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

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Front Cover:

Papilio nireus, Fort Worth Botanic Gardens, *Butterflies in the Garden*, live butterfly exhibit. Photo by Dale Clark.

C. R. Biederman and the 'Lost' Locality, Palmerlee, Arizona

Jerry A. Powell and David J. Powell

Berkeley, CA, and Arlington, TX

Palmerlee, Arizona, is a locality known to many lepidopterists through numerous type locality citations, which, however, rarely included capture date or collector and never stated where it was. Especially Barnes & McDunnough (1912, 1913, 1914, 1916, 1918), Barnes & Busck (1920), and Barnes & Benjamin (1924) described many species from Palmerlee, some from a collector named Biederman, and they cited Palmerlee as a second locality for numerous species described from Paradise, Arizona. The latter is located WNW of Portal in the foothills of the Chiricahua Mountains, just inside the U.S. National Forest boundary, shown on a 1909 USGS topographical map. Munroe (1976) reported *Pyrausta corinthalis* Barnes & McDunnough (Crambidae) from Rustler Park at 8,500' in the Chiricahua Mountains and stated that it had been known only from Palmerlee. That, along with the occurrence of several species at Paradise and Palmerlee, led us to wonder if the latter was also in the Chiricahua Mountains. However, W. C. Barnes in *Arizona Place Names* (1935) recorded Palmerlee as a U.S. Post Office established in December 1904 about 12 miles west of Hereford on Miller Creek, i.e., in the Huachuca Mountains.

We became interested in the history of mining activities in the Huachuca Mountains in 1974, after hiking from Miller Canyon to the crest of the Huachuca Mountains and encountering long abandoned mining equipment high on the west wall of the canyon. In 1988, we rented an apartment from the Beatty family, whose property is located at 5,800' in Miller Canyon in the Huachuca Mountains. There we learned that Edith Beatty had researched the history of the area and seemed certain that Palmerlee had been located at the foot of the grade in lower Miller Canyon, where there were a few remnant foundations and basement excavations.

Historical records of Lepidoptera

The earliest moth record we have seen from the area in question was by Skinner (1905), who described *Crinodes* (now *Astylis*) *biedermani* (Notodontidae) based on specimens that had emerged from pupae sent by C. R. Biederman, of Reef, Cochise County, presumably in 1904 or earlier. Dyar (1906) described larvae of *C. biedermani* from Palmerlee that had been provided by a Mr. Schaefer, but the collection date was not given. H. A. Kraeber and H. A. Wenzel collected in Miller's Canyon, Huachuca Mountains, in July 1907, from which several moths were described by Haimbach (1915). Barnes & McDunnough (1911) described *Schizura biedermani* (Notodontidae) from Palmerlee. During the next 13 years, Barnes and his collaborators cited above described at least 65 new species of moths from Palmerlee, primarily noctuids and other macros, but also a megalopygid, pyraustine crambids, and several microlepidoptera. Most of these citations lacked collection dates or collector, as was the Barnes collection labeling practice for purchased specimens. Cassino & Swett (1922) described *Eupithecia biedermanata* (Geometridae) from Hereford, Arizona.

Some early mining camps and post offices in the Huachuca Mountains area

Numerous mining claims were established in the Huachuca Mountains in the late 19th and early 20th centuries (Keith 1973, Anthony et al. 1995). Anthony lists 14 claims on the crest of the range (7,000') and a mining camp at the head of Carr Canyon, which had closed but was reopened during WWI. Reef was named for a conspicuous rock formation that forms the crest of the Huachuca Mountains, a noted landmark for mining camps. According to Hein (1983), these claims were developed particularly Max Baumkirchner [which is spelled Baumkirscher by Wilson (1995)] from 1908 through the 1920s, with mines in operation at several locations in the canyons and around Miller Peak. He built a five room log cabin, complete with a full-sized bathtub, which was hauled up the wall of the Miller Canyon on a burro. Later, they added a bunkhouse for men working for him. The bathtub remains as a landmark for Bath Tub Spring, along with some of their hauling and mining equipment, illustrated by Wilson (1995).

According to Wilson, there were two principal mining camps in the Huachuca Mountains at various times in the early 20th century: 1) Hamburg, which was associated with the Hartford-Arizona Copper Mining Company, located at 6,800' in Ramsey Canyon. It and the Hamburg Mine flourished for some years after 1906, with 150 people, boarding houses, general store, and the requisite saloon. This area now occupied by a Nature Conservancy park for birders. 2) Garces, which was known in its early years as Reef, then as Palmerlee, and was associated with the Reef mines when they were operated as gold and silver properties. The camp had a post office, originally named Reef in 1900 but changed to Palmerlee in 1901 (or 1904). Its name was changed again, to

Garces in 1911, then discontinued in 1926 (quoted from Sherman & Sherman1969). It served about 200 people at its peak. U.S. Department of the Interior relief maps of 1909, 1912, and 1921 tend to confirm the dates Wilson compiled, but we were unable to pinpoint the site of the Reef P.O.; it may have been at the Reef camp near the mine above Carr Canyon or at the foot of the steep road leading to Reef Camp. The 1909 US Department of Interior map shows Palmerlee in lower Miller Canyon, slightly north of Hereford's latitude and has Hamburg at the base of Carr Canyon. A 1912 topographical sheet shows Garces at the same spot as Palmerlee of 1909.

Arizona Place Names (Barnes 1935) contradicts Wilson's dates and sites of the post offices, placing Palmerlee about 12 miles west of Hereford "at Reef mine. On Miller Creek." It was named for Joseph L. Palmerlee, Postmaster and owner of the property on which the post office was located. According to Barnes, the P.O. was established December 7, 1904. Garces is placed at a different site, 8 miles west of Hereford, presumably in Carr Canyon. Its Post Office, with Richard Johnson Postmaster, was established April 12, 1911, replacing Palmerlee, and was named for the Garces National Forest, which consisted of the southern components of the current Coronado National Forest; the name was changed about 1915. It had been named for Padre Garces, who lived among Arizona indigenous people for many years and was killed by them in 1701 at Yuma.

According to the Arizona Highways web page [*www.idiscoverArizona.com*], the Reef town site was at 7,200' at the top of the Carr Canyon road, and this is confirmed by the 1958 USGS Miller Peak topographical sheet. It was operated as a USFS campground when we visited it in 1989. Some of the tent sites are situated on old foundations. However, we did not find evidence that the Reef Post Office was located there.

C. R. Biederman

Most of the moth specimens cited from Palmerlee evidently were collected by a German immigrant naturalist, C. R. Biederman, who lived in Carr Canyon, at about 5,600', a site he homesteaded from 1903 until 1932, when he died at 93 and is buried there. The home is owned by Ralph and Rosemary Snapp, who became aware of the significance to lepidopterists after they moved there in 1994, and they have welcomed visitors interested in Biederman and his collections. We visited the house along with other moth collectors in connection with the Annual Meeting of The Lepidopterists Society in August 2005.

We have not seen an account of Biederman in entomological literature, but Herbert Brandt, who visited Arizona from Ohio many times from 1935 to 1948 to record bird observations, provided a summary of Beiderman's life. Although Brandt did not document sources of his information, in one passage he quoted Major John Healy, owner of the Carr Canyon property in 1944, who may have been his main source (Brandt 1951: 376). Biederman was born in Germany and after graduation from Leipzig University came to the U.S. --- he is referred to as Professor Biedermann (sic!) by Brandt, but there is no evidence that Biederman had postgraduate training or teaching experience. He showed marked interest in natural sciences, especially entomology, as a youth, and all his life specialized in butterflies. Biederman joined the U. S. Army upon his arrival in this country in 1860 (at age 21), and after the Civil War, he went to South America on a collecting expedition for the Smithsonian Institution. Subsequently he traveled extensively before coming to Arizona in 1880 and finally to Carr Canyon 10 years later. According to Mrs. Snapp, Biederman came to Ft. Huachuca in connection with his military background and interest in mining. He homesteaded and built the Carr Canyon cottage about 1903, and his homestead application was made in 1905. To ornithologists, his place is of interest, according to Brandt, because Biederman declared it a bird sanctuary, which was respected by subsequent owners.

Biederman lived at the Carr Canyon house from 1903 to 1932, during which he mailed specimens from Palmerlee in 1904-1911. Depending upon which of the above Post Office dates is correct, any moths mailed in 1901-1903 also may have been from Palmerlee, or earlier collections could have been postmarked from Reef (1900-1903) or Ft. Huachuca. We have not seen any Biederman specimens cited from Garces, which presumably would have been his nearest post office from April 1911 until 1926. The type locality of *Eupithecia biedermanata* Cassino & Swett (1922) is Hereford, which was located at the railroad about 15 miles from Carr Canyon, so better transportation may have become available, and specimens were collected or mailed from there after WWI.

Conclusions

Probably specimens cited from Palmerlee, Arizona, originated from various places in the Miller and Carr Canyons area of the Huachuca Mountains. Palmerlee existed as a U.S. Post Office from 1901 or 1904 to 1911; it was located in lower Miller Canyon, and served several mining camps along the crest of the Huachuca Mountains, including the Reef Mine camp at the top of Carr Canyon. We assume that specimens collected by Biederman at his home in Carr Canyon and possibly from other collectors living in Miller Canyon (e.g., associated with the Tombstone Water Company) were mailed and postmarked from Palmerlee. The postmark was assumed by Barnes and others to be the source of the specimens they purchased. Judging from recent collections of some of the species described from Palmerlee, it seems unlikely that most of the early collections were made at the Palmerlee site, but it cannot be ruled out as a source of some of the specimens. Probably most of the historic material came from intermediate elevations, characterized by the occurrence of

Quercus hypoleucoides, i.e., at the Biederman property in Carr Canyon, Miller Canyon near the Beatty place at 5,800,' and Tombstone Water Co. at ca. 6,300', rather than from the high conifer-dominated country above 7,000', such as appears to have been the source of species such as *Pyrausta corinthalis*.

An unresolved piece of the puzzle is why the Garces Post Office, which evidently was closer to Biederman's home than Palmerlee had been, was not used to mail specimens between 1911 and 1926. Did he quit collecting and/or did Barnes cease buying specimens before 1911? Biederman lived another 20 years at the same site, and at least once collected or at least mailed specimens from Hereford, Arizona.

Acknowledgments

We thank Edith Beatty and Rosemary and Ralph Snapp for their hospitality and insights into Huachuca Mountains history and for providing leads to literature sources. Rangers at the Coronado National Memorial allowed us access to their historical files.

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Chetogena scutellaris (Diptera: Tachinidae) an endoparasite of larval *Anaea troglodyta floridalis* (Nymphalidae)

Mark H. Salvato[1], Holly L. Salvato[1] and Michael K. Hennessey[2]

1765 17th Ave SW, Vero Beach, Florida, 32962, USA, ***anaea_99@yahoo.com***[1]

United States Department of Agriculture, Center for Plant Health Science and Technology, Raleigh, North Carolina 27606-5202, USA ***mike.k. hennessey@aphis.usda.gov***[2]

The Florida leafwing, *Anaea troglodyta floridalis* F. Johnson and Comstock (Nymphalidae), occurs locally within the pine rocklands of southern Florida and the lower Florida Keys (Minno and Emmel 1993, Smith et. al 1994). Hennessey and Habeck (1991) and Worth et al. (1996) described many aspects of *A. t. floridalis* natural history. Salvato and Hennessey (2003), Salvato and Salvato (2008) and Salvato et al. (2008) also discussed *A. t. floridalis* ecology and provided a review of known parasites and predators for the species. Although several larval parasites have been mentioned for *Anaea* Hübner (DeVries 1987) and similar genera (Muyshondt 1974a, 1974b, 1975, Caldas 1996) throughout tropical America, little has been reported for *A. t. floridalis* larvae.

On 17 January 2009 MHS, HLS and Dennis J. Olle observed an egg of a parasitoid fly (Diptera: Tachinidae) attached to the cuticle of a late instar *A. t. floridalis* larva (Fig. 1, pp. 106) in the Long Pine Key region of the Everglades National Park (Miami-Dade County, Florida). After photographing the observation in the field, the parasitized larva was subsequently collected. Within approximately 24 hours of the initial observation the white egg casing dropped off the larva exposing a dark spot (entry hole) on the cuticle. Upon closer examination a second entry hole was observed on the ventral side of the larva indicating additional parasitism.

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The Polyommatine wing pattern elements and seasonal polyphenism of the Indian *Chilades pandava* butterfly (Lepidoptera: Lycaenidae)

Krushnamegh Kunte[1] and Ashish Tiple[2]

FAS Center for Systems Biology, Harvard University, Cambridge, MA 02138, USA.[1] ***KKunte@cgr.harvard.edu***

Department of Zoology (Entomology Division) and Centre for Sericulture and Biological Pest Management Research (CSBR), RTM Nagpur University Campus, Nagpur 440033, India.[2] ***ashishdtiple@yahoo.co.in***

Many butterfly species show environmentally induced but genetically determined discrete seasonal forms. This is known as seasonal polyphenism. The seasonal forms may have contrasting life history strategies in response to varying seasonal and social conditions such as ambient temperature and day-length, differential availability of secure resting places, nectar plants for adults and larval host plants, and a different set of predators and predation risk (reviews in Brakefield and Larsen 1984; Brakefield *et al.* 2007; Nijhout 2003, 1991; Shapiro 1976). Although extensively investigated only in some Holarctic and African pierid and nymphalid butterflies such as *Colias*, *Araschnia* and *Bicyclus*, seasonal polyphenism occurs extensively outside these groups within Pieridae, Nymphalidae and in some Hesperiidae (Brakefield and Larsen 1984). The nature and diversity of seasonal polyphenism in these groups, however, are poorly known.

Here we describe in detail seasonal polyphenism of *Chilades pandava pandava* Horsfield, 1829 (Lycaenidae: Lycaeninae: Polyommatini). First we will describe in detail the wing pattern elements of *C. pandava*, which follow the general Polyommatine pattern. Then we will show how individually variable change in coloration of spaces between specific wing pattern elements produces the remarkable diversity of dry season forms in this species.

