Butterflies and Moths of the Black Range and Doña Ana County

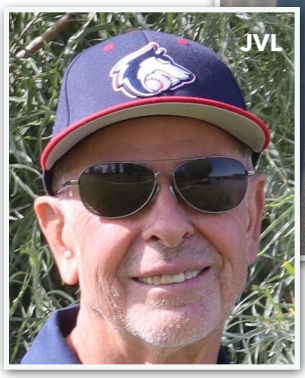
A Sampler - August 2023

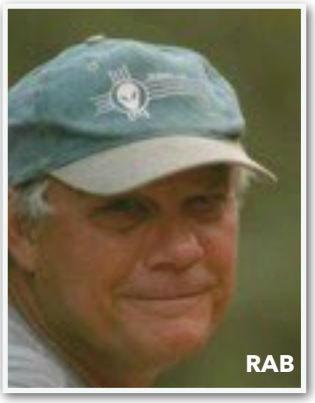
Version 1.0

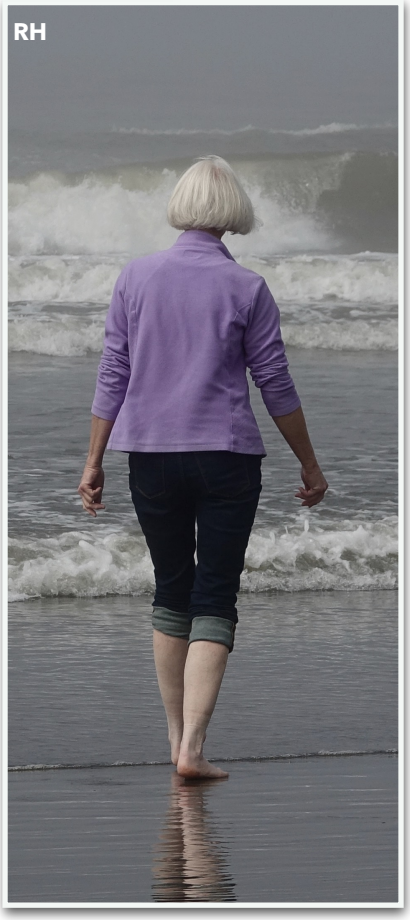
Some of The Contributors

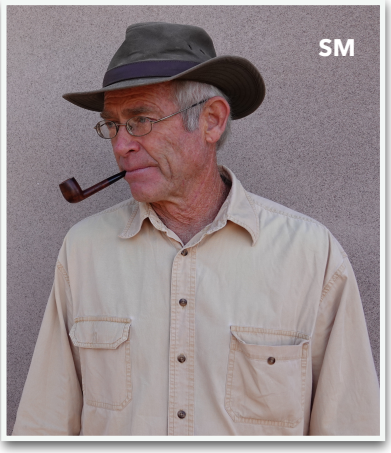
BLACK RANGE RAILWAY

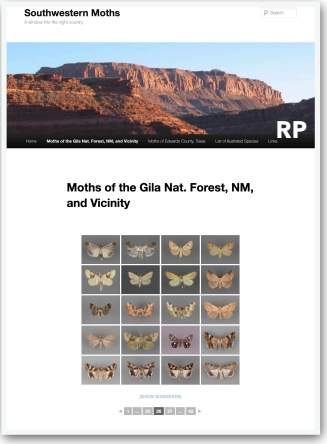
TL











Butterflies and Moths of the Black Range and Doña Ana County

A Sampler - August 2023

In this sampler we have gathered photographs of many of the butterflies, and a few moths, found in the Black Range and Doña Ana County, New Mexico. Although most of the photographs shown in this work are the products of special efforts made by people who perform research in this region, some are from a bit farther away. When we say research we use the term in an unstructured manner, research can be simple observation, even incidental observation. What is important is that observation occurs and insight is gained. That insight can be subtle and nuanced but our hope is that through efforts like this Sampler it will become additive to our common knowledge. All of this effort falls within the realm of what we call non-institutional science. This Sampler is not the result of a large institution funding a multi-year project. This is a volunteer project, from start to finish. A product of people who want to share the fruits of their efforts so that we can all flourish.

The Black Range Naturalist (Volume 5, Number 2) of April 2022, dealt extensively with Butterflies and Moths. Most of the images/narrative in that issue were the work of James Von Loh. This Sampler, is in many ways a reworking of that issue. BRN 5-2 included several butterfly natural history articles by Von Loh. Even though this sampler has a focus on species identification, material in those articles is pertinent. The full articles have not been included here, but portions of them are included in the species specific accounts which follow. This sampler and BRN 5-2 work well together and we encourage you to visit www.blackrange.org and download that issue to use with this sampler.

All of the species described in this sampler are found in the Black Range and Doña Ana County. Photographs from the Black Range are from a variety of sources, while James Von Loh and Gordon Berman contributed photographs from the Organ Mountains and Doña Ana County generally. We have also included some images from Ron Parry's website (moths from the Big Burro Mountains south of Silver City, for example) and a limited series of photographs by Todd Stout and Berry Nall. These photographs were taken farther afield.

With such a large amount of material from such a wide range of sources, attribution of each image can become intrusive. Therefore, throughout this work you will find the initials of the individuals who contributed the work. They are; Bob Barnes (RAB), Gordon Berman (GB), Nicky Davis (ND), Véronique De Jaegher (VDJ), Margie Gibson (MG), Rebecca Hallgarth (RH), Matilde Holzwarth (MH), Tom Lander (TL), Steve Morgan (SM), Berry Nall (BN), Debora Nicoll (DN), Ron Parry (RP), Bob Sivinski (BS), Todd Stout (TS), Nichole Trushell (NT), and James Von Loh (JVL). Although all of these contributors have eagerly agreed to share the products of their efforts with you, they retain all copyright to those products. Except, Bob Barnes who makes his work available for all non-commercial use under the provision of a Creative Commons license. Please honor their copyrights.

Species not included in the original (BRN 5-2) publication have been added to the Sampler, a process we hope to continue in future versions of the sampler. We look forward to a second edition and your submitted material which will make that possible. Works like this are never complete, it is a process, if you have or come across material which should be included in the second edition (or intermediate versions), please contact rabarnes@blackrange.org.

Species are arranged in alphabetical order according to their Latin binomial name. If the genus of the species has recently changed we include the older name in parenthesis. Especially of late, and contrary to what you might have learned in some science class, the latin binomial system has not been particularly stable. In part this is the result of new assessment techniques which have enabled new understandings about the relationships between various species. Although we have not included a complete list of synonyms for the species in this Sampler we have included some and we have included links to references which provide full lists.

This sampler is designed, produced, and distributed as electronic media. That allows us to add some splash which would be expensive in printed material, it allows easy distribution (and transport - it will fit on your digital device), and it allows us to link to other sources which enables a more thorough exploration of a the natural history of these species. But digital comes at a cost, it is not static, "the web" changes. If you find a broken link let us know and we will change it in future versions.

Enjoy and thanks for your support.

R. A. Barnes, Editor
rabarnes@blackrange.org

Some Resources

The Black Range Naturalist, Vol. 5, No. 2, April 2022. For free downloads of all publications of the Black Range website visit this link.

Butterflies and Moths of North America. A wealth of information, including extensive species specific pages, is available at this site.

North American Moth Photographers Group at the Mississippi Entomological Museum at Mississippi State University. Species specific pages on the moths and butterflies of North America and substantial amounts of other information, like an extensive links page to other resources.

BugGuide. You have to see it to believe it.

Butterflies of America. No moths but an extensive photograph collection, including breakouts by subspecies.

Pajarito Environmental Education Center. The section of this website devoted to butterflies, by Steven J. Cary and Michael E. Toliver is a New Mexico gem. Steve Cary's New Mexico Butterfly Blog site is a great resource with reports from various people around the state.

Native Plant Society of New Mexico provides a substantial amount of information about plant pollinators, like butterflies, on its website and in its newsletter.

Southwestern Moths, and the Links page in particular. This is Ron Parry's website, a resource which we are extremely lucky to have access to, for study and pleasure.

New Mexico butterflies: checklist, distribution and conservation - Steven J. Cary and Richard Holland, Journal of Research on the Lepidoptera 21(1-2):57-82, 1992

Starr County Butterflies. A bit far afield perhaps, but Berry Nall's website has thousands of images of species found in the Black Range and often images of several life stages.

Pacific Northwest Moths. Website. We share many species with the Pacific Northwest. This website includes species accounts, which are exceptional, in its portfolio. The link will take you to the glossary at Pacific Northwest Moths. If you want to know about the markings on moths - this is a must have!! The images below and on the following page are examples (there is so much more) of the material which supports the narrative of the glossary. The website also offers a free Android app for moth identification.

iNaturalist. Website. iNaturalist describes itself as "an online social network of people sharing biodiversity information to help each other learn about nature", with its primary goal being to connect people to nature. Although it is not a science project itself, iNaturalist is a platform for science and conservation efforts, providing valuable open data to research projects, land managers, other organizations, and the public.

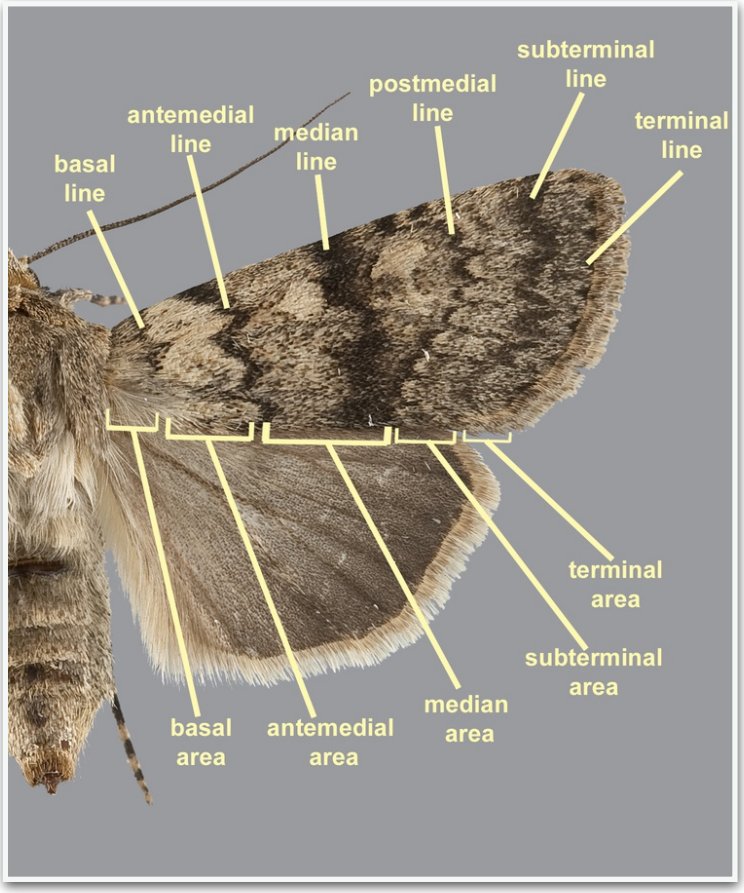
Southwestern Arizona Butterflies, Rich Bailowitz and Jim Brock. This guide is an updated sequel to the ground-breaking 1991 guide by the same two authors. It provides an in depth survey of all 273 species recorded in the region; includes more than 700 photographs of butterfly species; it includes more than 300 regional larval host plant records and images of common nectar sources, caterpillars and habitats, and range maps for all but the most common and widespread species, and an illustrated comparison guide to the difficult-to-identify duskywings.

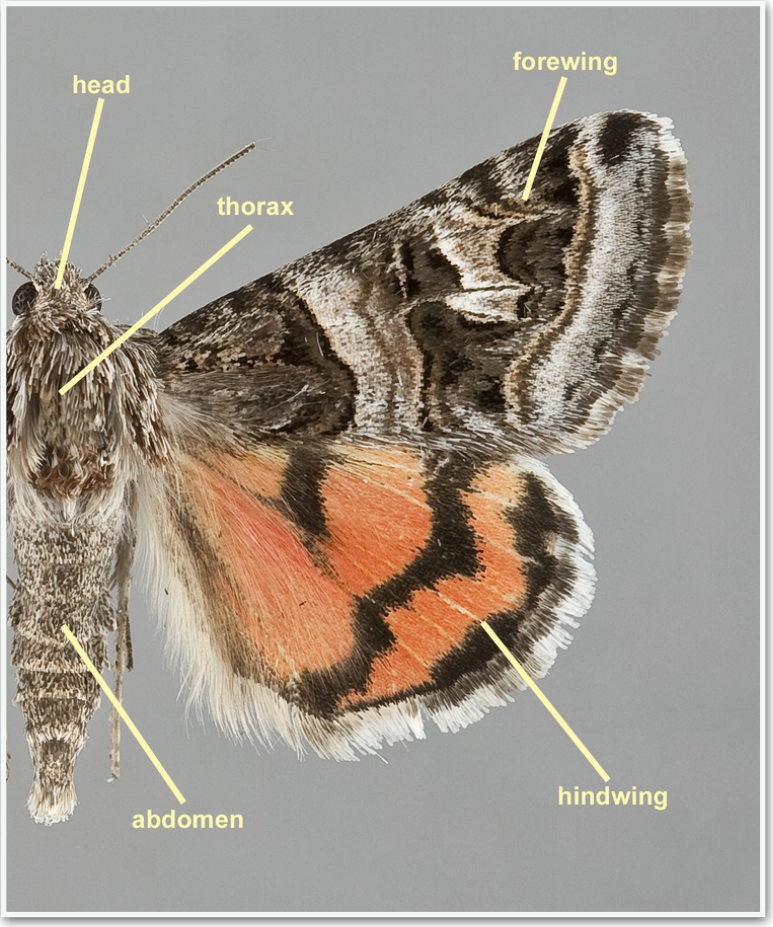
Tidbits and Terms

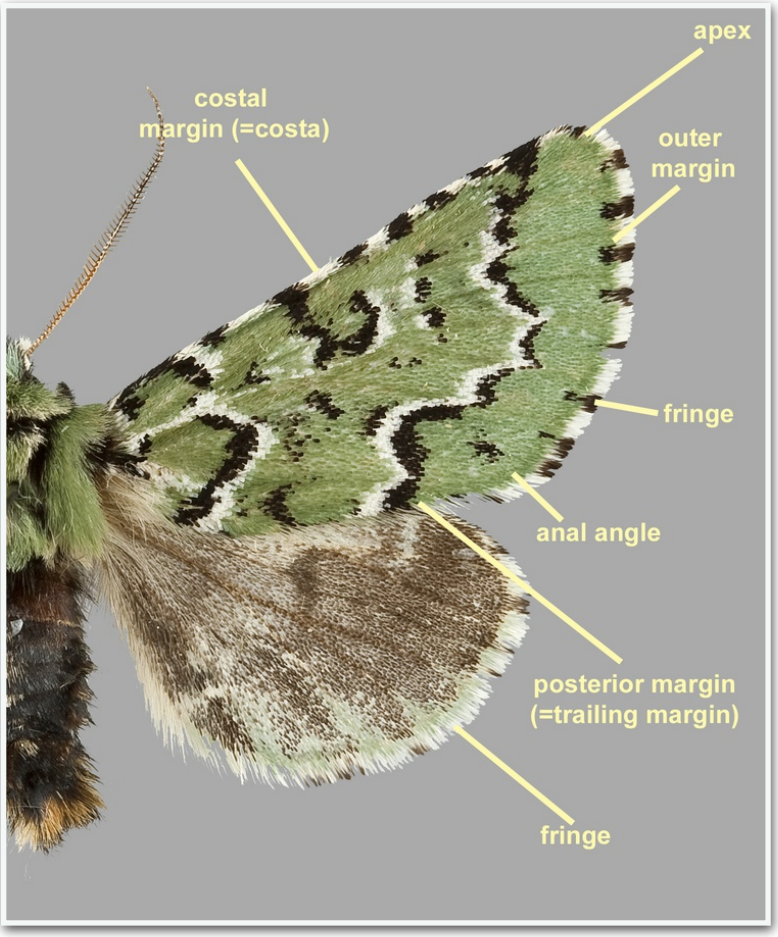
Knowing the terms being used in any field is the key to understanding. Some terms (like "puddlers") are used in some sources or subfields and not others. We have tried to avoid (or explain) such terms as we go along.

Puddle Club/Puddlers etc. is a behavioral term used to describe the activities of some adult butterflies. At pages 66-67 there is an extended discussion of this behavior and the term.

Instars are the stages of a caterpillar's life. As informative as diagrams like that at the bottom left on page 6 are they obfuscate by omission. A Monarch caterpillar, for instance, has five instars and the process of hatching from egg to forming a chrysalis will take about two weeks. The various instar stages may look very similar or they may look so unalike as to be thought different species.

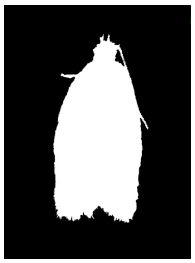






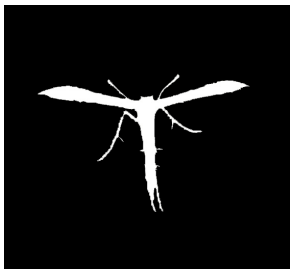
Moth Silhouettes

Moths can be very difficult to identify. A moth silhouette key developed by Lynette Elliott is useful in the initial identification sort. See her link for copyright information.



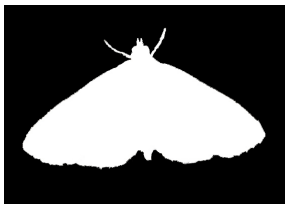
Tortricid Moths. Wingspan from 8 to 35 mm.

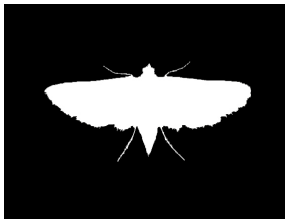
Slug Caterpillar Moths Wingspan from 10 to 35 mm.



Plume Moths Wingspan from 12 to 40 mm.

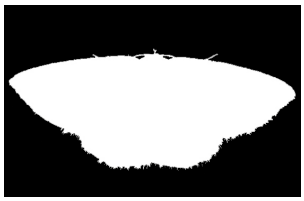
Silkworm Moths Wingspan from 32 to 45 mm.

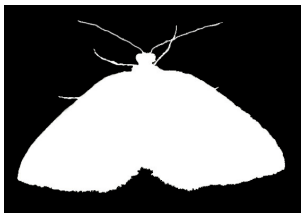




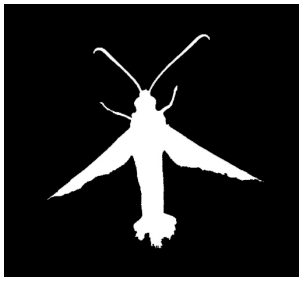
Pyralid Moths Wingspan from 10 to 55 mm.

Crambid Snout Moths
Wingspan from 10 to 35 mm.





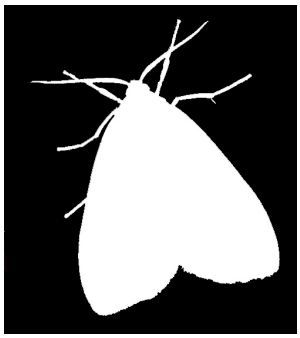
Geometrid Moths
Wingspan from 8 to 65 mm.



Clearwing Moths
Wingspan from 13 to 60 mm.

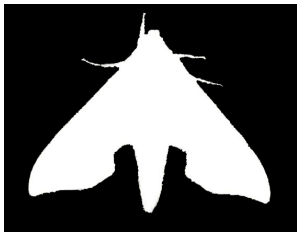
Prominent Moths
Wingspan from 25 to 60 mm.

Tussock Moths
Wingspan from 20 to 70 mm.

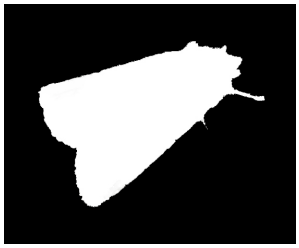


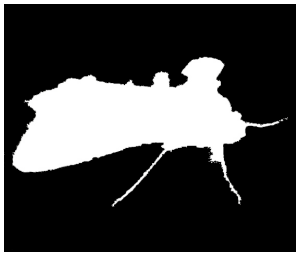
Tiger Moths
Wingspan from 12 to 80 mm.

Tent Caterpillar Moths
Wingspan from 22 to 105 mm.



Sphinx Moths
Wingspan from 30 to 150 mm.



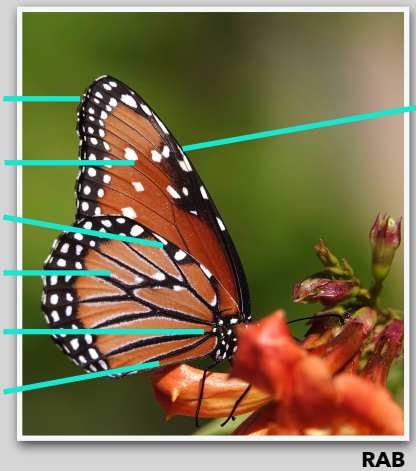


Owlet Moths
Wingspan from 20 to 150 mm.

Giant Silkworm and Royal Moths
Wingspan from 30 to 150 mm.

It takes practice to sort out all of the diagnostic tools which are available.

The best advice, however, is to enjoy. These are exotic creatures brimming with capabilities which we humans lack. Whether they are butterflies, flutterbies, or (insert your favorite latin binomial) they are beautiful and amazing. First of all - Enjoy.



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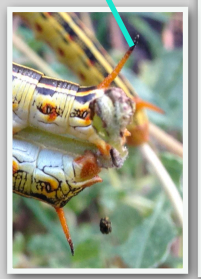
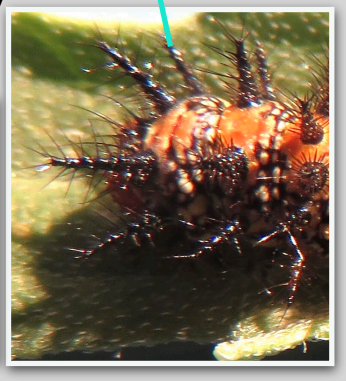
Growths from body may be called bristles, horns, hairs, or filaments.

Horns are generally rigid and pointed.

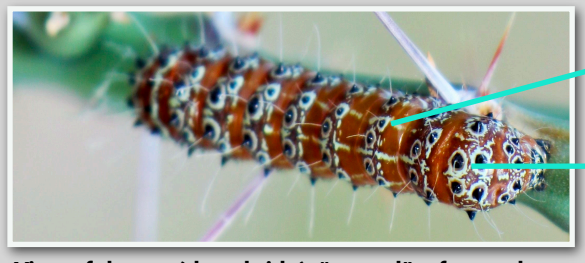


Gordon Berman

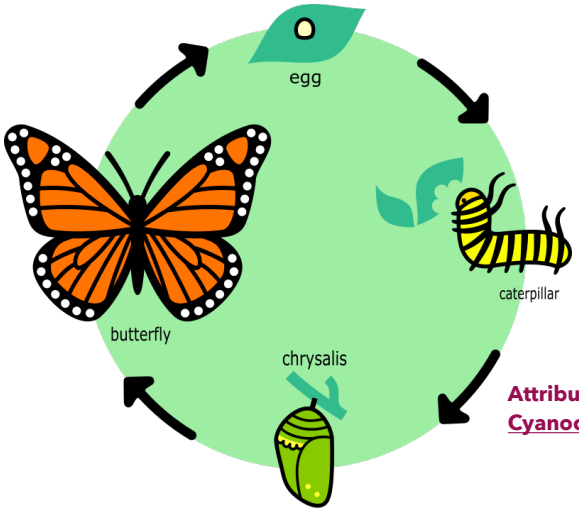


Gordon Berman

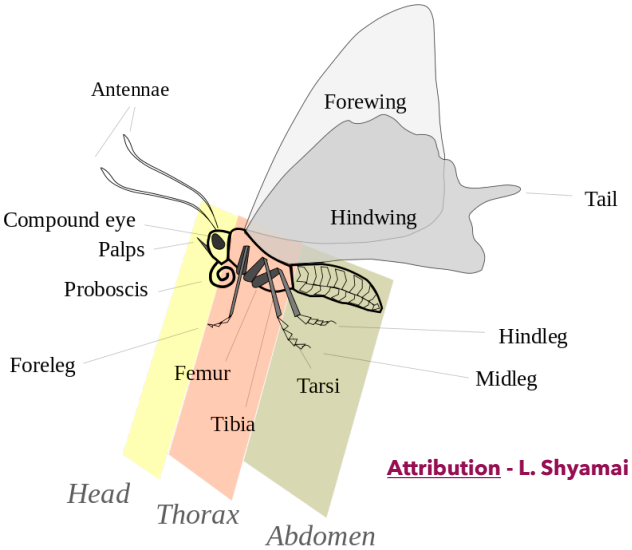
James Von Loh



View of the top (dorsal side); "ventral" refers to the bottom, and "lateral" refers to the sides.



Attribution: Cyanocorax



Attribution - L. Shyamai

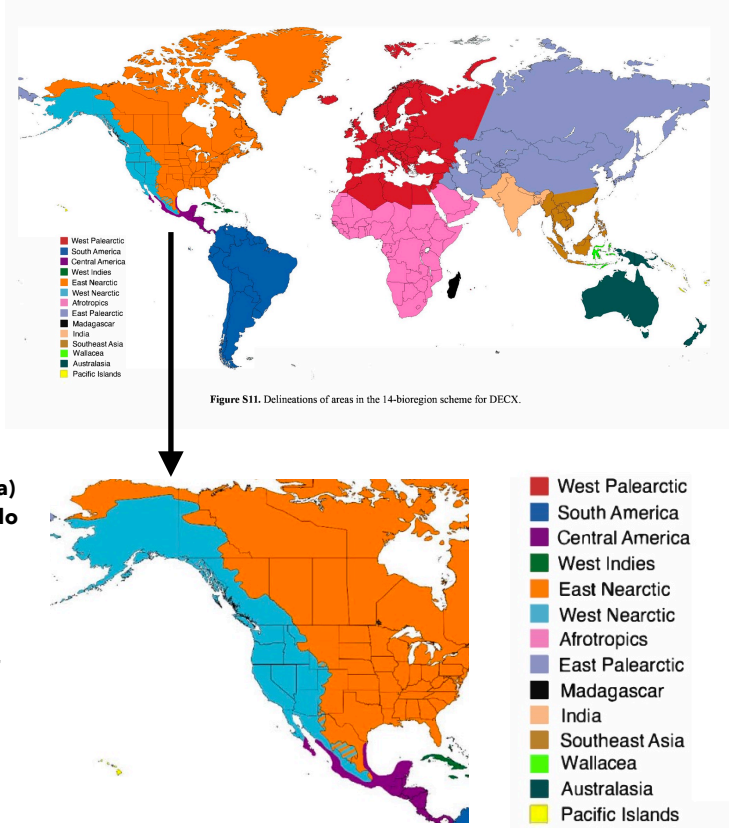
A Global Phylogeny of Butterflies Reveals Their Evolutionary History, Ancestral Hosts and Bio-geographic Origins

On May 15, 2023, *Nature Ecology & Evolution*, published an article (title above is link) by Akito Y. Kawahara and a host of others. If you have an unbridled interest in the genetic relationships between the various butterfly species this article, and its supplementary material, is a good place to start. Among the findings of the study are the following:

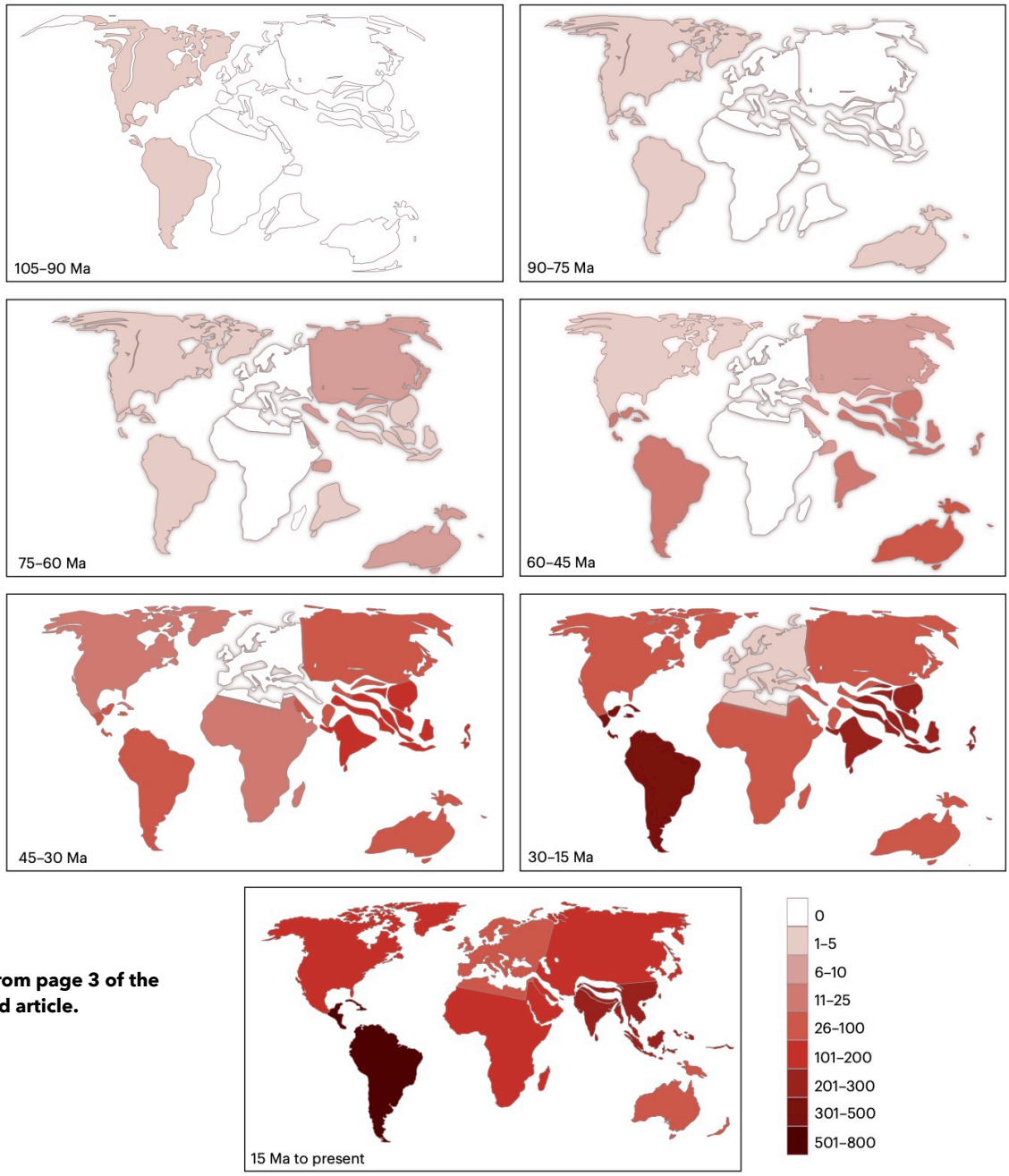
- **Butterfly species diverged from moths generally about 100 million years ago (101.4 mya in a range of 102.5 to 100.0 mya.);**
- **Butterflies probably originated in what is now the Americas (see graphic on following page). The divergence from moths (probably) occurred in what is now western North America or Central America;**
- **All but one family of butterflies existed prior to the K/Pg extinction event.d (Ed.: The Cretaceous-Palogene extinction event of about 66 million years ago caused [at least in part] by an astroid strike in the Yucatan.) They survived one of the six great mass extensions of earth's history;**
- **Butterfly species may have initially fed on plants in the *Fabaceae* family (legumes, peas, and beans). (Ed.: Note however that some sources date the origin of *Fabaceae* to between 89 and 94 million years ago.) See supplementary tables 10 and 11 and supplementary figure 9 at the above link;**
- **Larva of two-thirds (67.7%) of extant butterfly species feed on one host plant species and those which are "generalists" usually feed on closely related plant species;**
- **Although butterfly dispersal between the world's bioregions (see right) has been active at times and characterized by bi-directional fluidity, it has not been evenly distributed. Some of the world's bioregions (e.g. South America) have significant numbers of species, while others do not; and**
- **The evolutionary relationship between the various butterfly species has not been full mapped (see page 9) but what has been mapped indicates that further research is called for in more than a quarter of all butterfly tribes.**

There is a wealth of information in this article and the supporting material. Delving into it will take time. In the short term, however, relish the thought that our area lies at the edge of two of the major bioregions which characterize butterfly distribution.

105 MYA, Cretaceous Period. The area where the Black Range is now was periodically submerged by water in our geologic history. At this time it is above water. Dinosaurs, mammal, bird, and insect (as in butterflies and moths) lineages were all diversifying at this time. This image is courtesy of Ian Webster. See more of his work at ianww.com.



Graphic from the supplementary material associated with the referenced article.



Graphic from page 3 of the referenced article.

Fig. 2 | Distribution of butterflies over time. Bioregion shading indicates the number of butterfly lineages that were associated with that bioregion during that time period, as determined by BioGeoBEARS ancestral state reconstruction. Each map corresponds to a 15-Ma interval of butterfly evolution. Results are based on data from this study.

The oldest butterfly fossil from America is of a *Prodryas persephone* (shown left). This fossil, which dates from about 34 million years ago was found at the Florissant Fossil Beds in Colorado (see photographs from the Birding Travels in North America website).

Graphic from page 2 of the referenced article.

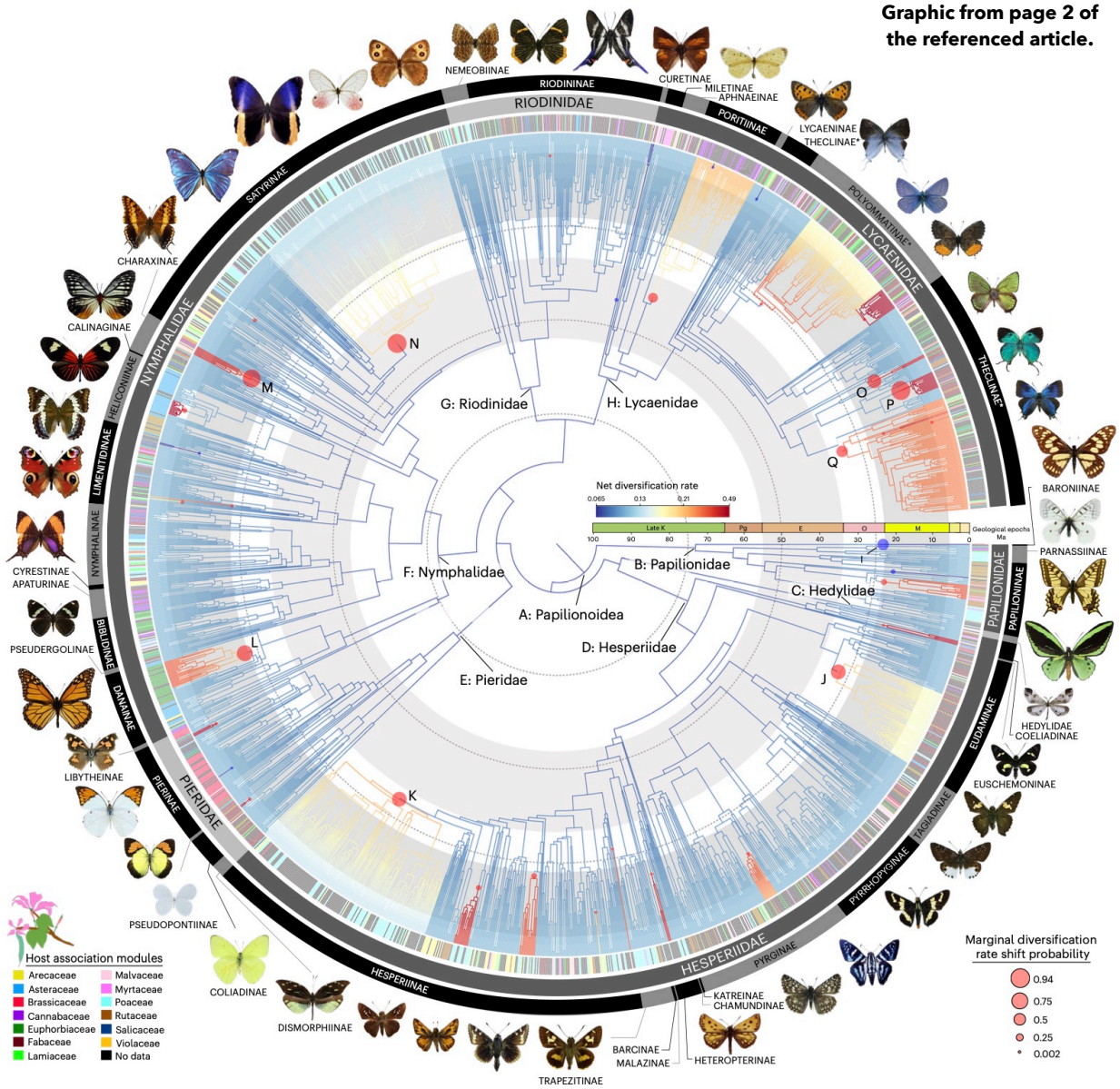
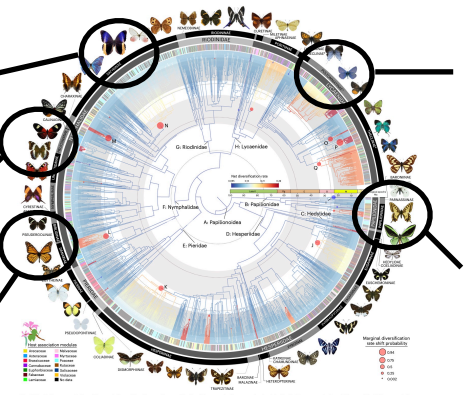


Fig. 1 | Evolutionary relationships and diversification patterns of butterflies. Time-calibrated tree of 2,244 butterfly species based on 391 loci and 150 amino acid partitions. Branches show distinct changes in diversification (circles) as estimated by clade-specific models. Letters at nodes refer to clades with significant rate shifts (see section 6 of Supplementary Results). Coloured lines in the outer ring beside tips indicate association with one of the 13 host modules (see section 17 of Extended Online Methods). Black lines in the host association ring indicate species without data, and asterisks denote non-monophyletic subfamilies. Supplementary Fig. 1 shows this tree with visible species names and ages for all nodes.

***Satyrinae* includes the genera *Cissia* and *Cyllopsis*. *Cissia rubricata* (Red Satyr) and *Cyllopsis pertepida* (Canyonland Satyr) are two examples from our area.**

***Limenitidinae* includes the genera *Adelpha* and *Limenitis*. *Adelpha eulalia* (Arizona Sister) and *Limenitis arthemis* (Red-spotted Admiral) are two examples from our area.**

***Danainae* includes the genus *Danaus*. *D. gilippus* (Queen) *and D. plexippus* (Monarch) are two examples from our area.**



***Polyommatinae* includes the genus *Brephidium*. *Brephidium exile* (Western Pygmy Blue) is an example from our area.**

***Papilioninae* includes the genus *Papilio*. *P. multicaudata* (Two-tailed Swallowtail), *P. ornythion* (Ornythion Swallowtail), and *P. polyxenes* (Black Swallowtail) are some examples from our area.**

Why did we choose to arrange the sampler by placing species in alphabetical order by Latin Binomial? Why didn't we use a taxonomic array typical of most other field guides? Why didn't we list species in alphabetical order by the English common name? These are all good questions, questions from the reviewers of our draft.

The arrangement chosen for the sampler is a compromise and like all compromises has its own set of pros and cons - most referenced or hinted at by the questions above.

We chose not to use the English common name as a matrix for arranging the species in *The Sampler* for the standard reason. In many cases a particular species will have several common names, in many cases those names have no apparent relationship with each other. Use of the common name, we believe, ends up creating confusion for our readers. We note that the Latin binomial naming protocol has not been the most stable of late and have tried to indicate synonyms in the species accounts to address this issue. We assume that we have a diverse readership and that not all readers are familiar with the taxonomic arrangement of species. For readers who do not regularly use material arranged taxonomically the placement of individual species can appear random. For those who regularly use taxonomically arranged material it is easy to move between that and an alphabetical listing by Latin binomial. The only outstanding argument is that the taxonomic arrangement enables users to see the relationship between various species. However, this relationship is most apparent at the genera level and an alphabetical listing addresses this by default in most cases.

All of that said, every protocol has its weaknesses. We hope that our choices do not detract from the value of this work.

Species Depicted In This Sampler

***Abaeis mexicana*, Mexican Yellow**
(Boisduval, 1836)
***Abaeis nicippe*, Sleepy Orange**
(Cramer, 1779)
***Adelpha eulalia*, Arizona Sister**
(E. Doubleday, 1848)
***Agraulis incarnata*, Gulf Fritillary**
(Linnaeus, 1758)
***Agraulis vanillae*, Gulf Fritillary**
See *Agraulis incarnata*
***Amblyscirtes cassus*, Cassus Roadside-Skipper**
(W. H. Edwards 1883)
***Anaea andria*, Goatweed Butterfly**
(Scudder, 1875)
***Ancyloxypha arene*, Tropical Least Skipper**
(W. H. Edwards, 1871)
***Anisota oslari*, Oslar's Oakworm Moth**
(Rothschild, 1907)
***Anteos clorinde*, White Angled-Sulphur**
(Godart, 1824)
***Anthanassa texana,* Texan Crescent**
(W.H. Edwards, 1863)
***Anthocharis thoosa,* Southwestern Orangetip**
(Scudder, 1878)
***Ascalapha ordorata,* Black Witch Moth**
(Linnaeus, 1758)
***Asterocampa celtis,* Hackberry Emperor**
(Boisduval & Leconte, 1835)
***Atalopedes campestris,* Sachem**
(Boisduval, 1852)
***Arachnis zuni,* Zuni Tiger-Moth**
(Neumoegen, 1890)
***Argynnis nausicaa nausicaa,* Southwest Fritillary**
(W. H. Edwards, 1874)
***Atlides halesus,* Great Purple Hairstreak**
(Cramer, 1777)
***Autochton cellus,* Golden-banded Skipper**
(Boisduval & Leconte, 1837)
***Automeric cecrops,* Cecrops-eyed Silkmoth**
(Boisduval, 1875)
***Battus philenor,* Pipevine Swallowtail**
(Linnaeus, 1771)
***Brephidium exile,* Western Pygmy Blue**
(Boisduval, 1852)
Bulia deducta
(Morrison, 1875)
***Burnsius albescens,* White-checkered Skipper**
(Plötz, 1884)
***Burnsius communis,* Common Checked Skipper**
(Grote, 1872)
***Caenurgina erechtea,* Forage Looper**
(Cramer, 1780)
***Calephelis nemsis,* Fatal Metalmark**
(W.H. Edwards, 1871)
***Callophrys gryneus,* Olive Juniper Hairstreak**
(Hübner, 1819)
***Chlosyne fulvia,* Fulvia Checkerspot**
(W.H. Edwards, 1879)
***Chlosyne lacinia,* Bordered Patch**
(Geyer, 1837)
***Chlosyne theona,* Theona Checkerspot**
(Ménétriés, 1855)
Chrysoecia atrolinea
(Barnes & McDunnough, 1912)
***Cissia rubricata,* Red Satyr**
(W.H. Edwards, 1871)
***Colias eurytheme,* Orange Sulphur**
(Boisduval, 1852)
***Colias philodice,* Clouded Sulphur**
(Godart, 1819)
***Copaeodes aurantiaca,* Orange Skipperling**
(Hewitson, 1868)
***Cyllopsis pertepida,* Canyonland Satyr**
(Dyar, 1912)
***Danaus gilippus,* Queen**
(Cramer, 1776)
***Danaus plexippus,* Monarch**
(Linnaeus, 1758)
Datana neomexicana,* Perhaps *Datana perfusa
(Doll, 1911)
***Dione vanillae*, Gulf Fritillary**
See *Agraulis incarnata*
***Dymasia dymas,* Tiny Checkerspot**
(W.H. Edwards, 1877)
***Dysschema howardi,* Great Northern Flag Moth**
(Hy. Edwards, 1886)
***Echinargus isola,* Reakirt's Blue**
(Reakirt, 1867)

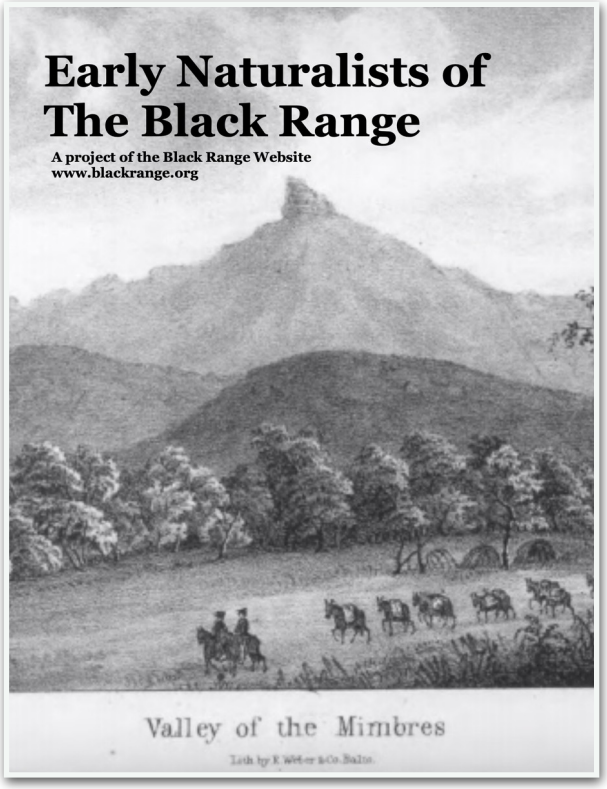
***Epargyreus huachuca*, Huachua Skipper**
(Dixon, 1955)
***Erynnis brizo,* Sleepy Duskywing**
(Boisduval & Leconte, 1837)
***Erynnis funeralis,* Funereal Duskywing**
(Scudder & Burgess, 1870)
***Erynnis telemachus,* Rocky Mountain Duskywing**
(Burns, 1960)
***Erynnis tristis,* Mournful Duskywing**
(Boisduval, 1852)
Euchaetes antica
(Walker, 1856)
***Euphyes vestris,* Dun Skipper**
(Boisduval, 1852)
***Euptoieta claudia,* Variegated Fritillary**
(Cramer, 1776)
Eurema mexicana* - see *Abaeis mexicana
Eurema nicippe* - see *Abaeis nicippe
***Eurema proterpia,* Tailed Orange**
(Fabricius, 1775)
See species discussion, most authorities now place this species in the genus *Pyrisitia*.
***Euscirrhopterus cosyra,* Staghorn Cholla Moth**
(Druce, 1896)
***Euscirrhopterus gloveri,* Purslane Moth**
(Grote & Robinson, 1868)
***Forsebia cinis*, Forsebia Moth**
(Guenée, 1852)
Gesta funeralis* - see *Erynnis funeralis
Gesta telemachus* - see *Erynnis telemachus
Gesta tristis* - see *Erynnis tristis
***Gyrocheilus patrobas,* Red-Rim Satyr**
(Hewitson, 1862)
***Helicoverpa zea,* Corn Earworm Moth**
(Boddie, 1850)
Gesta funeralis* - see *Erynnis funeralis
Gesta telemachus* - see *Erynnis telemachus
Gesta tristis* - see *Erynnis tristis
***Gyrocheilus patrobas,* Red-Rim Satyr**
(Hewitson, 1862)
***Helicoverpa zea,* Corn Earworm Moth**
(Boddie, 1850)
***Hemaris thetis,* Rocky Mountain Clearwing**
(Boisduval, 1855)
The species in our area may be *Hemaris diffinis,* Snowberry Clearwing (Boisduval, 1836)
See species account.
***Hemiargus ceraunus,* Ceraunus Blue**
(Fabricius, 1793)
***Hylephila phyleus,* Fiery Skipper**
(Drury, 1773)
***Hyles lineata,* White-lined Sphinx Moth**
(Fabricius, 1775)
***Hypantria cunea,* Fall Webworm Moth**
(Drury, 1773)
***Icaricia lupini,* Lupine Blue**
See *Plebejus lupini*
***Junonia coenia,* Common Buckeye**
(Hübner, 1822]
***Junonia grisea,* Gray Buckeye**
(Austin & J. Emmel, 1998) *Leptostales rubromarginaria,* Dark-ribboned Wave
(Packard, 1871)
***Leptotes marina,* Marine Blue**
(Reakirt, 1868)
***Libytheana carinenta,* American Snout**
(Cramer, 1777)
***Limenitis archippus,* Viceroy**
(Cramer, 1776)
***Limenitis arthemis,* Red-spotted Purple (Admiral)**
(Drury, 1773)
***Limenitis weidemeyerii,* Weidemeyer's Admiral**
(W.H. Edwards, 1861)
***Litocala sexsignata,* Litocala Moth**
(Harvey, 1875)
***Lon taxiles,* Taxiles Skipper**
(W.H. Edwards, 1881)
Some authorities treat this species as *Poanes taxiles*
Loxostege
The species included here is unidentified below genus. There are 25 species in this genus in our area.
***Manduca quinquemaculata,* Five-spotted Hawkmoth**
(Haworth, 1803)
***Megisto rubricata*, Red Satyr**
Currently described as *Cissia rubricata* (since 2018)
***Mestra amymone,* Common Mestra**
(Ménétriés, 1857)
***Nathalis iole,* Dainty Sulphur**
(Boisduval, 1836)
***Nymphalis antiopa,* Mourning Cloak**
(Linnaeus, 1758)
***Pachysphinx occidentalis,* Big Poplar Sphinx**
(Hy. Edwards, 1875)
***Papilio multicaudata,* Two-tailed Swallowtail**
(W.F. Kirby, 1884)
***Papilio ornythion,* Ornythion Swallowtail**
(Boisduval, 1836)
***Papilio polyxenes,* Black Swallowtail**
(Fabricius, 1775)
***Papilio rutulus,* Western Tiger Swallowtail**
(Lucas, 1852)
***Phoebis sennae,* Cloudless Sulphur**
(Linnaeus, 1758)
***Pholisora cattullus,* Common Sootywing**
(Fabricius, 1793)
***Phyciodes picta,* Painted Crescent**
(W.H. Edwards, 1865)
***Phyciodes pulchella,* Field Crescent**
(Boisduval, 1852)
***Phyciodes texana* (see *Athanassa texana*)**
***Phyciodes tharos,* Pearl Crescent**
(Drury, 1773)
***Pieris rapae, (*European) Cabbage White**
(Linnaeus, 1758)
***Plebejus acmon,* Acmon Blue**
(Westwood, 1851)
See species account.
***Plebejus lupini*, Lupine Blue**
(Boisduval, 1869)
See species account.
***Plebejus melissa,* Melissa Blue**
(W.H. Edwards, 1873)
Poanes taxiles
See *Lon taxiles*
***Polites (Yvretta) carus,* Carus Skipper**
(W.H. Edwards, 1883

Polygonia gracilis, Hoary Comma
(Grote & Robinson, 1867)
Polygonia interrogationis, Question Mark
(Fabricius, 1798)
Polygonia satyrus, Satyr Comma
(W.H. Edwards, 1869)
Pontia protodice, Checkered White
(Boisduval & Leconte, 1830)
Pontia sisymbrii, Spring White
(Boisduval, 1852)
Pyristitia proterpia, Tailed Orange
Listed here as *Eurema proterpia*
Pterourus
Species listed in this genus by some sources are listed in the genus Papilio in this Sampler.
Speyeria hesperis, Hesperis (Northwest) Fritillary
See *Argynnis nausicaa nausicaa,* Southwest Fritillary
Spodoptera ornithogalli, Yellow-striped Armyworm
(Guenée, 1852)
Staphylus ceos, Golden-headed Scallopwing
(W. H. Edwards, 1882)
Strymon melinus, Gray Hairstreak
(Hübner, 1818)
Telegonus cellus - see *Autochton cellus*
Thorybes pylades, Northern Cloudywing
(Scudder, 1870)
Vanessa annabella, West Coast Lady
(Field, 1971)
Vanessa atalanta, Red Admiral
(Linnaeus, 1758)
Vanessa cardui, Painted Lady
(Linnaeus, 1758)
Vanessa virginiensis, American Lady
(Drury, 1773)
Zerene cesonia, Southern Dogface
(Stoll, 1790)

Biographical Sketches

Biographical sketches of entomologists who originally described the species covered in this sampler (or did important research in this area), are found throughout the book.

- Austin: George T. Austin (1943-2009), p. 159
- W. Barnes: William Barnes (1860-1930) pp. 226
- Benjamin: Foster Hendrickson Benjamin (1895-1936) p. 226
- Boisduval: Jean Baptiste Alphonse Déchauffour de Boisduval (1799-1879) p. 50
- Cramer: Pieter Cramer (1721-1776) p. 53
- Doll: Jacob Doll (1847-1929) p. 106
- Doubleday: Edward Doubleday (1810-1849) p. 25
- Druce: Herbert Druce (1846-1913) p. 132
- Drury: Dru Drury (1724-1803) p. 245
- Dyar: Harrison Gray Dyar Jr. (1866-1929) p 93
- Hy. Edwards: Henry Edwards (1827-1891) p. 111
- W. H. Edwards: William Henry Edwards (1822-1909) p. 73
- Emmel: Thomas C. Emmel (1941-2018), p. 159
- Fabricius: Johan Christian Fabricius (1745-1808) p. 129
- Geyer: Peter Carl Friedrich Geyer (1802-1889) pp. 79, 233
- Grote: Augustus Radcliffe Grote (1841-1903), p. 217
- Guenée: Achille Guenée (1809-1880) p. 229
- Harvey: Leon F. Harvey (1837-1912) p. 174
- Haworth: Adrian Hardy Haworth (1767-1833) p. 180
- Hewitson: William Chapman Hewitson (1806-1878) p. 136
- Hübner: Jacob Hübner (1761-1826) p. 232
- Lalonde: Melanie Lalonde, p. 159
- Leraut: Patrice J. A. Leraut, p. 178
- Merian: Maria Sibylla Merian. p. 28
- McDunnough: James Halliday McDunnough (1877 - 1962) p. 84
- Marcus: Jeffrey Marcus, p. 159
- Ménétries: Édouard Ménétries (1802-1861) p. 82
- Nabokov: Vladimir Nabokov (1899-1977) p. 92 and p. 140
- Packard: Alpheus S. Packard (1839-1905), p. 162
- Reakirt: Tryon Reakirt (1884-1871) p. 112
- Scudder: Samuel Hubbard Scudder (1837-1911) p. 119
- Snow: Francis H. Snow (1840-1908) p. 93



A free download of *Early Naturalists of The Black Range* is available at the Black Range website, www.blackrange.org.

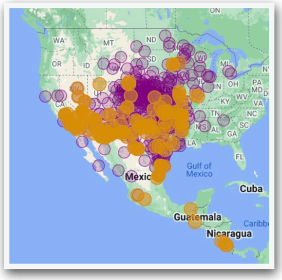
Mexican Yellow
Abaeis (Eurema) mexicana
(Boisduval, 1836)
Hodges #4246

Your field guide may have this species listed as *Eurema mexicana*; the name change (to *Abaeis*) has occurred recently.

Mexican Yellow, photographed in Carbonate Creek Canyon, Black Range. RAB

The Mexican Yellow butterflies pictured immediately above were taking nutrients from moist soil near the Soledad Canyon Trailhead. The photograph is by James Von Loh. He was able to take a photograph (below) of this species in flight, at the same location. The lower left image provides a view of the top of the wings (dorsal surface) of the species, something which can be difficult to see in species which consistently keep their wings closed when not flying.

Along the Rio Grande at Las Cruces. Note the short "tail" on the hind wing, a useful diagnostic in separating this species from the Southern Dogface. JVL



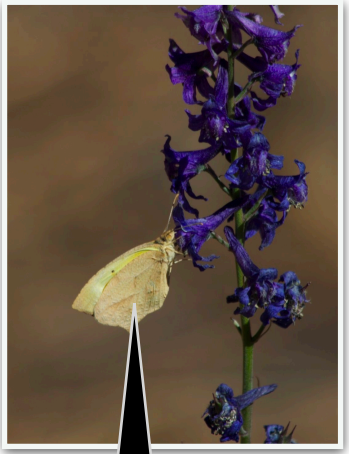
Range Map of *Abaeis (Eurema) mexicana* - Mexican Yellow From sightings reported to Butterflies and Moths of North America.

Dogface pattern in Mexican Yellow is visible in flight, when it is visible through the ventral wing. Compare with Southern Dogface, *Zerene cesonia,* shown below with backlit ventral wings.

Short tail

Other References (Mexican Yellow)

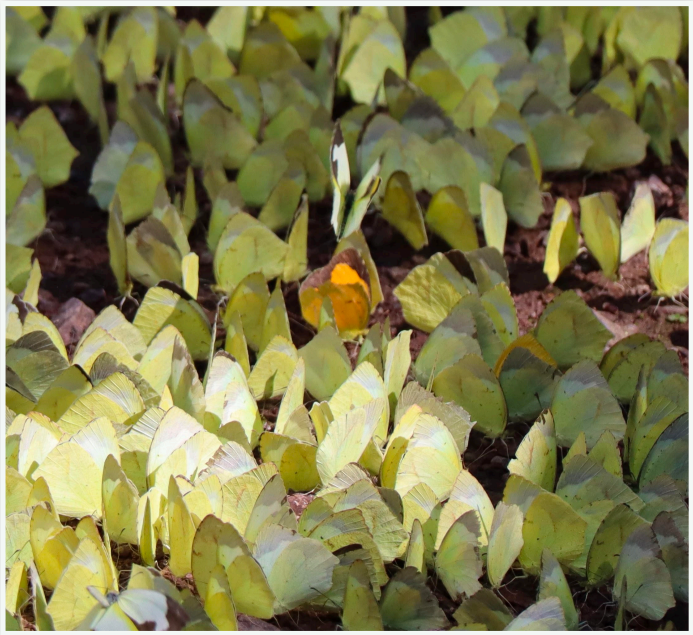
- Butterflies and Moths of North America
- Pajarito Environmental Education Center
- BugGuide (lists the species as Eurema mexicana)



During winter and dry season wings are more orangish

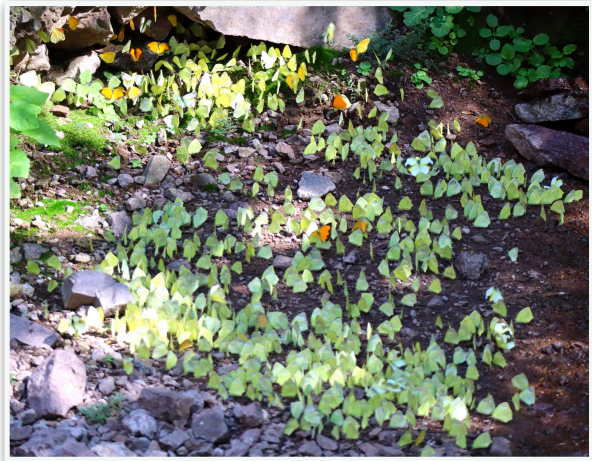
Yellow underside of wings compared with more patterned upper side.

Mexican Yellows in a dense mass which represents approximately 1/3 of this puddle club's occupied area. Dappling results from sunshine filtered through leaves of maple trees established at the Soledad Canyon head. JVL



Mexican Yellows in a detail of the image above, are joined by an individual Sleepy Orange. JVL.

Report from September 2021: In Soledad Canyon this abundant species formed large puddle clubs near the Soledad Spring headwall. Preferred soils were saturated sand with small gravel and occasional larger rocks; shallow pools of water, when present, were avoided by Mexican Yellows. Puddle clubs included numerous individuals ranging from a few hundred to several hundred in number; sometimes a few individuals of other sulphur butterfly species would join the club, usually along the fringe. JVL



Mexican Yellow puddle club that includes several Sleepy Orange individuals. JVL

Mexican Yellow puddlers close-up showing individual butterfly orientation to one another. JVL

Mexican Yellows puddling on rocks of the historic dam constructed along the base of the headwall of Soledad Canyon. JVL

Mexican Yellows, with other sulphur species, formed smaller, less dense puddle clubs on gravel-covered moist soil along La Cueva Trail just north of the Dripping Springs Visitor Center. JVL

Mexican Yellows puddling on moist soil along the La Cueva Trail. JVL

A short video of the Mexican Yellows (and others) described here may be viewed at this link. Video by James Von Loh. Hosted in a Vimeo Portfolio (no ads) by The Black Range Naturalist.

In the photographs to the left, Mexican Yellow butterflies are nectaring on Scarlet Morning-glory flowers, some of which are newly opening. In the bottom photo of this series, a Cloudless Sulphur (left side of image) joins a Mexican Yellow. JVL

In the photo above, a Mexican Yellow is nectaring from a blue morning-glory flower. A Dainty Sulpher, *Nathalis iole* Boisduval (1836), flies just above. JVL

In this Sampler we place this species in the genus *Abaeis* rather than in *Eurema*. This is a "where do you draw the line" question, or alternatively a split vs. lump question. The assignment to *Abaeis* is more common in North America (where it is elevated to a full genus), while *Eurema* is more commonly used in Europe. Pick one designation and someone will think you right, on the other hand, someone will think you wrong.

This species is listed as Hodges 4246.

When identifying this species, note the "dog's head" outline on the forewing and compare it with that of the Southern Dogface, *Colias (Zerene cesonia)*. The outline is more prominent in males and on the dorsal side of the wing, when compared with the ventral (underwing).

MONA or Hodges Number

When researching moths and butterflies you will generally find a Hodges or MONA (Moths of North America) number listed for the species you are considering.

There have been various attempts to distinguish individual *Lepidoptera* species (beyond the standard Linnaean scheme) over time. In 1983, Ronald Hodges published the *Check List of the Lepidoptera of American North of Mexico* establishing the numbering system which is most widely used today. The link will enable you to download a "working paper", May 2016, of the listing.

Such a schema is constantly challenged by changing taxonomic determinations, changes in species name, newly discovered species, lumped species, etc. The number initially assigned to a species stays with the species as it is "moved around" because of changes in the accepted taxonomic hierarchy. When a new species is identified, it is fit into the taxonomic order of that time and assigned a number with a decimal. The listing is in numeric order, except for the changes necessitated by the procedures used to keep the listing current. So, a number may be missing from the listing, or a number may appear out of sequence, or you might encounter something like *Epimartyria bimaculella* - Hodges 1.1, at the very beginning of the listing.

This numbering system has proven reasonably effective in controlling the chaos associated with the taxonomic determinations of more than 12,000 species (North America north of Mexico).

There are currently 89 families and 12,766 species of *Lepidoptera*, north of Mexico, which have been described. There are many undescribed species. Of these roughly 200 are introduced species. This is, however, a small number. There are more than 150,000 described species of *Lepidoptera* in the world.

Sleepy Orange
Abaeis (Eurema) nicippe
(Cramer, 1779)
Hodges # 4242

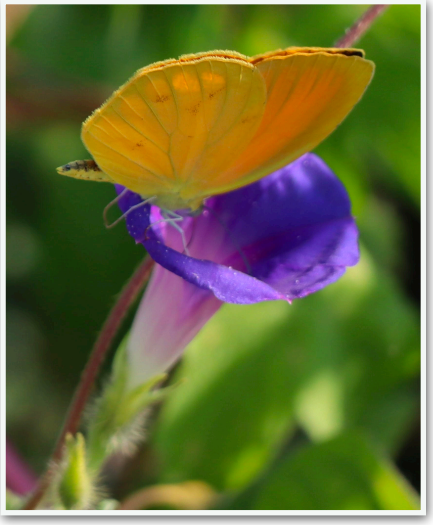
Report from September 2021: The Sleepy Orange were probably the most abundant medium-sized butterflies visiting habitats of the Organ Mountains' west-facing slopes and into the Rio Grande Valley. They formed puddle clubs where moist soil and seeps occurred, for example, from the Soledad Canyon Trailhead to its terminus at the headwall. Near the trailhead they formed less dense concentrations that included several other species including Mexican Yellows, *Abaeis mexicana* (Boisduval, 1836). At the headwall, they segregated from the Mexican Yellows to form more dense clubs of mostly Sleepy Oranges.

Sulphur species, generally, were the most abundant medium-to-large-sized butterflies visiting habitats of the Organ Mountains west-facing slopes and into the Rio Grande Valley. On these sites, they formed open and often widespread clubs that included several sulphur species and, often, other butterfly species as well. JVL

The photographs on this and on the following page were taken by James Von Loh along the Rio Grande at Las Cruces.

Sleepy Oranges form a high-rise puddle club, attracted by moist soil and moss on the face of the historical Soledad Canyon Dam (constructed along the headwall). They were joined by a few Mexican Yellows. JVL

Report from 2021: Smaller, mostly Sulphur, butterfly species nectared predominantly from Scarlet Morning-glory flowers in large numbers, with some selection observed for nectaring from blue morning-glory flowers. Because of their massive numbers (thousands upon thousands), their friendly nature, and their mechanics of obtaining nectar from the long, tubular, morning-glory flowers, I developed a particular affection towards the Sleepy Oranges. JVL



Sleepy Orange butterflies nectaring from Scarlet Morning-glory and from a blue-flowered morning-glory (uncommon observation). JVL

Sleepy Oranges form smaller clubs where water flows over bedrock at the Soledad Canyon Waterfall. JVL

Range Map of *Abaeis (Eurema) nicippe* - Sleepy Orange
From sightings reported to Butterflies and Moths of North America.

Other References (Sleepy Orange)

- Butterflies and Moths of North America
- Pajarito Environmental Education Center
- BugGuide

Sleepy Orange and Mexican Yellow puddlers mix on drier rock and gravelly substrates near the Soledad Canyon Waterfall. GB

***Abaeis nicippe*, Sleepy Orange**
Photographed east of Hillsboro, Black Range. RAB

Sleepy Orange near Soledad Canyon Waterfall, Organ Mountains. GB

The Sleepy Oranges pictured above were taking nutrients from moist soil. Like the Mexican Yellow, this species was recently moved to *Abaeis* from *Eurema*.

Sleepy Orange and Southern Dogface, *Zerene cesonia* (Stoll, 1790), are both present here. As are Marine Blues, *Leptotes marina* (Reakirt, 1868), White Checkered-skippers, and individuals of other butterfly species. JVL

Sleepy Oranges also form smaller clubs where water flows over or splashes onto bedrock at the Soledad Canyon Waterfall. GB

Left: Mixed Sulphurs form the matrix of this puddle club on moist seep soil and gravel adjacent to the Soledad Canyon Trail. JVL

Directly Below: Sleepy Oranges are nectaring on the flowers of Spiny Chloracantha (L) and Spine-aster (R) JVL

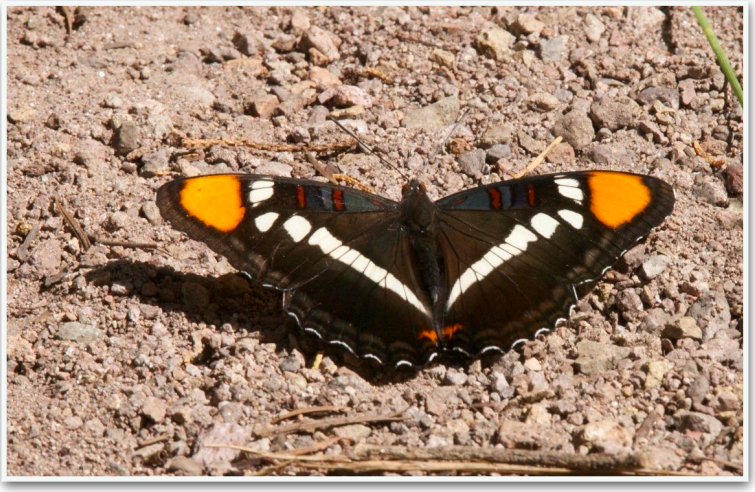
Sleepy Orange, above on June 17, were abundant, JVL

Above: Non-sulphur butterfly species occur with the more common sulphurs, puddling together on moist soils with gravel cover. Below: Mixed Sulphur butterflies, including Sleepy Oranges and Southern Dogface, *Zerene cesonia* (Stoll, 1790), puddling as a club on moist soil with a gravel veneer. JVL

Arizona Sister
Adelpha eulalia
(Doubleday, 1848)
Hodges #4527.1

The Arizona Sister is still considered a subspecies of the California Sister (*Adelpha californica*) by some authorities. There are definitely two geographically separate regions in which the "California Sister" is found. One area is west of the Cascades and Sierra Nevada (if split into two species, this is *Adelpha californica*). The other, separated by the Mojave Desert from *A. californica*, is the species shown here. Its range extends southward through the Great Basin and includes most of Arizona and New Mexico as well as parts of Texas and much of Mexico. The individual shown above was photographed by James Von Loh while it was taking nutrients from bedrock surfaces of the Soledad Canyon Waterfall.

The Arizona Sister is generally associated with oaks and oak habitat, as occurs in upper Soledad Canyon and along the arroyo at the trailhead in the Organ Mountains and in the canyons of the Black Range.



Arizona Sister photographed in Railroad Canyon, Black Range, July 2017. RAB

Butterfly identification must often rely on subtle differences and features are not always apparent on both sides of the wing.

Lilac colored line is distinct, straight, and strongly colored in the Arizona Sister. In the California Sister this line is less distinct.

The California Sister has an orange line at this location, this Arizona Sister does not.

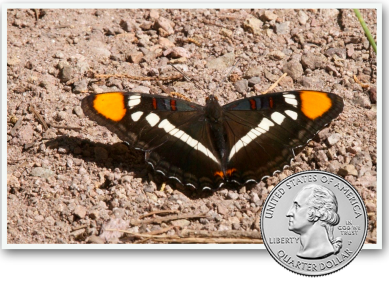
The adult Arizona Sister feeds on rotting fruit, mud, and water. It is seldom found on flowers.

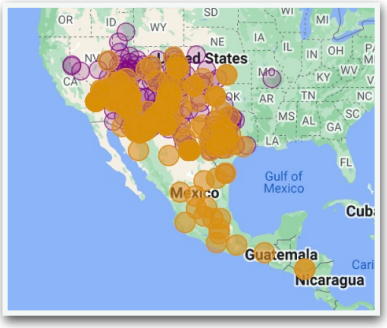
The caterpillar stages are found on various species of oak (Gambel's, Arizona, and Emory - probably others).

It is distinguished from Bredow's Sister (*Adelpha bredowii),* which is found in Mexico and not the United Staters. At one time, *A. bredowii* was the nominate subspecies of a species which included *A. eulalia* and *A. californica*.

Within Mexico, the Arizona Sister is found well south in the Sierra Madre. It is often found at elevations between 5,000' and 8,500' in New Mexico.

There are often three flights a year in our area and the three life cycles may overlap (one is at one stage of the cycle while another is at a different stage.)





Range Map of *Adelpha eulalia* - Arizona Sister
From sightings reported to Butterflies and Moths of North America.

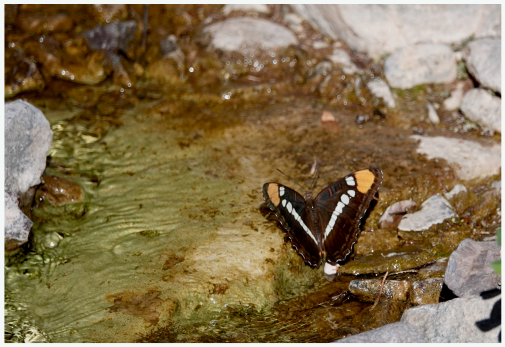
Range Map of *Adelpha californica*
California Sister
From sightings reported to Butterflies and Moths of North America.

Edward Doubleday
(1810-1849)

Doubleday probably never saw a live Arizona Sister (or *A. bredowii* either). He was a well known, British entomologist who did research in upstate New York during a short period in the United States. He helped establish the substantial butterfly collection at the British Museum.

Two of his major works are *The Genera of Diurnal Lepidoptera* (2 volumes) and *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum* (35 parts).

Photos in left column and at top right: Arizona Sister, Drummond Canyon, East slope of Black Range, September 29, 2018. RAB



Arizona Sister, July 10. 2017 North Percha Road (FR-157) north of NM-152. RAB

Other References (Arizona Sister)

- Fundamental differences between the California Sister and the Arizona Sister
- Pajarito Environmental Education Center
- BugGide

Above: Gulf Fritillary, photographed at Lake Valley in the Black Range of New Mexico by Debora Nicoll

Gulf Fritillary
Agraulis incarnata
(Linnaeus, 1758)
Hodges #4413

Depending on the reference you have at hand, this species may be listed as *Dione vanillae* or *Agraulis vanillae* (Linnaeus, 1758).

In January 2022, Rayner Núñez, et al published the findings of research they had conducted on *Agraulis* and *Dryas* in "Integrative taxonomy clarifies species limits in the hitherto monotypic passion-vine butterfly genera Agraulis and Dryas"; by Rayner Núñez, Keith R. Willmott, Yosiel Álvarez, Julio A. Genaro, Antonio R. Pérez-Asso, Marina Quejereta, Thomas Turner, Jacqueline Miller, Christian Brévigon, Gerardo Lamas, and Axel Hausmann; *Systematic Entomology,* The Royal Entomological Society, 47:152-178, 2022. Both *Agraulis* and *Dryas* had been treated as monotypic prior to the study. The cited study found seven species of *Agraulis* and four species of *Dryas*.

Gulf Fritillary caterpillar on *Passiflora caerulea*.
Photographed by Margie Gibson in Silver City, Grant County, N.M.

The initial draft of this *Sampler* was well underway when the study by Núñez et al. became better known. (See "DNA Barcoding and Those White-haired Black Caterpillars", *The Black Range Naturalist*, Vol. 6, No. 2, for an extended study of "knowing" when "knowledge" is continually evolving.) From an editor's perspective, it meant a lot of work; substance, the order of pages, page cites, etc. etc. had to be changed because the species had been listed as *Dione vanillae* (with a nod to *Agraulis vanillae*). Reordering of the *Sampler* was in order. I threw up my hands, it was late, I was tired, and decided to give it up for the day. The following morning, I awoke to possibilities, lots of possibilities. An integral part of the initial article on this species dealt with the work of Maria Sibylla Merian, if you read on you will be immersed in sausage making.

Natural History research can be a painstaking undertaking. The study of insects can be tedious, eye straining, and physically demanding. If you were a woman in the 1600's it is not something you did. But Maria Sibylla Merian did; in fact, she was one of the very first naturalists to study insects in the wild. To top it off, she ventured from Amsterdam to what was then Dutch Suriname in 1699 to do some of her most famous field work. The plate to the right shows the complete life cycle of the Gulf Fritillary. Showing the complete life cycle of an insect was a ground breaking concept. The plate is from her book *Metamorphosis Insectorum Surinamensium* about the insects of Suriname, published in 1705.

To understand how hidebound the world was at the time when she was working, she was not allowed to work in oil to create her images, because she was a woman.

Linnaeus named this species *Papilio vanillae* in 1758, based on Merian's painting of the species. It is he, not Merian, who is credited with the original description of the species.

In 1835 Boisduval & Le Conte moved the species to the genus *Agraulis*.

Plate XXV from Merian's *Metamorphosis Insectorum Surinamensium*.

The portrait of Merian, painted by Jacob Marrel, dates from 1679.

METAMORPHOSIS
INSECTORUM SURINAMENSIUM.
OFTE
VERANDERING
DER
SURINAAMSCHE
INSECTEN.
DOOR
MARIA SIBYLLA MERIAN.
TE AMSTERDAM,

In 2019, *Agraulis* was made a subgenus of *Dione*, based on a phylogenetic study.

Zhang et al, 2020, proposed a split of *Agraulis* and the elevation of *Agraulis incarnata* to a full species after analyzing COI barcodes and nuclear genomes. ("Genomic evidence suggests further changes of butterfly names"; *Taxonomic Report*, 8(7), 1-41.)

The study by Núñez et al. (2022) reordered *Agraulis* completely, the genus went from monotypic (but with eight recognized subspecies) to a genus of seven species. And it was not a case of thoughtless splitting. The new taxonomy explains many a puzzle. *Agraulis vanillae incarnata* was described as a subspecies by Riley in 1926.

Knowledge is never complete. Among the techniques utilized by Núñez et al. were detailed analysis of morphological "landmarks" on the wings. Significant sample sizes of wing markings underwent vigorous statistical analysis (using several different methodologies as cross checks). Findings like "Overall FW (forewing) deformation implies that males have a broader wing compared to females. This is due to the displacement of the wing base and the veins ending at the tornus, landmarks 1-4 (Figs 3, S10). As noted above, in males the origin of the Cu1 vein, landmark 16, is much closer to the end of cell whereas in females it is near the middle (Fig. 3). This trend is also present in each taxon when analysed separately (Figure S11A). On the HW, sexual dimorphism is almost indistinct . . ."

Technological and methodological advancements have extended our umvelten (see the discussion in *BRN 6-2, The Immense World book review*). The utilization of ever increasing precision in the analysis of species morphology (to include genetic attributes) allows us to draw ever more nuanced distinctions. In the case of this study, the distinctions made seem appropriate. Such a conclusion may not apply to all cases using similar techniques, however. Ultimately, the individuals of a species and the actions they take determine speciation. The differences between individuals, identified by our ever more advanced technological and methodological tools, may not be obvious to individuals of the species concerned. Even if they are obvious, they may not cause individuals to make different reproductive choices. (This is not a criticism of current methodologies per se, the same argument can be advanced when assessing the species determinations made throughout the time humans have made such determinations.)

Agraulis Boisduval and Le Conte, [1835]
Agraulis incarnata (Riley)
    Agraulis incarnata incarnata (Riley)
        Dione vanillae incarnata Riley, 1926: 243
    Agraulis incarnata nigrior Michener
        Agraulis vanillae nigrior Michener, 1942: 7
Agraulis vanillae (Linnaeus)
    Papilio vanillae Linnaeus, 1758: 482
Agraulis forbesi Michener, **new status**
    Agraulis vanillae forbesi Michener, 1942: 3
Agraulis insularis Maynard, **reinstated status**
    Agraulis insularis Maynard, 1889: 89
Agraulis maculosa (Stichel), **new status**
    Dione vanillae maculosa Stichel, [1908]: 18
Agraulis lucina C. Felder & R. Felder, **reinstated status**
    Agraulis lucina C. Felder & R. Felder, 1862: 110
Agraulis galapagensis Holland, **new status**
    Agraulis vanillae var. *galapagensis* Holland, 1890: 194
Agraulis sp. (undescribed species)

The species taxonomy described by Núñez et al. (2022) found the species shown above (from the cited work).

The original draft of this article contained the following:

Even the Great

> **Even the great are not infallible. Merian's painting shows the caterpillar on a vanilla plant. It is now known that this species does not use the vanilla plant for nutrition or as a place for its chrysalis. (Ed.: Although it may be an accurate depiction of the natural history of the species, it doesn't necessarily mean that she did not see this in nature at some time.)**
>
> **The species, however, retains its specific epithet, *vanillae*.**

There are two issues tied up in these two paragraphs.

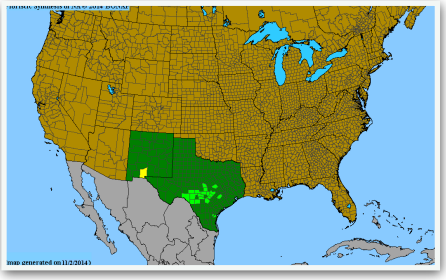
Firstly, the notation on the specific epithet is still correct, but diminished. The species known to Merian, the species found in northern South America, retains the epithet *Agraulis vanillae*. Previously, this species was classified as the nominate subspecies *A. v. vanillae*.

Secondly, others have mismatched the host plant and the butterfly larvas shown on them. For instance, John Abbot in his drawings from 1816-1818, for William Swainson, showed erroneous hostplants in (at least) his depictions of *Papilio palamedes* (the Laurel Swallowtail, found in the south-eastern United States) and *Asterocampa clyton* (the Tawny Emperor found in eastern North America). These errors persisted for decades.

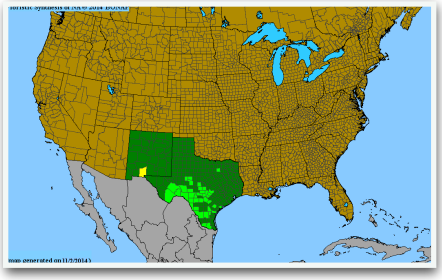
***Agraulis* are *Passifloraceae* (*Passiflora*, passion flower) specialists. The larva of *Agraulis incarnata*, the species found in our area, uses *Passiflora incarnata, P. lutea, P. suberosa, P. foetida,* and possibly other *Passifora* as host (food) plants for its larva. This species also uses Buttonsage, *Lantana involucrata*, as a larva host plant.**

John Abbot's depiction of *Agraulis vanillae* (now *A. incarnata*). From the University of South Carolina Irvine Department of Rare Books and Special Collections (John Abbot Watercolors of Lepidoptera of the South East)

We have gone afield to obtain an image of the chrysalis of this species. The one shown here was photographed by Colton Price in Houston, Texas. The pupa is on a *Passiflora* vine. The image is posted on iNaturalist as *Dione vanillae*. It is shown under a Creative Commons license.



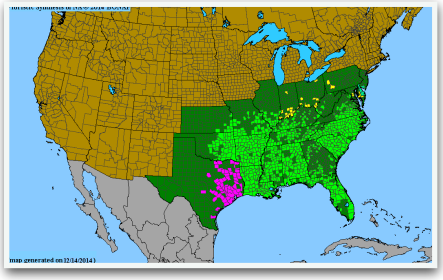
***Passiflora affinis* - BONAP - retrieved 4/7/2023.**



***Passiflora tenuiloba* - BONAP - retrieved 4/7/2023.**

BONAP indicates that *P. affinis* and *P. tenuiloba* are present and native in New Mexico based on specimens from Doña Ana county, where it is listed as rare (yellow color). *Passiflora incarnata* is not found natively in New Mexico.

Steve Cary, at his wonderful site on New Mexico Butterflies, lists this species as Dione vanillae (4/7/2023). He notes that the species regularly wanders to the southern counties of New Mexico and that larva have been recorded in Alamogordeo, on *Passiflora*. The site includes photographs of larva on what appear to be non-native *Passiflora (but not P. incarnata.)*



***Passiflora incarnata* - BONAP - retrieved 4/7/2023.**

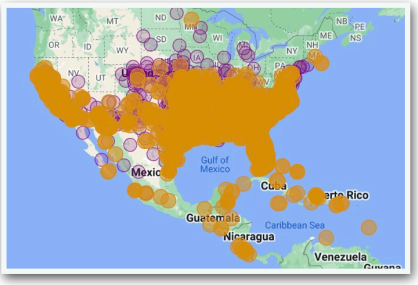
Adults nectar on a variety of species, including; *Lantana*, Shepherd's Needle (*Scandix pecten-veneris*), *Cordias*, composities, and other flowers.

***Lantana* is also used as a larva host plant. Only one species of *Lantana, L. urticoides*, is known natively from New Mexico (Grant County).**

Scientific Name	Collector	Number	Date	Country	State/Province	County	Locality
Passiflora inamoena A.Gray	C. Wright	1084		U.S.A.	New Mexico		
Passiflora tenuiloba Engelm. ex A. Gray	Charles C. Parry	393	1852-09-10	United States	New Mexico		Valley of Rio Grande below Donna Ana
Passiflora tenuiloba Engelm. ex A. Gray	John Milton Bigelow	393	1852-09-00	United States	New Mexico	Doña Ana	Dona Ana Co.
Passiflora tenuiloba Engelm. ex A. Gray	Charles (Carlos) Wright	1383	1852-00-00	United States	New Mexico		
Passiflora tenuiloba Engelm. ex A. Gray	Charles (Carlos) Wright	171		United States	New Mexico		
Passiflora tenuiloba Engelm. ex A. Gray	Charles (Carlos) Wright	1083	1851-00-00	United States	New Mexico		N. Mexico
Passiflora affinis Engelm.	Charles C. Parry	s.n.		United States	New Mexico		Dona Ana County.
Passiflora tenuiloba Engelm.	C. Wright	1383	1852-00-00	United States of America	New Mexico		
Passiflora inamoena A.Gray	C. Wright	1084	1851-00-00	United States of America	New Mexico		
Passiflora caerulea L.	Holmes, Cyndie	1684	1996-08-27	United States	New Mexico	San Juan	Near La Boca, Colorado. Los Pinos River area. One mile south of Colorado border.

***Passiflora* species are not common in New Mexico. See the listing from SEINet above (retrieved 4/7/2023 - *Passiflora* + New Mexico) and the BONAP distribution maps above.**

It is possible that *Agraulis incarnata* uses other plant species as larva hosts and it probably uses species not listed above as nectar sources. The range map shown below is not completely accurate since *A. incarnata* was elevated to a full species.



