



# Southern Lepidopterists' **NEWS**

*EST. 1978*

*Official Newsletter of the Southern Lepidopterists' Society*

**Vol. 28 NO. 1**

**March 30, 2006**

---

**THE OFFICIAL PUBLICATION OF THE SOUTHERN LEPIDOPTERISTS' SOCIETY  
ORGANIZED TO PROMOTE SCIENTIFIC INTEREST AND KNOWLEDGE RELATED  
TO UNDERSTANDING THE LEPIDOPTERA FAUNA OF THE SOUTHERN REGION  
OF THE UNITED STATES (WEBSITE: [www.southernlepsoc.org/](http://www.southernlepsoc.org/))**

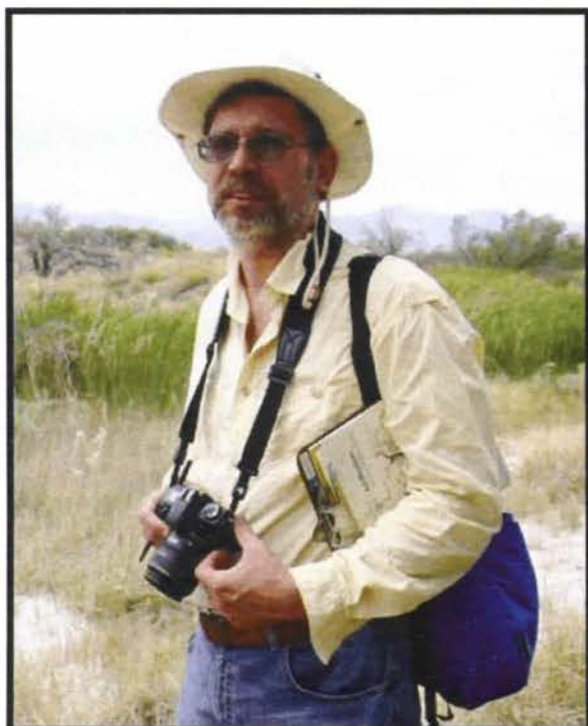
---

**J. BARRY LOMBARDINI: EDITOR**

---

## **NEW CHAIRMAN FOR THE SOUTHERN LEPIDOPTERISTS' SOCIETY**

**BY  
MARC C. MINNO**



**Marc C. Minno (Nevada, August 2004)**

Marc C. Minno was elected chairman of the society at the annual meeting held 1 October 2005, at the Florida Museum of Natural History, McGuire Center for Lepidoptera Research. Regarding my background, I received a bachelor's degree in entomology from Purdue University in 1978, a Master's in entomology from the University of California at Davis in 1981, and a Ph.D. in zoology from the University of Florida in 1994. I work for the St. Johns River Water Management District in Palatka as a Supervising Regulatory Scientist, overseeing the environmental assessment of consumptive use permits. I've been with the District for over 15 years. Even as a young boy, I was fascinated with butterflies and moths and hoped some day to write a book about them. During my time as an amateur lepidopterist, I have published a number of popular and scientific articles on moths and butterflies, as well as the books: *Florissant Butterflies*, *Butterflies of the Florida Keys*, *Florida Butterfly Gardening*, *Butterflies Through Binoculars: Florida*, and *Florida Butterfly Caterpillars and Their Host Plants*. One of my most cherished awards is the John Abbott Award that I received from the Southern Lepidopterists' Society on October 2, 1999.

My goal as chairman is to target places that are very little explored for field meetings, collect specimens, compile species lists, and publish the information in the newsletter. Development is proceeding at a hectic pace in Florida. It seems likely that, except for parks and preserves, most of the state will be converted to urban land uses within the next 50 years. The story is much the same or worse in other parts of the south.

Southern Lepidopterists' have a role in gathering data on butterflies and moths. No one else is trained or willing to spend the time collecting specimens. In Florida, I believe that we have lost our first butterfly species, the Zestos Skipper (*Epargyreus zestos*). This species has not been seen for many years. Others such as the Miami Blue, Meske's Skipper (Keys race), Arogos Skipper, Southern Dusted Skipper, etc. are critically imperiled. And that's just the butterflies. Almost nothing is known about most of the Lepidoptera in the south, i.e. moths. Unfortunately, little is being done to save invertebrate biodiversity in the southeastern United States by state and federal agencies.

So, I believe that we have a mandate to quickly survey as much of the southeast as possible for butterflies and moths. Historical records are interesting, but we need up-to-date information. For instance, the Miami Blue was widely distributed and locally abundant in the Keys during the 1980's, but had declined to a single colony by the late 1990's. Even common species may not be common in the future. I will be organizing field meetings to document the current fauna of Florida. I encourage other members to do the same in states where they live. We are not locked in to have just two or three meetings per year. Not only will we have fun, but we will be doing something to help save the environment. We collect species to save species. I hope to see many of you next year starting with the spring field meeting at Osceola National Forest in March.

\*\*\*\*\*

### **WELCOME TO OUR NEW MEMBERS**

Lance A. Durden  
Dept. of Biology, P.O. Box 8042  
Georgia Southern University  
Statesboro, GA 30460-8042

Byrum W. and Linda Cooper  
558 Sunshine Blvd.  
Haines City, FL 33844-9540

John Kern  
1145 Red Maple Circle NE  
St. Petersburg, FL 33703

\*\*\*\*\*

### **DONATIONS TO THE SOUTHERN LEPIDOPTERISTS' SOCIETY FOR NEWSLETTER EXPENSES**

The NEWSLETTER has become very expensive for a variety of reasons, mostly the Editor's fault. I have added color which is expensive and increased the number of pages which is also expensive. These two changes are within my control. However, the other expense which is not in my control is postage which has just recently increased.

Therefore, if you as a member find it within your generosity, please give a donation to the society to help defray the costs of the NEWS.

[Another possibility to increase our financial solvency is to raise the cost of the membership dues. At this time there is no impetus to take this course of action. However, we could reduce costs by going electronic. See page 15 for consideration of this possibility.]

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

### The Southern Lepidopterists' Society

#### OFFICERS

Marc Minno: President  
2433 River Tree Circle  
Sanford, FL 32771  
E-Mail: [mmminno@bellsouth.net](mailto:mmminno@bellsouth.net)

Jeffrey R. Slotten: Treasurer  
5421 NW 69th Lane  
Gainesville, FL 32653  
E-Mail: [jslotten@bellsouth.net](mailto:jslotten@bellsouth.net)

Irving Finkelstein: Secretary  
425 Springdale Dr. NE  
Atlanta, GA 30305-3816  
E-Mail: [dfritillary@earthlink.net](mailto:dfritillary@earthlink.net)

Paul Milner: Membership Coordinator  
272 Skye Drive  
Pisgah Forest, NC 28768  
E-Mail: [pamilner@citcom.net](mailto:pamilner@citcom.net)

Tom Neal: Member-at-Large  
1705 NW 23rd Street  
Gainesville, FL 32605  
E-Mail: [Chouwah@aol.com](mailto:Chouwah@aol.com)

Dave Morgan: Website Manager  
4935 Shadowood Parkway  
Atlanta, GA 330339  
E-Mail: [davemor@us.ibm.com](mailto:davemor@us.ibm.com)

J. Barry Lombardini: Editor  
3507 41st Street  
Lubbock, Texas 79413  
E-Mail: [jbarry.lombardini@ttuhsc.edu](mailto:jbarry.lombardini@ttuhsc.edu)

The Southern Lepidopterists' Society is open to anyone with an interest in the Lepidoptera of the southern region of the United States. Annual membership dues:

Regular	\$15.00
Student	\$12.00
Sustaining	\$25.00
Contributor	\$50.00

A newsletter, The News of the Southern Lepidopterists' Society is published four times annually.

Information about the Society may be obtained from the Membership Coordinator or the Society Website: [www.southernlepsoc.org/](http://www.southernlepsoc.org/)

## INDEX

	Page
1. New Chairman for the Southern Lepidopterists' Society by Marc C. Minno.....	1
2. New Members.....	2
3. Call for Donations.....	2
4. Butterfly "Home List" for 2005 by Charles V. Covell Jr.....	4
5. Color Plate 1 by Vernon A. Brou Jr. Entitled "Spotlight on Rearing - <i>Darapsa myron</i> (Cramer)".....	insert
6. Scientists Hail Discovery of Hundreds of New Species in Remote New Guinea by Terry Kirby, Chief Reporter of "The Independent".....	5
7. <i>Harrisimemna trisignata</i> (Walker) in Louisiana by Vernon A. Brou Jr.....	7
8. First Computer Bug "The Bug" by James S. Huggins.....	8
9. Members' Notices.....	10
10. Honeymoon Bugs by David Fine.....	11
11. Africanized Bees in Florida! By Bob Belmont.....	14
12. Notice Concerning Electronic Viewing of Newsletter.....	15
13. Biochemical Endocrinology of Silkworm Development and Metamorphosis by S. Sridhara.....	16
14. Almost More Than We Could Chew by David Fine.....	22
15. Definitions.....	24
16. Great Literary Taunts.....	24
17. <i>Catocala micronympha</i> Guenée in Louisiana by Vernon A. Brou Jr.....	26
18. Reports of State Coordinators.....	27
19. <i>Metarranthia obfirmaria</i> (Hbn.) in Southeast Louisiana by Vernon A. Brou Jr.....	32

\*\*\*\*\*

## QUOTES OF YOGI BERRA

"Nobody goes there; it's too crowded."

"A nickel ain't worth a dime anymore."

"When you come to a fork in the road, take it."

"We're lost, but we're making good time."

"If people don't come to the ballpark, how are you gonna stop them?"

"It was hard to have a conversation with anyone, there were too many people talking."

"Why buy good luggage? You only use it when you travel."

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*



## BUTTERFLY "HOME LIST" FOR 2005

BY

CHARLES V. COVELL JR

Keeping a list of Lepidoptera observed on your home property, or any other chosen site, is an enjoyable and scientifically valuable sideline to one's lepidopterology. I have such lists for many years for our former home in Louisville, KY, and this past year kept my first full year list for our present home, 207 NE 9th Ave., Gainesville, Alachua Co., Florida. It is a shady yard in a mature downtown area, fully developed, with big trees and numerous nectar plants such as "*Lantana*" and "*Pentas*" available for visiting butterflies. Below is a list of the 31 species seen, giving Latin names and the earliest date observed:

Backyard butterfly list for 207 NE 9th Ave., Gainesville, FL, 32601-4378, 2005:

1. <i>Phoebis sennae eubule</i>	Jan. 1, flying in our yard
2. <i>Danaus plexippus</i>	Jan. 9, flying in our yard
3. <i>Calycopis cecrops</i>	Feb. 10, lit on bush in backyard
4. <i>Papilio glaucus</i>	Feb. 13, flying over our house
5. <i>Parhassius —album</i>	March 31, on <i>Pentas</i> and in backyard grass
6. <i>Junonia coenia</i>	April 2, on pink wildflower in lawn
7. <i>Vanessa virginiensis</i>	April 2, on blossoms of big trees in yard
8. <i>Vanessa atalanta</i>	April 2, on blossoms of same trees
9. <i>Phoebis agarithe</i>	April 9, flying over the yard
10. <i>Hylephila phyleus</i>	May 12 on <i>Lantana</i>
11. <i>Libytheana carinenta</i>	May 16, resting in the back lawn
12. <i>Heliconius charithonius</i>	May 18, on <i>Viburnum</i> tree
13. <i>Papilio palamedes</i>	June 19, flying in backyard
14. <i>Agraulis vanillae</i>	June 19, on <i>Pentas</i> blossoms
15. <i>Polites vibex</i>	June 23, male on <i>Lantana</i> blossoms
16. <i>Urbanus proteus</i>	June 23, on <i>Lantana</i> blossoms
17. <i>Battus polydamas</i>	July 5, on <i>Pentas</i> blossoms
18. <i>Euphyes vestris metacomet</i>	July 7, on <i>Salvia</i> blossoms
19. <i>Erynnis horatius</i>	July 7, on <i>Salvia</i> blossoms
20. <i>Panoquina ocola</i>	July 7, on <i>Lantana</i> blossoms
21. <i>Papilio troilus</i>	July 10, on <i>Tithonia</i>
22. <i>Battus philenor</i>	July 16, on <i>Pentas</i>
23. <i>Limenitis arthemis astyanax</i>	July 17, sitting on bird feeder
24. <i>Papilio polyxenes asterius</i>	July 18, nectaring on <i>Pentas</i>
25. <i>Asterocampa clyton</i>	July 24, female at rest near back door
26. <i>Epargyreus clarus</i>	July 25, on <i>Lantana</i>
27. <i>Eurema lisa</i>	August 10, nectaring on weed plant
28. <i>Strymon melinus</i>	August 13, nectaring on <i>Pentas</i>
29. <i>Vanessa cardui</i>	August 13, nectaring on <i>Lantana</i>
30. <i>Asterocampa celtis</i>	August 27, perching on shrub
31. <i>Anartia jatrophae</i>	October 30, nectaring on <i>Lantana</i>

\*\*\*\*\*

COLOR PLATE 1 [insert] is by Vernon A. Brou Jr. and entitled "Spotlight on Rearing - *Darapsa myron* (Cramer)".

\*\*\*\*\*

\*\*\*\*\*

## SCIENTISTS HAIL DISCOVERY OF HUNDREDS OF NEW SPECIES IN REMOTE NEW GUINEA

BY

TERRY KIRBY, CHIEF REPORTER OF "THE INDEPENDENT"

Published: 07 February 2006

"First published in The Independent, ©Independent News & Media"

An astonishing mist-shrouded "lost world" of previously unknown and rare animals and plants high in the mountain rainforests of New Guinea has been uncovered by an international team of scientists.

Among the new species of birds, frogs, butterflies and palms discovered in the expedition through this pristine environment, untouched by man, was the spectacular Berlepsch's six-wired bird of paradise. The scientists are the first outsiders to see it. They could only reach the remote mountainous area by helicopter, which they described it as akin to finding a "Garden of Eden".

In a jungle camp site, surrounded by giant flowers and unknown plants, the researchers watched rare bowerbirds perform elaborate courtship rituals. The surrounding forest was full of strange mammals, such as tree kangaroos and spiny anteaters, which appeared totally unafraid, suggesting no previous contact with humans.

Bruce Beehler, of the American group Conservation International, who led the month-long expedition last November and December, said: *"It is as close to the Garden of Eden as you're going to find on earth. We found dozens, if not hundreds, of new species in what is probably the most pristine ecosystem in the whole Asian-Pacific region. There were so many new things it was almost overwhelming. And we have only scratched the surface of what is*

*there."* The scientists hope to return this year.

The area, about 300,000 hectares, lies on the upper slopes of the Foja Mountains, in the easternmost and least explored province of western New Guinea, which is part of Indonesia. The discoveries by the team from Conservation International and the Indonesian Institute of Sciences will enhance the island's reputation as one of the most biodiverse on earth. The mountainous terrain has caused hundreds of distinct species to evolve, often specific to small areas.

The Foja Mountains, which reach heights of 2,200 metres, have not been colonised by local tribes, which live closer to sea level. Game is abundant close to villages, so there is little incentive for hunters to penetrate up the slopes. A further 750,000 hectares of ancient forest is also only lightly visited.

One previous scientific trip has been made to the uplands - the evolutionary biologist and ornithologist Professor Jared Diamond visited 25 years ago - but last year's mission was the first full scientific expedition.

The first discovery made by the team, within hours of arrival, was of a bizarre, red-faced, wattled honeyeater that proved to be the first new species of bird discovered in New Guinea - which has a higher number of bird species for its size

than anywhere else in the world - since 1939. The scientists also found the rare golden-fronted bowerbird, first identified from skins in 1825. Although Professor Diamond located their homeland in 1981, the expedition was able to photograph the bird in its metre-high "maypole" dance grounds, which the birds construct to attract mates. Male bowerbirds, believed to be the most highly evolved of all birds, build large and extravagant nests to attract females.