Wing pattern elements of *Chilades pandava*, and changes between the seasonal forms:

The Polyommatine wing pattern elements are clearly homologous to the nymphalid ground-plan (Nijhout 1991). These are illustrated in Fig. 1 and Fig. 2.3 by the wet season form of *C. pandava*, and are as follows: (1) Both wings have a dark brown bar at the terminal end of the cell. (2) Both wings have a dark brown discal band between veins 1b and 7 (the distal band of the central symmetry system, Nijhout 1991). This band is composed of spots that are bounded by wing veins. The positions of these spots differ in each wing area, as also seen in nymphalids (Nijhout 2001). (3) Both wings have a sub-marginal dark brown band. (4) The hind wing has a large, black costal spot in wing space 7 (between veins 7 and 8). (5) The hind wing also has a series of sub-basal black or dark brown spots: one in wing space 7, one in the cell, one in wing space 1c closely juxtaposed with the spot in the cell, and one in space 1a along the dorsal wing margin. The first three wing pattern elements are bounded on both sides by narrow white bands, and the last two elements are ringed white. The inner white margins of the sub-marginal band on the hind wing are crescent-shaped and much broader than the rest. (6) Among the series of marginal spots, the tornal spot in wing space 2 (just above the tail) is large, black and broadly crowned orange. The tornal spots in 1c are much smaller and narrowly crowned orange. The ground color of the wings is usually very light brown but may be light grey or grey-brown in some specimens. However, the arrangement and presence of these wing pattern elements in the wet season form are nearly invariable, as evidenced by only slight individual variation among the several hundred specimens that we have inspected in the field and in research collections.

The dry season form, on the other hand, is remarkably variable. Individuals only

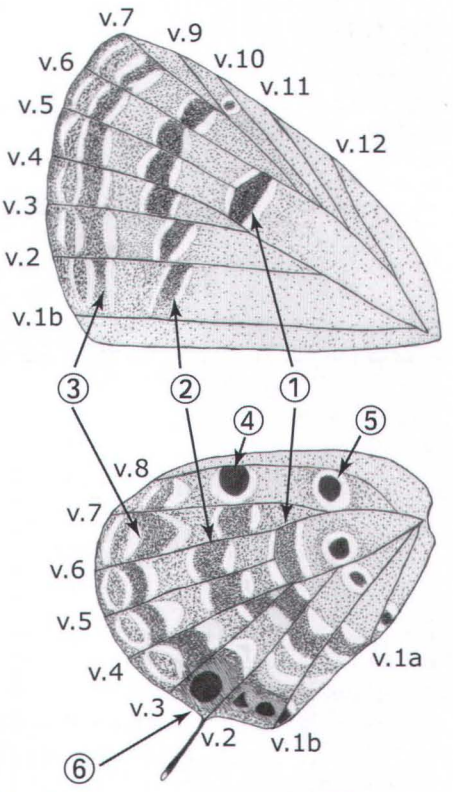

Fig. 1: *Wing pattern elements of C. pandava. The veins are numbered. The wing pattern elements, demarcated by veins, are organized into several series of spots, some of which form bands: 1: cell-end bar; 2: discal band; 3: sub-marginal band; 4: costal spot in the wing space 7; 5: sub-basal spot in space 7, followed by three sub-basal spots in the cell and spaces 1c and 1a; 6: tornal orange-crowned black spots. Illustration: Krushnamegh Kunte.*

Fig. 2: Diversity and individual variation in the seasonal forms of *C. pandava*. Note how individual variation in the extent and coloration of the wing pattern elements produces the remarkable diversity of the dry season forms in this species. **1 & 2:** upper sides of male, **4:** upper side of female. **1, 3 & 4:** wet season form of *C. pandava*. **2 & 5-12:** dry season forms of *C. pandava*. **13 & 14**: wet and dry season forms of *C. lajus*. **15 & 16:** normal and aberrant forms of *Azanus jesous*. The specimen details are as follows: **1:** Indira Gandhi National Park (IGNP), theAnamalais, Tamil Nadu, 28.v.2004. **2 & 8:** Indian Botanic Garden, Shibpur, West Bengal, 4.xi.07. **3:** Palamau Wildlife Sanctuary (WLS), Jharkhand, 17.vii.2004. **4:** Dandeli WLS, Karnataka, 2.xi.08. **5-7, 9-11:** Ambazari Garden, Nagpur, Maharashtra, **5:** 16.iii.2008, **6:** 23.ii.2008, **7:** 25.x.2007, **9:** 4.xi.2007, **10:** 30.x.2007, **11:** 30.x.07. **12:** Simlipal Tiger Reserve, Orissa, 7.i.2008. **13:** IGNP, Tamil Nadu, 3.vi.2004. **14:** Pune, Maharashtra, 26.xi.2006. **15:** Kumbalgadh WLS, Rajastan, 4.vii.2004. **16:** Chinnar WLS, Kerala, 6.ii.08. (Photo credits: Rudraprasad Das [2, 8], Aniruddha Dhamorikar [4], Shreepad Hardas [14], Rafeek Khalid [16], Krushnamegh Kunte [1, 3, 13, 15], Manoj Nair [12], Ashish Tiple [5-7, 9-11]).

slightly affected by the climatic conditions that produce the dry season form show all the characteristic wing pattern elements of the wet season form except that (1) the costal spot and the sub-basal spot in 7 on their hind wing turn brownish, and (2) the discal bands become lighter, sometimes almost as light as the ground color (Fig. 2.5-6). The typical dry season form, however, differs from the wet season form as follows: (1) The dark brown spots of the discal band in spaces 4 and 5 on the hind wing extend inwards and coalesce with the cell-end bar, forming a large brown area (Fig. 2.7-10). (2) The outer white margin of the discal band and inner white margin of the sub-marginal band coalesce either on both the wings (Fig. 2.10) or only on the hind-wing (Fig. 2.7-9 and 2.11), forming a broad white discal or post-discal band (Evans 1932; Pinratana 1981).

Individual variation and stability of the seasonal forms:

The following changes in coloration show considerable individual variation, which produce additional notable patterns among the dry season forms of *C. pandava*: (1) discal spots and cell-end bar may either coalesce on the fore wing (Fig. 2.10) or the discal spots increase in width (Fig. 2.7 and 2.12). (2) The white inner margin of the fore wing sub-marginal band becomes diffused to a variable extent (Fig. 2.5-11). (3) The area between the discal spots 4 and 5 and the cell-end bar on the hind wing becomes sooty-brown or black (Fig. 2.9-10). (4) The tornal orange-crowned black spots on the hind wing are either absent, greatly reduced in size, or without the orange (Fig. 2.5-12). (5) In highly unusual dry season forms, the discal and sub-marginal elements appear smeared (Fig. 2.12). (6) If the discal and sub-basal spots are elongated, their outer margins may turn black (Fig. 2.9-10).

The sexes are similar on the underside, although on the upper side males are brighter blue with narrow black borders whereas females have much broader borders (Fig. 2.1 and 2.4). However, there are small seasonal differences in the coloration and wing patterns on the upper side in both the sexes. In some males the blue coloration may be duller and the black border may be broader towards the apex (Fig. 2.2), but we do not know how commonly this occurs.

The seasonal polyphenism in *C. pandava* is not an isolated occurrence among Indian Polyommatini or Lycaeninae is general. In *Chilades lajus* Stoll, 1780, the dry season form has an extensive smear of dark brown on the hind wing from the cell-end bar to the wing margin, which is lacking in the wet season form (Fig. 2.13-14). In the dry season form of *Jamides celeno* Cramer, 1775, the spaces between the discal bands on both the wings are filled with dark brown whereas the tornal orange-crowned black spot is highly reduced in size and orange coloration (Kunte 2000). In *Azanus jesous* Guérin-Méneville, 1849, we have not observed a dry season form in southern India but an aberrant specimen photographed during the dry season showed several discal and sub-marginal wing pattern elements coalesced to form brown blotches (Fig. 2.15-16). Torben Larsen (personal communication) has seen neither seasonal forms nor aberrantly marked individuals among thousands of *A. jesous* in Africa. However, the aberrantly patterned specimen depicted in Fig. 2.16 shows that there is developmental and/or genetic potential for seasonally polyphenic coloration in *A. jesous*. It also shows that similar type of color smearing between the wing pattern elements occurs in *A. jesous* and in *C. pandava*, which appears to be a common response to high summer temperatures in *Chilades* and other Polyommatine and Lycaeninine butterflies.

The Indian butterfly fauna offers several nymphalid examples of seasonal polyphenism: *Melanitis leda*, *Mycalesis* spp., *Junonia almana*, as well as their close relatives (Brakefield and Larsen 1984; Nijhout 1991). Many pierids are also known to be seasonally polyphenic, *Eurema laeta* Boisduval, 1836, being a remarkable example in which both wing coloration and shape change between the seasons (Brakefield and Larsen 1984; Kunte 2000). The wet season form in *E. laeta* is bright yellow with rounded wings, and the dry season form is very dull yellow with pointed wings, which helps the butterflies blend with leaf litter during the dry season and escape predation. This note highlights a little-known but promising and phylogenetically distant example for further studies on seasonal polyphenism. Population dynamics and seasonal polyphenism in *C. pandava* have already been reported (Tiple et al. 2009). However, other aspects of seasonal polyphenism may also shed light on its ecology and evolution in *C. pandava*. For example, there is geographic variation in the occurrence of seasonal forms in *C. pandava*. The dry season forms have not been reported in the Sri Lankan subspecies, *C. p. lanka* Evans, 1925, and in populations of *C. p. pandava* in the humid tropical areas in south-east Asia (Evans 1932). These population and subspecific differences may merely indicate the lack of climatic factors (high temperatures and lower rainfall and relative humidity) that induce the dry season forms in *C. pandava* (Tiple et al. 2009). However, the possibility of polyphenism-related genetic differences and genetic assimilation cannot be overruled. Detailed comparative studies of the central Indian populations of *C. pandava* with other subspecies and closely related, seasonally non-polyphenic species may inform on the evolution of seasonal polyphenism in the tribe Polyommatini.

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Presidential Profile

John Shuey

1505 N. Delaware Street, Suite 200 Indianapolis, IN 46202 jshuey@TNC.org

When I assumed the role of president this summer, I couldn't help but ponder the many facets of lepidopterology and its impact on my life. The meeting in Chetumal symbolized many of the things that make life wonderful – the outstanding location in the Yucatan Peninsula, energetic presentations from students and professionals, and, of course the diverse mix of friends - both new and old. The persistent enthusiasm I see in lepidopterists is why I believe in our Society, and why it is such a pleasure to serve as president.

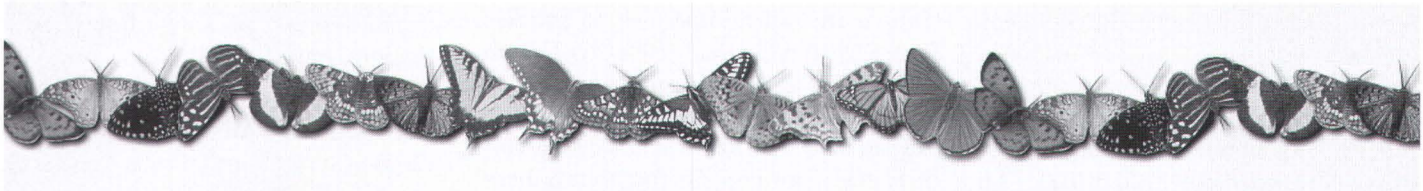
My own interests date back to childhood, when I just couldn't wait to get to fifth grade because "you have to make an insect collection"! At some level, I remain stuck in that fifth grade mindset. I love the field and attempt to spend as much time as possible out and about. But I have broadened my perspective a bit during the last 40 or so years. But just a bit.

I am a Buckeye at heart, and attended both Ohio University and Ohio State. While at OU, three people had a solid impact on my world view. Two of these, Warren Wistendahl and Henri Seibert, were throw backs to the naturalist era and were emeritus faculty even back then. I gleaned from them an intense interest in how species interact with their environments and more importantly, how ecosystems are shaped by ecological processes. Together, they helped me understand how habitats support butterflies and an appreciation that there are other species besides butterflies – like plants and birds. My advisor, Bill Romoser, taught me a lot about insects, but mostly about the nature of knowledge - that it isn't what you know that is important, but that understanding personal ignorance and corrective actions are. By and large, he taught me that smart people don't really have all the answers, but they know how to gather relevant information. And at Ohio State, I developed a serious passion for college football.

These days, I work for The Nature Conservancy in Indiana, where I have been lucky enough to find a role that allows me to feed my interests. I am still that fifth grader, looking out over an amazing prairie in awe, and to this day when a regal fritillary flits by, I sputter out a big "WOW!" But I can also look at the habitat and see the degradation that threatens the butterfly, its hostplants and structure, think about impending climate change, and develop appropriate conservation actions. That really captures the essence of what I do; look at ecosystems, assess threats to their integrity, and develop corrective strategies. In the agricultural Midwest, as often as not, this involves wholesale restoration, and I have helped lead us down an aggressive path. We are a decade into an 8,000 acre restoration designed to restore habitat connectivity and ecological processes in sand prairie and barrens mosaics. As I type right now, bulldozers are working to restore muck-soil hydrology to a fen and lake complex to the north while our fire crew is burning off the brush that is encroaching on sedge meadow at another wetland. We'll plant over 50,000 trees to decrease forest fragmentation and edge effect this spring. Three limestone glades will have encroaching red cedar removed over the winter. And so it goes... .

For some reason, The Conservancy has tolerated my passion for butterflies, perhaps even encouraging it. For the last decade, I've spent a fair amount of time sampling Belize and have participated in some truly spectacular efforts to collect remote habitats. To date, we have amassed over 26,000 records representing almost 1,000 species of butterflies. This project has become a bit of an obsession with me, and I hardly collect anywhere but Belize these days. It's turned into a puzzle that must be solved, and every day in the field turns up more of the missing pieces. Because of family obligations, this work (play) is hard to schedule, but I can still muster enough enthusiasm to rise long before anyone else, and spend my mornings working on this particular puzzle. Even when they're on a pin, I can't help but mutter "wow" occasionally.

So, I hope your plans for the coming year include some equivalent level of lep enthusiasm. Next year's annual meeting should be spectacular, and I hope that you are looking forward to it as much as am I. Like I said, the meetings are about friends, old and new. And my son, Ryan, will be 10 next year. So we two fifth graders are planning on watching Washington butterflies in awe together. We hope to see you there.