Range Map of *Dione vanillae*
Gulf Fritillary
From sightings reported to
Butterflies and Moths of North America.

The range depicted, within the United States and Mexico remains quite accurate however.

My first take on the western range of the species, as indicated on the map, was that *A. incarnata* must utilize more larva host plants and nectar sources than is described in the literature. However, Art Shapiro, who has studied the butterflies of California for more than 45 years notes "*This butterfly has no native host plant in California and is entirely dependent on introduced species of the tropical genus Passiflora (Passion Flower, Passion Vine), including the common Maypop (P. incarnata) and P. X alatocaerulea. However, it will not eat all of the Passiflora in cultivation in California.*"

Is this a case where range extension is due entirely to human intervention and the planting of non-native plants? The species was first found in Southern California in the late 1800's and was noted in the San Francisco area by 1908.

Is it possible that *A. vanillae* is found in association with species of vanilla plant? Probably not, but the absence of observation does not mean that it doesn't happen. (Although Merian probably took a bit of artistic license in her depiction of the species it can be difficult to admit that your heroine is human.)

The question of how "hard-wired" individuals are in their preference for "X" is becoming increasingly important given the significant (and swift) changes to the environment which we are experiencing. Species (phenotypic) plasticity will likely be the key to their likelihood of survival. In "From the butterfly's point of view: learned colour association determines differential pollination of two co-occurring mock verbains by Agraulis vanillae", M Eugenia Drewniak, Adriana D Briscoe, Andrea A Cocucci, Hernán M Beccacece, Adriana I Zapata, and Marcela Moré determined that *A. v. maculosa* could be trained to prefer certain plant flower colors. (*Biological Journal of the Linnean Society*, Volume 130, Issue 4, August 2020, pages 715–725). This subspecies has now been elevated to a full species, *A. maculosa*. It is found south of the range of *A. vanillae* (Argentina into Brazil).

Núñez et al. (2022) note the "distribution of most taxa includes contact zones or very closely abutting ranges . . . All named South American taxa and *Agraulis* sp. are in contact or in very close proximity with at least one congener."

Proximity always raises the question of "where do you draw the line"? In a cline of differences where is there a difference? COI barcodes are generally thought to indicate distinct species when the genetic distance is around 2%, but some species distinctions have been made when the genetic difference is as low as 1%, because separate species were found appropriate by the other methodologies used at the time. Note that "genetic distance" does not translate directly to "genetic difference", a genetic difference of 2%, for instance, could indicate that different "families" are involved - a very significant difference.

Utilizing an analysis of genetic distance the study determined that *A. incarnata* evolved into a separate species at least 2.8 million years ago and perhaps as much as 8.59 mya.

The cited study notes that "*Hypotheses explaining speciation and the present day distribution of Agraulis species require further research, but likely include adaptation to the different habitat types, colonization of new areas followed by periods of isolation and posterior range expansion.*"

When we think about butterflies, smell is not often one of the topics which comes readily to mind. But smell plays an important role in the lives of butterflies. For instance, the Gulf Fritillary will emit foul smelling chemicals when it encounters a predator. Chemical defenses are fairly common in *Lepidoptera*, including the ability of many species to sequester toxic substances contained in the plants the instar eats, making both the caterpillar and adult noxious, if not poisonous, to predators.

A substantive discussion of chemical defenses in this species and others can be found in "Variation of chemical compounds in wild Heliconiini reveals ecological factors involved in the evolution of chemical defenses in mimetic butterflies". (Ombeline Sculfort, Erika C. P. de Castro, Krzysztof M. Kozak, Søren Bak, Marianne Elias, Bastien Nay, and Violaine Llaurens; *Ecology and Evolution*, 13 Feb. 2020). The authors note that "*These neotropical butterflies contain large concentrations of cyanogenic glucosides, cyanide-releasing compounds acting as predator deterrent. These compounds are either de novo synthesized or sequestered from their Passiflora host plant, so that their concentrations may depend on host plant specialization and host plant availability.*"

Passiflora is not simply a (food) host plant for this species. It is integrated into all elements of the natural history of the species. Such a tight association may diminish the phenotypic plasticity of a species.

All of this because of a name change.

If you encounter *Agraulis incarnata*, at any life stage, please document the event, noting the type of plant that you found it on and let us know. Also, if you encountered either of the two native *Passiflora* species please let us know about that. Thanks.

- Bob Barnes
rabarnes@blackrange.org

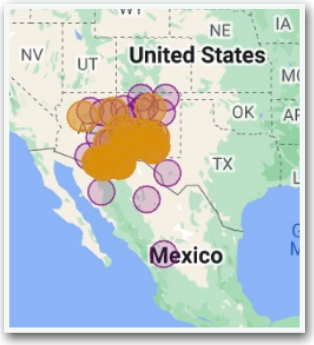
Cassus Roadside-Skipper
Amblyscirtes cassus
(W. H. Edwards, 1883)
Hodges # 4090

As with many butterflies, the dorsal and ventral view of the wings is very different.

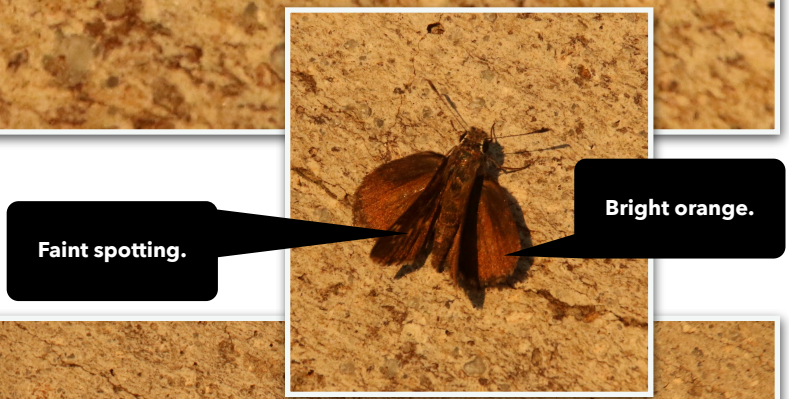
This species is typically found within the 5,400′ to 9,200′ elevation range. The individual shown here was photographed along NM-152 west of Kingston, just above the 7,000′ elevation mark. It is often found in pine woodlands with lots of understory grass.

There has only been one annual flight recorded, between late May and late August, peaking in July.

The Cassus Roadside-Skipper is threatened throughout its range of NM-AZ-West Texas south into northern Mexico.



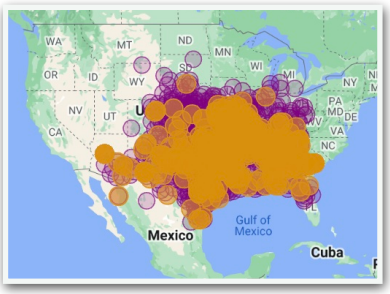
Range Map of *Amblyscirtes cassus* - Cassus Roadside-Skipper from sightings reported to [Butterflies and Moths of North America](#).



The Goatweed Leafwing, *Anaea andria* (Scudder, 1875) would be an excellent sighting in the Black Range. Many butterfly species are known to wander - keep your eyes out. This individual was taking nutrients from gravel along the creek below the La Cueva parking lot. This individual is a male. GB

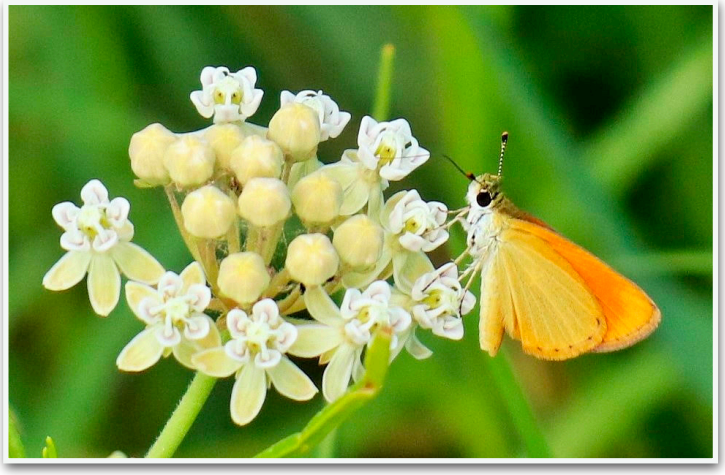
Goatweed Leafwing
Anaea andria
(Scudder, 1875)
Hodges # 4554

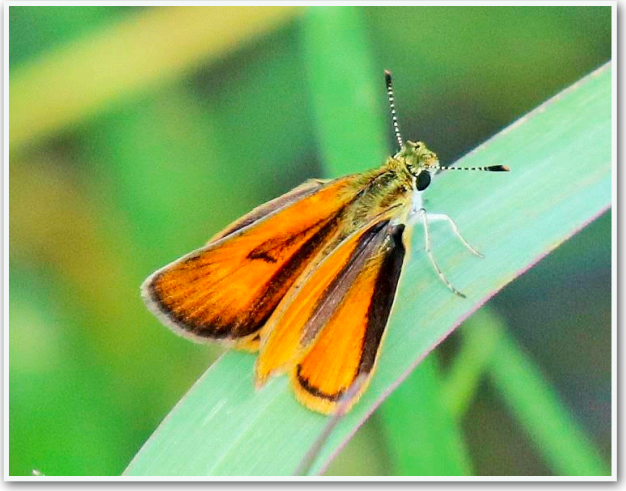
As with many butterflies, the dorsal and ventral view of the wings is very different. When the ventral side of the wings of this species are displayed they look very much like a dead leaf - thus its common name.

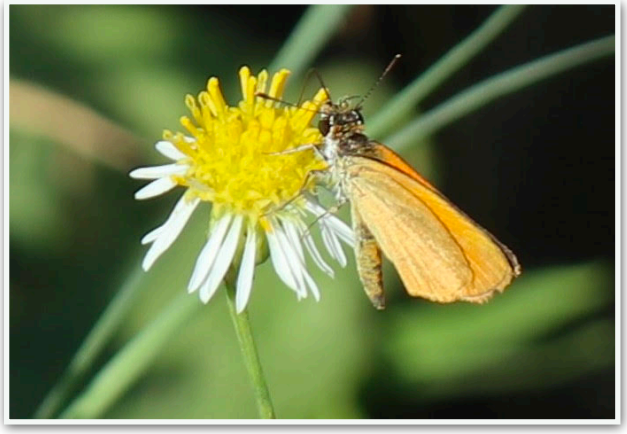


Range Map of *Anaea andria* - Goatweed Leafwing
From sightings reported to [Butterflies and Moths of North America](#).

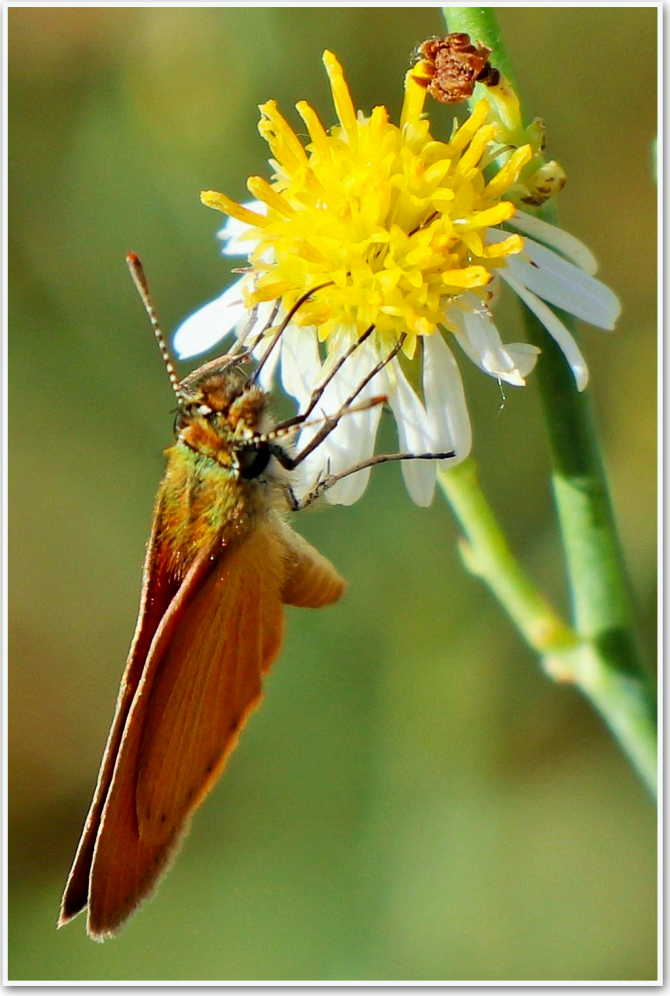
Tropical Least Skipper
Ancyloxpha arene
(W. H. Edwards, 1871)
Hodges #4005

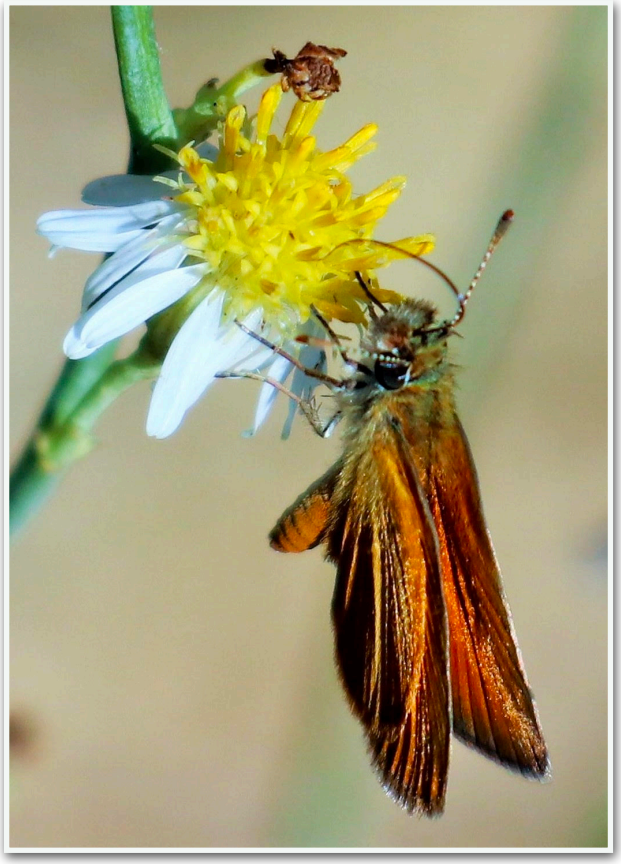






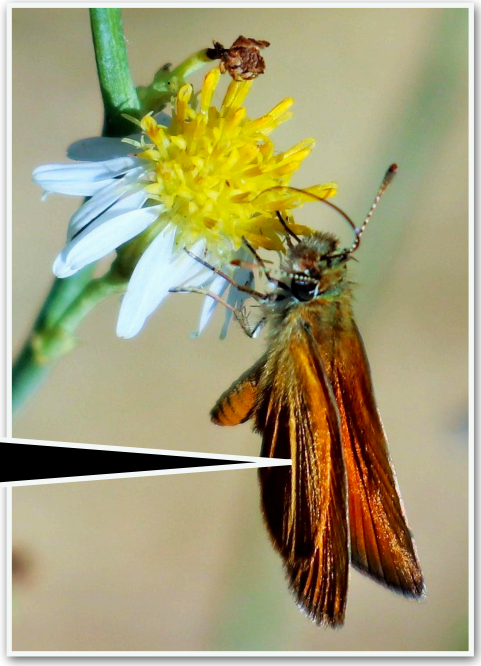
Top: Tropical Least Skipper nectaring from Horsetail Milkweed flowers (left) and perched on Johnson grass in a stand of Horsetail Milkweed (right). This species has rarely been documented, and when seen it is typically at the beginning of the Milkweed flowering period. JVL





Tropical Least Skipper on June 2 (left and right) and June 14 (center right). JVL

Range Map of *Ancyloxypha arene* -
Tropical Least Skipper
From sightings reported to
Butterflies and Moths of North America.



Skippers have two sets of wings which look like they are set on top of each other, rather than in a forewing and hindwing configuration.

Adults nectar from a variety of low growing plants while the caterpillar use *Echinochloa crusgalli, Polypogon viridis, Polypogon monspeliensis* and *Paspalum distichumas* as food hosts (see *Polypogon virdis* on the Vascular Plants of the Gila Wilderness website).

Skippers have significant muscles at their thorax to enable their rapid flight with quick alterations in trajectory.

Other Resources

Pajarito Environmental Education Center

PEEC - The Pajarito Environmental Education Center
(Los Alamos Nature Center)

The PEEC is a premier natural history resource in New Mexico. They are worthy of your support - take a look at their website, it is impressive. Steve Cary, Michael Toliver, and others have established a phenomenal resource in their "Butterflies of New Mexico" section of the website. As noted in their introduction:

> **New Mexico is home to more than 300 different butterfly species, placing it in the top three states for butterfly species richness, alongside Texas and Arizona. Admittedly, various excellent published field guides (including Glassberg 2017 or Brock and Kaufman 2003) already cover all of New Mexico's species. Comprehensive online resources exist as well, including www.butterfliesandmoths.org (Butterflies and Moths of North America (BAMONA)) and http://butterfliesofamerica.com (Butterflies of America). One consequence of their continental or hemispheric geographic scope, however, is that they compromise on local details. For New Mexico, or any other state, they do not provide all of the hows, whys and wheres, the details one typically needs to actually go out and find, study or photograph many of those butterflies . . . This present work will fill in some of the missing and critically interesting geographic details. When 'Species A' looks different in New Mexico compared to California or Florida, this site/book will illustrate that by using New Mexico images wherever possible; I think that will prove to be more than 90 percent of the time.**

Oslar's Oakworm Moth
Anisota oslari
(Rothschild, 1907)
Hodges #7722

This species is found in southern parts of New Mexico and Arizona, west Texas, and Chihuahua. Larva of the species feed on oak species, including Emory Oak.

Synonyms include: *A. neomexicana* and *A. skinneri*.

The photographs on this page were taken by Véronique De Jaegher in Kingston, N.M.

Caterpillar photographs on this and the following page were taken along the Kingston Cemetery - Emory Pass Trail, Black Range on October 11, 2022. RAB

Other Resources

- Butterflies and Moths of North America
- BugGuide
- North American Moth Photographers Group
- Moths of the Gila National Forest

Range Map of *Anisota oslari* - Oslar's Oakworm Moth From sightings reported to Butterflies and Moths of North America.

Female *Anisota oslari* from Ron Parry's website, Southwestern Moths.

White Angled-Sulphur
Anteos clorinde
(Godart, 1824)
Hodges #4266

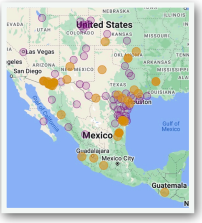
Nichole Trushell took the photograph below in Kingston on September 25, 2010. She has not seen it there since that time.

Bob Sivinski took the photograph on the following page at Emory Pass, Black Range, on August 8, 2011.

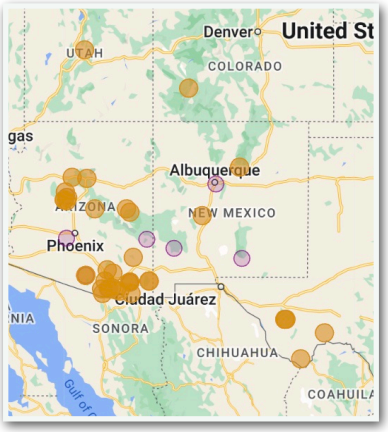
There are only a handful of sightings of this species in New Mexico. It generally is found in South America (as far south as Argentina), north through Central America and Mexico. It is sometimes seen as a stray in a small bit of southeastern Arizona and the lower Rio Grande valley. There are two subspecies. Based on range this is most likely *A. c. nivifera*.

Note the angle of the antenna in both photographs.

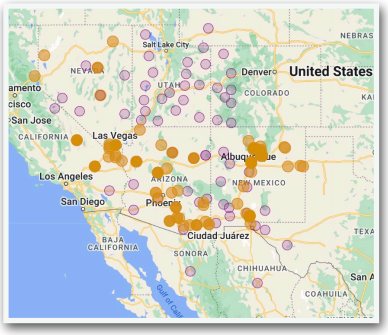
The range map below was generated from sightings reported to Butterflies and Moths of North America (BMNA).



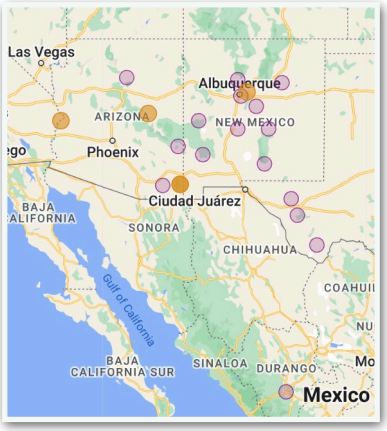
White Angled-Sulphur. Bob Sivinski took this photograph at Emory Pass on August 8, 2011.



Range Map of *Antheraea oculea*
Western Polyphemus
From sightings reported to
Butterflies and Moths of North America.



Range Map of *Anthocharis thoosa*
Southwestern Orangetip
From sightings reported to
Butterflies and Moths of North America.



Range Map of *Arachnis zuni*
Zuni Tiger-Moth
From sightings reported to
Butterflies and Moths of North America.

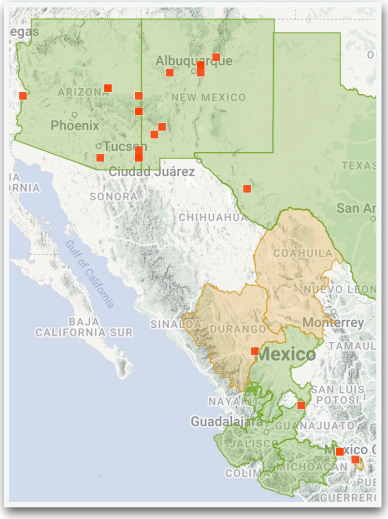
Range Maps

The range maps shown in this Sampler are based on the occurrences recorded in the Butterflies and Moths of North America data base. These sightings may be current or they may be historical (collections, etc.). In all cases they have been verified.

Because the maps depict individual sightings these maps do not always have that nice outline look which is depicted in some range maps, showing the boundary of the range and shading in everything within the boundary. This may lead you to conclude the species is found everywhere within those boundaries. There is utility in these maps but they suffer from a lack of detail. It is not true that a species which is only found above 8,000', for instance, is found everywhere within the boundary depicted - only above 8,000' within the boundary.

Because maps generated from data bases like those of Butterflies and Moths of North America reflect that data base, maps generated by different organizations will sometimes record different sightings. For instance, the following map is from the North American Moth Photographers Group. It documents the sightings within its data base, in this case for *Arachnis zuni*.

Because sightings are often reported to multiple data bases the maps generated by different organizations will often look very similar. The iNaturalist range map (see below), for instance, of *Arachnis zuni* looks similar to that generated by BMNA but is not the same.



These are all excellent maps, predicting which organization will have the most extensive set of sightings for a particular species, in its data base, is not always possible.

U. S. Coinage

The size of butterflies and moths varies within species, sometimes the individual range is significant.

We provide an indication of the size of the individuals shown in these photographs by placing an image of a coin from the United States next to the image. The diameter of American coins is shown below.

17.99 mm
(.7")

19 mm
(.75")

24.26 mm
(.95")

Western Polyphemus or
Oculea Silkworm
Antheraea oculea
(Neumoegen, 1883)
Hodges #7757.1

The photographs of Western Polyphemus shown here were taken by Tom Lander, in Kingston during June 2022. Some consider it a subspecies of *Antheraea polyphemus*.

See range map on page 41.

Southwestern Orangetip
Anthocharis thoosa
(Scudder, 1878)
Hodges #4206.2

The photographs of Southwestern Orangetip shown here were taken by James Von Loh. The top image was taken along the Bar Canyon Trail, the bottom one along Pine Tree Trail above the Aguirre Springs Campground. Both locations are in the Organ Mountains. In both cases the individual is taking nutrients from gravel and most soil.

The top image is of a female; if it were a male there would be more orange and black, and less white, in the wingtips.

This species of butterfly can be found early in the year, perhaps as early as February. Its "flight" may be over by April.

"Flight" is a term often encountered in discussions of butterfly species, as in "its flight may be over by April" or a species may have "three flights". Good luck trying to find a definition; you will be swamped by entries about butterfly flight, the mechanics thereof - a fascinating topic, but it has not much to do with what we are discussing here. A butterfly goes through several life stages (egg, larva, pupa, and imago). The adult, or imago, stage is what we call a butterfly (or moth). Before it dies, a female will probably lay eggs and the process will start over again. Each of these cycles can be said to end with an adult which flies. A "flight" is shorthand for the ending period of this cycle. Some species go through several "flights" in a year, some do not.

In the case of this Orangetip, there are two flights in a year (it is a "bivoltine" species). The first complete life cycle occurs between January and April, the second between May and July. Rarely do they overlap. But note, and this is a big note because natural history is not simple - some pupae of this species have been known to stay in that stage for three years.

Some authorities consider *Anthocharis thoosa* to be a subspecies of Sara Orangetip, *Anthocharis sara thoosa*.

Other Resources

- Butterflies and Moths of North America
- BugGuide
- North American Moth Photographers Group
- Pajarito Environmental Education Center

Zuni Tiger-Moth
Arachnis zuni
(Neumoegen, 1890)
Hodges #8150

The photographs of *Arachnis zuni* shown here were taken by Matilde Holzwarth, in Railroad Canyon, southwest of Hillsboro Peak, on June 8, 2012.

The hand on which the moth sits is that of her husband, Lloyd Barr.

Matilde and Lloyd were professors (pathology), researchers, and naturalists who explored the Black Range during most of the first two decades of the twenty-first century.

Southwest Fritillary
Argynnis n. nausicaa
(W. H. Edwards, 1874)
Hodges #4459.1

This species was, until recently, considered a subspecies of Atlantis Fritillary, *Speyeria atlantis*. Now it is generally placed in *Argynnis,* following a determination by Zhang et al. (2020) that Speyeria was a subgenus of *Argynnis*. At the same time, this butterfly was elevated to a full species *A. nausicaa*.

If you find a Fritillary in our area which looks like this, it is this species. The Pajarito Environmental Education Center website notes that "As a consequence of New Mexico's physiography, suitable habitats are isolated from each other by broad, unsuitable lowlands. As a result of isolation, multiple local regional populations have differentiated and are recognized as distinct subspecies." The subspecies typically found in the Black Range will probably be the nominate form, which apparently intergrades with *A. n. dorothea* in the Magdalena Mountains to the north.

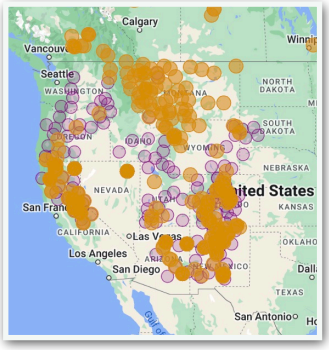
Violets are one host plant for this species. Adults feed on wet sand and nectar from a variety of flowers including rabbitbrush, mint, cinquefoil, and Gaillardia. Single eggs are laid in the leaf litter very near host plants. There is one flight per year, peaking during July and August. Violets are generally found between 7,500' and 10,000' in the Black Range, that helps to define where you are likely to encounter this species.

Southwestern Fritillary photographed in Railroad Canyon, Black Range, July 2017. RAB

The Butterflies and Moths of North America website notes that "unfed first-stage caterpillars overwinter, emerging in spring to feed on leaves".

Other Resources
(Southwest Fritillary)

- **Butterflies and Moths of North America (lists this species as *Speyeria hesperis* - unsplit)**
- **North American Moth Photographers Group (lists this species as *Argynnis hesperis* - genus change but unsplit)**
- **BugGuide (lists this species as *Speyeria hesperis* - unsplit but has an extensive discussion of taxonomic determinations)**
- **Butterflies of America (photographs limited to *A. n. greyi)***
- **Pajarito Environmental Education Center**



U. S. Range Map of *Speyeria hesperis* Northwest Fritillary (unsplit - see text) From sightings reported to Butterflies and Moths of North America.

Southwestern Fritillary photographed in Railroad Canyon, Black Range, July 1, 2018. RAB

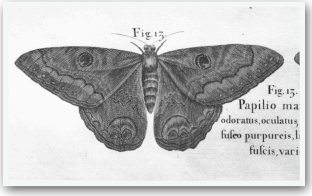
Black Witch
Ascalapha odorata
(Linnaeus, 1758)
Hodges #8649

Despite what you might assume from the range map below, this is primarily a tropical species, but one which wanders widely. Therefore, it is more likely to be found in the southern part of its range than in the northerly areas depicted on the map. The Black Witch is found southward into South America. It has been recorded as far north as Juneau, Alaska and Churchill, Manitoba.

Caterpillars feed on Cassia and *Mimosa aculeaticarpa* (Catclaw Mimosa or Wait-A-Minute Bush). Adults feed on tree sap and very ripe fruit.

Larva of *Ascalapha odorata* - Image by Forest and Kim Starr, shown here under provisions of a Creative Commons License, Attribution 3.

Range Map of *Ascalapha odorata*
Black Witch
From sightings reported to Butterflies and Moths of North America.



The original drawing of *Ascalapha odorata*, from A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica*: with the natural history of the herbs and trees, four-footed beasts, fishes, birds, insects, reptiles, &c. of the last of those islands; to which is prefix'd, an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. of that place, with some relations concerning the neighbouring continent, and islands of America. Illustrated with figures of the things described, which have not been heretofore engraved. In large copper-plates as big as the life*, Vol. 2, 1707, Hans Sloane, Table 236.

Southwest Canyon Spring, East side of the Black Range, July 6, 2017. RAB

Female Black Witch photographed in Hillsboro during July 2015. RAB

Bluish cast to wings may be visible

Pointed tips to wings

Note how different this live moth looks from pinned specimens like that at Pacific Northwest Moths.

Oval encircles two circular dots

Male lacks this light colored "V" marking

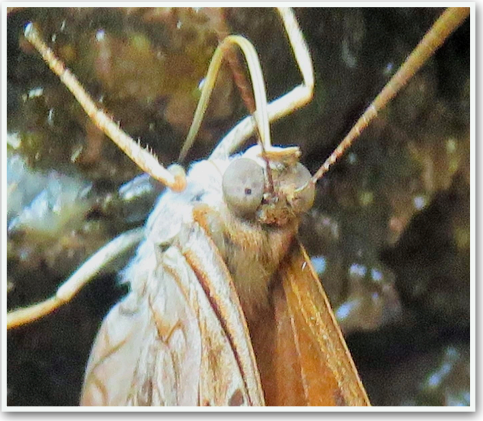
Not a "habitat specialist", often found on shaded human structures during the day.

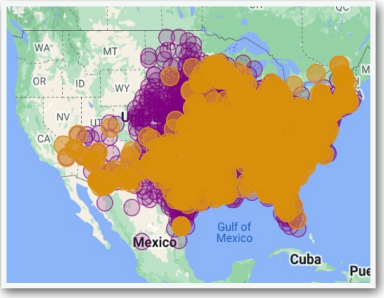
Other Resources

- Butterflies and Moths of North America
- BugGuide
- North American Moth Photographers Group
- Pacific Northwest Moths

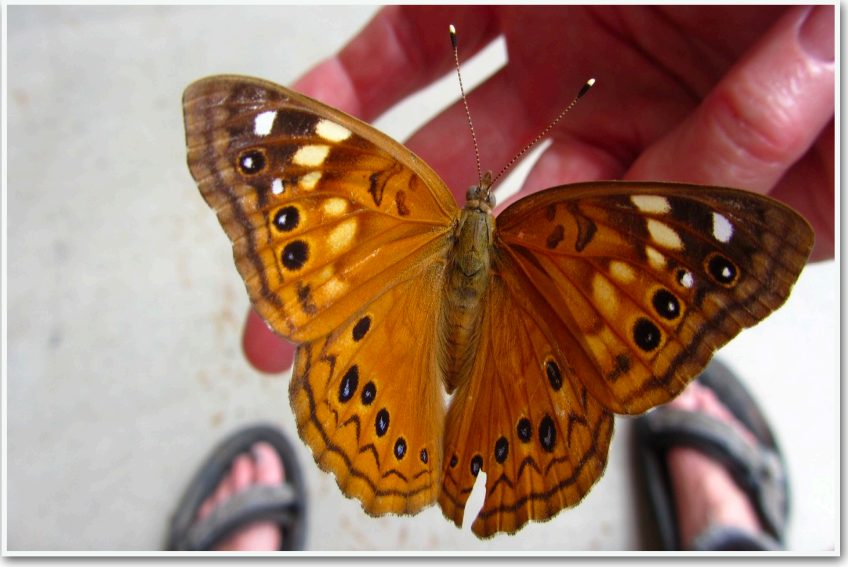
Hackberry Emperor
Asterocampa celtis
(Boisduval & Le Conte, 1835)
Hodges #4557

The Hackberry Emperors pictured directly below were taking nutrients from bedrock seeps in Soledad Canyon in the Organ Mountains. Both photographs are by Gordon Berman.



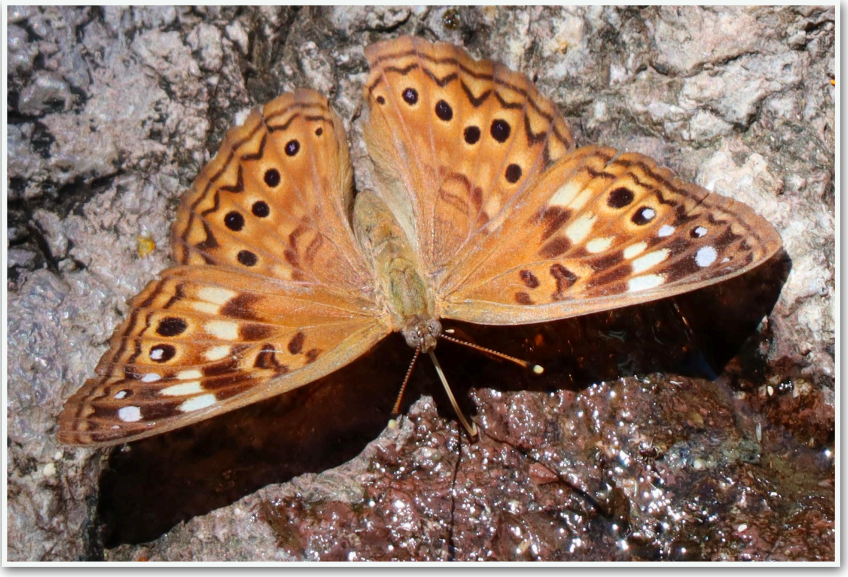


Range Map of *Asterocampa celtis*
Hackberry Emperor
From sightings reported to
Butterflies and Moths of North America.



Above: Hackberry Emperor, photographed in Lake Valley, Black Range, by Debora Nicoll.

On a site in Fillmore Canyon, the Hackberry Emperor, was documented extracting nutrients from domestic dog scat piles. JVL

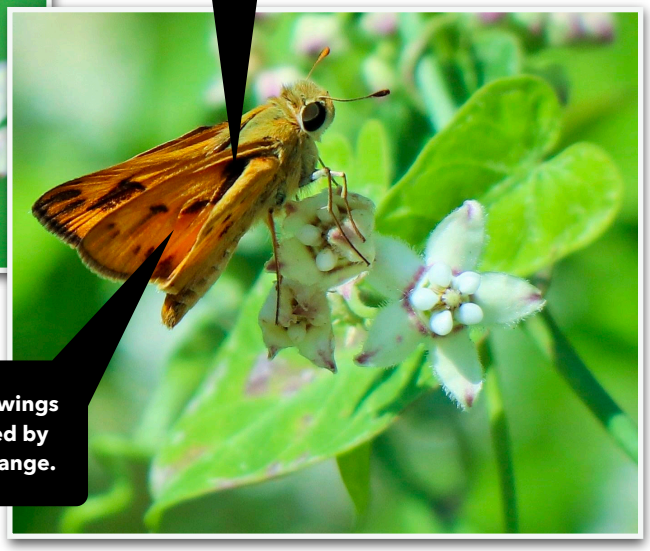


Above: Hackberry Emperor, taking nutrients from bedrock seeps of upper Soledad Canyon. JVL

Other Resources

- Butterflies and Moths of North America
- BugGuide
- Butterflies of America
- North American Moth Photographers Group

Hackberry Emperors will land on humans in search of salts. There is significant geographical variation in this species, some sources argue for multiple species.



Other Resources:

North American Moth Photographers Group
BugGuide
Pajarito Environmental Education Center
Butterflies and Moths of North America

Sachem
Atalopedes campestris
(Boisduval, 1852)
Hodges #4049

The variation in markings in the Sachems below is not just a function of ventral versus dorsal view of the wings. Some males have virtually no markings on their wings.

The Sachem is more common in the southern tier of the United States than in the northern tier. Its range extends southward all the way to Brazil.

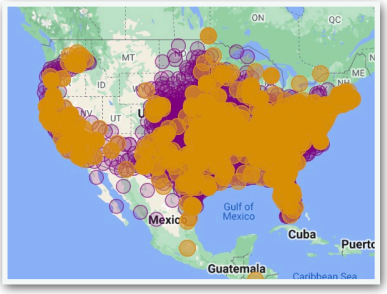
This species is often found on the ground, where the males wait for passing females. Females lay an egg (yes, single) on a grass blade, generally in the afternoon. The female will use multiple egg sites and the larva live at the base of the grass shoots. Bermuda Grass, crabgrass, St. Augustine grass, and goosegrass all serve as caterpillar host plants.

Because of its fondness of grasses, this species is often found in disturbed areas.

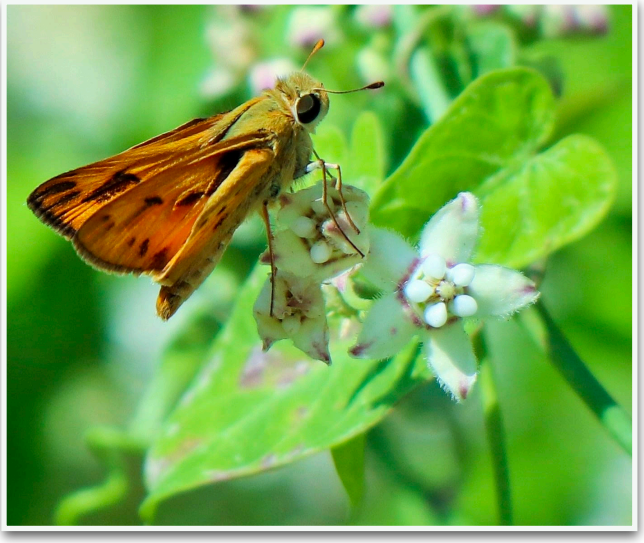
Boisduval

Jean Baptiste Alphonse Déchauffour de Boisduval (1799-1879) is cited as "Boisduval" in many butterfly species descriptions, indicating that he made the initial description of the species. He was a French lepidopterist and botanist. In the field of botany he is cited as "Boisd.".

Biological listings will often follow the common name and Latin binomial with the name of the person who initially described the species. For Sachem, Boisduval is listed, along with the year of the initial description. In the case of the Hackberry Emperor, both Boisduval and Le Conte are listed, indicating a joint effort.



Range Map of *Atalopedes campestris*
Sachem
From sightings reported to Butterflies and Moths of North America.



The Sachem Skipper is rarely observed. At left it is nectaring from Climbing Milkweed flowers, above on Horsetail Milkweed flowers. JVL

Sachem Skipper on Climbing Milkweed flowers. JVL

Texan Crescent
Athanassa (Phyciodes) texana texana
(W. H. Edwards, 1863)
Hodges #4476

Note that the rear of the forewing is indented just inside the tip of the wing.

This species has several broods per year in our area. The caterpillars of this species feed on species in the genus *Ruellia* (called wild petunias by some), *Justicia* (sometimes called Tube-tongues and/or false honey-suckle), and a few other species of the lowlands and desert where this butterfly is often found.

This species ranges as far south as Guatemala.

Synonyms for the species include *Melitaea texana, Tritanassa texana, Phyciodes texana, Eresia smerdis,* and *Eresia texana seminole*. In the realm of common names, it is also called the Texan Crescentspot. There are two subspecies, the nominate form is found in our area.

The original description from Wm. H. Edward's "Description of certain species of Diurnal Lepidoptera found within the limits of the United States and British America. No. 2" at p. 81 of *Proceedings of the Entomological Society of Philadelphia*, Vol. 2, No. 1, March, April, and May 1863, is shown below.

MELITÆA TEXANA, nov. sp.

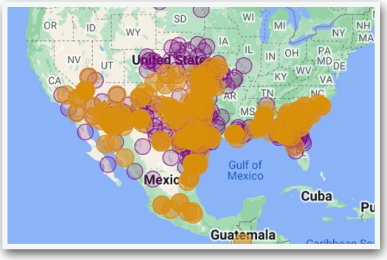
Male. Expands $1\frac{5}{10}$ inch. Upper side blackish brown, mottled with fulvous at the base of the wings, and sprinkled with small white spots; these form, on primaries, an interrupted sub-marginal line, and an abbreviated line of three spots from the costa, besides five or six others irregularly placed; on secondaries, a bent line across the disk and a sub-marginal row of faint crescents; fringe blackish, except in the emarginations, where it is white.

Under side: primaries ochrey-yellow next the base, and beyond, dark brown; the apex and hind margin paler brown; a sub-marginal row of crescents; the white spots re-appear of larger size.

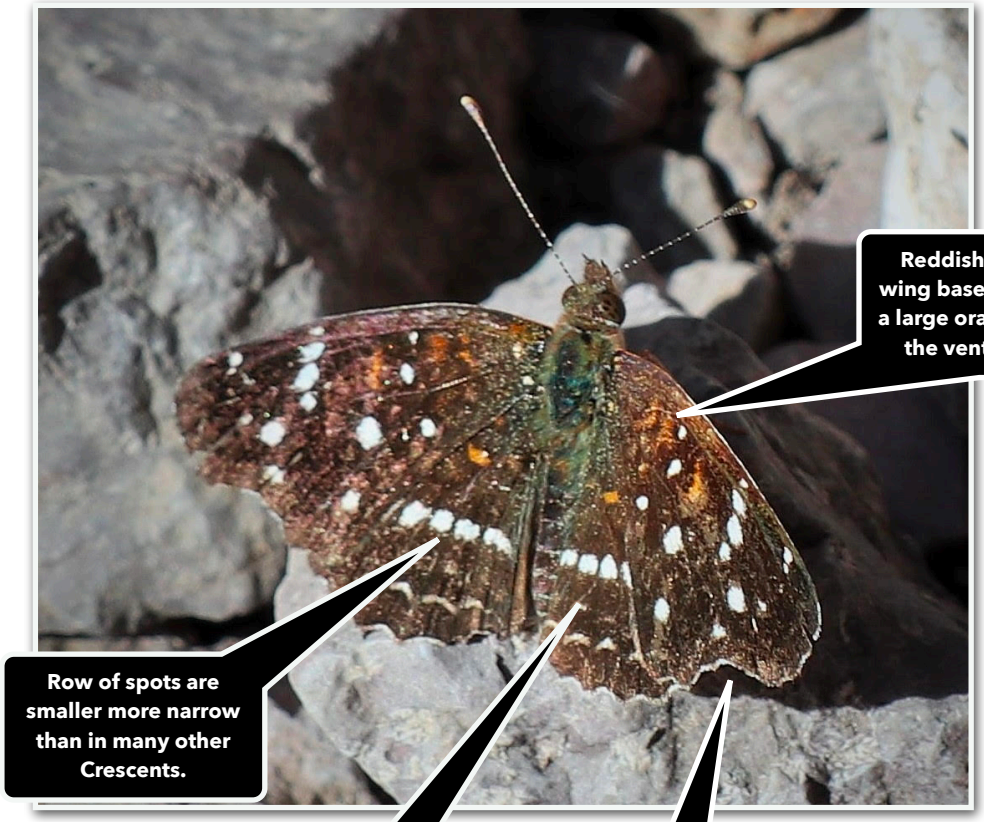
Secondaries buff next the base, reticulated with reddish-brown lines; a white band crosses the disk corresponding to the spots on upper side; beyond to margin clouded with brown, with a row of crescents, the third from the anal angle largest and whitish, all surmounted by blackish spots.

Texas.

Texan Crescent taking nutrients from cobble-covered moist soil near the Soledad Canyon Waterfall (James Von Loh).

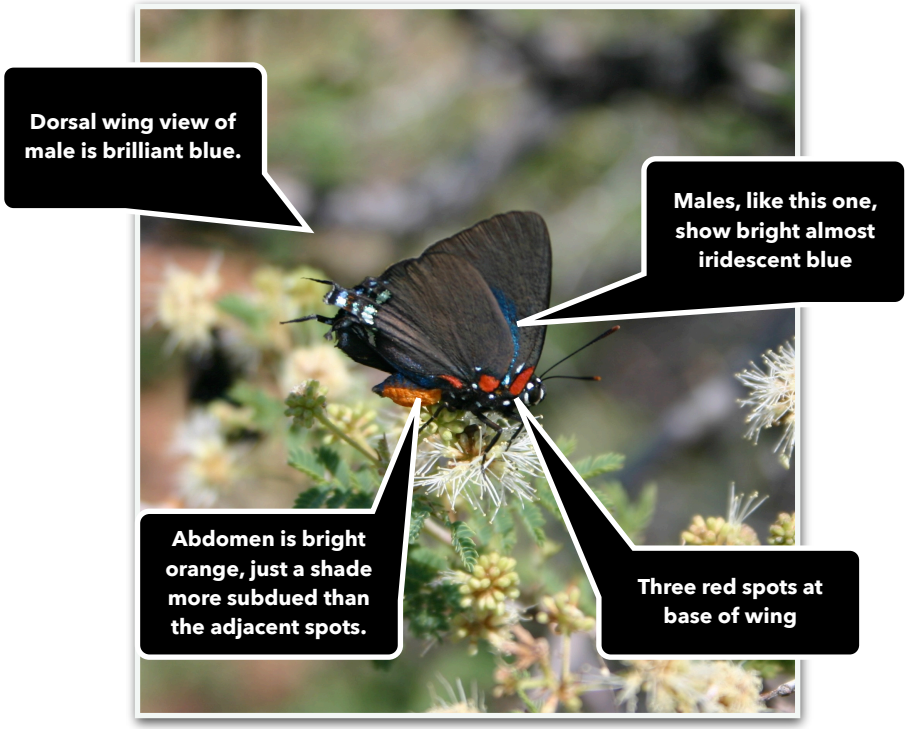


Range Map of *Athanassa texana*
Texan Crescent
From sightings reported to Butterflies and Moths of North America.



Other Resources (Texan Crescent)

- Butterflies and Moths of North America
- BugGuide
- Butterflies of America
- North American Moth Photographers Group



Other Resources (Great Purple Hairstreak)

- Butterflies and Moths of North America
- BugGuide
- Butterflies of America
- North American Moth Photographers Group

Great Purple Hairstreak
Atlides halesus
(Cramer, 1777)
Hodges #4270

Many copper and hairstreak instars look very similar. In the case of the fourth instar of the Great Purple Hairstreak, look for an obvious white diamond on the head (visible in the photo by Todd Stout to the right). Mistletoes on various hardwoods (cottonwood and mesquite, for instance) are the host plants for the instars. See: "The Insect Fauna of Mistletoe…In Southern Texas", by Paul L. Whittaker, *The Southwestern Naturalist* 29(4):435-444, Nov. 14, 1984.

Some sources refer to this species as the Great Blue Hairstreak.

Atlides halesus is found across the southern tier of the United States south to the southern part of Mexico. An excellent description of the natural history of this species is found on the University of Florida website.

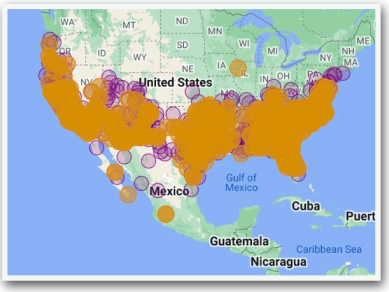
There are typically three flights, between March and December. Various mistletoe species serve as host plants for the caterpillars of this species.

This species is found as far south as Guatemala. It is typically found in wooded areas, especially those with mistletoe. Oak, mesquite, and walnut forests are common habitats.

Pieter Cramer
(1721 - 1776)

Pieter Cramer was a Dutch naturalist who is remembered as a significant entomologist. The documentation of his butterfly collection was printed in *De uitlandsche Kapellen voorkomende in de drie Waereld-Deelen Asia, Africa en America – Papillons exotiques des trois parties du monde l'Asie, l'Afrique et l'Amerique (1775–1782)* both prior to and after his death. Thus, the date of the original description of this species is one year after the original describer had died.

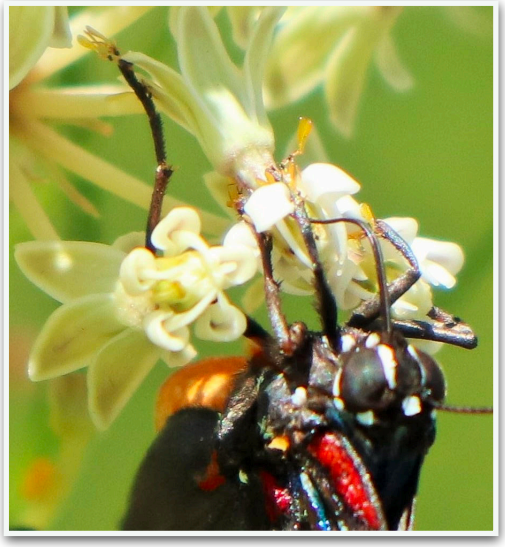
The type specimen of this species was shipped to Cramer from the Americas (apparently from Virginia). The species was depicted in the work cited above on plate XCVIII of Volume Two (see lower right). The painting was made by Gerrit Wartenaar. Caspar Stoll (ca. 1725-1791) completed the publication of the cited work, following the death of Cramer.



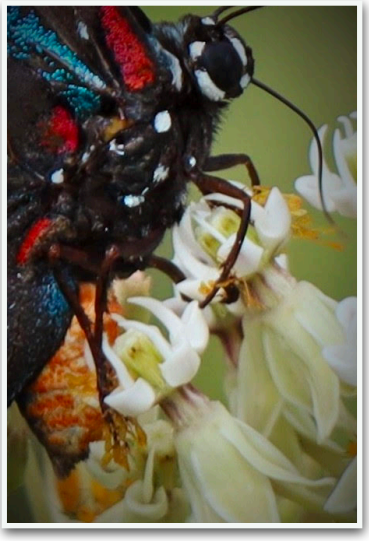
Range Map of *Atlides halesus* Great Purple Hairstreak From sightings reported to Butterflies and Moths of North America.

Instar photographs by Todd Stout, 4rth instar, accessed via Creative Commons License.

Atlides halesus, Great Purple Hairstreak nectaring on *Mimosa biuncifera* by Nichole Trushell, in Kingston, Black Range.



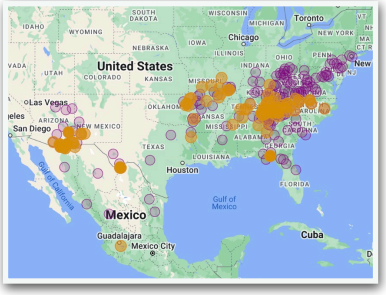
Great Purple Hairstreak nectaring from Horsetail Milkweed flowers. Close-up, to the left, of the several yellow pollinia/ pollen sacs attached to its feet; when present this species is likely an efficient pollinator of Horsetail Milkweed flowers.
Photo Above: Note several dark yellow Oleander Aphids, *Aphis nerii* (Fonscolombe, 1841) in the lower right corner, they are abundant on Horsetail Milkweed plants along the Rio Grande. JVL



Golden Banded-Skipper
Autochton cellus
(Boisduval & Leconte, 1837)
(Hodges #3902)

This butterfly is known as *Telegonus cellus* in some sources. The Golden Banded-Skippers, shown below were photographed in Railroad Canyon, Black Range, in July (2015, 2016, and 2017) RAB. In southern Arizona there is one brood (flight) from June-September; that is most likely representative of this area.

The New Mexico Locust, *Robinia neomexicana*, is a major host plant for the instars of this species. The number of locust plants in the Black Range increased dramatically after the 2013 Silver Fire, but there was not a noticeable increase in the number of Golden Banded-Skippers.



Range Map of *Autochton cellus* Golden Banded-Skipper From sightings reported to Butterflies and Moths of North America.

Sonoran Banded-Skipper would have a small whitish area near the tip of the antenna.

The lower spot is closer to the wing tip - in the Sonoran Banded-Skipper it is aligned vertically.

Spotted fringe of wing. Sonoran Banded-Skipper has much more distinct, and larger fringe pattern.

Range Map of *Autochton pseudocellus* Sonoran Banded-Skipper From sightings reported to Butterflies and Moths of North America.

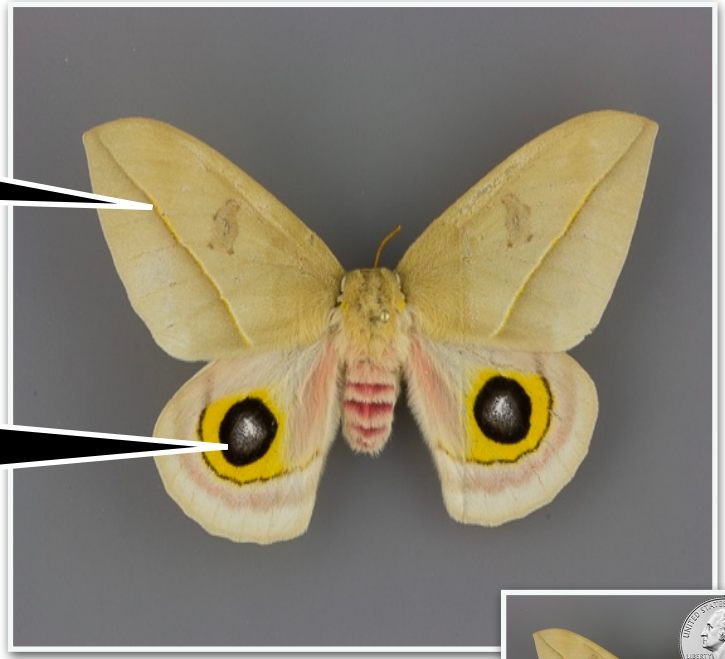
Range map for comparison. Sonoran Banded-Skipper is thought to be extirpated in the United States.

Other Resources (Golden Banded-Skipper)

- Butterflies and Moths of North America
- Butterflies and Moths of North America (Sonoran Banded-Skipper)
- BugGuide
- Butterflies of America (as *Telegonus cellus*)
- North American Moth Photographers Group (as *Telegonus cellus*)

Strong diagonal line.

Black eyespots surrounded by orangish-yellow.



Other Resources (Cecrops-eyed Silkmoth)

- Butterflies and Moths of North America
- BugGuide
- North American Moth Photographers Group
- Southwestern Moths

Cecrops-eyed Silkmoth
Automeris cecrops
(Boisduval, 1875)
(Hodges #7748)

This species is found from the southwestern United States (west of the Rio Grande) south into Mexico. There are three recognized subspecies. Early stage instars will often feed together as a group, but later stage instars are more solitary. Cecrops-eyed Silkmoth instars feed on Fendler Ceanothus, Catclaw Mimosa, Mountain Mahogany, willows (early stage instars), various oaks (later stage instars), and several other species. In this species, the instar is less selective about which host plant it feeds on than are many other species. The imago (adult moth) stage is not known to feed.

Moths versus Butterflies

"What is the difference between a moth and a butterfly?" is a frequently asked question. Sometimes it is clear that a species should be grouped with the moths and sometimes it is clear that it is a butterfly. But sometimes it is not and there is not single filter which you can use to place a flutterby you encounter. Flutterby is a spoonerism, named after W. A. Spooner (1844-1930). A spoonerism is a word/phrase in which the sounds of two or more of the main words are transposed. How would you like something like that to be named after you? Well, I digress, let's get back to determining what is a flutterby and what is a moth.

One myth is that the antenna is a good place to start. Moth antenna are often (not always) "feathery" and lack a ball of some type at the end of the antenna (club) which most butterflies have - some do not. Antenna structure cannot reliably be used to distinguish between a moth and a butterfly.

Another myth, that moths form cocoons (soft) and butterflies form chrysalis (hard). Again there are significant exceptions to the rule.

Moths generally, but not always, fly at night. Butterflies tend to fly during the daylight hours, often after it has warmed up a bit. Again, the simple rule is plagued by exceptions.

Sometimes, the estimated 160,000 moth species are thought of as small and nondescript. Some are. Many are quite large and a good many (small or large) are beautiful.

Sorry to say, there is no hard and fast rule which can be used to separate the two, they are all *Lepidoptera*. Disagreements about the taxonomic relationships between butterflies, skippers, moths, and others continue in the most hallowed halls (see Kawahara AY, Breinholt JW. 2014 "Phylogenomics provides strong evidence for relationships of butterflies and moth", *Proc. R. Soc. B* 281: 20140970. http://dx.doi.org/10.1098/rspb.2014.0970).

Special thanks to Eric Metzler for commenting on this issue.

This caterpillar of the Cecrops-eyed Silkmoth, *Automeris cecrops*, was photographed by Nichole Trushell.

Ron Parry's Website

Our region has many locally grown, comprehensive, and authoritative resources close at hand.

One of those resources is the website created and maintained by Ron Parry. His Southwestern Moths website is a jewel. On his home page he notes:

"I am a retired biochemist with a passion for natural history. I was born and raised in the Southwestern US. After retirement I began to explore the rich moth fauna found in the Gila bioregion. The purpose of this website is to help other folks who wish to do the same. A familiarity with our native fauna and flora not only enriches our lives, it also creates what Utah writer Ellen Meloy called a 'deep map of place.' That deep map should motivate us to stop the destruction of wild Nature in North America, including 'the little things that run the world' (E. O. Wilson). Recent studies indicate that arthropod populations in both temperate and tropical regions are undergoing serious decline, with dire consequences for the animals that feed upon them . . ."

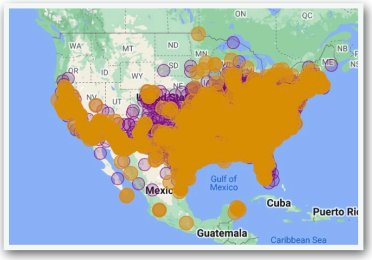
Much of the local resource I referenced above is the product of people who have succeeded in another life/avocation and come home to the study of natural history. Others have made a career of the study of natural history and now continue their study and research in non-institutional settings and/or in other areas of natural history. We are lucky to have many experts in this region who are not content to sit and languish. We also have naturalists in local and regional universities which are engaged in institutional research and nurturing the next generation of naturalists. And we have naturalists from elsewhere in the United States who come to the Black Range and the Gila to further their research and to teach.

Making it more accessible should be the goal of everyone who reads this. Sometimes people draw a distinction between the "creators" and the "consumers". There are distinctions to be made between the two, that is true. What is not true is that the "consumers" do not contribute. I am not making the argument that consumers enable the efforts of creators although that has an element of truth to it. I am talking about what happens when the knowledge of natural history is consumed. Those who consume can be (are not always) transformed into advocates for the natural world. When that happens we all grow, when that happens the chances of a thousand species continuing to survive is enhanced, and I dare say, there is greater joy in the world.

Range Map of *Automeris cecrops*
Cecrops-eyed Silkmoth
From sightings reported to Butterflies and Moths of North America.

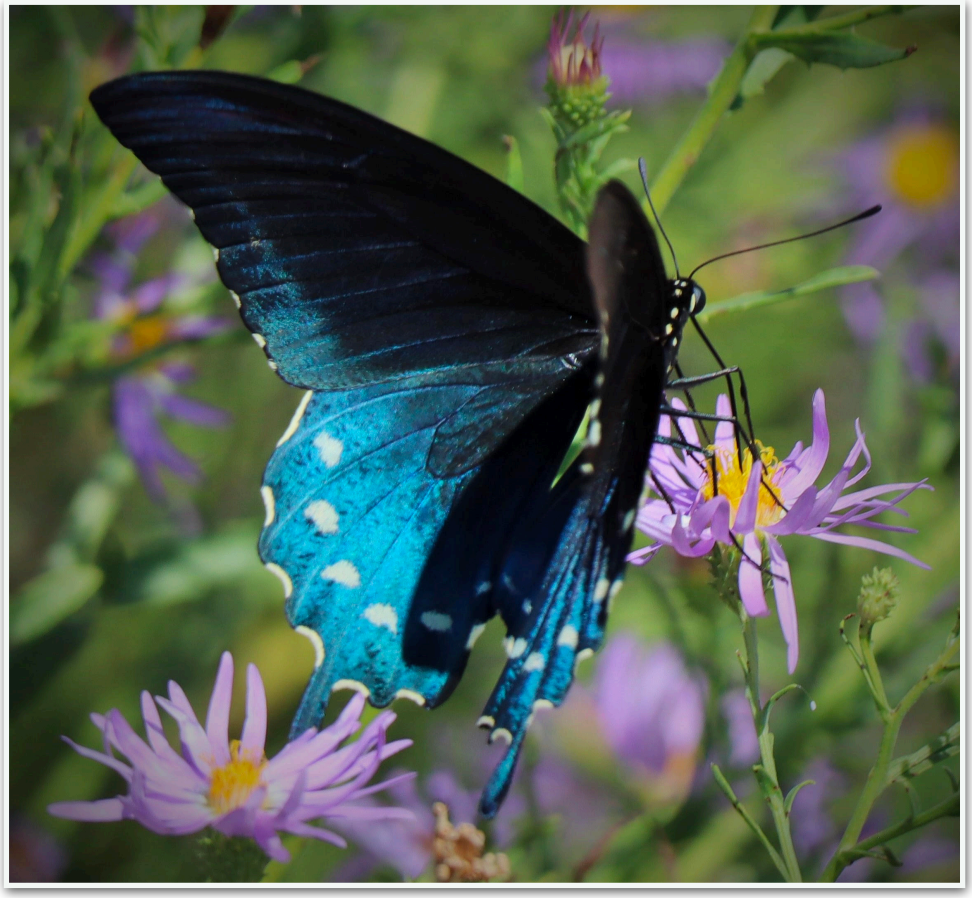
Ron Parry captured this *Automeris cecrops* in the Big Burro Mountains, Grant County, during June 2015.
This image is posted on his website at this link, used with permission.

Pipevine Swallowtail
Battus philenor
(Linnaeus, 1771)
Hodges #4157

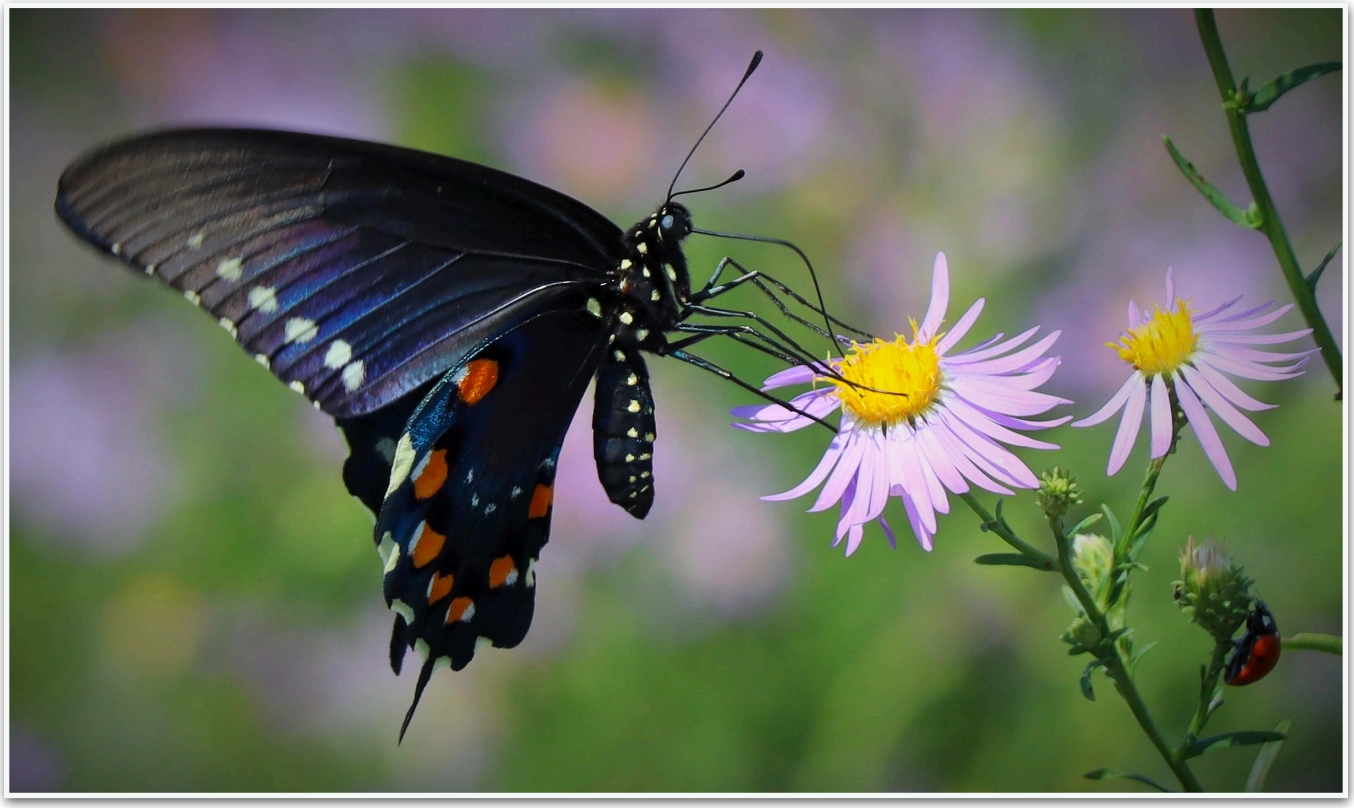


Range Map of *Battus philenor*
Pipevine Swallowtail
From sightings reported to [Butterflies and Moths of North America](#).

The larvae of this species are able to sequester aristolochic acids which are found in some species of *Aristolochia* (Pipevines), its host plants. In doing so, the larvae become poisonous to possible predators. In a sword with two-edges, some species of *Aristolochia* are poisonous to the larvae which eat them.



The Pipevine Swallowtail is occasionally observed nectaring from Spine-aster flowers along the Rio Grande at Las Cruces. Its fluttering style of nectaring makes it a challenge to photograph. Photographs above and below are by James Von Loh.

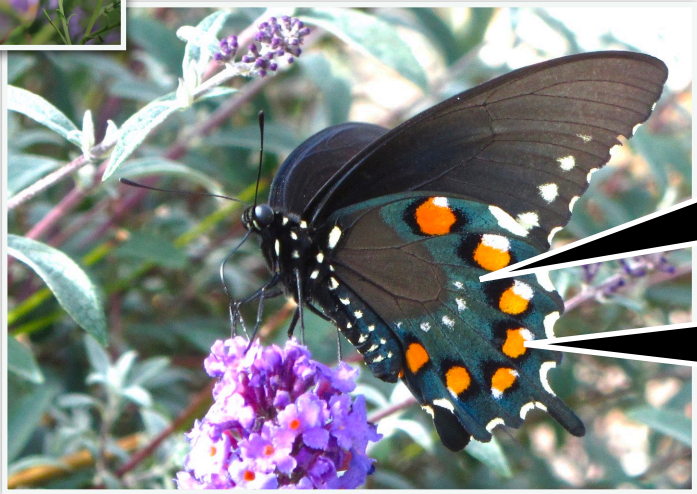


Other Resources (Pipevine Swallowtail)

- Butterflies and Moths of North America
- BugGuide
- North American Moth Photographers Group

Large shimmering blue area on hindwing of male. Intensity and surface area of blue will vary with angle of light. Blue in the female is more subdued.

Row of spots across hindwing



Blue often apparent in ventral view.

Large orange spots only visible in ventral view.

The story of changing taxonomic determinations is evident in the synonymies for this species:

- *Papilio philenor*, Linnaeus, 1771
- *Papilio astinous*, Drury, 1773
- *Papilio nezahualcoyotl*, Strecker, 1885
- *Papilio obsoleta*, Ehrmann, 1900
- *Papilio wasmuthii*, Weeks, 1901
- *Papilio hirsuta*, Skinner, 1908
- *Papilio inghami*, Gunder, 1927
- *Papilio serpentariae*, Fabricius, 1938

The larvae of this species exhibit the same type of behavior which is often seen in other species. In early instars they will often eat in groups. In later instars they are often more solitary while they eat.

Adults nectar on thistles, bergamot, lupines, and a variety of other species. When nectaring, the Pipevine Swallowtail, flutters its wings, making the blue obvious in the male and more readily apparent in the female.

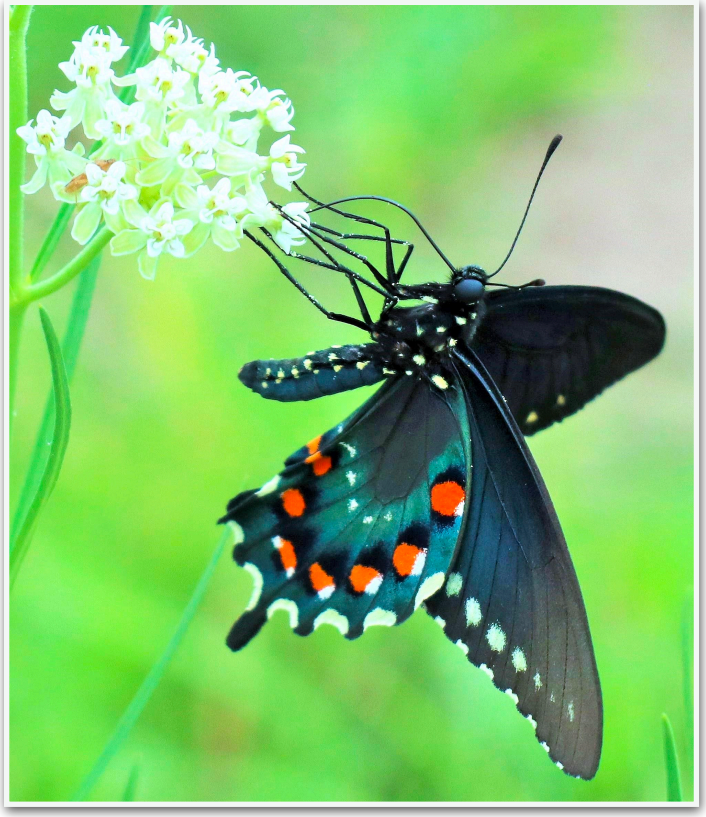
In the early 1900s, this species was known as the Blue Swallowtail by many sources.

There are five subspecies of Pipevine Swallowtail. The nominate form is found here.

In Mexico, this species flies year around. Flights are more restricted farther north.

This species is part of a complex of butterflies thought to exhibit Batesian (butterflies which are not distasteful look like associated species which taste bad) or Mullerian (several bad tasting species all look alike) mimicry. Additional research is necessary to sort this out.

Above: *Battus philenor*, Pipevine Swallowtail
Photographed in Lake Valley, Black Range, by Debora Nicoll.



Left Column: Pipevine Swallowtail nectaring from Horsetail (top two photos) and Climbing (bottom) Milkweed flowers. Immediately Above: Pipevine Swallowtail on Spine-aster flowers along the Rio Grande. JVL

Pipevine Swallowtail photos from August. At Hillsboro to the left and at Rodeo, NM above. RAB

Western Pygmy-Blue
Brephidium exilis
(Boisduval, 1852)
Hodges #4353

Above: Western Pygmy-Blues, photograph by Debora Nicoll, taken in the Black Range. This is the smallest butterfly species in North America.

Above and Below: Western Pygmy-Blue is a common butterfly along the Rio Grande. Here it is perched on Spine-aster flowers. It is sometimes overlooked because of its small size. JVL

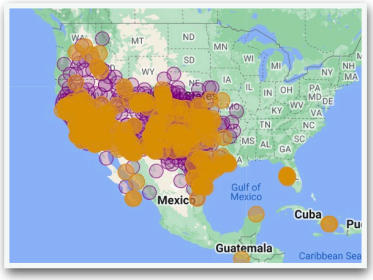
The larvae of this species feed on host plants in the *Chenopodium* (the goosefoots), *Atriplex* (*Atriplex canescens* is Four-wing Salt Bush), and related genera. *Chenopodium album* (lamb's quarters, goosefoot, wild spinach, fat hen) is one of its favorite host plants. Adult male Western Pygmy-Blues patrol above these host plants throughout the day looking for mates.

Female Western Pygmy-Blues lay their eggs on all of the surfaces of the host plants but seem to prefer the undersides of leaves. The larvae eat all parts of the host plant.

Pupa hibernate.

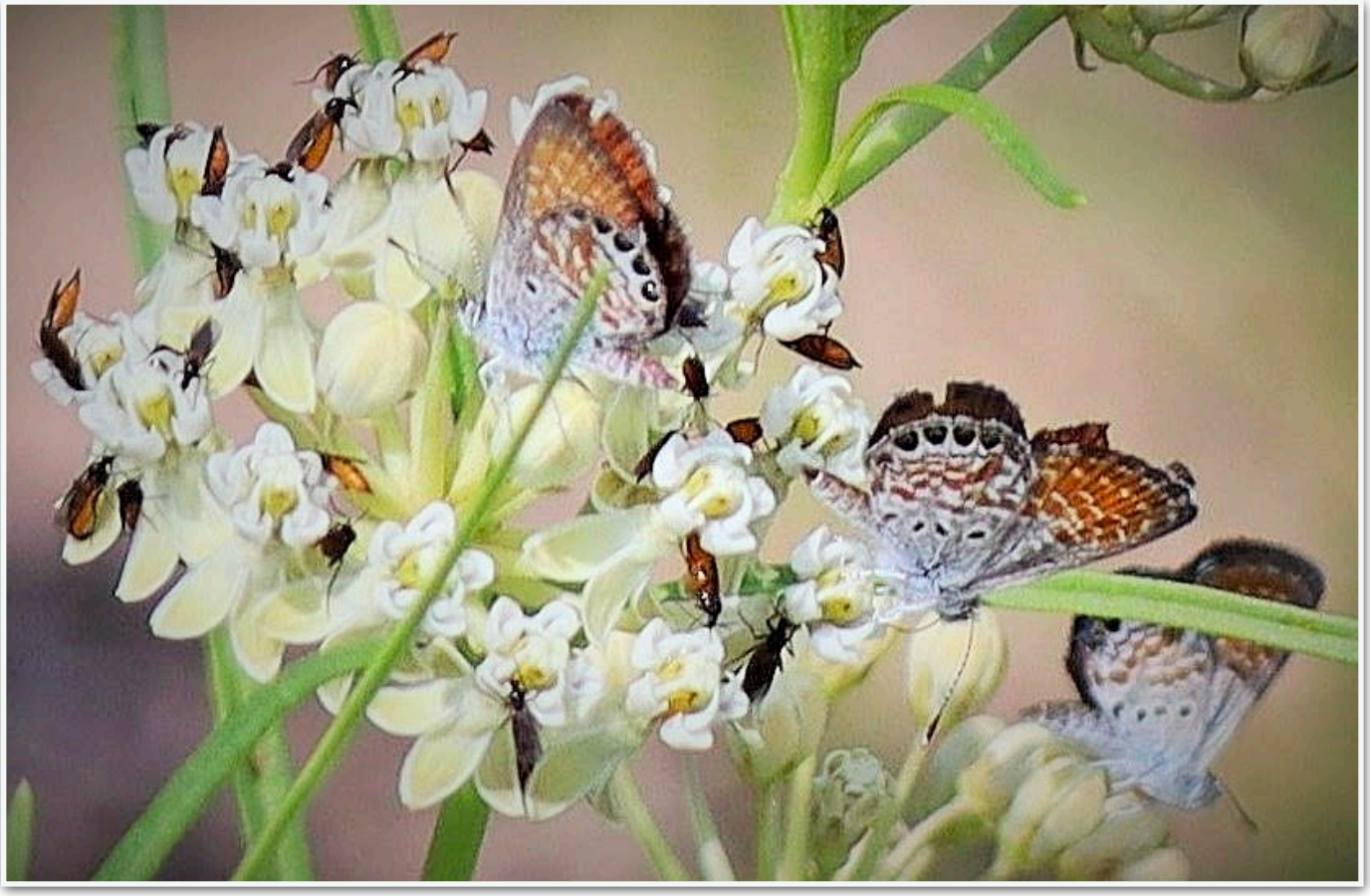
Alternatively, Western Pygmy-Blues are also named *Brephidium exile* in some sources. There are four subspecies, the nominate form is found in our area.

The range of the Western Pygmy-Blue extends southward to Venezuela.



U. S. Range Map of
Brephidium exilis
Western Pygmy-Blue
From sightings reported to
Butterflies and Moths of North America.

Above: *Brephidium exile* instar.
Photograph by Nicky Davis. (CC BY-NC-SA 2.0)



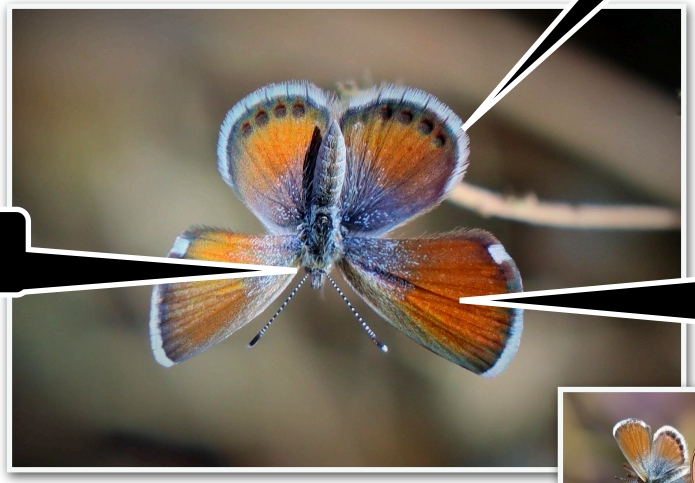
Above: Western Pygmy Blues nectaring from Horsetail Milkweed flowers along with several unidentified beetles - *Coleoptera* (Linnaeus, 1758) - foraging among the flowers.
Below: The Western Pygmy Blue is a resilient species and was present along the Rio Grande at the end of November 2021 and nectared from Water Speedwell, *Veronica anagallis-aquatica*, flowers. JVL

Four of the marginal spots are larger than the others and may show iridescence.

White Fringe

Other Resources (Western Pygmy-Blue)

- Butterflies and Moths of North America
- BugGuide
- Butterflies of America

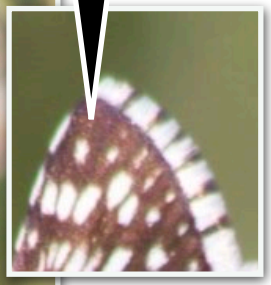


Grey eyes

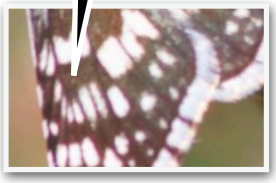
Two-tone wings, grey (described by some as dull blue) near thorax, reddish toward the end.

Markings cited here are more useful in distinguishing the Common Checkered-Skipper and White Checkered-Skipper from other Skippers than from each other.

Usually no spot in extreme corner.



Usually no spot.



Other Resources (Checkered-Skippers)

- Butterflies and Moths of North America (*B. communis*)
- Butterflies and Moths of North America (B. albescens)
- BugGuide
- Butterflies of America

Bulia deducta

(Morrison, 1875) Hodges #8614

There are three species of *Bulia* in the United States. All are limited to the southwestern states with ranges which extend into Mexico. *Bulia similaris* has a range which may overlap that of *Bulia deducta* in our area, although *B. deducta* is much more likely. Adding to the identification problem is the fact that *B. deducta* is quite variable in appearance (per Ron Parry). The third species, *Bulia schausi* is reported only from Arizona. There are two other species in this genus, they are found south of the U.S.-Mexico border.

***B. deducta* and *B. similaris* can not be separated to species without dissection. Mike Pogue (NMSU) has found that almost all of the *Bulia* found in New Mexico are of the species *deducta*. For a detailed assessment of this genus see, A Revision of the Genus Bulia Walker (Lepidoptera: Noctuidae), Michael G. Pogue, *Journal of the Lepidopterists' Society*, Volume 56 p.p. 129-150, 2002. The range maps shown below are from this article, page 141. This photograph was taken in Hillsboro on June 17, 2018.**

Other Resources
(*Bulia deducta*)

- Southwestern Moths - Moths of the Gila National Forest
- North America Moth Photographers Group
- Butterflies and Moths of North America
- BugGuide

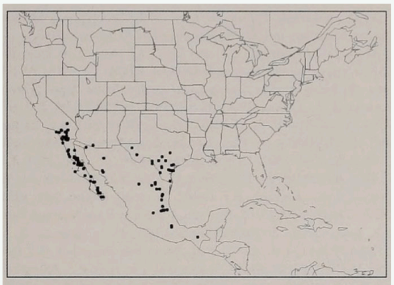


FIG. 60. Known localities from collections of *B. similaris*.

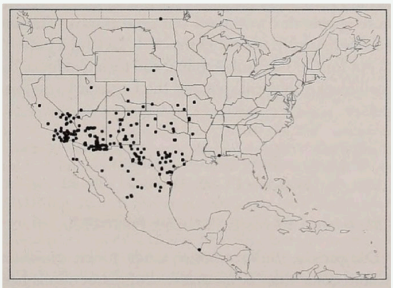
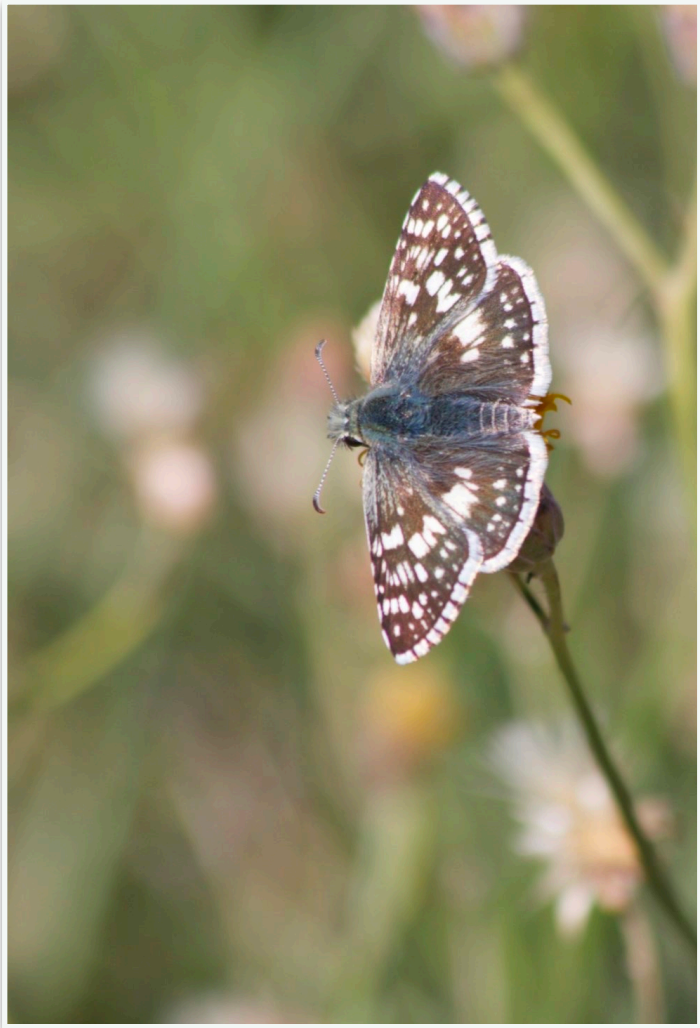


FIG. 61. Known localities from collections of *B. deducta*.

Common Checkered-Skipper
Burnsius (Pyrgus) communis
(Grote, 1872) Hodges #3966
White Checkered-Skipper
Burnsius (Pyrgus) albescens
(Plötz, 1884) Hodges #3967

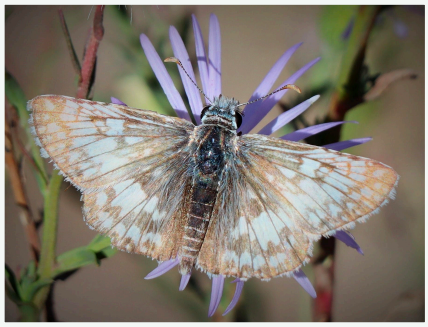
Identifying any creature to species can be difficult at times. The two species shown above are a great example of the issues involved. They, in fact, may not be separable in the field; the images may be of the same species, or not. For that reason we refer to the images in this section as Checkered-Skipper (Burnsius spp).

