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

J. BARRY LOMBARDINI: EDITOR

Mexican Silverspot (*Dione moneta poeyi*)

Isabella Heliconian (*Eueides isabella eva*)

Angled Leafwing (*Fountainea glycerium*)

PHOTOGRAPHS BY MIKE A. RICKARD

A rare January day of clear skies and mild temperatures led to an abundance of butterflies at the National Butterfly Center, including these three spectacular species: Mexican Silverspot (*Dione moneta poeyi*), Isabella Heliconian (*Eueides isabella eva*), and Angled Leafwing (*Fountainea glycerium*). All photos 12 January 2019, National Butterfly Center, Hidalgo Co., TX.

TREASURER'S REPORT FOR 2018

As of December 31, 2018:

There are 173 paid members and two complimentary issues sent out quarterly (Library of Congress and Library at Division of Plant Industry in Gainesville, Florida) .

Beginning Bank Balance with SunTrust of Gainesville as of 1/January/2018: $15,419.73.
Ending Balance as of 31/December/2018: $13,606.81.

Deposits and Credits: Includes member dues and donations, collections from meetings and sales of old newsletters:
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Withdrawals and Fees:
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Vol. 40 #2 $1,581.29
Vol. 40 #3 $1,176.99
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Vol. 40 #2 $ 451.83
Vol. 40 #3 $ 487.80

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$2089.27

Supplies for Newsletters in 2018 are:
Clasped Mailing Envelopes $42.00
Media Mail Stamp $26.95

We produce 4 newsletters each year. We spent $8,399.09 to produce these newsletters. If we had 173 members paying $30 each, that would bring in revenue of only $5,190.00 which would not cover the costs of the newsletters by $3,209.99. Thanks to the generosity of many of our members and the donation from Irving Finkelstein in 2017, the society still has reserves to cover the newsletters for the next year or two.

Bank Fees: $0.00
Printing costs include printer cartridges for Editor Barry Lombardini's home computer.

Barry Lombardini has continued to do an excellent job as editor of the Southern Lepidopterists' Society News.

Due to the generosity of several members we can continue to produce excellent newsletters and not incur a deficit.

Dues:

Student Membership:	$15.00
Regular Membership:	$30.00
Sustaining Membership:	$35.00
Contributor Membership:	$55.00
Benefactor Membership:	$75.00

Publication Fund (donations) open ended.

Respectfully submitted,
Jeffrey R. Slotten DDS
Research Associate McGuire Center
FSCA, SLS Treasurer 2018

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MANY THANKS TO THE FOLLOWING DONORS TO THE SOUTHERN LEPIDOPTERISTS' SOCIETY

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"Cover illustration: First known drawing of a North American butterfly from the Modern Age: Eastern Tiger Swallowtail *(Papilio glaucus)* by John White, North Carolina, 1587 (original design by J.V. Calhoun, 1996)."

NOTES ON THE GENUS *MATIGRAMMA* (LEPIDOPTERA: NOCTUIDAE: EREBINAE)

BY

HUGO L. KONS JR. & ROBERT J. BORTH

Abstract

North American species of *Matigramma* (Lepidoptera: Noctuidae: Erebinae) can be differentiated by COI 5' mitochondrial DNA and male genitalia, but some species apparently cannot be reliably separated by wing pattern. We present photos of exemplar *Matigramma* specimens which were dissected and/or sequenced for COI 5' mitochondrial DNA, and a series of three dimensional male genitalic images for *Matigramma repentina* and *M. emmilta*. We identify unique combinations of COI 5' characters that identify North American *Matigramma* species. We also provide information on distribution and habitat and document the occurrence of *Matigramma repentina* in the Davis Mountains of West Texas.

Introduction

The genus *Matigramma* was last revised by Franclemont (1986); this revision includes drawings of genitalic preparations and black and white photos of each species. The North American fauna includes seven species: *Matigramma obscurior* Strand, *M. repentina* Franclemont, *M. rubrosuffusa* Grote, *M. inopinata* Franclemont, *M. emmilta* Franclemont, *M. adoceta* Franclemont, and *M. pulverilinea* Grote. Two additional species are known only from Mexico: *Matigramma aderces* Franclemont and *M. necopina* Franclemont (Franclemont 1986). Knudson and Bordelon (2003) reported five species from Texas: *M. pulverilinea, M. rubrosuffusa, M. obscurior, M. emmilta*, and *M. inopinata*. The two remaining species, *M. repentina* and *M. adoceta*, were only reported from Arizona in Franclemont (1986).

Methods

We collected *Matigramma* specimens at MV/UV lights and at rotten banana bait. The specimen and genitalia photos in this article were taken with the GT Vision imaging system of the former American Entomological Institute. Male genitalia for imaging were dissected by HLK as described in Kons and Borth (2015a), but many dissections for routine identifications only involved pulling the capsule out of the abdomen and examining the valvae. We submitted representatives of *Matigramma* species to BOLD (Barcode of Life Data Systems) for sequencing the 5' region of the mitochondrial gene cytochrome oxidase subunit I (COI 5'). The *Matigramma* material in the genetic analysis presented herein was limited to material we submitted and for which we studied the associated voucher specimens, except for *M. adoceta*. Sequences for *M. adoceta, Acritogramma* species, and *Gnamptonyx* species were dowloaded from BOLD Systems' public records. Unique combinations of COI 5' characters that diagnose *Matigramma* species were identified with Winclada (Nixon 2002) using the "map characters (show hashmarks)" function. These characters were mapped on the strict consensus of most parsimonius trees imported from a cladistic analysis conducted with TNT software (Goloboff et al. 2008).

COI 5' Mitochondrial DNA: All known North American *Matigramma* species are readily identifiable by the unique combinations of COI 5' characters shown on the branches for each of the seven species clades in Figure 3. Expanding the analysis to include all of the public sequence records for *Matigramma* in BOLD yields the same seven clades; however, three species have greater haplotype variation than what is present among the samples shown in Figure 3 (*M. emmilta*, *M. inopinata*, and *M. pulvilinea*). The Mexican species *Matigramma aderces* and *M. necopina* have not been sequenced as of November 2018.

***Matigramma repentina* (Figure 1:A-C):** Franclemont (1986) reported this species from three Arizona counties, including material from the Santa Rita, Huachuca, and Chiricahua Mountains. Material we studied is from the Chiricahua Mountains between 5001 and 7627 feet (Cochise County, 2 sequenced, 2 dissected, 3 total) and the Davis Mountains of Jeff Davis County, Texas, between 4514 and 4914 feet (1 sequenced, 1 dissected, 2 total). Franclemont (1986) referred to *M. repentina* as "a dark greyish species similar to *inopinata, aderces*, and *obscurior*, with usually evident pinkish tints that are lacking in *aderces* and *obscurior*..." and a species that "can be confused with the darkest specimens of *emmilta*...". Our sequenced specimen from Texas is an unusual melanic phenotype we have seen only once (Figure 1:A), whereas our other specimens from Arizona and Texas look like typical darker individuals of West Texas *M. emmilta* in wing pattern (Figures 1:B-C). All have prominent pinkish suffusion. *Matigramma emmilta* is common in the West Texas Mountain ranges we have sampled (Davis Mountains, Franklin Mountains), and we cannot distinguish these specimens from *M. repentina* by pattern. Among 16 *emmilta*-like phenotypes HLK dissected from the Davis Mountains only one was *M. repentina*, and no *repentina* were represented among five dissections of *emmilta* from the Franklin Mountains. The greater abundance of *M.*

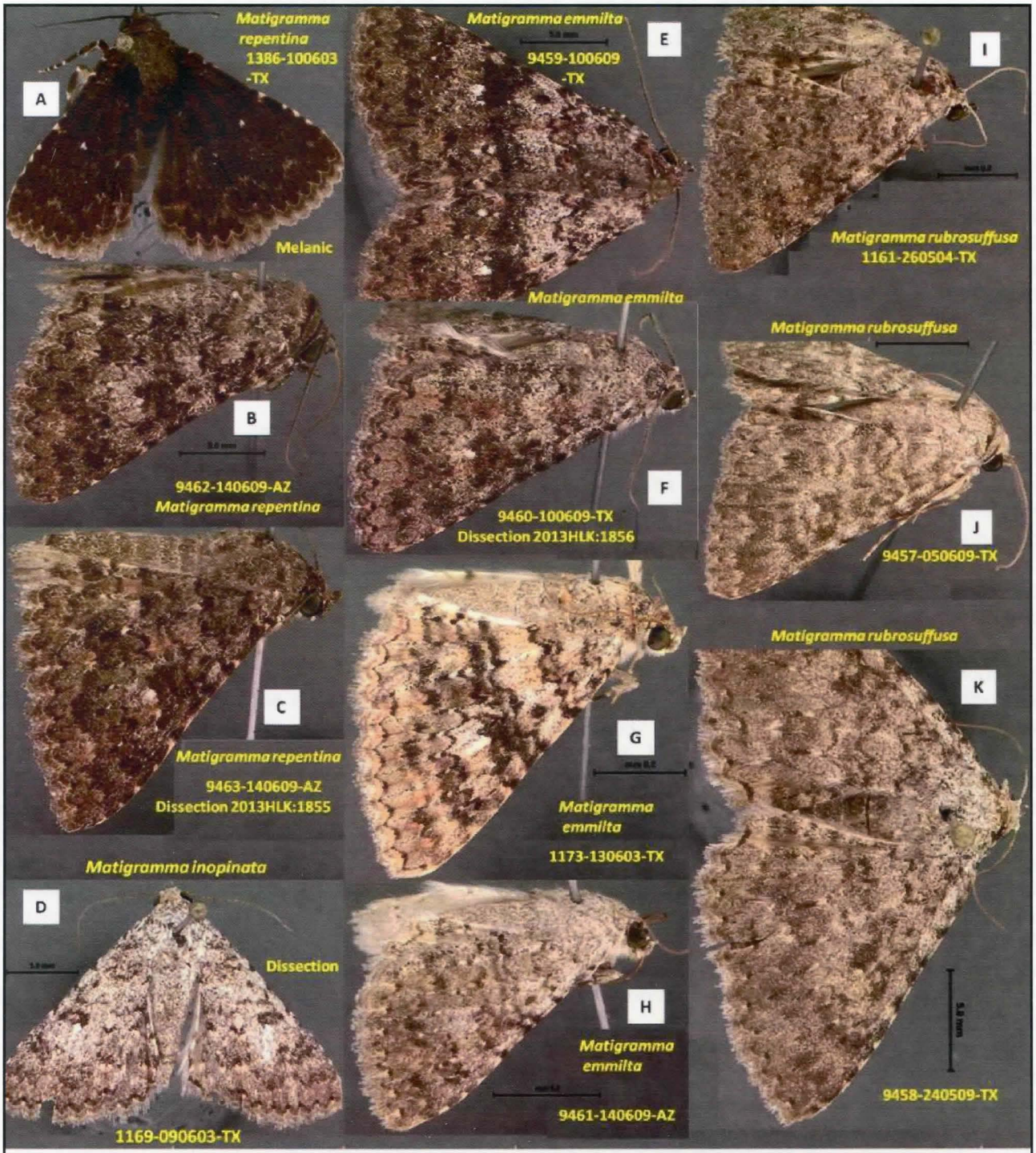

Figure 1: DNA and/or dissection voucher specimens of *Matigramma* species: **A-C:** ***Matigramma repentina;*** **D:** ***Matigramma inopinata*****; E-H:** ***Matigramma emmilta*****; I-K:** ***Matigramma rubrosuffusa.*** See Table 1 for collection data. *Matigramma repentina* Figure 1C (Dissection No. 2013HLK:1855, DNA No. 9463-140609-AZ) and *M. emmilta* Figure 1F (Dissection No. 2013HLK:1856, DNA No. 9460-100609-TX) are the voucher specimens for genitalia images in Figures 5-9. Numbers are DNA voucher sample ID numbers unless otherwise stated. The first part of the sample ID number (preceding the hyphen) is used in Figure 3.

emmilta and similarity in wing pattern make *M. repentina* difficult to detect in West Texas. Texas habitats in the Davis Mountains include a hydric-mesic canyon corridor with cottonwood and willow through xeric grassland interspersed with oak and juniper. Arizona habitats from the Chiricahua Mountains include oak-juniper-pine-spruce forest around Onion Saddle and oak forest near oak savanna at the Idlewilde Campground.

Specific data for the five specimens we sequenced or dissected is as follows: Arizona: Cochise County: Onion Saddle: N 31.93306° W 109.26360°, 7627', MV Sheet, 14 June 2009 (2 males, both sequenced, one dissected);

Arizona: Cochise County, Cave Creek Canyon, Idlewilde Campground, N 31.89146° W 109.16741°, 5001', MV Sheet, 15 June 2009 (1 male, dissected); Texas: Jeff Davis County, Davis Mountains State Park, Limpia Canyon, N 30.60866° W 103.91732°, 4914', UV Trap site 7, 10 June 2003 (1 sequenced); Texas: Jeff Davis County: Davis Mountains: Limpia Canyon near picnic area on TX Hwy 17, N 30.67687° W 103.79463°, 4514', MV Sheet, 6 June 2003 (1 male, dissected).

***Matigramma emmilta* (Figure 1:E-G):** Figures 1:E-G are the typical wing pattern phenotypes that occur in the Davis and Franklin Mountains of West Texas, based on specimens confirmed with DNA sequences or genitalic dissections. We have not recorded *M. emmilta* farther east in the Texas Hill Country, or at lower elevations of Chihuahuan desert habitats away from the mountain ranges in Ward County, Texas. Among West Texas material we cannot separate *M. emmilta* from *M. repentina* by wing pattern, but series of dissected males suggest *M. emmilta* has greater pinkish suffusion than sympatric *M. inopinata* and *M. rubrosuffusa*. Specimens from the Franklin Mountains (Figure 1:G) average lighter than those from the Davis Mountains (Figure 1:E-F), but there is broad overlap in the range of wing pattern variation between these two areas. The wing pattern is more variable in southeastern Arizona. Variants not seen in West Texas include a light grey female form with sparse pinkish suffusion (Figure 1:H), and dark gray males with variable pinkish suffusion (not shown). A single dark, grayish male of *emmilta* we dissected from Cochise County, Arizona, has minor differences in male genitalia relative to specimens we dissected from West Texas. Habitats in the Davis and Chiricahua Mountains are noted above, whereas habitat in the Franklin Mountains is drier, desert grassland with small scrubby oaks.

***Matigramma inopinata* (Figure 1:D):** This species is common in the Davis Mountains and Franklin Mountains of West Texas, and also occurs in the lower Chichuahuan desert habitats of the Trans-Pecos region of West Texas (Ward County). It is present but much less common in the Texas Hill Country where it occurs in xeric savannas with oaks and junipers. Our Hill Country collection localities include Pedernales State Park (Blanco County) and Garner State Park (Uvalde County). As noted above series of dissected males from West Texas suggest it can be separated from sympatric *M. emmilta* by having less pink suffusion. We have only examined one Arizona male that we confirmed with genitalic dissection (Idlewilde Campground, Cave Creek Canyon, Chiricahua Mountains, Cochise County), and it looks similar to specimens of *M. repentina* from the same area. This specimen (not shown) is darker grey than typical Texas specimens of *M. inopinata*.

***Matigramma rubrosuffusa* (Figure 1: I-K):** This species is uncommon in our experience, but it has a wider distribution than similar *M. emmilta, M. inopinata*, and *M. repentina*. In the Trans-Pecos region of West Texas it occurs both in the mountains (Davis Mountains, Franklin Mountains) and at Monahanas Sandhills State Park (Ward County). It occurs in the Texas Hill Country (Blanco, Kerr, Uvalde, Medina, and Bandera Counties), Sonoran/Lower Austral Life Zone boundary area (Palmetto State Park, Gonzales County, Texas), Texas Panhandle (Copper Breaks State Park, Hardeman County), and in the Wichita Mountains of southwest Oklahoma (Comanche County). East of the Trans-Pecos region of Texas it is a pale grey phenotype with sparse if any pinkish suffusion relative to *M. emmilta, M. inopinata*, or *M. repentina*. In the Davis and Franklin Mountains the few male specimens we have confirmed with dissection have more pinkish suffusion and were confused with *M. inopinata* prior to dissection. An Arizona male we identified from dissection, from the aforementioned Idlewilde campground, has more extensive pinkish suffusion and looks similar to *M. emmilta* and *M. repentina*. In southwest Oklahoma this species occurs in xeric oak savanna/short grass prairie in the Wichita Mountains. Our Texas localities all include some type of xeric grassland savanna. Our Arizona specimen from the Chiricahua Mountains was collected in dense oak woodland near a dry, rocky, wash, but more open grassy oak savanna was present in the vicinity.

Matigramma adoceta: This is the sole *Matigramma* species occurring in the United States that we have never collected or studied, although we did include three public sequences from BOLD Systems in our genetic analysis. Franclemont (1986) notes this species has the most contrasting pattern and pinkish coloration among the *Matigramma* species; this description matches the photos shown with the BOLD public records. Franclemont (1986) reported it only from the Baboquivari Mountains of Pima County, Arizona. One of the BOLD Systems public records is from this locality; however, another is from the San Bernardino Mountains, San Bernardino County, California.

***Matigramma obscurior* (Figure 2:A-E):** While the maculation is much like the preceding species, the dark grey and blackish coloration combined with the absence of pinkish suffusion allow this species to be identified from wing pattern. In the United States the distribution appears to be limited to southern Texas, including the Lower Rio Grande Valley, southern Hill Country, and southern portion of the transition area between the Lower Austral and Lower Sonoran Life Zones. Specific localities we have collected it include Resaca de la Palma State Park (Cameron County), Bensten Rio Grande State Park (Hidalgo County), Falcon State Park

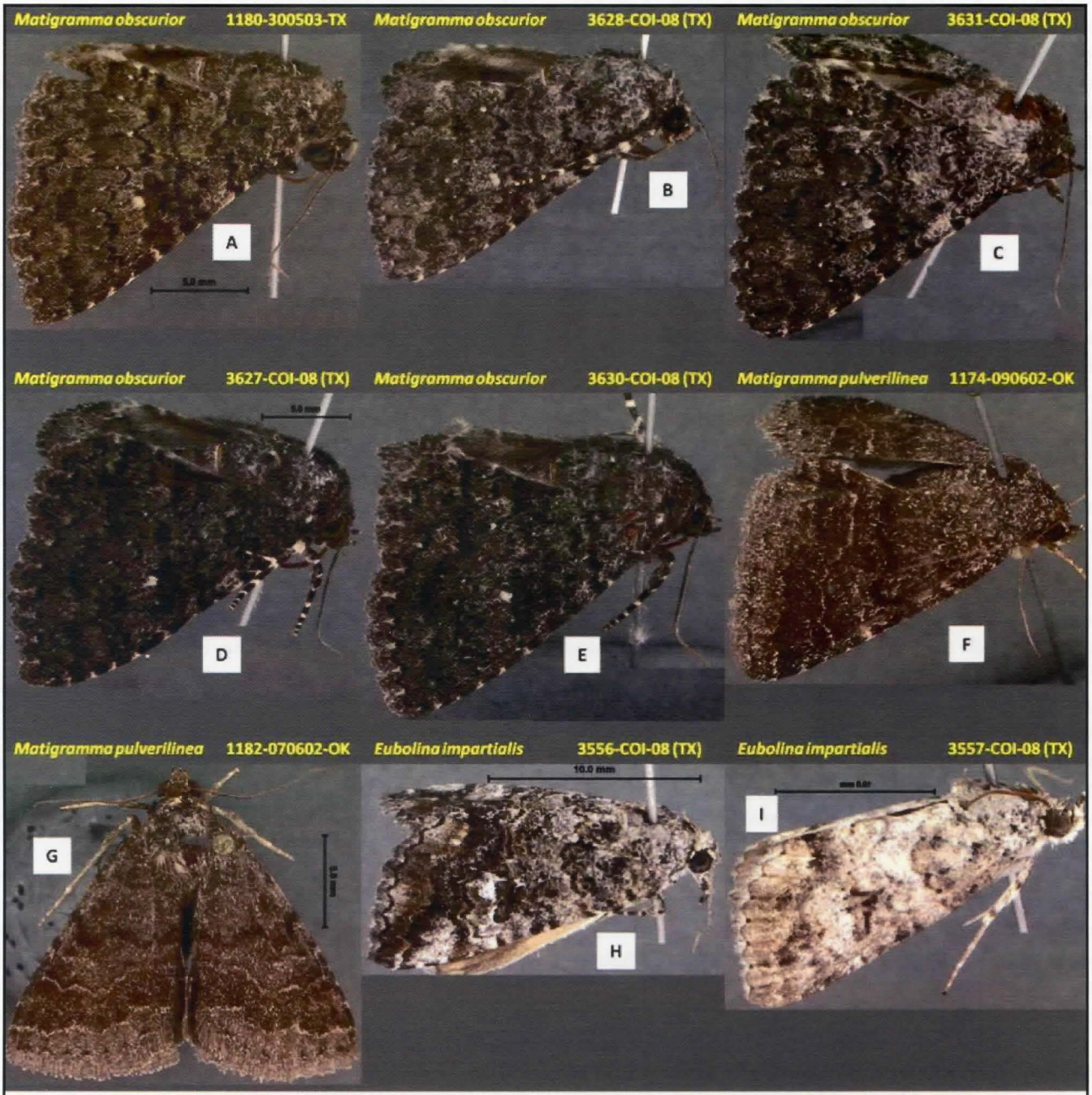

Figure 2: DNA and/or dissection voucher specimens of *Matigramma* and *Eubolina* species: **A-E:** ***Matigramma obscurior;*** **F-G:** ***Matigramma pulverilinea*****; H-I:** ***Eubolina impartialis.*** See Table 1 for collection data. Numbers are DNA voucher sample ID numbers. The first part of the sample ID number (preceding the hyphen) is used in Figures 3--4.

(Zapata County), Garner State Park (Uvalde County), Hondo Creek (Medina County), and Palmetto State Park (Gonzales County). Habitats among collection sites include: subtropical resaca ebony-anacua woodland (Resaca de la Palma State Park), mesic subtropical thorny woodland (Bensten State Park), Tamaulipan Thorn Scrub (Falcon State Park), oak-acacia savanna and riparian corridor (Hill Country sites), and hydric hardwood forest with a *Sabal minor* understory (Palmetto State Park). Thus, this species appears to be a habitat generalist within its limited range in the United States.

Matigramma pulverilinea **(Figure 2:F-G):** This is the most distinctive *Matigramma* species in terms of wing pattern. It has a dark grey wing pattern with a contrasting lighter grey area distal to the subterminal line, and the postmedial line shape is unlike any other *Matigramma*, being much less dentate. The core range appears to be the transition area between the Austral and Sonoran Life Zones. This species is locally common in central and western Oklahoma, including Oklahoma County (Luther) and Comanche County (Wichita Mountains National Wildlife Refuge, Medicine Park). We have never found it as common in Texas, but localities we have collected it include Copper Breaks

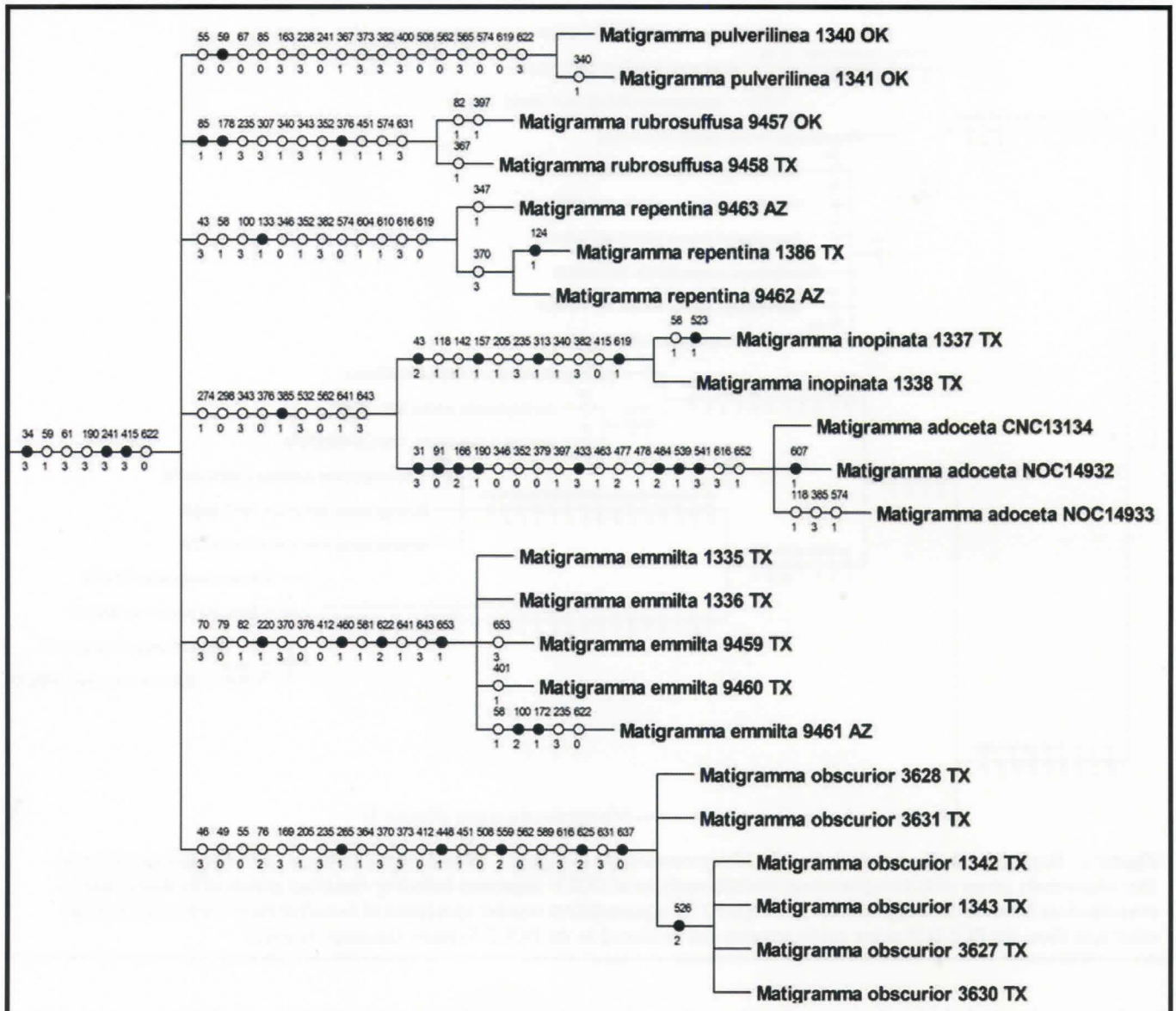

Figure 3: Unique combinations of COI 5' characters that diagnose *Matigramma* species occurring in the United States. Characters are mapped on the strict consensus of most parsimonious cladograms for the taxa in Figures 3-4. Upper numbers represent positions on the 658 base pair COI 5' region (a.k.a. DNA barcode region). Lower numbers represent base pair character states (0=A, 1=C, 2=G, 3=T). Black circles are character states unique among the included data; for example, base pair C for COI 5' position 265 is unique to *Matigramma obscurior*. COI 5' refers to the 5' region of the mitochondrial gene cytochrome oxidase subunit I. The purpose of this figure is to show the characters that differentiate *Matigramma* species –the phylogeny of *Matigramma* species is beyond the scope of this article, and analysis of COI 5' sequences provides little phylogenetic signal for relationships within *Matigramma*. See Figures 1-2 for representative voucher specimens for *Matigramma* species other than *M. adoceta*; photos of the voucher specimens of *M. adoceta* can be viewed with the BOLD Systems taxonomy browser. See Figure 4 for other taxa included in this analysis.

State Park (panhandle, Hardemon County), Caprock Canyonlands State Park (panhandle, Briscoe County), Pedernales Falls State Park (Hill Country, Blanco County), and Palmetto State Park (Gonzales County). Farther east we have found it local and uncommon in the Upper Austral Life Zone and northern Lower Austral Life Zone, including Osborn Prairie (Oktibbeha County, Mississippi), Osage Prairie (Vernon County, Missouri), and the Hovey Lake Wildlife Management Area (Posey County, Indiana). Single worn specimens we have collected from Jackson County, Florida (Buena Vista Road, 30 May 2006), and Ozaukee County, Wisconsin (Mequon, 7 September 2015) are likely strays far outside of the permanent range. Habitats typically include some type of upland xeric to semi xeric grassland: oak and/or juniper savanna or short grass prairie (TX/OK), tall grass prairie (MO), and Black Belt prairie (Miss.). The anomaly is the southern Indiana site where we found two fresh specimens in late August/early September of 2015; this site is a hydric mowed field in a floodplain adjacent to hydric hardwood forest. This species appears to be largely absent from

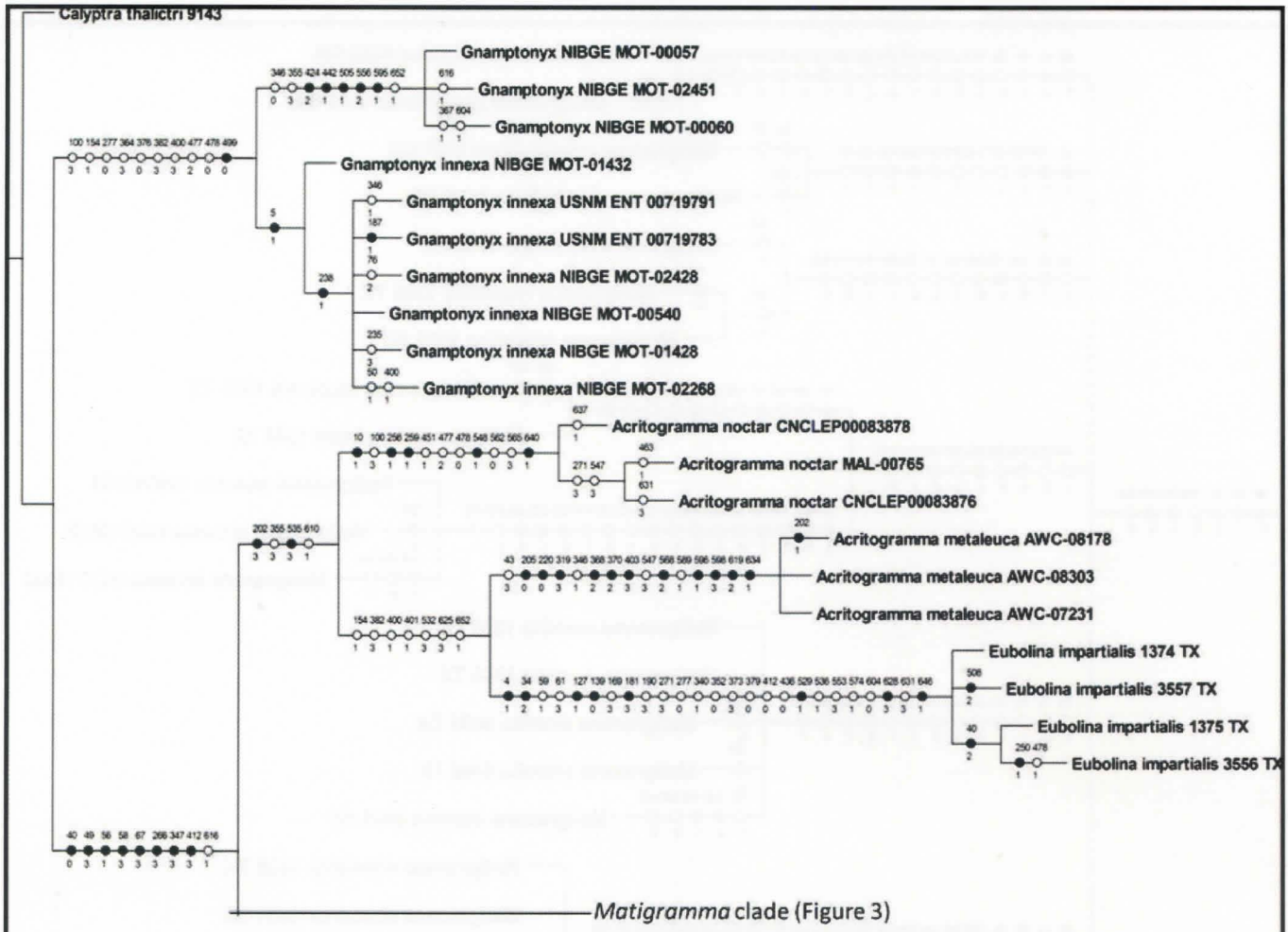

Figure 4: Base of the cladogram including the *Matigramma* clade in Figure 3. *Eubolina* and *Acritogramma* were included because they consistently group with *Matigramma* in cladistic analyses of COI 5' sequences including numerous genera of Erebinae, and are possible close relatives of *Matigramma*. See Figure 2 for representative voucher specimens of *Eubolina impartialis*; photos of the other taxa (from the BOLD Systems public records) can be viewed in the BOLD Systems taxonomy browser.

the Lower Austral Life Zone, and other than the aforementioned stray from Buena Vista Road we have seen no specimens from Florida or the piney woods region of eastern Texas.

