

NEWS

OF THE

LEPIDOPTERISTS' SOCIETY



Volume 39, Number 3 Summer 1997



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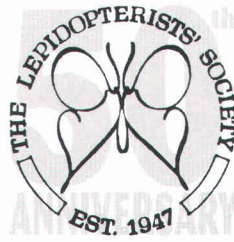
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Volume 39, No. 3 Summer 1997



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

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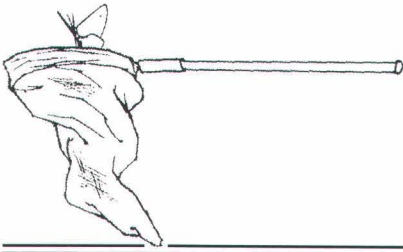
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Cover: Mating pair of Harris' Checkerspots (*Chlosyne harrisii*, *Nymphalidae*), Butterflies, 1st place and Best in Show, 1996 Photo Contest, by Jerry McWilliams.



Mailbag...

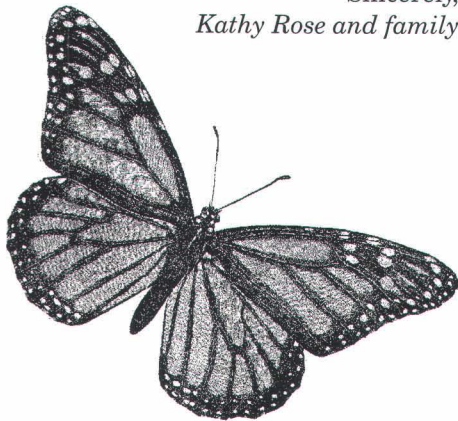
Dear Lepidopterists' Society,

Enclosed please find a donation for your Lepidopterists' organization. My family and I have chosen your organization to help us honor our deceased mother's birthday. We lost our mother to a long battle with cancer in May of 1995. One of the things she enjoyed most in nature was butterflies. She especially loved Monarch butterflies. Among her many talents, she was an amateur artist. She painted a beautiful Monarch butterfly that now hangs in my father's home. Because of her love for butterflies we thought it would be fitting to make a donation to an organization dedicated to the preservation of butterflies and their habitats.

It is my understanding, through my phone conversation with Mike Smith, that the money will be placed in the Harry K. Clench Memorial Award Fund. The award money will then be used to recognize a student(s) with an interest in butterflies, moths and their habitats. We would appreciate that the money be used in this manner.

Thank you for accepting this donation in honor of our much loved and missed mother, Eileen V. Kenick.

Sincerely,
Kathy Rose and family



To the Editor:

It was nice to see Bob Pyle's corrected history of the Xerces Society/Lepidopterists Society Committee on English names for butterflies (*News* 38(6), pp. 198-199). In my original letter (*News* 38(4), pp. 127-128), I gave a very short summary of that committee's history, as a preface to a discussion of the North American Butterfly Association (NABA) English Names Committee. Bob says that my summary of the committee's history was unfair and a misrepresentation. I think that a careful reading of my original letter and Bob's reply will convince the majority of readers that, in fact, my summary was perfectly fair and accurate.

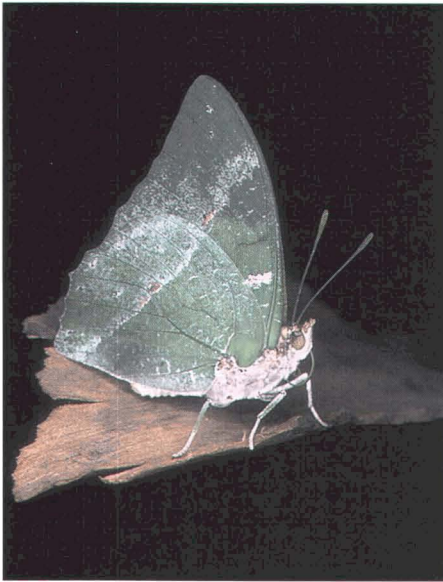
Bob also mocks NABA and me for saying that the NABA list is the official list of NABA and with emotion-laden language, charges that "NABA chose to arrogate the role of official arbiter" and that its committee is "self-appointed". This is silly. First, NABA doesn't claim that its list is the official list for anybody else in the world other than NABA. Second, NABA actually uses English names and thus needed a standard list of names that would be used in NABA publications, including the report of the NABA 4th of July Butterfly Counts. No other organization had a list of English names, so our choice was to either adopt the English names used by a single author, e.g., Holland, Klots, Miller, Opler, or Pyle, or construct our own. We chose to construct our own. Why?

One reason is that NABA is the *North American Butterfly Association*, and we intend to eventually have English and Spanish names for Mexican butterflies, as well as those found in Canada and the United States. The names used by pre-

vious authors have, for the most part, focused exclusively on Canada and the United States. For example, *Staphylus hayhurstii* had been called "Hayhurst's Skipper" (Holland, 1946), "Southern Sooty Wing" (Klots, 1951; Opler & Krizek, 1984) and "Southern Scalloped Sootywing" (Pyle, 1981). Miller (1992) lists its "preferred" name as "Scalloped Sooty Wing" (a name never used previously). What all of this ignores is that *Staphylus* is not that closely related to *Pholisora* (sootywings) and that *Staphylus* is, in general, a recognizable group of butterflies, the most northern representative of which is *S. hayhurstii*. The NABA committee decided to call species in the genus *Staphylus* "scallopwings" and to call *S. hayhurstii*, Hayhurst's Scallopwing, reserving the group name "sootywing" for *Pholisora*.

Another reason that, in our view, existing name sets were not suitable for NABA, was that they didn't work for verbal communication. If one sees the names Buckeye and West Indian (Mangrove) Buckeye in print, one has no problem distinguishing them. But, if you are in southern Florida and say to your field companion "I just saw a buckeye" and if these are the English names for *Junonia coenia* and *J. evarete*, then your statement is ambiguous — did you see a buckeye, but aren't sure if it was *J. coenia* or *J. evarete* or do you mean to say that you saw *J. coenia*. All of the other published name sets had many examples of this type of problem. A probable reason for this problem, is that the authors of these published English names, by and large, didn't, and don't, use them themselves. So, Jackie Miller, editor of **The Common Names of North American**

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1996 Photo Contest Winners

Left: *Charaxes eupale* (Nymphalidae), Butterflies, 2nd place, Andrei Sourakov; **Above:** *Epimecis matronaria* (Geometridae), Moths, 3rd place, Leroy Simon; **Right:** *Datana* sp. (Notodontidae), Life History, 2nd place, Leroy Simon



Above: *Brahamea hearseyi* (Brahameidae), Moths, 1st place, Mark Schmidt; **Top Right:** *Actias luna* (Saturniidae), Life History, 3rd place, Carter Bays; **Center Right:** *Lopinga achine* (Satyridae), Butterflies, 3rd place, Andrei Sourakov; **Bottom Right:** unidentified geometrid (Geometridae), Moths, 2nd place, Andrei Sourakov; **Below:** *Eacles imperialis* (Saturniidae), Life History, 1st place, Carter Bays





Moths of the genus *Annaphila* (Noctuidae). See article on page 34. **A:** *A. baueri* (top), *A. arvalis* (bottom); **B:** *A. vivianae* (top), *A. ida* (bottom); **C:** *A. lithosina* (top), *A. miona* (bottom); **D:** *A. diva* (top left), *A. diva*, Yosemite (top right), *A. casta* (bottom); **E:** *A. astrologa* (top left), *A. pseudo-astrologa* (top right), *A. olgae* ? (bottom); **F:** *A. depicta depicta* (top left), *A. depicta morula* (top right), *A. macfarlandi* (bottom); **G:** *A. danistica* (top left), *A. danistica* (uns, top right), *A. hennei*; **H:** *A. mera mera* (top left), *A. mera mera* (uns, top center), *A. mera mera* (top right), *A. mera eremia* (bottom left), *A. mera eremia* (uns, bottom center), *A. mera eremia* (bottom right); **I:** *A. spila* (top left), *A. evansi* (top right), *A. superba* (bottom); **J:** *A. decia* (top left and right), *A. divinula* (bottom); **K:** *A. abdita*, N. Calif. (top left), *A. abdita*, Kern Co. (late, top right), *A. abdita*, Kern Co. (early, bottom left and right); **L:** *A. pustulata*, W. Texas (top), *A. pustulata*, Prescott, AZ (center), *A. pustulata*?, Riverside Co., CA (bottom). Actual expanse ranges from 14 mm (*A. divinula*) to 22 mm (*A. casta* and *A. macfarlandi*). Photos by Julian P. Donahue.

Day-Flying Moths of the Genus *Annaphila* Grote (Noctuidae)

Ron Leuschner

1900 John Street, Manhattan Beach, CA 90266-2608, U.S.A.

The small, active and colorful noctuid moths of the genus *Annaphila* have long been popular with lepidopterists. All species are diurnal and fly early in the year in western North America, primarily on the Pacific Coast. Color photographs of all species are shown here for the first time (see color plate on page 33); previous works (Hampson 1910, Plate CXLVII; Seitz Vol. 7, 1927, Plate 47f) had unsatisfactory illustrations. Most of the species have orange hindwings, but three are red, two are white, and one has a pale form or possible subspecies.

Distribution

California is certainly the "hot spot" for this genus. Of the 23 described species, 21 occur there, and of these, 11 are known only from California. A few species range widely in the West (especially *A. diva* Grote, *A. decia* Grt. and *A. danistica* Grt.), from British Columbia through Idaho, Utah, and Arizona with one record from west Texas. None have been recorded from New Mexico or northern Mexican states, but should be sought there.

Habitats range from Mojave desert washes and mountains to coastal sage scrub and Sierra Nevada foothills and canyons. One species (*A. miona* J. B. Smith) has been found at 7000 feet in the Sierra Nevada. Careful observation has added many recent records for Arizona; more are needed for the Great Basin and Sonoran deserts.

Flight Habits

The first sighting of an *Annaphila* is often just a glimpse of orange color, which disappears as fast as it comes. Many species rest with forewings wrapped around a twig of *Ceanothus* (California lilac, Rhamnaceae), safe from net swings by

the many thorns on those bushes. Some visit the flowers of *Ceanothus*, but again protected by the thorns. Willow catkins and low flowering plants such as *Nemophila* (Baby Blue Eyes, Hydrophyllaceae) are attractive to some, and offer a better chance for capture. Several species ignore flowers and sit on the ground (*A. hennei* Rindge & Smith, *A. divinula* Grt.) or a near-vertical hillside (*A. danistica* Grt.). The best but most challenging method of capture is to follow the fast, erratic flight and swing in mid-air. For many attempts, the net will be empty!

Early Stages

Of the 23 species, 14 have been successfully reared with recorded foodplants. Chris Henne, John Comstock and Frank Sala were responsible for most of these. The foodplants are all annuals that appear in the spring, in these genera: *Mimulus* (Scrophulariaceae), *Montia* (Portulacaceae), *Nemophila*, *Emmenanthe*, *Phacelia* (Hydrophyllaceae), *Gilia* and *Linanthus* (Polemoniaceae). A detailed list will be supplied by the author on request.

Taxonomy

In 1873, Grote erected the genus *Annaphila* and described three species, with *A. diva* as the type species. Henry Edwards described five species (and four synonyms) between 1875 and 1890, besides supplying specimens to others. In the next 60 years, only two more species were described: *A. miona* J. B. Smith 1908 and *A. astrologa* B. & McD. 1918. Claude I. Smith began work on a monograph of the genus, which Fred Rindge completed after Smith's untimely death. This revision, published in 1952 as an American Museum bulletin (Vol. 98, Art. 3), added six more species and two sub-

species. Finally, in 1964, papers by Frank Sala and Buckett & Bauer added the final four species to the genus. Since nothing new has been found since, perhaps the final species complement has been determined.

Unique Histories

Annaphila casta Hy. Edwards, the largest member of the genus, deserves special notice since it was unknown for almost 100 years after the initial captures. It was first taken by Lord Walsingham in 1871, during his fabled horseback journey through the wilds of Northern California (CA) and Oregon (OR). The type locality was reported as "Oregon, Camp 9," but Hampson later stated that Camp 9 was in Mendocino Co., CA. The type series in the British Museum had one female from Sonoma Co., CA, May 2. The species was finally rediscovered twice within two years. Noel McFarland found *A. casta* in Benton Co., OR in 1962, and two years later, Noel LaDue found a colony at Plantation, Sonoma Co., CA. Perhaps we will never be sure whether the types came from Oregon or California.

Annaphila pustulata Hy. Edwards was described from a single female from Prescott, Arizona (AZ). By the time of the 1952 revision, added specimens had been found in the White Mts., Apache Co., AZ (Sept. 1925) and the Davis Mts., Jeff Davis Co., Texas (Nov. 1-15, 1924 and April 1-15, 1926). These are the only fall captures of any *Annaphila* known to the author, and are open to some doubt, since they haven't been duplicated in 70 years. In recent years, a few more *A. pustulata* have been found near Prescott, the type locality.

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Relationship of Butterfly Visitation with Nectar Qualities and Flower Color in Butterfly Bush, *Buddleia davidii*

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Designing gardens to attract butterflies is one of the fastest growing areas of wild-life gardening. As evidence of this, both "how-to" articles and descriptions of established gardens have appeared both in the popular press (newspapers, magazines, and books) and on a variety of television shows (gardening, and handyman). Many gardening centers, Cooperative Extension Service Offices, and nurseries have begun to provide flyers containing information about the best types of plants to use in creating butterfly gardens. Some seed producers (i.e., Park Seed Co., Inc.) have hired consultants to suggest which of their materials are "butterfly friendly" and indicate that in their catalogue with a butterfly symbol.

Although considerable "seat of the pants" knowledge exists concerning the types of plants important as nectar sources for adult butterflies, many of these are available in a wide range of varieties. Despite all of the effort that has gone into breeding these varieties, very few studies have examined whether all varieties of a given plant species are equally as good at attracting butterflies. As an example, most butterfly gardening guides suggest using butterfly bush (*Buddleia*) as a perennial 'anchor' plant in a butterfly garden. However, in many areas there are multiple commercially available cultivars with flower colors ranging from white to pink, blue, lavender, red, or purple. There is also considerable variation in plant form, individual flower size, inflorescence size, and flowering cycles. This range of variability can also be found in several other commonly recommended butterfly garden perennials such as *Lantana* and *Verbena*, and annuals such as *Cosmos* and *Zinnia*.

The objective of this project, conducted in 1994 and 1995, was to quantify flower color and nectar qualities in butterfly bush and to determine if those parameters were related to butterfly visitation patterns. The long-term objectives in this research program are to obtain these types of information for all of the major plants used in butterfly gardens in the Southeast. This information will allow both homeowners and landscapers who are planning butterfly gardens to select cultivars that will be the most effective at attracting butterflies. It also will aid nurseries to emphasize production of those plant materials that are most suitable for use in butterfly gardens.

Materials and Methods

This project was conducted in a research butterfly garden located at the Cherry Farm Entomology Laboratories of Clemson University (Clemson, Pickens, Co., South Carolina). Butterfly bush cultivars currently established in this garden are listed in Table 1 and illustrated in the color plate on page 36.

Flower color analysis. Visible flower colors were assessed using a Munsell Colorimeter located in Dr. J. R. Aspland's color analysis laboratory (School of Textiles, Clemson University). This equipment provides a quantitative measure of reflected light and avoids variation in color perception that may occur if human observers were used. Using this system, color is measured on a 3-dimensional scale having a black-white (L*), red-green (a*), and yellow-blue (b*) axes system (Fig. 1A). Inflorescences were removed from plants in the garden, placed into vials of distilled water, and taken within 30 minutes to the color laboratory

continued on page 37...

Table 1. Butterfly bush varieties established in the research garden at the Cherry farm Entomology Laboratories.

