# The Black Range Naturalist

Volume 5, Number 2
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## Contents and Contributors

This issue of the Black Range Naturalist is broken into four major sections:

- "Butterflies: It's All About the Caterpillars," by Steve Cary;
- A species listing of those *Lepidoptera* found in the Black Range which are depicted in this issue. The listings include images, links to additional images and/or information, and in some cases a natural history narrative. These species accounts and images have been contributed by the individuals listed below;
- A series of articles on various aspects of the natural history of *Lepidoptera* by James Von Loh and Nichole Trushell; and
- A short reference listing. There is a great deal of information available on butterflies and moths and their various life stages. In this section we point you to some of the standard sources as well as to some very good ones which you may not have heard about.

All of the species described in this issue are found in the Black Range, and most of the photographs included in this issue were taken in the Black Range. We have, however, reached a bit farther afield, using the images of James Von Loh and Gordon Berman from the Organ Mountains and Las Cruces to our east and images from Ron Parry's website (moths from the Big Burro Mountains south of Silver City). A limited series of photographs by Todd Stout and Berry Nall are also used. These photographs were taken farther afield.

This issue is a compilation of work done by the following: Bob Barnes, Gordon Berman, Steve Cary, Véronique De Jaegher, Margie Gibson, Rebecca Hallgarth, Steve Morgan, Berry Nall, Debora Nicoll, Ron Parry, Todd Stout, Nichole Trushell, and James Von Loh.

## Major Narrative Contributors

Several people contributed images to this effort. Their images are attributed as they occur in the issue. Three individuals made significant narrative contributions to this issue; see the various articles for their personal attributions. They are:

- **Steve Cary.** Steve is "New Mexico's Butterfly Guy" and among other things is the author of several works, including: *Butterfly Landscapes of New Mexico*, 2009, New Mexico Magazine; *Accidental Argonaut: A Natural History of Winslow Howard*, 2020, Metalmarker Press; and *Butterflies of New Mexico* An Online Photographic Guide (https://peecnature.org/butterflies-of-new-mexico/). This last work is a primary web-based resource for anyone interested in this topic.
- **James Von Loh.** Jim is a retired biologist attaining the MS degree in biology (1977) from the University of New Mexico and the BS degree in biology (1973) from Southern Colorado State College (CSU-Pueblo). He has a broad array of biological/ecological experience through positions in environmental consulting firms, state government departments, and through participating in many assessment, impact, mitigation, and natural resource management projects with local, state, and federal agencies; private companies; and international corporations.
- **Nichole Trushell.** Nichole holds a BS in Horticulture and an MS in Botany. She worked as a field botanist and is founding Director of the Highlands Center for Natural History in Prescott, Arizona. In this article she discusses the benefits of late-blooming plants in Kingston, NM.

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# Butterflies: It's All About the Caterpillars - by Steve Cary (Photographs by Steve Cary except as noted.)

**We humans usually see butterflies in their flapping, gliding, basking incarnations, living what we might imagine as an ethereal existence with no worries, no connections, no purpose. In fact, nothing could be farther from the truth. If that is all we see, we miss the boat entirely. Nature always has purpose and it is up to us to divine that purpose, if we choose.**

**Each adult butterfly we notice wafting through the landscape, nectaring at flowers, startling at our approach, is merely the glitzy two weeks of a much more mundane, more elaborate life cycle. Adulthood is the brief, reproductively active life stage of an organism that spends most of its existence in unglamorous immature stages of ovum (egg), larva (caterpillar) and chrysalis (pupa). In those developmental stages it tends to be well hidden and largely motionless. We don't see them much!**

**After mating, each female begins distributing eggs in her habitat. She has a few hundred to place and completion of the full task requires several days of decent weather. Each butterfly egg is about 1mm in diameter. Some species place eggs singly, while others, like Fulvia Checkerspot, *Chlosyne fulvia*, place them in bunches (see Figure 1).**

**Proper egg placement is a female's most critical task. Oviposition must be precise because each species has its own menu of plants that its caterpillars will eat; in the vernacular, those are host plants. Some butterfly species are very specialized and use only a single species of plant. For most it is one or more genera within a particular family. For a few generalist butterfly species, one or more entire plant families may be utilized.**

**Placement of an egg on a plant that is not on the menu for that butterfly is an error that usually results in starvation and death. If the individual that crawls out of that egg does recognize the substrate plant as food, then it starts walking, and it lacks resources to go very far. Ergo, this relationship between host plant and herbivore (butterflies here, but all other herbivorous insects, too) often amounts to a sacred connection. Without the plant, the butterfly is kaput. Of course, plants have their points of view, too. Plants prefer not to be chewed on and many have evolved various ways of deterring herbivory: physical and chemical. Herbivores that successfully overcome or stay ahead of various barriers thrown up by plants through natural selection often evolve an exclusivity, which becomes part of the sacredness.**

***

**Some butterfly life cycles are more conveniently observed in your flower or vegetable garden than in nature. Black Swallowtails, for example, *Papilio polyxenes*, are hosted by plants in the carrot family, *Apiaceae* (see figure 2). The Black Range is home to many native Apiaceae including mountain parsley, cow parsnip, poison hemlock, and water hemlock.**