The most remarkable find was of a creature called Berlepsch's six-wired bird of paradise, named after the six spines on the top of its head, and thought "lost" to science. It had been previously identified only from the feathers of dead birds.

Dr. Beehler, an expert on birds of paradise, which only live in northern Australia and New Guinea, said: *"It was very exciting, when two of these birds, a male and a female, which no one has seen alive before...came into the camp and the male displayed its plumage to the female in full view of the scientists."*

Scientists also found more than 20 new species of frogs, four new butterflies, five new species of palm and many other plants yet to be classified, including what may be the world's largest rhododendron flower. Botanists on the team said many plants were completely unlike anything they had encountered before.

Tree Kangaroos, which are endangered elsewhere in New Guinea, were numerous and the team found one species entirely new to the island. The golden-mantled tree kangaroo is considered the most beautiful but also the rarest of the jungle-dwelling marsupials. There were also other marsupials, such as wallabies and mammals that have been hunted almost to extinction elsewhere. And a rare spiny anteater, the long beaked echidna, about which little is known, allowed itself to be picked up by hand. Dr. Beehler said: *"What was amazing was the lack of wariness of all the animals. In the wild, all species tend to be shy of humans, but that is learnt behaviour because they have encountered mankind. In Foja they did not appear to mind our presence at all."*

*"This is a place with no roads or trails and never, so far as we know, visited by man...This proves there are still places to be discovered that man has not touched."*

### Inhabitants of New Guinea

#### Birds

The scientists discovered a new species - the red faced, wattled honeyeater - and found the breeding grounds of two birds of almost mythical status - the golden-fronted bowerbird and Berlepsch's six - wired bird of paradise, long

believed to have disappeared as a separate species. The expedition also came across exotic giant-crowned pigeons and giant cassowaries - a huge flightless bird - which are among more than 225 species which breed in the area, including 13 species of birds of paradise. One scientist said that the dawn chorus was the most fantastic he had ever heard.

#### Mammals

Forty species of mammals were recorded. Six species of tree kangaroos, rare elsewhere in New Guinea, were abundant and the scientists also found a species which is new to Indonesia, the golden-mantled tree kangaroo. The rare and almost unknown long-beaked echidna, or spiny anteater, a member of a primitive group of egg-laying mammals called monotremes, was also encountered. Like all the mammals found in the area, it was completely unafraid of humans and could be easily picked up, suggesting its previous contact with man was negligible.

#### Plants

A total area of about one million hectares of pristine, ancient, tropical, humid forest containing at least 550 plant species, many previously unknown and including five new species of palms. One of the most spectacular discoveries was a so far unidentified species of

rhododendron, which has a white scented flower almost six inches across, equaling the largest recorded rhododendron flower.

#### Butterflies

Entomologists among the scientists identified more than 150 different species of butterfly, including four completely new species and several new sub-species, some of which are related to the common English "cabbage white" butterfly. Other butterflies observed included the rare giant birdwing, which is the world's largest butterfly with a wingspan that stretches up to seven inches.

#### Frogs

The Foja is one of the richest sites for frogs in the entire Asia-Pacific region, and the team identified 60 separate species, including 20 previously unknown to science, one of which is only 14mm big. Among their discoveries were healthy populations of the rare and little-known lace-eyed frog and a new population of another frog, the *Xenorhina arboricola*, which had previously only been known to exist in Papua New Guinea.

[The Editor thanks Terry Kirby, Chief Reporter, and Dan Hedley of the Online Edition of The Independent (<http://www.independent.co.uk/>) for granting permission to the Southern Lepidopterists' Society to republish this article in their Newsletter.]

\*\*\*\*\*

**DUES NOTICE** - Members please note that if the year after your name on the address label is **2005** or less your dues are due for **2006**.

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*



**HARRISIMEMNA TRISIGNATA (WALKER) IN LOUISIANA**

BY

VERNON ANTOINE BROU JR.

The pretty noctuid moth *Harrisimemna trisignata* (Walker) (Fig. 1) is listed by Heppner (2003) to occur in eastern North America from Nova Scotia to Florida and Saskatchewan to Texas, February to October. Rockburne & Lafontaine (1976) reported *trisignata* to be widespread but uncommon over Ontario and Quebec. Reported May to September by Covell (1984). Heitzman & Heitzman (1987) report *trisignata* to be uncommon in

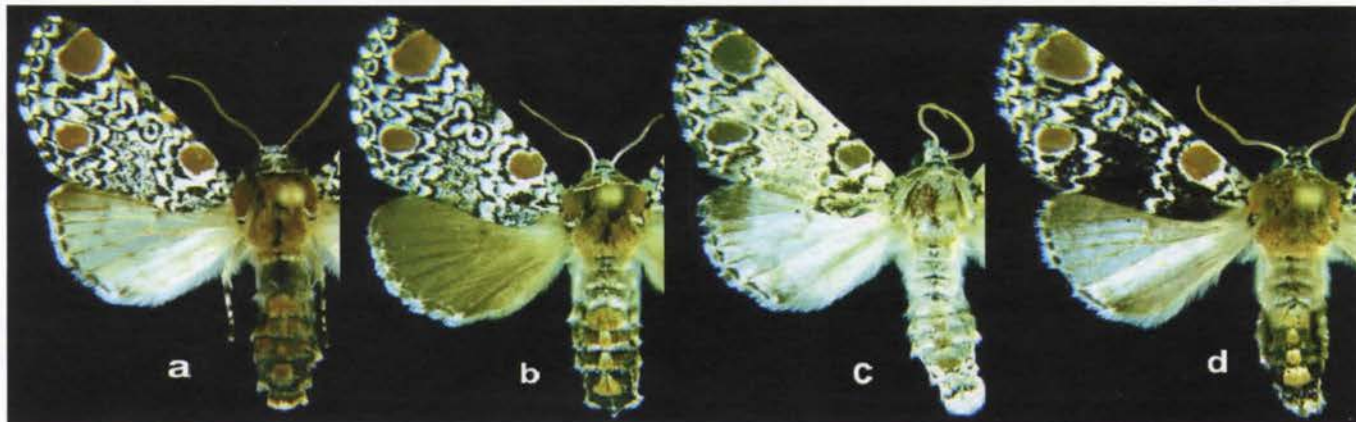


Fig. 1. Adult *Harrisimemna trisignata*; a. male, b. female, c. male aberrant, d. male aberrant.

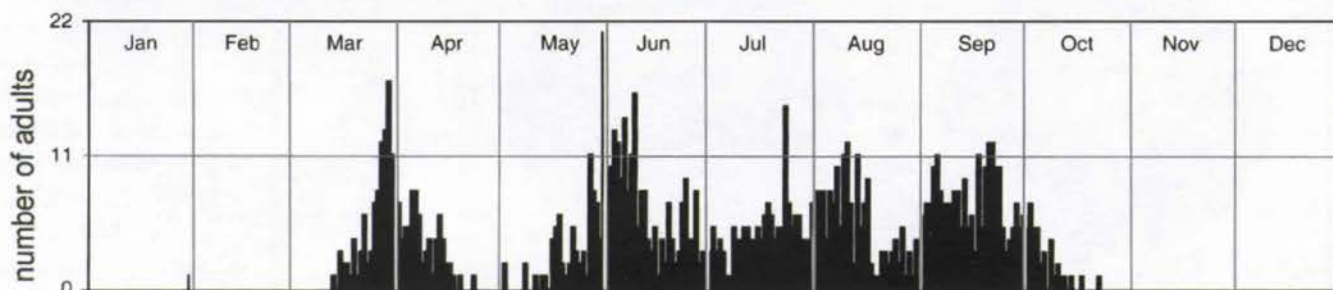


Fig. 2. Dates of capture of *Harrisimemna trisignata* captured at sec 24T6SR12E, 4.2 miles NE of Abita Springs, St. Tammany Parish, Louisiana. n = 1041.

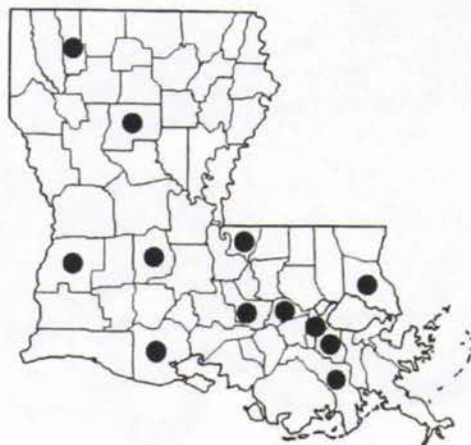


Fig. 3. Parish records by this author.

Missouri. Reported foodplants include: apple, lilac, willow, ash, persimmon, sweetgum, blueberry, arrowwood and holly. In Louisiana, *trisignata* has four annual broods (Fig. 2). Typical phenotypes are illustrated in Fig. 1a, 1b, with lighter and darker aberrants in Fig. 1c, 1d. Louisiana locality records are illustrated in Fig. 3.

**Literature Cited**

- Covell, Jr., C.V. 1984. *A Field Guide to the Moths of Eastern North America*. The Peterson Field Guide Series No. 30. Houghton Mifflin Co., Boston. xv + 469pp., 64 plates.
- Heitzman, J. R. & J. E. Heitzman 1987. *Butterflies and Moths of Missouri*. Missouri Dept. of Conservation, 385 pp.
- Heppner, J.B. 2003. *Arthropods of Florida and Neighboring Land Areas*, vol.17: Lepidoptera of Florida, Div. Plant Industry, Fla. Dept. Agr. & Consum. Serv., Gainesville. x+670 pp., 55 plates.
- Rockburne, E.W. & J. D. Lafontaine 1976. *The Cutworm Moths of Ontario and Quebec*. Canada Dept. Agr. Pub. 1593.



# FIRST COMPUTER BUG

## "THE BUG"

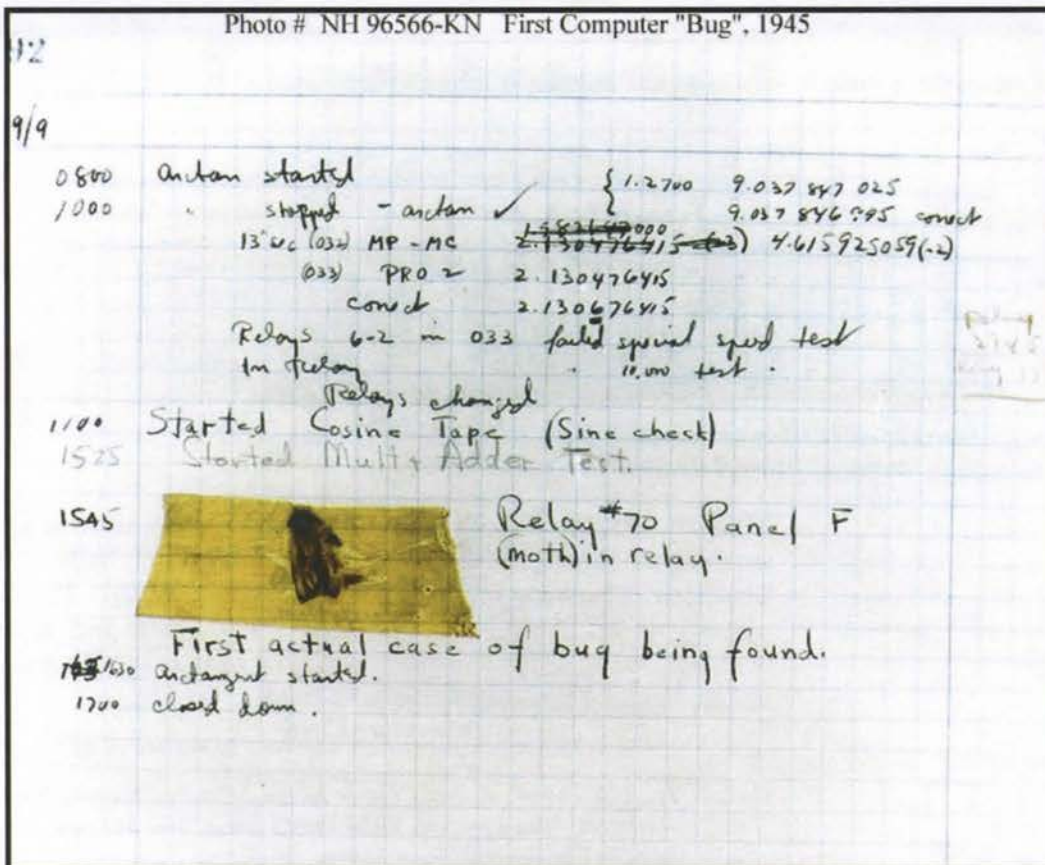
BY  
JAMES S. HUGGINS

In 1945, Grace Murray Hopper was working on the Harvard University Mark II Aiken Relay Calculator (a primitive computer). On the 9th of September, 1945, when the machine was experiencing problems, an investigation showed that there was a moth trapped between the points of Relay #70, in Panel F. The operators removed the moth and affixed it to the log. (See the picture below.) The entry reads: *"First actual case of bug being found."*

The word went out that they had "*debugged*" the machine and the term "*debugging a computer program*" was born. Although Grace Hopper was always careful to admit that she was not there when it actually happened, it was one of her favorite stories.

## The Exhibit

One of the most common stories about the moth, and a story I often repeated, was that the moth was on display at the Smithsonian. A correspondent for the Online Hacker Jargon File decided to check on it and guess what ... it wasn't there.



In 1990, the editor of the Online Hacker Jargon File did some investigating. Turns out that the log, with the moth still taped by the entry, was in the Naval Surface Warfare Center Computer Museum at Dahlgren, Virginia. They had tried to donate it to the Smithsonian, but the Smithsonian wouldn't accept it.

The 1990 curator of the History of American Technology Museum (part of the Smithsonian) didn't know all of this, agreed to accept it, and took it in 1991. It took years to be actually exhibited

due to space and money constraints.

As the Online Hacker Jargon File notes:

*Thus, the process of investigating the original-computer-bug bug fixed it in an entirely unexpected way, by making the myth true!*



## The Term

So, where did the term "bug" come from? Well, the entry ("*First actual case of bug being found.*") shows that the term was already in use before the moth was discovered. Grace Hopper also reported that the term "bug" was used to describe problems in radar electronics during WWII.

The term was in use during Thomas Edison's life to mean an industrial defect. And in *Hawkin's New Catechism of Electricity*, an 1896 electrical handbook from Theo. Audel & Co.) included the entry:

*The term "bug" is used to a limited extent to designate any fault or trouble in the connections or working of electric apparatus.*

In discussing the origin of the term, the book notes that the term is

*said to have originated in quadruplex telegraphy and has been transferred to all electric apparatus.*

Common folk etymology says that the phrase "*bugs in a telephone cable*" was used to account for noisy lines. There is no support for this derivation.

However, the term "bug" was used in the early days of telegraphy. There were the older "*manual*" keyers that required the operator to code the dots and dashes. And there were the newer, semi-automatic keyers that would send a string of dots automatically. These semi-automatic keyers were called "*bugs*". One of the most common brands of these keyers, the Vibroplex, used (and still does use) a graphic of a beetle.

These semi-automatic "*bugs*" were very useful, but required both skill and experience to use. If you were not experienced, using such a "*bug*" would mean garbled Morse Code.

Radio technicians also used the term "bug" to describe a roach-shaped device consisting of a coil of wire with the two ends of wire sticking out and bent back to nearly touch each other. This device was used to look for radio emissions. This term "bug" was probably a predecessor to the modern use of "bug" to mean a covert monitoring or listening device.

