

# NEWS

OF THE

# LEPIDOPTERISTS' SOCIETY



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# NEWS OF THE LEPIDOPTERISTS' SOCIETY

Volume 64, Number 4  
Winter 2022



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

The **News of The Lepidopterists' Society** (ISSN 0091-1348) is published quarterly by The Lepidopterists' Society, c/o Chris Grinter, The California Academy of Sciences, 55 Music Concourse Drive, San Francisco, CA 94118, and includes one or two supplements each year. The **Season Summary** is published every year as Supplement S1 and is mailed with issue 1 of the News. In even numbered years a complete **Membership Directory** is published as Supplement S2 and is mailed with issue 4 of that volume of the News. Please see the inside back cover for instructions regarding subscriptions, submissions to, and deadline dates for, the News.

Periodicals Postage paid at San Francisco, CA and at an additional mailing office (Lawrence, KS).

POSTMASTER: Please send address changes to **News of The Lepidopterists' Society**, c/o Chris Grinter, The California Academy of Sciences, 55 Music Concourse Drive, San Francisco, CA 94118.

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	Editor: James K. Adams

## Front Cover:

White Morpho, *Morpho polyphemus polyphemus*, Oaxaca, Mexico, May of 2010, photo by Bill Berthet. See associated article on page 210.

Conservation Matters: Contributions from the Conservation Committee**Regal Fritillary recovery at the Efroymsen Restoration at Kankakee Sands**John Shuey<sup>1</sup> and Trevor Edmonson<sup>2</sup><sup>1</sup>The Nature Conservancy, Efroymsen Conservation Center, 620 East Ohio Street, Indianapolis, IN 46202  
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We, your humble authors, get special treatment. For the last five years, we have hosted a citizen science effort to monitor regal fritillaries at a series of restorations and adjacent remnant prairies to better understand how the butterfly responds to habitat management in a contiguous landscape – albeit a modestly sized landscape of around 20,000 acres. We and our fellow volunteers fan out across 18 sites, conducting half hour meander counts of regals in 40-acre patches of dry to moist sand prairie and restoration habitats. These counts happen on a single day each summer, and each site is independently assessed twice to help account for observer bias. The idea is fairly simple. With enough time, we can observe how local population density responds to management treatment by assessing relative density changes between years on habitat patches that are both managed and unmanaged. Kankakee Sands lays on the eastern edge of the tallgrass prairie ecoregion, and we receive enough rain that without some type of disturbance, our habitats would become woodland or forest. In the original scheme of things, our very wet but fluctuating hydrology combined with the use of fire by Potawatomi and Miami Nations would have maintained a dynamic landscape of open grasslands, wetlands and oak woodlands at the site. But today, as the current stewards, we have to plan specifically to maintain some semblance of a balanced landscape dynamic. Typically, lepidopterists think “prescribed fire” when they think of prairie habitat management, a tool that is generally used to manage shrub encroachment. But here, we also use grazing, both cattle and bison, to manage habitat structure on about 20% of the site. Grazing is used as a tool to achieve many outcomes, and here we typically use it to decrease the dominance of the warm season grasses and scouring rushes that often dominate restorations (decreasing overall botanical diversity) and to create a variety of habitat structures for declining grassland birds, especially those songbirds that require short and medium statured grassland habitats. Our site design and management decisions are such that we strive to create a mosaic of habitat that supports not only butterflies of conservation interest but benefits a diverse array of species in the ecosystem.

And our special treatment? For the last couple of years, the count organizer has often assigned us to some of the coolest habitat patches – the two native prairie remnants

at the site. And in typical years, the abundance of regals can be outstanding in these prairies, females popping out of the grasses as you flush them, and the males constantly patrolling in broad circles through the open expanse.

Regals are perhaps the most common butterfly in the conservation area – at least in the drier portions of the site. In the only year with season-long monitoring data across the restoration, 2014, regals were the most abundant species encountered at nine mesic prairie and planting habitats, comprising over 21% of the butterflies counted. The weedy *Colias eurytheme* clocked into second place at 17%. This abundance was not always the case, and around 30 years ago, Shuey honestly assumed that he would observe the eventual extirpation of the species from the site (and with the site, Indiana). Prior to his arrival on the scene, Ron Panzer, perhaps the most influential insect conservationist in those formative years, had watched the butterfly’s regional decline, morphing from a species that was fairly widespread in appropriate habitats, to one that occupied just two local prairie patches in Indiana (and none in adjacent portions of Illinois). Ron was interested in any insect that depended on prairie for its survival in the greater Chicago region and spent almost 20 years looking at every decent prairie, wetland and savanna remnant he could find to document “remnant-dependent” insect species distributions across this shattered agroscape (see Panzer et. al 2000, 2010 for a sample of his interests). When Ron first started his work, regals could be expected in every portion of sand prairie in the bi-state project area. They were common along roadsides in savannas, and present in most savanna openings as well. But by the early 1990s, he stopped seeing regals in those smaller habitats. He watched as the butterfly contracted to only two spots within the 640-acre Beaver Lake Prairie State Nature Preserve, and obsessed about their future, the management of the prairie and the threats from invasive species. The situation had deteriorated to the point that any threat, however seemingly small, could have spelled the end to regal fritillaries.

Fortunately, the restoration efforts at Beaver Lake Prairie worked wonders for regals. The butterfly has since colonized the restoration and reclaimed those adjacent habitats from which Panzer watched it vanish (Shuey et al. 2016). And our recent counts are equally encouraging - since 2018 we

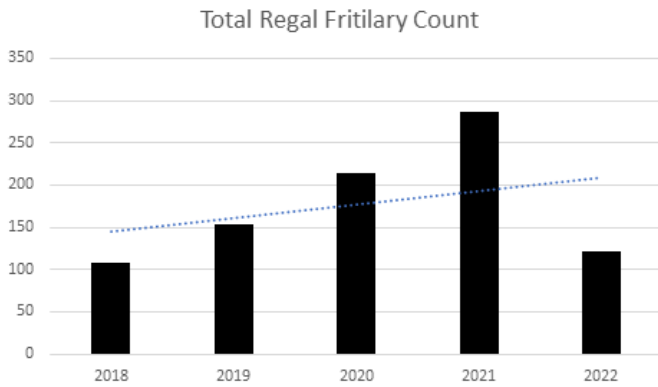


Figure 1. Total Regal Fritillary counts and trendline from annual counts. Annual counts are recorded on a single day each summer from 18 dry-mesic prairies and restorations representing about 10% of available open habitat in the conservation area.

have seen population densities generally increasing based on our annual counts (Figure 1). But note the decline in 2022, which we tentatively attribute to two factors - a very droughty spring may have depressed our counts, and we were early in the flight season, and females were just beginning to emerge. As time passes, we'll see if this is simply a temporary anomaly, or something we need to address.

This initial response of regals to the restoration was no accident – and yet you could construe it to be just that – accidental. The entire premise behind the restoration was that we could kick-start the healing of a small landscape by restoring environmental complexity and connectivity, seeded with a rich variety of regionally appropriate native species (O’Leary & Shuey 2003). The restoration wraps around Beaver Lake Prairie connecting it to Conrad Savanna to the north and Willow Slough State Wildlife Area to the south. These plantings were themselves designed to mimic landscape patterns across those gradients to create, in broad brush strokes, communities that ranged from emergent wetland to xeric prairie and sand blowouts (Shuey 2012, 2013). But the long game assumes that at some point, perhaps in a few decades, the plantings will mature, transitioning from our coarse “prairie plantings” toward systems that are “pretty-darn-close-to-prairie.” Anyone who works with both can tell you what this gestalt assessment means, but, quite simply, planted prairies have a look to them that is not quite right. Multiple generations of plant recruitment and mortality are required for this to really settle out – and many prairie species live for decades, so it’s a long process! But the idea as initially conceived, was that the restoration should allow the plants and animals that were originally trapped on isolated islands of remnant habitat, to spread through the restoration, both literally and through increased gene flow. And we assumed that regals and their *Viola* hostplants would follow.

The regals did just that, but their assumed hostplants did not. I say assumed, because on those two prairie remnants that supported the last small regal populations thirty years ago, one violet is conspicuously abundant and is the obvious

(and confirmed) hostplant - *Viola sagittata*. This violet occurs expansively at both sites, at densities that generally exceed 20 stems per square meter. And these are the exact places where you see the regals every summer. We included *Viola sagittata* seed in our planting mixes, but it is not a species from which you can collect bulk seed. Of the hundreds of pounds of seed planted annually, an ounce or two was *V. sagittata*. We hoped that our precious scattering of seeds would kick-start the healing process and would increase in density in the plantings. But while we would find scattered plants following the initial plantings, after a few years they often seem to disappear. There was no way this violet was the hostplant supporting the regals we found swarming across the restoration. Moreover, the regals were using drier habitats – much drier than the remnant prairies with abundant *Viola sagittata*.

Here is where the non-accidental, accident comes in. There is an annual violet on the site, a violet with a confused taxonomic history – *Viola bicolor*. Confused, because for centuries, it has been considered to be a non-native, semi-invasive plant, known as *Viola tricolor*. We, like almost everyone else, confused the two species, and because “eco-purists,” like ourselves, would never plant a non-native species, we ignored this violet. Well not entirely: early in the restoration, we had a few conversations about how aggressive it was, and pondered control strategies. And to our chagrin, it became pretty obvious that the densest populations of regals on the planting were also associated with this pesky plant.

Well, thank God, for competent taxonomists – right? At some point, we finally became aware that *bicolor* ≠ *tricolor*. And the entire idea behind the restoration is that **plants and animals trapped on isolated islands of habitat, will spread through the restoration.** *Viola bicolor*, a weedy, but native species did just that, and we think it has to be the host that supports regals in the planting. No other *Viola* species seems remotely common enough out there to support the numbers of regals that we are seeing. This violet is thriving in areas of dry disturbed sand – we have lots of that across the restoration. Lucky, yes. Are we “eco-purist geniuses?” Maybe, maybe not.

There are some significant issues to wrap up. This spring, we tried to confirm that regals use *V. bicolor* as a larval host at the site, with no luck. Regals are known to use this as a hostplant in south-central Illinois, so we have confidence that it uses it at Kankakee Sands as well. But there is a larger issue we have to address. Assume we are correct about the host plants that regals use across the plantings. *Viola bicolor* is a classic, early successional pioneer species – one that we don’t really see in the non-disturbed interiors of the remnant prairies or oak barrens at the site. As we mentioned, the long game assumes that at some point the plantings transition from “prairie plantings” to something more akin to real prairie. And real prairie is not a great habitat for a weedy, early successional *Viola*.



LEFT - Regal about to nectar on *Verbena stricta* in the Kankakee Sands Cattle Grazing unit. This plant enjoys disturbance areas across the site. CENTER - A rare site of mating regals seen during our annual Regal Fritillary survey in early July of 2020. RIGHT - Groups of regals are often seen nectaring together on *Asclepias tuberosa*, a common blooming plant in the Kankakee Sands Region when both male and female butterflies are flying together. (photos by Trevor Edmonson)



Restoration ecology is all about assembly rules which define how to best rebuild ecological communities. Most of the ecological assembly rules are a big mystery, best discovered by trial and error. Our approach was simple – plant the most diverse botanical assemblage possible using local genotype seed and see what shakes out. Over 600 species of plants have been seeded or directly planted into the restoration – the vast majority of the species are easy to find in the right season. And at the macro-scale, our 25 years of work at Kankakee Sands has been successful beyond our wildest dreams. Formerly extirpated species of birds like Wilson’s Phalarope and Northern Harrier now nest on the site. Ladies’ tresses orchids that we did not plant have jumped in from adjacent habitats. Rare Slender Glass Lizards can be easily found today, while state imperiled pocket gophers, as evidenced by their mounds, occur across the property. It has been especially exciting to see gopher predators respond - Bull Snakes are abundant, and Badgers now breed on the restoration. And regal fritillaries are just the tip of the lepidopteran iceberg; over a thousand species are known from the project area, and plantings are just as lepidopteran-species rich as are native prairie habitats.

But when you get your microscope out and look closely, things like *Viola sagittata* are not expanding as expected. Good botanists notice other missing bells and whistles as well. And each of those plants could be a hostplant for some interesting lepidopteran – right?

As we heal the plantings and potentially squeeze out *V. bicolor* over the next quarter century, regals will need a replacement hostplant – *V. sagittata*. But some unknown ecological assembly rule is standing in our way. It could be that our initial planting density is just too low to support population expansion. It could be that some obscure

mycorrhizal root association is missing from our ex-agricultural soil. It could be some crazy trace nutrient or residual herbicide issue associated with past land use. A missing pollinator? Or perhaps we just need to figure out how we keep our weedy *Viola* in the mix as the restoration matures? Who really knows?

But that’s what the future of the project is all about – trial and error combined with long-term commitment. It took us 25 years to complete the initial seeding! The next 25 years will involve moving our “prairie plantings” closer to “pretty-darn-close-to-prairie” status. Working to figure out what works and then scaling that solution up at the site and regional level. Our nonaccidental-accident created a dynamic that resulted in regal fritillaries re-occupying habitats far beyond this particular restoration. Our next steps forward should be intentionally designed to ensure that we do not lose momentum. The collective “we,” that much larger team dedicated to the project, just keeps plugging away with the grand vision in mind. And that pretty much defines the plan for our next quarter century at the site!

### Acknowledgments

We are grateful to the staff, volunteers and funders, too numerous to individually name, that make this project successful. But we really owe Alyssa Nyberg, our on-site nursery manager and volunteer coordinator for the regal count, for giving us the really sweet assignments every year!

(For a virtual tour of the Kankakee Sands Project, visit our story map at <https://bit.ly/3rSPC0u>

A video celebrating the first 25 years of work at the restoration and be viewed at <https://www.youtube.com/watch?v=6b8HuV9y9Es>

A regal fritillary-centric video from the site can be found here - [https://www.youtube.com/watch?v=\\_X8DOgzCvCo](https://www.youtube.com/watch?v=_X8DOgzCvCo)

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Regal on common milkweed – Common Milkweed is a reliable nectar source for Regals across Kankakee Sands. It grows in many habitats across the Kankakee Sands Region, and is disturbance tolerant.

# Two Caribbean butterflies new to Florida

Marc C. Minno<sup>1</sup>, Jeffrey R. Slotten, Dennis Vollmar and Susan Kolterman

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On May 28 and 29, 2022 Jeff Slotten observed one adult of the White Angled-Sulphur [*Anteos chlorinde nivifera* (Fruhstorfer, 1907)] each day on northern Key Largo, Monroe County, Florida. These butterflies were flying about seven to ten feet high across the power line and road just south of Carysfort Circle in the vicinity of power pole 123. Each would perch for a few seconds on leaves and then continue flying. Jeff also saw *Dryas iulia largo* Clench, 1975, *Eunica tatila tatilista* Kaye, 1926, *Phoebis agarithe maxima* (Neumoegen, 1891), *Kricogonia lyside* (Godart, 1819), *Leptotes cassius theonus* (Lucas, 1857), *Polygonus leo histrio* (Röber, 1925), and *Cymaenes t. tripunctus* (Herrich-Schäffer, 1865) in the same area. Mosquitoes were abundant.

On July 3, 2022 Dennis Vollmar visited the Crocodile Lake National Wildlife Refuge headquarters on northern Key Largo. He photographed a White Angled-Sulphur (Figure 1) visiting Firebush (*Hamelia p. patens* Jacq.) flowers in the Community Butterfly Garden on the property. This location is about five miles south of where Jeff Slotten saw the same species a few months earlier. Dennis posted his photos at iNaturalist (<https://www.inaturalist.org/observations/124655284>).

These seem to be the first reports of the White Angled-Sulphur in Florida. The individuals observed are most likely strays from Cuba where this species is a locally common breeding resident.

At 10:30 am on July 20, 2022 Susan Kolterman photographed a Caribbean Daggerwing (sometimes also called Antillean Daggerwing) (*Marpesia eleuechea*) at John Pennekamp Coral Reef State Park on Key Largo (Figure 1). This individual perched on the underside of a Potatotree (*Solanum erianthum* D. Don) leaf in the tropical hammock near the entrance to the Wild Tamarind Trail just north of the White Ironwood (*Hypelate trifoliata* Sw.) and Blacktorch trees (*Erithalis fruticosa* L.) marked along the trail. The black patch at the tip of the upperside forewing indicates that it is a male. After word spread about this sighting, others searched and saw it in the same area. Barbara DeWitt photographed this butterfly on August 1, 2022 around 15:50 in the afternoon.

Four subspecies of *Marpesia eleuechea* have been recognized (Munroe, 1971). *Marpesia eleuechea eleuechea* Hübn., 1818 occurs on Cuba and Grand Cayman Island; *M. eleuechea bahamensis* Munroe, 1971 occurs in the Bahamas; *M. eleuechea dospassosi* Munroe, 1971 occurs

in Hispaniola; and *M. eleucea pellenis* (Godart [1824]) is found on Jamaica.

The Caribbean Daggerwing was first reported from Florida by Anderson (1974). He captured a male that was visiting the blossoms of Brazilian Pepper (*Schinus terebinthifolia* Raddi) on October 14, 1973 on Sugarloaf Key. He did not include a photograph and did not indicate the subspecies in his publication but mentioned donating the specimen to the Allyn Museum. In 2004 the Allyn Museum collections were moved from Sarasota to the Florida Museum of Natural History in Gainesville. Marc Minno contacted Florida Museum Research Associate Riley Gott to see if he could locate Anderson's specimen. Riley searched the museum's *Marpesia* holdings but could not find the specimen. However, Smith *et al.* (1994), page 71, state that *M. e. eleucea* "very occasionally strays into the Lower Florida Keys" and cite Anderson (1974). Since Smith's coauthors, Lee and Jacqueline Miller, were the curators of the Allyn Museum, they must have examined Anderson's specimen and determined that it was *Marpesia e. eleucea*.

Other reports of *Marpesia eleucea* in Florida include Michelle Wisniewski who photographed one at Stock Island (probably at the Key West Tropical Forest and Botanical Garden) on January 27, 2005 (Reese, 2007). Based on the published photographs it is a male *Marpesia e. eleucea*. David Czaplak photographed a worn female *Marpesia e. eleucea* at the Key West Tropical Forest and Botanical Garden on February 23-24, 2017 (Czaplak and Calhoun, 2019).

The individual first found by Susan Kolterman at John Pennekamp Coral Reef State Park on Key Largo is *Marpesia eleucea bahamensis*, a new record for Florida. Munroe (1971) listed the following characteristics of male *M. eleucea bahamensis* which help differentiate it from *M. e. eleucea*.

1. Size a little smaller on average.
2. Markings of forewing slightly heavier.



3. Hind wing above with apex grey-suffused from first subterminal band to termen.
4. Second subterminal band diffuse, with fuscous suffusion extending weakly distad to termen.
5. Third subterminal line heavier.
6. Anal area with greyish-fuscous suffusion more extensive, completely encompassing first ocellate spot as well as second and third.
7. Basal margins of ocellate spots each with a strong white lunular marking.
8. Some light-grey suffusion in outer pairs of ocellate spots and in some specimens also along third subterminal band posteriad of tail.

He described the underside as purplish grey, with weak markings.

We thank John Calhoun and Barbara DeWitt for information about *Anteos chlorinde* and *Marpesia eleucea* and Riley Gott for searching the Florida Museum of Natural History for the specimen of *M. e. eleucea* collected by Richard A. Anderson on Sugarloaf Key in 1973.

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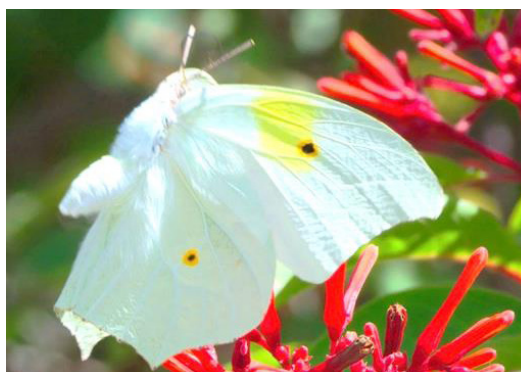


Figure 1. Far left: A male *Marpesia eleucea eleucea* mud puddling near Guardalavaca, Holguín Province, Cuba, November 8, 2017 (photo by Marc C. Minno). Near left: The male *Marpesia eleucea bahamensis* observed at John Pennekamp Coral Reef State Park, Key Largo, Monroe Co., Florida, July 20, 2022, (photo by Susan Kolterman). Red lines point to some characteristics of *M. e. bahamensis* noted by Munroe, 1971. Above: *Anteos chlorinde nivifera* observed at the Crocodile Lake National Wildlife Refuge Community Butterfly Garden, northern Key Largo, Monroe Co., Florida, July 3, 2022, (photo by Dennis Vollmar).