Male Genitalia of *Matigramma repentina* and *M. emmilta* (Figures 5-9): The male genitalic differences between the known North American species of *Matigramma* include obvious differences in the valvae shown in Franclemont (1986). We have not studied the female genitalia but these are also covered in Franclemont (1986). While we have dissected many male specimens of *Matigramma* for routine identifications, there are two preparations we studied in much greater detail with a series of three dimensional genitalia images, including one specimen of *M. repentina* and one specimen of *M. emmilta* (Figures 5-9). There are many differences between these two species but some of the most obvious include: the left valva is much broader in *M. repentina* (Figure 5), the apex of the costa of the right valva is shaped differently between these species (Figure 5), the left ventral side of the phallus has a prominent posterior projection in *M. repentina* (Figure 8, red arrow), and vesica diverticula 2b and 5b are much longer in *M. emmilta* (Figures 7-9). The juxta/anellus, uncus, tegumen, tuba analis, and ductus ejaculatorius are similar between the two species, and we have not compared enough preparations to know if there might be minor interspecific differences in these structures.

Genera currently classified in the Erebinae exhibit a wide array of variation in vesica structure, from simple to complex. On one extreme *Nagia* have a simple bulbous vesica without differentiation into distinct diverticula. Other genera such as *Catocala* (and other Catocalini), *Drasteria* (and other Melipotini), *Spiloloma*, and *Matigramma* have highly complex vesicas, with over ten unilobal to multilobal diverticula radiating outward in many different directions.

Three dimensional imaging systems like Automontage and GT Vision can greatly enhance studies of vesica structure beyond what was possible prior to this technology. Line drawings from a single orientation such as those shown in Franclemont (1986) do not capture much of the detail and complexity of *Matigramma* vesica structure. In *Matigramma* this is not currently a problem for routine identifications, as the vesica is not needed for separation of known species, and furthermore the interspecific differences in the vesica are so extreme that they would be obvious from many different angles. In contrast, differences between particular diverticula viewed from particular angles are the only known genitalic differences between some closely related *Catocala* species (Kons and Borth 2015a,b, 2016, 2017). If one were to investigate the possibility of unrecognized species within *Matigramma*, such as within the current species concept of *emmilta*, the three dimensional structure of the vesica could become more important. Furthermore, the *Matigramma* vesica is a character rich system for studies of comparative morphology.

Kons and Borth (2015a,b) presented a numbering system for homologous vesica diverticula in *Catocala*; this genus has a ground plan of 12 diverticula present in most species, although the shape, orientation, and complexity of the diverticula can vary markedly between species groups. Examination of the *Matigramma* vesica from multiple angles (Figures 7-9) suggests most of these same diverticula are present in *Matigramma*. While the overall shapes and orientations of *Matigramma* diverticula are unlike anything seen in *Catocala*, the relative positions suggest the diverticula labeled 1, 2, 3+4, 5, 6, 7, 8, 10, 12, and 13 on Figures 7-9 are homologous to *Catocala* diverticula assigned these numbers in the Kons and Borth (2015a,b) system. The possible homologies of diverticula 3 + 4 and 5 are more ambiguous between *Matigramma* and *Catocala*; in *Catocala* these diverticula are largely fused together with diverticulum 2 into an anterior to dorsal rosette, whereas they are more widely separated in *Matigramma*. The two *Matigramma* species studied in detail lack any distinct diverticula at the positions where diverticula 10 and 11 may occur in *Catocala*. The diverticulum labeled "X" on the *Matigramma* images does not appear to be homologous to a diverticulum present in *Catocala*.

Acritogramma, Eubolina: We have conducted numerous cladistic analyses of quadrifine noctuid genera with COI 5' sequences, experimenting with different outgroups and different combinations of taxa. Among these analyses all the *Matigramma* species consistently group together in a clade, and the sister clade is consistently *Eubolina+Acritogramma*, as shown in Figure 4. *Eubolina impartialis* is embedded within *Acritogramma*, and is congeneric if this tree topology is correct. However, we have not studied the structural morphology of either *Eubolina* or *Acritogramma*, and cannot corroborate any hypothesis of relationships derived from COI 5' sequences with other, independent evidence. The sister clade to *Matigramma+ Acritogramma+Eubolina* is unstable, varying wildly among different analyses and never with significant support.

Acknowledgments

We thank Charles Bordelon, Richard Brown, Chuck Harp, and Ed Knudson for providing information on habitats and collecting localities investigated during this study. David Wahl and the former American Entomological Institute provided use of a GT Vision imaging system and infrastructural support. We thank the following for providing authorization to collect at restricted locations: David Riskind (Texas State Parks and State Natural Areas), Walter Munsterman and Quinton Smith (Wichita Mountains National Wildlife Refuge), and the Missouri Department of Conservation (Osage Prairie). Paul Hebert's BOLD (Barcode of Life Data Systems) lab at the University of Guelph sequenced COI 5' for our *Toxonprucha* samples. Evgeny Zakharov along with BOLD personnel assisted with management and data collection for our BOLD DNA projects. Genome Canada, the Ontario Genomics Institute, the Ministry for Research and Innovation and the Canadian Foundation of Innovation provided support for the International Barcode of Life project.

[Article continues on next page.]

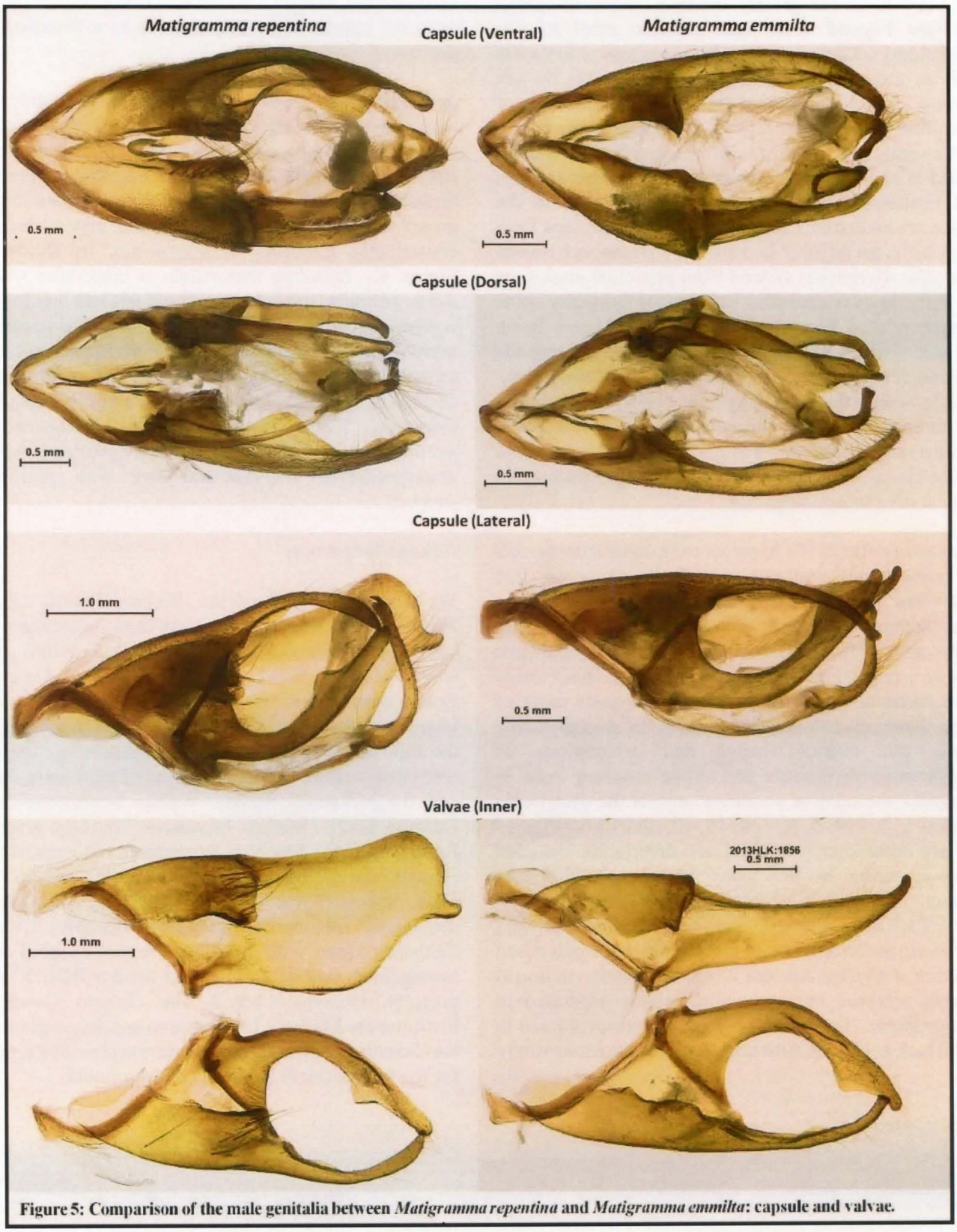

Figure 5: Comparison of the male genitalia between *Matigramma repentina* and *Matigramma emmilta*: capsule and valvae.

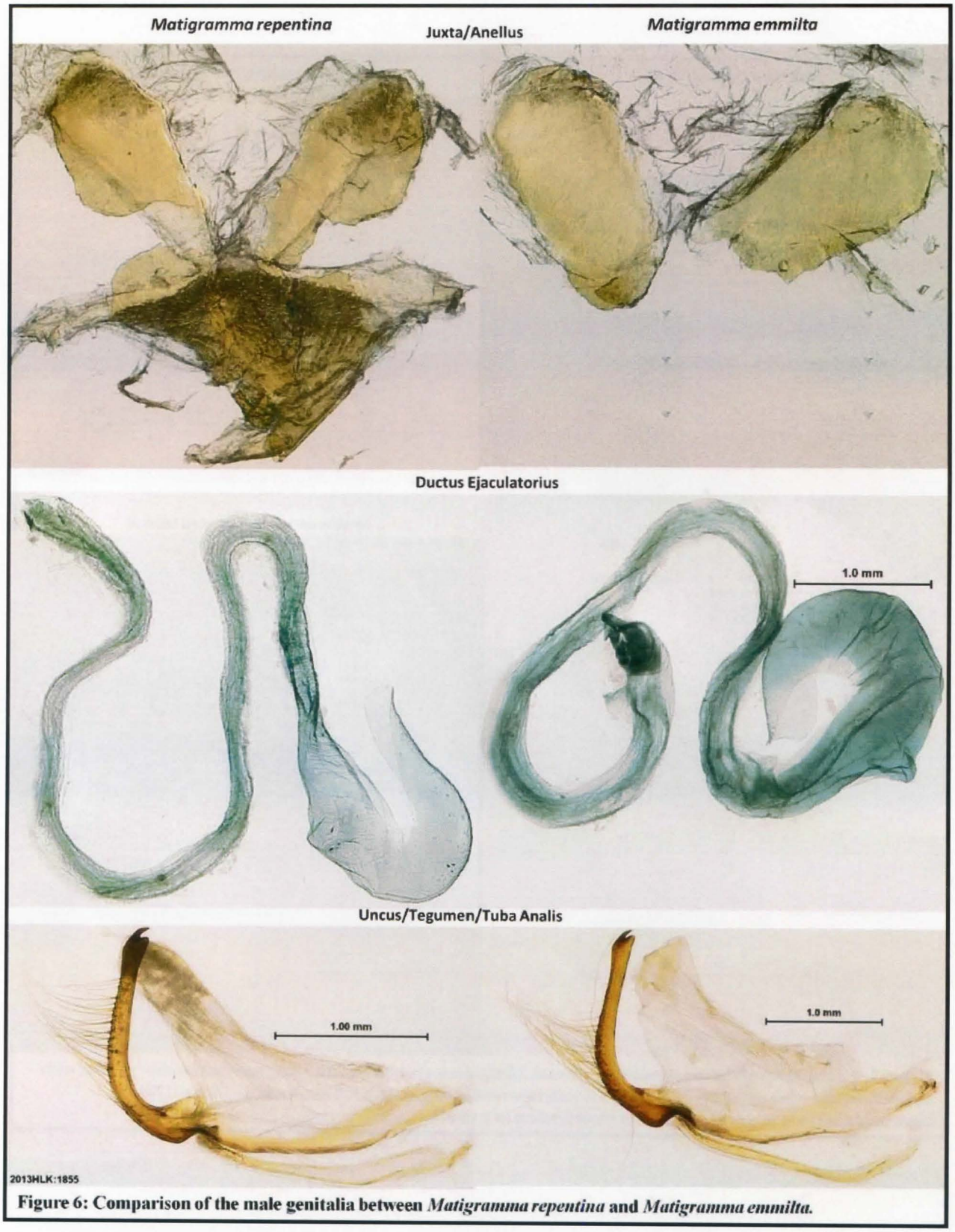

Figure 6: Comparison of the male genitalia between *Matigramma repentina* and *Matigramma emmilta*.

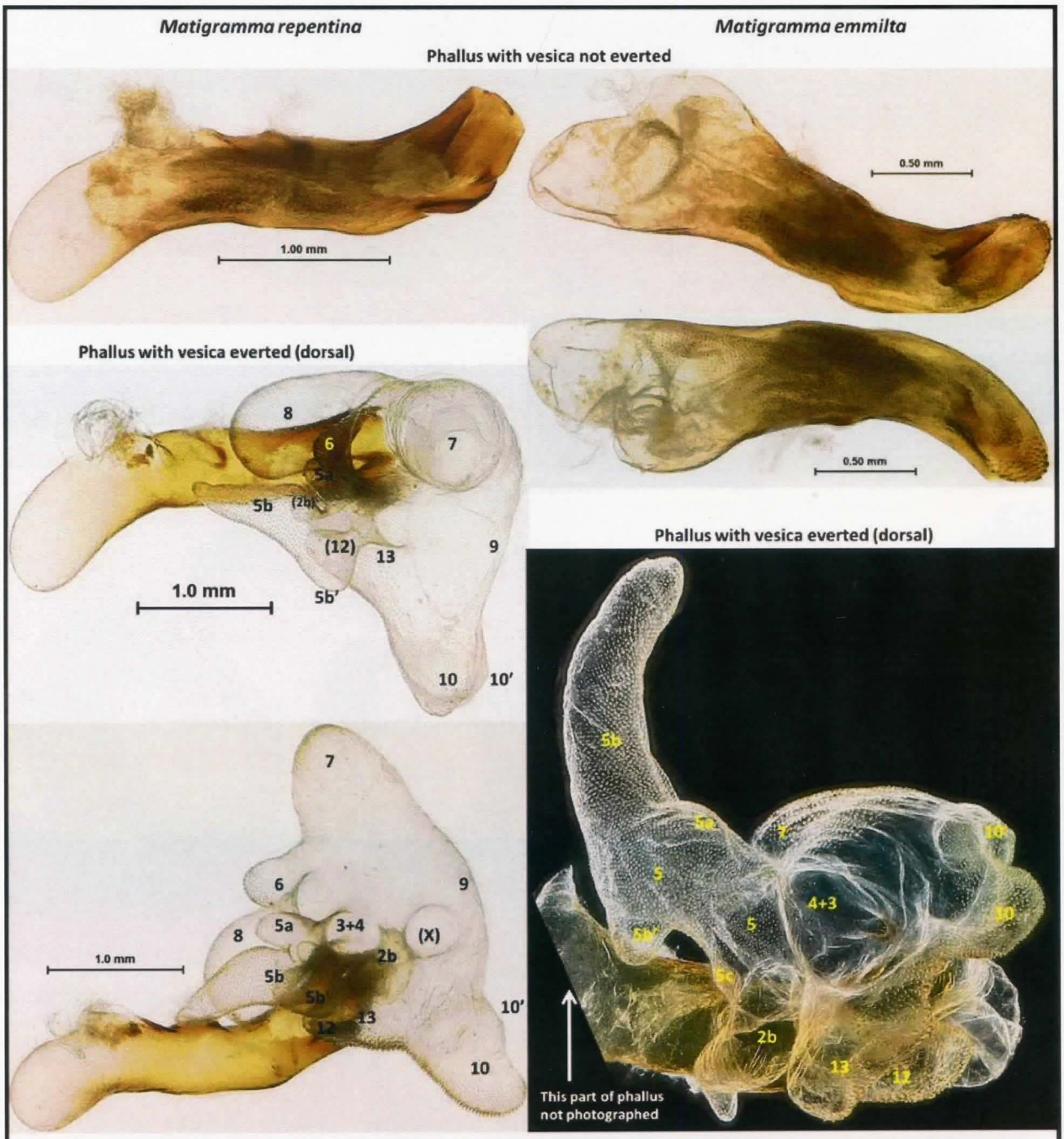

Figure 7: Comparison of the male genitalia between *Matigramma repentina* and *Matigramma emmilta*: phallus with and without the vesica everted. The vesica diverticula numbering system follows Kons and Borth (2015). Diverticula in () are underneath another diverticulum in a photo.

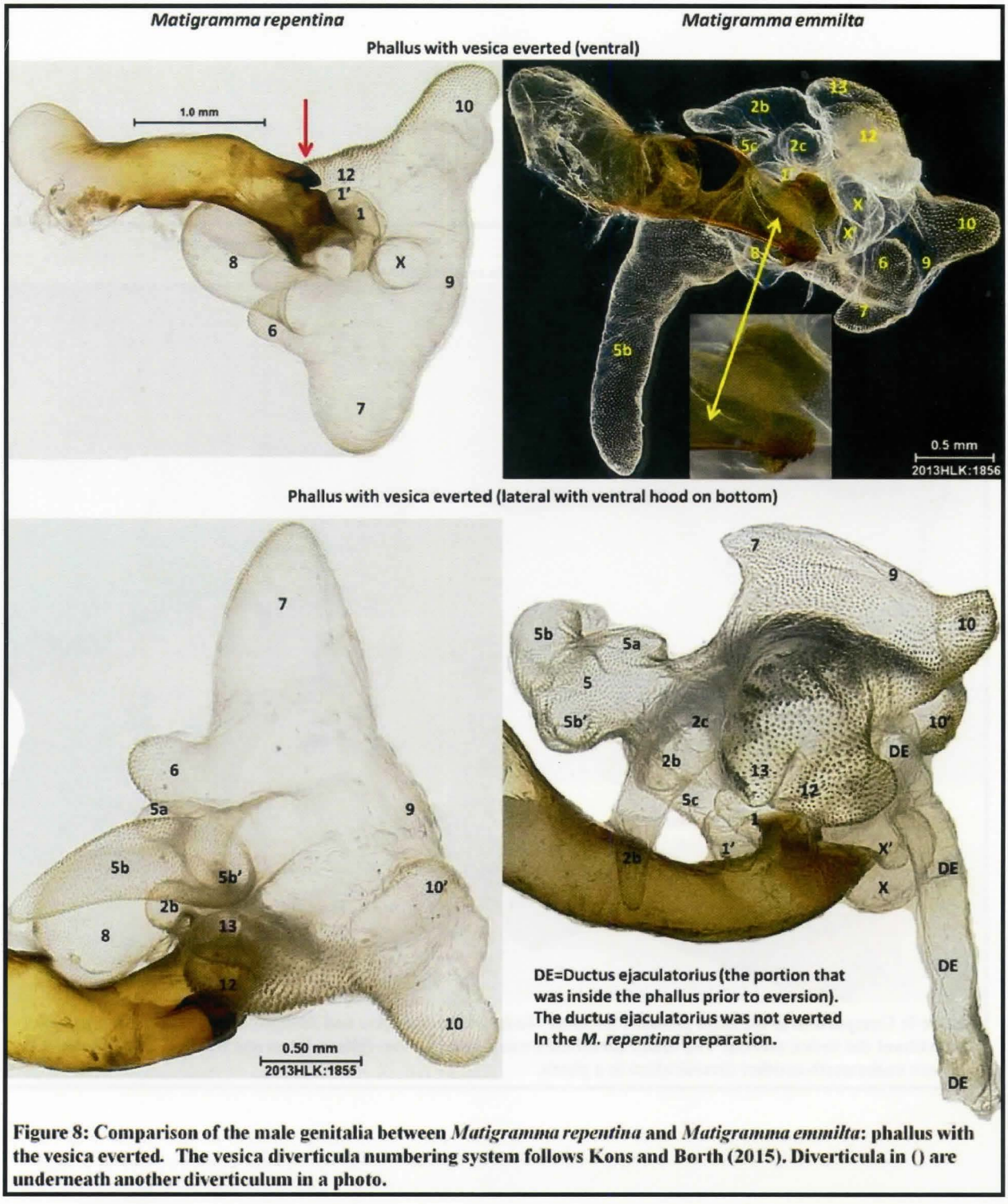

Figure 8: Comparison of the male genitalia between *Matigramma repentina* and *Matigramma emmilta*: phallus with the vesica everted. The vesica diverticula numbering system follows Kons and Borth (2015). Diverticula in () are underneath another diverticulum in a photo.

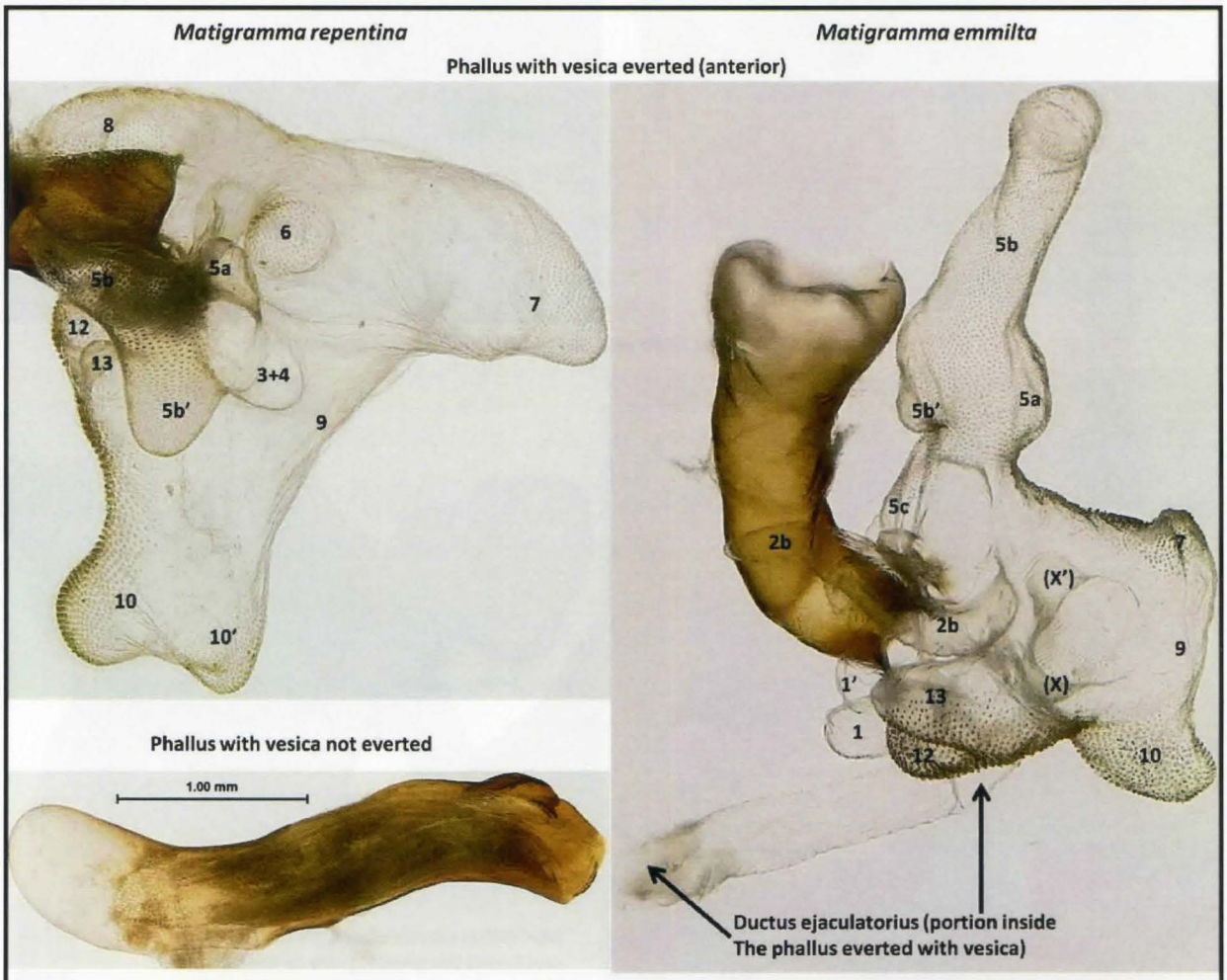

Figure 9: Comparison of the male genitalia between *Matigramma repentina* and *Matigramma emmilta*: phallus with and without the vesica everted. The vesica diverticula numbering system follows Kons and Borth (2015). Diverticula in () are underneath another diverticulum in a photo.

Table 1: Data for DNA sequence vouchers of *Matigramma, Acritogramma,* & *Eubolina* specimens included in Figures 3-4.

Taxon	DNA Code No.	State/[Country]	County	Locality	Lat	Lon	Elev (m)	Date	Collector(s)
Data for sequence vouchers from Kons & Borth DNA Projects in BOLD Systems									
Matigramma emmilta	1173-130603-TX	Texas	El Paso	Franklin Mountains State Park	31.916	-106.5	1518	13-Jun-2003	Kons & Borth
Matigramma emmilta	1335-100603-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.677	-103.795	1354	10 June 2003	Kons & Borth
Matigramma emmilta	1336-100603-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.677	-103.795	1354	10 June 2003	Kons & Borth
Matigramma emmilta	9459-100609-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.679	-103.795	1354	10-Jun-2009	Kons & Borth
Matigramma emmilta	9460-100609-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.677	-103.795	1354	10-Jun-2009	Kons & Borth
Matigramma emmilta	9461-140609-AZ	Arizona	Cochise	Onion Saddle	31.934	-109.263	2286	14-Jun-2009	Kons & Borth
Matigramma inopinata	1337-080603-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.677	-103.795	1354	8 June 2003	Kons & Borth
Matigramma inopinata	1338-090603-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.677	-103.795	1354	9 June 2003	Kons & Borth
Matigramma inopinata	1169-090603-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.677	-103.795	1354	9 June 2003	Kons & Borth
Matigramma obscurior	1172-030603-TX	Texas	Hidalgo	Bensten Rio Grande State Park	26.177	-96.388	30	3 June 2003	Kons & Borth
Matigramma obscurior	1180-300503-TX	Texas	Uvalde	Garner State Park	29.591	-99.738	417	30-May-2003	Kons & Borth
Matigramma obscurior	1342-040603-TX	Texas	Zapata	Falcon State Park	26.606	-99.154	92	4 June 2003	Kons & Borth
Matigramma obscurior	1343-030603-TX	Texas	Hidalgo	Bensten Rio Grande State Park	26.177	-98.388	30	3 June 2003	Kons & Borth
Matigramma obscurior	3627-COI-08	Texas	Cameron	Resaca de la Palma State Park	25.996	-97.569	11	12-May-2008	Kons & Borth
Matigramma obscurior	3628-COI-08	Texas	Cameron	Resaca de la Palma State Park	25.996	-97.569	11	13-May-2008	Kons & Borth
Matigramma obscurior	3630-COI-08	Texas	Cameron	Resaca de la Palma State Park	25.996	-97.569	11	12-May-2008	Kons & Borth
Matigramma obscurior	3631-COI-08	Texas	Cameron	Resaca de la Palma State Park	25.996	-97.569	11	11-May-2008	Kons & Borth
Matigramma pulverilinea	1174-090602-OK	Oklahoma	Comanche	Medicine Park N of Tackle Box Rd.	34.738	-98.487	428	9 June 2002	Kons & Borth
Matigramma pulverilinea	1182-070602-OK	Oklahoma	Comanche	Medicine Park N of Tackle Box Rd.	34.738	-98.487	428	7 June 2002	Kons & Borth
Matigramma pulverilinea	1340-080602-OK	Oklahoma	Comanche	Medicine Park N of Tackle Box Rd.	34.738	-98.487	428	8 June 2002	Kons & Borth
Matigramma pulverilinea	1341-090602-OK	Oklahoma	Comanche	Medicine Park N of Tackle Box Rd.	34.738	-98.487	428	9 June 2002	Kons & Borth
Matigramma repentina	1386-100603-TX	Texas	Jeff Davis	Davis Mountains: Limpia Canyon	30.609	-103.197	1354	10 June 2003	Kons & Borth
Matigramma repentina	9462-140609-AZ	Arizona	Cochise	Onion Saddle	31.933	-109.264	2286	14-Jun-2009	Kons & Borth
Matigramma repentina	9463-140609-AZ	Arizona	Cochise	Onion Saddle	31.933	-109.264	2286	14-Jun-2009	Kons & Borth
Matigramma rubrosuffusa	1161-260504-TX	Texas	Blanco	Perdenales Falls State Park	30.298	-96.26	335	26-May-2004	Kons & Borth
Matigramma rubrosuffusa	9457-050609-OK	Oklahoma	Comanche	Wichita National Wildlife Refuge	34.705	-98.734	454	05-Jun-2009	Kons & Borth
Matigramma rubrosuffusa	9458-240509-TX	Texas	Gonzales	Palmetto State Park overlook	29.594	-97.359	129	24-May-2009	Kons & Borth
Eubolina impartialis	1374-110503-TX	Texas	Uvalde	Garner State Park	29.591	-99.738	417	11 May 2003	Kons & Borth
Eubolina impartialis	1375-040603-TX	Texas	Zapata	Falcon State Park	26.606	-99.154	92	4 June 2003	Kons & Borth
Eubolina impartialis	3556-COI-08	Texas	Cameron	Resaca de la Palma State Park	25.996	-97.569	11	11-May-2008	Kons & Borth
Eubolina impartialis	3557-COI-08	Texas	Cameron	Resaca de la Palma State Park	25.996	-97.569	11	11-May-2008	Kons & Borth
Data for sequence vouchers from BOLD Systems public records									
Matigramma adoceta	CNC13134	Arizona							T. & S. Mustelin
Matigramma adoceta	NOC14932	California	San Bern.	San Bernandino Mountains:Cactus Flats				25 June 2006	T. & S. Mustelin
Matigramma adoceta	NOC14933	Arizona	Pima	Baboquivari Mountains, Brown Can.				18 Aug. 2006	C. D. Ferris
Acritogramma metaleuca	AWC-07231	Arizona	Yuma		32.84	-114.442	50	16-Apr-2010	T Whittier
Acritogramma metaleuca	AWC-08178	Arizona	Yuma	Mittry Lake	32.873	-114.463	50	05-May-2010	T Whittier
Acritogramma metaleuca	AWC-08303	Arizona	Yuma	Mittry Lake	32.873	-114.463	50	14-Jun-2010	T Whittier
Acritogramma noctar	MAL-00765	[Mexico]: Yucatan		Oxkutzcab, Reserva Kiuic	20.101	-89.465		29-Mar-2008	Estela Dominguez
Acritogramma noctar	CNCLEP00083876	[Mexico]: Sinaloa		5 miles North of Mazatlan				30-Jul-1964	W.C.McGuffin
Acritogramma noctar	CNCLEP00083878	[Mexico]: Sinaloa		5 miles North of Mazatlan				30-Jul-1964	W.C.McGuffin
Gnamptonyx innexa	NIBGE MOT-00540	[Pakistan]:Khyber Pakhtunkhwa		Ayubia	33.9167	73.3833	2014	01-Aug-2010	S. Akhtar
Gnamptonyx innexa	USNM ENT 00719783	[Kenya]: Turkana		TBI research station	3.144	35.863	465	18-Aug-2011	SE Miller
Gnamptonyx innexa	USNM ENT 00719791	[Kenya]: Turkana		TBI research station	3.144	35.863	465	18-Aug-2011	SE Miller
Gnamptonyx innexa	NIBGE MOT-01428	[Pakistan]: Punjab		Misrimore	32.067	73.05	228	15-Apr-2012	Q Abbas
Gnamptonyx innexa	NIBGE MOT-01432	[Pakistan]: Punjab		Dilawar	32.067	73.05	227	13-Apr-2012	S Swar
Gnamptonyx innexa	NIBGE MOT-02268	[Pakistan]		Shahdarra Sharif	33.55	74.34	1638	04-Jul-2012	M. Zia
Gnamptonyx innexa	NIBGE MOT-02428	[Pakistan]		Shahdarra Sharif	33.55	74.34	1638	04-Jul-2012	S Swar
Gnamptonyx sp.	NIBGE MOT-00057	[Pakistan]: Punjab		Isalamabad	33.7167	73.05	562	26-Jul-2010	S. Akhtar
Gnamptonyx sp.	NIBGE MOT-00060	[Pakistan]: Punjab		Isalamabad	33.7167	73.05	562	26-Jul-2010	S. Akhtar
Gnamptonyx sp.	NIBGE MOT-02451	[Pakistan]		Shahdarra Sharif	33.2	74.02	1638	04-Jul-2012	Q Abbas

Table 2: Summarization of distributional data for *Matigramma, Acritogramma,* and *Eubolina* specimens examined from Kons/Borth biodiversity surveys

Ecoregion		Chir. Mts.			Trans-Pecos TX				Rio Grande Valley			TX Hill Country							TX Panhand.		Coast	Austral/Sonoran Bd.			Upper Austral			Strays	
State		AZ	AZ	NM	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	TX	OK	OK	OK	MO	MS	IN	FL	WI
County	Locality																													
Matigramma pulverilinea																			X										X(1)	X(1)
Matigramma rubrosuffusa			D		D	D	D	D				D	X	X					D	X		S/D	S						
Matigramma inopinata			D	D	D	D	D	D				D			D														
Matigramma emmilta		S	D	D	D/S	D/S	D/S																						
Matigramma repentina		S/D	D		S	D											X	X											
Matigramma obscurior									S	S	S					X					X	S/D	S						
Eubolina impartialis									S	S	S	X	X	X	S	S	X	X			X	X								

S=Sequence Voucher; D=Male Genitalia Examined; X=All specimens identified by wing pattern.