James Von Loh took the photographs below, of Checkered-Skipper (Burnsius spp), taking nutrients from moist soil and gravel at the Soledad Canyon Trailhead, Organ Mountains.



Above: Checkered-Skipper (Burnsius spp) photographed in the Florida Mountains. Other gallery images are from Wicks Canyon east of Hillsboro, Black Range. RAB

James Von Loh took the image to the right of a Checkered-Skipper (Burnsius spp) along the Rio Grande. This individual's dorsal wing surface reflected coppery in the sun.



In *Black Range Naturalist*, 5-2, April 2022, James Von Loh noted that:

> ***It didn't take all that much, a four-month monsoon season with consistent 1.5" to 2" monthly rainfall between June and September. A desert transformation from dull shades of dusty green and brown to bright green with multi-colored flowers appeared within weeks. Low "clouds" of white and yellow, blue and orange, and brown and black butterflies simultaneously filled the sky above the rain-revived landscape.***

Where the monsoon rain moistened soil and gravel, it sometimes formed shallow pools and ponds and percolated into the soil and rocks, then emerged from seeps and springs. This is where butterfly puddle clubs were established. Known as puddlers, club butterflies are mostly males and have common needs.

Steve Cary described it thusly:

'Water is life...for desert butterflies...a solvent that contains lots of minerals, particularly electrolytes that are important for butterfly health and for males intending to offer to females a high-value spermatophore. On hot summer afternoons, damp soils...contain lots of electrolytes and attract local butterflies by the scores, hundreds, even thousands' (https://peecnature.org/our-chihuahuan-desert-jungle).

Checkered-Skipper (Burnsius spp) puddle club, near the Soledad Canyon Trailhead. JVL

Thus, male puddle clubbers, in summary: 1) are decoyed into the congregations already landed on the wet soil; 2) suck moisture, salts, and nutrients into their digestive system through a long proboscis; 3) use sodium, in particular, which increases their reproductive success; and 4) their spermatophore, with the additional sodium and other nutrients, are transferred to the female's eggs during mating, enhancing egg survival rate. Meanwhile, humans witnessing the puddlers on the soil and in dense clouds when disturbed to flight, smile, laugh, and say "look at all those butterflies"!! Children, in particular, appear enchanted by the experience.

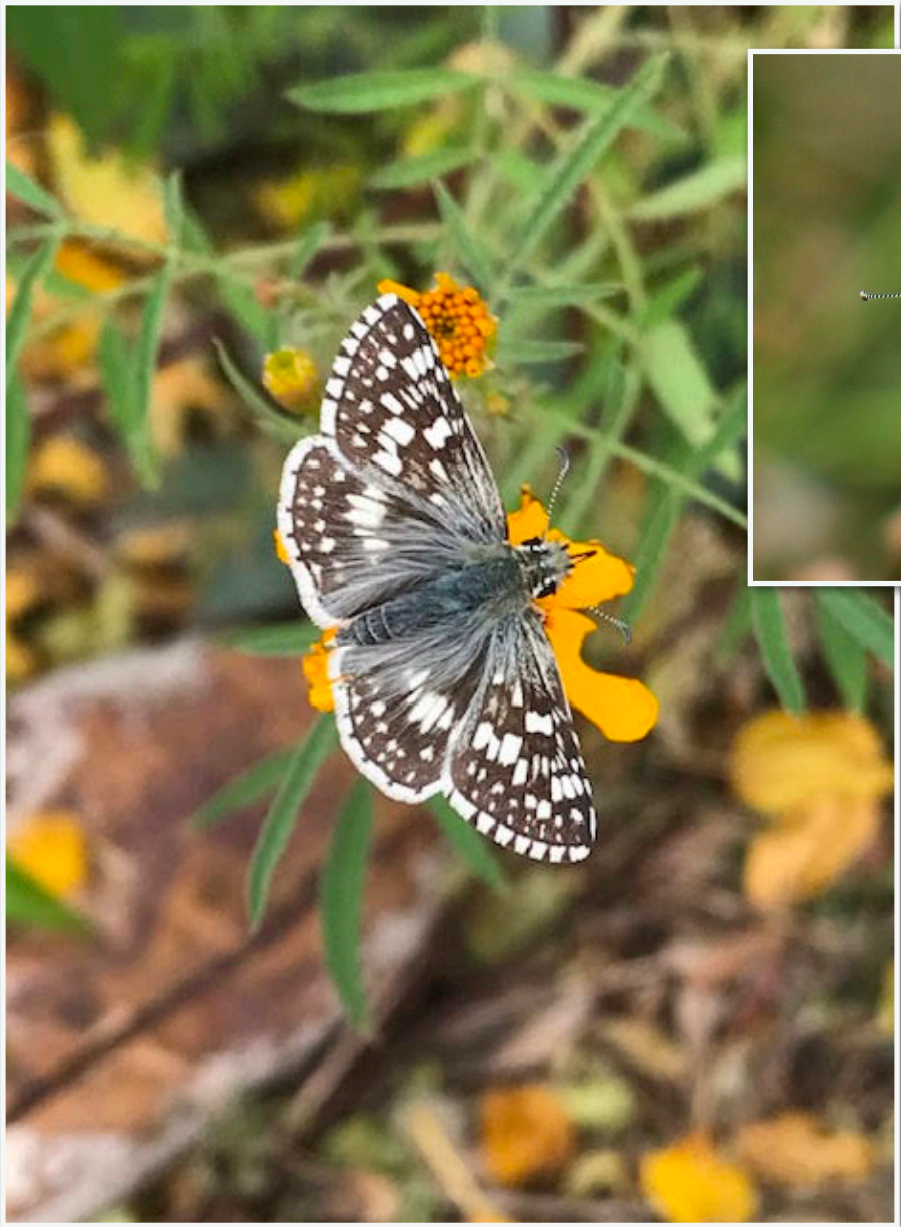
Checkered-Skippers (Burnsius spp) puddling in/on a typical substrate. JVL

These small skippers formed puddle clubs, near the Soledad Canyon Trailhead, numbering between 5-10 individuals up to 20-30 individuals. They exhibited a patchy distribution on moist sand covered by pebbles and small rocks. Often a few individuals joined other small puddle clubs with mixed species of sulfurs, marine blues, and lone individuals of other butterfly species.

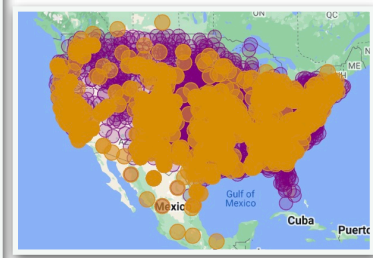
Checkered-Skippers (Burnsius spp) would often join a small puddle club with mixed species of sulphurs (Sleepy Orange, Abaeis nicippe [Cramer, 1779], and Southern Dogface, Zerene cesonia [Stoll, 1790] for instance), Marine Blues, Leptotes marina (Reakirt, 1868), and individuals of other butterfly species.

Range Map of *Burnsius albescens*
White Checkered-Skipper
From sightings reported to Butterflies and Moths of North America.

Checkered-Skipper (Burnsius spp) at the Dripping Springs Visitor Center. JVL

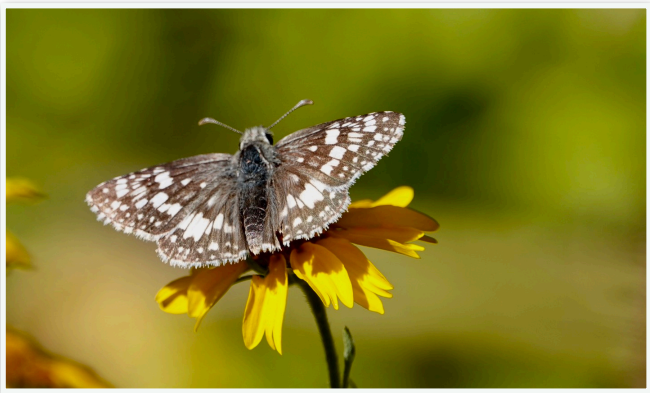


Above and Left: Checkered-Skipper (Burnsius spp) above. From June 15 - July 25 this species can be common. At left on *Tagetes*. JVL



Range Map of *Burnsius communis*
Common Checkered-Skipper
From sightings reported to Butterflies and Moths of North America.

Above: Checkered-Skipper (Burnsius spp), a common butterfly nectaring from Spine-aster flowers. JVL



Above: Checkered-Skipper (Burnsius spp), photographed in Hillsboro, Black Range, October 2021.

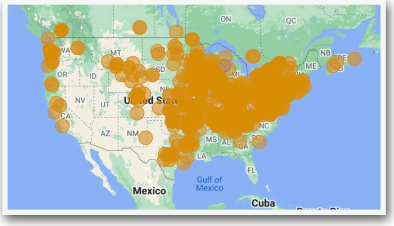
***Caenurgina erechtea*, Forage Looper**
Photographed on Sawyer's Peak, Black Range, June 30, 2019.

Forage Looper
Caenurgina erechtea
(Cramer, 1780)
Hodges #8739

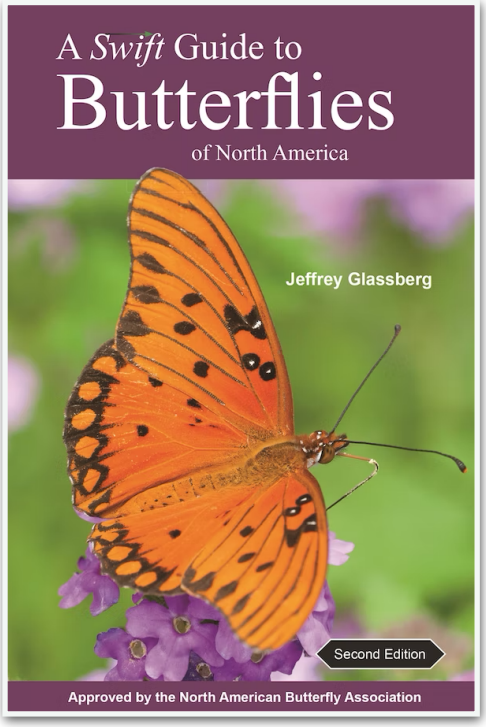
In the past this species has been known under several Latin binomials including *Phalaena erectea, Drasteria agricola,* and *Drasteria mundula*.

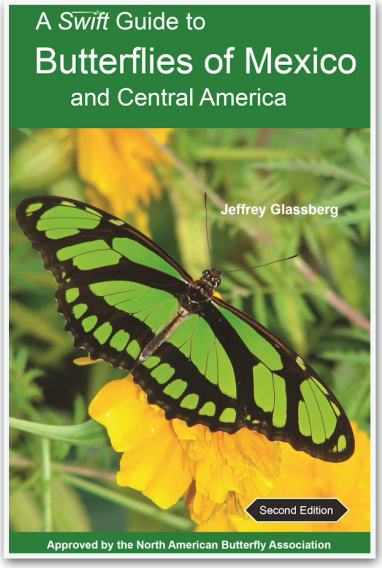
***Ambrosia trifida*; Great Ragweed, Giant Ragweed, Buffaloweed, etc. is a host plant for this species. It also feeds on various legumes and clovers.**

This species can be very difficult to separate from *Caenurgina crassiuscula*, requiring inspection under magnification.

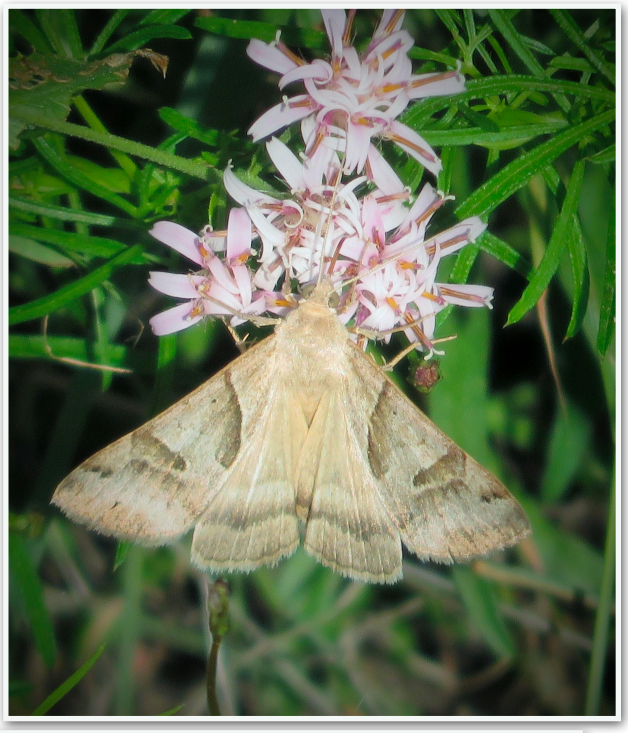


Range Map of *Caenurgina erechtea*
Forage Looper
(aka Common Grass Moth)
From sightings reported to
Butterflies and Moths of North America.



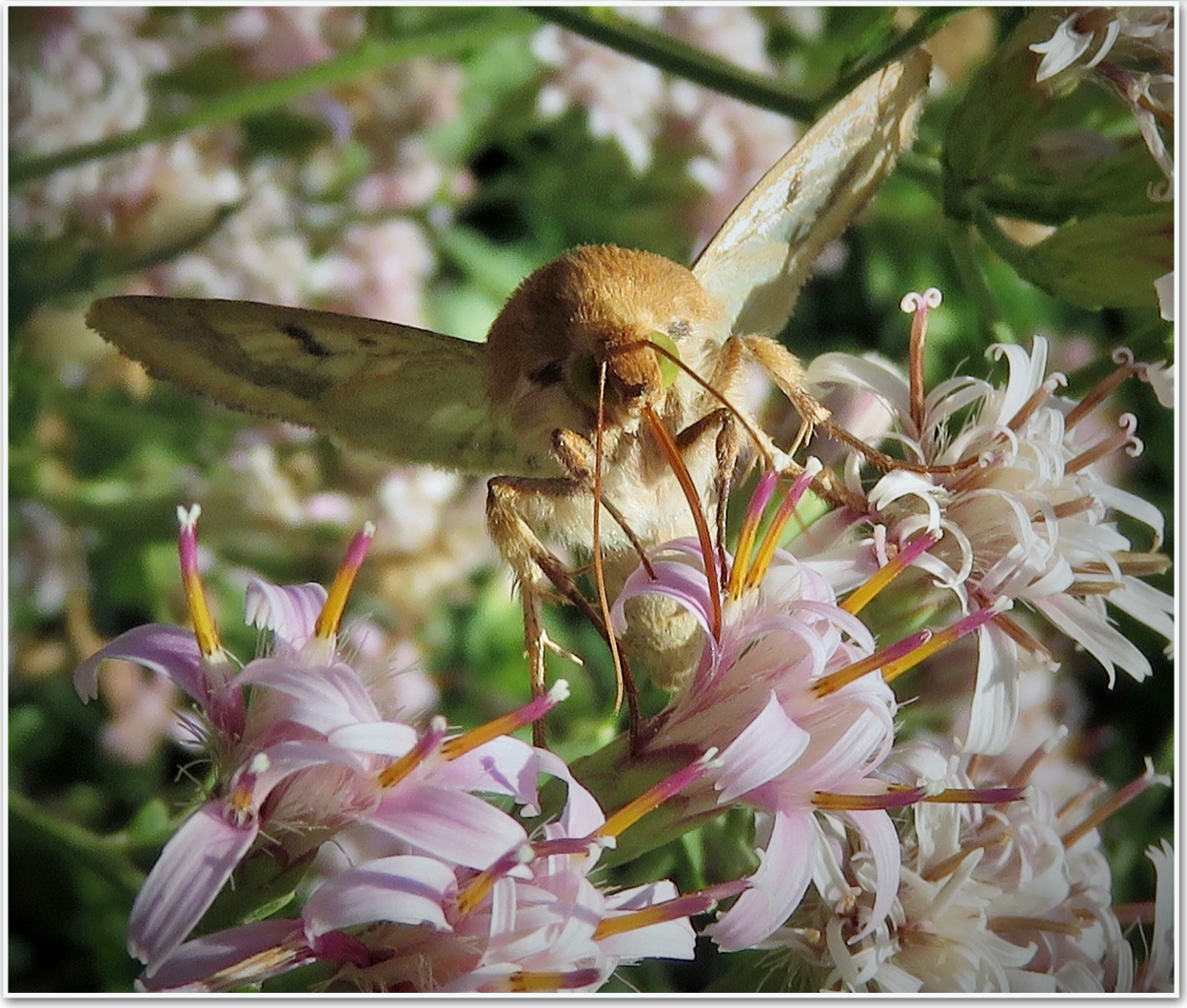


There are many butterfly identification guides, far fewer moth identification guides. Two of the best are the Swift guides which are available at the links.



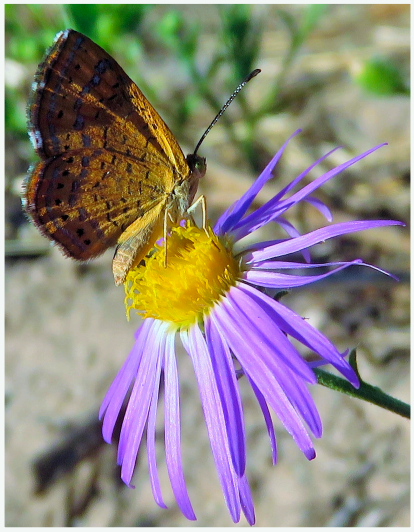
Other Resources (Forage Looper)

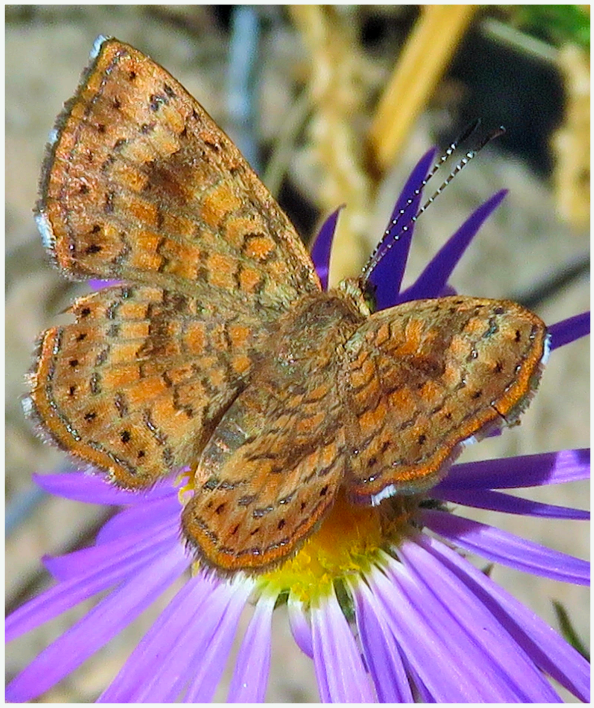
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide



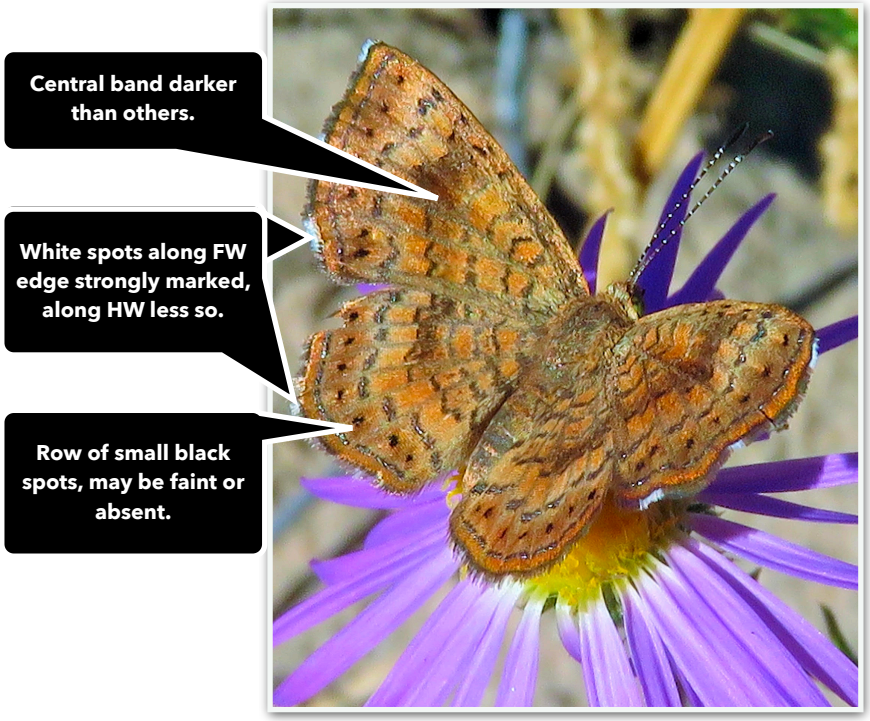
The Forage Looper shown directly above and upper right was photographed by Gordon Berman, nectaring from Brown-foot flowers.

Fatal Metalmark
Calephelis nemesis
(W. H. Edwards, 1871)
Hodges #4388
Photographs by Gordon Berman



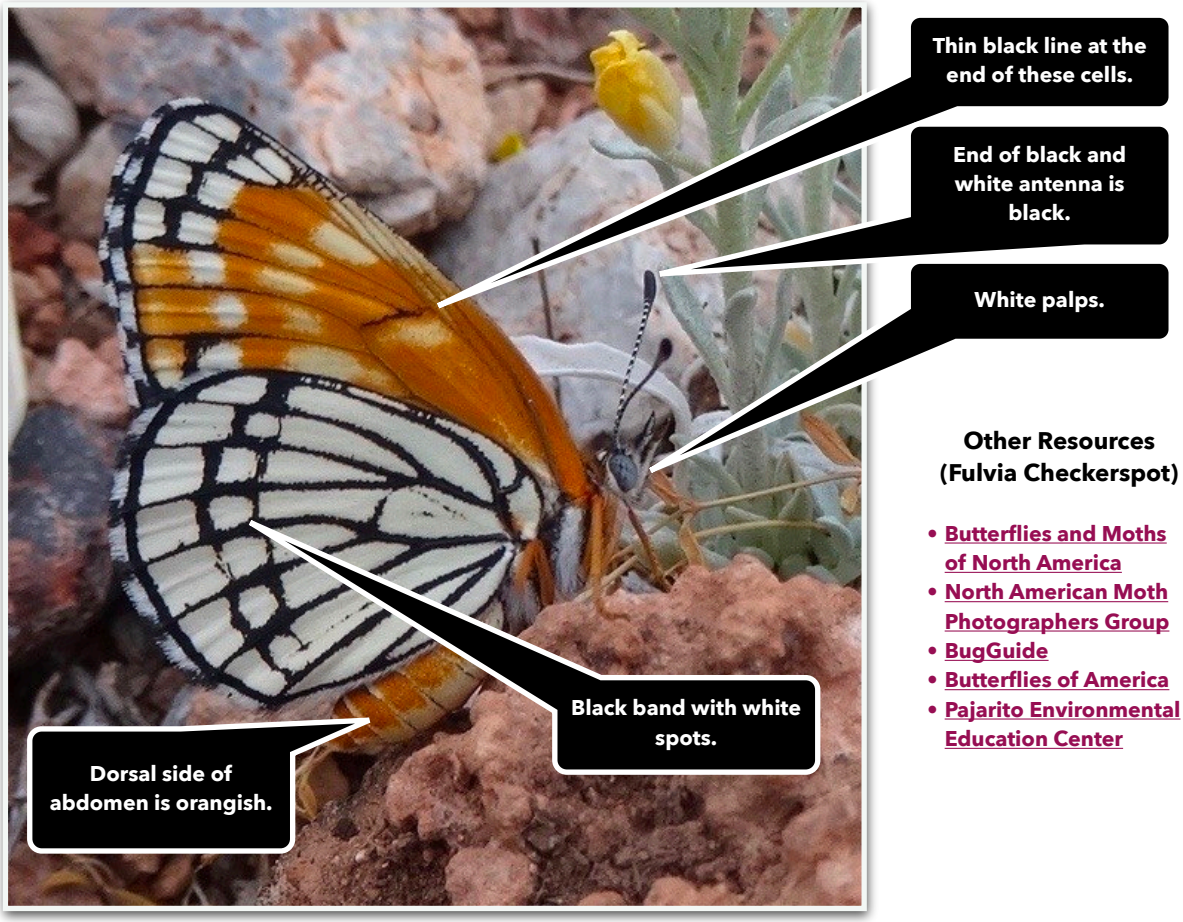


Range Map of *Calephelis nemesis*
Fatal Metalmark
From sightings reported to Butterflies and Moths of North America.



Other Resources (Fatal Metalmark)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



Other Resources (Fulvia Checkerspot)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Fulvia Checkerspot
Chlosyne fulvia
(W. H. Edwards, 1879)
Hodges #4506

Chlosyne fulvia **is found throughout New Mexico but generally prefers locations at altitudes between 5,000 and 7,000 feet. Among the host plants are several paintbrush species, including Plains (or Downy) Paintbrush, *Castilleja sessiliflora*, and Foothills Paintbrush, *Castilleja integra*.**

As a genus, *Chlosyne* has been sliced and diced by various authorities. And although there are no firmly established structures, *C. fulvia* is generally placed in the subgenus *Thessalia* along with (among others) *C. theona,* which is shown later. *C. lacinia*, which follows, is generally placed in the Lacinia Group of subgenus *Charydryas*. There are 23 species in this genus north of Mexico according to some authorities, 21 according to others.

In the Black Range, we should be observant as the very similar *Chlosyne coronado* is known from adjacent areas in southern Arizona.

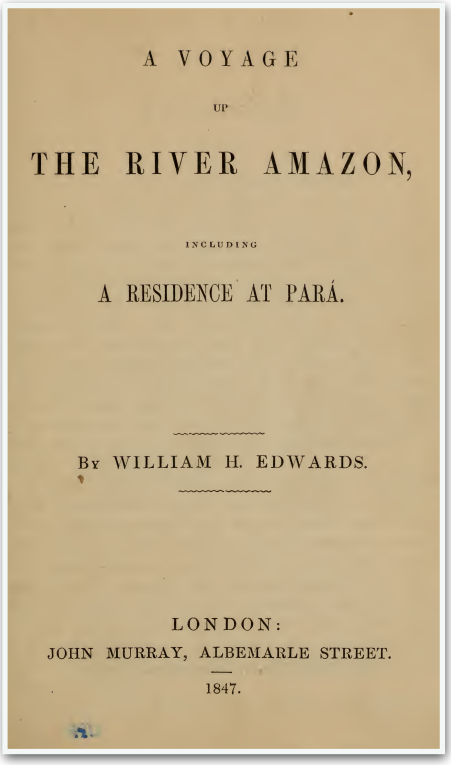
W. H. Edwards

William Henry Edwards (1822 - 1909) was an American entomologist who among other things wrote *The Butterflies of North America* (*Vol. 1*, *Vol. 2*, *Vol. 3*), 1868 - 1897. Many argue this is the best North American butterfly work ever published.

Edwards turned his attention to butterflies in 1856. He soon amassed a large collection, receiving specimens from around the world. He knew both John Weidemeyer and Spencer Baird. His study of polymorphism in butterflies influenced many naturalist.

In 1846, Edwards travelled the northern reaches of the Amazon River and published an account of those travels the next year in *A Voyage Up the River Amazon*. This book inspired both Henry Walter Bates and Alfred Russel Wallace to travel to the Amazon Basin and study its natural history. As such it may be one of the most important books in natural history.

***Chlosyne fulvia*, Fulvia Checkerspot, nectaring from Bladderpod. Photographed east of Hillsboro, Black Range, by Véronique De Jaegher**



A VOYAGE

UP

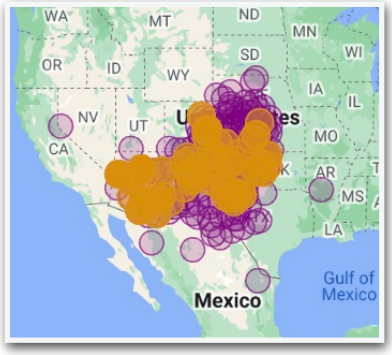
THE RIVER AMAZON,

INCLUDING

A RESIDENCE AT PARÁ.

BY WILLIAM H. EDWARDS.

LONDON:
JOHN MURRAY, ALBEMARLE STREET.
1847.



Range Map of *Chlosyne fulvia*
Fulvia Checkerspot
From sightings reported to Butterflies and Moths of North America.

Left: Plains Paintbrush, *Castilleja sessiliflora*, photographed at the same location as the butterfly below.

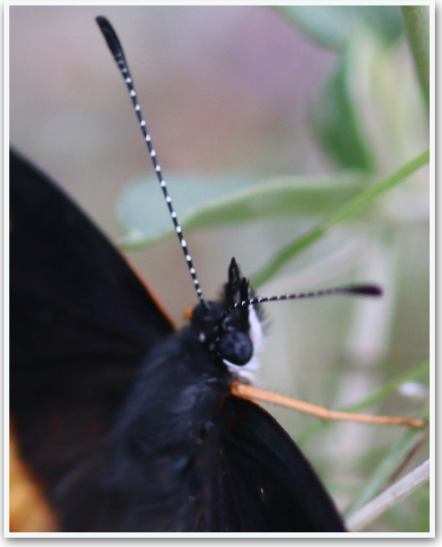
Photographs from east of Hillsboro on April 7, 2019. RAB

Bordered Patch
Chlosyne lacinia
(Geyer, 1837)
Hodges #4499

Gordon Berman photographed the Bordered Patch instars shown below and at the right at his home in Las Cruces, just west of the Rio Grande.

The Bordered Patch is variable in appearance, in all phases of its life cycle. Eggs start out yellow-green and later turn reddish. The color of instars ranges from mostly orange with black to mostly black. Pupas (chrysalises) will range from white to nearly all black in color, with intermediates of white with black markings. And lastly, the adult (imago) is also variable, but there is always a red spot near the body on the hindwing.

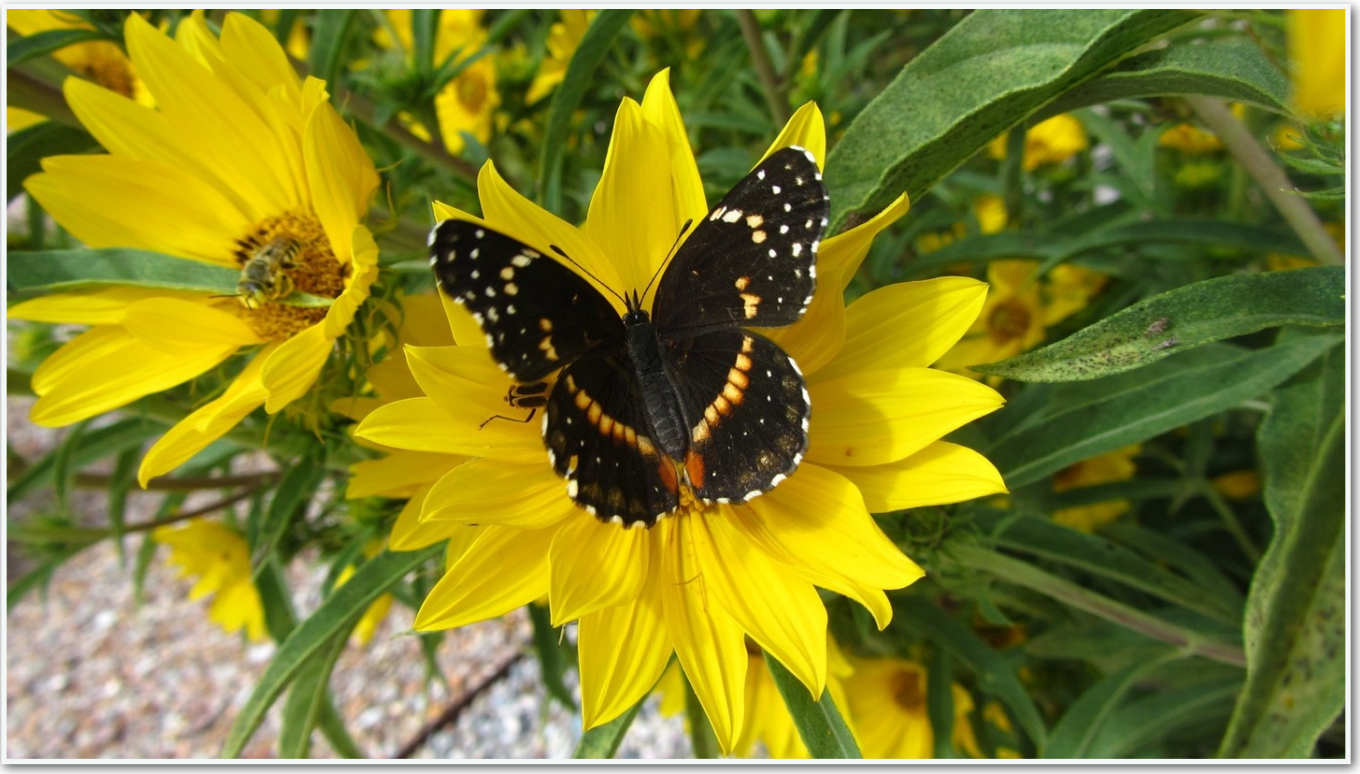
Among the host plants for this species are sunflowers, ragweed, cockleburs, and crownbeard. In the Black Range, this species is found from the desert foothills up into the Pinyon/Oak forest. Eggs are found on the underside of the leaves of host plants.

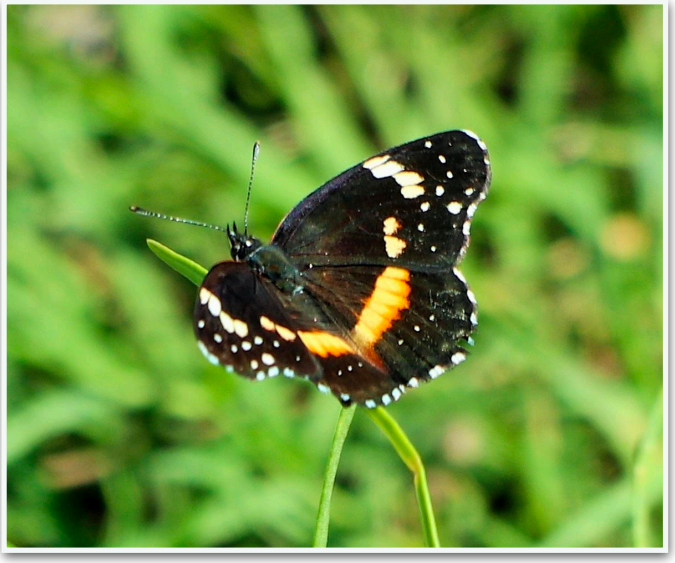


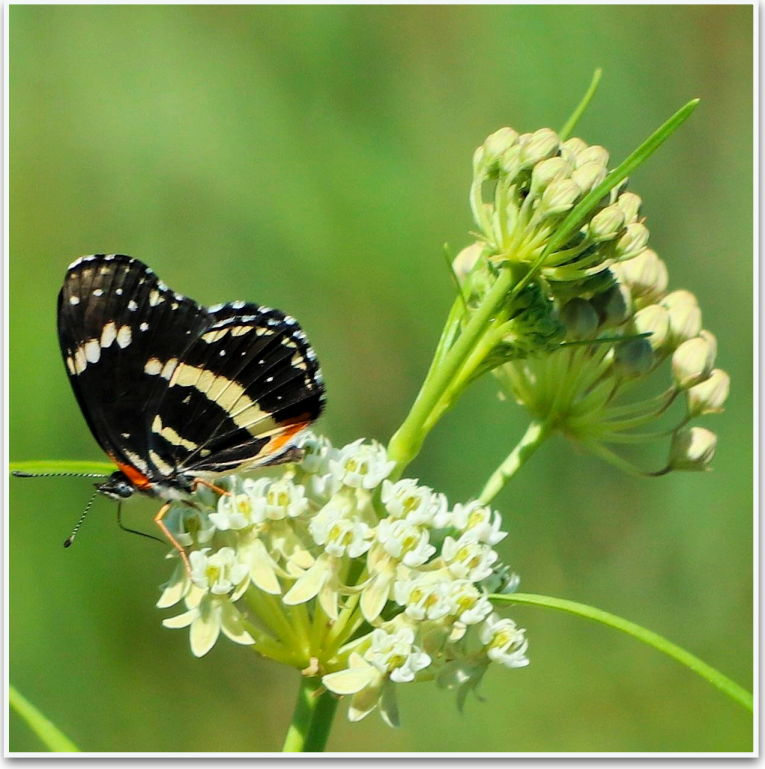
***Chlosyne lacinia*, Bordered Patch**
The photographs shown at the right and on pages 77 and 79 were taken in Hillsboro, NM on October 10, 2022. RAB

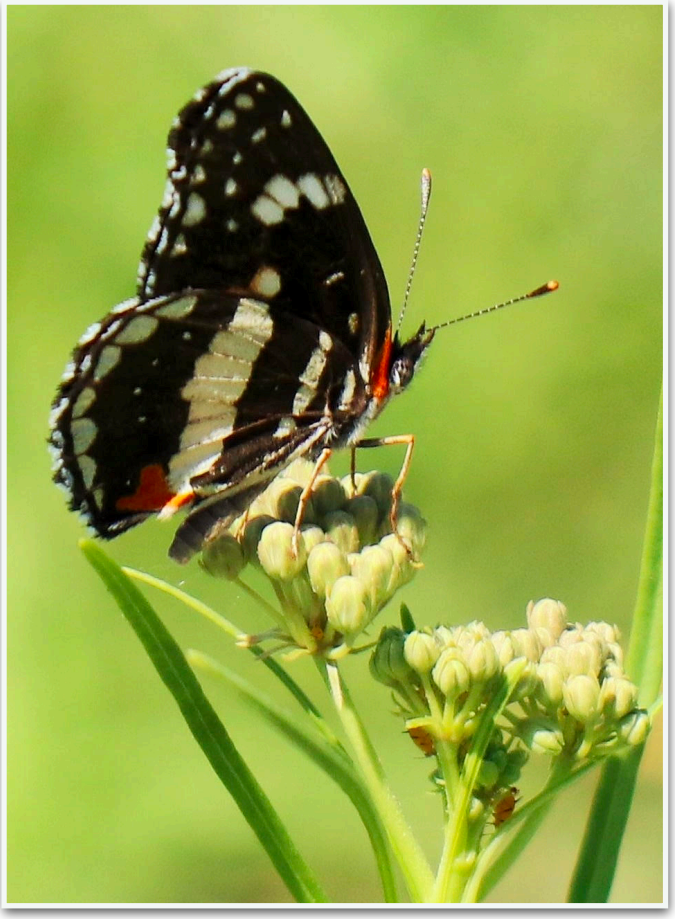
***Chlosyne lacinia*, Bordered Patch**

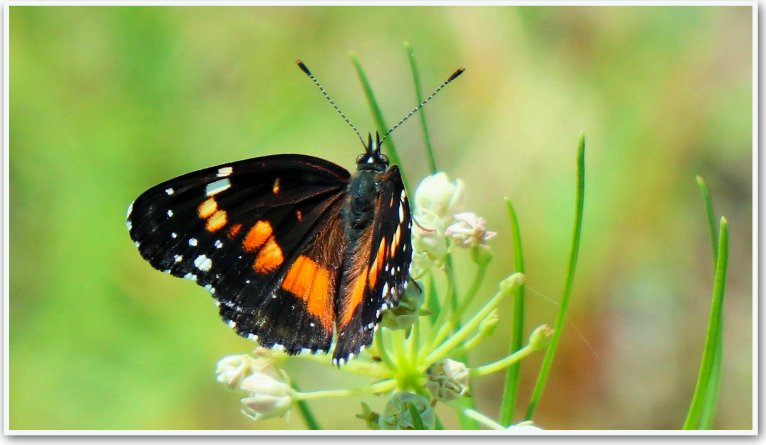
Above and Below: Photographed in Lake Valley, Black Range, by Debora Nicoll.





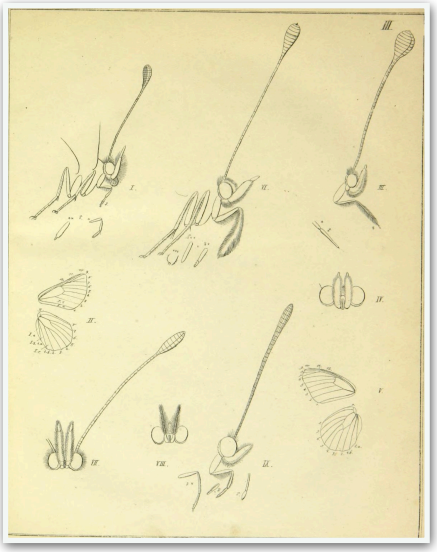


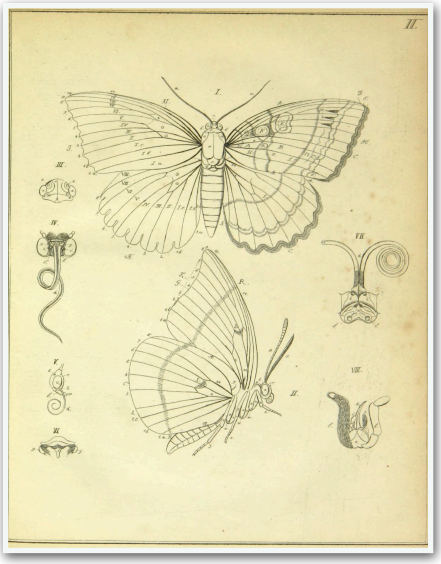




Bordered Patch perched and nectaring from Horsetail Milkweed flowers. Note that in the image to the right a single pollinarium has been extracted via the stigmatic slit and clings to the leg where it could be transferred into another flower, thus achieving pollination. JVL

Range Map of *Chlosyne lacinia*
Bordered Patch
From sightings reported to
Butterflies and Moths of North America.





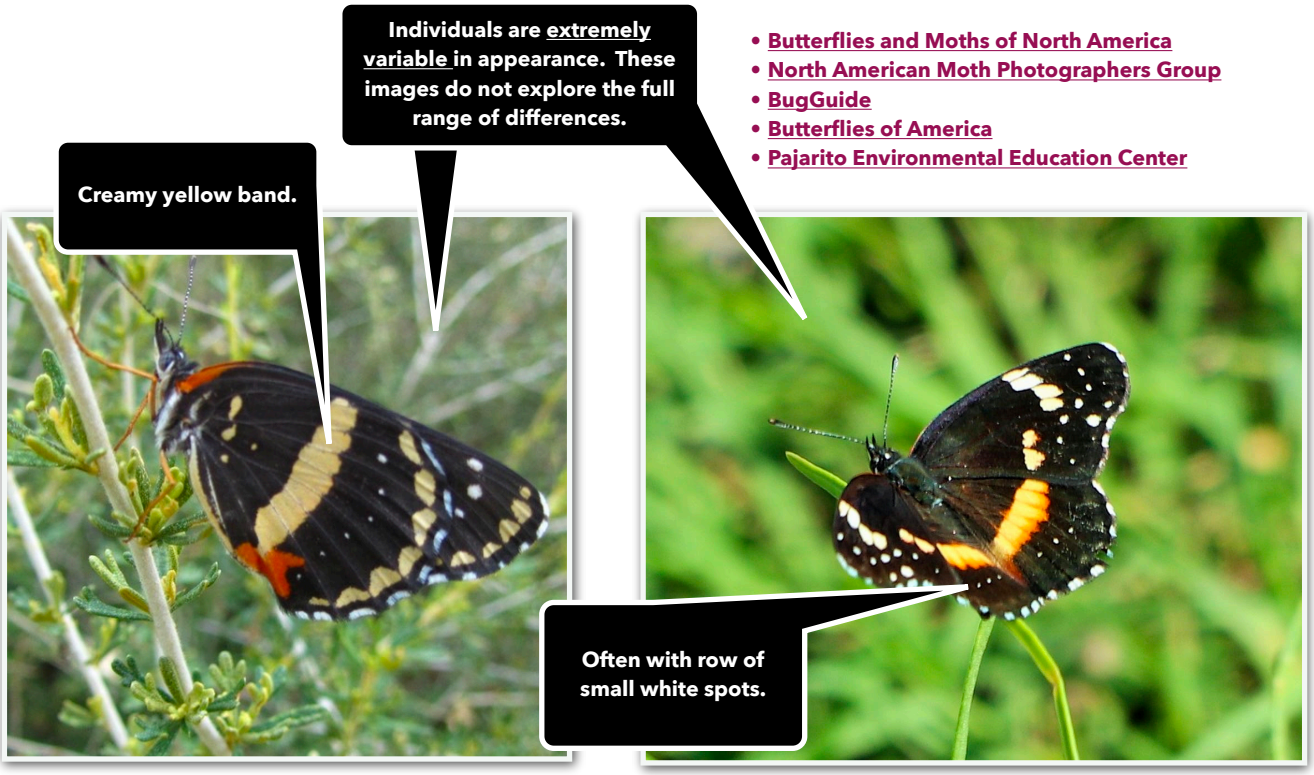
One thing to note about the Bordered Patch is that instars and adult butterflies are variable in appearance. Although the photographs shown in this series represent those that are seen in our area, there is broad of variability in other parts of the range.

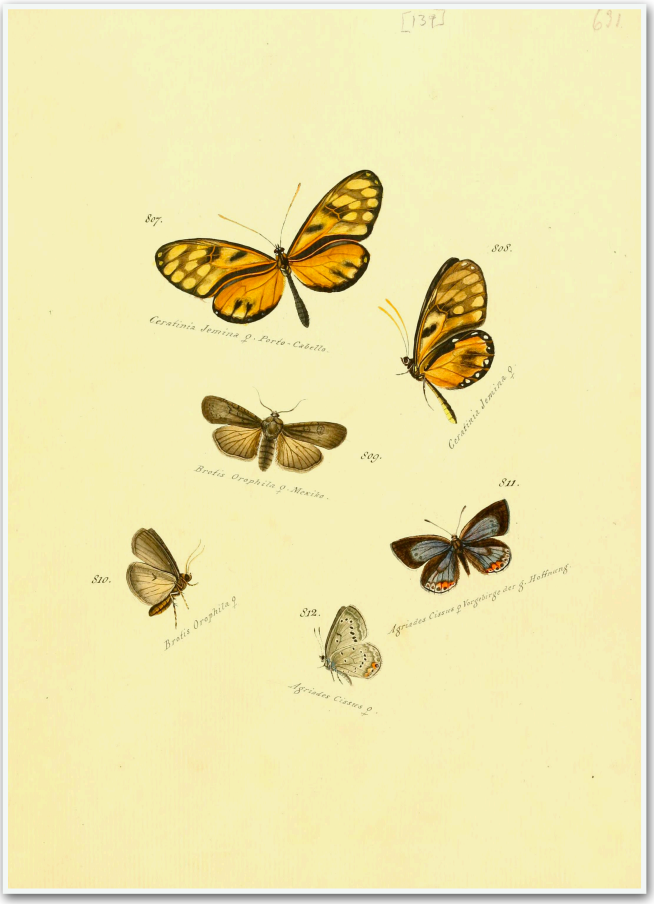
Carl Geyer
(1802-1889)

Peter Carl Friedrich Geyer was a German artist by profession. He worked on Jacob Hüber's works on butterflies, including that published after Hüber's death (primarily *Systematische Bearbeitung der Schmetterlinge von Europa, zugleich als Text, Revision und Supplement zu Jakob Hübner's Sammlung europäischer Schmetterlinge*). Geyer's diagrams of the parts of a butterfly, especially those useful in identifying a specimen to species is shown above left, from Plate 3 and Plate 2 (above right), Volume 6. His work on that project apparently included his first description of the Bordered Patch.

Other Resources
(Bordered Patch)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center





Not an illustration of Bordered Patch, but rather an example of Carl Geyer's work, from: *Zuträge zur Sammlung exotischer Schmettlinge [sic] : bestehend in Bekundigung einzelner Fliegmuster neuer oder rarer nichteuropäischer Gattungen*.

Theona Checkerspot
Chlosyne theona thekla
(Ménétriés, 1855)
Subspecies: (W. H. Edwards, 1870)
Hodges #4508

James Von Loh took the photographs of Theona Checkerspot, shown on this and the following page in the Organ Mountains east of Las Cruces. This species is found as far south as Colombia (see range map on the following page).

Among the host plants in our area are various species in the *Castilleja* (paintbrush) genus.

In the American Southwest the flights of this species are between April and October.

Caterpillars in their third or fourth stages are known to hibernate.

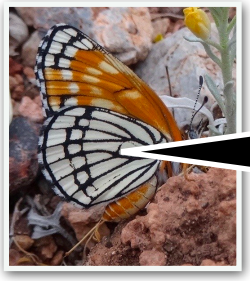
There are three subspecies.

Above: Theona Checkerspot with its ventral wing exposed, taking nutrients from moist soil under gravel of the Crawford Trail, Organ Mountains. JVL

Range Map of *Chlosyne theona*
Theona Checkerspot
From sightings reported to Butterflies and Moths of North America.

Édouard Ménétries

Ménétries was born in Paris, France in 1802 and died in St. Petersburg, Russia in 1861. He served in a Russian expedition to Brazil from 1821-25 and afterwards lived in St. Petersburg. He served as the curator of zoological collections in the Kunstkammer. In that position he received specimens from all over the world. Like many other entomologists, he is the official describer of a number of species which he never saw alive.



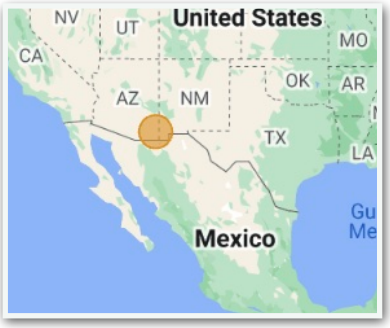
Alternating orange and white bands. Compare with *Chlosyne fulvia (left).*

Fairly wide black border.

Other Resources (Theona Checkerspot)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Theona Checkerspots are extremely variable in appearance even within discrete populations.



Range Map of *Chrysoecia atrolinea*
From sightings reported to Butterflies and Moths of North America.

Other Resources (*Chrysoecia atrolinea*)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide

Chrysoecia atrolinea

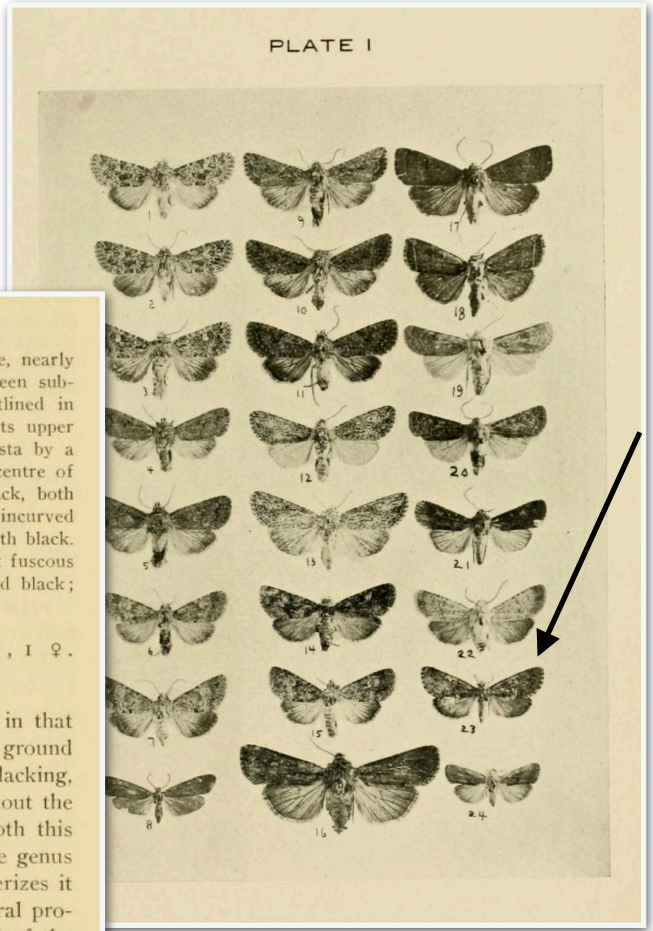
(Barnes & McDunnough, 1912)
Hodges # 9764

Synonyms of this species include *Antaplaga atrolina* and *Acontia dela*. The original description (and not very helpful image) are shown below right. Text from page 25 of *Contributions to the natural history of the Lepidoptera of North America*; Vol. 1, No. V, Barnes and McDunnough.

Chrysoecia atrolinea
Photographed near Bloodgood Spring (Kingston), Black Range. RAB

James Halliday McDunnough
(1877 - 1962)

After training as a classical violinist, McDunnough received a doctorate in zoology in 1909. From Wikipedia: "He soon learned of an important opportunity: a wealthy surgeon in Decatur, Illinois named William Barnes needed an entomologist to serve as curator and researcher for his private collection of North American Lepidoptera - probably the best in existence at the time." McDunnough and Barnes coauthored numerous professional papers on *Lepidoptera* between 1910 and 1919. In 1919, McDunnough became the manager of the Division of Systematic Entomology in the Canadian Department of Agriculture. He remained in that position until 1946.



ANTAPLAGA ATROLINEA sp. nov. (Plate I, fig. 23.)

Palpi, thorax and primaries orange; t. a. line black, partly double, nearly upright, twice waved, the inner line of the two extending only between subcostal and anal veins, at times broken; orbicular and reniform outlined in black; the former large, open towards costa, touching t. a. line in its upper portion, the latter narrow, well excised outwardly, connected with costa by a black line; below the two spots a waved black line runs through the centre of the median space, incurved in submedian fold; t. p. line double, black, both lines tending to become broken, starting from costa near apex it is incurved slightly opposite cell and strongly below vein Cu_1; fringes checkered with black. Secondaries deep smoky with yellowish fringes. Beneath primaries dark fuscous with costa and outer margin narrowly orange, and fringes orange and black; secondaries smoky with yellow fringes. Expanse, 25 mm.

Habitat:—Chiricahua Mts., Cochise Co., Arizona. 3 ♂♂, 1 ♀. Types, Coll. Barnes.

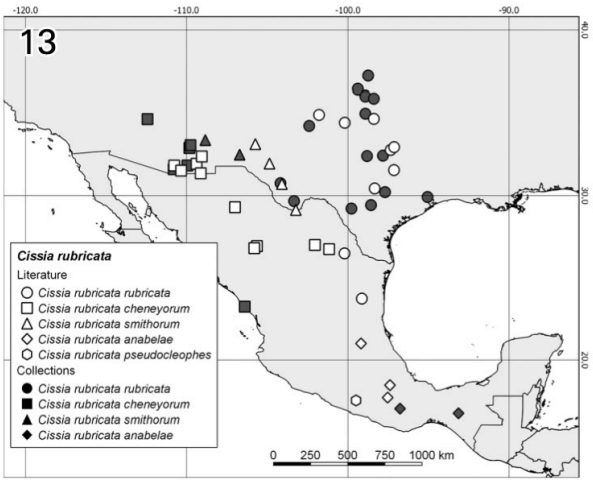
Related to *dela* Druce which we have before us; differs in that orbicular and reniform are not filled in with paler color than the ground color of the wing, the black suffusion around them is entirely lacking, and the black lines are broken, not so sharply angled and without the slight suffusion seen in *dela*. The frontal protuberance in both this species and *dela* differs from that of *dimidiata*, the type of the genus *Antaplaga*. For this latter species Hampson correctly characterizes it as a "truncate corneous prominence with raised edge and central process and corneous plate below." In *atrolinea* and *dela*, instead of the circular cup-like process, (Hampson's prominence with raised edges) we have a transverse lunate prominence, the front edge of which is drawn out centrally to form a vertical ridge; below this is the infraclypeal plate. This may represent a new genus; we prefer, however, for the present to refer these two species to *Antaplaga*.

Red Satyr
Cissia (Megisto) rubricata
(W. H. Edwards, 1871)
Hodges #4579

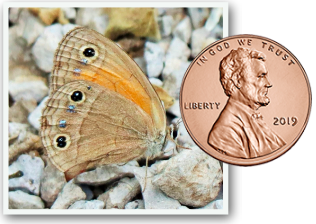
The Red Satyrs pictured to the right, in photos by James Von Loh, were taking nutrients from moist rock surface along Pine Tree Trail above Aguirre Springs Campground and from gravel-covered moist soil along the La Cueva Trail (Organ Mountains).

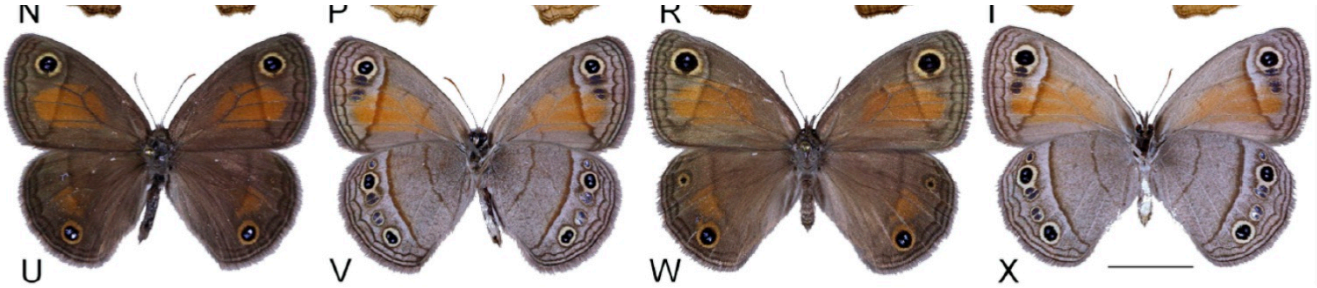
If you have a field guide which is only slightly out-of-date, this species will be called *Megisto rubricata*. In our area it probably has two flights (broods) a year, spanning late April to late August. The individuals shown here are probably of the *C. r. smithorum* subspecies (see distribution map from the study cited below). The subspecies found in the New Mexico boothill and southeastern Arizona is *C. r. cheneyorum;* its coloration is more subdued than the nominate subspecies. The nominate form is found in eastern New Mexico and Texas.

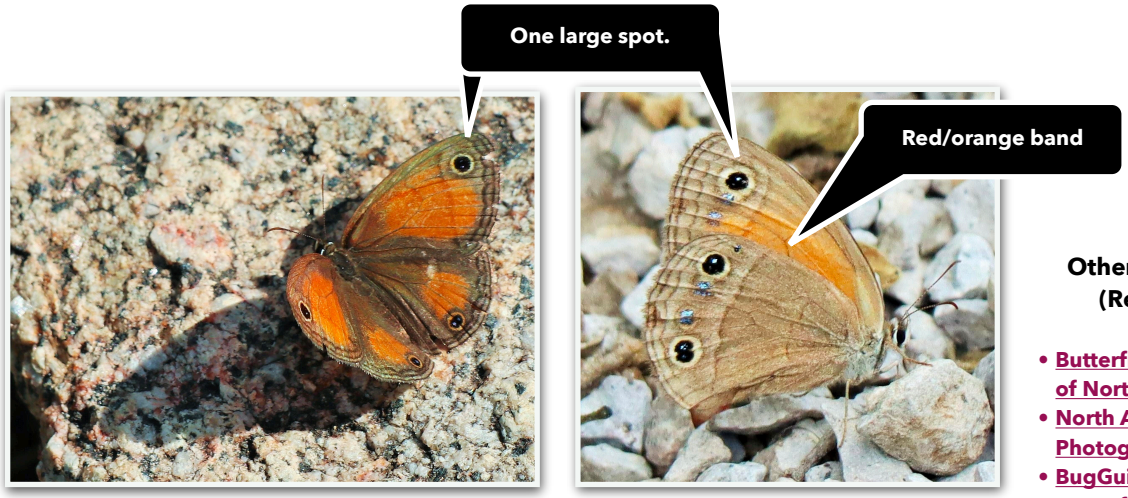
A 2018 study entitled "Systematics of the butterfly genus Cissia Doubleday, 1848 (Lepidoptera: Nymphalidae: Satyrinae) using an integrative approach" by Thamara Zacca, Mirna M. Casagrande, Olaf. H.H. Mielke, Blanca Huertas, Eduardo P. Barbosa, André V.L. Freitas, Luiza M. Magaldi, Marianne Espeland, Shinichi Nakahara, and Keith R. Willmott; in *Arthropod Systematics and Phylogeny* reshaped the genus *Cissia* and moved the Red Satyr to it from *Megisto*. As of the date of this publication (late 2023) some online sources have not adopted the change.



The specimens shown below are from a graphic in the cited study (p. 355). All of the butterflies shown are of the nominate subspecies. "U" is a dorsal view of a male; "V" is the ventral view of a male; "W" is a dorsal view of a female; and "X" is the ventral view of a female.

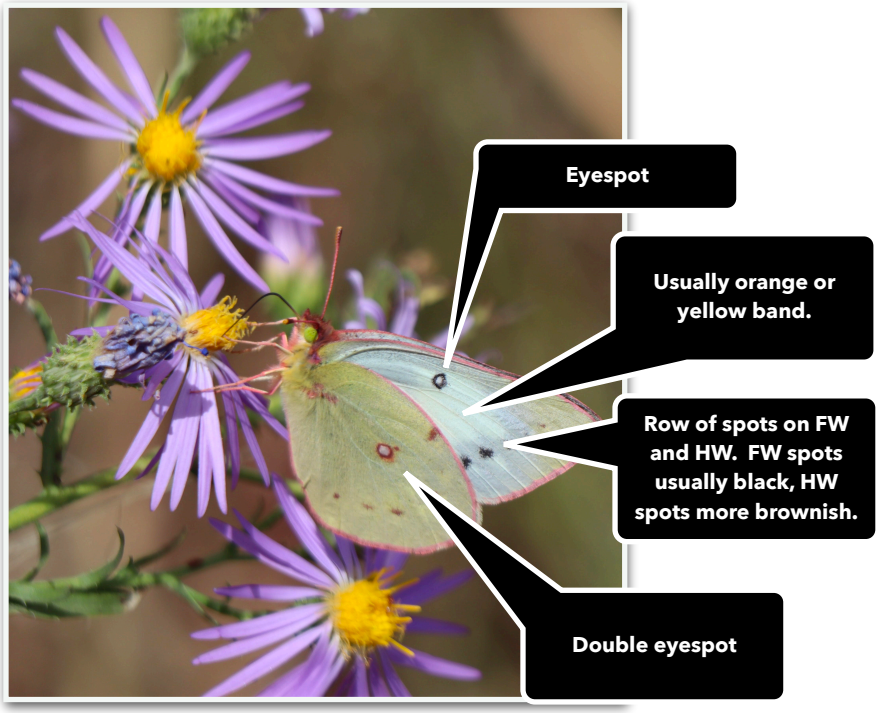






Other Resources (Red Satyr)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



Other Resources (Orange Sulphur)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Orange Sulphur
Colias eurytheme
(Boisduval, 1852)
Hodges #4210

Sulphurs can be very difficult to identify to species. In the case of an Orange Sulphur look for (among other things) an "underside hindwing spot silver with 2 concentric dark rings, and a spot above it" (Butterflies and Moths of North America).

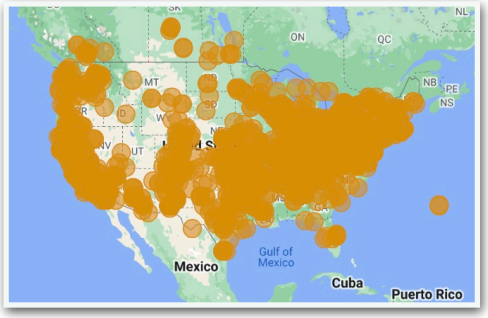
Host plants for caterpillars are in the pea family (alfalfa and clover). Adult butterflies nectar on a variety of species include asters, milkweeds, goldenrods, and dandelions (at least they have nectared on dandelions since the 1600s).

Flights may number three in our area, generally between March and November.

Orange Sulphur JVL

***Colias eurytheme*, Orange Sulphur**
Photographed in Percha Creek, Black Range.

Above: Orange Sulphur commonly seen nectaring from Spine-aster flowers. Photographs above and to the right are by James Von Loh.



Range Map of *Colias eurytheme,* Orange Sulphur. From sightings reported to Butterflies and Moths of North America.

Above: Orange Sulphur nectaring from Climbing Milkweed flowers. JVL

Orange Sulphurs nectaring from Spiny Chloracantha flowers on June 18, were common. JVL

Above: Variegated Fritillary, *Euptoieta claudia*, and Orange Sulfur on Chamisa in the Black Range. Steve Morgan

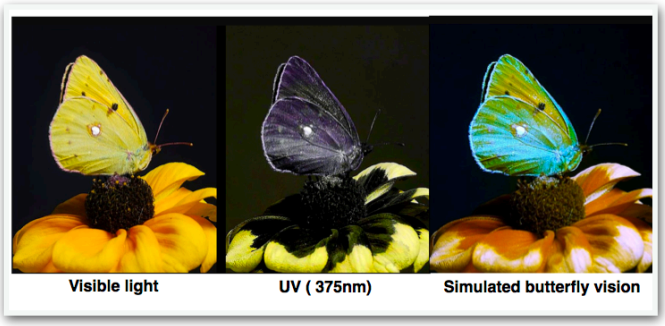
This group of images of the life stages of an Orange Sulphur are from Berry Nall's excellent website and are shown here under a Creative Commons Attribution - Non-Commercial 4.0 International License.

Clouded Sulphur taking nutrients from moist soil near the Soledad Canyon Trailhead in the Organ Mountains. JVL

Clouded Sulphur
Colias philodice
(Godart, 1819)
Hodges #4209

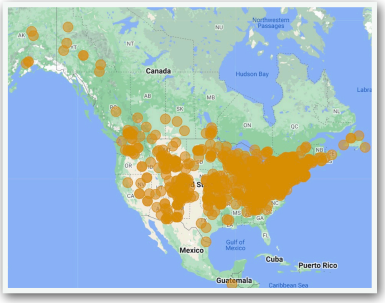
Clouded Sulphur were among the butterflies taking nutrients from moist soil near the Soledad Canyon Trailhead when James Von Loh visited the area in the summer of 2021, taking the two photographs shown here.

Clouded and Orange Sulphurs are closely related species. They use the same host plants and demonstrate some of the same breeding behaviors, like how they go about finding mates. It appears that interspecific breeding is reduced because the two species have wing patterns which reflect ultraviolet (UV) light differently. The dorsal side (top side) of the wings of the Orange Sulphur reflect UV light while the dorsal side of the wings of the Clouded Sulphur absorb UV light. Still, hybrids occur and are often fertile.

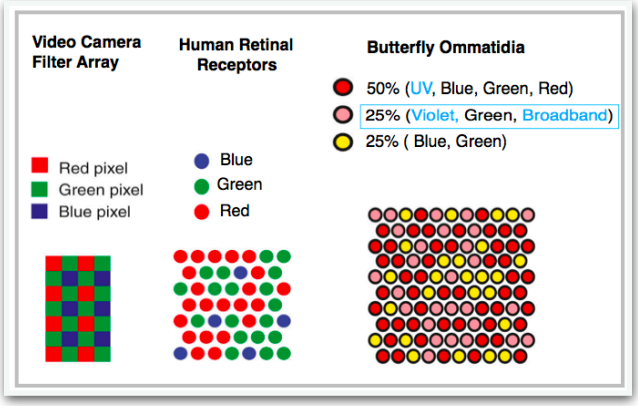


The image, above, is the product of Klaus Schmitt and is from a blog post (August 3, 2020) on the Nectandra Cloud Forest blog. This particular blog is entitled "Blink of an Eye". It describes the eyesight (workings, capabilities, etc.) of butterflies in wonderful detail, and reading it is time well

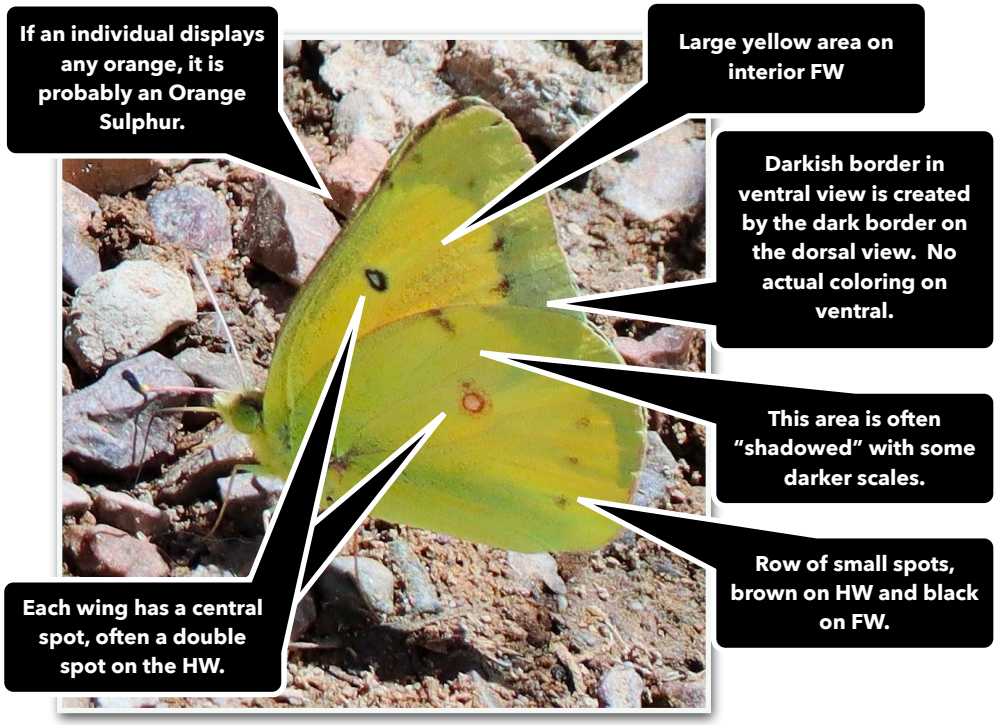
spent. The graph below is from the same blog entry and is adapted from Almut Kelber, *Current Biology* 26:R900-902, 2016.



Range Map of *Colias philodice*
Clouded Sulphur
From sightings reported to Butterflies and Moths of North America.



The first record of this species from New Mexico is from June 1961, but its population appears to be expanding. The subspecies found here is *C. p. eriphyle*. There are hints that it may be split and become a full species, *Colias eriphyle* (Western Clouded Sulphur).

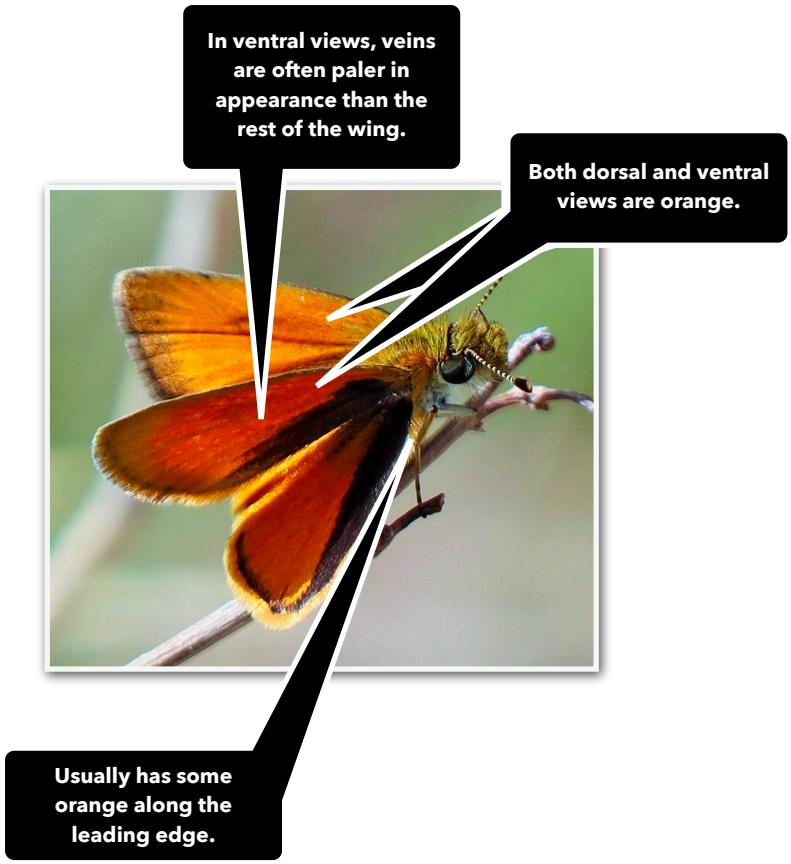


Other Resources (Clouded Sulphur)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Other Resources (Orange Skipperling)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America (Listed as *Oarisma aurantiaca*)
- Pajarito Environmental Education Center



Orange Skipperling
Copaeodes aurantiaca
(Hewitson, 1868)
Hodges #4009

Plants in *Poaceae* (like Bermuda Grass, Sideoats Grama, and Green Spangletop) are hosts for the caterpillar of this species.

The main range of this species covers the southern parts of California, Arizona, and New Mexico, south to Panama. It is also found in west Texas.

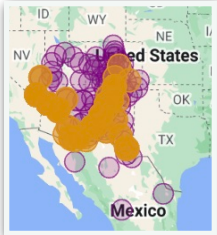
Range Map of *Copaeodes aurantiaca,* Orange Skipperling From sightings reported to [Butterflies and Moths of North America](#).

Report from 2021: Orange Skipperling, *Copaeodes aurantiaca* (Hewitson, 1868), arrived late in the Milkweed flowering period and can be confused with the Tropical Least Skipper. It is unknown if they nectar from Milkweeds earlier in the season, but many of these tiny skippers were observed along the Rio Grande during Thanksgiving week in 2021. It is a a resilient species. Night-time temperatures on November 28, 2021 were in the low 30s F when it was observed nectaring from Water Speedwell, *Veronica anagallis-aquatica* L. JVL

Canyonland Satyr
Cyllopsis pertepida
(Dyar, 1912) - Hodges #4572

The Canyonland Satyr directly below was photographed on November 13, 2021 along Mineral Creek, north of Kingston. There are typically three flights of this species every year, in our part of the world. It is most common during May, July, and October. The earliest an imago has been seen in the state is April 16.

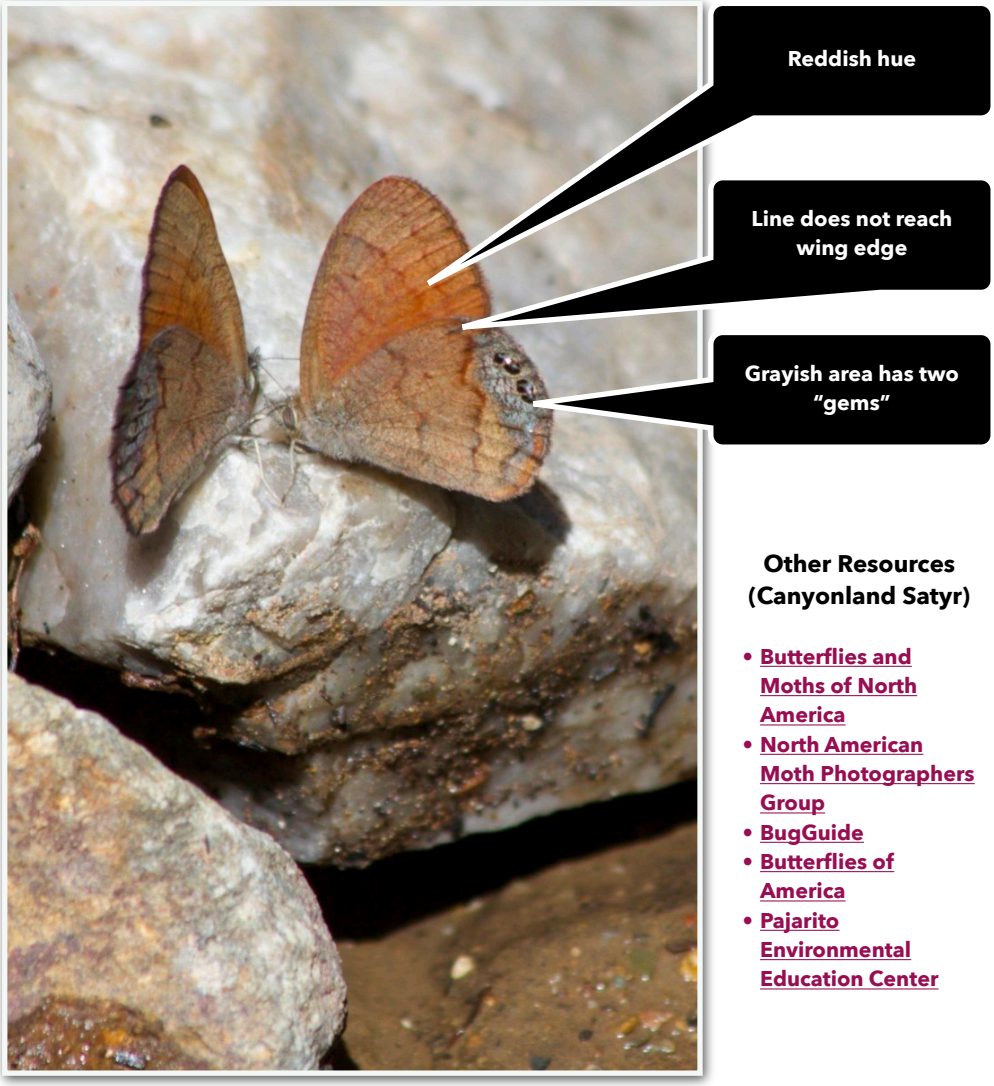
Canyonland Satyr is commonly found at elevations between 4,600′ and 8,900′, meaning that it can be expected in many of the foothill communities and much of the Black Range. Males often patrol dry gulches with enough vegetation to provide shade. The adults of this species rarely feed. Ron Parry notes that we also have Nabokov's Satyr in our area and that it can be differentiated from the Canyonland Satyr when the specimens are fresh, but it can be difficult to separate the two species if the specimens are worn.



Range: Map from Butterflies and Moths of North America.

This species was first described by Harrison Gray Dyar , Jr. in 1912, but its most famous admirer was Vladimir Nabokov, who studied the species extensively and is the first describer of the three subspecies. Most people know Nabokov as a world-class novelist, but he was also a renowned lepidopterist. Much of his work was not given critical credit during his lifetime, because he was an "amateur". It has, however, stood up well to the most recent genetic testing - something many of the "professionals" can not claim.

The two photographs at the upper right were taken at the fist stream crossing on Middle Percha Road heading west out of Kingston. The photograph immediately to the right is from May 26, 2020, it was taken in Drummond Canyon, off South Percha Creek.



Forewing/Hindwing and Dorsal/Ventral

A butterfly's forewing is the one which is at the front (face end) of the butterfly. The hindwing is the wing to the rear.

When looking at a butterfly from above, and if the wings are open, you are seeing the dorsal wing surface (like that in the top photo on the following page). When the butterfly is sitting and has its wings closed, it exposes the bottom of the wing or the ventral surface. When navigating the features of a butterfly, forewing, hindwing, dorsal surface, and ventral surface are terms of the trade.

The Canyonland Satyr will almost always land with its wings folded, given you a view only of the ventral side of the wings.

Other Resources (Canyonland Satyr)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Harrison Gray Dyar Jr. (1866-1929)

Dyar's Law, which describes the growth of various insect parts, is named after Dyar. He was an American entomologist.

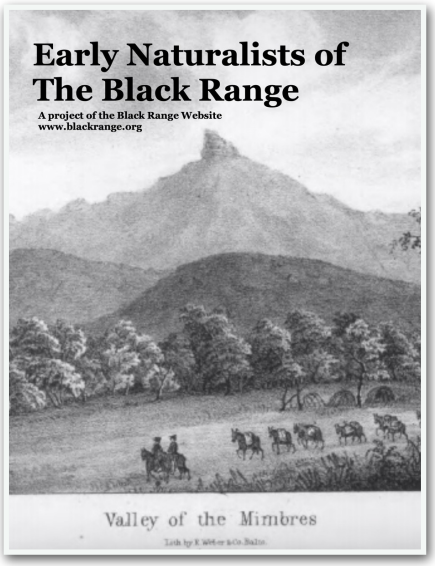
Dyar was the editor of several scientific journals, including; *Journal of the New York Entomological Society* (1904 to 1907), the *Proceedings of the Entomological Society of Washington* (1909 to 1912), and *Insecutor Inscitiae Menstruus* (1913 to 1926).

Dyar collected extensively and during the later part of his life became one of the leading authorities on mosquitoes, with an emphasis on their taxonomy.

There are three subspecies of Canyonland Satyr, all were originally described by Nabokov in 1942. Based on range, the one we find here, and the one shown in these photographs is most likely the nominate form. But check the subspecies images at Butterflies of America (link above) to distinguish the nominate form from *C. p. maniola* which is found in the far southwest of the state.

Francis H. Snow (1840-1908)

The Pajarito Environmental Education Center (link above) website notes that "Snow (1883) collected . . . (Canyonland Satyr) . . . in the Magdalena Mountains (So) in 1881, but misidentified it as *Cyllopsis henshawi*."

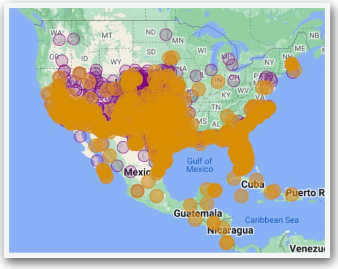


See *Early Naturalists of the Black Range*, pp 95-96, for a more complete biography of Snow.

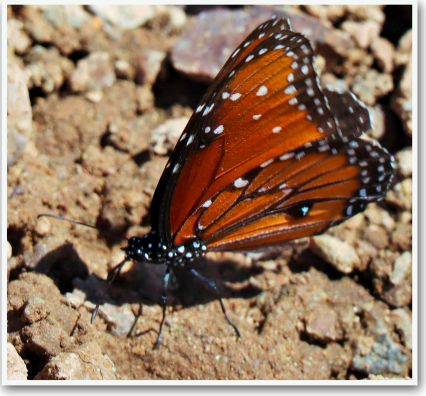
Queen
Danaus gilippus
(Cramer, 1776)
Hodges #4615

The Queen is the most commonly observed large puddler in our area. James Von Loh, photographed the larvae of the Queen butterfly, foraging on newer leaves and the stem of the inflorescence of *Asclepias subverticillata (*Horsetail Milkweed*)* and the two images of the pupa shown here. The two pupa photographs are of the same individual taken one day apart and were identified with the assistance of Steve Cary.

During both the imago and instar stages of their lives, Queens and Monarchs can be difficult to tell apart. The shades of their coloration, the patterns of color they exhibit, the food (milkweed) they consume, and their ability to sequester toxins from the plants they eat (and thus be distasteful or poisonous) are basically the same. Mullerian mimicry is the term used to describe two species with similar natural defenses and common predators evolve to look alike, "to spread the fear". A more complete description of the differences between the appearance of these two species is found at the end of this species account.