# Recent additions to the Kentucky list of Lepidoptera

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## ABSTRACT

In keeping with efforts to maintain the Kentucky list of Lepidoptera as up-to-date as possible, the authors herein add 39 species in 12 families to the state list. Most of these additions are by way of reports of recently collected specimens from the field. Some are newly available names of recently described species from the literature. At least two of the species reported here, and collected for the first time in Kentucky, originated in other countries and are spreading westward from their points of introduction along the east coast of the United States. Additions are in families: Tineidae (2); Gracillariidae (1); Oecophoridae (1); Momphidae (1); Cosmopterigidae (3); Gelechiidae (9); Sesiidae (3); Tortricidae (5); Crambidae (7); Pyralidae (2); Erebidae (1); and Noctuidae (4).

## INTRODUCTION

Field collecting in Boone, Carlisle, and Powell Counties produced most of the records reported here. All of the records included here are from only twelve of Kentucky's one hundred twenty counties! Survey work conducted in Big Bone Lick State Historic Site (previously Big Bone Lick State Park), Middle Creek County Park, and the Adair Wildlife Management Area in Boone County was responsible for many new records in the north. Carlisle County produced several new species for the state in the west. Survey work in Powell County's Gritter Ridge State Nature Preserve added new taxa from east central Kentucky. As usual, Raymond Little, working in McCreary County, produced new species from the southern part of the state. Eight additional counties: Fulton, Harlan, Henderson, Hopkins, Laurel, Menifee, Owsley, and Rowan were the source counties for eleven of these records.

One species included here, *Phyllonorycter mariaella* (Chambers), is not new for Kentucky. One old record from Annette Braun was included in Covell (1999) under another name which has now been synonymized under the currently recognized name.

New publications including the *Paralobesia* publication of Royals, et al (2019) and the new Moths of North America Fascicle 25.4 of Schmidt and Anweiler (2020) provided names of new species of *Paralobesia* and *Acronicta* respectively.

At the time of the last up-date to the Kentucky List of Lepidoptera (Gibson, et al 2021) a total of 2642 species were attributed to Kentucky. This supplement adds 39 species bringing the total reported from the state to 2681. Other published up-dates to the Kentucky list of Lepidoptera include: Covell, et al (2000), Gibson and Covell (2006), Covell and Gibson (2008) and Gibson, et al (2016)

Numbers preceding generic names and the taxonomic arrangement of species in this list follow Hodges, et al (1983) (the MONA Check List) and its many additions from various sources. For convenience, check list numbers from the Pohl et al, (2016) check list (P3 check list) are included and follow the MONA numbers.

## ADDITIONS

### Family TINEIDAE

0306, 300187 *Mea skinnerella* (Dietz, 1905)

Boone County, Adair Wildlife Management Area (WMA), Big Bone Church Road, one in black light trap, 21 June 2022. Collected by Loran D. Gibson (L. Gibson), determined by L. Gibson, det. confirmed by Don Davis.

0434.1, 300217 *Pelecystola nearctica* Davis & Davis 2009

Boone County, Big Bone Lick State Historic Site, 31 August 2022, one in light trap. Collected and determined by L. Gibson, determination confirmed by Jim Vargo.

### Family GRACILLARIIDAE

0633, 330155 *Caloptilia sassafrasella* (Chambers, 1876)

Boone County, Middle Creek County Park (north), one in black light trap, 16 June 2022. Collected and determined by L. Gibson, determination confirmed by Jim Vargo and Terry Harrison.

0769, 330304 *Phyllonorycter mariaella* (Chambers, 1875)

Boone County, Big Bone Lick State Historic Site, Boat Dock Road annex, 7 August 2022, one in black light trap. Collected and determined by Loran Gibson, determination confirmed by Jim Vargo. There is one other Kentucky record of this species in Covell (1999) from Rowan County, KY, reared by Annette Braun, under the name *Camareria affinis* (Frey and Boll), which is now synonymized under the current name.





Top to bottom: *Mea skinnerella*, *Pelecystola nearctica*, *Caloptilia sassafrasella*, *Phyllonorycter mariaella*.



*Promalactis suzukiella*

Family OECOPHORIDAE

1047.1, 420045 *Promalactis suzukiella* (Matsumura, 1932)  
Boone County, Middle Creek County Park (north), one in black light trap, 16 June 2022. Collected and determined by L. Gibson.

Boone County, Adair WMA, several in black light trap, 21 June 2022. Collected and determined by L. Gibson.

These appear to be the first specimens of this species collected in Kentucky. Photographs of the species were posted on the iNaturalist website by Rickey Shive and Eric Williams in Barren and Hopkins Counties respectively prior to the Boone County captures. According to Adamski et al (2009), the species is native to Japan, Korea, and Taiwan. It was apparently introduced into the northeastern United States around 2004. It seems to be moving steadily westward.

Family MOMPHEIDAE

1450, 421844 *Mompha passerella* (Bsk., 1909)  
McCreary County, Daniel Boone National Forest (DBNF), Ridge Road (aka Lucky S Rd.) off of SR 700 in powerline cut, one in black light trap, 14 June 2018. Collected and determined by L. Gibson, determination confirmed by Terry Harrison.

Family COSMOPTERIGIDAE

1476, 420359 *Cosmopterix montisella* (Chambers, 1875)  
Boone County, Adair WMA, two in black light trap, 24 May 2022. Collected and determined by L. Gibson, determination confirmed by Jim Vargo.

1481, 420379 *Cosmopterix callichalca* Meyrick, 1922  
Boone County, Big Bone Lick State Historic Site, Boat Dock Road annex, 19 August and 26 August 2022. L. Gibson collected several in light traps among a large growth of big bluestem and some little bluestem grasses (*Andropogon gerardi* and *Schizachyrium scoparium*), determined by Jim Vargo.



Top: *Cosmopterix montisella*. Bottom: *C. callichalca*.

2061, 420892 *Chionodes argentipunctella* Ely,  
Owsley Co., E side of County Rd. 1411, .85 mi. N  
of SR 30, larva collected by L. Gibson on 14 May 1994 on  
*Corylus americana*, emerged indoors 27 June 1994. Deter-  
mined by L. Gibson

2095.6, 420914, *Chionodes lactans* Hodges, 1999  
Powell Co., Gritter Ridge State Nature Preserve,  
one in light trap, 9 May 2022. Collected and determined by  
L. Gibson, determination confirmed by Terry Harrison and  
Jim Vargo. Male genitalia prep. lost!

2237, 420479 *Anacamptis innocuella* (Zeller, 1873)  
Harlan County, Big Black Mountain above 3750',  
in light trap, 29 July 2021. Collected and determined by L.  
Gibson, determination confirmed by Terry Harrison



Top to bottom: *Monchroa gilvolinella*, *Coleotechnites albicostata*,  
*Symmetrischema striatella*.

1627, 420333 *Perimede parilis* Hodges, 1969  
Menifee Co., DBNF, Zilpo Road, four specimens  
from 9 July 2005. Collected and determined by Jim Vargo.  
Three of the four specimens were confirmed by genitalic  
dissections.

Family GELECHIIDAE

1710, 420625 *Monachroa gilvolinella* (Clemens, 1863)  
Boone County, Middle Creek County Park (north),  
one in black light trap, 16 June 2022. Collected by L. Gib-  
son, determined by Jim Vargo.

1787, 420706 *Coleotechnites albicostata* (Freeman, 1965)  
Boone County, Big Bone Lick State Historic Site,  
two in black light trap, 15 August 2022. Collected by L.  
Gibson, determined by Sangmi Lee.

1799, 420759 *Exoteleia chillcotti* Freeman, 1963  
Powell Co., Gritter Ridge State Nature Preserve,  
one in light trap, 27 June 2022. Collected and determined  
by L. Gibson.

2039, 421330 *Symmetrischema striatella* (Murtfeldt, 1900)  
Boone Co., Middle Creek County Park (north), one  
in a light trap on 20 Sept. 2022. Collected and determined  
by L. Gibson, determination confirmed by Jim Vargo.

2278, 420577 *Dichomeris glenni* Clarke, 1947

Boone County, Big Bone Lick State Historic Site, one in light trap, 7 August 2022. Collected and determined by L. Gibson.

2293, 420578 *Dichomeris costarufuella* (Chambers, 1874)

Owsley County, E side of Rt. 1411, .85 mi. N of SR 30, 24 July 1982. One collected and determined by L. Gibson, determination confirmed by Terry Harrison.

#### Family SESIIDAE

2513, 640057 *Pennisetia marginatum* (Harris, 1839)

McCreary County, Raymond Little residence, Mine 18 Road N 36.660152 W 84.496194, Strunk, KY, one collected in a pheromone trap by Raymond Little on 14 Sept. 2018. Determined by W. H. Taft.

2555, 640096 *Synanthedon fatifera* Hodges, 1962

Harlan County, Big Black Mountain above 3650', one collected in a pheromone trap by Ellis Laudermilk on 12 July 2017. Determined by L. Gibson.

2579, 640099 *Synanthedon kathyae* Duckworth & Eichlin, 1977

McCreary County, Raymond Little residence, Mine 18 Road N 36.660152 W 84.496194, Strunk, KY, one collected in a pheromone trap by Raymond Little on 22 June 2018. Determined by W. H. Taft.

#### Family TORTRICIDAE

2714.1, 620497.1 *Paralobesia crispans* Royals et al, 2019

Laurel County, DBNF, Forest Serv. Rd. 615A, one collected 4 July 1996 by D. J. Wright. This specimen was designated as a paratype in Royals, et al (2019).

2725.5, 620511.1 *Paralobesia crassa* Royals et al, 2019

Powell County, DBNF, Tunnel Ridge Rd., 28 April 1989, one specimen collected by Loran Gibson was designated as a paratype in Royals, et al (2019)

3170, 621046 *Pelochrista vandana* (Kft., 1907)

Fulton County, Mississippi River bank, adjacent to the south end of Island #8, one in a light trap on 24 August 2010. Collected by L. Gibson, determined by D. J. Wright. This specimen is a light brown phenotype female.

3769, 620128 *Cochylis bucera* Razowski, 1997

Boone County, Big Bone Lick State Historic Site, 22 July 2022, one in light trap. Collected by L. Gibson, determined by Michael Sabourin.

3842, 620204 *Spinipogon resthavenensis* Metzler & Sabourin, 2002

Boone County, Big Bone Lick State Historic Site, 22 July 2022, one in light trap. Collected by L. Gibson, determined by Michael Sabourin.

#### Family CRAMBIDAE

4759, 800734 *Paraponyx maculalis* (Clem., 1860)

Hopkins County, 2.8 miles SW of Nortonville, N 37.169468 / W -87.499196, one photographed by Eric Williams on 1 Sept. 2020

Boone County, Big Bone Lick State Historic Site, one in light trap on 31 August 2022. Collected by L. Gibson, determined by L. Gibson.

5104, 801225 *Lamprosema victoriae* Dyar, 1923

Carlisle County, south along a two-track from CR 1308 beginning at 36° 53' 31.5" N / 89° 05' 24.85" W, 4.7 air miles WNW of Bardwell, 17 August 2021, two in a light trap. Collected by L. Gibson, determined by Brian Scholtens.



Top to bottom: *Cochylis bucera*, *Spinipogon resthavenensis*, *Paraponyx maculalis*.



Top to bottom: *Lamprosema victoriae*, *Herpetogramma aquilonalis*, *Donacaula sordidellus*..

5277.1, 801199.1 *Herpetogramma aquilonalis* Handfield & Handfield, 2021

Harlan County, Big Black Mountain above 3650' elev., exlarva on oil nut (*Pyralia pubera*), collected by L. Gibson on 1 July 2016, emerged indoors on 12 July 2016. Determined by Louis Handfield, 2021.

5313, 800707 *Donacaula sordidellus* (Zincken, 1821)

Henderson County, Sloughs WMA, Sauerheber Unit, three in a light trap on 24 August 2013. Collected and determined by Loran Gibson.

Carlisle County, south along a two-track from CR 1308 beginning at 36° 53' 31.5" N / 89° 05' 24.85" W, 4.7 air miles WNW of Bardwell, one in a light trap on 17 August

2021. Collected and determined by L. Gibson, determination confirmed by Brian Scholtens.

5319, 800715 *Donacaula longirostrallus* (Clem., 1860)

Boone County, Adair WMA, Big Bone Church Road, one in light trap on 13 June 2022. Collected and determined by L. Gibson, determination confirmed by Jim Vargo.

5422, 800877 *Microcrambus minor* (Forbes, 1920)

Boone County, Big Bone Lick State Historic Site, one in a light trap on 23 August 2022. Collected by L. Gibson, determined by Brian Scholtens.

5478, 800838 *Diatraea evanescens* Dyar, 1917

Carlisle County, south along a two-track from CR 1308 beginning at 36° 53' 31.5" N / 89° 05' 24.85" W, 4.7 air miles WNW of Bardwell, one in a light trap on 17 August 2021. Collected and determined by L. Gibson, determination confirmed by Brian Scholtens.

Family PYRALIDAE

5849, 800447 *Dioryctria pygmaeella* Ragonot, 1887

Carlisle County, south along a two-track from CR 1308 beginning at 36° 53' 31.5" N / 89° 05' 24.85" W, 4.7 air miles WNW of Bardwell, one in a light trap on 5 August 2021. Collected and determined by L. Gibson, determination confirmed by Brian Scholtens and James Hayden.

6056.1, 800674 *Peoria insularis* Shaffer, 2003

Boone County, Big Bone Lick State Historic Site, one in a light trap on 7 August 2022. Collected and determined by L. Gibson, determination confirmed by Brian Scholtens and Jim Vargo.



Top: *Microcrambus minor*. Bottom: *Peoria insularis*.

## Family EREBIDAE

8729.1, 930966 *Cutina aluticolor* Pogue & Ferguson, 1998  
Carlisle County, south along a two-track from CR 1308 beginning at 36° 53' 31.5" N / 89° 05' 24.85" W, 4.7 air miles WNW of Bardwell, several in light traps 5 August through 17 August 2021. Collected and determined by Loran Gibson, determination confirmed by James Adams.

## Family NOCTUIDAE

9201, 931422 *Acronicta hastulifera* (J. E. Smith, 1797)  
Rowan County, Morehead, one female collected by Freeman and Lewis (Canadian National Collection, Ottawa) on 8 July 1962, (Schmidt & Anweiler, 2020).

9249.1, 931467.1 *Acronicta cryptica* Schmidt & Anweiler, 2020

Schmidt & Anweiler (2020) include Kentucky within the range of this newly described species with a distribution map dot in northeastern Kentucky. No dates or counties of collections are included. Specimens in the L. Gibson collection from Meade and Harlan Counties appear to be this species.

9558.1 932716 *Niphonyx segregata* (Butler, 1878)  
Boone County, Middle Creek County Park, one in a light trap on 31 May 2022. Collected by L. Gibson, determined by Jim Vargo and James Adams. According to Eric Quinter in Lafontaine and Schmidt (2010) this species is "East Asian in origin and is thought to have been introduced into the New York City area in the late 1990". The species is apparently increasing its distribution and has moved west into northern Kentucky.

9724, 932022 *Ogdoconta tacna* (Barnes, 1904)  
Carlisle County, south along a two-track from CR 1308 beginning at 36° 53' 31.5" N / 89° 05' 24.85" W, 4.7 air miles WNW of Bardwell, one in a light trap on 17 August 2021. Collected and determined by L. Gibson, determination confirmed by James Adams.

## ACKNOWLEDGEMENTS

For help with difficult determinations, the authors wish to thank the following: James Adams, Don Davis, Louis Handfield, Terry Harrison, James Hayden, Sangmi Lee, Michael Sabourin, Brian Scholtens, W. H. Taft, Jim Vargo, and D. J. Wright.

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Top to bottom:  
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*Niphonyx segregata*,  
*Ogdoconta tacna*.

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(References continued on page 201)

## ***Announcements:*** **Call for Season Summary Records**

The Season Summary database is on the Lepidopterists' Society home page (<http://www.flmnh.ufl.edu/lepsoc/>). The value of the online database increases as your data gets added each year. For your 2022 field season, report range extensions, seasonal flight shifts, and life history observations. Reports of the same species from the same location provides a history. However, do not report repeated sightings of common species. Report migratory species, especially the direction of flight and an estimated number of individuals. Send this information to your Zone Coordinators -- they and their contact information appears on the inside back cover of the "News". The states covered by each zone are in the (most recent) Season Summary. Please have your data to the Zone Coordinator(s) no later than **December 31, 2022**. All of these records may be useful in the future. BE AWARE that some of these records will go IN THE DATABASE, but may NOT appear in the printed Season Summary.

### **Season Summary Spread Sheet and Spread Sheet Instructions**

The Season Summary Spread Sheet and Spread Sheet Instructions are available on the Lepidopterists Society Web Site at [http://www.lepsoc.org/season\\_summary.php](http://www.lepsoc.org/season_summary.php). The Zone Coordinators use the Season Summary Spread Sheet to compile their zone reports. Please follow the instructions carefully and provide as much detail as possible. Send your completed Season Summary Spread Sheet to the Zone Coordinator for each state, province or territory where you collected or photographed the species contained in your report.

### **Photographs for Front and Back Covers**

Please submit photos for the front or back covers of the Season Summary to the editor of the News, James K. Adams ([jadams@daltonstate.edu](mailto:jadams@daltonstate.edu)). Photos can be of live or spread specimens, but **MUST** be of a species that will actually be reported in the Season Summary for this year.

Brian Scholtens and Jeff Pippen.

### **Lep Soc Statement on Diversity**

This is available at any time, should you need to know at: <https://www.lepsoc.org/content/statement-diversity>

### **Lep Soc Statement on Collecting**

The Lepidopterists' stance on collecting is discussed fully in The Lepidopterists' Society Statement on Collecting Lepidoptera. This is available online at: <https://www.lepsoc.org/content/statement-collecting>

## **Searching The Lepidopterists' Society Season Summary on SCAN**

Brian Scholtens and Jeff Pippen

Part of what we are now doing as a society is contributing all our Season Summary records to SCAN (Symbiota Collections of Arthropods Network), a larger effort to assemble and make available occurrence records of insects and other arthropods to the greater scientific community and the public in general. Each year we now upload all of the submitted Season Summary records to this site. In addition, several years of back records are also hosted here, and we hope to continue adding past years as that is possible.

Now that our Season Summary is available online, we provide below a simple set of instructions about how to use the SCAN database to search our available records. This process is easy, but not immediately obvious when you start exploring the site. To get started you can go directly to the SCAN site using the link below, or you can access it through The Lep Soc webpage using the link under Season Summary. Then just follow the set of instructions below to access, search and download any data from the Season Summary. The first two instructions set up the search feature to search only the Lepidopterists' Society records. If you would like to include other databases, you can select them in addition to our database. Have fun and explore a bit. There are lots of interesting datasets on the site, including quite a few from major and minor collections as well as some important personal collections. Have fun exploring our data and those in the other databases.

- 1) Go to: <https://scan-bugs.org/portal/collections/index.php>
- 2) Click on Select/Deselect All to deselect all databases
- 3) Scroll to near the bottom of the list and select Lepidopterists' Society Season Summary
- 4) Go back to the top and click on Search
- 5) Choose whatever criteria you would like and tell to complete search
- 6) Records will be displayed
- 7) Click on the icon in the upper right if you would like to download records
- 8) Click on appropriate choices -- this will download comma separated or tab separated data, which can be compressed or not
- 9) Click Download Data

### **PayPal -- the easy way to send \$ to the Society**

For those wishing to send/donate money to the Society; purchase Society publications, t-shirts, and back issues; or to pay late fees, PayPal is a convenient way to do so. Sign on to [www.PayPal.com](http://www.PayPal.com), and navigate to "Send Money", and use this recipient e-mail address: [kerichers@wuesd.org](mailto:kerichers@wuesd.org); follow the instructions to complete the transaction, and be sure to enter information in the box provided to explain why the money is being sent to the Society. Thanks!

## Mix Family Award for Contributions in Lepidoptera

In honor of Nancy, John, Lin, and Joe Mix, the Lepidopterists' Society is pleased to announce the establishment of the "Mix Family Award for Contributions in Lepidoptera." This award will be used to honor an amateur lepidopterist (someone not professionally employed as an entomologist) who has contributed the most to the field of Lepidoptera in the view of the Awards Committee. Outstanding short-term or long-term accomplishments will be considered, and may include contributions to outreach and education, collaboration with colleagues, novel research and discoveries, building an accessible research collection, or leadership within the Society. Nominations are allowed from any member of the Lepidopterists' Society and the nominee must also be a member of the Society in good standing.

This annual award is funded by a very generous monetary donation from Steve Mix that is designated specifically for this award. Award recipients will receive a check for \$1,000 and a plaque that will be presented at the banquet at the Annual Meeting of the Lepidopterists' Society. The award will be presented to a single recipient, and any person who receives the award is not eligible to be nominated again for at least 5 years. It is estimated that the initial donation will be sufficient to sustain this award for at least 20 years. In the event that the award fund is reduced to the point where the award cannot be sustained, the Executive Council will determine if the award will continue.