But, lets go way, way back to Shakespeare. In Henry VI, part III, Act V, Scene II, King Edward says:

*"So, lie thou there. Die though; and die our fear; For Warwick was a bug that fear'd us all."*

Samuel Johnson's first dictionary includes a definition of "bug" to mean:

*a fightful object; a walking spectre.*

For a more detailed and careful discussion of the etymology, see "Entomology of the Computer Bug: History and Folklore", *American Speech* 62(4):376-378, 1987, by Fred R. Shapiro.

[Editor's Note: The Editor wishes to thank Mr. James S. Huggins for allowing me to reprint his article in our Southern Lepidopterists' Society Newsletter on the "First Computer Bug - the Bug" which was copied from his website ([http://www.jamesshuggins.com/h/tek1/first\\_computer\\_bug.htm](http://www.jamesshuggins.com/h/tek1/first_computer_bug.htm)). The format was slightly modified by The Editor. Mr. Huggins is an eclecticist who draws on a variety of disciplines, systems, talents, skills and experiences in his work. He is a writer and a professional speaker on topics such as technology and privacy. Mr. Huggins can be contacted at his E-Mail address: WM-6@JamesSHuggins.com. (His home web page is located at: <http://www.jamesshuggins.com/h/bas1/home.htm>). Mr. Huggins can also be reached at P.O. Box 742076, Dallas, TX 75374. The Editor also wishes to acknowledge the Naval Historical Center, 805 Kidder Breese Street SE, Washington Navy Yard, DC 20374-5060 as to the location of the photograph: #NH 96566-KN First Computer "Bug", 1945.]

**MEMBERS' NOTICES****LIGHT TRAP ADVERTISEMENT**

**FOR SALE:** *Light Traps*, 12 volt DC or 110 volt AC with 18 inch length - 15 & 25 Watts and 24 inch length - 20 & 40 Watt in both 12 Volt DC and 110 Volt AC all with 365 Quantum black light bulbs. Rigid vane assembly of stainless steel, aluminum or plexiglass. The traps are portable and easy to use. Rain drains and beetle screens protect specimens from damage.

**BAIT TRAP ADVERTISEMENT**

**FOR SALE:** *Bait Traps*, 15" Diameter, 36" tall collapsible traps with cloth top and plastic coated nylon screen and supported with 3/16 steel rings. A plywood platform is suspended with "Eye" bolts and "S" hooks. The bait container is held in place by a retainer. Three types are available: Flat Bottom, Invert Funnel and Tropical.

**NIGHT COLLECTING LIGHT ADVERTISEMENT**

**FOR SALE:** *UV Night Collecting Light*. Units are designed with the ballast enclosed in a weather tight cast aluminum enclosure and the fluorescent bulbs in a clear shatter proof tube in 18 inch length - 15 & 25 Watts and 24 inch length - 20 & 40 Watt in both 12 Volt DC and 110 Volt AC all with 365 Quantum black light bulbs.

A 110 Volt AC - 24 inch 40 Watt Quantum Black Light unit with a preheat rapid start ballast for use in the tropics is also available.

Visit our Website at: [www.leptraps.com](http://www.leptraps.com). Or for a free brochure and price list contact: Leroy C. Koehn, 522 Stillwater Drive, Winterville, NC 28590 [Home Phone (252) 321-8645] (E-Mail: [Leptraps@AOL.com](mailto:Leptraps@AOL.com)).

\*\*\*\*\*

**WANT AD**

I would like to purchase butterfly pupae and moth cocoons from any state. I would also like to purchase butterfly larvae and moth larvae from any state. These should be shipped in a plastic container, with ample amounts of food. Please contact me if interested: Daniel Waxman, 1016 Durham A, Deerfield Beach, FL 33442.

\*\*\*\*\*

**FIELD GUIDE TO EASTERN MOTHS:** This widely popular book on the moths of the eastern US has been recently (last year) "*slightly revised*" by Charles Covell. The book is available from Charlie directly for \$40.00. Order by sending a check to Charles Covell at: 207 NE 9<sup>th</sup> Ave., Gainesville, FL 32601-4378. (The \$40.00 includes shipping and handling.) (E-Mail: [covell@louisville.edu](mailto:covell@louisville.edu))

\*\*\*\*\*

**MEMBERS** - I am always in need of articles. Please consider writing about your experiences - on lepidoptera that is! - The Editor.

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*



## HONEYMOON BUGS

BY  
DAVID FINE

The comment had been made to me more than once in the past few months when people found out that we were going to the Dominican Republic for our honeymoon, "Please tell me you are going to leave your net at home!" Now, anyone that really knows me (including my wife) knows that I couldn't possibly travel to a tropical paradise without a net! I also heard the comment, "Some guys will do ANYTHING to get to go to the Dominican Republic to collect butterflies!" Of course my dear friend was joking when he made that comment. Bill, whenever you are in the presence of my wife, those comments probably are not a great idea! The truth is that we both love beaches. We both wanted to be in a tropical paradise, preferably a Spanish-speaking country where we can enjoy some good culture (food, dancing, music) along with typical honeymoon stuff. The Dominican Republic just happened to be the perfect place to do so in a manner that was not over-expensive. We spent nine days in Punta Canna, a very "touristy" city, at a five star hotel on the beach. I had always dreamed of visiting this island for collecting purposes because of its great diversity, however, serious collecting would have to wait for another trip.

On the way to the resort from the airport, I began to salivate seeing all of the awesome looking areas that we passed that looked as though they would be teeming with butterflies. I recognized many of the trees even from the road, due both to my experience at Butterfly World dealing with Ron Boender's extensive tropical plant collection as well as my thousands of hours spent venturing the hammocks of the Florida Keys. Many of the habitats looked very much the same containing similar trees like Tamarinds, Gumbolimbos, *Ficus*, Lead Tree, and many similar palms. I saw *Cecropia* trees which I recognized from Butterfly World, and there were many smaller plants that I saw that were familiar including different *Passifloras*, *Dalechampias*, *Mimosas*, and others. A blue *Eupatorium*-like bush was in full bloom all over the island which drove me nuts as we were driving by. I kept my tongue in my mouth until we got to the hotel, however.

We checked into the hotel in the late afternoon which left no appreciable time to observe butterflies. The resort was enormous. There must have been thousands of guests. There were many French, German, English, Irish, and Canadians, but very few Americans. We were there in the peak of tourist season and the island was "hopping!" I was disappointed in the lack of useful floral arrangement in the landscape. In fact, I don't think there was one flowering plant that attracted butterflies planted in the entire resort. I took a morning and walked the enormous premises and much to my dismay, I found nowhere that I could easily collect bugs.

It was strongly suggested to us that we not venture outside of the hotel premises without guidance. The hotel was surrounded by a 20 foot barbed-wire fence and a big gate with security guards at the front. Outside the resort was a whole new world! It was an extremely impoverished area that apparently was a high risk area for pick pockets and thieves. So then I walked down to the beach and headed up the coast until I was passed the gates and then made my way inland into a vacant lot. I quickly realized that collecting here would not be a very comfortable endeavor. There were people walking and riding bikes everywhere and all of them gave me the same curious look that we all know so well here in the US. People really wanted to know what I was doing with the net. I was approached 8 times in one hour and I began to make my way back to the hotel area. There was nowhere that I could see in close proximity to the hotel where I could "get lost" in the woods with a net and not be bothered by people. I did manage to swing a net a few times on some interesting bugs. I found *Precis genoveva* abundant in a weedy field nearby. Although this butterfly is common in the Caribbean, I have spent lots of time in its "habitat" in South Florida and have never seen one. I also saw *Anartia jatrophae*, *Calisto confusa*, *Calisto obscura*, *Lycorea cleobaea*, *Hemiargus ceraunus/hanno*, *Eurema elathea*, and *Atalopedes mesogramma* *apa*.

After my short walk into the city of Punta Canna I realized that any "butterflying" that I would do would have to be done within the premises of the hotel. Part of our package was a complimentary fruit basket delivered each morning to our room. It consisted of bananas, guava, pineapple, watermelon, green melons, and other odds and ends. Half of it was already over ripe and little to be desired, so naturally, I began to put them out onto the balcony of our 4<sup>th</sup> story hotel room. I put the fruit into a tray and added some water, sugar and some stale beer to ferment over night. It was about 9:30 the next morning, when my wife yelled out "Oh baby, how beautiful!" I

was still half asleep at that particular moment but immediately woke up thinking she was talking about me! She wasn't, she was admiring the enormous brown and orange butterfly circling our balcony just outside our window. When I saw the beast that she was referring to, I jumped out of bed, ran outside and patiently waited for the bug to land. After 5 minutes of flirting with death, the butterfly finally came to rest on the fruit basket. It was *Historis odius*! I never realized how big and fast this butterfly is. They move man! We attracted 5 of them to the room that we saw as well as some *Hamadryas amphiocloe* and some very peculiar Longhorn Beetles.

While out laying by the pool and on the beach there were several butterflies that repeatedly showed themselves including *Danaus plexippus*, *Heliconius charithonius*, *Agraulis vanillae*, *Dryas julia*, *Anartia jatrophae*, *Hamadryas amphiocloe*, *Historis odius*, and by far the most abundant butterfly was *Siproeta stelenes*. The Malachite was everywhere. At anytime, you could scan the hotel grounds and see 5 or 6 of them flying. They behaved very differently than I am accustomed. In Florida, they stay in the shadows of the under story venturing out only for sip of nectar from flowers or juice from a favorite fruit. These bugs were on a mission. They were flying full speed in a single direction as though there was some huge gathering to the south of the island. Out of the thousands of Malachites that I saw, I never saw one land or even think about landing. I also saw *Atalopedes mesogramma* *apa* ovipositing on the grasses beneath a palm tree where we were laying out and my wife pointed out to me a small group of plants that contained small orange butterflies darting about it. I was pleased to see that they were the large orange Hesperid, *Pyrrhocalles antiqua*. I saw them at no other place while on this trip, only around this one group of plants. I am sure that its host was there somewhere.

We took a horse-back riding trip offered with our package. This was one of the most enjoyable things that we did. I was a good boy and left my net in the hotel room. They took us by bus about a half an hour up into a small mountain to a stable where they kept their horses. I have had little experience with them so it was a totally new adventure for me. We rode slowly down a mountain path through the forest with a small group of people down onto a beach where the horses began to get a little moody. I thought I had a fair handle on things when my horse decided that he wanted to start running. No matter what I did, he just kept running until he was next to his "buddy". I had a sore butt in the morning, but that is besides the point. We then returned up the mountain side the back way through a small town where all the children would come out to the street side to see the tourists ride by on the horses. They were all very friendly and waved at us as we passed. Then a 10 year old tried to hit on my wife by saying that she was the most beautiful woman he had ever seen. I guess the Dominican guys start off young! He is lucky he had all of his friends with him or I might have had to get off my horse and deal with him. (That's another joke.)

During this trip we ventured through lots of great looking habitat but much to my dismay, I saw little to be desired. The *Eupatorium* was in full bloom and there were butterflies all over it but all of them were the usual species that I can see at home: *Heliconius charithonia*, *Dryas julia*, *Agraulis vanillae*, and *Siproeta stelenes*. I saw little else. I really felt sorry for my poor horse. I didn't realize until I saw the pictures how small the poor thing was. I couldn't believe how big I looked on it. The trip was three hours and I was on that thing's back the entire time. I am sure glad God sent me here as a human, for I am sure that my horse was sore for the next few days. I surely wouldn't want to be in his shoes!

All in all, the honeymoon was a great success. We had an absolutely fantastic time relaxing, eating, drinking, and mingling. We had great weather and met some really nice people. No! There are no kids on the way quite yet but it is in our plans for the near future. I am going to have to revisit the D.R. one day and do a little more serious collecting. It looks as though this country has awesome possibilities for prime collecting and I strongly recommend it for anxious collectors.

[Photographs for this article are on page 13.]

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*





**Dominican Republic coastline from above**



**Beach at Punta Cana in the Dominican Republic**



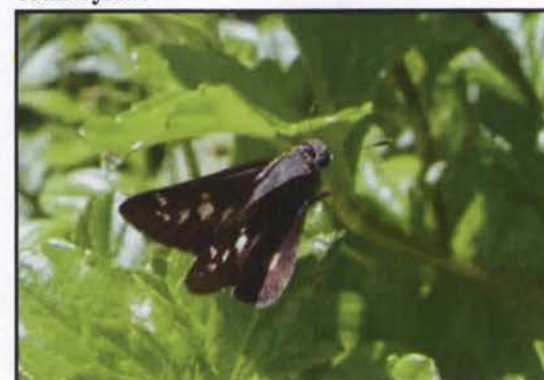
**Fields of *Eupatorium* in the Dominican countryside**



**Complimentary butterfly bait**



***Historis odius***



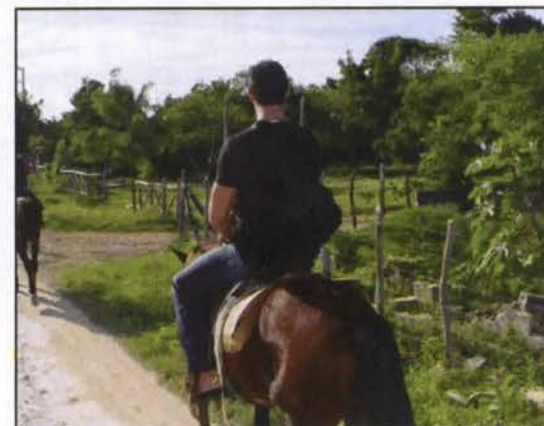
***Atalopedes mesogramma apa***



**Mr. and Mrs. David Fine**



**Noemi and David on horseback**



**Poor thing! (The horse that is)**

## AFRICANIZED BEES IN FLORIDA!

BY  
BOB BELMONT

Lepidopterists bee aware! "*Killer bees*" have in fact found their way into Florida and are now establishing their colonies statewide. What does this mean to the amateur and professional lepidopterists who enjoy scouring remote outdoor areas of Florida to observe range extensions, flight periods, photograph life histories, document insect-lepidoptera interactions, food plants and collect new species of butterflies and moths? It means you need to understand at least the information in this article before you venture any further into Florida's wonderfully tropical environment. If you're from Texas or Arizona, you already know what I'm going to say.

The following information summarizes a tremendous amount of information already known about these bees:

- ✧ "*Africanized*" bees, also called killer bees by the news media, were released by mistake in 1956 in Brazil during attempts to evaluate an aggressive strain of honeybee from Africa to increase Brazil's honey production. These bees have spread their colonies northward to the point that they entered the United States in 1990. Now that they have entered Florida they have dispersed throughout the state along side of normal honeybees. As they interbreed, the genetics produce over a span of a number of months much more aggressive hives. No human has died due to their stings in Florida yet. However, they have killed over 1,000 humans, over 100,000 cows, and thousands of pets and wild animals since their release.
- ✧ An Africanized honeybee looks no different and stings no differently from a "*Europeanized*" (normal, docile) honeybee.
- ✧ The Africanized bees are the identical genus and species to normal honeybees, but a different subspecies. The African subspecies is actually a very tiny bit smaller than the normal honeybee.
- ✧ In coming years because of the establishment of Africanized bees in Florida there will be an increase in the number of human encounters.
- ✧ Africanized bees spread more rapidly and often move their nests from one location to another.
- ✧ A normal Europeanized bee hive will swarm to start a new colony 1-2 times each year. But Africanized bees swarm 4-8 times per year and up to a maximum of 16 times. Thus they continue their dominating spread across the state quite rapidly.
- ✧ Africanized bees also exhibit nest **usurpation**. This is a form of reproductive parasitism where a swarm replaces a queen of a Europeanized hive with their own. A small "*contingency*" of attack bees and a queen leave the Africanized hive and head toward the European hive. African attack bees kill European guard bees and eliminate them, and a few more Africanized bees enter the European hive and obtain the European bee odors and are accepted. European odors are brought back to the waiting Africanized queen nearby until she will be accepted into the European hive. Then the remaining contingency enters the European hive, kills the European queen and takes over the entire hive.
- ✧ Beekeepers see this as a nightmare and many will go out of business. These bees will affect Florida's honey industry. Only the daring beekeepers will continue to tend hives. Constant replacement of European queen bees into hives may become a new job for beekeepers.
- ✧ The reason Africanized bees are so dangerous is because Europeanized honeybees, which normally have about 60,000 bees in a mature colony, send out about 60 "*guard*" bees that will



chase whatever bothers the hive for a few hundred feet, while an Africanized hive, that numbers about 6,000 bees at maturity will send out about 5,500 bees and attack whatever bothers them for about a half mile!

