Worn individual

Sandia Hairstreak (Callophrys mcfarlandi)

INTRO TO "BUTTERFLYING"

Fresh individual

by Rob Wu

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My Background

- Artist/Illustrator
 - BFA from University of Arizona, 2008
- Environmental Consultant
 - Field and lab work since 1999
 - Independent contractor since 2013

I am not an expert!!!

But I am a skilled observer.



These are moths. Forget about them, haha.















Moths vs. Butterflies

Lifestyle

- Most moths nocturnal, but.. [see left photo]
- Butterflies diurnal

Coloration

- Many moths are drab, but...[see left photo]
- Many butterflies brightly colored, but...[see right photo]

Flight

- Moths: wingbeats rapid and constant
- Butterflies: wingbeats less rapid and constant

Antennae

- Moths don't have clubs
- Butterflies have clubs

antennal club

Diversity/Discernibility

- Many many many many many many more species of moths than butterflies! Moths constitute 94% of Lepidopteran species worldwide
- Moths harder to ID than butterflies



Sleepy Duskywing (Erynnis brizo)

Butterfly

Cresson's Ctenucha (Ctenucha cressonana)

Moth

How I Got Started

My first experience learning butterflies happened while I was doing bird surveys on Ft. Bliss in the Organ Mountains.

- Dave Griffin (2011-2012)
- First superzoom camera (12x zoom)

During a separate bird project on WSMR, my efforts to learn kicked into a higher gear.

- All-season migratory bird surveys (2015-2016) Remember those, CJ Goin?
- Second camera had 42x optical zoom
- Started taking notes on butterfly observations

Vermilion Flycatchers: "This Guy is Relentless!"

Vermilion Flycatcher (*Pyrocephalus obscurus*)

> C. J. Goin (*That guy again!*?)

How I Knew I had a Problem Uh oh. I caught the "butterfly bug."

Vacation in Italy (June 2016)

• Took so many photos of butterflies at our Airbnb in Sansepolcro, Tuscany, that I was able to compile a book

Started to go out in my spare time to look for butterflies

- Visiting various local sites (e.g., OMDPNM, MVBSP)
- Butterflying during other vacations (Arizona, Arkansas, California, Oregon; Puerto Penasco, Mexico)



(Polyommatus bellargus)



Northern Pearly-eye (Enodia anthedon)

How My Problem Became a Project

WSMR Pollinator Garden (Fall 2015)

- Keeping notes on butterflies at Bldg 163 helped in acquiring additional funding for the garden project
- Also, received funding for some poster projects

Butterfly inventory of WSMR

• Rangewide survey project funded for 2019-2020 (spring/summer/fall)



o Rock Island Ave

WHITE SANDS MISSILE RANGE

three dezen native flowering plants that attract a wide range of pollinators—animals that all plant reproduction by specificing pollen from a Solant to another as they forage, insects (e.g. butterfles and writes, bees, ants, warps, flie Overties, and bugs) are the wart provinenplayers in this vital ecological process. Thus far, more than an species of butterfly hav already been observed in the garden. Small birds and manuals, especially neve feeders—the homoningbirds and some bats—or also polific politinators.



MISSILE RANGE

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New Mexico Agave

Purple Mistflower ∨ Purple Trailing Lantana
 ▲ Rabbit Brush

Red Autumn Sage

Plains Zinnia

Red Yucca Rock Penstemon

Rock Verbena

Shrubby Dogweed

Superb Penstemon

+ Skeleton-Leaf Goldeneye

SYMBOL KEY:

- × Angelita Daisy
- Apache Plume
- ▲ Blackfoot Daisy
- Canyon Penstemon
- A Chocolate Flower
- + Cimarron Texas Sage
- Claret Cup Cactus
- * Damianita
- Desert Willow
- Desert Zinnia

- Firecracker Penstemon
- Globe Mallow
- Mexican Blue Sage Golden Columbine
- New Gold Lantana
- Garden Plot Area
- C Tufted Evening Primrose Turpentine Bush Wooly Butterfly Bush Yellow Bells
- Vellow Yucca
- Hummingird Feeder



