

NEWS

OF THE

LEPIDOPTERISTS' SOCIETY



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Orb Spiders prey on larval *Anaea troglodyta floralis*

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The 2011 Lep Course in Southeastern Arizona

Update on *Aphrissa neleis* in Florida

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... and more!



NEWS OF THE LEPIDOPTERISTS' SOCIETY

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

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Front Cover:

Male Diana basking in the morning sun on south-facing rock outcrop atop Mt. Magazine, AR. Valley in distance is over 2000 feet below. (photo by Gary Noel Ross; see article, page 116).

Orb spiders (*Neoscona* spp.): Predators of larval *Anaea troglodyta* *floridalis* (Nymphalidae)

Mark H. Salvato and Holly L. Salvato

1765 17th Ave SW, Vero Beach, FL 32962 anaea_99@yahoo.com

The Florida leafwing, *Anaea troglodyta floridalis* F. Johnson and Comstock (Nymphalidae), occurs locally within the pine rocklands of southern Florida. Hennessey and Habeck (1991) and Worth et al. (1996) described many aspects of *A. t. floridalis* natural history. Salvato and Hennessey (2003) and Salvato and Salvato (2010) also discussed *A. t. floridalis* ecology and provided a review of known predators for the species.

Over the past several years we have conducted intensive monitoring of *A. t. floridalis* in the Long Pine Key region of the Everglades National Park (Miami-Dade County, Florida), to document various mortality factors on the immature stages of the species. On several dates between 27 November and 11 December 2010 we followed the development of an early instar *A. t. floridalis* larva on its hostplant, pineland croton (*Croton linearis*). Throughout this period an orb spider (*Neoscona*, most likely, *N. arabesca* Walckenaer) (Fig. 1) was observed on an adjoining branch in close proximity to the larva. On 17 December 2010 we relocated the larva in the webbing of the spider (Fig. 2), apparently predated.

This individual clearly wandered too close to the web, getting entangled and consumed. However, on other occasions we have observed *A. t. floridalis* larvae and orb spiders on the same pineland croton, without predation.

Acknowledgement

We thank Dr. G.B. Edwards (Florida Department of Agriculture and Consumer Services, Gainesville, Florida) for examining photos and specimen identification.

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Fig. 1 An orb spider (*Neoscona*, most likely, *N. arabesca*) in Long Pine Key, Everglades National Park on 27 November 2010 (Photo: H. L. Salvato).



Fig. 2 An mid-instar *Anaea troglodyta floridalis* larva predated by an orb spider (*Neoscona*, most likely, *N. arabesca*) in Long Pine Key, Everglades National Park on 17 December 2010 (Photo: H. L. Salvato).

Some New Records of Butterflies from Great Inagua, Bahamas

Rick Rozycki¹ and Denis Knowles²

¹5830 S. McVicker Ave., Chicago, IL 60638, USA, Research Associate: McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, Gainesville FL 32611 USA rickroz1@msn.com

² Nassau, New Providence, Bahamas

ABSTRACT: Three previously unrecorded butterfly species are reported from Great Inagua, Bahamas. These are: *Anthanassa frisia* Poey (Nymphalidae): *Asbolis capucinus* Lucas (Hesperiidae), and *Calpododes ethlius* Stoll (Hesperiidae). These three new records increase to 40 the number of butterfly species now known from Great Inagua.

The first comprehensive list of butterflies for Great Inagua, Bahamas, was provided by Clench and Bjrndal (1980). Additional records were published by Simon and Miller in 1986. Recent collecting on Great Inagua by Denis Knowles has added three new species to the island fauna. Specimens are deposited in the junior authors' personal collection. One male of *A. frisia* has been deposited in the collection of the McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida (Gainesville).

Nymphalidae

Anthanassa frisia (1832) Poey

Twelve male and twelve female adults were collected between December 7 and 12, 2007. This species was very common in Matthewtown proper at that time. The butterflies were flying in several residential backyards and adjacent vacant lots at the south end of town. The butterflies had a low, weak flight and would take nectar at *Stachytarpheta jamaicensis* and occasionally *Bidens alba*. The junior author has returned to this site on several occasions at various times of the year but has yet to encounter *frisia* again.

Hesperiidae

Asbolis capucinus (1857) Lucas

Only one male of this species was taken between September 7 and 14, 2007, at the north end of Matthewtown going toward the airport. The specimen is in very fresh condition with minimal flight wear, indicating it had recently emerged. It was captured in flight along the road. The only other record of this species in the Bahamas is from New Providence Island.

Calpododes ethlius (1782) Stoll

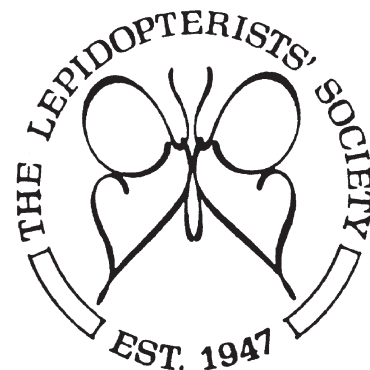
Sixteen adults were collected between December 7 and 12, 2007. All the specimens were taken in an area of open scrub near the coast, at the north end of Man-of-War Bay. The area is near the old church ruins. All specimens were taken visiting flowers of *Stachytarpheta jamaicensis*. No specimens were observed or collected anywhere else on Great Inagua.

Acknowledgements

We thank the Department of Agriculture, and Local Government of the Bahamas for providing collecting permits. We thank Dr. Jacqueline Miller (McGuire Center, Gainesville) for reviewing the manuscript and providing valuable suggestions, and also for her encouragement on the study of the butterflies of the Bahamas.

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Jasper National Park, July 10, 2008

No *Boloria astarte*, No *Boloria alberta*, No Butterflies

Steve Fratello

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

My girlfriend Danusia and I visited Banff and Jasper National Parks from June 29 – July 13, 2008. Like millions of other visitors, our main purpose was to enjoy the simply glorious mountain scenery these Canadian Northern Rockies national parks are famous for. As a lepidopterist from the flatlands of Long Island, NY, I thrilled to once again experience butterflies from montane life zones in rugged western North America. Foremost on my mind was the possibility of seeing two arctic-alpine specialties of this region: the more widespread *Boloria astarte astarte* Doubleday and Hewitson and the more restricted *Boloria alberta* W.H. Edwards.

The majority of our stay in Banff and Jasper was spent on day hikes in the montane and subalpine zones; our chance to see either or both of these high elevation *Boloria* would be on a 5 day backpacking trip to Maligne Pass (2,300m) in Jasper. Our plans were to spend two days among the arctic-alpine meadows surrounding the pass but as anyone who has visited alpine regions knows, mountain weather changes plans. The first planned day at the pass (Fig. 1) was spent in partly sunny weather with afternoon rain sending us back to our backcountry camp (Avalanche Camp) at approximately 2,000m in the subalpine zone.



Figure 1. Maligne Pass, 2300m, July 9, 2008.
Photo by Steve Fratello

What was so striking botanically, was the countless thousands of white/cream flowers that dominated the wet alpine meadows around the pass: Globeflower (*Trollius laxus*), anemone species (*Anemone* sp.) and Marshmarigold (*Caltha leptosepala*); all, and especially the anemone, with large blossoms for arctic-alpine plants. White Mountain Avens or Dryad (*Dryas octopetala*), another arctic-alpine plant with large white flowers was blooming on a rocky

outcrop near the pass and certainly on the scree slopes above the pass. This plant is the hostplant for *B. alberta*.

Patches of snow and still blooming anemone indicated it was very early in the arctic-alpine summer at Maligne Pass, perhaps the reason the only butterfly seen that day in the arctic-alpine zone was the Grizzled Skipper (*Pyrgus centaureae loki* Evans), which was fairly common and the most common subalpine butterfly during our two week stay in Banff and Jasper. On the way to the pass that day, in subalpine meadows spangled with the brilliant Rosy or Subalpine Paintbrush (*Castilleja rhexifolia*), along with Grizzled Skippers flew a fair amount of *Euphydryas* and a few *Boloria* (but not *astarte* or *alberta*!).

What would the next day bring? As the park ranger informed me before we set out, weather to the high country often comes a day before forecast. Our fourth day, which was to be our second at Maligne Pass, was spent at Avalanche Camp with approximately 2 inches of heavy, wet snow (Fig. 2) – no *B. astarte*, no *B. alberta*, no butterflies and cold feet in a 'winter' wonderland on July 10th in Jasper NP! Though it has happened before and certainly will happen again in these rugged Northern Rockies, it definitely was a unique experience for us. Next trip, God willing, more time in the arctic-alpine and hopefully a greater chance to see those elusive *Boloria*!



Figure 2. Avalanche Backcountry Camp, approx. 2100m;
Steve Fratello enjoying winter in July.
Photo by Danusia Antonowicz

Continued on p. 134

Free Mapping Software for Butterfly Atlases: Combining Quantum GIS with Google Fusion Tables

Alan Macnaughton

49 Northforest Trail, Kitchener, Ontario, Canada N2N 2Y7 amacnaug@uwaterloo.ca

Overview

Obtaining the latitude and longitude for the locations of butterfly observations has become increasingly easy in recent years with the advent of portable GPS devices and map websites. Turning these observations into dots on a map is the next step. Thus, the websites of both the Butterflies and Moths of North America (BAMONA) and the North American Butterfly Association (NABA) provide a system for having these point observations appear on online maps.¹ However, butterfly atlas developers generally prefer to aggregate observations over geographic units in order to facilitate the preparation of species lists and to avoid disclosure of the exact locations of rare and endangered species.² Usually these geographic units are squares of 10 km per side,³ although political units are sometimes used.⁴

Mapping these 10 km squares has required the use of costly and knowledge-intensive commercial geographic information system (GIS) software programs such as ArcGIS, even for simple printed or PDF maps which do not involve user interaction ("static maps"). Resource requirements have been still higher for the production of dynamic maps for online access which, for example, display more detailed geographic information on the computer screen as the user zooms in to examine particular locations. As a result, butterfly atlases have generally been produced only by well-funded organizations with access to professional mapping staff.⁵ Butterfly atlases, regrettably, have been much rarer than bird atlases.

New software tools allow the production of dynamic butterfly atlas maps at no cost and with much less technical knowledge. In particular, open-source GIS software such as Quantum GIS ("QGIS") will assign individual observations to geographic units and Google Fusion Tables ("Fusion Tables") will layer those units on top of standard dynamic maps (Google Maps) for web access (without requiring the user to download Google Earth).⁶ The use of Fusion Tables to draw the maps is the key simplification. Microsoft Excel (or other spreadsheet software, such as the free product Calc from the OpenOffice.org suite) provides additional data manipulations and communication between QGIS and Fusion Tables. All of the software can be used on computers running Windows, Mac OS X and Linux.

Figures 1 and 2 are screen captures of maps prepared using this methodology.⁷ Figure 1 shows in red the eighty-nine 10 km squares in southern Ontario, Canada for which

at least one observation of the Silver-spotted Skipper has been recorded in the atlas period (primarily 2002-2009).

Figure 2 shows the additional capabilities made possible by Fusion Tables and its dynamic maps. This figure shows a screen capture where the user has zoomed in to examine the geographic details (roads, parks, etc.) of a particular square in northwest Toronto. The user has also clicked on the square to display its full species list as a text bubble, which partly covers the square. To see the general topography of the area, the user could click on the box on the top right of the map to switch to satellite view. To see photographs of the view from roads (including rural roads), just metres away from the subject, the user could click on the human figure on the top left to switch to street view.

Implementation

Although general documentation for QGIS, Fusion Tables and Excel is available, the challenge is determining the best way for these three applications to work together to create a butterfly atlas. The following set of 10 steps is based on the experience of developing, with collaborators Colin Jones and Ross Layberry, an atlas of Ontario's butterflies for the Toronto Entomologists' Association (TEA). Steps 1 to 5 involve QGIS and Excel, while steps 6 to 10 involve Fusion Tables.

Computer implementation details are set out in detailed endnotes, and the underlying computer programs are available on request. The resulting maps, from which Figures 1 and 2 are drawn, are accessed through the TEA website.⁸

Step 1 is to record all observations in a single Excel spreadsheet. In the case of the TEA, this involved 65,000 observations of 149 species. Approximately another 20 species occur in Ontario occasionally but were not present in the data.

For each butterfly observation, decimal latitude and longitude values ("georeferences") must be assigned.⁹ Typos are hard to avoid, and so some preliminary mapping of data points is needed to identify them. In particular, missing the negative sign before the longitude will put a point in Asia rather than Ontario.

Step 2 is to determine the required definitions of suitable geographic subunits. Sharing information with other researchers and naturalists' organizations is best facilitated if an established grid is used. For the TEA project, Bird

Studies Canada supplied a division of Ontario into 10,747 10 km Universal Transverse Mercator (UTM) squares in the industry-standard “shape file” format. Records were available for 1,334 of these 10 km squares. Few records were available for Ontario’s sparsely-populated northern area.

Step 3 is to assign each observation to its proper square using the mapping program QGIS.¹⁰ The output of this step is a file detailing, for each observation, the species name or number, latitude, longitude, and square ID (the 6-digit UTM-standard name).

Step 4 is to summarize the observations regarding the occurrence of a species in a particular square. Formally, the task is to create a table (a cross-tabulation) for which the rows are the squares, the columns are the species, and each cell entry is the number of records for that square-species combination.¹¹ In the TEA’s case, this created a table of 1,334 rows by 149 columns. A typical row (one square), such as the one appearing in the info window of Figure 2, includes the information that UTM square 17PJ14 has 1 Silver-spotted Skipper record, 1 Juvenal’s Duskywing record, and so on, for all 20 species recorded in that square.

Step 5 is to create a file which provides the computer description (polygon shape) for each square in which one or more species of butterfly has been recorded.¹² Fusion Tables requires this information to draw the map.

Step 6 is to create the first map in Fusion Tables. This is done by setting up a Google account, signing in, uploading the two files created in steps 4 and 5 (the species-squares file and the file of polygon shapes), and then merging the former to the latter by using the square ID as the common variable. The merged file is given a new name. With this merged file open as a table of data, click on “Visualize” and then “Map.” This first map shows all squares where any butterfly species has been recorded.¹³

Step 7 is to arrange for the display of a species list for a particular square when the user clicks on that square. Clicking on a square causes Fusion Tables to display an “info window” which provides, for that square, the names of certain variables (column labels of the table) and the values of those variables. The variables displayed are those chosen using the command “Configure Info Window”. An appropriate choice of variables can be used to display a species list for each square.¹⁴

Step 8 is to give permission in Fusion Tables for the public to view the map. This is done by executing the “share” command in Fusion Tables for each of the 3 files referred to in step 6. This also makes the underlying data publicly viewable, but this data is only the number of records of each species for each square—the actual observations are not uploaded to Fusion Tables.

Step 9 is to produce a map for each particular species by filtering out all observations but those for that species.¹⁵ Finally, step 10 is to create maps for all species and to put them on the web.¹⁶

Refinements

Executing the above 10 steps produces a basic butterfly atlas. Some extensions used in the maps displayed on the TEA website are:

- For each square, the info window lists the major contributors of observations by their initials. This serves as both a thank-you for the observations submitted to date and an incentive to submit more observations.
- Some maps display not only the species recorded for that square but also species which are likely to be observed there, such as those other species recorded in one or more of the 8 adjacent squares.
- The observations for a particular species are disaggregated using multiple square colors (e.g., red if the species has been observed in that square in the past 10 years, and yellow otherwise)¹⁷ and multiple maps (e.g., sight vs. photo vs. specimen, or for specific observers).¹⁸
- Maps are produced for counties as well as 10 km squares.