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Big Bend National Park, Chisos Basin: View from Lost Mine Peak
(credit Michael P. Blanton, Ph.D., December 8, 2018)

JOHAN CHRISTIAN FABRICIUS – A SHORT BIOGRAPHY

BY

J. BARRY LOMBARDINI

Johan Christian Fabricius
1745- 1808 (1)

Johan Christian Fabricius was born in 1745 in Tønder which was in the Duchy of Schleswig [a town currently (January 2014) in the Region of Southern Denmark. Fabricius became the premier zoologist of his time and some historians today maintain that his studies in entomology are more prominent than Carl Linnaeus who was his teacher and mentor. He named 9,776 species of insects while Linnaeus named "*only*" ~3,000. (1)

Fabricius became professor in Copenhagen in 1770 and 5 or 6 years later was appointed professor of natural history and economics at the University of Kiel (in Germany). In 1775 he published his first major work *Systema entomologiae* followed by 9 other books on entomology published during the next 32 years. (1)

Fabricius "*...believed that man originated from the great apes and that new species could be formed by the hybridization of existing species.*"(2) He also modified the classification of insects. He noted that mouthparts of the insects discriminated the orders (3) and thus *"those whose nourishment and biology are the same, must then belong to the same genus"* (4)

Many of the genus names that Fabricius proposed are not currently used today: for instance he used Eleuherata as the name of the order for the beetles rather than the present name Coleoptera, and Piezata for the Hymenoptera (sawflies, wasps, bees, and ants). (1)

Fabricius also envisioned that the male genitalia of the insects would in the future be used to define "*systematics*" (the branch of biology that deals with classification and nomenclature; taxonomy).(4)

His major works on systematic entomology were the following:(3)

Systema entomologiæ (1775)
Genera insectorum (1776)
Species insectorum (1781).
Mantissa insectorum (1787)
Entomologia systematica emendata et aucta (1792–1799)
Systema eleuthatorum (1801)
Systema rhyngotorum (1803)
Systema piezatorum (1804)
Systema antliatorum (1805)
Systema glossatorum (1807)

Sources

1) https://en.wikipedia.org/wiki/Tønder
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3) S. L. Tuxen (1967). "The entomologist J. C. Fabricius". *Annual Review of Entomology*. 12: 1–15.[doi:10.1146/annurev.en.12.01 0167.000245.]
4) David A. Grimaldi & Michael S. Engel (2005). "Diversity and Evolution". *Evolution of the insects*. Volume 1 of Cambridge Evolution Series. Cambridge University Press. pp. 1–41. ISBN 978-0-521-82149-0.

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PHOTOGRAPHING BUTTERFLIES IN SOUTHERN ARIZONA

BY

BRYAN REYNOLDS

I've been taking photographs of small critters since the early 80's. I got serious about my photography in the mid-90's when I switched to shooting slide film and began getting my images published in popular literature. In the early 2000's I really started to focus in on butterflies. And today, all of my photography expeditions are now planned around what butterflies are flying in a particular area. My photography has now taken me to many wonderful places. Before my focus on butterflies, I had been to southern Arizona twice (1996 and 1997), but I never photographed a single butterfly on those excursions. Recently, I had been getting a yearning to head back and really work the butterflies. Scouring through field guides, I knew I could find and photograph many lifers. So, in mid-2017, I started researching the best times to visit and get the most species possible during a single week of time. One of the biggest factors to consider in Arizona, is the timing of the annual monsoons and after consulting with several colleagues, I decided to take my trip from 26 July through 5 August 2018 (including travel days there and back).

My home base was in Green Valley, and this was a perfect spot to head out for day-trips. I worked several areas, but eventually, ended up spending a lot of time in Box Canyon. This was for a couple reasons, first it was very close to where I was staying, and second, each time I was there, I always found new species to photograph.

Overall, I had a spectacular trip to south Arizona, but I barely scratched the surface for the amount of butterfly species the area has to offer. All total, I got 38 of them with 17 of those being lifers. Below is a running list of all of the species in the order I photographed them (once listed, I don't annotate the same species again). Even though I spotted many more than 38 species, my list only includes those I was able to get on film. Others I passed up on purpose (such as Painted Ladies), or couldn't/didn't get a shot of (i.e. Gold-costa Skipper).

Day 1, 28 July - Santa Rita Experimental Range and Wildlife Area and then Madera Canyon

1. Tiny Checkerspot, *Dymasia dymas* – lifer 1
2. Pacuvius Duskywing, *Erynnis pacuvius* – lifer 2
3. Northern Cloudywing, *Thorybes pylades*
4. Two-tailed Swallowtail, *Papilio multicaudata*
5. Elada Checkerspot, *Texola elada*
6. Ceraunus Blue, *Hemiargus ceraunus*
7. Western Pygmy-Blue, *Brephidium exilis*

Day 2, 29 July – areas near/in Mount Graham

8. Bronze Roadside-Skipper, *Amblyscirtes aenus*
9. Western Branded Skipper, *Hesperia colorado* – lifer 3

Day 3, 30 July - Box Canyon

10. Empress Leilia, *Asterocampa leilia*
11. Nysa Roadside-Skipper, *Amblyscirtes nysa*
12. Common Sootywing, *Pholisora catullus*
13. Golden-headed Scallopwing, *Staphylus ceos* – lifer 4
14. Arizona Skipper, *Codatractus arizonensis* – lifer 5
15. Bordered Patch, *Chlosyne lacinia*
16. Common Streaky-Skipper, *Celotes nessus* – lifer 6
17. Orange Skipperling, *Copaeodes aurantiaca*
18. Many-spotted Skipperling, *Piruna aea* – lifer 7
19. Arizona Powdered Skipper, *Systasea zampa* – lifer 8
20. Palmer's Metalmark, *Apodemia palmeri* – lifer 9
21. Acacia Skipper, *Cogia hippalus* – lifer 10
22. Desert Checkered-Skipper, *Pyrgus philetas* – lifer 11

Day 4, 31 July – areas along Ruby road

23. Sonoran Metalmark, *Apodemia mejicanus* – lifer 12

Day 5, 1 August - Box Canyon, Patagonia (post office and public garden), and Harshaw Creek

24. Leda Ministreak, *Ministrymon leda* – lifer 13
25. Zela Metalmark, *Emesis zela* – lifer 14
26. Elissa Roadside-Skipper, *Amblyscirtes elissa* – lifer 15
27. Texan Crescent, *Anthanassa texana*
28. Fiery Skipper, *Hylephila phyleus*
29. Cabbage White, *Pieris rapae*
30. Eufala Skipper, *Lerodea eufala*

Day 6, 2 August - Box Canyon

31. Desert Cloudywing, *Achalarus casica* – lifer 16
32. Fatal Metalmark, *Calephelis nemesis*

Day 7, 3 August - Box Canyon

33. Marine Blue, *Leptotes marina*
34. American Snout, *Libytheana carinenta*
35. Dainty Sulphur, *Nathalis iole*
36. Slaty Roadside-Skipper, *Amblyscirtes nereus* – lifer 17
37. Pahaska Skipper, *Hesperia pahaska*
38. Theona Checkerspot, *Chlosyne theona*

Of course, there were a few species I was hoping to get that I either didn't see, or missed the photos. I think most of these are common enough in the area and I should easily get them on subsequent trips. These include Arizona Hairstreak, Arizona Metalmark, Ares Metalmark, Dull Firetip (I was a few days early), Gold-costa Skipper (had two in my sights), Drusius Cloudywing, Valeriana Skipper, Erichson's White-Skipper, Snow's Skipper, Moon-marked Skipper, and several of the roadside skippers.

I had a great time photographing butterflies in southern Arizona and I'm excited and already planning my next visit to this butterfly-rich area.

Pacuvius Duskywing, *Erynnis pacuvius*, Madera Canyon, Pima County, Coronado National Forest, Arizona, 28 July 2018

Northern Cloudywing, *Thorybes pylades*, male, Madera Canyon, Pima County, Coronado National Forest, Arizona, 28 July 2018

Two-tailed Swallowtail, *Papilio multicaudata*, Madera Canyon, Pima County, Coronado National Forest, Arizona, 28 July 2018

Western Pygmy-Blue, *Brephidium exilis*, female, Green Valley, Pima County, Arizona, 28 July 2018

Western Branded Skipper, *Hesperia colorado*, male on verbena, *Glandularia* sp., Mount Graham, Coronado National Forest, Graham County, Arizona, 29 July 2018

Western Branded Skipper, *Hesperia colorado*, male on verbena, *Glandularia* sp., Mount Graham, Coronado National Forest, Graham County, Arizona, 29 July 2018

Empress Leilia, *Asterocampa leilia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Nysa Roadside-Skipper, *Amblyscirtes nysa*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Golden-headed Scallopwing, *Staphylus ceos*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Tiny Checkerspot, *Dymasia dymas*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Elada Checkerspot, *Texola elada*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Bordered Patch, *Chlosyne lacinia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Common Streaky-Skipper, *Celotes nessus*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Elada Checkerspot, *Texola elada*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Many-spotted Skipperling, *Piruna aea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Arizona Powdered Skipper, *Systasea zampa*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Golden-headed Scallopwing, *Staphylus ceos*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

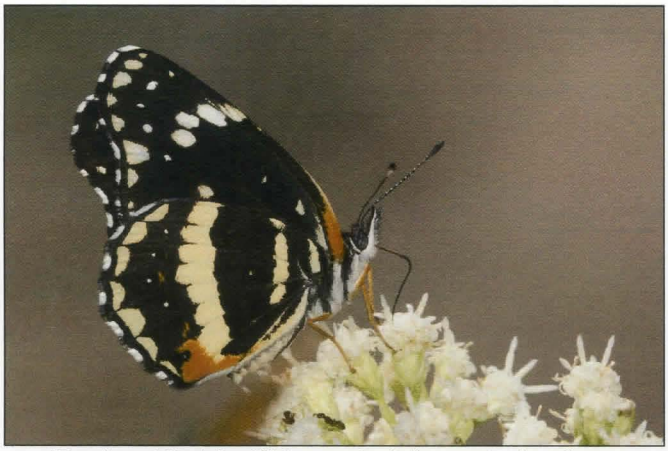
Orange Skipperling, *Copaeodes aurantiaca*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Palmer's Metalmark, *Apodemia palmeri*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Tiny Checkerspots, *Dymasia dymas*, and Elada Checkerspots, *Texola elada*, clusterd on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Elada Checkerspots, *Texola elada*, male attempting to mate with female on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Desert Checkered-Skipper, *Pyrgus philetas*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018



Bordered Patch, *Chlosyne lacinia*, nectaring from Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 30 July 2018

Acacia Skipper, *Cogia hippalus*, Ruby Road, Santa Cruz County, Arizona, 31 July 2018

Arizona Skipper, *Codatractus arizonensis*, Ruby Road, Santa Cruz County, Arizona, 31 July 2018

Bronze Roadside-Skipper, *Amblyscirtes aenus*, Ruby Road, Santa Cruz County, Arizona, 31 July 2018

Bronze Roadside-Skipper, *Amblyscirtes aenus*, Ruby Road, Santa Cruz County, Arizona, 31 July 2018

Acacia Skipper, *Cogia hippalus*, nectaring on San Felipe Dogweed, *Adenophyllum porophylloides*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Arizona Skipper, *Codatractus arizonensis*, nectaring on San Felipe Dogweed, *Adenophyllum porophylloides*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Acacia Skipper, *Cogia hippalus*, nectaring on San Felipe Dogweed, *Adenophyllum porophylloides*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Golden-headed Scallopwings, *Staphylus ceos*, mud-puddling, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Many-spotted Skipperling, *Piruna aea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Golden-headed Scallopwings, *Staphylus ceos*, mud-puddling, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Sonoran Metalmark, *Apodemia mejicanus*, nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Zela Metalmark, *Emesis zela*, male nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Texan Crescent, *Anthanassa texana*, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Bordered Patches, *Chlosyne lacinia*, mud-puddling, Box Canyon, Pima County, Coronado National Forest, Arizona, 1 August 2018

Desert Cloudywing, *Achalarus casica*, nectaring on Scarlet Spiderling, *Boerhavia coccinea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Desert Cloudywing, *Achalarus casica*, nectaring on Scarlet Spiderling, *Boerhavia coccinea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Empress Leilia, *Asterocampa leilia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Leda Ministreak, *Ministrymon leda*, nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Zela Metalmark, *Emesis zela*, female nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Elissa Roadside-Skipper, *Amblyscirtes elissa*, nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

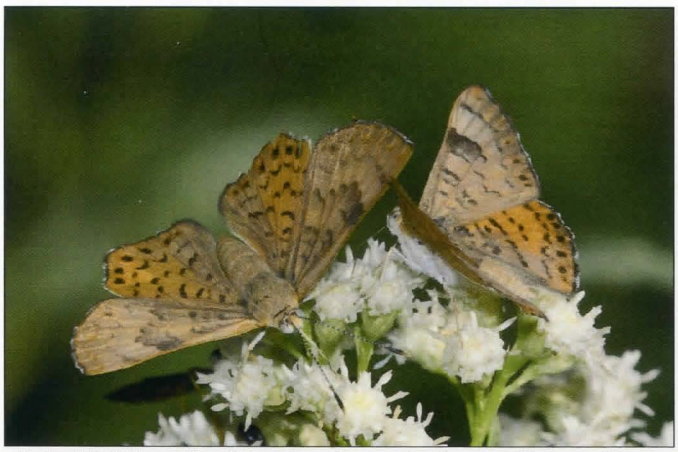
Golden-headed Scallopwings, *Staphylus ceos*, mud-puddling, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Golden-headed Scallopwing, *Staphylus ceos*, and Common Sootywing, *Pholisora catullus*, mud-puddling, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Arizona Skipper, *Codatractus arizonensis*, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Fatal Metalmark, *Calephelis nemesis*, male nectaring on Seep-willow, Baccharis salicifolia, Box Canyon, Pima County, Coronado National Forest, Arizona, 2 August 2018

Arizona Powdered Skipper, *Systasea zampa*, nectaring on San Felipe Dogweed, *Adenophyllum porophylloides*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018



Zela Metalmarks, *Emesis zela*, nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

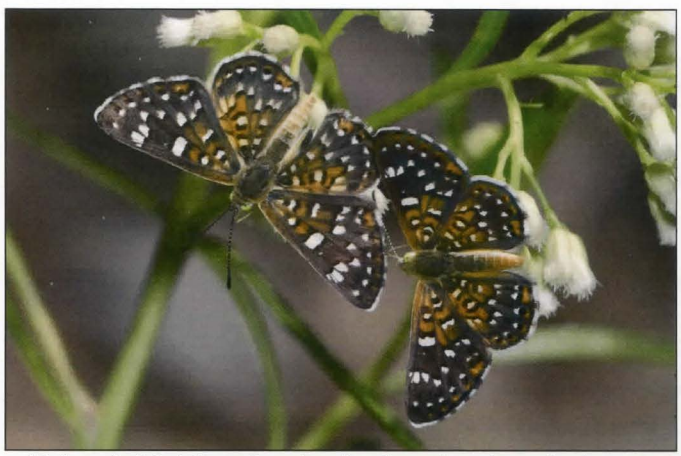
Marine Blues, *Leptotes marina*, nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Arizona Skipper, *Codatractus arizonensis*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Golden-headed Scallopwings, *Staphylus ceos*, mating, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Fatal Metalmark, *Calephelis nemesis*, male nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Fatal Metalmark, *Calephelis nemesis*, male nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

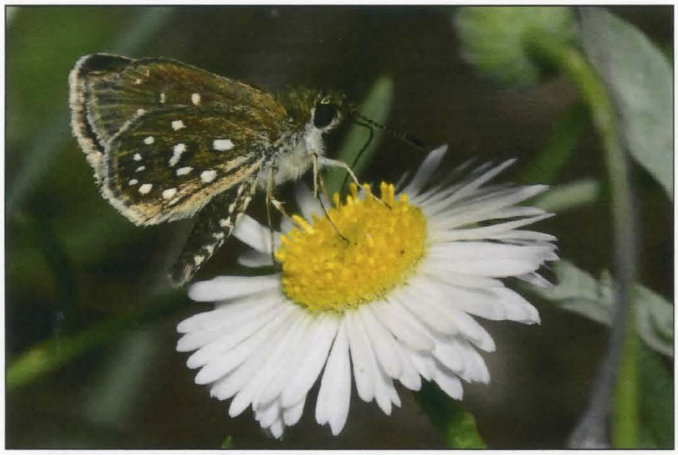


Palmer's Metalmarks, *Apodemia palmeri*, nectaring on Seep-willow, *Baccharis salicifolia*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Pahaska Skipper, *Hesperia pahaska*, female nectaring on Sweetbush, *Bebbia juncea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Pahaska Skipper, *Hesperia pahaska*, female nectaring on Sweetbush, *Bebbia juncea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Northern Cloudywing, *Thorybes pylades*, female nectaring on Sweetbush, *Bebbia juncea*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018



Many-spotted Skipperling, *Piruna aea*, nectaring on Fleabane, *Erigeron* sp., Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

Theona Checkerspot, *Chlosyne theona*, Box Canyon, Pima County, Coronado National Forest, Arizona, 3 August 2018

(Bryan Reynolds, E-mail: nature_photo_man@hotmail.com; all photographs are copyrighted by B. Reynolds)

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RETURNING TO PANAMA, NEW FRONTIERS AND OLD FRIENDS

BY

F. MATTHEW BLAINE

After retirement we began a series of exciting explorations and experiences. Some were planned and some were serendipity. The first big one was sailing down the east coast of the United States with first mate Dona in our 30' sailboat GRACE. We left The Chesapeake Bay, which we had extensively explored over the years, and headed south along the coast toward Florida. We sailed around the tip of Florida then up the west coast, across the Okeechobee, and back up north for home. Taking our time and stopping along the way we used our 10 foot rubber dinghy to go ashore. We carried packs on our backs to bring food, beverage, and ice back to GRACE. The trip lasted exactly 8 months but that is another story.

Originally I had planned and prepared to collect insects along the way, but I soon discovered that you cannot dry insects on a sailboat. It is just too humid when you are floating in water. As a result of that revelation I decided to collect shells which were abundant and all around us. This desire to collect shells and learn about them continued to build as we traveled. When we anchored at Melbourne, Florida for a few days we found that there was a shell show put on by the Astronaut Trail Shell Club where we met interesting people and made contacts for future travel and exploration.

One eventual result was a trip to the remote Las Perlas Islands, Panama to collect shells. Our guide was a shell dealer, collector, and trip organizer named James Ernest. James was also a Science teacher and his wife Gladas a Home Economics teacher. We took more trips with James to collect shells in and around Panama. On all of these trips we stayed with James in his home before we left for the distant expedition destinations to collect. While in Panama City, he took us sight-seeing which included going to museums, historic buildings, and Cathedrals before and after the collecting portion of each trip. Back then, I had mentioned to him that my real passion was Lepidoptera and he indicated that he too was interested in butterflies.

A few years ago we decided that we wanted to take one more trip to Panama but this time not for shells but just to do more sightseeing and visit the new museums. We contacted James and explained what we wanted to do and asked him if he would set it up. I mentioned to him that I would be interested in visiting any butterfly farms, if he knew of any, while we were there. He said that he would definitely set up the trip for us. We would stay at his house as a base and take daily trips from there. He encouraged me to stay at least a full week or longer as there was much to do and see. We left it at that.

I happened to mention our upcoming Panama trip to Charles Covell and he suggested that I contact Albert Thruman who took many Lepidoptera collecting trips to Panama. As a result I was fortunate enough to get my name added to a collecting permit for Panama. I decided to take one net and some glassine envelopes just in case I might see a butterfly there.

On January 17, 2015, we left Miami and headed to Panama where James would be waiting for us at the airport. After clearing customs we found him outside with his son Jimmy. They helped us with our bags and drove us to James's house. He showed us our room where we would sleep and we dropped off our bags. James drove us around The Old City in heavy traffic to see some places to explore later. We had dinner at a local restaurant that was owned by one of his old students. We had eaten there on a previous trip and liked it very much. It was packed with locals as usual. I had their Corvina once again which was roasted with peppers, tomato, olives, and garlic. It was delicious!

The next morning we started our first full day in the city. There were many huge new buildings that filled and transformed the skyline (Figs. 1-3). We discovered that the brand new museum had finally opened and the "Old City" had been renewed. Old dilapidated buildings had been recently cleaned, renovated, and restored. All around us were signs of prosperity and enormous growth (Figs. 4-7).

James told us that he could not locate a butterfly farm for us to see. The one that he knew of had closed, but that he had set up a couple collecting trips for us instead. So on day two we went on our first butterfly collecting trip. It was a long drive from Panama City which is on the Pacific coast to our destination that day which is on the Atlantic coast in the province of Colón La Guavia. We went to a cattle farm owned by El Gordo who is a friend of James. There we would attempt to catch Morpho butterflies which were often seen flying through the property. El Gordo's house is below the pasture land directly on the water (Figs. 8-9). When leaving his home we walked through a gate in the fence and up very steep hilly pasture. We had to dodge his cattle which roamed free. They had the right of way.

From time to time a Morpho butterfly would amble up the stream slowly wafting along. I would try to move to

Fig. 1. New construction all around the city

Fig. 2. Huge buildings on the waterfront

Fig. 3. Driving along Balboa Avenue, Panama City

Fig. 4. Interesting architecture

Fig. 5. All new construction everywhere

Fig. 6. Historic Cathedral with gold altar opened in 1796 in Old Panama

Fig. 7. Panama Canal Museum which displays the historic record of the canal

Fig. 8. The author ready to catch his first Morpho

Fig. 9. El Gordo with his sons on their hilltop pasture

Fig. 10. Our delicious lunch prepared and served under the trees by El Gordo's wife

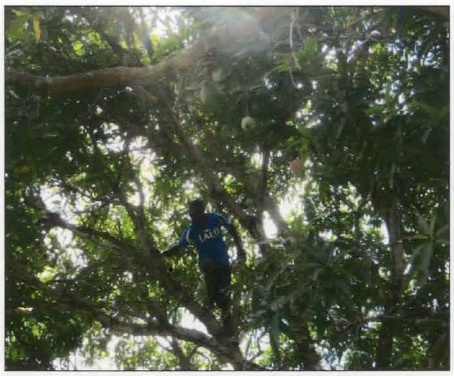


Fig. 11. El Gordo picking some ripe Mangoes for a snack

Fig. 12. Part of the pasture where we collected

a place where I thought it would go then wait with my net in hand with eager anticipation. I had never attempted to net Morphos, only dreamed of it. On my first attempt, I came within a half an inch of catching one but after that they were always farther away. In my limited experience, once you swing a net at a Morpho butterfly it immediately climbs in altitude to about 15 feet and moves quickly away from you laughing the whole time. El Gordo and his children found my attempts to be very humorous as well, so I let El Gordo have a chance to try his hand with a net. He was 100% unsuccessful too.

El Gordo's wife prepared us a delicious lunch of shrimp, rice, and beans with coconut, tomato, cucumber, oregano, and olives. Absolutely delicious! I never caught Morphos but after lunch El Gordo asked if he could borrow the net. He and his wife went back up the hill to try again. They came back about a half an hour later, he was hanging his head and she was giggling. After many attempts still no Morphos caught. We did collect some Satyrs in wooded areas and saw several Monarchs (Figs. 10-12). We had a wonderful time collecting there and were invited back for future attempts at catching the elusive Morphos.

For our third day James had set up another collecting trip. This one was at his wife's brother's property which is located in Santa Rita (La Chorrera) Panama, Camarillo. I gave Gladys the net and she caught a few small yellow butterflies (Fig. 13). Her brother wanted to try so I also gave him the net. He darted off across the field and immediately caught a few butterflies. Suddenly he saw a fast flyer and began running like a gazelle through the bushes. That one got away but he continued until he was successful. They all seemed to enjoy catching the butterflies and they brought them to me for inspection and collection. It was a very pleasant and rewarding experience (Figs. 14-15). After collecting Gladys made us a delicious lunch which we ate in the dining area of the home that she was brought up in.

Day four was a sightseeing day. We drove to Old City Panama. We visited the famous Fish Market where we tried fresh Ceviche (Figs. 16-19). Next we went to Museo de Panama Viejo, Avenida Cincuentenario, Panama City, Panama which is an archaeological site that you can walk through (Fig. 20). Next we visited the newly completed Biomuseo. The building was designed by Frank Gehry and is an outstanding piece of art. The museum is interactive dedicated to the evolution of biodiversity (Fig. 21).

For our final day of collecting, James had set up a trip on the Panama Santa Rita Road to Caimitillo. Our eventual destination would be property owned by Xiomara (Figs. 22-24) who was one of James's former students. Xiomara owns a piece of property in the mountains which is a wooded area. She has a collection of orchids that she has brought from other places to create an orchid sanctuary. On the way we went up in the mountains above 1000 feet. From the mountain top you can look down to Panama City. It was very windy on the mountain top with no butterflies in sight (Figs. 25-26). Next we stopped on the road going to Xiomara's Orchid Reserve which borders on a National Park, then went to Xiomara's property to collect. On the way back we collected again along the road which turned out to be very rewarding. The road where we collected was on a hill side and trails came up the hill through woods and crossed the road. Butterflies flew up the trails and crossed the road where some were nectaring. I managed to collect a few at the top of the trail (Fig. 27). I also was able to catch some nectaring but when disturbed they continued their uphill flight over a chain link fence into private property.

Fig. 13. Gladys proudly showing me her first butterfly

Fig. 14. Gladys' brother showing me his catch

Fig. 15. Two locals watching the action

Fig. 16. Fish lattice iron gates to the famous Fish Market

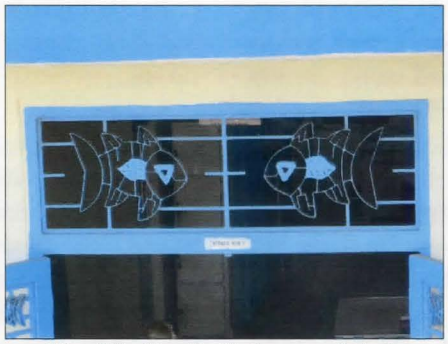


Fig. 17. North Entrance detail of the iron sculpture lattice

Fig. 18. Fantastic "twisted" skyscraper

Fig. 19. Behind the Fish Market at low tide

Fig. 20. New Bio Museum with fantastic architecture

Fig. 21. One huge display of ancient life in Panama inside the museum

Fig. 22. Exotic Xiomara in her private orchid sanctuary

Fig. 23. Habitat in her orchid sanctuary

Fig. 24. Xiomara relocated Panamanian orchids which were endangered by loss of habitat

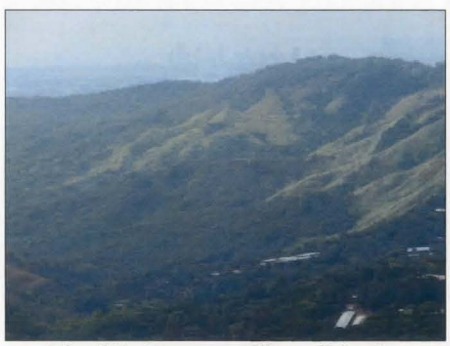


Fig. 25. Panama City off in the distance at top of photograph

Fig. 26. Dona, Xiomara, and James nearly blown off of the mountain top

Fig. 27. The road back

These are some of the butterflies that we caught while on our trip (Figs. 28-34).

This was the last day of collecting but we did take a trip to see the new Panama Canal but that is another story. All in all it was a wonderful adventure that included both collecting and sightseeing. James told me that he is eager to set up more lepidoptera trips in the future. When I returned to the US I ordered some student butterfly nets and glassine envelopes from BioQuip and had them sent to James. I hope that they eventually make it to El Gordo so that his children can practice collecting Morphos on their hill overlooking the Atlantic.