## The Ron Leuschner Memorial Fund for Research

The 2023 cycle of the Ron Leuschner Memorial Fund for Research on the Lepidoptera is now open for applications. Each year, the Society will fund up to 3(+) grants for up to \$500 each to undergraduate or graduate students depending on merit. Applicants must be members of the Lepidopterists' Society. Applications are due January 15, 2023. The application must include submission of the application form, posted on the Lep Soc website at <https://www.lepsoc.org/content/awards>, a brief (500 word maximum) proposal, and a letter of recommendation or support from the student's academic advisor or major professor. Additional information about the research fund or a copy of the application can also be obtained by writing to Dr. Shannon Murphy. Submit all of the above to Shannon Murphy at [Shannon.M.Murphy@du.edu](mailto:Shannon.M.Murphy@du.edu). Snail mail applications should be sent to Shannon Murphy, Associate Prof., Boettcher West 302, Dept. of Biological Sciences, University of Denver, 2050 E. Iliff Avenue, Denver, Colorado 80208. Successful applicants will be notified by March 15. The review committee consists of members of the Lepidopterists' Society, including the previous year's successful candidates (who are thus not eligible for a new award in the subsequent year's competition). Award recipients will be expected to produce a short report for the committee at the conclusion of their year of funding, which

summarizes the positive impact of the award on their research. Recipients must also acknowledge the Fund's support in any publications arising out of the funded work.

## Recent Research supported by the Leuschner Fund

Shannon Murphy recently reported that Ryan Spahn published a paper titled "Higher temperatures reduce efficacy of a key biocontrol parasitoid" (Spahn, R. & J. T. Lill, *Biological Control*, <https://doi.org/10.1016/j.biocontrol.2022.105079>). They found that parasitism rates of *Plutella xylostella* (diamondback moth) by its larval parasitoid decreased at higher temperatures. This study demonstrates how climate change may influence the interactions of lepidopteran pests. Ryan received funding from the Lepidopterists' Society through the Ron Leuschner Memorial Fund.

## The Southern Lepidopterists' Society invites you to join

The Southern Lepidopterists' Society (SLS) was established in 1978 to promote the enjoyment and understanding of butterflies and moths in the southeastern United States. Regular membership is \$30.00. Student and other membership categories are also available. With membership you will receive four issues of the SLS NEWS. Our editor J. Barry Lombardini packs each issue with beautiful color photos and must-read articles. The SLS web page (<http://southernlepsoc.org/>) has more information about our group, how to become a member, archives of SLS NEWS issues, meetings and more.

Please write Marc C. Minno, Membership Coordinator, at [marc.minno@gmail.com](mailto:marc.minno@gmail.com) if you have any questions. Dues may be sent to Jeffrey R. Slotten, Treasurer, 5421 NW 69<sup>th</sup> Lane, Gainesville, FL 32653.

## The Association for Tropical Lepidoptera

Please consider joining the ATL, which was founded in 1989 to promote the study and conservation of Lepidoptera worldwide, with focus on tropical fauna. Anyone may join. We publish a color-illustrated scientific journal, *Tropical Lepidoptera Research*, twice yearly (along with a newsletter), and convene for an annual meeting, which may change venues and times year by year as the ATL often shares a venue with the Southern Lepidopterists' Society, as well as The Lepidopterists' Society, for their meetings. Dues are \$95 per year for regular members in the USA (\$80 for new members), and \$50 for students. Regular memberships outside the USA are \$125 yearly. See the [trolep.org](http://trolep.org) website for further information and a sample journal. Send dues to ATL Secretary-Treasurer, PO Box 141210, Gainesville, FL 32614-1210 USA. We hope you will join us in sharing studies on the fascinating world of tropical butterflies and moths.



### 71<sup>st</sup> Annual Lepidopterists' Society Meeting

Please join us for the 71<sup>st</sup> Annual Meeting of the Lepidopterists' Society as we gather in Billings, Montana and enjoy the wide-open spaces of the American West. The meeting will be held from Wednesday, July 19<sup>th</sup> to Sunday, July 23<sup>rd</sup> and will be hosted by the Lepidopterists' Society, the Northern Rockies Research and Education Services (NRRES, Lolo, MT), and the C.P. Gillette Museum of Arthropod Diversity (Colorado State University, Ft. Collins, CO). The area provides an outstanding array of scenery, western history, and opportunities for exploring a diverse flora and fauna while set in a modern city, rich in industry and innovation. Billings, the largest city in Montana, is nestled between ancient marine cliffs (the Rimrocks) to the north and the Yellowstone River (North America's longest, free-flowing river), to the south. Residents consider Billings "Montana's Trailhead," as recreational opportunities abound in nearby ranges, including the Beartooth Mountains, which boast a 10,000 foot high alpine plateau, and the older, unglaciated Pryor Mountains to the South.

Field trips will include both collecting and observing, which will feature both daytime and night collecting trips to the Beartooth and Hell-Roaring Plateaus, riparian sites along the Yellowstone River, and to the southern flanks of the Pryor Mountains with its impressive ecological richness and unique high-desert habitats. The region also hosts areas of badlands to the north of Billings and myriad public lands accessed via National Forest, State, and Bureau of Land Management properties.

The meetings and lodging will be held in the historic Northern Hotel located in downtown Billings and less than two miles from the Billings International Airport. Shuttle services are available to and from the airport. There are many other lodging opportunities across the city as well as camping areas in nearby towns.

The Executive Council meeting will be held Wednesday morning (July 19). The welcome reception will be at the Northern Hotel on Wednesday evening. The scientific program (talks and posters) will be scheduled for

Thursday (July 20) and Friday (July 21), with Saturday morning available if needed. The annual BBQ will be held at a location just outside of town with an organized moth collecting/observing opportunity to follow the catered meal. The banquet will be held Saturday night at the Northern, again followed by an organized nighttime collecting trip after the meal. Dark skies come late (>10pm) this far north and collecting sites are always nearby and accessible.

More information on fees, registration and call for talks will be available in Spring 2023 via the Lepidopterists' Society website. A block of rooms will be reserved at the Northern Hotel for LepSoc members, with special rates for the meeting. The organizing committee consists of Mat Seidensticker ([mat@nrres.org](mailto:mat@nrres.org)) and Marian Lyman with NRRES, and Chuck Harp ([chuck.harp@colostate.edu](mailto:chuck.harp@colostate.edu)) and Todd Gilligan with Colorado State University.



Annual Meeting of the Lepidopterists' Society

Billings, Montana  
July 19<sup>th</sup>-23<sup>rd</sup> 2023



## Wedge Entomological Research Foundation Student Award

The Wedge Entomological Research Foundation (WERF) has established a student award for up to \$1,000/year that can be used for expenses related to the study and conservation of moths, butterflies, and related insects (e.g., travel to meetings, field station room/board, biosystematics research costs, etc.). High school, undergraduate, and graduate students are eligible. WERF is especially committed to supporting underserved groups. A one page (500 word) project description with an indication of how the funds will be used must be submitted by **15 April 2023**. The application should be accompanied by a resume or curriculum vitae, and a letter of recommendation from the student's major professor or academic advisor. Please email all application materials to the committee chair, David Wagner, at [david.wagner@uconn.edu](mailto:david.wagner@uconn.edu). Preference will be given to proposals that focus on Lepidoptera. Completion of a 350-word summary of project findings, with one to two appropriate images, is required by 31 December of the award year. Support from WERF should be acknowledged in relevant presentations, publications, web products and similar deliverables.

## DeWind Award from The Xerces Society

Joan Mosenthal DeWind was a pioneering member of the Xerces Society. In Joan's memory, Bill DeWind established this student research endowment fund. Award amounts are determined annually, but are a minimum of \$3,750 each.

### Details – Submission Requirements:

The DeWind Awards are given to students who are engaged in studies and research leading to a university degree related to Lepidoptera conservation and who intend to continue to work in this field. All proposals must be written by the student researcher. Proposed research should have a clear connection to Lepidoptera conservation and must be completed within one year from receiving funds. Applicants may be graduate or undergraduate students; however, please note that all but one awardee, to date, have been pursuing graduate research. Applications from countries outside the United States will be considered but must be written in English and international applicant work cannot involve work in the United States.

**Submission Deadline:** The submission deadline is Sunday, January 8, 2023, at 11:59 PM Pacific Standard Time (PST). Award winners will be announced by March 31, 2023, with initial award payments received by recipients by June 2023.

**Instructions and format:** All proposals must be submitted by email to [dewind@xerces.org](mailto:dewind@xerces.org). The proposal should be attached as a single file in PDF format. The subject line of the email should read "DeWind Award Proposal 2023."

**Proposal Format** (all text should use 12 pt font and 1" margins)

### 1. Cover page (1 page)

- Title. List the title in Bold.
- Contact information. Provide the name and contact information for the applicant and their major advisor. Include institutional affiliations, complete mailing address, and country. Also provide an email address and telephone number (include country code if outside the United States).
- Abstract. Include a project summary immediately following the title and contact information. The summary should be limited to 100 words and should not exceed one paragraph.

**2. Proposal body (2 pages).** Begin with a clear statement of the problem or objectives, follow with a clear methods section, and end with a substantial conclusion. The proposal should include a discussion of potential conservation applications and results, and what products, if any, will result from this work.

- Introduction and overview.
- Statement of conservation relevance. Why or how is the proposed work relevant to the conservation of Lepidoptera?
- Hypotheses or questions to be addressed. Can include explicit predictions.
- Methods. Including experimental design, data collection, and approach to analyses.
- Expected outcomes and communication. Discuss possible results and how they will be communicated to land managers, other scientists, & the general public.

**3. Additional information.** On separate pages, please include all of the following information: cited literature, project timeline, and a short (2 pages or less) CV.

Awards are paid as a qualified scholarship, which may be used for qualified or non-qualified education expenses as defined by the IRS. This allows recipients to avoid taxation on the grant if used for qualified education expenses. Recipients may use the award for other purposes which support them in completing their education or research.

Awards are made payable only to the recipient of the scholarship, and cannot be paid to an institution or other third party.

Recipients accepting the award will be asked to submit a brief report on the results of their research project.

**4.** Please include all of the materials as a single PDF attachment. No other attachments or supporting materials should be included.

*(Announcements continued on page 201)*

# Book Reviews

**Hawk Moths of Jamaica**, by Thomas W. Turner, Ph.D. and Vaughan A. Turland. Caribbean Wildlife Publications 2022. FriesenPress, One Printers Way, Altona MB R0G 0B0 Canada. ISBN: 978-1-03-614609-9 (Hardcover), 978-1-03-914608-2 (Paperback), 978-1-03-914610-5 (ebook). Review of the Sphingidae of Jamaica, distributed to the trade by the Ingram Book Company.

**Contents:** Authors and dedication, Abbreviations for Institutions, Introductions, a Taxonomic list of Jamaican Sphingidae, and Measurements.

The list of genera covered follows:

Subfamily SPHINGINAE 5 species

*Agrius*, *Neococytius*, *Cocytius*, *Manduca*, and *Nannoparce*.

Subfamily SMERINTHINAE 2 species

*Adhemarius* and *Protambulyx*.

Subfamily MACROGLOSINAE 34 species

*Pachylia*, *Callionima*, *Perigonia*, *Aellopos*, *Pachylioides*, *Madoryx*, *Erinnyis*, *Phryxus*, *Isognathus*, *Pseudosphinx*, *Enyo*, *Eumorpha*, *Cautethia*, *Himantoides*, *Xylophanes*, *Hyles*.

Chapter 2 is "A Guide to Morphology Classification and Taxonomy including the Adult Morphology and Behavioral Traits."

This section is extraordinary and sets the stage for this and other studies and includes illustrations and terms for adult morphology, key to the Sphingid foreleg, venation, and male and female genitalia. There is in depth discussion on the life history including the different types of eggs and egg structures and clusters, larvae with different coloration prior to pupation. Depending on the typical wingspan, the proboscis may be immense and the wings may be large and with a sometimes colorful ventral surface.

The higher classification of Jamaican Sphingidae is summarized by Hodges, 1972, Kawahara, et al 2009 and Kitching, 2019. This book includes the treatment used by each author for the Subfamily, Tribe, Subtribe and Genus over the years. This is expanded further by Superfamily BOMBYCOIDEA Latrelle, 1802. The type locality and

the common names is provided for each species. The discussion for each species includes the endemic species and subspecies that specifically occur in Jamaica and distribution maps are also included.

For each sphingid from Jamaica discussed, the authors include the original taxonomic references and the species to which it is closely related. The geographical distribution may include not only Jamaica in the West Indies but also Central and South America in addition to the United States. Under the "Chief Distinguishing Characteristics," the discussion of the adults includes the measurements of the wingspan and the coloration of the dorsal and ventral wing surfaces, head thorax and abdomen. Comparative comments are listed for the females as well as males.

Immatures and the associated foodplants are commented on, including observations of the shape of the egg and whether it is laid singly or in some numbers on the foodplants. As the larvae proceed from first through the final instars; coloration is important. The life history of some Jamaican species is not known. Flight periods are variable depending on the species and availability of foodplants and rain.

The authors also include seven Sphingidae of doubtful occurrence reported from Jamaica. Occasionally there are some problems when the data associated with locality on a specimen is obviously wrong. The last three sections include the Glossary, definition of terms (and their interpretation in the text), and the references used in the discussion of each taxon.

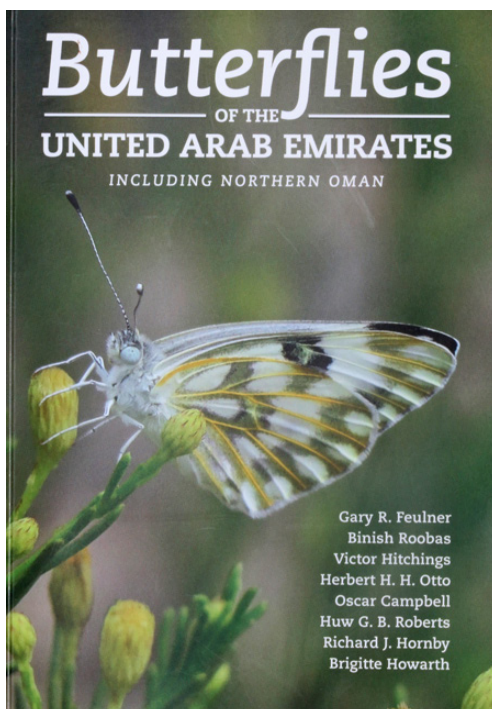
Finally, there is section on the Index of scientific names, which includes the genus, species, and subspecies. Every time a taxon, whether it is a species, subspecies, and/or genus, is mentioned in the text, each is included in the Index.

Further information is available at [www.jamaicanbutterfliesmoths.com](http://www.jamaicanbutterfliesmoths.com)

Jacqueline Y. Miller, McGuire Center for Lepidoptera and Biodiversity, University of Florida, Gainesville, Florida, [jmiller@flmnh.ufl.edu](mailto:jmiller@flmnh.ufl.edu)



**Butterflies of the United Arab Emirates including Northern Oman**, by Gary R. Feulner, Binish Roobas, Victor Hitchings, Herbert H. H. Otto, Oscar Campbell, Huw G. B. Roberts, Richard J. Hornby, and Brigitte Howarth. 528 pp., 210 mm (8.3") long x 148 mm (5.8") wide x 38 mm (1.5") thick, 2.85 lbs. ISBN: 978-1-86063-514-4. Price: UAE Dirham (AED) 150.00 or currently about US \$40.84 (paperback). Language: English. Published in October 2021 by Motivate Media Group, printed by Masar printing, and distributed by Booksarabia (all of Dubai, UAE). URL: <https://booksarabia.com/books/science-and-nature/butterflies-of-the-united-arab-emirates-including-northern-oman.html>. Order inquiries: [javed@motivate.ae](mailto:javed@motivate.ae)



The book is intended to be a field guide as well as a reference. There are some very helpful group plates (Fig. 1). For a few species that are particularly difficult to identify in the field, there are side by side comparisons with arrows pointing to markings of interest. It is printed on high quality paper but the book may be heavy to carry in the field at a weight of nearly three pounds.

The book includes these sections: dedication; foreword; introduction; a brief history of butterfly investigations in the UAE; a checklist of UAE butterflies; identification, distribution, habitats, and behavior of UAE butterflies; individual species accounts; the biogeography of UAE butterflies; acknowledgements; an appendix on UAE butterflies and their known larval foodplants; glossary; references; about the authors; index of scientific names of butterfly species; index of scientific names of plant species; and general index.

My brother Maurice recently travelled to Dubai and met with an old friend, Gary Feulner. Gary gifted him three inscribed copies of his recently published book, **Butterflies of the United Arab Emirates (UAE) and Northern Oman**. One copy quickly ended up in my library and I am pleased to write a review of this lavishly illustrated and well organized book. I had very little knowledge of Middle Eastern butterflies beforehand and came away with a greater understanding of this specialized fauna and intrigued by similarities with some New World butterflies.

The species accounts section is color coded by family. Families are arranged taxonomically and species alphabetically. Each species is numbered sequentially. The species accounts begin with the scientific name in bold font and the common name(s) below making it easy to find a butterfly of interest. For each account there is a helpful summary section at the beginning listing size, colour, habitat,

The book is dedicated to Torben B. Larsen (1944-2015) paying homage to Torben's extensive work on Middle Eastern and African butterflies. The color photo of Torben on page 4 is reproduced from **Butterflies of Saudi Arabia and its Neighbours**. There is also a dedication to Gary's coauthor, Herbert Otto, who died in October 2016.

The eight coauthors spent years observing, photographing, and researching butterflies in the UAE and northern Oman. This region is bounded by the Arabian Gulf to the north and Indian Ocean to the east. Saudi Arabia borders UAE to the south and Oman to the east. In viewing aerial photos via Google Earth, this is a parched landscape of sand and rocks that is sparsely vegetated in places. Yet 69 species of butterflies are discussed (64 confirmed present, 3 potentially present, and 2 reported by others that doubtfully occur in UAE).



Figure 1. Comparison of the underside patterns of twelve UAE Pieridae, pages 68-69 in *Butterflies of the United Arab Emirates including Northern Oman*.

season, status, behavior, and ID tips followed by a detailed narrative of identifying characteristics, distribution, habitat, flight periods, larval foodplants and behavior. No range maps are given in the species accounts, but on page 13 there is a map showing selected localities mentioned in the text. There are also three maps showing the path of Tropical Storm Aurora that passed westward from India in August 1983 with the locations of stray individuals of Indian butterflies (Striped Tiger, Blue Tiger, and Giant Egfly) that were seen in UAE and Oman afterward.

Each species is illustrated by multiple photographs, such as wild adults visiting flowers, in flight, mating, ovipositing, or puddling. Seasonal forms are shown and discussed. Photos of pinned, spread adults are mostly reproduced from Larsen's books or other publications and are of lesser quality. I counted 21 photos of eggs, 45 photos of larvae, 20 photos of pupae, 326 photos of live adults, and 80 photos of pinned adults. Eighteen photos are used twice in different places such as a group comparison and the species accounts. There are 30 photos of butterflies from places outside of the region - Dhofar, Ethiopia, France, India, Israel, Jordan, Kenya, Kyrgyzstan, Nepal, Turkey, and South Africa. UAE habitats such as coastal plains, dams and ponds, gravel plains and terraces, mountains, slopes, wadis (washes), parks and gardens, plantations, sand deserts, and ruderal areas are shown in 39 photos including 6 on double pages.

Of the 64 species known present in UAE and northern Oman, one is described as sometimes hyperabundant (*Colotis p. phisadia*), 21 (33%) as common to locally common, 12 (19%) as uncommon, 26 (41%) as rare to very rare, and four (6%) as strays from other regions. Four species not native to UAE and northern Oman are now breeding residents there including the Western Pygmy-Blue (*Brephidium exilis*) which incidentally has just been discovered breeding in Florida. Some 16 species are described as migratory.

The fauna is especially rich in Whites (13 species), Blues (19 species), and Grizzled Skippers (5 species). *Catopsilia pyranthe* and *Zizula hylax* are newly reported from UAE. *Pontia daplidice*, *Euchrysops cnejus*, *Euchrysops osiris*, *Lycaena phlaeas*, *Tarucus* sp., and *Zizeeria knysna* have been reported from northern Oman, but not yet UAE.

Predators are shown eating butterflies: a Common Cuckoo with a giant skipper larva in its bill, a jumping spider feasting on an African Babul Blue, and a crab spider with a Painted Lady. Tiny parasitoid wasps are shown on pupae of a Caper White and a Painted Lady. Notable associations with ants are mentioned for the Desert Silverline, whose caterpillars feed on plants at night but hide in or near *Crematogaster* ant nests during the day and larvae of the Mediterranean Pierrot attended by *Crematogaster* ants.