✧ The reason the Africanized bees are so dangerous is that the hive can be bothered and become aggressive at a distance with just a loud sound or a rapid movement from 50 feet away.

✧ So far in Florida about 5-6 pets and a 900 pound horse have been killed by Africanized bees. (The horse had about 3 pounds of bees in nasal passages, stomach and lungs...as do humans who die from not being able to get away from the bees in time). The bees have also attacked a number of outdoor workers, but no human deaths have yet to be recorded in Florida due to the bees.

✧ The predicted number of stings to provide a lethal dose of venom is 190 for a 22 lb. individual, 570 for a 66 lb. individual, 1140 for a 132 lb. individual, and 1710 for a 198 lb. individual. People all differ as far as allergic reactions. Some people are so sensitized to bee and ant venom that they need to carry an antidote for just one sting or they could die. We are preparing a study module about stings and their attention.

✧ During swarming when bees simply travel away to find a new nesting spot, Africanized bees do not normally attack and are docile. That's why it's more likely today than even last year that any "docile" bees are not European, but Africanized. That's why it is now recommended that all feral bee colonies be reported and killed.

✧ The most common Africanized honeybee nest sites include abandoned vehicles, empty containers, meter boxes, fences, wood piles, bird houses, old tires, trees, garages, outbuildings, sheds, & BBQ grills.

✧ If you should encounter the bees, don't stand still, don't hide in water, don't try to remove/kill a swarm, don't attempt to rescue an attacked person without a full bee suit on, but **DO take refuge immediately and if someone is threatened, call 911.**

In summary, from now on, when you're lepping in Florida, always be thinking of the fastest way back to refuge. Many of us get complacent when we're having so much fun enjoying the outdoors and forget that should bees attack you'll need to run for your life, now up to a half mile. Should they start a dive bomb attack, immediately turn around and run in the opposite direction of the attack. They're just trying to protect their nest. Get to know the local collectors and landowners and let them know where you're planning on working. They just may know the location of a wild nest and the information could possibly save your life. The situation is not all that gloomy. Florida has at least a million new lep discoveries awaiting us all. Just be careful out there!

\*\*\*\*\*

## NOTICE CONCERNING ELECTRONIC VIEWING OF SLS NEWSLETTER

Dear Southern Lepidopterists' Society Members:

I've been concerned that the price of the SLS Newsletter is getting fairly expensive mainly because I have added color plates, used a better paper, and expanded its length. Obviously, I could reduce the expenses if I eliminate some of the improvements - which I really do not want to do. Thus, a solution might be to send the newsletter by E-Mail attachment (pdf format) or put it on the SLS website (pdf format) for the membership. There is an obvious advantage to this and unfortunately some disadvantages:

## Advantage:

1. No expense (No printing. No US postage).

## Disadvantages:

1. Not everybody has a computer. Solution: we could print a few copies of the News to send by mail to these individuals. These copies would be expensive but our budget could afford the cost unless the membership would demand that their dues be reduced if they are going to print the News themselves which obviously then uses the member's resources. This issue could and would eventually be addressed if we went this route.
2. When members print their copy of the News it will not be in magazine form. Some members will certainly not like this non-magazine format and will also not want to print a 30-40 page or so document.
3. Newsletter is too big (megabyte size) and members' server will not receive this large an attachment. No solution to this problem that I know of. (However, I do know that "Hotmail" and "Yahoo" can handle a 6.5 MB attachment which is the size of the December 2006 issue - I did the experiments.)
4. Newsletter is in "pdf format" - some members can not handle pdf format. Do not have Adobe Acrobat 5.0 or more recent versions. Problem, but solvable as Adobe Acrobat Reader 7.0 is in the public domain.
5. Web is not secure. Could give members password but that may be a problem.
6. Any other disadvantages that you can think of?

What do you think of this idea (send by e-mail or put on website) if the kinks could be worked out? Dave Morgan, our SLS Website Manager, has placed the December 2006 issue (no plates) on the SLS Website (<http://www.southernlepsoc.org/newstest.php>) to experiment if the members can open it and determine if they would like this type of format. Go to the above website address. The username is: sls the password is: test

Also, Please fill out the enclosed survey that I have included in this issue of the Newsletter.

\*\*\*\*\*

## BIOCHEMICAL ENDOCRINOLOGY OF SILKMOTH DEVELOPMENT AND METAMORPHOSIS

BY  
S. SRIDHARA

### INTRODUCTION:

A common attribute of readers of this article is undoubtedly the love for and appreciation of the inherent beauty of moths and butterflies. The awe inspiring beauty, and the miraculous transformation of a crawling larva into the stunning flying organism have fascinated humans from times immemorial and been glorified in literature, poetry, painting, and music. The same appeal stirred biologists' curiosity to understand the physiological, organismic, and cellular, basis for the larval-adult transformation. Studies during the twentieth century on the domesticated silkworm (*Bombyx mori*) and the Saturniid silkmths, all belonging to the super family *Bombycoidea*, contributed profoundly to the founding of the field of insect endocrinology (Fig. 1). Such studies lead to the discovery of the two main hormones: ecdysone (20E) and Juvenile Hormone, as well as formulation of a general scheme of hormonal regulation of metamorphosis. This proposal has stood the test of time and is universally applicable to all the millions of insect species and other members of Arthropoda.

## ENDOCRINOLOGY OF DEVELOPMENT AND METAMORPHOSIS:

A general scheme of endocrine control of development and metamorphosis utilizing the *cecropia* silkmoth as the experimental organism was proposed more than thirty years ago (1) (Fig. 2). This model has been found applicable to all lepidopterans based on detailed studies carried out during the past few decades with the silkmoths and the Tobacco hornworm (Sphingid: *Manduca sexta*). The principal endocrine organs are the brain, *corpora allata*, and the *prothoracic* glands.

Specialized brain neurosecretory cells produce many neurohormones of which I will discuss only two: prothoracicotrophic hormone (PTTH) and eclosion hormone. The PTTH is a peptide hormone synthesized and secreted by just two pairs of neurosecretory cells in the brain, and regulates the production of ecdysone, the steroid hormone, by the *prothoracic* glands. This brain-*prothoracic* gland axis is analogous to the vertebrate

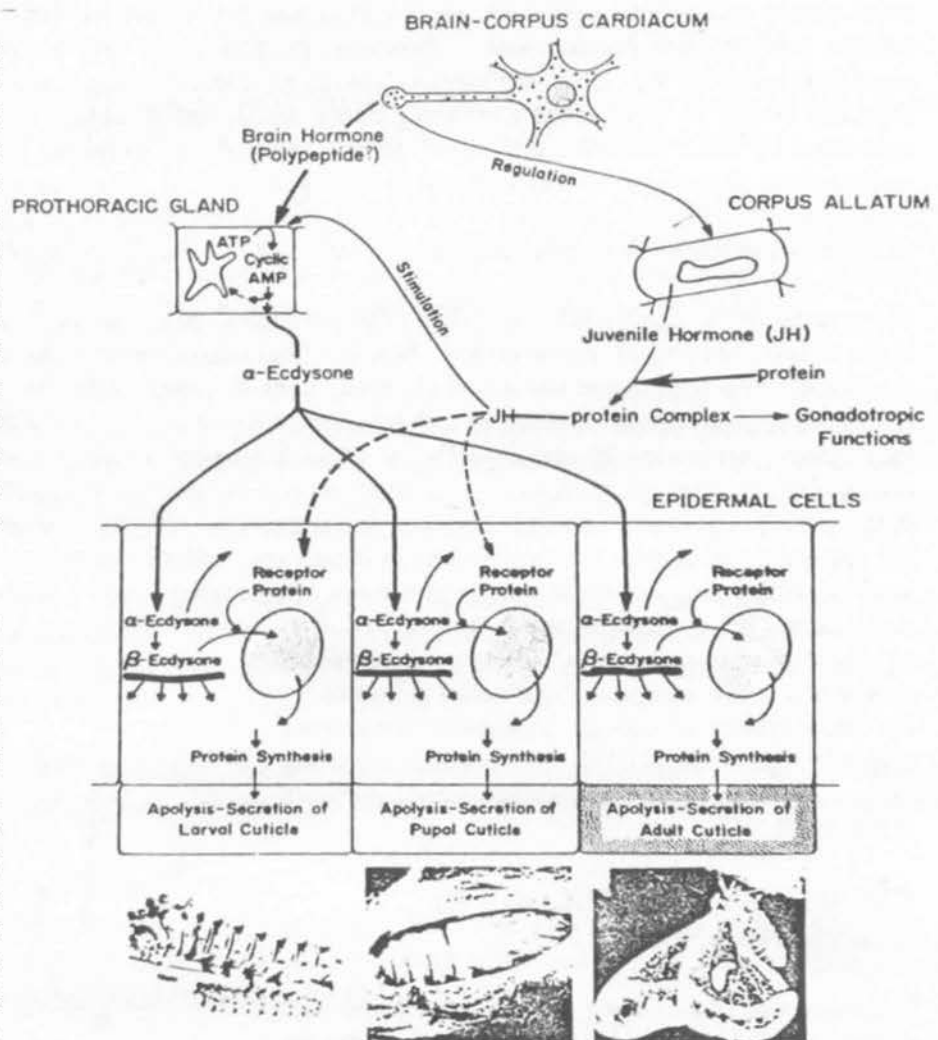


Fig. 2. General scheme for the endocrine control of post-embryonic larval-adult development of silkmoths (1,2).

pituitary-adrenal axis where ACTH, the pituitary peptide hormone, controls the synthesis of corticosteroids by the adrenal cortex cells. Ecdysone released into circulation is converted to 20 hydroxy ecdysone (20E) in peripheral tissues. 20E is the biologically active hormone that regulates numerous physiological processes in virtually all cells and organs (2). The name "ecdysone" derives from the nature of the phenomenon that was being mainly studied, viz ecdysis (shedding of the old cuticle and replacement by a new one). Because both the deposition of the cuticle by the epidermis and molting are vital components of insect growth and development, the tissue for studies on ecdysone action has been the epidermis. This pathway for ecdysone synthesis and action is depicted on the left side of Fig. 2. The morphological consequence of an ecdysone dependent molt, i.e., larval-larval, larval-pupal, or pupal-adult is determined by the amount of juvenile hormone (JH) that is synthesized and released by the cells of the *corpora allata* (CA). The exact amount of JH in circulation and within target tissues is established by regulated synthesis of the hormone by the CA, degradation by esterases in the blood, protection from the esterases by specific binding proteins, etc. (right side of Fig. 2). Based on numerous studies spanning four decades, the current hypothesis is that JH at high concentrations permits a larval-larval molt. Its decrease to almost undetectable levels during the last larval instar leads to a larval-pupal molt. Thus, the role of JH can be considered to be maintenance of the larval stage and/or inhibition of the activation of the pupal and adult programs (2 - 4).

Before discussing the ecdysone and JH further, I would like to mention that these two hormones also regulate the



sexual maturation and reproduction, at the adult stage of the majority of insects. In non-feeding moths like *Bombyx* and *Hyalophora* egg maturation occurs during the adult development within the pupal case. The development and differentiation of the ovarioles and subsequent vitellogenesis are driven by ecdysone as an integral part of adult development. However, in moths that feed as adults and butterflies, reproduction is regulated mainly by JH. Both vitellogenin (similar to albumin in eggs) synthesis by the fat body (a tissue which functions similar to mammalian liver and adipose tissue) and its uptake by the oocytes are post eclosion events controlled by JH. Enhancement of JH levels, required for increased egg production can occur by several mechanisms: stimulation of biosynthesis in CA, inhibition of JH esterase activity, transfer from males during copulation, etc. An indirect action of JH for stimulating reproduction occurs by the JH regulating the pheromone biosynthesis in the female that in turn controls the onset of calling, mating behavior, and ovarian maturation (4).

The process of molting includes a variety of physiological processes occurring over a lengthy period terminating in the visible shedding of the old cuticle. It is this final step of molting that occurs at the larval stage is referred to as ecdysis. The same process is called eclosion, when the adult moth emerges from the cocoon (or pupal case). Both ecdysis and eclosion involve an elaborate sequence of events involving the central nervous system and the musculature, controlled by the insect's circadian biological clock existing in the brain (5). The hormone responsible for eclosion produced in the brain, named eclosion hormone (EH) was first discovered in the giant silkmooths (5). EH is a polypeptide hormone and triggers not only the emergence of the insect from the old cuticle but also many other pre- and post- eclosion events (6). EH also regulates larval molts, but its action is on the insect's central nervous system and much more complicated than its action during eclosion. A larval-molt is initiated by EH (whose synthesis and secretion is regulated by ecdysone levels) acting on a three-cell epitracheal gland complex (Inka cells) followed by the relay system of peptide hormones: pre-ecdysis triggering hormone (PETH) and ecdysis triggering hormone (ETH). These relationships are diagrammed in Fig. 3 (7).

## CHEMISTRY AND BIOLOGY OF ECDYSONE AND JH:

Ecdysone was first isolated from *Bombyx* pupae and shown to be a steroid (8). Isolated ecdysone consisted of two steroid molecules referred to as  $\alpha$ - and  $\beta$ -ecdysone the difference being the latter having an additional hydroxyl group (Fig. 4). The latter was also referred to as ecdysterone. According to current accepted nomenclature, ecdysteroid refers to molecules that exhibit ecdysone like activity. Thus both ecdysone and 20E are ecdysteroids. The PTTH induced product of prothoracic glands is actually 3-dehydroecdysone that is rapidly converted to ecdysone in the hemolymph. 20E, the biologically active hormone, is generated from ecdysone in peripheral tissues by addition of an OH group at position C-20. For the general audience and easy reading "ecdysone" is used commonly, with the understanding that 20E is the true hormone being used and/or studied.

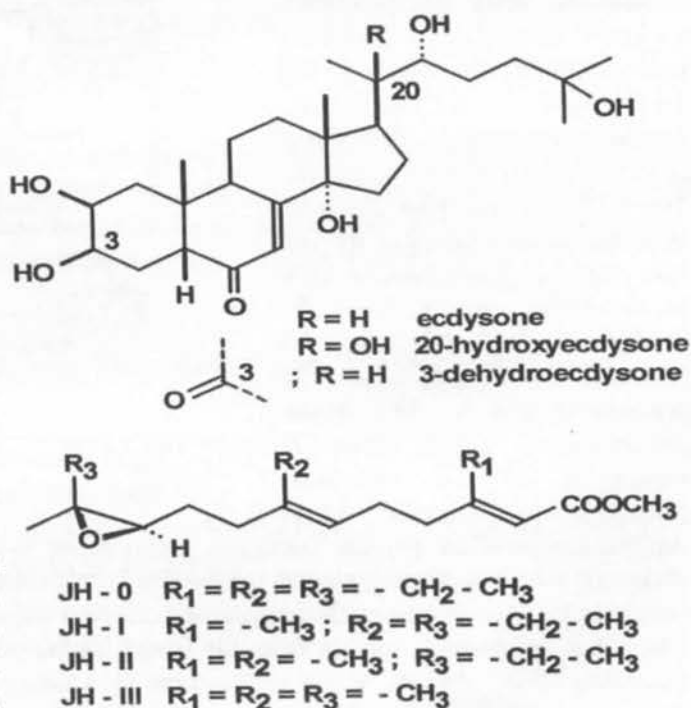


Fig. 4. Structures of ecdysteroids (top) and juvenile hormones (bottom). Esterases hydrolyze the methyl ester to the corresponding acids that are inactive.