Fig. 28. ***Astraptes fulgerator***

Fig. 29. ***Hamadryas feronia***

Fig. 30. ***Appias drusilla***

Fig. 31. ***Eurema elathea***

Fig. 32. ***Astraptes fulgerator***

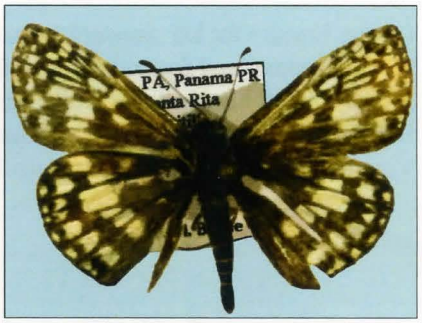


Fig. 33. ***Pyrgus oileus***

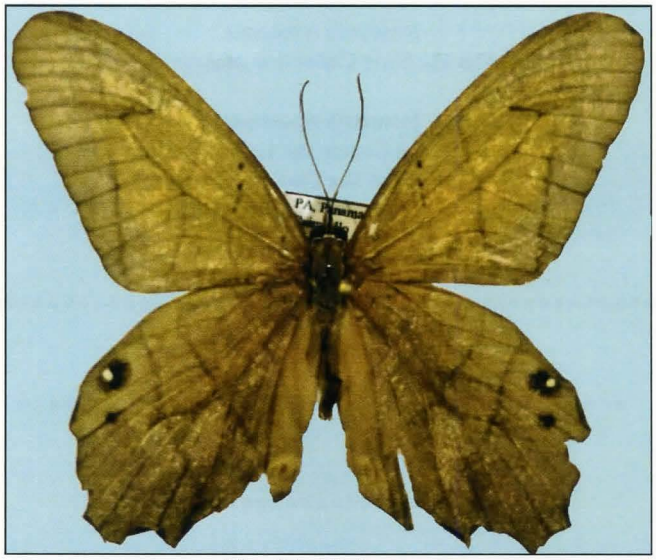
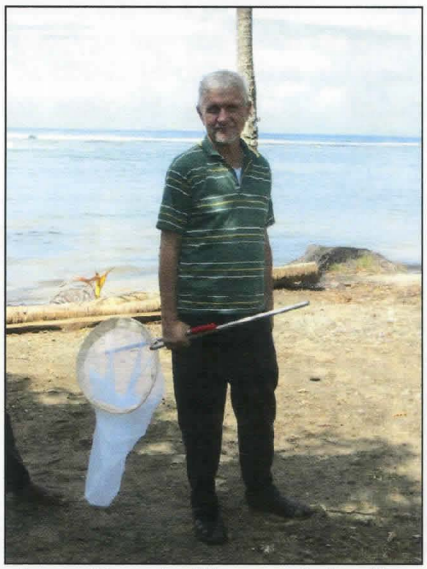


Fig. 34. Unknown

Credits:

Charlie Covell - for opening doors and great advice
Albert Thruman - for getting me on a collecting permit and for great advice
El Gordo - for allowing us to collect on his farm
El Gordo's wife - for preparing a beautiful and delicious lunch for us

Xiomara - for allowing us to visit and collect on her orchid reserve
James Ernest - for setting up a wonderful trip and for allowing us into their home



James Ernest with my net standing in El Gordo's front yard

Gladys Ernest - for her wonderful meals, hospitality, and taking us to visit her brother's farm
Gladys' brother and family - for allowing us to visit their farm and their friendly hospitality
Jimmy Ernest - for checking on the permit and his help
Dona Blaine - for 51 + years of companionship, for proof reading, and suggestions.
Vernon A. Brou Jr - for image manipulation assistance

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The McGuire Center for Lepidoptera and Biodiversity at the Florida Museum of Natural History, University of Florida

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DRASTERIA GRANDIRENA (HAWORTH, 1809) (LEPIDOPTERA: NOCTUIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR.

Fig. 1. ***Drasteria grandirena*** phenotypes: a-d. males. e-h. females.

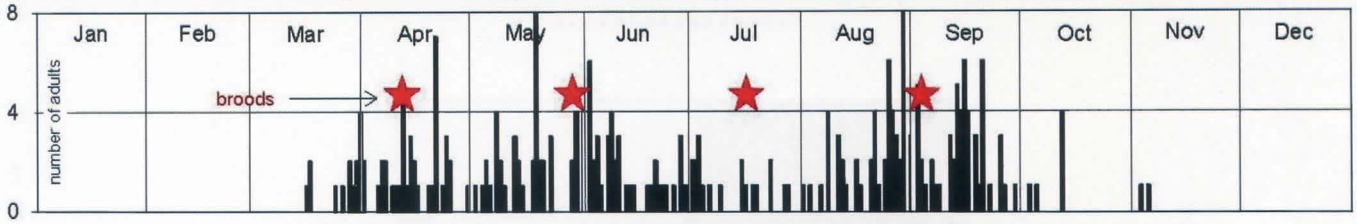

Fig. 2. Adult ***D. grandirena*** captured at sec.24T6SR12E, 4.2 mi NE of Abita Springs, Louisiana. n = 275

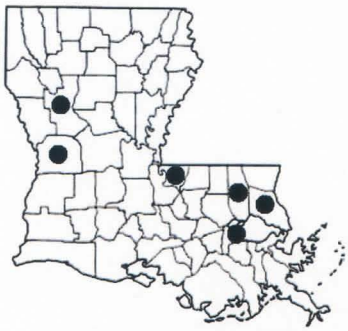

Fig. 3. Parish records for ***Drasteria grandirena***.

The noctuidae moth ***Drasteria grandirena*** (Haworth) (Fig. 1) is a commonly encountered species in Louisiana. L. von Reizenstein (1863) listed ***Drasteria graphica*** Hübner for the New Orleans area. Doubtfully, ***graphica*** was that species, as none have ever been documented among the hundreds of billions of moths I have taken over the past 60 years in Louisiana. Most probably this species was actually ***grandirena***. Forbes (1954) stated ***grandirena*** occurs from Nova Scotia and Quebec to Florida, west to Wisconsin and Alabama, sometimes common...., (flying) in the months June and July northward, April and May, August and October in the south. Chapin and Callahan (1967) did not record this species from the Baton Rouge area. Rockburne and Lafontaine (1976) stated (adults) were documented in June and July in Ontario and Quebec. Covell (1984) stated ***grandirena's*** range includes Nova Scotia to Florida, west to Wisconsin and Texas in the months May through August, active day and night. Heitzman & Heitzman (1987) did not cover this species. Heppner (2003) stated the same range and flight period provided by Covell, but added the month of March (for adults).

Powell and Opler (2009) stated 23 of the 26 North American species of ***Drasteria*** occur in the west. These authors did not cover ***grandirena***. All past authors mentioning larval foodplants state it to be 'witch-hazel' ***Hamamelis*** species.

Phenology dates of captured of adults indicates at least 4 annual broods, the initial brood peaking second week of April, with subsequent broods peaking at 48-day intervals (Fig. 2).

The confirmed parish records are illustrated in Fig. 3.

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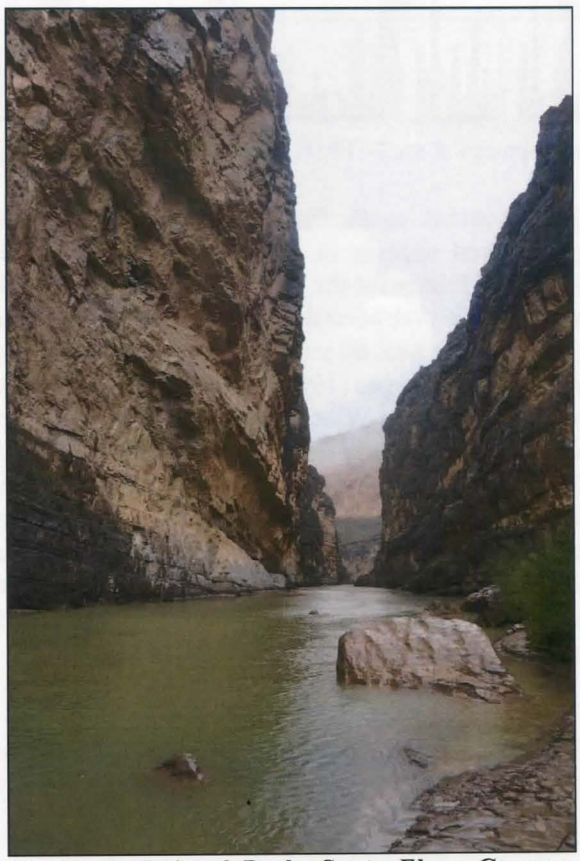


Big Bend National Park, Santa Elena Canyon: View of Rio Grande River (credit Michael P. Blanton, Ph.D., December 7, 2018)

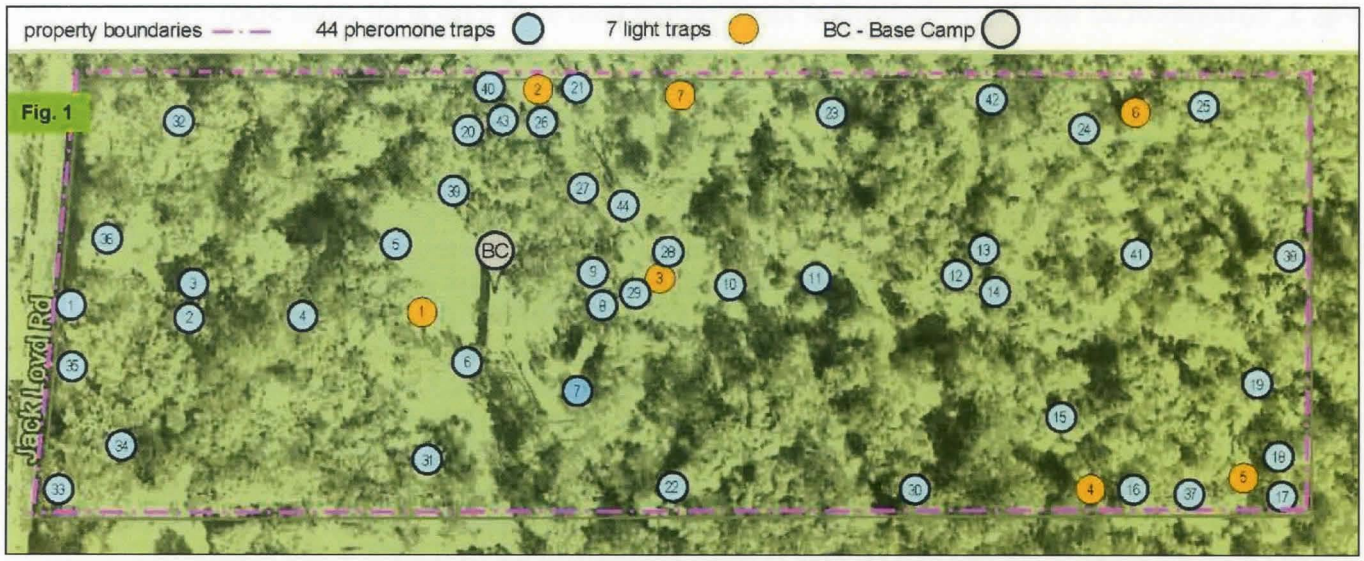
TRAP PLACEMENT AT THE ABITA SPRINGS STUDY SITE IN 2018 - A PICTORIAL

sec.24,T6S,R12E, 4.2 mi. NE of Abita Springs, Louisiana USA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE D. BROU

The Abita Springs entomological study site (Fig.1) consists of 10.0 acres located at 74320 Jack Loyd Road, Abita Springs, St. Tammany Parish, Louisiana, 70420, and is also the home of the authors (black dot on map). This location has undergone extensive surveillance of the populations of many insect orders, using several hundreds of self designed insect traps of many types and purposes. Traps operated continuously at this site for the past 36 years, year-round 365-366 days and nights, 24 hours every day, regardless of weather conditions or temperatures, and also at numerous other locations in the state since 1969. This location is recognized worldwide by amateur and professional entomologists to be the most intensely studied area in North America pertaining to its insect fauna. Hundreds of insect species of all orders and new to science have been discovered at this location. Delineation of the trap placements at this site is presented here from an aerial view illustrating the placement of 51insect traps operated during 2018. Additionally, 65 sesiid pheromone traps operated in Caddo Parish (green dot on map).



1. Sequoiae pitch moth X3
2. Scentry L103 X3
3. Western poplar 2017 X9
4. Sequoiae pitch moth X2
5. Scentry L103 X4
6. AS08 (Japan) X1
7. Synanthedon scitula Alpha Scents (2017) X4
8. Scentry L103 (2017) X4
9. Sesia apiformis X2
10. FP Paranthrene tabaniformis (2010) X2
11. Podosesia aureocincta (2010) X2
12. E2Z13-18:Al X1
13. Paranthrene tabaniformis X3
14. Synanthedon bibliopennis X4
15. Synanthedon scitula Scen X3
16. Synanthedon bibliopennis X3
17. Synanthedon tipuliformis X3
18. Synanthedon bibliopennis X3
19. Synanthedon scitula Scentry X3
20. Synanthedon bibliopennis X4
21. Synanthedon bibliopennis X4
22. Squash Vine Borer (used) X2
23. Synanthedon bibliopennis X3
24. Synanthedon bibliopennis X3
25. Scentry L103 X4
26. Paranthrene asilipennis X2
27. Synanthedon culiciformis X2
28. Synanthedon scoliaeformis X4
29. Scentry L103 2017 X3
30. Phero Base Squash Vine Borer X4
31. Phero Base Squash Vine Borer X4
32 Synanthedon virburni X4
33. Scentry L103 x1
34. R18 (Japan) X1
35. Grape Root Borer X 1
36. AS03 (Japan) X1

37. R21 (Japan) X1
38. AS04 (Japan) X1
39. R24 (Japan) X1
40. Scentry L103 X4
41. Scentry L103 X4
42. Scentry L103 X4
43. Pherobio Paranthrene regalis X2
44. Pherobio Paranthrene tabaniformis X2

Fig. 2. Semiochemical sesiidae lures used in 2018 at the Abita Entomological Study Site. Each of the (44) traps with amounts of specific identities of (125) semiochemical lures used in this study.

9 Scentry L103	1 Western poplar
7 Synanthedon bibliopennis	1 Podosesia aureocincta (Europe)
3 Synanthedon scitula	1 E2Z13-18:Al (Special order)
3 Squash Vine Borer	1 Sesia apiformis (Europe)
2 Synanthedon scoliaeformis (Europe)	1 AS08 (Japan)
2 Sequoiae pitch moth	1 AS03 (Japan)
3 Paranthrene tabaniformis (Europe and China)	1 AS04 (Japan)
1 Synanthedon viburni	1 R21 (Japan)
1 Synanthedon tipuliformis	1 R18 (Japan)
1 Synanthedon cuculiformis	1 Grape Root Borer
1 Paranthrene asilipennis	1 Paranthrene regalis (China)

Fig. 3. Synopsis of 22 specific semiochemical lure identities used in 44 traps at the Abita Study Site.

The authors have self funded the operation of sesiid pheromone traps at the Abita Springs entomological study site annually and continuously 24-hours, 365-366 days per year beginning 1982 to 2018. We have been capturing sesiids in Louisiana annually using hand netting and mostly using ultra-violet light traps since 1968, and using pheromone lures since 1975 across the state. Our annual inventory of pheromone traps fluctuates +/- around 250 units, though only rarely did we annually operate more than 120 pheromone units, as we were unable to adequately handle pinning, labeling, spreading, identifying, and cataloguing and ultimate long term storage of the considerable quantities of adult captures of sesiidae on a daily basis. We published a similar pictorial in 2010 titled: Trap placement at the Abita Springs study site in 2010 - A Pictorial, sec.24,T6S,R12E, 4.2 mi. NE of Abita Springs, Louisiana USA. In that 2010 publication we delineated operating 127 traps (light traps, bait traps, dung beetle traps, and including 83 sesiid pheromone traps). We have not logged the various sesiid species captured at the Abita location during 2018 but have added as many good quality pinned, spread and labeled specimens as possible to our scientific research collection as we have similarly done over the past half century. Over the past half century the authors have captured an estimated 400,000 adult specimens of sesiidae in Louisiana. The additional, 65 sesiid pheromone traps operated in Caddo Parish during 2018 are part of a planned separate publication; the field work is still in progress.

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PSAPHIDA STYRACIS (GUENÉE, 1852) (LEPIDOPTERA: NOCTUIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE DOZAR BROU

Fig. 1. ***Psaphida styracis*** phenotype variations: a-h. males, j-r. females.
All specimens from **Abita entomological study site* (1996-2008).

The medium in size winter noctuid moth ***Psaphida styracis*** (Guenée, 1852) (Fig. 1) is one of five species of the genus in the subtribe ***Psaphidina*** Grote, 1896 which I have captured in Louisiana. Poole (1994) remarked that ***styracis*** is the only brown species of the genus and stated the geographical range of ***styracis*** occurs from southern Ontario and southern New England, west to Wisconsin, Minnesota, and Missouri, and south to eastern Texas and Florida. This same author noted the great geographical void of known records in the central-southern states: West Virginia, Kentucky, Tennessee and North Carolina. Poole discussed the variability in appearance of ***styracis*** especially in the northern half of its range concerning darkness and intensity of maculation, unrelated to sex. This same author stated Texas specimens have almost no variability in appearance, while the Florida specimens are even more variable than the northern specimens. Beside previously mentioned states, Poole (1994) listed no specimens or records of ***styracis*** from Arkansas, Louisiana, Mississippi, or Alabama. Numerous thousands of ***styracis*** were captured at the **Abita entomological study site* using ultraviolet light traps operating 365-366 nights per year from dusk to dawn and elsewhere in Louisiana during the years 1974 to 2019 including through freezing winter temperatures, though during particular years cold temperatures did negatively affect the population abundance. In stored entomological collections, this species and other members of this genus have an affinity to become greasy over time.

Forbes (1954) listed the geographical range of ***styracis*** to include Montreal, Canada, south and west, and also mentions Georgia, Minnesota, Missouri, and Texas. Rockburne and Lafontaine (1976) stated ***styracis*** specimens in

the Canadian National Collection are from London and Pembroke, Ontario. Covell (1984) listed the geographical range to include Massachusetts and southern Ontario to Florida, west to Minnesota, Missouri, and Texas, (adults) in the months February to April. Heppner (2003) listed the geographical range to include Ontario to Florida and Minnesota to Texas (adults) in the months February to March. This species is univoltine, adults occurring end of December through mid-March, peaking in Louisiana during the second week of February (Fig. 2). The confirmed parish records for ***styracis*** are illustrated in Fig. 3.

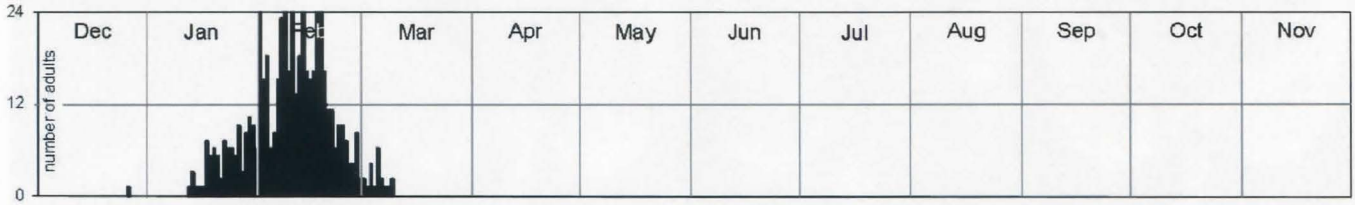

Fig. 2. Adult ***Psaphida styracis*** captured in Louisiana. n = 568

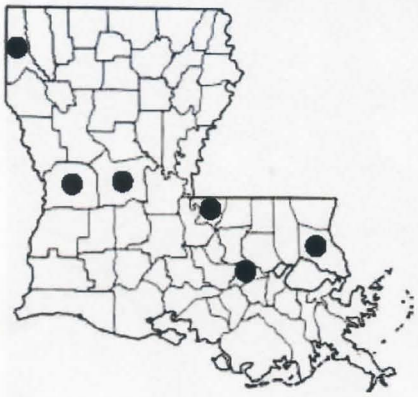

Fig. 3. Parish records for ***Psaphida styracis***.

This species was not covered by von Reizenstein (1863), Chapin & Callahan (1967), Heitzman and Heitzman (1987), nor Powell and Opler (2009).

We thank Charles Allen, Junsuk Kim, and Royal Tyler for providing additional records included in this study.

**Abita entomological study site*: sec.24, T6S, Range 12 East, 4.2 miles northeast of Abita Springs, St. Tammany Parish, Louisiana.

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TEXAS TREATS: A ZERO PERCENT CHANCE ?

BY

KATHY C. MALONE

Anticipation builds months before my November 2018 flight to the Lower Rio Grande Valley. Treasures await! Lifers I'd tried for in my past five trips had failed. My spirits rise as I imagine the fun lifer days ahead!

But my heart drops when I check the long-term weather forecast to see that the day I arrive the temperature drops to 55 degrees and rain after many days of 90 degrees and sun. Shall I cancel or move ahead? I decide to chance it…as my husband Bill says, "*You have a zero percent chance of seeing anything unless you try.*" And I decide to add four days to my trip for a total of 10. Turns out only about half that time was good for butterflies, yet I had some great success with them, and birds.

One can pack in a lot in a few days. A huge surprise treat was a high school musical comedy my friend and I took in nearby our base in Mission. While my primary target was a Xami Hairstreak and to experience the valley ahead of likely changes with the border wall, the play was right up there with other top treats. I'd been to Texas five times and had always missed Xami. Could just one cooperative and photogenic Xami be out there somewhere? When I arrived no one had seen any for the season.

Figure 1

Intrepidly, my friend and I decided to weather it all…the good weather days and the bad. We struck out on our treasure hunts come what may! Here are the highlights of our adventures:

Figure 1: Raindrop on Turk's Cap. This about sums up a good part of the trip. Rain!

Figure 2

Figure 2: A lifer Paraque "flies under the radar" with its astonishing camouflage at Estero Llano Grande State Park.

Figure 3

Figure 3: Linda Cooper and I set a comfy pot of simmering soup on one rainy, very chilly day while we went to take in a performance of The Addams Family by Palmview High School in La Joya. It was Broadway quality, no exaggeration, complete with an orchestra and incredible performances. We (I am on the left) and Morticia (Daniela Gandaria) got photobombed by Fester (Luis Olivares). Linda is on the right. We had the performers autograph the program. They were as thrilled as we.

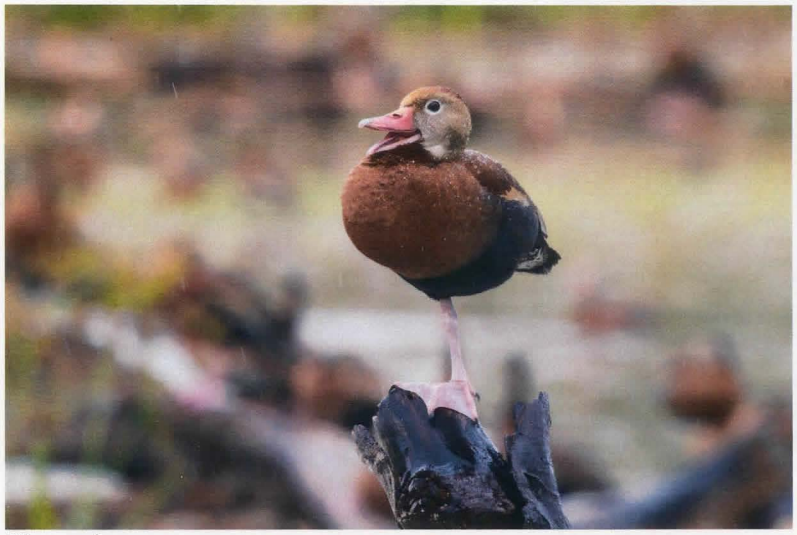

Figure 4

Figure 4: A Black-bellied Whistling Duck "laughs" at the rain. Actually, a big yawn helps it pass the lazy day, along with hundreds of others. The vast quantity of these ducks was jaw dropping at Estero Llano Grande State Park.

Figure 5

Figure 5: A Black Witch Moth (*Ascalapha odorata*), Estero Llano Grande State Park, takes shelter under the covered observation deck.

Figure 6

Figure 6: Isn't it fun when someone calls out a lifer rarity and everyone comes a runnin'?! This Four-spotted Sailor (*Dynamine postverta*) entertained a crowd off and on for several days at the National Butterfly Center. About 30 people clamored shoulder-to-shoulder for a photo when I shot this with my long lens.

Figure 7

Figure 7: I'm a sucker for a pink-frosted Southern Dogface (*Colias cesonia*), Estero Llano Grande State Park.

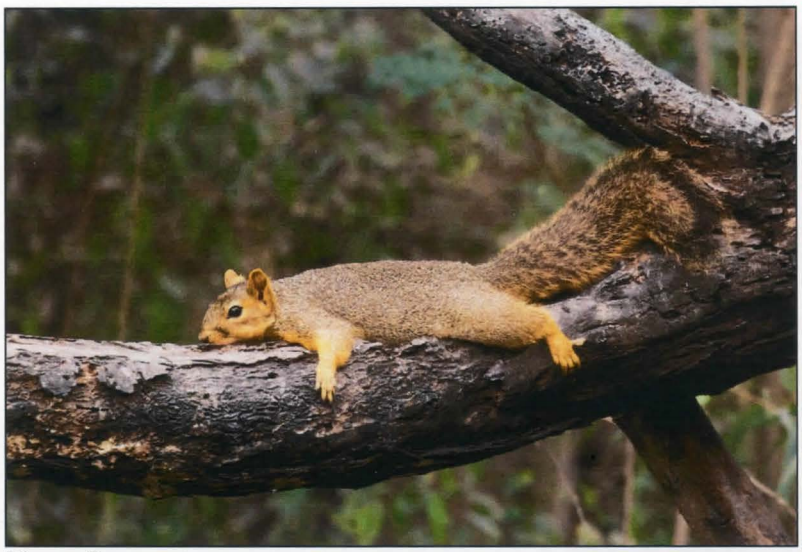

Figure 8

Figure 8: An Eastern Fox Squirrel relaxes at the National Butterfly Center.

Figure 9

Figure 9: An exciting moment on our treasure hunt was when the ding of a text notified us of a White-angled Sulphur (*Anteos clorinde*) in a bush near a stand of Firebush where we were staying. Out we dashed. It had been seen flying into the bush to roost late in the day, but more eyes were needed to spot it again. Finally someone relocated it, word spread and a gallery gathered. People were en route that evening from out of town and luckily got to photograph it the next morning.

Figure 10

Figure 10: Another rush was on to see a Red Rim (*Biblis hyperia*) at the National Butterfly Center. It was a lifer for several enthusiasts.

Figure 11

Figure 11: I'd be remiss if I didn't include "Mission's mascot," a Mexican Bluewing (*Myscelia ethusa*), at the National Butterfly Center.

Figure 12

Figure 12: Another butterfly I'd missed in all my trips to the valley was the Boisduval's Yellow (*Eurema boisduvaliana*), Resaca de La Palma State Park. A group of us tried for it on a semi-rainy day. My heart raced as we flushed a yellow butterfly after we had rattled the wet grass a few times. But it was a Mimosa Yellow (*Pyrisitia nise*). Happily, on an alternate sunny day, the yellow treasure target was in my lens. As I depressed my camera's shutter, I could see the field marks of a Boisduval's to confirm. Hooray!

Figure 13

Figure 13: Nice to see a Clytie Ministreak (*Ministrymon clytie*) on a leisurely stroll in Mission.

Figure 14

Figure 14: And now for the best co-highlight of the trip (along with The Addams Family)....drum roll please. Yes, a Xami Hairstreak (*Callophrys xami*). The day Linda and I set out to Cameron County it was blustery, overcast and about 72 degrees. It wasn't the best weather for butterflies, but it wasn't the worst. On the way over I'd asked her if she'd ever seen a Xami light on a cactus. No, she had not. We'd looked for over an hour without luck. I had my light field boots on and

gingerly avoided cactus as I tiptoed, ever keeping a keen eye out. "No luck" was what I had typed into my texts in reply to a friend who had asked if we'd seen any Xamis. An instant before I pressed the send button, I heard a faint voice carried upon the breeze that whispered, "Kathy, Kathy!" In reality, Linda urgently yelled my name and waved like crazy. I tried to run but couldn't because of the thorns that stood between my prize and me! I felt I was living my nightmare of feet stuck in quicksand, unable to move quickly among the perils of pointy plants. Finally, I reached the spot. But she had lost her great find. It had jumped. The pit in my stomach lurched, too. Hope faded as others came over to help search. Wah-wah. Just when I thought my sixth visit to the valley was not a charm, someone said, "Here it is. On this cactus!" They do perch on cactus! And one was enough, because that's the only one we saw that day. And it cooperated! And it was photogenic! Good thing we weathered that blustery day. The find reminded me of what my husband always says when I hesitate to go into the field… *"zero percent chance unless you try*" echoed to me. But Xami day was a 100 percent day, and so was the trip!

(Kathy Malone, E-Mail: kathymalone98@gmail.com)

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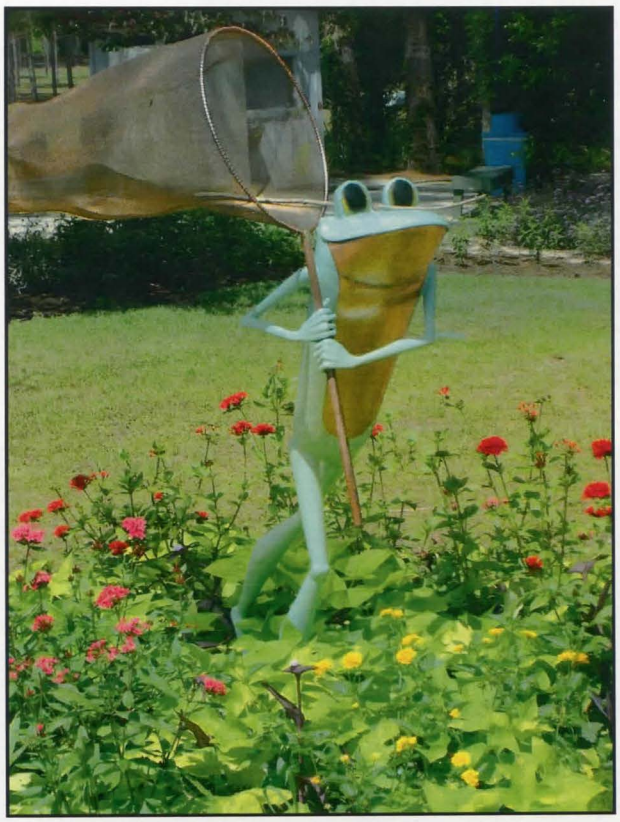

"The litle guy was photographed by me at Brookgreen Gardens, Pawley's Island, South Carolina. We probably ought to try recruiting him as a new member!!!" (Sent in by John Hyatt.)

SYNANTHEDON FATIFERA HODGES 1962 (LEPIDOPTERA: SESIIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE DOZAR BROU

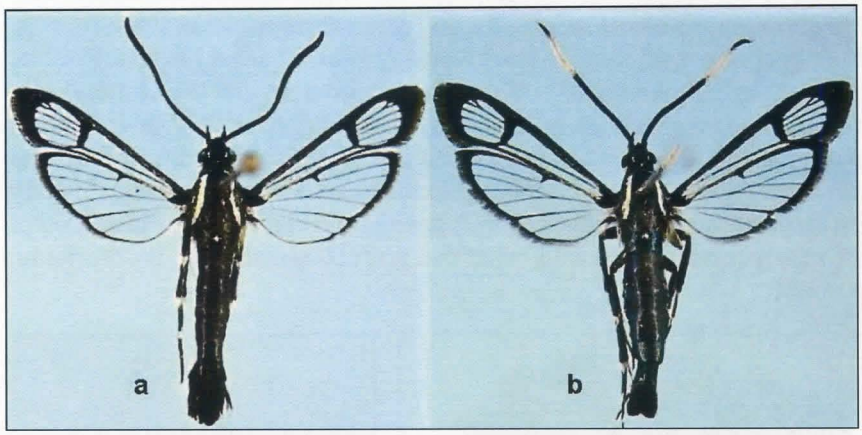

Fig. 1. ***Synanthedon fatifera*** Louisiana phenotypes: a. male, b. female captured at the **Abita entomological study site*. det. V.A. Brou Jr.

The glossy blue -black clearwing moth ***Synanthedon fatifera*** Hodges (Fig. 1) was originally described from Mentor, Ohio (type locality) originating from reared larvae found infesting ***Viburnum opulus nanum*** Jacq. (Hodges, 1962).