*Figure 1. Fulvia checkerspot eggs on its host, Indian Paintbrush*

*Figure 2. Black swallowtail female placing egg on Apiaceae inflorescence.*

*Figure 3. Mature Black Swallowtail larva*

*Figure 4. Black Swallowtail chrysalis (Dale & Marian Zimmerman)*

**The stinkier the plant, the easier it is for a female to find, and our herb gardens are home to many carrot family herbs humans have selected for their smell and flavor. Dill, fennel and parsley come to mind. All have pungent scents and all are readily found by Black Swallowtail females. Although those plants are not native to North America, they smell too good to resist.**

**Development from egg to mature larva takes a few weeks of feeding. Larvae are the eating/growing life stage for butterflies, and each individual caterpillar will fill and shed several external skins; each larval stage is called an "instar." Butterfly species vary in number of instars, from as few as 4 to as many as 7. Individuals within a species will generally go through the same number of instar stages.**

**The final instar larva sheds its last caterpillar exoskeleton and creates its next skin – the chrysalis. In this well-engineered container, each larva goes through the insect equivalent of human adolescence. During that minimum of two weeks, the individual is quite vulnerable and quite a score for a hungry bird or lizard. To avoid discovery, most species (like the Black Swallowtail - see figure 4) make chrysalids that are well disguised, for example as a dead, curled leaf still attached to a stem. Upon completion of metamorphosis, a winged, sexually mature adult emerges and, having completed the full cycle, we are back to the reproductive stage.**

**It is the needs of the larvae, not the adults, which drive the timing of each species' life cycle. The cycle is timed to ensure that larvae have the largest amount of the most nutritious food possible. Consider the Sara Orangetip, *Anthocharis sara*, which feeds particular native mustards to their larvae (see figure 5). The mustards in question have their own life cycle in which they sprout early in spring, grow, bloom, produce seeds and senesce, turning crunchy dry. All that transpires in a six-week period, typically between late March and early May, depending on elevation. Let's do the math: adults emerge from their chrysalids early in spring and mate; females place eggs on plants early in that mustard growth window; eggs hatch and youngsters have a few weeks to eat, grow, mature and pupate before the plants become inedible. Sara Orangetips enter diapause as pupae, then emerge as adults the following spring. That's one example. Many other plant species are edible for longer periods and so their herbivore butterflies may be able to complete two or three generations each warm season.**

**Because caterpillars do all the eating and growing, they are mercilessly targeted by predators and parasitoids. Migratory songbirds, for example, essentially raise their young on a diet of *Lepidoptera* larvae. Adult birds arrive in spring looking to nest. Like many prospective parents, they scout their surroundings, assess the developing food supply, and then locate and initiate their nesting so the neighborhood caterpillars are at their beefiest right when nestling birds need them.**

**This translates into considerable selective pressure on butterfly (and moth) larvae. Through survival of the better adapted forms, this has produced myriad defenses in caterpillars. Different butterfly species have evolved various defensive structures, deceptive appearances or protective behaviors to protect their larvae from bird predation. Here are some examples.**

*Figure 5. Sara Orangetip larva*

*Figure 6. Larva of Queen eating milkweed*

*Figure 7. Western Giant Swallowtail larva, osmeterium at left (Dale & Marian Zimmerman)*

**Larvae of some butterflies have evolved the ability to eat and tolerate noxious or bad-tasting plants, to store the nasty chemicals and then themselves become distasteful to birds. These bad-tasting species include the Monarch, *Danaus plexippus*, famously, but also the Queen, *Danaus gilippus* (see figure 6) , the Pipevine Swallowtail, *Battus philenor,* and the Viceroy, *Limenitis archippus,* and numerous others. Naive young birds typically go for them once, get a taste, then never try them again.**

**Not surprisingly, many butterfly larvae spend a lot of time on leaves, feeding. This would seem to be a very exposed and dangerous situation for a protein-rich prey item, but there are some work-arounds. For example, caterpillars of some species feed at night. Others feed from the leaf undersides and thus stay largely out of view.**

**Some caterpillars have come to resemble bird droppings (like Red-spotted Admirals and many swallowtails) and may feed on leaf uppersides in relative safety. After all, bird droppings are not on the menu for most birds. Such hiding in plain sight works until a larva become too large to pass as a bird dropping, so of course larger instars usually adopt another appearance.**

**Larvae of many swallowtail butterflies pack a stinky organ (osmeterium) tucked behind their head. When threatened, they evert the odiferous osmeterium to encourage birds to release them. Figure 7 suggests it pays to not merely look like bird poop, but to smell like bird poop, too.**

**Many skippers and some brushfoot butterflies have larvae that can produce silk. Some use the silk to construct loose shelters which offer reasonable refuge from predators and parasitoid insects. These caterpillars spend down time in the "nest" but must leave it to feed or to molt. In Figure 8 (see following page) , a Painted Lady caterpillar has silked together some lupine leaflets and is essentially invisible beneath the silken tangle.**