Variety	Plants	Color
'Charming Summer'	2	lavender-pink
'Lochinich'	2	pale lavender
'White Profusion'	2	white
'White Bouquet'	1	white
'Opera'	2	pink
'Royal Red'	2	very deep pink
'Pink Delight'	2	pink
'Dubonet'	2	blue
'Petite Plum'	2	deep pink-purple
'Black Knight'	2	vary deep purple
'Empire Blue'	1	deep blue
'Nanho Blue'	1	pale blue
'Nanho Purple'	2	pale blue-purple

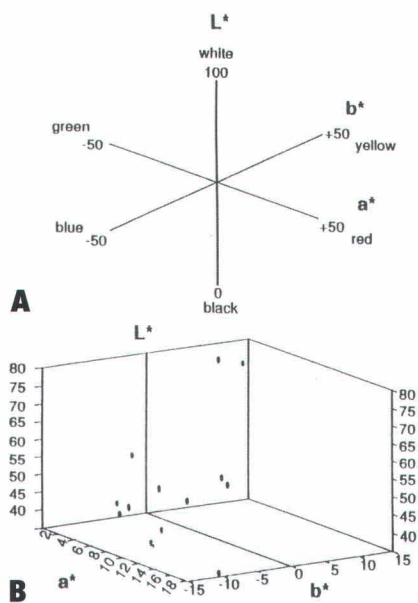
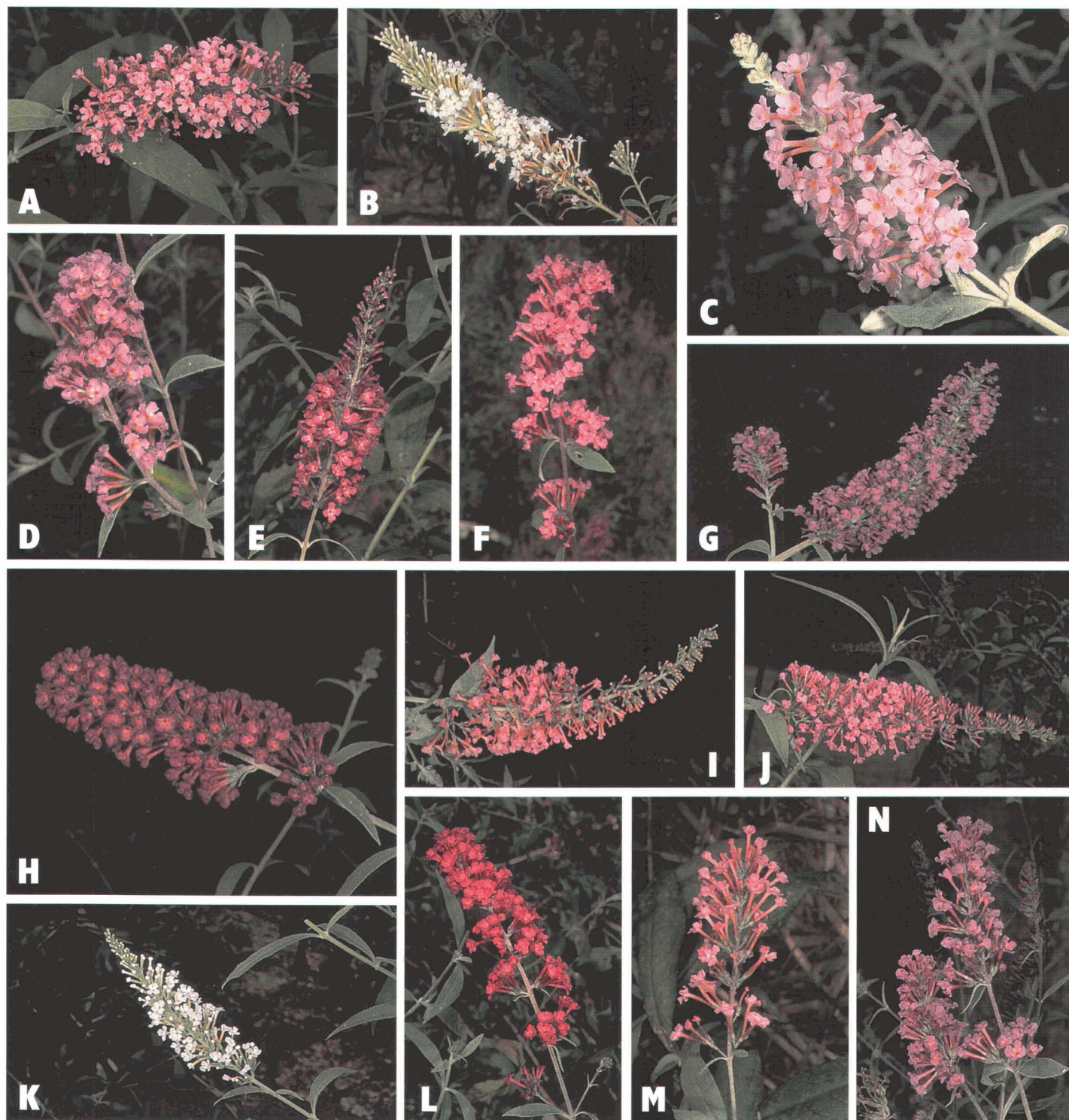


Figure 1. A: Three-dimensional color quantification scale. **B:** Color space of *Buddleia* varieties examined.



Flower color in Butterfly Bush, *Buddleia davidii* varieties. See article on page 35. **A:** Isle de France; **B:** White Profusion; **C:** Lochinich; **D:** Nanho Purple; **E:** Dubonet; **F:** Petite Plum; **G:** Empire Blue; **H:** Black Knight; **I:** Pink Delight; **J:** Charming Summer; **K:** White Bouquet; **L:** Royal Red; **M:** Opera; **N:** Nanho Blue. Note: Isle de France was not present in the garden during the nectar/color study. Photos by Joseph Culin.



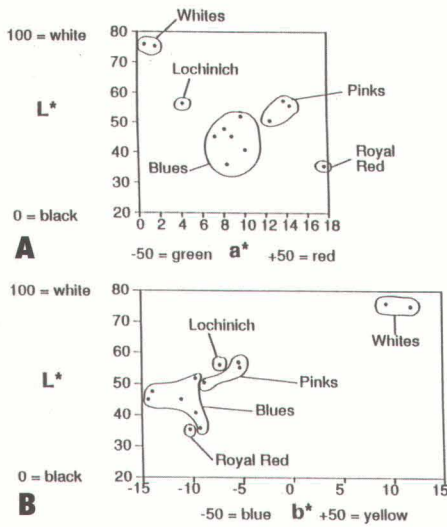


Figure 2. A: Distribution of *Buddleia* flower colors on the L^* and a^* axes. **B:** Distribution of *Buddleia* flower colors on the L^* and b^* axes.

Buddleia...continued from page 33

for analysis. Three inflorescences were examined from each plant on two dates (early July and early August). Flowers from the tip (youngest flowers), middle region, and base (oldest flowers) of each inflorescence were analyzed separately to determine if color varied with flower age. Andrea Butler of the South Carolina Governor's School for Science and Mathematics Summer Research Scholars Program conducted this portion of the study as her summer research project in 1995.

Nectar analyses. Nectar qualities examined were amount of nectar produced, percent sugar in the nectar, and, the relative amounts of sucrose, glucose, and fructose. In order to ensure that nectar was present for analysis, nectar feeders were excluded from three inflorescences per plant by enclosing them in fine-mesh bags for 24 hours prior to sampling. A 10 μ l (microliter) syringe was inserted into the corollas of five flowers on each inflorescence, the nectar was extracted, and the total amount of nectar from the five flowers was recorded to the nearest 0.1 μ l. Sugar concentration of each sample was determined immediately after removal from the flowers using a pocket sugar refractometer. Temperature, relative humidity, and rainfall were recorded in the garden. Karen Mabry of Union High School conducted this portion of the study in 1994 as a summer research project supported by the South Carolina Governor's School for Science and Mathematics Summer Research Scholars Program.

Identification of sugar composition of the nectars was accomplished as follows. Nectar was extracted from flowers as described above. After sample preparation, they were injected into an HPLC carbohydrate column and analyzed using a refractive index. Quantities of each sugar, expressed as percent mass, was determined by comparison to fructose, glu-

cose and sucrose standards. Samples for sugar identifications were gathered and prepared by Tze-Wah Leung, who was supported by the CSREES Minority Research Apprenticeship program in 1995. The HPLC analyses were conducted by Anil Ranwala, a graduate student, in Dr. W.B. Miller's laboratory (Department of Horticulture, Clemson University).

Butterfly visitation rates. Data on butterfly visitation on the plants in the study were determined by direct observations. Walk-through counts of butterfly visits were made twice daily beginning at approximately 10 am and 2 pm on each Monday, Wednesday, and Friday. Observers recorded the number and species of all butterflies on each plant.

Results and Discussion

Flower color. Statistical analyses showed that there were no significant differences in flower color based on age (region on the inflorescence) or time in the season (two samples approximately 4 weeks apart). Because there was no variation within a given plant, and only slight variation between plants of a given variety, color data are presented as a single figure for each of the 13 varieties examined. Colors of the butterfly bush varieties examined fell into three fairly distinct clusters, white, red, and lavenders-pinks-blues (Fig. 1b). Examination on the individual color axes indicated that

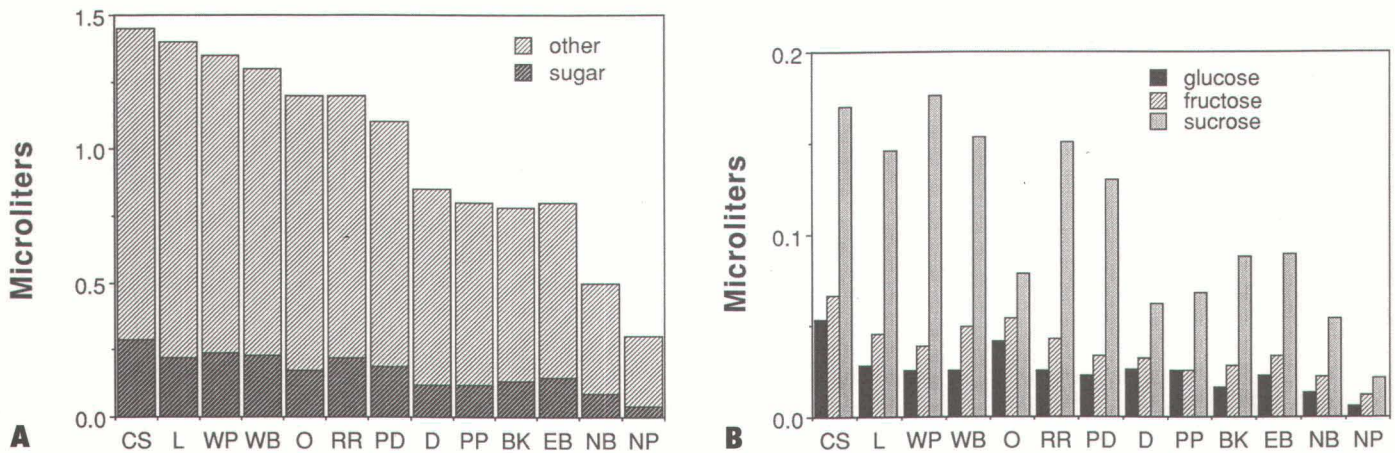


Figure 3. A: Amount of nectar (bar total) and sugar (dark shaded portions) in butterfly bush varieties. **B:** Amounts of sucrose, glucose, and fructose in butterfly bush nectars. Varieties are: CS = Charming Summer, L = Lochinich, WP = White Profusion, WB = White Bouquet, O = Opera, RR = Royal Red, PD = Pink Delight, D = Dubonet, PP = Petite Plum, BK = Black Knight, EB = Empire Blue, NB = Nanho Blue, NP = Nanho Purple

the white and red varieties were the extremes on the a^* [red-green] and L^* [black-white] axes (Fig. 2a), while only the white varieties fell outside of the main cluster on the b^* [yellow-blue] axis (Fig. 2b). Although they are available, we did not have any yellow-flowered varieties in the research garden during this study.

Nectar qualities.

The average amount of nectar recovered from five individual flowers and the amount of sugar in each nectar are presented in Figure 3. Nectar production fell into three broad groupings, with seven varieties having greater than $1.0 \mu\text{l}$ per 5 flowers, four having between $0.75 \mu\text{l}$ and $1.0 \mu\text{l}$ per 5 flowers, and two will less that $0.5 \mu\text{l}$ per 5 flowers. The amount of sugar in the nectar was similar across all 13 varieties examined (Fig. 3A).

With the exception

of 'Opera', 'Dubonet', and 'Nanho Purple', all varieties had two to three times more sucrose than either glucose or fructose (Fig. 3B). In those three varieties, sucrose was only slightly more abundant than the other sugars.

Butterfly visitation. Four butterflies and one day-active moth were chosen for use in examining activity in relation to flower color and nectar qualities. These were the tiger swallowtail (*Papilio*

glaucus), spicebush swallowtail (*Papilio troilus*), silver spotted skipper (*Urbanus proteus*), longtail skipper (*Epargyreus clarus*), and bumblebee hawkmoth (*Hemaris diffinis*). These were chosen because they are common, relatively large, and showy which makes them easy to identify. These characteristics also make them good butterfly garden butterflies in that they are fun to watch. Patterns of butterfly bush visitation are pre-

sented for July (Fig. 4A), August (Fig. 4B), and September (Fig. 4C). Season-long, the greatest amount of butterfly activity was observed on 'Charming Summer', 'Royal Red', 'Pink Delight', and 'Petite Plum'. In August, when butterfly numbers peaked, activity also increased on 'Lochinich', 'Black Knight', 'Empire Blue', 'Nanho Blue', and 'Nanho Purple'. Both 'Black Knight' and 'Empire Blue' had increases in the number of flowers in August that likely increased their attractiveness.

In butterfly bush, butterfly visitation appears to be based on both flower color and nectar qualities. In general, visitation rates were greatest on those varieties that produced the most nectar, and those having nectar containing relatively high amounts of sucrose in relation to glucose and fructose. However, among the varieties having those characteristics, butterfly visitation rates were lowest on varieties having white or pale lavender flowers and greatest on those having red, pink, or lavender-pink flowers. This is probably due to the fact that butterflies, unlike many insects, can perceive red wavelength colors. Although many white flowers have been found to reflect ultraviolet (UV), which is highly attractive to many insects, preliminary UV analyses conducted during this project have indicated that butterfly bush flowers do not.

Acknowledgments

The research garden at the Cherry Farm facility was begun in 1993 with plant materials donated by Park Seed Co. (Greenwood, SC), Wayside Gardens (Hodges, SC), McCorkle Nurseries, Inc. (Dearing, GA), and the South Carolina Botanical Gardens (Clemson, SC). Support has been provided by the Enhancement of Research in Ornamental Horticulture Program of the South Carolina Agricultural Experiment Station, Clemson University, the Summer Research Scholars Program of the South Carolina Governor's School for Science and Mathematics, and the Minority Apprenticeship Program of CSREES.

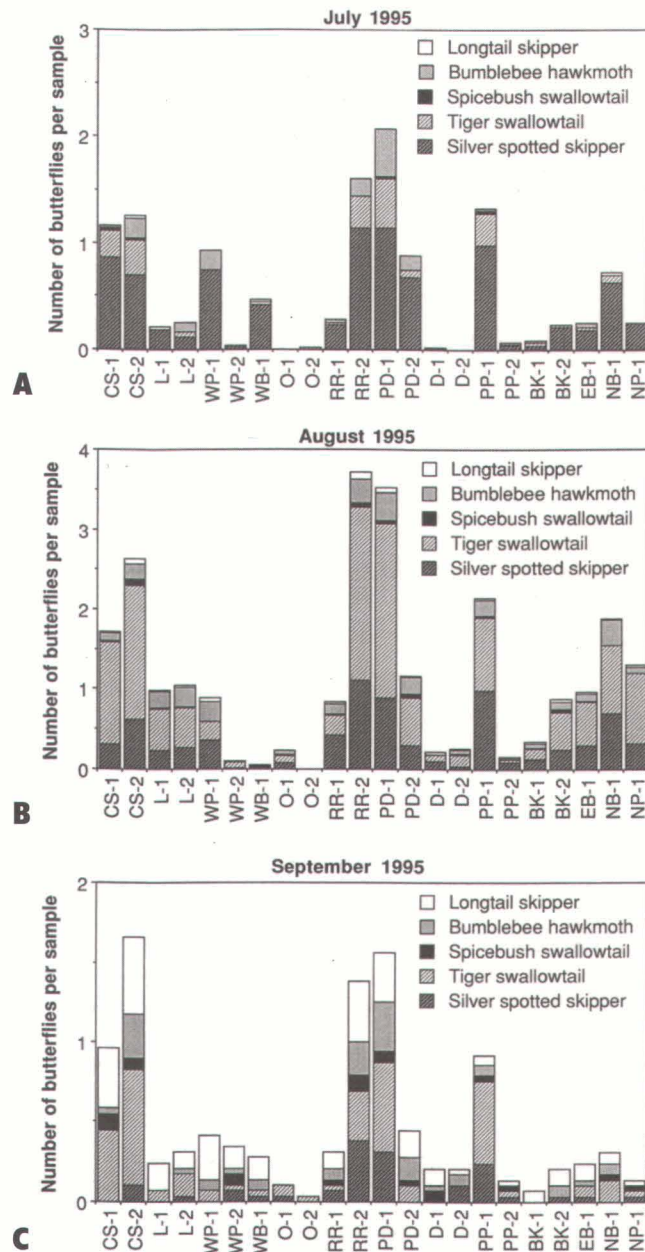


Figure 4: Butterfly and day-active moth visitation patterns on butterfly bush. **A:** July 1995, **B:** August 1995, **C:** September 1995. Varieties as per Figure 3, numbers denote individual plant identifications.

Annaphila...continued from page 33

When similar-looking specimens appeared in southern California, the author jumped to the conclusion that *A. pustulata* occurs in CA. But study of a long series in the Los Angeles Natural History Museum showed that these specimens were already identified as *A. mera eremia* Rindge & Smith. The monograph shows that *A. mera* Harvey and *A. pustulata* are separated by genitalia and shape of the frons, but these differences are slight and possibly subjective. All that can be said with certainty is that *A. mera eremia* appears closer to *A. pustulata* than to *A. mera mera*.

Summary and Conclusions

I saw my first *Annaphila* in February 1955, when *A. baueri* Rindge & Smith danced in front of my eyes (and into the net) in Lake Co., CA. Midwest collecting was never like that! Later, Charlie Hogue and Frank Sala showed me the *Ceanothus*-covered hills of Kern River

Canyon. This one spot has turned up 11 of the 23 known species of *Annaphila*. But every time I go there, and there have been 28 trips since 1960, is as much fun as the first.

There is still much to be learned. Nine of the species have never been reared. Several areas need more study to settle nomenclature and distribution problems. I hope that publication of these pictures will stir further interest in this genus, especially for areas outside the Pacific Coast.