Of special interest to me is the similarity of UAE and North American butterflies. *Belenois aurota* is very much like

*Ascia monuste*, *Catopsilia* is essentially *Phoebis*, *Eurema hecabe* is similar to *Pyrisitia lisa*, and *Danaus chrysippus* is a sister of *Danaus gilippus*. UAE skippers too share ancestors or display convergences in that *Gomalia* is similar to *Systasea*, *Gegenes* spp. resemble *Lerodea eufala*, *Pelopidas* spp. are like *Panoquina* but the males have brands, and *Spialia* spp. are like *Pyrgus scriptura* and *P. xanthus* of western USA. The two UAE *Junonia* species are colored very differently from those in North America, but the larvae are similar. Unlike North America, about one-third of the UAE Blues have tails. The Pomegranate Playboy has turned out flaps near the thecla spot similar to those of *Strymon acis* and *Atlides halesis* in Florida. There is a photo of a Tawny Silverline female laying eggs on a fence post, reminiscent of C. Don MacNeill's account of *Hesperia lindseyi* eggs on lichens attached to a fence post in the western United States. Butterflies that I would particularly like to see are the beautiful *Colotis* spp., the spectacular Fig Blue hairstreak, zebra-striped *Tarucus* spp., and the Giant Skipper (a Coeliadine).

If you visit United Arab Emirates to plan to find butterflies, this is an essential book! According to Gary Feulner, the Booksarabia link listed above can now take international orders, but try the email if you encounter problems. Expect a higher than normal shipping cost due to the weight of the book.

Marc Minno, 600 NW 35th Terrace, Gainesville, FL 32607  
marccminno@gmail.com

**The Gelechiidae of North-West Europe**, by Keld Gregersen & Ole Karsholt. Published by Norwegian Entomological Society, Oslo, Norway. 2022. 939 pp. ISBN 978-82-996923-3-5 hardcover. Euro 120.00.

When the book with 939 pages was delivered, I exclaimed "wow" while my eyes were rolling. This book, at first glance, exemplifies high quality and attention to detail. *The Gelechiidae of North-West Europe* is an encyclopedic handbook for the 269 species in 63 genera of Gelechiidae (Lepidoptera) occurring in the Nordic countries, the Baltic countries, the Netherlands, the British Isles, the northern part of Poland, the northern part of Germany, and the Kaliningrad region (of Russia).

This book is hardbound and divided into two major parts: general and systematic. The general part includes sources of distribution data, maps of countries with their regions and districts, preparation techniques, collection methods, a history of the description, classification, and phylogeny of Gelechiidae, and other information. A checklist of Gelechiidae in Northwest Europe and an index of host plants are provided as well. The systematic part includes treatments of all species. Each species treatment includes a description of the adult and any variations in wing pattern, genitalia, bionomics with descriptions of known larvae and their host plants, habitats, and distribution.



Adults of all species are illustrated in high resolution color, and structural details of genitalia are shown to facilitate identifications. The color plates of adults are clear and show regional differences among members of a species within a country and between different countries. While many adults of different species appear quite similar, the color

plates are distinct enough to show more subtle differences. This book is unique in having numerous photographs that document the immature stages and the moth's natural resting positions. Images of living adults, as they appear with wings folded and resting on plants, are especially valuable as this is how most readers are likely to view them in the field.

The general reader may be less interested in the plates showing male and female genitalia, but these plates are generally exceptional in quality and are especially useful, combined with drawings in the text, for making authoritative identifications. The color plates showing labial palps are distinct and show both color and textural differences. Some of the palps appear almost three-dimensional!

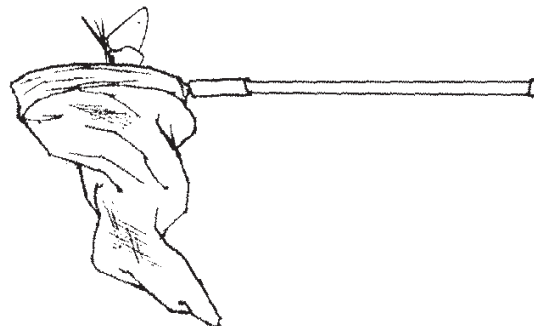
For each species, descriptions of known larvae are given, along with its host-plant and feeding strategy. Few publications have this many figures of larvae on host plants. The photos are detailed and show distinctive features that are present, although within a genus the larvae may be quite similar. Descriptions of larvae in the text often make identifications possible. The photos of larval habitation, with larvae feeding in shoots, hiding in flower buds, spinning leaves together, and attacking plants in a variety of other ways, give an interesting coverage of different larval lifestyles.

The authors examined thousands of specimens in museums and private collections to give accurate descriptions and provide distribution maps for all the species. In this book, one species new to science is described, two species are newly synonymized, one species is re-synonymized, two species are re-combined, and one lectotype is designated.

This handbook is a great reference for anyone who is interested in learning about or studying gelechiid species in Europe. I highly recommend having it in your library.

Sangmi Lee, Research Specialist Senior and Collection Manager of Arizona State University Insect Collection, P.O. Box 874108, Arizona State University, Tempe, AZ 85287-4108, [slee281@asu.edu](mailto:slee281@asu.edu).

## The Mailbag . . .



As authors who have had several natural history books published by an academic press, we have experience dealing with many types of criticism from reviewers. However, when that criticism seems mean-spirited and presumptuous, we feel the need to call it out.

The recently published review in the LepSoc News of our latest book, **Native Host Plants for Texas Moths**, did not focus on the accuracy of the host plant-moth associations, or even the accuracy of the host plant and moth species identifications. Rather, it incorrectly presumed that this book was a moth book for lepidopterists rather than a plant book for nature enthusiasts.

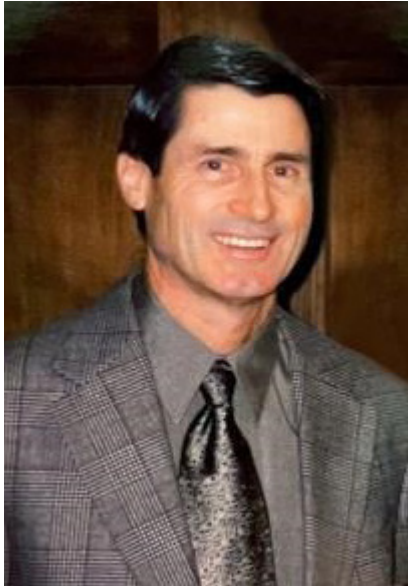
It questioned our reputation without knowing our background and experience, ranted about using NatureServe's designation 'critically imperiled' on 3 out of 168 moth species simply because it was not preferred language, and complained that too few photographs were taken by lepidopterists when the majority of photographs are of plants. None of these comments are relevant to the purpose of the book, which is to provide a broader audience with the knowledge to appreciate the connections between the selected plants and the moths that utilize them.

While we do not expect all reviews of our work to be positive, we do expect them to be constructive, respectful, and professional.

Jim Weber Austin, TX [jweber@austin.rr.com](mailto:jweber@austin.rr.com)  
<http://naturewatchaustin.blogspot.com>  
<http://www.flickr.com/photos/webersaustin/>

# Metamorphosis

**John Frederick Emmel** (August 10, 1944 – April 29, 2022)



The *Hemet* (CA) *Press-Enterprise* reported the passing of Dr. John F. Emmel, dermatologist, on May 15, 2022. John had been a member of the Lepidopterists' Society since the late 1950s. As a youth, he made many trips to the Natural History Museum of Los Angeles County, where he met one of his mentors, the late entomology curator, Lloyd Martin, who undoubtedly made a

large impact on his life's goals. With his brother, the late Dr. Thomas Emmel, John made numerous contributions to the knowledge of Lepidopterology, especially in California. Studying butterflies was not just a hobby to John. It was a pastime that he pursued to the highest professional level. In essence, it was his "second career", a career that required a knowledge of biology, botany, and geology in addition to photography, geography, and topographical map reading. John's free time was spent developing techniques for rearing various species of butterflies. Surrounding himself with numerous pots of native hostplants, he meticulously adjusted the lighting, temperature and humidity requirements for each species of egg (*ex-female*) or larva collected in the field.

His "second career" got an early start. In the 1960s, he and his brother Tom were employed at the Donner Pass Ski Resort in California and published notes on the butterfly ecology of that area. While in high school, he even hurried through his daily homework during study hall so that he could chase butterflies after school!

While at Stanford University in the 1960s, he and lepidopterist Oakley Shields collected insects throughout California, Nevada, Utah and Colorado in order to sell to museums and collectors. He had accumulated many topographical maps and kept extensive notes in field notebooks along with pressed pages of larval hostplants. In addition, no fewer than seven subspecies of the diverse *Papilio indra* swallowtail complex were described by the Emmels.

With Tom, his publications included two books: *Butterflies of Southern California* (1975) and *Systematics of Western*

*North American Butterflies* (1998). In 1975, they described the checkerspot butterfly, *Euphydryas editha insularis* from Santa Rosa Island. In 1977, John, together with lepidopterist Ed Perkins, named the endangered Palos Verdes Blue (*Glaucopsyche lygdamus palosverdesensis*) from L.A. County. The same year, Oakley Shields named Emmel's Blue (*Euphilotes pallescens emmeli*) in gratitude for John's contributions to his own research.

In his co-authored 1998 book, he and Tom added many new subspecies to the list of North American butterfly fauna, including three *Callophrys* (*Incisalia*) *mossii* and two *Callophrys* (*Callophrys*), each from California.

I was inspired by his intelligence and drive to find new (undescribed) butterfly subspecies. Now his spirit is undoubtedly on another collecting trip. Good luck, John... I just hope that it turns out better than our *Callophrys* hunt together with Oakley in the Avawatz Mountains!

Glenn A. Gorelick, [butterflyguy44@verizon.net](mailto:butterflyguy44@verizon.net)

## Ray E. Stanford, 1939-2022

Ray was born in San Diego and lived with his parents Maxine and Dwight in Point Loma, part of San Diego. Ray was a man of many talents and deep-felt interests including music, natural history, mathematics, and medicine. He held both a doctorate and an M.D. His professional specialty was lung pathology and his avocational interest was in butterflies. Ray met Kit, his life-long partner, while attending the U.C.L.A. School of Medicine in the 1960's.

I met Ray and two high school friends high in the Laguna Mountains of San Diego County on May 15, 1957 after have driven all night from Berkeley in my parents' car when I was a college freshman. Ray and the late Keith C. Hughes kept their joint collection at Ray's house, and gave me nice assortment of papered southern California specialties. That fall Ray matriculated at Stanford and Ray and I resumed our friendship and began a joint effort



Kit and Ray Stanford

to document the distributions of California butterflies. We went on several joint trips during those years and developed our mutual interests in the distributions of western butterflies.

Several noted butterfly experts of the time including Harry K. Clench and most notably, F. Martin Brown, had proposed that the distributions of North American butterflies be carefully documented. Ray was one of the primary people to bring this idea to fruition by exploring poorly documented regions, as well as compiling records from the literature and museum collections.

With the Lepidopterists' Society, Ray had been President in 1993, Vice-president, Executive Council Member-at-Large, Zone 4 Season Summary Coordinator for many years, and served on many committees. Ray was active in the Pacific Slope Section of the Society, and with Jerry Powell established the John Adams Comstock Award. Ray was active in both the National meetings and Pacific Slope Section since 1966. He and Kit attended countless meetings ranging from Fairbanks, Alaska and Mexico City and many locations in between.

Ray was also a long-time supporter of the Xerces Society and served on the Board of Directors and as Zone III editor of the Fourth of July Butterfly Counts. He began the Gilpin Butterfly Count, the longest running count, and coordinated until 2007 when he moved to Medford, Oregon. Under his leadership the Gilpin Count rarely reported fewer than 100 species and had a high count of 111 species.

The impact of Ray's influence on knowledge of North American butterflies was profound, and especially affected our knowledge of species distributions where he pioneered the county-by-county mapping of every species by a laborious compilation of individual records from his own fieldwork, extensive literature survey, season summaries, scanning of museum material, and contact with hundreds of individual lepidopterists. These efforts now are exemplified in the detailed distribution maps that appear in most recent butterfly books and the [Butterflies and Moths of North America](#) website.

Ray published or contributed to many publications, most notably [Butterflies of the Rocky Mountain States](#) and [Atlas of western USA Butterflies](#). He had a particularly strong interest in skippers drawn from early influences from C. Don MacNeill and John Burns.

In 2009, Andy Warren and I described a new blue species as *Euphilotes stanfordorum* in honor of Kit and Ray Stanford. Stanfords' dotted-blue was originally known only from western Colorado, but has since been found in New Mexico and Utah. Ray had a special touch in young people about butterflies and was an early mentor of Andy Warren.

Ray was my closest friend for many decades and our puzzling about the true identity of several species led to my

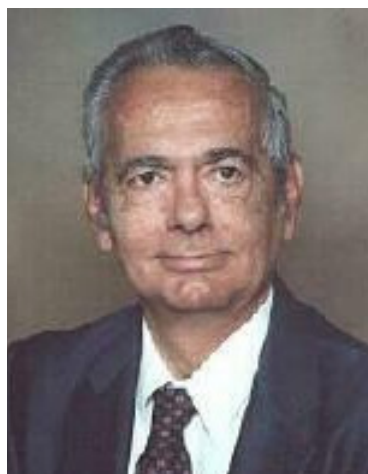
Masters topic on the revision of North American *Euchloe* and the *Apodemia mormo* group (Riodinidae).

I'll never forget Ray's smiling face and droll, expletive-free humor. His most intense phrase was 'Evil pi city.' He could recite pi to the 20<sup>th</sup> place during stressful situations!

The Ray and Kit Stanford Butterfly Collection of nearly 100,000 specimens is deposited in the C. P. Gillette Museum of Arthropod Diversity, Department of Arthropod Diversity, Colorado State University, Fort Collins, Colorado.

Ray is survived by his wife Kit Stanford, sister Gail Stevens, children Scott Stanford and Linda Stanford and grandchildren Remi Lathrop, Jolie Lathrop, Alexi Stanford and Dahlia Stanford. Memorial contributions may be made to The Xerces Society or charitable organization of one's choice.

Paul A. Opler, C.P. Gillette Museum, Colorado State University, Fort Collins, Colorado 80523-1177, paulopler@comcast.net



**Robert M. Patterson, Sr.** passed away Wednesday, September 28th, 2022 at the age of 84. Bob was born April 11, 1938 in New London, Connecticut to Stephen and Helen Patterson. The family moved to Washington, DC in the early 1950's where Bob attended Anacostia High School. He married Mary Jane Nethery in 1956 and they had 5 sons, Robert Jr, William,

Richard, Stephen (Scott) and Ronald. They moved to Bowie, Maryland in 1962. Bob and his brother Frank formed the business Belair Home Repair and worked together for many years serving the Bowie area. Mary Jane passed away in 1970 and Bob was later remarried to Bethel L Wilburn. Bob and Beth recently celebrated their 52nd anniversary together. Bob was a man of many passions, chief among them were; golf, bird watching, stamp and National Geographic collecting. Later in life Bob became a computer programmer, worked for and retired from the U.S. Peace Corps. In retirement, Bob studied moths and he created and maintained one of the largest Moth websites in the United States. The website now resides at Mississippi State University. Bob was preceded in death by his first wife Mary Jane and son Ron. He is survived by his wife, Beth, his sons; Robert Jr, William, Richard and Scott, 11 grandchildren and 3 great grandchildren.

Joy Keller (granddaughter)

# A review of *Cupido amyntula* (Lycaenidae) in Maine, and comments on the subspecies *C. a. maritima*

John V. Calhoun

977 Wicks Drive, Palm Harbor, FL 34684    [bretcall@verizon.net](mailto:bretcall@verizon.net)

Research Associate, McGuire Ctr. for Lepidoptera and Biodiversity, FL Museum of Natural History, Gainesville, FL

*Cupido amyntula* (Boisduval) (western tailed-blue) has been recorded in Maine only in Aroostook County, which borders Quebec and New Brunswick, Canada (Fig. 1). The species was first found in Maine in 1995, when Ronald Rockwell captured one male in the unorganized township of T19 R12 WELS, in the northwestern corner of the state (Webster and deMaynadier 2005). Only six records followed, all documented during the Maine Butterfly Survey. William Sheehan found a few in 2009 and 2011 in T14 R8 WELS, T15 R8 WELS, Parham Township, and Westmanland Township. Phillip deMaynadier recorded four individuals in 2013 in Allagash Township, and Ann Hammond found five in 2015 in T18 R10 WELS. The

Maine Department of Inland Fisheries and Wildlife lists *C. amyntula* as a Priority 3 species, defining it as a recently documented or poorly surveyed rare species for which risk of extirpation is potentially high (e.g., few known occurrences), but insufficient data exist to conclusively assess distribution and status (MDIFW 2015).

While conducting field work in Aroostook County on 29 June 2022, I came across a small, slow-flying lycaenid along a forested gravel road in the unorganized township of T14 R5 WELS. Upon capture, I confirmed my suspicion that it was a male *C. amyntula*. I spent the next several hours searching the area and found three more *C. amyntula*, all widely separated singletons in flight. I encountered four others about 1.5 miles (2.4 km) to the north, flying low along the edges of a weedy trail through mixed forest. Single individuals were also observed at these locations in the late afternoon the following day (Fig. 5).

Returning to northern Aroostook County on 3-4 July 2022, I found *C. amyntula* at ten separate localities in five townships: T13R5 WELS, T14R6 WELS, Madawaska Lake, Portage Lake, and Westmanland. Most were encountered singly in flight along logging roads and trails that branch off a 25-mile (40 km) stretch of gravel road through mixed forest (Figs. 2-4). They were nearly always widely spaced, requiring a great deal of walking to locate. Unlike the similar *Cupido comyntas* (Godart), which prefers weedy, open habitats, *C. amyntula* was mostly found in partially wooded situations. Some frequented clearings or basked on sunlit vegetation along forest edges (Figs. 6-8). Several were seen nectaring on introduced *Vicia cracca* L. (cow vetch) (Fig. 9). Nearly a dozen *C. amyntula* were observed around a former logging site with an extensive growth of *V. cracca*. The butterflies were active there as late as 1930 hrs, congregating in small groups where the last rays of sun reached west-facing forest edges. Elsewhere in its range, this species has been observed roosting together on foodplants at dusk (Pyle and LaBar 2018).

In Aroostook County, I always found *C. amyntula* in the vicinity of *V. cracca*, which probably serves as the primary food plant. The native host in the region is most likely *Lathyrus palustris* L. (marsh-vetchling). Widespread in Maine and adjacent New Brunswick (Hinds 2000, Magee and Ahles 2007), *L. palustris* mostly occurs in

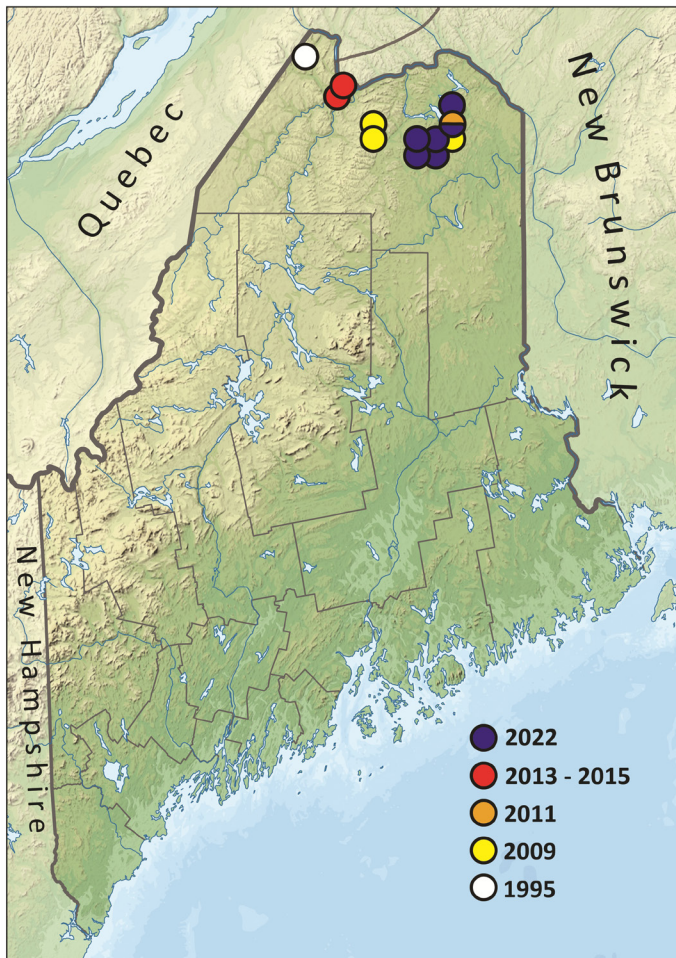
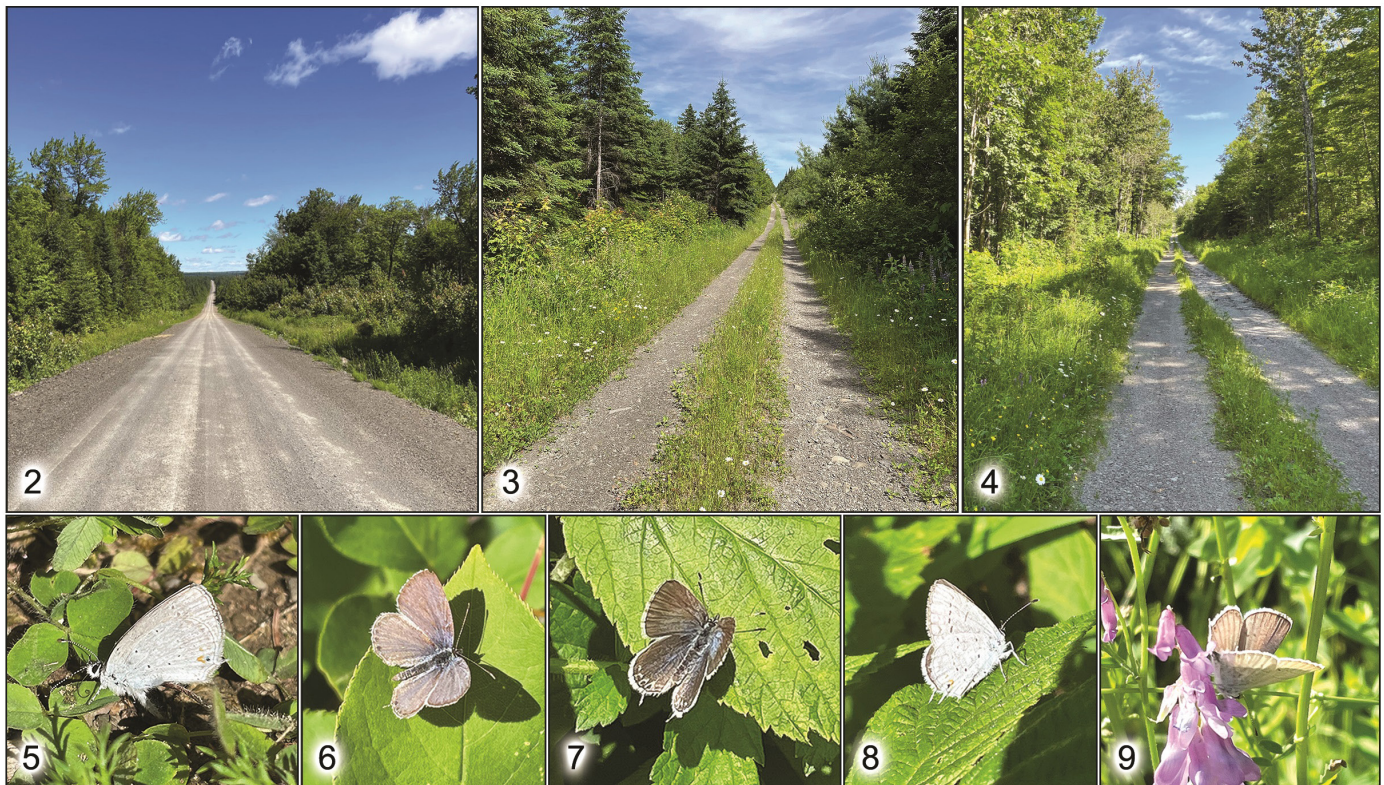


Fig. 1. Map of known Maine records of *C. amyntula* (by township).