Discussion

The above approach using free software is, of course, not as good as commercial mapping software. However, both QGIS and Fusion Tables have steadily been improved since their release in 2009.¹⁹ At this time, the issues with this software are as follows:

- QGIS is not as well-documented as commercial software in terms of help and instructions, although the basics are explained in many user-generated YouTube videos and more difficult questions can be posted on a users’ forum.²⁰ Fusion Tables presents fewer problems in this regard because the software is not as complex.²¹
- Sometimes QGIS will fail to process a file of data points if it contains formatting irregularities, and finding those irregularities becomes a time-consuming trial-and-error process. However, simply cutting and pasting the data into a new spreadsheet will often solve the problem.
- Fusion Tables has occasional problems in online display.²² Sometimes the filter will not take effect, that is, the map will still show the squares for which any species has been recorded, not the species in

Figure 1: 10 Km Squares in Ontario with Records of the Silver-spotted Skipper

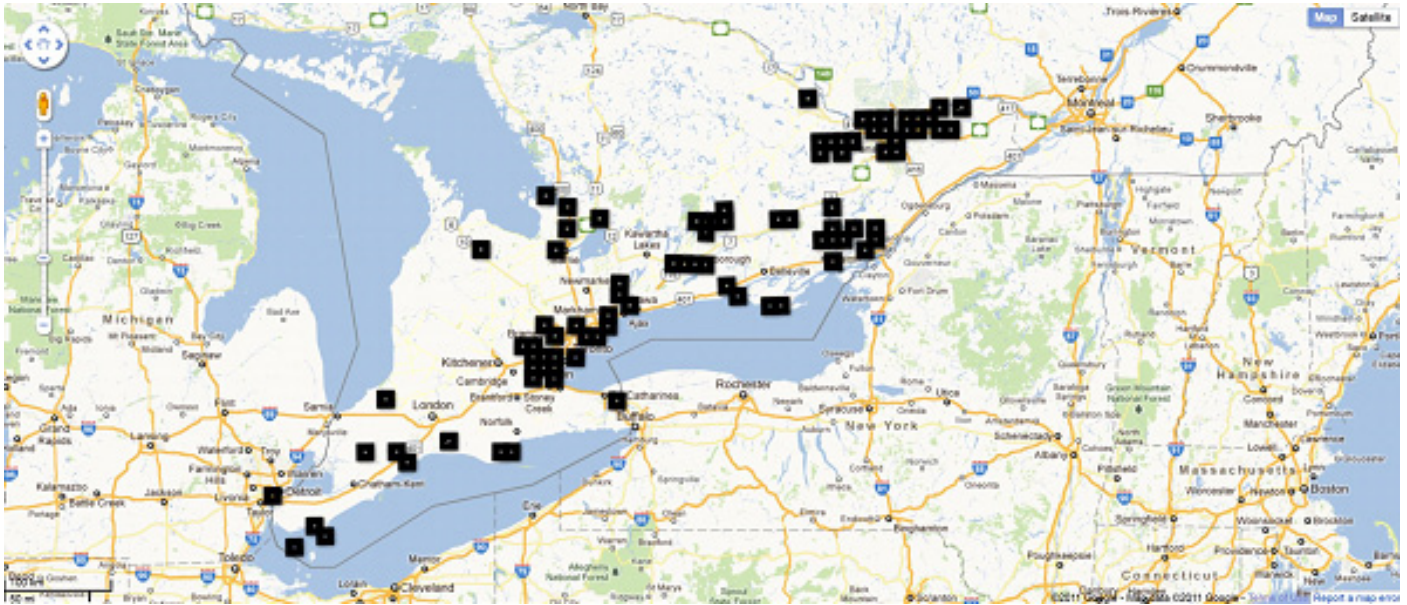
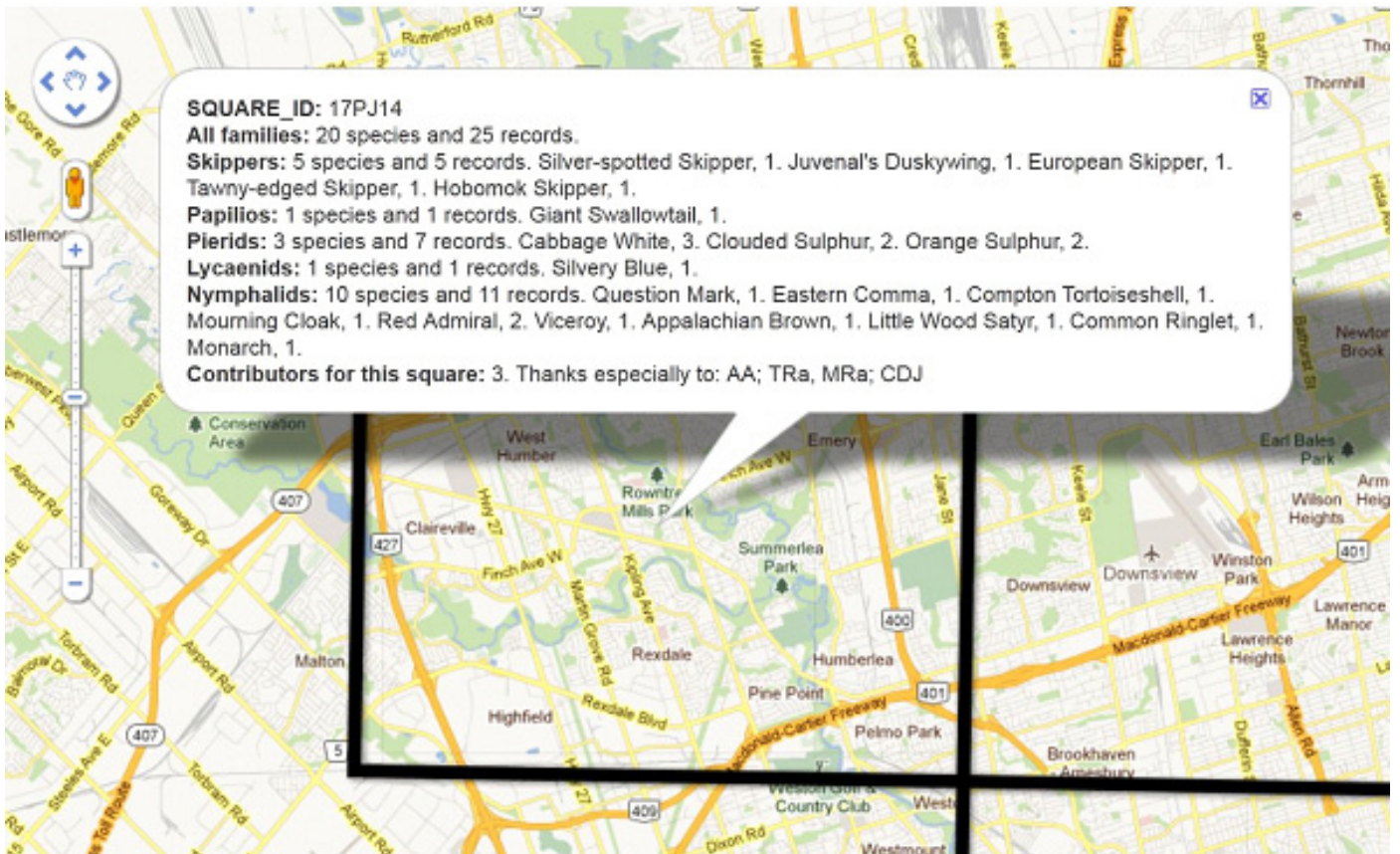


Figure 2: Zoomed-in View of a Square, Showing the Species List



question. Clicking “refresh” seems to solve that problem, but this has to be repeated each time the problem appears. Also, the view of the map may be blocked by a message saying that the data is still loading; zooming in and out resolves this problem. Finally, for the display of the info window with the Firefox browser, the text will sometimes overflow the space and become unreadable.

- The use of three separate software products (QGIS, Fusion Tables and Excel) implies that updating the maps for new data takes perhaps three hours of the developer's time (and thus cannot be done weekly, as some bird atlases do).
- Fusion Tables limits any cell to a maximum of 1 million characters. By displaying the QGIS map side-by-side with the Fusion Tables map to check accuracy, it has been found that this limit means that only about a thousand 10 km squares can be viewed by a single mapping request; beyond that, squares may disappear without warning. This number of squares would only cover an area of about 320 km by 320 km (since 32 x 32 is about 1,000) if the species in question is recorded in every square. A partial solution is that with a Fusion Tables API, up to 5 separate mapping requests (“layers”) may be used to construct a single map. All 3,251 US counties have been displayed on a single Fusion Tables map in this way. Ontario bird atlases address this problem by showing the province as a whole in 169 blocks of 100 km per side; 10 km squares are used only for smaller areas.

Acknowledgements

Many people deserve thanks. Colin Jones conceived of the atlas project, established the database, and encouraged data contributions for almost ten years. Ross Layberry further developed the database and contributed a massive amount of personal records. Over 800 people contributed to the TEA seasonal summaries; more data is still welcome. Steve Xu and other staff of the Map Library of the University of Waterloo suggested the use of QGIS and Google Fusion Tables and helped with problems. Mandi Gingerich provided text-editing services.

For Further Research

- Newman Library, Baruch College, City University of New York, *GIS Practicum Manual: Introduction to GIS Using Open Source Software* (www.baruch.cuny.edu/geoportal/practicum/)
- Toronto Entomologists' Association, *Atlas Online* (www.ontarioinsects.org/atlas_online.htm)
- Wisconsin State Cartographer's Office, *Quick and Easy Web Maps with Google Fusion Tables*. SCO

Technical Paper, August 2011, 10 pages (www.sco.wisc.edu/images/stories/publications/SCO_quick_and_easy_web_maps_v1.0.pdf)

NOTES:

- 1 The sites are www.butterfliesandmoths.org and www.nababis.org. The BAMONA website provides for authentication of observations through the review of photographs by regional coordinators. A Canadian website is in development (www.macroecology.ca/butterflies/).
- 2 Mapping points rather than squares reduces the loading time of the map. However, mapping points requires that observations on rare and threatened species be shown as occurring at the centre point of the relevant geographic unit (BAMONA's policy) or be suppressed entirely. Either alternative raises thorny issues of whether one should disclose to users which observations have been geographically censored (although researchers, who are given access to the true data, are not affected).
- 3 A few “seam squares” near UTM zone boundaries are less than 10 km by 10 km in size and appear more like triangles.
- 4 The advantage of political units such as counties is that they are better-known. Thus, the Wisconsin Butterflies website (www.wisconsinbutterflies.org) is able to provide much distribution information using only a thumbnail map of the state showing the outlines of each county. However, counties may be much larger (e.g., for an average US county, 30 times the area of a 10 km square), may be inconsistent in size (e.g., from 122 sq km to 51,960 sq km in California), and may not be defined for some areas (e.g., northern Ontario). Shape files of counties for the US and Canada are available at <http://support.google.com/fusiontables/?hl=en>.
- 5 Two printed atlases are J. Asher, M. Warren, R. Fox, P. Harding, G. Jeffcoate and S. Jeffcoate (eds), *Millennium Atlas of Butterflies in Britain and Ireland* (Oxford University Press, 2001) and C. W. Leahy, B. Cassie, and R. K. Walton (eds), *Massachusetts Butterfly Atlas 1986-1990* (Massachusetts Audubon Society, 2006). Dynamic maps for the latter atlas are available online (www.massaudubon.org/butterflyatlas).
- 6 The sites for QGS and Fusion Tables are www.qgis.org and www.google.com/fusiontables/Home/ respectively. Fusion Tables covers the entire world. No copyright fees are charged if Google's crediting requirements are followed.
- 7 See, e.g., Snipping Tool (included in Windows Vista and Windows 7).
- 8 http://www.ontarioinsects.org/atlas_online.htm.
- 9 Some conversions of geographic-location data may be necessary. Latitude-longitude pairs in degrees, minutes and seconds must be converted to decimal values (www.cpearson.com/excel/LatLong.aspx). UTM easting and northing values also must be converted to decimal latitude and longitude (<http://www.uwgb.edu/dutchs/usefuldata/utmformulas.htm>). Decimal latitude-longitude pairs computed using the NAD27 datum need to be converted to the NAD83 or WGS84 datum (e.g., using the free Windows-based NADCON software: www.ngs.noaa.gov/TOOLS/Nadcon/Nadcon.shtml) to avoid errors in determining the proper square in step 3.
- 10 For the TEA application, this involved several steps. First, an ESRI shape file of the province of Ontario was uploaded to QGIS through the “Add vector layer” menu choice. (The province layer was made transparent, so that the 10 km squares could be seen on top of it, as follows: right-click on the province layer; choose Properties; click on the Change button showing the image of a wrench; and, under Fill Style, choose No Brush.) Second,

the shape file of 10 km squares from Bird Studies Canada was similarly uploaded and made transparent. Third, the Excel file of butterfly observations was saved in CSV format, and then this CSV file was uploaded to QGIS using the "Add delimited text layer" icon on the Plugins toolbar. Finally, the "Join attributes by location" command in the Vector>Data Management Tools section was used to assign each butterfly observation to a 10 km square. For this command, the "Target vector layer" was the observations file and the "Join vector layer" was the squares file. The dbf file produced in this process was then opened in Excel to become the spreadsheet used in Step 4.

11 Excel does this through the pivot-table command. In Excel 2010, for example, select the square ID and species name-number columns with the mouse, then do Insert > Pivot Tables > OK. Enter the square ID in Row Labels, enter the species name or number in Column Labels, and enter the square ID in Summation of Values.

12 This is a multi-step process. First, create a CSV-format file in which each row is the latitude and longitude of any point in a particular square (including in the file only squares in which one or more species of butterfly has been observed). Centre points of the squares are a good choice for this purpose, as they are likely to be provided as part of the shape file of the squares. Second, upload this file to QGIS and use the "Join attributes by location" command to assign each point to the polygon shape of its associated square. This use of the command is different from that in step 3 in that the "Target vector layer" is the squares layer and the "Join vector layer" is the points file. Third, delete the latitude and longitude of the centre points from the new layer (using Table Manager – get it using Plugins > Fetch Python Plugins > Repositories > Add 3rd Party Repositories > OK); otherwise, on subsequent upload to Fusion Tables, the centre points will appear on the map instead of the squares. Finally, the resulting layer should be saved in the KML format required for Fusion Tables.

13 By default, each square is a solid color which is 50% opaque. A better approach is to choose 1% opaque with a border width of 8 px (pixels) -- when viewing the map, use Configure Styles > Polygons. Then from the zoomed-out view (Figure 1) each square will be almost a solid color and thus still easy to see, but from a zoomed-in view (Figure 2) the borders of each square will narrow to reveal the geographic details inside the square.

14 The method used for the TEA application is to create a variable for each butterfly family name which contains text listing the species in that family found in that square. This involves adding extra columns to the square-species table created in Step 4. Text functions in Excel were used to create these columns.

15 For an illustration using the TEA application, consider filtering for the Silver-spotted Skipper, i.e., displaying the set of squares for which the number of records of this species is greater than zero. To do this, first click on Options > Filter. The left-most drop-down menu contains the column labels. Click on the arrow beside it and choose the Silver-spotted Skipper. In the middle drop-down menu, click on the arrow to toggle from "=" (equals) to ">" (greater than). Next, in the right-most box, type in the number "0" (zero). Finally, click "Apply", and the map appears (Figure 1).

16 There are 3 choices here. The ideal approach is to create a Fusion Tables API on the insect organization's website that retrieves each species map. Alternatively, the developer could, for each species, filter to produce the map, click the "get embeddable link" command to display the required HTML code, and then paste that link into the HTML code of the web page. A third approach is to use the "get link" command in Fusion Tables to create a single link which directs users to a page on the Fusion Tables site. Users must then do their own filtering (step 9). The TEA application presently uses this approach but the plan is to

develop a Fusion Tables API.

17 Chose Configure Styles>Polygons Fill Color>Buckets.

18 An additional variable must be added to the table for each potential map. However, tables exceeding about 3,000 columns become slow to load. Thus, multiple tables may be required.

19 Other free software may be available. The BAMONA website uses OpenLayers to superimpose butterfly data points on a standard Google Map, and ArcGIS Online advertises some free functionality for non-profit applications.

20 <http://forum.qgis.org>

21 Fusion Tables also has a users' group which, despite its name, covers all types of issues. See Fusion Tables API Users Group (<https://groups.google.com/forum/#!forum/fusion-tables-users-group>).

22 It is still described by Google as "beta" (unfinished) software more than two years after its release. However, this is a frequent Google labelling practice.



From the Editor's Desk

James K. Adams

A Quick 2nd Round

In the last News, I forgot to thank my colleague Rebecca Lowery here at Dalton State College, who was a tremendous help in teaching me intricacies of the InDesign program. I could not have produced the News without her.

Clearly I wasn't lying when I indicated it would be a quick turnaround for my second issue. Let me apologize to anyone who thought they might have a little more time to get me something for this issue. Turns out that my appeal for immediate submission for quick publication was met with an immediate response by many people. So by the time everyone finished receiving the Fall issue I had virtually filled the Winter issue already. However, it is just a bit over two months until the NEXT issue will be coming out, so there is once again a quick turnaround time and an opportunity for you to get something in right away, and, as of this writing, I already have eight articles ready to go for spring. So hurry!

Thanks for the nice comments I received from a few of you on my first issue. Apparently I didn't screw anything up that was significant. As always, help me out and send in anything you think is worthwhile. Remember that my job is made a lot easier if you send stuff electronically. Right now I do NOT have the ability to scan slides, so if you want me to use some slide images, you will have to scan and digitize them before sending them to me. My snail mail and e-mail addresses are inside the back cover of each issue of the news (see Editor, News of the Lepidopterists' Society).

Reflections on viewing Lepidoptera Specimens: A Mirror Device

Annette Aiello AIELLOA@si.edu

Smithsonian Tropical Research Institute, Apartado 0843-03092 Balboa, Ancon, Panamá, Rep. de Panamá,

It can be a challenge to compare the wing pattern details on the ventral and dorsal faces of several moth or butterfly specimens, particularly as we age and our short term memories begin to fail. A simple mirror device that permits one to view dorsal and ventral faces of several specimens simultaneously greatly reduces those difficulties. The device is constructed by drilling holes into a mirror, which then is placed on top of a piece of pinning foam or, for safety sake, has been cut to fit into a container that has a pinning foam bottom. The mirror shown in Figure 1 was cut to fit a 4-3/8" x 7-5/16" Cornell style unit tray, and it has eight holes arranged in two rows. That size works well for three or four medium-sized specimens (e.g., *Anartia*, *Hamadryas*), or eight small ones (e.g., *Anthanassa*, *Janattella*). Obviously, comparison of large species (e.g., *Caligo*) would require a much larger mirror, perhaps one cut to fit into an insect drawer. The author found these devices indispensable during the process of identifying several drawers of *Adelpha* specimens.