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Odd Couples:

A Male-Male Pairing in the Tropical Tasar Silkmoth, *Antheraea mylitta* (Saturniidae)

by A. Chaudhuri* and A. K. Sinha

*Insect Physiology Laboratory, Central Tasar Research and Training Institute, Nagri, Ranchi — 834 303, India. * current address: Silkworm Breeding and Genetics Laboratory, Central Sericult. Res. and Training Institute, Berhampore — 74201, Murshidabad, West Bengal, India.*

A male-male pairing was observed in the Tropical Tasar Silkmoth, *Antheraea mylitta* Drury (Figure 1) under laboratory conditions at the Central Tasar Research and Training Institute in 1993. The pairing lasted five days before both males died. The body weights of the individuals were 4.4g and 3.8g with forewing lengths of 7.9cm and 7.0 cm respectively. This is the first report of which we are aware of a male-male copulation in *A. mylitta*. Homosexual behavior is believed to be rare in *A. mylitta*, although such pairings are relatively common in other insects.

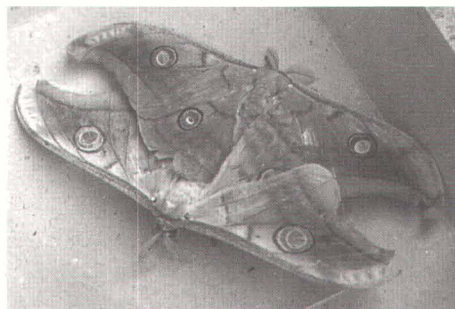


Figure 1. Male-Male Pairing in the Tropical Tasar Silkmoth, *Antheraea mylitta* in 1993.

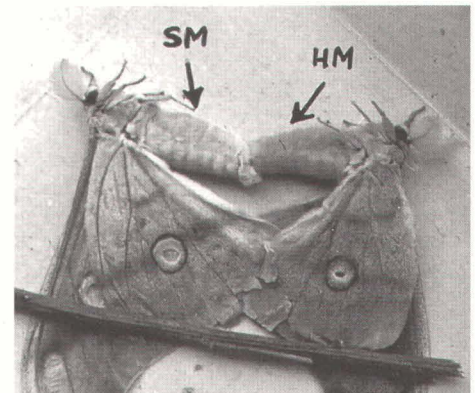


Figure 2. Male-Male Pairing in the Tropical Tasar Silkmoth, *Antheraea mylitta* in 1993. SM denotes smaller male, HM the heavier male.

Letters...*continued from page 31*

Butterflies (1992, Smithsonian Institution Press) is co-author of **The Butterflies of the West Indies and South Florida** (1994, Oxford University Press) a fine work that uses no English names, even for the many species on Miller's list.

A third problem with existing name sets is that they were taxonomically contorted. For example in Miller's list, most of the *Eurema* are called "yellows" or "oranges", while most of the *Colias* and other coliadinae are called sulphurs. But, as exceptions, *C. eurytheme* is called Alfalfa Butterfly, *Phoebis statira* is called Statira, and *Eurema lisa* is called Little Sulphur, creating confusion as to which group each of these species belongs. The NABA committee decided to call *Eurema* either "yellow" or "orange" and *Colias* and most of the other coliadinae "sulphur". This way, the name actually functions to communicate some information – all "yellows" and "oranges" are related.

Bob criticizes some of our name choices. But, to paraphrase Bob's response to Ehrlich and Murphy many years ago, perhaps he should have identified his duck correctly before shooting it down. He faults us for naming *Plebejus icarioides* the "Icariodes Blue". But, we called it Boisduval's Blue. Icariodes Blue is the name "preferred" in Miller (again, a name almost never used before). I wonder if Bob actually read the final NABA checklist, because he also accuses the NABA committee of "start(ing) all over", while in our introduction we state "We took as our point of departure **The Common Names of North American Butterflies** by J. Miller". In fact, whenever possible we used the "preferred" name from Miller, even if we wouldn't have chosen it had we been starting from scratch. I'm sure that it's impossible to find anyone who would agree that all 717 names selected are the best possible. I also dislike some of the names chosen. I was outvoted (votes of the committee are given in the material accompanying the list) on many names. But, I will use all the NABA names, even the ones I dislike, in books that I author. I am pleased to report that The Nature Conservancy has



From the Editor's Desk

Phil Schappert

Hi all,

Here's the color issue, as you can plainly see. This issue brings us up to date, the backlog has been cleared (mostly), and I'll be gearing up for the next issue after the 50th Anniversary meeting in July. I promised to have the News back on track by the meeting. To move forward from here, however, I need to hear from you: How am I doing? Do you like/hate the new format? What matters to you most/least? What do you want to see in upcoming issues? What don't you want to see in upcoming issues?

I need your submissions! Articles, questions, photographs, artwork, letters, news items – you name it, I'm looking for it! Take a moment to send it in, communication is the name of the game. I'm especially interested in artwork or your photographs. We'll need some covers for upcoming issues. If you are going to submit an item for the News please keep the Submission Guidelines in mind (see page 62). I plan to meet the deadlines I've set down in these guidelines so you should

now adopted the NABA list of English names and will use it in conjunction with its Natural Heritage Programs in all 50 states.

It is in the interest of lepidopterists and of the butterflies themselves, for us to standardize the English names used in books. There is a direct link between standardization of English names and support for research lepidopterists. I know from much personal experience that the Babel of names used in butterfly books is a very strong turn-off for members of the general public. Unable to decipher the different names used by each author of butterfly books, people

plan on meeting them too. The publication schedule for the remainder of this volume will be: 39(4), mid September and 39(5), mid December. The first issue of Volume 40 will be in production in February of 1998.

Two corrections to the previous issue: a typo in Jim Taylor's "Out of the Net" column had some people scrambling to find the "motherlode" – the correct address is [HTTP://WWW.CHEBUCTO.NS.CA/ENVIRONMENT/NHR/LEPIDOPTERA.HTML](http://www.chebucto.ns.ca/environment/nhr/lepidoptera.html) (note that you can find links to most of what Jim writes about from the Society's website, if in doubt check the homepage at [HTTP://WWW.FURMAN.EDU/~SNYDER/SNYDER/LEP](http://www.furman.edu/~snyder/snyder/lep)) and Karl Jordan Medal Rep. Ebbe Nielsen's correct Email address is EBBEN@ENTO.CSIRO.AU.

Don't forget the upcoming meeting at Yale, July 9th-13th, 1997 and remember to check the Society's website for updates on the meeting schedule. I hope to see many of you in New Haven in July...

throw up their hands in frustration and walk away from butterflies. In contrast, bird books have used the A.O.U. list of English names for many years. Millions of people are now birders and money available for ornithology research dwarfs that available for lepidopterology research. So, standardization of names leads to increased public interest, which leads to increased support for scientific research. Most importantly, without much greater public interest in butterflies we run the risk of losing many butterfly species due to indifference.

Sincerely,
Jeffrey Glassberg, President, NABA

Urbanus belli (Hesperiidae: Pyrginae): A New Record For the United States

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While searching the skipper collection at the American Museum of Natural History in New York City for distributional records from western Mexico (see Vargas et al., 1996), one male *Urbanus belli* (Hayward, 1935) collected in southern Texas was found mixed in with *Urbanus proteus proteus* (Linnaeus, [1758]). The specimen is labeled "Brownsville, Texas, 23 June 1968." There is no collector's name on the label, which is neatly handwritten. The specimen is in fresh condition, and is mounted ventral side up (see pp. 60, H). This is the first report of this species having been taken within the United States.

Urbanus belli can be distinguished immediately from *U. proteus*, *U. esmeraldus* (Butler, 1877), and *U. pronus* Evans, 1952 (the only three green bodied *Urbanus* reported from the U. S.) by the central dark band on the ventral hindwing (see pp. 60, F - J for comparison photos). This band is complete and

unbroken in *U. belli*, while it is composed of four to five separate spots in *U. proteus*, *U. esmeraldus*, and *U. pronus*. In North America, *U. belli* can only be confused with *U. viterboana* (Ehrmann, 1907), a species that has not been found in the U. S. but is known from Tamaulipas, Mexico. For illustrations of *U. belli* (adults and genitalia), and for a complete discussion on how to separate *U. belli* from *U. viterboana*, as well as from the other green bodied *Urbanus* species, see Steinhauser's (1981) revision of the group.

Urbanus belli is one of the most frequently encountered green bodied *Urbanus* species in most of Mexico (second only to *U. proteus*). Males of *U. belli* are often found perching on low vegetation in open areas near stream bottoms, and males and females are frequently found visiting *Eupatorium* (Compositae) flowers. In most parts of Mexico, several green bodied *Urbanus* species fly

sympatrically and synchronically. At Mismaloya, Jalisco, *U. proteus*, *U. viterboana*, *U. belli*, *U. esmeraldus*, *U. evona* Evans, 1952, *U. prodicus* Bell, 1956, and *U. esta* Evans, 1952 all fly together. Lepidopterists in southern Texas are urged to collect all unusual appearing green bodied *Urbanus* specimens encountered. While most specimens encountered in southern Texas are *U. proteus*, the patient collector will eventually be rewarded by one of the other species, and species not yet recorded from the United States (*U. pronta* Evans, 1952, *U. viterboana*, and *U. esta*) may eventually be found in southern Texas.

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A Melanic 5th Instar *Citheronia regalis*

Mark D. Schmidt

8780 Red Lion - Five Points Road, Springboro, Ohio 45066

When ova of the Regal Moth, *Citheronia regalis*, arrive for the first time for a moth breeder, he can hardly wait to behold the majestic splendor of a green larva, wickedly adorned by contrasting red horns. As one soon learns, brown is the dominant pigment for the rapidly growing caterpillar. With each molt, one anticipates beholding that green monster that is pictured in every book ever written about moths.

With the final larval molt and with almost absolute certainty, the breeder knows his anticipated vision is about to manifest. But there it is, a freshly shed fifth instar (see pp. 61, E), brown as can

be! One has to believe that he has miscounted the number of molts or wonder if there is yet one more molt to come. Then, in a few days, as the larva begins to bulge with food plant, the need to see green is finally satisfied.

Over the last twenty years, the pattern has repeated itself for this breeder. However, in August of 1993, one larva stood out as being just a little darker than its siblings after it molted into the fifth stage. It was the product of a reared female that had been tethered to attract a wild male. There had been nothing noteworthy in either parent.

As it grew, green did begin to finally show, but did not fully replace the immature brown. All of its siblings had become green. There was no doubt that this was an aberrant, melanic form.

Never, had I ever encountered one nor heard mention of one among my usual circle of lepidopterists. A photo was taken to bear witness. One familiar with larva of *C. regalis* can testify that it is a nearly mature fifth instar. The body is plump and the head and spines have taken on a smaller relative size. However, the brown which is still present is definitely unusual.

continued on page 58...

Art imitates Art imitating Life...

After 39(1) came out I received the following, posted on DPLEX-L (an internet mail-list on the Monarch butterfly):

Looking through the Spring 1997 issue of the **News of the Lepidopterists' Society 39(1)**, the artwork on page 14 looked familiar. It's a stylized drawing of an adult, late instar, and pupa of the monarch on the tip of a branch. (It was actually the tip of the branch that caught my eye). I consulted my copy of the August



Artwork by the Editor via CorelDraw

1976 issue of the **National Geographic 150(2)**, which I had just browsed the day before.

Voilà! The **News...** artwork is a mimic of the **National Geographic's!** (This was the NG issue where Dr. Urquhart announced the discovery of monarch overwintering colonies in Mexico). The **News...** version has the pupa repositioned down the branch about an inch. The adult's right hind-leg that was resting on the pupa was not repositioned.

Michael A. Quinn, Valley Nature Center PO Box 8125 (301 S. Border), Weslaco, TX 78596-8125, MQNATURE@TAMU.EDU

Wow! I was stunned! I thought I was being truly innovative when I took three separate pieces of clipart (available with any of the CorelDraw software packages) and assembled them, incorrectly as it turns out!, into a single figure, nicely illustrating the concept of "metamorphosis", to use for the **News** obituary column.

As it happened I only have three copies of **National Geographic** and one was the issue in question. Sure enough, there it was, a photo., admittedly staged "to portray the insects dramatic metamorphosis" (pp. 168), by Bianca Lavies. Needless to say I quickly "corrected" the figure!

See.

Art does imitate art imitating life!

Phil Schappert, philjs@yorku.ca

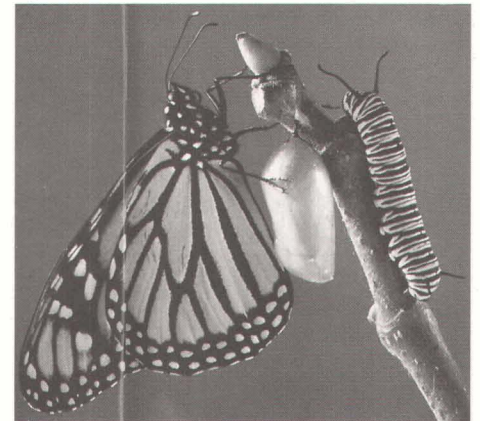


Photo. by Bianca Lavies

Announcement:

North American Conference on the Monarch Butterfly

A North American Conference on the Monarch Butterfly will be held in Morelia, Michoacan, Mexico from Monday, November 10 through Saturday, November 15, 1997.

The objectives of the conference will be: 1) to contribute to our understanding of the conservation issues surrounding the Monarch butterfly from a tri-national and a multi-disciplinary perspective; 2) to provide a forum for dialog among people from Canada, Mexico, the United States and other countries interested in the many facets of Monarch butterfly biology and conservation, including educators, government officials, representa-

tives of conservation groups and scientists; 3) to present initiatives addressing Monarch butterfly ecology, behavior and conservation; and 4) identify and propose actions which address both the conservation requirements of the Monarch butterfly and associated human needs.

The conference will include three days of oral and poster presentations in four thematic areas: 1) Biology, including ecology, reproduction, larval ecology, overwintering biology and migration; 2) Education, including both formal and informal outreach programs, commerce for educational purposes, and butterfly gardening; 3) Conservation and Protection,

including population dynamics and monitoring, pesticides and pollutants, socioeconomic problems associated with conservation, restoration projects, reserves and habitat management; and 4) Socioeconomic Issues, including patterns of land use, land ownership/development and environmental deterioration, public participation in consensus building processes, costs and benefits of ecotourism, and trade in Monarch products.

The first three days of the conference will be followed by 2 days of open public symposia consisting of roundtable discussions among specialists and representa-

continued on page 55...



The Lepidopterists' Bookshelf

Boyce A. Drummond, Editor

Index of Economically Important Lepidoptera

compiled by Bin-Cheng Zhang. 1994. CAB (Centre for Agriculture and Biosciences) International, North American Office, 8454 North Park Avenue, Tucson, AZ 85719. 599 pp.. Hardcover, 17.5 x 25 cm, ISBN 0-85198903-9, \$85.00. Also available on diskette (3.5" or 5.25"), MS-DOS only, with access software provided; ISBN 0-0000-254-02, \$119.00 (for book and diskette together).

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

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

Boyce Drummond, Book Review Editor, The Lepidopterists' Society, c/o Natural Perspectives, 1762 Upper Twin Rock Road, Florissant, Colorado 80816-9256

E-mail: 70413.566@COMPUSERVE.COM

This book is a reminder that Lepidoptera comprise not only adult forms of spectacular beauty and fascination, but larval ravagers of the land as well. It spotlights pests of agriculture, horticulture, forestry, and environmental management worldwide. In keeping with "economically important" in the title, beneficial species such as silk moths, scale and mealybug predators, and weed feeders are included also.

As succinctly traced in the introduction, the book is a result of mergings, branchings, and expansions of previous indexes and databases going back to 1913. (A systematist might be tempted to use an inverted tree to depict this history.) The introduction reflects the tendency for acronyms to proliferate around large databases: ANI for Arthropod Name Index, RAE for Review of Applied (now Agricultural) Entomology, CABI for Centre for Agriculture and Biosciences International, CAB ABSTRACTS for the Centre's bibliographic database, CAB-PESTCD for the Centre's pest abstracts on compact disk, and more. CABI maintains ANI in electronic form now as a source of preferred insect names for CAB ABSTRACTS, from which RAE and CABPESTCD are produced. This book is a printed version of

the Lepidoptera subset of ANI, enhanced with annotations.

The book has six sections. It gets to the point promptly; scarcely 4 pages among its 599 consist of prose, and these are in the opening two sections: *Introduction* (2 pages), and *How this Book is Arranged* (two pages). The remainder are workhorse sections: *List of Common Crop Names Used* (3 pages), *List of Families and Genera* (21 pages), *Main Index* (469 pages), and lastly, *Index of Specific and Intraspecific Epithets* (97 pages).

List of Common Crop Names Used provides a key so that short and familiar vernacular names can represent many binomial and trinomial host names in the main index. *List of Families and Genera* is an alphabetical guide to the supraspecific categories in the book with tallies of the number of species in each category covered in the main index. I counted no less than 81 families. The top three in number of species in the main index are, perhaps predictably, Noctuidae with 1034, Pyralidae with 748, and Tortricidae with 687. Butterfly families and their number of main index entries are Nymphalidae 152, Lycaenidae 95, Pieridae 61, Papilionidae 54, and Riodinidae (absent from the book) 0. It is hard

to imagine a more authoritative source for ranking the economic importance of lepidopteran families.

Main Index presents the core information by preferred names of the 6000 or so lepidopterans treated in the book. The arrangement is alphabetical by both preferred and non-preferred genus and species names; author names are included without parentheses. The non-preferred genus and species names, which also number about 6000, are cross-referenced by "see" to the preferred names. Cross-referencing is a useful and necessary feature because different names have been used for the same taxa during the history of ANI and RAE, and different names sometimes still prevail in different parts of the world. Annotations for most species consist of "Common Names", "Host Records", "Geographical Records", and "RAE References". RAE references are to volume number only, thus fostering compactness in the book without greatly hindering retrieval of abstracts and original publications.

Index of Specific and Intraspecific Epithets serves as the book's general index. It is arranged alphabetically by species names, each followed by the preferred generic name in bold italics and any non-

preferred ones in plain italics.