Figs. 2-9. *Cupido amyntula* and habitats in Aroostook Co., Maine, 29 June—4 July 2022. 2, gravel road traversing several townships. 3, trail through mixed forest, Westmanland Township. 4, trail near sunlit forest margin, Madawaska Lake Township. 5, female on ground, T14 R5 WELS. Figs. 6-9 all Madawaska Lake Township: 6, male basking. 7, female basking. 8, female perching. 9, male nectaring on *Vicia cracca*.

wetland habitats. This may explain why *C. amyntula* was historically known to occur in the Northeast only at a few localities in northern New Brunswick and the Gaspé Peninsula of Quebec (see below). The successful exploitation of *V. cracca* has enabled this butterfly to inhabit dryer, more disturbed habitats, resulting in a range expansion. Adults presumably disperse along road and railway corridors, where *V. cracca* can be abundant. The northeastern subspecies of the Silvery Blue, *Glaucopsyche lygdamus couperi* Grote, similarly benefited from feeding on *V. cracca* (Dirig and Cryan 1991). First recorded in Maine in 1936 (Brower 1974), *G. l. cooperi* became more frequent by the 1970s. It is now abundant statewide.

*Cupido amyntula* is probably widely distributed across the northern half of Aroostook County, but has mostly gone unnoticed due to its relatively remote distribution, small size, limited numbers, and retiring nature. This is further complicated by the recent arrival in northern Maine of *C. comyntas*, which was first recorded in Aroostook County in early August 2020, when I found two individuals near Fort Kent. Whereas *C. comyntas* is multivoltine in Maine, flying May to October, *C. amyntula* is univoltine, with extreme dates of 6 June and 12 July (Maine Butterfly Survey database). In New Brunswick, *C. amyntula* has been recorded from 31 May to 14 August (MBA 2022).

**Subspecies.** Populations of *C. amyntula* across most of Canada are generally recognized as the subspecies *C. a. albrighti* (Clench), while those in eastern Quebec, Maine, and New Brunswick are usually assigned to the subspecies *C. a. maritima* (Leblanc) (Layberry et al. 1998, Webster and deMaynadier 2005, Acorn and Sheldon 2016, Pohl et al. 2016, Pohl et al. 2018, MBA 2022, MBS 2022, NatureServe Explorer 2022, Pelham 2022). The continued recognition of *C. a. maritima* ultimately depends on two things: the nomenclatural availability of the name *maritima*, and the taxonomic validity of the subspecies. Both are debatable, however.

Landry (1994) discovered that the name *maritima* originated in 1969, when F. Martin Brown examined specimens of *C. amyntula* at the Canadian National Collection of Insects, Arachnids, and Nematodes (CNC, Ottawa). Brown set aside those from New Brunswick and the Gaspé Peninsula of Quebec as morphologically distinct and geographically isolated from specimens of the subspecies *C. a. albrighti* (Clench). He placed a label with the segregated specimens, identifying them as “*Everes amyntula maritima* Brown.” He discussed these populations in letters to Harry K. Clench, who had previously described *albrighti*. In an unpublished revision of the genus *Everes*, Clench considered the populations in the Gaspé and New Brunswick to be an integral part of

the subspecies *albrighti* (Landry 1994). Following this correspondence, Brown appears to have changed his mind about the uniqueness of those populations. Although Brown intended to publish a description of *maritima*, he never did so. None of his subsequent publications, including Miller and Brown (1981), alluded to such a subspecies.

During his research on the Lycaenidae of Quebec, André Leblanc examined material at CNC, including the series of *C. amyntula* that Brown had segregated under the name *Everes amyntula* *maritima*. In his published treatise, Leblanc (1985) matter-of-factly mentioned *maritima* as the subspecies of *C. amyntula* occurring in Quebec, as if the name were already established: “La sous-espèce présente dans l’est du Québec (Rimouski, Gaspésie) s’appelle *maritima*” [The subspecies found in eastern Quebec (Rimouski, Gaspé) is called *maritima*]. Landry (1994) and others insisted that by mentioning the name *maritima* as a subspecies, Leblanc had defined a new taxon, even though the act was obviously unintentional. This prompted Landry (1994) to designate a lectotype of *Everes amyntula* *maritima* Leblanc using a specimen from Jacquet River, New Brunswick, which Brown had previously associated with that name. Populations in eastern Quebec, Maine, and New Brunswick have since been identified as this subspecies, most recently in the combination *Cupido amyntula* *maritima* (Pelham 2022).

Leblanc (1985) was the first to publish the name *maritima*, but simply mentioning a name is not enough to constitute the description of a new taxon. This is established in the current (fourth) edition of the International Code of Zoological Nomenclature (ICZN 1999), as well as in the third edition (ITZN 1985), which was in force when Leblanc published his treatise. In both editions, Article 13 requires that for a new name published after 1930, at least one of three provisions (13.1.1–13.1.3) must be satisfied. In this case, the only relevant provision is 13.1.1, which stipulates that a new name must be “accompanied by a description or definition that states in words characters that are purported to differentiate the taxon.” Earlier editions of the Code (ICZN 1961, 1964) included a similar provision under Article 13(a)(i), requiring that names published after 1930 must be “accompanied by a statement that purports to give characters differentiating the taxon.” In addition, Recommendation 13A of ITZN (1985) urged authors who described a new taxon to make their intention to differentiate “clear to others by giving a summary of characters that in the author’s opinion differentiate the taxon from other named taxa of the same rank as the new taxon.” This recommendation was revised for the fourth edition of the Code (ICZN 1999). Titled “Intent to Differentiate,” it advises, “When describing a new nominal taxon, an author should make clear his or her purpose to

13. Plus petits (19–28 mm); ♂ bleus, ♀ brunes; Sous les AP, les 2 premières taches non alignées avec les suivantes (fig. 10); taches discales, sous les AP, répandues sur toute l'aile; pas de tache bleue sous l'angle anal des AP.  
 . . . . . genre: *Everes* 14
14. Dessous plus foncé (blanc-grisâtre), avec taches noires et orangées bien distinctes et définies . . . . *E. comyntas* p.43
- 14: Dessous plus pâle (blanc-craie), taches foncées grisâtres, plus floues, moins bien définies, rarement absentes. Taches orangées moins distinctes, parfois absentes . . *E. amyntula* p.44

Fig. 10. Dichotomy of *Everes* (=Cupido) in Leblanc (1985), distinguishing *C. amyntula* (*sensu lato*) from *C. comyntas*.

differentiate the taxon by including with it a diagnosis, that is to say, a summary of the characters that differentiate the new nominal taxon from related or similar taxa.”

The closest thing to a diagnosis in Leblanc (1985) is a dichotomous identification key, in which the species *Everes* (=Cupido) *amyntula* is broadly distinguished from the similar *E. comyntas* as “Dessous plus pâle (blanc-craie), taches foncées grisâtres, plus floues, moins bien définies, rarement absentes. Taches orangées moins distinctes, parfois absentes” [Paler (chalk-white) underside, grayish dark spots, blurrier, less well defined, rarely absent. Less distinct orange spots, sometimes absent]. Leblanc’s key couplet (Fig. 10) makes no mention of the name *maritima*, and his definition of *amyntula* (*sensu lato*) is generic enough to characterize the nominotypical subspecies, which Boisduval (1852) originally described using the same set of characters to differentiate it from *comyntas*.

Some may argue that Leblanc’s identification key implies *maritima* (since he believed this to be the only subspecies in Quebec), and his comparison with *C. comyntas* represents a definition of “characters that are purported to differentiate the taxon.” Pelham (2022) concedes that the “key in Leblanc (1985) apparently qualifies as a description.” Admittedly, this reveals a deficiency in Article 13.1.1 of the Code, in that it does not indicate how a new taxon is adequately differentiated. It should include the proviso that a new subspecies must be differentiated from other subspecies of its given species. Logic dictates that for a subspecies to be recognized there must be some justification for that treatment.

Accepting Leblanc’s key as a description of *maritima* fails to place the taxon within the context of its own species and ignores its uniqueness among other described subspecies of *C. amyntula*. It literally offers no basis for the concept of *maritima*. As noted by Cifelli and Kielan-Jaworowska (2005), “the precise basis for taxonomic recognition must be provided, so that subsequent workers can evaluate its merits and test it as new data emerge.” That being said,

Handfield (1999, 2011) claimed that there are no legitimate morphological criteria to distinguish populations of *C. a. maritima* from those of *C. a. albrighti*. Even Landry (1995), who designated the lectotype of *Everes amyntula maritima*, questioned the validity of this subspecies. Subsequent authors have also failed to provide any unique characters to differentiate *maritima*. Despite the troubling absence of this information, *maritima* continues to be treated as a subspecies, mostly due to reiteration in the literature. The only attribute ever cited is the alleged geographical isolation of these populations.

For many years, there were no known records of *C. amyntula* east of Ontario, except those in the Gaspé Peninsula and northern New Brunswick (first recorded in 1931 and 1941, respectively). Leblanc (1985) stated that the species was absent from southern, western, and central Quebec. Laplante (1985) figured two specimens from western Quebec, noting that the species was recorded only in the eastern and western parts of the province. Distribution maps of *C. amyntula* in Scott (1986) and Layberry et al. (1998) clearly show a gap in its range across central Quebec. The perceived isolation of eastern populations bolstered the notion that they represent a discrete subspecies (i.e., *C. a. maritima*). Since that time, *C. amyntula* has been recorded in western and southeastern Quebec, leading some authors to suggest that eastern populations are not as isolated as previously believed (Landry 1994, Handfield 1999, 2011). Nonetheless, correctly identified records of *C. amyntula* submitted to eButterfly (2022) and iNaturalist (2022), dating from 1977 to 2022, do not include central Quebec. This could reflect an ongoing lack of survey efforts, though other butterfly species have been recorded in that area during the flight period of *C. amyntula*. If populations in eastern Quebec, Maine, and New Brunswick are proven to be disjunct, this is still not enough to justify their treatment as a subspecies without a means to differentiate them.

For the reasons discussed, the name *maritima*, as published by Leblanc (1985), is arguably a *nomen nudum* (unavailable name). To avoid confusion over the misinterpretation of such “accidental” descriptions, the fourth edition of the Code (ICZN 1999) includes Article 16.1, which requires that “Every new name published after 1999, including new replacement names (*nomina nova*), must be explicitly indicated as intentionally new.”

Even if the name *maritima* is considered available, the lack of known criteria to differentiate northeastern populations demands that *maritima* Leblanc, 1985 be treated as a junior subjective synonym of *albrighti* Clench, 1944. As a result, populations in eastern Quebec, Maine (Fig. 11), and New Brunswick should tentatively be identified as *C. a. albrighti*. Planned genomic analyses of *C. amyntula* from Maine will hopefully shed light on the taxonomic status of these populations.

Finally, it should be pointed out that the concept of

*albrighti* is not without its own problems. Originally described as a subspecies of *C. comyntas* based on four specimens from Montana, *albrighti* was reassigned to *C. amyntula* by Downey (1975) on the advice of H. K. Clench, who had described *albrighti* as having gray ventral hindwings and grayish costal shading on the ventral forewings (Clench 1944). These characters do not agree with the chalky-white ventral surface generally associated with populations of *C. amyntula* across Canada and the northern United States (Hooper 1973, Klassen et al. 1989, Layberry et al. 1998, Nielsen 1999, Douglas and Douglas 2005, Handfield 2011, Huber 2012, Acorn and Sheldon 2016). Landry (1994) preferred to identify Canadian populations as *C. a. amyntula*. Scott (2008) suggested that *albrighti* may be nothing more than a form or subspecies of limited distribution, and that most Canadian populations are applicable to *C. a. maritima* (!). Western populations ranging northward into Alaska have been associated with *albrighti* (Downey 1975, Pyle 2002), though Guppy and Shepard (2001) identified them as *C. a. amyntula*, and Philip and Ferris (2016) did not assign Alaskan populations to any subspecies. Bird et al. (1995) stated



Fig. 11. *Cupido amyntula albrighti* from Aroostook Co., Maine (29 June 2022, Leg. J. V. Calhoun). Male (top) and female; dorsal (left) and ventral.

that populations in southern Alberta can be treated as *C. a. albrighti*, implying that the nominotypical subspecies occurs elsewhere in the province. Pohl et al. (2010) called for a taxonomic review of western Canadian populations that have traditionally been identified as the subspecies *C. a. albrighti*.

Warren (2005) observed complex patterns of variation in *C. amyntula* populations, both in wing morphology and genitalia. As suggested by Fisher (2009), the species we now recognize as *C. amyntula* may comprise a complex of several discrete species. Obviously, much more study is needed.

## Acknowledgements.

I thank Robert Dirig, Jennifer M. Long, and B. Christian Schmidt for their kind assistance with literature, Jonathan Pelham for helpful input, and Nick Grishin for offering to include Maine *C. amyntula* in forthcoming genomic studies.

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## Cognitive dissonance and pierine taxonomy

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The term “cognitive dissonance,” used in social psychology, refers to mental conflict that results when one holds two beliefs simultaneously that contradict each other. Leon Festinger in 1957 published a very influential book, *A Theory of Cognitive Dissonance*. In it, he explained that attempting to sustain such contradictions leads to intense malaise or discomfort. The commonest mechanisms used to relieve this discomfort are “explaining things away” or rejecting information that conflicts with existing beliefs, usually by rationalizing that the information is wrong or the source is unreliable.

Everyone experiences cognitive dissonance at times. As I write this, I am suffering a severe acute bout of cognitive dissonance, triggered by a recent paper by Zhang, Cong, Shen, Opler and Grishin (2021) entitled “Genomics-guided refinement of butterfly taxonomy.” Before proceeding to explain the source of my angst, let me quote from “Naming Nature” by Carol K.-S. Yoon: “The evolutionary taxonomist’s reluctance to abandon the use of subjectivity and intuition was based on more than an adherence to hardened Linnean traditions. The difficulty that taxonomists had in accepting the invisible — of DNA and proteins — to order life was more than a matter of two hundred years of indoctrination in the use of visible, physical characteristics of living things. It was a matter of the human mind being made up to order life based on how it looks, how it appears to us.”

I have been teaching evolution, ecology, biogeography and systematics in the University of California for 50 years this November. I have been doing research on and with Pierid butterflies for over 60 years now. I began working on and with the endemic South American Pierids in 1977; that’s 45 years. I believe I have published more on the biology of the Andean and Patagonian Pierini than anyone else. From these facts one may be justified in concluding (a) that

I am probably pretty set in my ways and (b) that I probably am justified in being so. That of course does not mean my ways are the right ways.

Now, about Zhang *et al.*: I will not explain, or even attempt to critique, their methodology. I will leave that to people who do genome-based classification and phylogenetic reconstruction for a living. I have collaborated with such people in the past and hope to continue doing so. I am primarily interested in what DNA can tell us about evolution and evolutionary relationships. What Zhang *et al.* get from their work that impinges on my world-view is not the evolutionary relationships of the Andean-Patagonian Pierini *per se* but the taxonomic conclusions they draw from them, to wit: “With genetic similarity between these taxa being at the level of a species group...we propose that *Tatochila* Butler 1870, *Piercolias* Staudinger 1894, *Hypsochila* Ureta 1955, *Theochila* Field 1958, *Pierphulia* Field 1958, and *Infraphulia* Field 1958, are junior subjective synonyms of *Phulia* Herrich-Schaeffer 1867... [and] it may not be meaningful to consider these names as denoting valid subgenera.”

Zhang *et al.* are certainly correct in stating that “all these genera together represent a prominently distinct genetic group that is sister to *Ascia* Scopoli 1777.” That much was evident – long before the advent of DNA-based classification – to Jose Herrera and Bill Field! I am not aware that there has ever been any doubt that these endemic South American taxa represent an adaptive radiation. The principal question has been whether that radiation was derived from the Holarctic *Pontia* or *Synchloe*, a question that was made urgent by the discovery of the monotypic *Reliquia santamarta* in the Sierra Nevada de Santa Marta of northeastern Colombia. Almost immediately after its description by Ackery I observed its seeming very close affinity to *Pontia* – in fact my entire South American

Are all of these in the same genus?



Top row: *Piercolias forsteri* male, upper- and undersides; *Infraphulia madeleinea*, live male and specimen underside. Second row: *Phulia nymphula*, male, female and female underside; *Theochila maenacte*, live male. Third row: *Hypsochila galactodice*, male, female and female underside; *Tatochila theodice* female. Bottom row: *Tatochila macrodice*, male, female, and live female underside; *Tatochila theodice*, male underside.

career was initiated by the desire to explore that putative relationship. I speculated that if the relationship were real it would have to be quite recent — a product of the Great American Biotic Interchange, and hence of Quaternary age or at least not older than the Pliocene. The Zhang *et al.* study confirms that and demonstrates that *Reliquia* is not very closely-related to the group of genera this paper wants to lump into *Phulia*.

The problem is that phenotypically and ecologically those genera are as distinct as any consubfamilial group of genera in any butterfly family. As Yoon would say, to lump them all into one genus is to do violence to our shared perceptions. Yoon again: “Science has slowly but surely distanced itself from the view of the living world that all humans share and understand.” Understand: genera are not *things*; they are defined by us for our convenience. Of

all the ranks in the Linnean hierarchy, only the species has any claim to a biological criterion for membership, and that is highly controversial. How we define genera is up to us. Before Darwin they were based on subjective evaluations of phenotypic similarity. After Darwin, they supposedly reflected evolutionary kinship (unless one was a pheneticist, in which case the old criterion of similarity still held sway, albeit now quantitatively defined). How the Zhang *et al.* team chooses to define genera, based on genomic similarity, is explained on pp. 4-5 of their paper and further elaborated in their discussion of the Andean-Patagonian taxa (pp. 9-10). Note that this is a conscious choice, not an ironclad rule that they are obliged to follow wherever it may lead. Just as many of Willi Hennig’s rules of thumb in phylogenetic systematics have been discarded, we may expect the procedures used to rank taxa in genome-based studies to evolve over time.