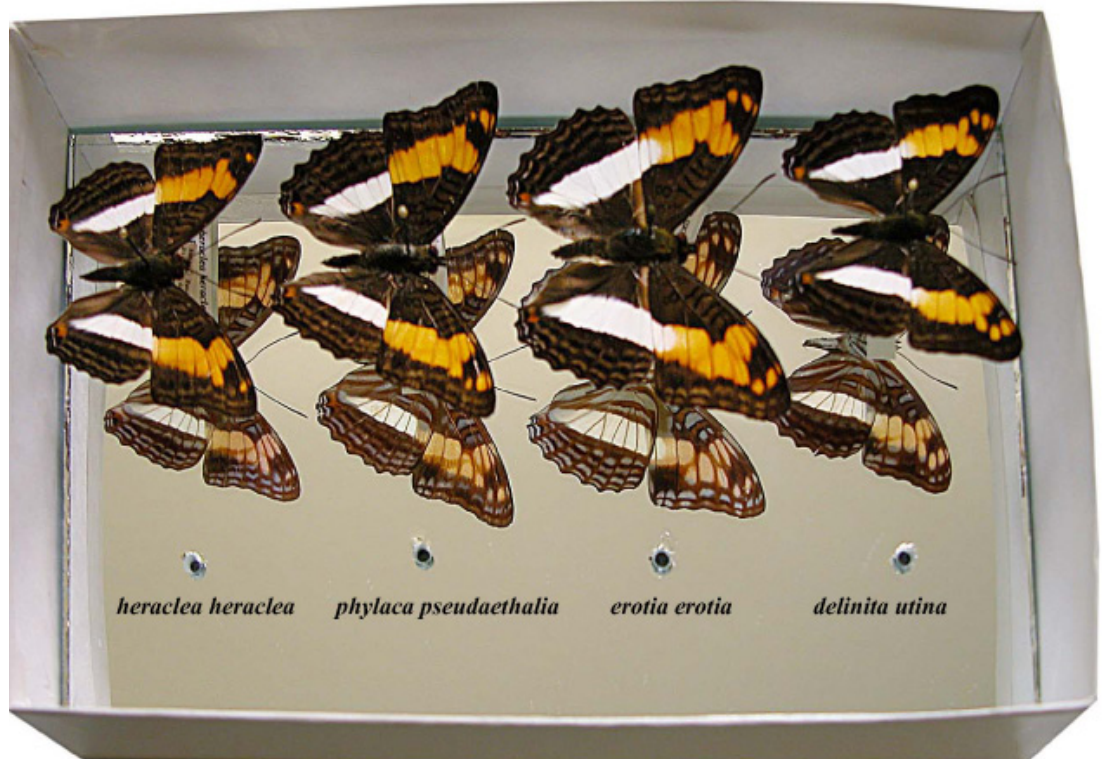
Specimens pinned into a mirror are best viewed from one side, *i.e.*, with the specimens arranged in a row (rather

than a column), with the bodies perpendicular to the observer (Fig. 1), who then tilts the mirror slightly to bring the ventral faces into view, and scans the specimens side to side. From that perspective the distance from the eye to any given specimen is nearly identical, thus greatly reducing the need to continuously re-focus the eyes and maintain details in short term memory. Pattern differences are easy to spot, and seem to jump into view.

The mirrors were purchased from, and cut and drilled by a local glass-cutter, who used paper templates prepared by the author. To prepare a template: 1) Select the container into which the mirror must fit; 2) install pinning foam in the container if it does not already have it; 3) cut a piece of white paper to fit into the container; 4) pin the specimens through the paper and into the foam to mark the locations of holes. To ensure an accurate fit, it is recommended that the container(s), not just the paper template(s), be brought to the glass-cutter.

Many thanks to Ricardo Cortez for his technical advice.

Figure 1. Specimens of four species of *Adelpha* (Nymphalidae) pinned into a mirror tray that permits the simultaneous viewing of dorsal and ventral wing surfaces.



Butterfly Scales: Is there some traction going on?

Mark Schmidt

8780 Red Lion-Five Points Road, Springboro, OH 45066 drmoth@pol.net

When a person has been chasing butterflies and moths for more than four decades, sometimes the simplest of concepts seems to have escaped notice. People frequently ask, "Why do butterflies have scales." and of course, "Can they fly without them?" The usual answers are given, those easily accessed with a Google® search. Yet, then a thought enters the mind and the old lepidopterist asks himself, did I miss this in elementary school? Wasn't there a Lep Soc Journal article about this? Worse yet, he's afraid to ask the questions or state the premise for fear of looking all the more senile. So for those of us who might be in this category, let me say, I have never found the following thought on butterfly scales, nor bird feathers, for that matter. The question is, do butterflies need scales for traction?

Butterfly flight is more than air foils, minimized turbulence, gliding, and stationary aerodynamic lift studies. It's also about propulsion and maneuvering. In order to do these two things, friction is actually advantageous! Running on ice for bipeds such as ourselves is made so much easier with a sprinkling of grit and sand.

Scales generally orient with their unattached end facing caudally. When the wing is slipping forward to initiate a stroke, scales are naturally forced flat just by their orientation, producing the least resistance and turbulence in this motion. With the wing foil moving forward, lift is likely generated—I'll leave that to the physicists. However, as the wing is moved back, or more accurately, the body is moved forward on the wing, the scales' free caudal ends can act as a spade, digging into the air serving to anchor it in the air. Further, the micro-pockets created by each scale and its neighboring scale and/or wing surface cup the air and create a temporary high frictional surface. This locks the wing in place or at the very least, impedes its slippage backwards, propelling the rest of the insect forward. The insect virtually claws, digs, scratches, and grips the air with its wings, climbing into the sky and gaining acceleration and speed. This permits the non-jumping, non-running, non-soaring [see problems plaguing theories of bird evolution] insect to take flight in an instant. It climbs the air. The aerodynamics of foiled wing motion provides additional lift but not necessarily speed or acceleration when moved forward for the next beat. The scales are again flat and aerodynamic, perhaps even assisting in dampening drag from turbulence during that traditional aerodynamic phase of the wing beat cycle.

Think of the swimmer performing the butterfly stroke. His arms and hands lock himself into the water and pull his body past his arms, propelling forward. Cupping hands makes it all more effective.

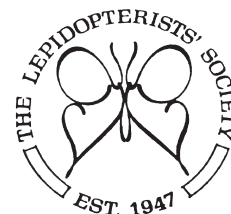
Each butterfly wing beat is an alternation between forward slip [generating the lift] and the forward propelling traction from the back stroke that adds to speed and forward progress [propulsion]. The latter is really a variable vector and may be directed in any direction depending on the energy applied to each individual wing. This creates maneuverability.

If another real-life example is needed, then take out your lint brush [not the tape kind.] The hairs are pointed in one direction. If the brush moves against the hand in the direction of the hairs' origins, it is quite smooth, if not slick. However, the opposite direction produces a rough, gripping effect.

Producing friction during one phase of the wing beat cycle may be the true function of scales and one rarely quoted. That's why I actually write this excerpt. A search of the internet contained no such mentions. True, a butterfly may not need its scales to fly. Lift may be enough from the traditional aerodynamics but the flight pattern and maneuverability is significantly altered to say the least. Also, all the other traditionally mentioned uses for scales as in camouflage, mate identification, predator warning, and predator escape are handy add-ons to the original design just as is paint and markings on a stealth fighter. Again, that need for scales is gaining flight speed, predator-escape velocity, and maneuverability as fast as possible. The latter also comes in handy for mate courting. In the end, even a microsecond advantage over a predator or rival mate may make the difference when it comes to survival and procreation.

So, for those who might have missed the same lecture or articles on butterfly scales as did I, this article is submitted. Cheers!

www.lepsoc.org



Announcements:**New Editor for the Journal**

Starting with the first issue of 2012 (Volume 66), Keith Summerville, of Drake University, will take over the reins as editor of the Journal. Keith is excited about working with the Journal, and I am pleased to leave it in such capable hands. Please submit manuscripts to **keith.summerville@drake.edu** for consideration and review. (Keith's complete contact information is inside the back cover).

I want to express my appreciation to the many society members (and many non-members) who volunteered their valuable time to review manuscripts while I was editor. It truly made my tenure enjoyable and I'll miss the interactions. Being editor allowed me to interact with many members I did not previously know. I hope to see and keep in touch with all of you as the Society moves forward. Many thanks to all for allowing me to serve as your Journal editor for five years.

Brian Scholtens, Biology Dept., College of Charleston

National Moth Week July 23-29, 2012***Exploring Nighttime Nature***

The first annual National Moth Week will be held July 23 – 29, 2012. Visit the National Moth Week website at www.nationalmothweek.org for more information. The complete announcement can be seen in the News of the Lepidopterists' Society Fall 2011 issue (53:3, pg. 83).

David Moskowitz, Senior Vice President, EcolSciences, Inc., 75 Fleetwood Drive, Suite 250, Rockaway, NJ 07866 www.ecolsciences.com.

Join the Membership Committee!

The LepSoc needs your help! As members, you can finally voice your opinion and help the Lepidopterists' Society in its quest for a stronger membership and to improve upon our organization in general. A [Yahoo Groups](#) "listserv" (online discussion group) has been created exactly for this purpose, and those members that wish to opine, discuss, or bring up new issues can have their voice heard as de-facto Members of the Membership Committee. By this action, instigated over a year ago and approved by the EC this past summer, allowed are a potentially unlimited number of participants to be involved and to add to the betterment of the Lepidopterists' Society. In addition to member involvement, it is hoped that all EC members and Committee Chairs alike join in and at least lurk in the background (at a minimum) and monitor the progress. A formal reporting of the success or lack thereof and a condensed summary of the group's discussions will be included in the Membership Committee Report in June for review by the EC.

The description on the opening page of the listserv states:

"This discussion group is open to members in good standing of the Lepidopterists' Society (.org) who wish to help in the process of increasing LepSoc membership or can otherwise help in the future prosperity and improvement of LepSoc policies, practices, enticements, programs, and social interactions thereof, by their constructive input."

Some sample questions that might be addressed:

1. What can the LepSoc do for you that it isn't already doing?
2. How can we increase LepSoc membership and grow the Society?
3. Is it even necessary, in the first place, that we grow in numbers? Do greater membership numbers actually benefit the LepSoc?
4. Is that "Statement on Collecting" really necessary? Does it scare potential members off? Bring in new members? Should we amend it? How?

To join in this action, go to the following link, <http://tech.groups.yahoo.com/group/LepSocMembershipCommittee/>, click on the blue "Join This Group!" button, and follow the instructions. If you do not have a Yahoo Groups ID and Password from participating in other Yahoo Groups (List-servs like Desertleps, Tils-Lep-Talk, Leps-L, Goats-101, etc.) I would suggest you make your "Yahoo! ID" your name instead of a pseudonym (like Joe_Lastname instead of dieyougravysuckingpigs) since this is not an anonymous blastboard of inflamed rhetoric but rather a mature discussion of issues. And one has to pass the gauntlet of being a LepSoc member in good standing to join. See You There!

Dave Wikle, Membership Committee Chair, 2007-2012, wikleps2@earthlink.net

The 2012 Lepidoptera Course

The 2012 Lepidoptera Course will be held at the Southwestern Research Station in the heart of the Chirichahua Mountains in SE Arizona from 11-20 August. This setting is one of the highest areas of lepidopteran biodiversity in the US. The focus of the course is to train serious amateurs, citizen-scientists, and academic professionals in lepidoptera identification, classification, and biology. The staff for the 2012 course includes Deane Bowers (U of CO), John Brown (USDA, Smithsonian), Jason Dombroskie (Cornell), Lee Dyer (U of NV), Paul Goldstein (Smithsonian), Jim Miller (AMNH), Ray Nagle (U of AZ), Chris Schmidt (CNC), David Wagner (U of CT), and Bruce Walsh (U of AZ). The course fee (which includes room and board) is \$1070 for students, \$1170 for non-students. Application deadline is 11 June 2012. Further details, and a link to the application form, can be found at www.lepcourse.org. You can also see photos and comments from the students of the 2011 course at their facebook site, "2011 Lep Course, SWRS SEAZ". For any questions, contact Bruce Walsh, jbwalsh@u.arizona.edu

No Sleep at the 2011 Lep Course

Hugh McGuinness

12 Round Pond Lane, Sag Harbor, NY 11963 hmcguinness@ross.org

They came from as far away as Brisbane and Sri Lanka, laden with black lights, nets, and Schmidt boxes to the Southwestern Research Station in the Chiricahua Mountains of southeastern Arizona. Twenty students and ten instructors convened in this idyllic setting for eight days last August at the third annual "Lep Course."

The course, which was originally the brainchild of University of Arizona geneticist Bruce Walsh and systematist Jim Miller, of the American Museum of Natural History, was designed to provide students with the opportunity for in-depth, graduate level training. "There is nowhere in the United States that students, amateurs or professionals can learn the basics of Lepidopteran systematics, morphology and biology," says Miller. "The aim of the course is to make sure this knowledge is passed on to future generations of lepidopterists," adds Walsh

The faculty assembled for the course had impressive credentials. In addition to Miller and Walsh, it included five outstanding systematists: John Brown, a tortricid expert from the U.S. National Museum; Chris Schmidt from the Canadian National Collection in Ottawa; Richard L. Brown, museum director at Mississippi State University; gelechioid specialist Sang-mi Lee from MSU; and Jennifer Zaspel from the University of Wisconsin, who specializes in arctiine phylogeny and ecology. Walsh and University of Arizona pathologist Ray Nagle provided local expertise. Expertise does not guarantee quality instruction, but this group delivered a great program. Kirsha Fredrickson, an undergraduate at the University of Nevada Reno, put it this way, "The instructors were all so inspiring and it was obvious that they loved what they were doing."

The students were culled from a wide variety of backgrounds. Among them were three professional scientists, two agricultural inspection agents and one fine dining chef. Seven participants were enrolled in degree programs: three working for their Ph.D., three for their Masters and one for a bachelor's degree. Two of the students worked in collections at natural history museums and several had experience conducting faunal surveys for Lepidoptera in their home states or had on-going research projects concerning Lepidoptera.

Sleep was hard to come by during the course, as up to a half dozen black and mercury-vapor lights were set each night. With a seven am breakfast and daily field trips for butterflies, students and faculty spent most of the week in a sleep-deprived state.

Each day's activities were structured around a theme, such as morphology of larvae and adults, or Lep taxonomy.

Typically, there were two lectures and a lab session, in addition to the fieldwork. Student Mark Adams, Assistant Director of the National Radio Astronomy Observatory in Charlottesville, VA, noted, "I was impressed that I could engage with the course at any time of day since the lab was always open and someone was almost always there. I had not anticipated this 24-hour access and it enriched the experience for me."

The biodiversity encountered during the course was overwhelming, but typical of what is to be found in southeastern Arizona during the monsoons. More than 500 species of moths were documented with specimens (of which nearly 300 were photographed alive). About 35 species of butterflies were encountered as well. Lep diversity seemed very high despite the cataclysmic forest fires that had burned 90% of the Chiricahuas in May 2011. In addition to Leps, the area around the station provided close-up encounters with charismatic wildlife including Black Bears, Mountain Lions and several species of snakes. Brigette Zacharczenko's wonderful blog (<http://caterpillarblog.com>) documents some of the wildlife, as well as many of the experiences during the course.

One of the highlights of the course was the group sorts of trap catches. The diversity made putting names on the moths a difficult, yet rewarding, experience. "My favorite part of the course was the group sorting. Sitting with people with all sorts of expertise at a table sorting through a thick pile of moths was great," said Rene Simon, a Senior Agricultural Inspector from Placer, CA.

The eight-day seminar began on a Sunday night with an inspired overview of macro-lep diversity given by Bruce Walsh. The following day Chris Schmidt, John Brown and Sang-mi Lee provided training in collecting and curatorial methods, highlighted by Lee's demonstration of how to spread micro moths. By evening, every student was engaged in specimen preparation. Caterpillar anatomy and dissection were the topic of the second day under Jim Miller's tutelage. Richard Brown's lecture on pupae provided ample insight into this overlooked life stage. Dave Wagner and Lee Dyar, itinerant scholars who happened to be passing through the area, provided Guest lectures in the afternoon.

The fourth day of the course focused on adult morphology, particularly genitalic dissection using the maddening genus *Matigramma* as the test case. By the afternoon the course had shifted focus to phylogeny and taxonomy, and micro and macro-moth families were covered on days five and six. John Brown's highly acclaimed annual micro-lep lecture and lab, in which each student received

a representative collection of micro-leps families, was augmented this year by outstanding presentations by Sangmi Lee on Gelechioids and Richard Brown on Pyraloids. Chris Schmidt provided an insightful talk on the derived traits that characterize each family of macro-moths.

There were many other fascinating topics covered during the week. Jim Miller and Richard Brown presented everything you ever wanted to know about androconia (sex-scaling). Aaron Corcoran, a doctoral candidate in Bill Conner's lab at Wake Forest University and course TA, lectured on Arctiines that jam bat sonar. His film footage of bats attacking moths was outstanding. Ray Nagle's insights into Lepidopteran histology and its physiological significance provided a unique lens into the biology of Lepidoptera. Richard Brown gave a fascinating talk on the evolution of wing pattern.