Juvenile hormone was also first purified and characterized from silkmooths. JH is a lipid like molecule with a polyisoprenoid structure and an epoxide function (bottom Fig. 4). *Corpora allata* from different insects produce several related compounds that mainly differ in ethyl- and methyl-substituents (Fig. 4). Interestingly, JH I and JH II are unique to lepidopterans, while most other insects utilize JH III. Small peptide neurohormones,



# SPOTLIGHT ON REARING *DARAPSA MYRON* (CRAMER)

BY  
VERNON ANTOINE BROU JR.

The common Louisiana sphingid species *Darapsa myron* (Cram.) is very easy to rear in desktop containers. The common foodplants grape and virginia creeper were utilized in rearing the specimens illustrated. Adult *myron* readily oviposit on just about anything presented to them. Various color forms of mature larvae included bright green, purplish-green, pink, yellow, and yellow with dark green. *D. myron* usually has at least five broods in Louisiana (Brou & Brou, 1997). *D. myron* adult females are especially attracted to fermenting fruit bait, though males are most often attracted to ultra violet light.



a. Second instar, b. third instar, c. mature larva bright green, d. mature larva dark green, e. mature larvae bright green, yellow with green, pale orange, f. mature larva pale orange, g. mature larva yellow with green, h. mature larva pink exhibiting common posture, j. pupa.

## Literature Cited

Brou, Vernon A. and C. D. Brou 1997. Distribution and

phenologies of Louisiana Sphingidae. *Jour. Lepid. Soc.* 51:156-175.

**SURVEY - ELECTRONIC SLS NEWSLETTER**

**YES, LET'S GIVE IT A TRY**\_\_\_\_\_

**NO, PREFER HARD COPY**\_\_\_\_\_

**COMMENTS:**

**ANY OTHER COMMENTS CONCERNING NEWSLETTER:**

**YOUR NAME**\_\_\_\_\_

**SEND TO:**

**J. BARRY LOMBARDINI  
3507 41<sup>ST</sup> STREET  
LUBBOCK, TEXAS 79413  
806-743-2425 (WORK)  
806-795-4981 (HOME)  
E-MAIL: jbarry.lombardini@ttuhsc.ed**



allatotropins and allatostatins, produced by specialized neurons and neurosecretory cells in the brain regulate biosynthesis of JHs by CA (4).

Soon after ecdysone and JH were characterized, it was hypothesized that synthetic molecules that mimic (agonist) or antagonize (antagonist) these hormones would be valuable insecticides. Among thousands of organic compounds synthesized and tested, a few have been commercially very successful as insect growth regulators (IRG) (Figs. 5 and 6). IGRs that function like JH (Fig. 5) are all agonists, and methoprene is most commonly used instead of JH in research laboratories (3, 4). While methoprene and hydroprene have carbon backbone structures similar to JH, the recent IRGs fenoxycarb and pyriproxyfen bear no resemblance to JH.

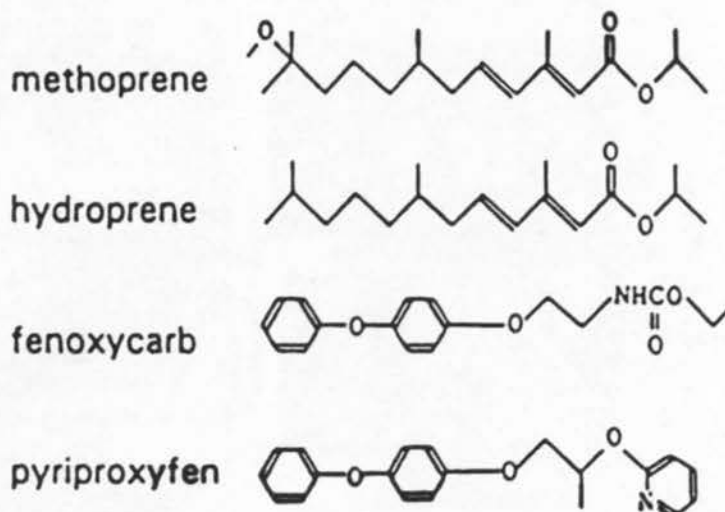


Fig. 5. Structures of JH agonists utilized as insect growth regulators.

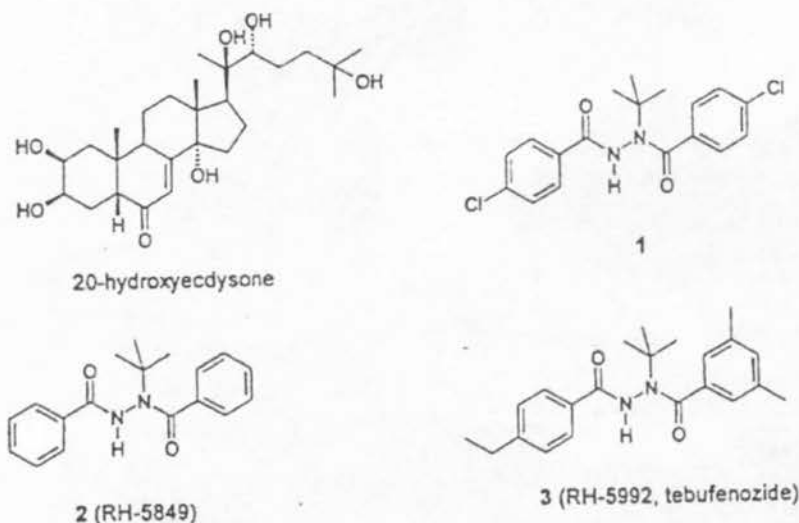


Fig. 6. Structures of the natural active ecdysone (20E) and the agonists used as IGRs on lepidopterans.

### MECHANISM OF ACTION:

The fundamental concept that steroid hormones act upon genes resulting in stimulation of RNA synthesis was first put forward based on studies of ecdysone action (10). This hypothesis has not only proven correct, but has now reached unimagined depth of understanding at the molecular level, due mostly to studies on mammalian steroid hormones, like estrogen, androgen, glucocorticoids, *etc.* (11). In the currently accepted model, the steroid hormone binds to its specific receptor in the target tissue, forms a dimer (homo- or hetero-), the dimer binds to short DNA segments upstream of target genes, (called response elements: RE). It is this hormone bound receptor-dimer associated with the precise REs that permits stimulated RNA synthesis and all the subsequent events recognized as the physiological outcome of hormone action. The ecdysone receptor (EcR) of silkworms and other insects has the same modular structure of receptors for mammalian steroid hormones with a DNA binding

Invention of agonists and antagonists of ecdysone has been slower and less successful compared to those of JH. However, synthetic substituted 1,2-dibenzoylhydrazines such as RH-5849 and Tebufenozide (Fig. 6) developed by Rohm & Haas Research Laboratories, have become commercially successful as insecticides against lepidopterans. They function as non-steroidal ecdysone agonists that induce precocious molting leading to death (9). Tebufenozide is used as an IRG to control caterpillar pests of vegetables, fruits, ornamentals, and forest trees. New structural analogs are being made and tested for developing compounds that have higher efficacy and selectivity towards other lepidopteran pest insects.

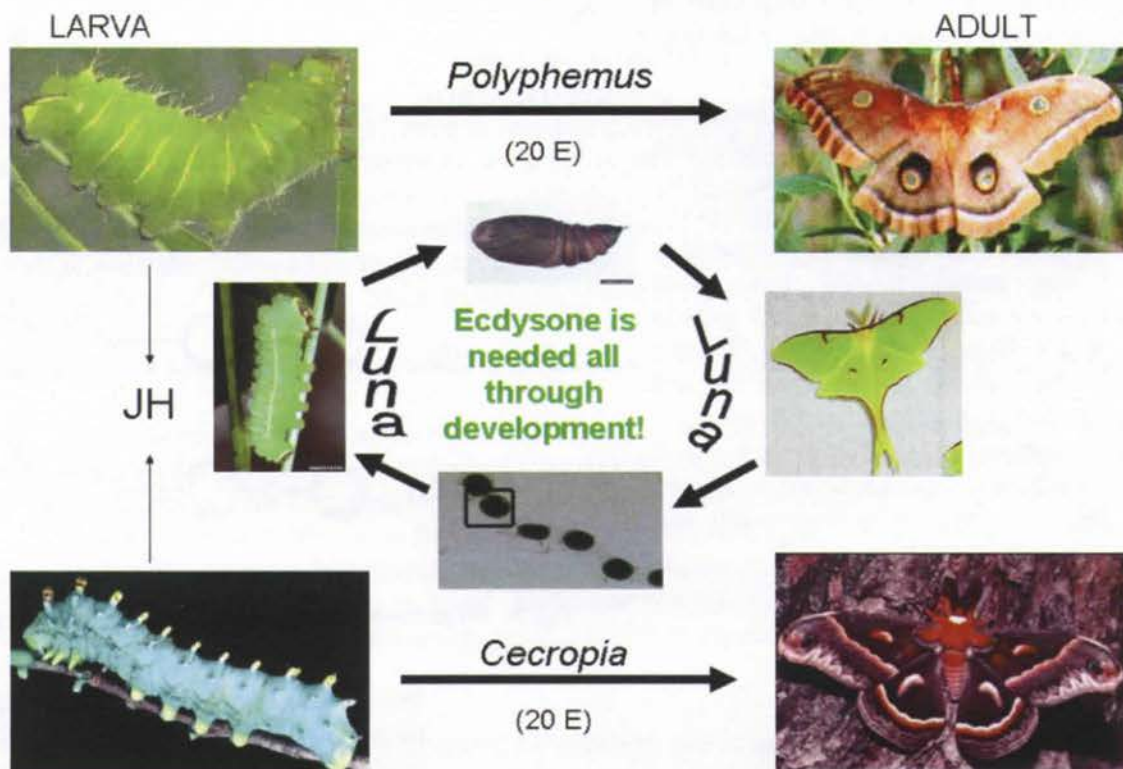


Fig. 1. Studies on *Saturnid* giant silkworms (mostly *cecropia*) established that ecdysone and juvenile hormone regulate insect development and metamorphosis.

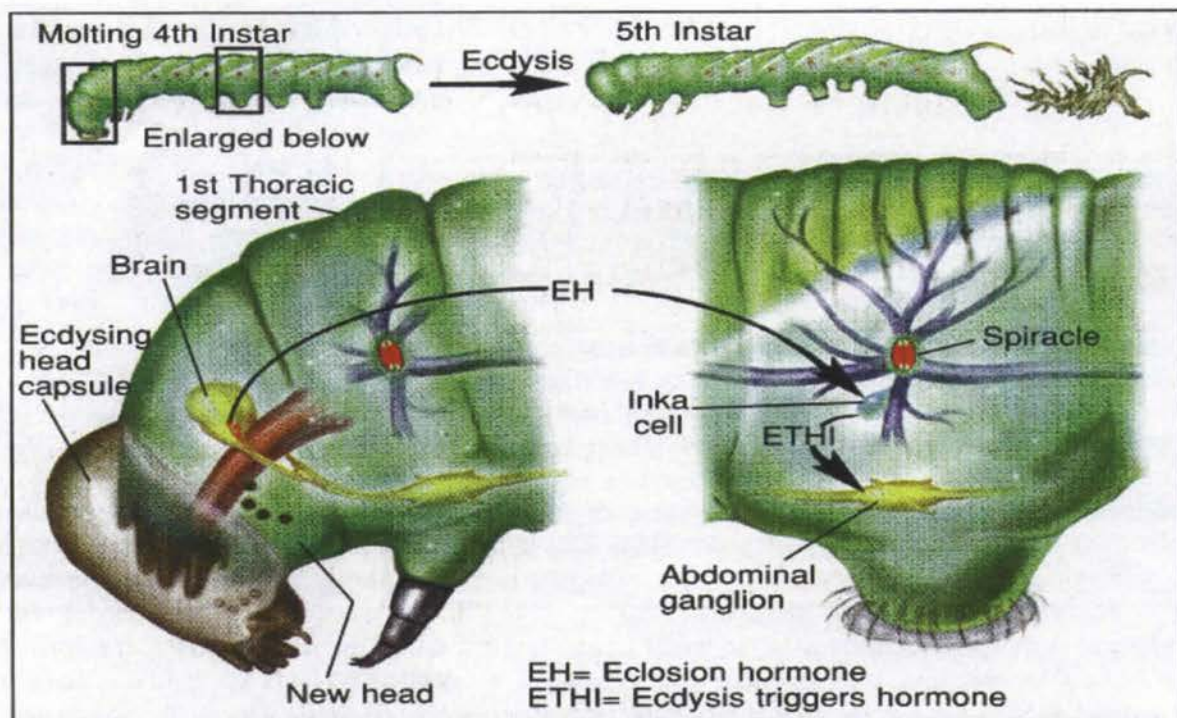


ILLUSTRATION: TERESE WINSLOW

Fig. 3. Mechanism of ecdysis control. The pathway for triggering ecdysis behavior originates in the brain by the release of EH and is relayed through the Inka cells, a set of glands in the periphery. [Courtesy of Ms. T. Winslow (7).]



domain called the "Zinc Finger" in the middle of the molecule. The hormone binding region is at the carboxy-terminus and the modulatory region is located at the amino-terminus of the protein. Ecdysone receptor dimerizes with another nuclear receptor called USP, recognizes its own response elements (ECRE), and regulates gene activity (12). Ecdysone singly regulates the wide variety of physiological processes that in vertebrates need six steroid hormones and other important ligands like retinoic acids, thyroid hormone, and vitamin D. Major diseases associated with malfunctioning of each of these ligand-receptor signaling systems are common knowledge. The phenotypic results of mutations within the EcR gene are similar to many vertebrate receptor related diseases. Thus, there is striking similarity between ecdysone signaling, that has an evolutionary history of ~600 million years, and signaling by mammalian steroid hormones, whose history extends to <100 million years. Such comparative studies have led to the hypothesis that fundamentals of steroid hormone-receptor regulation of gene activity were set in place in the form of ecdysone-EcR signaling and mammalian steroid hormone signaling is a logical evolution of the basic theme. Supporting this hypothesis are the similar dual roles of ecdysone and estrogen during post-embryonic development and reproductive maturation in insects and vertebrates, respectively. Given that all vertebrate steroid receptors have probably evolved from an ancestral estrogen receptor (13), it is quite possible that estrogen-estrogen receptor signaling has its ancestry in ecdysone-EcR signaling. Moreover, the consensus response element for estrogen (ERE) and that of ecdysone (EcRE) are so similar, that they can be functionally inter-converted just by varying the spacer distance between the half inverted repeats (14). Hence the argument that studies on ecdysone signaling will continue to provide information on the commonality of pathways, evolutionary significance of steroid hormone regulation of gene expression, and also the database necessary for targeted intervention of each of the specific pathways exclusive of others.

The characteristics of JH: (i) it being a lipid like molecule, (ii) its ability to modify ecdysone function, and (iii) its ability to stimulate transcription of specific genes in target tissues, have led to the suggestion that it also functions via a nuclear receptor (JHR) that has not yet been isolated and characterized. One can predict another decade of explosive research leading to a comprehensive biochemical and molecular elucidation of hormonal regulation of insect development and metamorphosis when JHR is isolated and reagents to monitor JHR protein and JHR mRNA are available.