Conservation Matters:
Contributions from the Conservation Committee

Formal Protection of Lepidoptera species in Alberta, Canada

by Greg Pohl

Natural Resources Canada, 5320 – 122 St., Edmonton, AB, Canada T6H 3S5 ***gpohl@nrcan.gc.ca***

Like most other jurisdictions, Canada has only recently begun to look at insects from a conservation perspective. Legislation that was developed primarily for bird and mammal species is now being brought to bear on these less conspicuous entities that make up the vast majority of living species. Naturally, butterflies were the first insect group to be considered, but several moth species are being examined as well. As a member on both the provincial and federal scientific subcommittees charged with doing species assessments, I'll attempt to demystify the process here. Unfortunately, some of the agencies involved have long names, so beware, this article has a high acronym count.

Alberta is one of Canada's largest and most diverse provinces. With an area of about 662,950 km^2, it borders the Northwest Territories at 60^{0}N, and Montana to the south at 49^{0}N, spanning a distance of about 1220 km north to south. The western boundary follows the crest of the Rocky Mountains along the Continental Divide, to about 54^0 latitude. Because most of the province was covered by ice during the last glaciation, virtually all living things have migrated into the regions within the last 10,000 years and there are few endemics. However, the fauna is quite rich, due to the diverse communities of the Boreal, Cordilleran and Grassland regions in the province. A map of the province and its ecoregions has been published on the World Wide Web by the Natural Regions Committee (2006). The last published checklist of Alberta Lepidoptera was published over fifty years ago (Bowman 1951). The butterflies were most recently treated by Acorn (1993), Bird et al.(1995) and Layberry et al.(1998). A new checklist by the author and others is in the final stages of preparation, and should be published by the end of 2009. It lists 175 species of butterflies and 2185 species of moths reported from the province (Pohl et al., in prep.).

Federal Protection

Federally in Canada, species are protected by the Species At Risk Act (SARA). Protection under SARA makes it illegal to kill or harm a species on federal lands, to possess or traffic in them, or to destroy their residences. These laws are enforced, and carry a maximum penalty of $1,000,000 or five years imprisonment. As well, the federal Department of the Environment, in cooperation with provincial and other federal departments, is obligated to develop and implement recovery plans for protected species. The minister is required to present a recovery plan within four years of a species being listed under SARA, and to report on the implementation of that plan every five years. However, there are no rigorous requirements that the goals of these recovery plans are met, so their success varies.

Species are assessed for conservation status by the Committee On the Status of Endangered Wildlife In Canada (COSEWIC). COSEWIC reports to the Canadian Endangered Species Conservation Council (CESCC), which is made up of federal, provincial, and territorial ministers responsible for the management of species at risk. That body in turn makes recommendations to parliament, which can designate protected status under SARA.

COSEWIC is composed of 30 voting members from a variety of organizations to facilitate national agreement on species at risk in Canada:

- Four members from federal government departments (the Canadian Wildlife Service, Department of Fisheries and Oceans, Parks Canada, and the Canadian Museum of Nature on behalf of the Federal biodiversity Information Partnership)

- Thirteen members from provincial and territorial governments

- Three members from national non-government scientific, conservation or environmental organizations

- Nine scientific specialists on particular taxonomic groups (chairs of Species Specialist Subcommittees; see below)

- One chair from the Aboriginal Traditional Knowledge (ATK) Specialist group

Candidates for COSEWIC are appointed to a four-year renewable term. Each of the nine Specialist Subcommittees focuses on a particular taxonomic group. They are made up of scientific experts and at least one expert from the ATK Subcommittee. SSC members are also appointed to four-year renewable terms, and are expected to conduct assessments with strict impartiality and independent of non-scientific considerations.

Lepidoptera are handled by the Arthropod Specialist Subcommittee. This group is also actively assessing

odonates, tiger beetles, bees, and selected other arthropod taxa. The subcommittee maintains a prioritized candidate list, and puts names forward for consideration by the parent committee (COSEWIC) to consider for funding an evaluation. From the species put forward by the various SSCs, COSEWIC selects a small number of species each year and commissions status reports on them. A significant percentage of these have been insect species in recent years. COSEWIC may also accept unsolicited reports from the public. These reports are then approved by the subcommittee and used to suggest assessments of the species' risk of extinction or extirpation. The assessment is a rigorous process based on population size, geographic range, and the perceived threats to the species. The result is a status recommendation; the species is deemed not *at risk*, *threatened*, *endangered*, *extirpated*, or *extinct*. Additionally, a species can be deemed to be of *special concern* if it does not quite meet the requirements of *threatened* or *endangered*, but the subcommittee has a good reason to recommend that it be protected nevertheless. A species can also be deemed *data deficient*, meaning that not enough is known about the species, to make an accurate designation. Assessments of *threatened*, *endangered*, or of *special concern* result in a recommendation for protected status under SARA. At that point, the recommendations are reviewed by the Canadian Endangered Species Conservation Council, and then sent to parliament for debate before (hopefully) being passed into law. Species are re-assessed every ten years to see if a status change is warranted.

So far, COSEWIC has assessed 29 butterfly and moth species for conservation status; 10 of these occur in Alberta (Table 1). Detailed status reports and regular summary reports of species at risk are available on the COSEWIC website (Committee On the Status of Endangered Wildlife in Canada 2009). A list of species protected under SARA is available on the SARA registry website (Species at Risk Public Registry 2008).

Provincial Protection in Alberta

Provincially in Alberta, protected status for threatened and endangered species is designated under the Alberta Wildlife Act. Species are assessed by the Scientific Subcommittee of the Alberta Endangered Species Conservation Committee (AESCC). The scientific subcommittee is made up of experts from across all biological disciplines, and deals with plants and animals. Like its federal counterpart on COSEWIC, the subcommittee commissions status reports and makes status recommendations to the parent committee, the AESCC. however, unlike its federal counterpart, the AESCC includes members from industry and non-governmental organizations, as well as from government departments. With such a diverse group of stakeholders at the table, in a province whose economy

Species	Common Name	Assessment Date	COSEWIC Recommendation	SARA Protection
Schinia avemensis (Dyar)	Gold-edged Gem	2006	endangered	endangered
Satyrium semiluna Klots	Half-moon Hairstreak	2006	endangered	endangered
Prodoxus quinquepunctella (Chambers)	Five-spotted Bogus Yucca Moth	2006	endangered	endangered
Tegeticula corruptrix Pellmyr	Non-pollinating Yucca Moth	2006	endangered	endangered
Tegeticula yuccasella (Riley)	Yucca Moth	2002	endangered	endangered
Schinia verna Hardwick	Verna's Flower Moth	2005	threatened	pending
Danaus plexippus (Linnaeus)	Monarch	2001	special concern	special concern
Limenitis weidemeyerii Edwards	Weidemeyer's Admiral	2000	special concern	special concern
Melaporphyria immortua Grote	Dark-banded Flower Gem	2005	data deficient	none
Copablepharon grandis (Strecker)	Pale Yellow Dune Moth	2007	special concern	pending
Copablepharon longipenne Grote	Dusky Dune Moth	2007	endangered	pending

Table 1. *Lepidoptera species occuring in Alberta that have been assessed for conservation status by COSEWIC, and resulting SARA protection.* *See photos pp. 93.*

is based on resource extraction, the AESCC's review of protected status recommendations can be a politically-charged process. For example, protected status for the Grizzly Bear, a contentious species with an Alberta population somewhere under 1000, has been stalled for years as stakeholders debate its status as either a game animal or threatened species. If a species' status recommendation passes review by the EASCC, a recommendation is made to the provincial Minister of Sustainable Resource Development, to designate protected status under the Alberta Wildlife Act. Under the act, it is illegal to purposely harm or kill a protected species on provincially-controlled or private land in Alberta, and a recovery plan must be developed and put into action for the species. Implementation of recovery plans is another matter; the involvement of diverse stakeholders means that the will and resources to change land usage are often lacking. We have seen meaningful steps taken for charismatic species such as the Peregrine Falcon and Swift Fox, but recovery actions for other species are often stalled at the planning stage.

A major problem with the Alberta Wildlife Act is that invertebrates are not currently covered under it, so there is no official provincial protection at this time for them. Members of the AESCC are currently working to propose changes to the Provincial species At Risk Act, to extend protection to invertebrate species. Despite the current lack of legislated protection for them, the AESCC has assessed a few insect species that had already been designated federally. So far, three Lepidoptera species have been evaluated: Weidemeyer's Admiral (*Limenitis weidemeyerii* Edwards) has been designated "Special Concern"; the Yucca Moth (*Tegeticula yuccassella* (Riley)) has been recommended for "Endangered" status; and Verna's Flower Moth (*Schinia verna* Hardwick) has been designated as "data deficient". Provincial status reports and other information can be found on the AESSC website (Alberta Endangered Species Conservation Committee 2009).

General Status Rankings

Besides the aforementioned federal and provincial assessments of selected species, general status assessments are carried out on selected taxonomic groups in Canada. Like global G-ranks (NatureServe 2009), these rankings do not confer any protected status, but they provide a general perspective on the conservation status of wild species. Federally, the National General Status Working Group (NGSWG) assigns federal and provincial rankings to all species in certain target groups, and produces a report every five years. The NGSWG is made up of representatives from each of the 13 Canadian provinces and territories, as well as representatives from federal agencies that deal with wild species. Butterflies were first ranked in 2000 (Canadian Endangered Species Conservation Council 2001); selected moth groups (saturnids, sphingids, and arctiine noctuids) are scheduled to be included in the 2010 report.

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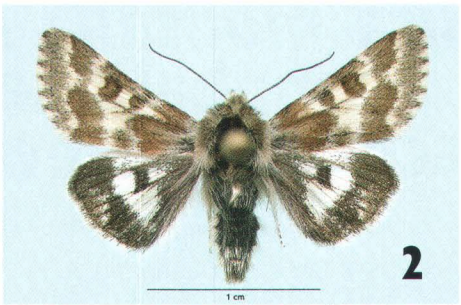
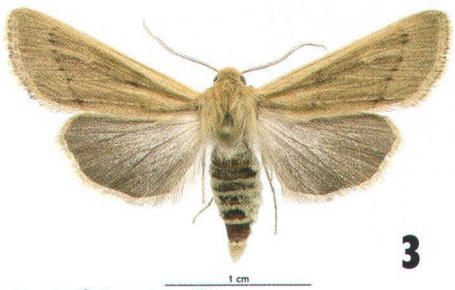
New Prices for Lepidopterists' Society T-Shirts

A new supply of Lepidopterists' Society t-shirts are now available and with this new supply comes a new price: $12.00 each. Shipping remains unchanged at $5.00 for the first shirt, $2.00 for each additional shirt (U.S. and Canada; inquire for shipping charges to other countries). There is also a new size available: XXL, in both colores (navy blue or yellow).

The t-shirts are high quality, 100% cotton, preshrunk and proudly display a 7-inch diameter Lepidopterists' Society logo on the front. For ordering form please see the mailing insert that came with this issue, or indicate quantity, color and size desired and send along with a checkto Kelly Richers, Treasurer, The Lepidopterists' Society 9417 Carvalho Court, Bakersfield, CA. 93311-1846.



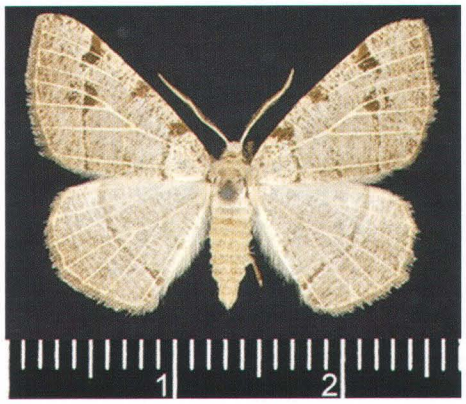


Endangered Alberta Lepidoptera. **See article pp. 91**

1) A pair of mating *Schinia avemensis* (Dyar), on their host plant, a sunflower (*Helianthus* sp.). Photo by Thomas J. Simonsen. **2)** *Schinia verna* Hardwick, collected near Jenner, AB, by G.G. Anweiler, 19 May 2000. **3)** *Copablepharon longipenne* (Grote), collected at Canadian forces Base Suffield by G.G. Anweiler, 13 August 2008. Photos 2 and 3 by Gary G. Anweiler.

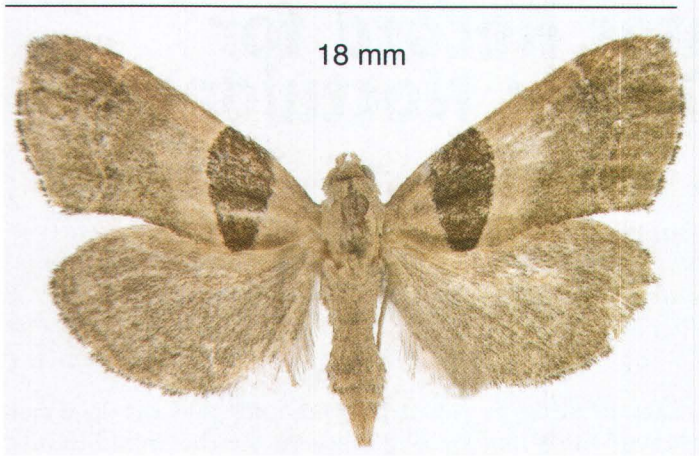
Chlosyne rosita montana: A new Record for New Mexico

Two tattered wings found floating in an irrigation canal in Las Cruces, New Mexico added another species to the list of lepidoptera found in the state. See article pp. 94.



Discovery of a Northern Population of *Isturga dislocaria* in southern Quebec, Canada

Light traps with mercury vapor lamps brought in sevearl specimens of Isturga dislocaria *in areas where it's host plant,* Celtis occidentalis *was located. See article on pp. 104.*



First U.S. Record of *Eustrotia fausta*

The specimen above was taken northeast of Vail, Pima Co., AZ on September 8, 2009. See note on page 94.

Presidential Profile: John Shuey

Newly elected President of the Lepidopterists' Society, John Shuey checks out the moths at the sheet. Read his profile on pp. 89.