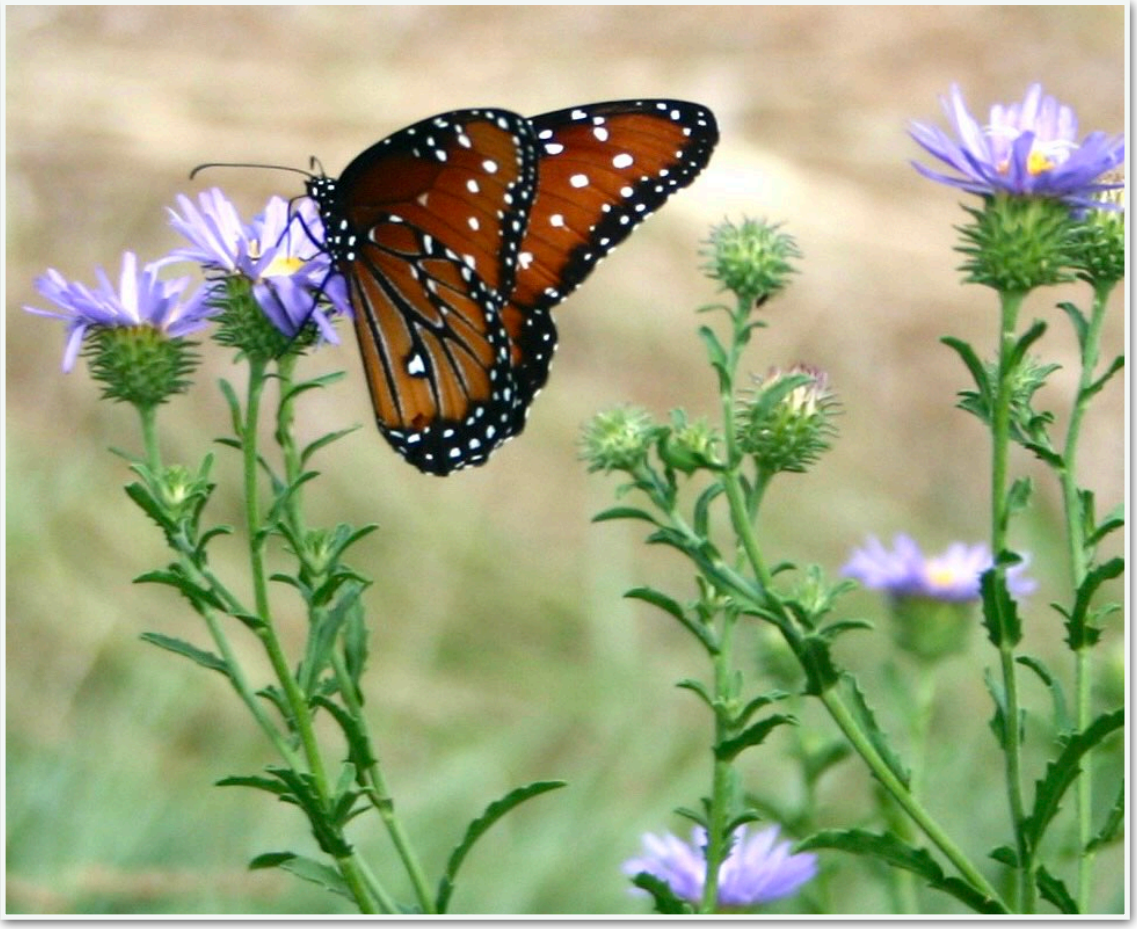


Range Map of *Danaus gilippus* Queen
From sightings reported to Butterflies and Moths of North America.



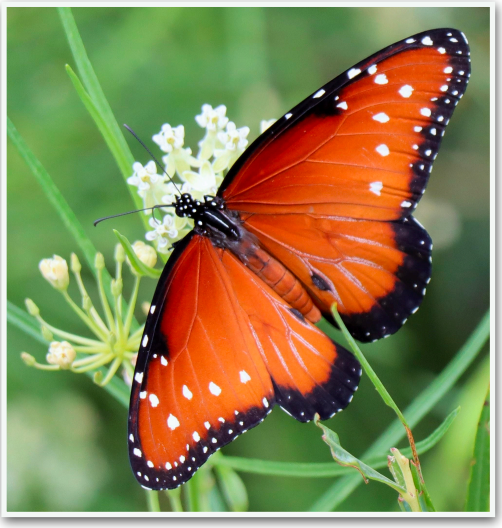
Above: Queen, *Danaus gilippus* (Cramer, 1775). A common large butterfly nectaring from Spine-aster flowers. JVL

This Queen was photographed in Hillsboro, Black Range (RAB). Video of the butterfly may be viewed here.

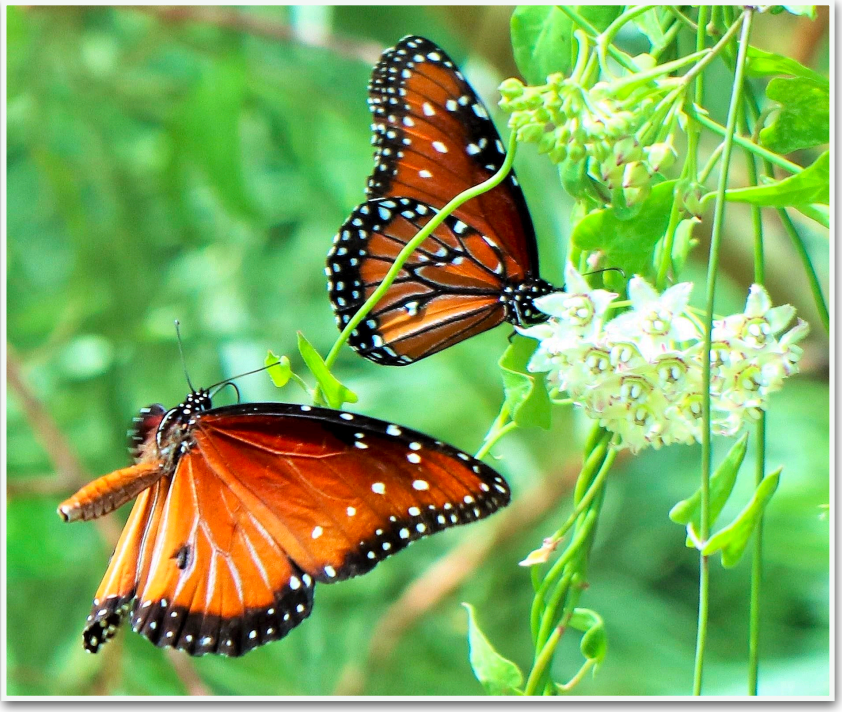


Sometimes a photographer will be able to capture a good portion of both wing surfaces, as Nichole Trushell did in the photo to the left. But that can be very difficult. She photographed this Queen at her home in Kingston, Black Range.

Desert Queen, *Danaus gilippus* (Cramer, 1775) *thersippus* (H. Bates, 1863), butterflies nectared from both Horsetail and Climbing Milkweed flowers consistently over three growing seasons per my observations/photographs. JVL



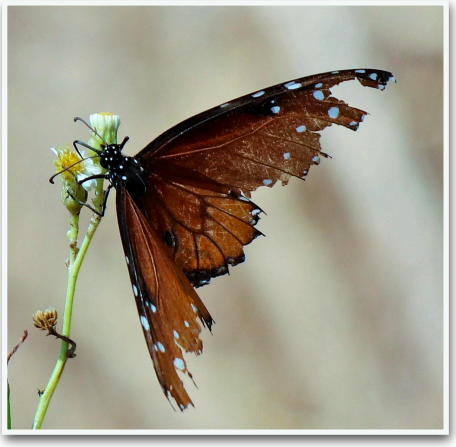
Desert Queen, shown here nectaring from Horsetail Milkweed flowers, exhibits brownish-colored dorsal wing surface (above) and brownish-colored ventral wing surfaces. JVL

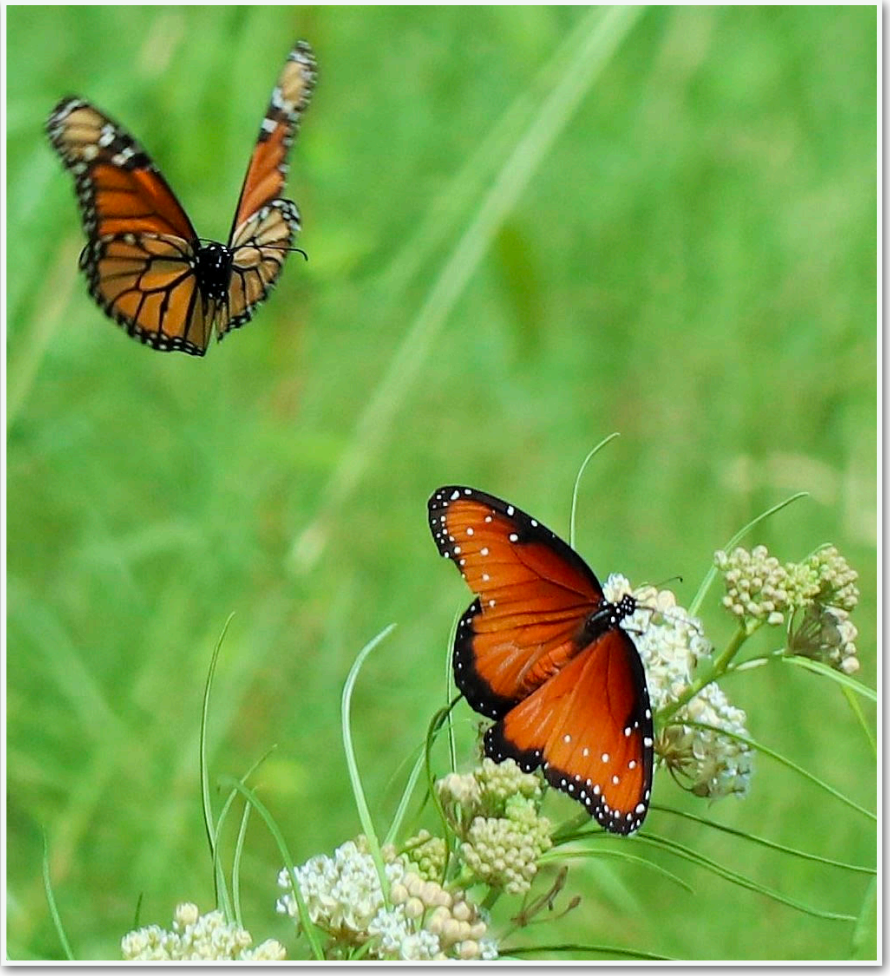


A short video by James Von Loh, of Desert Queens on Horsetail Milkweed at this site is hosted here.

Desert Queens nectar from both Horsetail and Climbing Milkweed flowers, while Monarchs appear to exclusively nectar from Horsetail Milkweed flowers. (I observed only a single Monarch nectaring from Climbing Milkweed flowers, in 2019).

Below: Queen with frayed wings on June 27, it was uncommon at that time and nectaring from Spiny Chloracantha flowers. JVL





Above: Queen is nectaring from Brown-foot, *Acourtia wrightii* ((A. Gray) Reveal & King) flowers. JVL

Above: Queen nectaring from Scarlet Morning-glory in Fillmore Canyon. JVL

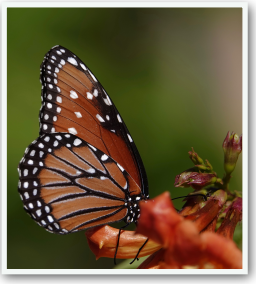
Above Right: Horsetail Milkweed plant illustrating typical progression of leaf distribution, flower development, and nectaring opportunities available to migrating butterflies such as this Queen. JVL

Queen (*Danaus gilippus*) on Chamisa.
Nichole Trushell

Above: Queen on June 22, were uncommon.
Here it is is nectaring from Spiny Chloracantha flowers. JVL

Other Resources (Queen)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



Telling them apart: Forewing and hindwing of Queen (left) are same color; they are different colors in the Monarch (right). Monarchs do not have white spots within the orange of the forewing; Queens do.

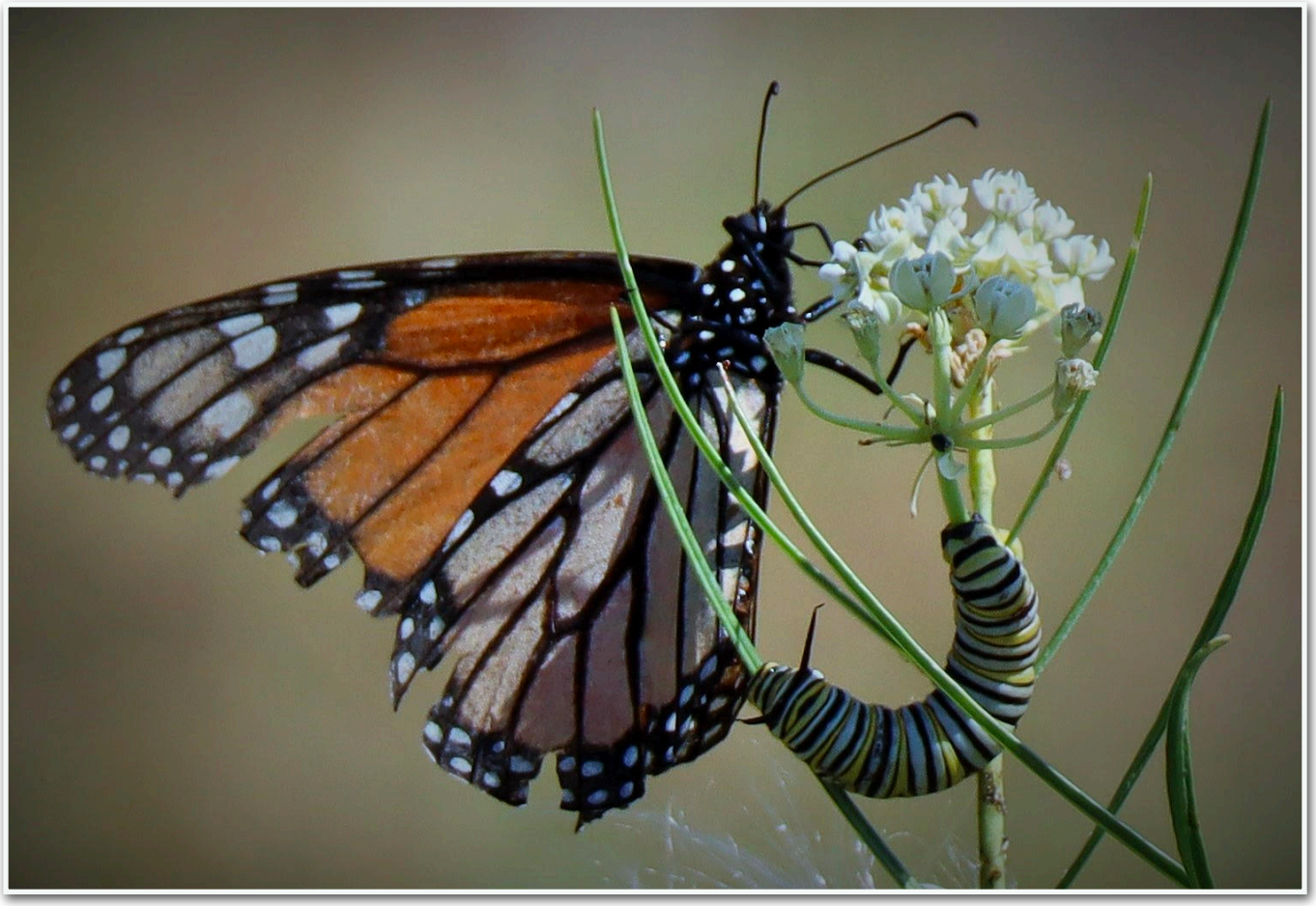
Monarch
Danaus plexippus
(Linnaeus, 1758)
Hodges #4616

There are several species of butterfly in the genus *Danaus* in our area; the Monarch is probably the best known. This species is a milkweed specialist, and there are milkweed planting campaigns you can "join" in an effort to mitigate the decline in its population.

Upper Right: The photograph of a Monarch at the upper right was taken by Debora Nicoll in Lake Valley, Black Range.

In both photographs of Monarch larvae, the insects are foraging on newer *Asclepias subverticillata* (Horsetail Milkweed) leaves among fruits. Photograph above by Nichole Trushell (photographed in Kingston, Black Range) and by James Von Loh, to the right.

Below Right: Monarch nectaring from Brown-foot flowers. JVL



Monarch adult nectaring from flowers and larva foraging on younger *Asclepias subverticillata* leaves near inflorescence. Photograph by James Von Loh.

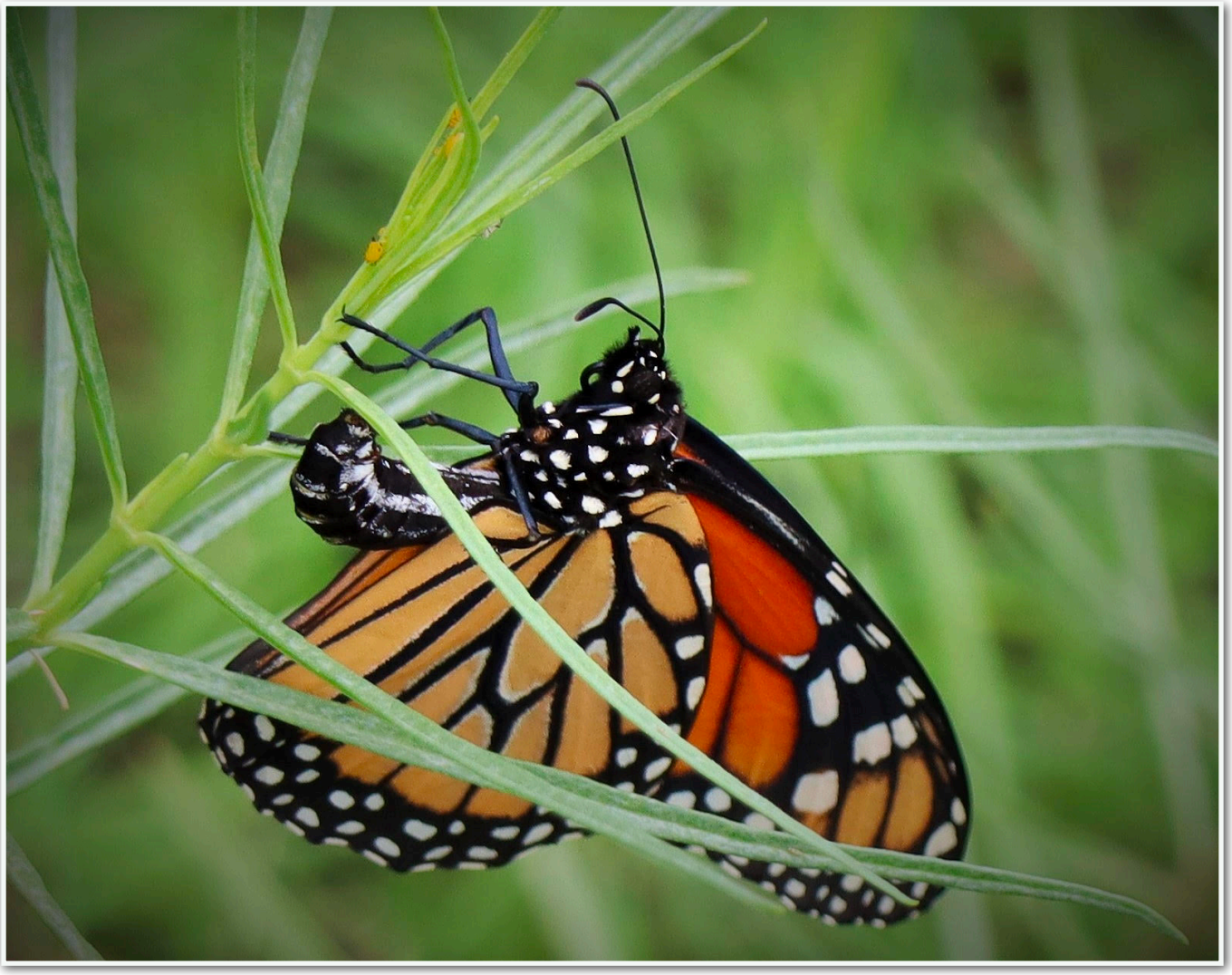
Monarch larvae often forage on *Asclepias subverticillata* fruits or on the youngest leaves of the stem. There are probably high concentrations of nutrients available at those locations. Instars can often look quite different. Photographs by James Von Loh.

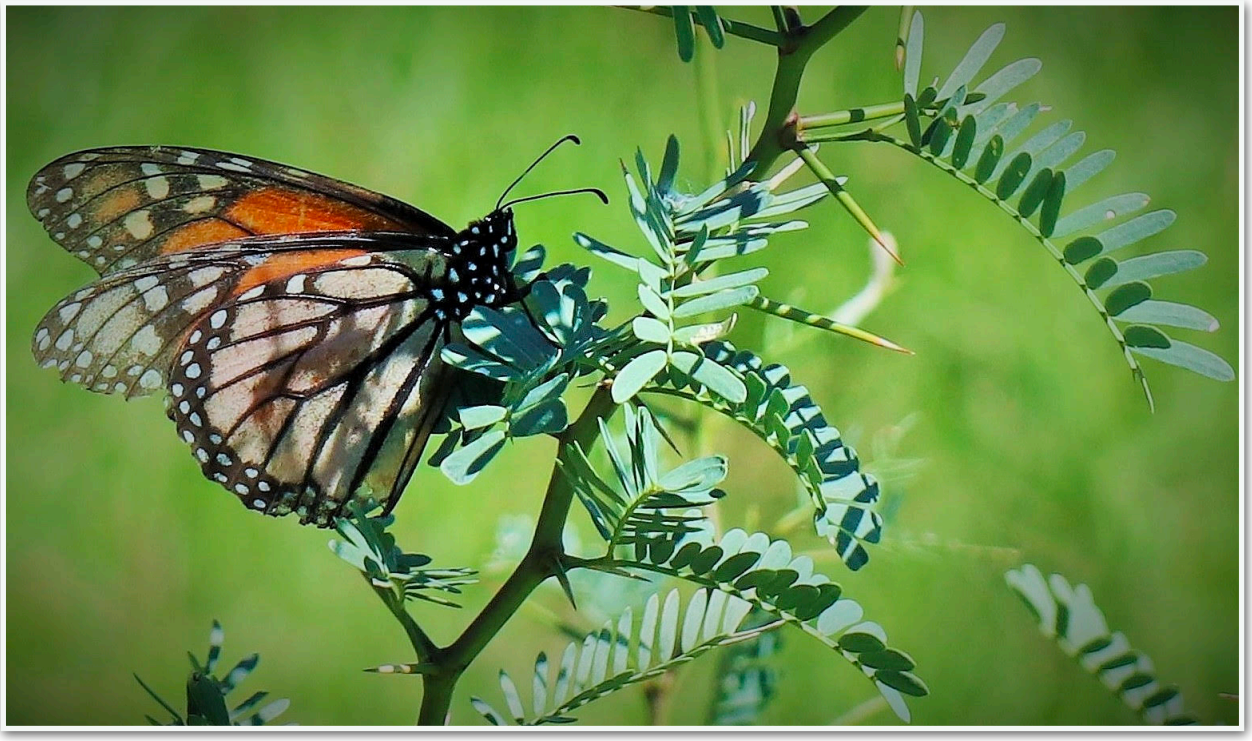
Telling them apart: Monarch (left) has bands which are roughly the same width; Queen (right) has broader white bands, and filaments emerge from yellow bands boarded by black. Monarchs will have two sets of filaments (those "antenna" look a likes), front and back, while Queens have three (two front sets with filaments longer than those of the back - see page 94).

Monarch, above, at Fillmore Falls, Organ Mountains (photo by Gordon Berman)

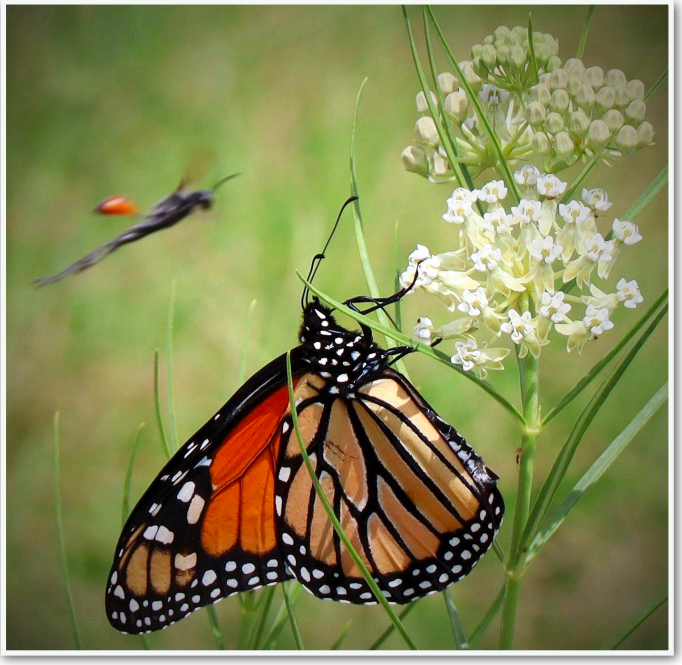
The Bordered Mantis, *Stagmomantis limbata* (Hahn, 1835), is the color of Horsetail/Whorled Milkweed leaves and stems. In this image a Bordered Mantis captures and ingests a Monarch which was seeking nectar from the Milkweed flowers. JVL

Monarchs are well known for laying eggs on milkweed species, as is shown below. Above, a Monarch nectars on Horsetail Milkweed, while a larva of the species munches on the same plant - the plant is in flower and seed. JVL





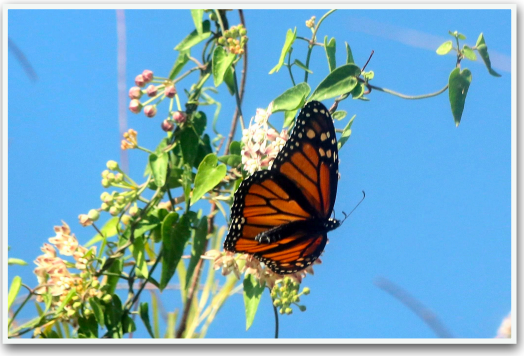
This Monarch is depositing eggs on a Honey Mesquite, *Prosopis glandulosa* (Torr.), which was within a Horsetail Milkweed stand. JVL

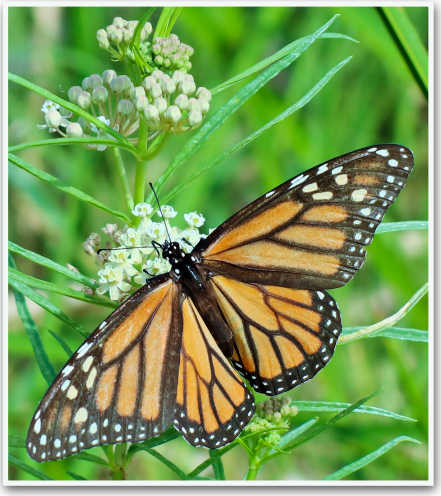


Monarchs nectaring on Horsetail Milkweed flowers are sometimes harassed by Ashmead's Digger Wasp, *Sphex ashmeadi* (Fernald, 1906) - at left - and Hymenoptera (Linnaeus, 1758) wasps - above.

This is the only Monarch (dorsal wing view below center and ventral wing view below left) I have observed nectaring from Climbing Milkweed flowers, during three seasons of observation/photography.

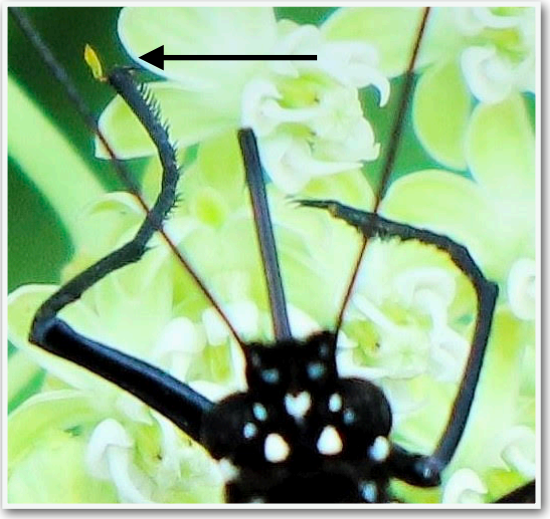
Bottom Right: Horsetail Milkweed fruits, provide an egg deposition site for this Monarch. The fruits are also preferred forage for Monarch caterpillars. JVL

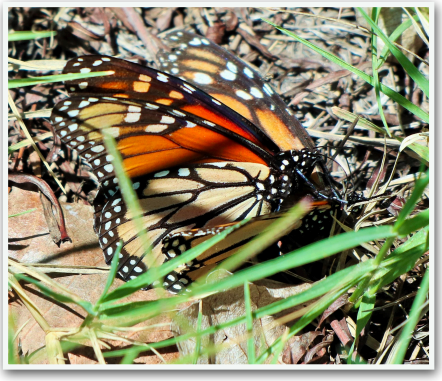




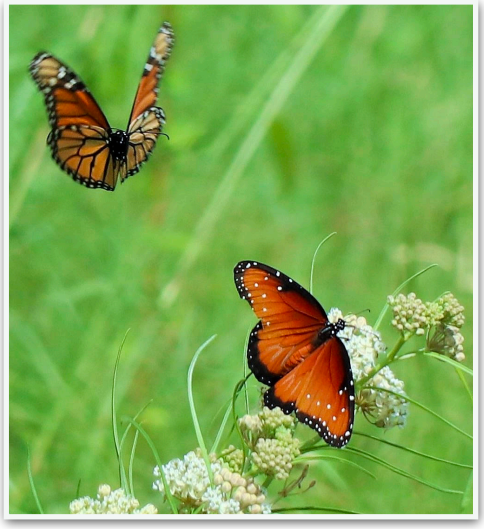
When photographing many butterfly species, like this Monarch, back-lighting will often enhance the wing colors. However, their wings will exhibit dull orange color under a cloudy sky (second photo from top, at right).

The pair of Monarchs pictured at the bottom right were mating in Bermuda Grass, *Cynodon dactylon* under Horsetail Milkweeds. The butterfly in the foreground exhibits the large beige color patches on the ventral wings which are one of the keys to the identification of the species. JVL

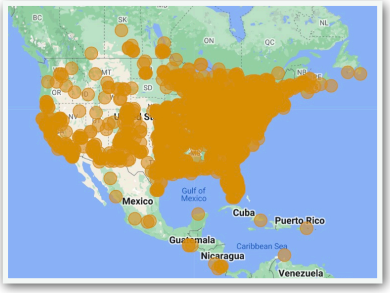




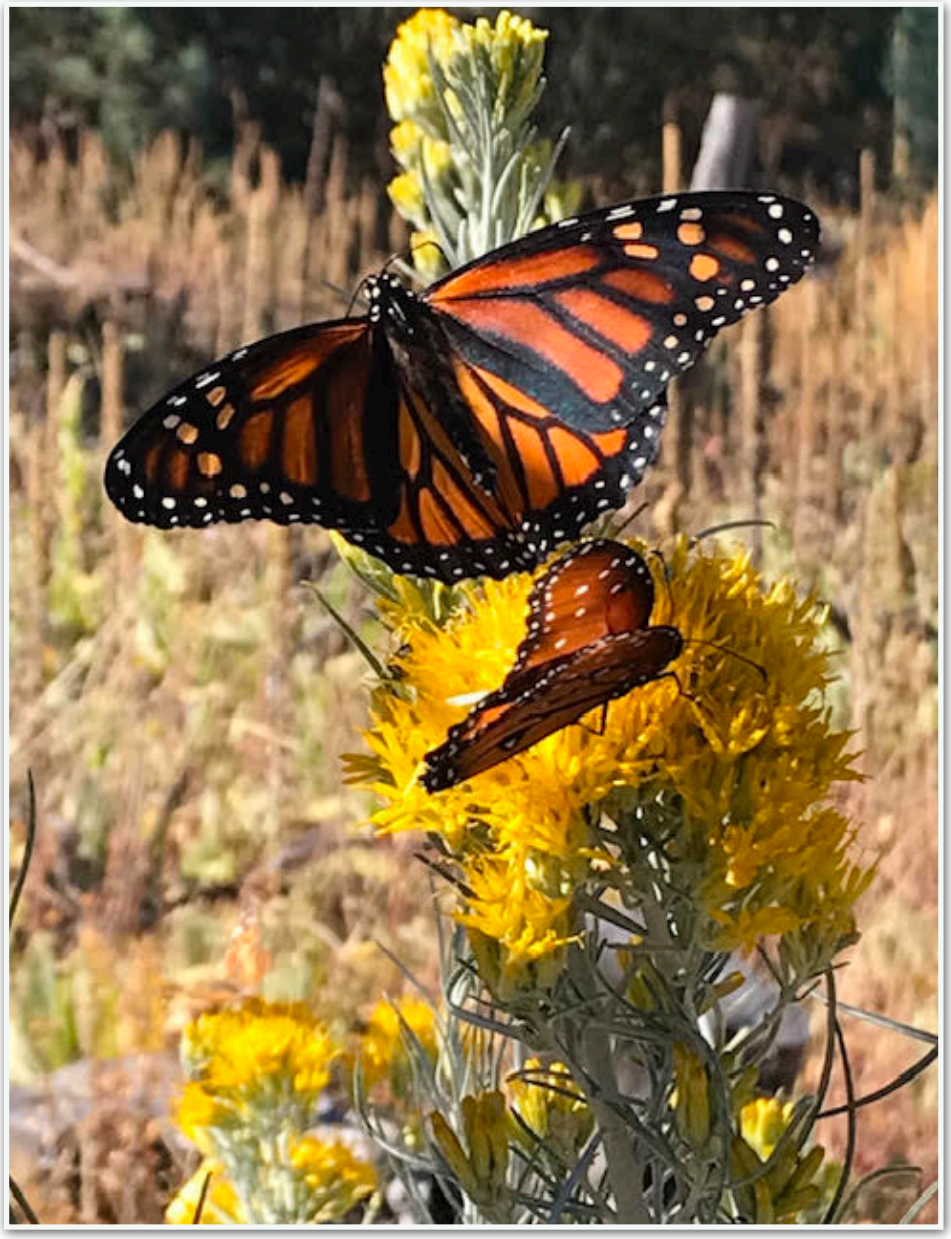
Above: Monarchs have legs that are long and strong enough to extract pollinia (see pollen sac on left front leg) however, I would consider them a rare pollinator of Milkweed flowers and an uncommon flower visitor along this Rio Grande reach. JVL



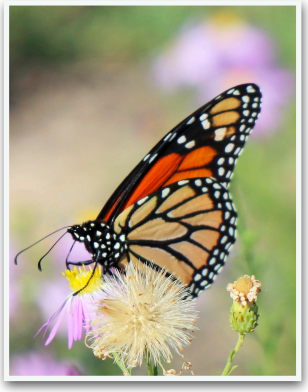
Left: Monarch (in-flight) investigates Desert Queen nectaring from Horsetail Milkweed flowers. Generally, Monarch wings are orange-colored dorsally with orange and beige colors ventrally while Desert Queen wings are shades of brown-to-brownish orange in color, both dorsally and ventrally. Desert Queens nectar from both Horsetail and Climbing Milkweed flowers, while Monarchs appear to exclusively nectar from Horsetail Milkweed flowers. (I observed only a single Monarch nectaring from Climbing Milkweed flowers, in 2019). JVL



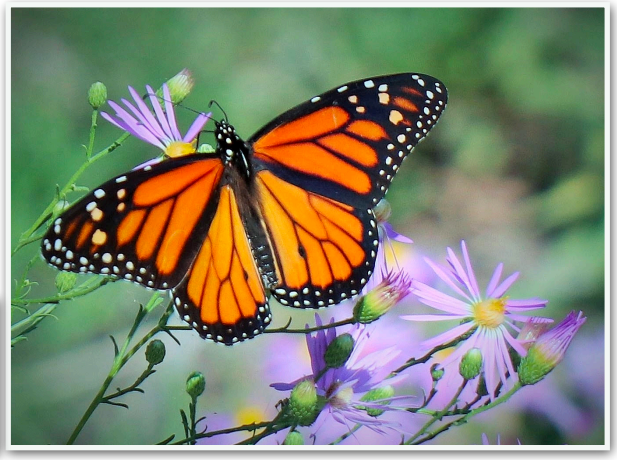
Range Map of *Danaus plexippus* Monarch
From sightings reported to Butterflies and Moths of North America.



Top: Monarch and Queen on Chamisa. JVL



The Monarch images directly above have been entered on the Journey North page on this species. JVL



Monarchs are uncommon on Spine-aster flowers. JVL

Datana neomexicana
(Doll, 1911)
Hodges #7913

The caterpillars shown here are most likely the instars of *Datana neomexicana* which has a range which extends from Arizona to western Texas, to include New Mexico and parts of Colorado. This determination, however, is made exclusively on range (at this point). *Datana neomexicana* can not be separated from *D. perfusa* using DNA barcoding techniques.

The April 2023 issue of the Black Range Naturalist has a more extended discussion of these issues.

The two photographs on this page were taken by Véronique De Jaegher of Kingston in late summer, 2022.

Photographs on the following page were taken along the trail from the Kingston Cemetery to Emory Pass on October 11, 2022 - RAB.

Range Map of *Datana neomexicana*
From sightings reported to Butterflies and Moths of North America.

Jacob Doll
(1847-1929)

Doll is known primarily as a collector but from 1898 to 1927 he served as the Curator of Lepidoptera at the Brooklyn Museum.

The *Bulletin of the Brooklyn Entomological Society*, p. 105, Volume 24, Number 2, April 1929, noted that *"To Mr. Doll's credit there is a long list of moths all bearing the specific name of 'dolli' in his honor as the first discoverer of the species. Many of these were collected by him during pioneer days out west. Of his exploits and the incidents connected with the capture of these insects, his is wont to talk freely . . ."*

From the early 1870's to 1896 he collected for, and maintained the collection of, Neumoegen, who at that time owned one of the largest *Lepidoptera* collections in the country. Following Neumoegen's death, his collection became the core of the Brooklyn Entomological Society's collection and remained under Doll's care.

Photographed along the trail from the Kingston Cemetery to Emory Pass, Black Range, New Mexico on October 16, 2022 - RAB.

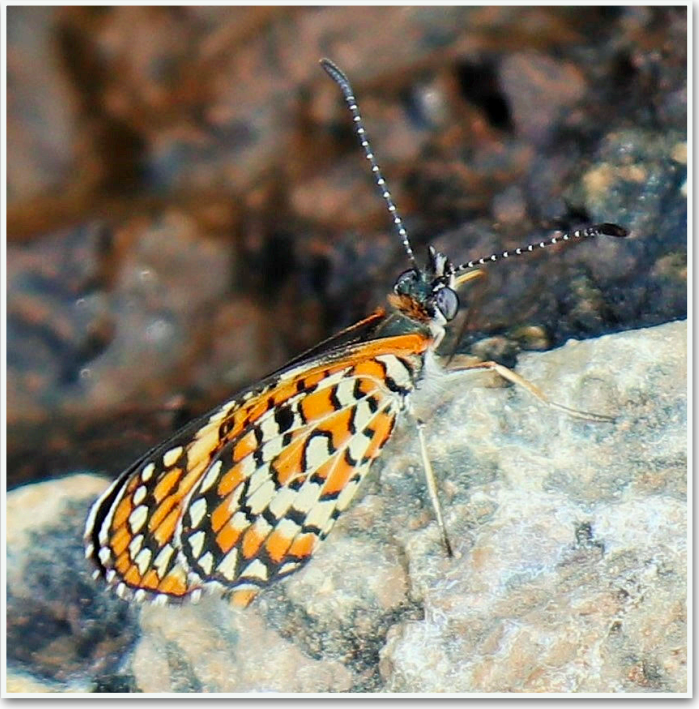
Tiny Checkerspot
Dymasia dymas
(W. H. Edwards, 1877)

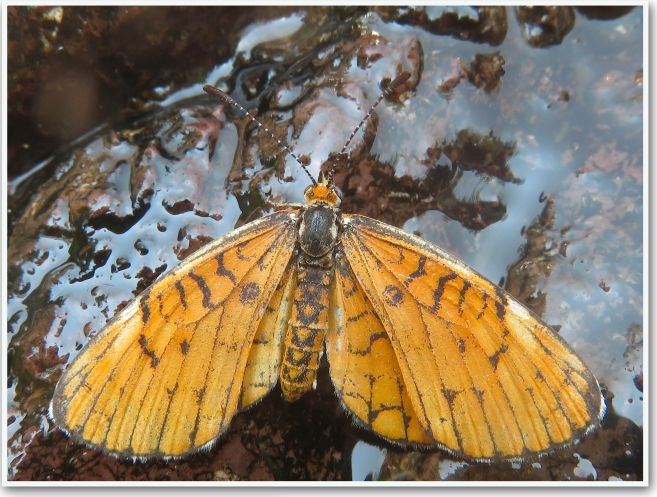
James Von Loh took the photograph (immediately below) of two Tiny Checkerspots taking nutrients from a pool in drainage at the head of Achenbach Canyon. In the same location, he took the photograph (bottom left) of the butterfly showing its ventral wing exposure.

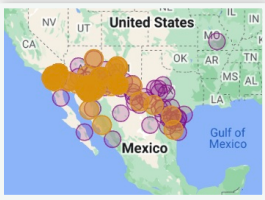
This species is found in the very southern parts of California, Arizona, New Mexico, and Texas, southward into central Mexico, usually below 5,500 feet. In New Mexico it has from three to four flights a year, during March to October.

The wingspan of this species varies between 3/4 of an inch and 1-1/2 inches.

See instar at Berry Nalls site.

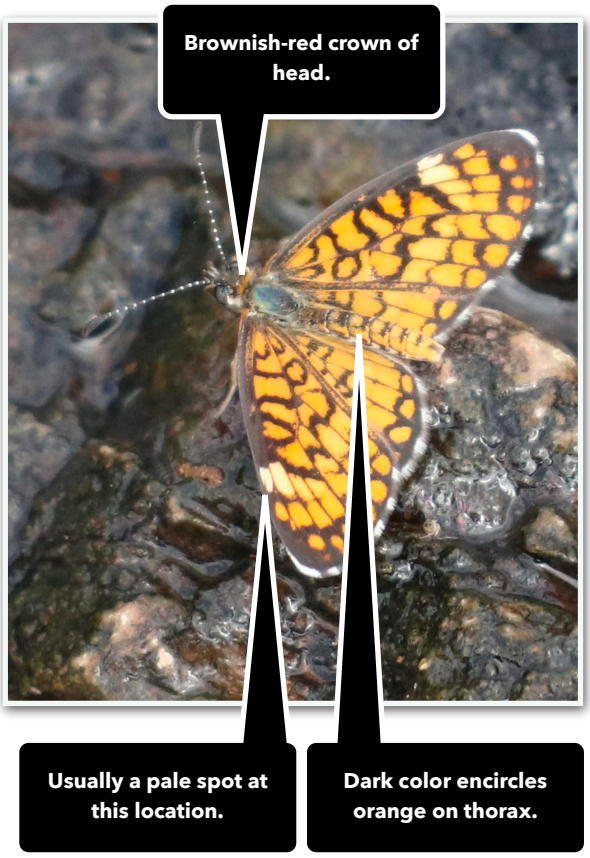






Range Map of Dymasia dymas
Tiny Checkerspot
From sightings reported to Butterflies and Moths of North America.

Gordon Berman took these photographs of a Tiny Checkerspot taking nutrients from wet bedrock below Soledad Canyon Falls in the Organ Mountains. Note that there are orange spots inclosed by black along its abdomen, a diagnostic feature.



Other Resources
(Tiny Checkerspot)

- Butterflies and Moths of North America
- North American Moth Photographers Group. As *Microtia dymas*
- BugGuide. As *Microtia dymas*.
- Butterflies of America. As *Microtia dymas*.
- Pajarito Environmental Education Center

Giant Northern Flag Moth or Giant Northern Flag
Dysschema howardi
(Hy. Edwards, 1886)

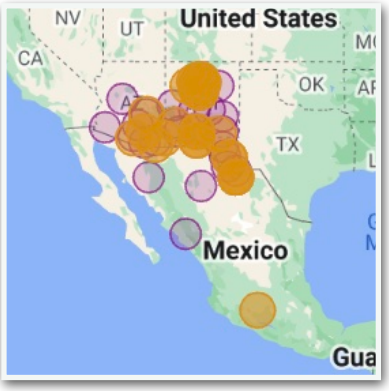
Hodges 8040

This species is found in Arizona, New Mexico, southwestern Texas, and Mexico. None of the other (90) species in *Dysschema* are found this far north. This species was known as *Daritis thetis* at one time.

The instar (right) was photographed by Gordon Berman in 2019 on the west side of the Organ Mountains. Ron Parry captured an individual in the imago stage (below) and has added the image to his website.

Captured in the Big Burro Mountains. From Moths of the Gila National Forest by Ron Parry (website).

Giant Northern Flag Moth instar photographed by Gordon Berman, on the west side of the Organ Mountains in 2019.



Range Map of *Dysschema howardi*
Great Northern Flag Moth
From sightings reported to Butterflies and Moths of North America.

Henry Edwards
(1827-1891)

People who have a fascination with natural history, and often contribute significantly to that field, come from all walks of life.

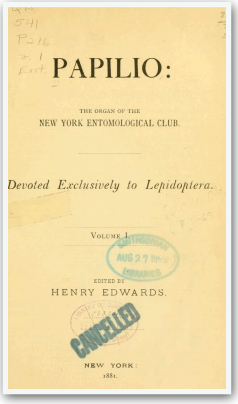
"Harry" was the stage name of Henry Edwards. He was an actor of note, gaining fame in Australia and on the east and west coasts of the United States.

He was elected a life member of the California Academy of Sciences following his publication of a series of studies of the butterflies and moths of the Pacific Coast region.

On the east coast he edited three volumes of *Papilio*, the journal of the New York Entomological Club.

***Papilio* merged with *Entomologica Americana* in 1941. He also completed a major work on the life cycle of butterflies at this time.**

Edwards' personal insect collection became the foundation of the butterfly and moth collection at the American Museum of Natural History.


PAPILIO:

THE ORGAN OF THE NEW YORK ENTOMOLOGICAL CLUB.

Devoted Exclusively to Lepidoptera.

VOLUME I.

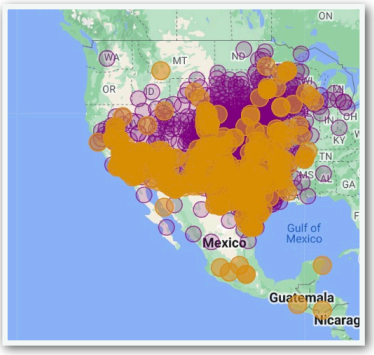
EDITED BY HENRY EDWARDS.

NEW YORK:

1881.

Reakirt's Blue
Echinargus isola
(Reakirt, 1867)
Hodges 4360

Ants tend the caterpillars of this species, apparently protecting them. The caterpillars excrete a sugary substance which the ants consume. This type of relationship is seen in several butterfly species.



Range Map of *Echinargus isola*
Reakirt's Blue
From sightings reported to Butterflies and Moths of North America.

Caterpillars feed on plants in the pea family including (but not limited to), clover, mimosa, and mesquite. The caterpillars eat the flowers and seed pods of these plants. Sometimes they also eat the leaves. The adult butterfly nectars on diverse plant sources including spearmint, white sweet clover, water speedwell, tamarisk, coyote willow, milkweed species, aster species, littleleaf sumac, honey mesquite, etc.

Reakirt's Blue. JVL

Reakirt's Blue taking nutrients from a muddy flat near livestock pond at the Sierra Vista Trail. JVL

Reakirt's Blue, east of Hillsboro, Black Range, July 2017.

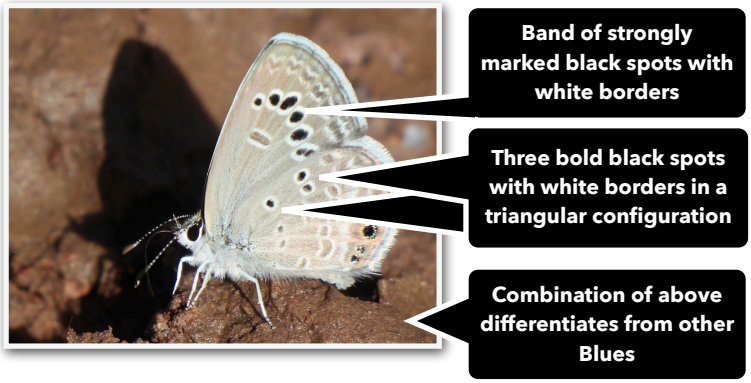
Tryon Reakirt
(1844-1871)

From Wikipedia: Reakirt *"was an American businessman and entomologist. He wrote several papers on butterflies and showed great promise in his field. However his career was cut short when financial and legal difficulties forced him to flee the country."*

I guess not all entomologists are "pristine" - they seem to be human.

Reakirt's Blue on June 25. Common. JVL

Reakirt's Blue taking nutrients from a muddy flat near livestock pond at the Sierra Vista Trail, Organ Mountains. JVL.



Other Resources (Reakirt's Blue)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Slice and Dice

The Linnaean classification system has grown a bit more complicated over the years as humans have attempted to fit everything into a box. The classical hierarchy is:

- Life;
- **Domain;**
- **Kingdom;**
- **Phylum (Division** is the term sometimes used in botany);
- **Class** (in botany, the suffix "eae" is added to the name);
- **Order;**
- Suborder (in botany, the suffix "ineae" is added to the name);
- **Family** (in botany, the suffix "aceae" is added to the name);
- Subfamily (in zoology, Subfamiles end in "inae" and in botany, the suffix "oideae" is added to the name);
- Tribe (in zoology, Tribes end in "ini" and in botany they end in "eae");
- Subtribe (in zoology, Subtribes end in "ina");
- **Genus;**
- Superspecies or Species Complex (several closely related species);
- **Species;**
- Group (as in one of the groups of Dark-eyed Junco subspecies which make up that species); and
- Subspecies.

You may encounter divisions which are based on a more complex methodology. Differing Kingdoms have different rules for classifying and naming the various classifications.

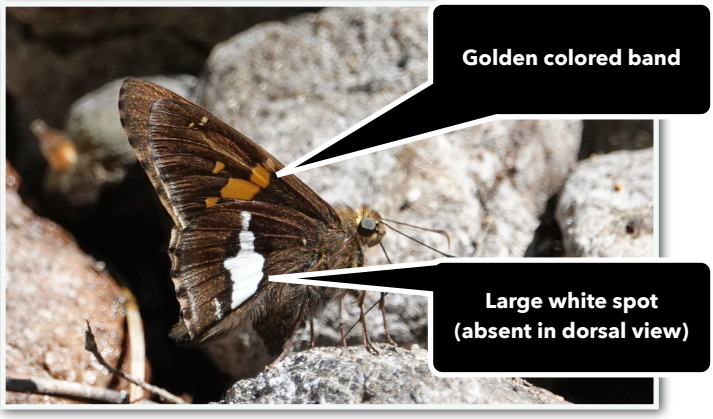
Huachuca Skipper
Epargyreus huachuca
(Dixon 1955)
Hodges 3870.1

This Huachuca Skipper was photographed (RAB) in Railroad Canyon, on the west slope of the Black Range, on May 13, 2022. This species does not like yellow flowers - other colors yes, yellow, no. At night, Huachuca Skippers can be found "perching" upside down on the bottom side of leaves. Sometimes they will exhibit this behavior on especially hot days.

Range Map of *Epargyreus huachuca*
Huachuca Skipper
From sightings reported to Butterflies and Moths of North America.

Other Resources
(Huachuca Skipper)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



The larvae of Huachuca Skipper prefer the New Mexico Locust, *Robinia neomexicana,* as a host plant. This plant species proliferates in the Black Range following forest fires. There are many individual host plants in the Black Range for this species.

This species has recently been split from *Epargyreus clarus*, Silver-spotted Skipper. Markings used to separate Silver-spotted Skipper (which is found in northern New Mexico) and Huachuca Skipper have yet to be identified. There are several subspecies of Huachuca Skipper, the one we have here is the nominate form. Some sources name this species Sonoran Skipper, a name previously given to *Polites sonora*.

The April 2022 issue of The Black Range Naturalist focused on butterflies and moths of the Black Range. Much of the material in this Sampler was taken from that source.

Additional species accounts and species photographs have been added to the species listing since April of 2022. Additional supporting material has also been added to the Sampler. However, the natural history articles on butterflies and moths, written by James Von Loh, in the April 2022 issue of *The Black Range Naturalist* have not been included in the Sampler. The Sampler is intended to be, primarily, an identification guide to the butterflies and moths found in our area.

We recommend that you read or download the April 2022 issue of *The Black Range Naturalist*. It makes a perfect companion piece to the Sampler.

The Black Range Website has a complete index of all of the issues of the Black Range Naturalist.

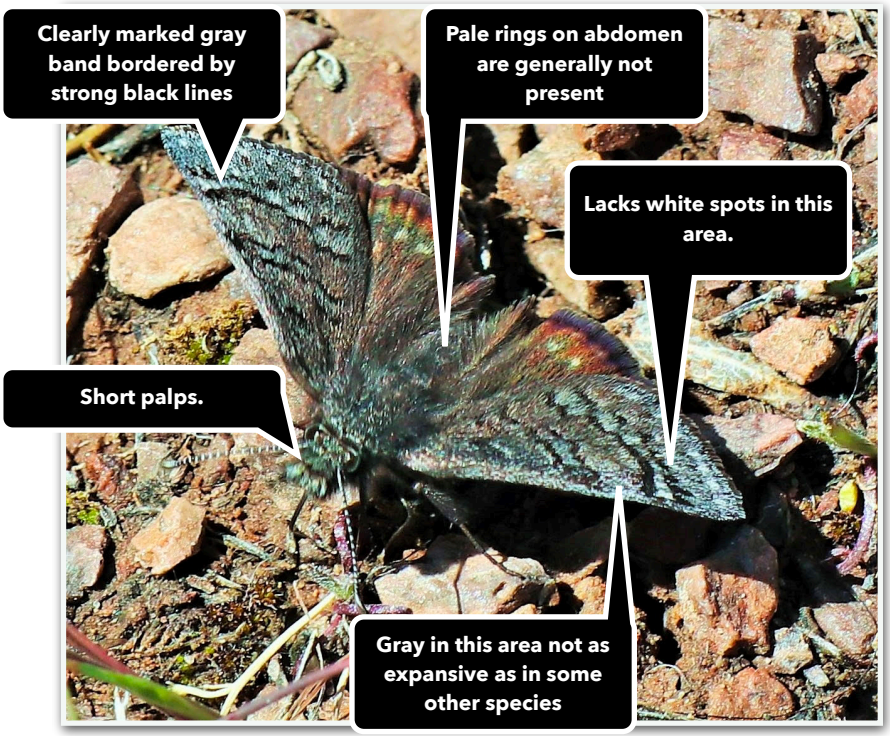
We hope to issue future versions of the Sampler. If you have material which would make this effort more comprehensive, and wish to share, please contact the editor at rabarnes@blackrange.org.

Sleepy Duskywing
Erynnis brizo burgessi
(Boisduval & Leconte, 1837)
Hodges 3946

This Sleepy Duskywing was photographed by James Von Loh. It is taking nutrients from moist soil under gravel near the Soledad Canyon Trailhead, Organ Mountains. Note the blunt appearance of the antennal clubs.

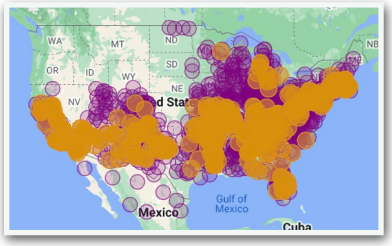
This is a butterfly of higher elevations, from a mile to a mile-and-a-half high (5200' to about 7800'). This is the life zone of several of the host plants that larvae feed on, especially oaks like *Quercus gambelii* and *Quercus emoryi* in our area.

The last instar of the larval stage will overwinter (hibernate). There is one flight per year.



Other Resources
(Sleepy Duskywing)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America



Range Map of *Erynnis brizo*
Sleepy Duskywing
From sightings reported to
Butterflies and Moths of North America.

Other Resources
(Funereal Duskywing)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Funereal Duskywing

Erynnis (Gesta) funeralis

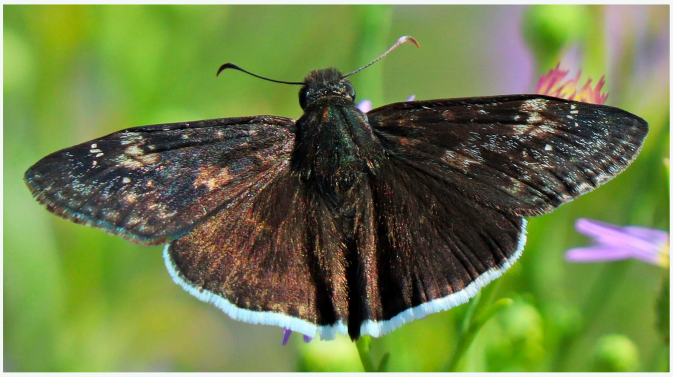
(Scudder & Burgess, 1870)

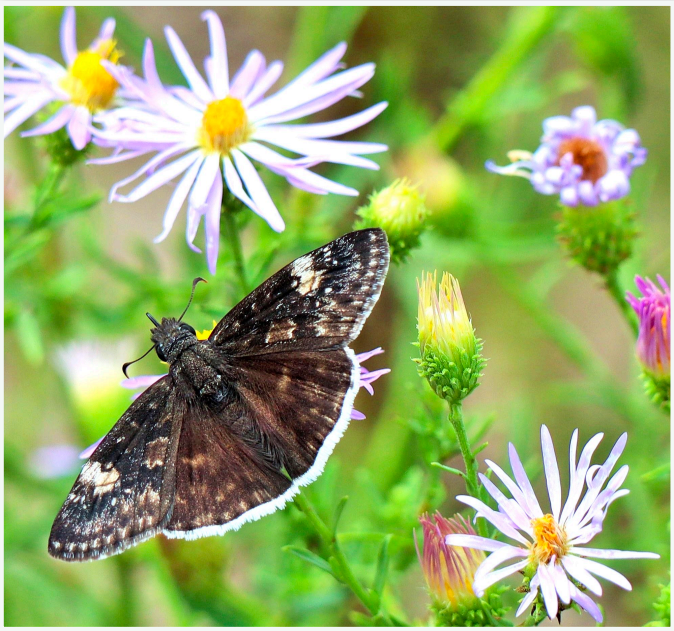
Hodges #3957

Top Left: Photographed on Sawyers Peak, Black Range, June 2019. RAB Center Left: Photograph by Gordon Berman.

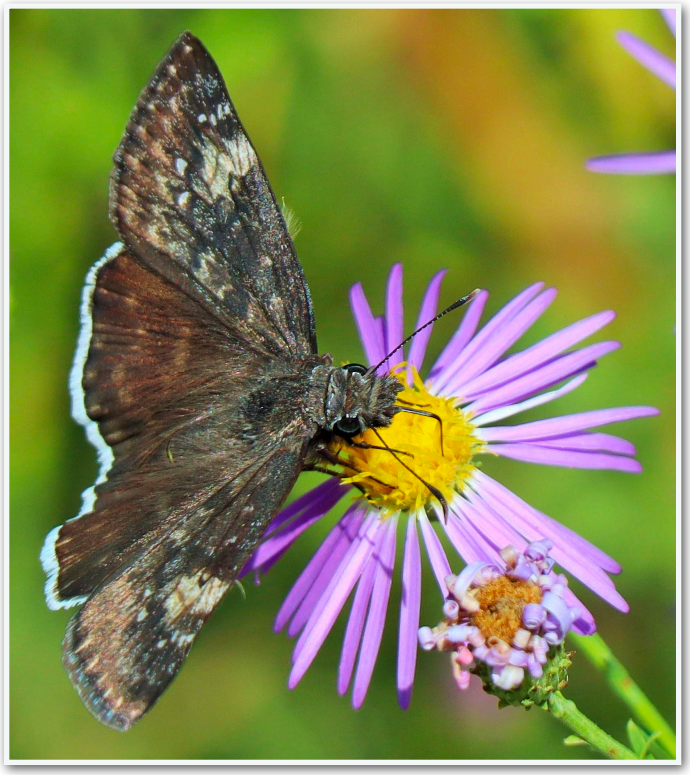
Remaining imago photographs by James Von Loh. In the Rio Grande at Las Cruces, Von Loh found this to be an uncommon-to-common butterfly nectaring from Spine-aster flowers.

This species is found at a wide range of elevations, from about 4,000 feet to 11,00 feet. Caterpillars of this species feed on New Mexico Locust, alfalfa, various vetch species, and other legumes.





Instar of Funereal Duskywing, an image from Berry Nall's excellent website, shown under a Creative Commons Attribution-NonCommercial 4.0 International License.



Funereal Duskywing. JVL

Adults feed from the nectar of various flowering species, including the asters which are shown here.

Both sexes have scent scales. The male has a costal fold which has (yellow) scent scales and the female has a patch of scent scales on her 7th abdominal segment.

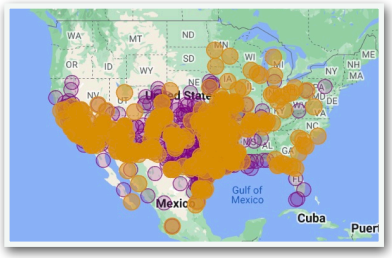
The range of Funereal Duskywing extends as far south as Argentina. As shown on the range map, they wander widely from their core American range in the Southwest.

Referring back to the current range of taxonomic categories, this species is in the Tribe *Erynnini*. The Genus *Erynnis* (the Duskywings) has at least 24 species.

Samuel Hubbard Scudder
(1837-1911)

Scudder is often described as the father of insect paleontology in the United States, combining two of his life's interests.

He studied under Louis Agassiz at Harvard and then worked with him for two years. He was considered to be the world's foremost authority on grasshoppers, but alas that is for other references to explore. Here we focus on his work on the *Lepidoptera*. His multivolume *The butterflies of the eastern United States and Canada: with special reference to New England* was the standard reference for decades. Although the focus of the work is on the eastern United States, it covers many species which are found in this area. In addition to species plates (see an example, plate 5 from Volume 3, to the right), this work includes range maps and drawings of anatomical details. It is such a classic (and the



Range Map of *Erynnis funeralis*
Funereal Duskywing
From sightings reported to
Butterflies and Moths of North America.

plates are beautiful) that we provide links to the work here (downloadable).

The butterflies of the eastern United States and Canada: with special reference to New England

Volume One (67.5 MB)
Volume Two (63 MB)
Volume Three (25.6 MB)

On page 8 of this sampler we referenced the fossil butterfly, *Prodryas persephone* (image below), which Scudder described originally. His *The Fossil Insects of North America* (41.9 MB) in two volumes continues to be a major reference in the field of insect paleontology.

Rocky Mountain Duskywing
Erynnis (Gesta) telemachus
(Burns, 1960)
Hodges#3948

The instar of the Rocky Mountain Duskywing appears to be a Gambel Oak specialist. Comparing the range maps of the two species might lead you to the conclusion that this Duskywing does not stray far from the table. The adult butterflies feed on the nectar of a variety of flowers.

Rocky Mountain Duskywing
Photographed 5 miles north of Kingston, Black Range RAB

Range Map of *Erynnis telemachus*
Rocky Mountain Duskywing
From sightings reported to
Butterflies and Moths of North America.

Range Map of Gambel Oak

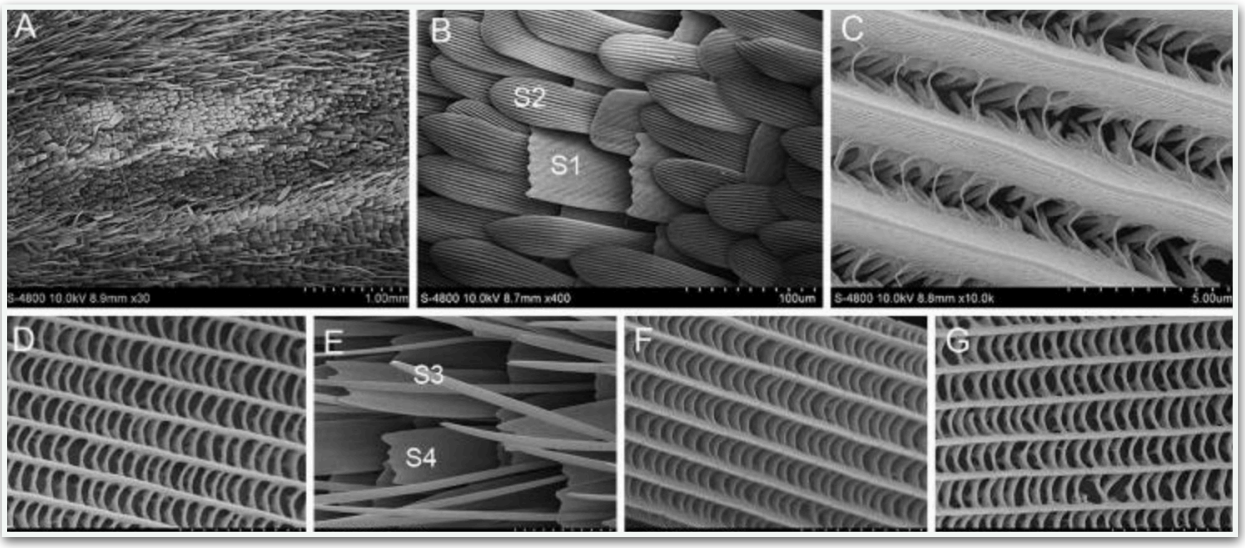
The Rocky Mountain Duskywing has scent scales at the same locations as the Funereal Duskywing. Costal fold on the male and at the 7th abdominal segment on the female.

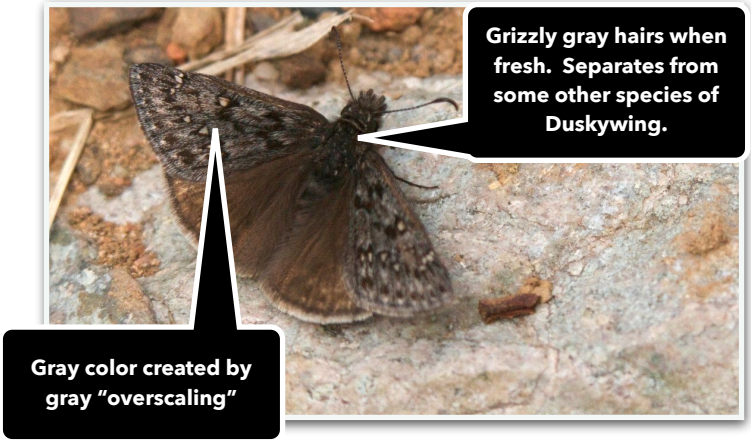
Costa refers to the leading edge of the wing. Wing references, for instance, may refer to the costal margin which simply means the leading edge of the wing.

***Lepidoptera* have scaled wings. The "dust" you see when you handle a butterfly are the wing scales which have come off of the insect, damaging it. Scent scales are a type of scale which surrounds scent glands and are used to distribute pheromones. Scent scales are distinctive (at microscopic magnification) and can be used to determine the species of many butterflies/moths (see below).**

Below: Ultrastructure of scales in and around scent glands patches:

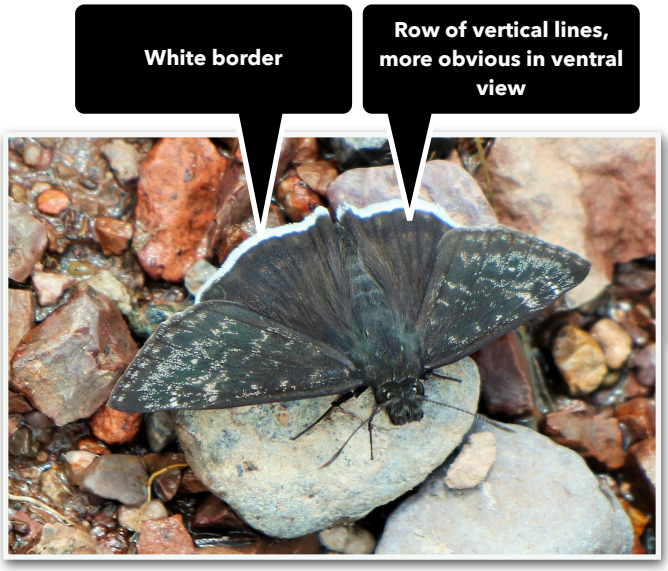
A. Scent glands patches
B. Scales in the scent glands patches (S1: The first scale; S2: The second scale)
C. Ultrastructure of the first scale
D. Ultrastructure of the second scale
E. Scales around the scent glands patches (S3: The third scale; S4: The fourth scale)
F. Ultrastructure of the third scale
G. Ultrastructure of the fourth scale





Other Resources
(Rocky Mountain Duskywing)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



Range Map of *Erynnis tristis*
Mournful Duskywing
From sightings reported to
Butterflies and Moths of North America.

Other Resources
(Mournful Duskywing)

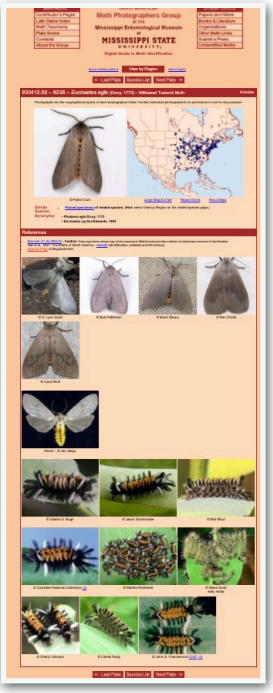
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Mournful Duskywing
Erynnis (Gesta) tristis
(Boisduval, 1852)
Hodges #3953

Mournful Duskywing pictured to the right was photographed by James Von Loh as it was taking nutrients from moist soil under gravel near the Soledad Canyon Trailhead.

Scent scales are present at the same locations as in the Funereal and Rocky Mountain Duskywings (costal fold on male, 7th abdominal segment on female).

Mournful Duskywing instar, an image from Berry Nall's website, shown here under a Creative Commons Attribution-NonCommercial 4.0 International License. Although the species on Nall's website differ somewhat from those found in the Black Range, it is an excellent resource for our area of New Mexico.



Euchaetes antica
(Walker, 1856)
Hodges # 8242

The screenshot of a *Euchaetes* moth page on the North American Moth Photographers Group, left, has a substantial amount of information; more is available as you drill down into the site.

But hardly anything is listed for *Euchaetes antica* on the Butterflies and Moths of North America page on this species, and the North American Moth Photographers Group has nothing. A lot is known about the natural world, but more is unknown. Even casual observations, as long as they are careful and critical, can be additive to our understanding of the natural history of the world generally and of the Black Range specifically.

Ron Parry captured this female Euchaetes antica in the Big Burro Mountains in July 2015. This image is hosted on his website at this link.

Photograph by Gordon Berman from 2014. Soledad Canyon. Possibly *Euchaetes antica* (Hodges 8242).

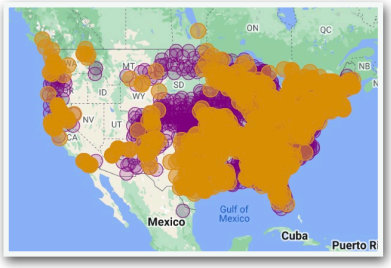
Range Map of
Euchaetes antica
From sightings
reported to
North American Moth Photographers Group.

Range Map of *Euchaetes antica*
From sightings reported to
Butterflies and Moths of North America.

Other Resources
(*Euchaetes antica*)

- **North American Moth Photographers Group**
- **BugGuide**
- **Southwestern Moths**

Head is usually a lighter color, sometimes described as "golden".



Range Map of *Euphyes vestris*
Dun Skipper
From sightings reported to
Butterflies and Moths of North America.

Other Resources
(Dun Skipper)

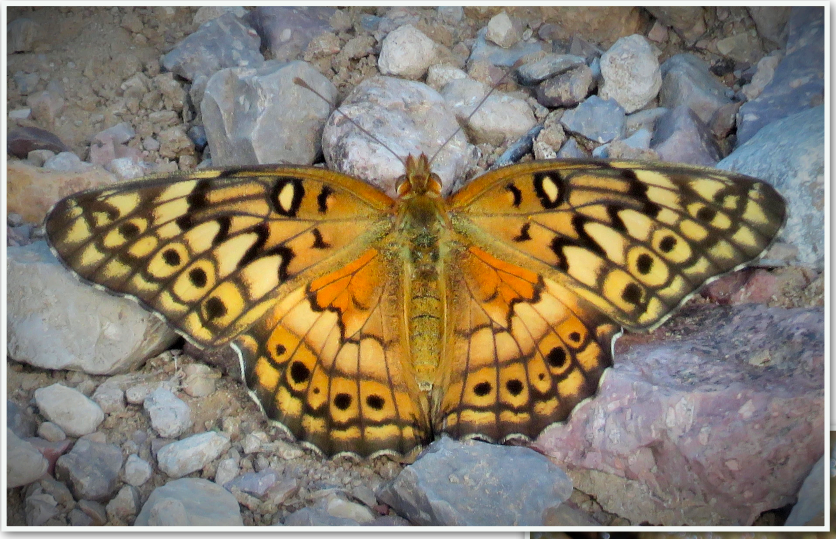
- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center**

Dun Skipper
Euphyes vestris
(Boisduval, 1852)
Hodges # 4078

The Dun Skipper pictured here was photographed taking nutrients from moist soil around small rocks below the Soledad Canyon Waterfall by James Von Loh.

This is another creature of higher elevations (4600' to 9200'). During the right season, any walk in the Black Range will allow an observer to see many different species and good numbers of individuals.

The Pajarito Environmental Education Center is located in Los Alamos in the northern part of the state. Among the resources that it provides is a comprehensive listing of butterflies found in New Mexico, by Steven Cary. The species descriptions include photographs and narratives based on the wealth of information which resides in Cary's head. The link above is to one of the subsections of the website (Butterflies of New Mexico: The Skippers V: Folded Wing Skippers (*Hesperiidae: Hesperiinae*). This page has a general description of this group of skippers, including a species listing. Links for each species provide specific information about, and photographs of, the species.

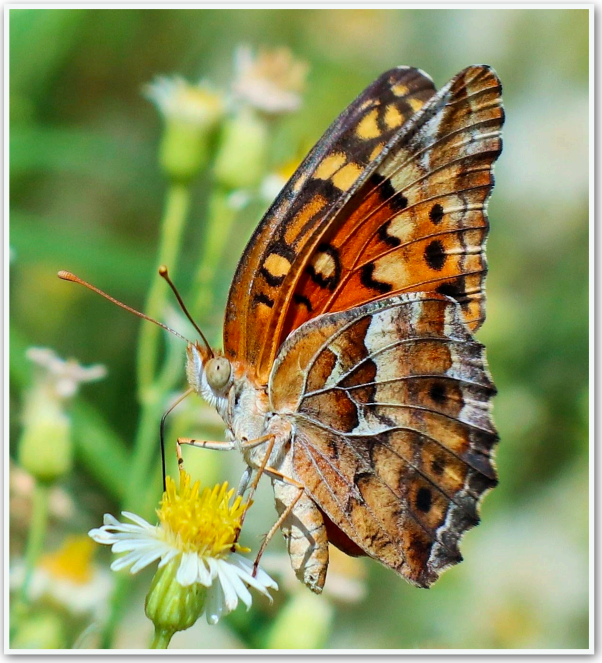


The Variegated Fritillary, *Euptoieta claudia* (Cramer, 1776) butterflies, shown here in photographs by Gordon Berman (left) and James Von Loh (below) were observed in the Organ Mountains. Both were taking nutrients; from saturated soil near the trailhead of Soledad Canyon, below, and from the moist gravel along Fillmore Canyon Trail to the left. The Variegated Fritillary is a medium-sized solitary puddler. Sometimes a butterfly will be more inclined to land on one type of substrate than another, sometimes they are more cosmopolitan in their taste.

Variegated Fritillary
Euptoieta claudia
(Cramer, 1776)
Hodges #4447

The caterpillars of Variegated Fritillary feed on several species of plant, including; *Passiflora*, purslane, stonecrops, and violets. Adults nectar on several species including butterflyweed, milkweeds, clover, some sunflowers . . .

This is a very common species in the Black Range and is found at various elevations. In addition to the range shown on the following pages, this species is found as far south as Argentina.



Above: Variegated Fritillary, nectaring from Spiny Chloracantha, was common along the Rio Grande on June 17. JVL

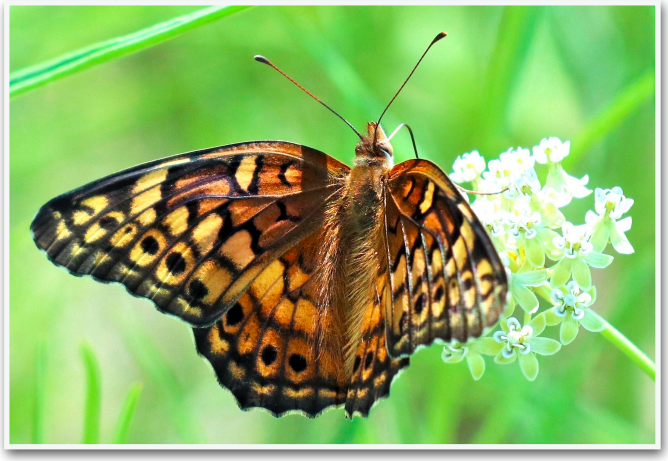
Above: Variegated Fritillary was an often-observed butterfly nectaring from Spine-aster flowers. Photograph by Gordon Berman.

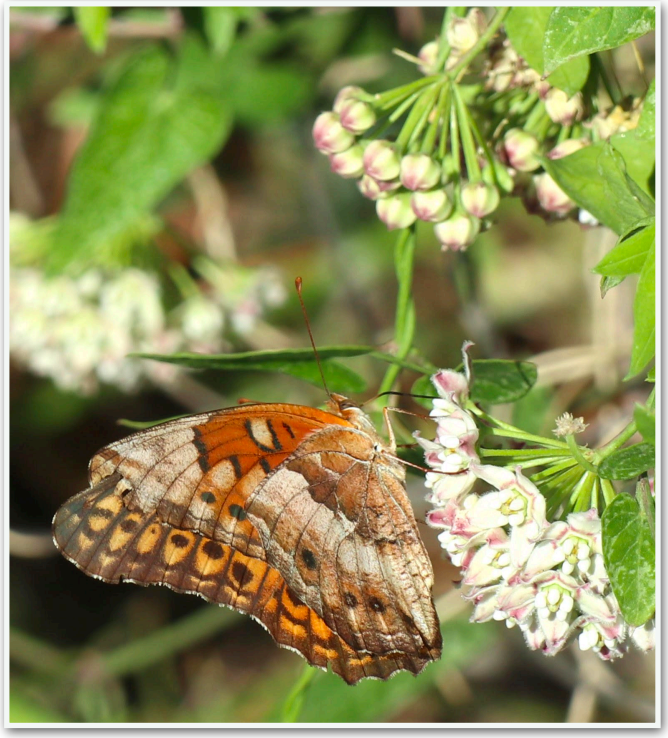
The mating Variegated Fritillaries shown above were photographed in Railroad Canyon. The individual to the right was photographed at the Hillsboro Cemetery, both locations in the Black Range. RAB

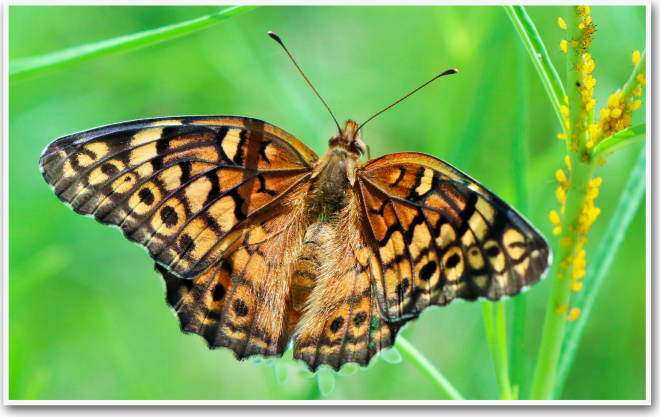
The two photographs at the bottom, of Variegated Fritillary nectaring from Brown-foot flowers, are by James Von Loh (R) and Gordon Berman (L).

Above: Variegated Fritillary nectaring from Horsetail Milkweed flowers. Note that a single pollinium has been extracted and clings to the leg where it could be transferred into another flower, thus achieving pollination. When present, Variegated Fritillaries could contribute to milkweed flower pollination. JVL

Below: Variegated Fritillary nectaring from Horsetail (top) and Climbing (bottom) Milkweed flowers. JVL

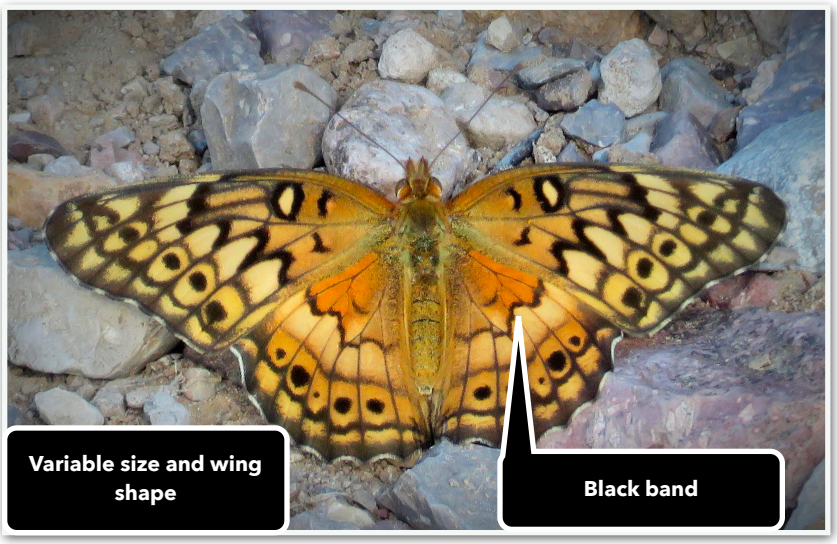


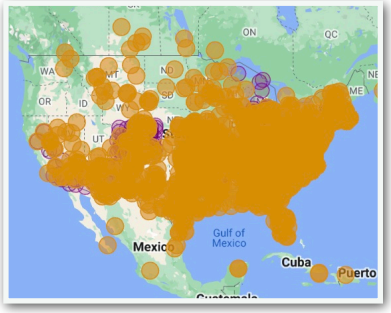




Left: Butterflies often share flowers with other species, like the *Hymenoptera* bees in the middle image and Oleander Aphids, *Aphis nerii,* at the bottom. JVL

Above: Variegated Fritillary and Orange Sulfur, *Colias eurytheme*, on Chamisa. Steve Morgan





Range Map of *Euptoieta claudia*
Variegated Fritillary
From sightings reported to Butterflies and Moths of North America.

Other Resources
(Variegated Fritillary)

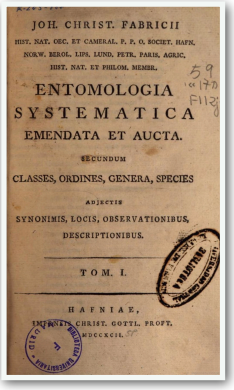
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Johan Christian Fabricius
(1745 - 1808)

Fabricius named over 10,000 species of animal during his lifetime. His methodology of distinguishing between species still forms the core of insect taxonomy. The taxonomy of insect wings was used to distinguish between species prior to Fabricius introducing the concept that using mouth parts was a more definitive approach.

Between 1775 and 1807, Fabricius published at least ten major works on systematic entomology. Works like: Systema Entomologiae (1775), Genera Insectorum (1776), Species insectorum (1781), Philosophia Entomologica (1778), Betrachtungen über die allgemeinen Einrichtungen in der Natur (1781; "Considerations upon the Universal Arrangements in Nature"), Species Insectorum (1781), Entomologia Systematica (1792-98), Mantissa insectorum (1787), Systema piezatorum (1804), and Systema glossatorum (1807).

His name is abbreviated J.Fabr. in botanical references.


JOH. CHRIST. FABRICII
HIST. NAT. OEC. ET CAMERAL. P. P. O. SOCIET. HAFN. NORW. BEROL. LIPS. LUND. PETR. PARIS. AGRIC. HIST. NAT. ET PHILOM. MEMBR.
ENTOMOLOGIA SYSTEMATICA
EMENDATA ET AUCTA.
SECUNDUM
CLASSES, ORDINES, GENERA, SPECIES
ADJECTIS
SYNONIMIS, LOCIS, OBSERVATIONIBUS, DESCRIPTIONIBUS.
TOM. I.
HAFNIAE,
IMPENSIS CHRIST. GOTTL. PROFT.
MDCCXCII.

Tailed Orange

Eurema (Pyrisitia) proterpia

(Fabricius, 1775)

Hodges #4236

These images of a Tailed Orange were photographed by Debora Nicoll in Lake Valley, Black Range. This is the dry season/winter form. Note how strongly flocked the hindwing is in this image and the lack of a black spot on the forewing. This species is named *Pyrisitia proterpia* by some authorities.