*Figure 8. Painted Lady larva in its silk shelter*

**A wide array of flies and wasps have life cycles that specify placement of their own eggs into the bodies of growing *Lepidoptera* larvae. Fly and wasp larvae consume the butterfly caterpillar from the inside, usually resulting in death of the larva. Against parasitoids such as these, *Lepidoptera* larvae deploy various physical, chemical and behavioral defenses. One of the more popular defenses is to have an exoskeleton with plenty of protruding spines, bristles or hairs to discourage other insects from landing. These devices are very popular among the brushfoots (see Figure 9).**

*Figure 9. Question Mark larva showing branched spines*

**Among the more exotic adaptations to discourage parasitoids, many blues and hairstreaks exhibit a phenomenon termed myrmecophily which translates as "ant-love." Myrmecophily is a mutualism whereby butterfly larvae have specialized glands which secrete sugary fluids that are highly desired by particular ants. As we have all seen with aphids, the ants return the favor by chasing off parasitoid insects seeking to place eggs in the slug-like caterpillars, see Figure 10. For some butterfly species, this mutually beneficial partnership continues as the larva crawls down the host plant stem to pupate in the soil, where ants continue to care for the larva until it is safely pupated. Upon**

*Figure 10. Silvery Blue larva attended by ants as it feeds on lupine*

**eclosing, the adult butterfly crawls up and out of the soil and gets on with business.**

**Despite all their wide-ranging adaptations to avoid predation and parasitism, *Lepidoptera* larvae remain nutritious prey for predators and, thus, vital components of terrestrial food webs. For example, consider a large, stable population of any species such as Fulvia Checkerspot. Each mated pair of adult butterflies generates about 300 eggs, representing genetic contributions from those two adults. How many of those 300 eggs need to survive to reproductive adulthood in order for the overall population to maintain stable numbers? The answer is two (2). The other 298 individuals get gobbled along the way. Those are the brass tacks of insects' reproductive strategy: overwhelm with numbers; most will be eaten, but enough will survive to keep the species going, and the ecosystem is nourished along the way.**

**Black Range life zones and habitats are chock full of plants that host your local butterflies. When you find a mated female butterfly in your ramblings, follow her and watch to see where she places her eggs. A mated female will be business-like, trying not to be noticed, checking carefully among the shrubbery to find something on her menu. She may disappear for a minute, then reappear and continue on her mission. What plant does she choose? This is the vital question that you must answer. When you see a caterpillar (hallelujah!), do everything required to figure out what plant it is eating. Check your field guide or take a sample and consult a botanist. Take the caterpillar home and continue to feed it whatever it was eating in nature. When you know the plant and can see what butterfly (or moth) it becomes as an adult, you have cracked the sacred code for that species.**

# Species Depicted in This Issue

| *Latin Binomial* | English Common (Page Number) | *Latin Binomial* | English Common (Page Number) |
|---|---|---|---|
| *Abaeis mexicana* | Mexican Yellow (8, 71, 72, 73, 74, 84) | *Cissia rubricata* | Red Satyr (21) |
| *Abaeis nicippe* | Sleepy Orange (9, 71, 72, 73, 74, 75, 83, 93, 106) | *Colias eurytheme* | Orange Sulphur (22, 93, 106, 109, 110, 122, 127) |
| *Adelpha eulalia* | Arizona Sister (10) | *Colias philodice* | Clouded Sulphur (23) |
| *Agraulis vanillae* | Gulf Fritillary (11( | *Copaeodes aurantiaca* | Orange Skipperling (134) |
| *Anaea andria* | Goatweed Butterfly (79) | *Cyllopsis pertepida* | Canyonland Satyr (24) |
| *Ancyloxpha arene* | Tropical Least Skipper (89, 134) | *Danaus glippus* | Queen (4, 25, 26, 28, 82, 86, 97, 108, 109, 111, 114, 118) |
| *Anthocharis thoosa* | Southwestern Orangetip (13) | *Danaus plexippus* | Monarch (25, 26, 27, 28, 76, 86, 97, 108, 109, 111, 114, 115, 116, 117, 135, 136) |
| *Ascalapha ordorata* | Black Witch Moth (14) | *Dymasia dymas* | Tiny Checkerspot (29, 78) |
| *Asterocampa celtis* | Hackberry Emperor (14, 76, 80) | *Dysschema howardi* | Great Northern Flag Moth (30) |
| *Atalopedes campestris* | Sachem (133) | *Echinargus isola* | Reakirt's Blue (30, 71, 79, 92, 101) |
| *Athanassa texana* | Texas Crescent (14) | *Erynnis brizo* | Sleepy Duskywing (31) |
| *Atlides halesus* | Great Purple Hairstreak (15, 126) | *Erynnis funeralis* | Funereal Duskywing (32, 103) |
| *Autochton cellus* | Golden-banded Skipper (15) | *Erynnis telemachus* | Rocky Mountain Duskywing (33) |
| *Automeric cecrops* | Cecrops-eyed Silkmoth (15, 16) | *Erynnis tristis* | Mournful Duskywing (33) |
| *Battus philenor* | Pipevine Swallowtail (16, 17, 108, 121) | *Euchaetes antica* | (34) |
| *Brephidium exile* | Western Pygmy Blue (17, 100, 110, 131) | *Euphyes vestris* | Dun Skipper (35) |
| *Burnsius albescens* | White-checkered Skipper (17, 18, 70, 71, 76, 78, 92, 100, 105) | *Euptoieta claudia* | Variegated Fritillary (36, 78, 85, 93, 107, 110, 121, 122) |
| *Burnsius communis* | Common Checked Skipper (18, 109, 113) | *Eurema proterpia* | Tailed Orange (37, 74) |
| *Caenurgina erechtea* | Forage Looper (18) | *Euscirrhopterus cosyra* | Staghorn Cholla Moth (38) |
| *Calephelis nemsis* | Fatal Metalmark (102, 127) | *Euscirrhopterus gloveri* | Purslane Moth (38) |
| *Callophrys gryneus* | Olive Juniper Hairstreak (19) | *Gyrocheilus patrobas* | Red-Rim Satyr (39) |
| *Chlosyne fulvia* | Fulvia Checkerspot (2, 19) | *Helicoverpa zea* | Corn Earworm Moth (39, 40) |
| *Chlosyne lacinia* | Bordered Patch (19, 125) | *Hemaris diffinis/thetis* | Rocky Mountain Clearwing (40) |
| *Chlosyne theonas* | Theona Checkerspot (20, 78) | *Hemiargus* ceraunus | Ceraunus Blue (40, 110) |
| *Chrysoecia atrolinea* | (21) | *Hylephila phyleus* | Fiery Skipper (41, 92, 101, 133) |