Chlosyne rosita montana A. Hall, 1924 (Lepidoptera: Nymphalidae: Melitaeini): a new record for New Mexico

Noah Arthur

3648 Nevil St. Oakland, CA

On August 13, 2009, near the intersection of Mesilla Hills Drive and S. Fairacres Road, Las Cruces, Dona Ana County, New Mexico, I found a forewing and hindwing of *Chlosyne rosita montana* A. Hall, 1924 (Figs. 1-2), apparently from the same individual. The hindwing was spotted first, as it was floating in a roadside irrigation canal. Initially, I thoght the wing was from a small sphingid, but upon fishing it out of the canal with my net, it was identified as the hindwing from a *Chlosyne*, apparently *C. rosita* A. Hall, 1924. In a subsequent search of the canal, I found one forewing, but no more. The canal was near a road, surrounded by agricultural fields (largely alfalfa), pecan groves, mesquite scrub, a larger canal and the Rio Grande, both with riparian vegetation. After the wings were found, a search along the canal and in nearby areas for live adults of *C. r. montana* was unsuccessful.

Based on the details of wing shape and markings (Figs. 1-2, pp. 93), these wings represent *C. rosita montana*, apparently a female. This taxon occurs in central and northwestern Mexico (Brock & Kaufman 2006, Warren et al. 2009), and is a regular resident as far north as central Sonora (Bailowitz and Brock 1991). While *C. r. montana* has been reported as stray individuals in southeastern Arizona on several occasions, in Cochise, Pima, and Santa Cruz counties (Bailowitz & Brock 1991), this constitutes the first report of *C. rosita* from New Mexico (see Toliver et al. 1994, Opler et al. 2009).

It should be noted that small amounts of silk, apparently from a spider web, were found on parts of the wings, suggesting that the butterfly might have initially become trapped in a spider web on the margins of the canal.

I would like to thank Andrew Warren for helping me with the butterfly's identification, editing this note, encouraging me to publish this, and being a great encouragement in general to my interest in Lepidoptera.

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First United States Record for *Eustrotia fausta* Druce: Noctuidae

Clifford D. Ferris

5405 Bill Nye Avenue, R.R.#3, Laramie, WY 82070. Research Associate:McGuire Center for Lepidoptera and Biodiversity, Florida Museumof Natural History, University of Florida, Gainesville, FL; C.P. Gillette Museum of Arthropod Diversity, Colorado State University,Ft. Collins, CO; Florida State Collection of Arthropods, Gainesville,FL.

Eustrotia fausta was described by Druce in 1889 from Panama.Recently a friend, Jillian Cowles, sent me a specimen of this species that she collected from her kitchen window on the eveningof 8 September, 2009. The locality is Colossal Cave Road NE ofVail, Pima Co., Arizona, 3370' at the base of the RinconMts. I thank J. D. Lafontaine for confirming both my initial species identification, and that the specimen is a new record for theUnited States. (See photo pp. 93.)

Herbs and Spices for Man and Butterflies

Gary Noel Ross

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

Because I now am "on the other side of 50," I confess that I spend an inordinate amount of time reading about health issues. Seems as if the latest hubbub for a healthy and long-lasting life centers on protecting our bodies from free radicals—those maverick molecules that form as by-products of normal metabolism and that are often triggered by environmental factors such as the sun, contaminants and even stress. The chief warriors in this on-going battle are collectively referred to as "antioxidants," of which the vast majority are plant based. In my school days, such plant-based chemicals—along with plant pigments—were simply cited as **secondary plant substances** because research indicated they did not take part in the physiology of the plants themselves. Currently, however, the name **phytochemicals**, literally "plant chemicals," is usually employed. (In the field of herbal medicine, the name **phytomedicines** is more common.)

Although phytochemicals may not take part in a plant's metabolism, the substances nonetheless have been proven crucial in a plant's temporal and evolutionary success. Basically, phytochemicals either attract or repel microbes, animals, and insects. Consider: Phytochemicals in situ can act as (1) antibiotics to protect from microbes (viruses, bacteria, and fungi), (2) as anti-inflammatory agents that boost immunity, (3) aromas to repel herbivores, (4) aromas and/or colors to attract animals for pollination or seed dispersal, or (5) airborne hormones to communicate on the cellular level with other plants regarding defense and growth.

Today The Chemical Heritage Foundation reports that more than 100,000 phytochemicals have been isolated and identified—and the number keeps escalating as more and more species of plants are analyzed. While such molecules serve the botanical kingdom, scientists have learned that many if not most of these substances can be pharmacologically active in us, *Homo sapiens*. Who, for instance, has not heard of such exotic fare as echinacea for stimulating our immune system, ginkgo biloba for boosting memory, kava and chamomile to tone down anxiety and promote sleep, St. John's wort to reduce depression, and saw palmetto to promote prostate health in men? And let us not overlook such popular drugs such as caffeine, nicotine, opium (and derivatives), and salicylic acid (aspirin). Laboratory experiments have proven that phytochemicals either in their true or altered form work their magic first on the cellular level. In turn, this promotes a response in tissues, organs, and organ systems, so that in the end, we recognize a reduction or even elimination of disease, infection, and inflammation. And it stands to reason, that if we can benefit from such health-enhancing activity, other biota can benefit too. I am convinced that the bottom line is as the old adage suggests: "We [and our animal kin as well] are what we eat."

Lepidopterists—in particular those who garden for butterflies—are well versed in insect-plant relationships, of course. Take, for illustration, larval food plants. Milkweeds are sought out by female monarch butterflies to lay their eggs; parsley, fennel, dill, and their relatives are used by black swallowtails; and citrus and rue are the preferred hosts of the giant swallowtail. To quote another adage: "If you plant them, they will come!"

Such close relationships are termed "host specificity" and result from the co-evolution between plants and insects. A quintessential example of this timeless interplay involves milkweed plants (*Asclepias*) and the monarch butterfly (*Danaus*). Modern milkweeds contain bitter-tasting cardiac glycosides that prove distasteful and even toxic to most animal species. Monarch larvae, however, find milkweeds delectable; in fact, the caterpillars literally sequester the chemicals during feeding. These are then passed along through the chrysalis and finally to the adult butterflies. The result is that the monarch caterpillar, chrysalis, and butterfly are all unpalatable to many predators. But how did this iconic story line develop?

Here's the way conventional evolutionary biologists theorize it went. (Keep in mind that evolution is dynamic and usually proceeds in a step-by-step fashion, and plants and insects have been around for at least tens-of-millions of years.) In the distant past, the "proto-milkweeds" did not contain toxins; hence, they were mundane menu by herbivores—especially caterpillars. But perchance, a random genetic mutation in a single plant initiated the synthesis of a particular chemical that possessed distasteful or even toxic qualities that deterred caterpillars. With such an asset, this mutant plant flourished, and because insects usually have multiple life cycles each year, the mutation spread rapidly. Now the paradigm of classic Darwinian natural selection, aka "survival of the fittest" was launched. In a nutshell, what began as a simple mutation proved over generations to be so advantageous that the oddball DNA eventually became incorporated into the genome of the entire population. Voila! Milkweeds were now "caterpillar proof."

But not for long. At some early point in history a single "proto-monarch" caterpillar developed a mutation—again at random—that produced a metabolic pathway that counteracted the milkweeds' chemical defense. Because

this individual could now utilize an unexploited food source, this caterpillar was favored by natural selection; in time, the mutation entered the DNA code for the butterfly species. Now every monarch larva could feed with impunity.

Again, not for long. With additional random mutations acted upon by natural selection, the chemical arsenal of the milkweeds was retooled to yet again produce caterpillar-resistant plants. And not to be defeated, monarch larvae designed ways to detoxify these also. Thus, bit by bit, mutation after mutation, over eons of time milkweeds created the signature cardiac glycosides that identify all rank and file species to this day and monarch butterflies and their relatives are resistant. And in an unexpected twist of fate, monarch caterpillars upped the ante by introduced two other dimensions into the age-old competition. First, contemporary monarch larvae actually sequester the glycosides and then pass them along to their adult stage. (This, of course, renders larval, pupal, and adult stages of the butterfly unpalatable and even toxic to many potential predators.) Second, both monarch caterpillars and butterflies have evolved—again through natural selection—conspicuous color patterns that advertise their inherent distastefulness to potential predators (termed "aposematic coloration"). And that is the status, at least as of today.

What I find most interesting in this relentless tit for tat between the plant and insect worlds is the manner in which larval butterflies deal with a plant's chemical arsenal. At first glance, one might suppose that the simplest method would be to isolate and then excrete the chemicals per se. While such may be point of fact in some situations, excretion does not seem to be a universal modus operandi. In those cases that have been analyzed, the experts theorize that the process somehow involves the creation of new biosynthetic pathways within the caterpillars in which the potential poisons are chemically rearranged, transforming them into regulatory enzymes and coenzymes. Now, instead of killing, the specialized phytochemicals are actually required for normal growth. In the case of the monarch, the butterfly became a milkweed specialist. Put simply, monarchs are "hooked" on milkweed.

Of course, an inextricable dependency upon a single source of food can pose serious risks. What, for instance, happens if the host plant becomes endangered or worse still, extinct? Needless to say, the obligatory herbivore suffers, too. (This scenario has indeed played out time and time again.) Still, by and large, having exclusive rights to a verdant larder that is avoided by other herbivores significantly reduces competition for food. And let's not forget that because phytochemicals still protect their hosts from rampant diners, the plants benefit from the relationship, too.

I became acutely aware of one instance of co-evolution between butterflies and plants during the 1990s while conducting extensive field research in Arkansas and North Carolina with the Diana fritillary (*Speyeria diana*) and great spangled fritillary (*S. cybele*), and in Missouri with the regal fritillary (*S. idalia*) and great spangled fritillary. To summarize: These three butterfly species exhibit exceptionally long lives in both their larval and adult stages. Larvae feed exclusively on violets (*Viola*) and adults are addicted to the nectars of beebalm (*Monarda*), butterfly weed (*Asclepias*), coneflower (*Echinacea*), gayfeather (*Liatris*), Joe-pye weed (*Eupatorium*), mountain mint (*Pycnanthemum*), and thistle (*Cirsium*/*Silybum*). And because all of these species are stocked with potent antimicrobial and anti-inflammatory compounds, I am convinced that this association is not by coincidence. In "What's for Dinner? A New Look at the Role of Phytochemicals in Butterfly Diets" (NEWS OF THE LEPIDOPTERISTS' SOCIETY, 2003, Vol. 45, No. 3), I theorized that both caterpillars and butterflies of these three species of *Speyeria* secure from their select food sources a cocktail of (1) nutrients and micronutrients, especially high-energy sugars and (2) cell-protecting phytochemicals.

More recently, to prepare a program titled "Gardening with Herbs and Spices for Cooks and Butterflies" for a culinary workshop, I cross-referenced the host plants (recorded) and preferred nectar plants (my personal observations) of Louisiana's 124 resident herbivorous (phytophagous) butterflies (140 species have been logged for the state but that includes 15 strays and 1 species whose larvae are carnivorous) with plants recognized as herbs and spices by practitioners in the culinary arts and the pharmaceutical/medical professions. There was a virtual 100 percent correlation. (I say "virtual" because a few satyrids and hesperiids (skippers) may utilize species of grass with no currently—and I emphasize "currently"—listed human-friendly phytochemicals.) Put another way, all or practically all of Louisiana's butterflies appropriate plants known to harbor identified phytochemicals with proven medicinal properties—and the majority of the host plants have culinary benefits, too. (NOTE: The majority of culinary herbs and spices—including old-time favorites such as basil, garlic, onion, oregano, rosemary, sage and thyme—remain, as nature originally intended, off-limits to butterflies and to the vast majority of other animals—including adult humans who have cultivated a taste for them.)

Because I found the research enlightening, I present my detailed results here in TABLE 1 and TABLE 2. [In this context, an herb is defined as "a plant or plant part valued for its medicinal, culinary, or aromatic quality." A spice is defined as "a non-leafy part or product of a plant that is used to flavor foods."]

Acknowledgement:

I wish to thank culinary herbalist Sarah Liberta for inspiring me to participate in one of her unique workshops in Baton Rouge, LA on March 11, 2009.

Table I. Herbs and Spices Preferred as Host Plants for Louisana Butterflies

Herb/Spice (Aromatic=A, Culinary=C, Medicinal=M)	Butterfly Species
Acanthus (M)	Seminole Texan Crescent (*Anthanassa texana*)
Alfalfa/Spotted bur (medic) clover (*Medicago*) (C,M)	Clouded Sulphur (*Colias philodice*), Orange Sulphur (*C. eurytheme*), Southern Dogface (*Zerene cesonia*), Gray Hairstreak (*Strymon melinus*), Eastern Tailed Blue (*Cupido comyntas*), Reakirt's Blue (*Echinargus isola*), Painted Lady (*Vanessa cardui*), Northern Cloudywing (*Thorybes pylades*), Funereal Duskywing (*Erynnis funeralis*)
Amaranth (*Amaranthus*) (C, M)	Hayhurst's Scallopwing (*Staphylus hayhurstii*), Common Sootywing (*Pholisora catullus*)
Artichoke (*Cynara*) (C, M)	Painted Lady (*Vanessa cardui*)
Ash (*Fraxinus*) (M)	Eastern Tiger Swallowtail (*Papilio glaucus*), Mourning Cloak (*Nymphalis antiopa*)
Aster (M)	Silvery Checkerspot (*Chlosyne nycteis*), Pearl Crescent (*Phyciodes tharos*)
Bay, Sweet (*Magnolia*) (A, C, M)	Eastern Tiger Swallowtail (*Papilio glaucus*), Spicebush Swallowtail (*P. troilus*), Palamedes Swallowtail (*P. palamedes*)
Betel, Mexican (*Piper*) (C, M)	Giant Swallowtail (*Papilio cresphontes*)
Bittercress (*Cardamine*) (C, M)	Falcate Orangetip (*Anthocharis midea*)
Blueberry (*Vaccinia*) (C, M)	Striped Hairstreak (*Satyrium liparops*), Henry's Elfin (*Callophrys henrici*), Spring Azure (*Celastrina ladon*)
Calendula/Pot Marigold (A, C, M)	Painted Lady (*Vanessa cardui*)
Cane, Giant (*Arundinaria*) (C, M)	Southern Pearly-Eye (*Lethe portlandia*), Creole Pearly-Eye (*L. creola*), Roadside Skippers (*Amblyscirtes* sp.)
Canna Lily (C, M)	Brazilian Skipper (*Calpodes ethlius*)
Cassia/Senna (C, M)	Orange Sulphur (*C. eurytheme*), Cloudless Sulphur (*Phoebis sennae*), Orange-barred Sulphur (*P. philea*), Little Yellow (*Pyrisitia lisa*), Sleepy Orange (*Abaeis nicippe*)
Cedar, Eastern Red (*Juniperus*) (A, C, M)	Juniper Hairstreak (*Callophrys gryneus*)
Cherry, Black (*Prunus*) (C, M)	Eastern Tiger Swallowtail (*P. glaucus*), Coral Hairstreak (*Satyrium titus*), Striped Hairstreak (*S. liparops*), Henry's Elfin (*C. henrici*), Spring Azure (*Celastrina ladon*), Red-spotted Purple (*Limenitis arthemis astyanax*)
Citrus (A, C, M)	Giant Swallowtail (*P. cresphontes*), Gray Hairstreak (*Strymon melinus*)
Clover, Bush/Lespedeza (C, M)	Eastern Tailed-Blue (*Cupido comyntas*), Spring Azure (*C. ladon*), Silver-spotted Skipper (*Epargyreus clarus*), Hoary Edge (*Achalarus lyciades*), Northern Cloudywing (*Thorybes pylades*), Southern Cloudywing (*T. bathyllus*), Confused Cloudywing (*T. confusis*)
Clover, Prairie (*Dalea*) (C, M)	Southern Dogface (*Zerene cesonia*)
Clovers - Buffalo, Crimson, Persian, Red, White Dutch, Yellow sour (*Trifolium/Melilotus*) (C, M)	Clouded Sulphur (*C. philodice*), Orange Sulphur (*C. eurytheme*), Southern Dogface, (*Z. cesonia*), Barred Yellow (*E. daira*), Gray Hairstreak (*S. melinus*), Reakirt's Blue (*Echinargus isola*), Eastern Tailed-Blue (*C. comyntas*), Spring Azure (*C. ladon*), Northern Cloudywing (*T. pylades*), Southern Cloudywing (*T. bathyllus*)