#### Literature Cited

- (1) Gilbert, L.I. (1974). Recent Progress Hormone Action. **30**: 347.
- (2) Sridhara, S., Nowock, J., Gilbert, L.I. (1978): In Rickenberg H. V. (ed.) *International Rev. of Biochemistry: Biochemistry and Mode of Action of Hormones II*, Vol. **20**, pp. 133-188, Univ. Parks Press, Baltimore.
- (3) Riddiford, L. M. (1994): Adv. Insect Physiol. **24**: 213-274.
- (4) Sridhara, S., Bhaskaran, G., Dahm, K.H. (2004). In *Handbuch der Zoologie*, Vol. **4**. (N.P. Kristensen, ed.), Walter De Gruyter, Berlin. pp. 389-425.
- (5) Truman, J.W. Riddiford, L.M. (1970). Science **167**: 1624-1626.
- (6) Truman, J.W. (1985). In *Comprehensive Insect Physiology, Biochemistry and Pharmacology*, Kerkut G.A., Gilbert L.I., (eds.) Vol **8**: pp. 413-440, Pergamon, New York.
- (7) Truman, J. W. (1996). Science. **271**: 40-41.
- (8) Butenandt, A., Karlson, P. (1954). Zeitschrift fur Naturforschung. **9b**: 389-391.
- (9) Dhadialla, T. S., Carlson, G. R., Le, D. P. (1998): Annu. Rev. Entomol. **43**: 545-569.
- (10) Karlson, P. (1961). Symp. Dtsch. Gesellschaft. Endokrinol. **8**: 90.
- (11) Edwards, D. P. (1999). Vitamins and Hormones. **55**: 165-218.
- (12) Cherbas, P., Cherbas, L. (1996): In Gilbert L. I. Tata, J. D., Atkinson, B. G (eds.) *Metamorphosis: Postembryonic reprogramming of gene expression in amphibian and insect cells*, pp. 175-221, Acad. Press, San Diego.
- (13) Thornton, J. W. (2001). Proc. Natl. Acad. Sci. USA. **98**: 5671-5676.
- (14) Martinez, E., Givel, E., Wahli, W. (1991). EMBO. J. **10**: 263-268.

[Dr. Sridhara is an Associate Professor in the Department of Cell Biology and Biochemistry in the School of Medicine at Texas Tech University Health Sciences Center, Lubbock, Texas. Aside from being an expert in the Biochemistry of insect development "Srid" is a very accomplished Racquetball player and has a well known reputation for this athletic ability at the University. Srid is a good friend and long-time colleague - The Editor.]

\*\*\*\*\*  
\*\*\*\*\*



## ALMOST MORE THAN WE COULD CHEW

BY

DAVID FINE

It finally happened! I met the woman of my dreams in June of 2004 and a year and a half later, I find myself in the final stretch of "single-hood" preparing for our January 1<sup>st</sup>, 2006 wedding. I had always imagined how I would incorporate my passion for butterflies into my wedding. The whole butterfly release thing isn't so original anymore but I felt compelled to add butterflies into the mix somehow. I have always enjoyed doing creative art work with butterflies. I have always liked to make displays with butterflies in shadow boxes resting in natural setting positions not the typical museum mount style.

Back in October, my wife and I were in an arts and crafts store when I saw small glass domes with wooden bases to display various delicate types of art work. I have never experimented with them before but I have seen some beautiful work done in this type of display in the past. I made the comment in passing "Wouldn't it be neat to get a bunch of these, mount butterflies for them and give them out as party favors at our wedding?" I truly was not expecting such a quick and easy.... "I think that's a great idea!" It caught me off guard. She told me "how great of an idea it is to share your passion with our friends and family on our wedding day." I stopped to think about its possibilities and to visualize what I actually wanted to do. I thought to myself, "Man! She has no idea how much work this is going to involve?" The truth is neither did I. Not by a long shot. You see, in a typical American wedding, we may have had to make 30 or 40 of these things if we were to give one to each household or couple. My wife is from El Salvador, however, and one thing about people from Central America is that family has an entirely different meaning. They do family really big! Most of her family couldn't make it because they were in El Salvador. Even with many not being able to attend, her family alone consisted of about 150 people!

Yah, the pews were lop-sided at the church and I had to bribe some of our mutual friends to sit on the groom's side to make it look more equal. Well, that's a joke, but when all was said and done, we had well over 200 guests and we had to make 124 of our party favors to give each couple/household one. I immediately started collecting butterflies for the enormous project, mostly *Heliconius charithonius*, *Agraulis vanillae*, *Siproeta stelenes*, *Dryas julia*, *Phoebis sennae*, *Phoebis philea*, *Phoebis agarithe*, *Vanessa atalanta*, *Danaus gilippus*, *Danaus plexippus*, *Marpesia petreus*, and *Anartia jatrophae*. I even made a special moth gift for my dear friend Leroy Koehn containing two *Composia fidelissima*.

Now the big object was to get these bugs mounted. I never dreamed I would be receiving help, so immediately I began to spread the wings on the butterflies in somewhat natural-sitting positions. When I began to mount them, I noticed that I had a spectator peering over my left shoulder drawing closer and closer and becoming more and more inquisitive. After mounting only one or two, my wife asked me if she could help. She wanted desperately to be involved in the making of these things. I said "Sure honey." I showed her one time how to mount them. Now, my wife is an absolute perfectionist in everything that she does, not just in butterflies like as in my case! It amazed me as she dove into it. The next day, I got home from work to find that she had mounted about 40 or so while I was working. They were all perfectly spread with no fingerprints or smudges on the wings. Tears immediately began to build in my eyes to come in and see a beautiful woman (who I finally convinced to marry me) sitting on the couch mounting butterflies! What an awesome feeling that was!

Before we knew it, the butterflies were mounted and it was time to start preparing the domes. We called an arts and crafts warehouse in Ft. Lauderdale to order the domes and wood bases. The young man with whom we spoke who found the item # for the glass domes began to ring us up when my intuition told me to ask him if that included the bases. It didn't of course and if I hadn't asked, we would have received only the glass with nothing to mount it on. So I made sure that he went and found the item number for the wood bases and add them onto our bill. He told me that it would be a few weeks before they would receive them as they had to order them from their supplier in Illinois. I should have know by how the phone order went that this young man wasn't very competent and should have double checked to make sure that both of the items that I ordered coincided with each other.

This time, however, I went against my intuition and relied in my faith in this young man that he knew what he was doing. Three weeks later when the items finally arrived, I opened the box to find that the wood bases were way too big for the glass that they sent. In fact, they were not even close being almost two times the circumference of the glass.

Being the second week of November, we didn't have time for these types of stupid mistakes. I started to get really nervous. I could go on and on about how unhelpful the employees were at this store when I tried to get them to fix their mistake in a timely manner. After about a week of arguing, complaining and even a few hang-ups, I finally got the number for the plant manager for the company in Illinois that manufactures this product. As "*Murphy's Law*" states that if something can go wrong, it will, it did. They didn't have enough wooden bases of the size that matched the glass domes we had in stock. This woman was extremely nice, however, and made calls around to other companies until she found one that carried the equivalent so that she could complete the order. She "*next-dayed*" them to me so that we could get started in making our gifts as soon as possible. Although there was one problem solved, "*Murphy's Law*" became the theme of this project.

Now that we had the proper hardware, we then needed to buy the accessories to spice up the gifts. We visited a rag-shop nearby and bought some Styrofoam, dried flowers, glue and other odds and ends so that we could get to work. We cut the Styrofoam into chunks and chipped up the sides giving a jagged appearance, perhaps as a rock. We covered all surfaces of the rock with a glue paste and sprinkled sand over the top and allowed it to dry to give a rock-like appearance. We had sheets of dried moss from which we broke pieces off gluing it onto the rock to give the appearance of grass or a low-growing shrub. Dried sage was the flower of choice to add to the display to give a more natural appearance. Other small dried flowers like babies breath were also used.

We left one side of the "*rock*" flat with a beveled edge so that we could place a label with our names and the date of our wedding on it. I ordered small gold sticker labels from another company that read "*Noemi and David Fine 01-01-06*" in black cursive writing. They also took a week to be made because the company that produces them is in Indiana and they needed to ship them to us. We received them a week later, and they sat on our living room table for a few weeks until we were ready to put them on. Overwhelmed with wedding planning, we didn't get to the labels until the Friday before Christmas. It wasn't until this point when we realized that they actually read "*Noemi and David Fine 01-06-06*" not 01-01-06. We were both ready to have a nervous breakdown at this point. I wound up driving to the store that we ordered them at 10 o'clock on Friday the 23<sup>rd</sup> of December to try and get things straightened out. They were very apologetic but the company that makes them in Indiana is closed and wouldn't open again until Tuesday the 27<sup>th</sup>. I called them up that day and ordered them with the correct date on them. I was blessed once again to encounter another very helpful woman who was the plant manager there in Indiana. She heard my story and my heart and sympathized. She had them made immediately and shipped out that day. The labels were delivered the following morning with the correct date on them. I sort-of got to thinking. I wish we had an influx of mid-westerners in South Florida to help things run smoother. I'm quite certain they haven't had a "*butterfly-ballot*" or "*hanging chad*" crisis in Indiana or Illinois! Perhaps if they were to run our elections, we would find out who won on time as well.

We received the correct labels on December 28<sup>th</sup>. We bought thin sheets of balsa wood and placed the sticker-labels on them and used an exacto-knife to cut out the label stuck onto a firm support that made a nice border for the labels. We then glued the labels onto the beveled edge of the Styrofoam "*rocks*". Then with a small dab of hot glue in a strategic place and with a sturdy hand, we then set the butterflies into the displays. It was lots of fun experimenting with different positions to see what looked best. I am so proud of my wife. She took so much pride in what she was doing. Her creativity and diligence certainly added to the success of the project. Two of Noemi's cousins, Xiomara and Evelyn Saravia who flew in from Washington D.C., were bridesmaids in the wedding and were kind enough to donate their time to help us with many of the final stages. They actually spent long hours a few nights in a row helping us get the gifts ready in time for the wedding.

We then put a ring of glue on the wood bases and rested the glass domes into what would be their final resting spot. The next morning the gifts were complete! What a great feeling. The only thing that was left was to make labels for each one containing the name of the guest(s) that they would be for, and the table number where they

were to be placed. We wouldn't want anybody to get away with "double-dipping" as far as the gifts were concerned so we made sure everybody had one with their name on it. We tied the labels onto the domes with gold ribbons and at this point they were finished! The long hours of toiling over these things had finally come to an end. There was a point in time when we started to get sentimental over the things thinking to ourselves that we should just keep them because they really did look so nice. It was difficult to part with them. While the glue was drying, we had them all over the place. They were all over the wall unit, on the dining room table, on chairs and counter-tops. They really lit up the room! Alas, the nostalgia was over and we gave Xiomara and Evelyn first pick to thank them for their help.

The next day, I had to drive them down to Ft. Lauderdale to the hotel where the reception was to be held and drop them off to the wedding coordinator with a seating arrangement. Once they were out of our hands it was a huge relief. All of the hard work was over and now, only 2 days before the wedding, we could focus on more important things like finding wedding rings and a tuxedo. (Just kidding!) The wedding was a huge success and I married the woman of my dreams! Everybody had a great time eating, drinking, laughing and dancing to the ethnic Salsas, Merengues, Bachatas and Cumbias. We even had the "Electric Slide" and some country music for the white folk that were there. Everybody loved the party favors! Many refused to believe that we actually made them. These comments made us happy, allowing us to know that they wouldn't be like the typical party favor at weddings these days that you order out of a catalogue like cheap champagne glasses with names and date etched into the plastic or the typical cup of candy. They would, more than likely, be happily displayed in any one's wall unit or nick-nack display area. Their beauty certainly displays the love that we have for each other, our families, and for this wonderful hobby that we will share for a lifetime. I can't wait to share it in El Salvador when we frequently go to visit my new family!

[Photographs for this article are on page 25.]

\*\*\*\*\*

### DEFINITIONS:

**Bald** - not covered by natural growth (bald hills); a shrubby or grassy area without trees on a mountain summit.

**Costa** (*pl. costae, adj. costal*) - a riblike part, as the thickened fore edge of an insect's wing or the central vein of a leaf; the upper edge of both the fore wing and the hind wing.

**Photoperiod** - The number of daylight hours best suited to the growth and maturation of an organism; ratio of light to darkness in the daily cycle.

**Stadium** - a period or stage in the life history of an animal; period between molts in a developing insect.

\*\*\*\*\*

### GREAT LITERARY TAUNTS

**I thought that the SLS members might enjoy some clever "insults" by some famous people:**

*"I didn't attend the funeral, but I sent a nice letter saying I approved of it."* **Mark Twain**

*"He loves nature in spite of what it did to him."* **Forrest Tucker**

*"He has never been known to use a word that might send a reader to the dictionary."*

**William Faulkner (about Ernest Hemingway)**





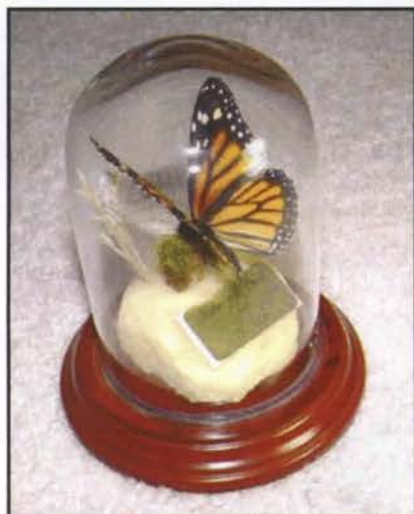
*Agraulis vanillae*



*Danaus gilippus*



*Danaus plexippus*



Finished product



*Phoebis agarithe*



*Leroy's Composita fidelissima*



Left to right: Noemi Fine,  
Xiomara Saravia,  
Evelyn Saravia



**CATOCALA MICRONYMPHA GUENÉE IN LOUISIANA**

BY

VERNON ANTOINE BROU JR.

The *Quercus* feeding medium-sized noctuid species *Catocala micronympha* Guenée is quite common where found in Louisiana. This species has more than a half dozen different appearing forms distinguished by highly variable forewing maculation and color, a few examples of which are shown in (Fig. 1). At some locations, *micronympha* populations do not exhibit many of the different appearing forms found at other locations, e.g., variations illustrated in Fig. 1a,e were not captured at St. John the Baptist parish in 12 years of continual light trapping despite an abundant population there. *C. micronympha* has one brood peaking late May (Fig. 2). Fig. 3 illustrates parish records by this author. *C. micronympha* was first reported in Louisiana by von Reizenstein (1863) and again by Chapin and Callahan (1967). *C. micronympha* is reported from Ontario to Florida and Minnesota to Texas (Heppner, 2003).



Fig. 1. *Catocala micronympha* phenotypes, a-c males, d-e females.

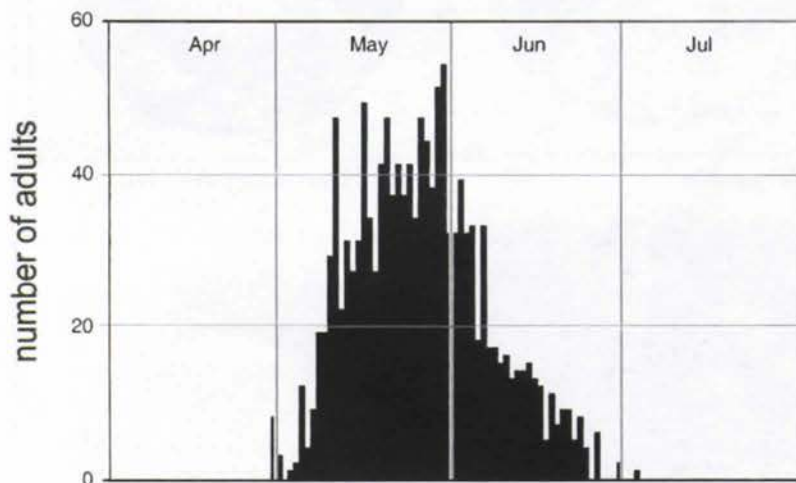


Fig. 2. Adults of *Catocala micronympha* collected at sec.24T6SR12E, 4.2 mi. NE Abita Springs, Louisiana. n = 1318.