| *Latin Binomial* | English Common (Page Number) | Latin Binomial | English Common (Page Number) |
|---|---|---|---|
| *Hyles lineata* | White-lined Sphinx Moth (41, 42, 43, 44, 45, 46) | *Phyciodes picta* | Painted Crescent (90, 103, 129) |
| *Hypantria cunea* | Fall Webworm Moth (47) | *Phyciodes pulchella* | Field Crescent (60) |
| *Icaricia lupini* | Lupine Blue (48) | *Phyciodes tharos* | Pearl Crescent (103) |
| *Junonia coenia* | Common Buckeye (48) | *Pieris rapae* | European Cabbage White (60, 88, 104, 127) |
| *Junonia grisea* | Gray Buckeye (49, 80, 88, 102, 105, 123, 124) | *Plebejus acmon* | Acmon Blue (61) |
| *Leptostales rubromarginaria* | Dark-ribboned Wave (49, 50) | *Plebejus melissa* | Melissa Blue (130) |
| *Leptotes marina* | Marine Blue (50, 89, 130) | *Polygonia gracilis* | Hoary Comma (61) |
| *Libytheana carinenta* | American Snout (50, 78, 103, 128) | *Polygonia interrogationis* | Question Mark (5, 61, 62, 76, 77, 85) |
| *Limenitis archippus* | Viceroy (118) | *Polygonia satyrus* | Satyr Comma (62) |
| *Limenitis arthemis* | Red-spotted Purple (Admiral) (51, 76, 82) | *Polites (Yvretta) carus* | Carus Skipper (102, 132) |
| *Limenitis weidemeyerii* | Weidemeyer's Admiral (51) | *Pontia protodice* | Checkered White (62, 88, 92, 94, 106, 122) |
| *Litocala sexsignata* | Litocala Moth (52, 53) | *Pontia sisymbrii* | Spring White (62) |
| *Lon taxiles* | Taxiles Skipper (53) | *Pterourus multicaudata* | Two-tailed Swallowtail (82) |
| *Loxostege (species)* | (53) | *Pterourus rutulus* | Western Tiger Swallowtail (63) |
| *Manduca quinquemaculata* | Five-spotted Hawkmoth (53 | *Speyeria hesperis* | Northwest Fritillary (63) |
| *Mestra amymone* | Common Mestra (54) | *Spodoptera ornithogalli* | Yellow-striped Armyworm (63, 64, 65) |
| *Nathalis iole* | Dainty Sulphur (54, 79, 92, 113, 128, 135) | *Staphylus ceos* | Golden-headed Scallopwing (65) |
| *Nymphalis antiopa* | Morning Cloak (55, 77, 119) | *Strymon melinus* | Gray Hairstreak (65, 88, 101, 128) |
| *Pachysphinx occidentalis* | Big Poplar Sphinx (55) | *Thorybes pylades* | Northern Cloudywing (66, 78) |
| *Papilio multicaudata* | Two-tailed Swallowtail (56, 57, 58) | *Vanessa annabella* | West Coast Lady (66) |
| *Papilio ornythion* | Ornythion Swallowtail (58) | *Vanessa atalanta* | Red Admiral (66, 67, 123) |
| *Papilio polyxenes* | Black Swallowtail (2, 3, 59, 99, 119, 120) | *Vanessa cardui* | Painted Lady (5, 67, 68, 76, 86, 107, 123, 135) |
| *Phoebis sennae* | Cloudless Sulphur (60, 74, 84, 127) | *Vanessa virginiensis* | American Lady (68, 69, 107, 109 ) |
| *Pholisora cattullus* | Common Sootywing (60, 78) | Zerene cesonia | Southern Dogface (69, 71, 75, 106, 110 , 122, 135) |