Subsequently, ***fatifera*** was reported to have a range from Wisconsin and southern Ontario to the Atlantic Coast states and south to northern Florida (Eichlin & Duckworth, 1988).

In Louisiana, ***fatifera*** has a single annual brood peaking early May, occasional adults appearing in March, and stragglers flying into early August (Fig. 2). Despite operating pheromone traps across the state for the past 44 years, we have yet to encounter ***fatifera*** at any other location within Louisiana, only near Abita Springs, St. Tammany Parish. No doubt because this area has very abundant populations of at least two species of ***Viburnum***, the assumed local larval host for ***fatifera***. Some females of ***fatifera*** in this study were captured in ultraviolet light traps, but primarily this sample (612 adults) was captured using sesiid lures in 'pheromone' traps. A typical example of more than 250 self-designed sesiid pheromone traps used in this study is illustrated in Fig. 3. These traps were fabricated from commonly availabe household plastic items.

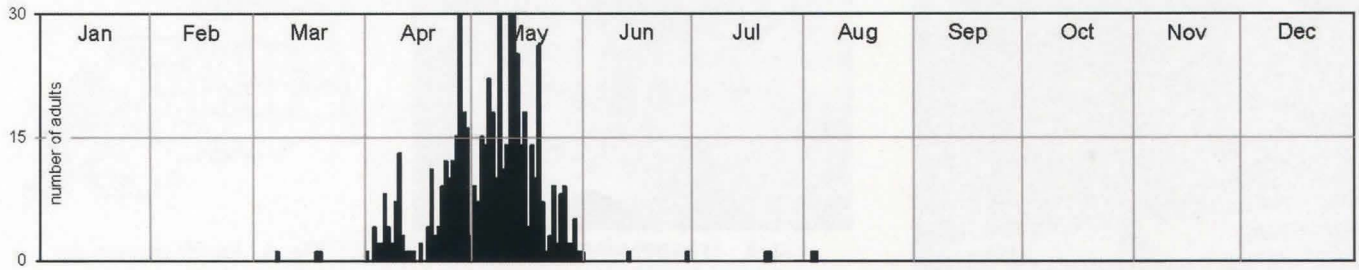

Fig. 2. Adult ***Synanthedon fatifera*** captured at the **Abita entomological study site*. n = 612

Fig. 3. Trap with 10" diameter collection chamber.

The specific semiochemical which attracts this species in Louisiana is *(Z,Z)-3,13-Octadecadienyl acetate*. This compound has been reported in literature to attract more than 80 species of sesiidae worldwide, and is often referred to as *ZZA* or *ZZ-ODDA*. We have used this semiochemical to also attract and capture more than two dozen other species of sesiidae in the state of Louisiana. Additional commercial semiochemical lures which commonly attracted Louisiana ***fatifera*** include those identified as: ***Synanthedon exitiosa*** (Say), Scentry L103, both Scentry and Alpha Scents ***Synanthedon scitula*** (Harr.), and (1:1) Scentry Sequoiae Pitch moth: Scentry L103, and Scentry ***Synanthedon fatifera***, and both Scenturian and Scentry Sequoiae Pitch moth, and ***Synanthedon culiciformis*** (Linnaeus), and ***Synanthedon myopaeformis*** (Borkhausen). Many of these lures contain the same semiochemical *(Z,Z)-3,13-Octadecadienyl acetate*, as the major semiochemical component.

Eichlin and Duckworth (1988) reported adults of ***fatifera*** were taken late April into July, but most records are from mid-late May. Taft, Smitley and Snow (1991) listed a single annual brood for the eastern U.S. and Canada, with adults attracted to *ZZA*.

Similarly, Brown and Mizell (1993) listed a single annual brood occurring May and June in the state of Florida with adults attracted to *ZZA*.

We have reproduced the drawing in the original species description of the right valve of the male genitalia of ***fatifera*** (Fig. 4). A photograph of the right valve of male genitalia from a Louisiana specimen is illustrated in Fig. 5, and from Michigan (Fig. 6). DNA barcodes indicated the adult illustrated in (Figs. 1b, 7, and 8) to be consistent with ***fatifera***. Hodges (1962) stated of ***fatifera***, "male antennae blue-black with a few pale yellow scales at three-fourths, slightly dilated apically, a short apical tuft". In contrast, Eichlin & Duckworth (1988) reported ***fatifera*** exhibits "antennae blue-black with pale yellow dorsally on apical one-third". We make special note that the vast majority of males of the 612 adults captured in Louisiana and reported on in this study, have no white or yellow on their antennae. Less than one dozen males of the entire sample population did exhibit some whitish scales, near the distal end of the antennae. A few dozen males do have areas of white on their antennae accounting for approximately 25-30% of total antennae length. Regarding ***fatifera*** females Hodges (1962) stated "maculation as for male except that antennae is pale yellow from three-fifths nearly to apex". Exactly what that erroneous statement is describing, is a matter of personal interpretation of the reader.

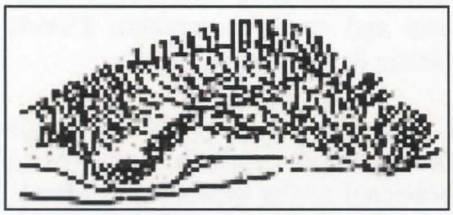

Fig. 4. Right valve of ***S. fatifera*** (original description), ex Ohio.

Fig. 5. Right valve of ***S. fatifera*** ex Louisiana.

Fig. 6. Right valve of ***S. fatifera*** ex Michigan courtesy William Taft.

Fig. 7. ***Synanthedon fatifera*** ♀ det. via DNA barcodes
**Abita entomological study site.*

Fig. 8. ***Synanthedon fatifera*** ♂ det. via DNA barcodes from
**Abita entomological study site.*

Fig. 9. Parish records for ***Synanthedon fatifera***
**Abita entomological study site.*

It is noteworthy to mention that among the small sample number of the barcoded Louisiana '***fatifera***-appearing' specimens were two adults that resulted in dissimilar appearing barcode profiles representing possible unknown species, near ***fatifera***. The significance of these have not been further investigated at this time.

Acknowledgements

We thank James Hansel (Great Lakes Integrated Pest Management) for supplying thousands of commercial and special order semiochemical sesiidae lures over several decades . We are indebted to J. Donald Lafontaine for assisting with DNA barcoding of Louisiana sesiidae specimens and William H. Taft for generously providing the illustrated genitalia image and helpful advice, and we also acknowledge the late Tom Eichlin for most helpful determinations and opinions about this species.

**Abita entomological study site*: sec.24, T6S, Range 12 East, 4.2 miles northeast of Abita Springs, St. Tammany Parish, Louisiana.

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Big Bend National Park, Chisos Basin: View of Casa Grande from Lost Mine Trail (credit Michael P. Blanton, Ph.D., December 8, 2018).

SCHIZURA UNICORNIS (J. E. SMITH, 1797) (LEPIDOPTERA: NOTODONTIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE DOZAR BROU

Fig. 1. ***Schizura unicornis*** phenotypes: a-d. males, e-h. females. All St. Tammany Parish, Louisiana (1993-2018).

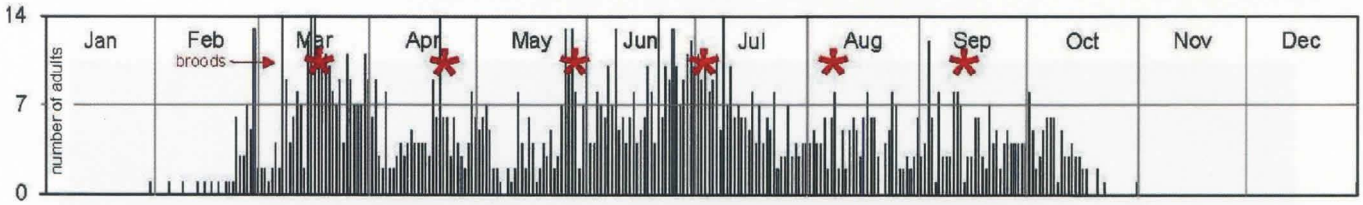

Fig. 2. Adult ***Schizura unicornis*** captured in Louisiana. n = 1418

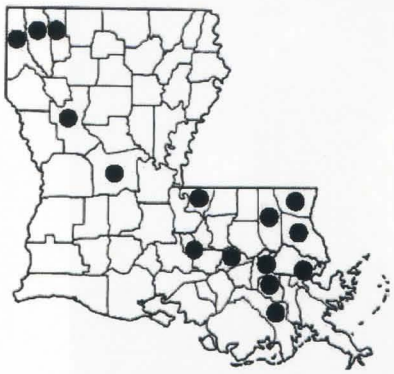

Fig. 3. Parish records for ***Schizura unicornis***.

The moth ***Schizura unicornis*** (J.E. Smith) (Fig. 1) is a very abundantly populated species within the state of Louisiana. Covell (1984) reported ***unicornis*** is a common species throughout our area (North America, east of the 100th meridian). Heppner (2003) listed the range of ***unicornis*** to include Nova Scotia to Florida and Manitoba to Utah and Texas in the months January to June and August to December.

Powell and Opler (2009) stated "***unicornis*** *occurs coast to coast*" (Atlantic to Pacific) "*and this species is probably the most common species of the genus*". These same authors stated u***nicornis*** has "*one flight from June to August in most of the west, and from March to September in Texas, where there are likely two flights*". But these authors did not provide any proof of their phenology suppositions. Heitzman and Heitzman (1987) did not address any ***Schizura*** species for the state of Missouri.

Within Louisiana ***unicornis*** has six annual broods, first brood peaking mid-March, with subsequent broods at approximate 36-day intervals (Fig. 2). The 14 confirmed parish records are illustrated in Fig. 3.

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Heppner, J.B., 2003. *Arthropods of Florida and neighboring land areas*, vol. 17: Lepidoptera of Florida, Div. Plant Industry, Fla. Dept. Agr. & Consum. Serv., Gainesville. x + 670pp., 55 plates.

Powell, J.A. and P.A. Opler, 2009. *Moths of Western North America*, Univ. Calif. Press xiii + 369pp + 64 plates

PHYPROSOPUS CALLITRICHOIDES GROTE, 1872 (LEPIDOPTERA: EREBIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE DOZAR BROU

Fig. 1. ***Phyprosopus callitrichoides*** phenotype variations: males (a-b), females (c-d).

In the original description the erebid moth ***Phyprosopus callitrichoides*** Grote (Fig. 1) was reported to occur in New York and Texas (Grote,1872). (Forbes, 1954) listed ***callitrichoides*** to occur from New Hampshire to Florida and Texas in the months May to July, and feeding on ***Smilax*** sp. Within Louisiana, Chapin and Callahan (1967) reported ***callitrichoides*** to occur in the months July to September from Baton Rouge and/or nearby locations. (Covell, 1984) listed ***callitrichoides*** to occur New Hampshire to Florida, west to Missouri and Texas in the months May to August and to be uncommon. (Heppner, 2003) listed the range of ***callitrichoides*** to include New Hampshire to Florida and Illinois and Texas in the months of January to November, and feeding upon several species of ***Smilax*** and also toadflax ***Nuttallanthus canadensis*** (L.) D.A. Sutton (syn. ***Linaria canadensis***). There are also two other species of toadflax ***Nuttallanthus*** in eastern North America. Neither Heitzman & Heitzman (1987), nor Powell and Opler (2009) addressed ***callitrichoides***. Wagner (2005) stated ***callitrichoides*** occurs Missouri to Ohio and New Hampshire south to Florida and Texas, and has *"two broods north of Maryland... three broods in Missouri, presumably more southward*".

Within Louisiana ***callitrichoides*** is a very abundantly populated species as evidenced by the six or more annual broods, the initial brood peaking the third week of March, the second brood peaking first week of May with four to five subsequent broods peaking at 33-day intervals into October (Fig. 2).

The current confirmed 13 parish records within Louisiana are illustrated in Fig. 3.

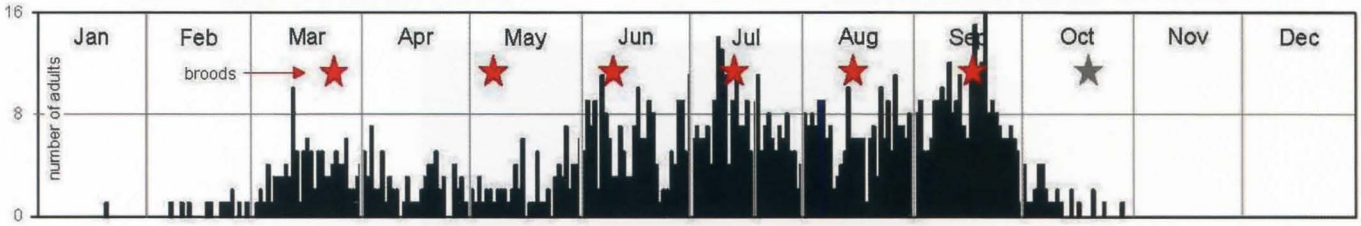

Fig. 2. Adult ***Phyprosopus callitrichoides*** captured in Louisiana. n = 1153

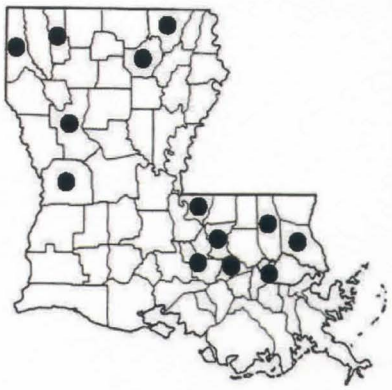

Fig. 3. Parish records for ***P. callitrichoides.***

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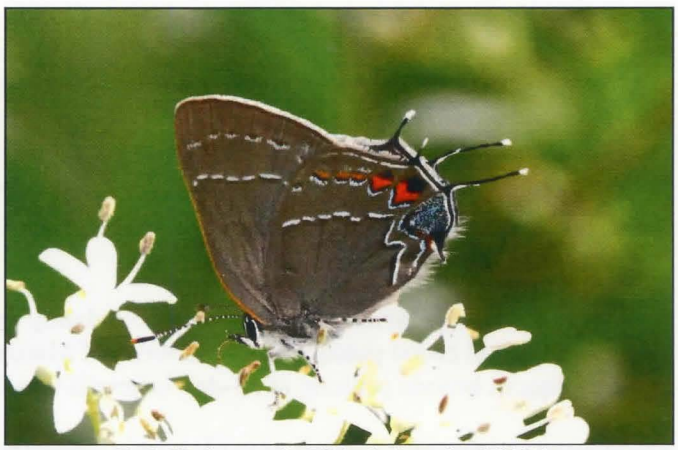
PHOTOS OF LOUISIANA LEPIDOPTERA
BY
JEFF TRAHAN

Eastern Tiger Swallowtail, Shreveport, Caddo Parish, LA, August 19, 2005



Oak Hairstreak, Thistlethwaite WMA, St. Landry Parish, LA, April 23, 2011

Rosy Maple Moth, Fillmore, Bosssier Parish, LA, July 27, 2013

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EL DORADO

BY
CRAIG W. MARKS

Gaily bedight,
A gallant knight,
In sunshine and in shadow,
Had journeyed long,
Singing a song,
In search of Eldorado. (From the poem, Eldorado, by Edgar Allen Poe)

As I start this issue's article, it is a typical winter day in south Louisiana. I make no pretense that our winters are as intense as the kind that many of you experience. That said, however, winter here is primarily gray, wet and dreary. The dampness tends to make what might otherwise be tolerable temperatures seem much colder. As I look out my window, the skies are ominously gray and threatening rain. The wind is stiff, and the humidity is high. Other than the live oaks, the trees have now finally shed their leaves. We have had enough early morning frosts to turn all of the grass and other groundcover brown. Those frosts have pretty much put an end to our butterfly flight season. Even though I saw a couple of Cloudless Sulphurs and a Monarch in mid-December, primarily the only insects that are currently flying are Louisiana's ever-present mosquitos.

The picture is depressing, but as a defense to the dreary weather, my mind wanders back to memories of a trip I took this summer, when skies were blue above the mountains of Utah, Idaho and Wyoming, temperatures were warm and butterflies abounded in numbers that I don't often experience. I have had the pleasure of numerous trips to different parts of the country designed almost exclusively to see new butterflies. On occasion, weather, drought or other factors have caused butterfly species and/or numbers to be less than hoped, but the trips are always worth the time, effort and expense. Every once in a while, the stars all align perfectly, and I am able to experience a day that is even more than I had hoped (and I usually have pretty high hopes).

Such day occurred this past July. After a very productive trip to North Dakota and Minnesota in July of 2017 (see SLS Newsletter, Vol. 39, No. 3) Mike Mulligan and I decided to visit areas both north and east of Salt Lake City. My hope was to see several species that I had only admired via pictures such as Gillette's Checkerspots and Hayden's Ringlets, both of which have very limited ranges, found only in what is essentially the Greater Yellowstone Region. The trip, as a whole, was wonderful, but there was one particular day that will not soon be forgotten. After doing some research and speaking to knowledgeable people who had previously butterflied that area, I decided that one of our designated destinations would be the Caribou-Targhee NF out of Soda Springs, Idaho. The specific area was along Blackwater River Road at various canyons and streams as they intersect with that road.

Enders Hotel and geyser behind hotel

On July 6, I flew into Salt Lake City where Mike picked me up in his truck at the airport. We had a good hike up Lamb Canyon west of SLC before driving on to Soda Springs late that afternoon. The next morning, we had an excellent breakfast at the Enders Hotel in Soda Springs, stopped to watch the impressive geyser behind

that hotel, and then started toward Caribou-Targhee NF at about 9:00. The temperatures were in the mid-60's. Our first stop was a canyon that "T-ed" into the road from our right (the high side). We pulled in next to a small running stream with a stone bottom. There was a heavily rutted dirt road that extended up the canyon, but we decided to park at the bottom and walk into the canyon.

Small bowl with bushes across the middle of picture which bordered a stream (July 7, 2018)

Another view of small bowl (July 7, 2018)

We started into the canyon around 10:00. I decided to proceed into the canyon by using a cow trail along the side of the stream. The cow trail crossed the stream and led me into a small, open bowl. By the time I had worked my way across the bowl, it was approaching 10:30, and I had not seen a single butterfly. My anxiety was rising with each passing moment.

On the opposite side of the bowl, the stream was now on my left (see picture above). At that point, I saw my first butterfly, a sulphur that turned out to be a Pelidne Sulphur. It was flying in a U-shaped bend in the stream. As I approached, the sulphur flew up and then over a patch of thick bushes, disappearing out of sight. Beyond where the sulfur had been, I noticed a reddish-orange colored butterfly that I recognized by its flight pattern to be a checkerspot. Before I could get to it for a close look, it crossed the stream at a point that was both too deep and too wide to cross. It then perched on the other side, and I was able to id it as a male Gillette's Checkerspot.

The Gillette Checkerspot, *Euphydryas gillettii*, is primarily a montane species. Its U.S. range is centered in the northern Rockies, including western Wyoming, western Montana and Idaho. Its typical habitat is moist meadows at altitude, the majority of which include flowing water to some degree. It is colonial, living in localized populations. It is not migratory, nor is it, for that matter, particularly mobile, preferring to live in sunny, open, fire-disturbed areas which include both its larval foodplant, *Lonicera involucrate* (twinberry honeysuckle), and multiple nectar sources. Most colonies are small, and because of their preference for open, fire-disturbed meadows, the colonies are subject to successional extinction. This species has only one flight per year, from late June to early August.

At this point I was standing in what was essentially the end of the "U-shaped" bend of the stream. I turned to my right and there, perched and feeding on several stands on small white flowers, were numerous other Gillette's Checkerspots, both males and females. As I stood there, watching the checkerspots float from one flower to another, I looked more closely at the bushes that I referenced above and realized most of those bushes were twin-berry honeysuckle, growing in profusion on three sides of that U-shaped bend in the stream.

The temperature had warmed, and I suddenly realized there were Gillette's flying all around me. Wherever I looked, I could see multiple Gillettes. Checkerspots are colonial by nature, and, at times, they can be quite numerous in one location. I have primarily experienced this characteristic with Silvery Checkerspots here in Louisiana, but I've also had similar experiences with Baltimore Checkerspots and Gorgone Checkerspots. My research had suggested that Gillettes were rare and local within their range, and I never imagined I would experience the numbers we found. We eventually saw at least 50, and probably closer to 75, that day.

As I stood there enjoying the view, the Pelidne Sulphur seen previously returned, and I also realized there were Purplish and Edith's Coppers feeding on the same white flowers as the Gillettes. It was such an exhilarating experience with all of these unique (to me) butterflies swirling around me in this relatively small area that I probably spent10-15 minutes just standing and watching.

Because I was standing in a U-shaped bend in the stream, I had to walk back out the way I had entered.

Gilliette Checkerspots, Caribou-Targhee NF, Idaho (July 7, 2018).

When I got back to the open bowl, it was now filled with swallowtails, admirals, greater fritillaries, coppers and blues. While standing in that bowl, I noticed that the cow trail I had previously followed into the bowl veered out of the bowl upward into an open aspen grove with tall grass growing in the under story. I love those kinds of trails, so I started up and into the aspens. In the first opening I found Relict Fritillaries, Mariposa Coppers and Arctic Skippers feeding on multiple kinds of wild flowers blooming in profusion. As continued up the trail, I saw a dark butterfly bobbing through the tall grass. It seemed too small to be a Common Alpine, and it turned out to be the first Haden's Ringlet I had ever seen, live and in person. Within its range, Hayden's Ringlets, *Ceononympha haydeni*, are reported to be much more common than Gillette's Checkerspots. That said, the range of these ringlets is as equally restricted as the checkerspots, limited to southwest Montana, western Wyoming and eastern Idaho. It is also a denizen of montane meadows and forest openings where it reproduces on various kinds of grasses. It is single brooded, flying during the same late June to early August period as Gillette's Checkerspots. Its flight is very similar to that of the Common Ringlet, a bouncy, dodging flight close to the ground, just above the grass. Walking that trail back and forth yielded multiple greater fritillaries, more coppers, tortoiseshells and admirals, along with more Hayden's Ringlets.

The next canyon we visited presented similar circumstances. The running stream was somewhat smaller, and the surrounding brush was thicker, thereby making it harder to walk the stream. Fortunately, the accompanying road up the canyon was in much better condition and allowed us to drive all the way to the top. The butterflies were primarily the same as the previous canyon. There were multiple Gillette Checkerspots present although not as many as in the first canyon. There were also numerous Northern Checkerspots, much more brick red than those I had previously seen in the Golden, Colorado area.

There was a camper at the top of the canyon which apparently had dumped some water on the road. It was here that I experienced my first fritillary "puddling party." Now, I had seen puddling parties in Louisiana involving Snouts, Question Marks, Pearl Crescents, swallowtails and sulphers, and I had even seen several "parties" with large numbers, but nothing of this magnitude. The make-up included large numbers of Hydaspe, Zerene and Callippe Fritillaries. Included in the mix were Northern Checkerspots and at least one Gillette. There were also crescents and blues. In the area beyond where the road ended, we were able to walk-up a couple of Small Wood Nymphs and one Common Alpine.

The rest of the trip included a couple of stops (Periodic Springs and Strawberry Reservoir) within the Bridger-Teton NF, Wyoming, on the 8th and then we went even higher, to the summit of Utah's Murdock Mountain in Uinta-Wasatch-Cache NF on the 9th. We saw more Gillette Checkerspots and Hayden's Ringlets at both locations in Wyoming, along with huge numbers of greater fritillaries, particularly at mud puddles along the roads. I would recommend driving an off-road vehicle to get to Strawberry Reservoir. The view is tremendous, and the butterflies were numerous, including Indra Swallowtails. So, the trip is worth the

effort, but the road is very rough, and we ended up having to change a flat on Mike's truck on the way down.

As is my practice, I set this article aside for a couple of weeks to let it sit and ferment. I have come back to it during the first week of February. The weather is much improved with several days of sun and temperatures in the 70's. If this weather holds, I should start seeing Falcate Orangetips toward the end of the month. Despite the greatly improved weather, reading the words I had generated in early January on that dark winter's day immediately caused me to "ride, boldly ride" back to Eldorado, back to the mountains of Idaho.

Fritillary "puddle party", Carbou-Targhee NF, Idaho (July 7, 2018)

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SYNANTHEDON SCITULA (HARRIS), 1839 (LEPIDOPTERA, SESIIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE DOZAR BROU

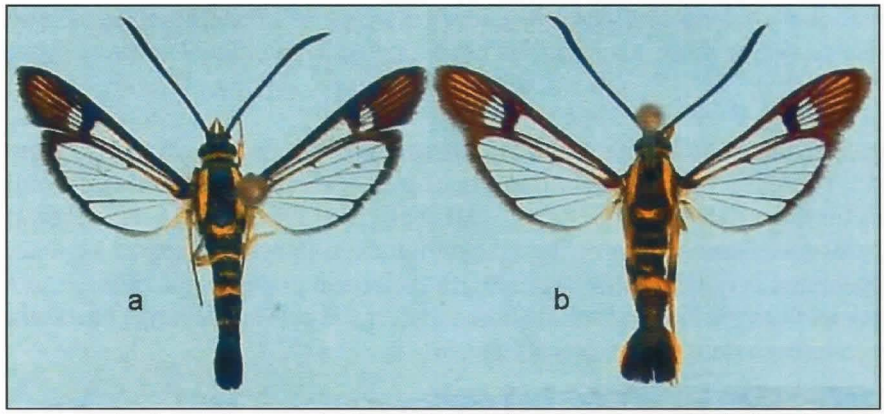


Fig. 1. ***Synanthedon scitula*** Louisiana phenotypes: a. male, b. female.

The very small in size clearwing moth species ***Synanthedon scitula*** (Harris) (Fig. 1) is a commonly encountered species within the state of Louisiana. A copious amount of research has been published in recent decades concerning lure composition and development for this well known and important agricultural, ornamental, orchard, and forest pest e.g., Bergh et al. (2004).

The wing lengths of ***scitula*** in louisiana for males: mean = 6.3 mm (5.5-6.9) n = 20, and females: mean = 7.7 mm (7.0-8.2) n = 20. At this time we address ***scitula***, because there are also three similar-looking species which are new and currently undescribed species belonging to the genus ***Synanthedon*** Hübner. One of the new species is known from roughly equal numbers of adults of both sexes 241 ♂♂ + ♀♀ captured almost exclusively using ultraviolet light traps and will be addressed in the near future.

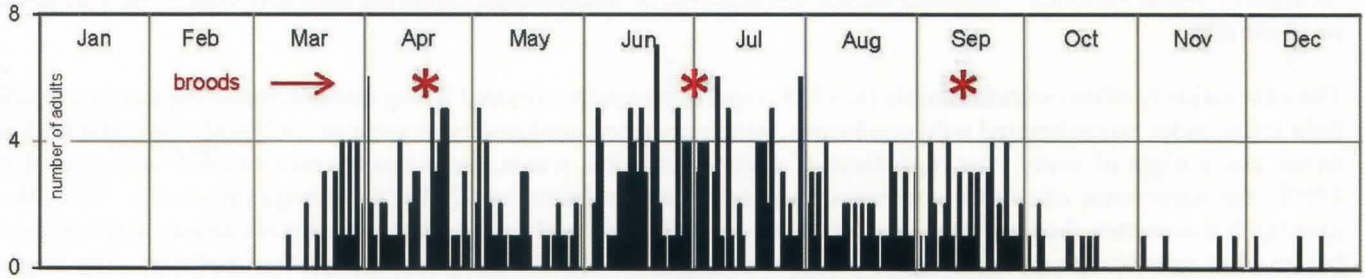


Fig. 2. Adult ***Synanthedon scitula*** captured in Louisiana. n = 385

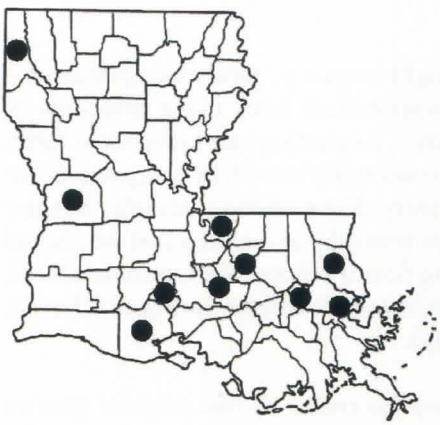
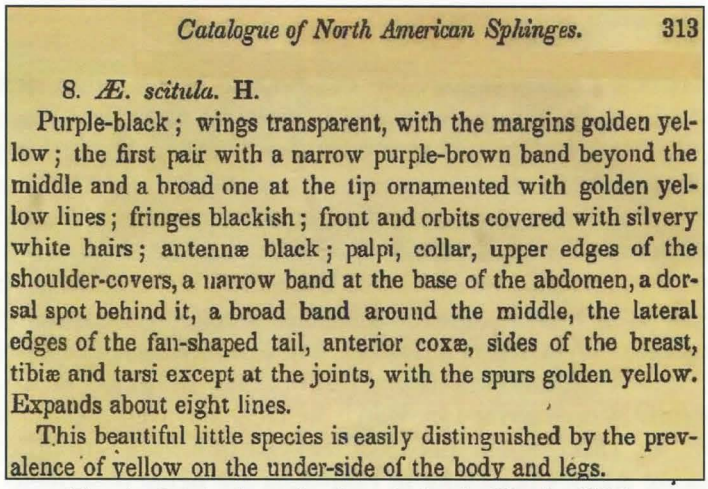


Fig. 3. Parish records for ***Synanthedon scitula***.



Catalogue of North American Sphinges. 313

8. *Æ. scitula.* H.

Purple-black; wings transparent, with the margins golden yellow; the first pair with a narrow purple-brown band beyond the middle and a broad one at the tip ornamented with golden yellow lines; fringes blackish; front and orbits covered with silvery white hairs; antennæ black; palpi, collar, upper edges of the shoulder-covers, a narrow band at the base of the abdomen, a dorsal spot behind it, a broad band around the middle, the lateral edges of the fan-shaped tail, anterior coxæ, sides of the breast, tibiæ and tarsi except at the joints, with the spurs golden yellow. Expands about eight lines.

This beautiful little species is easily distinguished by the prevalence of yellow on the under-side of the body and legs.

Fig. 4. Original species description by Harris, 1839.

Covell (1984) reported ***scitula*** to be common throughout eastern North America from May through September. Eichlin and Duckworth (1988) reported "***scitula*** has a one-year life cycle," but provided no proof for this anecdotal statement. Both of these authors stated this species "occurs throughout the eastern half of the United States and southern Canada," .... "adults occurring April to October." Heppner (2003) listed the range for ***scitula*** to include:

Eastern North America, Nova Scotia to Florida, and Colorado to Texas (adults) March to October.

Engelhardt (1946) remarked "emergence...March in the South, but occasional adults....July and August...and even September...whether this signifies two broods in one year is difficult to prove." Bergh, et al. (2004) reported "It takes approximately a year for larvae to pass through seven instars." Snow, et al. (1985) stated more than one generation per year (multivoltine) may occur in Georgia. Knudson and Bordelon (2010?) reported ***scitula*** common in east and central Texas (17 Counties)....single brooded, adults occurring mainly mid-summer. But all of these authors referenced here provided no actual proof, only making anecdotal baseless assumptions concerning the natural phenology of ***scitula***, more probably simply parroting what other authors have repeatedly mentioned without proof for the past century.

Beutenmuller (1901) stated ***scitula*** occurs "Canada, New England, and middle states, to Virginia, westward to Ohio and Illinois.... emerges in May and June". Though it has been reported to occur in several western states, Powell and Opler (2009) did not cover this species for the western United States. Taft et al. (1991) illustrated a male ***scitula*** that visually differs in some maculation, especially terminal forewing maculation from images presented by other southern authors. Though, that ***scitula*** specimen is typical of northern North American populations. These same authors addressed in particular the populations from the North Central United States, and stating the range of ***scitula*** to include the Mississippi Valley, Midwest, eastern United States and Canada.