Coneflower, Purple (*Echinacea*) (C, M)	Silvery Checkerspot (*Chlosyne nycteis*)
Cottonwood, Eastern (*Populus*) (M)	Eastern Tiger Swallowtail (*P. glaucus*), Mourning Cloak (*Nymphalis antiopa*), Red-spotted Purple (*L. arthemis astyanax*), Viceroy (*L. archippus*)
Croton (A, M)	Goatweed Leafwing (*Anaea andria*)
Crucifers/Mustards (*Brassica*), Capers (*Capparis*), Nasturtium (*Tropoeolum*) (A, C, M)	Checkered White (*Pontia protodice*), Cabbage White (*Pieris rapae*), Great Southern White (*Ascia monuste*), Painted lady (*V. cardui*)
Daisy, Ox-eye (*Chrysanthemum*) (M)	Spring Azure (*C. ladon*)
Dogbane (*Apocynum*) (A, M)	Monarch (*Danaus plexippus*), Queen (*D. gilippus*)
Dogwood (*Cornus*) (M)	Spring Azure (*C. ladon*)
Dutchman's Pipe/Virginia Snakeroot (*Aristolochia*) (A, M)	Pipevine Swallowtail (*Battus philenor*)
Elm (*Ulmus*) (M)	Question Mark (Polygonia interrogationis), Eastern Comma (*P. comma*), Mourning Cloak (*N. antiopa*), Painted Lady (*V. carudi*)
Everlasting (*Anaphalis*) (A, C, M)	American Painted Lady (*V. virginiensis*)
Flax (*Linum*) (C, M)	Variegated Fritillary (*Euptoieta claudia*)
Frog (fog)-fruit (*Phyla*) (M)	Phaon Crescent (*Phyciodes phaon*), Common Buckeye (*Junonia coenia*)
Glasswort (*Salicornia*), Saltbush (*Atriplex*) (C, M)	Eastern Pygmy Blue (*Brephidium pseudofea*)
Grasses - Bermuda (*Cynodon*), Broomsedge (*Andropogon*), Cock's Foot (*Dactylis*), Festuca, Johnson (*Sorghum*), Switchgrass (*Panicum*) (A, C, M)	Gemmed Satyr (*Cyllopsis gemma*), Carolina Satyr (*Hermeuptychia sosybius*), Georgia Satyr (*Neonympha areolata*), Little Wood-Satyr (*Megisto cymela*), Common Wood-Nymph (*Cercyonis pegala*), and grass skippers -- especially Fiery Skipper (*Hylephila phyleus*), Whirlabout (*Polites vibex*), Sachem (*Atalopedes campestris*), and Ocola Skipper (*Panoquina ocola*)
Hackberry (*Celtis*) (C, M)	American Snout (*Libytheana carinenta*), Question Mark (*P. interrogationis*), Mourning Cloak (*N. antiopa*), Hackberry Emperor (*Asterocampa celtis*), Tawny Emperor (*A. clyton*)
Hawthorn (*Crataegus*) (M)	Striped Hairstreak (*S. liparops*)
Hibiscus, Hollyhock, Rose of Sharon (*Althaea*) (C, M)	Gray Hairstreak (*S. melinus*), Painted Lady (*V. cardui*), Common Checkered Skipper (*Pyrgus communis*), Tropical Checkered Skipper (*P. oileus*)
Hickory, Pecan (*Carya*) (C, M)	Banded Hairstreak (*Satyrium calanus*), Striped Hairstreak (*S. liparops*), Gray Hairstreak (*Strymon melinus*)
Hog Peanut (*Amphicarpaea*) (M)	Silver-spotted Skipper (*E. clarus*), Long-tailed Skipper (*Urbanus proteus*)
Hops (*Humulus*) (C, M)	Spring Azure (*C. ladon*), Question Mark (*P. interrogationis*), Eastern Comma (*P. comma*), Mourning Cloak (*N. antiopa*), Red Admiral (*Vanessa atalanta*)
Hoptree/Hop Wafer (*Ptelia*) (C, M)	Giant Swallowtail (*P. cresphontes*), Eastern Tiger Swallowtail (*P. glaucus*)
Hornbeam, American/Ironwood (*Carpinus*) (M)	Striped Hairstreak (*S. liparops*), E. Tiger Swallowtail (*P. glaucus*), Red-spotted Purple (*L. arthemis astyanax*)
Hornbeam, Hop/Ironwood (*Ostrya*) (M)	Mourning Cloak (*N. antiopa*), Red-spotted Purple (*L. arthemis astyanax*)
Indigo, False/Lead Plant (*Amorpha*) (M)	Southern Dogface (*Z. cesonia*), Gray Hairstreak (*S. melinus*), Silver-spotted Skipper (*E. clarus*), Hoary Edge (*A. lyciades*)
Indigo, Wild (*Baptisia*) (M)	Clouded Sulphur (*C. philodice*), Orange Sulphur (*C. eurytheme*), Frosted Elfin (*C. irus*), Gray Hairstreak (*S. melinus*), Eastern-tailed Blue (*C. cupido*), Wild Indigo Duskywing (*Erynnnis baptisiae*)

Indigo/Indigofera (M)	Gray Hairstreak (*S. melinus*), Reakirt's Blue (*E. isola*), Silver-spotted Skipper (*E. clarus*), Hoary Edge (*A. lyciades*), Zarucco Duskywing (*E. zarucco*)
Kudzu (*Pueraria*) (C, M)	Silver-spotted Skipper (*E. clarus*)
Laurels - Bay, Red (*Persia*), Camphor (*Cinnamonum*), Sassafras, Spicebush (*Lindera*) (A, C, M)	Eastern Tiger Swallowtail (*P. glaucus*), Spicebush Swallowtail (*P. troilus*), Palamedes Swallowtail (*P. palamedes*)
Lettuce, Garden (*Lactuca*) (C, M)	Painted Lady (*V. cardui*)
Licorice (*Glycyrrhiza*) (A, C, M)	Reakirt's Blue (*E. isola*), Gray Hairstreak (*S. melinus*), Orange Sulphur (*C. eurytheme*), Silver-spotted Skipper (*E. clarus*)
Locust, Honey (*Gleditsia*) (M)	Silver-spotted Skipper (*E. clarus*)
Mallow (*Malva, Sida*) (C, M)	Gray Hairstreak (*S. melinus*), Painted Lady (*V. cardui*), Common Checkered Skipper (*P. communis*), Tropical Checkered Skipper (*P. oileus*)
Milkweeds - Butterfly Weed, Mexican, Spider, Swamp (*Asclepias*) (M)	Monarch (*Danaus plexippus*), Queen (*D. gilippus*)
Mistletoe (*Phoradendron*) (M)	Great Purple Hairstreak (*Atlides halesus*)
Mullein, Common (*Verbascum*) (M)	Gray Hairstreak (*S. melinus*)
Nettles (*Urtica*) (C, M)	Question Mark (*P. interrogationis*), Painted Lady (*V. cardui*), Red Admiral (*V. atalanta*)
New Jersey Tea (*Ceanothus*) (C, M)	Spring Azure (*C. ladon*)
Oak, White, Red (*Quercus*) (C, M)	Banded Hairstreak (*S. calanus*), White M Hairstreak (*Parrhasius m-album*), Southern Hairstreak (*S. favonius*), Gray Hairstreak (*Strymon melinus*), Juvenal's Duskywing (*E. juvenalis*), Horace's Duskywing (*E. horatius*)
Paintbrush, Indian (*Castilleja*) (M)	Common Buckeye (*Junonia coenia*)
Passionflower (*Passiflora*) (C, M)	Gulf Fritillary (*Agraulis vanillae*), Zebra Heliconian (*Heliconius charithonia*), Variegated Fritillary (*Euptoieta claudia*)
Pawpaw (*Asimina*) (C, M)	Zebra Swallowtail (*Eurytides marcellus*)
Pine (*Pinus*) (A, C, M)	Eastern Pine Elfin (*Callophrys niphon*)
Poplar, Yellow/Tulip Tree (*Liriodendron*) (M)	Eastern Tiger Swallowtail (*P. glaucus*), Spicebush Swallowtail (*P. troilus*)
Pussy's Toes (*Antennaria*) (M)	American Painted Lady (*V. virginiensis*)
Ragweed (*Ambrosia*) (M)	Gorgone Checkerspot (*C. gorgone*), Silvery Checkerspot (*C. nycteis*)
Redbud/Judas Tree (*Cercis*) (C, M)	Henry's Elfin (*C. henrici*)
Reed, Common (*Phragmites*) (M)	Broad-winged Skipper (*Poanes viator*)
Rue (*Ruta*), (A, M)	Eastern Black Swallowtail (*P. polyxenes*), Giant Swallowtail (*P. cresphontes*)
Sedges (*Carex, Rhynchospora*) (A, C, M)	Appalachian Brown (*Satyrodes appalachia*), grass skippers - especially Broad-winged Skipper (*P. viator*), Duke's Skipper (*Euphyes dukesi*), and Dun Skipper (*E. vestris*)
Snapdragon (*Antirrhinum*) (C, M)	Common Buckeye (*Junonia coenia*)
Sweetleaf/Horse Sugar (*Symplocos*) (A, C, M)	King's Hairstreak (*Satyrium kingi*)
Sumac, Winged (*Rhus*) (C, M)	Red-banded Hairstreak (*C. cecrops*), Spring Azure (*Celastrina ladon*)

Toothache Tree/Prickley Ash (*Zanthoxylum*) (A, M)	Giant Swallowtail (*P. cresphontes*)
Thistle (*Cirsium*) (C, M)	Little Metalmark (*Calephelis virginiensis*)
Umbels - Angelica, Carrot/Queen Anne's Lace (*Daucus*), Celery (*Apium*), Dill (*Anthum*), Fennel (*Foeniculum*), Parsley (*Petroselinum*), Parsnip (*Pastinaca*) (A, C, M)	Eastern Black Swallowtail (*Papilio polyxnes*)
Vetch (*Vicia*) (C, M)	Clouded Sulphur (*C. philodice*), Orange Sulphur (*C. eurytheme*), Little Yellow (*Pyrisitia lisa*), Southern Dogface (*Z. cesonia*), Gray Hairstreak (*S. melinus*), Eastern Tailed Blue (*C. comyntas*)
Violet, Pansy (*Viola*) (A, C, M)	Variegated Fritillary (*Euptoieta claudia*)
Walnut, Black (*Juglans*) (C, M)	Banded Hairstreak (*S. calanus*)
Water-willow (*Justicia*) (M)	Seminole Texan Crescent (*A. texana*)
Wax Myrtle, Southern (*Morella*) (M)	Red-banded Hairstreak (*C. cecrops*)
Willow, Black (*Salix*) (M)	Mourning Cloak (*N. antiopa*), Red-spotted Purple (*L. arthemis astyanax*), Viceroy (*L. archippus*)
Wisteria (M)	Silver-spotted Skipper (*E. clarus*), Long-tailed Skipper (*U. proteus*)
Wormwood/Mugwort (*Artemesia*) (M)	American Painted Lady (*V. virginiensis*)
Yaupon (*Ilex*) (M)	Henry's Elfin (*C. henrici*)
Yucca/Spanish Bayonet/Beargrass (M)	Yucca Giant-Skipper (*Megathymus yuccae*)

Table 2. Herbs and Spices Preferred as Nectar Sources by Louisiana Butterflies

(Human Uses: Aromatic = A, Culinary=C, Medicinal=M)

Abelia, Glossy (M)	Marigold (*Tagetes*) (A, C, M)
Aster (*Aster*, *Stokesia*) (M)	Mexican Flame Vine (*Senecio*) (M)
Beebalm (*Monarda*) (A, C, M)	Mexican Heather (*Cuphea*) (M)
Butterfly Bush (*Buddleia*) (M)	Mexican Sunflower (Tithonia) (M)
Buttonbush (*Cephalanthus*) (M)	Milkweeds - Butterfly weed, Mexican (*Asclepias*) (C, M)
Cassia (C, M)	Mountain Mint (*Pycnanthemum*) (A,C,M)
Clover (*Trifolium*) (C, M)	New Jersey Tea (*Ceanothus*) (C, M)
Coneflower (*Echinacea*) (C, M)	Pentas (C, M)
Cosmos (M)	Porterweed/Snakeweed (*Stachytarpheta*) (M)
Daisy (*Chrysanthemum*) (M)	Sage (*Salvia*) (A, C, M)
Gayfeather (*Liatris*) (M)	Thistle (*Circium*) (C, M)
Ironweed (*Vernonia*) (C, M)	Verbena (C, M)
Joe-pye Weed (*Eupatorium*) (M)	Zinnia (M)
Lantana (M)	

An Endoparasite of larval *Anaea troglodyta floridalis*

Continued from pp. 85

The *A. t. floridalis* larva was maintained in a screen mesh cage and provided fresh food plants (*Croton linearis*, the only known hostplant for the species). MHS and HLS have successfully reared numerous *A. t. floridalis* larva under these conditions over 12 years of research on this species. However the *A. t. floridalis* larva, which behaved lethargically in the field and laboratory, fed only minimally until 25 January 2009 when it became moribund while attempting to pupate. Seven days later on 31 January 2009 tachinid larvae (n = 2) ejected out of the *A. t. floridalis* larva exiting through their respective entry holes (Fig. 2, pp. 106). The tachinid larvae were each placed in separate small plastic cups containing a layer of soil in which both quickly pupated. Adult flies emerged on 15 and 16 February 2009.