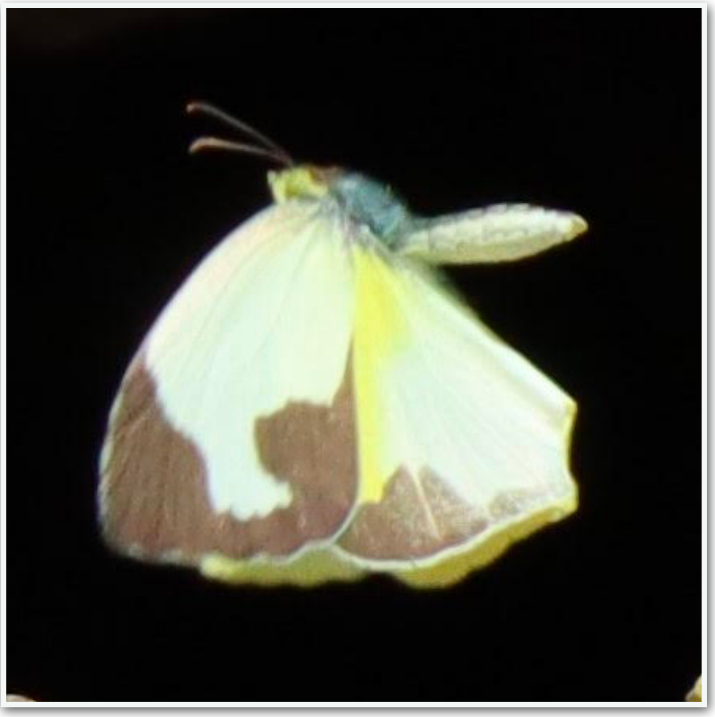
# The Species With Links to Additional Images

## Mexican Yellow
## *Abaeis mexicana*

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

***Abaeis mexicana*, Mexican Yellow**
**Above: Photographed in Carbonate Creek Canyon, Black Range.**

**The Mexican Yellow, *Abaeis mexicana* (Boisduval, 1836), 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. This 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.**



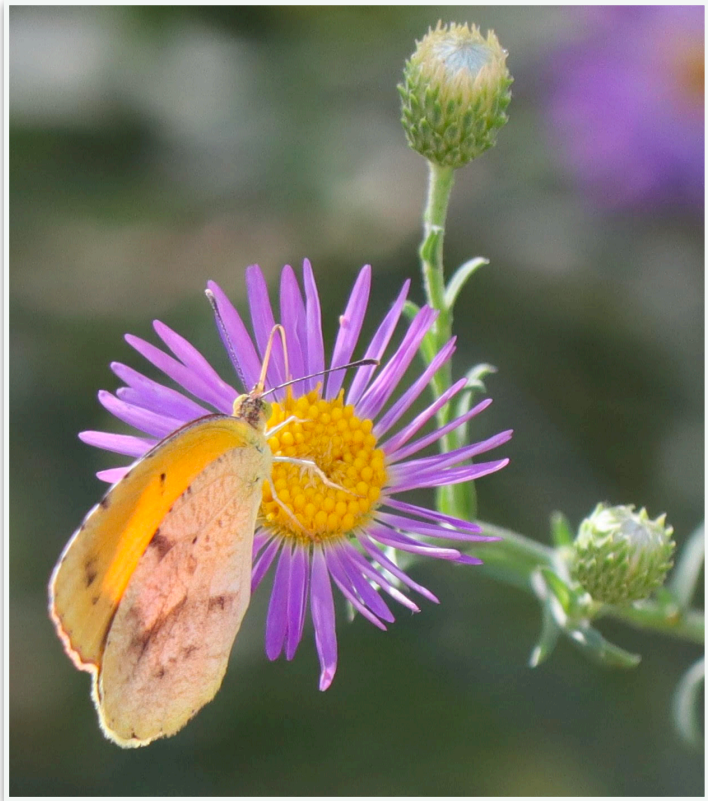
**Photograph by James Von Loh, along the Rio Grande at Las Cruces.**

## Sleepy Orange
## *Abaeis nicippe*

**The Sleepy Oranges, *Abaeis nicippe* (Cramer, 1779), pictured below were taking nutrients from moist soil. This is another species recently moved to *Abaeis* from *Eurema*.**

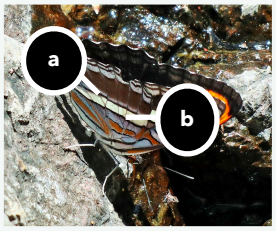
***Abaeis nicippe*, Sleepy Orange**
**Photographed east of Hillsboro, Black Range.**

**Sleepy Orange near Soledad Canyon Waterfall, Organ Mountains.**
**Photograph by Gordon Berman.**



**The photograph to the left and the two above were taken by James Von Loh along the Rio Grande at Las Cruces.**

## Arizona Sister
## *Adelpha eulalia*



**The taxonomic order in which we present species in is not universally accepted. The Arizona Sister, *Adelpha eulalia* (Doubleday, 1848), is considered to be a subspecies of the California Sister (*Adelpha bredowii*) by some authorities, for instance. 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, 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. It is distinguished from the California Sister by the fact that the lilac band ("a"), above the strong horizontal white bar is stronger and straighter and by the lack of an added orange spot ('b') just below the white bar. Butterfly identification must often rely on subtle differences. Note that these features are not apparent on the top of the wing.**