In Louisiana, wild adults of ***scitula*** have been collected in all months March into December. There appears to be three annual broods based upon the illustrated phenogram (Fig. 2). The first brood peaks around mid-April, the second brood peaks about the end of June/beginning of July, the third brood peaking around mid-September, the three broods peaking at intervals of approximately 43-days. Date ranges of the population sample (n = 385) in this study included adults captured in the years 1908-2018. The reporting of this species having three annual broods has not previously been characterized by any researcher, though other researchers have never studied the phenology daily and year-round for 50 consecutive years, nor have any studies been conducted under wild conditions in a southern location of North America. No other author has reported or documented capturing naturally occurring wild adults in 10 months.

The vast majority of this ***scitula*** sample (n = 385) represents adults captured flying into automatic capture ultraviolet light traps under unadulterated wild conditions, which operated unabated beginning in 1969 and continued dusk to dawn, every night of every year regardless of severity of rains, winds, temperatures down to 6°F to greater than 100°F, the occurrence of tropical storms, or any adverse conditions into 2018 (49 contiguous years). To further exemplify this matter, the light traps were operated in all 50 years nightly during the months of January and February, but no adult ***scitula*** were encountered or captured during these months using this or any other methods. The largest numbers of the adults reported in this study were captured at the **Abita entomological study site* from 1982 to 2019. The Louisiana parish records are illustrated in Fig. 3. Previously, ***scitula*** was reported in Louisiana by Brou and Lemann (2012) occurring in Orleans Parish.

Adult ***scitula*** were occasionally captured by other means besides ultra violet light traps e.g., rarely using dozens of fermenting fruit bait traps, rarely using flight (malaise) traps, and via semiochemical lures using hundreds of 'pheromone traps'. No ***scitula*** were captured by hand netting during this study. Regarding semiochemical lures, a few dozen adult males were taken using various lures beginning in 1975 and continuing into 2018 using numerous brands and sources of lures, some identified as ***Synanthedon scitula***, Scentry ***Synanthedon scitula***, Scentry ***Paranthrene asilipennis***, Scentry L103, Z3Z13-18Ac, and E2Z13-18Ac. It is noteworthy to mention that the second of the similar looking to ***scitula*** new species of ***Synanthedon*** was collected using Scentry ***Synanthedon scitula*** lures, but so have several other Louisiana sesiidae species: ***Paranthrene simulans*** (Grote), ***Podosesia syringae*** (Harris), ***Podosesia aureocinta*** Purrington and Nielsen, and ***Synanthedon exitiosa*** (Say).

Synanthedon scitula was described by Harris in 1839 and we have illustrated the entire 12-line original species description in Fig. 4. This original species description of ***scitula*** is of little to no help in distinguishing which of the four similar looking species occurring in Louisiana are being described. In the 1839 description, there are no drawings or photographs of the adults, no information or illustrations concerning genitalia, no type locality, no country of origin, no location at which ***scitula*** occurs is mentioned, nor indication as to which sex of ***scitula*** the description represents, and there is no type specimen mentioned or designated. Doubtfully, we will ever know the true identity as to what species Harris was actually describing. Fig. 5 illustrates the right valve of ***scitula,*** which coincides with those illustrated by authors Eichlin and Duckworth (1988) and Looney et al. (2012).

Heitzman and Heitzman (1987) covered four species of sesiidae for Missouri, none of which are ***scitula.*** Brown and Mizell (1993) illustrated adult ***scitula*** on plate 2, Fig. 9 of their publication, and it appears to visually match the male illustrated in this publication (Fig 1a), and these same authors state that "adults emerge March to October.....a one-year life cycle". These same authors provided no factual information proving a 'one-year life cycle' only an anecdotal statement, no doubt originating from similar statements in previous literature.

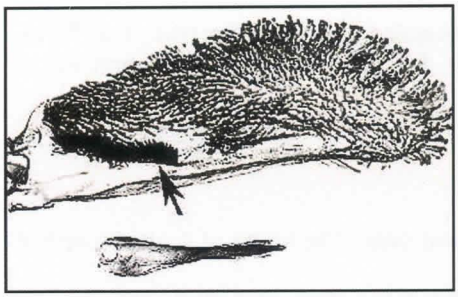


Fig. 5. ***Synanthedon scitula***
right valve and aedoeagus.

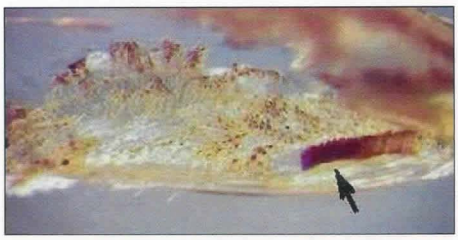


Fig. 6. ***Synanthedon scitula***
left valve, Dewitt, Michigan
courtesy William Taft.

Fig. 6 illustrates a left valve from ***scitula*** occurring in the state of Michigan (Taft and Anweiler, 2015) which matches the right valve illustrated in Fig. 5. As for ***Aegeria corusca*** Hy. Edwards 1881, most illustrated specimens corresponding to this name in literature have been females of ***scitula***, while authors illustrating males never use ***corusca*** to characterize ***scitula***. ***Aegeria corusca*** was originally described as a distinct species, but some subsequent authors e.g., Engelhardt (1946) called it a race of ***scitula***, and Eichlin and Duckworth (1988) listed it as a form of ***scitula***. Consequently, various authors synonymized it, the geographical black and yellow color form in the north and east, traveling south and west in the US, gradually changing appearance to black and orange. From literature it appears the name ***corusca*** represents the orange color of southerly adults, whereas yellow color represents northern ***scitula.*** The names ***scitula*** and ***corusca*** have been placed in several additional different genera among past scientific literature including: ***Thamnosphecia*** Spuler, 1910, ***Trochilium*** Scopoli, 1777, and ***Sesia*** Fabricius, 1775.

Both of the species ***Synanthedon arkansasensis*** Duckworth and Eichlin and ***scitula*** were not previously mentioned by Eichlin and Duckworth (1988) to occur in Louisiana, despite Eichlin placing determination labels on more than a dozen Louisiana specimens representing both sexes of both species ***arkansasensis*** and ***scitula*** sent to him four years before 1988. Those specimens in our research collection still bear the handwritten or printed determination labels of Eichlin dated 1984, and other labels dated 1990.

While investigating these species we discovered that among the entire type series of ***arkansasensis*** specimens listed, labeled and mentioned in the original description (Duckworth and Eichlin, 1973) including some labeled paratypes is composed of what appears to be a mixture three to four different unrecognized similar species. All of these specimens are located in the USNM. We also discovered that the entire series Louisiana specimens labeled and determined as ***arkansasensis*** for us in 1984 and 1990 by Eichlin are not that species, and are still another currently undescribed species. We hope to properly expose these errors concerning ***arkansasensis*** and definitively redescribe its true identity in a future publication.

We found no literature evidence that ***scitula*** occurs in Europe, (Lastuvka andLastuvka, 2001) and (Spatenka et al., 1999).

Acknowledgements

We thank and acknowledge numerous individuals for supplying property and collecting site access, images, comments, opinions, manuscript reviews, semiochemical lures, specimen records, and other helpful assistance: Charles M. Allen, Victoria M. Bayless, James Beck, F. Matthew Blaine, the late Charles Bordelon, Chris Carlton, the late Thomas D. Eichlin, Rick Gillmore, Benjamin Gregory, James Hansel, Matthew Hughes, Gary Judd, Rick Kergosien, Junsuk Kim, the late Edward C. Knudson, J. Donald Lafontaine, Zack Lemann, T.C. Leskey, J. Barry Lombardini, Nathan Lord, Mark A. Metz, Eric Metzler, Hideshi Naka, Ricky Patterson, Franz Pühringer, Jeffrey Slotten, William H. Taft, and Royal Tyler. Great Lakes IPM, Inc., Vestaburg, Michigan was most helpful in obtaining commercial and special order semiochemical sesiidae formulations used in this study over many decades. Access was granted to study the entomological holdings of Louisiana State Arthropod Museum (LSAM). We also utilized numerous manufacturers, brands and sources for semiochemical lures during this study, including Alpha Scents, Pherobase, Pherobio, Scentry, Scenturian, Suttera, Trece, and numerous custom formulations.

**Abita entomological study site*: sec.24, T6S, Range 12 East, 4.2 miles northeast of Abita Springs, St. Tammany Parish, Louisiana.

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SOUTHERN LEPS FIELD MEETING: APRIL 26 - 28, 2019, SAPELO ISLAND, GEORGIA

BY

JOHN HYATT

There will be a Southern Lepidopterists' Field Meeting the weekend of April 26-28 on Sapelo Island, Georgia. Accommodations are limited, but as of this writing there are still three slots available. For details, see the Southern Lepidopterists' News for December 31, 2018, page 244. If you're interested in attending, contact John Hyatt (423-279-0827 (h); e-mail: jkshyatt@centurylink.net).

CISSUSA SPADIX (CRAMER, 1780) (LEPIDOPTERA: EREBIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU Jr. AND CHARLOTTE DOZAR BROU

Fig. 1. Adult ***Cissusa spadix*** phenotype variations: males (a-h), females (j-r).

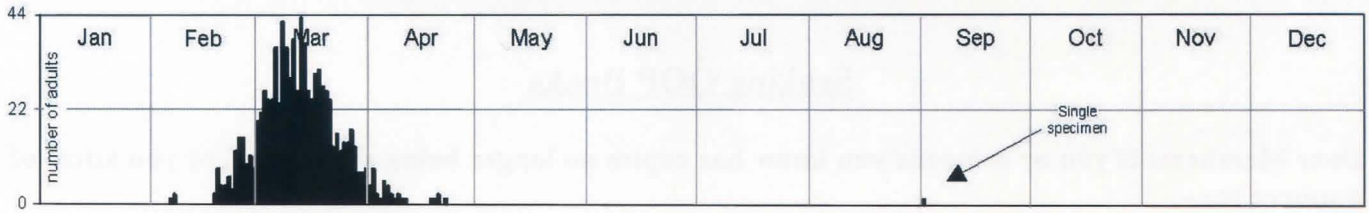

Fig. 2. Adult ***Cissusa spadix*** captured in Louisiana. n = 870.

The Erebidae moths ***Cissusa spadix*** (Cramer) (Fig. 1) is one of four species in the tribe Melipotini Grote listed by Lafontaine and Schmidt (2010). Powell and Opler (2009) made a puzzling statement *"All North American* ***Cissusa*** *are western*". Though, these authors covered only one western species, ***Cissusa indiscreta*** (Henry Edwards), not mentioning ***spadix***. Forbes (1954) stated the geographical range of ***spadix*** to include "*Gulf States, rarely straggling north to Massachusetts, Decatur, Illinois, Toronto, Ontario, and Wisconsin*". Chapin and Callahan (1967) listed ***spadix*** to occur in Louisiana mentioning a single date of April 20. Rockburne and Lafontaine (1976) stated of ***spadix*** (*... occasional migrant from the south ... collected at Toronto and Ottawa in April*). Covell (1984) listed the geographical range of ***spadix*** to include Maine and Ontario to Florida, west to Wisconsin, Missouri and Texas. Heppner (2009) listed the geographical range of ***spadix*** to include Ontario to Florida and Wisconsin to Texas, in the months January to April, and hostplants unknown.

This species was not covered by Heitzman and Heitzman (1987). Within Louisiana, ***spadix*** is univoltine, peaking during second week of March (Fig. 2). The confirmed Louisiana parish records are illustrated in Fig. 3).

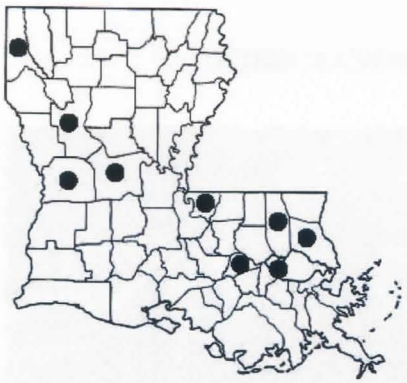

Fig. 3. Parish records for ***Cissusa spadix***.

We thank Charles Allen, Junsuk Kim, and Royal Tyler for providing additional records included in this study.

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Seeking OOP Books

Dear Members: If you or someone you know has copies no longer being referenced, or you know of a source for –

***The Butterflies of Colorado* –**
Part 1 (Satyriinae) and/or
Part 2 (Heliconiinae and Danainae) and/or
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by Michael S. Fisher (C. P. Gillette Museum series), please contact --

Parker Backstrom at dpbackstrom@embarqmail.com.

Many Thanks

NOTES ON *CROCIDOSEMA UNICA* (HEINRICH; EUCOSMINI)

BY

ROYAL TYLER & MICHAEL SABOURIN

This paper is an attempt to document the occurrence and identifying characteristics of a poorly known Tortricid moth occurring in the United States. The authors collaborated on collecting several specimens and attempting to research and identify the species.

Royal Tyler was responsible for the collection and photography of live specimens, and Michael Sabourin conducted the dissection and taxonomic research.

The study site is The Royal Hills farm, a 153 acre tree farm located in Caddo Parish, Louisiana. This is the NW corner of the state, not far south of Texarkana, AR. It is approximately 120 acres of upland shortleaf pine (*Pinus echinata*) and loblolly pine (*Pinus taeda*) ecosystems, with about 25 acres of creek bottoms of hardwoods and cypress, and 2-3 miles of pipelines and woods roads providing good access and openings. Soils are predominately deep, sandy to sandy loam soils.

Fig. 1. August 31, 2017 (♀)

On August 31, 2017, the first specimen of interest was collected (see Figures 1 and 2). The adult was photographed at a standard light bulb at 9:58 pm at the study location. The adult female was then collected and sent to Michael Sabourin for analysis. Initial dissection showed a moth near *Crocidosema perplexana*, but it would be necessary to collect additional specimens, preferably including a male, to be more specific in species determination.

On August 16, 2018, an additional female was collected (see Figure 3). Two more additional specimens were collected on August 30 (a male, Figures 4 and 5) and September 9 (a female, Figures 6 and 7). All were collected at low intensity, standard light bulbs. Large lights were run a few nights during the collection periods, but we speculate that the small size of these Tortricids, as well as the black dots being easily lost with worn specimens, were probably a reason they were not seen more frequently amongst all the much larger moths attracted to lights.

Fig. 2. August 31, 2017 (♀)

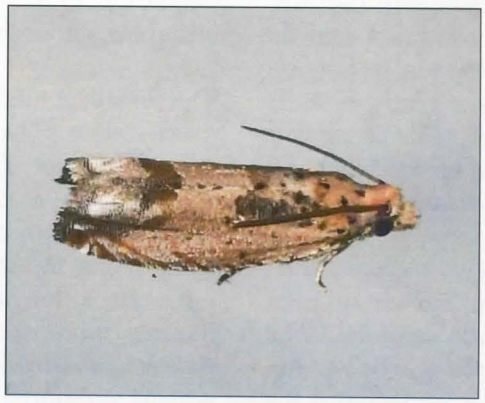

Fig. 3. August 16, 2018 (♀)

Fig. 4. August 30, 2017 (♂)

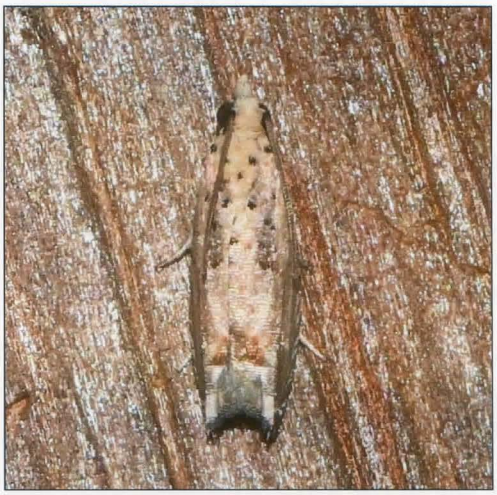

Fig. 5. August 30, 2017 (♂)

Fig. 6. September 9, 2018 (♀)

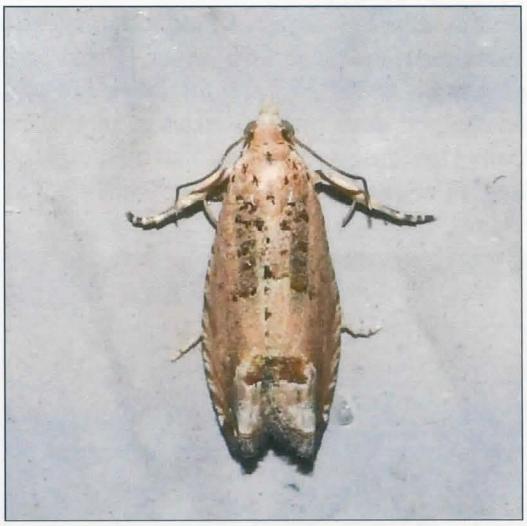

Fig. 7. September 9, 2018 (♀)

In addition we were able to examine photos of 3 male specimens from N. Carolina that were likewise collected over the past year by J. Bolling Sullivan.

Crocidosema unica (Spotted Butterfly Pea Moth) was described by Heinrich (1923) as *Epinotia unica*. The species is currently placed in *Crocidosema* (Brown, 2005). Adult specimens in good condition can be identified from other Eucosmini by the black spots on the thorax and base of the forewing. The species is unique among its congeners in lacking male secondary sexual characters such as a costal fold on forewing or a sexual scale patch on the base of the hindwing.

Heinrich (1923) gives distinguishing characters as two distinct black dots on the upper side of the second joint of the labial palpi and the unique male genitalia. The adult head and forewing ground color tend to be varying degrees of brownish white. The forewing length is 4.5 to 6.5mm, the markings are either dark brown or fuscous in color. Typical of *Crocidosema* the moths have a basal patch to some degree, a dark pre-tornal patch along hind margin, and a brow line along the upper and distal edges of the forewing ocelli.

The male genitalia (Figure 8) have been previously illustrated in Heinrich (1923, Figure 376). They are diagnostic in having a medial dentate spur along the costal margin of the valva.

The female genitalia are illustrated here (Figure 9) for the first time. The ovipositor lobes are flat, narrow, and subreniform in shape; the seventh sternite is dome shaped with a circular ostium medially along the posterior margin, and a pair of diagnostic lateral dentate spurs along the anterior margin; the ductus bursae is moderate in length, approximate in size to the corpus bursae, with short sclerotized patches posteriorly (antrum) and medially (colliculum); the ductus bursae widens anteriorly coalescing with the pyriform shaped corpus bursae, the corpus bursae with a pair of horn shaped signa approximate in size.

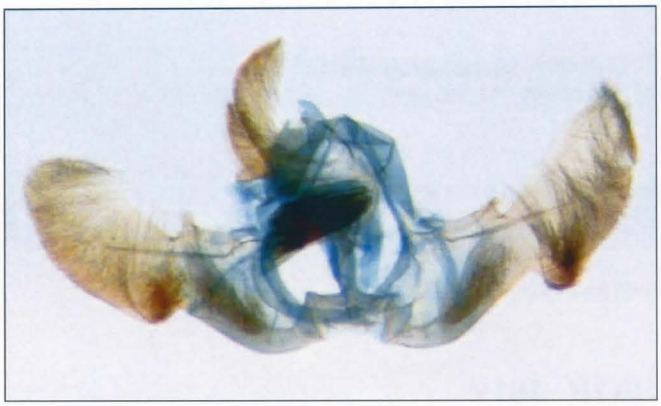

Fig. 8. Male genitalia

Fig 9. Female genitalia

Current records for *Crocidosema unica* are confined to the southeastern United States and Puerto Rico (MPG, 2018) within the known distribution of its recorded food plant; *Bradburya* (*Centrosema*) *virginiana* (Heinrich, 1923). *Crocidosema unica* may also have habitat preferences as Sullivan (2018) reported the species from a longleaf pine (*Pinus palustris*) savanna along the North Carolina coastal plain and the Tyler study site contains shortleaf (*Pinus echinata*) and loblolly pine (*Pinus taeda*) upland forest ecosystem. The May and August collection dates for *C. unica* suggest that it may be bi-voltine.

Centrosema virginiana, commonly known as spurred butterfly pea, is distributed in the southeast United States and ranges into the neotropics (USDA, Wikipedia). Other congeners of *C. unica* such as *C. plebejana* are known to be polyphagous with cosmopolitan distributions (Razowski, 2003)

Sabourin genitalic dissections were consistent with that described in Sabourin et al (2002). Lepidoptera terminology is consisted with that of Horak (2006).

Material Examined:

TN: Knoxville, Holotype ♂ (photo, Gilligan et al, 2018) [USNM]. **LA:** ♀ Vivian, 13302 Mailbox Rd., 31 Aug. 2017, Royal Tyler, gen. prep. #17238 [MS], ♀ Caddo Parish, 16 Aug. 2018, Royal Tyler, gen. prep. #18616 [MS], ♂ Caddo Parish, 30 Aug. 2018, Royal Tyler, gen. prep. #18607 [MS], ♀ Caddo Parish, 9 Sept. 2018, Royal Tyler, gen. prep. #18618 [MS]; **NC:** ♂ Jones Co., Croatan National Forest, Haywood Landing, N34 49.073; W-77 10.787, May 14 2018, 16 wt. uv trap, J. B. Sullivan, gen. prep #8564 (photo)[JBS], ♂ Pender Co., Holly Shelter Game Land, Trumpet Rd. Savannas, N 34.431131; W-77.721827, 22 June 2017, uv trap, J. B. Sullivan, gen. prep #8417 (photo)[JBS], ♂ same data, gen. prep. #8114 (photo)[JBS].

Collection abbreviations:

JBS - J. Boling Sullivan Collection
MS - M. Sabourin collection
USNM - US National Museum of Natural History

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We would like to acknowledge Steve Nanz, JoAnne Russo, and J. Bo Sullivan for their help with photography and additional information.

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NEW MOONS FOR 2019

April 5	May 4	June 3
July 2	August 1	September 28
October 28	November 26	December 26

FULL MOONS FOR 2019

April 19	May 18	June 17
July 16	August 15	September 13
October 13	November 12	December 11

THE MAN IN THE MOON (1)

This concept has been around for thousands of years and spoken by early man to the present day. But what are some of the specific explanations as to who the "Man in the Moon" was thought to be and how did he, the "Man", get to this great white globe in the sky.

Screenshot from *Le Voyage dans la lune* (A Trip to the Moon) (1902) (2)

Tradition accounts for many of the examples of the "Man in the Moon":

1. Europeans thought that the "Moon" was a prison for a man who committed a crime.
   a) Germanic tradition says that the "Man" was a thief stealing from his neighbor.
   b) Early Romans held that the "Man" was a sheep thief.
2. Early Christians thought that the 'Man" was caught working on the Sabbath (collecting wood) and God stoned him and banished him to the "Moon".
3. There is a suggestion in medieval Christian tradition that the "Man" is Cain who because of his slaying of Abel is forced to wander and circle the earth and ended up on the "Moon".
4. Many other claims in mythology of the Norse, Chinese, indigenous peoples of the Pacific Northwest Coast of North America, and others as to how the "Man" got to the "Moon".

Source:

1) https://en.wikipedia.org/wiki/Man_in_the_Moon
2) Roger-Viollet; Author: Georges Méliès (1861–1938)

GEAUX GROW NATIVES!

BY

LINDA BARBER AULD, BUGLADY

I'll never forget the first time I met author Doug Tallamy was the evening of October 10, 2013, at his lecture at Longue Vue Gardens. I purchased his book, "*Bringing Nature Home – How You Can Sustain Wildlife with Native Plants*" and asked him to sign it. Along with his signature, he wrote these words: "*Garden as if life depended on it!*"

Doug's words inspired me to learn more about native plants and to try them in my landscapes. I loved them from the start. In early 2014, I saw Monarch Watch's report on the lowest Monarch butterfly overwintering population in recorded history. That shocked me into focusing my efforts to help Monarchs. Trying different approaches and collaborations to raise public awareness about Monarchs and propose solutions, my various projects have educated and inspired many folks to join the native plants bandwagon. This year, in 2019, aware of the latest scientific reports of general biological decline, *I want more than ever* to make a positive impact in my community.

Over the past 42 years Louisiana and Mississippi trails have been my playground and my classroom. Performing butterfly surveys for the North American Butterfly Association, I have seen firsthand which plants best attract winged beauties. Propagating native plants in my own gardens has shown me the connection between plants and their various insect communities. By raising over a hundred different species of butterflies and moths on native plants, and closely observing bees, wasps and other beneficial insects, I've arrived a deep appreciation of how these creatures recognize native plants as their "real food" and thrive on them. To spread the joy of my experience is why my 2019 project for the Greater New Orleans and Baton Rouge communities is titled ***Geaux Grow Natives***.

"*Plant it and they will come*" really does work! The *Geaux Grow Natives* mission is to make twelve wonderful Louisiana native plants available to the gardening public. Each plant provides important support for beneficial insects that need it. Each one has repeatedly proven to attract butterflies and other beneficial pollinators. Some plants are caterpillar hosts, some are nectar producers and many are both. Five local area plant nurseries and the New Orleans Master Gardeners have signed on to propagating these plants. Ten local commercial garden centers, Longue Vue Gardens and Crosby Arboretum have agreed to make them available for public purchase, starting May 1, 2019.

The list of the participating locations:

Jefferson Feed	4421 Jefferson Hwy	Jefferson	504-733-8572
Double M Feed	8400 Jefferson Hwy	Harahan	504-738-5007
Rose Garden Center	4005 Westbank Exp.	Marrero	504-341-5664
Harold's Plants	1135 Press Street	New Orleans	504-947-7554
Charvet's Nursery	4511 Clearview Pkwy	Metairie	504-888-7700
LongueVue Gardens	7 Bamboo Road	New Orleans	504-488-5488
Crosby Arboretum	370 Ridge Road	Picayune, MS	985-641-3600
Options , Inc.	19362 W. Shelton Rd.	Hammond, LA	985-345-6269
Clegg's Nursery	5696 Siegen Lane	Baton Rouge	225-292-9153
Clegg's Nursery	10645 Greenwell Springs Rd.	Baton Rouge	225-275-7006
Clegg's Nursery	31275 LA Hwy.	16 Denham Springs	225-791-6060
Clegg's Nursery	274 N. Donmoor	Baton Rouge	225-927-1419

Seven plants will be offered for the Spring 2019 planting season and seven more for Fall (the two Spring milkweeds are repeated). I will conduct a free workshop on growing and caring for these special natives at each retail location on the following schedule:

Spring Tour Dates

May 4	Jefferson Feed	9:00 am - 11:30 am
	Double M Feed	12:30 pm - 3:00.pm
May 11	Harold's Plants	9:00 am - 11:30 am
	Options	1:30 pm - 3:30 pm
May 18	Longue Vue Gardens	10:00 am - 12 noon
	Charvet's	1:30 pm - 3:30 pm
May 25	Clegg's Siegen lane	9:30 am - 12 noon
	Clegg's-Denham Springs	1:00 pm - 3:00 pm

Fall Tour Dates

Sept. 7	Jefferson Feed	9:00 am - 11:30 am
	Double M Feed	12:30 pm - 3:00 pm
Sept. 14	Crosby Arboretum	9:30 am - 12 noon
Sept. 21	Harold's Plants	9:00 am - 11:30 am
	Rose Garden Center	12:30 pm - 3:00 pm
Sept. 28	Clegg's Siegen Lane	9:30 am - 12 noon
	Clegg's - Denham Springs	1:00 pm - 3:00 pm

Both Spring and Fall selections include our two easiest to grow local native milkweeds, Aquatic and Swamp (Rose) because milkweed is critical for Monarch butterfly survival.

Spring 2019 Native Plants

Aquatic Milkweed
Swamp (Rose) Milkweed
False Foxglove
Partridge Pea
Garden Phlox
Purple Coneflower
Narrowleaf Mountain Mint

Fall 2019 Native Plants

Aquatic Milkweed
Swamp (Rose) Milkweed
Passion flower Vine (Maypop)
Hop Tree (Wafer Ash)
Buttonbush
Cardinal Flower
Ironweed

I am hoping this project will encourage gardeners to become proactive in helping the natural environment by selecting and nurturing these plants that give our butterflies and pollinators their best opportunity to thrive. Although the start date is a little ways off, please start planning now where in your garden you can add one or more of these special Geaux Grow Natives plants.

Spring HOST Plants:

Aquatic milkweed, *Asclepias perennis*, has been native to the New Orleans area since the 1890's. It can be seen on woody trail hikes at both Bonnet Carre Spillway and Honey Island Swamp. It grows in sun or shade but performs better in shade. It requires moist soil and will even grow in standing water! Twelve or eighteen inches tall with a pretty white flower, it provides food for Monarch caterpillars plus attracts aphids, ladybugs, lacewings, milkweed bugs, and flower flies. Seed pods develop after the flowering stage. It is the only milkweed whose seeds lack silky filaments; its seeds spread by water instead of wind–hence the name. Zones: 6-9 Hardy to zero degrees.

Swamp Milkweed, *Asclepias incarnata*, likes the swamp but will also grow in sunny home gardens. Several of my friends have tried these with great success. The lovely pink flower clusters attract the same community of insects as Aquatic milkweed. Swamp milkweed can reach five feet tall and will re-sprout quickly after caterpillar feedings. Choose a sunny spot and enjoy watching insect visitation. Zones: 3-8 In winter, mulch well as a tender perennial for Spring bounce back.

False Foxglove, *Agalinus tenuifolia*: This annual reaches three feet tall with pink flowered spikes creating a fairyland appearance. It hosts the Common Buckeye butterfly caterpillar which has electric blue barbs but does not sting. The butterfly is named after its conspicuous target-shaped eyespots. Agalinus grows best in medium moist but well-drained soils in full sun to part shade. A self-seeding annual, it is drought tolerant once established. Zones: 2-11

Partridge Pea, *Chamaecrista fasciculata* hosts Cloudless Sulphur, Sleepy Orange and Little Sulphur butterflies. It is also a nectar favorite for bees and other pollinators, plus a food for birds. Sometimes called Sensitive Plant, this annual legume provides bright yellow flowers from early summer until first frost then attractive maroon seed pods in the fall. It readily self seeds in medium to dry soils. Grows best in full sun but will survive under shade. Zones: 3-9

Spring NECTAR Plants:

Garden Phlox, *Phlox paniculata* adds striking colors and months of delicious fragrance to any garden. A perennial, it prefers well drained soils and full sun but can take afternoon shade. Garden Phlox grows in clumps up to 3 feet tall and can spread about 2 feet wide. Dead-head spent flowers to extend its already long blooming season. Zones: 4-8

Purple Coneflower, *Echinacea* thrives in full to partial sun, will tolerate poor rocky soil but will not grow in wet, mucky soil. A clumping plant and versatile herbaceous perennial with profuse, vivid, long lasting flowers is suitable for a formal border, meadow look, or

any garden. Echinacea flowers provide reliable nectar for butterflies then dried seed heads for birds in winter. Zones: 3-9

Narrowleaf Mountain Mint, *Pycnanthemym tenuifolium* is a member of the mint family. This stiff, erect, compact, clump forming plant grows to 30" tall. Its dried leaves can be used as flavoring and in tea though it is not as flavorful as culinary mints. Mountain mint prefers dry to moist soil and, once established, is somewhat drought tolerant. It does best in full or partial sun. A robust grower and nectar source, the Xerces Society reports it of special value to native bumblebees and honey bees. Numerous animals eat the seeds. Zones: 4-8

Fall HOST PLants:

Aquatic Milkweed and **Swamp Milkweed**: – see information above.