The adult flies (Fig. 3, pp. 106) were pinned and sent to John O. Stireman III (Wright State University) who examined and identified them as *Chetogena scutellaris* (Wulp). Dr. Stireman dissected the genitalia of the male *C. scutellaris* specimen to further determine the species. *Chetogena scutellaris* is a generalist endoparasite that preys on a variety of insect groups, including several families of Lepidoptera (Arnaud 1978, Sourakov and Mitchell 2002, Stireman and Singer 2003a, 2003b) in Florida, Arizona and throughout the Americas. A similar species, *C. edwardsii* (Williston) has been recorded as a larval parasitoid of *A. andria* Scudder in the southeastern United States (Arnaud 1978).

This observation represents at least the second time *Chetogena* has been documented as a parasitoid of *A. t. floridalis*. On 14 November 1988 Hennessey and Habeck (1991) collected a moribund fifth-instar *A. t. floridalis* within Long Pine Key which produced larvae (n = 4) that were reared to adults of a tachinid fly identified as *Chetogena* sp. (Salvato and Hennessey 2003). In addition on 9 November 2007 MHS and HLS observed and photographed a similarly moribund late instar *A. t. floridalis* within Long Pine Key that had been parasitized, perhaps by *Chetogena*. These combined observations suggest that *Chetogena* of one or more species serve as a consistent parasitoid to *A. t. floridalis* within this portion of the species range.

Acknowledgements

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

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

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.**

Note: All advertisements must be renewed before the deadline of the third issue following initial placement to remain in place.

All ads contain a code in the lower right corner (eg. 481, 483) which denote the volume and number of the **News** in which the ad. first appeared. ***Renew it Now!***

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 resolved 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 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.

Canada. Ph/Fax: 418-907-7367. Email: ypdion@entomopro.com 512

For Sale or Trade: Very rare Propomacrus davidi (China) Yoshiaki Furumi, 97-71 Komizo, Iwatsuki-Shi, Saitama-Ken, 339-0003 Japan 514

Wanted: Want to purchase butterfly collections U.S./non-U.S., common/rare. Contact: Brad Black, 2777 Carrington Street NW, North Canton, OH 44720-8163. email: doc3girls@aol.com 514

Wanted: Want to trade butterflies from Japan with individuals from USA and Canada. Shigeo Nomura 1-3 Goryou-cho Higashimatuyama-shi Saitama-ken Japan shigeonomura2@ybb.ne.jp 512

Research

Material needed for research project on geographic differences in Lophocampa maculata. Eggs, larvae (all instars) or adults useful. Will pay for shipping. Please contact Ken Strothkamp, Chemistry Dept., Lewis & Clark College at kgs.lclark.edu 514

Seeking short series (5-10 individuals) of recently collected papered specimens (since 2003) of species in the genus Celastrina from the Americas (especially localities far from Kentucky), Asia, Europe, etc. for a student project in molecular phylogenetics. Good locality data essential. Specimens collected in 2009 are particularly desirable. We are happy to reimburse for postage. Jeffrey Marcus, Department of Biology, Western Kentucky University, 1906 College Heights Blvd., #11080, Bowling Green, KY 42101 USA or email: jeffrey.marcus@wku.edu 511

Seeking egg masses of the Catalpa Sphinx, Ceratoma catalpa (Sphingidae) for research on the chemical ecology of this species. Please contact Deane Bowers at: deane.bowers@colorado.edu or (303) 492-5530. I am happy to reimburse for express shipping. Send to: Deane Bowers, Dept. of Ecology and Evolution, Ramaley N122, UCB 334, University of Colorado, Boulder, CO 80309. 514

The Ecoinformatics lab of Dr. Jeremy Kerr at the University of Ottawa is conducting an analysis of mobility for butterflies in Canada. In the absence of experimental mobility data for the vast majority of species, I will rely on the cumulative knowledge of Canada's lepidopterists to construct a mobility index. I am distributing a survey to people with field experience with butterflies and skippers of Canada. Surveys of lepidopterists in the UK and Finland have produced mobility estimates remarkably similar to those obtained from field experiments. If you have field experience with Canadian butterflies then I hope you will take the time to complete my survey. Visit: www.science.uottawa.ca/~jfitz049/survey.html for more information on this project and to download the survey. Email me: rburk091@uottawa.ca with any questions or comments you may have. 514

Equipment

Light Traps: 12 VDC or 120 VAC with 18 inch vanes (15 & 32 Watt) and 24 inch (40 Watt). Rigid vanes of Stainless Steel, Aluminum, or Plexiglass. Rain Drains and beetle screens to protect specimens from damage. Collecting Light: Fluorescent UV 15, 32 & 40 Watt. Units are designed with the ballast enclosed in a weather tight cast aluminum enclosure. Mercury Vapor: 160 & 250 Watt self ballast mercury vapor with medium base mounts. Light weight and ideal for trips out of the country. Bait Traps: 15 inch diameter and 36 inches in height with a rain cloth top, nylon coated fiberglass screen, and supported with 3/16 inch steel rings. A plywood platform is suspended with eye bolts and S hooks. Flat bottom has a 3/16 inch thick plastic bottom that will not warp or crack. Bait container is held in place by a retainer. For more information, visit our website at: ***www.leptraps.com*** or contact Leroy C. Koehn, Leptraps LLC, 802 South Third Street, Watseka, IL 60970-1607. Or telephone: 815-515-4060

Announcement

The Lep Course: A Comprehensive Introduction to Lepidoptera Identification and Classification 7-14 August 2010

Held at the SouthWest Research Station (SWRS) in the Chirichahua Mountains in SE Arizona (a 2 1/2 hour drive from Tucson), the focus of the lep course is to train graduate students, post-docs, faculty, and serious citizen-scientists in the classification and identification of adult lepidoptera and their larvae.

With its extensive series of Sky-Island mountain ranges, SE Arizona has the highest lepidoptera diversity in the US. With low desert scrub, oak and mixed oak-pine woodland, lush riparian, juniper, Douglas fir, and mountain meadow habitats all within a 40 minute drive from the station, the SWRS is an ideal location from which to sample this diversity (of both habitats and species).

For more information visit ***www.lepcourse.org***

Books

For Sale: The Butterflies of Venezuela Part 2. Price GBP 110 (+postage and packing at cost) Please order from the author/publisher, Andrew Neild (email: andrew.neild@blueyonder.co.uk, phone +44 (0)20 8882 8324 or post: 8 Old Park Ridings, London N21 2EU, United Kingdom. 1451 figures on 84 color plates display all 196 species (355 subspecies) of Venezuelan Acraeinae, Ithomiinae, Libytheinae, Morphinae, and Nymphalinae. 8 new species, 91 new subspecies, 4 neotypes, 10 lectotypes, 272 text pages, 31 figures, 2 tables, 4 maps. Laminated hardback, 22x30 cm. Part 1 also available. Details and sample plates: www.thebutterfliesofvenezuela.com 521

Discovery of a northern population of *Isturga dislocaria* (Packard) (Lepidoptera: Geometridae) in southern Quebec

Julien Delisle, B. Sc., D.M.V., M. Sc.

3 Oasis-des-Carrieres, Cantley, Quebec J8V 0B6 Canada ***Julien.delisle@hotmail.com***

Isturga dislocaria(Packard) is a little nocturnal moth of the Geometridae family (tribe Macariini) known to occur from southern Ontario (Pointe Pelee), western Pennsylvania, Maryland and West Virginia across the Midwest at least to central Nebraska, and southward to central Florida, the Gulf States, and south most Texas, and thence westward through the Texas panhandle to southeastern New Mexico and Cochise and Pima Counties, Arizona [1]. The distribution follows the range of trees belonging to the genus *Celtis* (Ulmaceae) which is believed to be the natural host plants of the species [1]. In Quebec province, only *Celtis occidentalis* occurs, reaching its northwestern limit in localities such as Gatineau (north of Ottawa), Oka, Laval and Berthierville [2]. Between the years 2003 and 2005, a total of five specimens have been found in Parc-Nature du Cap-Saint-Jacques in Montreal in a wood rich in *C. occidentalis*. This population might be the most northern one for that species, confirming the fact that *I. dislocaria* is really following the range of *Celtis* species [1].

In 2002, I began an insect survey based on Lepidoptera at the Parc-Nature du Cap-Saint-Jacques, a place situated in the western part of the Montreal Island and reaching the Prairie River which is separating the Montreal and Laval municipalities. This place is known to protect a good and healthy population of *Celtis occidentalis* [3]. Many young trees have been added recently to the park by the authorities following the fact that this plant is becoming rarer in the province due to the intensive urbanization around Montreal. The Lepidoptera survey took place at a site near the Prairie River (Rivière-des-Prairies in French language) in a small, open and immature forest where *C. occidentalis* is common. A more ancient forest made of *Acer*, *Quercus* and *Carya* was bordering the river near the site of observation and a lot of herbaceous plants were present in more open places. Light traps with 250W mercury vapor lamps combined with sugar baits applied on some trees (away from lights) were used for observing nocturnal insects. The first two specimens have been observed during the night of June 10th in 2003 (see photo pp. 93). Two others were seen in 2004 (June 4th and 13th) and a last one in 2005 (June 12th), the last year of the survey. No individuals were seen in May or after the first half of June. All specimens have been attracted to lights and not to sugar baits (not very effective for Geometridae members). Other interesting Lepidoptera species related to the same host plant were also found (*Acronicta rubricoma* in June and July and *Asterocampa celtis* in July) [3].

This finding supports Ferguson in his theory that *Celtis* species, including *C. occidentalis*, are the natural host plants for *I. dislocaria* [1]. In his work published in 2008, he reports having reared larva of that species on *C. occidentalis* with success while the caterpillars refused any other plant. He also confirms that all specimens collected for his studies were inside the range of the host plants [1].

The population of Montreal is a new, most northern known record for *I. dislocaria* (45°28, 185 North; 73°40, 017 West; altitude 44 meters). Ferguson talks about only one Canadian locality for that geometer (Pointe-Pelee National Park in extreme southern Canada: 41°54, 577 North; 82°30, 528 West; altitude 173 meters) [1]. There's a big difference in latitude between these locations, but they are both situated in the Great Lakes / St-Lawrence River axis which is reputed to be a great migratory zone for birds and insects. Slowly, *I. dislocaria* might have followed the same route, along with its host plant, for colonizing the St-Lawrence River lowlands in southern Quebec.

The presence of *I. dislocaria* is not a surprise according to the fact that *C. occidentalis* is present there. But it demonstrates that the species is able to survive in a zone where the winter is harder (zone 5 from a botanical point of view). The range should not be more northern than the Montreal region because the host plant disappears quickly in cooler areas. But we can expect to find some colonies along the St-Lawrence River between southern Quebec and Leamington in extreme south Ontario. The Ottawa region, where some populations of *C. occidentalis* can be found (Petrie Island for example), might also be a good place for finding *I. dislocaria*.

Acknowledgment

I thank Dr. Douglas C. Ferguson, died in 2002, for the huge work he has done for entomology in North America. I also thank M. Denis Fournier and Mme. Sylvie Comtois, from Parc-Nature de Montréal, for giving me all the authorizations I needed for my Lepidoptera survey.

Literature cited

1) Ferguson, D. C. 2008. The Moths of North America. Fascicle 17.2. Geometroidea, Geometridae (Part). The Wedge

Continued on pp. 109

Update of the Rule changes to the Endangered Species Act.

John Shuey

505 N. Delaware Street, Suite 200 Indianapolis, IN 46202 ***jshuey@TNC.org***

In the closing weeks of 2008, the U.S. Fish and Wildlife Service (FWS) proposed changes to rules that amend the regulations used to implement Section 7 of the ESA. Section 7 requires federal agencies to consult with wildlife experts at the Fish and Wildlife Service to ensure that their actions do not jeopardize a listed plant or animal, or harm or destroy its habitat. These independent reviews, called Section 7 consultations, provide a critical safety net for imperiled wildlife and help ensure that Federal actions do not harm those species most at risk. The proposed changes, designed to "streamline" the Section 7 process, allow non-biologists to make initial determinations relative to the project's impact on listed species. Someone without training in conservation, or any biological science, would be able to evaluate projects and, in some cases, allow these to proceed without further review.

Despite limiting the period for public comment to 30 days (from the normal 90-day public comment period for rule changes), FWS received over 150,000 comments raising concerns about the proposed changes, including comments provided by The Lepidopterists' Society (see *News of the Lepidopterists' Society* 50: 77-79). On December 11, 2008 the rule changes were adopted. As noted in our comment letter, the proposed rules would likely lead to habitat degradation with direct impacts to several endangered species of Lepidoptera.

On April 28, 2009, the Secretaries of the Interior and Commerce announced the reversal of these rule changes. Federal agencies will once again consult with wildlife experts at the Fish and Wildlife Service to ensure that their actions do not jeopardize a listed plant or animal, or harm or destroy its habitat.