While the content of the course was comprehensive, the students consistently reported that it was the ability to interact with the instructors that was the most valuable aspect of the course. Mark Adams put it this way, "I was impressed by the enthusiasm of the instructors, which was infectious and undoubtedly improved the class experience. The instructors were having a great time; how could the course participants not do the same." Pete van Zandt, professor of Biology at Birmingham-Southern College, added, "The biggest benefit to me was the ability to learn firsthand from all the instructors about so many things... This ranged from simple things like handling a butterfly in a net to what I thought were complex things like dissecting genitalia. All the instructors were obviously happy to be interacting with a bunch of geeky students who were excited to learn, and I tried to soak up all I could. It was the most intense and productive learning experience I've had since grad school."

The Southwestern Research Station is a hidden gem. Tucked into Cave Creek Canyon on the southeastern side of the Chiricahua Mountains, the station is set among dramatic rock formations and a subtly beautiful oak forest, and even boasts a swimming pool, filled by a nearby mountain stream. At 5600 feet in elevation, daytime temperatures rarely reach the low 90s (but it's a dry heat!), while nighttime is very comfortable in the high 50s to low 60s. The summer monsoons provide dramatic entertainment on most afternoons. Accommodations are modest (shared cabins) but comfortable while the food is plentiful and excellent. The staff is friendly and helpful.

The course is scheduled to run again from August 11-20, 2012. More information can be obtained by pointing your browser to <http://research.amnh.org/swrs/education/lepidoptera-course>.

Author Bio: Hugh McGuinness was an instructor and curator for the 2011 Lep Course. He lives on eastern Long Island, NY, where is actively engaged in faunal surveys and research on Lep ecology.

Metamorphosis...

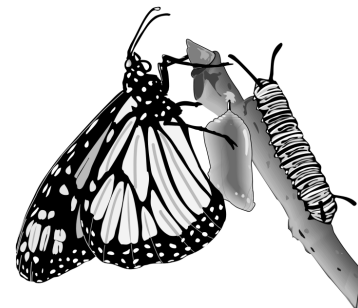
Julian Donahue

Viette, Pierre E.L. passed away on 30 April 2011 at 89 years of age. Dr Viette spent his entire career, starting in 1945, at the entomology lab of the Muséum national d'histoire naturelle, Paris, where he was in charge of the Lepidoptera Service for a long time and assistant to the director for 18 years, until 1988. He wrote more than 400 publications, mostly on the fauna of Madagascar, but also on that of Réunion and French Oceanic Islands. He edited more than 70 of the 91 volumes of the *Faune de Madagascar*, a country he came to know like no one else, following eight missions on the island, starting in 1951. He published on various groups of Lepidoptera, and Pyraloidea was a favorite. Among his many distinctions, he was awarded the Karl Jordan Medal of The Lepidopterists' Society in 1978 for his work, *Noctuelles Trifides de Madagascar*. The Society never had the honor of Dr. Viette being one of our members. Look for more information in a future issue of the *Bulletin de la Société entomologique de France*. [reproduced with permission from *The Pyraloid Planet* Vol. 5, 15 July 2011] .



Pierre Viette in June 2006. Photo Credit: Joël Minet.

Our condolences go out to the Viette family.



Diana Still Reigns in Arkansas: A Natural History Essay

Gary Noel Ross

6095 Stratford Ave., Baton Rouge, LA 70808 gnross@yahoo.com

July 4, 1992, 7:30 pm CDST. I am seated behind the steering wheel of my pickup/camper, my home-away-from home and field laboratory. I am parked on a narrow, lonely forest service road that loops around the rim of the plateau of Mt. Magazine in Arkansas. A picturesque and precipitous sandstone escarpment subtends the elongate tableland that has an east-west orientation. Barely 10 feet in front of my vehicle is a small meadow of yellow wildflowers carpeting the edge of a south-facing bluff. From this vantage point I have a panoramic view of an elongate valley 2,000 feet below the mountain. The lowland is a checkerboard of verdant pastures, farms, woodlots and hedgerows. A large lake and several ponds, placid and slate blue in color, complete the rural imagery. To my immediate right and left are patches of scraggy forest bedecked in new summer greenery. This is the hour when the sky is enigmatic: bright azure on the western horizon is being captured by deeper indigo tones advancing from the east. Like an extravaganza of natural fireworks in honor of the nation's birthday, fireflies are beginning to punctuate the intensifying darkness with flickering pinpoints of light.



Monarch butterfly stopping during its fall migration to nectar on gayfeather (*Liatris aspera*) on a north-facing ledge atop Mt. Magazine.

Yet it is not these bucolic and surreal surroundings that capture my attention and that prompted my 550-mile sojourn from Baton Rouge. No, I am in quest of the Diana fritillary, or simply "Diana," a medium size, elusive butterfly that is reported to occur in the highlands of northwest Arkansas. I had discovered the deserted road and colorful wildflower meadow earlier—about noontime. More interesting, I noticed that a small patch of purple coneflowers (*Echinacea purpurea*) growing within a bright gap in the

forest immediately to the left of the road was more active with butterfly visitors than the meadow proper. The dozen or so plants were barely two feet in height. Although they bore scanty leaves, they were crowned with showy, daisy-like flowers, each consisting of a whorl of pink petals surrounding a yellow-orange pincushion center. The flowers seemed irresistible to as many as nine species of butterflies. Individuals would circle, then alight on a flower head. After probing for nectar, the butterflies would switch to another head. After perhaps 10 to 15 minutes, each would depart—usually into the meadow. And so, I decided to park and observe insect activity throughout the afternoon. Alas, although the tableau in this seemingly enchanted garden was entertaining, my "diva" was a no-show.

About 5:30, my eyes tired and my attention waning, I suddenly recognized that there was a sizable dark butterfly atop one of the coneflowers. At first I thought that my eyes were playing tricks since the apparition seemed to materialize from the ether. But no, the butterfly was indeed a female Diana. She was positioned on a coneflower, her characteristic black and pale blue wings spread in perfect view. I grabbed my binoculars for a close encounter. I was



Female Diana on gayfeather, a favored nectar plant in early summer and locally common atop Mt. Magazine.

surprised at the butterfly's size: larger than her male counterpart and sporting inordinately long, spindly legs and an equally disproportioned proboscis. She walked slowly on the flower's protruding spiky center, probing into each crevice to access the tiny reservoirs of high-octane fluid. The Diana's movements were resolute. Often she tilted for-

ward in a headstand to tap the deep recesses. Occasionally she ceased walking, flew upward for a few feet to circle the patch several times before eventually resettling and resuming business as usual. As the glowing sun-ball continued to sink, several rays of light poured into the flower patch. In response, the Diana closed her wings. Although she continued securing her sugary fix, the dark color of her underwings imparted the resemblance to a dead leaf and so the butterfly was less discernable. Once the beams faded



Female Diana nectaring on Zinnia (at homesite near Paris, AR).

the butterfly re-opened her wings; and after another 25 minutes on the flower head, she fluttered up gracefully, and selected an adjacent spike. On no occasion did she stray into the brighter meadow as did the other species. Caught up in the moment, the chic “flower-strider” seemed insatiable and oblivious to the sun’s impending intersection with the horizon.

As twilight deepened, I continued my voyeurism. Past decades of ecological research have taught me temperate zone butterflies depend directly upon the warmth from the sun for flight energy that they usually cease feeding long before the sun sinks below the horizon. This allows the butterflies sufficient energy and time to locate safe nighttime roosts. So why and how was this Diana up so late?

Eight fifty o’clock. My eyes are exhausted and the light has so faded that I have difficulty focusing on the Diana’s dark silhouette. But suddenly, the butterfly closes her wings and launches straight up. She alights in an inverted pose on the underside of a yellowing and frayed hickory tree leaf about eight feet above the ground. After a few seconds she partially tucks her two forewings into her hind wings so that she now resembles a frayed leaf. I keep my vigil for another 10 minutes to assure the butterfly has indeed settled in. With nightfall complete, I retire into my back camper. I quickly down two cans of ENSURE®—my usual evening meal when in the field. As I settle onto my mattress, my mind reels with questions regarding the unorth-

odox behavior of the Diana. But soon the flickering fireflies within a heaven awash with twinkling stars lull me into my own nocturnal slumber.

Speyeria diana is the largest of a group of nymphalid or brushfooted butterflies commonly referred to as “The Greater Fritillaries” (genus *Speyeria*). Roughly 14 species (and numerous subspecies) share a homogenous but unconventional lepidopteran life cycle. Details are sketchy, but this much is reported: (1) all species are restricted to geographical venues with decidedly cold, snowy winters; (2) most species can be relatively common within their seasonal flight periods of mid summer; (3) males and females usually are similar in appearance: a dorsal side usually dull orange/brown interrupted with black spots whereas the ventral side is brown with numerous silvery checkerspots; (4) females are fecund, producing between 1,000-2,000 eggs over a three to four week period in autumn; (5) there is but a single generation each year; (6) host plants are restricted to violets (*Viola*) associated with shaded and semi-shaded habitats; (7) males emerge from their pupal stage (chrysalis) in early summer, usually a few weeks before females; (8) males die shortly after mating (within 2-3 weeks) whereas females postpone egg development and live until autumn (3-4 months) when they deposit their load of eggs; (9) eggs are deposited singly in ground litter, not directly on host plants, which are usually desiccated at the time; (10) young hatchlings (first instars) do not feed but remain inactive, hidden in detritus and often beneath winter snowfall; (11) after the emergence of fresh violet foliage in the spring, emaciated larvae begin to feed and resume development in typical butterfly fashion; (12) while immature stages are rarely encountered in the field, laboratory observations have shown that young larvae have numerous long, bulbous, hair-like appendages whereas older larvae are usually dark with lighter colored markings and numerous protuberances bearing branching, non-stinging spines.

But *Speyeria diana* is quirky—a sort of maverick. Unlike its cousins, *S. diana* is sexually dimorphic, that is, males and females are dissimilar. A female is basically black with contrasting pale blue splashes and dots; the under-surface is a rich mottled mahogany color. By contrast, a male is dark brown with extensive bright orange borders; ventral wings are cinnamon in color.

Whereas most fritillaries are at home in sunlight meadows, Dianas opt for heavily forested habitats. [The very name “Diana” evokes powerful imagery. For example, In Roman mythology, *Diana* is “goddess of forest, childbirth and fertility.” Her Greek equivalent, *Artemis*—often portrayed holding a cocked bow—is “goddess of the hunt.” And let’s not forget one of Britain’s most popular royals, the late “Diana, Princess of Wales.”] The species was historically common throughout the temperate deciduous forests of the southern Appalachian Mountains and then westward to the Ozark-Quachita Mountains of the Midwest.

The northern limit of distribution was southern Ohio, the southern, southwestern Arkansas. But since the 1980s, the species has been greatly marginalized. Today *Dianas* are limited to restricted locales within only two population centers that are separated by approximately 600 miles: An eastern population now encompasses northern Alabama, northern Georgia, western North Carolina, southwestern Virginia, and southern West Virginia. A more western population is restricted to western Arkansas (26 counties) and eastern Oklahoma; until recently, four counties in southern and eastern Missouri were included, too. All habitats are wooded with intervening meadows, and all usually receive some snowfall each winter. The southern most population seems to be Rick Evans Grandview Prairie Wildlife Management Area in extreme southwestern Arkansas (near Hope, Hampstead Co.).

My research on the *Diana* fritillary butterfly began in 1990. Several cursory late summer road trips to a known population center in northern Georgia and southwestern North Carolina led me to conclude that the species has a distinct preference for elevations between 2,100-2,500 feet where summers are uncommonly cool and mornings often shrouded in pea-soup fog. Surrounding forests are tall and



Author taking notes, waiting for the fog to lift.

consist of hardwoods and hemlock. Cold/clear-water creeks banked by thickets of evergreen rhododendrons are commonplace. In most shaded locations, sizable clumps of violet plants (reported host plants for *Speyeria*) are common. During my visits I observed only a few female *Dianas*. They were not scattered randomly, but instead were restricted to patches of select blooming wildflowers such as butterfly weed (milkweed), joe-pye weed, and fall thistle growing locally along shadowy forest roadsides. Unexpectedly, the butterflies were docile and approachable. With this initiatory information in hand, in 1992 I turned my attention to my northern neighbor, Arkansas—"The Natural State."

In mid June I drove to Mt. Magazine (or Magazine Mountain). Located in Logan County near the small community

of Paris (about 100 miles northwest of the City of Little Rock), the mountain is a monolith rising from the Petit Jean River Valley. The actual summit of Mt. Magazine, 2,753 feet above sea level, is a knob officially known as



Author photographing butterflies and wildflowers on south-facing slope atop Mt. Magazine. The nearby summit (Signal Hill) is 2753 feet, the highest point in the state.

"Signal Hill" and the highest point in Arkansas. Surrounding the summit is a seven-mile long elongated plateau supported by a picturesque sandstone escarpment. So pleasant the summer climate on the plateau, in the 1850s it became a seasonal respite of town-size proportion. But during the Great Depression of the 1930s, homesites were abandoned and the land was purchased by the federal government to become the Magazine Division of the Ozark National Forest. A summer resort consisting of a two-story lodge, 18 cabins, and a primitive campground followed. But in 1971 the unoccupied lodge burned to the ground and cabins were abandoned shortly thereafter. Except for occasional nature enthusiasts and forest service personnel, the area remained relatively undisturbed.

As my truck began climbing state highway 309 up the mountain, I was shocked by the obvious dissimilarities between the forest cover on Mt. Magazine and documented *Diana* habitats in Georgia and North Carolina. Specifically, whereas the forestlands of the southern Appalachians are tall, luxurious, and moist with a rainfall average of over 60 inches, Mt. Magazine is drought prone and dominated by oak and hickory of average height. Too, other than Cove Lake, a man-made and recreational site, Mt.

Magazine has virtually no permanent bodies of water. Paradoxically, violet plants are common—not as luxurious as in the forests of East, but nonetheless, conspicuous and ubiquitous. My initial conclusion was that except for the violets, the Arkansas site seemed alien to any respectable butterfly named after the *Diana* of classical antiquity.

But we all know that things are seldom as they seem. After failing to discover Dianas at lower elevations of the mountain, I turned my attention to the plateau proper. There the roadsides were unmaintained and banked with an exuberance of wildflowers. I even spotted several flashy flower heads of *Asclepias tuberosa*, a.k.a., common butterfly weed, growing in several sunny swaths. Then another surprise: perched on one of the flowers was an orange-bottomed butterfly, which I instantly recognized as a male Diana. After a few minutes, the butterfly departed but quickly returned. During the remainder of the day I logged in six

Dianas, all male, and all feeding on butterfly weed or patrolling sunny roadsides seemingly in search of additional *Asclepias*. Sporadically, individuals would veer off into the shaded forest flying within a foot or two of the ground, and then return shortly to the light-drenched roadsides where they revisited the butterfly weed. (In addition, on several occasions I witnessed males feeding on fresh coyote or fox scat—and even ground saturated with human urine.) A day or two later, I discovered the “enchanted garden,” where I was able to acquaint myself with my first female Diana. Over the past couple of decades, I have been able to formulate some substantial theories. How so?

A classical paradigm in biology is that the morphology, anatomy, physiology and behavior of an organism all represent ancient adaptations to specific environmental parameters. Furthermore, the extraordinary number of eggs deposited by females was a hint that the life cycle was extremely problematic. So armed, I assumed that the unique attributes of both sexes of *S. diana* could be explained if I could be privy to the details of the insect's life style. First, I concentrated on the obvious: sexual dimorphism. Granted, both male and female Dianas must comply with the same biological imperatives: (1) secure nourishment, (2) locate mates as soon as possible, (3) avoid physical damage—mainly during flight (adult insects cannot repair damaged tissues), (4) dodge vertebrate and invertebrate predators, and (5) avoid infections from a pantheon of microbes and parasites. But males are short-lived, and so have an advantage. Specifically, males can afford to be more aggressive with their appearance. My observations indicate that the marked contrast between the bright edges of the upper wings and the dark hues close to the body conspicuously



Male Diana on Butterfly Weed (*Asclepias tuberosa*), a common sun-loving wildflower along roadsides on Mt. Magazine and adjacent lowlands.



Male Diana feeding on human urine along roadside on Mt. Magazine. Males also feed on scat from carnivores (coyote, fox).



Male Diana on Purple Coneflower (*Echinacea purpurea*)

advertise a male's presence, particularly within the shade of forest cover where they frequently patrol for females (see below). And when feeding, the orange color closely matches the butterfly's favorite nectar source, butterfly weed; at night when a sleeper is sheltered under a leaf, the subdued underwings mimic a spent discolored leaf. These observations lead me to conclude the distinctive coloration of males functions well in both courtship and eluding predators.

Females are saddled with more Herculean challenges, however. For example, emerging in early to mid summer, a female must mate while males are still on the wing. She then must remain alive until September and October at which time she will then deposit her load of eggs. With each passing day, threats become more ominous. Furthermore, in order to maintain her metabolic systems and to produce a prodigious number of eggs for next year's generation of *Dianas*, a female must be able to gain access to pivotal nutrients over this extended period.

In trying to comprehend the biology of the female Diana, my observations on that July 4 evening proved to be a benchmark. Turns out that females spend most of their time during the summer perched quietly atop leaves within deep forest shade but always within close proximity to favored sources of nectar. They stray from these enclaves only during the coolness of morning (arising as early as 8:00 am), late afternoon and early evening (retiring as late as 8:45 pm). While in the forest, if an individual over cools, she will fly into a sunlit patch, spread her wings and slowly fan to adjust body temperature. After a few minutes, she returns to an inconspicuous respite. During cloudy but warm conditions, females feed in the open regardless of the hour; if daytime temperatures are cool, females remain secluded all day.