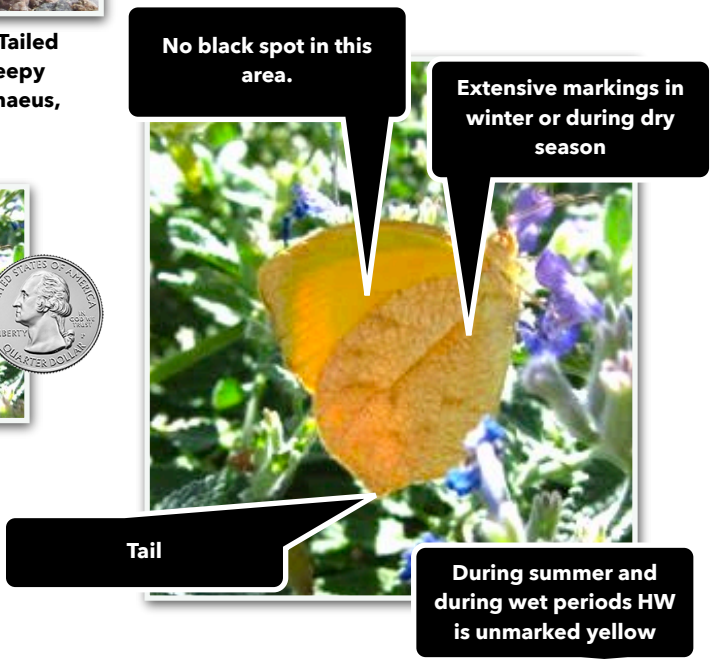
Elsewhere we note the variability found in butterflies (imago) and their instars (caterpillars) - especially in the caterpillars. The adult Tailed Orange has two sexual forms and two seasonal forms, adding to the confusion. There is a wet season or summer form and a dry season or winter form (like the one pictured here, which has a "tail" on the hindwing). The differences between the forms caused them to be classified as different species for quite a long time. Making such an error more plausible is the fact that, in some cases, the two forms may be found at the same time/location.

Some of the species found in our area have a relatively limited range. Others, like this species, can be found quite widely - in this case from Peru, north through northern South America, Central America, and Mexico and into the southwestern United States and the Plains States as far north as Nebraska. It is also found in the Greater Antilles, but apparently not in the Lesser.

Its flight is later than many of the other species, in the late summer into the fall (August to November in the southwest). Instars use mesquite as a host plant.

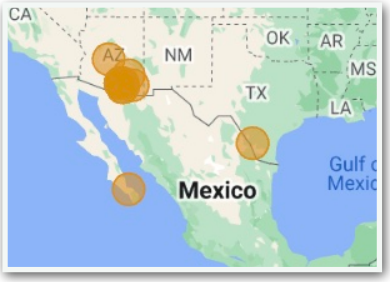
A portion of a puddle club occupied predominantly by Tailed Oranges, *Eurema proterpia* (Fabricius, 1775), a few Sleepy Oranges, and a Cloudless Sulphur, *Phoebis sennae* (Linnaeus, 1758). Gordon Berman.

Range Map of *Eurema proterpia*
Tailed Orange
From sightings reported to
Butterflies and Moths of North America.



Other Resources (Tailed Orange)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



Range Map of *Euscirrhopterus cosyra,* Staghorn Cholla Moth
From sightings reported to
Butterflies and Moths of North America.

Other Resources (Staghorn Cholla Moth)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide

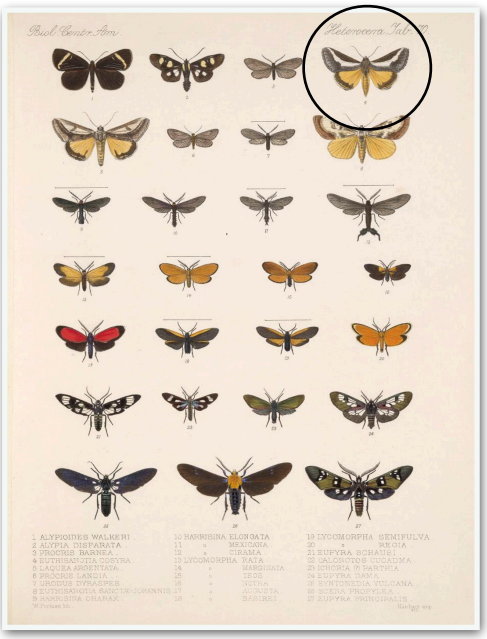
Staghorn Cholla Moth
Euscirrhopterus cosyra
(Druce, 1896)
Hodges #9308

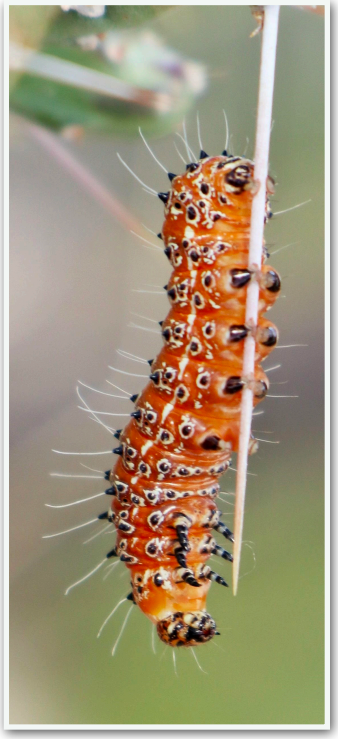
The photographs of Staghorn Cholla Moth instars shown on this page were taken by James Von Loh. They are feeding on Pencil Cholla.

The larval stage of this moth feeds externally on its host cactus (typically *Opuntia* or *Cylindropuntia*). Other species which feed on these hosts will often bore into the cactus.

The imago stage of the Staghorn Cholla Moth is quite striking (shown below in an image from Wikipedia).

Photograph by Katja Schulz from Washington, D. C., USA - Staghorn Cholla Moth, CC BY 2.0. This individual was photographed in Madera Canyon, Arizona.





Herbert Druce
(1846-1913)

Druce was a noted English entomologist, as was his son Hamilton Herbert Druce. Plate 70 (right) of his *Biologia Centrali-Americana, Insecta, Vol. III*, included the type for *Euscirrhopterus cosyra*.

Purslane Moth
Euscirrhopterus gloveri
(Grote & Robinson, 1868)
Hodges #9307

Ron Parry has a nice image of a male *Euscirrhopterus gloveri*, Purslane Moth, on his website (see right). Although in the same genus, both the imago and the instar stages of *E. cosyra* and *E. gloveri* are quite different in appearance, see the North American Moth Photographers Group page on this species.

The original description of this species is shown below (*Transactions of the American Entomological Society, Volume 2, 1868-9*).

Range Map of *Euscirrhopterus gloveri*, Purslane Moth
From sightings reported to Butterflies and Moths of North America.

AMERICAN LEPIDOPTERA. 185

Family ZYGAENIDAE.

Subfamily CASTNIINAE.

Tribe EUDRIINI.

EUSCIRRHOPTERUS, Grote.

Euscirrhopterus gloveri, n. s.

♀.—Size of ♀ E. poeyi. Antennae simple. Thorax and head above clothed with mixed brownish scales, beneath, with under surface of abdomen, whitish. Abdomen above yellowish. Legs within clothed with long whitish, shading to griseous, scales; tarsi outwardly black subannulate with white.

Primaries with the costal region covered with mixed brownish and pale scales to just before the apex. The center of the wing is white, the white scales extending upward and intruding on the costal region before the apex. On this white ground of the wing, on the discal cell, lie the ordinary spots which are distinct, subequal, of the normal shape, brownish, distinctly darker ringed, and with dark centers. Superiorly they are merged in the dark scales of costal region which obtain between them. Terminally the wing is brown outside of the white center, which is edged unevenly. The brown color extends as a darker subterminal shade from the costa at apex, widening as it proceeds to internal margin, which it broadly margins to the base of the wing; centrally the border along internal margin is intruded upon by the white central space which here forms an irregular shallow sinus. The terminal space is paler. A dark interrupted terminal line, obsolete on the nervules and narrowly edged within by pale scales.

The secondaries are bright yellow, without discal spot, and with a broad, even dark brown border, interrupted before the angle by yellow scales. Fringes whitish, paler than on primaries. A dark and broken terminal line.

Beneath, both wings are bright yellow, with narrow brownish costal edgings and broad terminal borders tapering to internal and anal angles, and not continued along internal margins. These borders are paler shaded terminally, throwing the regularly interrupted dark terminal lines into relief. On the secondaries the border is interrupted by pale scales just before anal angle. Two dark discal spots on primaries, the outer larger and diffuse. A single spot on secondaries reduced in size and situate on the discal cross vein.

Expanse, 42 mil. *Length of body*, 20 mil.

Habitat.—Texas, (Prof. Townend Glover).

Differs from the female of the Cuban E. poeyi, *Grote*, as follows: The white central space of the primaries is broader, more irregularly

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defined; the oblique and even dark subterminal line is absent; the reniform spot is very much smaller and differently shaped, being normal, whereas in E. poeyi it is elongated and completely divides the white field of the wing; the orbicular spot is absent in E. poeyi, in which species also the secondaries and both wings beneath are of a paler yellow, the primaries with a single discal mark, and the secondaries without a discal dot on either surface. The discovery of the male of this fine species will be attended with interest in view of the great structural disparity between the sexes of E. poeyi.

In dedicating this species to Prof. Glover we pay a very willing tribute to the scientific zeal and industry of the gentleman.

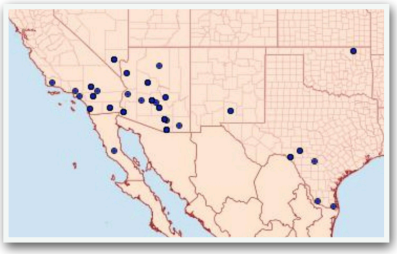
Forsebia Moth
Forsebia cinis
(Guenée, 1852)
Hodges #8613

***Forsebia cinis* is the only member of the genus in the United States. Most individuals in the United States have been found in Southern California and Arizona.**

Flight occurs between February and October. Larva feed on species of *Parkinsonia*.

This individual was photographed on July 12, 2020 in Hillsboro. RAB

Note the similarity, especially at the bottom of the hindwing between the individual shown here and the individual identified as *Bulia deducta* earlier in this sampler. Both have been vetted through BugGuide.



Range Map of *Forsebia cinis*
From sightings reported to
North American Moth Photographers Group.

Other Resources
(Forsebia Moth)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide

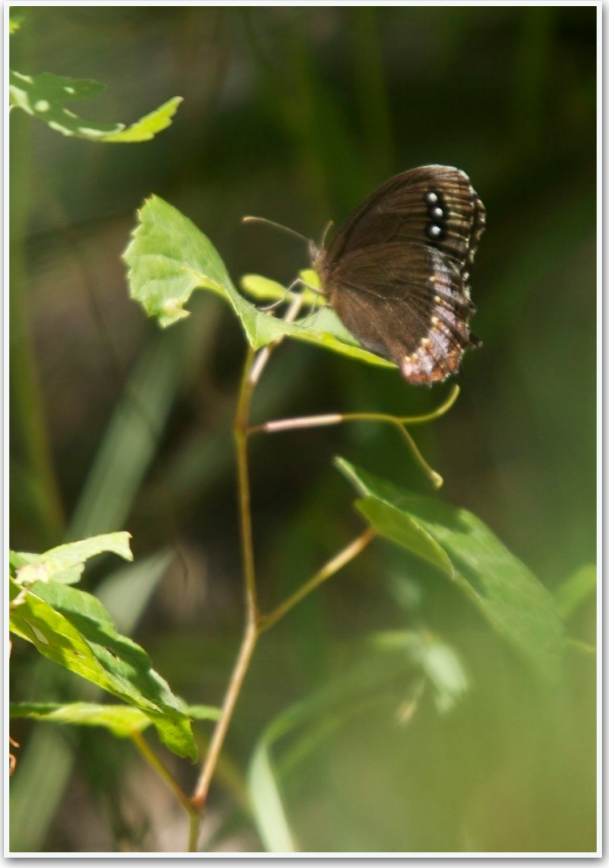
Red-bordered Satyr
Gyrocheilus patrobas
(Hewitson, 1862)
Hodges #4602

Muhlenbergia emersleyi **is a caterpillar host reported from Arizona, for this species. In Arizona, it is reported from riparian areas of open coniferous forests in the mountains of the central and southern parts of the state. This is the same habitat as Railroad Canyon.**

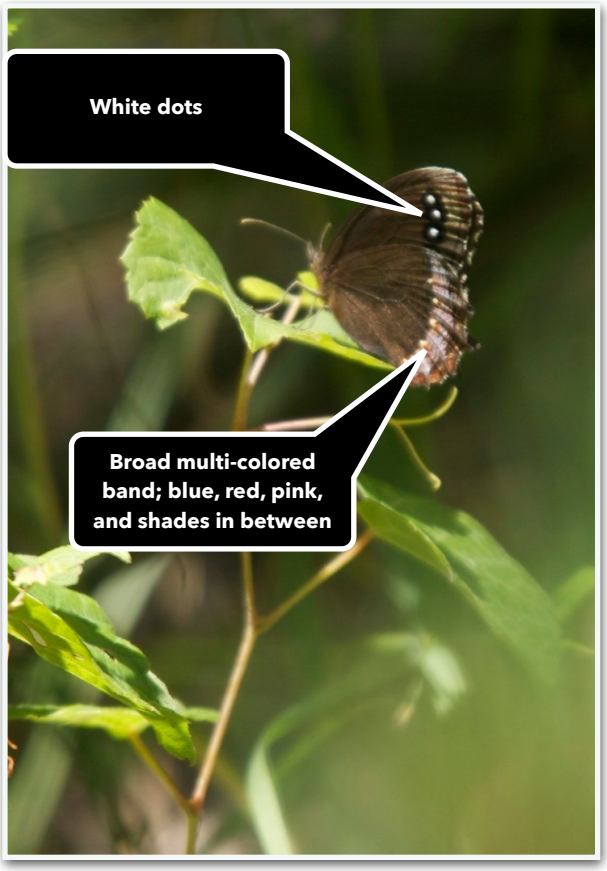
The genus is monotypic, the species is found as far south as Central America. There are two subspecies, the one found here is *G. p. tritonia* (Edwards, 1874).

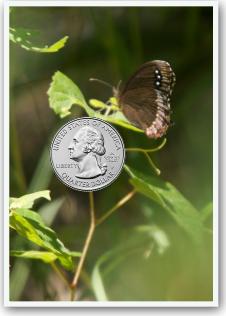
This species has one flight per year, between Mid-August and October.

***Gyrocheilus patrobas*, Red-bordered Satyr**
Photographed in Railroad Canyon, Black Range. RAB



Photographed in Railroad Canyon, west slope of the Black Range, north of NM-152. RAB





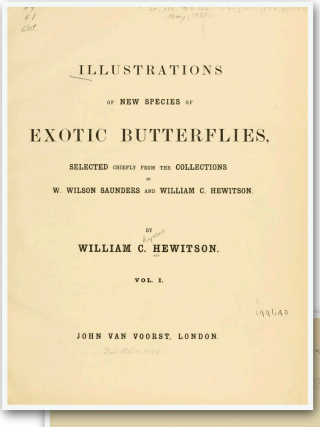
Range Map of *Gyrocheilus patrobas*, Red-bordered Satyr, From sightings reported to Butterflies and Moths of North America.

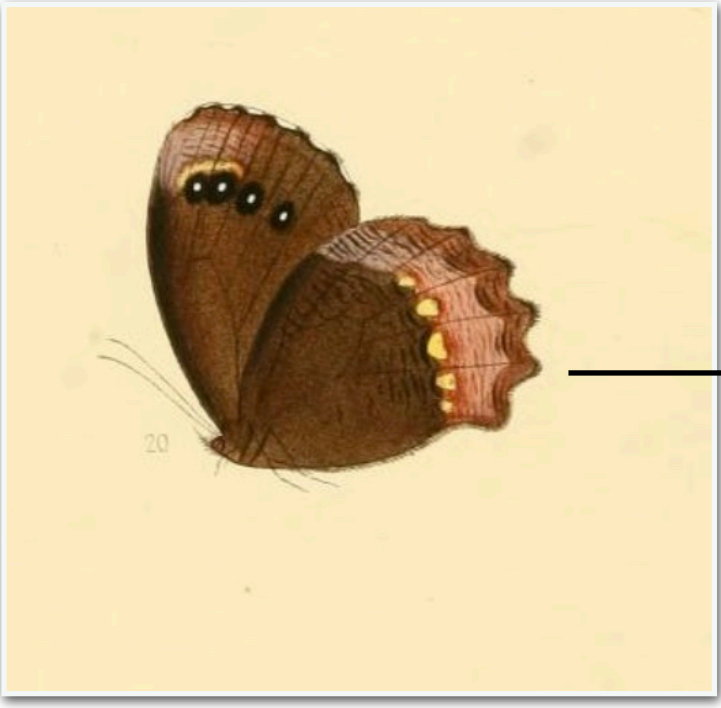
Other Resources (Red-bordered Satyr)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

William Chapman Hewitson
(1806-1878)

Hewitson was a British naturalist and scientific illustrator. His associates included Boisduval, Gray, and Wallace. He illustrated and published many significant works. The original depiction of this species is shown below (Satyridae: Pronophil IV - from *Illustrations of new species of exotic butterflies: selected chiefly from the collections of W. Wilson Saunders and William C. Hewitson* by Hewitson (Vol. 3 of 5).


ILLUSTRATIONS
OF NEW SPECIES OF
EXOTIC BUTTERFLIES,
SELECTED CHIEFLY FROM THE COLLECTIONS
OF
W. WILSON SAUNDERS AND WILLIAM C. HEWITSON.
BY
WILLIAM C. HEWITSON.
VOL. I.
JOHN VAN VOORST, LONDON.



Other Resources
(Corn Earworm Moth)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Pacific Northwest Moths

Pacific Northwest Moths

The glossary (link above) at the Pacific Northwest Moths is incredibly good.

One of the diagnostics you will find referenced when trying to identify a Corn Earworm Moth is the appearance of the discal spot. If you don't know what that is, or what it looks like, use this glossary. You will find a narrative description and the image to the right. You will find similar material on scores of other terms. Somehow, comprehensive, does not quite get there as a description of this site.

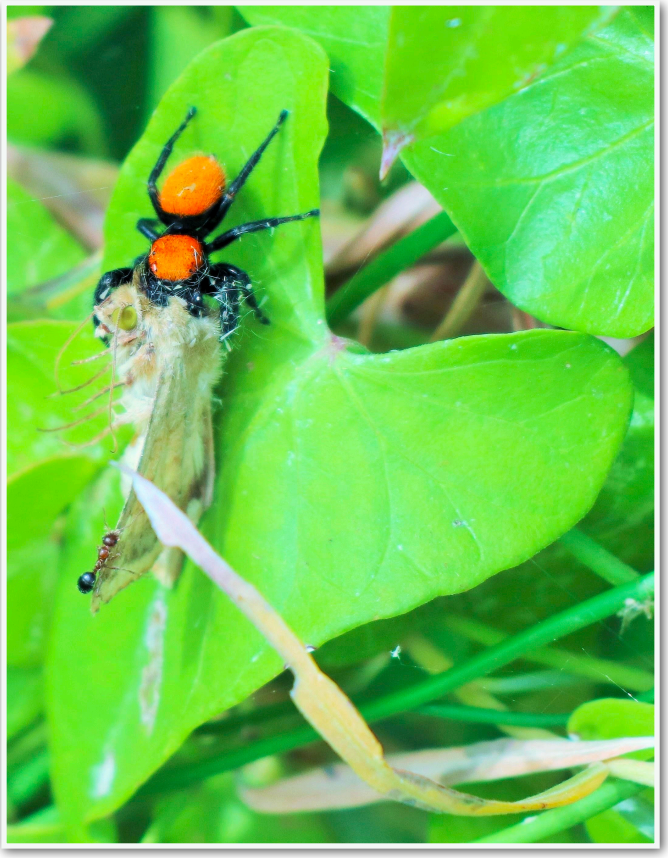
Corn Earworm Moth

Helicoverpa zea

(Boddie, 1850)
Hodges #11068

This species is known by several other English common names, including Cotton Bollworm and Tomato Fruitworm, an indication of the eclectic taste of the larval stage. In the case of the Latin binomial, "*zea*" means corn.

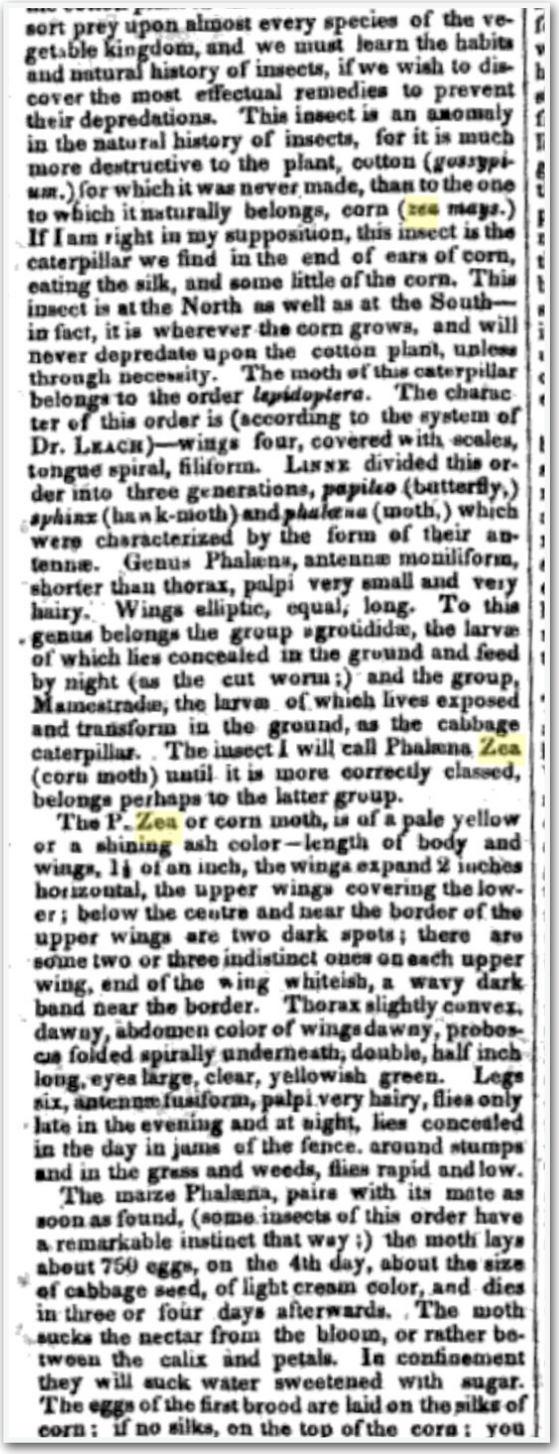
This species will go through four to six instars. During the initial instars, many caterpillars are found eating together. During later instars they become more aggressive and cannibalistic, and fewer are found feeding together. The larvae image is from the University of Minnesota.



Those that consume are consumed. James Von Loh captured the image above in 2019. The Corn Earworm Moth has been captured and is being ingested by an Apache jumping spider (male), *Phidippus apacheanus* (Chamberlain & Gertsch, 1929).

Range Map of *Helicoverpa zea*
Corn Earworm Moth
From sightings reported to Butterflies and Moths of North America.

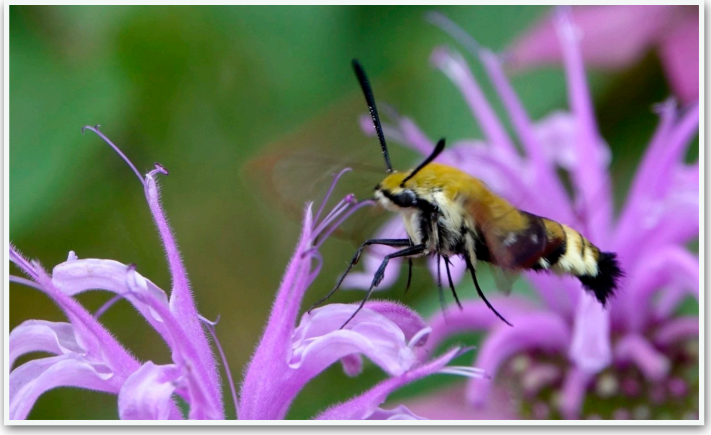
Below: Part of John W. Boddie's original description of *Helicoverpa zea* which he named *Phalaena zea*. It was published in Vol. 8 of the *Southern Cultivator,* January 1850.



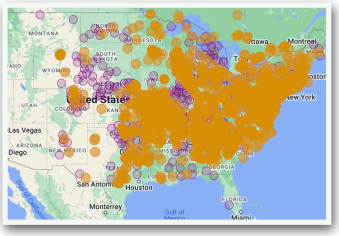
sort prey upon almost every species of the vegetable kingdom, and we must learn the habits and natural history of insects, if we wish to discover the most effectual remedies to prevent their depredations. This insect is an anomaly in the natural history of insects, for it is much more destructive to the plant, cotton (*gossypium.*) for which it was never made, than to the one to which it naturally belongs, corn (*zea mays.*) If I am right in my supposition, this insect is the caterpillar we find in the end of ears of corn, eating the silk, and some little of the corn. This insect is at the North as well as at the South—in fact, it is wherever the corn grows, and will never depredate upon the cotton plant, unless through necessity. The moth of this caterpillar belongs to the order *lepidoptera*. The character of this order is (according to the system of Dr. LEACH)—wings four, covered with scales, tongue spiral, filiform. LINNE divided this order into three generations, *papilio* (butterfly,) *sphinx* (hawk-moth) and *phalæna* (moth,) which were characterized by the form of their antennæ. Genus Phalæna, antennæ moniliform, shorter than thorax, palpi very small and very hairy. Wings elliptic, equal, long. To this genus belongs the group agrotididæ, the larvæ of which lies concealed in the ground and feed by night (as the cut worm;) and the group, Mamestradæ, the larvæ of which lives exposed and transform in the ground, as the cabbage caterpillar. The insect I will call Phalæna Zea (corn moth) until it is more correctly classed, belongs perhaps to the latter group.

The P. Zea or corn moth, is of a pale yellow or a shining ash color—length of body and wings, 1¼ of an inch, the wings expand 2 inches horizontal, the upper wings covering the lower; below the centre and near the border of the upper wings are two dark spots; there are some two or three indistinct ones on each upper wing, end of the wing whiteish, a wavy dark band near the border. Thorax slightly convex, dawny, abdomen color of wings dawny, proboscis folded spirally underneath, double, half inch long, eyes large, clear, yellowish green. Legs six, antennæ fusiform, palpi very hairy, flies only late in the evening and at night, lies concealed in the day in jams of the fence, around stumps and in the grass and weeds, flies rapid and low.

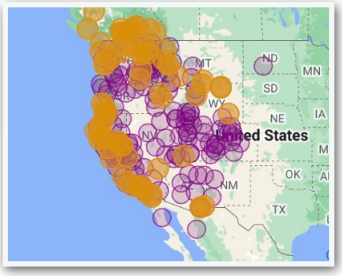
The maize Phalæna, pairs with its mate as soon as found, (some insects of this order have a remarkable instinct that way;) the moth lays about 750 eggs, on the 4th day, about the size of cabbage seed, of light cream color, and dies in three or four days afterwards. The moth sucks the nectar from the bloom, or rather between the calix and petals. In confinement they will suck water sweetened with sugar. The eggs of the first brood are laid on the silks of corn: if no silks, on the top of the corn: you



Hemaris thetis, Rocky Mountain Clearwing
Photographed in Railroad Canyon, Black Range. RAB



Top Range Map:
Range of *Hemaris diffinis*
Snowberry Clearwing
From sightings reported to Butterflies and Moths of North America.



Bottom Range Map:
Range of *Hemaris thetis*
Rocky Mountain Clearwing
From sightings reported to Butterflies and Moths of North America.

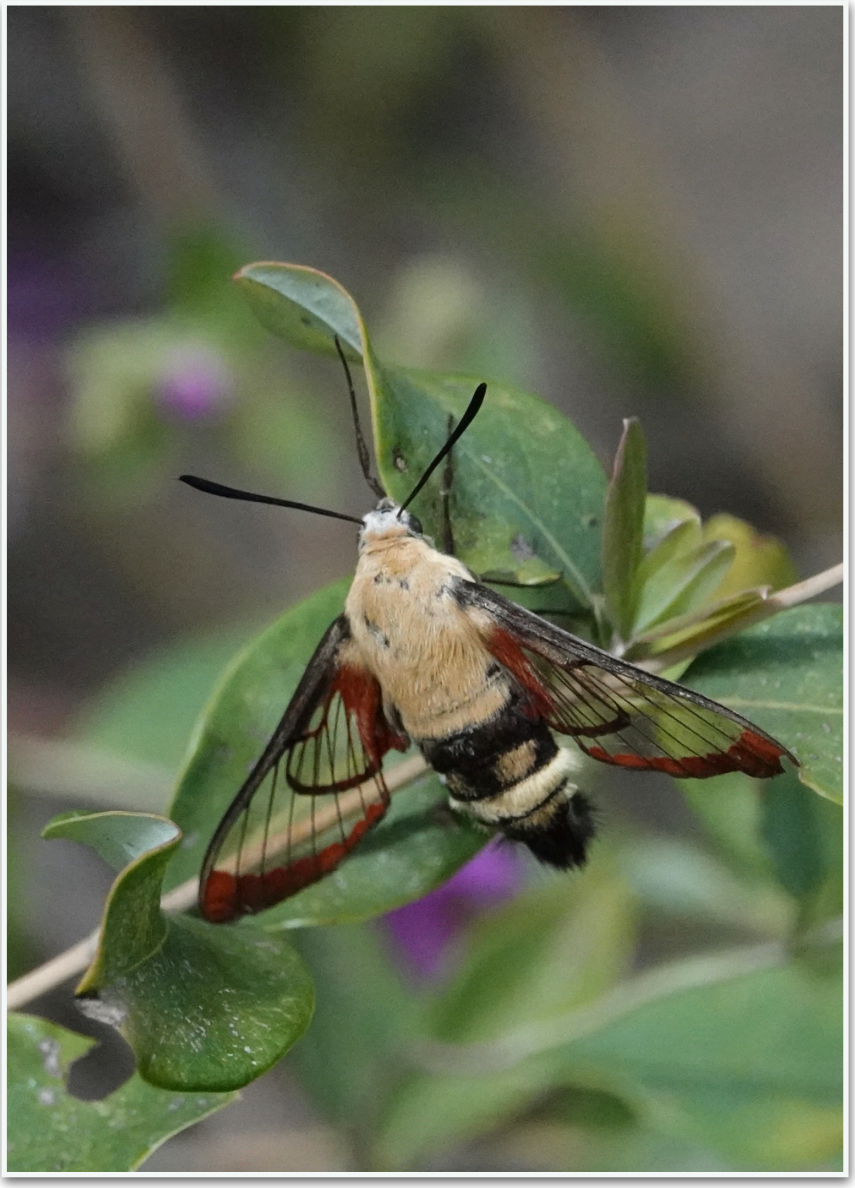
Rocky Mountain Clearwing
Hemaris thetis
Boisduval, 1855
Hodges #7855.1

First consider the common name, it is problematic. The family *Seslidae* is also referred to as the Clearwing Moths. Sometimes *Hemaris* are called Hummingbird Moths, but that is also a term used for the Sphinx Moths. In the United Kingdom, *Hemaris* are called Bee Hawk-Moths.

The Snowberry Clearwing is an eastern species, the Rocky Mountain Clearwing is a western species. At one time they were considered the same species. The line dividing their geographic ranges seems to run along the crest of the Black Range, or there about. The Butterflies and Moths of North America (BAMONA) website gives the range of *H. diffinis* as "East of the Continental Divide, through most of the United States to Maine and Florida. Some overlap with *Hemaris thetis* just east of the Divide."

Adult Snowberry Clearwings fly during the day nectaring on *Lantana*, Snowberry, thistles, some violets, etc. Snowberry Clearwing caterpillar hosts include Snowberry, honeysuckle, and dogbane.

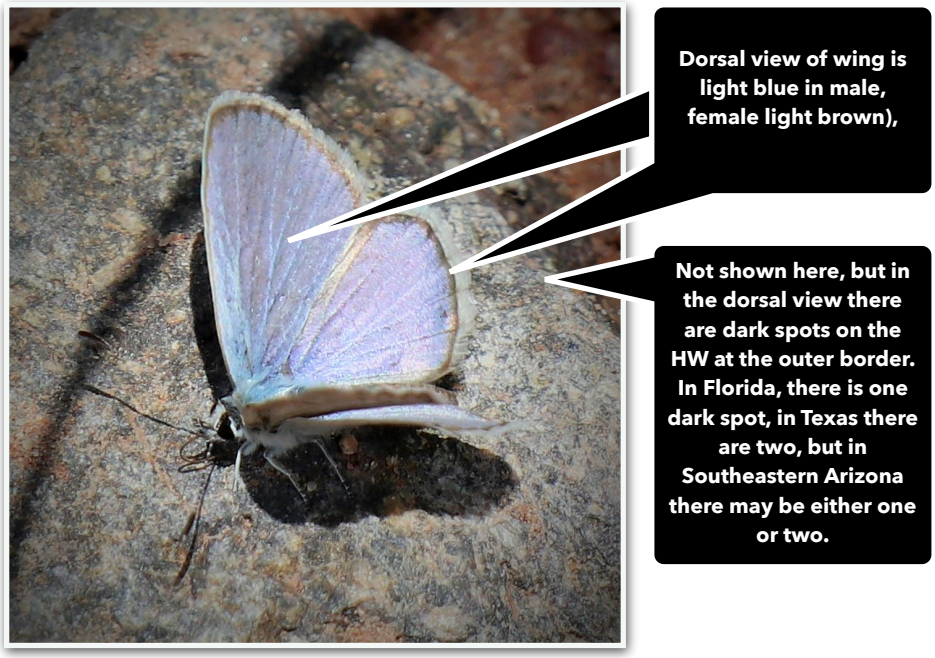
All of that said, the individuals shown here are identified as Rocky Mountain Clearwing, utilizing, in part, the information provided at the Pacific Northwest Moths website. Identification should not be considered definitive. The larva of this species are honeysuckle and snowberry food plant specialists.



Rocky Mountain Clearwing, photographed in Hillsboro during August 2022. RAB

Other Resources (Rocky Mountain Clearwing)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Pacific Northwest Moths
- Southwestern Moths



Other Resources (Ceraunus Blue)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Ceraunus Blue
Hemiargus ceraunus
Fabricius, 1793
Hodges #4359

The blues are small butterflies, this one has a wingspan which rarely extends more than an inch.

In the southern most parts of its range the Ceraunus Blue can be found flying throughout the year. Flight time is more limited in the northern parts of the range. Its range extends southward to South America. It can typically be found in open (including disturbed) areas.

Caterpillar hosts plants include the woody legumes, in our area look for them on mesquite. The adults feed on flower nectar (undifferentiated?).

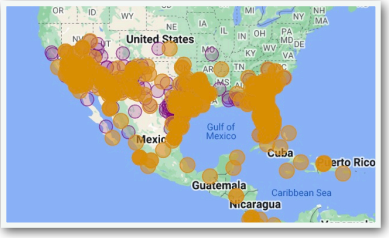
Vladimir Nabokov
1899-1977

Vladimir Nabokov (Владимир Владимирович Набоков, in Russian) wrote *Lolita, Pale Fire, Speak Memory* and many other works. Many know him only as an author.

He was, however, a renowned entomologist. His early inspiration, by the work of Maria Sibylla Merian, became a life-long love. Among other important roles, he was the curator of Harvard University's butterfly collection during the 1940s. Nabokov was even the subject of one of Stephen Jay Gould's essays ("No Science Without Fancy, No Art Without Facts: The Lepidoptery of Vladimir Nabokov"). When asked if he considered himself a scientist or a writer, Nabokov responded with his now famous quote, "There can be no science without fancy. No art without facts."

Among Nabokov's many accomplishments was the development of a hypothesis that the *Polyommatus* blues (Ceraunus Blue is one) crossed the Bering Strait in five waves as they populated the Americas. His theory was not accepted by the scientific establishment for several decades, but with the insights gained through genetic analysis and the development of "genetic distance" concepts it is now regarded as fact.

Ceraunus Blue, *Hemiargus ceraunus* (Fabricius 1793), taking nutrients from moist rock near the Soledad Canyon Trail head. Photograph by James Von Loh.



Range Map of *Hemiargus ceraunus,* Ceraunus Blue From sightings reported to Butterflies and Moths of North America.

***Hemiargus ceraunus* instar from Berry Nall's website, shown here under a Creative Commons Attribution-Non-Commercial 4.0 Inter-national License.**

Glover's Silkmoth
Hyalophora gloveri
Strecker, 1872
Hodges #7769

The Glover's Silkmoth, is considered a subspecies of *Hyalophora columbia* by some authorities. Synonyms include *Platysamia gloveri* (Strecker, 1872), *Platysamia gloveri var. reducta* (Neumoegen, 1891), *Platysamia columbia nokomis* (Brodie, 1894), *Platysamia columbia winonah* (Brodie, 1894), and *Samia columbia* (Smith, 1865).

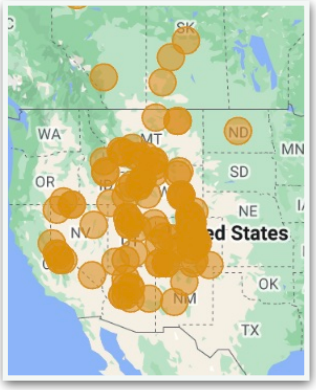
The taxonomic status of this species and *H. columbia* is somewhat confused and the distinctions between various populations poorly understood.

This species is found along the eastern and western slopes of the Rocky Mountains in the United States, extending northward into Canada and southward into the northern states of Mexico. The populations found here are more closely related to the "Mexican Variants" of the species than to the northern and plains populations. When lumped with *H. columbia*, the population found here is sometimes referred to as *Hyalophora columbia ssp. gloveri* ("Mexican variants").

In our area adults fly from late July into August and the larvae are present from July into October.

The populations here are generally bivoltine, they produces two broods in a season. Voltinism refers to the number of broods per year that a species produces. Most populations of this species are thought to be univoltine (one brood). It is factors like this which lead some authorities to posit that the Mexican Variants may represent a different taxa.

The adult moth is large (5" wingspan) and strikingly beautiful. The instar shown here was more than 3" long. Véronique De Jaegher photographed this caterpillar in her yard in Kingston, New Mexico on September 20, 2022.

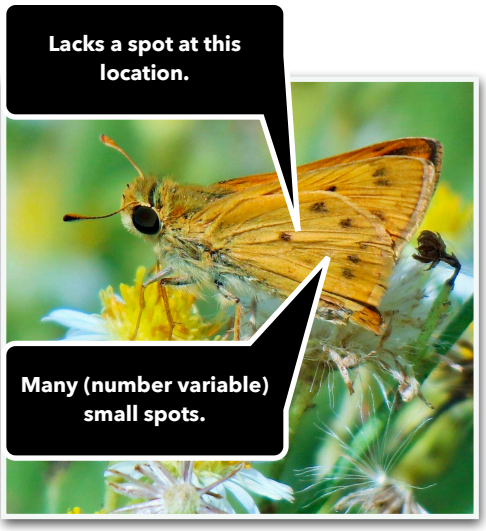


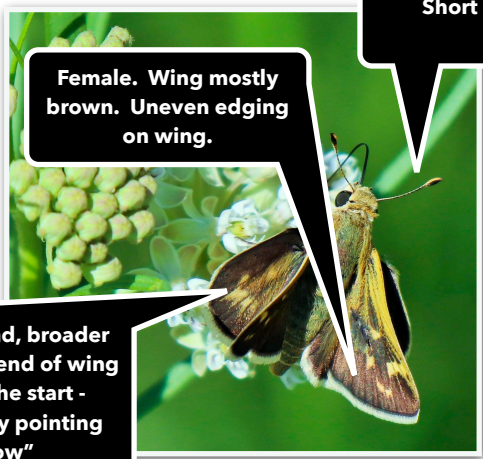
Range Map of *Hyalophora gloveri* Glover's Silkmoth From sightings reported to Butterflies and Moths of North America.

Image from the Southwestern Moths website of Ron Parry, used with permission.

Other Resources
(Fiery Skipper)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center





Fiery Skipper
Hylephila phyleus
Drury, 1773
Hodges #4013

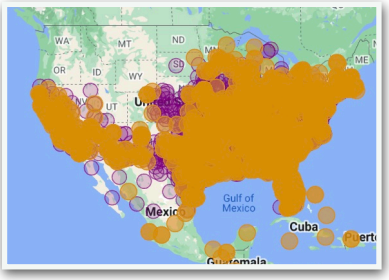
The male of this species will generally perch in grass awaiting a female. Single eggs are laid on grass blades. The caterpillars eat the leaves and structure a shelter, which lie horizontally on the ground, from them.

The caterpillars of this species specialize on grasses for a food source (Bermuda Grass, crabgrass, etc.) while adults nectar from a variety of plant species including milkweed, aster, knapweed, thistles, etc.

Although this species can not survive harsh winters it will often travel into northern areas during the summer. Its range extends southward as far as Argentina. In this area, the population seems to reach its maximum in September as multiple flights overlap. In south Texas and Florida this species is known to brood throughout the year.

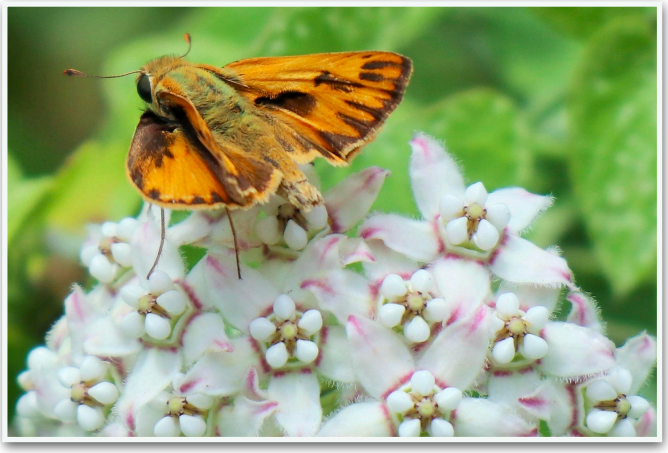
Fiery Skipper, nectaring from Spiny Choracantha, on June 22. Uncommon. JVL

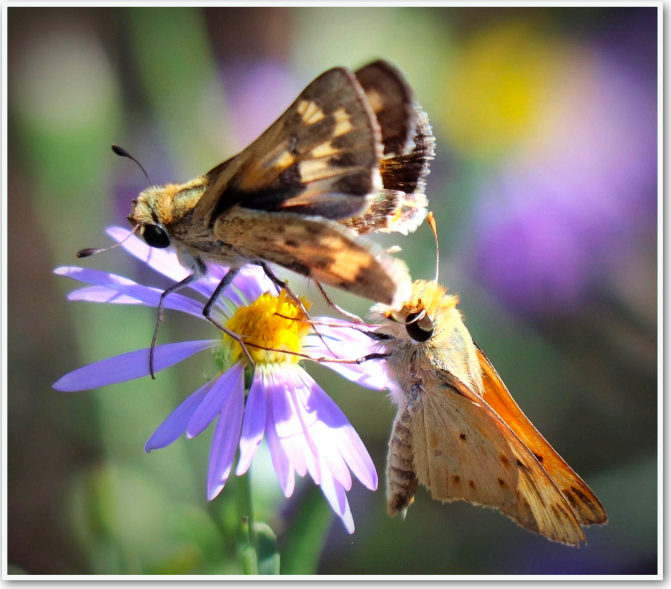
Fiery Skipper, *nectaring from Spine-aster,* along the Rio Grande at Las Cruces. JVL



U. S. Range Map of *Hylephila phyleus,* Fiery Skipper
From sightings reported to Butterflies and Moths of North America.

Above: Fiery Skipper, nectaring from Horsetail Milkweed flowers. JVL
Below: On Climbing Milkweed flowers. JVL





Right Column: Fiery Skipper
Top: An interesting pair with unique color combinations (male is lower right).
Two individuals at center and bottom; the Fiery Skipper is an uncommon butterfly nectaring from Spine-aster flowers. JVL

White-lined Sphinx
Hyles lineata
(Fabricius, 1775)
Hodges # 7894

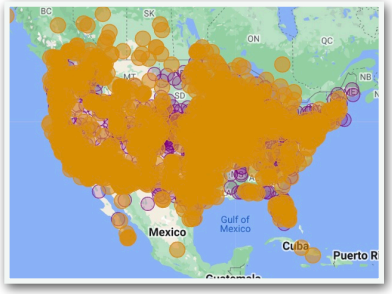
The White-lined Sphinx is found in most of the Americas, as far north as southern Canada and as far south as Argentina. Its range includes the West Indies. Previously, this species was considered conspecific with *Hyles livornica,* which is found in parts of Eurasia and Africa. As might be expected with such a range, it is found in a variety of habitats, including deserts and foothills.

Associated with such an extensive range, the larvae of this species feed on a variety of plants, including many evening primrose (*Onagraceae*), rose (*Rosaceae*), four o'clock (*Mirabilis*), and tomato (*Lycopersicon*) species. Adults of this species nectar on many flowers including honeysuckle, clovers, thistles, and datura.

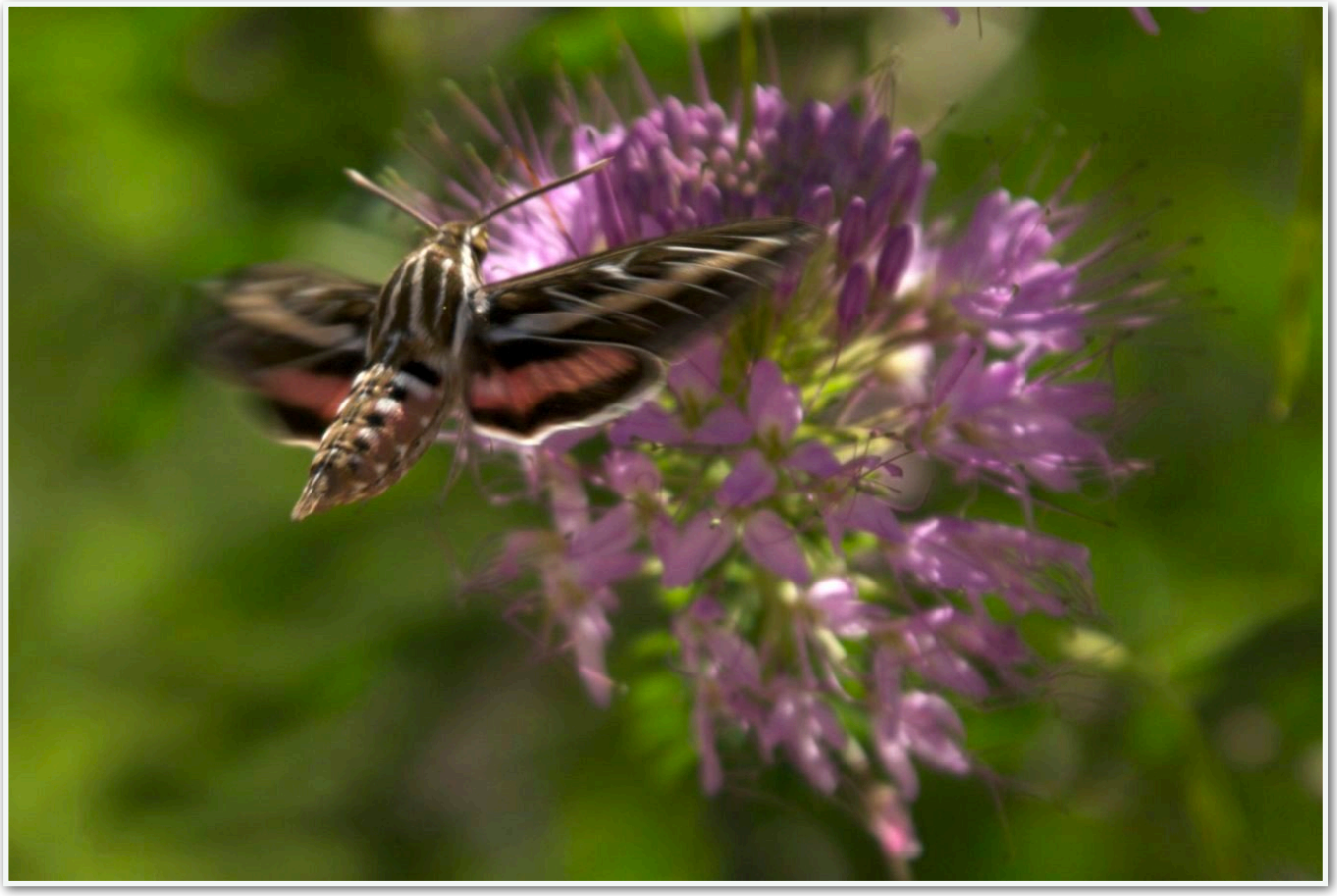
The larval stage of the White-lined Sphinx is highly variable in appearance (see later). Larvae will, however, have orange or green speckled heads and anal plates and possess a yellow or orange "horn" near the anal plate. The "horn", which is not a stinger, will often have a blackish tip or even be blackish in color.

This species will generally produce two or more broods a year, between February and November. When the larvae are through eating, they will excavate a shallow burrow and pupate underground. The length of pupation varies but may be as little as three weeks.

In the world of common names, the larval stage of this species is sometimes called Purslane Caterpillar. Latin binomial synonyms include *Sphinx lineata* and *Deilephila lineata*. "*Lineata*" refers to the white lines which cross the forewing from front to back on the diagonal. These markings are not found on other moths in this genus in the Americas. Sphinx moths are often called Hummingbird Moths because of their flight behavior. They flit about flowers like a small hummingbird.



U. S. Range Map of *Hyles lineata,* White-lined Sphinx
From sightings reported to Butterflies and Moths of North America.



White-lined Sphinx, *Hyles lineata*, photographed at San Lorenzo, Grant County, New Mexico - on *Cleomella serrulata*, Rocky Mountain Bee Plant

White-lined Sphinx is catalogued as Hodges #7894. This number refers to the number given in Ronald Hodges et al. *Check List of the Lepidoptera of America North of Mexico,* published in 1983. The initial publication established the basic numbering system which is now (sometimes) called the MONA number (Moths of North America).

James Von Loh (Las Cruces) noted that much of his most recent work has been in or around Las Cruces. The images on the following three pages were taken by Jim in that area, not the Black Range per se.

Von Loh notes that he often see butterflies and moths on wet earth; that is where they obtain the water and some of the salts and other nutrients that they need. But actively drinking? That is something he has rarely seen.

White-lined Sphinx moths drinking water from pools at Achenbach Canyon (top), Dripping Springs Visitor Center (middle), and at Soledad Canyon Spring (bottom) - all in the Organ Mountains.

- Photos by James Von Loh
Las Cruces

The larvae of the Black Caterpillar Hunter Beetle, *Calosoma prominens*, prey on the White-lined Sphinx caterpillar. One attacks and begins to eat a White-lined Sphinx caterpillar in the photo above. This photo is supplemented by a short video clip.

Other larval forms are depicted at the North American Moth Photographers Group Website.

The two beetles to the left are probably the adult form of *Calosoma prominens*. (Probably, because there are 40 species of this genus in the Americas, north of Mexico.) *Calosoma* (Caterpillar Hunter Beetles) species number around 125.

Several of the plant species which Sphinx nectar on are shown on the following page.

-Photos and video by
James Von Loh
Las Cruces

White-lined Sphinx nectaring;
(Images by James Von Loh)

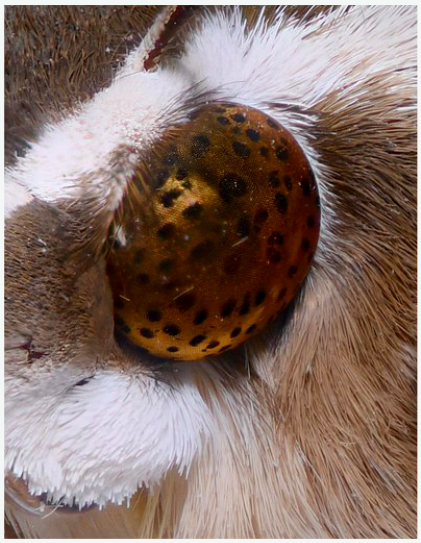
1. ***Asclepias subverticillata*, Horsetail Milkweed,**
2. ***Ipomoea* (Morning-glory), possibly *I. hederacea* or *I. purpurea***
3. ***Funastrum cynanchoides*, Climbing Milkweed,**
4. ***Polanisia dodecandra*, Clammyweed,**
5. ***Allionia incarnata*, Trailing Windmills,**
6. ***and Acourtia wrightii*, Brown-foot.**

The two caterpillars shown on this page and the ones shown on pages 150 and 151 are all larvae of White-lined Sphinx, *Hyles lineata*. The two photographs on this page were taken in/near Hillsboro by Bob Barnes. The one below was photographed on August 26, 2021. Not only do the instars of the caterpillar stage differ, there are more general regional differences as well.

The caterpillar shown on this page is another larvae of White-lined Sphinx, *Hyles lineata*. The variability of instars of this species (by stage, region, and other factors?) cry out for research. This photograph was taken by Véronique De Jaegher in Kingston, N.M.

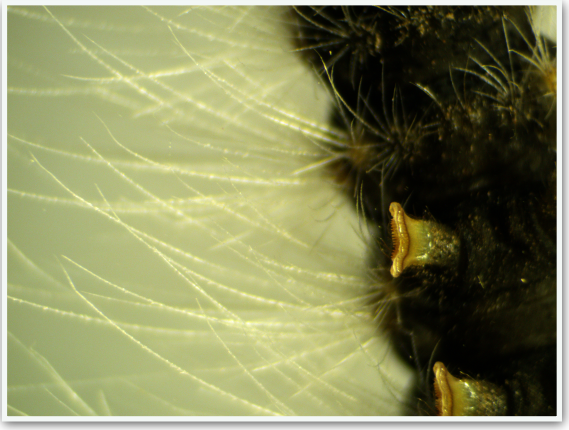
Above: Gordon Berman took this photograph of of White-lined Sphinx caterpillars on the Fillmore Canyon Trail in the Organ Mountains. A dramatic photo for all sorts of reasons. Note, for instance, how different the caterpillar in the background looks from the two in the foreground. The "horn" on the rump of the caterpillar of this species is a key diagnostic feature, both in terms of shape and (bi)-color.

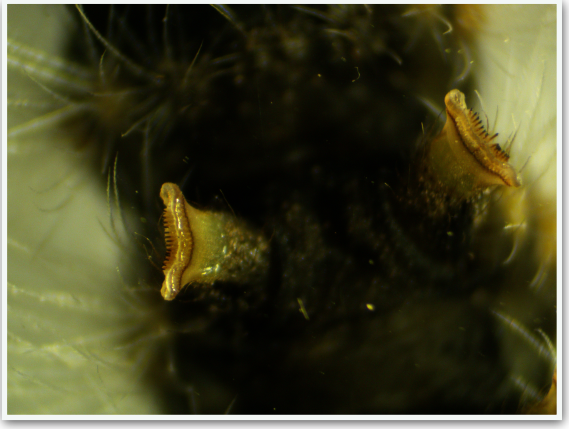
The head of a White-lined Sphinx, from Wikipedia, gives some idea of its eye structure. Like the proboscis which is evident in the photographs on previous pages, a wonderful adaptation.

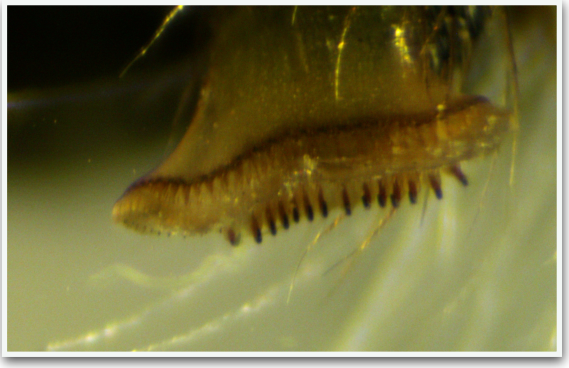


Fall Webworm Moth
Hyphantria cunea
(Drury, 1773)
Hodges #8140

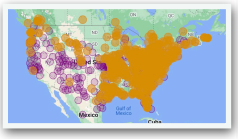
Hyphantria cunea which are **frequently found in our area, may have as many as four generations per year. The caterpillar stage is often found in Fremont Cottonwood (*Populus fremontii*) - see left, and willows. Photographs from Hillsboro, Black Range. RAB**



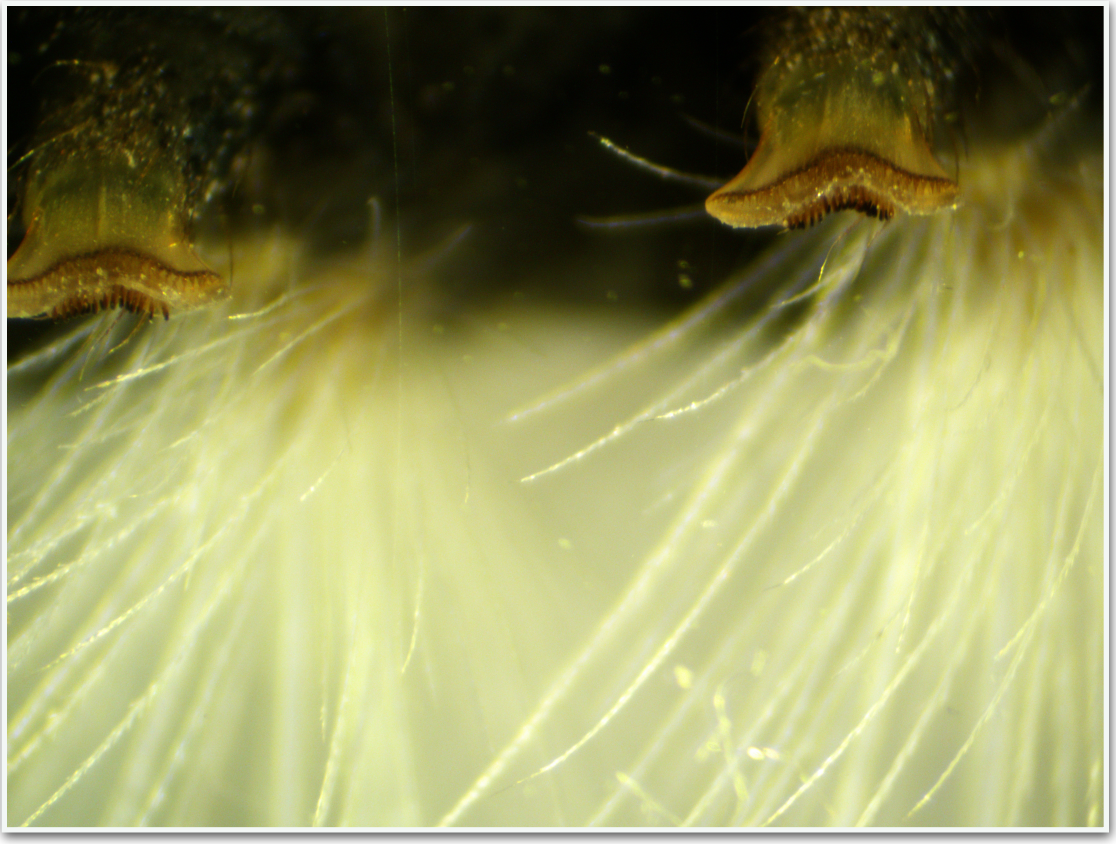




Photographs on this and the preceding page were taken in Hillsboro on October 10, 2022. RAB



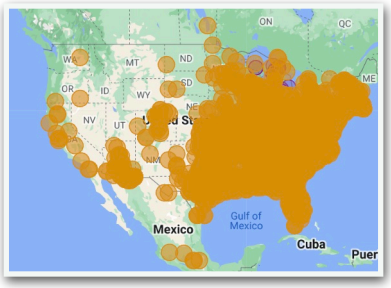
U. S. Range Map of *Hyphantria cunea,* Fall Webworm Moth From sightings reported to Butterflies and Moths of North America.



Common Buckeye
Junonia coenia
Jacob Hübner, 1822
Hodges #4440

The plate that accompanied Hübner's original description of the Common Buckeye is shown below (Sammlung exotischer Schmetterlinge (1819 -1827) Vol. 2 Plate 32.

The Common Buckeye, photographed near Kingston (right), has a range which is mostly limited to the east of the Rocky Mountains.



U. S. Range Map of *Junonia coenia,* Common Buckeye
From sightings reported to Butterflies and Moths of North America.

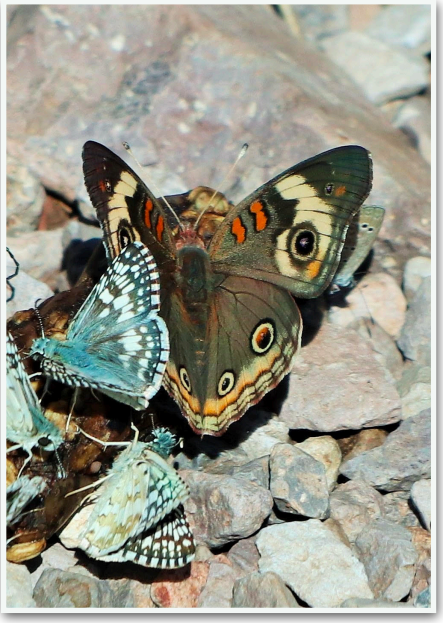
If you have an older field guide, it will not show that the Gray Buckeye (see following page) has been split from the Common Buckeye - and the range for the species will stretch across the southern tier of the United States and southward to southern Mexico.

Steve Cary maintains an excellent blog on the Pajarito Environmental Education Center website. His entry for June 10, 2020 addressed buckeye species in New Mexico. A wonderful and informative discussion - well worth the time! His latest blog effort is located at this link - New Mexico Butterfly Blog.

***Junonia coenia*, Buckeye**
Photographed at Bloodgood Spring (Kingston), July 2017.

Gray Buckeye
Junonia grisea
(Austin & J. Emmel, 1998)
Hodges #4444.2

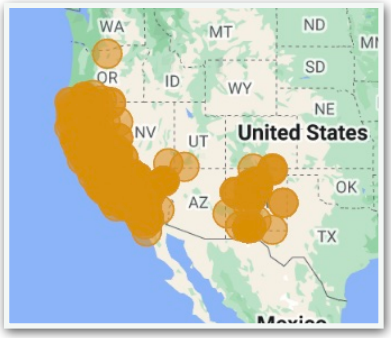
Until recently, the Gray Buckeye, pictured to the right in a photograph by Gordon Berman was considered a subspecies of the Common Buckeye, *Junonia coenia* grisea (Lalonde & Marcus, 2018). This individual was photographed taking nutrients from saturated sand and small gravel of the Pine Tree Trail above Aguirre Springs Campground in the Organ Mountains.



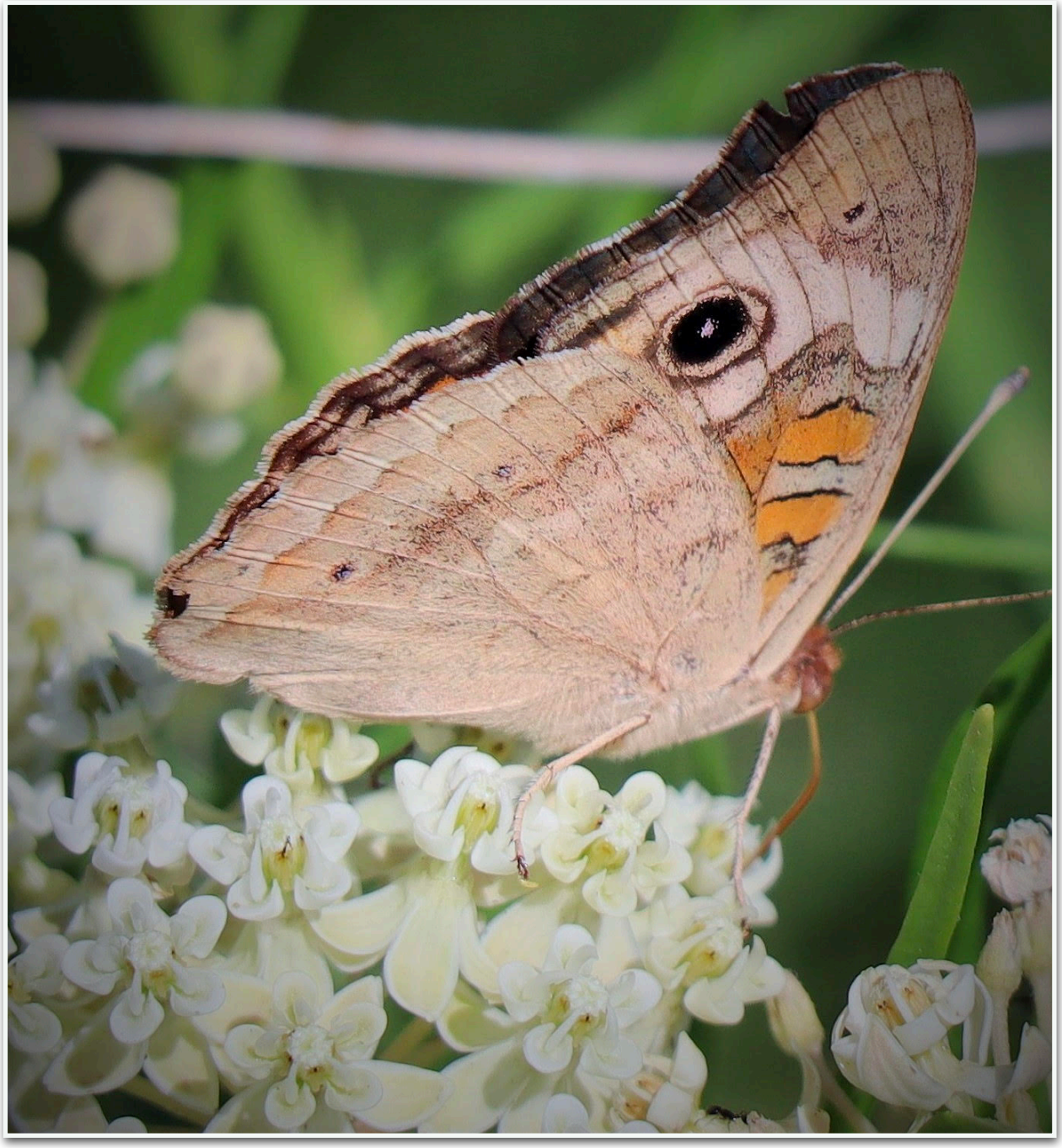
A Gray Buckeye (photo above and left), along the Soledad Canyon Trail. JVL

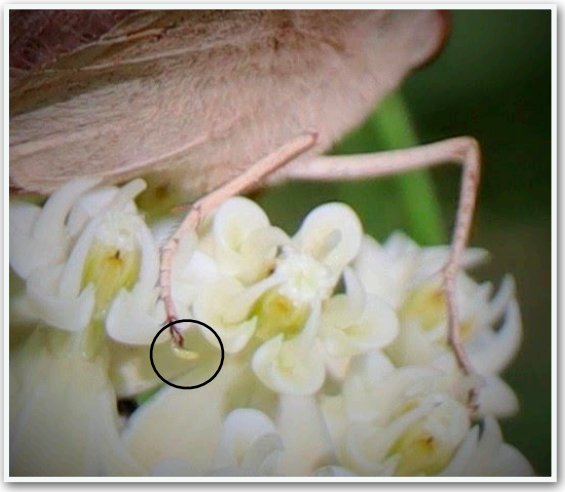
If your reference is current and recognizes this species, it will describe the range as west of the Rocky Mountains. At this point, you may be questioning how useful "range" is in determining the species of the butterfly you are attempting to identify. Sometimes it is very useful, sometimes not - and the "not" is more commonly the situation at the edges of a species' range. Obviously where species are found does not always match their described range.

In the photograph above, by James Von Loh, a Gray Buckeye and White Checkered-skippers are extracting moisture and nutrients from seed-filled wildlife scat near the Soledad Canyon Trailhead of the Organ Mountains.



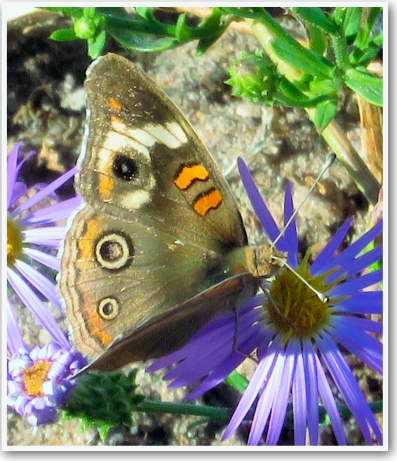
U. S. Range Map of *Junonia grisea*, Gray Buckeye
From sightings reported to [Butterflies and Moths of North America](#).

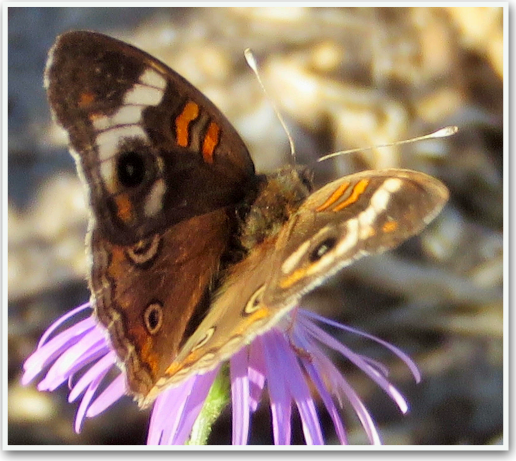




Gray Buckeye nectaring on Horsetail Milkweed flowers. In image above, and enlargement to left, note that a single pollinarium has been extracted via the stigmatic slit and clings to the leg where it could be transferred into another flower, thus achieving pollination. JVL

Above: Gray Buckeye stops nectaring from Spine-aster flowers to bump several times into White Checkered-skipper, *Burnsius* (*Pyrgus*) *albescens* (Plotz, 1884) that appeared to be displaying to attract a mate. This behavior occurred over several minutes and several "bumping" incidents. JVL. Photographs below by Gordon Berman





Gray Buckeye nectaring from Horsetail Milkweed flowers. JVL

Gray Buckeye, nectaring from Spiny Chloracantha flowers, on May 27 when it was uncommon along the Rio Grande. JVL

Gray Buckeye nectaring from Spine-aster flowers. JVL

Lalonde & Marcus
Austin & J. Emmel

In 2018, Melanie Lalonde and Jeffrey Marcus published research which led to the subspecies *Junonia coenia grisea* being elevated to full species status. ("Getting western: biogeographical analysis of morphological variation, mitochondrial haplotypes and nuclear markers reveals cryptic species and hybrid zones in the Junonia butterflies of the American southwest and Mexico", *Systematic Entomology*, 14 November 2018.) In the abstract of the paper they noted that "*The American southwest and northern Mexico has a great degree of endemic diversity compared with the rest of North America. The Pleistocene glaciations and the dispersal of species from glacial refuges in this region have been important engines for the production of biodiversity in the region. The New World Junonia are a recent radiation of butterflies that are thought to have spent time in these refuges during periods of glacial advancement. We have reconstructed the plausible movements and the contemporary geographic distributions of the five taxa (J. coenia, J. grisea, J. litoralis, J. nigrosuffusa and J. zonalis) that occur in the American southwest and northern Mexico . . .*" This paper contains significant amounts of information about the life history, morphology, and general natural history of the *Junonia* species. Some of the difficulties encountered when distinguishing between the *Junonia* species is created by hybridization, an example of the study's assessment of this issue is shown in Figure 8 of the cited work (see following page).

Melanie M. Lalonde is currently on the faculty of the University of Manitoba as is Jeffrey M. Marcus.

Austin and J. Emmel are credited with the identification of the subspecies, *J. coenia grisea* in 1998 and are given credit for the original species description by most sources. George T. Austin was a major figure in the study of the butterflies of western North America and the rest of the Americas. John F. Emmel appears to have specialized in the butterflies of the western United States and especially California. He worked in various other international locales.

The speciation of the Buckeye's has been a center of confusion for many years. In "Speciation in North American Junonia from a genomic perspective", Qian Cong et al. perform a great service in tackling the question. (*Systematic Entomology*, 2020 October ; 45(4): 803-837, doi:10.1111/syen.12428). Many people will find the numerous graphics, like that shown in two pages, to be very helpful.

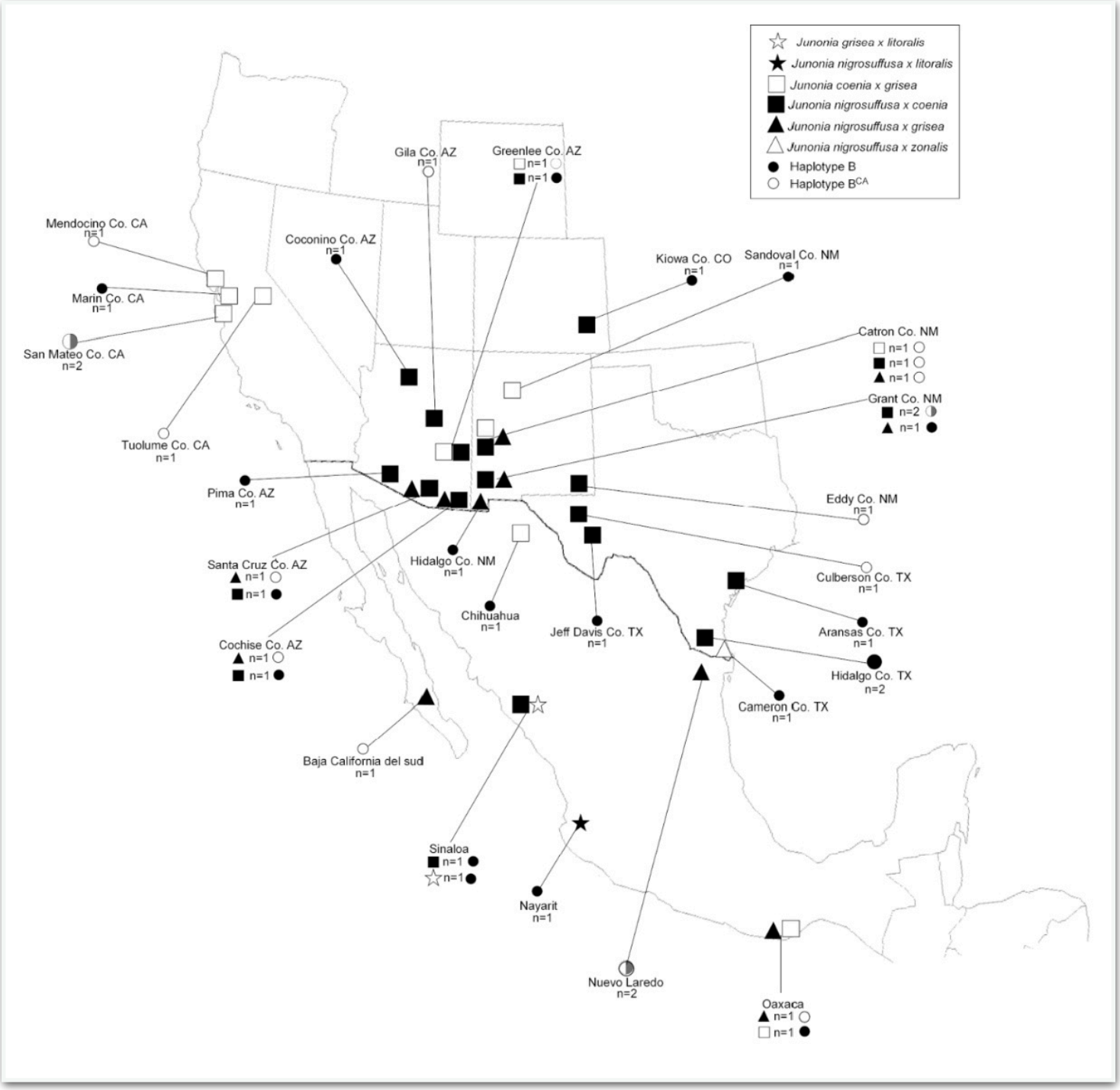


Fig. 8. Map of the American Southwest and Mexico showing the distributions of Junonia species hybrids using collection localities, and cytochrome oxidase subunit I (COI) haplotype group assignments from this study. The specific hybrid combinations are shown in the figure legend.

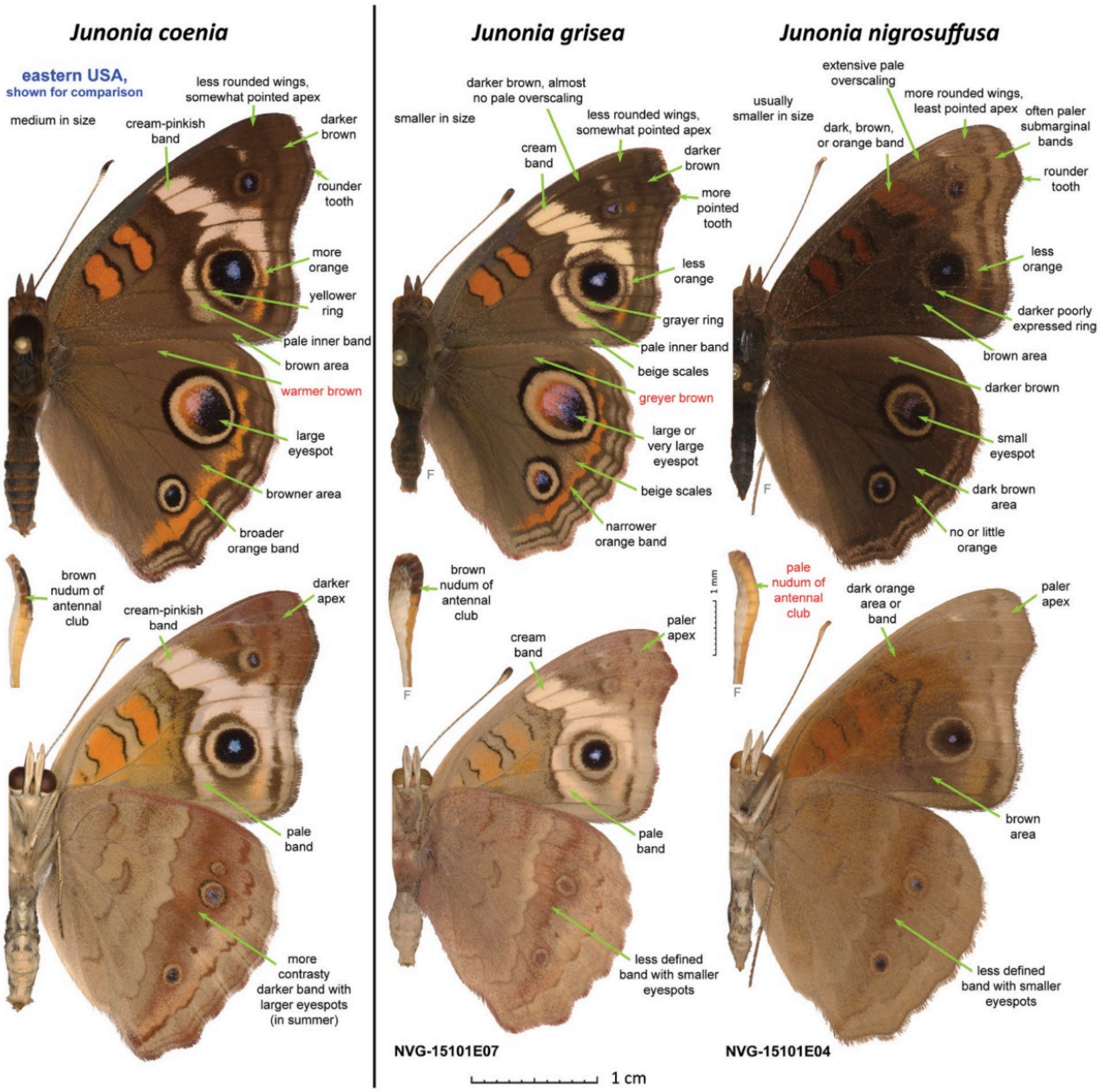


Fig. 3.
Differences between males of the two *Junonia* species from western U.S.A. and *J. coenia*. The three specimens are those shown in Fig. 1. *Junonia coenia* (U.S.A.: Texas, Wise Co., LBJ National Grassland, ex larva, eclosed 11-Sep-1997), *J. grisea* (NVG-15101E07; see Table S1 for the data), and *J. nigrosuffusa* (NVG-15101E04) are shown in the left, middle and right columns, respectively; dorsal and ventral views of the same specimen are shown above and below; and ventral view of the antennal club (shrivelled to various extents) is shown between them. All images are to scale: 1 cm scale (specimens); 1 mm (antennal clubs). Characters typical for males of each species are listed on the images with green arrows pointing to these features. A single most reliable character to identify each species is marked in red. 'Nudum' is a bare, scale-free portion of antenna beneath. 'F' indicates a flipped image (left/right inverted). Specimen images were edited to remove imperfections

From: "Speciation in North American Junonia from a genomic perspective", Qian Cong et al. perform a great service in tackling the question. (*Systematic Entomology*, 2020 October ; 45(4): 803–837, doi:10.1111/syen.12428).

Dark-ribboned Wave
Leptostales rubromarginaria
(Packard, 1871)
Hodges #7179

The Dark-ribboned Wave shown below was located along the Hillsboro Peak Trail in the Black Range at about 9,000' (RAB).

In the world of identification, butterflies are difficult, but moths, that is a whole different level of difficulty entirely.

This moth is proof that they are not all dingy gray and brown. Although some of the moths of the genus are, in fact, gray and brown, this individual is certainly not. As we walked, this moth fluttered up from the trail. With a wingspan of less than 20 mm, it was quite small.

The identification of this individual required the help of the folks at the Iowa State University Department of Entomology. But eventually I got there. This species was known as *Acidalia rubromarginaria* for a short period but was placed in its current genus by Alpheus Spring Packard in 1871, the year he made the original description.

The Mississippi State University Mississippi Entomological Museum site was also helpful in the identification of this individual.

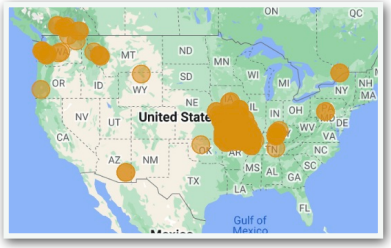
The host plant for the larvae is not known (4/19/23).

Other Resources
(Dark-ribboned Wave)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide

Alpheus S. Packard
(1839-1905)

Packard was the Massachusetts State Entomologist (1871-1873), member of the U. S. Entomological Commission (1877-1882), curator and director of the Peabody Academy of Science (1867-1878), a professor of zoology and geology at Brown University (1878-1905), founder and editor-in-chief of the American Naturalist for twenty-five years, a fellow of the National Academy of Sciences, etc. etc.

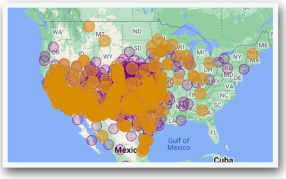


U. S. Range Map of
Leptostales rubromarginaria
Dark-ribboned Wave
From sightings reported to Butterflies and Moths of North America.

Among more than 400 monograms and other works he published was the *Textbook of Entomology* (1898).

Marine Blue
Leptotes marina
(Reakirt, 1868)
Hodges #4357

Marine Blue taking nutrients from moist rock near the Soledad Canyon Trailhead. JVL



U. S. Range Map of *Leptotes marina* Marine Blue From sightings reported to Butterflies and Moths of North America.

Marine Blue, photographed in Lake Valley, Black Range. DN

Marine Blue nectaring from Spiny Chloracantha flowers. James Von Loh observed this species on June 6th and 7th and took the two images above on July 16. Common.

Marine Blue nectaring from Horsetail Milkweed flowers. These small butterflies are abundant regionally but were less well represented along the Rio Grande in 2021. JVL

The Marine Blue larva shown to the right is a photograph from Berry Nall's website and is shown here under the provisions of a Creative Commons Attribution-NonCommercial 4.0 International License. Other larval stages may be green, reinforcing the fact that instar stages can look very different from each other.

The female will lay a single egg (multiple locations) on the flower buds of the caterpillar host plant (mesquite, milkvetch, legumes [including alfalfa], leadwort . . .). The caterpillar will eat the flowers and seedpods of the host plant.

The range of this species extends down the Baja Peninsula and as far south as Guatemala. This species is found throughout New Mexico but tends to be uncommon above 8,000'. This species generally prefers more open areas.

Look for this species between late March and late November.

The wings of the male (below) are "solidly" colored, females have white spotting on interior of both FW and HW.

Darker blue in the Marine Blue than in Cassius Blue.