Fig. 3. Parish records by this author.

**Literature Cited**

- Chapin, J.B. and Philip S. Callahan 1967. A list of the Noctuidae (Lepidoptera, Insecta) collected in the vicinity of Baton Rouge, Louisiana, *Proc. La. Acad. Sci.* 30: 39-48.
- Heppner, J.B. 2003. *Arthropods of Florida and Neighboring Land Areas*, vol. 17: Lepidoptera of Florida, Div. Plant Industry, Fla. Dept. Agr. & Consum. Serv., Gainesville. x + 670 pp., 55 plates.
- von Reizenstein, L. 1863. *Catalogue of the Lepidoptera of New Orleans and its Vicinity*. Isacc T. Hinton. New Orleans, 8 pp.

## REPORTS OF STATE COORDINATORS

**Alabama:** C. Howard Grisham, 573 Ohatchee Road, Huntsville, AL 35811, E-Mail: [chgrisham@Comcast.net](mailto:chgrisham@Comcast.net)

**Arkansas:** Mack Shotts, 514 W. Main Street, Paragould, AR 72450, E-Mail: [cshotts@grnco.net](mailto:cshotts@grnco.net)

**Florida:** Charles V. Covell Jr., 207 NE 9<sup>th</sup> Ave, Gainesville, FL 32601, E-Mail: [covell@louisville.edu](mailto:covell@louisville.edu)

The following report by Charlie Covell is for the time period: January 1 - March 13, 2006.

Alachua Co., Gainesville:

January 2, *Phoebis sennae*

January 4, *P. sennae*, *A. vanillae*, and *D. plexippus*

January 11, *H. charithonius*

January 21, *P. sennae*, *E. nicippe* and *E. lisa*

January 24, *P. sennae* and *P. agarithe*;

February 17, *P. sennae*, *E. nicippe*, *P. interrogationis*, *V. atalanta* and *D. plexippus*

February 18, *Erynnis horatius*, *Papilio troilus*, *Erytides marcellus*, *Calycopis cecrops* and *Junonia coenia*

February 24, *P. troilus*, *P. sennae*, and *E. nicippe*

February 28, *P. palamedes*

March 3, *Erynnis horatius*, *H. cresphontes*, *P. sennae* and *D. plexippus*

March 8 and 9, *P. glaucus*

March 9, *P. palamedes*

March 10, *P. troilus*, *P. palamedes*, *P. sennae*, *E. nicippe* and *J. coenia*

Suwanee Co. near High Springs March 10/11, 2006. At lights:

*Spilosoma virginica*, *Ecpantheria scribonia*, *Hyphantria cunea*, *Hypsoropha monilis*, *Macaria bicolorata*, *Dryocampa rubicunda*, *Dasychira* sp., and *Zale minerea*.

March 11 during day:

*Erynnis* sp., *Polites vibex*, *Phoebis sennae*, *Eurema nicippe*, *Calycopis cecrops*, *Vanessa virginiensis*, *Junonia coenia*, and *Hermeuptychia sosybius*.

Levy Co., Tom Wood's nursery vic Archer, February 18:

*Erynnis horatius*, *Papilio troilus*, *Erytides marcellus*, *Calycopis cecrops* and *Junonia coenia*

**Georgia:** James K. Adams, 346 Sunset Drive SE, Calhoun, GA 30701, E-Mail: [jadams@daltonstate.edu](mailto:jadams@daltonstate.edu) (Please check out the GA leps website at: <http://www.daltonstate.edu/galeps/>).

Records are from James Adams (JA or no notation), Irving Finkelstein (IF), Eleanor Adams (ERA), Ric Peigler, and Michael Boehm. Most records presented here represent new or interesting records (range extensions, unusual dates, uncommon species, county records, etc.) or records for newly investigated areas. Known County and State records are indicated. All dates listed below are 2006 unless otherwise specified.

Ric Peigler visited various areas in south GA on a winter trip between Texas and SC and found the following cocoons:

**SATURNIIDAE:**

*Antheraea polyphemus* - cocoons in downtown Savannah (Chatham Co.) hanging on *Acer rubrum*, *Acer saccharum*, *Quercus nigra*, *Quercus rubra*, *Betula nigra*, *Ulmus rubra*, and *Platanus occidentalis*.



*Actias luna* - Savannah, Chatham Co., empty cocoons attached to sweetgum; Glennville, Tattnall County, viable cocoon under a pecan tree beside a McDonald's parking lot.

*Callosamia securifera* - Long Co. and Camden County. I think the latter may be new COUNTY record.

Crest of Rocky Face Ridgeline along Dug Gap Battle Rd., just SW of Dalton, Whitfield Co., Oct. 20, 2005:

**NOCTUIDAE:** *Epiglaea apiata*, Jan. 12 (STATE).

Thomaston, Upson County, February 17, Michael Beohm:

**ARCTIIDAE:** *Hypercompe scribonia* (EARLY)

A trip to south GA during the first full week in March added some interesting records to previously investigated areas, and a couple of potential state records from some newly investigated areas. For the newly investigated areas (King Tract and Dixon Memorial Forest WMA's in Ware County) a number of the species may be new, though the late Doug Ferguson did some permitted collecting in the Ware County part of the Okefenokee Swamp in the early 1990's. Records I would consider of interest (including uncommon species and possible county records) are marked with an "\*". As always, there were a number of pyralids and tortricids taken that were not identified to species.

Doerun Pitcherplant Bog NA, Colquitt Co., March 6-7, 2006 (with IF and ERA):

**ARCTIIDAE:** *Spilosoma virginica*. **NOTODONTIDAE:** *Heterocampa guttivitta*, *Symmerista albifrons*. **NOCTUIDAE:** *Schrankia macula*, *Tetanolita mynesalis*, *Phalaenophana pyramusalis*, *Lascoria ambigualis*, *Hypena scabra*, *Phytometra rhodarialis*, *Caenurgia chloropha*, *Mocis marcida*, *Phoberia orthosoides\**, *Zale squamularis\**, *Iodopepla u-album*, *Egira alternans*, *Orthosia hibisci*, *Galgula partita*, *Leucania extincta*, *Leucania adjuta*, *Leucania sp.*, *Agrotis ypsilon*. **GEOMETRIDAE:** *Macaria varadaria*, *Anavitrinella pampinaria*, *Pero anetaria*, *Eupithecia sp.* **PYRALIDAE:** *Nomophila nearctica*, *Diasemioides jannasialis*, *Palpita magniferalis*, *Achyra rantalis*, *Cramus agitatellus*. **TORTRICIDAE:** 2 species. **GELECHIIDAE:** *Dichomeris sp.*

Vicinity of Council, along Hwy. 94, Clinch Co. March 7:

**LYCAENIDAE:** *Calycopis cecrops*. **HESPERIIDAE:** *Erynnis juvenalis*.

Griffin Ridge WMA, Long Co., March 7-9, 2006 (with IF and ERA):

**PAPILIONIDAE:** *Pterourus palamedes*. **NYMPHALIDAE:** *Nymphalis antiopa*, *Phyciodes tharos*, *Hermeuptychia sosybius*. **LYCAENIDAE:** *Atlides halesus*, *Calycopis cecrops*. **HESPERIIDAE:** *Erynnis juvenalis*.

Swampy areas:

**LASIOCAMPIDAE:** *Phyllodesma americana*. **SPHINGIDAE:** *Deidamia inscripta*. **ARCTIIDAE:** *Spilosoma virginica* (unusual heavily spotted individuals\*). **NOTODONTIDAE:** *Symmerista albifrons*. **NOLIDAE:** *Meganola phylla*. **NOCTUIDAE:** *Phoberia atomaris*, *Zale lunifera*, *Acrionicta impleta*, *Marathyssa basalis*, *Iodopepla u-album*, *Psaphida resumens*, *P. rolandi*, *Xystocheilus rufago*, *Egira alternans*, *Leucania adjuta*, *Trichosilia manifesta\** (COUNTY; in huge numbers and a variety of forms). **GEOMETRIDAE:** *Cleora sublunaria*, *Ectropis crepuscularia*, *Protoboarmia porcellaria*, *Iridopsis vellivolata*, *Hypomecis sp.*, *Melanolophia signataria*, *Phigalea titea*, *Phaeoura quernaria*, *Lycia ypsilon*. *Episemasia solitaria*, *Tacparia zalissaria\**, *Besma quercivoraria*, *Nemoria bifilata*, *Nemoria elfa\**, *Eupithecia sp.* **TORTRICIDAE:** *Amorbia humerosana*.

Dry sandy forest:

**LASIOCAMPIDAE:** *Phyllodesma americana*. **ARCTIIDAE:** *Spilosoma virginica*. **NOTODONTIDAE:** *Nadata gibbosa*. **NOLIDAE:** *Meganola minuscula*. **NOCTUIDAE:** *Hypsoropha monilis*, *Phoberia atomaris*, *Zale calycanthata*, *Z. declarans*, *\*Drasteria sp. nr. graphica* (COUNTY; very orange), *Iodopepla u-album*, *Xystocheilus rufago*, *Morrisonia mucens*, *Leucania adjuta*, *Egira alternans*, *Trichosilia manifesta*. **GEOMETRIDAE:** *Cleora sublunaria*, *C. projecta*, *Ectropis crepuscularia*, *Protoboarmia porcellaria*, *Phigalea titea*, *Lycia ypsilon*. *Phaeoura quernaria*, *Euchlaena sp.*, *Nemoria bifilata*, *Hydriomena sp.*, *Eupithecia sp.*

Horse Creek WMA, Telfair Co., March 9, 2006 (with IF and ERA):

**PAPILIONIDAE:** *Papilio palamedes*. **PIERIDAE:** *Phoebis sennae*, *Eurema nicippe*. **NYMPHALIDAE:** *Anaea andria*, *Phyciodes tharos*. **LYCAENIDAE:** *Calycopis cecrops*. **HESPERIIDAE:** *Erynnis juvenalis*.

King Tract WMA, 14 mi. S of Alma, Ware Co., March 9-10, 2006 (with IF and ERA):

**PAPILIONIDAE:** *Battus philenor*, *Papilio palamedes*, *Papilio troilus*. **NYMPHALIDAE:** *Nymphalis antiopa*. **ARCTIIDAE:** *Spilosoma congrua*, possible *Spilosoma dubia* (need to carefully check this individual), *Holomelina "opella"*. **NOTODONTIDAE:** *Heterocampa biundata*, *H. guttivitta*, \**Schizura* new species (COUNTY, possible STATE). **LYMANTRIIDAE:** *Orgyia definita*. **NOCTUIDAE:** *Zanclognatha lituralis*, *Tetanolita floridana*, *Schranksia macula*, *Sigela* sp. \*, *Lascoria ambigua*, *Phytometra rhodaria*, *Hypsoropha hormos*, *Cutina albopunctella*, *Mocis marcida*, *Lesmone hinna*\*, *Argyrostroma carolina*, *A. deleta*, *A. sylvarum*, *A. quadrifilaris*, *Pseudanthracias coracias*\*, *Zale lunata*, *Z. aeruginosa*, *Z. squamularis*\*, *Acronicta brumosa*, *Panthea nr. furcilla*, *Metaxaglaea viatica*, *Lithophane patefacta* (FAR SOUTH), *Condica videns*, *Elaphria exesa*, *E. grata*, *E. versicolor*, *Galgula partita*, *Leucania adjuncta*, *L. inermis*. **GEOMETRIDAE:** *Iridopsis defectaria*, *Ectropis crepuscularia*, *Epimecis hortaria*, *Glena cribrataria*, *G. cognataria*\*, *Glenoides texanaria*, *Phigalea titea*, *Melanolophia signataria*, *Tornos scolopacinarius*, *Episemasia solitaria*, *Tacparia zallisaria*\*, *Petrophora divisata*\*, *Euchlaena* sp., *Pero anetaria*, *Metarranthis obfirmaria*, *Eutrapela clemataria*, *Prochoerodes transversata*, *Eusarca confusaria*, *Nemoria catachloa*\*, *Synchlora frondaria*\*, *Lophosis labeculata*, *Costaconvexa centrostrigaria*, *Eupithecia* sp. (as at GR). **TORTRICIDAE:** *Amorbia humerosama*. **URODIDAE:** *Urodus parvula*. **OECOPHORIDAE:** *Antaeotricha schlaegeri*.

Waycross (SE), along Hwy. 1 at lights, Ware Co., March 10-12, 2006, with IF and ERA:

**SATURNIIDAE:** *Automeris io* (EARLY), *Actias luna*, *Antheraea polyphemus*, *Callosamia angulifera*, *Hyalophora cecropia* (EARLY). **SPHINGIDAE:** *Isoparce cupressi*\*. **NOTODONTIDAE:** *Clostera inclusa*. **NOCTUIDAE:** *Sigela* sp. \*, *Zale metatoides*, *Z. confusa*, *Z. obliqua*, *Acronicta betulae* (FAR SOUTH), *A. oblongata*, *A. longa*, *Agrotis subterranea*. **GEOMETRIDAE:** *Eumacaria laetiferrugata*, *Macaria distributaria*, *Digrammia gnophosaria*, *Iridopsis vellivolata*, *Tornos scolopacinarius*, *Episemasia solitaria*, *Pero zalissaria*, *M. obfirmaria*, *Tacparia zalissaria*\*, *Eusarca fundaria*, *Eupithecia* sp. **PTEROPHORIDAE:** two species.

Dixon Memorial Forest WMA, NE side of Hwy. 1, ESE of Waycross, Ware Co., March 10-12, 2006; with IF and ERA: Woods/edge habitats just east of Laura Walker SP:

**SATURNIIDAE:** *Antheraea polyphemus*. **LASIOCAMPIDAE:** *Phyllodesma americana*. **ARCTIIDAE:** *Cisthene subjecta*, *Apantesis nais*, *Spilosoma congrua*. **NOTODONTIDAE:** *Nadata gibbosa*, *Heterocampa guttivitta*, *H. biundata*. **NOCTUIDAE:** *Sigela* sp. \*, *Hypsoropha monilis*, *Phytometra rhodaria*, *Pangrapta decoralis*, *Argyrostroma deleta*, *A. quadrifilaris*, *A. sylvarum*, *A. carolina*, *Ptichodis pacalis* (possible STATE), *P. bistrigata*, *Zale declarans*, *Z. submediana*, *Z. confusa*, *Phoberia atomaris*, *Drasteria* sp. nr. *graphica* (COUNTY, very orange), *Acronicta brumosa*, *Hyperstrotia flaviguttata*, *Elaphria georgei*\* (COUNTY), *Egira alternans*, *Ulolonche nr. culea*, *Chateoglaea tremula*. **GEOMETRIDAE:** *Glena cribrataria*, *G. cognataria*\* (COUNTY), *Anavitrinella pampinaria*, *Iridopsis vellivolata*, *Episemasia solitaria*, *Euchlaena* sp., *Petrophora divisata*\*, *Metarranthis obfirmaria*, *Tacparia zallisaria*\*, *Nemoria catachloa*\*, *N. bifilata*, *N. lixaria*, *Synchlora frondaria*\*, *Eupithecia* sp. **PYRALIDAE:** *Desmia funeralis*, *Diacme elealis*, +others. **COSSIDAE:** *Prionoxystus robiniae*. **TORTRICIDAE:** *Amorbia humerosana*.