The Lepidoptera Paintings of Pamela Lewis

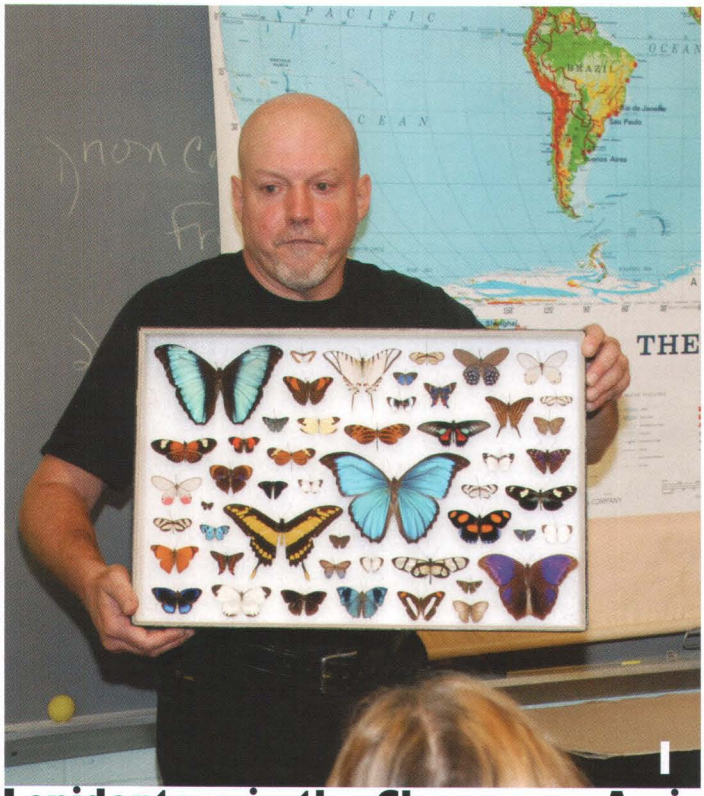
Arthur M. Shapiro

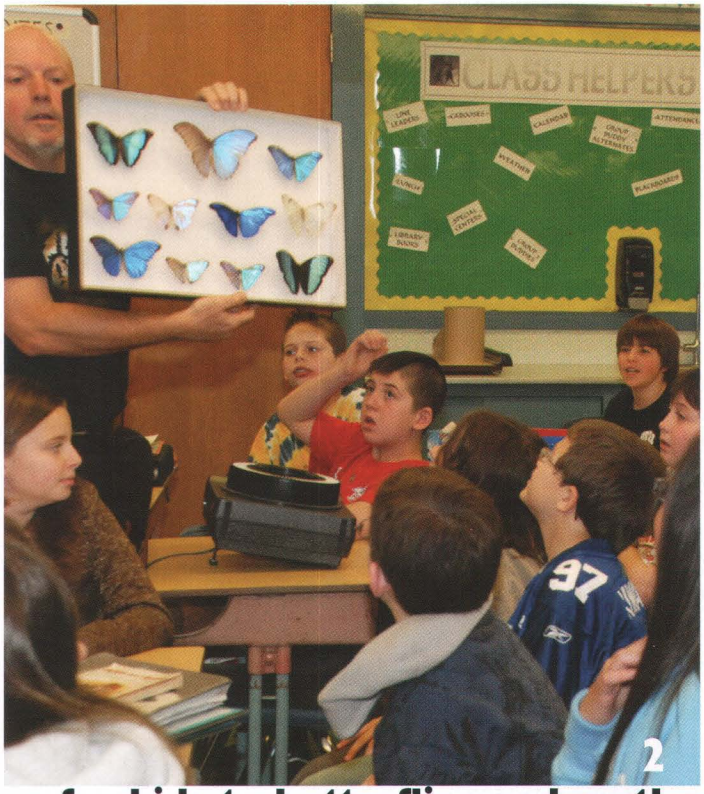
Center for Population Biology, University of California, Davis, California 95616 ***amshapiro@ucdavis.edu***

A few months ago my distinguished colleague Mel Green, Professor Emeritus of Genetics, came over to my table at the campus coffee house and said "I have something here I think you'll like to see." He was right. The "something" was a privately-published book of Lepidopteran-themed paintings by Pamela Lewis, whom he had been visiting. She is the widow of Nobel Prize-winning geneticist Ed Lewis, who died in July 2004. His 1995 Nobel (in Physiology or Medicine; jointly with Christiane Nuesslein-Volhard and Eric Wieschaus) was in recognition of his role in breaking open the "black box" of how genes control animal development. Ed and Pam, who were married 58 years, were dedicated natural historians, and their friends tell a tale of a pet octopus that escaped from its tank and was found several days later, alive but covered with dust under the sofa. In the mid-1940s Pam took a course in scientific illustration at Stanford and later learned watercolor technique from Edith Wallace, who was illustrator to the renowned geneticist Thomas Hunt Morgan. From then on, watercolor was her preferred medium. Ed gave her a copy of Winston Churchill's book Painting as a Pastime. She illustrated posters commemorating various scientific meetings. And her fascination with Lepidoptera continued to grow. It's still growing, at age 83.

The book, Metamorphosis: The Artistic Expressions of Pamela Lewis, was intended for family and friends, not for general distribution, and is not for sale. It contains magnificent color reproductions of 39 of her paintings, many of which contain butterflies or moths. Sometimes they are centered and dominate the work. Sometimes they are elements in complex, surreal dreamscapes reminiscent of Salvador Dali or even of Hieronymous Bosch. They are always lovingly rendered in minute detail, anatomically correct and instantly identifiable. Each plate has an explanation of the artist's intentions and the title of the work, the scientific names of the insects sometimes given. These "captions" are highly personal. One caused me some confusion. The painting of the Red Admiral (*Vanessa atalanta*) (p.38 in the book, image #16 on the Web site) is labeled "Hunter's Butterfly." Some readers may know that that is an antique common name for the West Virginia Lady, *Vanessa virginiensis*, harking back to when its "real" name was *Vanessa huntera*. But

Continued on pp. 109





Lepidoptera in the Classroom: An intro for kids to butterflies and moths

1) Large Peruvian Amazon display being shown to fifth grade students. 2) Showing a display of South American male Morphos always engages the audience and prompts many questions. *See article on opposite page.*

An endoparasite of larval *Anaea troglodyta floridalis*

See article on pp. 85

FIG. 1. A late-instar *Anaea troglodyta floridalis* larva with an egg of *Chetogena scutellaris* attached to its cuticle on 17 January 2009 in Long Pine Key, Everglades National Park (Miami-Dade County, Florida). **FIG. 2** A moribund late-instar *Anaea troglodyta floridalis* larva showing the exit hole from a *Chetogena scutellaris* larva. **FIG. 3.** Male (left) and female *Chetogena scutellaris* parasitoid flies that emerged from a moribund late-instar *Anaea troglodyta floridalis* larva (All photos: H. L. Salvato).

Education Matters:
Contributions from the Education Committee

Bringing Lepidoptera Programs to Our Schools

Steve Fratello
11 First Street, W. Islip, NY 11795 ***sfratell@suffolk.lib.ny.us***

I volunteered for the Education Committee a few years ago because of my direct involvement with lepidoptera education, predominantly in elementary schools, and the thought that my expertise could be of value to our Society and ultimately, many more schoolchildren. As the sole proprietor and only employee of my small education business, Rainforest Exploration, Research & Education, I presented lepidoptera programs at 60-65 schools in each of the previous three school years. I also present to a lesser degree at other venues: libraries, garden clubs, Audubon chapters,...

My school programs usually coincide with grades (mostly 3rd) that study the butterfly life cycle, their study almost always in conjunction with them raising Painted Ladies (*Vanessa cardui*) from larvae in their classrooms. The crux of my Rainforest Butterflies enrichment program is showing the students a small but very spectacular tropical lepidoptera collection (predominantly butterflies), which is used to reinforce and teach basic scientific /nature knowledge, and equally important, it is certain to awe the audience with nature's unmatched aesthetics.

Sometimes these grades also study Tropical Rainforests, my presentation covering both topics; less often I am brought in for grades that study biomes, my Tropical Rainforests Program utilizing my tropical lepidoptera collection as a great classroom representation of tropical rainforest biodiversity and various specimens demonstrating amazing physical adaptations for survival and success. For Tropical Rainforests presentations for 5th Grade up, a slide show comprised of photos from my numerous tropical rainforest trips/ expeditions is part of the program.

Simple science concepts involving lepidoptera that are covered in my Rainforest Butterflies Program include: the general differences between butterflies and moths, very basic anatomy, metamorphosis, camouflage, warning coloration, mimicry and a few other physical adaptations, very basic communication and how to make a lepidoptera collection (3rd grade & up); as well, basic tropical rainforest geography and climate are covered and a few, enlarged tropical rainforest photos are shown. Presenter-to-student and student-to-presenter questions are asked throughout the presentations.

The biology concepts come alive (even using dead specimens in a classroom environment!) when using an Owl Butterfly (*Caligo* species), a clearwing Satyrine (*Cithaerias* species), Morphos, a *Nessaea* species (Nymphalidae: Biblidinae) and others as examples. The dramatic differences between dorsal and ventral surfaces in most butterflies, derived from the simple fact that most rest with their wings closed, is always certain to amaze the audience, young or old. These dramatic differences are first shown from a collection of 11 specimens from the Peruvian Amazon, displayed in an insect box, where pinned specimens have only their dorsal surfaces revealed. Already astonished by this small but spectacular collection, revealing the venter of the Owl Butterfly with its two huge eyespots (camouflage, partial mimicry) and then the *Nessaea*, with its black, blue and orange dorsum (communication) and green venter (camouflage), is certain to increase the amazement!

A succession of displays, twelve in all, keeps the audience enthralled for an hour or so. Prior to the Peruvian Amazon display, the first display shown contains a mixture of ten tropical and temperate moths that are used to illustrate the general differences between moths and butterflies, one example being the huge pinnate antennae of a male Polyphemus Moth. The third display of 16 specimens from Costa Rica's Osa Peninsula includes the first Morpho, *Morpho amathonte*. Its brilliant iridescence of course is the center of focus of young audiences (and older); showing the stark contrast of the venter, colored as dead leaves, again astounds and reinforces basic lepidoptera biology/ecology. From this display, for novelty sake, I often show the venter of *Diaethria marchalii*, an 88 or 89 Butterfly.

Next, revealing the staggering beauty and variety of tropical rainforest butterfly faunas, two large displays, one from the Peruvian Amazon, the second from Guyana's lowlands, each with 50 or so specimens and each having representatives of all the true butterfly families and most of the subfamilies from those regions. A highlight while showing the Peruvian Amazon display is when I remove and contrast giant *Morpho didius* with a tiny *Sarota* Riodinid. From their life cycle study, most students realize that minuscule butterfly is a fully-grown adult! Rounding out the major portion of the presentation, in which nearly all the specimens were collected myself during extensive Neotropical explorations, is a display containing a

single butterfly, the Neotropic's largest for wingspan, a specimen of *Morpho hecuba* from Guyana.

Having given numerous Rainforest Butterflies presentations over many years, where all the specimens were from the Neotropics, I decided to buy some specimens to show the students a few glories from the two other major tropical rainforest faunal regions. Everyone involved is happy about that decision, as the last ten minutes or so involves an aesthetic barrage, to say the least! Before leaving the Neotropics, one more large display, eleven male Morphos including the incomparable scintillating royal blue *M. rhetenor*.

The Old World tropics are represented by three displays, one more spectacular than the next. The sole Afrotropical display includes eleven *Papilios*, the centerpiece being *P. antimachus*, The Giant African Swallowtail, Africa's largest butterfly. Italian member Giancarlo Veronese was kind enough to donate *P. antimachus* and a few other African *Papilios* to me for these educational purposes. Myself, and tens of thousands of others (mostly school children) who have seen the presentation, are most thankful for his generosity! The Indo-Australian region is represented by two displays: one with eight gloss *Papilios*, the other with eight Birdwings. Beyond the sheer splendor and size of the Birdwings, the two females of *Ornithoptera goliath* (second largest of the world's butterflies) and *O. priamus*, along with their respective males, are dramatic examples for the students of the sexual dimorphism found in many butterfly species.

Though moths play a minor role in my presentation (especially compared to their numbers!), six of the world's most spectacular moths in two displays culminate the presentation. After the giant Birdwings, three huge moths: a male and gargantuan female Atlas Moth, *Attacus atlas*, from Southeast Asia and the imposing Neotropical Noctuid, The Ghost Moth or White Witch, *Thysania agrippina*. The 'snake head' at the FW apex of the Atlas Moths is another physical adaptation sure to astound, and some students (sharper than when I was a kid!) see it almost immediately! Ending on a most beautiful anomaly, a display of three diurnal moths more brilliant than the great majority of butterflies, three Uraniids: *Urania leilus* from the Amazon, *Alcidis agathyrsus* from New Guinea and the supreme Sunset Moth, *Chrysiridia rhipheus*. Diurnal moths communicate like butterflies, please check their antennae!

Though I have explained my program in some detail; that is not the gist of this article. I am hoping this article will inspire other members to share their passion and knowledge with students in their local areas. If each of our over 1,000 members volunteered to give grade level programs for one day in a local school each year, that would account for approximately 100,000 school-children enlightened and enthralled each year with a part of the natural world that has given us members so much joy and pleasure! My Rainforest Butterflies Program follows naturally from my extensive tropical rainforest experience. Each of our members has unique interests and experiences with lepidoptera that can be shared with others, especially children with their innate curiosity and wonder concerning the natural world. Wouldn't it be great to see our many members whose predominant lepidoptera interest is moths, give school programs to educate about these fantastic and often misunderstood creatures? I can envision our larvae experts giving simply spectacular caterpillar slide shows. The list goes on and on from our members various interests.

What is now a business that is my main source of income, presentations being given to somewhere between 5000 to10,000 students a year, started out some might say by chance. Many years ago while on a temporary job, a mother whose son was studying the Painted Lady life cycle in First Grade, found out of my interest in butterflies and asked me if I would give a presentation to her son's class. By chance, this school was one of the elementary schools in my hometown that I had attended! Her son's teacher loved the program and I volunteered to come back to her class the next year when the students were involved with lepidoptera. That next year or the following year, I believe I was presenting to the entire grade. The school's principal, who was told of my programs quality by the teachers, advised me that I could and should present my program professionally in their and other schools.

I did just that, very modestly at the beginning, involving a small number of schools and having a fee that was a tiny fraction of the cost of other enrichment/cultural arts programs. Not until fairly recently, after a couple of jobs I thought I would get did not transpire, did I realize that I could/should seriously try to expand my business and make it a true livelihood. I say, without arrogance, this decision has brought great wonder and beauty to tens of thousands of students and has worked out personally very well for me also. With this experience presenting in schools, I would be more than happy to share insights to any of our members who would like to present lepidoptera programs in schools, including any who might desire to do it professionally. As stated earlier, I hope each member chooses, if possible, to give one school program a year – this will result in rich lepidoptera/nature/science experiences for countless students and a fulfilling reward to our members as presenters.