Two spots very obvious (and different from others) on hind wing

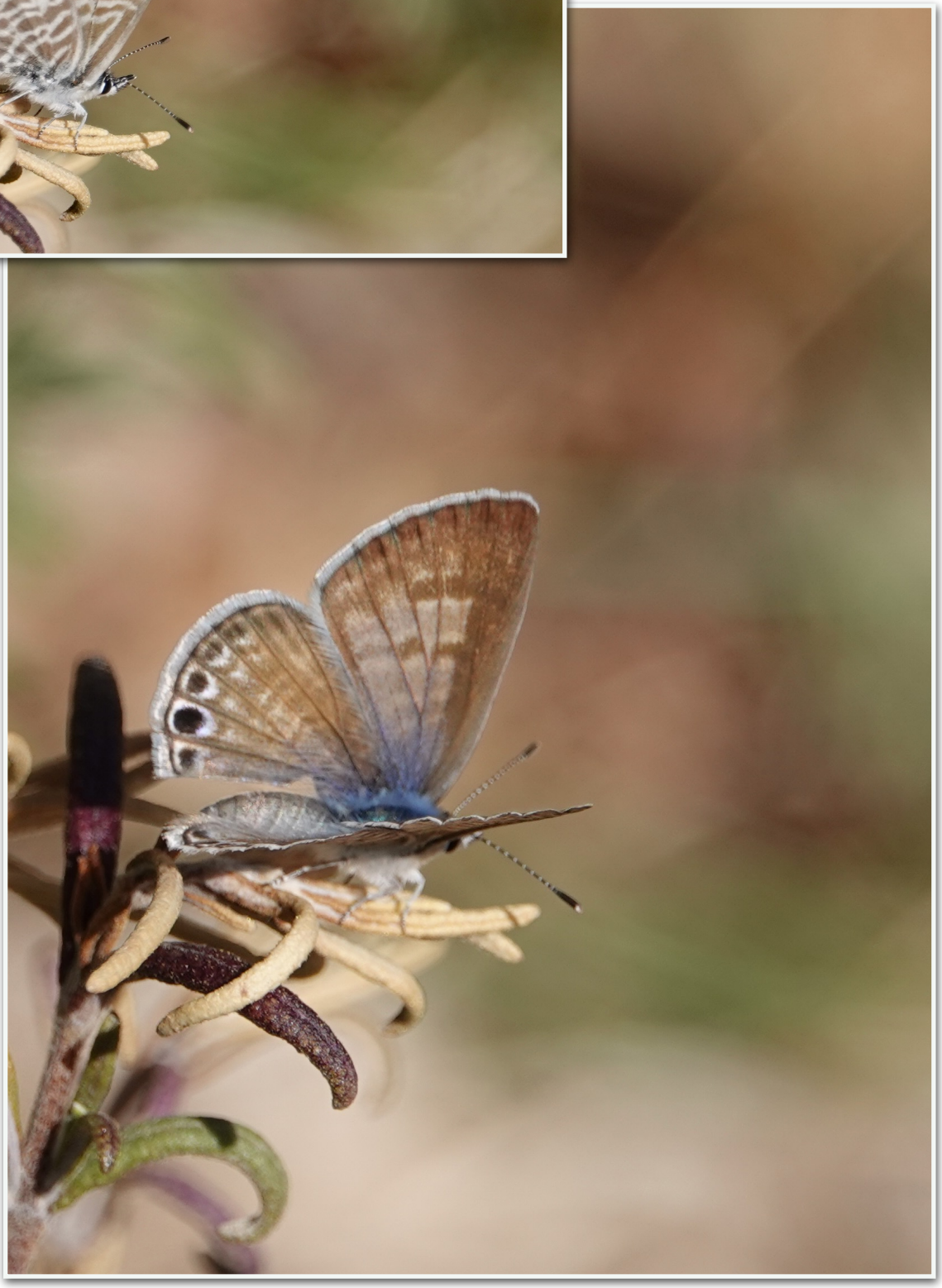
This "block" is gray to brown in the Marine Blue, all white in Cassius Blue. An unbroken brown line across the FW.

General appearance is that of brownish streaking. In Cassius Blue the general appearance is white with brown streaks. As a result, Marine Blues generally look darker than Cassius Blues.

Alternating brown and white pattern across wings distinguishes Marine and Cassius Blues from other Blues.

Range of Cassius Blue is farther east.

Female Marine Blue photographed in Hillsboro on April 4, 2021. RAB



Additional Resources

- North American Moth Photographers Group
- BugGuide
- Butterflies and Moths of North America
- Pajarito Environmental Education Center

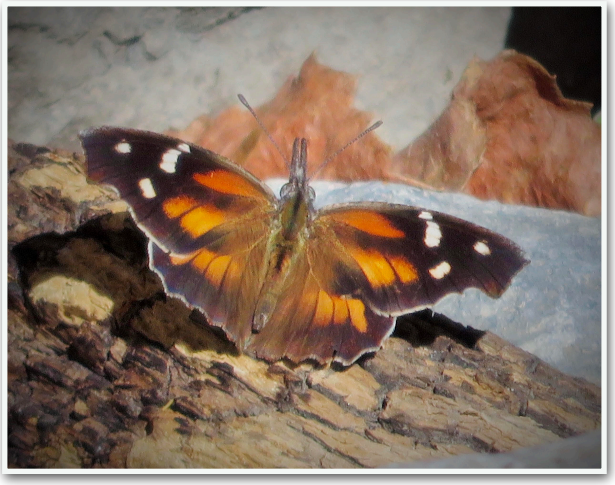
American Snout
Libytheana carinenta
(Cramer, 1777)
Hodges #4411

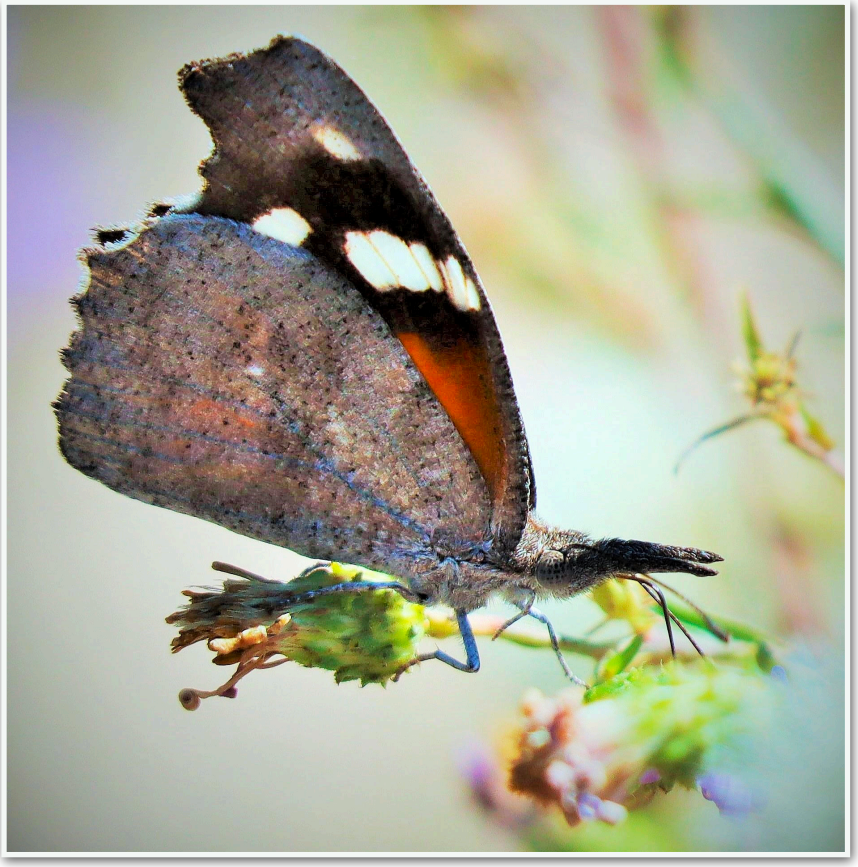
The American Snout pictured below was photographed by James Von Loh at the Dripping Springs Visitor Center in the Organ Mountains. This is one of the smaller solitary puddlers which were present during the 2021 season. It is taking nutrients from the moist soil of a retention pond.

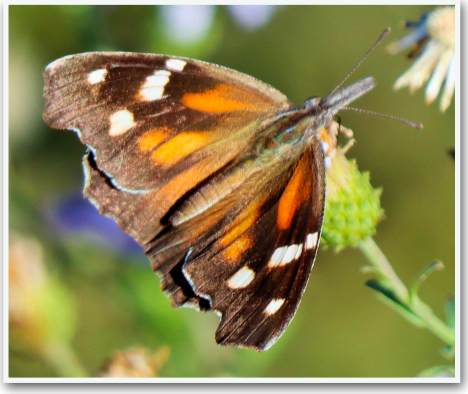
Hackberries are a major plant host for the larvae of the species.

This is the only Snout species found in the United States. Its population fluctuates with the intensity and duration of dry periods. It is sometimes found as far north as southern Ontario, to the south it it found in Mexico.

Photograph immediately below: American Snout taking nutrients from moist substrate below the Fillmore Canyon Waterfall. Photograph by Gordon Berman.

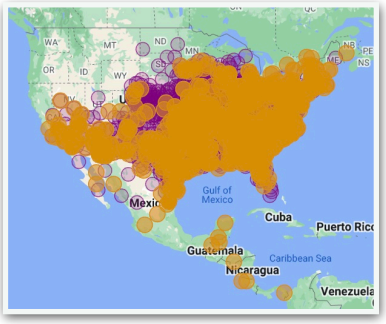






Left and two above: American Snout was an abundant butterfly often found nectaring from Spine-aster flowers during 2021. As shown to the left, individuals became darker in color near the end of October. JVL

Above: American Snout nectaring from Horsetail Milkweed flowers. JVL

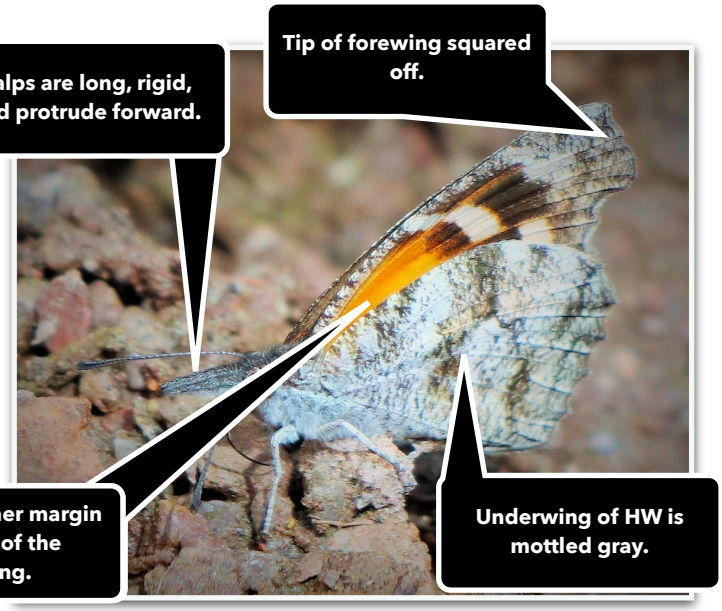


U. S. Range Map of
Libytheana carinenta
American Snout
From sightings reported to
Butterflies and Moths of North America.

Other Resources
(American Snout)

- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center**

American Snout



Why Not Just Viceroy?

If you are out and about and run across a local Viceroy you are likely to call it a "Viceroy". If you are writing about the encounter in a casual correspondence you are likely to call it a "Viceroy".

But if you write about your encounter in a more formal publication you might write it as:

> Viceroy, *Limenitis archippus obsoletus*, W. H. Edwards, 1882
> or *Limenitis archippus obsoletus* (W. H. Edwards, 1882)
> or *Limenitis archippus (Cramer, 1776) obsoletus* (W. H. Edwards, 1882) or
> Desert Viceroy *Limenitis archippus obsoletus* (W. H. Edwards, 1882)

Part of the reason for the variance is the perceived need to indicate which taxonomic determination we are talking about. Ornithologists rarely have to indicate who the original describers of a species or subspecies was when they list a species. The universe is really quite limited. Botanists and entomologists on the other hand have a very large universe to address. To begin with, there are simply many more species and subspecies to describe. Not only does that create a initial problem of accurately distinguishing between the species and subspecies but it also means that the possibilities for the revision of earlier taxonomic determinations increase dramatically. To ensure that everyone is on the same page, the original describer, and the date of the description, of a species is almost always listed when discussing a particular species. If a subspecies has been identified, the original describer of the subspecies is also listed, with the date of the description.

What happens when the genus of a species (or subspecies of a species) is changed following the original description? Generally, the original describer and date of description is listed, even though the latin binomial is no longer that which they gave the species. This is also the general rule which is also followed for subspecies determinations.

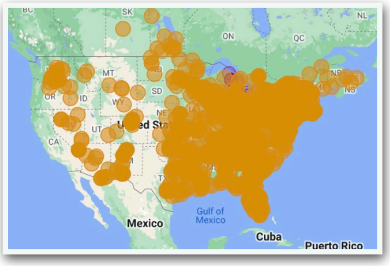
What is the rule when a species is split or lumped?

The International Code of Zoological Nomenclature outlines the rules for how species are described and which describers gets credit under which conditions. It is an extensive set of rules, covering just about any situation which might occur. But it is a complicating listing and its rules are not always followed in the manner that everyone agrees is appropriate. The International Commission of Zoological Nomenclature is the body which makes the official determinations when there is a disagreement in these matters. And, disagreements about these matters can become quite heated, not the least of which is caused by rules applied when the "strict adherence to the Code would interfere with stability of usage" - nothing better for controversy than adding some subjectivity into a field where extensive efforts have been made to make it objective.

So when a name listing isn't easy to understand, or does not quite make sense to you, do the best that you can and live with it, don't fight over it.

Other Resources (Viceroy)

- Butterflies and Moths of North America
- North American Moth Photographers Group (Note especially the information about flight times on this page)
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



U. S. Range Map of
Limenitis archippus
Viceroy
From sightings reported to
Butterflies and Moths of North America.

(Desert) Viceroy
Limenitis archippus obsoletus
(Cramer, 1776 - species)
(W. H. Edwards, 1882 - subspecies)
Hodges #4523

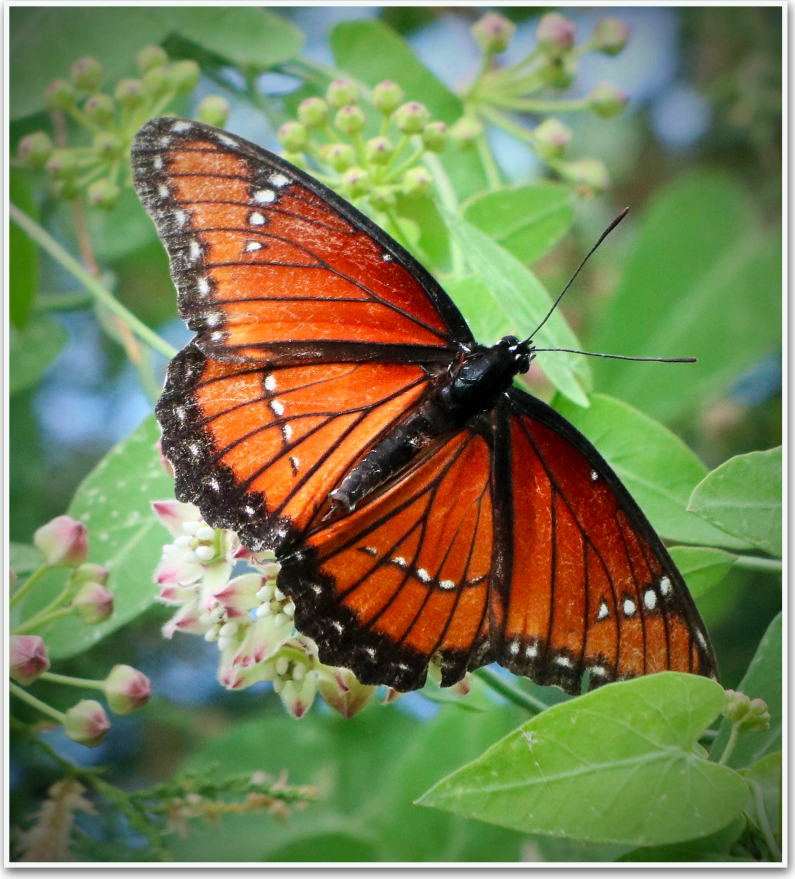
The Viceroy is smaller than the Monarch and flies with shallower wing beats. The Monarch will often glide with wings apart in the form of a "v".

In the northern part of their range, Viceroys mimic Monarchs. In the southern part of their range they mimic Queens. Viceroys are lighter in color in the northern part of the range than they are in the southern part.

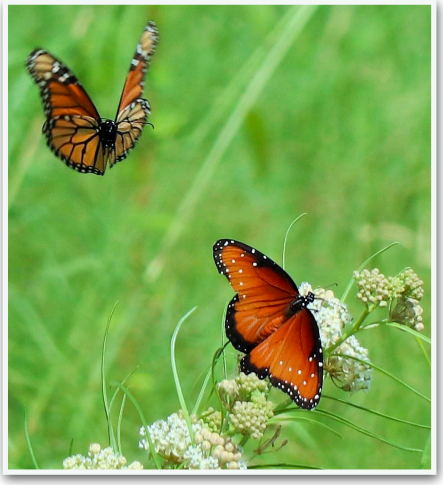
Viceroy caterpillar host plants include willows, poplars, and cottonwoods. Females will lay two or three eggs near the tip of the leaves of host plants and then move on to another location.

Early in the season (or when flowers are few) adults will feed on aphid honeydew, dung, or decaying meat or fungi. When flowers are available they nectar, favoring composites like asters and thistles.

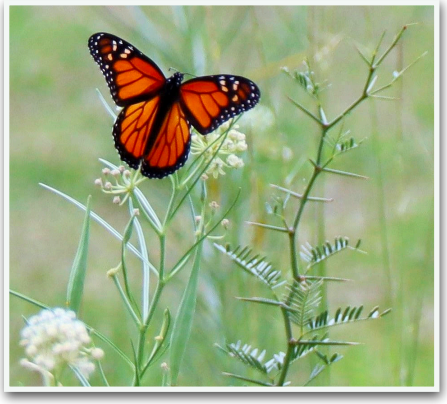
***L. a. obsoletus*, known as the Desert, Southwest, Arizona, or Obsolete Viceroy has lost much of its habitat because of water impoundment, human "development" of its habitat, and the encroachment of Salt Cedar.**



Above: This Desert Viceroy, *Limenitis archippus*, (dorsal wing view) is the only one I observed nectaring from milkweed flowers in three seasons. This individual is nectaring from Climbing Milkweed flowers. JVL



Compare the Viceroy with the Queen and Monarch (above) and Monarch (below). JVL.



Red-spotted Admiral
Limenitis arthemis arizonensis
(Species: Drury, 1773)
(Sub-species: W. H. Edwards, 1882)
Hodges #4522

The Red-spotted Admiral which is found in our area is a subspecies of the Red-spotted Purple form of this species. It is also known as the Arizona Red-spotted Purple. The range of this subspecies is limited to parts of Arizona, New Mexico, and Texas in the U. S. and to the northern states of Mexico.

This species has been widely studied, especially in the eastern United States. In that region, *L. a. arthemis* (White Admiral), is found to the north and is non-mimetic while *L. a. astyanax* is mimetic, mimicking the poisonous Pipevine Swallowtail, as does *L. a. arizonensis*.

There is disagreement about whether or not *L. a. arizonensis* and *L. a. astyanax* are distinct subspecies. The differences in morphology and behavior appear to be minor. In general *L. a. arizonensis* is found in more narrow canyons (in New Mexico, generally between 5,000' and 8,000') than is the eastern form. That, however is to be expected given the topography of the west.

This subspecies is known to hybridize with *L. weidemeyeri, L. archippus obsoleta,* and *L. arthemis*. Species in *Limenitis* are know to hybridize with relative ease where they come into contact.

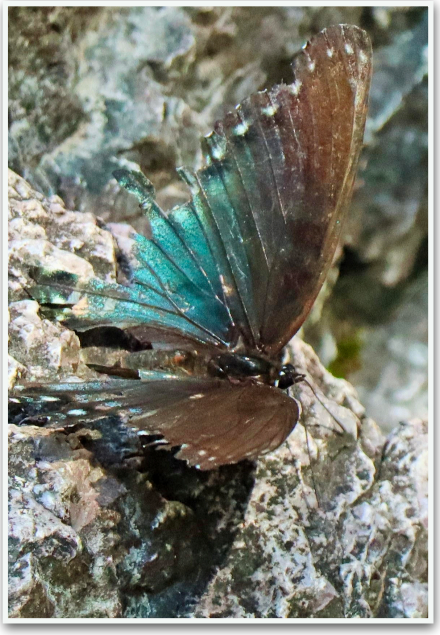
Caterpillar host plants include many (primarily tree) species including, cottonwoods, oaks, poplars, aspen, and wild cherry. *L. a. arizonensis* appears to prefer willow more than the eastern subspecies. Adults sometimes will nectar from flowers but generally get their nutrition from dung, carrion, sap, and rotting fruit.

The most common behavior, in butterflies, is to hold the wings vertically above the body when at rest or nectaring, or opening and closing their wings slowly. General rules can be misleading. Sometimes, butterflies will "bask", holding their wings open to absorb heat from the sun.

Red-spotted Admiral photographed in Mineral Creek, Black Range, September 2017. RAB

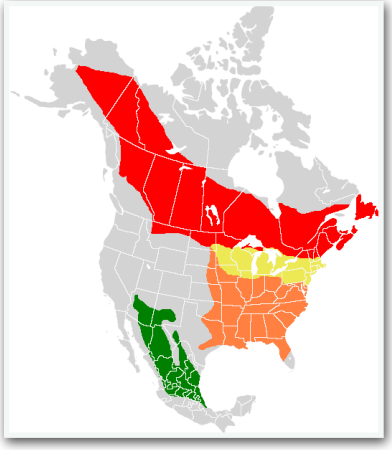
This Red-spotted Admiral is taking nutrients from the bedrock surfaces forming Soledad Canyon Waterfall. JVL

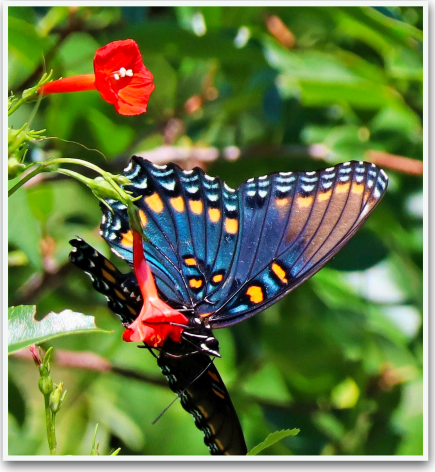
Wings are everything to a butterfly. If it loses a wing or if its wings are damaged, it is at a severe disadvantage. There are many reasons that a butterfly's wings may become damaged, like those in the image to the right. Its wings may have been damaged by material stress, wear and tear of flight, and random encounters with objects. Such stress may be especially prevalent during migration when butterflies are often traveling significant distances, often in inclement weather conditions. Or, the wings may have been damaged when the butterfly was attacked by a predator. The butterfly shown to the right was taking nutrients from outcropping bedrock forming Soledad Canyon Waterfall, photograph by James Von Loh.



Other Resources
(Red-spotted Admiral)

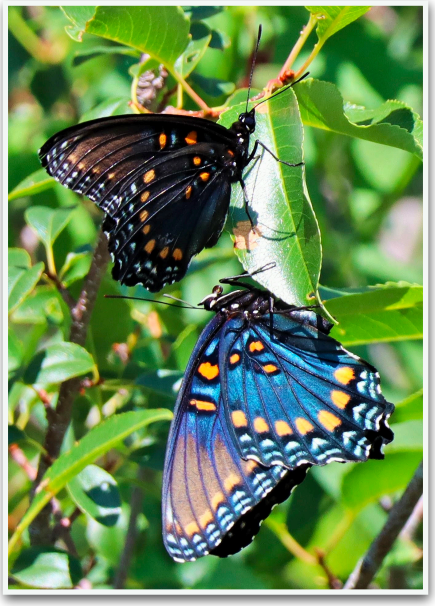
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center
- Wikipedia

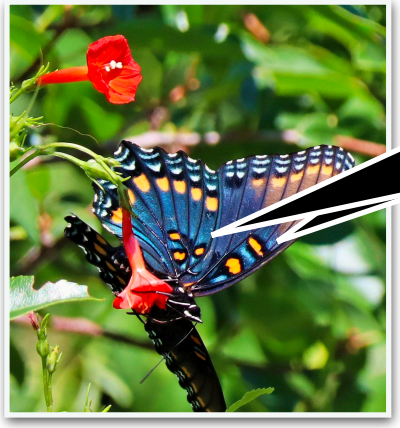


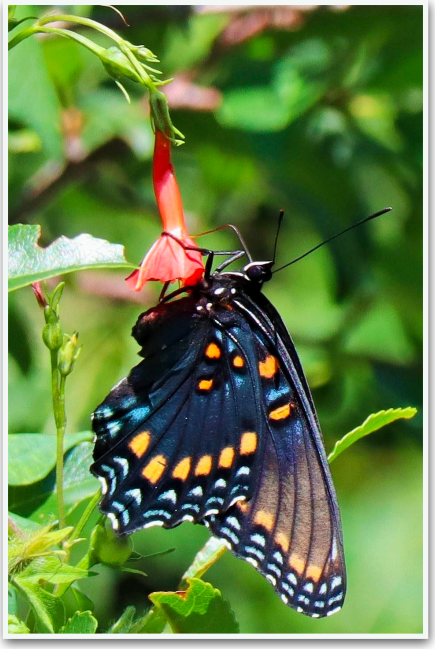


Range Map Attribution

This map shows the distribution of *Limenitis arthemis*. The red shows the range of *L. a. arthemis*; the orange shows the range of *L. a. astyanax*; the green shows the range of *L. a. arizonensis*; and the yellow shows where the ranges of *L a. arthemis* and *L. a. astyanax* overlap.







In the three images to the right, Red-spotted Admirals are nectaring from a Scarlet Morning-glory which adorns a tall Black Cherry shrub. In the middle photo of the series, a pair of Red-spotted Admirals is in the Black Cherry. They were also in a nearby Apache Plume, which also had Scarlet Morning-glory intertwined with its branches. The top butterfly in the middle photo is laying eggs on a Black Cherry leaf. JVL

Above: Photographed in Mineral Creek, Black Range, September 2017. Right: In Kingston, N.M. RAB

Weidemeyer's Admiral
Limenitis weidemeyerii angustifascia

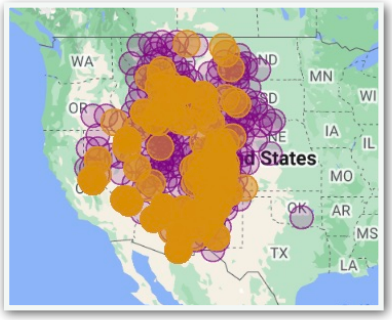
(Species: W. H. Edwards, 1861)
(Subspecies: W. Barnes & McDunnough, 1912)
Hodges #4524

Within the Black Range this species is generally found above 6,500'. The larvae plant hosts of this species include willow, aspen and *Prunus*. There are two overlapping flights in New Mexico, with the highest population occurring in late summer.

Like some skippers, the larvae will protect themselves by rolling a leaf to make a shelter.

There are two subspecies of Weidemeyer's Admiral found in New Mexico, the nominate form is found in the central and northern part of New Mexico and has relatively wide white bands. *L. w. angustifascia*, like the one shown below, is found in the southwestern part of the state and has more narrow white bands.

Barnes and McDunnough described this subspecies as *Basilarchia angustifascia* in 1912.



U. S. Range Map of *Limenitis weidemeyerii* Weidemeyer's Admiral From sightings reported to Butterflies and Moths of North America.

Other Resources (Weidemeyer's Admiral)

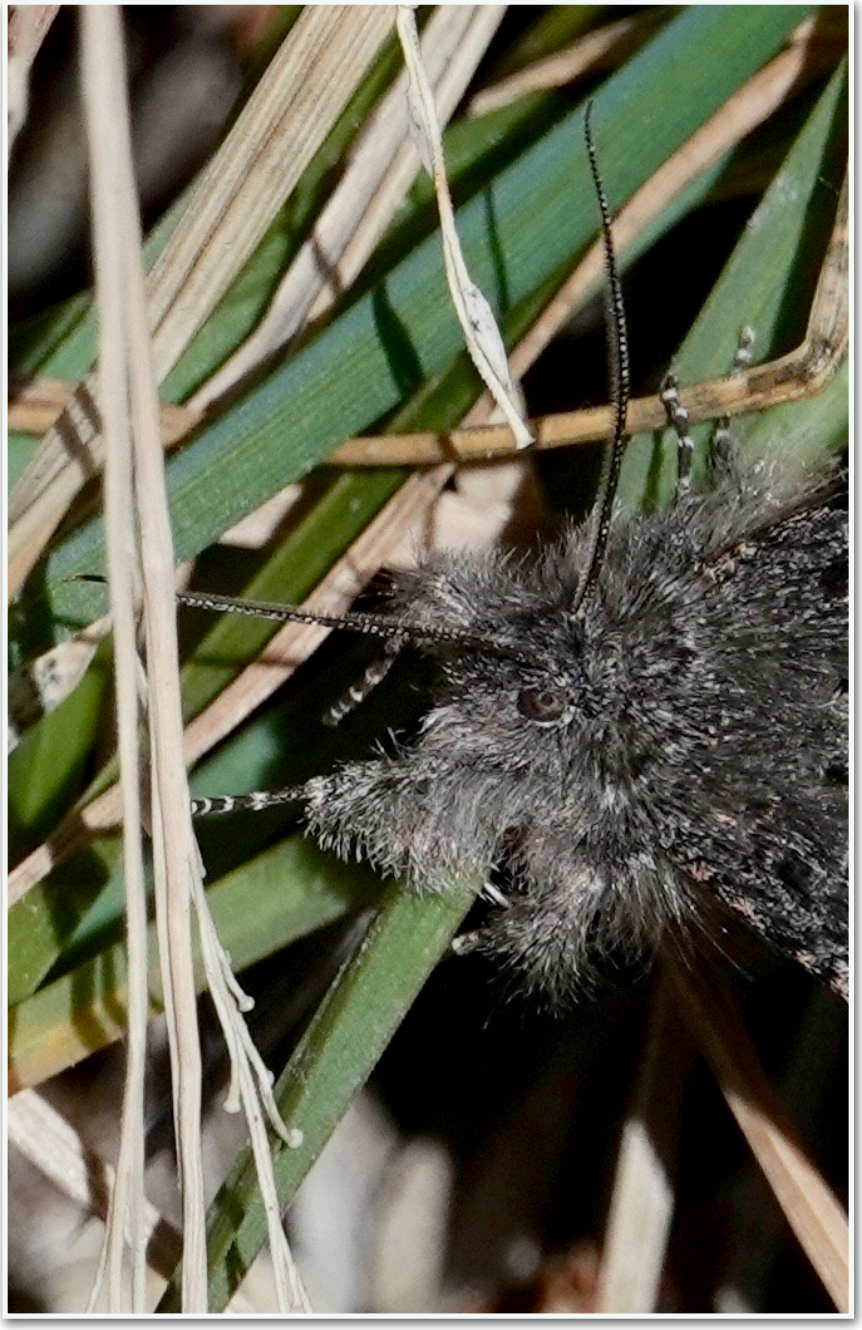
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Width of white band varies between the subspecies.

Row of small faint white spots.

Weidemeyer's Admiral **Photographed in Railroad Canyon, Black Range, June 2017. RAB**

Litocala Moth
Litocala sexsignata
(Harvey, 1875)
Hodges #8597



The Litocala Moth shown to the right and on the following page was photographed (RAB) in Southwest Canyon (6,500′), south and west of Kingston, Black Range on March 7, 2021.

Beauty, and the unexpected, sometimes come in small packages. In the January 2021 issue of the *Black Range Naturalist*, Ron Parry introduced us to the world of moths, and his excellent website, Southwestern Moths. In the April 2021 issue, moths and their place in the web of living things were discussed as part of a series of articles about plantings.

These moths were present where bedrock forced the water to the surface of the canyon bottom. Just a trickle of water running over the marble, but lots of thick grass on the stream edges. The *Litocala* were not seen at other locations.

The moths would flit about, rarely flying more than 20′ before landing and crawling into the grass. Sometimes they would land on a rock or on the mud. Not always easy to see.

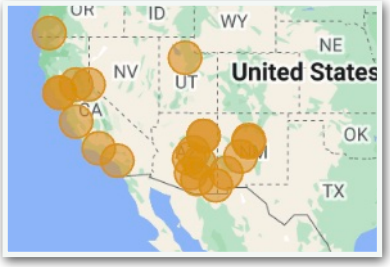
This species is the only one of the genus which is found in North America, primarily in the western part of the United States but also into northern Baja California.

The website bugguide.net, notes that the adults fly from March until June. The species is diurnal and often nectars at flowers (including willow catkins, per Pacific Northwest Moths). It is often seen sipping water from mud.

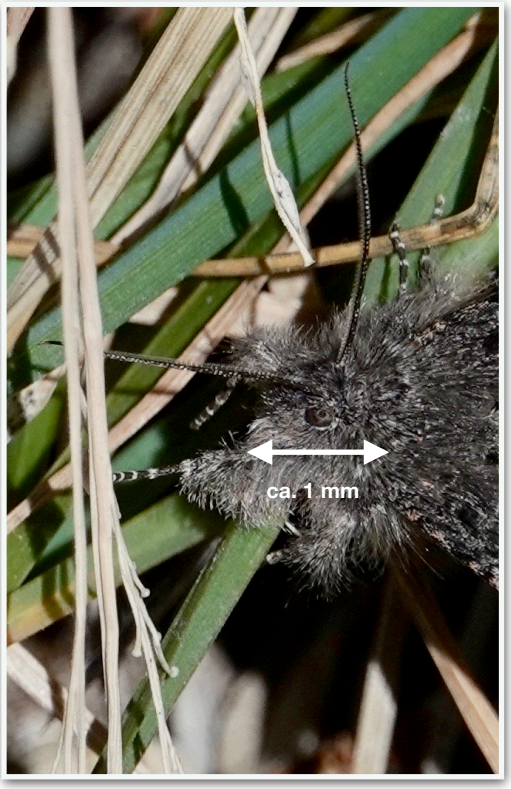
The beauty of this creature would be missed if it did not periodically become the focus of our attention.

Not all moths are small, however. The wing span of moths can be as narrow as 2-3 mm or as wide as 150 mm.

This larvae of this species feed on various oak species.

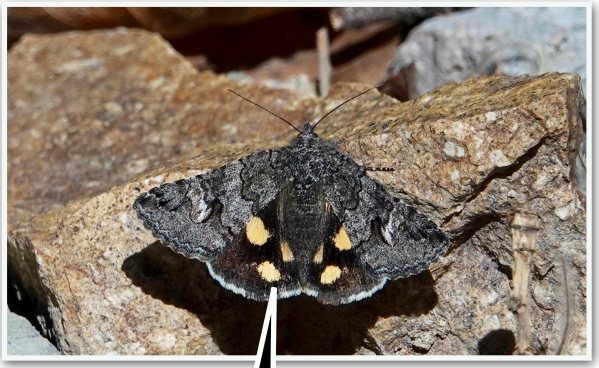


U. S. Range Map of
Litocala sexsignata
From sightings reported to
Butterflies and Moths of North America.



Other Resources
(*Litocala sexsignata*)

- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Southwestern Moths**



The species name, *sexsignata*, refers to the six spots on the hindwings.

Leon F. Harvey
1837-1912

Harvey was an American entomologist who published a number of scientific articles on the moths and butterflies of North America. He was a founding member of the Buffalo Society of Natural Sciences and served as both Treasurer and President of that organization. Augustus R. Grote was also associated with that organization.

Taxiles Skipper

Lon (Poanes) taxiles

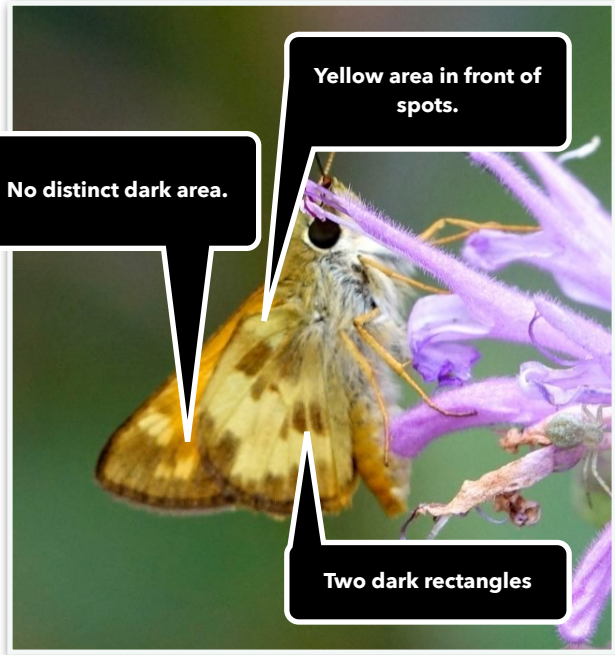
(W. H. Edwards, 1881)

Hodges #4061

The larvae feed on various grasses and adults nectar on flowers. Caterpillars feed on the grass leaves and tie leaves together with their silk to make shelter.

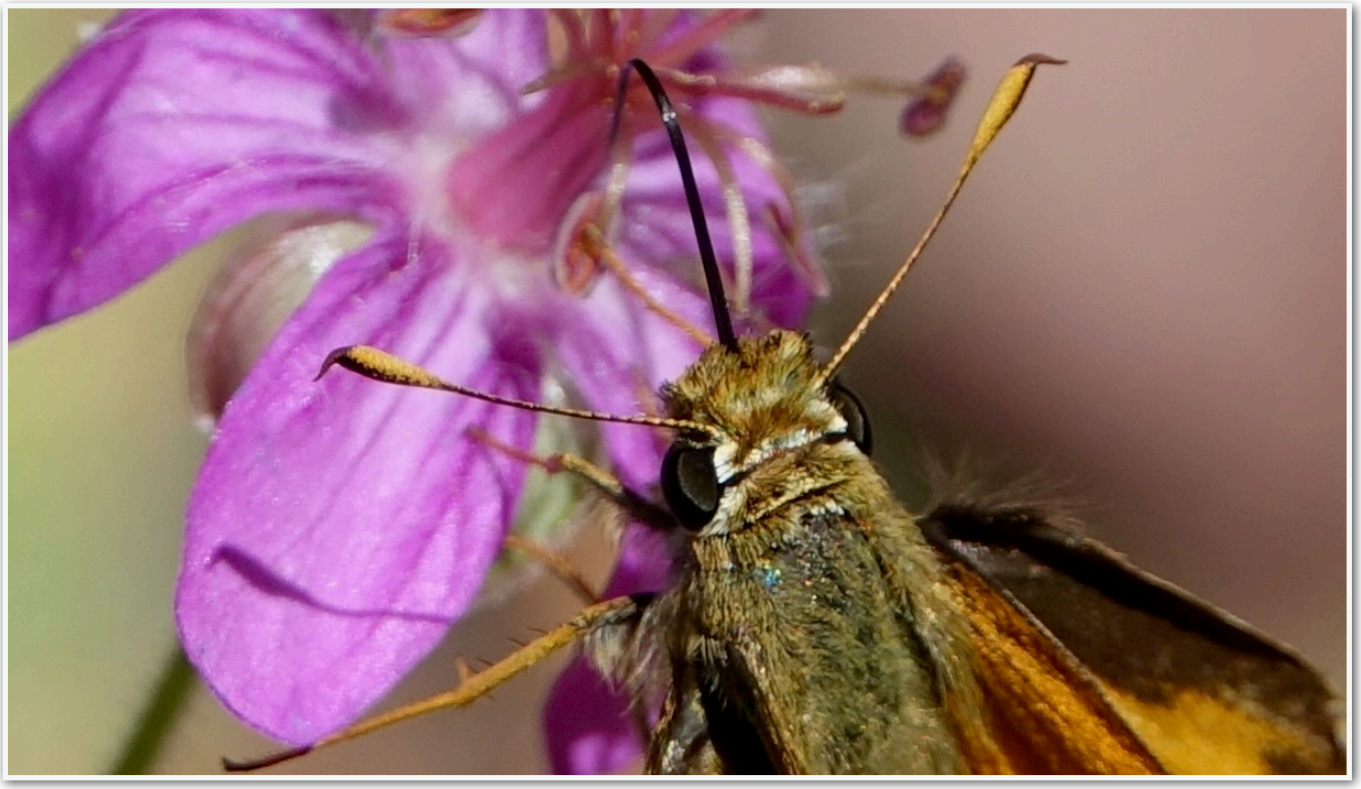
The range of this species extends well into Central America. The individuals shown here were photographed in Railroad and Gallinas Canyons on the west slope of the Black Range. In New Mexico, they are typically found in such riparian areas at elevations between 7,000′ and 9,000′.

Formerly in the genus *Poanes*, this species was transferred to the genus *Lon* in 2019.



Other Resources (Taxiles Skipper)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

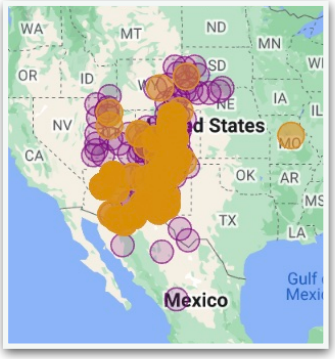


Taxiles Skipper, **photographed in Gallinas Canyon, Black Range. RAB**

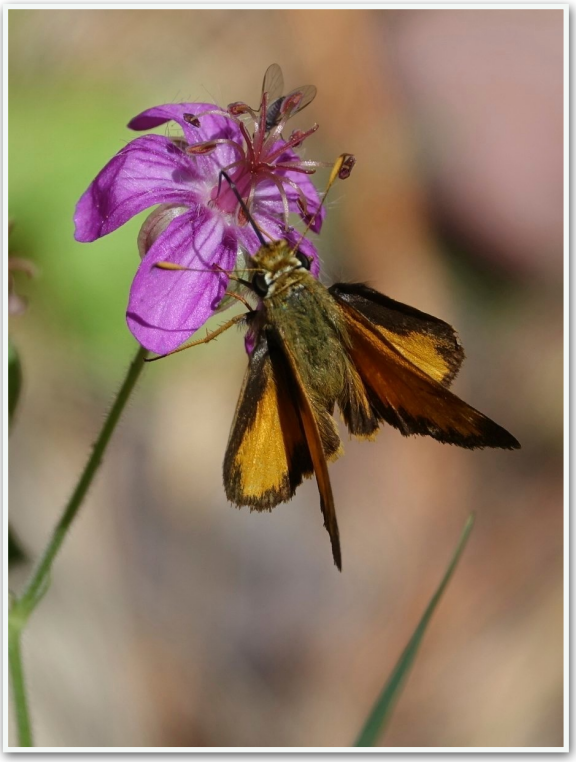
***Lon taxiles*, Taxiles Skipper on Bergamot, *Monarda fistulosa*. Photographed in Railroad Canyon, Black Range. RAB**

Males and females are very dissimilar in appearance. The male is shown here. Males apparently will defend small sunlit territories. They will perch from three to five feet above the ground.

The identification of skipper species can be difficult at times, seek a variety of resources when doing so.



U. S. Range Map of *Lon (Poanes) taxiles* Taxiles Skipper From sightings reported to Butterflies and Moths of North America.



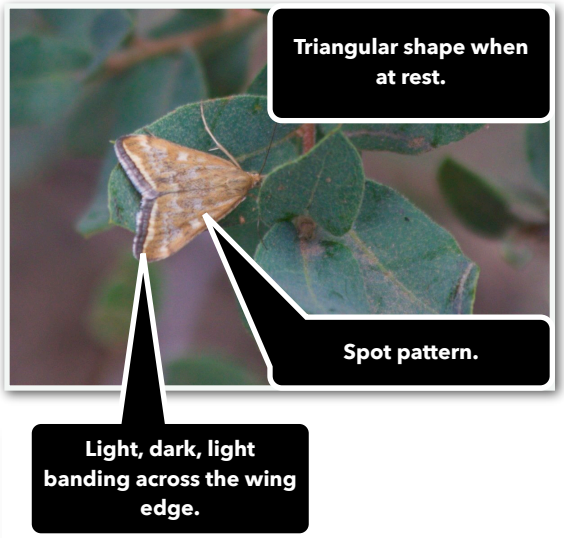
Taxiles Skipper, photographed in Gallinas Canyon, Black Range. RAB

Taxiles Skipper on Bergamot, *Monarda fistulosa*. Photographed in Railroad Canyon, Black Range. RAB

Beet Webworm
Loxostege munroealis
(Leraut, 2005)
Hodges #5004

The species found here was formerly treated as *L. sticticalis,* a species of the Eastern Hemisphere.

Typically found in fields, gardens, disturbed areas, prairie areas, and aspen parkland. Larvae feed on a variety of plant species, including Lamb's Quarters (*Chenopodium album*), beet crops, wormwood, sunflowers, and spinach.



Loxostege munroealis **Beet Webworm**
Photographed along Middle Percha Creek, west of Kingston, Black Range, July 2017. RAB

Larvae form silk-lined cells, in which they overwinter in loose soil. The moth stage is both diurnal and nocturnal, they are attracted to light.

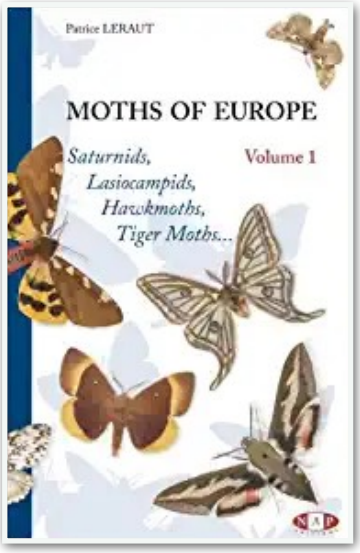
Other Resources
(Beet Webworm)

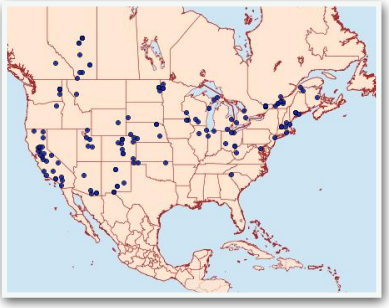
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Southwestern Moths
- Moths of North Dakota
- University of Alberta Museum

Patrice J. A. Leraut

Leraut has described more than 200 species, he is a French entomologist. He separated *Loxostege munroealis* from *L. stricticalis* in: Leraut, P.J.A., 2005. Contribution à l'étude de quelques genres et espèces de Pyraustinae (Lepidoptera: Crambidae). (Contribution to the study of some genus and species of Pyraustinae Lepidoptera, Crambidae) *Nouvelle Revue d'Entomologie*, 22(2): 123-139.

In addition to his many scientific publications, Leraut has also written many books on the butterflies of Europe.





U. S. Range Map of
Loxostege munroealis
Beet Webworm
From sightings reported to North American Moth Photographers Group.

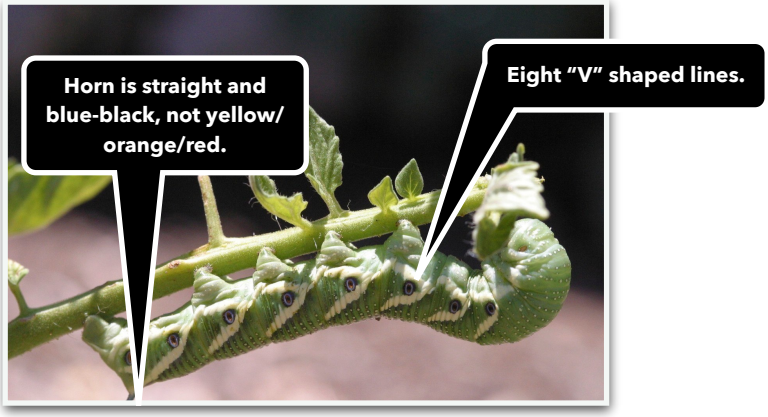
Five-spotted Hawkmoth Caterpillar - Tomato Hornworm
Manduca quinquemaculata
(Haworth, 1803)
Hodges #7776

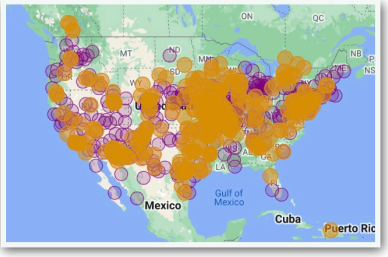
To paraphrase Shakespeare, in a Macbethean sort of way - "out, out, damn caterpillar". A refrain heard in many a garden. But in truth, unlike the Lady, most people who "out" the larval stage of the Five-spotted Hawkmoth show little remorse.

Video of the caterpillar stage of this species, being attacked by ants can be viewed here.

Large (wingspan between 9 and 13.5 cm) adults fly at dusk. They nectar on honeysuckle and phlox among other things. Females lay a single egg on the upper surface of host plants. Host plants are in *Solanaceae* and include potato, tomato, and nightshade.

Pupa overwinter in the soil in brown 2-inch long, spindle-shaped pupal cases. Caterpillars will feed for about a month before they enter the soil to pupate.





U. S. Range Map of *Manduca quinquemaculata* Five-spotted Hawkmoth/Tomato Hornworm From sightings reported to Butterflies and Moths of North America.

Other Resources (Five-spotted Hawkmoth)

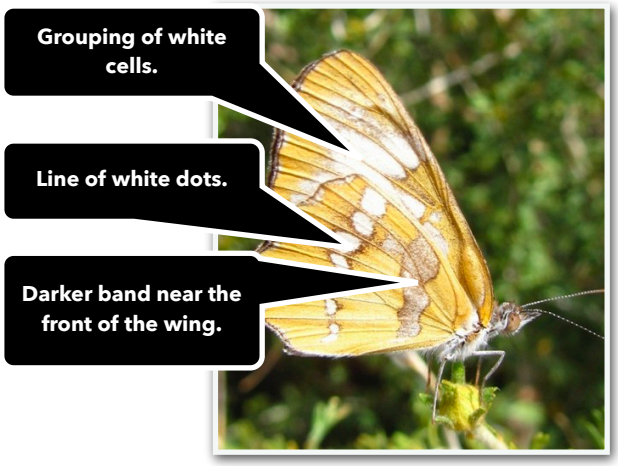
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Pacific Northwest Moths

Five-spotted Hawkmoth - Caterpillar: Tomato Hornworm. Hillsboro, New Mexico. RAB

Common Mestra
Mestra amymone
(Ménétriés, 1857)
Hodges #4537

Host plants are in the spurge family, slow flying adults usually stay close to host plants and grasses. They have been reported roosting under juniper trees at night.

This species is found as far south as Costa Rica. It is the only species of *Mestra* found outside of South America and the West Indies. Some authorities consider it to be a subspecies of *M. dorcas*. Within New Mexico, it is more common in the southeastern part of the state than in the southwestern part. Apparently, this species is not reported within New Mexico during some years.



Other Resources
(Common Mestra)

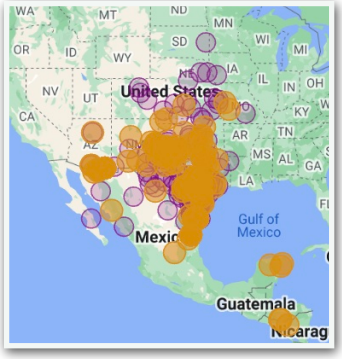
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center
- Berry's Butterfly Photos (Excellent life history including photos of all life stages)

***Mestra amymone*, Common Mestra**
Photographed in Lake Valley, Black Range by Debora Nicoll.

Adrian Hardy Haworth
(1767-1833)

An English entomologist who named several taxa and twenty-two genera of moths. He wrote *Lepidoptera Britannica* (1803-1828) which was considered the authoritative text for several decades.

He was a member and fellow of most of the natural history societies of his time.



U. S. Range Map of
Mestra amymone
Common Mestra
From sightings reported to
Butterflies and Moths of North America.

Dainty Sulphur
Nathalis iole
(Boisduval, 1836)
Hodges #4248

Adult males fly a few inches above the ground. Females lay single eggs on *Asteraceae* (Aster) seedling leaves which are the host plants for the caterpillar. Adults nectar on (among other things) asters and rabbitbrush.

Adults bask by closing their wings and sitting perpendicular (not parallel) to the sun. However, note the shadows in the identification key to the right, this species does not always sit perpendicular to the sun. It is typically found in open dry areas.

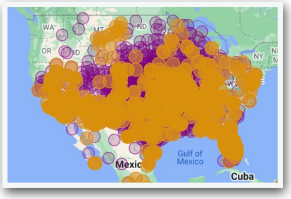
There is a summer/wet season form and a winter/dry season form of his species. As shown to the right, colors are darker in the winter/dry season form.

Dainty Sulphurs (sometimes called Dwarf Yellows) do not do well with cold winters. Although found to the far north in the United States these individuals have migrated north following the winter. In our area, their flights may be year around.

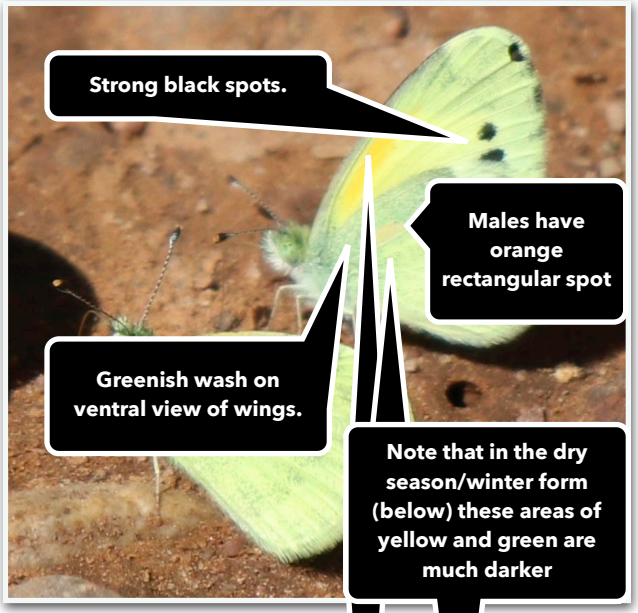
Dainty Sulphurs are found above 3,000' in most of New Mexico. They are found southward to Central America (Nicaragua and north). A subspecies, *N. i. natalia*, is described from Colombia.

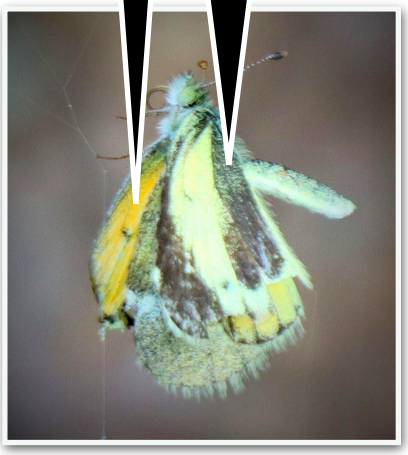
Other Resources
(Dainty Sulphur)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



U. S. Range Map of *Nathalis iole* Dainty Sulphur From sightings reported to Butterflies and Moths of North America.

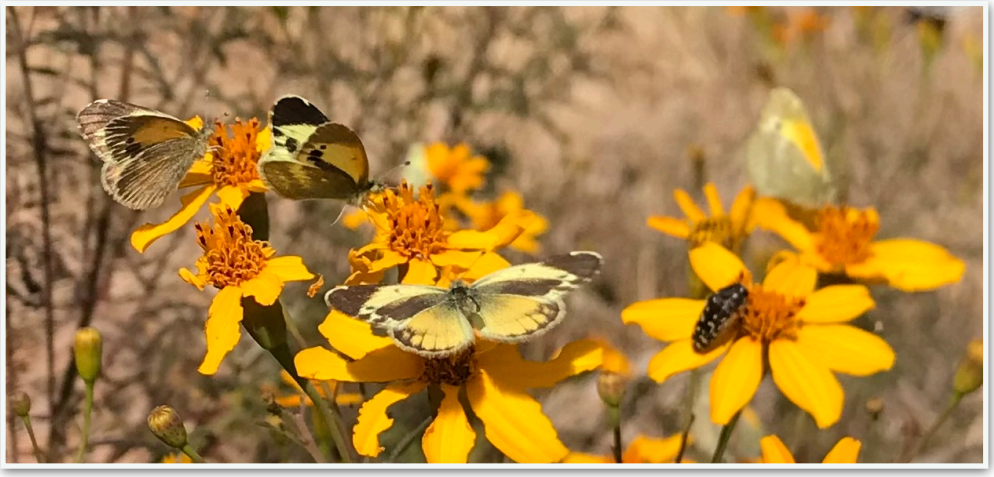




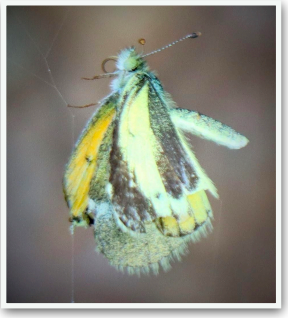
Above Left: The Dainty Sulphur was common, nectaring on Spiny Chloracantha flowers, with photographs from June 14, 16 (left), 18, and 19. Left: Dainty Sulphur taking nutrients from moist soil around the retention pond at Dripping Springs Visitor Center. JVL

Right: Multiple Dainty Sulphur, on Tagetes. JVL

Second Row: Dainty Sulphurs, were abundant along the Rio Grande, nectaring from Spine-aster flowers. JVL



Dainty Sulphur Photographed east of Hillsboro, Black Range. RAB

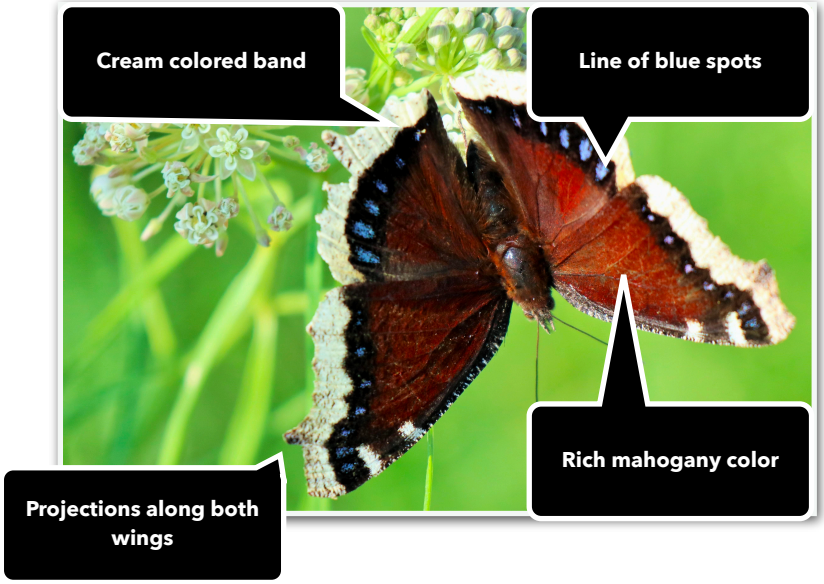


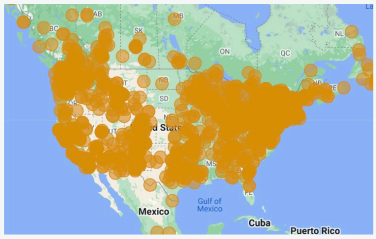
Dainty Sulphur has become recently ensnared on a sticky spider web strand and will eventually be consumed. JVL

Dainty Sulphurs taking nutrients from moist soil at

Dainty Sulphur nectaring from Horsetail Milkweed flowers. JVL

Dainty Sulphur photographed east of Hillsboro. RAB





Other Resources (Mourning Cloak)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center
- Wikipedia

U. S. Range Map of *Nymphalis antiopa* Mourning Cloak From sightings reported to Butterflies and Moths of North America.

Larger Butterfly Species Nectaring on Milkweed Along the Rio Grande

Larger butterfly species were observed visiting Milkweed habitats along the Rio Grande during 2019 and 2021; they included Mourning Cloak, *Nymphalis antiopa* (Linnaeus, 1758), Black Swallowtail, *Papilio polyxenes* (Fabricius, 1775), Pipevine Swallowtail, *Battus philenor* (Linnaeus, 1771), and Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775). These butterfly species were photo-documented perching on and nectaring from both Horsetail and Climbing Milkweed flowers; the most common flower visitor during 2021 was Variegated Fritillary.

Black and Pipevine Swallowtails and Variegated Fritillaries flutter their wings while nectaring and often make a challenging photographic target. I counter this somewhat by visiting the habitats when temperatures are cooler and collect images while they perch to warm in the sun's rays. Mourning Cloaks were rarely observed in prior years, but a few arrived during the 2021 migration. Images shown on the next two pages represent my first observations and photo-documentation of Mourning Cloaks nectaring from Horsetail and Climbing milkweed flowers. JVL

Mourning Cloak nectaring from Horsetail Milkweed. JVL

Mourning Cloak
Nymphalis antiopa
(Linnaeus, 1758)
Hodges #4432

The Mourning Cloak is a cosmopolitan species and is found in much of the northern Hemisphere. Within the Black Range they can be found at all elevations. Here they have up to four broods a year and may be found flying about in every month of the year.

See an article by Steve Siegfried, in the July 2019 issue of the Black Range Naturalist, for more information about this species.

Center Right: Mourning Cloak ventral wing view, taking nutrients while puddling. JVL
Center: Mourning Cloak nectaring from Horsetail Milkweed. JVL
Bottom Right: Not all individuals are brightly colored. This aged individual has lost many of the scales on its wings. Photographed in Railroad Canyon, Black Range on March 27, 2019. RAB

The caterpillars of this species use willows, elm, cottonwood, hackberries, alder . . . as host plants. Adults seem to prefer tree sap (especially oaks). The mourning Cloak is typically found in riparian areas. Eggs are found encircling the twigs of host plants. Caterpillars will form a communal web and feed together on the host plant.

Mourning Cloak is one of the large solitary puddlers, it uses both moist and saturated soils to take nutrients near the Soledad Canyon Trailhead. It was one of the rarest puddlers at this location. JVL

Morning Cloak, photographed along North Percha Creek, Black Range. RAB

Western Poplar Sphinx, photographed in Hillsboro, Black Range, July 2017. RAB

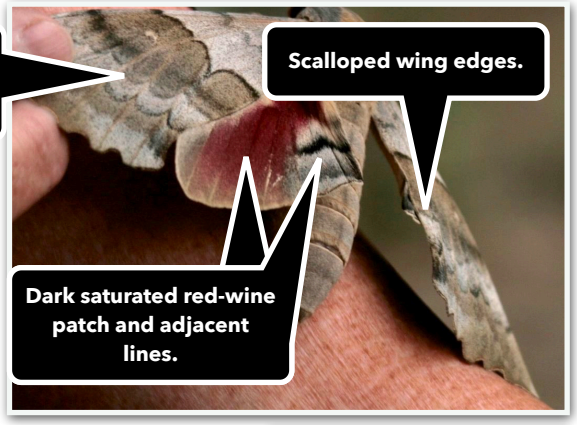
Western Poplar Sphinx
Pachysphinx occidentalis
(Edwards, 1875)
Hodges #7829

The caterpillar prefers cottonwoods as a host plant but also feeds on willows.

Adults are nocturnal, come to light, and do not feed.

This species is one of our largest moths and may be the heaviest.

It is known as Big Poplar Sphinx in some sources, since there are two species which share this common name BugGuide recommends the common name above. The other species known as Big Poplar Sphinx is *P. modesta*.



Other Resources (Western Poplar Sphinx)

- Butterflies and Moths of North America (listed as Big Poplar Sphinx)
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pacific Northwest Moths (listed as Western Poplar Sphinx Moth)
- Southwestern Moths

U. S. Range Map of *Pachysphinx occidentalis* Western Poplar Sphinx From sightings reported to Butterflies and Moths of North America.

Western Poplar Sphinx, photographed in Hillsboro, Black Range, July 2017. RAB

Two-tailed Swallowtail
Papilio (Pterourus) multicaudata
(W. F. Kirby, 1884)
Hodges #4178

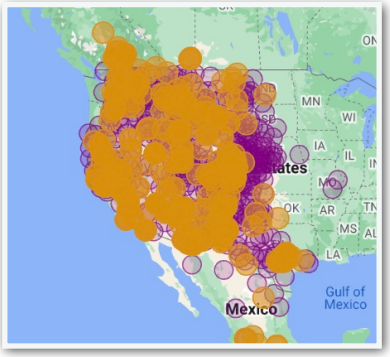
At every stage of life, the Western Tiger Swallowtail and the Two-tailed Swallowtail can be difficult to tell apart and, of course, their ranges overlap. The imago stage of the two species is shown to the right. One of the ways they are told apart is by the width of the black bars which start at the leading edge of the forewing and taper as they fade to the interior. The bars are wider on the Western Tiger Swallowtail.

Various instar (caterpillar) stages of the Two-tailed Swallowtail are shown on the following page. The markings which distinguish it from the caterpillar of a Western Tiger Swallowtail (of the same stage) can be obscure. Observe the "eyespots" on the thorax very carefully: 1) They are more elongated in the Two-tailed; and 2) the ring inside the large yellow spot is thicker in the Western; in both species it is generally black. The markings of the Two-tailed Swallowtail are clearly seen in Todd Stout's image at the lower left on the following page.

Earlier instars of both species look like bird droppings. The larva of the Two-tailed is often darker than that of the Western.

And, of course, count the tails. Three-tailed is sometimes found in southeastern Arizona.

The Western Tiger Swallow-tail, *Papilio rutulus*, at the top was photo-graphed by Bob Barnes in Railroad Canyon, Black Range, on June 9, 2019. The Two-tailed Swallowtail (below) was photo-graphed by Véronique De Jaegher in Kingston.

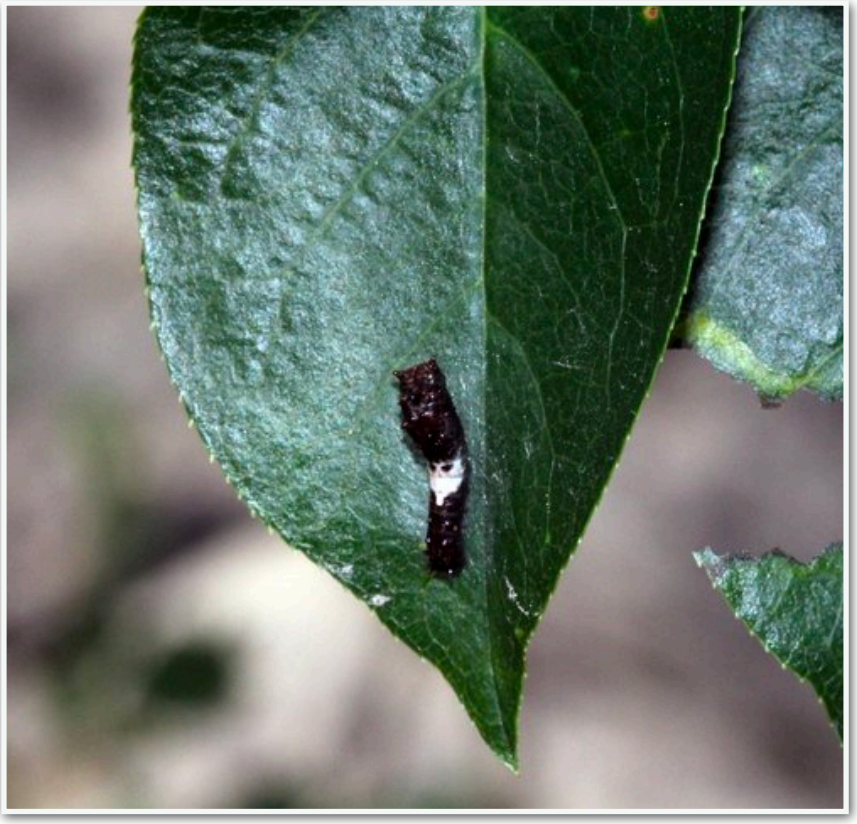


U. S. Range Map of
Papilio multicaudata
Two-tailed Swallowtail
From sightings reported to
Butterflies and Moths of North America.

Two-tailed Swallowtail, *Papilio* (*Pterourus*) *multicaudata* (W.F. Kirby, 1884), nectaring from a Scarlet Morning-glory flower in Soledad Canyon. JVL

Other Resources
(Two-tailed Swallowtail)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America (listed as Pterourus multicaudata)
- Pajarito Environmental Education Center (listed as Pterourus multicaudata)



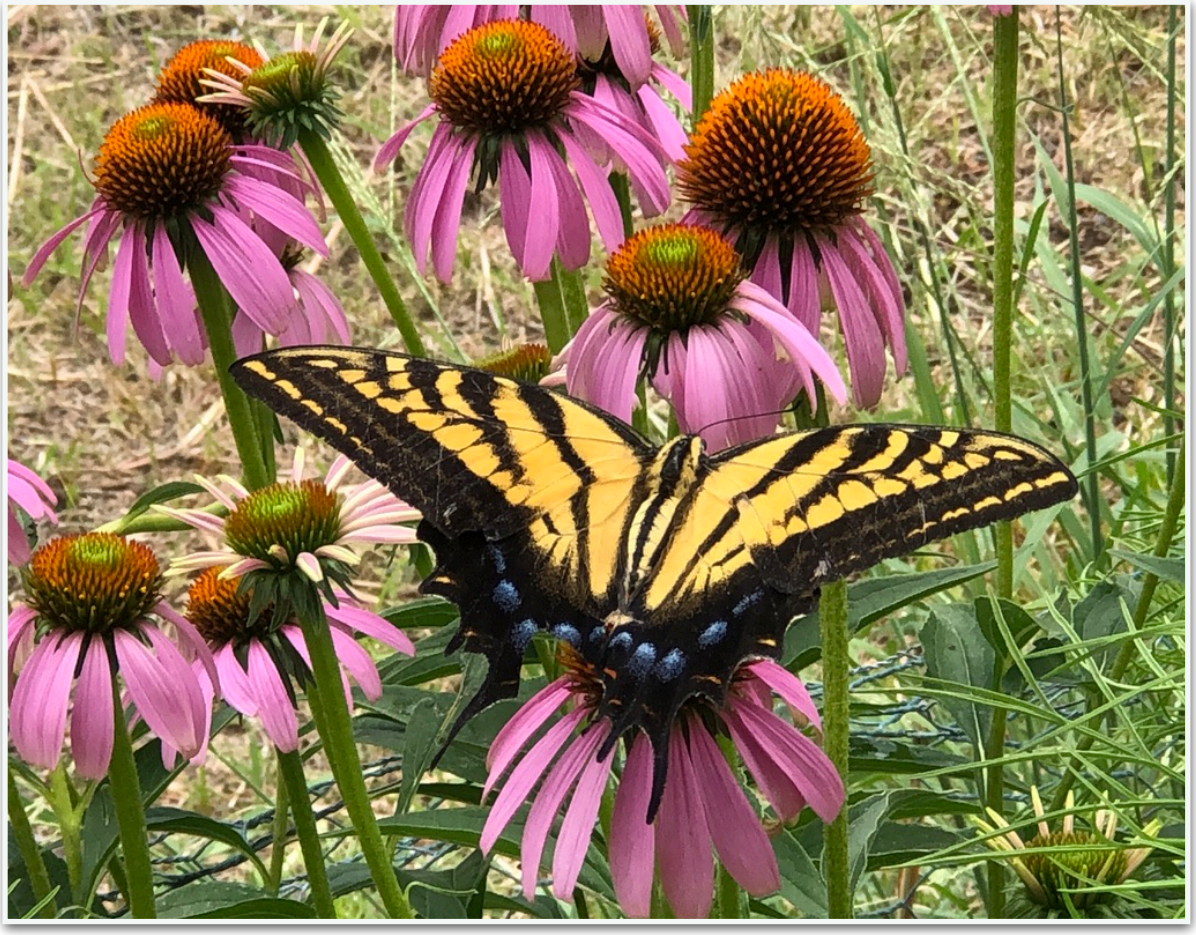
Third instar of Two-tailed Swallowtail, left, above, and to the right. Photographs by Todd Stout.

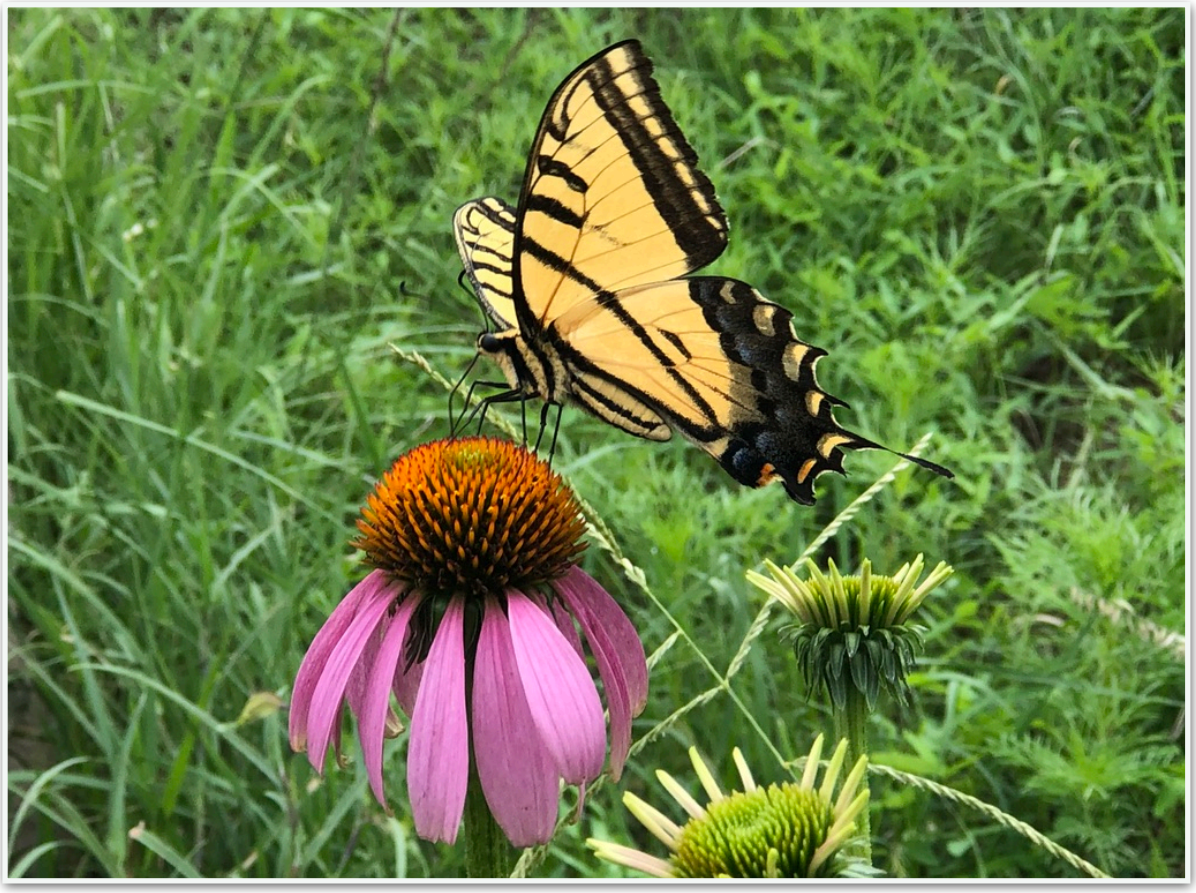
Egg (ovum) of Two-tailed Swallowtail. Photographed by Todd Stout.

Special Reference

Todd Stout's website, Raising Butterflies, has a wealth of information on the life stages of butterflies. If you are interested in raising butterflies from eggs or larvae, his website sells materials which will be helpful.

Fifth instar of Two-tailed Swallowtail, immediately above and to the left. Photos by Todd Stout.





Two-tailed Swallowtail photographs by Véronique De Jaegher in Kingston, August 2022.

Gordon Berman took this photograph of the caterpillar of *Papilio multicaudata* at the Dripping Springs Visitor Center. It is a fifth instar approaching the pupation stage.

Solitary Puddlers
by James Von Loh

It can be difficult to focus on individual butterflies among displays of hundreds-to-thousands of puddle clubbers, constant flitting, and when disturbed the explosions of color into the air. The diverse species of solitary puddlers appear not to be influenced much by this activity, settling in to take moist soil and seep nutrients alone or perhaps accompanied by another-to-few other individuals.

Species of solitary puddlers arriving at the moisture and nutrient-providing seeps, soil, gravel, and rocks present differing behaviors; some individuals isolate from puddle clubs while others land in or near the large congregations.

Puddlers of all sizes take nutrients from moist soil, often as individuals or in pairs.

Species which are large solitary puddlers include Monarch, Queen, Red-spotted Admiral, Mourning Cloak, Question Mark, Goatweed Leafwing, Black and Two-tailed Swallowtail, and Arizona Sister.

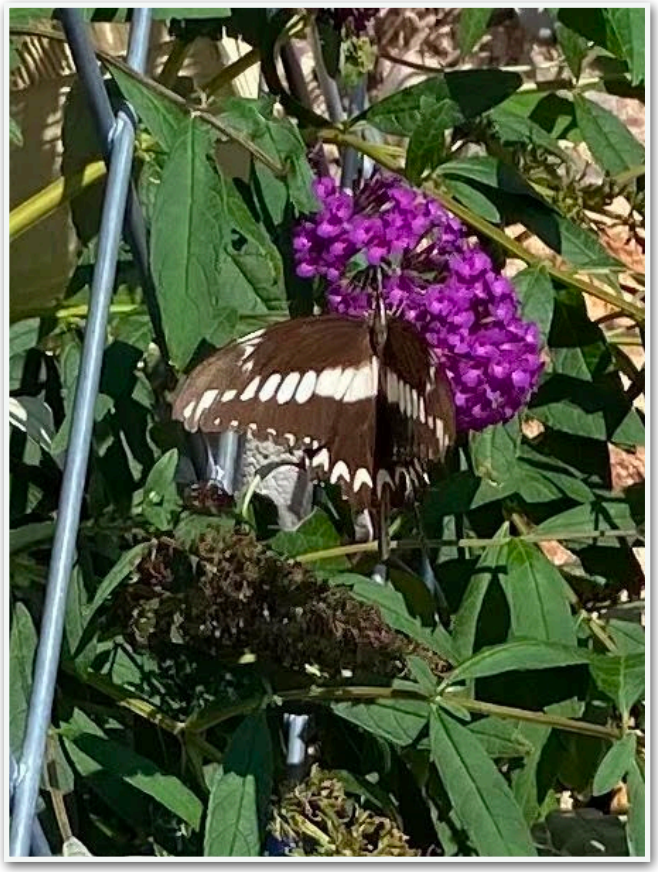
In the middle size range of solitary puddlers there are species like: Southwestern Orangetip, Painted Lady, Hackberry Emperor, Gray Buckeye, Variegated Fritillary, Red Satyr, and the Red-spotted Admiral.

Among the smaller sized solitary puddlers in the Organ Mountains during the summer of 2021 were Tiny Checkerspot, Theona Checkerspot, American Snout, White Checkered-skippers, Common Sootywing, Northern Cloudywing, Mournful Duskywing, Sleepy Duskywing, Texas Crescent, Reakirt's Blue, Ceraunus Blue, Marine Blue, Lupine Blue, Dainty Sulphur, and Dun Skipper.

Of note is the fact that sometimes some species of sulphur will act as solitary puddlers rather than being in a "club". Among the species which exhibit this behavior are Mexican yellow, Cloudless Sulphur, Clouded Sulphur, and Sleepy Orange.

Ornythion Swallowtail
Papilio ornythion
(Boisduval, 1836)
Hodges #4174

Rare in New Mexico, this Ornythion Swallowtail was photographed in Hillsboro by Jan Richmond in August 2021. See the January 2022 issue of The Black Range Naturalist for more details. This species is usually found in Mexico and Guatemala.



The Female of this species has two forms. One looks like the male, the other is mostly black with large greenish-gray spots forming a marginal row on the hindwing.

Caterpillar hosts are listed as citrus, adults nectar on flowers.

Compare this species with the similar looking *P. astyalus* (see BugGuide for a discussion of the differences).

Other Resources
(Ornythion Swallowtail)

- Butterflies and Moths of North America
- North American Moth Photographers Group (lists this species as *Heraclides ornythion*)
- BugGuide
- Butterflies of America (lists this species as Heraclides ornythion)
- Pajarito Environmental Education Center (lists this species as Heraclides ornythion)

U. S. Range Map of *Papilio ornythion* Ornythion Swallowtail From sightings reported to Butterflies and Moths of North America.

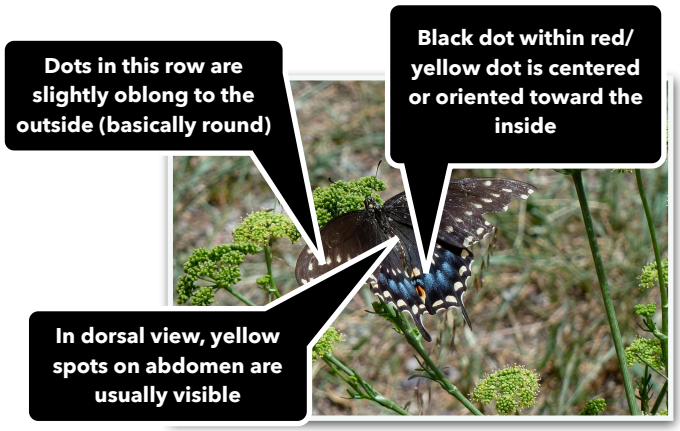
Black Swallowtail
Papilio polyxenes
(Fabricius, 1775)
Hodges #4159

Black Swallowtail is found throughout New Mexico at elevations between 3,300 feet and 9,000 feet. In our area there are typically three flights a year, with most imagoes being seen in April, July, and September. There is a yellow form of this species, which has a broad band of yellow cells across the middle of the wings. It is generally found in California and western Arizona. To the south, it ranges as far as northern South America.

Caterpillar hosts are generally in the *Apiaceae* family (parsley). Adults nectar on milkweed, thistle, and clover.

Not all larva look like the ones shown here, they change appearance dramatically between molts.

Male Black Swallowtail, photographed in Kingston, Black Range, by Véronique De Jaegher.



Two photos above, Black Swallowtail nectaring from Horsetail Milkweed (upper) and Climbing Milkweed flowers (lower). JVL

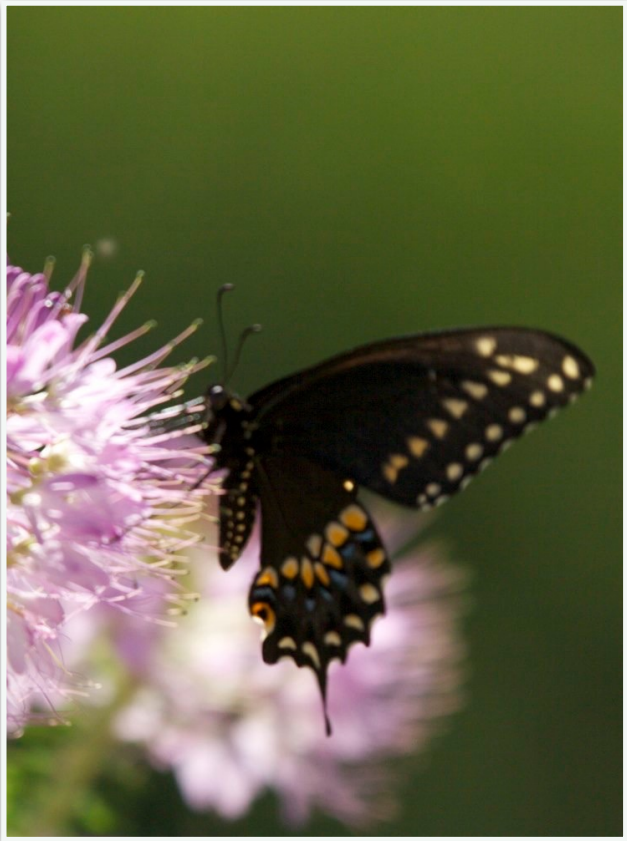
Other Resources (Black Swallowtail)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

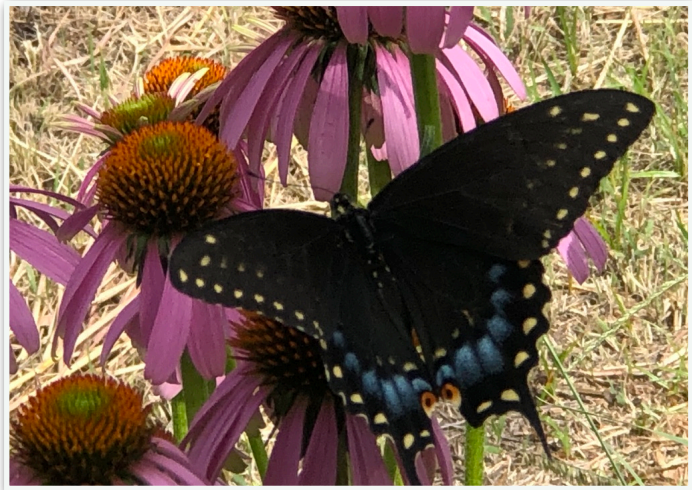
U. S. Range Map of *Papilio polyxenes* Black Swallowtail From sightings reported to Butterflies and Moths of North America.