Manufactured at the University Press, Cambridge, the book's print format is comfortably readable, its paper of high quality, and its binding sturdy.

Shortcomings are forthrightly self-acknowledged. One is that choice of species for inclusion follows from prior inclusion in ANI and RAE. Actually, many included species are of scant economic importance. Some seem present only because important congeners are, or because of a commodity host plant. A few entries lack host records; very few host records mention the plant part affected. It is also stated that expediency prompted assembly of annotations almost entirely from RAE and CAB ABSTRACTS, and therefore that host lists and geographic ranges are not comprehensive. There may be overmodesty in this caveat because RAE covers more than 6200 serials, not to mention annual reports of research and other organizations (Smith 1988). The annotations for an arbitrary list of species I am familiar with seemed quite adequate. A few synonymies had not caught up with ANI in

time to be included in the book. Refreshingly, the book invites readers to suggest improvements to CABI for future editions.

In addition to a source of snapshot information on economic Lepidoptera worldwide, this book improves accessibility to RAE. RAE, an admirable legacy of empire, is the oldest entomological abstract journal, indeed, the *only* one for more than half a century (Gilbert & Hamilton 1990). It is useful anywhere — in developed countries because it abstracts many obscure publications from the less developed, often in languages other than English, and in developing countries because it abstracts expensive publications from the more developed. Beginning in 1913 as the Review of Applied Entomology in two series, agricultural (A) and medical (B), RAE was more formally divided in 1990 when the letters began to stand for Review of Agricultural Entomology. Countless professional and student literature reviews have been and still are generated from RAE. Deservedly, ANI and RAE are not only being continued but expanded, references by the thousand being added annually.

The book also aptly identifies its audience, namely people involved in international, national, and local plant quarantine and crop pest management. Lepidopterists Society members might browse in it for a different or broader spin on their favorite taxa. Anyone who opens it will find it easy to use and informative.

The electronic version of this book was not available to me for review. Just as the book is a printed version of the Lepidoptera subset of ANI records, the diskette version is the electronic subset of the same. The entire Arthropod Name Index, with over 110,000 records covering all orders of arthropods treated by RAE, is now available on CD-ROM as "ANI-DC" for \$720.

Literature Cited

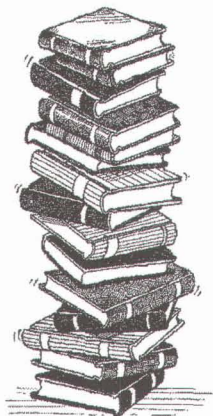
- Gilbert, P. & C. J. Hamilton. 1990 (2nd ed.). *Entomology: A Guide to Information Sources*. Mansell, New York. 259 pp.
 Smith S. (ed.). 1988. *CAB International Serial Checklist, 1988 ed.* CAB International. 511 pp.

William E. Miller

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Die Tagfalter Nordwestasiensis (Butterflies of North-West Asia)

by Vladimir Lukhtanov and Alexander Lukhtanov. 1994. Verlag Dr. Ulf Eitschberger, Humboldtstr. 13a, D-95168 Marktleuthen, Germany. 440 pp., 400 text figs., 56 color plates, 19 map plates, 32 genitalia plates. Hardcover, 21 x 30 cm, ISBN 3-923807-02-3, DM 250 (about \$160 US).



Vladimir A. Lukhtanov is one of Russia's leading lepidopterists, in addition to being Professor of Entomology at the University of St. Petersburg. Lukhtanov has taken more than 50 expeditions throughout Russia and Asia, often being in the field continuously from April or May through August, visiting different mountain ranges in the northwestern Asian area. His father, Alexander

Lukhtanov, is a highly talented artist. The results of this scientific and artistic collaboration are impressively displayed in this outstanding publication, which should serve to stimulate great interest in the fauna of the former Soviet Union, especially the western part of Asian Russia and Kazakhstan.

The book focuses on the area between the western boundary of

the Ural Mountains and the eastern boundary of the Yenisey River. Inside this great region are habitats ranging from desert to Arctic tundra and some of the world's most complex mountain systems, including the Ural, Altai, and many others. With the aid of excellent maps, the first section of the book describes these diverse habitats and geographic areas and provides an overview of their com-

ponent butterfly faunas. Next, the authors treat each of the 400 species in this region in considerable detail, including type locality, description of the adult males and females, ecology, detailed distribution, period of flight, and habitat type. This information is repeated in smaller type in English at the end of each German description, thus broadening the usefulness of this book to scientists and amateur lepidopterists throughout the world. Each species account is accompanied by its own distribution map showing localities where the species has

been collected. When appropriate for identification, drawings of male genitalia are included.

The book's 51 color plates, drawn by Alexander Lukhtanov with great professional skill, depict the dorsal and ventral surfaces of every species. An additional four color plates show typical habitat scenes and butterflies in natural situations, and the last color plate illustrates some especially interesting species with color photographs of spread specimens.

This book is available directly from the publisher and deserves

a place in the library of every lepidopterist with any potential interest in the fauna of the Palearctic, especially this northwest Asian region of the former Soviet Union. It is to be hoped that the Lukhtanovs will continue their work with book-length treatments of other parts of the former Soviet Union in the same excellent and meticulous detail.

**Thomas C. Emmel and
Andrei Sourakov**

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Atlas of Adirondack Caterpillars

by Timothy L. McCabe. 1991. *New York State Museum Bulletin, No. 470. The New York State Museum, Division of Research and Collections, Albany, New York. 114 pp., 157 B&W photographs, 101 line drawings. Softcover, 21.5 x 28 cm, ISBN 1-55557-185-9. \$19.95 (+ \$1.00 p&h).*

The Adirondacks, clothed in ancient verdure, rear their rugged granite shoulders against the sky, much as Atlas, the mythological titan, was forced to bear the heavens on his back. Years of stoic toil certainly are evident in this bound collection of plates depicting Adirondack caterpillars. Tim McCabe's choice of "Atlas" as the book's title seems uniquely appropriate.

The beautiful forms and markings of caterpillars and the changes that accompany each molt make them inherently fascinating to lepidopterists. Despite bright colors, they often blend quite effectively into the background of the particular plants they favor, which in turn may captivate by beauty of leaf and flower, or specialized ecological settings. Finding caterpillars in nature can be quite challenging, but the thrill of discovering a kind that is new anticipates the continuing adventure of following its metamorphosis to see what butterfly or moth hatches from the pupa. Such activities can provide a life-

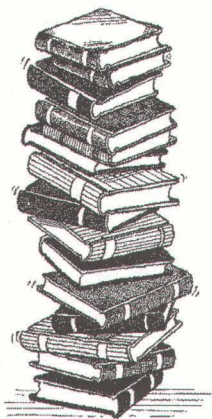
long source of wonder and delight.

The Adirondack Mountains of northern New York enshrine the last great ancient forest of the Northeast — regrettably, also one of the last on this continent. Their 2.4 million hectares of largely undisturbed wilderness provide breathtaking vistas of high peaks and lakes, and unsurpassed biotic richness. The privilege of being employed to search for caterpillars in this pristine place would be a dream come true for many lepidopterists.

Tim McCabe's *Atlas* reports on two years of doing this very thing. In 1977 and 1980 he explored five localities in Hamilton and Essex Counties (detailed on page 3), obtaining larvae, growing them to the adult stage, and recording their foodplants. His rearing methods and vouchering system are thoroughly explained on pages 1-3. A section titled "Host Records and Rearing Notes" (pages 4-19) offers information on 250 species in 5 butterfly and 10 moth families. However, only 11

species of butterflies are treated, the emphasis of this publication being moths. I wish there were more larval host records for butterflies, which are poorly known in this region of New York. Species entries include: brief larval descriptions; lists of plants accepted and rejected by larvae (and ovipositing females, where applicable); dates of larval collection, egg hatching (where appropriate), and pupation; voucher numbers; and cross-references to the plates. Species are arranged according to their numbers in the *Check List of the Lepidoptera of America North of Mexico* (Hodges et al., 1983, London, E. W. Classey Ltd. & The Wedge Entomological Research Foundation), with the same species numbers appearing on the illustrations to facilitate cross-referencing.

Larvae of 178 species are illustrated on the following plates (pages 20-95), 156 as final instar photographs by McCabe, the rest as line drawings of head capsules and mandibles by Linnea M. Johnson. Three-quarters of the



species included have never before been figured, and five percent represent completely new biologies, according to McCabe. A glossary appears on page 96, cross-referenced by *Check List* number to relevant illustrations. The first "Selected Bibliography" of world literature depicting caterpillars (pages 97-106) is another gem to be mined from this work. Indices to hostplants and Lepidoptera species complete the book.

The larval photographs were submitted to the publisher as color transparencies with an understanding that the plates would be in color. It was later decided that this was unfeasible, so the process of conversion from color originals to black-and-white prints began, but was repeatedly delayed. Ten years after submission, the book has finally appeared. People using this atlas should therefore keep in mind that the photographic im-

ages are twice removed from the original color pictures — once in the conversion to black and white, and again in printing. Probably all suffer from this. Many images are adequate, but it is obvious that they were not taken in black and white.

A major problem of this book is its glued binding. While writing the previous paragraph, I had a new copy lying on my desk, opened to the first set of plates, and heard the binding crack bit by bit. Turning to look, I found that all the pages in the front part of the book were loose! People who expect to use this reference regularly may want to have it hardbound immediately upon receipt. It is unfortunate that the New York State Museum was unable to produce a color version with a sewn binding.

The *Atlas of Adirondack Caterpillars* has an almost Victorian charm, rare in the

literature of today, that recalls Joseph Albert Lintner's classic "Entomological Contributions" (New York State Museum Annual Reports 23, 24, 26, and 30, published in 1873, 1872 [sic], 1874, and 1879 respectively) and Ida M. Eliot and Caroline Gray Soule's *Caterpillars and Their Moths* (1902, New York, The Century Co.). McCabe's book is a major step uphill in our climb toward a thorough understanding of Lepidoptera life histories, and evokes the romance of discovering something new in a place that is very old and very rare on a global scale. Perhaps in supporting the heavens, Atlas also helps us reach for the celestial Lamp of Learning.

Robert Dirig

Bailey Hortorium Herbarium, 462
Mann Library, Cornell Univ., Ithaca,
New York 14853.

Recently Published Books

Boyce A. Drummond, Editor

Larger Moths of the London Area

by Colin W. Plant. 1993. London Natural History Society, 3 Chatsworth Gardens, West Harrow, Middlesex HA2 0RS, UK. xxii + 292 pp., 523 distribution maps. Hardcover, 21.5 x 30.5 cm, ISBN 0-901009-04-0. £19.95 (about \$32 US).

This volume, a sequel of sorts to the author's *The Butterflies of the London Area* (1987), records 715 Macrolepidoptera for the London area, which is defined as the region within a 20 miles' radius of St. Paul's Cathedral. In a ten year period (1980-1991) roughly 84% of this area was carefully surveyed and these data are plotted on the distribution maps (older data are listed but are plotted only for the rarer species). Of the 715 species, 66 were not recorded during this recent ten-year sample period. The book also records foodplants and the years of the oldest and most recent records for each species. A transparent overlay is provided with maps showing the built-up areas, wood-

lands, and chalklands to aid the reader in understanding the moths' distributions. The intensity of the sampling, carried out in 856 2 x 2 km "tetrads," has generated data of great value to London naturalists, lepidopterists, and conservation organizations.

Lycaeniden-Bibliography 1993

edited by Udo Luy. 1995. 180 pp. Softcover, 14.5 x 20.5 cm, ISSN0947-4730, DM 25 (about \$39) plus DM 3 postage.

Lycaeniden-Bibliography 1994

edited by Udo Luy. 1996. 290 pp. Softcover, 14.5 x 20.5 cm, ISSN0947-4730, DM 35 (about \$54) plus DM 3 postage. Both published by Udo Luy, Muhl-gasse 75, D-96179 Rattelsdorf, Germany. Both volumes available for DM 50 (about \$78) plus DM 4 postage.

These two volumes are the first two issues of an annual series that compiles ar-

ticles published on Lycaenidae from over 800 journals worldwide. The references are cross-referenced by Journal, Authors, Genera, and Geographical area.

Karner Blue Butterfly: a Symbol of a Vanishing Landscape

edited by D. A. Andow, R. J. Baker, & C. P. Lane. 1994. University of Minnesota Agricultural Experiment Station Miscellaneous Publication 84-1994. viii + 222 pp., 1 color plate. Softcover, 21 x 27.5 cm. Available from David A. Andow, 219 Hodson Hall, Dept. of Entomology, University of Minnesota, St. Paul, MN 55108. \$17.00 US, postpaid.

This book contains the proceedings of the 1992 Karner Blue Butterfly Symposium at Zaleski, Ohio, where people from throughout the range of the butterfly met and spoke of their experiences and concerns. The color frontispiece by Bob Dirig depicts, in the style of 18th century illustrated works of natural history, the

complete life cycle of *Lycaeides melissa samuelis* on its foodplant, *Lupinus perennis*.

A Field Guide to The Smaller Moths of South-east Asia

by Gaden S. Robinson, Kevin R. Tuck, & Michael Shaffer (with illustrations by Katrina Cook and color plates by Frank Greenaway). 1994. *The Malaysian Nature Society & The Natural History Museum, London*. 309 pages, 32 color plates, 51 halftone figures. Softcover, 18 x 25.5 cm, ISBN 983-9681-13-3. Available from Malaysian Nature Society, P.O. Box 10750, Kuala Lumpur for RM 40 (about \$30 US), postpaid.

This is the first general work devoted to the Microlepidoptera of this region, one of the biologically richest areas on earth. More than 6500 Microlepidoptera species are already known from here, twice the number known from western Europe. From this vast and still incompletely known fauna the authors have drawn on their extensive field experience to describe and illustrate about 650 species such that the book gives a broad overview of the diversity, structure, and biology of these small moths. Used as an identification manual, this book should enable the reader to identify a small moth from South-East Asia to family, often to genus, and to species about 20% of the time.

The Butterflies of The West Indies And South Florida

by David Spencer Smith, Lee D. Miller, & Jacqueline Y. Miller. 1994. *Oxford University Press, 200 Madison Avenue, New York, NY 10016-3987*. x + 264 pp., color frontispiece plus 32 color plates. Hardcover, jacket, 22.5 x 28 cm, ISBN 0-19-857199-2. \$125.00.

This comprehensive guide draws together the remarkable array of butterflies that marks the West Indies and the southern tip of Florida as a biogeographical area. The authors describe all 350 species of butterflies, including skippers,

known from the region. The book begins with an historical overview that surveys possible faunal origins, the size of island faunas, and conservation problems. The bulk of the book consists of individual descriptions of all taxa from family to subspecies, including each taxon's range, its West Indian distribution (including numerous new island records), a paragraph highlighting the key features needed for identification, observations on habitat choice and behavior in the field, and life history information. A taxonomic checklist, a list of families of plant genera used as larval foodplants or as adult nectar sources, an extensive bibliography, and an index are also included. The color plates, featuring beautiful paintings by renowned artist Richard Lewington, illustrate almost all of the species and a wide range of subspecies.

Swallowtail Butterflies of The Americas: a Study in Biological Dynamics, Ecological Diversity, Biosystematics, and Conservation

by Hamilton Tyler, Keith S. Brown Jr., & Kent Wilson. 1994. *Scientific Publishers, P.O. Box 15718, Gainesville, FL 32604*. 377 pp., 100 color plates, numerous text figures, drawings, tables, and information boxes. Hardcover, jacket, 22 x 28.5 cm, ISBN 0-945417-90-X. [A softcover edition is available to students and third-world residents only.] \$49.50.

This incredible book is a wide-ranging treatise on the biology, ecology, systematics, conservation, and cultural significance of the butterfly family Papilionidae, a group of large and colorful butterflies that occur all over the globe. It is crammed from cover to cover with rich information in almost every form imaginable, from Gary Larson cartoons, intricate diagrams, and data-rich tables, to beautiful color photographs of butterflies in the wild. Pre-publication comments from two reviewers capture the unorthodox flavor of this book. Paul Feeney (Cornell University, Ithaca, New York): "The scope of this book is breath-

taking. It is as much a work of art as of science and will be treasured for inspiration and reference by amateur naturalists and professional biologists alike." Gerardo Lamas (Universidad Mayor de San Marcos, Lima, Peru): "A highly controversial but engrossing book, chock-full with valuable information: you can either enjoy or be enraged by its contents, but it will never leave you bored or indifferent."

The Coevolutionary Process

by John N. Thompson. 1994. *The University of Chicago Press, Chicago, IL 60637*. xi + 376 pp. Softcover, 15 x 23 cm, ISBN 0-226-79760-0. \$24.95.

Recognizing that traditional ecological approaches to species evolution have frequently dealt with small numbers of species, small geographical areas, and relatively short time spans, Thompson advances in this book a new conceptual approach to the evolution of species interactions — the geographic mosaic theory of coevolution. Thompson demonstrates how an integrated study of life histories, genetics, and the geographic structure of populations yields a surprisingly broad understanding of coevolution. Through the geographical mosaic theory, Thompson connects the study of specialization and coevolution in local communities to the study of broader patterns derived from comparisons of the phylogenies of interacting species. The book is well written and relies heavily on lepidopteran examples.

Chemical Ecology: The Chemistry of Biotic Interaction

edited by Thomas Eisner & Jerrold Meinwald. 1995. *The National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, DC 20418*. 214 pp. Hardcover, 16 x 23.5 cm, ISBN 0-309-05281-5, \$49.95.

Chemical signals among organisms form a vast communicative interplay and chemical ecology is the discipline that

continued on page 55...

Membership Update...