During the coolness of autumn, a female delays feeding until approximately 10:30 am. Then a butterfly will spend as much as 2-3 hours on a single thistle flower head.



Two female *Dianas* nectaring on fall-blooming thistle (*Cirium discolor* and *altissimum*), important nectar sources during their prolonged egg-laying period. Females often congregate on a single inflorescence.

By one o'clock in the afternoon, the female will take flight into the canopy of the nearby forest. There she descends and alights on the shaded ground, begins walking about and probing dried detritus with the tip of her abdomen. After an appropriate stimulus (still unknown), she curls



Female Diana depositing an egg in leaf litter on forest floor. Young larvae do not feed but hibernate through winter months. They then begin feeding on the leaves of newly emerging violets.

her abdomen under dead plant material to deposit a single egg. Within 4-5 seconds, she moves a few inches and repeats the probing and egg laying. A maximum of 6-12 eggs will be deposited. Apparently now overly cool, she will fly to a sun-drenched spot to bask, her wings outstretched for maximum heat absorption. She continues egg laying and basking until approximately 3:00 pm at which time she usually will have laid a total 30-45 eggs. The female then abandons the forest to resume feeding, usually on the same thistle from earlier in the day, until 4:45 pm when she seeks shelter for the impending cool night. A female will follow this routine each sunny day until she deposits her full load of eggs, or until she becomes so worn that disease or predators overtake her. I conclude, therefore, that the dark coloration of a female Diana is directly involved with energy conservation, allowing an individual to stock up on nutrients during the cooler, less taxing parts of the day. Additionally, the dark color acts to camouflage an individual in forest shade. In the past, scientists have hypothesized that the black and blue coloration of a female Diana mimics the coloration of the pipevine swallowtail (*Battus philenor*), a common butterfly species reputed to be unpalatable to vertebrate predators. Hypothetically, predators cannot distinguish between the two species, and so neither the swallowtail nor the Diana is attacked. (Of course, everyone doesn't agree.)

Source of nectar is crucial, too. Although *Dianas* feed on the flowers of a variety of plants, the butterflies are quite fussy. Example: Male *Dianas* favor *Asclepias*—peak bloom in June. Females, on the other hand, are partial to *Echinacea*—peak bloom in late June, early July. Both plants have short flowering times. Males usually die before *Asclepias* fades and so these individuals are never in want of nectar. Females, however, are long-lived. They resolve their potential nutritional problems by utilizing a series of species with overlapping blooming periods that span the entire summer and fall months. In chronologic order, these species are: purple coneflower, wild bergamot (*Monarda fistulosa*), mountain mint (*Pycnanthemum tenuifolium*),

gayfeather (*Liatris aspera*), pasture thistle (*Cirsium altissimum*) and tall thistle (*Cirsium discolor*). These food sources share relevant characteristics. First, all are locally common in disturbed, sunny to partially shaded habitats in the vicinity of forest cover. These habitats enable high levels of photosynthesis and therefore, high nectar production. Second, all possess an inflorescence consisting of multiple individual flowers, each with a nectar reservoir allowing a pollinator to spend considerable time aboard. Third, all have spiky flower heads that target pollinators endowed with long legs and mouthparts. Finally, all contain phytochemicals, those torrents of plant-derived compounds that are pharmacologically active in human beings. (Popular examples include: nicotine, caffeine, ginkgo, St. John's wort, lycopene, echinacea, peppermint, menthol, saw palmetto, beta carotene, vitamin C, herbs in general; and the list goes on and on.) Such complex chemicals patently were not synthesized in the ancient past to satisfy our health and culinary needs! Most likely these potent chemicals exhibit vital *in situ* functions on the cellular level of virtually all organisms. Reasonable targets could include: to attract efficient pollinators and seed dispersers, to repel herbivores, and to impart resistance to inflammation, mutations, viruses, bacteria, and fungi. Tellingly, the phytochemicals identified from the major nectar sources of female *Dianas* all possess strong anti-bacterial and anti-inflammatory properties. (In addition to feeding on specific nectars, aged females lessen the impact of dehydration by imbibing moisture directly. For example, on four separate occasions I was privy to a female imbibing water directly from dew coating roadside detritus.)

In 2003 and 2009, I published articles (see "Literature") on the relationship between butterflies' source of food and longevity. I proposed that the dictum "we are what we eat" applies not only to humans but to the entire animal kingdom. Specifically, I suggested that female *Dianas* sequester phytochemicals from nectars in their diet. If so, then the insects are primed with an arsenal of natural health promoting pharmaceuticals. Couple this with a coloration and behavior that make the insects super efficient with energy conservation, and I can easily explain how female *Dianas* are able to endure months of potential lethal abuses. Furthermore, I proposed that these same medicinal agents are transferred via adult to egg, and later to young larvae. There they are stored (perhaps in body fluids or even in the bulbs of the long protruding hairs) to aid their hosts beat the odds at subsisting in forest floor debris rife with fungi and small predators during an hiatus of nearly six months. (The accumulation of dead leaves in autumn and snowfall—made up of mostly trapped air—help conceal and insulate the tiny larvae from colder ambient temperatures, thus further enhancing survival potential.) While such hypotheses are in need of scientific experimentation, I find the empirical data compelling.

Boldly extending this line of thinking, I submit that the present (and probably past) geographical range of



Ice storm atop plateau on Mt. Magazine (January 1997).
Ice and snow storms provide insulation for first-instar larvae during their winter hibernation in forest ground litter.



Cedar tree on Mt. Magazine escarpment during January 1997.

S. diana is governed not by the extirpation of violet host plants in the East as has been promulgated by hard-core ecologists (factually, *Viola* remains common throughout most of the butterfly's former range) but instead by a female's dependency on specific drug-rich nectar plants that bloom in sequence throughout her long life span. With its

unique history of human settlement and abandonment, Mt. Magazine seems to fulfill the Diana's stringent requirements.

Mt. Magazine has now been rediscovered by the American public. The mountain top has become a popular state park and tourist destination. Inspired by my research, since 1997 the mountain has been host to the annual Mt. Magazine International Butterfly Festival—an event that brings in thousands of visitors. More recently, the Diana fritillary



Parade in downtown Paris, AR to inaugurate the first Mt. Magazine International Butterfly Festival (1997). Female Diana is depicted on cart. Author's research inspired what has become an annual festival.



Mt. Magazine International Butterfly Festival (1998). Entry features Miss Sierra Sten, Miss Mount Magazine Tiny Miss as "Cover Girl" for American Butterflies magazine (Summer 1998).

has been designated the poster species for Mt. Magazine State Park, and on February 28, 2007, the Arkansas General Assembly passed legislature enacting the Diana fritillary as the official butterfly of the State of Arkansas (the honeybee is the official state insect). Finally, I and others have further storied Mt. Magazine's Diana in published articles, posters, television productions, and presentations at meetings and butterfly events around the country.

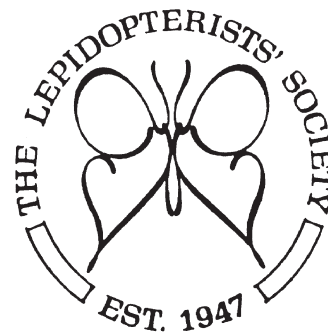
Today the words "Mt. Magazine" and "Diana" resonate in concert among butterfly aficionados and conservationists. Residents in communities near the mountain such as Paris, Magazine, Havana, Booneville, and Subiaco are well aware of the mountain's celebrity insect. In fact, Dianas occasionally visit the gardens of residents who cultivate flowering plants such as phlox, onions, and especially, zinnias. Still, fame can be a double-edged sword. Because Mt. Magazine is now public friendly, the insular and fragile ecosystem of Mt. Magazine is under increased pressure. As such, the Diana's continued presence there is highly tenuous. What the future holds is anyone's guess, of course. Meanwhile, I wish her well.

A shorter version of this story was published as "Diana's Mountain Retreat" (NATURALIST AT LARGE column) in *Natural History* magazine, March (Vol. 117:2), 2008. The story here is used with permission.

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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. For more information, visit our web site at: www.leptraps.com, or contact Leroy C. Koehn, Leptraps LLC, 3000 Fairway Court, Georgetown, KY 40324-9454: Tel: 502-542-7091

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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. 250 & 500 Watt self ballast mercury vapor with mogul base mounts. Light weight and ideal for trips out of the country. For more information, visit our web site at: www.leptraps.com, or contact Leroy C. Koehn, Leptraps LLC, 3000 Fairway Court, Georgetown, KY 40324-9454: Tel: 502-542-7091

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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

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 ppgaphis, 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.

The Marketplace

more information, visit our web site at: www.leptraps.com, or contact Leroy C. Koehn, Leptraps LLC, 3000 Fairway Court, Georgetown, KY 40324-9454; Tel: 502-542-7091

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Butterfly Photography Tour

Butterfly Photography Tour to Eastern Tibet: This exciting new tour led by Andrew Neild & Vadim Tshikolovets is tailored exclusively for butterfly photographers and watchers. Departs May 20th 2012, return 9th June. Nearly

full - 3 places left! For details please visit: <http://www.thebutterfliesofvenezuela.com/butterflytours.html>

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Specimens

Needed: Any A1 papered butterflies and moths, world-wide species, large and small, to help rebuild my collection that suffered a loss awhile back. Common and rare are all welcome. Any donations will be noted and very much appreciated. Mail to: Fred Bower, 288 Willow Street, Apt. 53, Lockport, New York 14094.

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Membership Update...

Julian Donahue

INCLUDES ALL CHANGES RECEIVED by 10 Jan. 2012

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

Forbes, Gregory S. (Las Cruces, New Mexico)

Fitter, James P. (Fairfax, Virginia)

New and Reinstated Members: members who have joined/renewed/been found/or rescinded their request to be omitted since publication of the 2010 Membership Directory (not included in the 2008 Membership Directory; all in U.S.A. unless noted otherwise):

[Note: Names of new members first joining in 2012 will be published in the first issue of the News in 2012.]

Correction to entry in 2010 Membership Directory:

Hiromasa, Daiguji: correct name is **Daiguji, Hiromasa**. Our apologies to Mr. Daiguji.

Address Changes (all U.S.A. unless noted otherwise):

Adamski, David (Dr.): Communications & Taxonomic Services Unit, Systematic Entomology Laboratory, USDA, 10300 Baltimore Ave., Bldg. 005, Rm 18, Beltsville, MD 20705-2325.

Barron, Alan D.: 1125 Oregon Street, Apt. 20, Crescent City, CA 95531-2284.

Cappa, Charles: c/o Curator of Butterflies, Long Island Exhibitions Center, Atlantis Marine World, 63 Julie Crescent, Central Islip, NY 11722-4907.

Davis, Christopher K.: 534 US Highway 319 South, Moultrie, GA 31768-0575.

Dunford, James C. (Dr.): 1907 Ridgewood Drive NE, Atlanta, GA 30307-1154.

Goldstein, Paul Z. (Ph.D.): National Museum of Natural History, E-523, MRC 168, P.O. Box 37012, Washington, DC 20013-7012.

Guppy, Crispin: 5 Boss Road, Whitehorse, Yukon Territory Y1A 5S9, Canada.

Lafontaine, J. Donald (Ph.D.): Canadian National Collection of Insects Biodiversity Program, Agriculture & Agri-Food Canada, K.W. Neatby Bldg., 960 Carling Ave., Ottawa, Ontario K1A 0C6, Canada.

Lewis, Jon A.: 308 Fieldcrest Road, Bristol, TN 37620-4509.

McKown, Shannon K. (Ms.): 1423 SE Glenwood Street, Portland, OR 97202-5610.

Nagle, Ray B. (M.D.): 2027 East Helen Street, Tucson, AZ 85719-4703.

Patel, Sanjay: 618 Valley View Drive, Redlands, CA 92373-7358.

Selby, Joseph: 2225 Lauren Ann Circle, Anchorage, AK 99515-3161.

Taylor, Milton D. "Mickey," Ph.D.: 130 Pecan Bluff Drive, Watkinsville, GA 30677-6064.

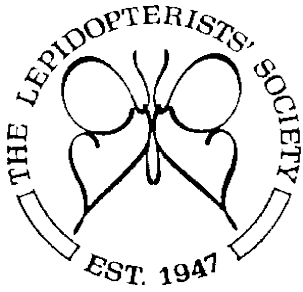
Vawter, A. Thomas (Ph.D.): 107 Ross Road, Lansing, NY 14882-8807.

Wiseman, James C.: 1141 Briarcroft Road, Claremont, CA 91711-3213.

Woodward, Bob: 5529 Jaguar Court, White Bear Lake, MN 55110-2249.

Zakharov, Evgeny V. (Ph.D.): Biodiversity Institute of Ontario #138, University of Guelph, 50 Stone Road East, Guelph, Ontario N1G 2W1, Canada.

Zebold, Roger A.: 14065 Sir Walker Drive, Montpelier, VA 23192-2945.



**Combined Annual Meeting of the Lepidopterists' Society and the
Societas Europaea Lepidopterologica
23 - 29 July 2012
Denver Museum of Nature & Science, Colorado, USA**

Societas Europaea Lepidopterologica



The 2012 Lepidopterists' Society Annual Meeting will take place July 23-29 as a combined meeting with the Societas Europaea Lepidopterologica. The meeting will be held at the Denver Museum of Nature & Science (DMNS) in Denver, Colorado, at the foot of the magnificent Rocky Mountains. The 2012 meeting has an expanded program, with three days of talks and symposia, 21 guided field trips to spectacular mountain locations for both collectors and watchers, the traditional BBQ, banquet, and access to one of the most renowned natural history exhibits in the United States at the DMNS. Participants will also have an opportunity to attend a public talk by noted author and Lepidopterist Robert Pyle, visit the world famous Butterfly Pavilion, and access the research collections of the DMNS. A complete schedule for the meeting is provided on the following page.

Registration for the meeting is now open. Early registration is \$115 for non-students and \$85 for students. The Denver Museum of Nature and Science has created an easy to use online registration system for the meeting that can be located at the following web address. **PLEASE USE THE ONLINE MEETING REGISTRATION FORM IF POSSIBLE!** This will allow you to have the greatest chance of signing up for field trips (which have a participation limit) and obtaining tickets for other events. Detailed descriptions of all events are also provided on this form and on the following pages. If you are unable to use the online form (and need to pay with a check), a paper form is provided on the following pages.

Online registration form:

<http://www.dmns.org/lepidopterists-annual-meeting>

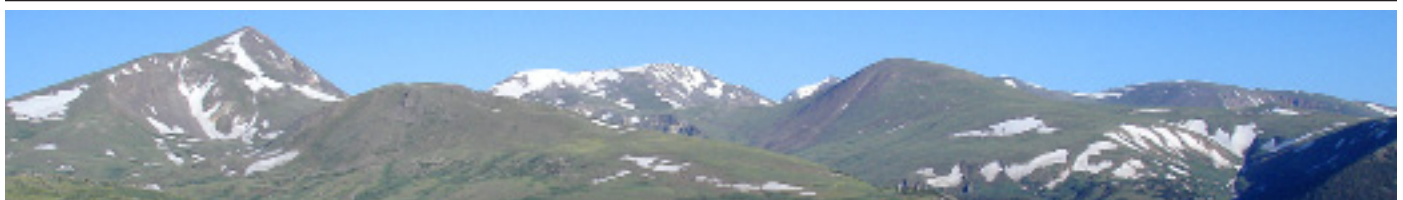
Accommodations are provided by the Red Lion Hotel and are reserved at a special rate of \$69/night (\$89 quad rate). Transportation will be provided to and from the hotel throughout the day and during evening events. Hotel reservations are made on your own using the online registration form link provided above. The Red Lion Hotel also has many great options for spouses and families. They provide shuttles throughout the Denver area to visit attractions and they will pick you up from the airport. The conference has secured free or discounted tickets for attendees to the Butterfly Pavilion. The Conference Committee is also working on other free or discounted tickets for families and will announce as they are available.

Denver and the State of Colorado are top tourist destinations for travelers from throughout the world and have countless activities for the entire family. Denver offers quick, central, easy access to the area's biggest attraction, the Rocky Mountains, where you can explore various ecosystems in one of the largest and highest mountain ranges in North America. Come to the meeting and bring the entire family for an unforgettable vacation!

Any general conference questions or requests can be directed to lepidopterist@dmns.org or 303-370-6334.

We hope to see you in Denver in 2012!