Left: Nichole Trushell photographed this instar of a Black Swallowtail at her home in Kingston, Black Range.

Immediately Above and Below: Black Swallowtails photographed on the Sawyers Peak Trail, Black Range, New Mexico, June 30, 2019. RAB

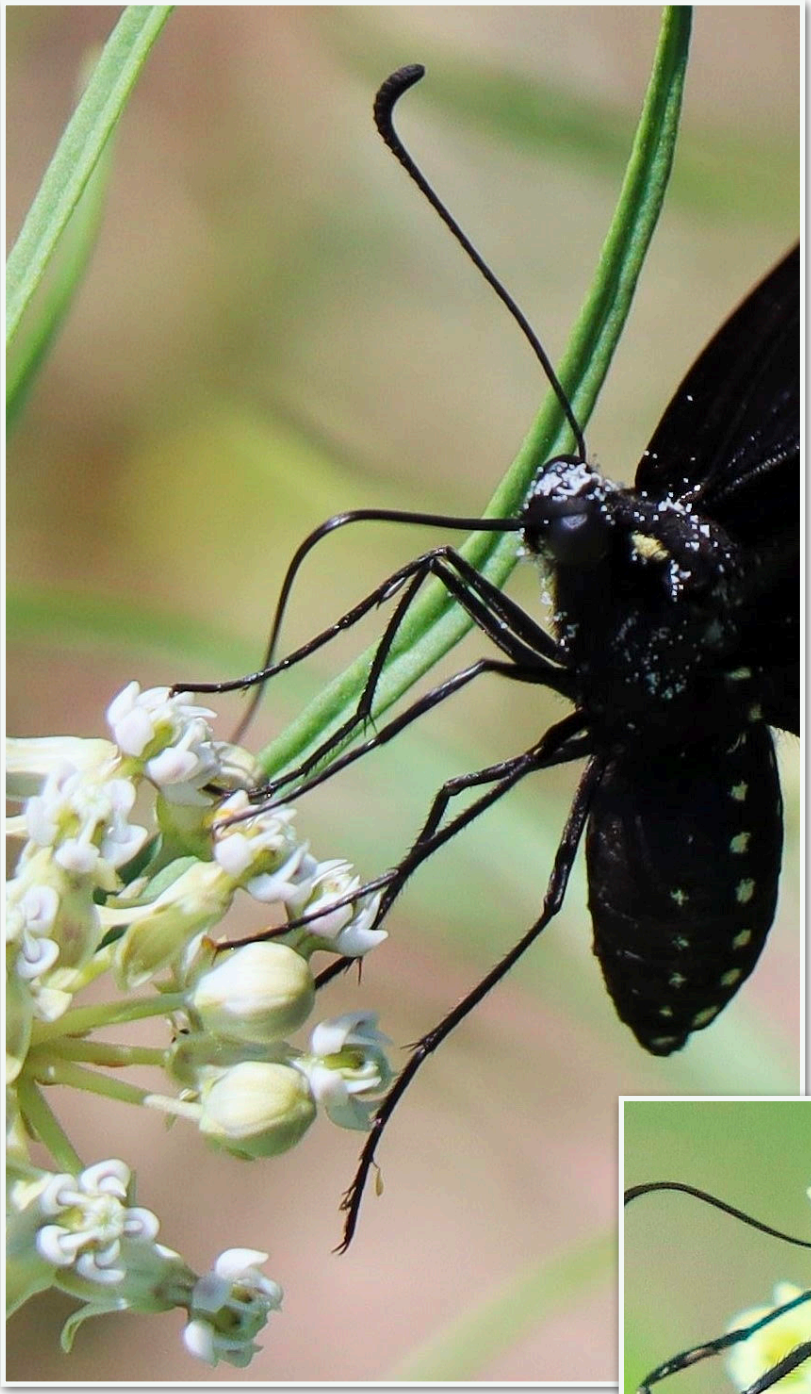


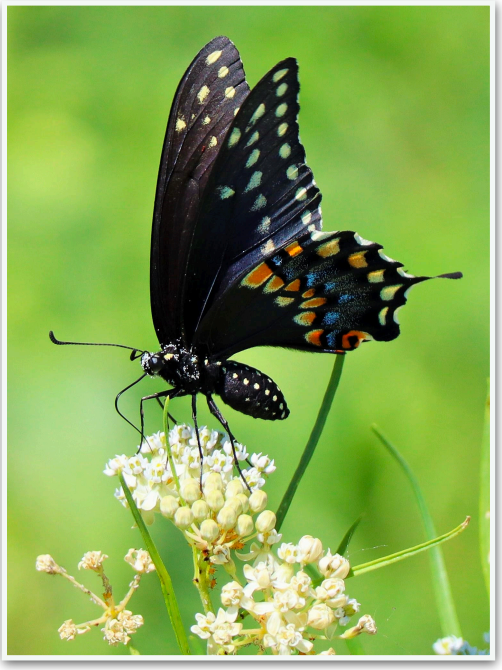
Black Swallowtail caterpillars photographed by Debora Nicoll in Lake Valley, Black Range, New Mexico, August 2022.

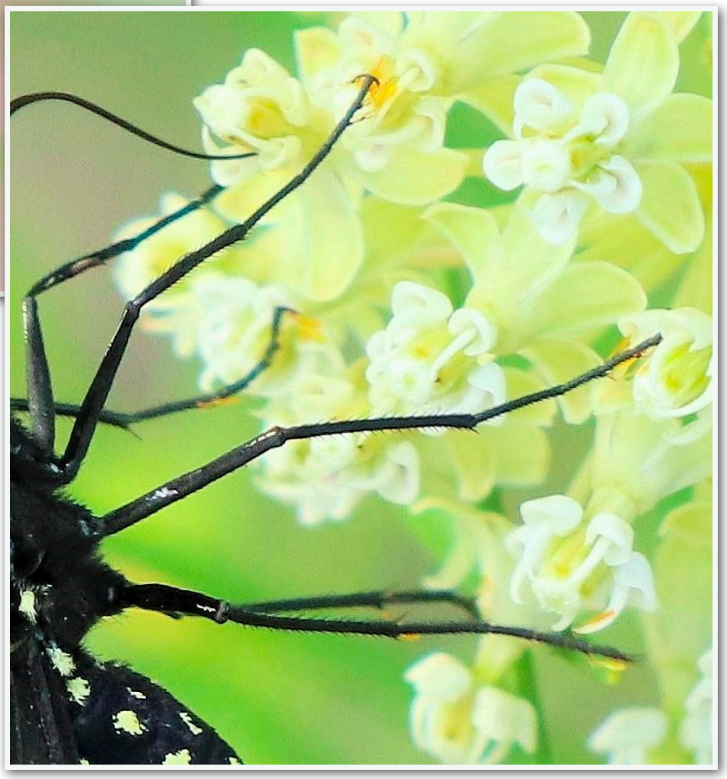


Black Swallowtail, (female) photographed in Kingston, Black Range, by Véronique De Jaegher in August 2022.

Immediately Above: Black Swallowtails photographed at San Lorenzo, Black Range, New Mexico. RAB







Black Swallowtail nectaring from Horsetail Milkweed flowers. Note that multiple pollinaria have been extracted and cling to the legs where they could be transferred into another flower, thus achieving pollination. When present, Black Swallowtails could represent efficient pollinators of Milkweed flowers. JVL

Nichole Trushell photographed this Black Swallowtail at her home in Kingston, Black Range.

Climbing Milkweed vines, typical progression of flower development and nectaring opportunities available to migrating butterflies such as this Black Swallowtail; vines are draped on Coyote/Sandbar Willow, tall shrubs to 4-8 m high. JVL

Western Tiger Swallowtail
Papilio (Pterourus) rutulus
(Lucas, 1852)
Hodges #4177

Care should be exercised when identifying the yellow swallowtails in our area. This would seem to be a relatively easy task but butterflies can become quite frayed as the season progresses and things like tails may be missing. In addition, relative size of bands and bars can sometimes - especially in the field - be quite subjective.

This species has one flight per year, generally in the height of summer (June-July). The caterpillar hosts include cottonwoods, aspens, elms, willows, ash, and wild cherry. Larvae make shelters by curling leaves and making an enclosure with their silk. The adults nectar on a variety of flowers including thistles.

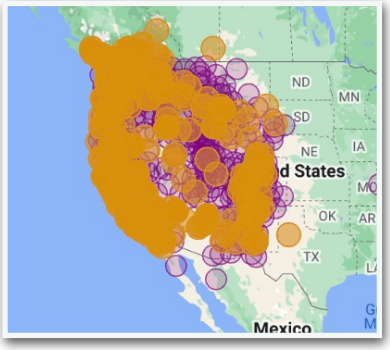
Some authorities split several of the species of *Papilio* into a different genus, *Pterourus*. This is the treatment followed by the Pajarito Environmental Education Center website and by the Black Range Website.

This species is found from the eastern edge of the Rocky Mountains westward to the coast. It is usually found in wooded areas and in riparian zones. In our area, generally at elevations between 7,000 and 10,000 feet - basically the more heavily wooded areas of the Black Range. The photograph below and the two on the following page were all taken in Railroad Canyon, on the west slopes of the Black Range, June 9, 2019.

The taxonomic placement of this species is debated by various authorities. Of note for us, is the fact that the subspecies *Papilio rutulus arizonensis* is found in our area, it has broader black margins on the wings. See the link at Butterflies of America for examples of the subspecies. Although a bit uncertain, it is likely that the butterflies found in the entire Gila region are *P. r. arizonensis*.

Other Resources
(Western Tiger Swallowtail)

- Butterflies and Moths of North America
- North American Moth Photographers Group (Lists this species as *Pterourus rutulus*)
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center (Lists this species as *Pterourus rutulus*)



U. S. Range Map of
Papilio rutulus
Western Tiger Swallowtail
From sightings reported to
Butterflies and Moths of North America.

***Papilio (Pterourus) rutulus*, Western Tiger Swallowtail, (Hippolyte Lucas, 1852) Hodges #4177**
Photographed in Railroad Canyon, Black Range, June 2019. RAB

Cloudless Sulphur
Phoebis sennae
(Linnaeus, 1758)
Hodges #4228

This species lacks dark borders on its wings or for that matter any strong dark markings at all.

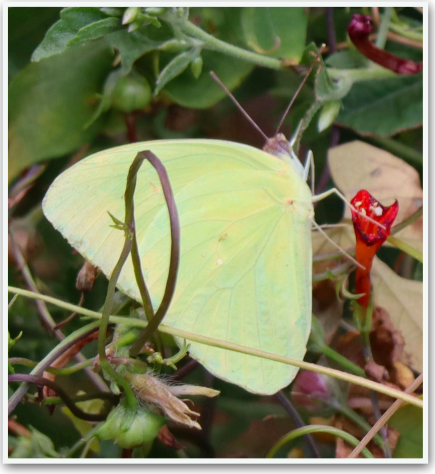
Caterpillars will host on legumes and *Senna* species. It is probable that there are two flights a year in our area although numbers appear to peak in the summer months. Records of the species in New Mexico range from late March to early December.

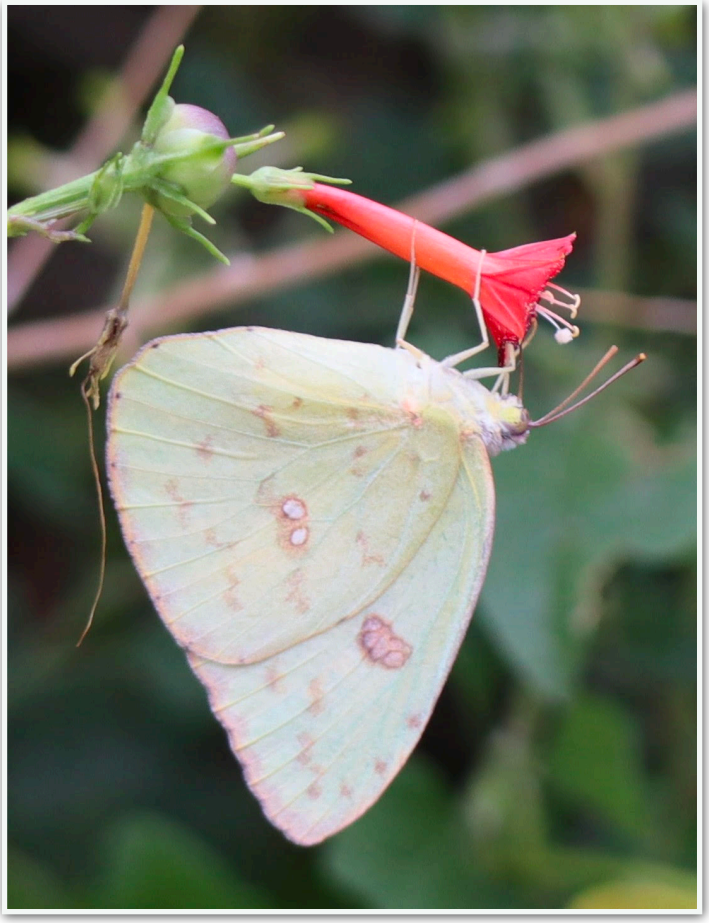
There are a number of subspecies which may be present here, confusing matters.

U. S. Range Map of
Phoebis sennae
Cloudless Sulphur
From sightings reported to
Butterflies and Moths of North America.

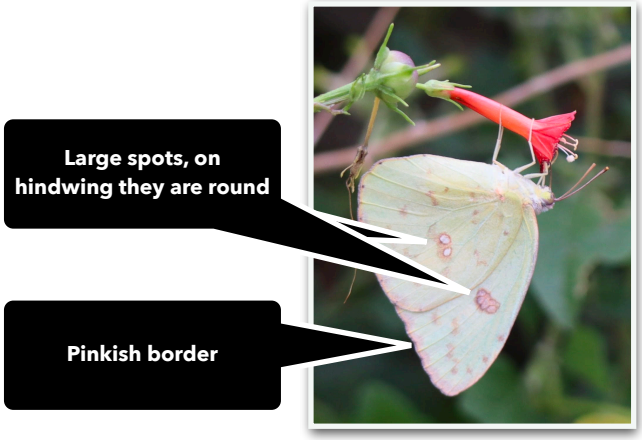
Other Resources
(Cloudless Sulphur)

- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center**





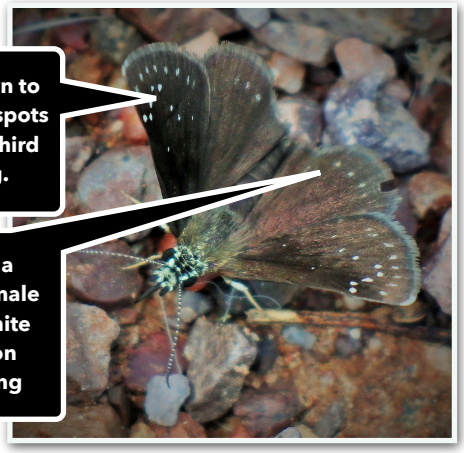
Male above and female right: Cloudless Sulphur nectaring from Scarlet Morning-glory flowers. JVL

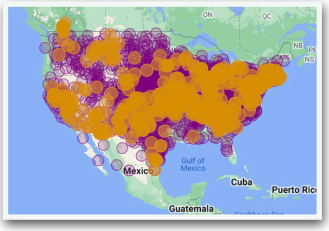


Common Sootywing
Pholisora catullus
(Fabricius, 1793)
Hodges #3977

The three Common Sootywing butterflies shown to the right were photographed by James Von Loh at the Soledad Canyon Trailhead in the Organ Mountains. This species is found southward into central Mexico.

Host plants for caterpillars include pigweed and lamb's quarters.





U. S. Range Map of
Pholisora catullus
Common Sootywing
From sightings reported to Butterflies and Moths of North America.

The larva of the Common Sootywing is an image by Berry Nall from his website. Shown here under a Creative Commons Attribution-Non-Commercial 4.0 Inter-national License.

Other Resources
(Common Sootywing)

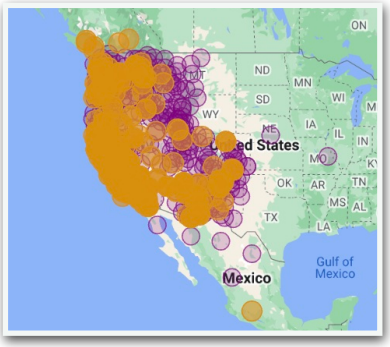
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Mylitta Crescent
Phyciodes mylitta
(W. H. Edwards, 1861)
Hodges #4488

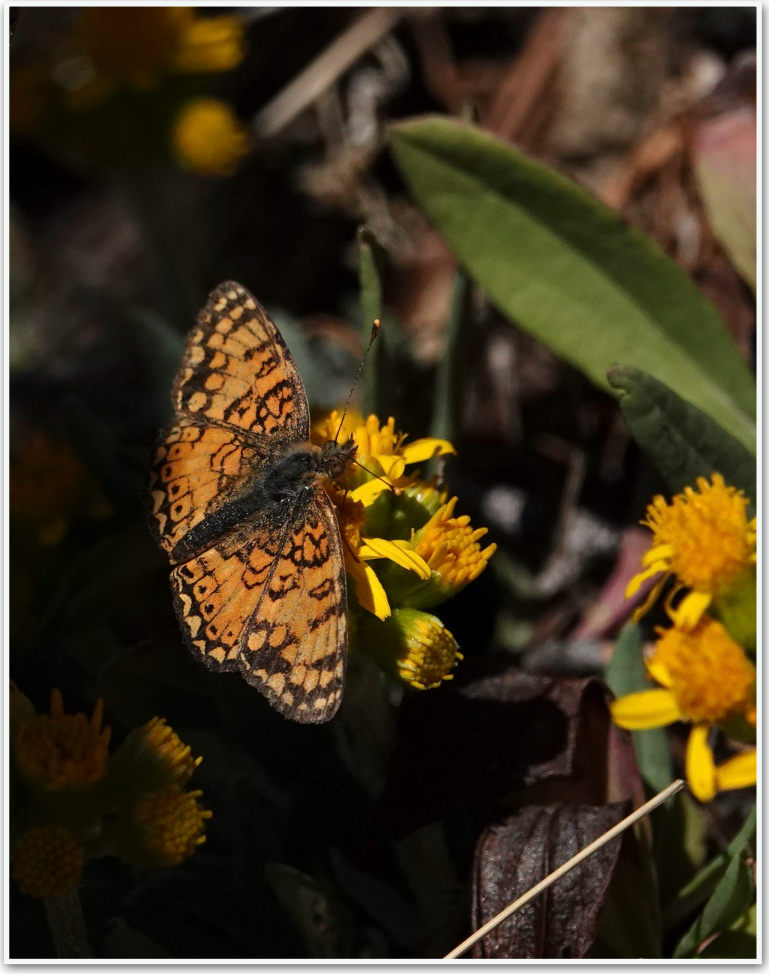
The Mylitta Crescent shown here and on the following page was photographed along Mineral Creek, north of Kingston, NM on April 22, 2022. RAB

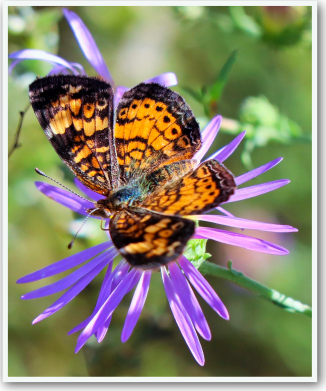
This species is generally found below 7,000' in New Mexico. To the south it is found well within Mexico.

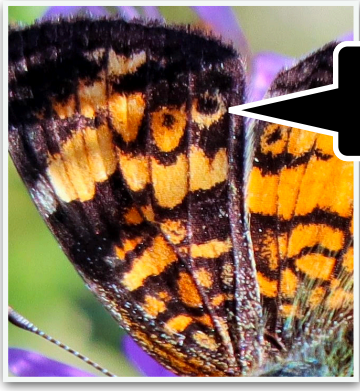
Thistles are a common caterpillar host, adults nectar on flowers.



U. S. Range Map of
Phyciodes mylitta
Mylitta Crescent
From sightings reported to
Butterflies and Moths of North America.







Compare with Pearl Crescent

Narrow bar.

Lack of a black spot, within the orange spot at the outer lower part of the forewing, distinguishing it from the butterflies in the Pearl Crescent group

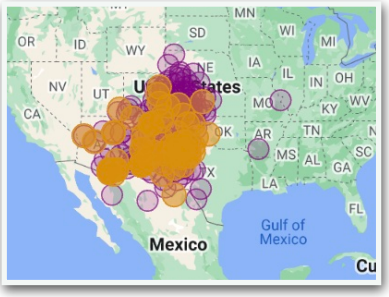
Other Resources (Mylitta Crescent)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

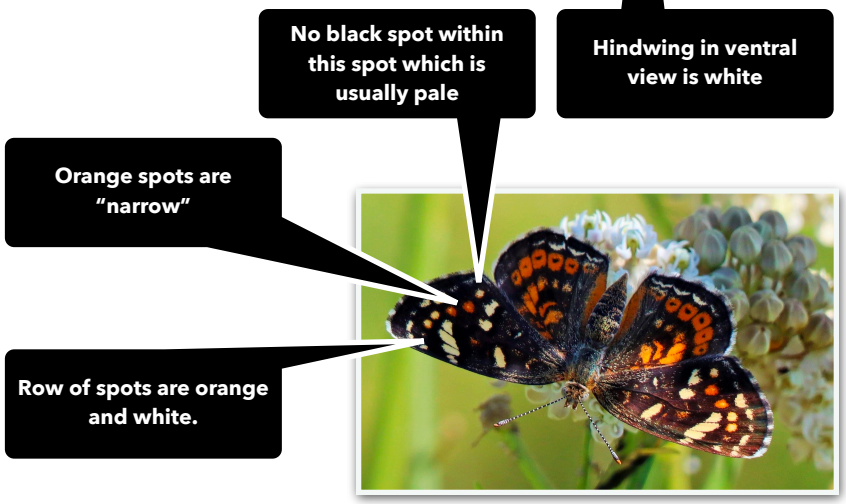
Painted Crescent
Phyciodes picta
(W. H. Edwards, 1865)
Hodges #4484

Caterpillar host plants for the Painted Crescent include Field Bindweed, *Convolvulus arvensis,* asters, and Hairy Tubetongue (*Siphonoglossa pilosella*). Eggs are laid in clusters on the undersides of host plant leaves.

The nominate subspecies is typically found in New Mexico. This species is generally found below 8,500′.



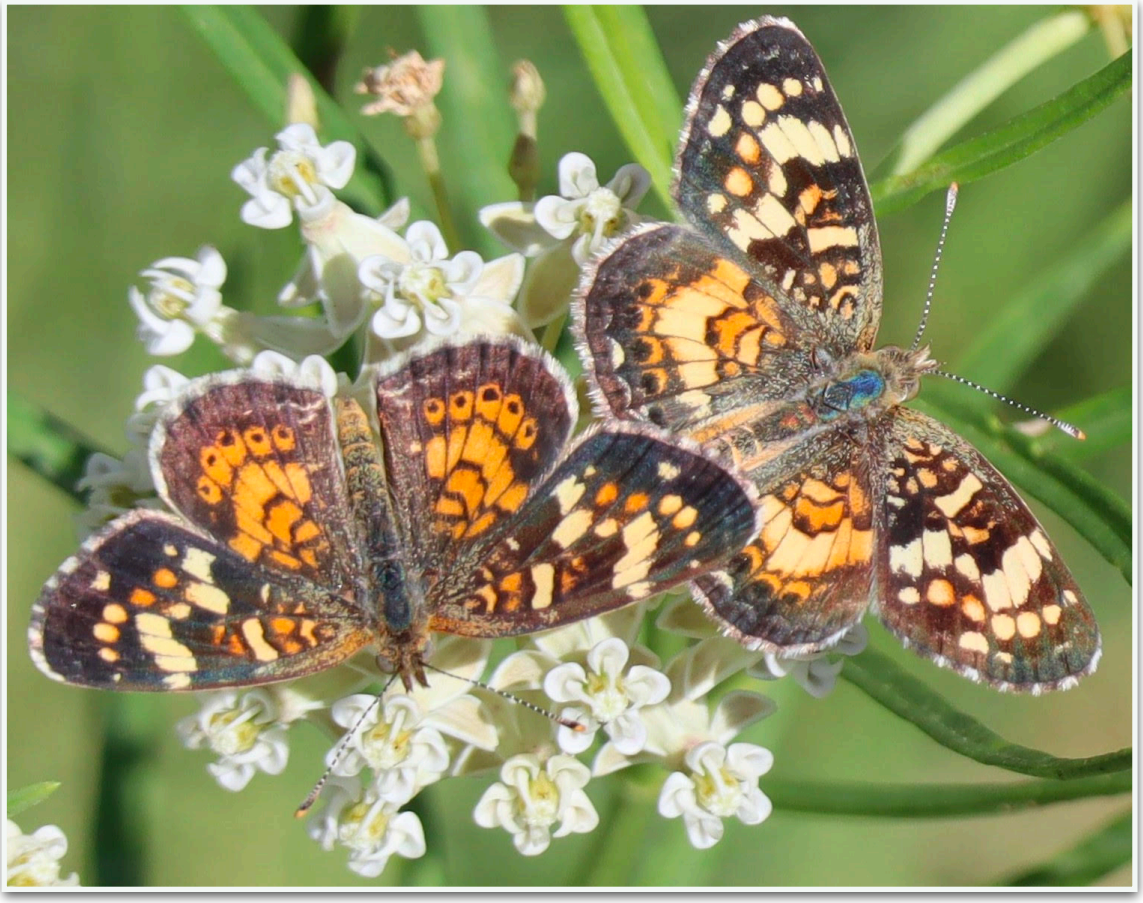
U. S. Range Map of
Phycoides picta
Painted Crescent
From sightings reported to
Butterflies and Moths of North America.



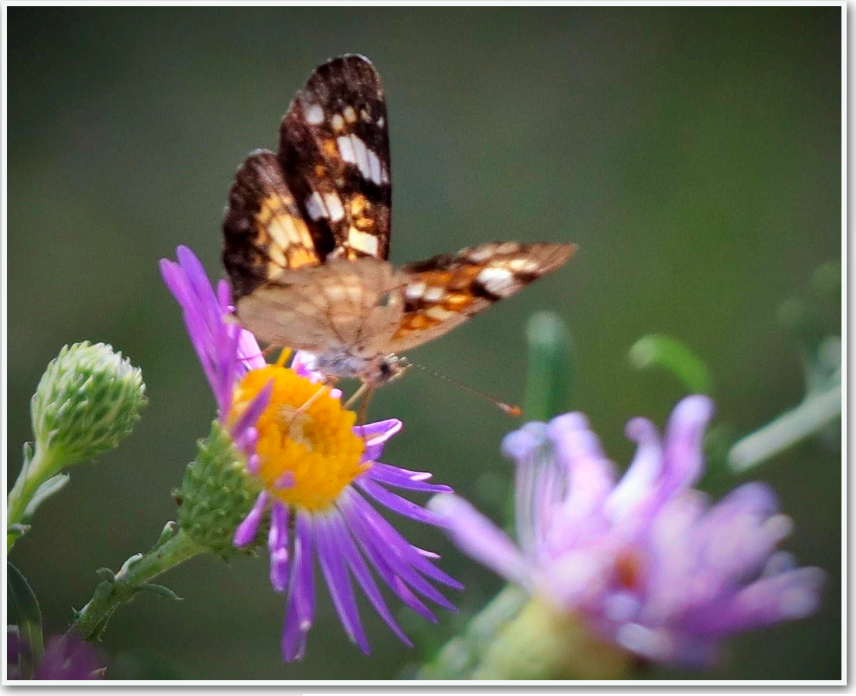
Painted Crescent nectaring from Horsetail Milkweed flowers. They are abundant in milkweed habitats and, in my opinion, represent the most commonly observed/photo-documented butterfly species along the Rio Grande. JVL

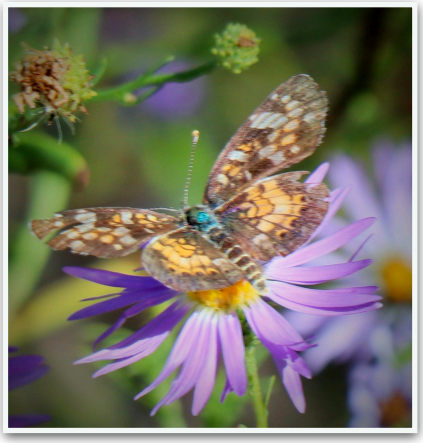
Other Resources
(Painted Crescent)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



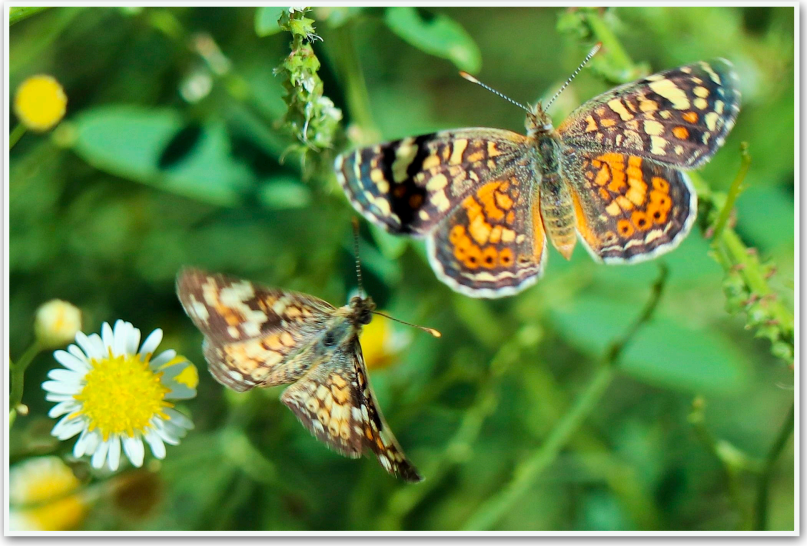
Painted Crescent nectaring from Horsetail Milkweed flowers. JVL





Above: Painted Crescent often was found nectaring from Spine-aster flowers. JVL

Painted Crescents nectaring from Spiny Chloracantha flowers. Above on June 22, on June 8 to the right, and on June 17 below. Abundant. JVL



Field Crescent
Phyciodes pulchella camillus
(Boisduval, 1852)
Hodges #4482.1

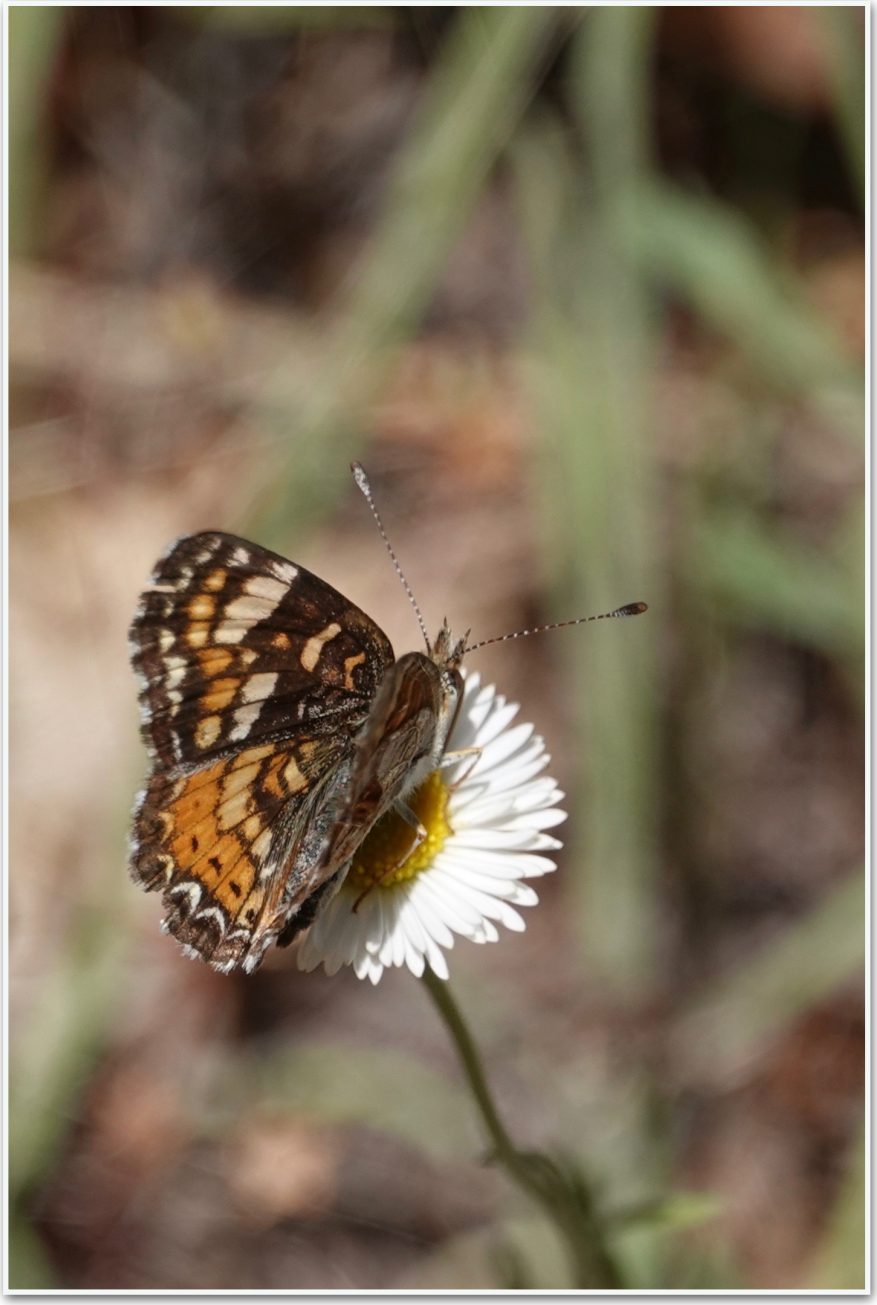
The Field Crescent is typically found in open areas, but note that this individual was photographed in Railroad Canyon. It is a higher elevation butterfly, found from 6,000′ to 10,000′ in New Mexico (most of the wooded area of the Black Range).

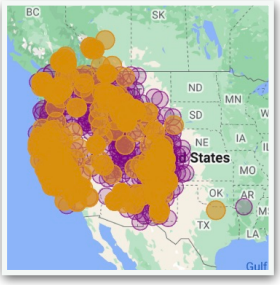
Caterpillar host plants are in *Asteraceae*. Adults nectar on flowers, especially fleabane.

There are two flights a year here, generally May to June and August to September.

Eggs are laid in large groups on the underside of host plant leaves. Young caterpillars may live in a loose web.

Field Crescent, photographed in Railroad Canyon, Black Range, June 2019. RAB





U. S. Range Map of *Phycoides pulchella* Field Crescent From sightings reported to Butterflies and Moths of North America.

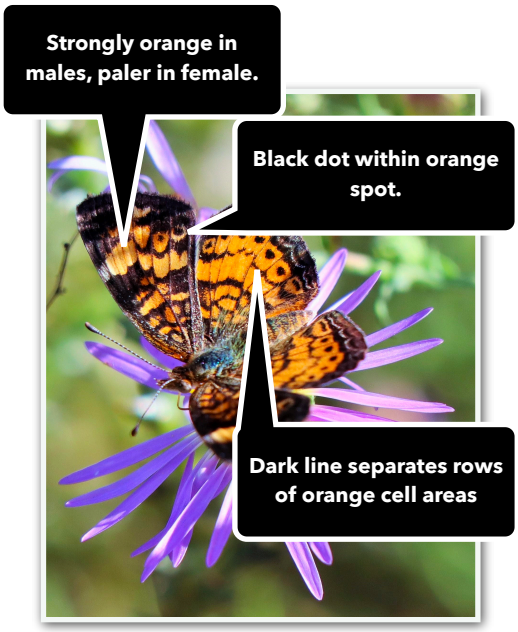
Other Resources (Field Crescent)

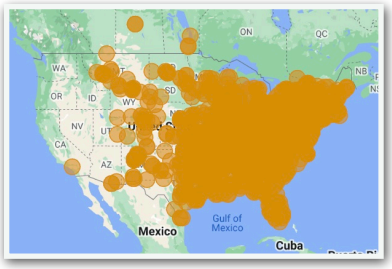
- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center**

Pearl Crescent
Phyciodes tharos
(Drury, 1773)
Hodges #4481

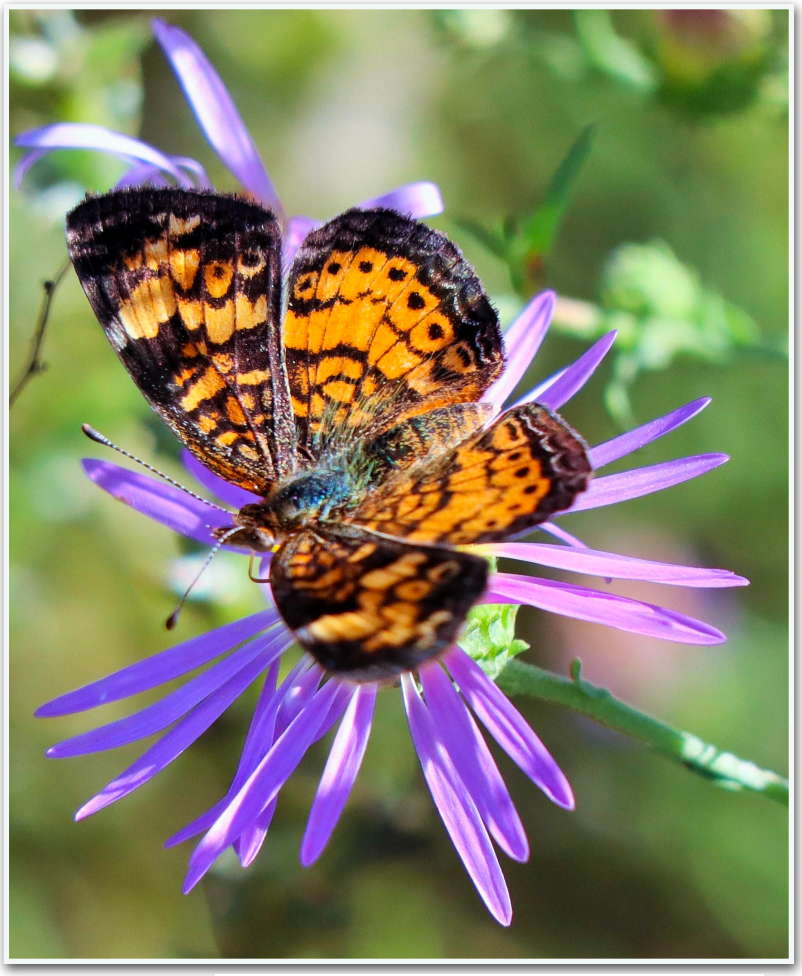
Caterpillar host plants for the Pearl Crescent include several aster species. Adults nectar on a variety of flowers including asters, dogbane, and milkweed. Eggs are laid in small groups on the underside of host plant leaves.

This species favors open areas. There may be several flights in a year.

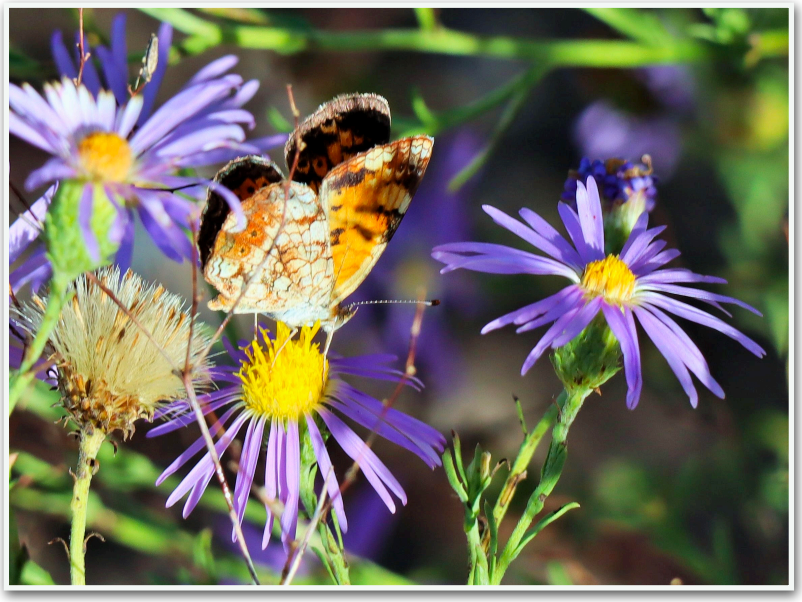




U. S. Range Map of
Phyciodes tharos
Pearl Crescent
From sightings reported to
Butterflies and Moths of North America.



Above and below: Pearl Crescent is a rare butterfly, seen here nectaring from Spine-aster flowers. JVL



Other Resources
(Pearl Crescent)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

European Cabbage White
Pieris rapae
(Linnaeus, 1758)
Hodges #4197

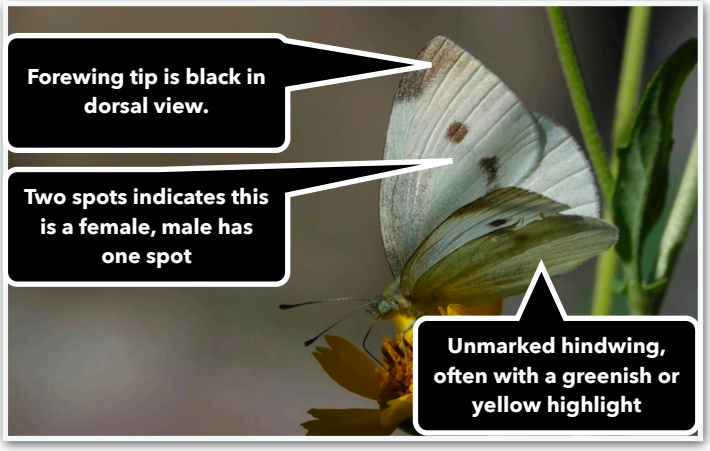
The European Cabbage White is an invasive from Europe which has spread throughout most of the United States. It was introduced near Montreal in the 1860s. It is called simply Cabbage White in some sources.

Caterpillar host plants are often non-native *Brassicaceae* (mustards/cabbages). Adults nectar on mustards, asters, clover, dandelion . . .

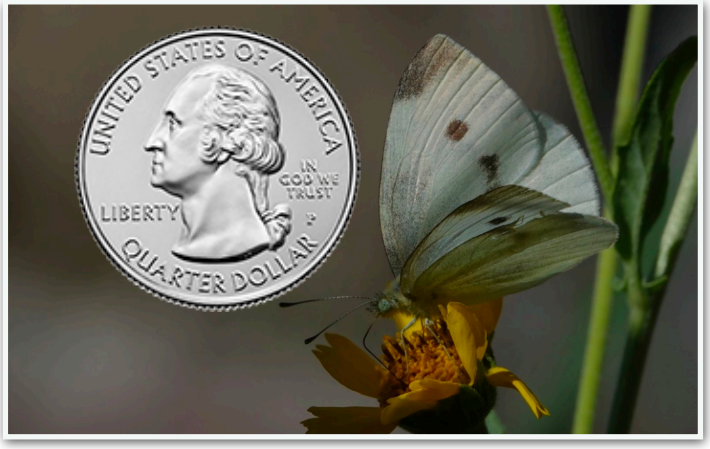
During the shorter days (early spring/fall) of its flights this species will tend smaller with less yellow and reduced black areas.

Cabbage White, photographed in Hillsboro, Black Range. RAB

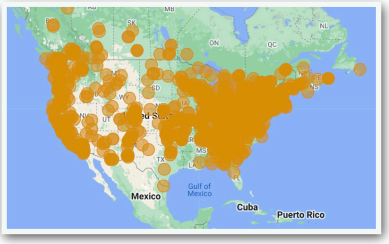
European Cabbage White nectaring from Spiny Chloracantha flower on May 26. Occasional. JVL



Cabbage White, photographed in Hillsboro, Black Range. RAB



U. S. Range Map of
Pieris rapae
European Cabbage White
From sightings reported to Butterflies and Moths of North America.



Other Resources
(European Cabbage White)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Above and at right: European Cabbage White, note that while nectaring from Horsetail Milkweed flowers, the butterfly to the right had its leg trapped within a stigmatic slit, making this individual a target for predation. JVL

Above and three to left: European Cabbage White. A common butterfly nectaring from Spine-aster flowers. JVL

Acmon Blue
Plebejus acmon
(Westwood, 1851)
Hodges #4380

Lupine Blue
Plebejus lupini
(Boisduval, 1869)
Hodges #4381

Caterpillar host plants include buckwheats, milkvetches, lupines, and lotus. (Note that Steve Cary states that Lupine Blue caterpillars do not eat lupines.) Female lays a single egg on the leaves or flowers of the host plant. Caterpillars are often tended by ants. Adults nectar on various flowers.

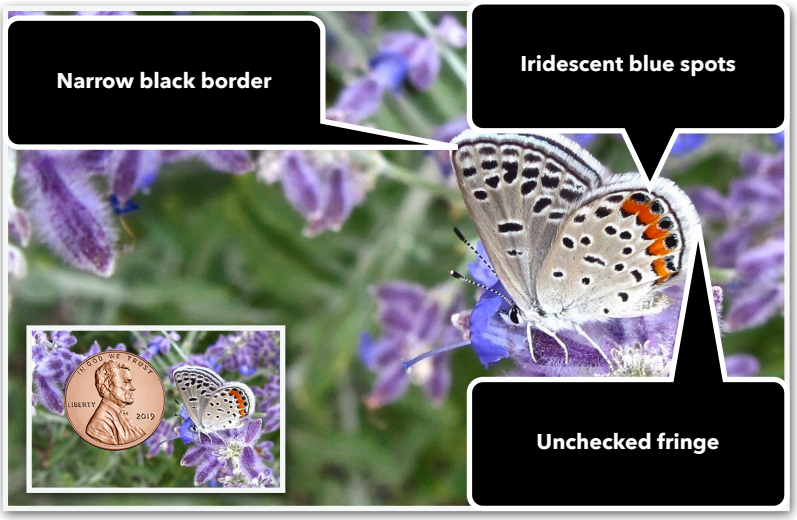
In the recent past the species determination for this butterfly has been in flux. *The Butterflies of North America* - James A. Scott - p. 411, defines this butterfly as Acmon Blue (aka Silver-studded Blue), *Plebejus acmon*. *The Peterson Field Guides - Western Butterflies* by Opler and Wright list the genus as *Icaricia lupini* (p. 252) (Lupine Blue).

Whatever the genus/species name you choose. This species is frequently found at mid-elevations (about 5,400' in Ready Pay Gulch east of Hillsboro). It is a small butterfly with a wingspread of between 1.5 and 2 cm. This species was first described by Jean Baptiste Boisduval in 1869. Along the way it has gone by several synonyms, including; *Plebejus lupinus, Lycaena lupini, Plebejus lupini, Icaricia lupini,* and *Rusticus chlorina*.

- **In 2002, P. A. Opler and A. D. Warren concluded that *Plebejus lupine - P. acmon* represented a species complex of an undetermined number of species.**
- **By 2003, Opler had concluded that *P. acmon* was monotypic and restricted to the west coast of the United States and Baja, Mexico.**
- **Some authorities consider *P. lupini* to have 11 or more subspecies. In one version of the Lupine Blue taxonomy, the subspecies which we have here is *Icaricia lupini texanus* (Goodpasture, 1973).**
- **Of importance to us is that Steve Cary treats this species as Icaricia lupini (Boisduval 1869) Lupine Blue.**
- **Jeffrey Glassberg's, *A Swift Guide to Butterflies of North America*, 2nd Edition, treats this species as Acmon Blue**

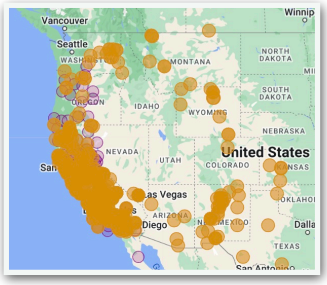
In this species account we punt, giving both names for the individuals found here. It is probable that this species will be known as Lupine Blue but it does seem clear that we do not have both Acmon Blues and Lupine Blues here. Either they are lumped or they are split, and if split, it is not clear how.

Acmon Blue/Lupine Blue - Photographed in Lake Valley, Black Range, by Debora Nicoll.

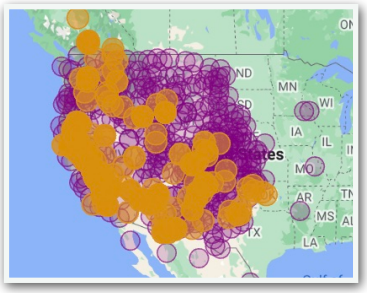


Other Resources (Acmon/Lupine Blue)

- **Butterflies and Moths of North America**
- **North American Moth Photographers Group (*Icaricia acmon*)**
- **BugGuide (Acmon Blue)**
- **BugGuide (Lupine Blue)**
- **Butterflies of America (*Icaricia acmon* - the west coast butterfly)**
- **Butterflies of America (*Icarica lupine* - a Pacific Northwest butterfly)**
- **Pajarito Environmental Education Center**



U. S. Range Map of *Plebejus acmon*, Acmon Blue from sightings reported to Butterflies and Moths of North America.



U. S. Range Map of *Plebejus lupini*, Lupine Blue from sightings reported to Butterflies and Moths of North America.

Lupine Blue/Acmon Blue taking nutrients from moist soil near the trailhead of Soledad Canyon. Photograph by James Von Loh.

Lupine Blue/ Acmon Blue taking nutrients from moist soil in Ready Pay Gulch east of Hillsboro, Black Range. June 2016. RAB

Milkweed Rio Grande Small-sized Butterfly Species

Thirteen small-sized species of butterflies have been photo-documented visiting milkweed habitats along the Rio Grande. They are varied, including species of snout, metalmark, sulphur, hairstreak, crescent, blues, and skippers/skipperling. Small-sized butterfly species nectar from flowers of both milkweeds; however, their small size and short legs make them doubtful pollinators of these specialized flowers. They are potentially subject to entrapment on milkweed flowers. Representative individuals of these species were photo-documented nectaring from both Horsetail and Climbing Milkweed flowers.

Painted Crescents, *Phycoides picta* (W. H. Edwards, 1865), were the most commonly observed small butterfly nectaring from milkweed flowers. During 2021, American Snouts, *Libytheana carinenta* (Cramer, 1777), were abundant during the summer months, nectaring from milkweed flowers. In the prior two years (2020 and 2019) I had observed only a single individual nectaring from White Sweetclover, *Melilotus albus* (Medik.) flowers.

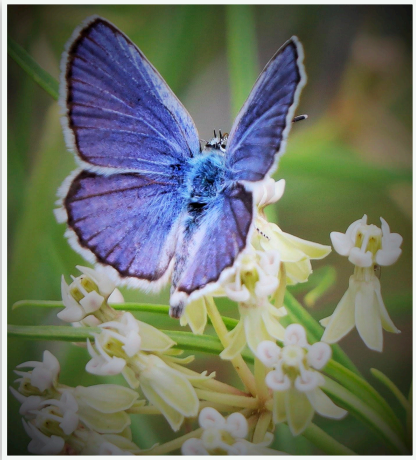
Melissa Blue
Plebejus melissa melissa
(W. H Edwards, 1873)
Hodges #4375

Referred to as *Lycaeides melissa* in the 2nd Edition of the *Swift Guide to Butterflies of North America*. Most other sources follow Opler and Warren in lumping *Lycaeides* with the genus *Plebejus*.

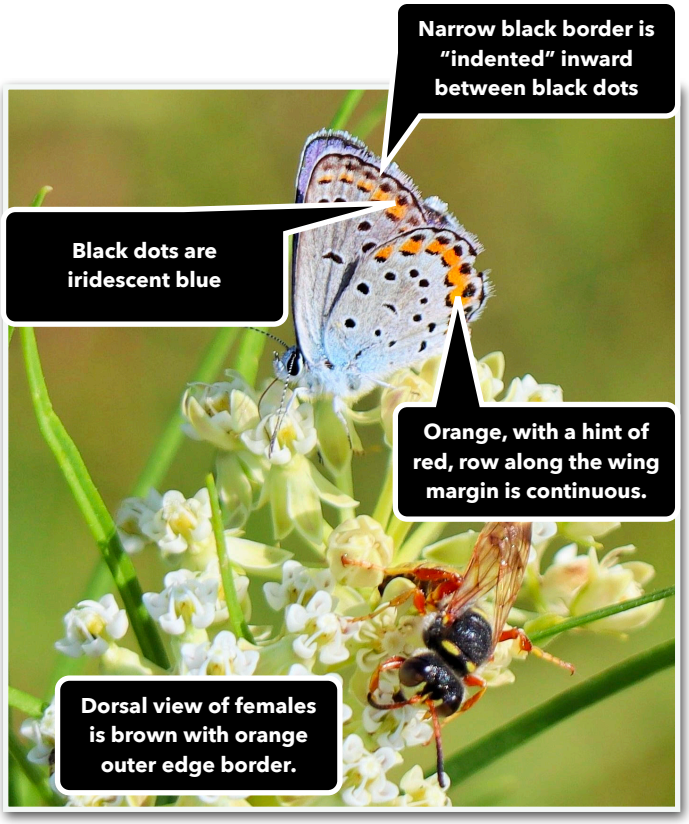
Caterpillar hosts include lupines, lotus, legumes, peas, among others. Adults nectar on milkweed (other flowers?). We have observed them locally using: Horsetail Milkweed, Spiny Chloracantha, Alkali Swainsonpea, and one was seen perching on an orange mallow leaf. Caterpillars are tended by ants which feed on sugary secretions produced by the caterpillars. Adults live only two or three weeks, there are two flights a year in New Mexico.

We have the nominate subspecies in our area.

Below and right: Melissa Blue nectaring from Horsetail Milkweed flowers near to a paper wasp (Hymenoptera (Linnaeus, 1758 - Family: Vespidae) foraging through flowers of an adjacent umbel. JVL

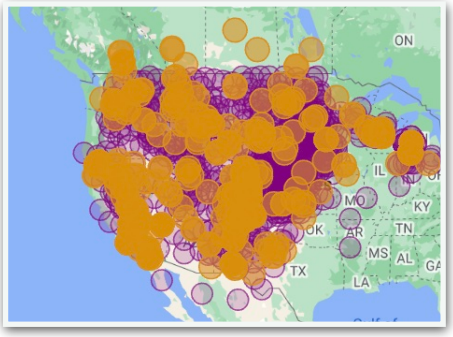


The female Blues are not blue, or at least not that bright blue of the male dorsal wings. Generally the female dorsal wings are brownish in tone, with only a few having a hint of blue. Female Melissa Blue butterflies demonstrate this coloration well, as shown by these photographs by Gordon Berman. The comparison with the males on the previous page is quite dramatic. The photographs were taken on September 19 and 20, 2022 on the Rio Grande levee at Las Cruces. The composite flower in four of these photographs is *Chloracantha spinosa*. JVL (Images by GB)



Other Resources (Melissa Blue)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



U. S. Range Map of
Plebejus melissa
Melissa Blue
From sightings reported to
Butterflies and Moths of North America.

Butterfly Species Using Mammal Scat as a Moisture and Nutrient Source (JVL)

Entomologists and naturalists alike have observed many insects, including butterflies, collecting nutrients from moist substances including mud, rotting plant matter, carrion, and dung. During the summer of 2022 we noticed and documented some of this behavior, ancillary to field visits to photo-document butterflies visiting seeps, ponds, and springs. From the fluids retained in wildlife and domestic dog scat piles, butterflies obtain salts and amino acids.

Within the arroyo near the beginning of the Soledad Canyon Trail, a large Buffalo/Coyote Gourd, *Cucurbita foetidissima* (Knuth in Humb.), with long vines and many immature fruits became established. A scat filled with immature gourd seeds was deposited, probably by a coyote, near the gourd plant. A single Gray Buckeye, was documented, in addition to White Checkered-skipper, Burnsius Complex and Reakirt's Blue, *Echinargus isola*, individuals which were attracted to this scat to acquire nutrients. On a site in Fillmore Canyon, the Hackberry Emperor was documented extracting nutrients from domestic dog scat piles.

Milkweed Rio Grande Intermediate-sized Butterfly Species. (JVL)

In addition to the larger butterfly species observed visiting Milkweed habitats along the focus Rio Grande reach, an intermediate-sized group of butterfly species occurs. They include ten species which are most commonly observed nectaring from Milkweeds. This group includes Orange Sulphur, *Colias eurytheme* (Boisduval, 1852), European Cabbage White, *Pieris rapae* (Linnaeus, 1758), Checkered White, *Pontia protodice* (Boisduval & Le Conte, 1830), and Painted Lady, *Vanessa cardui* (Linnaeus, 1758).

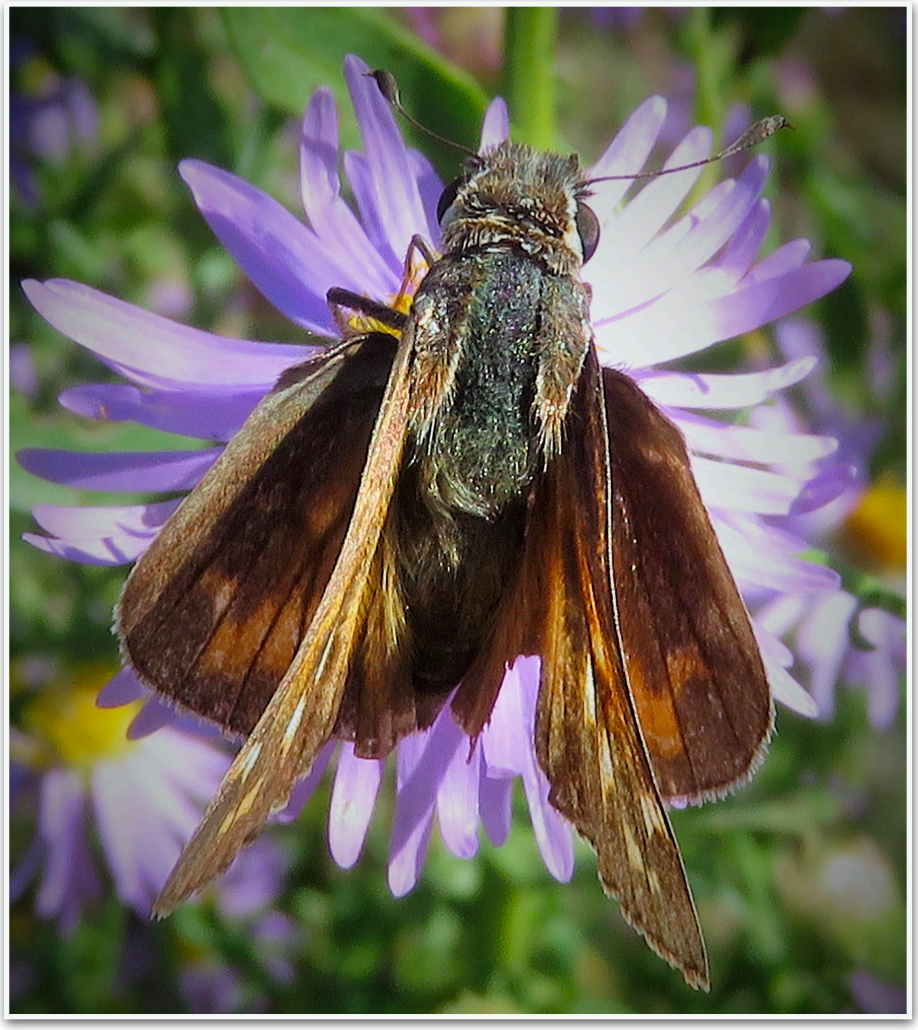
The Great Purple Hairstreak, *Altides halesus* (Cramer, 1777) are uncommon visitors to Milkweed habitats and when present nectar from Horsetail Milkweed flowers. They are efficient foragers, moving slowly from flower to flower to nectar and in the process extract many yellow pollinaria/pollina (pollen sacs) which attach to their leg bristles and hairs. When present, Great Purple Hairstreak individuals may approach flower wasp species in terms of being extremely likely pollinators of Horsetail Milkweed flowers.

It is not uncommon for butterfly species of this group and smaller butterflies to have difficulty pulling their legs from the stigmatic slit of Milkweed flowers. This struggle is also true of bees the size of Western Honey Bee, *Apis mellifera* (Linnaeus, 1758) and smaller. Sometimes individuals become trapped by the leg and struggle to fly from the flower; if they cannot attain release or break their leg off, they become subject to predation or may die stuck to the Milkweed flower.

Carus Skipper
Polites (Yvretta) carus
(W. H. Edwards, 1883)
Hodges #4105

In general, species of skippers are among the smallest of butterflies visiting Rio Grande habitats; they nectar from flowers of both milkweed species. Their small size and short legs make them unlikely pollinators of these specialized flowers. The most commonly observed skipper species nectaring from milkweeds is the Fiery Skipper, *Hylephila phyleus* (Drury, 1773).

While visiting the more exposed Horsetail Milkweed flowers, skippers may be quick to fly during photo-documentation attempts and are often subject to interruption/ harassment by aggressive bees and wasps. I have found it somewhat easier to photograph skippers nectaring from Climbing Milkweed flowers which are associated with a tangle of vines, large leaves, and cover from supporting shrubs that provide hiding cover. When photographing skippers, patience is your greatest virtue (right next to pure luck). JVL



Carus Skipper is an uncommon butterfly in this area. Seen here nectaring from Spine-aster flowers. Photograph by Gordon Berman.

Adults nectar on milkweed and caterpillars apparently use a variety of grasses for host plants. There are two flights a year in our area (mid-April to late June and mid-July to mid-August).

The range of this species extends southward into Central America. It is typically found in grasslands, in New Mexico, between 4,600′ and 7,500′.

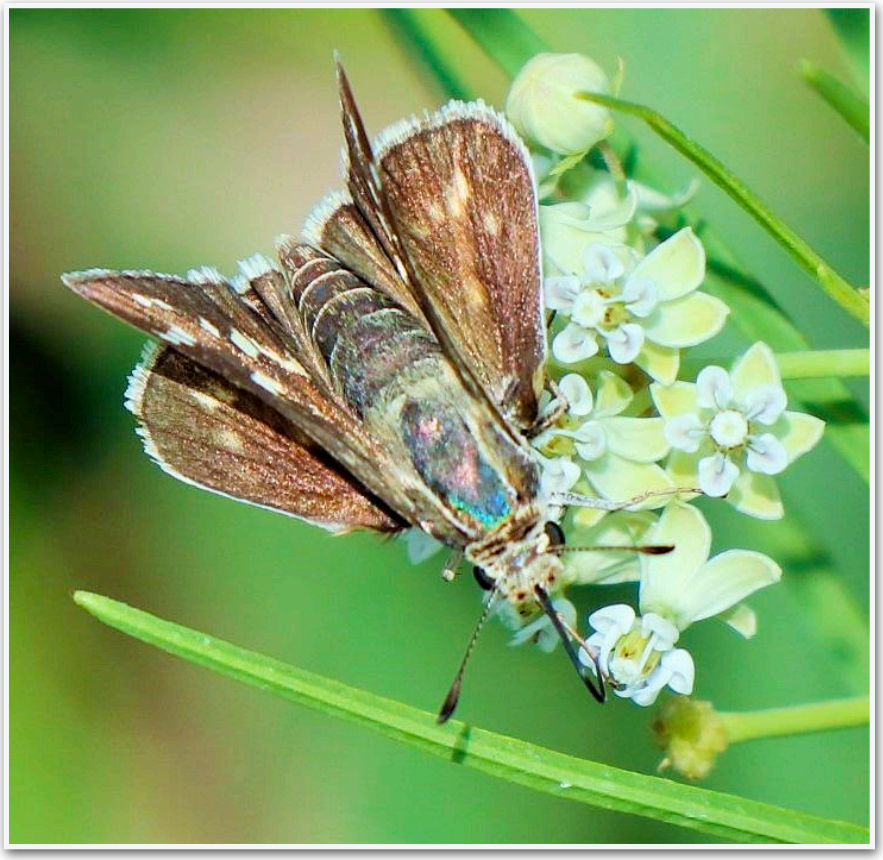
Some authorities treat *Yvretta* as a full genus (in which case this species is *Yvretta carus*) while others treat it as a sub-genus of *Polites*.

In our species accounts we treat each species individually. In nature, however, nothing is individual. Everything affects everything and even the smallest spaces are inhabited by many species. Here we see a range of butterfly sizes in one small area. Upper Left: White Checkered-skipper, *Burnsius communis* (Grote, 1872); Lower Left: Painted Lady, *Vanessa cardui* (Linnaeus, 1758); and, Right: Question Mark, *Polygonia interrogationis* (Fabricius, 1798). Photograph by James Von Loh

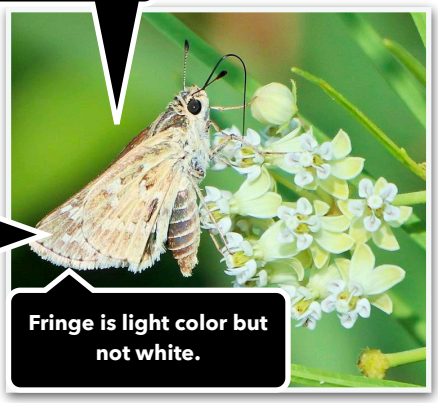
Other Resources
(Carus Skipper)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

U. S. Range Map of *Polites carus*, Carus Skipper, From sightings reported to Butterflies and Moths of North America.



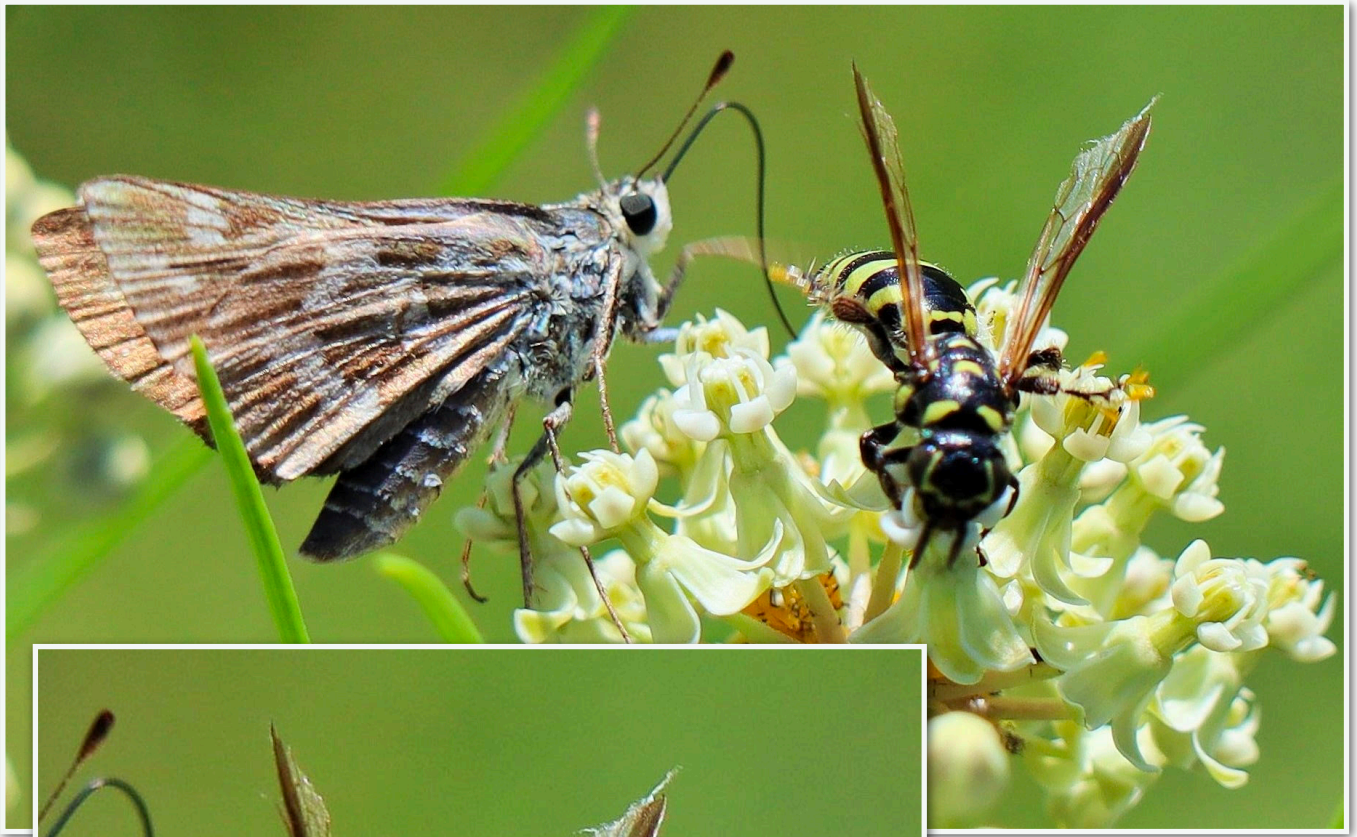
Bottom Left: Carus Skipper nectaring from Climbing Milkweed flowers. JVL
All Others: Carus Skipper nectaring from Horsetail Milkweed flowers. JVL

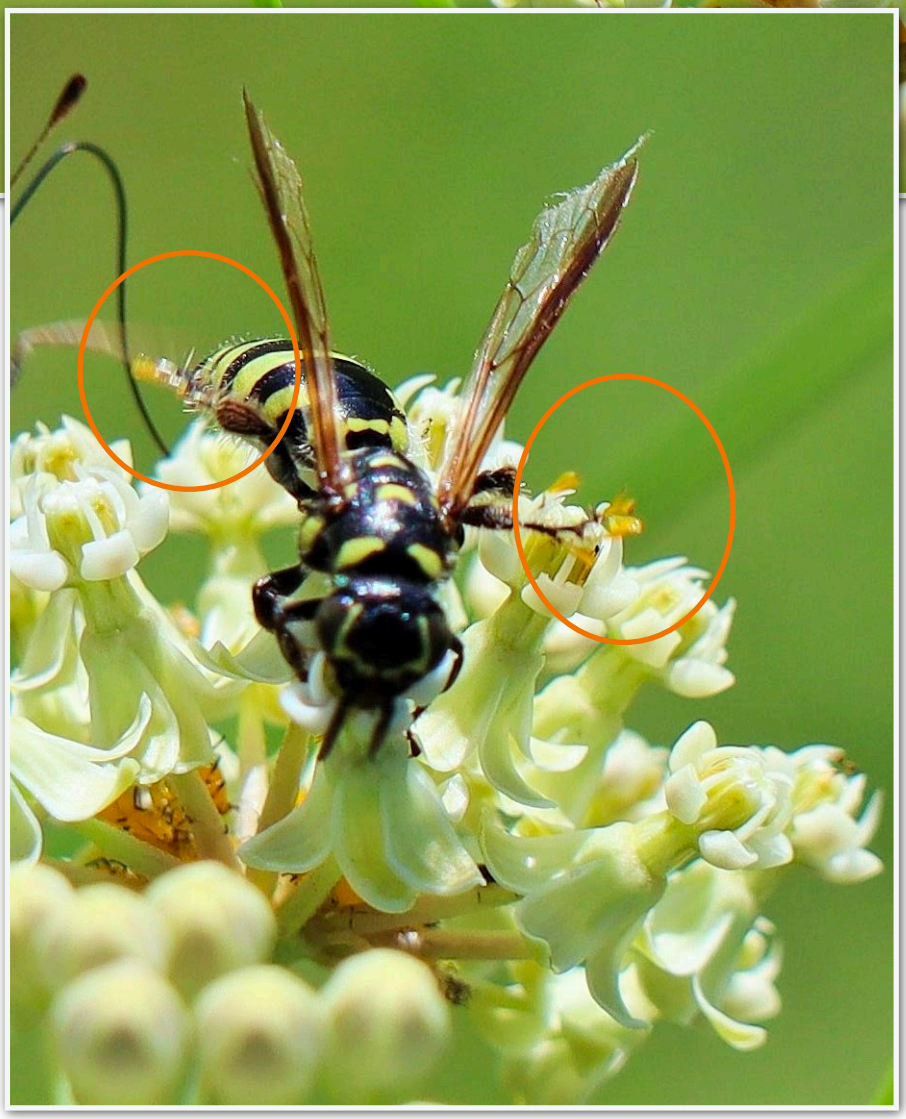


Basic color pattern is light gray-brown, yellow-brown, with hints of white. All subdued.

In our area you may wish to compare this species with the Rhesus Skipper. The shaded areas in the ventral view of the Carus Skipper are much lighter in color than they are on the wings of the Rhesus.

Fringe is light color but not white.





Above and left: Carus Skipper nectaring from Horsetail Milkweed flowers. The skipper shares a Horsetail Milkweed flower cluster with a foraging Weevil Wasp, *Cerceris* (Latreille, 1802 sp.) Note that the wasp's leg bristles have collected several yellow-colored pollen packets (pollinaria/pollinia), and it is a likely pollinator, transferring the packets to other flowers while foraging. JVL

Augustus Radcliffe Grote
(1841-1903)

More than 1,000 species of moths/ butterflies were described by Grote. He was an British entomologist who spent much of his time in the United States. For a while he was a member of the Buffalo Society of Natural Sciences where he knew Leon Harvey. Among Grote's many works was *The Hawk Moths of North America,* published in 1886.

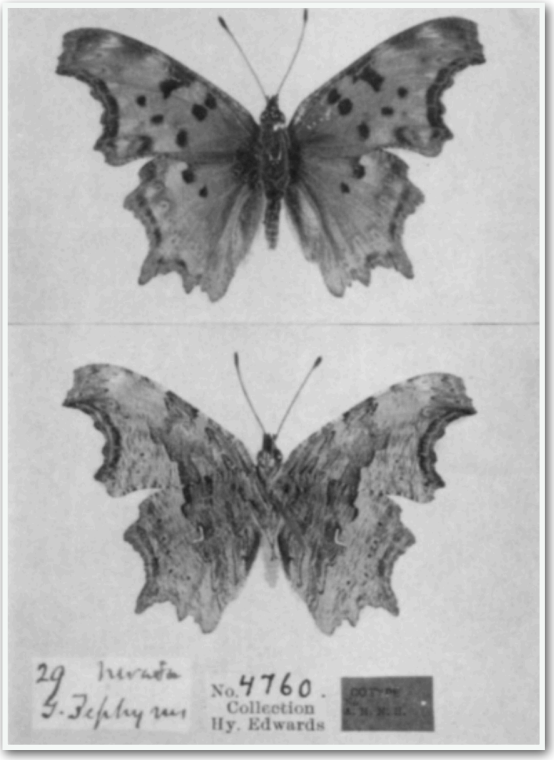
Hoary Comma
Polygonia gracilis zephyrus

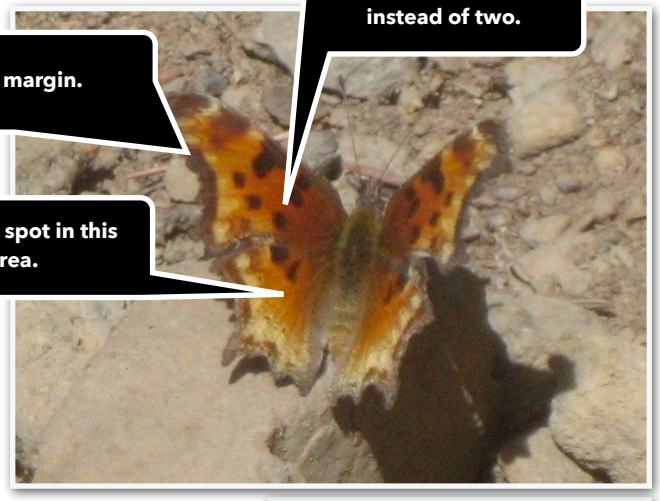
(Species: Grote & Robinson, 1867)
(Subspecies: W. H. Edwards, 1870)
Hodges #4427

Caterpillar hosts for this species include gooseberries and currants. Adults nectar from flowers and eat sap. Adults which are found in the spring have overwintered. Females lay eggs in the spring (until June) and then die.

In some sources, this sub-species is known as the Zephyr Anglewing. Francis H. Snow collected the first specimen of this sub-species from New Mexico in his 1881 expedition to the Magdalena Mountains (Water Canyon) in Socorro County. The type specimen of *P. g. zephyrus* was collected a decade prior (1870) by W. H. Edwards near Virginia City, Nevada. That specimen is held by the American Museum of Natural History (shown below).

Hoary Comma photographed on McKnight Mountain Road, Black Range, by Steve Morgan.



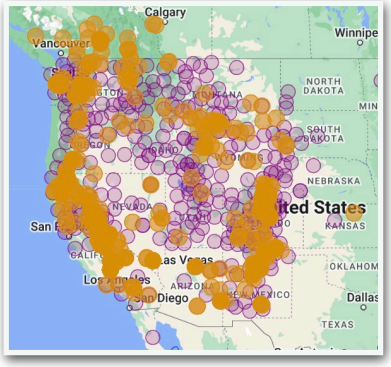


Species are delineated using a variety of techniques in today's study of the natural world. Those techniques do not always yield compatible results. Julian R. Dupuis, Christianne M. Mcdonald, John H. Acorn, and Felix A. H. Sperling in "Genomics-informed species delimitation to support morphological identification of anglewing butterflies (Lepidoptera: Nymphalidae: *Polygonia*)" provide a way through some of the issues we encounter when we place things in boxes. Their study was published in *Zoological Journal of the Linnean Society*, Volume 183, Issue 2, June 2018, Pages 372-389, https://doi.org/10.1093/zoolinnean/zlx081.

Other Resources
(Melissa Blue)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

U. S. Range Map of
Polygonia gracilis
Hoary Comma
From sightings reported to Butterflies and Moths of North America.



Question Mark at a water seep (spring). JVL

Question Mark
Polygonia interrogationis
(Fabricius, 1798)
Hodges #4420

In the Black Range, we are at the western edge of the range of this species. The photographs shown here were taken in the Organ Mountains, only slightly east of the western edge of its range.

There are at least two forms of the adult butterfly. The Von Loh photographs are of the black form, which is more common in summer. During the spring and fall, the red form is more prevalent, with much of the black color in the hind wings replaced with red hues.

The adult Question Mark will nectar only if it fails to find carrion, rotting fruit, dung, or tree sap to feed on. Larvae will feed on a number of different host plants.

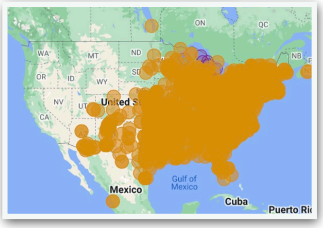
Berry Nall took the photograph of a larva of the Question Mark to the left. Shown here under a Creative Commons Attribution-Non-Commercial 4.0 International License.

The Question Mark (above) used both moist and saturated soils to take nutrients near the Soledad Canyon Trailhead. JVL

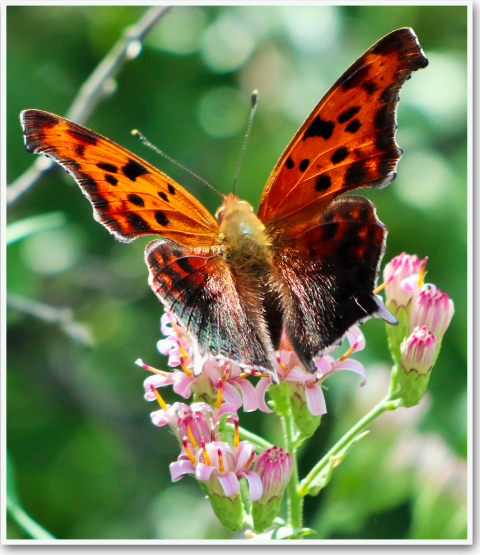
Note white dot and "comma" which make up the "question mark". JVL

Other Resources (Question Mark)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



U. S. Range Map of *Polygonia interrogationis* Question Mark From sightings reported to Butterflies and Moths of North America.



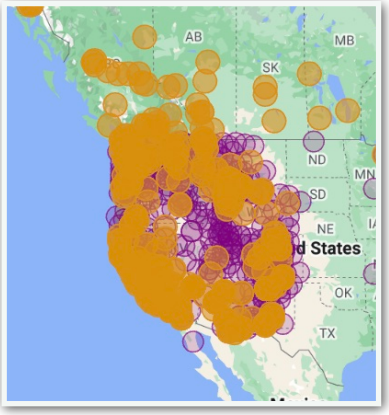
Question Mark nectaring from Brown-foot flowers. JVL

Satyr Comma
Polygonia s. satyrus
(W. H. Edwards, 1869)
Hodges #4422

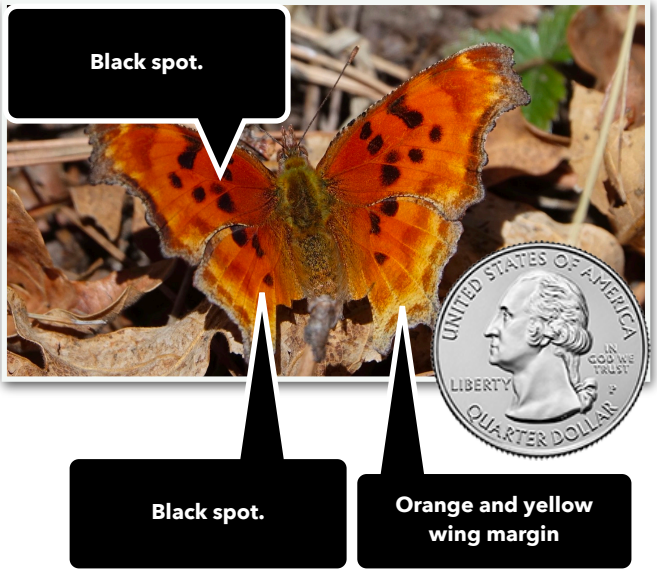
Nettles are the primary caterpillar host plants for this species. Eggs are laid on the bottom side of the nettle leaves. Adults consume tree sap, rotting fruit, animal dung, moist ground, and nectar from flowers - including blackberries.

Synonyms for this species include the original designation by Edwards, *Grapta satyrus*. Other common names include Satyr Anglewing, Golden Comma, and Western Comma.

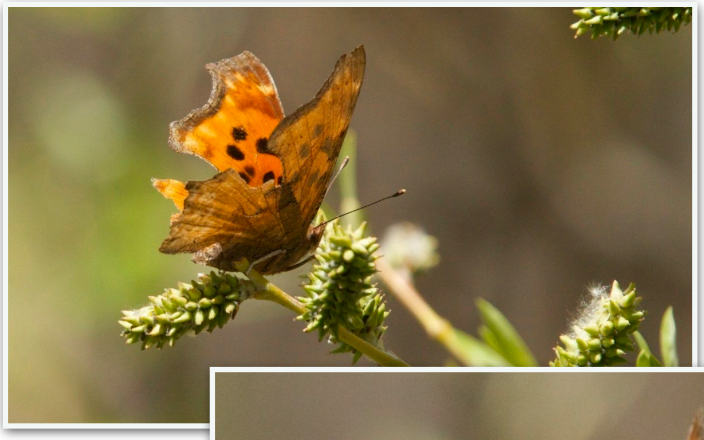
The difference in basic color between the dorsal and ventral view is helpful in distinguishing this species from others.