Julian Donahue

This update includes all changes received by 12 May 1997.

Corrections and Minor Revisions to the '96 Membership Directory

(make appropriate changes in Alphabetical List of Members):

Belmont, Robert A.: correct ZIP Code is 34106.

Bird, Stephen: correct postal code is 83000, Phuket, Thailand.

New & Reinstated Members

Members who have joined/renewed/ been found/or rescinded their request to be omitted since publication of the 1996 membership directory (NOT included in the 1996 Membership Directory; all in U.S.A. unless noted otherwise)

Barbour, Spider: 5 Fishcreek Road, Saugerties, NY 12477.

Blum, William: 2119 Arthur Avenue, Belmont, CA 94002.

Borcyczkowski, Howard: 4045 South Pine Avenue, Milwaukee, WI 53207.

Bray, J. Bradford: 8935 Marshfield Lane, Orland Hills, IL 60477-4658.

Bray, Richard O.: 5613 McLean Drive, Bethesda, MD 20814-1021.

Brigham, John, Jr.: 6425 Yale Street, Windsor, CA 95492-8749.

Cowan, Gerard: 10602 Tami Trail, Hudson, FL 34669.

Dale, Allen: 211 Melrose Avenue, Pocatello, ID 83204.

Davidson, Kathryn: RD #8, Box 359, York, PA 17403.

Davis, Ronald E.: 5258 Glenwood Avenue, Jacksonville, FL 32205-7251.

Enz, John: P.O. Box 18362, Louisville, KY 40261.

Fork, Susanne K.: 30 Summit Road, Woodside, CA 94062-2640.

Freiman, Amy: P.O. Box 257, Smithtown, NY 11787.

Frounfelter, D.J. (D.D.S.): 715 Jefferson Street, Rochester, IN 46975.

Gibson, Malcolm R.: 8102 Pella Drive, Houston, TX 77036-7338.

Goodpasture, Carll (Ph.D.): 47 Ing. Hoelsv., 1346 Gjettum, Norway.

Guillen, Bayardo D.: P.O. Box 282809, San Francisco, CA 94128-2809.

Gunter, Peggy W.: 17932 Heritage Estates Drive, Baton Rouge, LA 70810-6566.

Harrison, William B.: P.O. Box 1063, West Falmouth, MA 02574.

Heinze, Dar: 811 Harvest Moon Lane, Houston, TX 77077.

Iacovelli, Debi: 4216 SE 19th Place, Cape Coral, FL 33904.

Jones, Monty: 1819-D River Crossing Circle, Austin, TX 78741.

Kavalovski, Charles: 30 Woods End Road, Dedham, MA 02026.

Kleiner, Klaus-Juergen: Lichtenfelder Str. 37, D-55743 Idar-Oberstein, Germany.

Kriegel, Robert D.: 6031 Sleight Road, Bath, MI 48808.

Krings, Alexander: 2402 Clark Avenue #7, Raleigh, NC 27607.

Kumon, Takashi: Shuwa-Yoyogi-Residence #215, Yoyogi 2-37-15, Shibuya-ku, Tokyo 151, Japan.

Leski, Michael: 391 Broadway #211, Somerville, MA 02145.

Long, Douglas: 603 Ontario Street, P.O. Box 233, Holbrook, NE 68948-0233.

Maurer, Thomas C.: 328 Sacajawea Peak Drive, Bozeman, MT 59718.

Mccarty, Bruce: 1536 Lyons Bend Road, Knoxville, TN 37919.

Moore, Tony: 162 Uxbridge Road, Sutton, MA 01590.

Moreau, Sheri S.: P.O. Box 7253, Carmel, CA 93921.

Murphy, Preston: Lectret Precision, 26 Ayer Rajah Cr 04-01, Singapore.

Natale, John: 1639 North River Road, Coventry, CT 06238.

O'donnell, Jane E. (Ph.D.): Manager of Scientific Collections, Dept. of Ecology and Evolutionary Biology, U-43, University of Connecticut, Storrs, CT 06269-3043.

Orzel, John: 609 Middlefield Road, Salinas, CA 93906.

Parziale, Victor: 105 Timber Jump Lane, Lincoln University, PA 19352.

Petterson, Jeanne H.: 5520 Del Park Avenue, Virginia Beach, VA 23455.

Pogue, Michael G. (Ph.D.): Systematic Entomology Laboratory, c/o Department of Entomology, MRC-168, Smithsonian Institution, Washington, DC 20560.

Psomas, Philip: 902 21st Street N.W., Albuquerque, NM 87104.

Reed, Robert D.: 1945 Haste Street, Berkeley, CA 94704.

Rosche, Debra: 31 Harrison Street, North Kingstown, RI 02852-1111.

Saranko, Joseph W.: 9630 Edison Road, Lithia, FL 33547.

Saranko, Suzanne C.: 9630 Edison Road, Lithia, FL 33547.

Sharp, Millard H.: 2304 Ivy Gail Drive East, Jacksonville, FL 32225.

Simmons, Ron: 3311 Big Woods Road, Chapel Hill, NC 27514.

Smaranda, Stefan: [address omitted by request]

Smith, Ruth: 847 Calle Circulo, Camarillo, CA 93010.

St. John, Dennis (Ph.D.): P.O. Box 556, Okanagan Falls, British Columbia V0H 1R0, Canada

Stefanescu, Constanti (Dr.): Can Liro, 084588 Sant Pere de Vilamajor, (Barcelona), Spain.

Swope, Jason: 167 Holderness Drive, Longwood, FL 32779.

continued on next page...

Members...*continued from page 51*

Upson, Sandy: P.O. Box 1453, Bisbee, AZ 85603.

Usman: Jl. S. Tappang No. 6, Rantepao, Tana Toraja, Sulawesi 91831, Indonesia.

Voss, Susan: 3505 North Highway 19-A, Mt. Dora, FL 32757.

Weber, Byron: 2917 South 7th West, Missoula, MT 59804.

Willis, Christine: 1208 Heatherton Drive, Naperville, IL 60563.

Zavortink, Thomas J.: 1386 31st Avenue, San Francisco, CA 94122-1420.

Zisoff, Mary Jane: Trilogy of Art, Box 143, Parry Sound, Ontario P2A 2X3, Canada.

Address Changes

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

Balint, Zsolt: Gyoki ut 122, H-1122 Budapest XII, Hungary.

Brower, Andrew Van Zandt: Dept. of Entomology MRC-127, National Museum of

Natural History, Smithsonian Institution Washington, DC 20560.

Benton, Michael R.: 6102 NW 111th Place, Alachua, FL 32615-7421.

Chilson, Robert: 5198 Arlington Avenue, #222, Riverside, CA 92504.

Cotton, Adam Miles: 247/5, Moo Bahn Rim Vieng, Mahidol Road, Tambon Chang Klan, Muang District, Chiang Mai 50100, Thailand.

De Swarte, David H.: 5305 West Rose Street, Brown Deer, WI 53223-3037.

Gregory, Gardiner Emerson (Dr.): HCR 79, Box 259, Castine, ME 04421.

Guyomar, Jak: 789 Grassdale Road, Gumdale, Queensland 4154, Australia.

Henne, Donald C.: Department of Entomology, Room 214 Animal Science/

Entomology Building, University of Manitoba, Winnipeg, Manitoba R3T 2N2, Canada.

Karbalaye, Ahmad: P.O. Box 11495-175, Tehran, Iran.

Kellogg, Steven: 58 North 3rd Street, Allegany, NY 14706.

Konno, Yasuhiko: Kamihurumichi 45-1, Yotsuya, Oomagari, Akita 014-01, Japan.

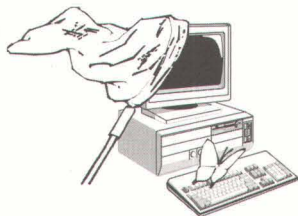
Lucas, Vincent P.: 3431 Tree Lane, North Olmsted, OH 44070.

Mate, Jason E.: c/Henares, 10, Velilla de San Antonio, 28891 Madrid, Spain.

Robinette, Randy: 73022 Midland Trail Road, Ashland, KY 41102-9294.

Schweitzer, Dale E.: 1761 Main Street, Port Norris, NJ 08349.

Stell, Gary O.: 77 Tinton Avenue, Suite 2, Eatontown, NJ 07724.



Out of the Net...

by Jim Taylor

Some of you careful readers may wonder why in the last issue there was a mention of a previous column — one which you, unfortunately, did not see. Well, from where I was standing there was a previous column! At the Houston meeting in 1996 the Minnos were looking for someone to cull the Internet for sites of interest and do a quarterly write-up. I volunteered, picked some material off the Web, wrote it up, and sent it in.

As you know, shortly after that the Minnos' PC developed anthrax and had to be put down, and things got out of whack for a bit. Meanwhile, the new Editor, Phil Schappert, asked me to continue the column series into this year. I agreed, put what to me was the second one together, and sent it to him. This is the one you saw in the first 1997 issue. The earlier column never saw daylight. Had we

not had these problems, however, you would have read the following:

Our Editors recently were looking for someone to summarize Internet activity, and they looked so overworked I volunteered. Until now, my telecommunications experience has been limited to e-mail knock-knock jokes with a grandchild in Oklahoma (yes, it takes five days to do one joke), so bear with me if this attempt seems amateurish.

I searched on "lepidoptera" or "moth" or "butterfly" and received, much to my surprise, over 600 hits. Just the summaries ran 80 pages — there are even multiple references to "moth" in the Bible. A good many were of little use for my purpose, but quite a few proved to be of interest. I'll begin with a couple of collections "open to the public" and finish with two reference works and some informa-

tion on a specific moth.

Dominick Moth Collection

[HTTP://ZEBRA.SC.EDU/MOTH.HTML](http://zebra.sc.edu/moth.html)

The Dominick Moth Collection contains over 26,000 individual specimens of more than 1,100 species. Everything in the collection (mostly moths) was taken at the Wedge Plantation (on the South Santee River near McClellanville, South Carolina) from the ten year period 1965-1975. The collection is now at the Columbia Campus of the University of South Carolina and includes information on catch times (time of day, month and year) and method of collection (reared, light trap, bait, etc.). Host plant information is preserved with some species, as are life stage forms (freeze dried larvae and pupae). The collection is fully catalogued

continued on next page...

The Net...continued from page 52

and is available for research use - but not yet for loan of any specimens.

Available with a mouse click at this web site are the following:

Brief Background on Collection and R.B. Dominick (3,204 bytes); Dominick's Forward to The Moths of America North of Mexico (15,864 bytes) Lepidoptera Families Represented in Collection (1,731 bytes); Index to species, Alphabetical Listing (58,269 bytes); Index to species, Numerical Listing (60,252 bytes); References Included in Wallace Checklist (1,710 bytes); Links to Other Lepidoptera / Insect Sites; Children's Literature; Butterflies, Birds and Bugs; The Pherolist — list of moth sex-pheromones.

National Museum of Natural History, Smithsonian Institution

HTTP://NMNHWWW.SI.EDU/CRIS/COLLDB.HTML

Here are the data bases of the Smithsonian collections - mammals, mollusks, etc. Among the items listed is "Holdings of "Lepidoptera" (Butterfly) Species at the USNM". Papilionidae and Ithomiinae (Nymphalidae) are indexed; the plan is to list everything eventually. (Also available is more than I personally want to know about flies...)

The Butterfly Zone

HTTP://WWW.BUTTERFLIES.COM

The Butterfly Guide offers information about which butterflies you should find in your neighborhood and which plants will attract them to your home. The guide divides the United States into six regions and describes which flowering plants will attract specific butterflies in each region. Two gardening guides are available on line. Seeds (and other items) are offered for sale.

Moths of the United States

HTTP://WWW.NPSC.NBS.GOV/RESOURCE/DISTR/LEPID/MOTHS/MOTHSUSA.HTM

So far, the families Saturniidae and Sphingidae are in this work. Maps are available for the United States and each individual state (to counties). A county is shaded if there is a specimen in an institution or private collection or a reliable literature record such as a citation in an

original description, a monograph, or a state compilation. A disclaimer cautions that records may represent either resident or stray status, and although most records are recent, some may be quite old. Hence, the shading of a county does not necessarily mean current residence of the species.

The Gypsy Moth in North America

HTTP://GYPSY.FSL.WVNET.EDU/GMOTH/

There are some great pictures here of the larvae and adults of *Lymantria dispar*, the gypsy moth. The moth was introduced into the U.S. just after the civil war near Boston and has become wide spread. The gypsy moth is known to feed on the foliage of hundreds of species of plants in North America, but its most common hosts are oaks and aspen. Gypsy moth hosts are located through most of the coterminous US, but the highest concentrations of host trees are in the southern Appalachians, the Ozarks, and in the northern Lake States.

This web site contains a large write-up on the moth and its depredations. A good deal of "clickable" information as well as other sources are listed:

Gypsy Moth News, a semi-annual newsletter about the gypsy moth; Virginia Tech University; Michigan State University; MOTH@GYPSY, a gypsy moth listserv (email discussion group); USDA Forest Service, Forestry Sciences Laboratory, Morgantown, WV; Gypsy Moth Life Systems Model, a systems model of gypsy moth ecology; Methods for estimating Gypsy Moth population boundaries at the expanding front; Virtual tour of gypsy moth effects (heavy tree mortality) in the WVU Forest; Gypsy Moth Atlas; Gypsy Moth mating success affects the survival of isolated infestations; Gypsy Moth Digest; Swath Kit (aerial spraying technology); Gypsy Moth defoliation in Michigan; Slow the Spread Pilot Program in Michigan; USDA For. Serv. Gen. Tech. Rep. NE-211, "Suitability of North American Tree Species to the Gypsy Moth: A Summary of Field and Laboratory Tests"; USDA "Record of Decision" on Gypsy Moth Environmental Impact Statement

And more...

Announcement**XIth European Congress of Lepidopterology**

**B-2390 Malle Belgium
22-26 March 1998**

The 11th European Congress of Lepidopterology will be organized by the Societas Europaea Lepidopterologica (SEL) in the "Provincial Vormingscentrum Malle", about 25 km NE of Antwerpen, Belgium, from Sunday 22 to Thursday 26 March 1998.

Plenary Sessions:

Conservation Biology
Ecology and Field Biology
Field Reports and Faunistics
Systematics and Phylogeny
Zoogeography and Biodiversity

Parallel Sessions and Workshops:

Computer Workshop
Microlepidoptera
Noctuidae
Pest Control
Tropical Lepidoptera

Registration Forms and Details:

Dr. Ugo Dall'Asta
Royal Museum for Central Africa
B-3080 Tervuren (Belgium)
Tel. +32 2 769 5373
Fax +32 2 769 5695
E-mail: SELCON98@AFRICAMUSEUM.BE

The Marketplace

IMPORTANT NOTICE TO ADVERTISERS: If the number following your advertisement is "386" then you must renew your advertisement before the next issue! Remember that all revisions are required in writing.

Books Wanted

Hampson, G.F. (1898-1926), Catalogue of the Lepidoptera Phalaenae in the British Museum, Volumes 4, 5, 8, 11, 12, 13 and supplementary volumes 1 and 2, plus any of the colour plates. Watson, A. (1973) An illustrated catalogue of the Neotropic Arctiinae Types in the United States National Museum Part 2, Smithsonian Contributions to Zoology 128. Amsel, H.G. (1956 and 19057), Microlepidoptera Venezolana Parts 1 and 2, Boletín de Entomología Venezolana 10(1/2): 1-336 (1954) and 10:1-110 (1957). Matthew Barnes, Upper Cow Leys Farm, Piddington, Bicester, Oxon OX6 OQE, ENGLAND, telephone +44-1869-252-483, FAX +44-1869-248-180. 386

Correspondence Wanted: correspondence with anyone living in Japan and having access to purchase of Japanese books on Lepidoptera. Richard Holland,

1625 Roma NE, Albuquerque, NM 87106, USA. DMEREWETHR@AOL.COM 386

Books Wanted: Seitz Vol. 6 and 7, Biologia Centrali-America, Rhopalocera (3 Volumes). Contact Richard Holland, 1625 Roma NE, Albuquerque, NM 87106, USA. DMEREWETHR@AOL.COM 386

Books For Sale

Atlas of New Jersey Butterflies by David C. Iftner and David M. Wright. Twenty eight page Atlas consists of a checklist and plotted county maps for all 151 species of skippers and butterflies that have been recorded for New Jersey. Copies can be ordered for \$5 (postage paid) from Dr. David C. Iftner, 8 Alpine Trail, Sparta NJ 07871. 393

The Moths of Borneo, by J.D. Holloway, Part 9, Oenochrominae, Desmobarthrinae, Geometrinae US\$26, Part 10 Sterrhinae, Larentiinae due mid-97.

Back numbers still available of all numbers issued so far, (but some in short supply.) Full details from H.S. Barlow, PO Box 10139, Postcode 50704 Kuala Lumpur Malaysia, fax +603 4222267, e-mail: HSBAR@PC.JARING, my Website: [HTTP://WWW.RFITECH.COM/BARLOW/](http://www.rfitech.com/barlow/) 386

For Sale: Seitz, Vol. 5 (English edition, complete, needs rebinding) \$3000.; Biologia Centrali-America, Heterocera (4 Vols.), nicely bound, complete, good condition, \$5000. Richard Holland, 1625 Roma NE, Albuquerque, NM 87106, USA. DMEREWETHR@AOL.COM 386

E. W. Classey Ltd provides a service for over 10,000 entomologists worldwide. Our catalogs contain hundreds of Lepidoptera books, including the very latest titles from all around the world. Why wait until you hear of new titles through the grapevine? E-mail, fax, or write to be placed on the mailing list. We export

The aim of the Marketplace in the **News of the Lepidopterists' Society** is to be consistent with the goals of the Society: "to promote the science of lepidopterology...to facilitate the exchange of specimens and ideas by both the professional worker and the amateur in the field,..." Therefore, the Editor will print notices which are deemed to meet the above criteria, *without quoting prices*, except for those of publications or lists.