The fact is, this is merely a contemporary manifestation of a problem that has dogged systematics at least since the theory of evolution was proposed: the competing claims of phenotype and phylogeny as a basis for classification. In modern times, phenetics opted for the first and cladistics for the second. For molecular data, inferences based on overall similarity (“homology”) are phenetic, but those based on phylogenetic principles are cladistic. “Evolutionary” taxonomy represented a non-ideological compromise.

Meanwhile, if we accept the validity of Zhang *et al.*'s data and methods, we are faced with a very significant *biological* problem: how can we account for the inconsistency between genomic and phenotypic divergence in this lineage? We could be dealing with either very rapid phenotypic evolution or very slow genomic evolution, or both. To answer this question we need to look at other adaptive radiations to see whether this sort of inconsistency is characteristic of such cases. There is plenty of relevant literature (cf. Givnish and Systma, 1997). Of particular relevance are the explosive high-Andean radiations of the Hypericaceae (Nurk *et al.*, 2013) and the frailejones (Asteraceae: Espeletiinae) (Pouchon *et al.* 2018) as well as the Hawaiian Silversword Alliance (Asteraceae: Madiinae) in which extreme morphological divergence has far outrun apparent genetic divergence, and on a similar time scale to our Andean-Patagonian Pierini. The implication is that selection on morphology and the loci controlling it has been very intense, while much of the genetic background has been largely unaffected. This may be a common if not general phenomenon accompanying the invasion by a lineage of a largely-vacant niche space. In the silverswords, species with quite different growth forms have retained (so far) the ability to hybridize — underscoring the rapidity of their divergence (Baldwin 1997, Landis *et al.* 2018.)

When we took a stab at molecular relationships in the Pierines (with the object of clarifying whether the Central Asian *Baltia* was closely related to the Andean *Phulia* and related genera, or merely convergent in very similar high-altitude environments) we found no molecular criterion for separating the genera *Tatochila* and *Hypsochila*. Not only were they not distinct at that level, but both genera had subsets of species very closely related among themselves feeding on Brassicaceae on the one hand and Fabaceae on the other. There is a hint of lineage sorting underlying this odd state of affairs. There is also a hint of kinship between *Theochila* and the group of species including *Tatochila stigmadice* and *T. orthodice*. None of these three has been reared. See Shapiro, Forister and Fordyce, 2007.

The moral of all of this is that lumping all these things into the genus *Phulia* does violence to our intuitive and experiential concept of the genus. One can point to the divergence of phenotypic and genomic similarity and ask why that should be the case without making the taxonomic leap Zhang *et al.* have made -- seemingly for shock value. Without denying for a moment the intrinsic interest and potential utility of genomic data in classification, we are

just as free to resolve our cognitive dissonance by ignoring their mega-lumping as we were to ignore the mega-splitting that afflicted butterfly taxonomy a couple of decades ago, when some taxonomists seemed determined to put every species in its own genus. Do you remember *Occidryas*, *Pterourus*, *Artogeia* and so on? If so, I invite you to join me for a beer and we will try to forget.

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The Jewelled Nawab, Nymphalidae, Charaxinae: *Polyura delphis delphis*, Yot, Nan-Thailand, 11 February 2020, during a trip of [www.ThaiButterflies.com](http://www.ThaiButterflies.com)

# The Marketplace

**IMPORTANT NOTICE to ADVERTISERS:** If the number following your ad is "643" then you must renew your ad before the next issue if you wish to keep it in the Marketplace!

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644

### Southeastern Arizona Butterflies, by Rich Bailowitz and Jim Brock, 356 pages.

This guide is an updated sequel to the ground-breaking 1991 guide by the same two authors. This new work treats in depth all 273 species recorded in the region. It features more than 700 excellent color photographs, most of living butterflies photographed in the field. It provides more than 300 regional larval host plant records. Plus, it features color images of common nectar sources, caterpillars and habitats, range maps for all but the most common and widespread species, and an illustrated comparison guide to the difficult-to-identify duskywings.

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

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**Revised with corrections:** Butterflies of the Southern Rocky Mountains Area, and their Natural History and Behavior, Papilio (New Series) #27. 392 pages free pdf. Go to <https://dspace.library.colostate.edu> [which goes to Mountainscholar.org], select Colorado State University, Fort Collins, then search for Papilio (New Series), where all 32 issues are free pdfs. Related papers on butterflies such as my paper on flower visitation are also free pdfs. James Scott. 643

### Equipment

**WANTED TO BUY:** Genitalia vials/stoppers. Formerly BioQuip catalog number 1133A; 4 x 10 mm plastic vials, w/stoppers, in units of 100 vials/stoppers per bag. Please send quantity and price information to: Terry Harrison, [nosirrah@consolidated.net](mailto:nosirrah@consolidated.net). 643

### Research

**INFORMATION WANTED:** For a biography in preparation, I would very much like to hear from anyone with information, correspondence, anecdotes or memories on **Colin Wyatt**, entomologist, linguist, ski champion, adventurer, artist and raconteur, who was killed in a plane crash in Guatemala on the 19th of November 1975. Please e-mail [johntennent@hotmail.co.uk](mailto:johntennent@hotmail.co.uk) (note, not “.com”!) or write c/o Department of Life Sciences, the Natural History Museum, London UK SW7 5BD. Thank you. 643

**WANTED:** For trade or purchase, papered specimens of *Phyciodes* and *Anthanassa* (from anywhere) for a study of phenotypic and morphological variation of Saskatchewan *Phyciodes*. 5-10 exemplars per population would be desirable. I have a limited number of specimens for trade, primarily from Western Canada. Please contact Dr. Daniel Glaeske at [dmg936@usask.ca](mailto:dmg936@usask.ca). 643

Canadian Wildlife Service, Prairie Region, is seeking information about observations of four species: *Melaporphyria immortua* (any obs); and *Notamblyscirtes simius*, *Hesperia pahaska*, and *Amblyscirtes oslari* (any obs from Canada, MT, ND or MN). Data will be used to help identify potential habitats and locations for future Canadian surveys and to assist with determination of Canadian at-risk status. Detailed locations do not have to be shared. Please contact Medea Curteanu, CWS Edmonton, AB; [medea.curteanu@ec.gc.ca](mailto:medea.curteanu@ec.gc.ca) 643

**WANTED: Hawkmoths for Research.** Hawkmoths can drink liquids with very different viscosities, from water to honey. We seek to understand how this is accomplished. We are requesting hawkmoths (Sphingidae) of any species (non-threatened, non-endangered species only) from Arizona, California, and New Mexico. We request dry adult hawkmoths carefully packaged to avoid broken appendages or damaged wings. We will pay shipping costs. Proboscis images will be posted on our website, and all contributors will be acknowledged.

Contact me, Alex (Alexandre Varaschin Palaoro), to arrange shipping (e-mail): [avarasc@clemsun.edu](mailto:avarasc@clemsun.edu).

Website: <https://cecas.clemson.edu/kornevlab/> 643

### Miscellany

Tony Roberts, a continuous Lep. Soc. member since 1956 with a concentration from 1987-2010 on the moth, and in particular the post-glacial microlepidopteran, fauna of immediate coastal Down East Maine, seeks suggestions, inquiries, requests regarding residual lab equipment, reagents, 20th century micro-photographic and drawing paraphernalia, fiberoptics, slides, pins, pith for double-mounts, drawing aids, etc. and, most important, an extensive library of North American books, offprints and copies of North American papers on same, PLUS many scarce Holarctic titles. Kindly contact: Michael A. “Tony” Roberts at [maroberts@maineline.net](mailto:maroberts@maineline.net), if interested in any of the above. 643

### Announcements, continued

*Continued from p. 185*

#### Society of Kentucky Lepidopterists

The Society of Kentucky Lepidopterists is open to anyone with an interest in the Lepidoptera of the great state of Kentucky. Annual dues are \$15.00 for the hard copy of the News; \$12.00 for electronic copies. The annual meeting is held each year in November, at the University of KY, Lexington. This year's meeting was Nov. 4-6, 2022. Also, follow the Society's facebook page (<https://www.facebook.com/societykentuckylep/>) for meetings and potential field trips.

To join the Society of Kentucky Lepidopterists, send dues to: Les Ferge, 7119 Hubbard Ave., Middleton, WI 53562.

#### Gibson, et al., new records from Kentucky -- references, continued

*Continued from p. 181*

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# Final instar larva and pupa of *Siproeta superba euoe* (Nymphalidae, Nymphalinae, Victorinini) from Costa Rica

Keith V. Wolfe

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Social networks are proving to be an invaluable resource for revealing “hidden” butterfly caterpillars whose depictions have remained unreported for various reasons even among field lepidopterists (Wolfe, 2017; Wolfe, 2018). Some recent records posted on the popular image-hosting website Flickr as well as iNaturalist, the equally well-known biodiversity platform, further illustrate this point: *Euripus robustus* Wallace (<https://www.flickr.com/photos/leutnant/33834234602/>) from Sulawesi, *Bolboneura sylphis* Bates (<https://www.inaturalist.org/observations/62651337>) from Honduras, and *Charaxes (Euxanthe) lycurgus* species-group (<https://www.inaturalist.org/observations/72179159>) from the Democratic Republic of the Congo. True, such circumstantial identifications must be viewed with caution since the larvae in question were never reared, but they nonetheless should not be summarily dismissed when these determinations are based upon extensive experience, solid research, and careful analyses. Thus, herewith is yet another new-to-science caterpillar, this time surely *Siproeta superba* from Costa Rica.

The genus *Siproeta* Hübner is comprised of three species: *Siproeta epaphus* Latreille (Rusty-tipped Page), which occurs from Mexico through Brazil; *Siproeta stelenes* L. (Malachite), which is more widely distributed from the Antilles and southernmost US through Brazil to Uruguay; and *Siproeta superba* Bates (Broad-banded Page), which flies from southern Mexico to Honduras and also in Costa

Rica\* ([https://www.butterfliesofamerica.com/L/t/Siproeta\\_a.htm](https://www.butterfliesofamerica.com/L/t/Siproeta_a.htm)). The Costa Rican taxon of the last-named butterfly is *Siproeta superba euoe* Fox & Forbes, which in the words of DeVries (1987), “This rare endemic subspecies occurs from 300 to 900 m on the Pacific slope, in the transition zone to tropical moist forest near Atenas-San Mateo. Encountered as rare, solitary individuals from January to April along forest and riparian edges. Both sexes visit flowers of *Cordia*, *Croton*, and *Lantana*. It appears that this species is restricted to a specialized habitat that is one of the most endangered by agriculture in all of Costa Rica.” Indeed, “rare” seems an appropriate relative description of *S. superba* in general, since an Internet search returns almost nothing regarding this species, while as of this writing, iNat’s 2,295 total individual records for *S. epaphus* and 6,357 total individual records for *S. stelenes* utterly dwarf the total individual records for *S. superba* – 19, only two of which were found in Costa Rica (duly referenced herein, the other 17 iNat sightings being for the nominate subspecies flying far to the north).



Fig. 1. Final-instar *Siproeta superba euoe* on the undersurface of its presumed hostplant that exhibits a characteristic Acanthaceae appearance (note possibly severed midrib) two days before pupation > <https://www.inaturalist.org/observations/105830490>; 20 December 2008; 9°54'35.3"N 84°17'14.7"W, which is the same location as verified adult #1 (not shown here due to the shadowy photo) that was observed five days later.



Fig. 2. Comparison of final-instar *Siproeta epaphus* (top: Costa Rica); the subject *Siproeta superba* (middle: Costa Rica); and *Siproeta stelenes* (bottom: Costa Rica). Note difference in coloration of scoli; top and bottom are authenticated from the Internet.



Fig. 3. Pupa of *Siproeta superba euoe* > <https://www.inaturalist.org/observations/105830489> resulting from the Fig. 1 caterpillar that was subsequently brought indoors; 22 December 2008; 9°54'35.3"N 84°17'14.7"W (see explanation above).

and two separate substantiating wild adults to boot! – all on Costa Rica's Pacific slope near the districts of Atenas and San Mateo as stated above by DeVries (1987).

The accompanying images of the caterpillar, chrysalis, and butterfly of *Siproeta superba euoe* were shot in Mora Canton, San José Province, Costa Rica, by Dr. Heiner Ziegler who kindly gave his permission for their inclusion here and provided valuable supporting information. Still, because these observations were made 14 years ago, he does not recall if there was any change in larval color as it neared pupation, nor the cause of the black area on the pupa's head where congeners have "horns" (Fig. 4, see next paragraph). Furthermore, since his return flight to Switzerland was fast approaching, the outcome of the chrysalis could not be followed.

After carefully examining two groups of pupal pictures showing several different angles taken eight hours apart, I am convinced that the chrysalis was manually affixed to the branch, and the dark discoloration on the left tip of the pupa's head, possibly the result of melanization, was most likely caused by

Having personally bred *S. epaphus* from Mexico and *S. stelenes* from southern Florida, both with readily recognizable larvae that feed upon many different genera and species in the Acanthaceae and a handful of other plants in mostly related families (Beccaloni et al., 2008), I have long wanted to "discover" *S. superba's* unknown yet presumably distinct caterpillar, figuring my best chance was by searching through the pictures of "clueless" photographers in specific countries. Fortunately, thanks to iNat's crowdsourcing structure and widespread popularity, it did not take long to find the target larva – plus its resultant pupa

an earlier fall injury. Even before the apparent coagulation of hemolymph as seen in Fig. 3 due to suspected cuticular damage, I saw no indication of anything resembling tapered horns. Instead, there clearly appears to be a pair of small cephalic "bulges" that are reminiscent of what I have observed with at least *Anartia fatima* Fabricius, though rounder and more pronounced. Needless to say, this assessment must await future corroboration.

In summation: Despite that these photos of an initially misidentified caterpillar and chrysalis were found online and not part of a completed rearing thus proving the identity, their morphology compared to congeners as well as that of the probable hostplant, larval behavior (Young, 1972; KVV, pers. obs.), location in Costa Rica, and a verified co-occurring adult plus another nearby, nevertheless provide compelling circumstantial evidence that this is in fact the first documentation of *S. superba's* immature stages!

\* The 1971 original description of *Siproeta superba euoe* by Fox & Forbes (<https://www.biodiversitylibrary.org/partpdf/330499>) cites two paratypes from westernmost Panama (Chiriquí) that are deposited in the National Museum of Natural History in Washington, DC. Besides these two males, no other Panamanian examples of this species were found there (R. Robbins, pers. comm.). In the 1992 chapter by Lamas & Small, this OD is indirectly referenced along with the caveat that *S. s. euoe* has otherwise "not been confirmed by any recent capture or definitely bona-fide specimen in collections seen" and thus was included only on their list of possibilities for Panama. NB: As of this September 2022 writing, the holotype of *S. s. euoe* is mistakenly illustrated under nominate *S. s. superba* on the Butterflies of America website ([https://www.butterfliesofamerica.com/L/siproeta\\_s\\_superba\\_types.htm](https://www.butterfliesofamerica.com/L/siproeta_s_superba_types.htm)).



Fig. 4. Comparison of pupae of *Siproeta epaphus* (left: Costa Rica); the subject *Siproeta superba euoe*, same image as Fig. 3 (middle: Costa Rica, large size indicates ♀); and *Siproeta stelenes* (right: Costa Rica). Note difference in length of subdorsal spine-like projections and adjacent black "spots" versus golden "bumps"; left and right are authenticated from the Internet.



Figs. 5 & 6. Adult #2 of *Siproeta superba euoe*, upperside (5) and underside (6) > <https://www.inaturalist.org/observations/105830649>; 17 December 2008; 9°54'19.1"N 84°18'02.2"W, which is 1.53 km distant from the subject larva/pupa and verified adult #1 (not shown here due to the shadowy photo).

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In 2004, my dear friend and colleague Motomu Teshirogi published the life history of *Prepona hewitsonius beata* – back then as *Agrias beatifica beata* (<http://bflyearlystages.weebly.com/uploads/6/2/3/5/62354975/prepona-hewitsonius-beata-teshirogi-trans-lepid-soc-japan-55-3-2004.pdf>) – in support of which I also raised one caterpillar in order to provide additional technical and writing assistance. Since that Japanese journal is probably not widely available to many Neotropical workers, the above link is furnished along with a high-quality image of the final instar and the following supplemental notes from my rearing journal.

Ex Río Venado, Satipo Province, Junín Region, Peru. Last (fifth) instar 26 days before pupation: November 2003, Nikon N70 SLR camera, Kodachrome 64 color slide film, Fuji Frontier SP-2000 scanner. Measuring ~70 mm in total length when fully mature, the two light/dark round protuberances on the second abdominal segment possibly resembling eyes. Larval behavior is sluggish, resting on

hostplant twigs for very long periods; walks with a slow and deliberate gait, swaying side to side as it moves; feeds during the day and at night. Substitute foodplant: *Erythroxylum areolatum* (Erythroxylaceae). Keith Wolfe, [bflyearlystages@comcast.net](mailto:bflyearlystages@comcast.net)



*Prepona hewitsonius beata*, final instar larva.

# An Oklahoma big butterfly year

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A big year is a personal challenge to see as many species as possible within a set geographic boundary such as a backyard, state, or country (Stuller 1989, Pyle 2010, McIntosh 2014). After considering doing a big year for butterflies for years, I decided on the last day of March in 2021 to finally try to complete one after a Henry's Eflin (*Callophrys henrici*) landed on a hiking trail in front of me to bask in the sun. It was the first butterfly of the year I had seen after a particularly icy and cold winter broke records for the state (McManus 2021). As I laid on the ground my face inches from the tiny butterfly, I decided to commit to the challenge of seeing as many butterfly species as possible within in a 12-month timespan in Oklahoma. Walking back to my car, an Eastern Tailed-blue (*Cupido comyntas*) landed on a patch of bare ground nearby and my list grew to two species as my big year officially began.

## April

April was a wet and rainy month that kept the butterflies at bay, but I was able to pick up 7 more species including the state butterfly, the Black Swallowtail (*Papilio polyxenes*). Only two states, New Jersey and Oklahoma, have the Black Swallowtail as the state butterfly (State Symbols 2022). Oklahoma chose the Black Swallowtail in 1996, because of the species' beauty and its regarded ecological importance (HB2081 1996, Bostian 2014). My Black Swallowtail sighting came on a warm day in a native plant garden filled with dill (*Anethum* spp.), a common hostplant for the species (Scott 1986). The other six species spotted throughout the month were: Question Mark (*Polygonia interrogationis*), Common-checkered Skipper (*Burnsius communis*), Pearl Crescent (*Phyciodes tharos*), Red-banded Hairstreak (*Calycopis cecrops*), Silver-spotted Skipper (*Epargyreus clarus*), and Goatweed Leafwing (*Anaea andria*).

## May

My big year coincided with my last field season as a graduate student. Fieldwork for my research began in May, and I began traveling to counties throughout central Oklahoma. However, despite regular outings May was a rather unsuccessful month with only two new species added to the list: the Monarch Butterfly and the Dainty Sulphur (*Nathalis iole*). While I had sighted some Monarch Butterfly larvae on butterfly milkweed (*Asclepias tuberosa*) a week before in a friend's garden, I had decided that only adult butterflies would count

for my big year. It did not take long for the first adult Monarch Butterfly of the year to arrive and it did so on picture perfect spring day resting on some yarrow (*Achillea millefolium*) in a pasture. The first Dainty Sulphur of the year also chose a beautiful spring day to appear, and I spotted it beside a raccoon footprint in mud (Fig. 1). Dainty Sulphurs would become a regular sighting on my outings, and I recorded one every month of the year except February.