Passion Flower Vine, *Passiflora incarnata* also known as "Maypop" hosts the Gulf Fritillary, Louisiana's State butterfly, and also the Variegated Fritillary. Both of these caterpillars have barbs but do not sting. This fast growing perennial vine with tendril stems has large intricate flowers. A tender perennial, the vine loses it leaves in Autumn but, especially if mulched well, re-sprouts the next Spring from surviving roots. Preferring full sun to partial sun and medium water, this vine occurs in sandy soils, low moist woods and open areas. You will enjoy the showy fragrant flowers and the butterfly activity this vine will stimulate. (Not winter hardy) Zone: 6

Hop Tree, (Wafer Ash) *Ptelea trifoliata* is a member of the citrus family and is host for the Giant Swallowtail butterfly. The caterpillar known as the "Orange Dog" looks like bird poop as its defense against predators. The natural habitat for this understory deciduous shrub or small multi-stemmed tree is wide: forests, savannas, prairies, woodland glades and sand dunes. Its small greenish white flower clusters, produced in May and June, are a honey bee magnet. Hop tree tolerates moist or dry soil and can reach up to 20 feet. The fruit can be used as substitute for hops in beer and the root bark is used in home remedies. Zones: 4-9

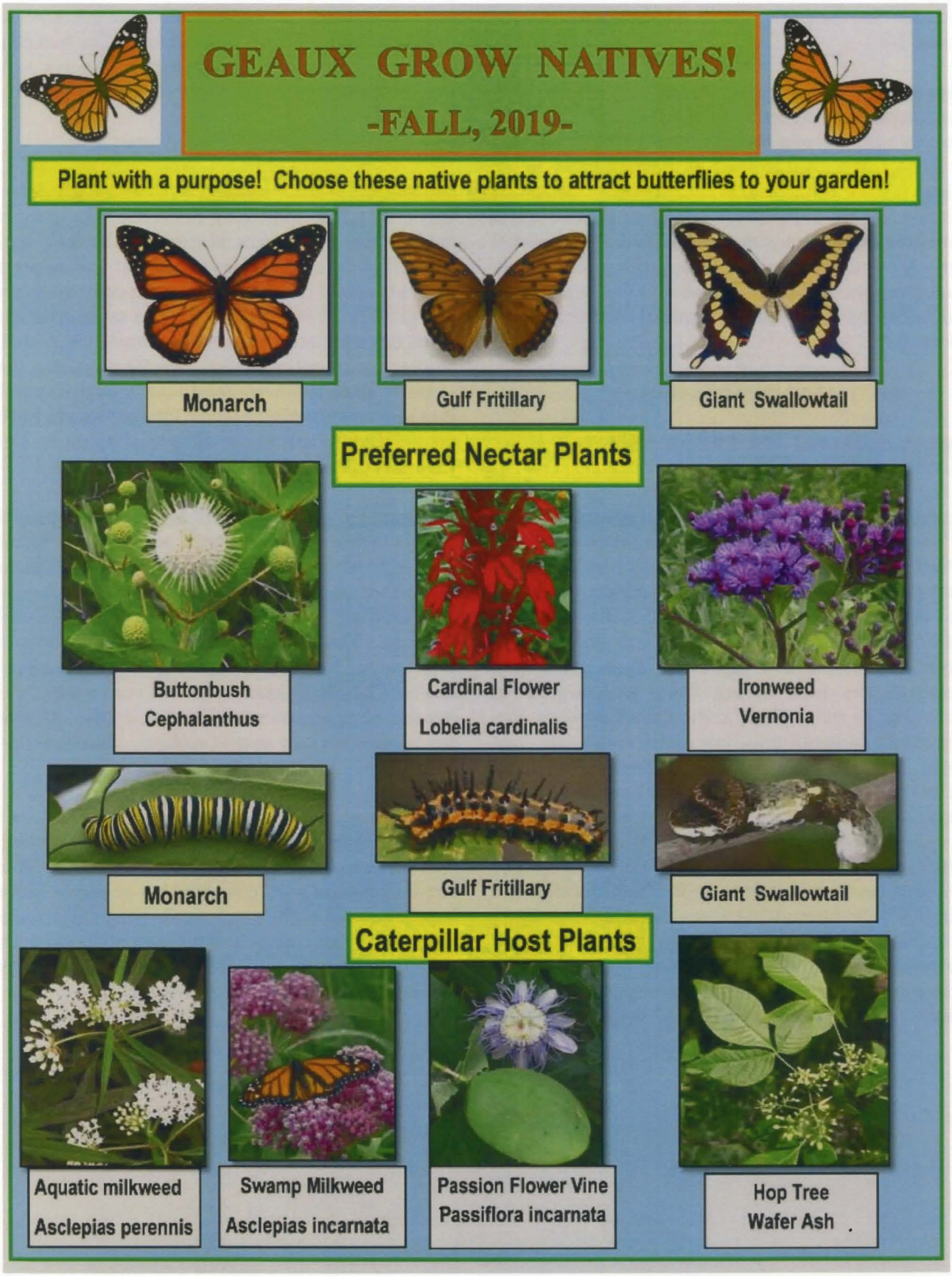
Fall NECTAR Plants:

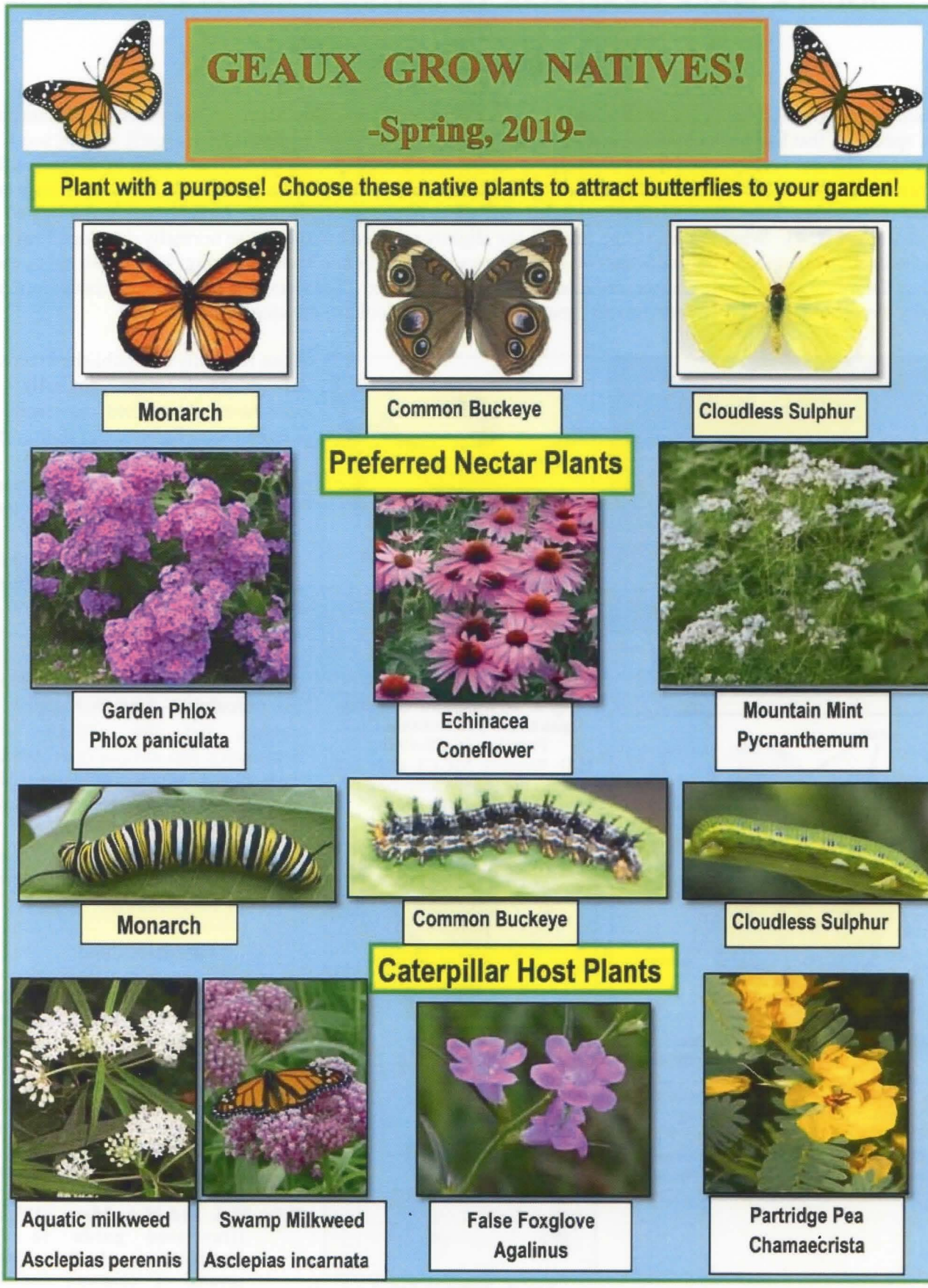
Buttonbush, *Cephalanthus occidentalis* is a member of the coffee family Rubiaceae, found naturally in wetland habitats but also thrives in gardens. Its long lasting unusual globe-shaped blossoms attract pollinators and its seeds attract birds. Buttonbush is cold tolerant and can grow to 12 feet tall. Cultivated as an ornamental plant, this multi-stemmed shrub is sometimes planted on slopes to help control erosion. Preferring partial shade to shady areas, it flowers from June through September then provides beautiful Autumn foliage. Xerces Society reports Buttonbush to be of special value to native Bumble bees as well as Honey bees. Zones: 5-9

Cardinal Flower, *Lobelia cardinalis* is a perennial that prefers to grow in moist, fertile soil. It likes morning sun with afternoon shade. Blooming July through September, its red flowers attract hummingbirds as well as butterflies. It's a real favorite of the Cloudless Sulphurs. The plant can reach 4 feet tall and can spread 2 feet wide. Named after the bright red robes worn by Roman Catholic Cardinals, Lobelia can be found along streams, sloughs, swamps and wooded areas. Divide in the Spring after new growth emerges. Zones: 1-10

Ironweed, *Vernonia,* a member of the Aster (Daisy) family, is a magnet for thirsty butterflies. Growing naturally in moist soil and tolerating brief flooding, it will reach to eight feet in fertile, damp soil. It is a sun-loving plant with loose bunches of purple flowers. It partners well with fennel, sunflowers, milkweed and hollyhock. This ensemble at the back of the garden bed provides elegance, attractive foliage, striking blooms and interesting fall color. Zones: 4-8

[Article continues on next page.]


GEAUX GROW NATIVES!
-FALL, 2019-
Plant with a purpose! Choose these native plants to attract butterflies to your garden!
Monarch
Gulf Fritillary
Giant Swallowtail
Preferred Nectar Plants
Buttonbush
Cephalanthus
Cardinal Flower
Lobelia cardinalis
Ironweed
Vernonia
Monarch
Gulf Fritillary
Giant Swallowtail
Caterpillar Host Plants
Aquatic milkweed
Asclepias perennis
Swamp Milkweed
Asclepias incarnata
Passion Flower Vine
Passiflora incarnata
Hop Tree
Wafer Ash



(Linda B. Auld, BugLady, E-Mail: nolabuglady@gmail.com)

DOUBLE MALE GENITALIA IN *DIATRAEA LISETTA* (DYAR)

BY

JAMES E. HAYDEN

Diatraea lisetta (Dyar) (Fig. 1) is a small crambid that is widespread in the Southeast. A few years ago, I identified a male specimen that had been collected in a trap for Mexican rice borer [*Eoreuma loftini* (Dyar)] located south of Gainesville, Florida. It happened that I dissected it on October 31, 2013. At first, I was struck by the unusually large juxta and the complexity of what appeared to be the basal lobes of the valvae, which are normally simple and rounded in *D. lisetta* (Fig. 2). Scrutiny revealed that parts of the genitalia were teratologically duplicated in symmetry (Figs. 3, 4). What looks like the juxta is the slightly reduced but otherwise normally developed valvae. The juxta itself in this species normally has two long, narrow arms (Solis and Metz 2016: Fig. 4e). In this sport, each juxta has the mesal arm slightly shorter, reduced like the mesal valves. The twin phalli and ductus ejaculatorii are normally developed. All other parts (uncus, gnathos, tegumen, vinculum) are single and normal.

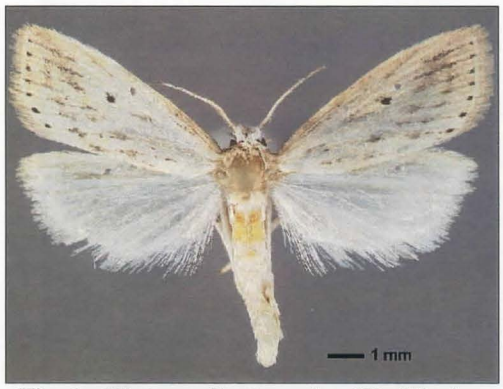


Fig. 1. *Diatraea lisetta* male. FL, Marion Co., 29°17'N 82°08'W, 12-XI-2005, T.S. Dickel (FSCA).

Fig. 2. *D. lisetta* normal male genitalia. FL, Putnam Co., Palatka, 16-IX-1989, H.D. Baggett. MGCL slide 1484 (Florida State Collection of Arthropods, FSCA).

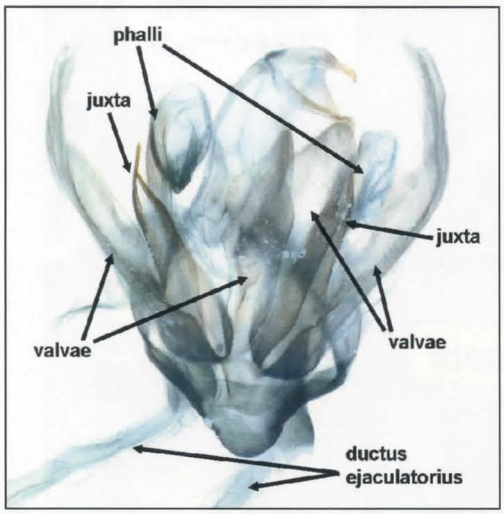


Fig. 3. *D. lisetta* duplicate male genitalia in detail, before slide-mounting. FL, Marion Co., Citra, Vermillion Ranch, 29.41593°N 82.09805°W, UF Mexican rice borer trap, 30-X-2013, Gregg Nuessly (FSCA).

Fig. 4. Same as Fig. 3, slide-mounted, MGCL slide 1548.

(James E. Hayden,
E-Mail: jehayden63@gmail.com)

I can find only two published records of doubled male genitalia or structures interpreted as such in Lepidoptera (Balazuc and Bourgogne 1968, Balazuc and Pointel 1956). In the first case, in *Earias biplaga* Walker, the ejaculatory duct is split and leads to a sclerotized body that might include doubled valvae, but the tegumen, phallus, and other recognizable structures are absent or rudimentary. In the second, *Melitaea athalia* Rottemburg, two genitalic capsules are recognizable and fused at the vinculum. Each has a pair of valvae, but the capsules are asymmetric and unequally developed. Two phalli, which are symmetrical and normally developed, emerge side-by-side through one of the capsules. I could only speculate about the causes of these deformities and their functionality.

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Balazuc, J. and J.-G. Pointel, 1956. Observations tératologiques chez les Lépidoptères. *Bulletin de la Société Entomologique de France* 61:67–74.

Solis, M.A. and M.A. Metz, 2016. An illustrated guide to the identification of the known species of *Diatraea* Guilding (Lepidoptera, Crambidae, Crambinae) based on genitalia. *Zoo Keys* 565:73–121.

MOTHS OF THE GENUS *GLENA* HULST 1896, (LEPIDOPTERA: GEOMETRIDAE) IN LOUISIANA

BY

VERNON ANTOINE BROU JR. AND CHARLOTTE DOZAR BROU

Fig. 1. ***Glena cribrataria*** phenotypes: males a-c, females d-h, ***Glena cognataria*** phenotypes: males j-n, females o-r, ***Glena plumosaria*** phenotypes: males s-u, females v-x.

Forbes (1948) covered four species ***Glena cribrataria*** (Guenée, 1857) and listed its range to include Ontario, Virginia, Indiana, and for New York: rare and sporadic. This same author listed ***Glena fuliginaria*** Hulst, of which Forbes stated "*Type only known*"..."*most likely an aberration of cribrataria*", and later Rindge (1965) synonymized ***fuliginaria*** under ***cribrataria***. Forbes also listed ***Glena cognataria*** Geyer, though I can find no other references of ***Glena cognataria*** associated with the author's name 'Geyer. Regardless, Forbes appears to be discussing ***cognataria*** Hübner. This author stated ***cognataria*** occurs Nova Scotia to Georgia and Florida, May to August in probably two broods. Forbes also listed ***Glena quinquelinearia*** Packard, not a species occurring in Louisiana, and ***Glena polygrammaria*** (Packard), a species currently placed in the genus ***Stenoporpia*** (Hodges, 1983), and not a species occurring in Louisiana.

A very in-depth revision of the Geometridae genus ***Glena*** in North America was published by Rindge (1965) which included Nova Scotia, and Canada and the United States from coast to coast. Based upon museum material available at that time, Rindge reviewed 2464 specimens and 264 genitalic dissections, dividing 11 species and three subspecies into 3 distinct groups. Regarding the three species I am currently reporting for Louisiana, Rindge stated the range of ***Glena cribrataria*** to include eastern North America, Minnesota and Ontario to Florida and Texas. For ***Glena cognataria*** Rindge stated the range to be eastern North America, Nova Scotia to Florida. For ***Glena plumosaria*** (Packard, 1874) Rindge stated the range to include Mississippi, Alabama, Tennessee and New Jersey.

Fig. 2. Phenogram of adult ***Glena cribrataria*** captured in Louisiana. n = 1068

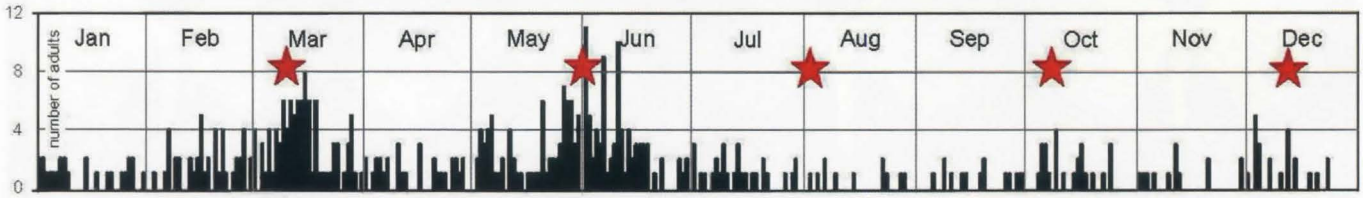

Fig. 3. Phenogram of adult ***Glena cognataria*** captured in Louisiana. n = 465

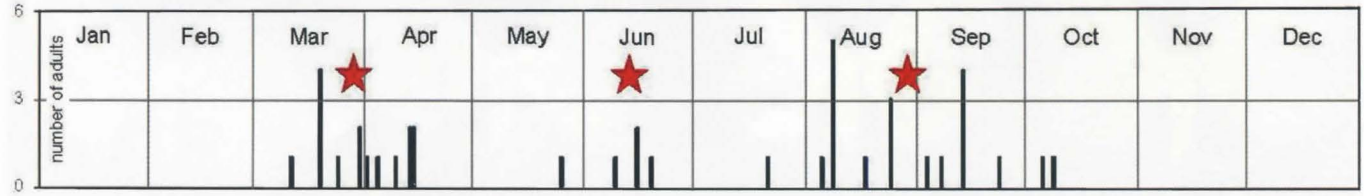

Fig. 4. Phenogram of adult ***Glena plumosaria*** captured in Louisiana. n = 40

Covell (1984) addressed only ***cribrataria*** and ***cognataria.*** This same author stated ***cribrataria*** is found from southern Ontario to southern Virginia, west to Wisconsin and Texas, April-May, July-August and being uncommon. Regarding ***cognataria*** Covell stated this species occurs from coastal Nova Scotia to Florida, west to Louisiana, (adults) in the months May-August, probably in two annual broods, and uncommon northward.

Heitzman & Heitzman (1987) did not address any member of this genus.

Heppner (2003) listed the same three species for the state of Florida that I am reporting here as occurring in Louisiana. Heppner listed ***cribrataria's*** range to be eastern North America, Ontario to Florida and Wisconsin to Texas in the months January and March. Regarding ***cognataria***, this same author stated the range to include "Atlantic/Gulf Coast: Nova Scotia-Florida-Louisiana". For ***plumosaria***, this author stated the range to include the eastern United States: New Jersey to Florida/Kentucky-Alabama.

Wagner (2005) stated ***cognataria*** occurs Minnesota and Ontario to Vermont, south to Florida and Texas, with one generation in the north and two or more generations in the south.

Powell and Opler (2009) reported the new world genus ***Glena*** has 44 species, ten found in North America, six found in the west, and specifically mentioned only two western species, ***Glena nigricaria*** (Barnes and McDunnough) and ***Glena grisearia*** (Grote).

Fig 5. Parish records for: ***Glena cribrataria***, ***Glena cognataria***, and ***Glena plumosaria***.

In Louisiana I have documented 1573 adults of the genus ***Glena*** representing three species: ***Glena cribrataria*** (Guenée) Figs. 1a-h, ***Glena cognataria*** (Hübner) Figs. 1j-r, and ***Glena plumosaria*** (Packard) Figs. 1s-x. Of the three, ***cribrataria*** is the most abundantly encountered, occurring February through December in four annual broods, the initial brood peaking in late March and each of the subsequent broods occurring at approximate 81-day intervals (Fig. 2). The second most commonly encountered species is ***cognataria*** occurring January through December in five annual broods, first brood peaking second week of March, second brood peaking end of May with each of the subsequent broods peaking at approximate 58-day intervals (Fig. 3). The least abundant species of the three is ***plumosaria*** which has at least three annual broods, the first brood peaking the end of March, and subsequent broods each peaking at approximate 77-day intervals (Fig. 4).

The confirmed Louisiana parish records for all three species of ***Glena*** are illustrated in Fig. 5.

N.B.: Presumed to be Carl M. Geyer (1796-1841) German entomologist who published several times (in Hübner) circa (1826-1838).

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E-mail: vabrou@bellsouth.net)

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Edward C. Knudson, M.D.
1947 - 2018
Charles Bordelon Jr.
1958 - 2016

Texas and the States of the Southern Lepidopterists' Society
have lost 2 of the premier butterfly and moth aficionados.

May they rest in peace and continue their research and collecting activities in eternity!

"The following comments by Mike Quinn: Ed Knudson was a very soft spoken individual, but hopefully his legacy will continue to speak to us for many years to come...

The Ed Knudson and Charles Bordelon collection was donated to the McGuire Center in Florida in 2017:
https://www.floridamuseum.ufl.edu/science/entomologists-donate-lifetimes-worth-of-butterflies-and-moths/

Images of some 118 Cornell drawers (with closeups of select paired unit trays) that they donated to the McGuire Center:
https://www.floridamuseum.ufl.edu/mcguire/collection/collection-overview/knudson

A great many of the individual specimens that Ed and Charles collected and photographed are compiled here on the Moth Photography Group website:
http://mothphotographersgroup.msstate.edu/TLS.shtml

Here's a wonderful three page autobiography by Ed upon his reception of the 1986 John Abbot Award by the Southern Lepidopterists' Society:
http://southernlepsoc.org/pdf/Vol_08_no_3-4.pdf

Following his biographical sketch, Ed makes a plea for the production of state Lepidoptera checklists. Here's the 2018 version of the list of some 5000 moth species. that Knudson and Bordelon compiled for Texas. It runs 52 pages. Their list includes a large number of species that Ed described or co-described as well as numerous patronyms for Ed:
https://www.floridamuseum.ufl.edu/files/5015/1784/5550/Checklist-Texas-Lepidoptera-Knudson-Bordelon-2018.pdf
or: https://bit.ly/2BhJQun

Between 2000 and 2011, Knudson & Bordelon self published a series of illustrated Texas Lepidoptera Survey Publications from various biological hotspots across Texas, namely the Audubon Sabal Palm Grove Sanctuary, the Big Thicket National Preserve, Big Bend National Park, Guadalupe Mountains National Park, Caprock Canyonlands, the Davis Mountains, the Texas Hill Country, and several for the Lower Rio Grande Valley.

Ed was the primary lepidopterist to determine over 1000 moth species collected at the 82-acre Brackenridge Field Lab. Moths of Brackenridge Field Laboratory (resurrected link to Ed's list):
https://web.archive.org/web/20160805102012/https://www.bfl.utexas.edu/research/species-list/insects/lepidoptera
or: https://bit.ly/2C7yNWz

The last TAMUIC Open House Ed attended was in 2012 (half kneeling 3rd from left):
https://photos.app.goo.gl/FojDK9CvUSmhPquE6
Ed standing 4th from left:
https://photos.app.goo.gl/HUijw2R1HuRbsvGTA"

[The Editor thanks Mike Quinn for compiling these websites on Ed and Charles and his comments, and also thanks to Monica Krancevic for directing me to Mike Quinn's contributions.]

AN OVERVIEW OF BUTTERFLIES AND MOTHS OF CONSERVATION CONCERN IN ARKANSAS

BY

SAMANTHA SCHEIMAN AND CINDY OSBORNE,
ARKANSAS NATURAL HERITAGE COMMISSION

Aptly called The Natural State, Arkansas encompasses a mosaic of natural communities, such as glades and associated woodlands and savannas in the Ozark Highlands and Ouachita Mountains, tallgrass prairies in the Arkansas River Valley, blackland prairies and pine-oak flatwoods in the Coastal Plain, and bottomland hardwoods in the Mississippi Delta. Naturally, this diversity in habitat supports an array of Lepidoptera in Arkansas—approximately 2,500 species of moths and over 150 species of butterflies and skippers, including the much-celebrated Diana fritillary (*Speyeria diana*), the State Butterfly of Arkansas. However, as development continues to reduce and fragment habitat, identifying and protecting butterfly and moth species of conservation concern is of paramount importance, lest we lose species important to ecosystems and the natural heritage of Arkansas and the southeastern United States.

Butterflies and Moths of Conservation Concern in Arkansas:

To guard against the loss of Arkansas's rarest Lepidoptera, the Arkansas Natural Heritage Commission (ANHC) maintains a dynamic biodiversity database that tracks the locations and status of butterflies and moths of conservation concern, as well as other rare animals, plants, natural communities, and important natural sites such as animal assemblage areas. Known as the ANHC's Natural Heritage Database, it is the principal source on the locations of such rare species in Arkansas. Information from the database is used by the agency and shared with others in planning efforts to maintain these special resources. The butterflies and moths of conservation concern that the ANHC currently tracks are shown in Figure 1 along with a corresponding legend that explains the status codes and ranks.

Discussion of Arkansas Natural Heritage Commission's Tracked Lepidoptera Species List:

Two major components of the legend that describe the rarity of tracked Lepidoptera species are global ranks and state ranks. Factors within three overarching categories—rarity, trends, and threats—inform these ranks. Global ranks are conservation ranks that address the rarity of a given species throughout its range using a scale of 1–5 (G1 = extremely rare and G5 = globally secure). Global ranks are assigned through NatureServe, a non-profit organization with a mission to provide scientific basis for conservation action. NatureServe utilizes its international network of conservation professionals to make global rank assignments.

State ranks are conservation ranks that address the rarity of a given species within Arkansas and, like global ranks, use a scale of 1–5 (S1 = extremely rare and S5 = secure in state). State ranks are assigned by NatureServe's heritage program partner in each state, with the ANHC serving as the heritage program for Arkansas. Ranks are assigned using NatureServe's rank calculator tool. Assigned ranks are typically reviewed by a committee of state professionals knowledgeable about the group of species being ranked. The review committee may make rank adjustments based on professional knowledge and experience. Most tracked species in Arkansas are ranked S1–S3 with very few exceptions, and in fact, only one species of tracked Lepidoptera, the bronze copper (*Lycaena hyllus*), currently has a ranking of S4 or greater. Note that many tracked species have numeric range ranks (e.g., G3G4, S1S2) indicating the range of uncertainty in the status of a given species.

Global and state ranks are used to inform environmental reviews, land acquisitions, and conservation actions in Arkansas. The ranks serve as the basis for determining the species of greatest conservation need (SGCN) within the Arkansas Wildlife Action Plan, which is the guiding document for the conservation community in identifying those animal species in Arkansas that are at risk of becoming further imperiled and the actions needed to conserve those species [1]. Typically, the lists of Arkansas Wildlife Action Plan SGCN and species tracked by the ANHC are the same, with the exceptions often being species showing signs of decline but that are still too abundant in the state to practically track. For example, the monarch butterfly (*Danaus plexippus*) falls within this category, as it is currently identified as an SGCN in Arkansas but is not a species the ANHC tracks.

[1] Fowler, Allison (Ed) 2015. Arkansas Wildlife Action Plan. Arkansas Game and Fish Commission, Little Rock, Arkansas. 1678 pp.

Figure 1: Arkansas Natural Heritage Commission
Department of Arkansas Heritage
Butterflies and Moths of Conservation Concern

Scientific Name	Common Name	Federal Status	ANHC Status	AWAP Species	Global Rank	State Rank
Order: Lepidoptera						
Family:Erebidae (Erebid Moths)						
Cycnia collaris	unexpected tiger moth	-	INV	N	G4	S1
Family: Hesperiidae (Skippers)						
Amblyscirtes aesculapius	Lace-winged Roadside-Skipper	-	INV	Y	G3G4	S1S3
Amblyscirtes belli	Bell's Roadside-Skipper	-	INV	Y	G3G4	S3S4
Amblyscirtes carolina	Carolina Roadside-Skipper	-	INV	Y	G3G4	S1S3
Amblyscirtes linda	Linda's Roadside-Skipper	-	INV	Y	G2G3	S1S3
Atrytone arogos iowa	Arogos Skipper	-	INV	Y	G3T3	S1
Atrytonopsis hianna	Dusted Skipper	-	INV	N	G4G5	S2S3
Autochton cellus	Golden Banded-Skipper	-	INV	Y	G4	S2S3
Cogia outis	Outis Skipper	-	INV	Y	G3G4	S3
Erynnis martialis	Mottled Duskywing	-	INV	Y	G3	S2S3
Euphyes dion	Dion Skipper	-	INV	Y	G4	S3
Euphyes dukesi	Dukes' Skipper	-	INV	Y	G3	S1S2
Hesperia leonardus	Leonard's Skipper	-	INV	Y	G5	S3
Hesperia meskei	Meske's Skipper	-	INV	Y	G3G4	S1S2
Hesperia metea	Cobweb Skipper	-	INV	Y	G4	S3
Poanes viator	Broad-winged Skipper	-	INV	Y	G5	S3
Poanes yehl	Yehl Skipper	-	INV	Y	G4	S1S3
Problema byssus	Byssus Skipper	-	INV	Y	G3G4	S3
Family: Lycaenidae (Gossamer-wing Butterflies)						
Callophrys irus hadros	Frosted Elfin	-	INV	Y	G3T2T3	S1
Celastrina neglectamajor	Appalachian Azure	-	INV	Y	G4	S1
Celastrina nigra	Dusky Azure	-	INV	Y	G4	S2
Lycaena hyllus	Bronze Copper	-	INV	Y	G5	S4
Satyrium caryaevorus	Hickory Hairstreak	-	INV	N	G4	S1S3
Satyrium favonius ontario	Oak Hairstreak	-	INV	Y	G4G5T4	S3
Satyrium kingi	King's Hairstreak	-	INV	Y	G3G4	S2
Family: Noctuidae (Owlet Moths, Miller Moths)						
Catocala lincolnana	Lincoln underwing	-	INV	Y	G3G4	S3
Papaipema eryngii	Rattlesnake-master borer moth	C	INV	Y	G1G2	S1
Schinia indiana	Noctuid Moth	-	INV	Y	G2G4	SH
Family: Nymphalidae (Brush-footed Butterflies)						
Chlosyne gorgone	Gorgone Checkerspot	-	INV	Y	G5	S3
Euphydryas phaeton ozarkae	Baltimore Checkerspot	-	INV	Y	G4T3	S3
Lethe creola	Creole Pearly-Eye	-	INV	N	G3G4	S3
Neonympha areolatus	Georgia Satyr	-	INV	Y	G3G4	S2
Polygonia progne	Gray Comma	-	INV	Y	G5	S2S3
Speyeria diana	Diana Fritillary	-	INV	Y	G3G4	S2S3
Speyeria idalia	Regal Fritillary	-	INV	N	G3	S1
Family: Papilionidae (Parnassians and Swallowtails)						
Papilio joanae	Ozark Swallowtail	-	INV	Y	G3	S2
Family: Riodinidae (Metalmarks)						
Calephelis borealis	Northern Metalmark	-	INV	Y	G3G4	S3
Calephelis muticum	Swamp Metalmark	-	INV	Y	G3	S1

Need for Data and Expertise:

As previously mentioned, the ANHC gathers information on rare species, exemplary natural communities, and other significant natural sites such as animal assemblage areas. Collectively these are referred to as "elements" of conservation concern. Natural locations supporting these elements are recorded in the ANHC's biodiversity database as "occurrences." Element Occurrence Records (EORs) provide a science-based foundation to guide the ANHC's conservation efforts.