- The 2012 Lepsoc Organizing committee (Frank Krell, Todd Gilligan, Chuck Harp, Janet Chu, Paul and Evi Opler, Ximo Baixeras, Deane Bowers, and Mary Ann Hamilton)



2012 Combined Annual Meeting of the Lepidopterists' Society and the Societas Europaea Lepidopterologica - Meeting Schedule

Monday, July 23

- Organized butterfly field trips
- Evening moth field trip
- Special overnight trip to Rocky Mountain National Park

Tuesday, July 24

- Registration open (all day)
- Organized butterfly field trips
- Executive Council and committee meetings
- Poster setup (available until Saturday evening)
- Evening welcome reception at the Red Lion Hotel

Wednesday, July 25

- Registration open (all day)
- Student paper competition (all day)
- Vendors open (until Friday evening)
- Evening moth field trip
- Evening event at the Butterfly Pavillion

Thursday, July 26

- Registration open (all day)
- Contributed papers (morning)
- Symposia (afternoon)
- Evening moth field trip
- Evening public talk by Robert Pyle at the Museum

Friday, July 27

- Registration open (all day)
- Contributed papers (morning)
- Symposia (afternoon)
- Group photo (noon)
- Book signings (afternoon)
- Vendors closing (evening)
- Evening barbecue at the Museum

Saturday, July 28

- Registration open (morning)
- Contributed papers (morning)
- Business meeting (afternoon)
- Poster session (afternoon)
- Evening banquet with presentations, awards, and door prizes at the Museum

Sunday, July 29

- Organized butterfly field trips
- Evening moth field trip

2012 Combined Annual Meeting of the Lepidopterists' Society and the Societas Europaea Lepidopterologica - Call for Papers and Posters

If you plan on presenting a paper or poster at the meeting, **PLEASE EMAIL** the following information to:
lepidopterist@dmns.org

Please be sure to include your name, address, and affiliation, even if you have already registered.

Author(s) Information

Presenter
 Presenter's address and affiliation
 Co-author(s) (if any)
 Co-author(s) address and affiliation

Presentation information

Contributed Paper, Student Paper, or Poster? (choose one)
 Title
 Abstract (150 words or less)

Senior authors are limited to one oral presentation (with the exception of invited symposium speakers). Each contributed paper is limited to 15 minutes (12 minutes for the presentation followed by three minutes for questions). Unless prior arrangement is made, all presentations will need to be in Microsoft Powerpoint. The deadline for contributed papers is June 15, 2012. This completed form (or equivalent) must be received for each contribution by the deadline for inclusion in the printed program.

Please direct any questions to **lepidopterist@dmns.org** or **303-370-6334**.

2012 Combined Annual Meeting of the Lepidopterists' Society and the Societas Europaea Lepidopterologica - Event Descriptions

RECEPTION, BANQUET, AND EVENTS

Welcome Reception - July 24, 2012

Kick off the conference right, by mingling with your peers at the Welcome Reception. Hors d'oeuvres are served along with a complimentary drink for registrants, courtesy of Bioquip Products. Reservations requested.

Location: Red Lion Hotel Denver Central

Time: 6 p.m. to 8 p.m.

Cost: Free

Butterfly Pavilion Event - July 25, 2012

Take pleasure in a rare opportunity to access the nation's first stand-alone non-profit invertebrate zoo. The Butterfly Pavilion has five exhibit areas: a terrestrial invertebrate museum, a marine invertebrate tide pool, a butterfly flight house, a traveling exhibit hall, and beautiful outdoor habitat gardens. Enjoy a variety of invertebrate species while mingling with your colleagues and their families. Heavy hors d'oeuvres and drinks are served while you enjoy the splendor of this great experience.

Location: Butterfly Pavilion, Westminster, Colorado

Time: 6 p.m. to 8 p.m.

Cost: \$35/person

Barbecue Event - July 27, 2012

Enjoy good company and a down home feast at this informal gathering. You don't want to miss out on this barbecue served with Barbecued Pork Ribs, Chicken Fried Chicken, a variety of salads, and fixin's. Indulge in an array of delicious desserts to wrap up the evening. Cocktails served on Anschutz Sky Terrace until 7 p.m., food will be served in Southeast Atrium. Food served until 8:30 p.m. Prior registration required.

Location: Denver Museum of Nature & Science, Anschutz Sky Terrace and Southeast Atrium

Time: 6 p.m. to 10 p.m.

Cost: \$32/person

Banquet - July 28, 2012

Celebrate colleagues' accomplishments at this formal gathering. Take pleasure in the company of your peers during this presentation, awards, and a delectable feast. A beef entrée, sides, dinner salad, dinner rolls, and a luscious dessert served. Cash bar. Prior registration required.

Location: Denver Museum of Nature & Science, Southeast Atrium

Time: 6 p.m. to 10 p.m.

Cost: \$45/person

SPECIAL EVENT - PUBLIC TALK

Public Talk: Robert Pyle - July 26, 2012

A public talk by noted author and Lepidopterist Robert Pyle is available to registrants and guests. Free for conference attendees ONLY. Additional tickets will be available for purchase at a later date. Information will be sent via e-mail once tickets are available.

Location: Denver Museum of Nature & Science, Phipps Auditorium

Time: 7 p.m.

Cost: Free to conference attendees

PAID FIELD TRIPS

All field trips are led by local experts. Once you sign up for a field trip the leader will coordinate with the group. All field trips will leave from the Red Lion Hotel unless instructed differently by trip leader.

- These Field Trips are PAID
- 1 guest is allowed on trip
- Prices include box meals

Butterfly watching, overnight at Rocky Mountain National Park - July 23 & 24, 2012

Enjoy this two day overnight trip to the pristine Rocky Mountain National Park. This high elevation wilderness is home to many high country species. The trip will include transport, boxed lunch, and guided tours by Rich Bray and Jan Kilgore. Overnight accommodations are on your own through the Baldpate Inn. Email lepidopterist@dmns.org for more information.

Location: Rocky Mountain National Park, Estes Park, Colorado

Time: July 23 to 24, 7:30 a.m. to 7 p.m.

Limited to 14 participants

Cost: \$250/person (includes transport, boxed lunch, guided tours)

Butterfly watching, Rocky Mountain Nat. Park - July 24, 2012

A drive up Trail Ridge Road takes you to the Arctic Circle ecologically. Habitats progress from foothills and mountain ecosystems, with many high altitude plant species. Openings in these cool, dark forests produce wildflower gardens of rare beauty and luxuriance where the blue Colorado columbine reigns. Then the trees disappear when you reach alpine tundra, a harsh, fragile world. Eight miles of the road is above 11,000 feet.

Location: Rocky Mountain National Park, Colorado USA

Time: 7:30 a.m. to 4:30 p.m.

Limited to 60 participants

Cost: \$40/person (includes bus, entrance fees, boxed lunch)

FREE FIELD TRIPS

Each of the field trips are led by local experts. Once you sign up for a field trip the leader will coordinate with the group. All field trips will leave from the Red Lion Hotel unless instructed differently by trip leader.

- These Field Trips are FREE
- Trip leaders will organize transportation with the attendees
- Two guests are allowed on watching trips; NO guests are allowed on collecting or moth trips
- Box meals are provided for \$10.00 per box meal

Butterfly Watching Trips

Butterfly watching, Mount Evans - July 23, 2012

Mount Evans is a 14,265 feet (4,348 m) mountain in the Front Range region of the Rocky Mountains with the highest paved road in North America. In the tundra you may see big-horn sheep, mountain goats, ptarmigan, pika and marmots. There will be a stop in the sub-alpine to enjoy flowers and associated butterflies. Program led by Jan Chu and Larry Crowley – watching only.

Location: Mount Evans, Colorado, USA

Time: 8 a.m. to 5 p.m.

Limited to 35 participants

Butterfly watching, Roxborough State Park - July 23, 2012

The park contains high-quality and relatively undisturbed examples of several natural communities, including tall and mixed grass prairie with moist north and east-facing ravines, ponderosa pine, woodlands, Douglas fir forests, Gambel oak thickets. Of special interest is the Colorado State Insect, Colorado Hairstreak *Hypaurotis crysalus*. Led by Gordon Revey and Ellen Shannon this watching trip has an elevation of 5,900 to 7,280 feet.

Location: Roxborough State Park, Colorado, USA

Time: 7:30 a.m. to 3:30 p.m.

Limited to 30 participants

Butterfly watching, Golden Gate State Park - July 24, 2012

The Golden Gate State Park especially the area around Tiny Town and Mt. Lindo are excellent locations for butterfly watching. At an elevation of 7,054 feet, Tiny Town is a unique, one-sixth-size town with more than 100 colorful buildings and a train ride powered by authentic steam locomotive, all nestled into a scenic mountain canyon. Access to Mt. Lindo is limited due to extreme slopes and rock cliffs. There is an historic cemetery and many butterflies hilltopping. Watching trip led by Gordon Revey.

Location: Golden Gate State Park, Mt. Lindo, and Tiny Town, Colorado, USA

Time: 7:30 a.m. to 4:30 p.m.

Limited to 30 participants

Butterfly watching, Plains Conservation Center - July 24, 2012

Networks of incised dry channels, often called arroyos or gullies, are common features of prairie and desert landscapes (approx. 5,280 ft). Thanks to occasional flash floods and the shade provided by their banks, gully networks tend to be zones of high soil moisture that support less drought-tolerant plant species many with unique butterfly species. The deeper and more vegetated channels provide shade for wildlife, and their walls offer burrow and nest sites for birds and small mammals. Program led by Susan Smith and Mike Sipes.

Location: Plains Conservation Center, Aurora, Colorado, USA

Time: 7:30 a.m. to 2:30 p.m.

Limited to 30 participants

Butterfly watching, Walker Ranch - July 29, 2012

Walker Ranch was one of the largest ranches in this area beginning in 1892 when the homestead was filed. Since 1976 the county has controlled management to preserve its fields, Ponderosa Pine forests and historic structures. This team has studied butterflies along the Meyer's Homestead Trail, finding many Rocky Mountain Dotted blues nectaring on their host the wild buckwheat. Canyon Bramble Hairstreak and Common Ringlet fly on this moderately easy trail. Metallic blue Mountain Bluebird families fly close to the trail. Led by Jan Chu, Larry Crowley, Jean Morgan, and Venice Kelly.

Location: Walker Ranch, Boulder County Open Space, Boulder County, Colorado, USA

Time: 8 a.m. to 5 p.m.

Limited to 30 participants

Butterfly watching, Loveland Pass - July 29, 2012

At an elevation of 11,990 feet Loveland Pass provides the perfect terrain for butterfly watching. Along U.S. 6 there are many flowers and copper butterflies. From the aspen and lodgepole forests, drive through sub-alpine Engelmann spruce and Douglas fir forests. Soon you will be above treeline (10,500 – 11,000 ft) and into the fascinating tundra. This fieldtrip is led by Steve Fratello and Christian Nunes.

Location: Loveland Pass, Colorado, USA

Time: 7:30 a.m. to 4:30 p.m.

Limited to 30 participants

Butterfly Collecting Trips:

all on this page limited to **20 participants**

Butterfly collecting, Loveland Pass - July 23, 2012

Enjoy this high altitude field trip to Loveland Pass, 11,990' and higher. Alpine rock slides and tundra, krumholtz. A variety of trails that access rock slides with a wide variety of alpine Lepidoptera including *Erebia callias*, *E. magdalena*, *E. epipsodea*, *Oeneis melissa*, *O. polixenes*, *Lycaena cupreus snowi*, *Colias meadi*, *Colias scudderii*, small rockslide Noctuidae. Trip lead by Mike Fisher.

Location: Loveland Pass

Time: 7:30 a.m. to 3:30 p.m.

Butterfly collecting, Berthoud Pass - July 23, 2012

Enjoy this high altitude field trip to Berthoud Pass, 11,315' and higher. Subalpine spruce-fir and krumholtz. Some alpine species such as *Colias scudderii*, *Colias meadi*, *Plebejus cotundra*, and a variety of moths including *Eana georgiella*, *Arctia* sp. Higher elevations may be reached on foot. Led by Steve Spomer.

Location: Berthoud Pass, Colorado USA

Time: 8 a.m. to 5 p.m.

Butterfly collecting, North Fork, South Platte - July 23, 2012

At an elevation of 6,398 feet Deckers is nestled up to the South Platte River providing an array of species. Enjoy this butterfly collecting trip led by Boyce Drummond.

Location: Deckers, Colorado, USA

Time: 8 a.m. to 5 p.m.

Butterfly collecting, Loveland Pass - July 24, 2012

Enjoy this high altitude field trip to Loveland Pass, 11,990' and higher. Alpine rock slides and tundra, krumholtz. A variety of trails that access rock slides with a wide variety of alpine Lepidoptera including *Erebia callias*, *E. magdalena*, *E. epipsodea*, *Oeneis melissa*, *O. polixenes*, *Lycaena cupreus snowi*, *Colias meadi*, *Colias scudderii*, small rockslide Noctuidae. Led by Mike Fisher and Steve Cary

Location: Loveland Pass, Colorado USA

Time: 8 a.m. to 5 p.m.

Butterfly collecting, Berthoud Pass - July 24, 2012

Enjoy this high elevation collecting trip to Berthoud Pass, 11,315' and higher. Subalpine spruce-fir and krumholtz. Some alpine species such as *Colias scudderii*, *Colias meadi*, *Plebejus cotundra*, and a variety of moths including *Eana georgiella*, *Arctia* sp. Higher elevations may be reached on foot. Led by Paul Opler.

Time: 8 a.m. to 5 p.m.

Butterfly collecting, North Fork, South Platte - July 24, 2012

Deckers, Colorado sits at 6,398, nestled up to the North Fork and South Platte Rivers. Trip led by Boyce Drummond.

Location: Deckers, Colorado USA

Time: 8 a.m. to 5 p.m.

Butterfly collecting, Berthoud Pass - July 29, 2012

Enjoy this high altitude field trip to Berthoud Pass, 11,315' and higher. Subalpine spruce-fir and krumholtz. Some alpine species such as *Colias scudderii*, *Colias meadi*, *Plebejus cotundra*, and a variety of moths including *Eana georgiella*, *Arctia* sp. Higher elevations may be reached on foot. Led by Paul Opler.

Location: Berthoud Pass, Colorado, USA

Time: 8 a.m. to 5 p.m.

Butterfly collecting, Cottonwood Pass - July 29, 2012

Explore the South Texas Creek Basin in the Collegiate Peaks Wilderness adjacent to Cottonwood Pass. The South Texas Creek Basin is a spectacular, pristine alpine/subalpine basin with Mt. Harvard and other 14,000 footers in the splendid scene. Habitat includes an extensive alpine willow bog (*Colias scudderi*), subalpine spruce forest, varied and extensive alpine meadows, numerous boulder fields (*E. magdalena*, *L. snowi*, *C. w. damoetas*). Collecting opportunities of three *Erebia* spp., four *Oeneis* spp. and many others in this famed and exquisite high country Colorado locale. This program is led by Steve Fratello.

Location: Cottonwood Pass, Chaffee/Gunnison Counties, 12 mi. W. of Buena Vista, Colorado, USA

Time: 6:30 a.m. to 6:30 p.m.

Limited to 15 participants

Moth Collecting and Watching Trips

Moth Collecting and Watching, Chatfield Lake State Park - July 23, 2012

Enjoy this evening trip led by Chuck Harp, Research Associate at the Denver Museum of Nature & Science. You are likely to find *Catocala junctura*, *aholibah*, *violenta*, *ilia*, *amatrix* and *verrilliana* at this 5,500' foothills prairie with riparian forest and gambel oaks. Three community collecting sheets are set up and the location is near restrooms and parking. It is a great location for those with limited or no equipment, as well as easy access for watchers. Afterward, the group will join members of The Audubon Society at the Lockheed-Martin Pavilion for identification.

Location: Chatfield Lake State Park, Littleton, Colorado, USA

Time: 7 p.m. to 2 a.m.

Limited to 35 participants

Moth collecting and watching, Kenosha Pass, Pike National Forest - July 25, 2012

Enjoy this moth watching and collecting night fieldtrip to Kenosha Pass in the Pike National Forest. This 10,000' aspen/coniferous forest has wet meadows. Three community collecting sheets are available and the location is near restrooms and parking. Program led by Chuck Harp, Research Associate, Denver Museum of Nature & Science. No accommodations provided.

Location: Kenosha Pass, Pike National Forest

Time: 7 p.m. to overnight

Limited to 35 participants

Moth collecting and watching, Roggen sandhills, Weld County - July 26, 2012

The Roggen sandhills consist of sand sage and rolling sandhills at an elevation of 4,800 feet. This area is good for tortricids and known for *Schinia regina*, *reniformis*, *sexplagiata*, *mortua*, *jaguarina*, *meadi*, *bicuspidata*, *simplex*, and *diffusa*. Collecting will be split into two locations about 2 miles apart. Community collecting sheets will allow attendees the opportunity to collect along or into the sandhills habitat. Program led by Chuck Harp, Research Associate, Denver Museum of Nature & Science.

Location: Roggen sandhills, Mentzelia, Weld County, Colorado, USA

Time: 8 p.m. to overnight

Limited to 30 participants

Moth collecting and watching, Cottonwood Pass - July 29, 2012

Join us for a high elevation (12,000') evening moth trip to Cottonwood Pass in Gunnison and Chaffee Counties. This open area provides a great opportunity for collecting and watching for *Xestia*, high altitude *Apamea zeta nichollae* and *Euxoa*, *Polia rogenhoferi*, *Sympistis* and *Lasionycta* species. Three community sheets will allow those without equipment to participate. No accommodations provided. Led by Chuck Harp, Research Associate, Denver Museum of Nature & Science.