U. S. Range Map of
Polygonia satyrus
Satyr Comma
From sightings reported to
Butterflies and Moths of North America.



***Polygonia satyrus*, Satyr Comma**
Photographed in Railroad Canyon, Black Range, March 2018. RAB



Other Resources
(Satyr Comma)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Satyr Comma photographed along Percha Creek, Black Range. RAB

Checkered White
Pontia protodice
(Boisduval & Le Conte, 1830)
Hodges #4193

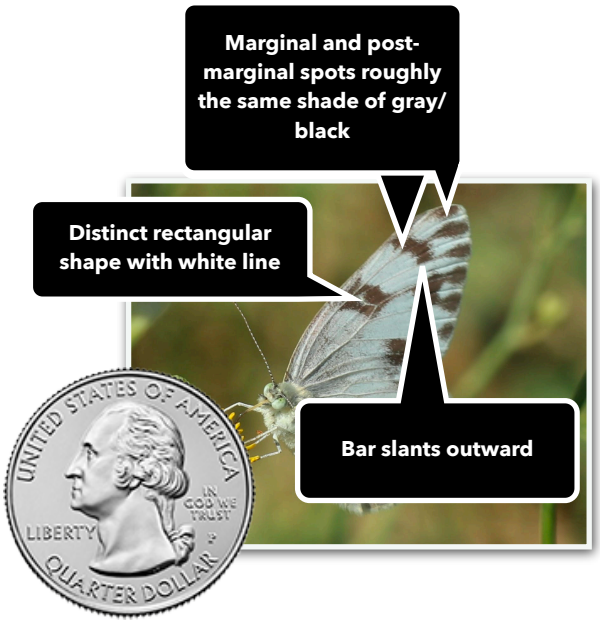
Like most butterfly species, male and female markings differ. Male spotting is on the outside part of wing, female has more markings but they tend to be less sharply marked and browner in color. Hindwings of both male and female are white. Markings on butterflies of the spring flight are stronger than those on the wings of butterflies in later flights.

Caterpillar host plants are in the mustard and caper families. Caterpillars will eat the leaves of host plants but seem to prefer the buds, fruits, and flowers. Adults nectar at various composites, alfalfa, and mustards.

Checkered White was common through most of June and July nectaring from Spiny Chloracantha flowers in each image on this page. Above on June 15. JVL

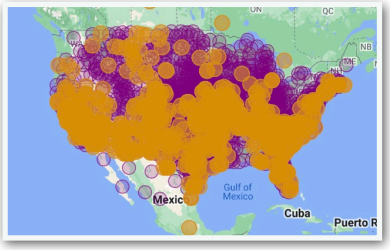
Checkered White and foraging Weevil Wasp, *Cerceris* (Latreille, 1802) sp., on May 26. Common. JVL

June 22. JVL



Other Resources
(Checkered White)

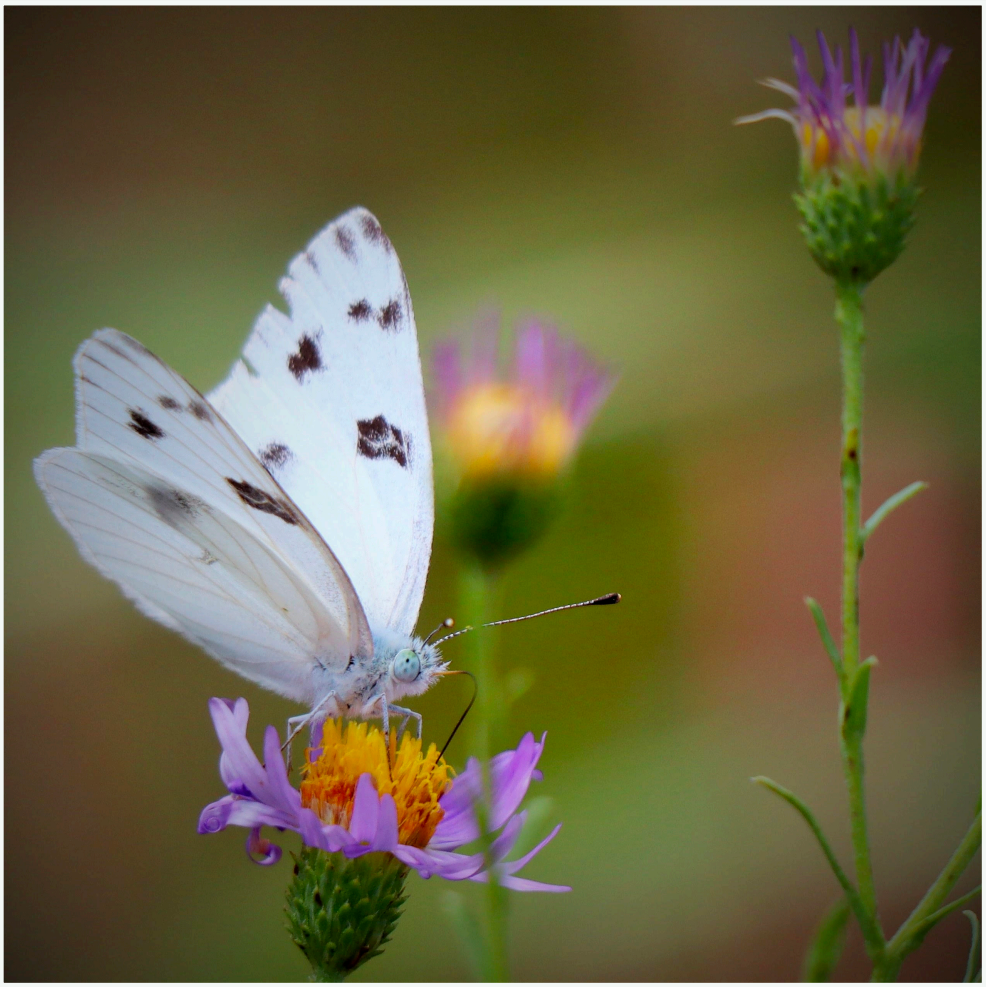
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center



U. S. Range Map of
Pontia protodice
Checkered White
From sightings reported to
Butterflies and Moths of North America.

Checkered White nectaring from climbing milkweed flowers. JVL

The Checkered White (two above and below) was photographed nectaring from blanketflowers in San Lorenzo, Black Range. RAB



Above: Checkered White nectaring from Spiny-aster. JVL

Spring White
Pontia sisymbrii
(Boisduval, 1852)
Hodges #4192

Caterpillar host plants are in the mustard family. Single eggs are laid on any part of the host plant. Young caterpillars are more likely to eat the leaves of the host plant while older ones seem inclined to eat the flowers. Larvae may sequester "mustard oils" from their host plants, making them unpalatable.

This species is known as the California White in some sources. Boisduval initially described it as *Pieris sisymbrii*.

Spring White is typically a butterfly of the mountains.

This Spring White (3 images this page), was photographed in Railroad Canyon, Black Range, March 2018. RAB

***Sisymbria* has been elevated to full genus status by some authorities, including the Pajarito Environmental Education Center. Following this taxonomy most of the individuals in New Mexico key to *S. s. elivata* (W. Barnes & Benjamin 1926). Other authorities treat *Sisymbria* as a subgenus of *Pontia*.**

Richard Holland, in "Distribution of Selected Anthocharis, Euchloe and Pontia (Pieridae) in New Mexico, Texas, Chihuahua and Sonora", *Journal of the Lepidopterists' Society*, 49(2), 1995, 119-13, discusses some of the issues associated with this species. The plate shown below is from that work.

William Barnes
(1860-1930)

William Barnes was an American entomologist who named 31 taxon. His publications were quite extensive. His personal collection of more than a half million butterflies and moths is now part of the United States National Museum (Smithsonian). His collection is thought to include more than 10,000 species.

Foster Hendrickson Benjamin
(1895-1936)

Benjamin was the curator of the William Barnes Museum (Decatur, Illinois) for a period starting in 1922.

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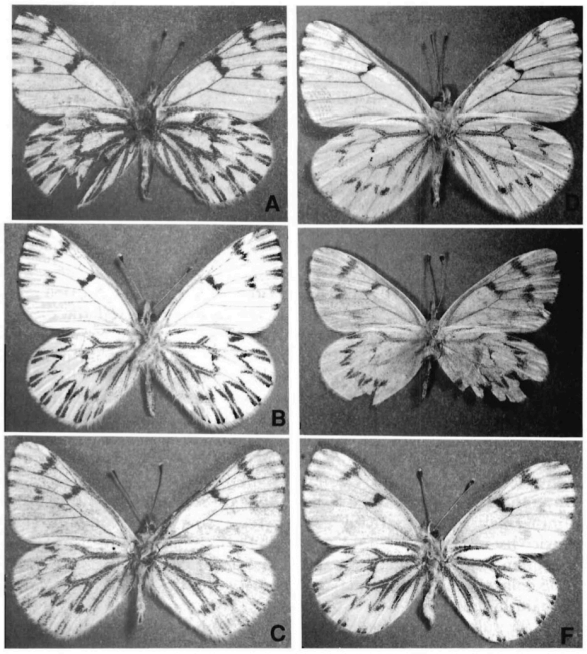
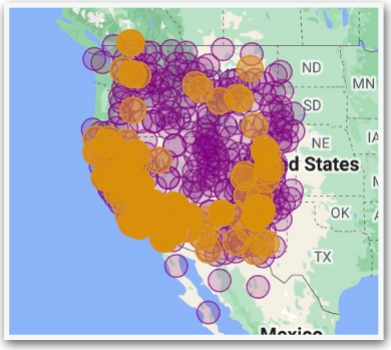


FIG. 1. Ventral surface of *Pontia sisymbrii* phenotypes: **A**, typical male morph, SW slope, Black Range, USFS Road 152, Grant Co., NM, ca. 7500′, 9-iv-89; **B**, intermediate male, Baylor Canyon, NW slope, Organ Mts., Dona Ana Co., NM, 6000′, 16-iii-79; **C**, *transversa* male paratype, North Franklin Peak, Franklin Mts., El Paso Co, TX, ca. 6000′, 1-iv-87; **D**, male paratype with extreme expression of *transversa* features, Gray Ranch, Deer Creek, SW slope, Animas Mts., Hidalgo Co., NM, ca. 5400′, 31-iii-93; **E**, *transversa* male paratype with an unusually dominating VHW transverse postmedial band, 26 mi. E of Ascencion on Mex. Hwy 2, Mun. Ascencion, Chih., 3800′, 1-iv-85; **F**, *transversa* female paratype, Gray Ranch, Deer Creek, SE slope, Animas Mts., Hidalgo Co., NM, ca. 5400′, 31-iii-93.



U. S. Range Map of
Pontia sisymbrii
Spring White
From sightings reported to Butterflies and Moths of North America.

Other Resources
(Spring White)

- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center**

Yellow-striped Armyworm Moth
Spodoptera ornithogalli
(Guenée, 1852)
Hodges #9669

As with nearly all of the caterpillar images in this article, identification to species is tentative. The adult stage of this species is called the Yellow-striped Armyworm Moth. The caterpillar stage of this species is also called the Cotton Cutworm, and it feeds on various cash crops in addition to other vegetation.

Images by James Von Loh. The caterpillar at the top of the following page is foraging on slender janusia (*Janusia gracilis*) fruits (flowering plant shown below): the larva at the bottom of this page is on a Wright's Beebalm.

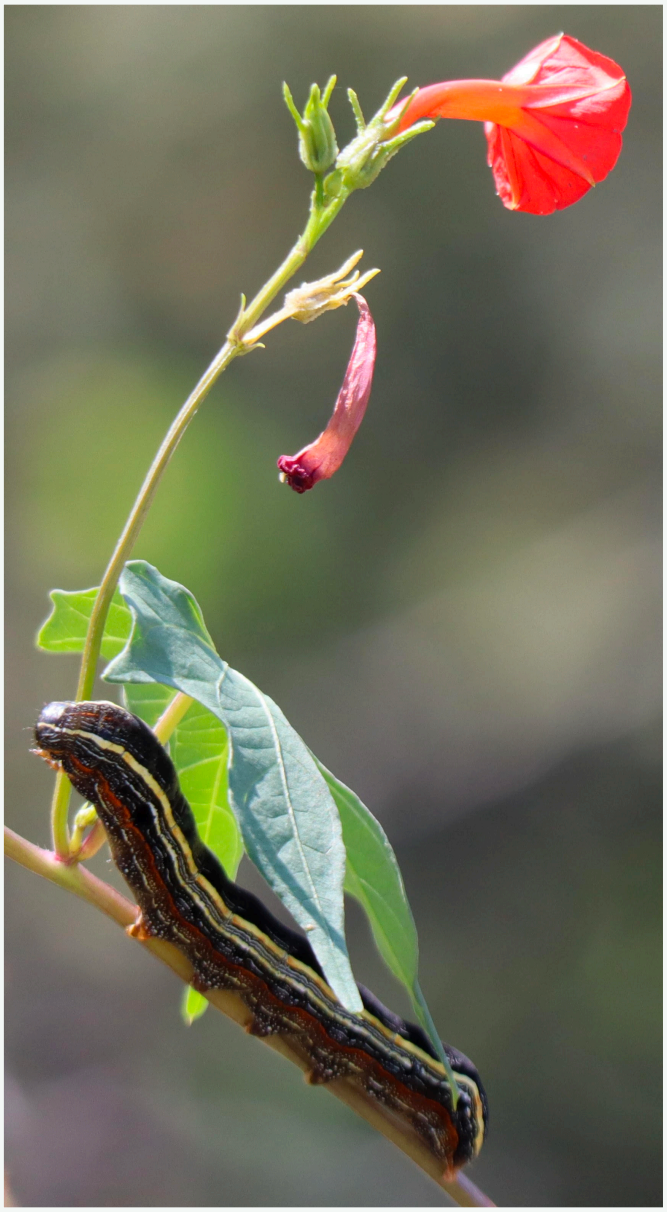
Guenée originally named this species *Prodenia ornithogalli*. The species ranges well into South America so the list of synonyms is extensive.

This species overwinters as a pupae in soil near host plants, emerging in April-May. Host plants include many species including alfalfa, asparagus, jimsonweed, morning glory, etc. etc. The entire life cycle of an individual takes from four to six weeks, there are several flights each year.

U. S. Range Map of *Spodoptera ornithogalli* Yellow-striped Armyworm Moth From sightings reported to North American Moth Photographers Group

Other Resources (Yellow-striped Armyworm Moth)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Southwestern Moths



Yellow-striped Armyworm, foraging on Red Morning Glory Vine. JVL

***Spodoptera ornithogalli*, imago and instar, University of Georgia. Shown under a Creative Commons License 3.0.**

Spodoptera ornithogalli - female - Ron Parry

Caterpillar images by James Von Loh. Caterpillars are foraging on Apache Plume at left and on desert willow below left.

Achille Guenée
(1809-1880)

Guenée was a French entomologist who authored at least 63 professional publications. Among his collaborators was Boisduval, with whom he wrote *Histoire naturelle des Insectes. Species général des Lépidoptères* (Vols 5–10, 1836–57). One of his more noteworthy publications was his contribution of *Species des nocturnes* (six volumes, 1852–1857), part of the 89 volume *Suites à Buffon*. He described species from specimens, never having seen many in life.

Examples of plates from his works are shown below.

Golden-headed Scallopwing
Staphylus ceos
(W. H. Edwards, 1882)
Hodges #3930

The top of the head is called golden colored by many, others consider it orangish.

Caterpillar host plants are in the *Chenopodium* genus (goosefoot).

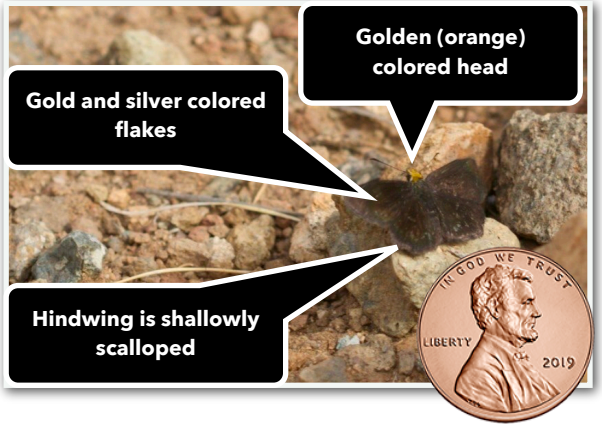
Edwards initially described this species as *Pholisora ceos*. It is also called the Gold-Headed Scallopwing.

Little is known of the natural history of this species. It is generally found between 4,000′ and 6,500′, sometimes higher.

Other Resources (Golden-headed Scallopwing)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

U. S. Range Map of *Staphylus ceos* Golden-headed Scallopwing From sightings reported to Butterflies and Moths of North America.



Golden-headed Scallopwing photographed east of Hillsboro, Black Range. RAB

Gray Hairstreak
Strymon melinus franki
(Species: Hübner, 1818)
(Subspecies: W. D. Field, 1938)
Hodges #4336

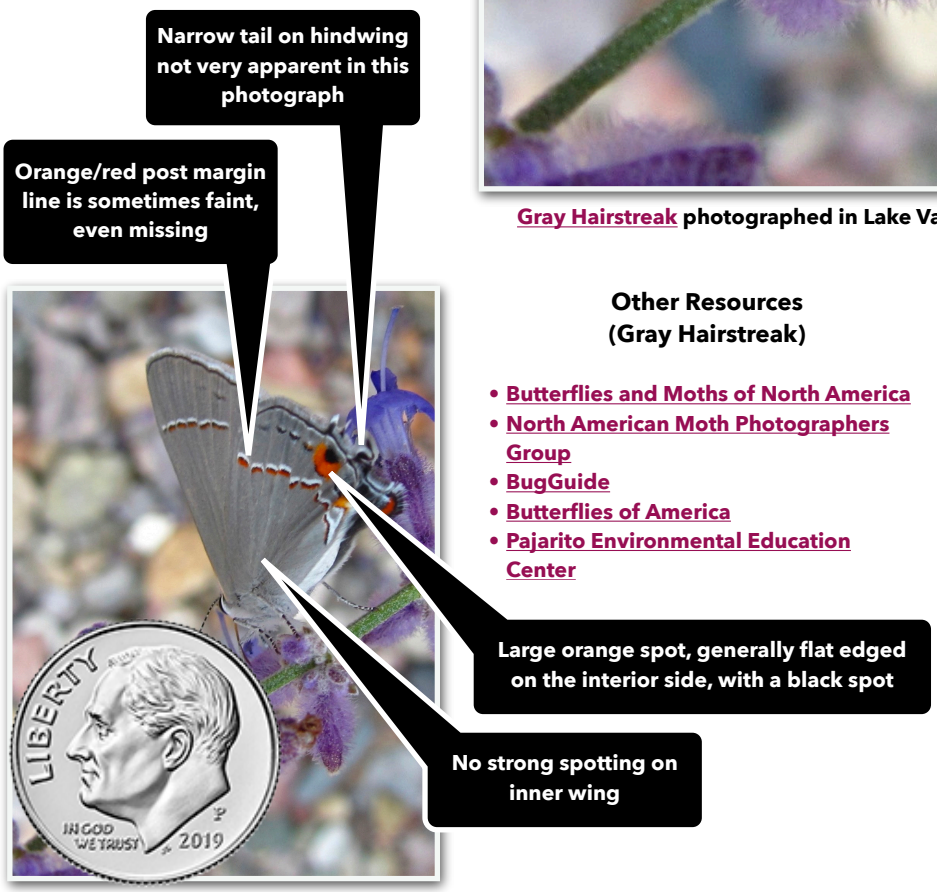
Caterpillar host plants are extensive, perhaps with a preference for the pea and mallow families. Single eggs are laid on the host plants. Young caterpillars prefer flowers and fruit, older ones may eat leaves. Adults nectar on many plant species including goldenrod, milkweed, clover . . .

Amazingly, Hübner's original name for this species is still used. Other English names include Common Hairstreak.

The Idaho Museum of Natural History notes that caterpillars of this species are sometimes attended by ants. The ants provide protection and eat a sugary solution produced by the dorsal nectary organ of the caterpillar. This relationship is called myrmecophily.

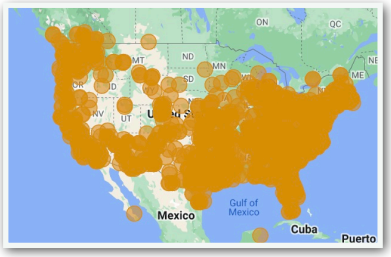
Within New Mexico, this species has been found from 3,000′ to 10,000′. There are one or two flights per year.

Gray Hairstreak photographed in Lake Valley, Black Range, by Debora Nicoll.

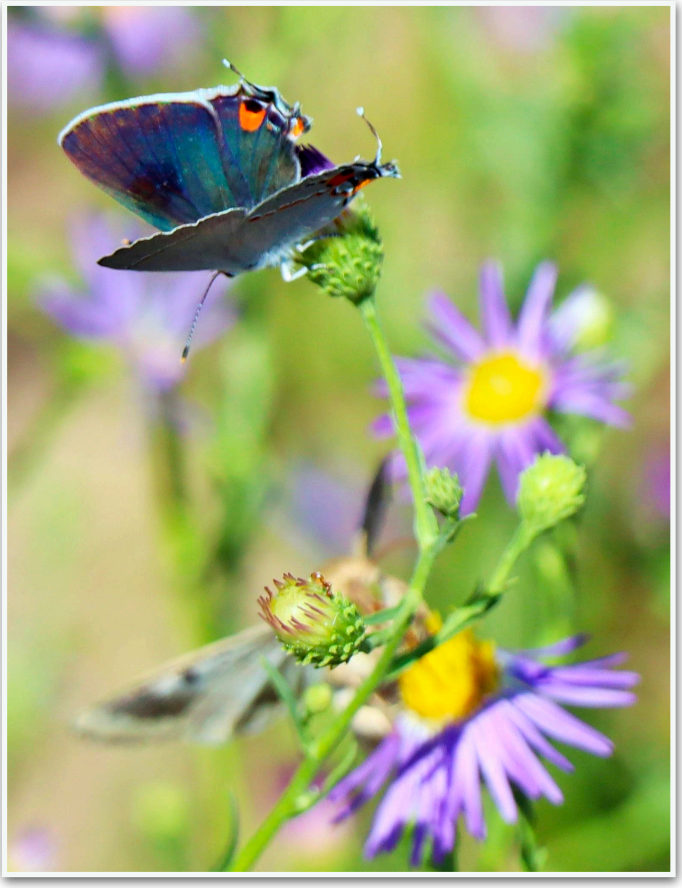


Other Resources
(Gray Hairstreak)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

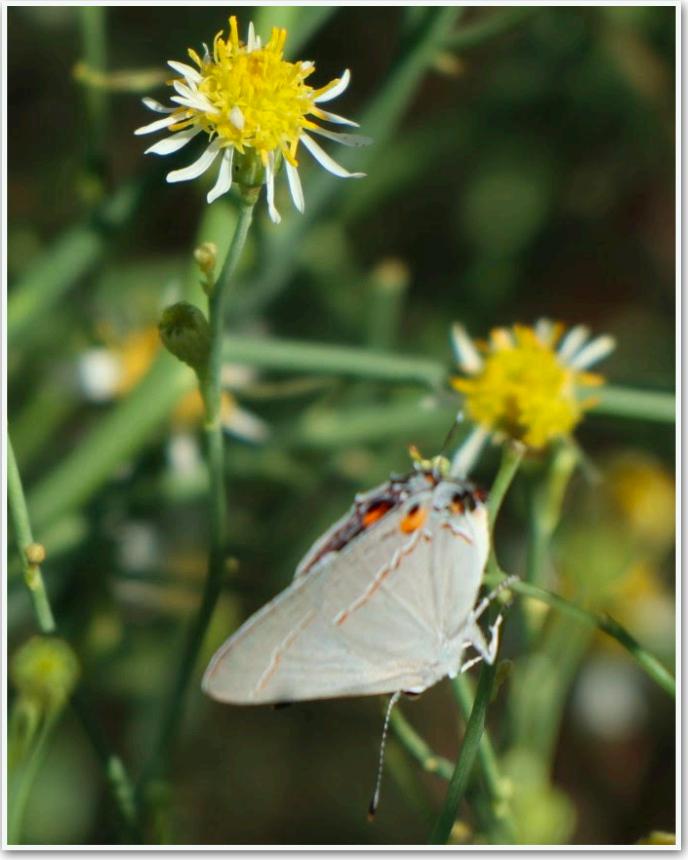


U. S. Range Map of
Strymon melinus
Gray Hairstreak
From sightings reported to Butterflies and Moths of North America.



Above: Gray Hairstreak nectaring from Horsetail Milkweed flowers. JVL

Above: Gray Hairstreak on Spine-aster flowers. JVL
Below: On May 22, when it was occasional on Spiny Chloracantha flowers. JVL

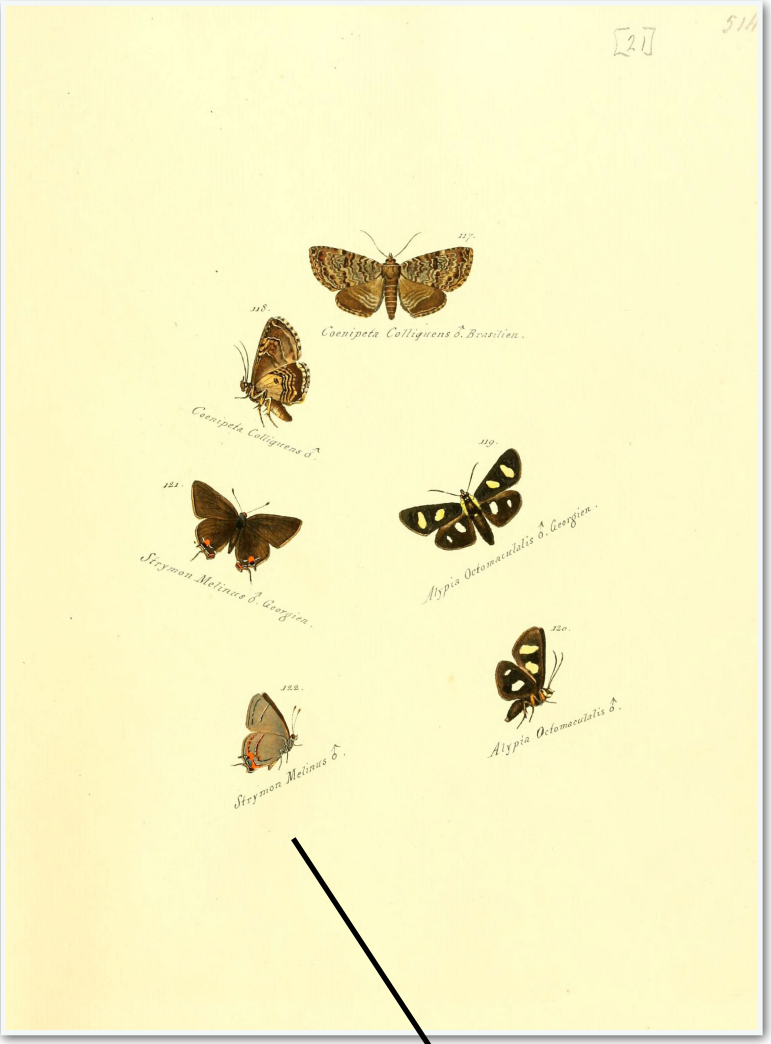


Gray Hairstreak photographed in Lake Valley, Black Range, by Debora Nicoll.

Jacob Hübner
(1761-1826)

Hübner was a German entomologist and the author of one of the most important early works in entomology, *Sammlung Europäischer Schmetterlinge* (1796–1805). He was the initial describer of a substantial number of species and genera.

Hübner's drawing of the Gray Hairstreak, from *Zuträge zur Sammlung exotischer Schmettlinge: bestehend in Bekundigung einzelner Fliegmuster neuer oder rarer nichteuropäischer Gattungen* / *von Jacob Hübner* (1818-1837), Plate 164, is shown on the following page.

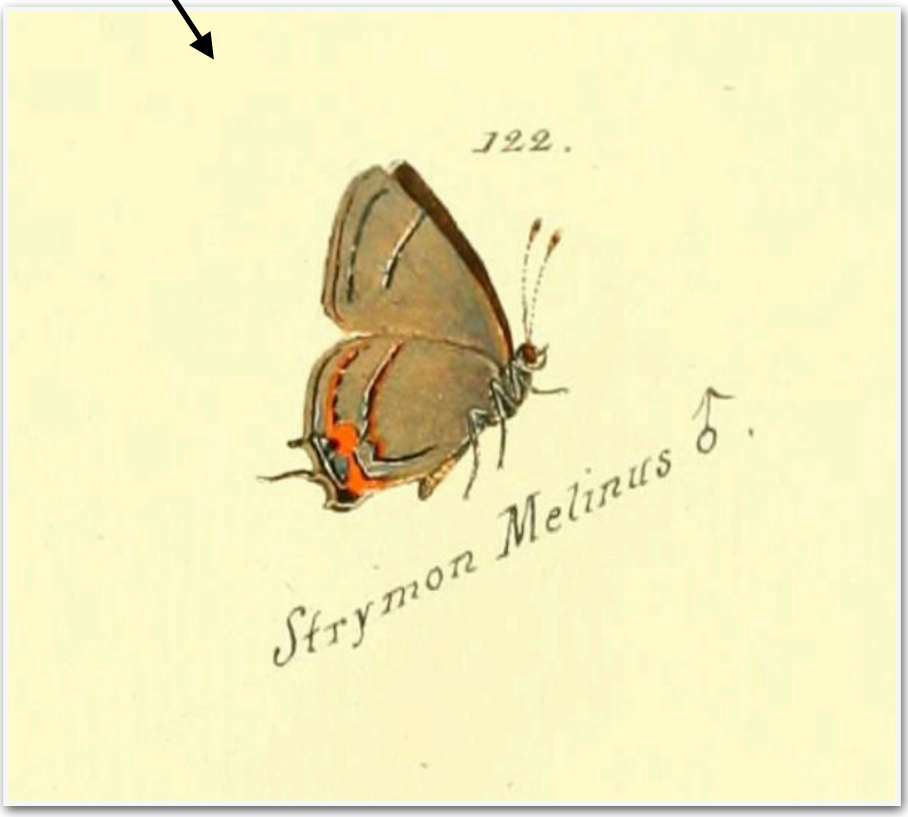


Peter Carl Friedrich Geyer
(1802-1889)

Geyer was a German (Kingdom of Bavaria) lepidopterist, illustrator, and engraver. He did the engravings for Hübner. His work is discussed earlier in this Sampler.

Following Hübner's death, Geyer finished the publication of his collection. He is the author of the volumes published after 1826.

The role of the engraver in early natural history publications was critical. Geyer's engravings are excellent. To make an engraving the artist might work from a specimen or an image drawn by someone else. The materials used in engraving varied over time and application. In all cases it was tedious and exacting work. In works like the ones shown here, the engravings were printed and then hand colored as part of a separate process. Because this was an elaborate process which took time, works were often published in multiple volumes over several years or in the case of works like those of Audubon and Gould sold, as part of a subscription, as the individual prints were produced - made into books at a later time.



Northern Cloudywing
Thorybes pylades
(Scudder, 1870)
Hodges #3910

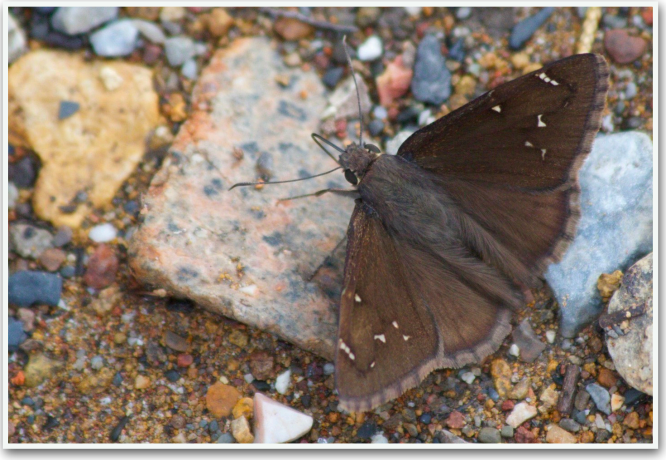
The Northern Cloudywing is the most common Cloudywing in our area. Synonyms include *Cecropterus pylades* and *Eudamus pylades*.

Caterpillar host plants are in the pea (*Fabaceae*) family. Single eggs are laid under the leaves of host plants. Caterpillars form shelters of rolled leaves, tied with silk, as shelter. Adults nectar from a variety of plant species; vetches, milkweed, clover . . .

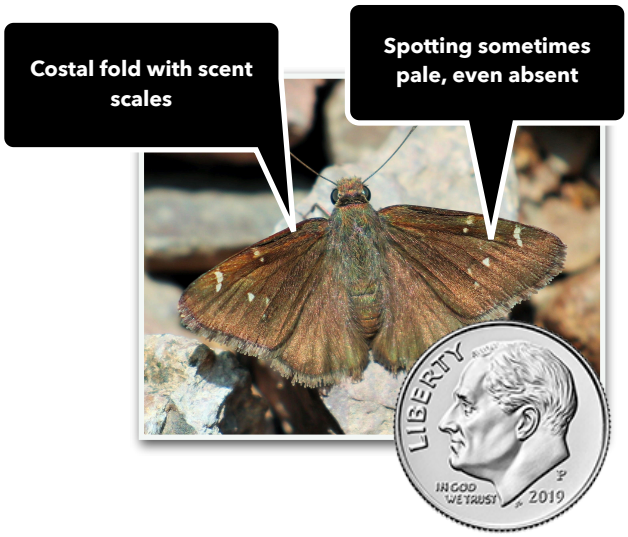
Various populations are recognized without rising to the level of a subspecies. The individuals found here are typified as the "southwestern segregate population".

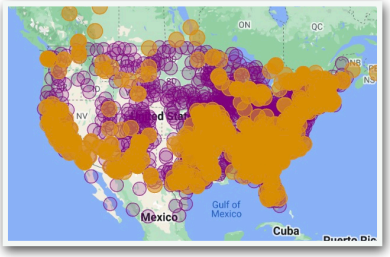
In our area there is probably one flight per year, but just south of here there are probably two flights per year.

Above and Below: Northern Cloudywing taking nutrients from moist soil under gravel near the Soledad Canyon Trailhead. JVL



Northern Cloudywing photographed north of Kingston, Black Range. RAB



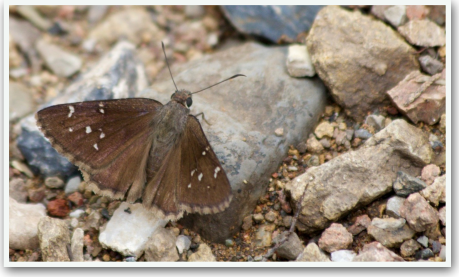


U. S. Range Map of *Thorybes pylades* Northern Cloudywing From sightings reported to Butterflies and Moths of North America.

Other Resources
(Northern Cloudywing)

- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center (lists this species as *Cecropterus pylades*)**

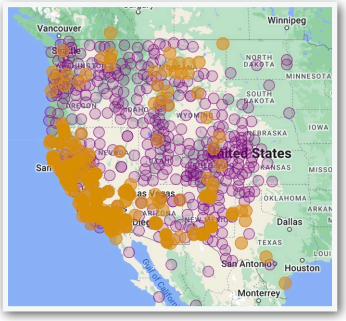
Above: Northern Cloudywing, Hillsboro, New Mexico
Two images directly below: Northern Cloudy-wing, Middle Percha Creek, west of Kingston, N. M. RAB



Steve Cary (at link) cautions that this species can be very difficult to define to species when only the dorsal view is available. The fact that it is common and has a costal fold helps but definitive determinations require ventral views.

The Northern Cloudywing butterflies were taking nutrients from moist bedrock of the Soledad Canyon Waterfall. GB

West Coast Lady
Vanessa annabella
(Field, 1971)
Hodges #4436

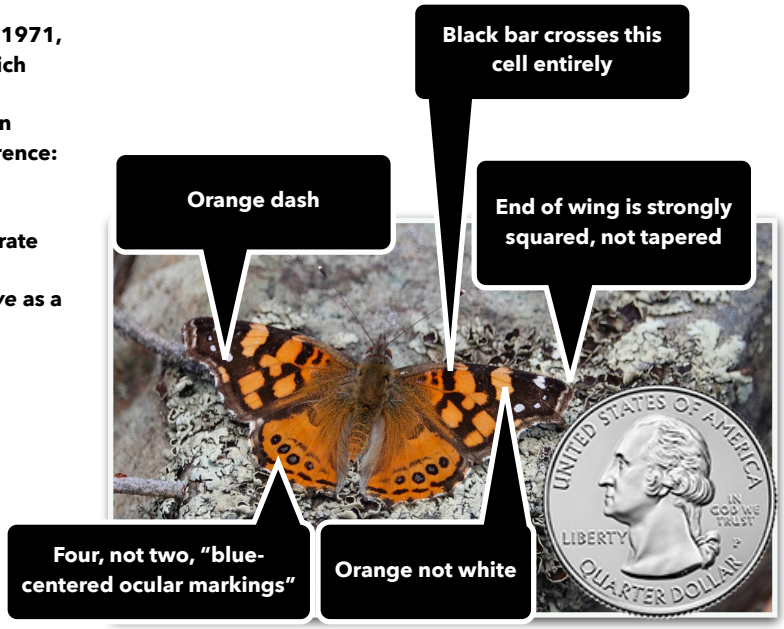


U. S. Range Map of *Vanessa annabella* West Coast Lady From sightings reported to Butterflies and Moths of North America.

Caterpillar host plants include many species of mallow and hollyhock. Single eggs are laid on the underside of host plant leaves. Caterpillars build silk nests as shelter.

There may be two flights a year in the lowlands and only one at higher elevations.

Synonyms include Western Painted Lady and *Cynthia annabella* (original combination by W. D. Field). Until 1971, this species was *Vanessa carye* (which has a range which extends as far south as Bolivia). Field considered *V. annabella* a separate species and most North American sources agree. However, to quote the BugGuide reference: "The two are virtually identical; both molecular and morphological differences are minimal (and possibly inconsistent?). Opinions vary, and distinction as separate species or not is debated. It seems possible that *V. annabella* could eventually be placed back into *V. carye* as a synonym, or considered as a subspecies."



Other Resources (West Coast Lady)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

West Coast Lady **photographed on Sawyers Peak Trail, Black Range, June 2019. RAB**

West Coast Lady photographed on Sawyers Peak Trail, Black Range, June 2019. RAB

Vanessa annabella
Vanessa atalanta
Vanessa cardui
Vanessa virginiensis

The natural history of these four species is full of interesting little tidbits. Take for instance:

- *V. annabella,* West Coast Lady, is usually found flying along side *V. cardui*, Painted Lady, and the two not only look alike, their behavior is similar;
- *V. annabella* and *V. atalanta*, Red Admiral, hybridize producing an "intermediate" looking offspring. These crosses were labeled *V. atalanta* variety *edwardsi* by F. Grinnell (1918);
- As noted in the species listing for *V. annabella*, that "species" may be a subspecies of *V. carye*; and
- *V. virginiensis*, American Lady, is often found with *V. cardui,* which is very similar in appearance.

The taxonomic determinations in this genus are a bit uncertain at times and the ranges of the various species overlap extensively. It makes for some interesting discussions between the splitters and the lumpers.

William Dewitt Field
(Original description of *Vanessa annabella*)

Among his efforts at the Smithsonian's Museum of Natural History, Department of Entomology, was the publication of *Butterflies of the Genus Vanessa and of the Resurrected Genera Bassaris and Cynthia (Lepidoptera: Nymphalidae)*, Smithsonian Contributions to Zoology, number 84, 105 pages, 1971. Although taxonomic nomenclature may have changed since the publication, this paper remains an extraordinary repository of information about the genus *Vanessa (Cynthia)*. At page 56 he begins his description of a new species, *Cynthia annabella*, supported later by plates at pages 86 and 91. In his description he notes:

> This species and *C. carye* are easily distinguished from all other species of *Cynthia*, except *C. terpsichore* and some females of *C. virginiensis*, in having the bar just beyond cell on upper side of forewing tawny instead of white. From *C. terpsichore* and *C. virginiensis* they are easily distinguished by having four, instead of two, blue-centered ocular markings on upper side of each hindwing.

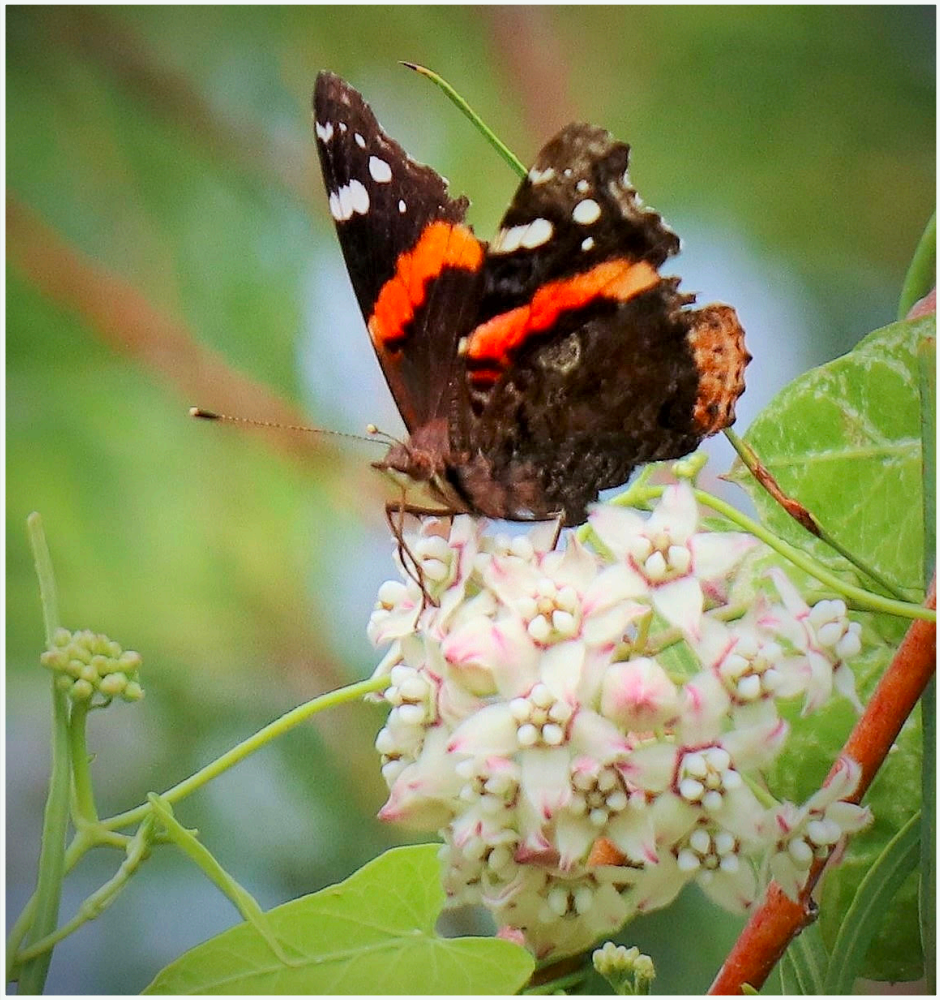
He notes that without close examination of the genitalia, it is not possible to separate the male and female of this species.

Following the separation of *V. annabella* and *V. carye* a search for the type specimen for *V. carye* was unsuccessful, requiring a deferral to Hübner's original drawing of the species (from a specimen found in the Andes) in *Sammlung Europäischer Schmetterlinge*, Volume 1, plate 45, shown below.

Red Admiral

Vanessa atalanta rubria

(Species: *Linnaeus, 1758*)
(Subspecies: Fruhstorfer 1909)
Hodges #4437



Red Admiral. A rare observation, nectaring from Climbing Milkweed flowers. JVL

Red Admirals use nettles of various types as caterpillar host plants. Reports that caterpillars use thistles as host plants may be incorrect. Adults prefer sap, bird droppings, old fruit, and as a last resort flower nectar (alfalfa, milkweed, asters, thistle, clover, among others).

Red Admirals do not survive freezing weather. Its range, however, extends through much of North America - so there are often major migrations of this species as it heads north. (There is some recent evidence that some of the northern population may fly south as far as Mexico, rather than dying out in the north, a matter to be resolved.)

Young caterpillars shelter within folded leaves. Later stages use their silk to tie a few leaves together for shelter.

This species is found from Guatemala to well into Canada. It is a cosmopolitan species being found in much of the northern hemisphere. During their migration they may be found in any habitat. Otherwise they prefer moist areas but can be found in many other places.

In New Mexico there are two flights annually.

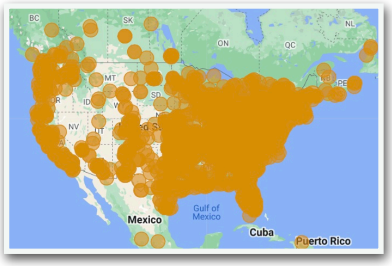
Red Admiral larva, March 24, 2012 by Berry Nall.

Other Resources
(Red Admiral)

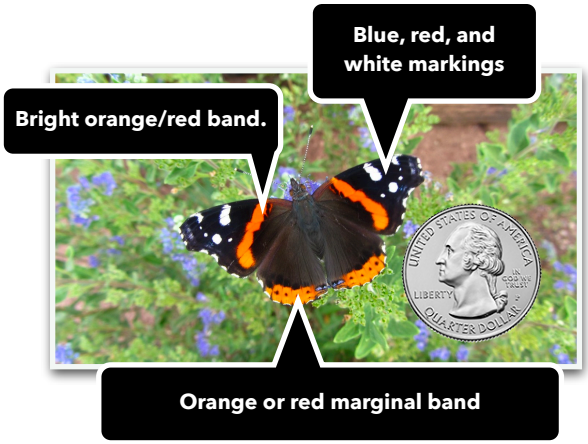
- **Butterflies and Moths of North America**
- **North American Moth Photographers Group**
- **BugGuide**
- **Butterflies of America**
- **Pajarito Environmental Education Center**

Red Admiral taking nutrients from large gravel below the Soledad Canyon Waterfall in the Organ Mountains, photograph by Gordon Berman.

Red Admiral. A rare observation, nectaring from Climbing Milkweed flowers. JVL



U. S. Range Map of
Vanessa atalanta
Red Admiral
From sightings reported to
Butterflies and Moths of North America.



Vanessa atalanta, Red Admiral
Photographed in Lake Valley, Black Range, by Debora Nicoll.

Painted Lady
Vanessa cardui
(Linnaeus, 1758)
Hodges #4435

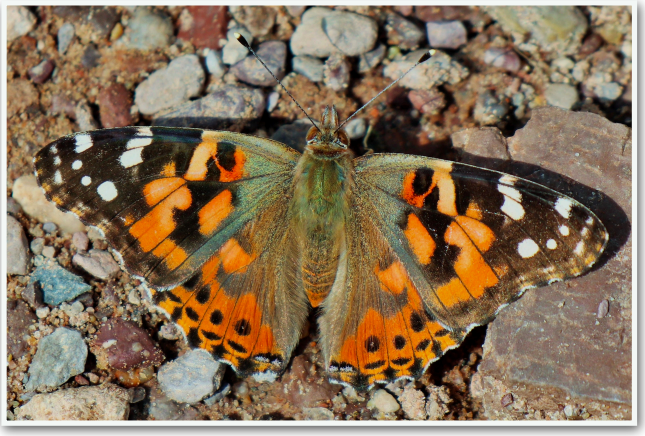
Painted Lady is frequently raised by elementary school children as a science project.

This species is found on every continent (except Antarctica). It is found throughout New Mexico and can be found at any time of the year, except in the very coldest weather. Apparently, at least some of the individuals we may see here in the fall have migrated south to avoid severely cold weather, which can kill all life stages of the species.

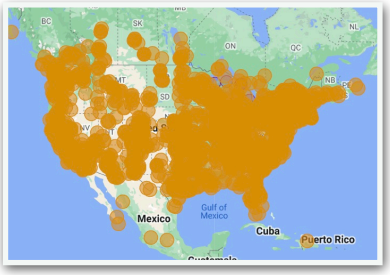
Instars seem to prefer thistles, mallow, and hollyhock, but also feed on a variety of other composites (over 100 host plant species have been identified. Adults nectar on many composites, apparently they prefer flowers 3-6 feet high.

Although the spring migration north is easy to predict the number of individuals involved is not. Numbers will fluctuate significantly from year to year.

See C. B. Williams, "The Migrations of the Painted Lady Butterfly, Vanessa Cardui (Nymphalidae) with Special Reference to North America", *Journal of the Lepidopterists' Society*, Vol. 24, No. 3, 1970, pp. 157-175.



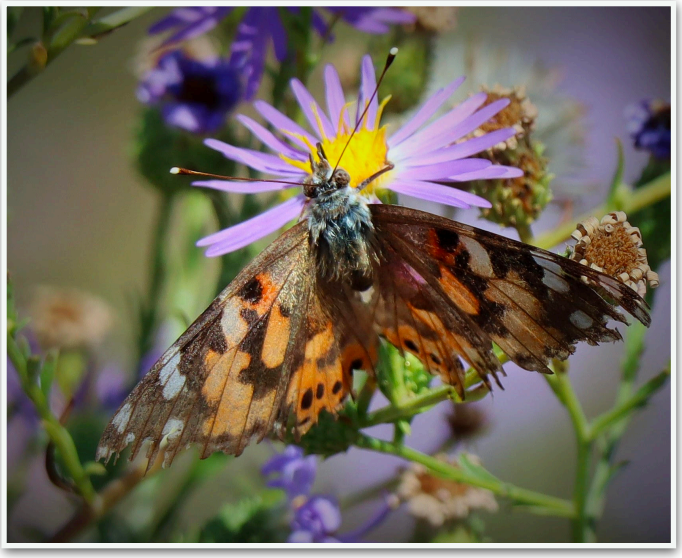
Painted Lady taking nutrients from moist sand and gravel near the Soledad Canyon Trailhead (above) and nectaring on Spiny-aster along the Rio Grande (below). JVL



U. S. Range Map of
Vanessa cardui
Painted Lady
From sightings reported to Butterflies and Moths of North America.

Other Resources
(Painted Lady)

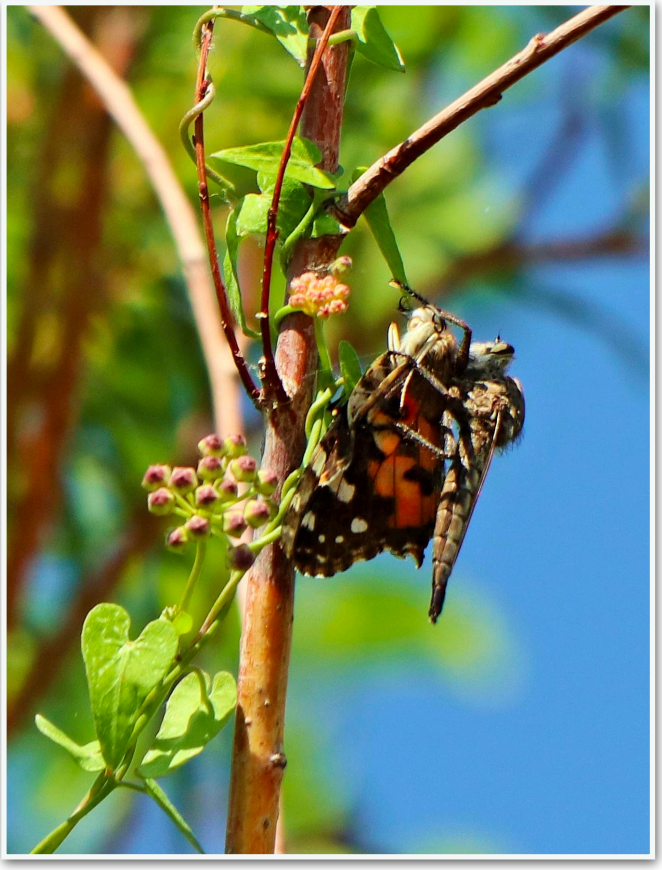
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

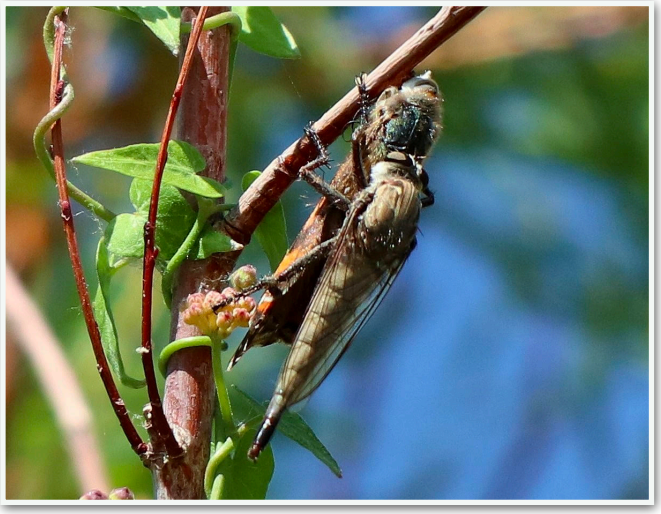


Painted Lady. This individual is showing the tattered wings and wing-tears common to many butterflies migrating during 2021. Photograph taken along the Rio Grande at Las Cruces. JVL

Painted Lady photographed along the Hillsboro Peak Trail, Black Range, October 2017. RAB

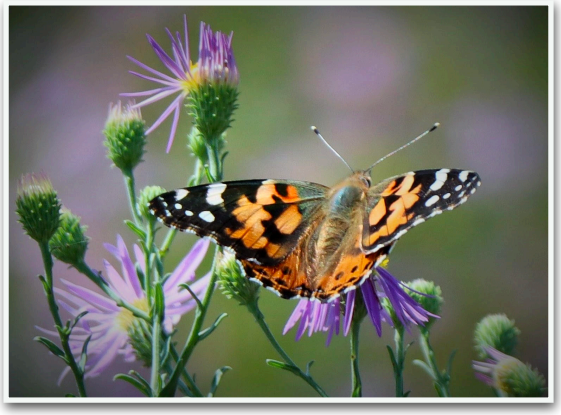
Above and immediately below: Painted Lady nectaring from Brown-foot flowers. JVL





Right Center: Hunting around Climbing Milkweed vines and flowers, this Giant Robber Fly, *Proctacanthus* (Macquart, 1838) sp., has captured and is ingesting nutrients/fluids from a Painted Lady. Right: When I began digitally recording this event, the Robber Fly moved higher up the Climbing Milkweed vines to find additional visual cover and more distance. JVL

Above: Painted Lady. Photograph taken along the Rio Grande at Las Cruces in 2021. JVL



Painted Lady was common on the Spine-aster flowers in 2021. JVL.

Left: Painted Lady nectaring on Horsetail Milkweed. JVL

Above and Right: Painted Lady nectaring from Climbing Milkweed flowers. JVL

Bottom Left: Railroad Canyon, November 11, 2021. RAB

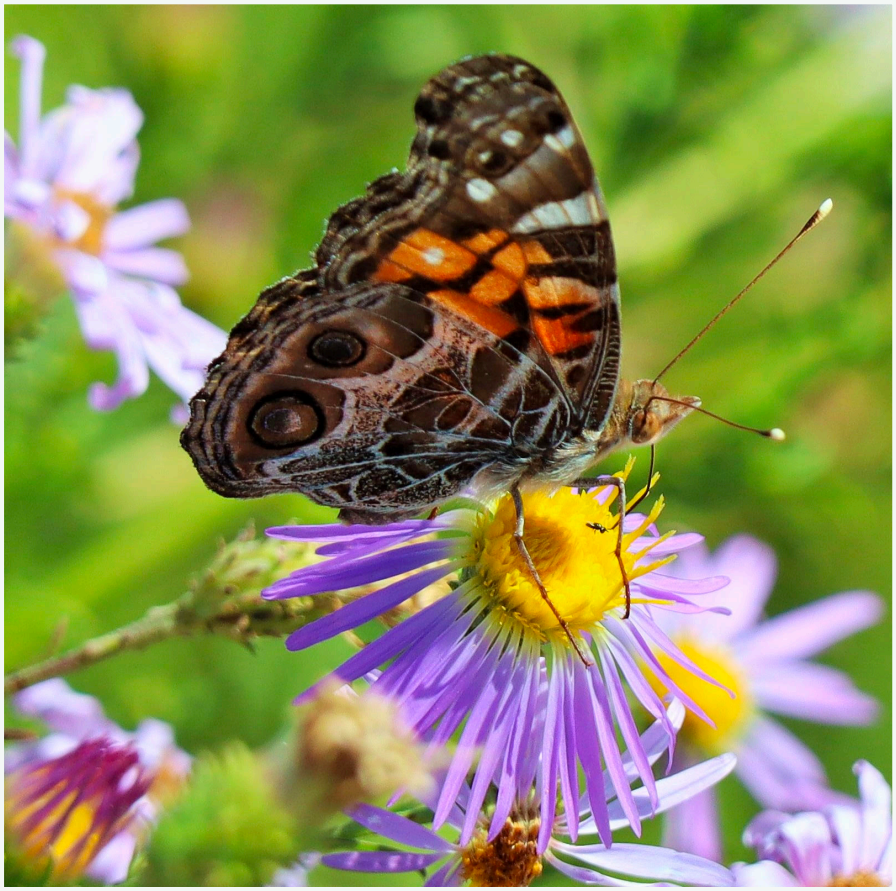
American Lady
Vanessa virginiensis
(Drury, 1773)
Hodges #4434

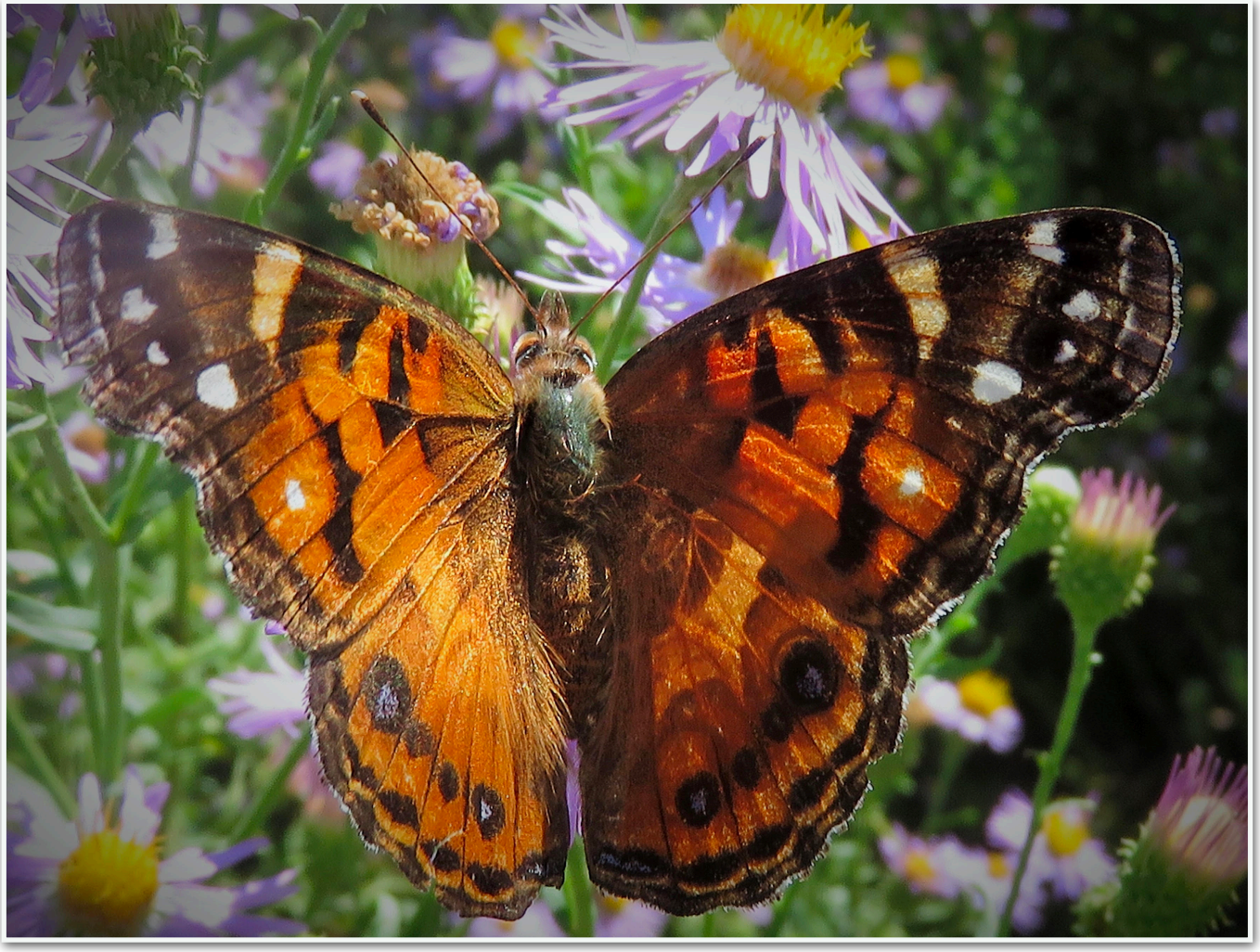
Caterpillar host plants are in the sunflower family; pearly everlasting, burdock . . . Caterpillars shelter individually within nests of leaves tied together with their silk. Adults only nectar. They seem to prefer milkweed, goldenrod, asters, and vetch.

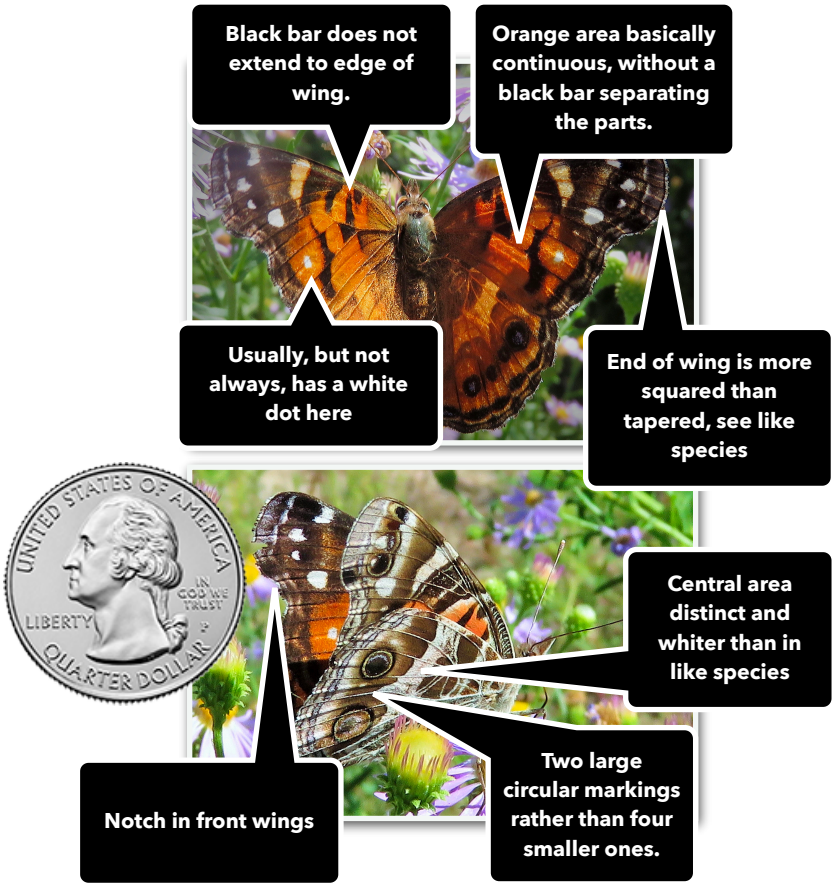
The range of this species extends into northern South America (Colombia and Venezuela).

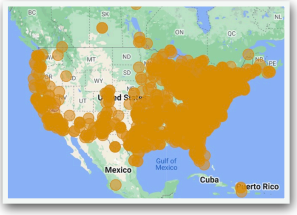
In New Mexico, there may be one or two flights depending on elevation. At lower elevations, they hibernate and fly again as early as April.

Right: American Lady nectaring from Spine-aster flowers, where it was uncommon along the Rio Grande at Las Cruces. JVL
Below: American Lady. Gordon Berman









U. S. Range Map of *Vanessa virginiensis* American Lady From sightings reported to Butterflies and Moths of North America.

Other Resources (American Lady)

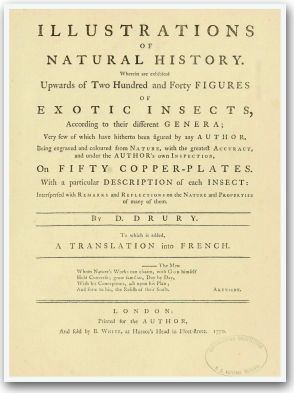
- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

Above: American Lady nectaring from Spine-aster flowers, where it was uncommon. By Gordon Berman, from the Rio Grande at Las Cruces.

Above: American Lady photographed in Railroad Canyon, Black Range. RAB

Dru Drury (1724-1803)

Drury was a British entomologist known mostly for his collection. It was not customary to record a great deal of information about individual specimens in a collection during his life so his collection, although extensive, was of limited scientific value. His original description of the Fiery Skipper (see page 143) was based on specimens from St. Christoper's, Antigua, and Nevis. In his Illustrations of Natural History . . . Vol. 1, Plate XVIII, Drawings 4 & 5, pp 25-26, he made the original drawing and published the original description of the species, this in 1770. He did not, however, name the species until 1773.


ILLUSTRATIONS
OF
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Wherein are exhibited
Upwards of Two Hundred and Forty FIGURES
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EXOTIC INSECTS,
According to their different GENERA;
Very few of which have hitherto been figured by any AUTHOR,
Being engraved and coloured from NATURE, with the greatest ACCURACY,
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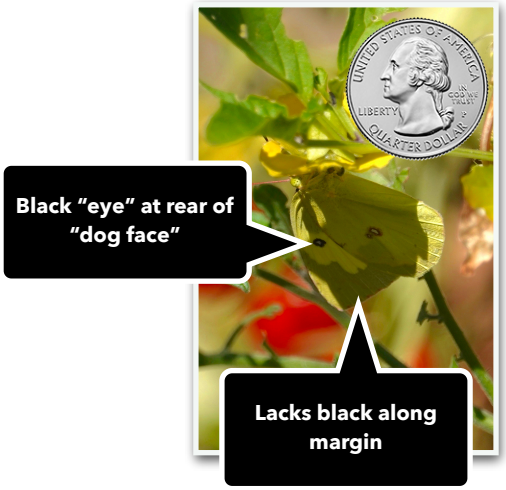
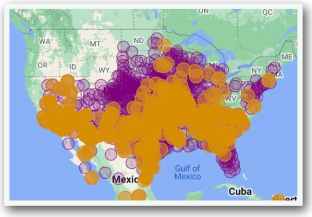
With a particular DESCRIPTION of each INSECT:
Interspersed with REMARKS and REFLECTIONS on the NATURE and PROPERTIES
of many of them.
By D. DRURY.
To which is added,
A TRANSLATION into FRENCH.
LONDON:
Printed for the AUTHOR,
And Sold by B. WHITE, at Horace's Head in Fleet-Street. 1770.

Southern Dogface
Zerene (Colias) cesonia
(Stoll, 1790)
Hodges #4224

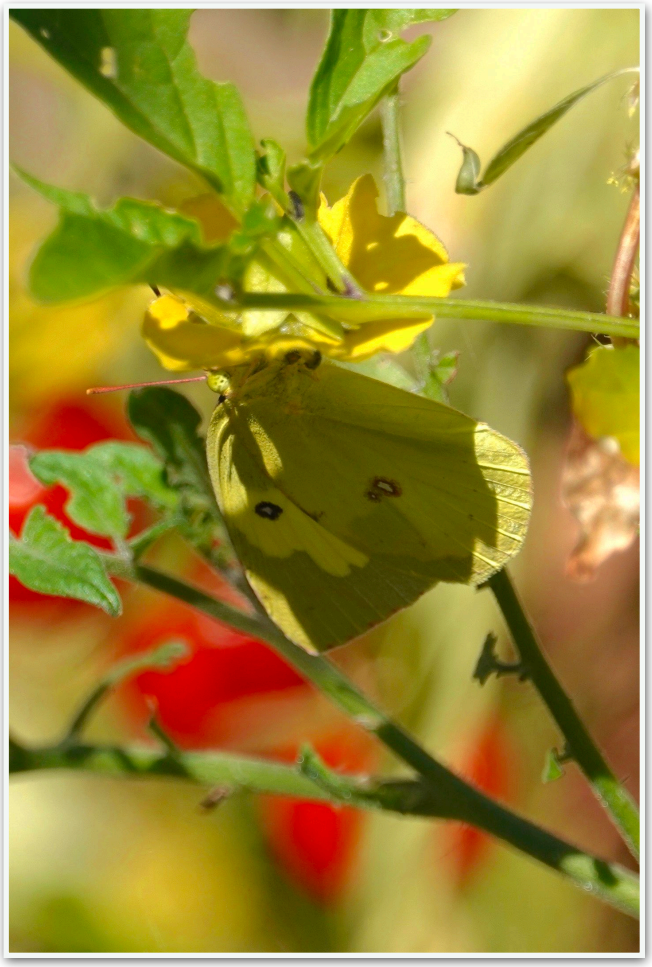
Caterpillar host plants are in the pea family (alfalfa and clover). Adults nectar from these same plants plus verbena.

The range of this species extends as far south as Argentina. It is generally found below 7,000′ in New Mexico and is more common in the south than in the north.





U. S. Range Map of
Zerene cesonia
Southern Dogface
From sightings reported to Butterflies and Moths of North America.



Southern Dogface photographed in Hillsboro, Black Range, October 2021. RAB

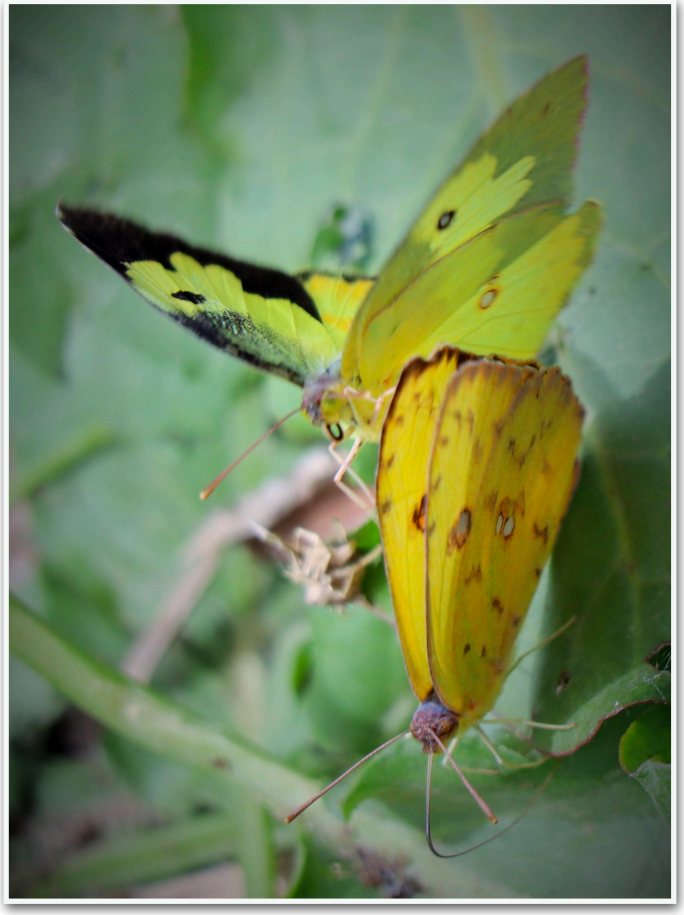
Other Resources
(Southern Dogface)

- Butterflies and Moths of North America
- North American Moth Photographers Group
- BugGuide
- Butterflies of America
- Pajarito Environmental Education Center

White Checkered-skippers joining a small puddle club with mixed species of sulphurs. Sleepy Orange, *Abaeis nicippe* (Cramer, 1779) and Southern Dogface are both present here. As are marine blues, *Leptotes marina* (Reakirt, 1868), and individuals of other butterfly species. JVL

James Von Loh took the two top photographs at the left, of Southern Dogface along the Rio Grande at Las Cruces. This species is a common-to-abundant butterfly nectaring from Spine-aster flowers.

Southern Dogface nectaring from Horsetail Milkweed flowers. JVL



Southern Dogface, *Zerene cesonia* (Stoll, 1790), formerly *Colias cesonia*. JVL

Left: Southern Dogface, *Zerene cesonia*, and Western Pygmy Blue, *Brephidium exilis*, on Chamisa. Steve Morgan

Other Publications of the Black Range Project

Early Naturalists of the Black Range is our survey of the people who have added to our understanding of the natural history of the Black Range.

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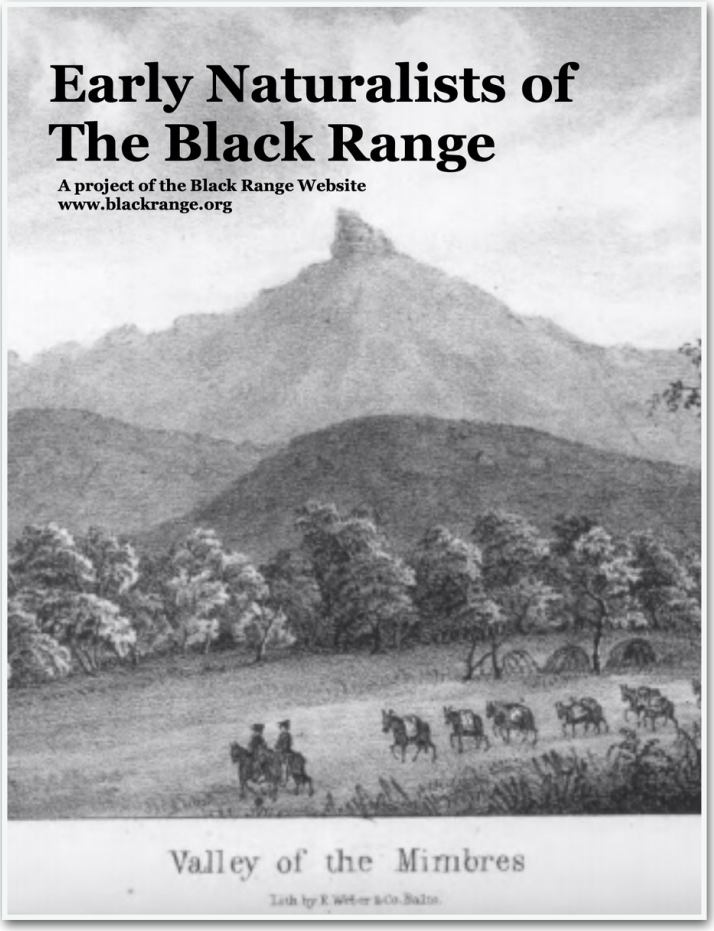

Webpage at the Black Range Website
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THE BLACKRANGE RAG - WWW.BLACKRANGE.ORG

The Silver Fire

As We Lived It

Published on the Second Anniversary of the Silver Fire.

What we saw and felt...

The blog entries on the Free Range and Silver Fire Blogs captured our thoughts as we lived through the Silver Fire. This reprint of those blog entries and never before published images by Véronique De Jaegher and Catherine Wanek are a vivid reminder of what the communities of the Black Range went through during the summer of '13. Although reformatted to fit this publication, the blog entries otherwise remain unchanged. Read the blogs carefully and you will see that our understanding of what was happening; changed over time, was not always clear, and was full of dread and hope.

At the end there are photographs of the fire and Range which were not published in the Black Range Rag.

This document is available as one document, or because of its size, as several. See the Black Range Rag for details.

The Silver Fire Blog

During the summer of 2013, the Silver Fire burned much of the Black Range, or at least that is what we thought at the time. We worried, we helped however we could, but mostly we turned our faces to the Black Range and watched.

It was especially traumatic for the people of Kingston, the fire was at their doorsteps, they were evacuated, they worried more, their gaze was not always at the crest of the Black Range. Their gaze was often toward Kingston.

During that time, the Black Range Rag carried a special blog: "The Silver Fire Blog" - some how a title that was less precise did not feel good in the stomach, it was not a time for catchy titles. The blog was one of several sources which the people of the Black Range were able to use to keep informed about the status of the fire.

The Initial Post

On June 14, 2013 The Black Range Rag first noted the fire in a post by Harley Shaw on a different topic. At first it was not clear that the fire was going to be anything out of the ordinary. A lightening strike, a fire, quickly suppressed was certainly the scenario of the first couple of days. By the 14th things had changed.

This post was submitted prior to the start of the Silver Fire. The photographs of that fire are from June 9 and 10. As of this posting the fire has consumed 19,000 acres of forest.

In Memory of the Granite Mountain Hotshots 1

Fire is a natural process, but natural processes are not always pleasant. During the summer of 2013 a major forest fire swept through the Black Range: trees were burned; helicopters were flying; people were evacuated from their homes; and every day brought a new report of acres burned, smoke indexes, fire crew status....

The blog entries on the Free Range and Silver Fire Blogs captured our thoughts as we lived through the Silver Fire. This reprint of those blog entries and never before published images by Véronique De Jaegher and Catherine Wanek are a vivid reminder of what the communities of the Black Range went through during the summer of '13. Although reformatted to fit this publication, the blog entries otherwise remain unchanged. Read the blogs carefully and you will see that our understanding of what was happening; changed over time, was not always clear, and was full of dread and hope.
At the end there are photographs of the fire and Range which were not published on the Black Range website.

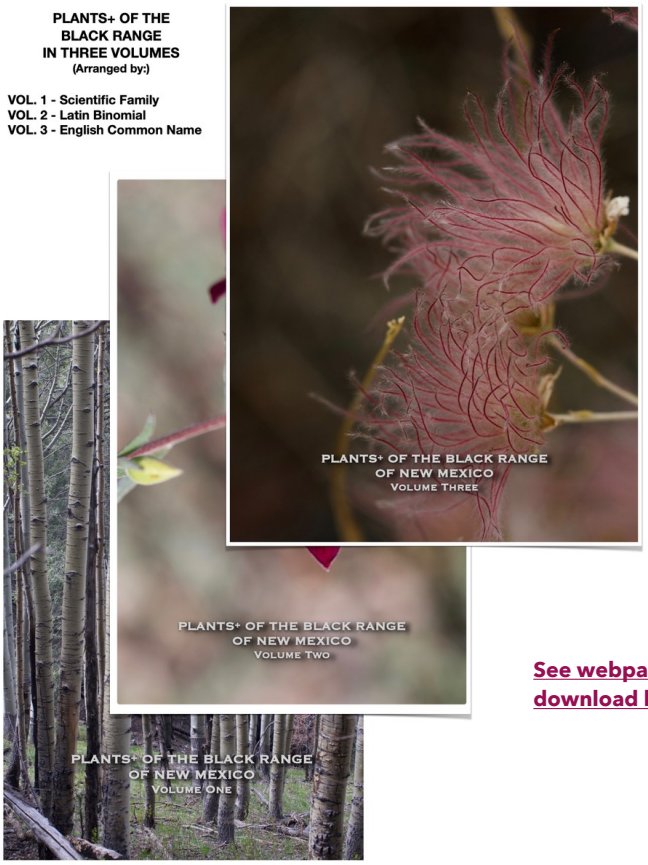
Webpage at the Black Range Website
Download Copy of the Book (30.5 MB)

See webpage for download links.

Published prior to the Black Fire.

PLANTS+ OF THE BLACK RANGE IN THREE VOLUMES
(Arranged by:)

VOL. 1 - Scientific Family
VOL. 2 - Latin Binomial
VOL. 3 - English Common Name



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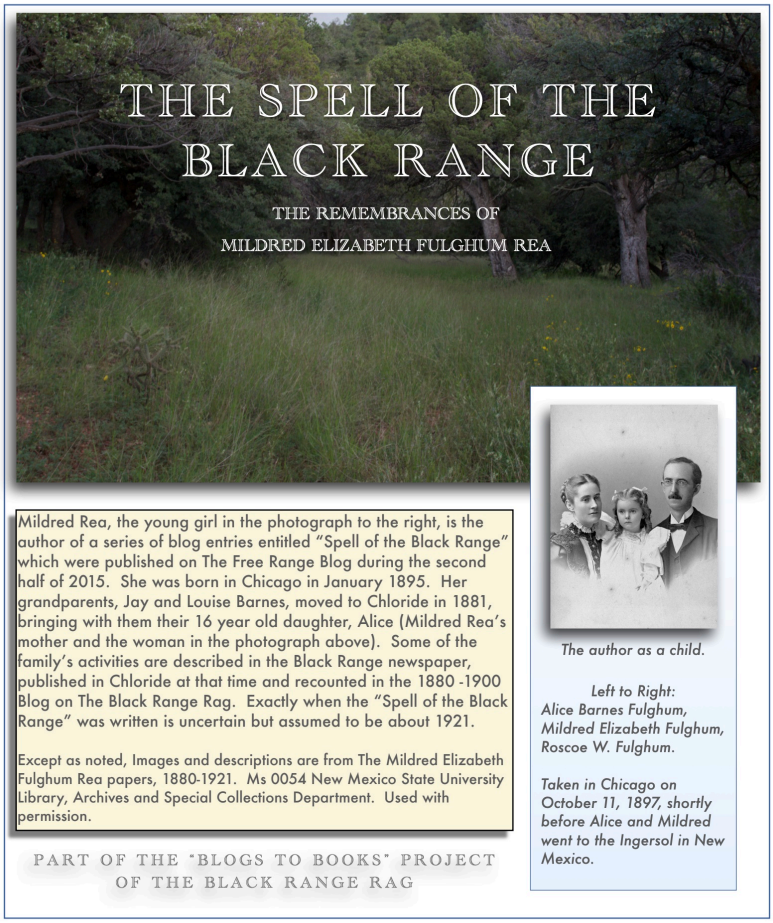

Mildred Rea, the young girl in the photograph to the left, is the author of a series of blog entries entitled "Spell of the Black Range" which were published on The Free Range Blog during the second half of 2015. She was born in Chicago in January 1895. Her grandparents, Jay and Louise Barnes, moved to Chloride in 1881, bringing with them their 16 year old daughter, Alice (Mildred Rea's mother and the woman in the photograph above). Some of the family's activities are described in the Black Range newspaper, published in Chloride at that time and recounted in the 1880 -1900 Blog on The Black Range Rag. Exactly when the "Spell of the Black Range" was written is uncertain but assumed to be about 1921. Except as noted, Images and descriptions are from The Mildred Elizabeth Fulghum Rea papers, 1880-1921. Ms 0054 New Mexico State University Library, Archives and Special Collections Department. Used with permission.

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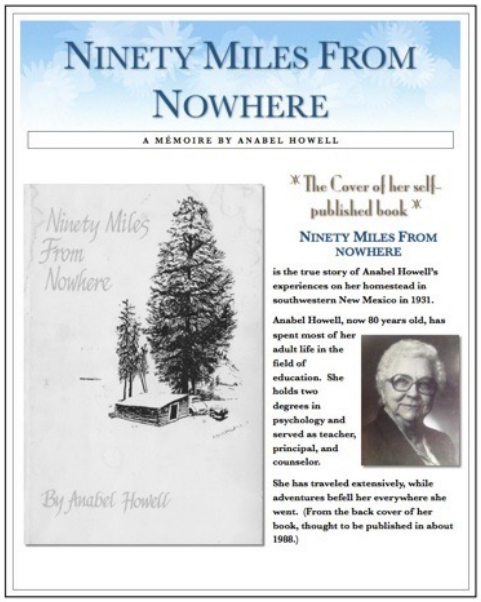
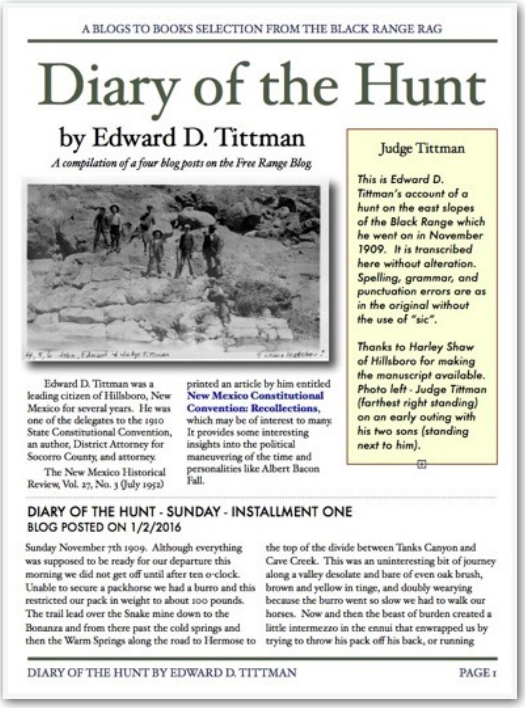


"Ninety Miles From Nowhere" is the true story of Anabel Howell's experience on her homestead in southwestern New Mexico in 1931…" It was serialized on The Free Range blog during 2015-1016. We offer it here as a "Blog to Book".

Webpage
Download Book



Diary of the Hunt, Edward D. Tittman's account of a hunt on the east slopes of the Black Range, which he went on in November 1909, was published in the Free Range Blog during the first quarter of calendar year 2016. It has now been put into a .pdf format as part of our Blogs to Books program.

Webpage
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Published in Hillsboro, New Mexico
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