ACKNOWLEDGEMENTS:

Thomas J. Allcot, Senior Technologist, at John F. Kennedy School in W. Babylon, NY, took and kindly provided the classroom photos used for this article. The photos were taken in Feb, 2009, during a Tropical Rainforests/Rainforest Butterflies presentation in Mr. Joseph Russo's 5th Grade Class. I thank Mr. Russo and many other teachers, also administrators and PTA representatives, for their discernment in bringing awe-inspiring and horizon-broadening programs to their students. For making it all possible, I Thank our Great God, who led my life in the direction where I could share my passion, concerning a subject with great intrinsic value, with so many eager young minds and spirits.

Membership Update...

Julian Donahue

Includes all changes received by 23 October, 2009

Additions/corrections to entries in 2008 Membership Directory:

Hall, Jason P.W. (Dr.): add mail code "MRC-105"

New and Reinstated Members:

members who have joined/renewed/ been found/or rescinded their request to be omitted since publication of the 2008 Membership Directory (not included in the 2008 Membership Directory; all in U.S.A. unless noted otherwise)

Arthur, Noah: 3648 Nevil Street, Oakland, CA 94601-3818.

Burks, Charles (Ph.D.): 750 East Ponderosa Avenue, Reedley, CA 93654-2236.

Hoyt, Cathryn A. (Ph.D.): P.O. Box 215, Fort Davis, TX 79734-0003.

Jantscher, Thomas: 3850 Glacier Place, Plymouth, MN 55446-3334.

Kertell, Ken: 4344 East Monte Vista Drive, Tucson, AZ 85712-1631.

Selby, Joseph: [address omitted by request]

South, Nigel: Mis Montana's, Los Robles 1818, Villa Los Altos, Rio Ceballos, Cordoba 5111, Argentina.

Wilcox, Mark W.: 2770 North 1775 East, Layton, UT 84040-8591.

Yukich, Bob: 39 Lincoln Avenue, Toronto, Ontario M6P 1M7, Canada.

Address Changes

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

Caldas, Astrid (Dr.): 5401 Christy Drive, Bethesda, MD 20816-2013.

Daniels, Emily Vanessa: 1013 Verano Place, Irvine, CA 92617-3188.

de Mordaigle, Rodolphe C.: P.O. Box 184, Olancha, CA 93549-0184.

Hardaway, John F.: 121 Aspen Trail, Columbia, SC 29206-4978.

Johnson, Kurt (Dr.): 135 Eastern Parkway, Apt. 7G, Brooklyn, NY 11238-6024.

Lohman, David (Ph.D.): Department of Biology, The City College of New York, 160 Convent Avenue, New York, NY 10031-9101.

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

Ross, Dana N.: 1005 NW 30th Street, Corvallis, OR 97330-4441.

Rumpsa, Paul: 14358 Waco Street NW, Ramsey, MN 55303-6176.

Simonsen, Thomas J. (Ph.D.): Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, England.

Weinberger, Marc: 1823 Mariposa Drive, Petaluma, CA 94954-5794.

Northern Population of *Isturga dislocaria*

Continued from pp. 104

Entomological Research Foundation, Washington, 431 pages, 15 planches.

2) Marie-Victorin. 1995. Flore Laurentienne, 3e Édition. Les Presses de l'Université de Montréal, Montréal, 1093 pages, 120 planches.

3) Handfield, L. 1999. Le guide des Papillons du Québec, version scientifique. Broquet, Boucherville, 982 pages, 125 planches, 1 planche frontale et 1 carte.

Seasonal polyphenism of *Chilades pandava*

Continued from pp. 88

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Lepidoptera Paintings of Pamela Lewis

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the painting was done for C. Hunter Sheldon, M.D., and its title actually honors *him*.

When I saw the book I knew I *had* to tell my fellow Lepidopterists about it, so I contacted her family, who very graciously agreed to this article. A few representative paintings are shown here (see back cover, pp 112). You can view the entire set at http://www.fruitfly.org/lewis/Site/Back.html. Limited-edition prints of some of the paintings may be available. For information contact **<pam.lewis.book@comcast.net>**.

Membership

The Lepidopterists' Society is open to membership from anyone interested in any aspect of lepidopterology. The only criterion for membership is that you appreciate butterflies or moths! To become a member, please send full dues for the current year, together with your current mailing address and a note about your particular areas of interest in Lepidoptera, to:

Kelly Richers,
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Dues Rate

Active (regular)	$ 45.00
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Students must send proof of enrollment. Please add $ 5.00 to your Student or Active dues if you live outside of the U.S. to cover additional mailing costs. Remittances must be in U.S. dollars, payable to "The Lepidopterists' Society". All members receive the **Journal** and the **News** (each published quarterly). Supplements included in the **News** are the Membership Directory, published in even-numbered years, and the Season Summary, published annually. Additional information on membership and other aspects of the Society can be obtained from the Secretary (see address inside back cover).

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

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

Submissions of potential new Memoirs should be sent to:

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lawrence.gall@yale.edu

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scholtensb@cofc.edu

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WebMaster

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

Submission Guidelines for the News

Submissions are always welcome! Preference is given to articles written for a non-technical but knowledgable audience, illustrated and succinct (under 1,000 words). Please submit in one of the following formats (in order of preference):

1. Electronically transmitted file and graphics—in some acceptable format —*via* e-mail.

2. Article (and graphics) on diskette, CD or Zip disk in any of the popular formats/platforms. Indicate what format(s) your disk/article/graphics are in, and call or email if in doubt. Include printed hardcopies of both articles and graphics, a copy of the article file in ASCII or RTF (just in case), and alternate graphics formats. Media will be returned on request.

3. Color and B+W graphics should be good quality photos or slides suitable for scanning or—preferably—electronic files in TIFF or JPEG format at least 1200 x 1500 pixels for interior use, 1800 x 2100 for covers. Photos or slides will be returned.

4. Typed copy, double-spaced suitable for scanning aand optical character recognition. Original artwork/maps should be line drawings in pen and ink or good, clean photocopies. Color originals are preferred.

Submission Deadlines

Material for Volume **51** must reach the Editor by the following dates:

Issue	Date Due
4 Winter	Dec. 1, 2009

Material for Volume 52 must reach the Editor by the following dates:

1 Spring	Feb. 15, 2010

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

Executive Council

President

John Shuey
1505 N. Delaware St., Suite 200
Indianapolis, IN 46202-2418
jshuey@tnc.org
(317) 951-8818

Past President

John Acorn
132 Walsh Crescent, Edmonton, Alberta T5T 5L7 Canada
janature@compusmart.ab.ca
(403) 489-0423

Vice Presidents

Joaquin Baixeras
Inst. Cavanilles de Biodiv. y Biol Ev., Universitat de Valencia, Apartat deCorreus 22085, E-46071 Valencia, Spain
joaquin.baixeras@uv.es

Marcelo Duarte
Museu de Zoologia,
Universidade de Sao Paulo,
Avenida Nazare 481, 04263-000, Sao Paulo, Brazil
lycaenidae@ig.com.br

Soren Nylin
University of Stockholm
Dept. of Zoology
S-10691
Stockholm, Sweden
08-16-20 00

Secretary

Michael Toliver
Division of Math and Science
Eureka College, 300 E. College Avenue, Eureka, Illinois 61530-1500
miketol@eureka.edu

Assistant Secretary

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

Treasurer

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

Assistant Treasurer

Ron Leuschner
1900 John Street,
Manhattan Beach, CA 90266-2608, (310) 545-9415
ron leusch@aol.com

Publications Manager

Kenneth R. Bliss
28 DuPont Avenue
Piscataway, NJ 08854-435
(732)968-1079
krbliss@gmail.com

Editor, News of the Lepidopterists' Society

Dale Clark
1732 South Hampton Rd.,
Glenn Heights, TX 75154-8530, (972) 274-0890
daleclark@dallasbutterflies.com

Editor, Journal of the Lepidopterists' Society

Brian G. Scholtens
Biology Department
College of Charleston
66 College Street
Charleston, SC 29424-0001
(803)856-0186
scholtensb@cofc.edu

Editor, Memoirs of the Lepidopterists' Society

Lawrence F. Gall
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Michelle DaCosta, John H. Masters, Michael G. Pogue, Kenn Kaufman, Harry Zirlin, Kim Garwood, Stephanie Shank, Charles Harp, Todd Stout

Season Summary Zone Coordinators

Refer to Season Summary for Zone coverage details.

Chief Season Summary Coordinator And Editor

Jim Tuttle
57 Inkerman Street
St Kilda 3182
Victoria Australia
jtuttle164@hotmail.com

Zone I, The Far North:

Kenelm W. Philip
Institute of Arctic Biology
University of Alaska
P.O. Box 75700
Fairbanks, Alaska 99775-7000
(907) 479-2689
fnkwp@uaf.edu

Zone 2, The Pacific Northwest:

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

Zone 3, The Southwest:

Ken Davenport
8417 Rosewood Avenue
Bakersfield, CA 93306
(661) 366-3074 (home)
flutterflies93306@att.net

Zone 4, The Rocky Mountains:

Chuck Harp
8834 W. Quarto Ave.
Littleton, CO 80128-4269
(720) 981-5946
cehmoth@aol.com

Zone 5, The Plains:

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

Zone 6, Texas:

Charles Bordelon
Texas Lepidoptera Survey,
8517 Burkhart Road, Houston, TX 77055, (713) 822-8731 (cell)
Texaslepsurvey@sbcglobal.net

Zone 7, Ontario And Quebec:

Jeff Crolla
413 Jones Ave.,
Toronto, Ontario
Canada M4J 3G5
(416) 778-4162
crollaj@rogers.com

Zone 8, The Midwest:

Leslie A. Ferge
7119 Hubbard Avenue
Middleton, Wisconsin 53562-3231
(608) 836-9438
lesferge@gmail.com

Zone 9, The Southeast:

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

Zone 10, The Northeast:

Mark J. Mello
c/o Lloyd Center,
430 Potomska Rd
Dartsmouth, MA 02748
m.rogovsky@comcast.net

Zone 11, Mexico & the Caribbean:

Isabel Vargas Fernandez
Museo de Zoologia,
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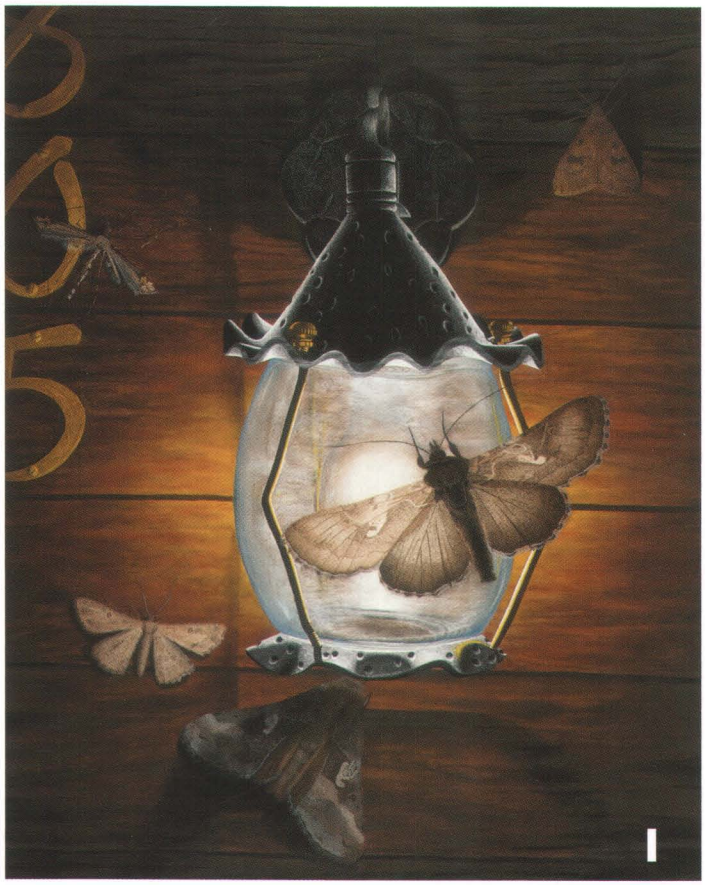

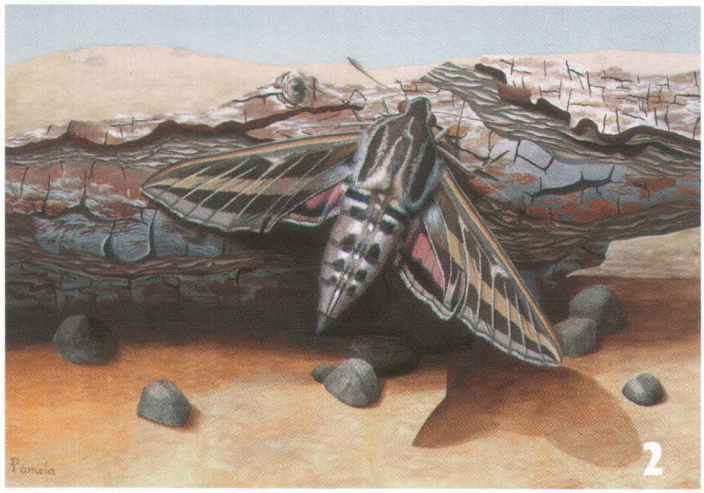

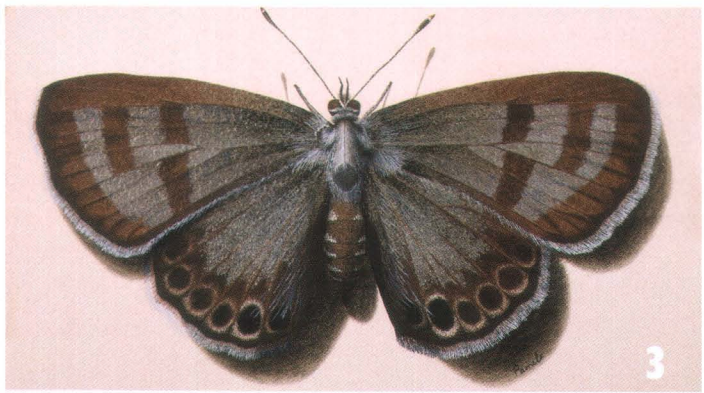

The Lepidoptera Paintings of Pamela Lewis

1) Our Front Porch, **2)** The Sphinx Moth, **3)** Lyle's Butterfly, **4)** Metamorphosis Complete, **5)** Hunter's Butterfly, **6)** The Snapdragon. See article on pp. 105.