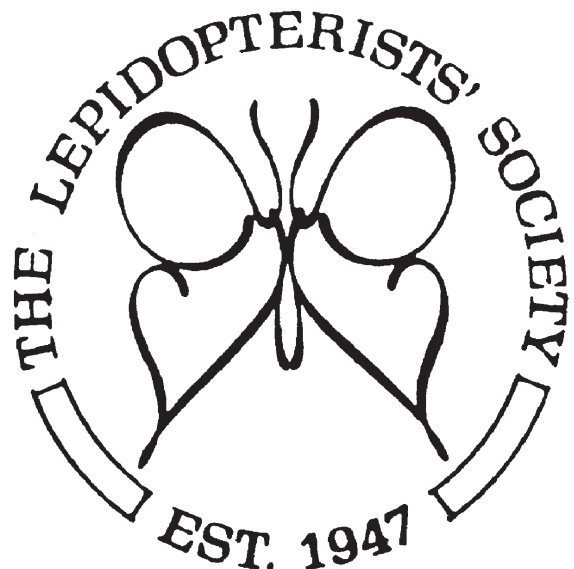
Location: Cottonwood Pass, Chaffee/Gunnison Counties, 12 mi. W. of Buena Vista, Colorado, USA

Time: 4 p.m. to 3 a.m.

Limited to 40 participants

[Remember, the registration forms on the next two pages can be Xeroxed and then filled in. There is no reason to mutilate your Newsletter.]

Contributed by: Todd Gilligan, Colorado State University, BSPM, 1177 Campus Delivery, Fort Collins, CO 80523-1177
 tgilliga@gmail.com



2012 Combined Annual Meeting of the Lepidopterists' Society and the Societas Europaea Lepidopterologica - Registration Form Page 1

This paper registration form is ONLY for persons who are paying with a check. We **STRONGLY** encourage you to pay with a credit card and register using the online form at: <http://www.dmns.org/lepidopterists-annual-meeting>
If you use this form to register, please xerox this form from your newsletter and use the copy.
All prices are in U.S. Dollars (USD)

Personal Information

First Name: _____ Last Name: _____

Email: _____ @ _____

Company/organization: _____

Address

Street: _____

City: _____ State/Province/Region: _____

Postal/Zip Code: _____ Country: _____

What is your tee-shirt size?

___ Small ___ Medium ___ Large ___ X-Large ___ XX-Large

Registration

Early registration pricing - must be received by April 30, 2012

___ Attendee Early Registration - \$115.00 (USD) ___ Student Early Registration - \$85.00 (USD)

Regular registration pricing - received on May 1, 2012 or after

___ Attendee Regular Registration - \$165.00 (USD) ___ Student Regular Registration - \$135.00 (USD)

Dinners, Receptions, and Events

Event details are provided on the proceeding pages.

Welcome Reception - Red Lion Inn - Tuesday, July 24, 2012

___ 1 Attendee ___ 2 Attendees ___ Not attending

Butterfly Pavilion Event - Wednesday, July 25, 2012

___ 1 Attendee - \$35.00 ___ 2 Attendees - \$70.00 ___ 3 Attendees - \$105.00 ___ 4 Attendees - \$140.00

Barbecue Event - Friday, July 27, 2012

___ 1 Attendee - \$32.00 ___ 2 Attendees - \$64.00 ___ 3 Attendees - \$96.00 ___ 4 Attendees - \$128.00

Banquet - Saturday, July 28, 2012

___ 1 Attendee - \$45.00 ___ 2 Attendees - \$90.00 ___ 3 Attendees - \$135.00 ___ 4 Attendees - \$180.00

Public Talk by Robert Pyle - Thursday, July 26, 2012

___ Attending ___ Not attending

Contributed papers, Student papers, or Posters

Do you plan on giving a paper or poster? Check the box below and fill out the abstract form

___ Contributed paper ___ Student paper ___ Poster

2012 Combined Annual Meeting of the Lepidopterists' Society and the Societas Europaea Lepidopterologica - Registration Form Page 2

This paper registration form is ONLY for persons who are paying with a check. We **STRONGLY** encourage you to pay with a credit card and register using the online form at: <http://www.dmns.org/lepidopterists-annual-meeting>
If you use this form to register, please xerox this form from your newsletter and use the copy.
All prices are in U.S. Dollars (USD)

Paid Field Trips

Field trip details are provided on the proceeding pages.

Butterfly watching, overnight at Rocky Mountain National Park - Monday, July 23, 2012

1 Attendee - \$250.00 2 Attendees - \$500.00

Butterfly watching, Rocky Mountain National Park - Tuesday, July 24, 2012

1 Attendee - \$40.00 2 Attendees - \$80.00

Free Field Trips

Field trip details are provided on the proceeding pages. Please **ONLY CHOOSE ONE FIELD TRIP PER DAY.**

Monday, July 23, 2012

Butterfly watching, Mount Evans Butterfly watching, Roxborough State Park
 Butterfly collecting, Loveland Pass Butterfly collecting, Berthoud Pass
 Butterfly collecting, North Fork, South Platte River Moth Collecting and Watching, Chatfield Lake St. Pk.

Tuesday, July 24, 2012

Butterfly watching, Golden Gate State Park Butterfly watching, Plains Conservation Center
 Butterfly collecting, Loveland Pass Butterfly collecting, Berthoud Pass
 Butterfly collecting, North Fork, South Platte River

Wednesday, July 25, 2012

Moth collecting and watching, Kenosha Pass, Pike National Forest

Thursday, July 26, 2012

Moth collecting and watching, Roggen Sandhills

Sunday, July 29, 2012

Butterfly watching, Walker Ranch Butterfly watching, Loveland Pass
 Butterfly collecting, Berthoud Pass Butterfly collecting, Cottonwood Pass
 Moth collecting, Cottonwood Pass

Liability Agreement

Please sign and date this form, even if you are not planning on attending any of the above field trips. By signing this form you are agreeing to the following liability agreement:

"I release and hold harmless the Denver Museum of Nature & Science, the Lepidopterists' Society, the Societas Europaea Lepidopterologica, its trustees, officers, employees and field trip leaders, from any liability that may result from my participation in the 2012 lepidopterists' conference in Denver, Colorado. This release applies to all conference activities, including without limitation field trips. I understand that hazards for a field trip may include travel to remote locations, high altitude conditions, strenuous hiking and extreme weather conditions. I assume all responsibility, personal and financial, for any accidents or other personal injury or property damage related to the conference."

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Signature: _____

If paying by check, please total the dollar amount that you owe for registration, events, and field trips, and send a check, payable in USD made out to "Denver Museum of Nature and Science" to the following address: Kizra Sullivan, Denver Museum of Nature and Science, 2001 Colorado Blvd., Denver, CO 80205-5798.

A Treasure Hidden in Plain Sight: *Aphrissa neleis* is a resident in Southern Florida, USA (Lepidoptera: Pieridae: Coliadinae)

Andrew Warren¹ and John Calhoun²

¹McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, SW 34th Street and Hull Road, P.O. Box 112710, Gainesville, Florida, 32611-2710 andy@butterfliesofamerica.com
²977 Wicks Dr., Palm Harbor, Florida 34684-4656 Research Associate: McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida bretcal@verizon.net

Last year, we (Warren & Calhoun, 2011) reported on historical Florida records of the Pink-spot Sulphur, *Aphrissa neleis*, documenting this species for the first time from the United States. Our earlier report was based on five specimens of *A. neleis* in the collections of the McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Gainesville (MGCL). They were collected in 1959 (1 female), 1982 (1 male) and 1985 (2 males, 1 female). Although the most recent records known to us at that time were from 1985, we speculated that *A. neleis* might be a current resident in southern Florida.

Since the publication of our note, word about the discovery of *A. neleis* in southern Florida has quickly spread among butterfly enthusiasts. It even became the subject of a newspaper article in the Ft. Lauderdale Sun Sentinel (Flesher 2011). As a result, a number of additional records of *A. neleis* have been documented from Miami-Dade, Broward and Palm Beach counties, including several from 2011. Thus, it is now apparent that *A. neleis* is a current breeding resident in southeastern Florida, and likely has been for at least several decades. The continued examination of older specimens and photographs may reveal that the butterfly has actually been present in Florida for much longer. Records of *A. neleis* that have come to our attention since the publication of Warren & Calhoun (2011) include the following (in chronological order):

1985: Dade Co., Miami, Castellow Hammock, SW 165 Ave., 29 June, William D. Patterson (2 males, specimens) (Figs. 7, 8); **1986:** Dade Co., SW Miami, Kendall Drive, 21 September, William D. Patterson (2 males, specimens) (Figs. 9, 10); **1992:** Palm Beach Co.: Delray Beach, June, David Fine (1 female, specimen); **2006:** Broward Co.: Davie, Flamingo Gardens & Wildlife Sanctuary, 25 September, Charles Weber (males, photos) (Fig. 1); **2007:** Miami-Dade Co.: Homestead, Mary Krome Park, 20 May, Susan Hengeveld (male, photo); same locality, 3 June, Mary Ann Friedman & Linda Cooper (1 male, photos) (Fig. 2); **2010:** Broward Co.: Hollywood, 4912 Cleveland St., 19 September, Stephen Baig (1 female, photo) (Fig. 3); **2011:** Miami-Dade Co., Deering Estate, 21 May, Lucienne Bruce (1 male, photo); Palm Beach Co., W Boca Raton, Effingham Butterfly Sanctuary, 20 July, EJ Haas (males, film clip) (Fig. 5); Broward Co., Hollywood, 4912 Cleveland St., 1 August, Stephen Baig (1 male, photo) (Fig. 4); Broward

Co., Coconut Creek, 19 September, David Fine (1 female, specimen); Miami-Dade Co., Miami Beach Botanical Garden, 4 December, Frank Model (mating pair, photo) (Fig. 6).

As indicated by the recent records from southern Florida, *A. neleis* occurs mostly within urban areas around the greater Miami area. While we have not yet confirmed the local larval foodplant(s), this evidence strongly suggest that *A. neleis* is exploiting ornamental legumes. It is truly astonishing that such a large butterfly has literally “flown under the radar” in Florida for so long. This underscores the importance of closely examining specimens and photographs for unexpected surprises.

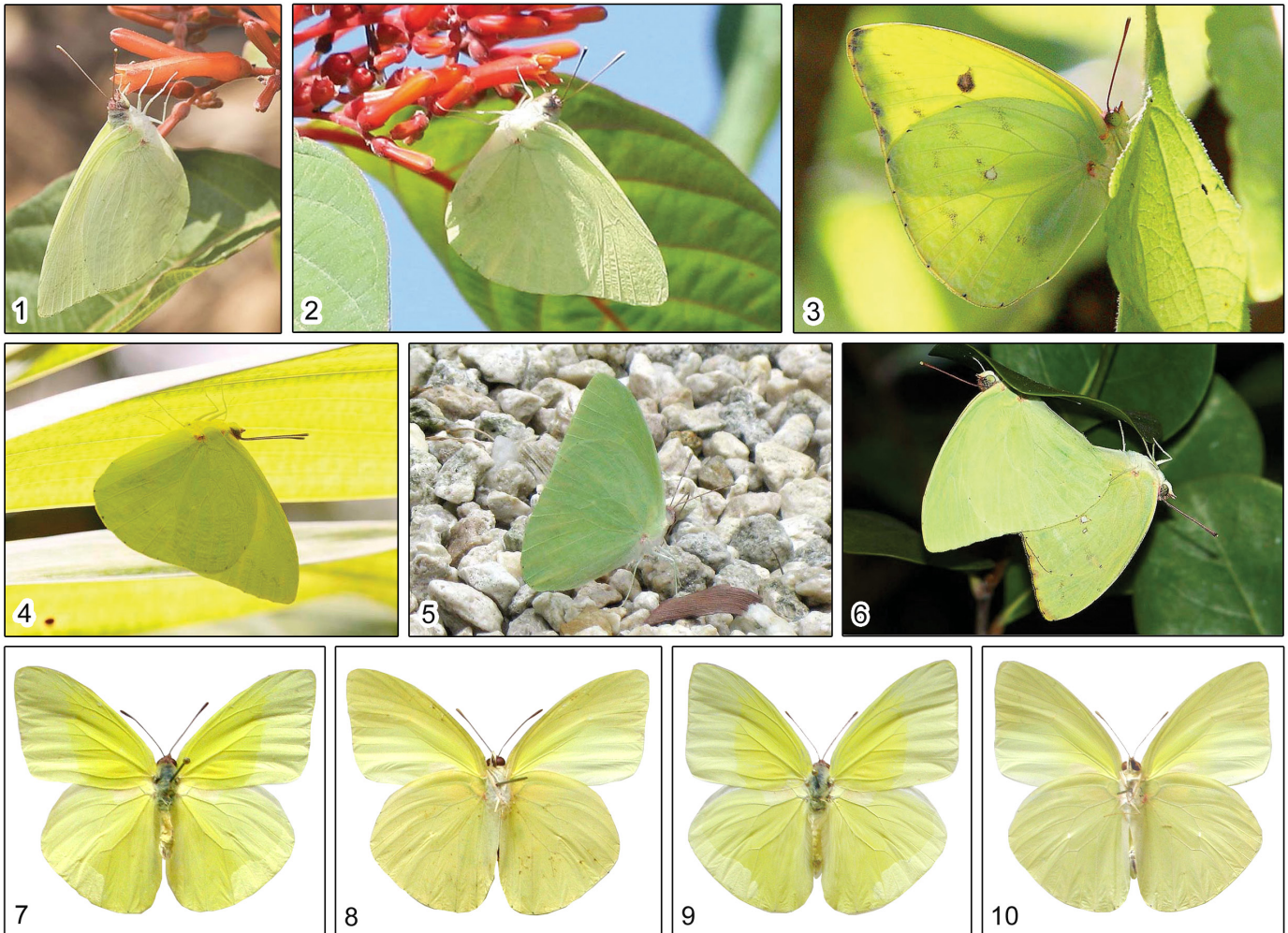
We urge lepidopterists to remain on the lookout for *A. neleis* in southern Florida and recommend that anyone who seeks this butterfly review our prior article (Warren & Calhoun 2011) to understand the primary differences between *A. neleis*, *A. statira* and *P. sennae*. *Aphrissa neleis* remains very poorly understood throughout its range and its life history is virtually unknown. This discovery provides an extraordinary opportunity to document its life history, as well as learn more about its distribution in Florida and seasonal patterns of abundance. Please inform us about any additional records and observations of *A. neleis* in Florida.

Acknowledgments

Sincere thanks to everyone who shared their photos and data, including Stephen Baig, Lucienne Bruce, Linda Cooper, Linda Evans, David Fine, Mary Ann Friedman, EJ Haas, Susan and Jim Hengeveld, Frank Model, William D. Patterson and Charles Weber. Thanks also to Alana Edwards for searching for records, and David Flesher, for writing about them.

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Warren, A. D. & J. V. Calhoun. 2011. Notes on the historical occurrence of *Aphrissa neleis* in southern Florida, USA (Lepidoptera, Pieridae, Coliadinae). *News of the Lepidopterists' Society* 53(1):3-7, 16 figs.



Figs. 1-6. Additional records of *A. neleis* from Florida. **1.** ♂ Broward Co., Davie, 25.ix.2006 (Charles Weber). **2.** ♂ Miami-Dade Co., Homestead, 3.vi.2007 (MaryAnn Friedman). **3.** ♀ Broward Co., Hollywood, 19.ix.2010 (Stephen Baig). **4.** ♂ Broward Co., Hollywood, 1.viii.2011 (Stephen Baig). **5.** ♂ Palm Beach Co., W. Boca Raton, 20.vii.2011 (from film clip, EJ Haas). **6.** ♂/♀ (in copula) Miami-Dade Co., Miami Beach, 4.xii.2011 (Frank Model). **7.** ♂ Miami-Dade Co., Homestead, 29.vi.85 (leg. Bill Patterson). **8.** Ventral aspect of no. 7. **9.** ♂ Miami-Dade Co., S.W. Miami, 21.ix.86 (leg. Bill Patterson). **10.** Ventral aspect of no. 9.

Jasper National Park

Continued from p. 105

Author's Note: Before our backpacking trip, we stopped briefly at the Jasper NP information building in the town of Jasper. A book caught my eye, "Alberta Butterflies" by C.D. Bird, G.I. Hilchie, N.G. Kondla, E.M. Pike & F.A.H. Sperling, and I browsed it briefly. This was one of those lepidoptera/natural history books, that even after only a cursory examination, you know you must have for your library. After our backpacking trip, I made sure that happened. This book contains excellent text, excellent photos of set specimens, excellent habitat photos, excellent botanical drawings, in effect, excellence in everything. I highly recommend it to anybody interested in the Nearctic fauna, the fauna of Alberta and especially the fauna of the Northern Rocky Mountains.

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Acknowledgements

As in all our trips together, my girlfriend Danusia Antonowicz was a great partner. For the sublime beauty of the Canadian Rockies and for allowing me to see more beauty than any mortal should be exposed to, I thank God.

Book Reviews

LES AILES DE LA SOIE, by Joël Clary, 160 pages, text in French; 9 1/2 x 12 inches, soft cover; ISBN 13: 9788836614646; price 30 euros; can be ordered online directly from the publisher Silvana Editoriale, Milan (www.silvanaeditoriale.it); November 2009.