No mention may be made in any notice in the **News** of any species on any federal threatened or endangered species list. For species listed under CITES, advertisers must provide a copy of the export permit from the country of origin to buyers. **Buyers must beware and be aware.** Advertisements for credit, debit, or charge cards or similar financial instruments or accounts, insurance policies and those for travel or travel arrangements cannot be accepted be-

cause they jeopardize our nonprofit status.

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

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

The Lepidopterists' Society and the Editor take no responsibility whatsoever for the integrity and legality of any advertiser or advertisement. Disputes arising from such notices must be re-

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

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

books daily to the United States, and we accept checks and all major credit cards. We regularly visit the US as buying agents for several large booksellers, to buy natural history books from individuals and institutions. Let us know if you have a collection or library for sale. Contact Peter Classey, E. W. Classey Ltd, PO Box 93, Faringdon Oxon SN7 7JP, UK, +44-1367-244700. 386

For sale: Volumes 1 through 4 (1887-1896) *Lépidoptères de Loja et Environs (Equateur) Descriptions D'Espèces Nouvelles* by P. Dognin. Uncut, excellent condition, including uncolored plates. Coloured Illustrations of the Butterflies of Japan by Mitsuo Yokoyama (revised by T. Esaki) (1955). Text in Japanese, Latin names. Good condition. Library stamp inside. The Butterflies of Ceylon by W. Ormiston (1924). Worn spine, some water spotting. Will take best offer for all. Send offers to John V. Calhoun, 977 Wicks Drive, Palm Harbor, FL 34684, telephone (813)785-0715 home. 386

Livestock

Saturniidae, Sphingidae and Papilionidae of North Eastern U.S.A. and Canada. Available in fall of 1997 in winter diapause. Also: Reemay larvae sleeves, spun-bonded polyester caterpillar bags, sewn to your specifications or in standard sizes. In Canada send SASE for price list, in U.S. enclose 50c and SAE for price list. Bill Oehlke, Box 476, Montague, P.E.I. Canada, C0A 1R0, (902) 838-3455/0861 (H/W), Fax (902) 838-0861, CLAYCOE@CYCOR.CA 393

Ova of *Hyalophora cecropia* for sale, cocoons of same will be available in fall. Possibly cocoons of *Antheraea polyphemus* also in fall. Send SASE for prices or call, Michael Jablonski, 5683 Township Rd. 27, Jenera, Ohio 45841-8933, (419) 326-4641. 393

For Sale: Specimens of Russian Lepidoptera, including Sphingidae (*Marumba daschkewitchi*), Arctiidae (*Grammia quenseli*, *Spilarctia subcarnea*, *Pragmatobia fuliginosa*, *Parasemia plantaginis*), Papilionidae (*Papilio machaon kamschadalus*, *Parnassius phoebus kamschatica*), and various species of Pieridae, Lycaenidae, Nymphalidae, and Satyr-

idae; also Carabidae (*Carabus macleander*, *Carabus arcensis*). Contact: Dean Morewood, 4705 Hillwood Road, Victoria, B.C. V8Y 2N3 Canada. 393

Cocoons of 1st generation *Actias luna*, *Antheraea polyphemus*, *Callosamia promethea*, *C. angulifera*, *Samia cynthia* and *S. ricini*. Additional species may also be available. Please send S.A.S.E. for price list, or call 908-439-2462 to reserve. Will buy or exchange in small quantities. Some wintered cocoons still available. Don Oehlke, c/o Post Office, Pottersville, NJ 07979. 391

For Sale or Trade: Cocoons of *Callosamia promethea* and *Hyalophora cecropia*. Will trade for livestock of Sphingidae, Papilionidae, and Saturniidae of western U.S. and Canada as well as tropical species. Please send self-addressed, stamped envelope to: Edward J. Komperda III/58 Birch Lane/Massapequa Park, New York 11762, EANDC1092@AOL.COM 386

Cocoons and pupae of the following for sale: *Papilio glaucus*, *Callosamia promethea*, *Philosamia cynthia*. Contact William Houtz, RD#4, Box 477, Pine Grove PA 17963. 386

Cocoons of *Hyalophora cecropia* and *Antheraea polyphemus* for sale. Also, papered specimens of *Hyalophora cecropia*, *Antheraea polyphemus*, and *Actias luna* for sale. Send a self-addressed stamped envelope to Ronald Aaron Royer, RD 4 Box 2295, Lebanon, PA 17042-9433, or telephone (717) 867-1021. 386

Cocoons of *Hyalophora cecropia* and *Hyalophora columbia* for sale. Send self-addressed stamped envelope to Bruce R. Effenheim, PO Box 425, Grafton WI 53024. 386

Cocoons of *Actias luna*, *Automeris io*, *Callosamia promethea*, and possibly *Antheraea harti*, and pupae of *Papilio glaucus* and *Papilio troilus*. Send self-addressed, stamped envelope for prices to Larry J. Kopp, RD#1 Box 30, Klingers-town PA 17941-9718. 386

Catocala ova: *Catocala briseis*, *C. mira*, *C. blandula*, *C. ultronia*, *C. cerogama*, *C. minuta*, *C. innubens*, *C. amica*, *C. ilia*, *C. meskei*, *C. relictata*, *C. amatrix*, *C. cara*, *C.*

grynea, *C. palaeogama*, *C. obscura*, *C. residua*, *C. judith*, *C. illecta*, *C. whitneyi*, *C. amestris*. Please send a self-addressed, stamped envelope to Jim Mouw, 245 Sarah Avenue, Iowa Falls, IA 50126. 386

Semi-wild cocoons of *Antheraea polyphemus* and *Hyalophora cecropia* for sale or trade. Bill Kenney, Box 671, RR#1, Dixmont ME 04932, telephone (207)257-2047. 386

Wanted: Overwintering pupae and ova, especially *Telea polyphemus* cocoons. Please offer price and quantity to Robert Goodden, Worldwide Butterflies, Sherborne, Dorset, DT9 4QN, England, phone 0044-1935-74608 or fax 29937. 386

Live Polyommatae and Lycaeninae wanted: See help wanted notice below. Please tell me of any livestock sources of any North American Polyommatae and Lycaeninae. Will trade various North American silkmths: *Polyphemus*, *Cecropia*, *Promethea*, *Luna*, *Cynthia*, *Io*, and also other Macroheterocera and Rhopalocera, Oecanthus eggs, and mantid oothecae. Contact Fritz Wilhelm, 1042 SW Belmont #140, Albany OR 97321, USA, telephone (541)928-0424. 386

I breed, buy, and sell livestock worldwide: Butterflies, moths (Sphingidae and Saturniidae). List available upon request. Send \$3 for a catalog or \$2 for a livestock list to cover costs to Nigel South, Butterfly Connections, "Caribana," Silver Street, Misterton, Nr Crewkerne, Somerset TA18 8NH England, phone 01460 73586, FAX 01460 78444. 386

For sale: Live pupae of *Vanessa virginiensis*, *V. atalanta*, *V. annabella*, *V. cardui*, *Artogeia napi venosa*, *Sabulodes aegrotata cottlei*. Mounted and papered adults of California butterflies and moths. Many very rare. Send self-addressed, stamped envelope for list information to Frank Sala, 3493 Greenfield Place, Carmel, CA 93923. 386

Will buy or trade for ova or pupae of the following North American species: *Epantheria scribonia* (Giant Leopard Moth), *Ascalapha odorata* (Black Witch), *Arctia caja americana* (Great Tiger Moth). Contact Steve Greenfield, 1810 Marbury Lane, Albany GA 31707. 386

Specimens

For sale: Large selection of Iranian butterflies, perfect quality, with data. All *Louristana* sp., *Hybushirica*, *A. apollinaria*, *Colias sagartia*, *C. cholorocoma*, *C. aurorina*, *C. thisoa* ssp. *shahkuhensis*, and more. Many species from other families at fair prices, local or rare species are allowed for exchange. Also, local beetles and dragonflies, books. Write for extensive price list to A. Karbalaye, P.O. Box, 11495-175, Tehran, Iran. ³⁹³

Offered: Papilionidae, *Charaxes Euphaedra*, *Cymothoe* etc. from the Republic of Central Africa and Burundi. Wanted: *Charaxes* from East Africa and South African Republic, as well as *Charaxes* and *Polyura* from the Philippines and Indonesia (exchange or purchase). Giancarlo Veronese, Viale Venezia n. 138, I-33100 Udine (Italy). Tel. 0432-232754. ³⁹¹

For Sale: specimens of *Idea tambusisiana* and *Papilio jourdani* from Sulawesi. Albert Dalmau, Mariano Estrada, 14, 08328 Alella (Barcelona), Spain. Tel. 555 46 52. ³⁹³

Collection for sale: A large number of butterflies (papered/ pinned) mostly from Peru and Brazil. Many genera are represented, including *Caligo*, *Papilio*, *Prepona* and *Morpho*. Approximately 2,500 specimens. For additional information, contact Michael Taylor, 1138 Tulane Drive, Mountain View CA 94040, telephone (415)962-9787. ³⁸⁶

Collection for sale: A large collection of papered specimens from Florida, Ohio, Pennsylvania, Virginia, Georgia and Kentucky. To be sold as is and only in one lot. Approximately 5,000 specimens. For additional information, contact Leroy C. Koehn, 207 Quail Trail, Greenwood, MS 38930-7315, telephone (601)455-5498. ³⁸⁶

For Sale: 19-drawer butterfly collection complete with 24 assembled BioQuip CAS drawers and Cornell pinning trays (4 rows per drawer). Includes 7 drawers of birdwings. Contact Ronald M. Young, Absaroka Natural History Trust, 2236 Greever Street, Cody, WY 82414 (307) 527-7326. ³⁸⁶

Collection for sale: Moderate-sized collection of Lepidoptera, primarily tropical, with a small number of North American insects other than Lepidoptera, from the estate of George F. Caldwell, deceased. Contact the Executor, Michael F. O'Neill, Mellon Private Asset Management, 1735 Market Street, PO Box 7899, Philadelphia PA 19101-7899, telephone (215)553-3080. ³⁹³

Selling Lepidoptera from Russia (USSR) at minimal prices. Large stocks, excellent quality, super rarities (e.g. *Parnassius autocrator*, *Colias*, *Oeneis*, *Erebia* etc.). Guaranteed 7-day delivery to anyplace in the world. Can collect requested species throughout Russia or the former USSR. Contact Mr. Sergei Gundorov, Plant Protection Department, Agricultural Institute, Teatralnaia Square, Saratov, 410710, Russia, FAX (845-2)264-963. ³⁸⁶

For Sale: Butterflies from many parts of the world: Brazil, Peru, China, India, Thailand, Malaysia, Indonesia, Papua New Guinea, Australia, etc. Papilionidae (including *Parnassius*, *Delias*, *Charaxes*) etc. I am licensed by the Australian Authorities to breed and export Australian butterflies. CITES permits issued where necessary. David Hall, 6 Rule Street, Cambridge Park, NSW 2747, Australia, telephone/FAX +047-312-410. ³⁸⁶

Serving lepidopterists since 1976. Offering many unusual butterfly specimens from Neotropical, African, and Indo-australian regions. Many ex-pupae and bred specimens. Please send \$1 (cash or stamps) for a 12-page illustrated catalog to: Transworld Butterfly Company, Apartado 6951, 1000L San Jose, Costa Rica, Central America. ³⁹³

Sale or exchange: Rare and common species and subspecies of Papilionidae, Satyrniidae, *Charaxes*, *Parnassius*. I can offer items such as *Papilio manlius* male, Mauritius, *Papilio aristodemus bjorn-dalae* male, Bahamas, *Papilio aethiopsis* male, Ethiopia, *Graphium auriger* male, Gabon, etc. Looking for collectors, dealers, and contacts in Costa Rica, Panama, Colombia, Venezuela, Guyana, Ecuador, Bolivia, etc., for purchase, exchange. John Kamps, 6994 Nickerson Way, Greely, Ontario, Canada K4P 1A3. ³⁸⁶

Will buy or trade for papered specimens of the following species: *Coscinocera hercules*, *Acherontia atropos*, *Xyleutes* spp. Contact Steve Greenfield, 1810 Marbury Lane, Albany GA 31707. ³⁸⁶

I am interested in exchanging a limited number of specimens (all macro moth families, plus Pyralidae) from French Guyana and the Eastern Caribbean for comparative material from Central and South America, the Greater Antilles, and southern Florida. Matthew Barnes, Upper Cow Leys Farm, Piddington, Bicester, Oxon OX6 0QE, England, telephone +44-1869-252-483, FAX +44-1869-248-180. ³⁸⁶

Wanted: Lots of large, spectacular butterflies, especially African and South American, for decorative aims. Buy or exchange for my butterflies from Russia and Tien Shan. Yuri Berezhnoi, PO 29, Voronezh, 394029, Russia. ³⁸⁶

Equipment

Insect pins, black and stainless steel. Telescopic net sticks from 29 to 74cm and from 60 to 115cm. Complete nets from 30 to 65cm diameter also available. We are looking for wholesaler in North America, Australia and Japan. Contact: J. Krüger, Danziger Str. 14, D-40822 Mettmann, Germany. ³⁹³

For sale: Light traps, 12 volt DC or 110 volt AC with 15 watt or 8 watt black lights. The traps are portable and easy to use. Rain drains and beetle screens protect specimens from damage. Also available: Battery charging system for 12 volt batteries (for use while traveling, plugs into cigarette lighter, safely charges up to four 12 volt batteries in 3 hrs., great for the traveling lepidopterist with light traps) and custom made light fixtures. For a free brochure and price list, contact Leroy C. Koehn, 207 Quail Trail, Greenwood, MS 38930-7315, Telephone (601)455-5498. ³⁹³

For sale: Entomological pins. Price with postage and handling is about \$3.50 per 100. For information, contact Marek Turcáni, Lesnícka 11, SK 96900 Banská Stiavnica, Slovak Republic, FAX 0042 859 21044. ³⁸⁶

Art

Limited dated and signed edition prints of Lepidoptera in card size at \$3.50, or print size at \$8.00. Eight by ten of your favorite species or mine. Original watercolors or oils priced higher. Contact Ms. Teddie Ciavola-Carboni, 1231 Irma Road, Warminster PA 18974, telephone (215)672-3863. 386

Beautiful butterflies laminated between beveled glass. Felt bodies, thread antennae, soldered and antiqued. Sun catchers, diamond shaped (4" x 7"). Mary Jane Zisoff, Trilogy of Art, Box 143, Parry Sound, Ontario, Canada, P2A 2X3, 705-746-4147, HTTP://WWW.ZEUTER.COM/PARRYSD/SPECIALTYSTORES 393

Information Wanted

50th Anniversary Meeting: Julian Donahue and Ron Leuschner are trying to assemble the programs for all of the Society's Annual Meetings. They have them all except for the programs listed below. If you have any of these, please get in touch with Ron as soon as possible at 1900 John Street, Manhattan Beach CA 90266.