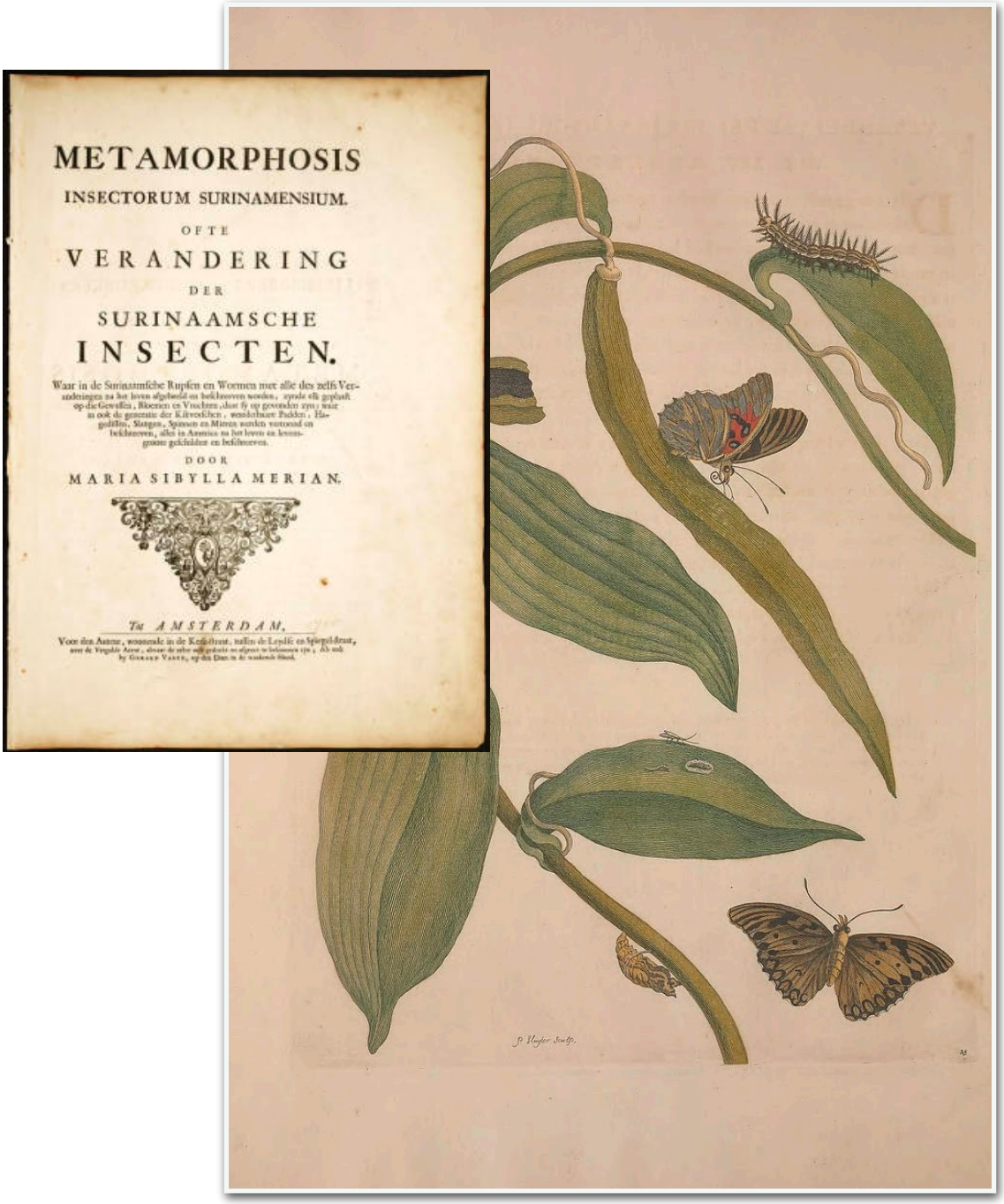
**Above: Gulf Fritillary - *Agraulis vanillae***
**Photographed at Lake Valley in the Black Range of New Mexico by Debora Nicoll**

## Gulf Fritillary
## *Agraulis vanillae*

**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.**

**We have gone afield to obtain an image of the chrysalis of this species. The one shown here was photographed by José Roberto Peruca.**

**Gulf Fritillary - *Agraulis vanillae,* caterpillar.**
**Photographed by Margie Gibson in Silver City, Grant County, NM.**



METAMORPHOSIS
INSECTORUM SURINAMENSIUM.
OFTE
VERANDERING
DER
SURINAAMSCHE
INSECTEN.
Waar in de Surinaamsche Rupsen en Wormen met alle des zelfs Veranderingen zo het leven afgebeeld en beschreven worden, zyndeelk geplaatst op de Gewassen, Bloemen en Vruchten, daar sy op gevonden zyn; waar in ook de generatie der Kikvorsschen, wonderbaare Padden, Hagedissen, Slangen, Spinnen en Mitten worden vertoond en beschreven, alles in America zo het leven en levensgroote geschilder en beschreven.
DOOR
MARIA SIBYLLA MERIAN.
Tot AMSTERDAM,
Voor den Autheur, woonende in de Kerkstraat, tusschen de Leydsche en Spiegelstraat, aen de Vergulde Arend, daar de zelve selfgedruckt en afgeverd te bekomen zyn, Als ook by GERARD VALCK, op den Dam in de wassende Bloem.