Bldg 163



to Rock Island Ave

NEEF





How You Can Get Started

If you are a birder, great news! You likely have most of the important equipment you need already:

- Binoculars
- Superzoom camera

What you may not have but will need to get:

• Guidebooks

Notes

photo from www.opticsplanet.com

Optional stuff:

- Close-focus binoculars
- Butterfly net



photo from www.birdguides.com

Guidebooks

- "A Swift Guide to Butterflies of North America" (2nd ed.) by Jeffrey Glassberg
- "Kaufman Field Guide to Butterflies of North America" by Jim P. Brock and Kenn Kaufman

America

UN P. BROCK &

• "Butterfly Landscapes of New Mexico" by Steven J. Cary



photos from www.amazon.com

Online Resources

- Butterflies and Moths of North America (a.k.a., BAMONA) www.butterfliesandmoths.org
- North American Butterfly Association
 www.naba.org
- Butterflies of America www.butterfliesofamerica.com
- eButterfly www.e-butterfly.org

web banner from www.butterfliesandmoths.org



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How to "Butterfly"

Where should you butterfly? Same places as where you like to bird:

- In town
 - Your backyard
 - Municipal parks and gardens
- In country

• Public Lands (State and National Parks, Monuments, BLM holdings, etc.)



How to "Butterfly" (cont.)

Many birding skills are useful for butterflying:

- Active scanning of your surroundings
- Recognition of field marks: size, shape, color, pattern, flight characteristics
- Recognition of habitats and ecology as it applies to species
 - Landforms (mountains, canyons, plains, hilltops, arroyos)
 - Habitats (woodlands, wetlands, desert basins)
- Seasonality
 - Knowing residents vs. migrants/strays

You can often get closer to butterflies than birds; however, you can't hear butterflies! (Mostly not, anyway. [see Yucca Giant-skipper* on slide 30; the wingbeats of this butterfly are actually audible])



How to "Butterfly" (cont.)



When is the best time to butterfly?

- In our area, butterflies may be active year round—even in the dead of winter (if it is a mild winter); solid butterflying can be accomplished from March through October.
- Butterflies tend to be most active when temperatures reach about 80-100 degrees.
- After wet periods when there is green-up and blooming of flowers.
- Depends on what butterflies you are looking for.

How to "Butterfly" (cont.)

Tips for elevating your butterflying skills:

- Learn to be more patient
- Get out there—and frequently!
- Learn about local plants
 - Host plants, food plants, roosting/perching plants

Modified figure from Leite et al. 2013

- Take lots of photos; also, organize them
 - I have learned a lot by visiting and revisiting my extensive photo archive
- Knowing anatomy/morphology—esp. of the wings—will help
 - Dorsal, ventral views very important!
 - Descriptions of field marks reference wing structure

Small in Size, Large in Luster

- When many of us think of butterflies, what come to mind are the larger species —the ones with bright colors and bold patterns.
- Some of the smaller and less flashy butterflies (e.g., Henry's Elfin [*Callophrys henrici*; photos below], however, can really wow you if you don't overlook them.

Seasons Change

Butterflies are fragile and ephemeral

• Worn butterflies may look much different than fresh ones

Some species have seasonal forms

- Winter forms tend to be less brightly colored
- Some even show changes in size and wing morphology

What Butterflies Do We Have Here?

- New Mexico has 300+ species; southern NM has roughly 160 species.
- Since 2015, I have observed right around 100 species on WSMR and in the greater Las Cruces area.
- Six families of butterflies:
 - 1. Papilionidae (Swallowtails)
 - 2. Pieridae (Whites and Sulphurs)
 - 3. Lycaenidae (Blues, Hairstreaks, Elfins)
 - 4. Riodinidae (Metalmarks)
 - 5. Nymphalidae (Brushfoots)
 - 6. Hesperiidae (Skippers)

Papilionidae (Swallowtails)

Two-tailedSwallowtail (Papilio multicaudata)

- Among the largest butterflies, they can have a wingspread as large as your open hand
- Our largest and one of our most common and widespread (particularly in wild lands) is the Twotailed Swallowtail (*Papilio multicaudata*)
 - Host plants: ash, hoptree, chokecherry
 - Food plants: various; often seen nectaring on thistles

Papilionidae (Swallowtails)

1 Subfamily

• Papilioninae (Swallowtails)

Giant Swallowtail (Papilio cresphontes)

male

Black Swallowtail (Papilio polyxenes)

female

Pieridae (Whites and Sulphurs)

- Several of the most commonly encountered and widespread species in our area come from this family.
- A sulphur known as the Brimstone (*Gonepteryx rhamni*) inspired the term "butterfly"—British naturalists referred to it as the "butter-coloured fly."