Year	Number	Location
1954	5	Pittsburgh PA
1955	6	Lake Placid FL
1956	7	New York City NY
1957	8	Washington DC
1958	9	Lawrence KS
1960	11 (10)	New York City NY
1961	12 (11)	Gothic CO
1966	17	Ottawa ON
1967	18	Corvallis OR

Correspondence wanted: with individuals who have collected butterflies and skippers from New Jersey or have specimens in their collections from New Jersey. I am particularly interested in specimen data, larval host plant records, nectar resources, observations, etc. for an ongoing study of New Jersey's butterflies and skippers. Contact Dr. David C. Iftner, 8 Alpine Trail, Sparta NJ 07871. 393

Collaboration requested: I am a collector of butterflies and moths from Romania. I am studying biology at the University Babes Bolyai from Cluj-Napoca. I have collected Lepidoptera since I was 12, and

have accumulated quite an extensive collection. I would like to start a collaboration with an interested person regarding material and data exchange. Please contact Jihut Sergiu, Aleea Baita No2/33, 3400 Cluj-Napoca, Romania. 386

Live Polyommata and Lycaeninae wanted: I am rearing Polyommata for live display in a vivarium utilizing reconstituted sea salt in small ponds rimmed with beach sand and native food plants to serve their puddling and larval foodplant needs. I have had great success gathering diapausing *Everes amyntula* larvae from the Corvallis area, but my former sources for *Glaucopsyche lygdamus* and *Icaricia acmon* have fallen to housing developments and I am delayed as I search elsewhere. If you know of any livestock sources of any North American Polyommata and Lycaeninae, I would greatly appreciate the information. I do have various North American silkmths to trade: *Polyphemus*, *Cecropia*, *Promethea*, *Luna*, *Cynthia*, *Io* and also sources for other Macroheterocera and Rhopalocera, Oecanthus eggs, and mantid oothecae. I have allowed my stock to breed naturally on their native hostplants, thereby, I am hoping, to retain their genetic integrity and strength. I would also like to expand these populations for trade in livestock. If you have any pertinent information to that effect that would particularly lend itself to North American Polyommata and Lycaeninae, I would greatly appreciate your correspondence. Contact Fritz Wilhelm, 1042 SW Belmont #140, Albany OR 97321, USA, telephone (541)928-0424. 386

Texas Sesiids: An Atlas of Texas Sesiidae is now in the beginning stages. We are requesting any species and county information pertaining to all species of Sesiidae known from Texas. Any and all contributions will be appreciated and acknowledged. Please forward your information to Charles Bordelon, 8440 Washington, Beaumont TX 77707, or Edward C. Knudson, 8517 Burkhardt, Houston TX 77055. 386

Research assistance requested from California collectors: I am in the process of photographing larvae of the Sphingidae

of the U.S. and Canada. This is one of the preliminary steps towards a book on the biology/ecology of the family. At present, I have photographed the last instar larvae of 72 of the 100+ species. For you California collectors who have the luxury of field collecting in January and February, I am looking for ova and/or larvae of *Euproserpinus phaeton* and *Arctonotus lucidus*. I have greenhouse access to food plants during the winter. All contributions will be fully acknowledged upon publication, and I would be willing to exchange material. Jim Tuttle, 3838 Fernleigh St., Troy, Michigan 48083 (810)689-6687 386

Host plant records wanted: Previously unpublished records are sought for inclusion in a forthcoming catalog of the larval host-plants of the Neotropical butterflies (Hesperioidea and Papilionoidea). All records will be fully credited if they are published. We are also interested in photographs (preferably as slides) of final instar larvae and pupa of Neotropical butterflies for possible publication in the catalog. Please send lists of photographs to Stephen Hall, 15 Chatsworth Crescent, Allestree, Derby DE22 2AP, England. E-mail 101772.3305@COMPUSERVE.COM, For details of how to submit host-plant records please contact Dr George Beccaloni, Insect-Plant Division, Entomology Dept, The Natural History Museum, Cromwell Road, South Kensington, Cromwell Road, South Kensington, London SW7 5BD, England. E-mail G.BECCALONI@NHM.AC.UK 386

Audio/Visual

CD-ROM: Butterflies of North America. Lepidoptery hits the computer age with the publication of this CD-ROM by James A. Scott. Everything in the 600 page Stanford Univ. Press book plus about 1000 new color photos of eggs, larvae, pupae and adults (about 5000 photos overall). Features include a new section on butterfly gardening, videos, instantaneous search capabilities for words or topics, species photos now grouped together, print photos and text, online glossary, background music. Windows only. \$49.95 + \$5 shipping/handling. Order from Hopkins Technology, 421

Hazel Lane, Hopkins, Minn. 55343-7116, 1-800-397-9211, [HTTP://WWW.HOPTECHNO.COM](http://www.hoptechno.com). 393

Skippers Of The Northeast: A Video Guide. This 48 minute video includes virtually all the resident and vagrant skippers occurring in Northeastern North America. 45 species are presented including the males and females of many species. The video focuses on field identification and includes numerous examples of fascinating skipper behavior. VHS. \$19.95 plus \$3.00 s/h, MA residents add 5% tax; send to Richard K. Walton, 7 Concord Greene #8, Concord, MA 01742, or e-mail: RWALTONXXX@AOL.COM for more information. 386

Common Butterflies Of The Northeast. This video, covering 30 of the Northeast's most common species, provides the basics of butterfly identification with numerous tips on butterfly watching as well as productive butterfly habitats. Perfect for that friend or companion you'd like to win over to butterflying. The video's regional approach makes it the best choice for budding naturalists in the Northeast. 30 min. VHS. Each video is \$19.95 plus \$3.00 S & H. (Order both for \$35.00 and I'll pay shipping). Richard K. Walton, 7 Concord Greene #8, Concord, MA 01742. MA residents add 5% tax. 386

Help Needed

Seeking support for Peruvian butterfly ranching project: Prior to 1990 we lived in Lima Peru (our country of origin) and California, and are now living in Costa Rica. I am a consultant for the pharmaceutical industry of this region. However, my wife had connections with a local butterfly farm, and I thus developed an ever growing interest in butterflies, to the point where I am currently involved in rearing some local species. My own experiences connect with your News issue on The Next Generation, although in an inverted manner: a new generation triggered the interest of an older generation. The person who triggered my interest in Lepidoptera was Ricardo, whom I befriended and from whom I have learned quite a bit. Ricardo received his

know-how from the leading lepidopterists in town, both foreign and locals. They have instructed him since he was 11, when they recognized his keen interest in Lepidoptera. Ricardo has a collection of over 1,200 specimens, and is constantly requested by his teachers to lecture on habitat conservation through Lepidoptera. He has just sent in an application for a student membership in The Lepidopterists' Society, after my suggestion that he do so. Now, as newly-arrived Peruvians, we wish to do something equivalent here. I perceived with my own eyes the incredible devastation of deforestation occurring here in a trip I took to the Peruvian Amazon jungle in 1995. In addition, although a commercial market exists here for Lepidoptera, it is exclusively derived from collecting. However, at the collecting sites, the people involved are highly interested in knowing how to develop an insectary. We can help provide the know-how, but the people need land for breeding. Is there a funding organization that would support our effort to develop an insectary in the Peruvian Neotropics? Your help will be highly appreciated! Contact Eduardo Chumpitasi, Apartado 1106, 2150 Moravia, San Jose, Costa Rica, telephone (506)235-5160. 386

Monarch...continued from page 42

tives of all stakeholders. Specific subjects will include: 1) monitoring and data collection; 2) education and communication strategies; 3) sustainable development and Monarch conservation in breeding habitat and overwintering sites in Mexico and California; 4) biodiversity and resource management; and 5) national and international laws, policies and regulations.

A call for papers and posters will be issued shortly. To receive a call for submissions or for further information, please contact: Irene Pisanty, Commission for Environmental Cooperation, 393 St. Jacques Street West, Suite 200, Montreal, Quebec H2Y 1N9, Canada, fax: (514) 350-4314, IPISANTY@CCEMTL.ORG

Announcement:

Molecular Insect Science Symposium



The Center for Insect Science presents the 3rd International Symposium on Molecular Insect Science, June 5-10, 1998, in Snowbird, Utah. Abstract Deadline: February 16, 1998. Advanced Registration Deadline: April 20, 1998. For further information contact: Center for Insect Science, 225 Life Sciences South, The University of Arizona, Tucson, Arizona 85721, USA, Fax: (520) 621-2590, INSECTS@CCIT.ARIZONA.EDU, [HTTP://WWW.ARL.ARIZONA.EDU/CIS/SYMPIUM](http://www.arl.arizona.edu/cis/symposium)

Books...continued from page 47

seeks to understand these interactions. This book highlights selected research areas of medicinal and agricultural importance. Leading experts review the chemistry of insect defense and its application to pest control; phyletic dominance — the survival success of insects; social regulation; eavesdropping, alarm, and deceit — the array of strategies used by insects to find and lure prey; and reproduction — from gamete attraction to courtship and sexual selection. Although chemical signals are enormously important in the lives of Lepidoptera, butterflies receive little attention in this book (because of their relatively low economic importance) but moths have many entries. There are 13 chapters by 18 authors, plus a preface and an index.

North African Butterflies

by W. John Tennent

1 Middlewood Close, Fylingthorpe, Whitby, North Yorkshire YO22 4UD, England

The Maghreb States of Morocco, Algeria and Tunisia, combine to form a fascinating zoogeographic area. It is a distinct region, effectively separated from the fauna of western Europe by the natural barriers of the Mediterranean Sea and Atlantic Ocean to the north and west, and from the remainder of Africa by the Sahara desert.

Well over half of the 3 million square kilometers concerned is arid, with most of Algeria and the southern section of Tunisia forming part of the world's greatest desert, the Sahara. Northern habitats support the greatest diversity of butterflies, which include several endemic genera and species, a circumstance arising from geographic and ecological isolation brought about by the presence of high mountain ranges. In particular, the Atlas mountains of North Africa, in reality a structural extension of the Alpine systems of Europe, rising to over 4,000 meters, provide ideal conditions for species diversification and a significant number of butterfly species in these mountains are very local in distribution.

North-west Africa, north of the Sahara, lies at the southern and western Limits of the Palaearctic region and the fauna is fundamentally Palaearctic in composition. In some respects, the Sahara is a transition zone between the Palaearctic and Ethiopian regions, with its own distinctive fauna, and there is some disagreement as to whether the boundary separating the two faunal regions should be the southern slopes of the High Atlas mountains or the southern edge of the desert. Morocco supports a greater faunal diversity than Algeria and Tunisia and is also the best known country; different mountain ranges provide a variety of habitats and each range supports its own distinctive fauna.

The high peaks and deep valleys of the High Atlas form an almost impenetrable

barrier between the Mediterranean flora, fauna and climate to the north and the arid Anti-Atlas mountains on the northern edge of the Sahara desert to the south. The few areas of abundant vegetation are largely confined to creeks, deep river valleys and cultivated/irrigated areas and large areas support little more than prickly leguminous shrubs. A significant proportion of the area lies above 2000 m altitude and this includes Djebel Toubkal, at 4165 m, the highest mountain in North Africa.

The ancient volcanic Middle Atlas mountains and plateaux to the north of the High Atlas are more Mediterranean in character; remnants of the once great cedar forests still clothe the northern slopes together with the ubiquitous *Quercus*. The Rif mountains lie south of the Mediterranean coast of North Africa and are the least explored, primarily due to the fact that the western section, from Tetouan to Al Hoceima, is where hashish is grown and harvested, making unhindered travel difficult. Hashish is grown openly and in mid-summer, when most crops have yellowed and ripened, swathes of dark green *Cannabis* can be seen on the steep slopes and terraces adjacent to the main roads. The flora and fauna of the Rif have a close affinity with Mediterranean Europe and it is quite likely that more butterfly species remain to be discovered there.

The Rif mountains extend eastwards from Morocco in a series of massifs through northern Algeria and Tunisia where, combined with the coastal lowlands, they are known as the Tell or Tell Atlas. In western Algeria, south of the Tell, the Moroccan Middle Atlas blend into the Algerian High Plateaux, rising to become the Southern or Saharien Atlas mountain range, the southern boundary of which marks the northern limit of the Sahara desert in Algeria. The South-

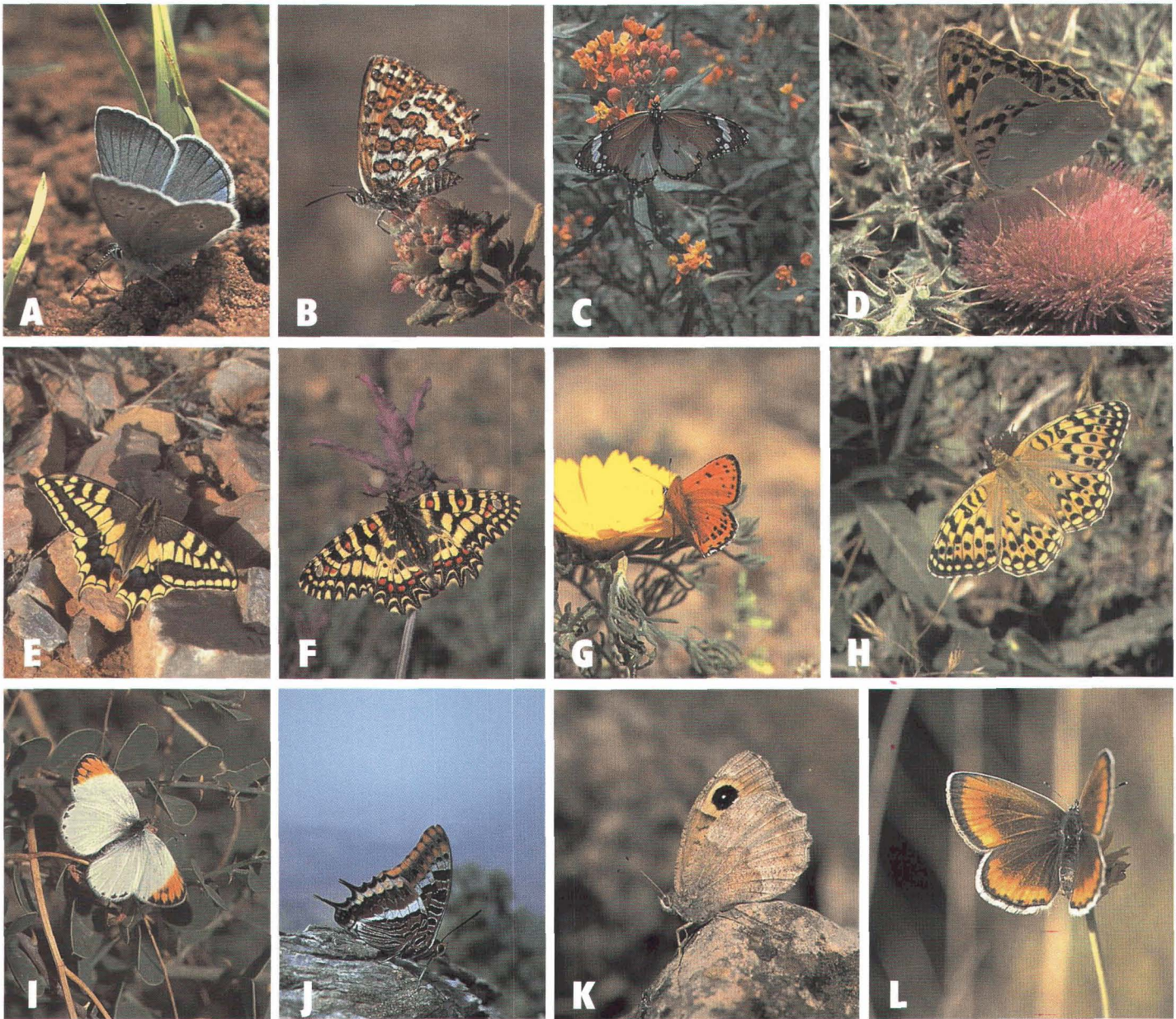
ern Atlas are slightly lower in altitude than the Moroccan Atlas ranges, reaching just over 2000 m in the west and a little higher in the Hodna mountains and Djebel Aures range in the east, before becoming lost in the coastal plains of eastern Tunisia. The essentially 'steppe' High Plateaux of west and central Algeria lie at an approximate altitude of 1000m.

As might be expected, most of the sandy, stony vastness of the Sahara supports very few butterfly species, although butterflies do occur in cultivated desert oases and dry wadis. Some truly eremic species are found in the isolated n'Ajjer and Hoggar mountains, rising to more than 2900 m north of Tamanrasset. A total of 176 taxa are currently recognized from Morocco, Algeria and Tunisia, and well over half of these are endemic to the region.

Travel in North Africa has been relatively easy in recent years, although at present, the activities of the Front Islamique du Salut (FIS) make travel in Algeria impossible for Europeans. However, tourists are welcomed in Morocco and Tunisia; the wealth of endemic butterflies in the spring and early summer, particularly in the mountains of Morocco, make a visit well worthwhile.

Note:

John Tennent has travelled widely in North Africa and is author of the only comprehensive book on the region: 'The butterflies of Morocco, Algeria and Tunisia' published in 1996 and illustrating the full range of variation of all taxa found in North Africa, as well as numerous 'natural life' and habitat photographs. Further details and information may be obtained from the author at the address given or e-mail J.TENNENT@NHM.AC.UK



North African Butterflies: Butterflies of Morocco, Algeria and Tunisia. **A.** *Agrodiaetus amanda abdelaziz* Blachier, 1908 – male. Endemic to Morocco and Algeria where it is local but sometimes abundant. **B.** *Cigaritis allardi occidentalis* Le Cerf, 1923 – female. The genus *Cigaritis* contains some very attractive butterfly species and races, all of which are confined to North Africa. **C.** *Danaus chrysippus* Linnaeus, 1758, f. *alcippus* Cramer, 1777 – male. On hostplant, *Asclepias curassavica* (Asclepiadaceae). Form *alcippus*, with the white hind-wings, represents about 30% of the population in Morocco, where it is local. In Algeria and Tunisia, where the butterfly is more widespread, f. *alcippus* is rare. **D.** *Pandoriana pandora seitzi* Fruhstorfer, 1908 – male. One of several large fritillary butterflies with endemic races in North Africa. **E.** *Papilio saharae* Oberthur, 1879 – male. Although it differs in some significant respects, *P. saharae* can be difficult to separate from the common *P. machaon*. It is a butterfly of hot, barren habitats on the northern edge of the desert and may be more closely related to the Corsican/Sardinian *P. hospiton* than to *P. machaon*. **F.** *Zerynthia rumina africana* Stichel, 1907 – female. *Z. rumina africana* is endemic to North Africa, where it is widespread and sometimes common in coastal districts and at moderate levels in the mountains in the spring. **G.** *Thersamonia phoebus* Blachier, 1905 – male. This endemic “copper” butterfly is restricted to western Morocco, where it flies in the High Atlas and Anti-Atlas mountains and on the plains around Marrakech. **H.** *Mesoacidalia aglaja lyauteyi* Oberthur, 1920 – female. A very distinctive endemic race of *M. aglaja*, given species status by some authors. **I.** *Colotis evagore nouna* Lucas, 1849 – male. On host-plant, *Capparis* sp. (Capparidaceae). This is the only member of the Pierid genus *Colotis* which reaches Europe (Spain). It is found in central and southern regions of North Africa; other *Colotis* species occur in desert regions of southern Algeria. **J.** *Charaxes jasio jasio* Linnaeus, 1767 – male. This is the only European member of a genus of robust Nymphalid butterflies, reaching maximum development in tropical Africa. **K.** *Neohipparchia hansii* Austaut, 1879 – female. This immensely variable species occurs in discrete populations throughout the Maghreb, where it is endemic. Local variation is considerable and has given rise to the description of many subspecies; it is probably best considered as a variable species, particularly sensitive to local ecological conditions. **L.** *Plebicula atlantica atlantica* Elwes, 1905 – female. The female *P. atlantica* is arguably one of the most attractive lycaenid butterflies in North Africa. A local species, males stray some distance from their habitats; females are usually found close to where the host-plant *Anthyllis vulneraria* (Fabaceae) grows. All photos by W. John Tennent.