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

## Maria Sibylla Merian

**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 above shows the complete life cycle of the Gulf Fritillary. Showing the complete life cycle of an insect was a ground breaking concept. It 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.**

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

## Southwestern Orangetip
## *Anthocharis thoosa*

**The photographs of Southwestern Orangetip, *Anthocharis thoosa* (Scudder, 1878), 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*.**

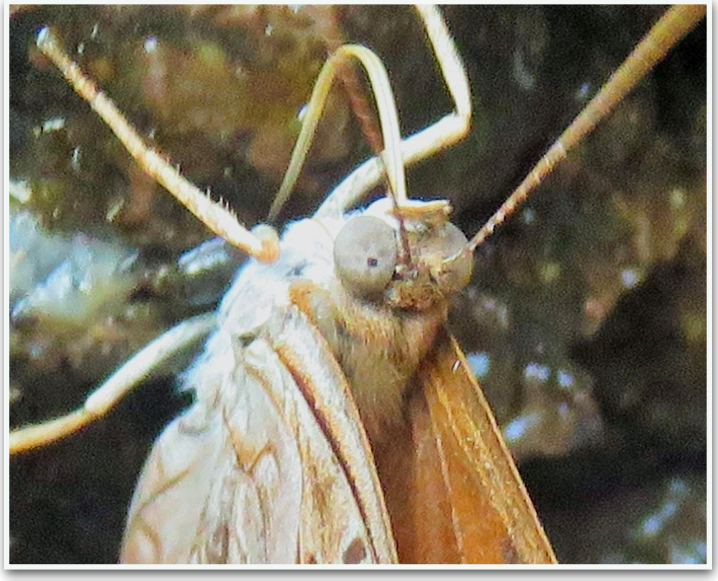
***Ascalapha odorata*, Black Witch Moth**
**Photographed in Hillsboro, Black Range, July 2015.**

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

## Hackberry Emperor
## *Asterocampa celtis*

***Asterocampa celtis*, Hackberry Emperor**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**

**The Hackberry Emperors, *Asterocampa celtis* (Boisduval & Le Conte, 1835) pictured below were taking nutrients from bedrock seeps in Soledad Canyon in the Organ Mountains. This type of behavior is discussed, in depth, in a later article in this issue. Both photographs are by Gordon Berman.**



**Immediately Above: Texas Crescent, *Athanassa texana* (W. H. Edwards, 1863), taking nutrients from cobble-covered moist soil near the Soledad Canyon Waterfall (James Von Loh).**

## Great Purple Hairstreak, *Atlides halesus*

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 smaller photo by Todd Stout below). 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.

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

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

## Golden-banded Skipper, *Autochton cellus*

The *Autochton cellus*, Golden-banded Skipper, shown below was photographed in Railroad Canyon, Black Range, in July 2017. 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.

## Cecrops-eyed Silkmoth, *Automeris cecrops*

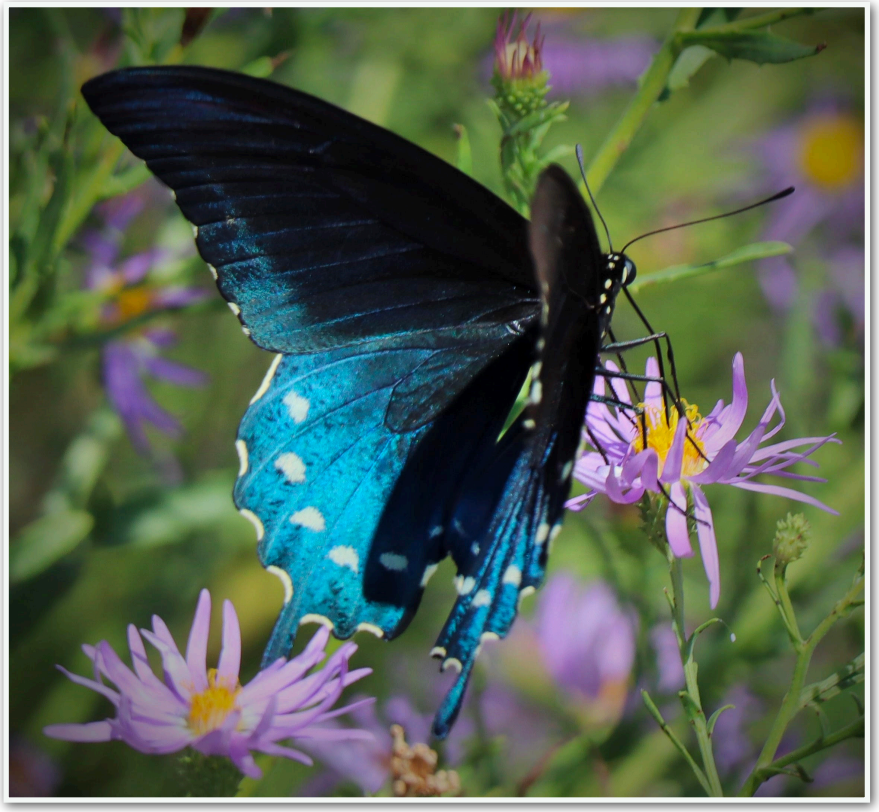
This species is found from the southwestern United States (west of the Rio Grande) south into Mexico. There are three recognized subspecies. Early stage instars will often feed together as a group, but later stage instars are more solitary. Cecrops-eyed Silkmoth instars feed on Fendler Ceanothus, Catclaw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