## June

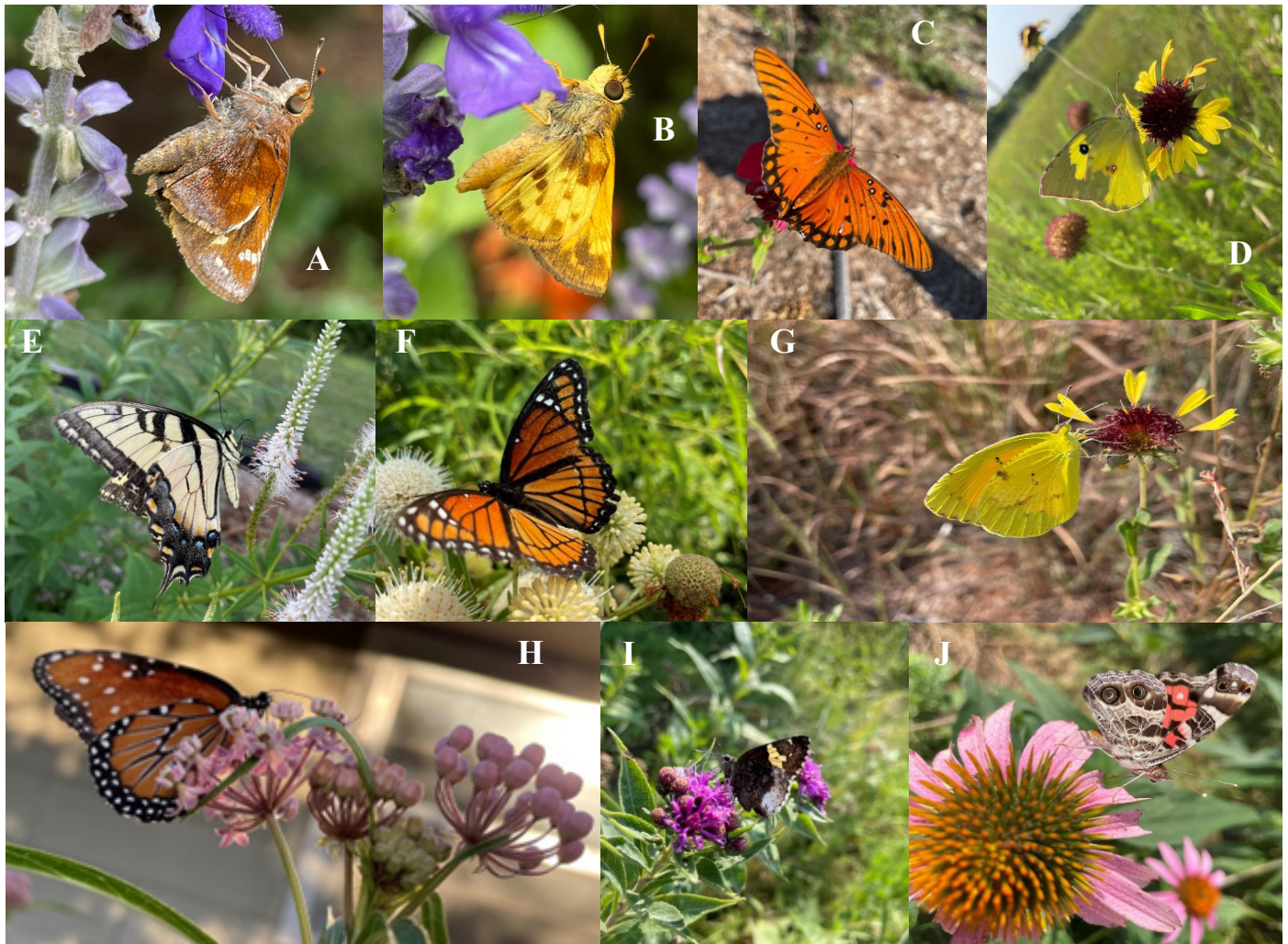
With the addition of new field sites and new counties, June became a butterfly bonanza with 31 species added to my list including rather common species such as Red Admirals (*Vanessa atalanta*), Tawny-edged Skippers (*Polites themistocles*), and Orange Sulphurs (*Colias eurytheme*). However, the highlight of the month were the Oklahoma greater fritillary trio of the Regal Fritillary (*Argynnis idalia*), Diana Fritillary (*Argynnis diana*), and Great Spangled Fritillary (*Argynnis cybele*). Both the Regal Fritillary and Diana Fritillary are species of conservation concern while the Great Spangled Fritillary is considered globally secure (Geest 2021). In Oklahoma, these three species comprise all the species within the genus *Argynnis* in the state. Despite, having searched for all three species for each of the three summers prior this was the first year that I saw all three in the same field season. Even more incredible, all three were in the same location in the Joseph H. William's Tallgrass Prairie Preserve, located in North-central Oklahoma.

## July

By July, the brutally hot Oklahoma summer had arrived. Having worked in the state during the summers for a few years, I was aware of the danger of heat exhaustion. However, carelessness on my part pushed me to my limits. Having been outside collecting data for hours with no



**Fig. 1.** Twelve butterfly species were recorded in Oklahoma in spring (March-May 2021, March 2022), including a A) Dainty Sulphur (*Nathalis iole*) and a B) Lupine Blue (*Icaricia lupini*).



**Fig. 2.** Forty-two butterfly species were recorded in Oklahoma in summer (June-August 2021), including a A) female Zabulon Skipper (*Lon zabulon*) and a B) male Zabulon Skipper, C) Gulf Fritillary (*Dione vanillae*), D) Southern Dogface (*Zerene cesonia*), E) Eastern Tiger Swallowtail (*Papilio glaucus*), F) Viceroy (*Limenitis archippus*), G) Sleepy Orange (*Abaeis nicippe*), H) Queen (*Danaus gilippus*), I) Hoary Edge (*Thorybes lyciades*), and J) American Lady (*Vanessa virginiensis*).

breaks in a remote pasture, the heat overwhelmed me and I fell to the ground dizzy and nauseous. My field partner helped finish collecting data while I was able to recover in the air conditioning of our field truck. Heat exhaustion makes you more susceptible to heat and I began taking more frequent breaks for the rest of the summer season cutting down on my butterfly searching time significantly. Despite these setbacks, I was able to add ten more species to my list for the month of July. Interestingly, four of the ten (Dion Skipper (*Euphyes dion*), Marine Blue (*Lepototes marina*), Juniper Hairstreak (*Callophrys gryneus*), and Zabulon Skipper (*Lon zabulon*)) came from a single day at a volunteer butterfly walk for my local library in the local botanic gardens. Zabulon Skippers became one of my instant favorite species because the species is sexually dimorphic and look so different from one another that I originally thought the female was another skipper species entirely (Fig. 2). Quick glancing through my field guide revealed they were the same species and I enjoyed watching the females and males dart around the flowers together.

### August

By August, many flowering plants in fields, pastures, and grasslands had begun to die back for the year. When I would go searching for butterflies, I would focus my attention on what was still blooming including thistles (*Cirsium* spp.), ironweeds (*Vernonia* spp.), and Leavenworth's eryngo (*Eryngium leavenworthii*). These remaining flowering plants were often the only splashes of color against a backdrop of yellow-brown fields of grasses. With fewer nectar resources available, butterflies would congregate around what remained in flower and I was able to pick up 11 more species for my list. August also welcomed the return of the Gulf Fritillary (*Dione vanillae*), a typical late summer species in Oklahoma (Fig. 2). With bright orange wings and silvery undersides, the first one of the year is always a beautiful sight, no matter how abundant they can become. I added Gulf Fritillary to my list in early August walking through a native plant garden that had a trellis archway covered in passionflower (*Passiflora* spp.),

**Fig. 3.** Eleven butterfly species were recorded in Oklahoma in fall (September-October 2021), including a **A**) Western Pygmy-blue (*Brephidium exilis*), **B**) Eastern Giant Swallowtail (*Papilio cresphontes*), and a **C**) Cloudless Sulphur (*Phoebis sennae*).



the main hostplant for the species (Scott 1986). While one was flying around, a close look at the archway revealed dozens of orange spikey caterpillars nibbling away at the vines. I returned a few weeks later and counted 15 Gulf Fritillaries flying around the garden.

### September

September ushered in the slower months as summer began to ease. I added 7 more species including a Queen (*Danaus gilippus*). Queens are close relatives of Monarch Butterflies and they resemble them in a multitude of ways. When I got the text a Queen was flying around a garden, I headed over to try to catch a glimpse of it. The garden had planted swamp milkweed (*Asclepias incarnata*), and the flowers were covered in a dozen nectaring Monarch Butterflies with one Queen hidden amongst them. In my hurry, I had left my binoculars behind, so I had to try to spot the Queen without them. The milkweed was taller than me and it proved difficult to get a glimpse of the forewings, as the butterflies were constantly fluttering and chasing one another off a flower to only return a moment later. If I got too close the whole group would take off. Finally, one butterfly landed by itself on the milkweed and remained still enough to see the forewings lacked the black vein lines of the Monarch Butterfly and I could contently add a Queen to my list for the year (Fig. 2).

### October

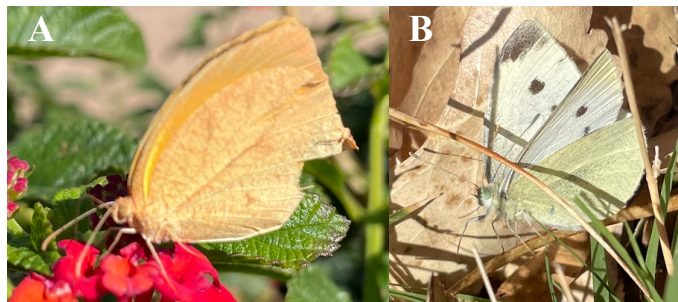
October proved to be a challenging month, as my dissertation defense loomed and much of the month was dedicated to finishing my degree. I continued to go searching for species as a welcome distraction from the stress. Despite my best attempts, I was only able to add 4 more species. On a warm day in western Oklahoma, I saw the fluttering of a tiny insect on some gravel. I laid across the rocks and watched a Western Pygmy-blue (*Brephidium exilis*), the smallest butterfly in Oklahoma, land in front of me. Western Pygmy-blues have metallic coloration along their eyespots on their hindwing, and being so close to this species I could see the metallic color reflecting in the afternoon sun. It rested for a few moments and then took off, and I excitingly was able to add another species to the list (Fig. 3).

### November

After the stress of defending my dissertation in October, November brought much needed relaxation and the addition of one more species. On a visit to a friend's garden, after a series of strong windy days, yielded what at first I thought was a Sleepy Orange. On closer inspection, my Sleepy Orange turned out to be a rather uncommon Tailed Orange (*Pyrisitia proterpia*) with a bite out of the hindwings removing the characteristic hindwing tail. Even though its tail was missing, the slightly larger body and prominent mid-vein along the hindwing helped to distinguish it from a Sleepy Orange (Fig. 4). Out of the entire year's sightings this was probably the most uncommon species, with only a few records recorded in the state (Lotts and Naberhaus 2021).

### December

December, was another single species month. Despite, how common the non-native Cabbage Whites (*Pieris rapae*) can be, especially among residential gardens, I had yet to see one the entire year. However, this changed when I finally spotted one during a walk in a small park set off Lake Hefner in Oklahoma City. After making a loop on the walking path, a single white butterfly fluttered past. I continued walking until I realized I had yet to record a Cabbage White the entire year, and turned and ran after it.



**Fig. 4.** Two butterfly species were recorded in Oklahoma in winter (November-December 2021, January-February 2022), including an uncommon **A**) Tailed Orange (*Pyrisitia proterpia*) and a common **B**) Cabbage White (*Pieris rapae*).

**Table 1.** A list of butterfly species recorded in a 12 month timeframe.

#	Species	Common Name	Month
1	<i>Callophrys henrici</i>	Henry's Elfin	March
2	<i>Cupido comyntas</i>	Eastern Tailed-Blue	March
3	<i>Polygona interrogationis</i>	Question Mark	April
4	<i>Papilio polyxenes</i>	Black Swallowtail	April
5	<i>Burnsius communis</i>	Common Checkered-Skipper	April
6	<i>Phyciodes tharos</i>	Pearl Crescent	April
7	<i>Calycopis cecrops</i>	Red-banded Hairstreak	April
8	<i>Epargyreus clarus</i>	Silver-spotted Skipper	April
9	<i>Anaea andria</i>	Goatweed Leafwing	April
10	<i>Danaus plexippus</i>	Monarch	May
11	<i>Nathalis iole</i>	Dainty Sulphur	May
12	<i>Euphyes vestris</i>	Dun Skipper	June
13	<i>Polites otho</i>	Southern Broken Dash	June
14	<i>Euptoieta claudia</i>	Variogated Fritillary	June
15	<i>Thorybes pylades</i>	Northern Cloudywing	June
16	<i>Polites themistocles</i>	Tawny-edged Skipper	June
17	<i>Strymon melinus</i>	Gray Hairstreak	June
18	<i>Chlosyne nycteis</i>	Silvery Checkerspot	June
19	<i>Satyrrium calanus</i>	Banded Hairstreak	June
20	<i>Colias eurytheme</i>	Orange Sulphur	June
21	<i>Vanessa atalanta</i>	Red Admiral	June
22	<i>Lethe anthedon</i>	Northern Pearly-eye	June
23	<i>Ancylorhynchus numitor</i>	Least Skipper	June
24	<i>Chlosyne gorgone</i>	Gorgone Checkerspot	June
25	<i>Phaenostriemon alcectis</i>	Soapberry Hairstreak	June
26	<i>Argynnis cybele</i>	Great Spangled Fritillary	June
27	<i>Vanessa virginiensis</i>	American Lady	June
28	<i>Polites egeremet</i>	Northern Broken-Dash	June
29	<i>Atrytone arogos</i>	Arogos Skipper	June
30	<i>Erynnis horatius</i>	Horace's Duskywing	June
31	<i>Papilio glaucus</i>	Eastern Tiger Swallowtail	June
32	<i>Anatrytone logan</i>	Delaware Skipper	June
33	<i>Atalopedes campestris</i>	Sachem	June
34	<i>Asterocampa clyton</i>	Tawny Emperor	June
35	<i>Argynnis diana</i>	Diana Fritillary	June
36	<i>Thorybes bathyllus</i>	Southern Cloudywing	June
37	<i>Tharsalea dione</i>	Gray Copper	June
38	<i>Polites origenes</i>	Crossline Skipper	June
39	<i>Megisto cymela</i>	Little Wood Satyr	June
40	<i>Celastrina neglecta</i>	Summer Azure	June
41	<i>Pholisora catullus</i>	Common Sootywing	June
42	<i>Argynnis idalia</i>	Regal Fritillary	June
43	<i>Cercyonis pegala</i>	Common Wood-Nymph	July
44	<i>Amblyscirtes belli</i>	Bell's Roadside-Skipper	July
45	<i>Lon zabulon</i>	Zabulon Skipper	July
46	<i>Callophrys gryneus</i>	Juniper Hairstreak	July
47	<i>Euphyes dion</i>	Dion Skipper	July
48	<i>Leptotes marina</i>	Marine Blue	July
49	<i>Amblyscirtes nysa</i>	Nysa Roadside-Skipper	July
50	<i>Asterocampa celtis</i>	Hackberry Emperor	July
51	<i>Zerene cesonia</i>	Southern Dogface	July
52	<i>Thorybes lycaides</i>	Hoary Edge	July
53	<i>Erynnis baptisiae</i>	Wild Indigo Duskywing	August
54	<i>Junonia coenia</i>	Common Buckeye	August
55	<i>Limenitis archippus</i>	Viceroy	August
56	<i>Dione vanillae</i>	Gulf Fritillary	August
57	<i>Lerodea eufala</i>	Eufala Skipper	August
58	<i>Thorybes confusus</i>	Confused Cloudywing	August
59	<i>Hylephila phyleus</i>	Fiery Skipper	August
60	<i>Libytheana carinenta</i>	American Snout	August
61	<i>Colias philodice</i>	Clouded Sulphur	August
62	<i>Pontia protodice</i>	Checkered White	August
63	<i>Battus philenor</i>	Pipevine Swallowtail	August
64	<i>Phoebis sennae</i>	Cloudless Sulphur	September
65	<i>Pyrisitia lisa</i>	Little Yellow	September
66	<i>Papilio cressphontes</i>	Eastern Giant Swallowtail	September
67	<i>Abaeis nicippe</i>	Sleepy Orange	September
68	<i>Staphylus hayhurstii</i>	Hayhurst's Scallopwing	September
69	<i>Nastra lherminier</i>	Swarthy Skipper	September
70	<i>Danaus gilippus</i>	Queen	September
71	<i>Lerema accius</i>	Clouded Skipper	October
72	<i>Echinargus isola</i>	Reakirt's Blue	October
73	<i>Brephidium exilis</i>	Western Pygmy-Blue	October
74	<i>Vanessa cardui</i>	Painted Lady	October
75	<i>Pyrisitia proterpia</i>	Tailed Orange	November
76	<i>Pieris rapae</i>	Cabbage White	December
77	<i>Icaricia lupini</i>	Lupine Blue	March

After chasing it down, I was able to confirm it was indeed a Cabbage White (Fig. 4).

**January/February**

With a warm start to the winter, it took until January and February for cold winter days to usher in the return of winter. Despite seeing the Dainty Sulphur and Orange Sulphur on the occasional warm sunny days, I recorded no new species these two months.

**March**

By March, I had given up on adding any new species to my big year after not having seen any new species since December and the cold persistently lingering. However, after a brief snow event followed by a return to warm weather, I decided to venture out to western Oklahoma

for one last attempt to catch any early spring species I had missed the previous spring. Shortly after midday, after following an interesting weevil (Curculionioidea) around a cattle pond on private property, a Lupine Blue (*Icaricia lupini*) landed in front of me on a cow patty. Having never been so excited to see cow dung, I dove into the grass to watch it closer. Slightly larger than an Eastern-tailed blue with no distinctive tails and a row of red spots along the hindwing it fluttered around briefly before settling back on to the cow patty. The Lupine Blue, is typically listed in field guides as having ranges far west of Oklahoma (Scott 1986, Brock and Kaufman 2003). However, record databases show infrequent records along the western portion of Oklahoma (Lotts and Naberhaus 2021, iNaturalist.org). The addition of a Lupine Blue on March 15, and with no further species by the midnight on March 30<sup>th</sup> my big year concluded with 77 species in total (Table 1, Fig. 1).



## Lessons learned

According to Butterflies and Moths of North America, the state of Oklahoma has had 198 species recorded (Lotts and Naberhaus 2021). Only 143 species seem to be regularly occurring enough to have been recorded on the community scientist site iNaturalist (inaturalist.org). So after 12 months, 152 days searching, one distressing heat-related illness, a dissertation defense, and subsequent graduation, I saw an estimated 35-54% of the state's species depending on which record source is used. With my big year over, and time to reflect on what I'd learned my three valuable lessons for anyone else wanting to do a big year is: 1) never underestimate the heat and the sun so *always* bring lots of water and sunscreen, 2) it's not always necessary to travel to exotic locales to have a successful big year, and 3) always keep a pair of binoculars on you, it's always the day you leave them behind that the most exciting butterfly will show up.

## Acknowledgements

To all those who joined me in the field to search for butterflies throughout the year including Ray Moranz, David Berman, Teri Cocks, Andrine Shufan, and Latta Miller. All my gratitude to those on iNaturalist (iNaturalist.org) and Butterflies and Moths of North America (www.butterfliesandmoths.org) who helped confirm the identities of species, especially those tricky skippers, with less than stellar images, including: Alex Harmon (alex\_cicindela\_guy), Mary Hogan (mchogan), Bill Carrell (arrowhead-spiketail58), Roy Cohutta (roy\_cohutta), and C.A. Ivy (arbutternut/CA Ivy). As well as to the creator of the original butterfly

big year Robert Michael Pyle, whose book *Mariposa Road* inspired me to have my own butterfly big year.

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# Membership Updates

Chris Grinter

Includes ALL CHANGES received by November 9, 2022. Direct corrections and additions to Chris Grinter, [cgrinter@gmail.com](mailto:cgrinter@gmail.com).

**New Members:** *Members who have recently joined the Society, e-mail addresses in parentheses. All U.S.A. unless noted otherwise. (red. by req. = address redacted by request)*

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Digital Collecting:

# Mexico: State of Oaxaca

Bill Berthet

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Butterfly photography holiday, State of Oaxaca, Mexico -- Part one: May 5-10, 2010 (May 11-23 see digital collecting State of Chiapas Vol.64, Number 3 Fall 2022) Part two: May 24-30, 2010 organized by Judi Ross and Kim Garwood, with Kim as trip leader. The trip summary includes: Valle Nacional - Hwy 175 Km markers 55, 74, 85, 103, and 138; a turnoff road to meadow near Ixtlan de Juarez; 2 visits to Guacamaya road, Valle Del Teotitlan; Hwy 175 km 5 trash pullout; the dirt road to Pluma Hildago; and Finca Monte Carlo.

To begin our Oaxaca adventure, Judi drove her van like a demon for 9 hours on various roads from Tapachula in Chiapas State to Tuxtepec in the State of Oaxaca. We stayed at the Villa Esmeralda for the night. Driving was hindered somewhat by the numerous trucks and trailers transporting sugar cane to the large processing factory near Tuxtepec. We observed various species of Satyrs feeding on some of the sugar cane that had fallen off the vehicles and trailers along the road.

The starting point for the modern study of Mexican butterflies was the publication of the *Biología Centrali-Americana* by Godman and Salvin from 1887-1901. In this work, several new species were described and illustrated. The excellent plates and careful descriptions made this book the basis for future research. Another very significant event was the publication of the *Macrolepidoptera of the World* by Seitz from 1906-1924. These two works were the major references for the study of Mexican butterflies for a very long time and are still used today.

The first catalog of Mexican butterflies was created by C.C. Hoffmann in 1940. Since then, several others have added to our knowledge of Mexican butterflies. Researchers at the National Collection of Insects (Instituto de Biología) and the Zoology Museum (both at the National Autonomous University of Mexico), as well as many amateurs, have been studying the butterflies of Mexico. Foreigners, especially Americans, have also made a great contribution to our knowledge.