This is an attractive and interesting book, dealing primarily with the history of sericulture, especially wild silks (those besides silk produced by *Bombyx mori*), and Saturniidae in general. The title translates to mean "The Wings of Silk." The text is detailed, well-researched, and well-written. There are color photographs on almost every page, ranging from museum pieces composed of silk, caterpillars and moths of many species of Saturniidae, historical photos of places or silk workers in China, Japan, Africa, and Europe, and biographical sketches and photos of several French specialists on silk and Saturniidae: Léon Sonthonnax, Jules Dusuzeau, Claudius Côte, Philippe Darge, Claude Lemaire, and others. The primary focus of the text treats the history of the silk industry in southern France, especially in Lyon in the 19th and early 20th centuries. Additional sections cover historical and current research on classification of Saturniidae. One color plate of saturniids is reproduced from each of these old monographs: *Biologia Centrali-Americana* (moth volume authored by Druce), "The Cabinet of Oriental Entomology" by J. O. Westwood, and "The Macrolepidoptera of the World" edited by A. Seitz. Many pages provide photos of pinned Saturniidae from all over the world, including choice ones like *Attacus caesar*, *Antistathmoptera granti*, *Actias chapae*, several *Eudaemonia*, and *Maltagorea*. These are presented in the same format used by Bernard d'Abrera in his *Saturniidae Mundi*, in which the pinned moths float on the page with no background. For anyone with a serious interest in Saturniidae or silks, this beautifully illustrated book would be a highly desirable item for the personal library.

Richard S. Peigler, Department of Biology, University of the Incarnate Word, 4301 Broadway, San Antonio, Texas 78209-6397 peigler@uiwtx.edu

BUTTERFLIES OF ALABAMA, by W. Mike Howell, photographs by Vitaly Charny, 510 pages; 6 x 9 inches, softcover; ISBN 978-0-558-55631-0. Peason Learning Solutions, Boston, Massachusetts. 2010.

This book is a field guide, with discussions of 112 species of butterflies and skippers that are documented by the authors as occurring in the state of Alabama. The authors, particularly Charny (who is listed as both photographer and data gatherer) spent 9 years very intensively studying, documenting and photographing butterflies in Alabama. 27 additional species are noted as having been recorded from Alabama but not encountered by the authors,

bringing the total number of Alabama butterflies and skippers in the book to 139 species. These species are included in the checklist (Appendix D).

The authors emphasize that the book was written to familiarize students of Lepidoptera with the butterfly fauna of Alabama. The book opens with a discussion of why butterflies are important to people and to Alabama. The highlights of the rest of the Introductory section include a detailed and useful section on ecoregions of Alabama, photography, and conservation. Data gathering and population monitoring are discussed, something the authors indicate as in its infancy in studying populations in Alabama. The introduction ends with a detailed section on natural places in Alabama excellent for finding butterflies.

The species accounts are very concise, with good field marks and entire range of the species indicated (including outside of Alabama, a big plus as far as I am concerned). Detailed flight season(s), life history, and hostplant information is also given, and each account finishes with an Alabama range map (though author data alone were largely used to generate range maps). The maps are a bit pixelated (low resolution), but still clear enough.

The photography in the book is decent, though a couple of photos (see *Callophrys gryneus*) leave something to be desired. The pictured "male" *Satyrium liparops* on page 301 is actually a female, though the species is not strongly sexually dimorphic and this is the only gender photo mistake I found. Photos are almost exclusively of adults.

A table of most/least common butterflies near the beginning of the book (actually most/least encountered) includes six distinctly local/rare skipper species, but also the Phaon Crescent, common on the coastal plain in Mobile Co., and the White-M Hairstreak, which is widespread but local. The authors must have missed these two during surveys.

This book, publication of which precedes the next book by a few months, is a fine compilation, and should be on the want list of Alabama butterflies/naturalists.

James K. Adams, 148 Sequoya Hall, School of Sciences and Math, Dalton State College, 650 College Drive, Dalton, GA, 30720 jadams@daltonstate.edu

BUTTERFLIES OF ALABAMA, Glimpses into their Lives, by Paulette H. Ogard, photographs by Sara Bright. 486 pages, 418 color illustrations, 86 maps; 6 1/8 x 9 1/4 inches, softcover; ISBN 978-0-8173-5595-1; \$29.95; The University of Alabama Press, Tuscaloosa, Alabama. 2010.

No, I'm not repeating myself. This visually stunning book, published a few months after the previous book, is definitely NOT a field guide, and the authors indicate as such. Although approximately the same cover dimensions as the

previous book, this book is printed on very thick paper, giving it a 1 5/8 inch depth and weighing in at 3 1/4 pounds. Definitely not a book to take into the field!

The Focus section near the beginning indicates that you are in for a ride through the world of butterflies, plants, and their predators, which is exactly what is strong about this book. Ogard's botanical knowledge shines through in discussions of hostplants and their phytochemistry, and how it plays into the defenses of the butterflies. Bright's photography is masterful, and includes immatures (larvae and pupae, and even eggs for 10 species) of the vast majority of the 84 covered species. The text is written in "plain language", and is a very pleasant flowing read, with life history detail and information about defenses against predation for both larval and adult stages.

With the species accounts, there is NOT a lot of discussion of range, nor is there a strong discussion of field marks, leaving the pictures to do the talking. This may partially be explained by the fact that they did not include skippers, where field marks would be more important. At the end of the book, they do have an annotated checklist, where there are Alabama range maps (which include more counties than indicated in Howell and Charny for many species). Flight period info in this Checklist is mostly seasonal, however, which is an important shortcoming as far as I am concerned. Interestingly, they also include several species not in Howell and Charny: Dainty and Orange-Barred Sulphurs (as accidentals); the American and Bronze Coppers; Edward's, Hessel's (which they discovered in Alabama) and Early Hairstreaks; the Eastern Pygmy, Marine and Ceraunus Blues (the latter two as accidentals); and *Helicta Satyr*.

For those interested, nomenclature used in this book is a mixed bag. For example, the Eastern-Tailed Blue is in *Cupido* (a recent move from *Everes*), and *Eurema* is used for the Sleepy Orange (*Abaeis* in some) but *Pyrisitia* is used for the Little Sulphur. *Lethe* (an Eastern hemisphere genus) is used for the Pearly-Eyes (*Enodia*) and Appalachian Eyed-Brown (*Satyrodes*), though *Hermeuptychia*, *Neonympha*, *Cyllopsis* and *Megisto* are used for smaller satyrids.

There are a few typos here and there, misuse of the terms dorsal and ventral (pgs. 116 and 216), and an odd discussion of large migrations of Cloudless Sulphurs and Gulf Fritillaries southward in the fall to avoid the cold. What masses of northern individuals are there for these butterfly species to migrate southward? Three photos have misdetermined gender (Black Swallowtail, pg. 33; Tiger Swallowtail, pg. 49, and Cloudless Sulphur, pg. 88), but

considering the huge number of photographs, this is a very MINOR problem. Now I'm just getting picky . . .

Honestly, this book is an easy and delightful read, and the pictures are fantastic. You will find yourself flipping through pages just to see what lovely images are coming next. Anyone interested in southeastern butterflies will want this book, both for the life history information and for the coffee table.

James K. Adams, 148 Sequoya Hall, School of Sciences and Math, Dalton State College, 650 College Drive, Dalton, GA, 30720
jadams@daltonstate.edu

NOTE: I found it quite interesting and odd that Ogard was acknowledged for some information only briefly in the Howell and Charny book, and that the Ogard and Bright book neither acknowledges any input nor includes in the Literature the previously published Howell and Charny book. Don't people in Alabama talk to one another?

A GUIDE TO THE BREEDING OF TROPICAL SILK MOTHS...DIE ZUCHT VON TROPISCHEN WILDEN SEIDENSPINNERN, by Frank Meister. 220 pages; bilingual text in English and German; 17.5 cm × 24.5 cm; hardbound; 27 color photos; ISBN 978-3-89937-140-6; Verlag Dr. Friedrich Pfeil, Munich. € 39.00 (about US\$50.00). Publication date: November 2011.

This book is a welcome contribution to the knowledge of Saturniidae and will be a useful resource for rearers and taxonomists who specialize in Saturniidae. I am glad to see this one published, because the old standbys on breeding saturniids by Aue (1933), Crotch (1956), Collins and Weast (1961), Villiard (1969), and Gardiner (1982) have long been out-of-print and are hardly known to the younger enthusiasts who collect and rear saturniids. None of the above books can approach the recent volume by Lampe (2010) with almost 3000 color images covering hundreds of species from all over the world (Peigler 2010). I first acquired the books by Villiard, Collins, and Weast when I was a sophomore at Clemson University, and they had a profound impact on me. Now 40 years later the new books by Lampe and Meister allow me to recapture some of that joy.

Meister's new book is beautifully produced with a dual text presented in English and German, as side-by-side columns on every page. The English text by the translator Frank Haase is virtually perfect. The comprehensive indices to moth names and plant names are very accurate and useful. The subfamilies are arranged in phylogenetic order,



alphabetical by genus within each. This is perfect for me, because in Lampe's volume, for example, one has to chase down the various *Antheraea* and *Actias* in the Palaearctic, Nearctic, Neotropical, and Oriental biogeographical sections of his book. The Oxyteninae and Cercophaninae are included, as they should be, and Meister's book is a useful source on those two groups. Updated and accurate nomenclature for the tribes and subfamilies of the African fauna is employed. Of great importance is the fact that the systematics part can serve as a world checklist for Saturniidae, although I disagree with some of Meister's taxonomic decisions on what are really species, subspecies, or synonyms. However, I was pleased to see *Antheraea mylitta* treated as a synonym of *A. paphia*, *Actias truncatipennis* again treated as a full species as it was originally proposed in 1899, and *Graellsia* treated as a valid genus, so Meister has also made taxonomic decisions to my liking in some of the contentious cases. I found very few misspellings, namely *lumbrosa* for *umbrosa* on page 63, *slossleri* for *slosseri* on page 103, *Pseudobunaea* for *Pseudobunaea* on page 141, *manowiensis* for *manowensis* on page 165, and *roylii* for *roylei* on page 146, although the last two were intentional and apparently remain controversial. On page 169 I must rectify that *Rothschildia lebeau* does not feed on *Enicospilus lebophagus*, although the reverse is true.

Regarding the long and very detailed parts on ecology and rearing of Saturniidae, I learned a lot, and I rarely found myself disagreeing with a point. The book offers hundreds of useful tips for achieving matings, how to provide proper care to eggs, larvae, pupae, and moths, how to mail eggs and caterpillars, and how to obtain livestock through internet sources. Meister complains on page 45 that lepidopterists sometimes slit an opening in the side of a cocoon to see if it contains a viable pupa, something that has irritated me for many years when I have received cut cocoons. He correctly points out that the slit will curl inward after the cocoon is wetted, pressing on the pupa and disturbing the micro-environment within the cocoon. The author's text is interspersed with field observations he has made on saturniids in the tropics. If beginners will only read Meister's wealth of rearing guidance, it will prevent them from repeating all of the common mistakes that we all made, and thus many more caterpillars will reach moth-hood.

The bibliography is long but not balanced. However, so many hundreds of the foodplant records have been published and re-published so often, that trying to assign every record to its original literature source would be prohibitive, and such details are better left to taxonomic revisions. My main point here is that the book will serve as

a valuable reference to finding a suitable foodplant for a given species. Meister has made good use of the internet to update the botanical nomenclature and taxonomy.

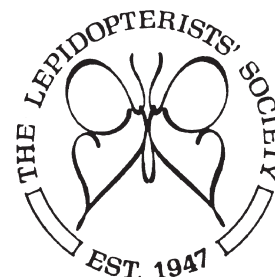
Some who bought Lampe's fantastic book filled with color images may have been disappointed that it did not give lists of foodplants and had only a minimal text on rearing techniques. Meister's book complements Lampe's book perfectly, for although it has only a few color photos, it provides the aforementioned detail on rearing methods and thousands of foodplant records. I have never communicated with the author as far as I recall, but I suspect that the publisher and he were quite aware that the two books together have everything needed to rear and appreciate the immature stages of Saturniidae. So, if you bought Lampe's book, go ahead and buy this one also, and then you will be set. I hope the two books will be available side by side on the shelves of many libraries awaiting future saturniidologists.

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RICHARD S. PEIGLER, *Department of Biology, University of the Incarnate Word, San Antonio, Texas 78209-6397; peigler@uiwtx.edu; and Research Associate, McGuire Center for Lepidoptera & Biodiversity, Gainesville, Florida 32611-2710. peigler@uiwtx.edu*

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

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2. Article (and graphics) on diskette, CD or thumb drive 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. The new InDesign software can handle most common wordprocessing software and numerous photo/graphics software. Media will be returned on request.
3. Color and B+W graphics should be good quality photos 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.
4. Typed copy, double-spaced suitable for scanning and optical character recognition. Original artwork/maps should be line drawings in pen and ink or good, clean photocopies. Color originals are preferred.

Submission Deadlines

Material for Volume 53/54 must reach the Editor by the following dates:

	Issue	Date Due
54	1 Spring	Feb. 28, 2012
	2 Summer	May 20, 2012
	3 Fall	Aug. 15, 2012
	4 Winter	Nov. 15, 2012

Reports for Supplement S1, the Season Summary, must reach the respective Zone Coordinator (see most recent Season Summary for your Zone) by Dec. 31. See inside back cover for Zone Coordinator information.

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Andrew Warren
McGuire Center for
Lepidoptera & Biodiversity
Florida Museum of Natural
History
P.O. Box 112710
Gainesville, FL 32611-2710
andy@butterfliesofamerica.com

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John Shuey
The Nature Conservancy of
Indiana, Efromyson Conser-
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620 E Ohio Street
Indianapolis IN 46202
jshuey@tnc.org
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Laboratory of Conservation
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watanabe@kankyo.envr.tsukuba.ac.jp

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Michael Toliver
Division of Math and Science
Eureka College, 300 E. Col-
lege 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)
krichters@bak.rr.com

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

James Adams
School of Sciences and Math
Dalton State College
650 College Drive
Dalton, Georgia 30720
(706)272-4427
jadams@daltonstate.edu

Editor, Journal of the Lepidopterists' Society

Keith Summerville
Dept. of Environmental
Science and Policy, 131 Olin
Hall, Drake University, Des
Moines, IA 50311-4505
(515)271-2265
keith.summerville@drake.edu

Editor, Memoirs of the Lepidopterists' Society

Lawrence F. Gall
(see Memoirs opposite)

WebMaster

John A. Snyder
(see WebMaster opposite)

Members-At-Large

Stephanie Shank, Charles
Harp, Todd Stout, Richard
Brown, Charles V. Covell,
Dan Rubinoff, Todd Gilligan,
Peter Jump, Bruce Walsh.

Season Summary Zone Coordinators

Refer to Season Summary for Zone coverage details.

Chief Season Summary Coordinator and Editor

Leroy C. Koehn
3000 Fairway Court
Georgetown, KY 40324
(502) 370-4259
lep traps@aol.com

Zone 1, The Far North:

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

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)
kdavenport93306@yahoo.com
with help on moths from
Kelly Richers (see Treasurer,
this page)

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 Burkhardt Road,
Houston, TX 77055
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
66 College Street
Charleston SC 29424-0001
(803) 856-0186
scholtensb@cofc.edu

Zone 10, The Northeast:

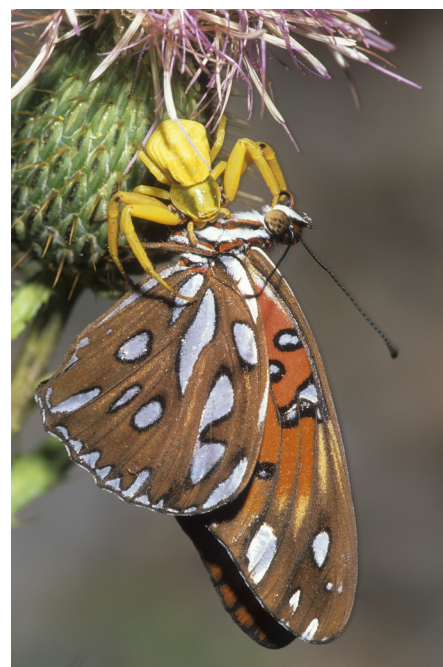
Mark J. Mello
c/o Lloyd Center,
430 Potomska Rd
Dartmouth, MA 02748
m.rogovsky@comcast.net

Zone 11, Mexico & the Caribbean:

Isabel Vargas Fernandez
Museo de Zoologia,
Facultad de Ciencias,
Univ. Nacional Autonoma,
Mexico,
Apartado Postal 70-399,
Mexico 04510 D.F., Mexico
ivf@hp.fcencias.unam.mx



This painting of a Cecropia Moth caterpillar (*Hyalophora cecropia*) is a water color by Robert Burnett that measures 29 by 21 inches in size. Burnett Studios, Inc., 566 Awosting Road, Pine Bush, NY 12566 jburnett@hvc.rr.com



Gulf Fritillary, *Agraulis vanillae*, in clutches of White-Banded Crab Spider, *Misumenoides formosipes*, Lexington WMA, Cleveland Co., OK 19 Sept., 2005



White Admirals, *Limenitis a. arthemis* on coyote scat, J. Clark Salyer NWR, McHenry Co., ND, 26 June, 2003

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Sheridan's Hairstreak, *Callophrys sheridanii*, nr. Grassy Butte, Little Missouri Nat'l Grassland, McKenzie Co., ND, 23 April, 2005



Arizona Sisters, *Adelpha eulalia*, on coyote scat, Forest Road 55 nr. 4th of July Cmpgrd, Manzano Mtns., Cibola Nat'l Forest, Torrance Co., NM, 17 Aug., 2010

Acadian Hairstreak, *Satyrium acadica*, nr. Pigeon Point, Ransom Co., ND, 13 July, 2003