Pieridae (Whites and Sulphurs)

2 Subfamilies:

male

- 1. Pierinae (Whites)
- 2. Coliadinae (Sulphurs)

Southwest Orangetip (Anthocaris thoosa)

> yellowish female

> > emale

23

Southern Dogface (Zerene cesonia)

color variants

female

male

69

0

Lycaenidae (Gossamer-wings)

- After Nymphalidae (Brushfoots), this is the second largest family of butterflies worldwide.
- Interesting fact: many Lycaenids share a symbiotic relationship with certain ant species
 - In some cases, larvae produce a nectar-like substance which the ants feed on; the ants then protect the developing larvae.
- Our smallest butterfly—Western Pygmy-blue (*Brephidium exilis*) belongs to this family.

2 Subfamilies:

1. Theclinae (Hairstreaks)

2. Polyommatinae (Blues)

Great Purple Hairstreak (Atlides halesus)

> Silver-banded Hairstreak (Chlorostrymon simaethis)

Ceraunus Blue 25 (Hemiargus ceraunus)

Riodinidae (Metalmarks)

Palmer's Metalmark (Apodemia palmeri)

1 Subfamily

- Riodininae (True Metalmarks)
- Historically considered a subfamily in Lycaenidae but has more recently been assigned to its own family; taxonomic relationships regarding status of "Mormon complex" metalmarks is unresolved [see Mexican Metalmark, above right]

Mexican Metalmark (Apodemia duryi)

> Fatal Metalmark (Calephelis nemesis)

Nymphalidae (Brushfoots)

- Worldwide, this is the largest family, and it has lots of flashy member species. I'll bet you've heard of at least one of them (Monarchs, anyone?).
- In our area, definitely one of the most well-represented families (In my records since 2015, species numbers for Hesperiidae (Skippers) are neck-in-neck with Nymphalidae: about 30 species each.).

Nymphalidae (Brushfoots)

Variegated Fritillary

8 Subfamilies

- 1. Libytheinae (Snouts)
- 2. Danainae (Milkweed Butterflies)
- 3. Heliconiinae (Longwings)
- 4. Limenitidinae (Admirals)
- 5. Apaturinae (Emperors)
- 6. Nymphalinae (True Brushfoots)
- 7. Charaxinae (Leafwings)
- 8. Satyrinae (Satyrs)

Tropical Leafwing (Anaea aidea)

Hackberry Empero

Red Satyr (Megisto rubricato

28

caterpillar

6995

American Snout (Libytheans carinenta)

> Mourning Cloak (Nymphalis antiopa)

> > adult

Hesperiidae (Skippers)

Common Checkered-skipper (Pyrgus communis) and

> White Checkered-skipper (Pyrgus albescens)

> > Fiery Skipper (*Hylephila phyleus*)

So you were out birding and missed seeing any sparrows.... Great news! You can still torment yourself with the "sparrows" of the butterfly world.

- Small size
- More subdued colors
- More subtle differences between species

Dotted Roadside-skipper (Amblyscirtes eos)

Erichson's White-skipper (Heliopyrgus domicella)

Hesperiidae (Skippers)

3 Subfamilies

- 1. Pyrginae (Spread-wing Skippers)
- 2. Hesperiinae (Grass Skippers)
- 3. Megathyminae (Giant-skippers)

Yucca Giant-skipper (*Megathymus yuccae*)

Questions?

Question Mark (Polygonia interrogationis)

Check out my coloring book, "Wild Coloring" https://www.blurb.com/books/6907492-wild-coloring