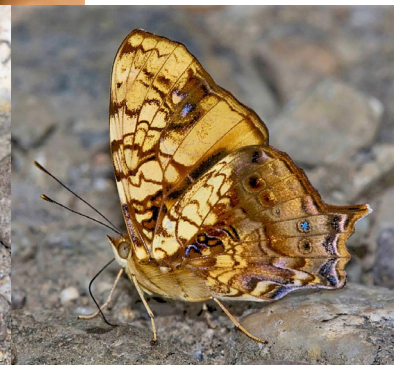
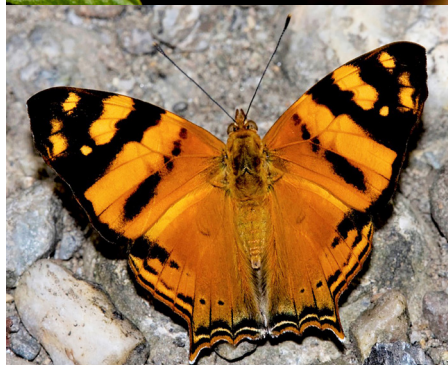
The State of Oaxaca is located in southwestern Mexico bordered by the states of Guerrero to the west, Puebla to the northwest, Veracruz to the north and Chiapas to the east. It has a significant coastline along the Pacific Ocean.

There are more than 1000 species of butterflies recorded from the state. Oaxaca is a mountainous region where two major ranges come together, the Sierra Madre del Sur and Sierra Madre de Oaxaca that is an extension of the much larger Sierra Madre Oriental range. The high level of biodiversity is due to Oaxaca's rugged topography, its diverse ecosystems and the Isthmus of Tehuantepec that is the narrowest stretch of land separating the Gulf of Mexico from the Pacific Ocean (see map page 217). Millions of migratory birds pass through between North, Central and South America. This state is best known for its indigenous peoples, cultures, and unique cuisine. The most numerous and best known are the Zapotecs and the Mixtecs, but there are 16 native cultures that are officially recognized. These cultures have survived better than most others in Mexico due to the state's rugged and isolated terrain.

We headed south on Mexican highway 175 slowly advancing towards the city of Oaxaca, but first getting a hotel in Valle Nacional. We entered into the tropical evergreen and pine-oak forests of the La Sierra Norte de Oaxaca mountains. Stops on the day included Km 55 (600m), Km 74 (1400m) and Km 84 (1700m) on highway 175. We got images of the Yellow-patched Satyr *Oxeoschistus tauropolis* (typical segregate), Orange Mapwing *Hypanartia lethe*,



Left: Yellow-patched Satyr, *Oxeoschistus tauropolis*. Below: Orange Mapwing, *Hypanartia lethe*, upperside and underside.





Top: *Diaethria astala*, *D. pandama*, *Arawacus togarna*, *Pareuptychia metaleuca*. Middle: *Doxocopa laurentia cherubina*, *Diaethria anna mixteca*, *P. metaleuca* (upperside). Bottom: *Cyllopsis suivalens escalantei*, *C. suivalenoides*, *Cissia pseudoconfusa*, *Pedaliodes circumducta*. Right: *Marpesia c. corita*.

Astala Eighty-eight *Diaethria astala*, Orange-striped Eighty-eight *Diaethria pandama*, Togarna Hairstreak *Arawacus togarna*, and our favorite for the day Barajo Hairstreak *Laothus barajo* (see back cover) ovipositing, before heading back to our hotel in Valle Nacional.

After a tasty breakfast at the big palapa restaurant in Valle Nacional we headed back up the hill to a short dirt road, at Km 55 (600m), passing several locals with backpacks filled with weed killer spraying the side of the road. We hurried down the road, finding a shrub with several White-banded Satyrs *Pareuptychia metaleuca* chasing each other. They

liked to pose with open wings. Later we headed back to Km 74 (1400m) and found several new goodies including open winged shots of the Turquoise Emperor *Doxocopa laurentia cherubina*, Anna's Eighty-eight *Diaethria anna mixteca*, and Orange-banded Daggerwing *Marpesia c. corita* (a female).

In the afternoon we continued up and over the pass, visiting another dirt road off to the left just before Km 103 (2400m). We went down to a waterfall, where it was quite cool and dark with lots of hanging moss in good high elevation habitat in the pines. I got excited as I came across several beautifully marked satyrs bobbing up and down near the road before disappearing into the old growth pine forest. I finally spotted another one, and chased the bug around 100 feet or so before it landed on a steep bank about 10 feet off the road. I finally got within about 6 feet for one click of Dyar's Gemmed Satyr *Cyllopsis suivalens escalantei* before it took off not to be seen again. Additional satyrs here included Big-eyed Gemmed Satyr *Cyllopsis suivalenoides*, Gold Stained Satyr *Cissia pseudoconfusa*, and Circumducta Satyr *Pedaliodes circumducta*.



Top: *Anetia thirza insignis*, *Autochton cellus*, *Piruna ceractes* (below *A. cellus*). Middle (undersides) and bottom (uppersides): *Poanes m. melane*, *P. monticola*, *P. taxiles*.

including the Golden Banded-skipper *Autochton cellus*, Veracruz Skipperling *Piruna ceractes*, Umber Skipper *Poanes m. melane* female, Oyamel Skipper *Poanes monticola*, and Taxiles Skipper *Poanes taxiles* female. Not many butterflies but the quality and surrounding habitat were very enjoyable. This would be a great spot to come back to in the rainy season, especially with a sunny day. The problem is, once the rains start it is overcast and cool. John mentioned it is almost impossible to hit the few sunny days up this high. He felt the best time is February to May -- if you could time it right you could find all kinds of goodies at this site.

Heading up one of the twisting 1½ lane mountain roads a truck carrying large logs came around a corner, slamming on the brakes and stopping just short of our vehicle. We had to back up a ways to find a spot to settle into while the truck passed by. A very scary moment, to say the least!

It was about an hour drive to Ixtlan de Juarez where we shared a 200 peso pizza near the town square, spending the night in the pines around 2100m at their ecotourism cabins. The cabins were not easy to find, having to drive through town and up a paved road about another 3.5 km. Clear skies, a cool breeze, the fresh clean air smell of pine trees, watching them sway back and forth . . . life is good.

John Kemner drove up from Oaxaca, about a 2 hour drive, to meet us at Jemina's in Ixtlan de Juarez for breakfast. We followed John on Highway 175 to a dirt road (Km138) that had signs for 2 villages and went on for at least another 60 kilometers. We drove for around 20 minutes to a wet meadow filled with yellow composites (2810m), arriving around 9:30am. It was overcast and cool, and too early for butterflies at this high elevation.

We continued driving in the van with John entertaining us with nuggets of information. It was fascinating to spend time with him in the field. We spotted the Cloud Forest King *Anetia thirza insignis*, and got a couple of photos. We finally turned around and went back to the meadows. The sun popped out with warming temperatures. This allowed us to spend several hours chasing high elevation skippers

Judi drove into the city of Oaxaca where Kim and I stayed at the Anturium Hotel. It was very hot, and there was no A/C, but it did have ceiling fans and you could open the windows. Judi who lived nearby spent the night at her house reuniting with her dogs. On a previous trip in 1977 my girlfriend Anita (later my wife) and I drove my 1974 Ford Econoline 150 customized dark blue van from Florida to Guatemala and back visiting many of the archeological ruins.

One stop near the town of Danta Maria del Tule, a short distance east of Oaxaca city, we observed the massive Montezuma Cypress (*Taxodium mucronatum*) known as the Arbol de Tule. With a circumference of 138 feet, it is the widest trunk of any tree on the planet.

While in Oaxaca, Anita and I purchased black and green colored pottery from one of the street side venders. Black pottery is familiar as a decoration and is widely used for practical purposes. Damp charcoal-gray clay is brought



The Arbol de Tule, a massive Montezuma Cypress (*Taxodium mucronatum*) in the town of Danta Maria del Tule, Oaxaca, Mexico.



Oaxacan black and green pottery.

down by villagers from the nearby mountains in baskets on the backs of burros, moistened and kneaded. Next the clay is treaded with their feet to give it the right texture, then fashioned by hand into jugs, bowls, jars, candelabras, and various animal figures. It dries for two weeks before it is burnished and fired in a kiln to give it strength, resulting in a satiny sheen and sometimes silvery luster.

Friday morning Judi picked Kim and I up at our hotel. We drove over to pick up John Kemner at his house near the top of a hill overlooking the valley. The four of us headed north toward Mexico City along Federal Highway 190, that continues along the “libre” or free highway, rather than going on the toll road “cuota” towards La Guacamaya (2725m). Tourists going to La Guacamaya have an opportunity to partake in the ancient healing custom of Temazeal -- sweat brought on by steam, combined with medicinal herbs that purportedly cleanses the body and soul.

Around 31 kilometers north of the City of Oaxaca, just past the Pemex station, there was a clearly marked sign “Arroyo Guacamaya Ecoturismo 13 kilometers” with an arrow indicating a right turn. In another 45 minutes or so the road changed from paved to dirt. It was very hot, dry, and dusty. The large white clusters of flowers from the plant Mala Mujer “Bad Woman” were in bloom -- a magnet for butterflies this time of year. Be wary of this plant. Stay away from the nasty painful nettle hairs that can go right through pants and socks.

On the way I asked Judi to stop the van. Rushing out at around 2050m I got a click of Magnificent Swallowtail *Papilio g. garamas* nectaring on Bougainvillea alongside the road. Other butterflies for the day included Costa Rican White *Hesperocharis costaricensis pasion*, Flocked Roadside-skipper *Amblyscirtes fluonia*, Zela Emesis *Emesis zela* female, and Oak Hairstreak *Satyrium favonius*.



Top: *Papilio g. garamas*. Bottom: *Hesperocharis costaricensis*, *Amblyscirtes fluonia*.



Top: *Emesis zela*, *Satyrium favonius* (under- and upperside). Middle: *Atlides carpasia*, *A. gaumeri* (underside and rear view with tails/false head). Bottom: *Calydna venusta*, *Cyanophrys longula*, *C. miserabilis*, *Libytheana carinenta*.

Driving out of Oaxaca we went east on highway 190 for about an hour to Valle del Teotitlan, a Zapotec village famous for weaving, where you can see big looms all around town. We worked our way up a dirt road, gaining altitude above 2300 meters. John noticed blooming Acacia trees with white spikes of flowers. Hairstreaks love this plant but the trouble was the trees were downslope from the road making it very hard if not impossible to photograph. I tried my luck anyway getting long range shots of Jeweled Hairstreak *Atlides carpasia*, White-tipped Hairstreak *Atlides gaumeri*, with one displaying a “false head”, Venusta Metalmark *Calydna venusta*, 2 small green hairstreaks -- Mountain Hairstreak *Cyanophrys longula*, Clench’s Hairstreak *Cyanophrys miserabilis*, and the Snout Butterfly *Libytheana carinenta*.

While back in town a Quinceanera celebration passed by the van. The fiesta de Quinceanera celebrates a girl’s 15<sup>th</sup> birthday, marking the transition from childhood to young

womanhood, with cultural roots in Mexico and Southern Europe. It is widely celebrated by girls throughout Latin America. Historically in the years prior to their 15th birthdays, girls were taught cooking, weaving, and about child-bearing by the elder women in their communities in preparation for their future roles as wives. During the celebration the girl’s father may present her to potential suitors.

As indicated previously, it was very dry as the rains had not started yet. We headed back to Guacamaya Road 2400m stopping where some water ran across the road from some drainage pipes and the road made a big right hand turn. We stayed busy here for hours. Adrenalin started to flow as I observed a very fresh Two-tailed Swallowtail *Papilio multicaudata* imbibing moisture near the side of the road. I also photographed a Mexican Dartwhite *Catantixia nimbe*, Theona Checkerspot *Chlosyne theona*, False Duskywing *Gesta gesta invisus*, and Orange-edged Roaside Skipper *Amblyscirtes fimbriata*.



Top: *Papilio multicaudata*, *Chlosyne theona*, *Gesta gesta invisus*, *Amblyscirtes fimbriata* (under- and uppersides; below *C. theona* and *G. g. invisus*). Middle: *Catasticta nimbice* (upper- and underside), *Melanis acroleuca*. Bottom: *Astraptus fulgerator* (complex; upper- and undersides), *Microtia elva*, *Panthiades bathildis* (rear view with false head appearance).

We left Oaxaca city going south on Mexican 175 then turned off east looking for what had been an excellent area for butterflies in the past -- on the dirt road going to Pluma Hidalgo. There was lots of construction on the road, with lots of traffic, so everything was very dusty and not very good for butterflies. So we continued on to the hard to find Posada Isabel, a large green building without any signs behind a church. I ended up with a fancy matrimonial suite on the second floor, where I found a freshly emerged Two-tailed Flasher *Astraptus fulgerator* (complex) wedged between two glass windows.

Driving southeast through Santa Maria Huatulco to hwy

200, along the Pacific Ocean near the airport, we headed east for about 40km turning left just before the Puente Zimatan bridge around km 275. We stopped at a very dry creek bed to check out White-tipped Pixie *Melanis acroleuca*. Turning left again on a dirt road for about 20 km we stopped at the village of Xadani, getting clicks of Elf butterfly *Microtia elva*, and a false head (rear end) shot of Zebra-striped Hairstreak *Panthiades bathildis*.

The last 10 kilometers the road got worse with steep tight switchbacks. Judi got stuck on the last one in her ford van almost shredding one of her new Michelin tires that later had to be replaced. Almost immediately several locals



Judi gets help from a local to pull her van free from a ditch.

popped out from nowhere with one having a nice Toyota truck to help get the van pulled out.

Finally we made it to Finca Monte Carlo, an old coffee finca located at the end of the road, up against a hill with great looking habitat at around 900m. We stayed for the next three nights at this Finca, run by Efre and Anna. The rains should have started but hadn't, so it was still dry. But there was still a good selection of butterflies. Efre said the best time for butterflies is August and September, during the rainy season, which is typified by (usually) sunny mornings and cloudy afternoons, with rain most afternoons and evenings.

We explored the trails finding lots of stuff. They have irrigation canals running down the valley surrounded by all sorts of plants and bamboo. We found the best places down by a stream where they were building a new irrigation

Right: *Morpho helenor*. Below: Helicopter damselfly, *Megalopterus coerulatus*. Below right -- top: *Oleria paula* (upper- and undersides); bottom: *Chlosyne hippodrome*, *Eurybia elvina*.

canal, and probably where the workers peed. One day I followed a Helicopter damselfly flitting along the stream. It located a large spider web where it grabbed a spider then backed up so not to get caught in the web. Another example of fascinating entertainment by Mother Nature.

The second day unfortunately a campansino came down from the hills and was hanging around a stream crossing where I was kneeling down photographing a Dalla skipper. Two of his dogs attacked me from behind leaving several bites. The bites weren't bad, but they did break the skin and bled. I made the decision not to go for treatment, and fortunately had no further problems from the bites. To this day I am quite wary of most dogs.

Two of my favorites on the day included White Morpho *Morpho polyphemus* (see front cover) and Common Morpho *Morpho helenor* hunkered down imbibing minerals from large nuts that had fallen on the ground. Others included Paula's Oleria *Oleria paula*, Simple Patch *Chlosyne hippodrome*, Blind Eurybia *Eurybia elvina*, Monarch *Danaus*







Top: *Melinaea lilis imitata*, *Historis odius*, *Celaenorrhinus monartus*. Bottom: *Antigonus erosus*, *Codatractus bryaxis*, *Dalla nubes*.

*plexippus*, Blue-eyed Sailor *Dynamine dyonis*, Mimic Tigerwing *Melinaea lilis imitata*, Orion Cecropian *Historis odius*, and the skippers Dusted Spurwing *Antigonus erosus*, Dotted Flat *Celaenorrhinus monartus*, Golden Mottled-Skipper *Codatractus bryaxis*, and the butterfly I was photographing when getting bitten by dogs, Chiapas Skipperling *Dalla nubes*.

There was a huge cycad in Efrems front stone garden that is the host plant for Superb Cycadians *Eumaeus childrenae* (see back cover).

Tuesday we drove over 400 kilometers to Tuxtla Gutierrez in the State of Chiapas (“Digital Collecting -- State of Chiapas”, Vol.64, Number 3, Fall 2022 of the Lep Soc News) to continue our adventure there.

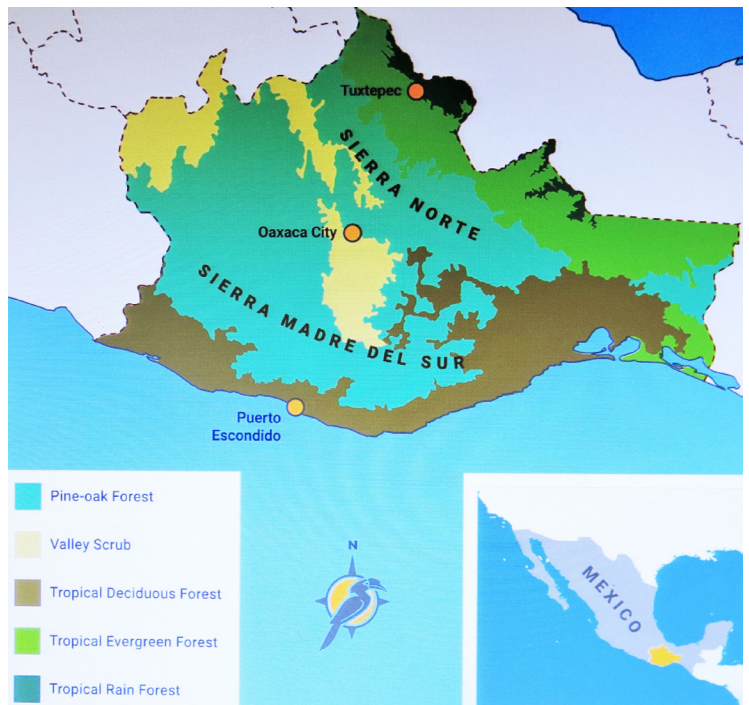
**Acknowledgements**

Thanks to Kim Garwood for allowing me to use parts of her trip report in the narrative and providing photos and reviewing text when needed. Dan Wade for his picture of Cloud Forest King *Anetia thirza insignis*. Judi Ross for her fearless driving skills. John Kemner for his extensive knowledge of butterflies and showing us some of his in the field locations. Efrems and Anna from Finca Monte Carlo for their assistance attending to my dog bites, their hospitality and good food. To all the locals who helped pull out Judi’s van that was stuck in the ditch.

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Map of Oaxaca, Mexico

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

1. Electronically transmitted file and graphics — in some acceptable format — via e-mail. Graphics/figures should be at least 1200 x 1500 pixels/inch<sup>2</sup> for interior use, 1800 x 2100 for covers.
2. Article (and graphics) on disk or thumb drive in any of the popular formats/platforms. Indicate what format(s) your disk/article/graphics are in, and call or email if in doubt. The InDesign software can handle most common word processing software and numerous photo/graphics software. Media will be returned on request.
3. Color and B+W graphics; should be high quality images suitable for scanning. Original artwork/maps should be line drawings in pen and ink or good, clean photocopies. Color originals are preferred.
4. Typed copy, double-spaced suitable for scanning and optical character recognition.

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Material for upcoming volumes must reach the Editor by the dates below:

Issue	Date Due
65 1 Spring	February 15, 2023
2 Summer	May 12, 2023
3 Fall	August 15, 2023
4 Winter	November 15, 2023

Be aware that issues may ALREADY BE FULL by the deadlines, and so articles received close to a deadline may have to go into a future issue.

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

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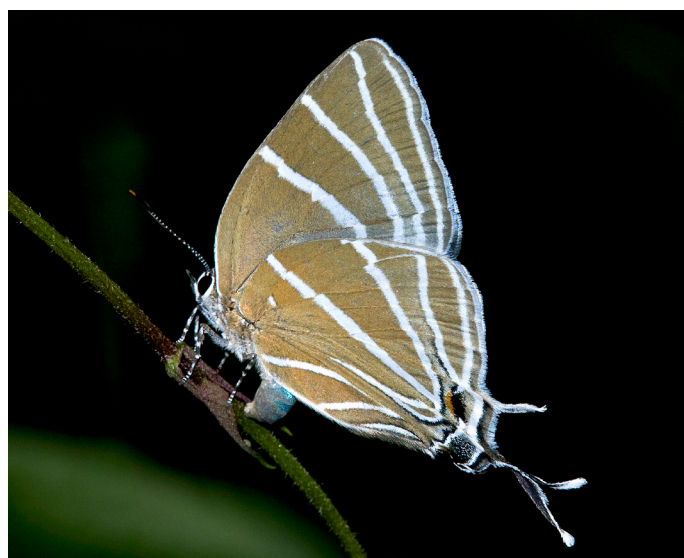
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Superb Cycadians, *Eumaeus childrenae* (on Cycad): empty eggs, larvae, pupae and adults, at Finca Monte Carlo, Oaxaca, Mexico, May, 2010. Photos by Bill Berthet; see related article on page 210.



*Laothus barajo*, ovipositing. May 2010, in the tropical evergreen and pine-oak forests of the La Sierra Norte de Oaxaca mountains. Photo by Bill Berthet; see related article on page 210.



*Horaga albimacula*. Koh Phangan, Surat Thani, Thailand, 22 May 2011. Photo by Antonio Giudici.