C. regalis...continued from page 41

As fate would predictably have it, the next question as to the appearance of the adult would not be answerable. Though the larva matured, evacuated its gut, and sought a pupation site in my peat moss bucket, it failed to form a flawless pupal case. One leg was outside of the grove between the wing cases. Persons familiar with *C. regalis* know that this means 100% mortality for the slumbering creature. Indeed, it became motionless, stiff, and dehydrated. Inspection of the pupa did not demonstrate any parasites. There was no pungent aroma of bacterial decay. Fungal elements were not present on the chitinous case. viral infection is left to speculation.

There had been nothing distinguishing in earlier instars; at least none bold enough to draw attention. A few years ago, I had noted that first instar larvae did demonstrate some variability in the color of the saddle. This seemed to be more of a regional variation than an individual characteristic. When I lived sixty miles north of my present location, all first instar had a distinctly red-orange saddle. Locally, I noted that the first stage larvae have a grey saddle. The remaining instars were indistinguishable.

As far as food plant, this larvae, like at least two generations before and two since, have been reared by me on ash. They had demonstrated similar maturation times and attained sizes equal to those I had reared on black walnut. The species of ash did not seem to matter to larvae and they readily switched between offered leaves without hesitation.

Though many lepidoptera have variable larval coloration, fifth instar *C. regalis* coloration has always been a predictable constant for me. I offer this sighting of a melanic form because of its stark deviation from the norm.



Hot Swallowtails Rise to the Occasion: Larval Antibasking Behavior.

Marc C. Minno

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I recently noticed a behavior of swallowtail caterpillars that I've never seen in other butterflies. In July of 1993 we had a colony of the Tailless Swallowtail (*Battus polydamus lucayus* Rothschild and Jordan, Papilionidae) feeding on *Aristolochia trilobata* L. (Aristolochiaceae) in our garden in Gainesville, Alachua County, Florida. Some of the caterpillars were preparing to molt from the fourth to the fifth instar. Two of the larvae were exposed to the midday sun on the upper sides of leaves. The front half of the body was raised nearly perpendicular to the leaf (Figure 1, pp. 61, C). Larvae in the shade did not exhibit this behavior.

Last May I noticed that a honey tangerine (a cross between Sweet Orange or *Citrus sinensis* and Tangerine, *Citrus reticulata*, Rutaceae) in the garden had

several third instar caterpillars of the Giant Swallowtail (*Heracles cressphontes* (Cramer), Papilionidae) feeding on the leaves. Three of the larvae were in bright sunlight, and had the front half of the body raised perpendicular to the leaf (Figure 2, pp. 61 D). Two others in the shade did not.

Judging from the positions of the shadows of the larvae in the figures, it can be seen that the head was pointing nearly directly toward the sun. This behavior is the antithesis of basking or exposing the body to the sun in order to warm up. The caterpillars of other families of butterflies seem to crawl into the shade if too warm. By staying put and exposing as little of the body to the sun as possible, swallowtail caterpillars may be less noticeable to predators and still remain near their food.

Backyard Butterflies:

The Tawny Emperor

Leroy Simon

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The accompanying photos of the life history of the Tawny Emperor, *Asterocampa clyton flora* (Edwards), Nymphalidae (see pp. 60, A-E), are from my backyard in Belleview, Lake County, FL. Some early writing referred to *A. c. flora* as a separate species but it is now considered a subspecies. The butterflies are multi-brooded and are usually found near the Hackberry trees (*Celtis* sp., Ulmaceae) upon which the larvae feed. It is common to see the butterflies perched upside down on the tree trunks. They do not visit flowers.

Ova are deposited in a mass on the un-

derside of a young leaf. Young larvae feed as a group, skeletonizing the leaves. Later they spread out but feed from a nest containing one or more larvae. The larvae pupate singly on the underside of a leaf. Hibernation occurs as tiny larvae in a nest of rolled up leaves fastened to a tree branch with silk. When looking for the larvae in summer look for the skeletonized leaves at the ends of branches. In winter look for leaves that did not fall from the tree — if the leaves are attached by silk it may be a nest containing a dozen or more larvae. On the down side is that some of these nests will contain spiders!

New Host Plant Records for the Rustic Sphinx, *Manduca rustica* (Fabricius), in North-central Florida.

Marc C. Minno and Ivan A. Minno

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Last summer, my son, Ivan, found a sphinx caterpillar on a Lantana (*Lantana camara* L., Verbenaceae) bush in our yard in suburban Gainesville, Alachua County, Florida. Since we knew of no sphingids that ate *Lantana*, we were astonished. *Lantana* is a common garden and naturalized plant of the vervain family. The crushed leaves have a strong aromatic odor. *Lantana* is also highly toxic to humans and livestock (Perkins and Payne 1984).

As it turned out, Ivan had found a third instar larva of the Rustic Sphinx, *Manduca rustica* (Fabricius), on August 2, 1996. The caterpillar was raised on branches of *Lantana* with the cut ends placed in a jar of water (see pp. 61, B). By August 13, 1996 the larva developed a burgundy-red color on the dorsum of the abdominal segments, and a pink color on the dorsum of the thorax. The caterpillar began to wander about, and when placed into a plastic container with about two inches of sand, it quickly burrowed out of sight. Some three weeks later, an adult Rustic Sphinx emerged (see pp. 61, A). The pupa was very similar to that of the Tobacco Hornworm, *Manduca sexta* (Johanssen), dark reddish-brown, with the proboscis case mostly detached from the body.

On October 8, 1996, I was again surprised to find two last instar larvae of *M. rustica* feeding on Blue Curly (*Trichostema dichotomum* L., Lamiaceae) growing in our garden. This aromatic

plant is in the mint family. Tietz (1972) gives the following list of food plants for the Rustic Sphinx: *Callicarpa americana* L. (Verbenaceae), *Chionanthus virginicus* L., *Ligustrum* sp., *Syringa vulgaris* L., *Jasminum* sp., *Fraxinus* sp. (Oleaceae), *Helianthus annuus* L. (Compositae), *Heliotropium* sp. (Boraginaceae), and *Lagerstroemia indica* L. (Lythraceae). According to Hodges (1971), the Rustic Sphinx has been recorded from Fringe Tree (*Chionanthus virginicus*), Jasmine (*Jasminum* sp.), Bignonia (*Bignonia* sp., Bignoniaceae) and members of the Verbenaceae and Boraginaceae. Although Beautyberry (*Callicarpa americana* L.), Fringe Tree, and Pigmy Fringe Tree (*Chionanthus pygmaea* Small) grow in our garden, we have not found immatures of the Rustic Sphinx, or feeding damage, on these plants.

Diagnosis of the Last Instar Larva of *M. rustica* (F.):

Head: grayish-green; slightly rough sculpturing; oval in shape; a faint, slightly paler line extending from the base of the antenna to the vertex; no horns or ornaments; labrum and mandibles black; ocellar patch dark, crescent-shaped.

Thorax: basal segment of legs with a whitish distal ring and a small black spot on the inner margin, distal segments reddish brown and black; dorsum of thorax with short, whitish cuticular points, especially along a whitish subdorsal line,

bordering the heart line, and in a few transverse rows along the annuli.

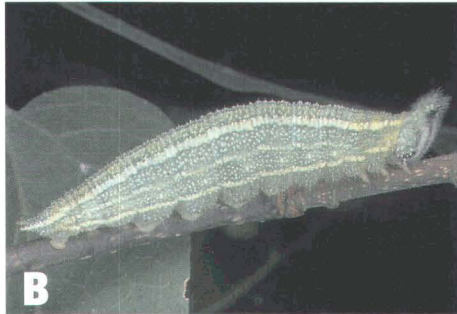
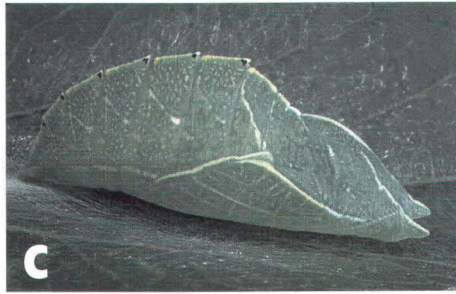
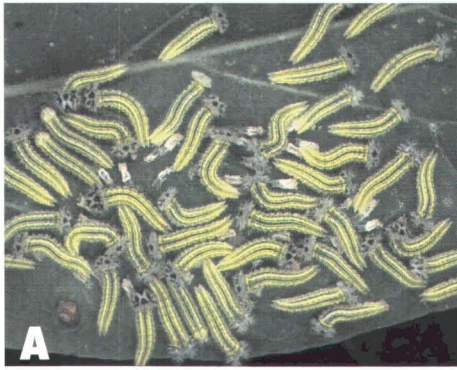
Abdomen: body grayish-green ventrally and laterally, lime-green dorsally with scattered small whitish spots; segments A1-A7 with oblique purple and white lines, the lower white portion extending caudally onto the following segment and meeting the whitish line bordering the heart; subdorsal line faintly present on segments A1-A2 and represented by a faint, short double line on segments A3-A7; spiracles pale yellow with a black center and a narrow black margin; distal part of prolegs lime green, crochets black; anal horn relatively long, light green with numerous short whitish or blackish points, the tip dark; suranal plate v-shaped, grayish-green with a light green margin; setae relatively sparse and short (less than 2 mm around the legs and mouth).

Frass: deeply furrowed.

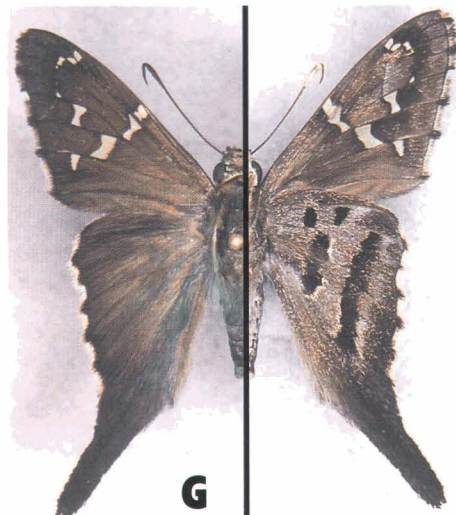
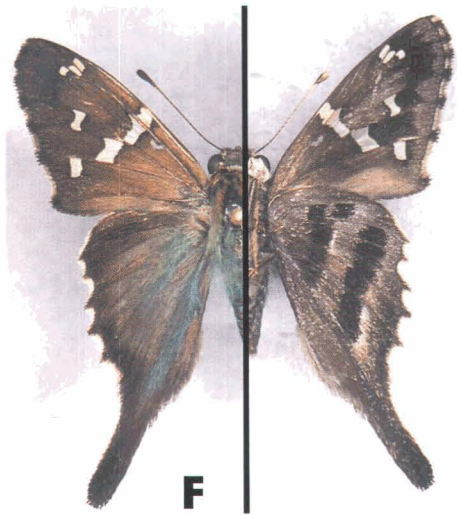
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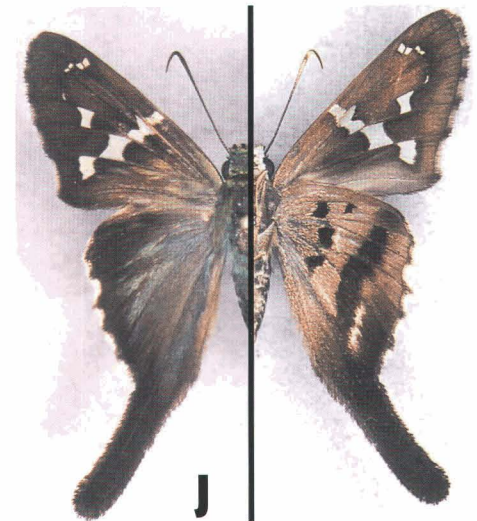
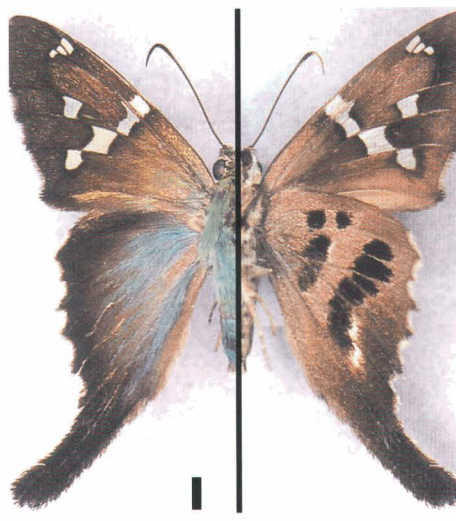


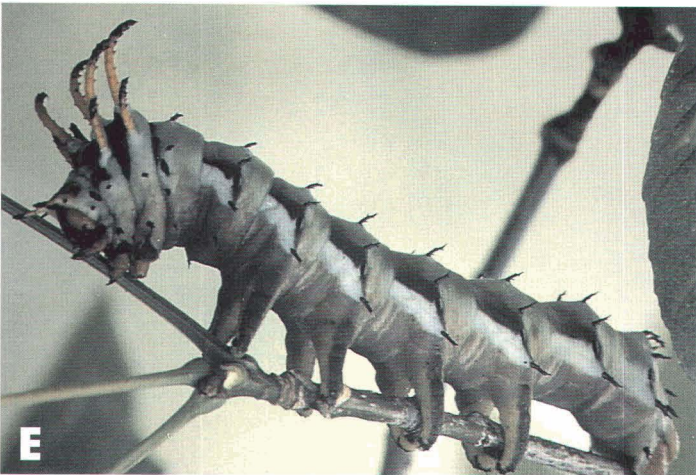


Backyard Butterflies: The Tawny Emperor (*Asterocampa clyton flora*). See article on page 58. A: group of early instar larvae; B: late instar larva; C: pupa; D: adult, upperside; E: adult, underside. All photos by Leroy Simon.



Urbanus from the Southern U.S. and Mexico. See article on page 41. All photos show dorsal on left and ventral on right. **F:** *Urbanus belli*, male, Mex: Nayarit: Mpio Tepic: Jumatan, 360 M, 28/XII/96, A. D. Warren; **G:** *U. proteus proteus*, male, Mex: Sinaloa: Mazatlan, 29/XI/96, A. D. Warren; **H:** *U. belli*, male, USA Record, Brownsville, TX, 23/VI/68; **I:** *U. pronus*, female, Mex: Michoacan: Mpio Gabriel Zamora, P. H. Cupatitzio, 27/IX/92, L. Gonzales-Cota; **J:** *U. esmeraldus*, female, Mex: Nayarit: Mpio San Blas Mecaton, 260 M, 1/X/96, A. D. Warren. Photos by A. D. Warren.





A & B. New Host Plant for the Rustic Shinx (*Manduca rustica*). See article on page 59. **A:** adult moth; **B:** larva on *Lantana camera*. Photos by Marc Minno.

C & D. Antibasking Behavior in Swallowtail Larvae. See article on page 58. **C:** Figure 1. Tailless Swallowtail larva (*Battus polydamus lucayus*) trying to stay cool. **D:** Figure 2. Giant Swallowtail larva (*Heraclides cressphontes*) with front half of body pointing toward the sun. Photos by Marc Minno.

E: Melanic 5th instar of the Regal Moth, *Citheronia regalis*. See article on page 41. Photo by Mark D. Schmidt.

F: Artwork from a notecard by Teddie Ciavola-Carboni. Contact the artist at 1231 Irma Rd. Warminster, PA 18974-1929, U.S.A.



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Submissions are always welcome! When space becomes limiting, preference is given to articles written for a non-technical but knowledgeable audience, illustrated, written succinctly, and under 1,000 words. Please submit your article or item in one of the following formats (in order of preference):

1. Article on high-density, DOS- or MAC-formatted, floppy diskette in any of the popular formats. You may include graphics on disk, too. Indicate what format(s) your article is in, and call if in doubt. Include a printed hardcopy and a backup in ASCII or RTF (just in case).
2. Electronically transmitted file in ASCII or other acceptable form *via* e-mail.
3. Typewritten copy, double-spaced suitable for scanning and optical character recognition. Articles may also be faxed directly to my computer for OCR but you must call first so that I can set up for reception of your fax. Artwork should be line drawings in pen and ink or good, clean photocopies suitable for scanning.
4. Handwritten or printed (very legible, short pieces only please, <500 words).

Submission Deadlines

Mail disks and illustrations to the *News* Editor. Material for Volume 39 must reach the Editor by the following dates:

Issue	Date Due
1 Spring	too late...
2 Season Summary	December 15
3 Summer	you missed it...
4 Autumn	August 15
5 Winter	November 15

Reports for the Season Summary must reach the Zone Coordinator by Dec. 15. See next page for more information.

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ROSEMARY JOHN
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*A misty early morning scene is the background for the 1996-97 Wild Louisiana Stamp, from a watercolor and acrylic painting by Rosemary John. The stamp portrays the striking Gulf Fritillary butterfly, *Agraulis vanillae*, on one of its native larval hostplants in Louisiana, Maypop (*Passiflora incarnata*). Adults are frequently found in the vicinity of these plants. The painting depicts a male, basking with open wings, and a female which displays the beautiful underwing of this species, with its soft orange, coral and metallic silver coloration. A Wild Louisiana Stamp is required of anyone not in possession of a hunting or fishing license utilizing State-administered lands. The state receives royalties from the sale of prints and revenue from the sale of Wild Louisiana Stamps in support of the functions of the Louisiana Natural Heritage Program. For more information about the painting, obtaining prints, stamps or posters, the Wild Louisiana Stamp program or the Louisiana Natural Heritage Program, contact the artist at: PO. Box 83933, Baton Rouge, LA 70884-3993, e-mail: zowood@unix1.sncc.lsu.edu.*