Swampy habitat, 2.5 mi. SW of Laura Walker SP:

**SATURNIIDAE:** *Hyalophora cecropia* (EARLY), *Automeris io*. **ARCTIIDAE:** *Spilosoma congrua*. **NOTODONTIDAE:** *Nadata gibbosa*, *Heterocampa guttivitta*, *H. biundata*. **NOLIDAE:** *Nola* (2 spp.), *Nycteola frigidana*. **NOCTUIDAE:** *Idia nr. forbesi*, *Sigela* sp. \*, *Schranksia macula*, *Hypenodes fractilinea*, *Colobochyla interpuncta*, *Phytometra rhodaria*, *Metalectra tantallus*, *Mocis disseverans*\*, *Allotria elonympha*, *Dysgonia similis*\*, *Parallelia bistriaris*, *Argyrostroma carolina*, *A. deleta*, *A. erasa*, *A. sylvarum*, *Cutina albopunctella*, *Zale aeruginosa*, *Z. horrida*, *Z. minerea*, *Leucania adjuncta*, *Balsa malana*, *Iodopepla u-album*, *Egira alternans*. **GEOMETRIDAE:** *Macaria distributaria*, *M. nr. aemulataria*, *Glena cribrataria*, *Glena cognataria*\*, *Anavitrinella pampinaria*, *Iridopsis vellivolata*, *Episemasia solitaria*, *Euchlaena madusaria* (COUNTY), *Euchlaena* sp., *Pero morrisonaria*, *Pero honestaria*, *Petrophora divisata*, *Metarranthis homuraria*, *M.*

*obfirmaria*, *Eutrapela clemataria*, *Hethemia pistasciaria*, *Nemoria catachloa*\*. **LIMACODIDAE:** *Euclea delphinii*. **OECOPHORIDAE:** *Antaeotricha lucilliana*.

**Louisiana:** Michael Lockwood, 215 Hialeah Avenue, Houma, LA 70363, E-Mail: [mikelock34@hotmail.com](mailto:mikelock34@hotmail.com)

Sight records from Thistlewaite WMA, St. Landry Parish, Louisiana (April through July 2005) -- Reporter Craig W. Marks:

**Papilionidae:** *Papilio cresphontes*, *P. glaucus*, *P. polyxenes*, *P. troilus*, *Battus philenor*.

**Pieridae:** *Phoebis sennae*, *Colias eurytheme*

**Danaidae:** *Danaus plexippus*

**Nymphalidae:** *Phyciodes tharos*, *P. phaon*, *Nymphalis antiopa*, *Polygonia interrogationis*, *Limenitis archippus*, *L. astyanax*, *Vanessa atalanta*, *V. virginiensis*, *Junonia coenia*, *Asterocampa celtis*, *A. clyton*, *Chlosyne nycteis*

**Lycaenidae:** *Satyrrium favonius*, *S. calanus*, *Calycopis cecrops*, *Atlides halesus*, *Parrhasius m-album*

**Libytheidae:** *Libytheana carinenta*

**Satyridae:** *Enodia portlandia*, *Megisto cymela*, *Hermeuptychia sosybius*, *Cyllopsis gemma*

Sight records from Avery Island, Iberia Parish, Louisiana (April 4 through May 9, 2005) -- Reporter Craig W. Marks:

**Papilionidae:** *Papilio palamedes*, *P. troilus*

**Nymphalidae:** *Vanessa atalanta*, *V. virginiensis*, *V. cardui*, *Junonia coenia*

**Lycaenidae:** *Satyrrium favonius*, *Parrhasius m-album*, *Strymon melinus*

**Satyridae:** *Enodia portlandia*,

**Mississippi:** Rick Patterson, 400 Winona Rd., Vicksburg, MS 39180, E-Mail: [rpatt42@aol.com](mailto:rpatt42@aol.com)

Collecting has just started here this spring. The following are specimens collected by Ricky Patterson:

On March 10, 2006 at a locality near Regantown, Claiborne County, *Anaea andria* (county), *Papilio polyxenes asterius*, *Eurytides marcellus* (county), *Battus philenor*, *Anthocharis midea*, and *Cyllopsis gemma*.

On March 15, 2006 at a locality 3.2 miles west of Lorman, Jefferson County, *Enodia portlandia missarkae* (county), *Papilio polyxenes asterius* (county), *Cyllopsis gemma* (county), *Eurytides marcellus* (county), *Anthocharis midea*, and *Amblyscirtes aesculapious*.

**North Carolina:** Steve Hall, North Carolina Natural Heritage Program, Div. of Parks & Recreation, 1615 MSC, Raleigh, NC 27699-1615, E-Mail: [Stephen.Hall@ncmail.net](mailto:Stephen.Hall@ncmail.net)

**South Carolina:** Brian Scholtens, College of Charleston, Charleston, SC 29424, E-Mail: [scholtensb@cofc.edu](mailto:scholtensb@cofc.edu)

See page 31 for Brian Scholtens South Carolina report.

**Tennessee:** John Hyatt, 5336 Foxfire Place, Kingsport, TN 37664, E-Mail: [jkshyatt@aol.com](mailto:jkshyatt@aol.com)

John states the following: "All I have to offer is the sighting on Sunday, March 5, of the first butterfly of the season up here in the mountains - the obligatory *P. rapae*. That's a tad early - my usual first sighting averages around March 12-15."

**Texas:** Ed Knudson, 8517 Burkhart Road, Houston, TX 77055, E-Mail: [eknudson@earthlink.net](mailto:eknudson@earthlink.net)

**Virginia:** Harry Pavulaan, 494 Fillmore Street, Herndon, VA 22070, E-Mail: [pavulaan@aol.com](mailto:pavulaan@aol.com)



Family	Genus	species	County	Co. Rec.	Locality (South Carolina)	1st date	2nd date	Collector/Observer	Notes by B. Scholtens
Arctiidae	<i>Syntomeida</i>	<i>epillais</i> ( <i>subspecies = jucundissima</i> )	Charleston	Y	James Island	27-Oct-05	30-Oct-05	B. Scholtens	state record, ex larvae on oleander
Geometridae	<i>Macaria</i>	<i>aemulataria</i>	Greenville	Y	near Paris Mt. St. Pk.	24-Aug-04		John Snyder	state record
Geometridae	<i>Macaria</i>	<i>fissinotata</i>	Greenville	Y	near Paris Mt. St. Pk.	20-Apr-05		John Snyder	state record
Geometridae	<i>Nemoria</i>	<i>biflata</i>	Greenville	Y	near Paris Mt. St. Pk.	6-May-00		John Snyder	upstate record
Hesperiidae	<i>Calpodus</i>	<i>ethlius</i>	Charleston		N. end of Folly Island	26-Aug-05		Nathan Dias	sight record
Hesperiidae	<i>Hesperia</i>	<i>attalus</i>	Chesterfield		3 mi. E of McBee	24-Sep-05		B. Scholtens	
Hesperiidae	<i>Hesperia</i>	<i>meskei</i>	Chesterfield		3 mi. E of McBee	24-Sep-05		B. Scholtens	
Hesperiidae	<i>Pyrgus</i>	<i>oileus</i>	Williamsburg	Y	US41 at Santee River	25-Sep-05		B. Scholtens	
Hesperiidae	<i>Pyrgus</i>	<i>oileus</i>	Charleston		James Island	11-Nov-05		D. Forsythe	photo record
Limacodidae	<i>Tortricidia</i>	<i>flexuosa</i>	Greenville	Y	near Paris Mt. St. Pk.	1-Jun-05		John Snyder	state record
Limacodidae	<i>Tortricidia</i>	<i>testacea</i>	Greenville	Y	near Paris Mt. St. Pk.	24-Apr-04		John Snyder	state record
Noctuidae	<i>Baileya</i>	<i>ophthalmica</i>	Greenville	Y	near Paris Mt. St. Pk.	2-Aug-03		John Snyder	upstate record
Noctuidae	<i>Catocala</i>	<i>dejecta</i>	Greenville	Y	near Paris Mt. St. Pk.	14-Sep-03		John Snyder	upstate record
Noctuidae	<i>Catocala</i>	<i>marmorata</i>	Greenville		near Paris Mt. St. Pk.	18-Sep-04		John Snyder	
Noctuidae	<i>Chrysanympa</i>	<i>formosa</i>	Greenville	Y	near Paris Mt. St. Pk.	9-Jun-05		John Snyder	state record
Noctuidae	<i>Palthis</i>	<i>angulalis</i>	Greenville	Y		1-Jul-05		Heath Garris	upstate record
Nymphalidae	<i>Chlosyne</i>	<i>gorgone</i>	Jasper		edge of Tillman Sandridge HP	14-Oct-05		D. Forsythe	sight record
Nymphalidae	<i>Chlosyne</i>	<i>nycteis</i>	Richland		locks on Congaree Rr. ½ mi. from Rosewood Dr.	3-Sep-05		Mike Turner	sight record
Nymphalidae	<i>Danaus</i>	<i>gilippus</i>	Charleston		N. end of Folly Island	26-Aug-05		Nathan Dias	sight record
Nymphalidae	<i>Enodia</i>	<i>creola</i>	Bamberg	Y	River Bridges St. Pk	15-May-05		D. Forsythe	sight record
Nymphalidae	<i>Neonympha</i>	<i>areolata</i>	Berkeley		Hwy 41 nr. Jamestown	28-Aug-05		D. Forsythe	sight record
Nymphalidae	<i>Phyciodes</i>	<i>texana</i> ( <i>subspecies = seminole</i> )	Richland		locks on Congaree Rr. ½ mi. from Rosewood Dr.	3-Sep-05		Mike Turner	sight record
Pieridae	<i>Ascia</i>	<i>monuste</i>	Charleston		N. end of Folly Island	26-Aug-05		Nathan Dias	sight record
Pieridae	<i>Colias</i>	<i>cesonia</i>	Berkeley		Hwy 41 nr. Jamestown	28-Aug-05		D. Forsythe	sight record
Pyrilidae	<i>Cactoblastis</i>	<i>cactorum</i>	Charleston	Y	Sullivan's Island	10-Oct-04	20-Oct-04	B. Scholtens	ex larvae on ornamental Opuntia
Pyrilidae	<i>Conchylodes</i>	<i>ovulalis</i>	Greenville		near Paris Mt. St. Pk.	15-Aug-05		John Snyder	
Pyrilidae	<i>Diaphania</i>	<i>modialis</i>	Charleston		Mt. Pleasant	20-Oct-05		B. Scholtens	2nd record in state
Pyrilidae	<i>Geshna</i>	<i>cannalis</i>	Charleston		Mt. Pleasant	8-Apr-05		B. Scholtens	state record, larvae seen many times, but first adult recorded
Pyrilidae	<i>Microcrambus</i>	<i>elegans</i>	Greenville	Y		13-Jun-05		Heath Garris	upstate record
Pyrilidae	<i>Omiodes</i>	<i>indicata</i>	Charleston	Y	Mt. Pleasant	9-Nov-05		B. Scholtens	state record
Pyrilidae	<i>Palipta</i>	<i>magniferalis</i>	Greenville		near Paris Mt. St. Pk.	18-May-05		John Snyder	
Pyrilidae	<i>Palpita</i>	<i>quadristigmalis</i>	Charleston		Mt. Pleasant	16-Sep-05		B. Scholtens	
Pyrilidae	<i>Psara</i>	<i>obscuralis</i>	Charleston		Mt. Pleasant	10-May-04		B. Scholtens	
Pyrilidae	<i>Pyrausta</i>	<i>subsequalis</i>	Greenville	Y	near Paris Mt. St. Pk.	23-Jun-05		John Snyder	upstate record
Pyrilidae	<i>Tetralopha</i>	<i>scortialis</i>	Greenville		near Paris Mt. St. Pk.	27-May-05		John Snyder	
Tortricidae	<i>Pandemis</i>	<i>limitata</i>	Greenville		near Paris Mt. St. Pk.	26-Jul-05		John Snyder	

**METARRANTHIS OBFIRMARIA (Hbn.) IN SOUTHEAST LOUISIANA**

BY  
VERNON ANTOINE BROU JR.

The medium-sized geometrid moth *Metarranthis obfirmaria* (Hbn.) (Fig. 1) is a common species in St. Tammany Parish at the Abita Springs study site. Both sexes are common at ultraviolet light traps, females far outnumbering males. Males of *obfirmaria* can be seen in considerable numbers briskly flitting about woodlands just about much of the day in bright sunshine.

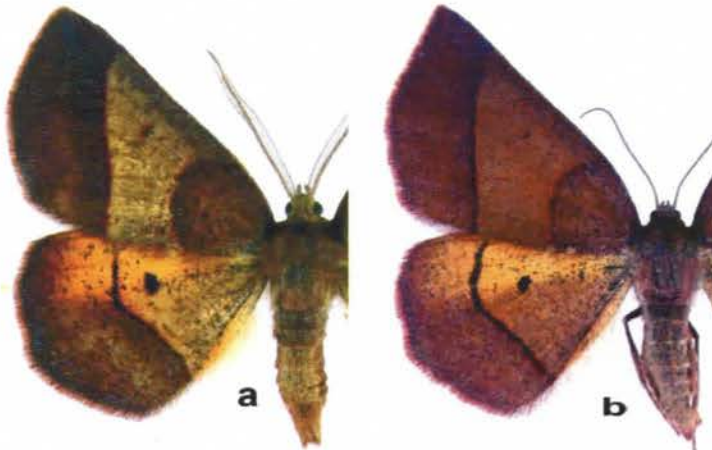


Fig. 1. *Metarranthis obfirmaria*: a. male, b. female

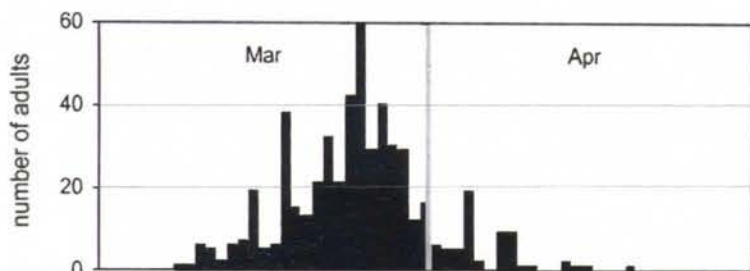


Fig. 2. *Metarranthis obfirmaria* captured at sec24T6SR12E, 4.2 mi. NE Abita Springs, Louisiana. n = 518.

Hodges (1983) lists 13 species in the genus *Metarranthis* for America North of Mexico. Forbes (1948) states *obfirmaria* occurs from Nova Scotia and Canada to Georgia, west to Kansas, common in acid areas and peat bogs. Larvae reported on blueberry and accepting cherry. The single adult brood peak occurs in March (Fig. 2).

#### Literature Cited

- Forbes, W. T. M. 1948. *Lepidoptera of New York and Neighboring States, Geometridae Sphingidae Notodontidae Lymantriidae, Part II*, Cornell Univ. Agr. Exp. St. Mem. 274. 263 pp.
- Hodges, R. W. et al. 1983. *Checklist of the Lepidoptera of America North of Mexico*. E.W. Classey Ltd. and The Wedge Entomol. Res. Found., Cambridge: Univ. Press xxiv + 284 pp.

(Vernon Antoine Brou Jr., 74320 Jack Loyd Road, Abita Springs, Louisiana 70420;  
E-Mail: vabrou@bellsouth.net)

\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*  
\*

\*\*\*\*\*  
The Southern Lepidopterists' News is published four times annually. Membership dues are \$15.00 annually. The organization is open to anyone with an interest in the Lepidoptera of the southern United States. Information about the Society may be obtained from Paul Milner, Membership Coordinator, 272 Skye Drive, Pisgah Forest, NC 28768, and dues may be sent to Jeffrey R. Slotten, Treasurer, 5421 NW 69th Lane, Gainesville, FL 32653.

\*\*\*\*\*  
**SOUTHERN LEPIDOPTERISTS' SOCIETY**  
c/o J. BARRY LOMBARDINI, THE EDITOR  
3507 41<sup>st</sup> Street  
Lubbock, Texas 79413