EOR data for tracked Lepidoptera in Arkansas are sorely needed, largely because the ANHC does not have a full-time entomologist on staff to devote considerable time to gathering and requesting such data. Additionally, there is a paucity of data in part because it can be challenging to gather data at the level of detail required for EORs, and some expertise and often specimens or photos are required to ensure accurate identification. Further, more EORs are needed for recent and decades-old observations alike to better understand the population dynamics of rare species. Therefore, the Southern Lepidopterists' Society community is highly encouraged to contribute EOR data to the ANHC for observations of tracked butterflies and moths in Arkansas. The ANHC also recognizes that there are many untapped data resources, so any guidance for accessing such information is welcome, too.

Additionally, expertise is critically needed to inform conservation rankings. The S ranks for tracked butterflies and moths in Arkansas are due for a comprehensive update, as the last such effort was undertaken in 2000, and only a small selection of species has been updated opportunistically since that time. While a few experts have assisted with recent ranking updates, more expert input is required to ensure the process is conducted as accurately as possible. Thus, assistance from the Southern Lepidopterists' Society community with the ANHC's ranking efforts is highly desired.

To contribute EOR data for observations of tracked butterfly and moth species in Arkansas, or to express interest in assisting with ranking efforts, please contact ANHC Data Manager/Environmental Review Coordinator Cindy Osborne at Cindy.Osborne@arkansas.gov for instructions. The ANHC looks forward to collaborating with the Southern Lepidopterists' Society to advance the conservation of Arkansas's rarest butterflies and moths for this and future generations.

LEGEND

STATUS CODES

FEDERAL STATUS CODES

C = Candidate species. The U.S. Fish and Wildlife Service has enough scientific information to warrant proposing this species for listing as endangered or threatened under the Endangered Species Act.

STATE STATUS CODES

ANHC Status

INV = Inventory Element - The Arkansas Natural Heritage Commission is currently compiling detailed location information in its database and conducting active inventory work on these species. Available data suggest they are of conservation concern in the state.

AWAP Species

Y/N = Yes or No, this species is designated as a "Species of Greatest Conservation Need" in the Arkansas State Wildlife Action Plan.

DEFINITION OF RANKS

Global Ranks – These are conservation ranks that address the rarity of a species throughout its range.

G1 = Critically imperiled globally. At a very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled globally. At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable globally. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently secure globally. Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure globally. Common, widespread and abundant.

GH = Of historical occurrence, possibly extinct globally. Missing; known from only historical occurrences, but still some hope of rediscovery.

GU = Unrankable. Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

GX = Presumed extinct globally. Not located despite intensive searches and virtually no likelihood of rediscovery.

GNR = Unranked. The global rank not yet assessed.

GNA = Not Applicable. A conservation status rank is not applicable.

T-RANKS = T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level. The subrank is made up of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.

State Ranks – These are conservation ranks that address the rarity of a species within Arkansas.

S1 = Critically imperiled in the state due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors making it vulnerable to extirpation.

S2 = Imperiled in the state due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it vulnerable to extirpation.

S3 = Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 = Apparently secure in the state. Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 = Secure in the state. Common, widespread and abundant.

SH = Of historical occurrence, with some possibility of rediscovery. Its presence may not have been verified in the past 20-40 years. A species may be assigned this rank without the 20-40 year delay if the only known occurrences were destroyed or if it had been extensively and unsuccessfully sought.

SU = Unrankable. Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SX = Presumed extirpated from the state. Not located despite intensive searches and virtually no likelihood of rediscovery.

SNR = Unranked. The state rank has not been assessed.

SNA = Not Applicable. A conservation status rank is not applicable.

General Ranking Notes.

Q = A "Q" in the global rank indicates the element's taxonomic classification as a species is a matter of conjecture among scientists.

RANGES = Ranges are used to indicate a range of uncertainty about the status of the element.

? = A question mark is used to denote an inexact numeric rank.

B = Refers to the breeding population of a species in the state.

N = Refers to the non-breeding population of a species in the state.

(Samantha Scheiman, E-Mail: Samantha.Scheiman@arkansas.gov)

NEW HOST PLANT FOR *ERYNNIS BAPTISIAE* (HESPERIIDAE: PYRGINAE) IN NORTHERN FLORIDA

BY

MARC C. MINNO

Until recently the Wild Indigo Duskywing (*Erynnis baptisiae*) had hardly been known to occur in Florida (Kimball 1964, Heppner *et. al* 2003). Forbes (1936) described and named *E. baptisiae* as a new species in the *persius* group of *Erynnis*. He noted that the allotype in the U.S.National Museum from the Barnes collection had been reared from *Baptisia tinctoria* and that the holotype and paratype series of adults had also been collected in close association with *B. tinctoria*. He did not include other museum specimens that he had seen from New England, Pennsylvania, and Florida that lacked information on associated food plants.

Although larvae of both *E. baptisiae* and *E. persius* eat the leaves of *B. tinctoria* in the wild, those of *E. baptisiae* have been reported from many other legumes from throughout its range including: *Amorpha canescens* (Ebner 1970), *Astragalus canadensis* (Scott 1986), *Baptisia australis* (Opler and Krizek 1984), *Baptisia leucantha* (Burns 1964), *Baptisia leucophaea* var. *laevicaulis* (Kendall 1965), *Coronilla varia* (Wheeler 1974), *Lupinus perennis* (Shapiro 1974), *Melilotus albus* (Monroe and Wright 2017), *Sesbania vesicaria* (Roy O. Kendall collection), *Thermopsis villosa* (Opler and Krizek 1984), and *Trifolium aureum* (Monroe and Wright 2017). The use of *C. varia*, an exotic planted along highways in the eastern U.S. for erosion control, has enabled *E. baptisiae* to increase in abundance and spread to new places.

Host plants used by larvae of *E. baptisiae* in Florida were not identified until recently. Minno *et. al* (2005) speculated that *Baptisia alba* could be a host of *E. baptisiae* in Florida because this plant is widely distributed and locally common in northern areas of the state. However, Minno *et. al* (2006) were surprised to discovered larvae of *E. baptisiae* feeding on the leaves of a rare species of wild indigo, *Baptisia calycosa* var. *villosa* (now *Baptisia hirsuta*) at Eglin Air Force Base (Okaloosa County) in the western panhandle. Other observations by Dean and Sally Jue of *E. baptisiae* larvae feeding on *Baptisia lanceolata* and a female attempting to oviposit on *Baptisia simplicifolia* in the panhandle were also listed by Minno *et. al* (2006).

Warren *et. al* (2015) attempted to track down Florida specimens of *E. baptisiae* reported in the literature, listed on the Butterflies and Moths of North America web site, and in museum collections. They also documented records from photographs taken by butterfly enthusiasts and collected specimens at new locations. They verified *E. baptisiae* from nine counties in the panhandle and northern peninsula including: Okaloosa, Washington, Liberty, Wakulla, Suwannee, Columbia, Gilchrist, Clay, and Nassau. A specimen from Lake County they questioned as possibly mislabelled. They found a number of Florida populations to be closely associated with patches of *Baptisia lecontei* and documented larvae feeding on the leaves of this plant.

During the summer of 2018, I discovered a population of *E. baptisiae* at Peacock Slough that was using *B. alba* as a host. Peacock Slough is a 1,174-acre tract owned and managed by Suwannee River Water Management District. This conservation area is located on the north side of the Suwannee River between Luraville and Peacock Springs State Park in west-central Suwannee County, Florida. On July 20, 2018, I photographed a perched adult male, an ovipositing female, and discovered a pupa and two last instar larvae in shelters on the leaves of *B. alba* (Fig. 1). Plants of *B. alba* were abundant in certain areas of the preserve where pine trees had recently been harvested. Many dozens of individuals of *B. alba* were present. I subsequently found another adult on July 27, one on August 3rd, 10 (including a mating pair) on August 10th, and six on September 14th. Immatures were not common and I had to examine many plants of *B. alba* to find just one shelter. On July 27th I also found one third instar, two last instars, and one pupa. On August 3rd I found two last instars and on August 10th, two prepupae. *Baptisia alba* is the only species of wild indigo that I have seen on the property, but *B. lecontei* could potentially be present too.

The related skipper, *Erynnis zarucco*, is also present at this site. Adults are relatively easy to distinguish from *E. baptisiae* when perched because they are darker and less contrastingly patterned. Unlike *E. baptisiae*, the larvae of *E. zarucco* have orange patches on the head. I did not found any larvae of the Zarucco Duskywing on *B. alba*, although I had previously reared some from the Florida panhandle on this plant (Minno *et. al* 2006). Larvae and a pupa of *E. zarucco* were found in shelters on the leaves of *Sesbania vesicaria* at Peacock Slough.

So far, *E. baptisiae* has only been found using species of wild indigo in managed natural areas in Florida. Of the nine species of *Baptisia* reported from Florida, two are listed as Threatened (*B. hirsuta, B. simplicifolia*) by the State of Florida and two are Endangered (*B. calycosa, B. megacarpa*). *Baptisia lecontei, B. lanceolata*, and *B.*

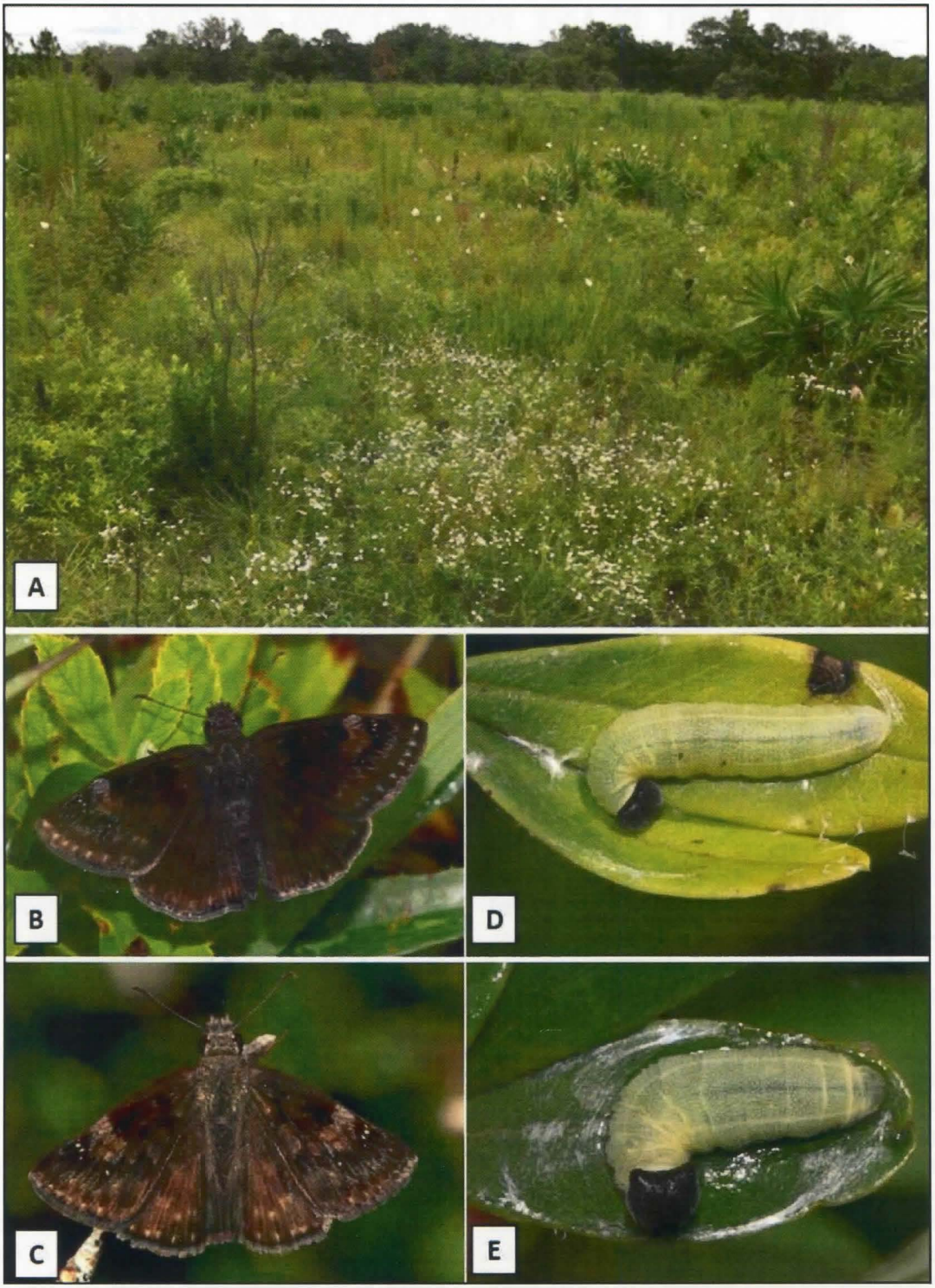

Figure 1. Habitat of *Erynnis baptisiae* at Peacock Slough conservation area, Suwannee County, Florida, with dozens of the larval host plants, *Baptisia alba*, in view (A) plus adults and larvae of *E. baptisiae* observed there: male, July 20, 2018 (B), female, July 27, 2018 (C), fourth instar larva, July 27, 2018 (D), and fifth instar larva, July 20, 2018. (E), both on *B. alba*.

alba are the most common and widely distributed species of wild indigo in Florida according to the Atlas of Florida Vascular Plants web site (http://florida.plantatlas.usf.edu/). This web site also lists a few records of *C. varia* from Florida, but this plant is unlikely to survive here, being suited to a more temperate climate. However, the host records of white sweet clover (*M. albus*) and a clover (*T. aureum*) from Pennsylvania are interesting because the former as well as species of clovers are common along Florida roadsides and other disturbed places. If *E. baptisiae* switches to these hosts in Florida, the Wild Indigo Duskywing could expand to become a weedy butterfly here, just like it has in the northern United States.

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(Marc C. Minno, E-Mail: marc.minno@gmail.com)

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REPORTS OF STATE COORDINATORS

Alabama: C. Howard Grisham, 573 Ohatchee Road, Huntsville, AL 35811, E-Mail: chgrisham@Comcast.net

Arkansas: Mack Shotts, 514 W. Main Street, Paragould, AR 72450, E-Mail: cshotts@grnco.net

Florida: Charles V. Covell Jr., 207 NE 9th Ave, Gainesville, FL 32601, E-Mail: covell@louisville.edu

Florida report, November and December 2018, Charlie Covell, correspondent:

This from Rick Gillmore: "I'd like to report that I found a very fresh female *Erinnyis alope* resting at the base on my front door stoop on the morning of December 6, 2018. This is the third time that I had collected a specimen of *E. alope* in December in the Winter Park area, Seminole County. It is interesting to state that the host-plant, papaya, is not been seen near any of the locations that I collected the three species between the years of 1972/2018, yet all the specimens were very fresh."

Gainesville, FL records, November - December, 2018. Most observations at 207 NE 9th Ave. (home), the McGuire Center for Lepidopteera and Biodiversity, Florida Museum of Natural History, and Gainesville Country Club golf course, Charles V. Covell Jr.

Urbanus proteus, Nov. 1, 14
Lerema accius, Nov. 1
Agraulis vanillae, Nov. 1, 13, 14, 20
Danaus plexippus, Nov. 9, 12, 13, 14, 21, 23
Leptotes cassius, Nov. 12, Dec. 28
Heliconius charithonia, Nov. 12, 14, 20, Dec. 18, 31
Junonia coenia, Nov. 14, 23, 30
Phoebis sennae, Nov. 19, 21, 23, 30, Dec. 18, 31
Hylephila phyleus, Nov. 21, 23
Abaeis nicippe, Nov. 23
Limenitis archippus, Nov. 23

Total butterflies seen in home yard of C. V. Covell Jr. 2018, with date of first sighting. Down 5 species from last year.

1. *Phoebis sennae*	Feb. 20, flying across front yard
2. *Papilio glaucus*	Feb. 23, flying across front yard
3. *Papilio troilus*	March 6, flying in our back yard
4. *Heraclides cresphontes*	March 11, flying in our back yard
5. *Libytheana carinenta*	March 25, in Viburnum tree blossoms
6. *Junonia coenia*	March 28, on Viburnum blossoms
7. *Agraulis vanillae*	April 29, flying over back yard
8. *Heliconius charithonia*	June 3, flying in our back yard
9. *Strymon melinus*	June 19. perched in front yard
10. *Papilio palamedes*	Aug. 25, flying over yard
11. *Danaus plexippus*	Sept. 2, flying over driveway
12. *Leptotes cassius*	Sept. 9, flying in back yard
13. *Limenitis arthemis astyanax*	Sept. 15, flying in back yard
14. *Phoebis philea*	Sept. 20, flying across front yard
15. Urbanus proteus	Sept. 24, nectaring on lantana

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

James sends in the following report:

The contributors include James Adams (JKA or no notation), Brian Scholtens (BS), John Hyatt (JH) and Lance Durden (LD). Others are indicated with their records. Most records presented here represent new or interesting records (range extensions, unusual dates, uncommon species, county records, etc.), or more complete lists for new locations/new times of year. All known new STATE and COUNTY records are indicated, and all dates listed below are 2018 unless otherwise specified.

Rocky Face ridgeline, just W of Dalton at crest of Dug Gap Battle Rd., Whitfield Co:
Jan. 7-8:
NOCTUIDAE: *Feralia major*; first record for the year.

Taylor's Ridge, 5 mi. W of Villanow, Walker Co., Dec. 2, 2018:
SATURNIIDAE: *Hemileuca maia*, still abundant. These are the first December records for this species ever at this locality. The rather chilly early and late November may have extended the flight into December, but later flight could also be an indicator of climate change. The species was flying fresh on November 17-18, which is later than usual for the start of the flight as well.

Rum Creek WMA, Monroe Co., Sept. 14, 2018 (Terry Johnson):
HESPERIIDAE: Brazilian skipper (*Calpodes ethlius*).

St. Cathernines Island, Liberty Co., during the Christmas Bird Count, Dec. 15, 2018 (John Jensen):
NYMPHALIDAE: John says he "encountered a dozen or so monarchs roosting, and, in addition, he saw many (less than 100) flying about the island.

Bibb Co., GA, July 23, 2018 (Rose Payne):
EREBIDAE: *Catocala luctuosa* (COUNTY).

Louisiana: Michael Lockwood, 215 Hialeah Avenue, Houma, LA 70363, E-Mail: mikelock34@hotmail.com

REPORT (9) ON BUTTERFLIES OBSERVED ON AVERY ISLAND, IBERIA PARISH, LOUISIANA

Contributed by Gary Noel Ross 6095 Stratford Ave., Baton Rouge, LA 70808, E-mail: GNRoss40@yahoo.com

On Thursday November 29, I revisited Avery Island (A.I.) for a quick check on the status of autumn leaf color because Baton Rouge (b.R.) was in the midst of an unusual brilliant fall display. Wind southerly and noticeable (5-10 mph), temperature 60-74 degrees. Sky cloudy and misty early but partially clearing with some weak sun between 11:00-2:00, then cloudy again. Aggregate-topped roads damp but not wet; dirt roads damp. Mosquitoes still pesky.

Leaf color was not as intense or as generalized as in B.R. This was probably due to the fact that A.I. had not experienced a freeze or heavy frost (B.R. had experienced two mornings with temps. 32-31, and two other mornings of heavy frosts). Nonetheless, several trees with great leaf color were evident, especially cypress in JUNGLE GARDENS, soapberry, pawpaw, Chinese tallow, Chinese parasol, sweet gum, and ginko. Unfortunately, Eric Anderson (Project Mining Engineer with CARGILL SALT), was extremely busy and could not assist Garrie Landry and I with obtaining aerial photos taken with Eric's drone. Because heavy rain was predicted for the next day and evening, I shot as many photos of leaf color as I could.

Sasanqua camellias were beginning to bloom, but a bit behind those in Baton Rouge. Japanese camellias were in heavy bud although a few plants were beginning to blossom.

Most wildflowers, except lantana (*Lantana camara*), were spent with no flowers and brown foliage; those lantanas in open places showed some leaf burn from the region's light frost the previous week. However, I did manage to locate a few sprigs of goldenrod (*Soladago altissima*), chain-leaf aster (*Aster adnatus*), Virginia crownbeard (*Verbesina virginica*), yellow crownbeard (*Verbesina helianthoides*), bacharris (*Baccharis halimifolia*), and blue mist flower (*Canoclinum coelestinum*)—all of which were common to abundant in mid October. Passionflower vine (*Passiflora incarnata*) was still green but not flowering. No butterflies were nectaring—possibly because of cloudy to semi-cloudy weather and cool temperatures.

The peppers in the fields had been cut, shredded, and plowed under for composting during the previous three days. The plowed fields were now seeded with rye grass and granular fertilizer and will remain fallow for the next four years.

No buck moths (*Hemileuca maia*) were observed on the wing. I was surprised because of the abundant oak trees and because this is usually the time of year for adult flight. But perhaps the unusual cold the week before caused a delay in emergence. As evidence, Vernon A. Brou, Jr. in Abita Springs, LA, reported on FACEBOOK his first sighting of a male buck moth on Saturday December 1, just two days after my visit to A.I. On December 2-3, I observed no moths in B.R. even though temps were in 60s, sun shinning, and time between 11:00 am and 3:00 pm.

Very few butterflies were observed. This absence, however, could be attributed in part to inclement weather and my only one-day visit. Additionally, the day witnessed only approximately four hours (11:00 AM-3:00 PM) of intermittent/weak sunlight. Species documented are below. Asterisk (*) indicates unique to site.

Jungle Gardens

Cloudless Sulphur (*Phoebis sennae*)—2 (flying in open areas)
*Southern Pearly Eye (*Enodia portlandia*)—1 (flushed from forested trail flanked by bamboo in Camellia Garden)

Carolina Satyr (*Hermeuptychia sosybius*)—1 (flushed from forested trail near *Bird City*)
*Least Skipper (*Ancyloxypha numitor*)—2 (flushed from grass bordering *Bird City*)

(SUBTOTAL SPECIES FOR SITE: 4; only 2 unique to site)

Sites on private property

Cloudless Sulphur (*Phoebis sennae*)—2 (flying along Pepper Farm Road)
Carolina Satyr (*Hemeuptychia sosybius*)—1 (flushed along edge of woods near Cargill Salt docking facility)
*Gulf Fritillary (*Agraulis vanillae*)—6 (flying in colony of passionflower vine near Cargill Salt docking facility; 1 late instar located on passionflower vine)

*Common Buckeye (*Junonia coenia*)—1 (resting on limestone aggregate near old oil well near Bear Corridor Road)
*Monarch (*Danaus plexippus*)—2 (flying along main road to Cargill Salt headquarters)
*Dun Skipper (*Euphyes vestris*)—2 (in grassy area with spent Virginia crownbeard near Cargill Salt docking facility)

(SUBTOTAL SPECIES FOR SITE: 5; only 4 unique to site)

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TOTAL SPECIES FOR TWO SITES: 8

TOTAL INDIVIDUALS FOR TWO SITES: 20

NEW SPECIES FOR CURRENT SURVEY: 0

CUMULATIVE SPECIES FROM NINE REPORTS: 47 (no change)

CUMULATIVE INDIVIDIUALS FROM NINE REPORTS: 1,552

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REPORT (10) ON BUTTERFLIES OBSERVED ON AVERY ISLAND, IBERIA PARISH, LOUISIANA

Contributed by Gary Noel Ross 6095 Stratford Ave., Baton Rouge, LA 70808, E-mail: GNRoss40@yahoo.com

On Monday January 7, 2019, I revisited Avery Island for a quick check on the butterflies and camellias. Wind WSW and mild (0-5 mph), temperature 49-72 degrees F. Sky cloudy and light fog early, but clearing about 10:00 AM. Weak sun later. All roads were very wet due to high rainfall the previous Thursday. Mosquitoes were not as common, but still pesky. Because the previous December was exceptionally wet—sixth wettest on record (12.4 inches with more than double the normal rainfall for the month)—I conducted no survey during the month.

Previous frost damage was obvious: grasses and many other plants had browned. Lantana bushes that were growing beneath a protective tree canopy, however, still featured a few blossoms. No other plants in bloom except white clover in several mowed venues. Rye grass in spent pepper fields from 2018 harvest, were bright green. No preparation for fields to be used in 2019. Company employees were refurbishing platforms of bamboo in BIRD CITY; fresh bamboo was cut from clumps growing behind pond and just off the proximal section of Marsh House Road. Three great egrets (*Ardea alba*), one great blue heron (*Ardea herodias*), and five roseate spoonbills (*Platalea ajaja*) were fishing in lagoons in JUNGLE GARDENS and in bordering Bayou Petit Anse; presence indicates that at least some of the nesting populations of these species remain in south LA during the winter. In JUNGLE GARDENS, sasanqua camellias were past their prime, but the buds of the mature Japanese camellias were just beginning to open; several smaller plans were in full bloom (estimate for peak bloom for collection will probably be between the first and second weeks in February). Christmas berry (*Ardesia crenata*), a plant that has invaded many wooded venues throughout the gardens and in other wooded sections of the island, was displaying red berries.

I had lunch with a CARGILL SALT engineer who owns a high-quality drone. The young gentleman indicated that he would be delighted to work with me in the near future to obtain unique aerial photos of the island.

Because of the winter season, I observed very few butterflies. These are listed below. Asterisk (*) indicates unique to site.

Jungle Gardens

Cloudless Sulphur (*Phoebis sennae*)—1 (flying high near BIRD CITY)

(SUBTOTAL SPECIES FOR SITE: 1)

Sites on private property

Cloudless Sulphur (*Phoebis sennae*)—1 (flying along Pepper Field Road)
*Gulf Fritillary (*Agraulis vanillae*)—1 (flying low to ground in breeding area with *Passiflora incarnata* near Cargill Salt dock)
*Common Buckeye (*Junonia coenia*)—1 (resting on limestone aggregate near old oil well site off Pepper Field Road)
*Long-tailed Skipper (*Urbaus proteus*)—1 (nectaring on lantana blossom near Cargill Salt dock)

(SUBTOTAL SPECIES FOR SITE: 4; only 3 unique to site)

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TOTAL SPECIES FOR TWO SITES: 4

TOTAL INDIVIDUALS FOR TWO SITES: 5

NEW SPECIES FOR CURRENT SURVEY: 0

CUMULATIVE SPECIES FROM TEN REPORTS: 47 (no change)

CUMULATIVE INDIVIDUALS FROM TEN REPORTS: 1,557

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REPORT (11) ON BUTTERFLIES OBSERVED ON AVERY ISLAND, IBERIA PARISH, LOUISIANA

Contributed by Gary Noel Ross 6095 Stratford Ave., Baton Rouge, LA 70808, E-mail: GNRoss40@yahoo.com

On Monday January 28, 2019, I revisited Avery Island for a quick check on the butterflies and camellias. Wind SW and mild (0-5 mph), temperature 42-68 degrees F. Sky partly cloudy all day. All roads still wet from high rainfall previous week. Mosquitoes no problem.

Lantana (*Lantana camara*) bushes that were growing beneath a protective tree canopy still featured a few blossoms, but no pollinators were evidenced. Bull thistles beginning to emerge in un-mowed area near the Cargill docking facility. Rye grass in spent pepper fields from 2018 harvest were bright green. Still no new preparation for fields to be inaugurated in 2019. Bamboo nesting racks for egrets in BIRD CITY were completed, but no birds beginning to nest. One great egret observed fishing in a lagoon in JUNGLE GARDENS. The vast majority of sasanqua camellias (*Camellia sasanqua*) no longer flowering. Japanese camellias (*Camellia japonica*), however, were now in full bloom in JUNGLE GARDENS; each plant exhibited both blossoms and buds. Because of the unusual age, size, and shaded conditions, no single plant exhibited massive numbers of blooms; apparently, the historic plants display a small number of flowers over an extended period of time. Honey bees were pollinating many blossoms. Christmas berry (*Ardesia crenata*), a plant that has invaded many wooded venues throughout the gardens and in other wooded sections of the island, was still displaying red berries. Native blue violets (*Viola* sp.) beginning to bloom in shaded areas. Butterweed (*Packera glabella*) coming into bloom in several low, wet venues. Yellow thistle/bull thistle/bristly thistle (*Cirsium horridulum*) beginning to

show renewed growth of basal rosettes (will be a great source of nectar and pollen for pollinators—including Monarchs returning from Mexico—in April).

Considering the sunny, mild day, and the openness of the deciduous woodlands, I took several strolls along pathways in hopes of observing butterfly species known to hibernate but to fly on such a day. Specifically, I was hoping to locate Question Mark (*Polygonia interrogationis*), Eastern Comma (*Polygonia comma*), Red Admiral (*Vanessa atalanta*), or even Mourning Cloak (*Nymphalis antiopa*). But no such luck, even though I had previously encountered *P. interrogationis*, and *V. atalanta* in previous surveys.

Below is the list of species I encountered. Asterisk (*) indicates unique to site.

Jungle Gardens

Cloudless Sulphur (*Phoebis sennae*)—2 (1flying high near Buddha Temple; 1 flying in sunny venue along "Camellia Road")
Gulf Fritillary (*Agraulis vanillae*)—1 worn female (flying through "Old Nursery")
American Snout (*Libytheana carinenta*)—3 (flying through "Old Nursery" and fluttering around berries of a tall holly bush in "Old Nursery")
*Monarch (*Danaus plexippus*)—1 very worn male (flying above grass along lagoon near Bayou Petit Anse; probably a released reared specimen from some gardener).

(SUBTOTAL SPECIES FOR SITE: 4; only 1 unique to site)

Sites on private property

Cloudless Sulphur (*Phoebis sennae*)—1 (flying along grassy road behind Saline Lake)
American Snout (*Libytheana carinenta*)—1 (flying along edge of Bird City)
Gulf Fritillary (*Agraulis vanillae*)—1 (flying low to ground in breeding area near salt dock of CARGILL)

(SUBTOTAL SPECIES FOR SITE: 3)

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TOTAL SPECIES FOR TWO SITES: 4

TOTAL INDIVIDUALS FOR TWO SITES: 9

NEW SPECIES FOR CURRENT SURVEY: 0

CUMULATIVE SPECIES FROM TEN REPORTS: 47 (no change)

CUMULATIVE INDIVIDUALS FROM ELEVEN REPORTS: 1,566

Mississippi: Ricky Patterson, 400 Winona Rd., Vicksburg, MS 39180, E-Mail: rpatte42@aol.com

North Carolina: Steve Hall, Moths_of NC_ Website@outlook.com, E-Mail: stephen.phall@outlook.com

South Carolina: Brian Scholtens, College of Charleston, Charleston, SC 29424, E-Mail: scholtensb@cofc.edu

Tennessee: John Hyatt, 233 Park Ridge Court, Kingsport, TN 37664, E-Mail: jkshyatt@centurylink.net

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Virginia: Harry Pavulaan, 606 Hunton Place, Leesburg, VA. 20176, Pavulaan@aol.com

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