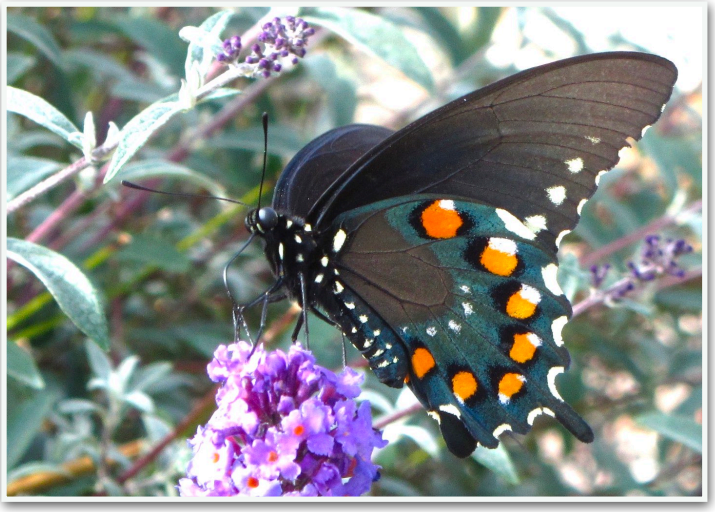
Ron Parry captured this *Automeris cecrops* in the Big Burro Mountains, Grant County, during June 2015. This image is posted on his website at this link.

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

**Pipevine Swallowtail, *Battus philenor* (Linnaeus, 1771).**

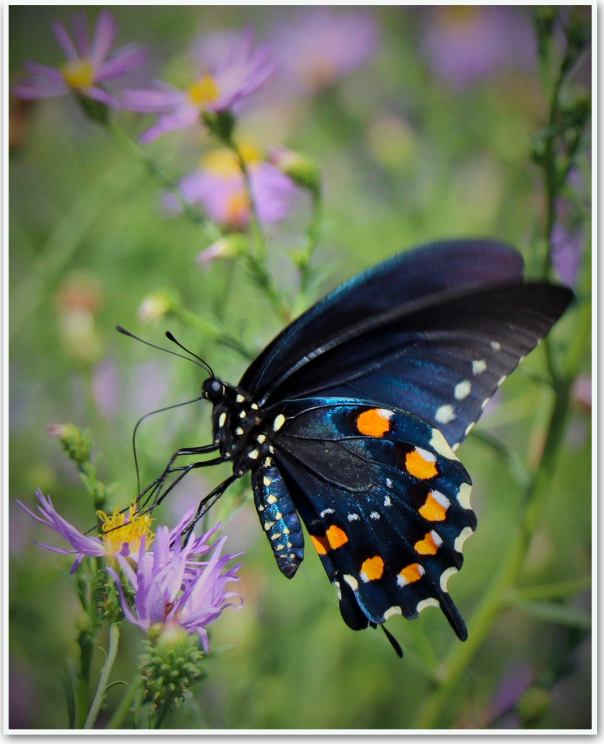
**The Pipevine Swallowtail is occasionally observed nectaring from Spine-aster flowers along the Rio Grande at Las Cruces. Its fluttering style of nectaring makes it a challenge to photograph. Photographs at right and middle left on the following page are by James Von Loh.**





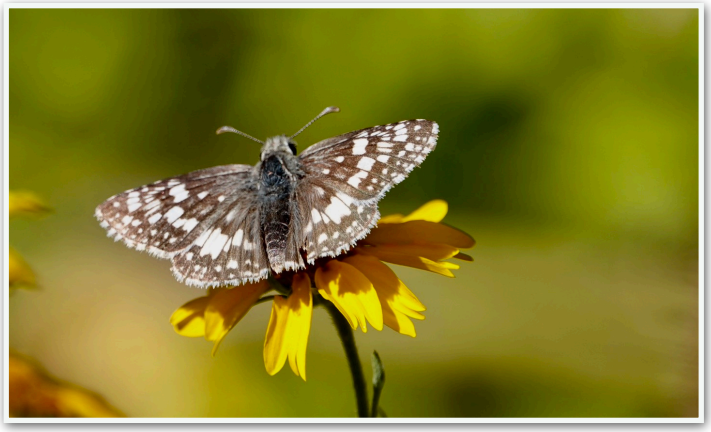
**Above: *Battus philenor*, Pipevine Swallowtail**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**

**Western Pygmy Blue, *Brephidium exile* (Boisduval, 1852). Photographed along the Rio Grande in Las Cruces by James Von Loh.**



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

***Brephidium exile*, Western Pygmy Blue**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**
**This is the smallest butterfly in North America.**

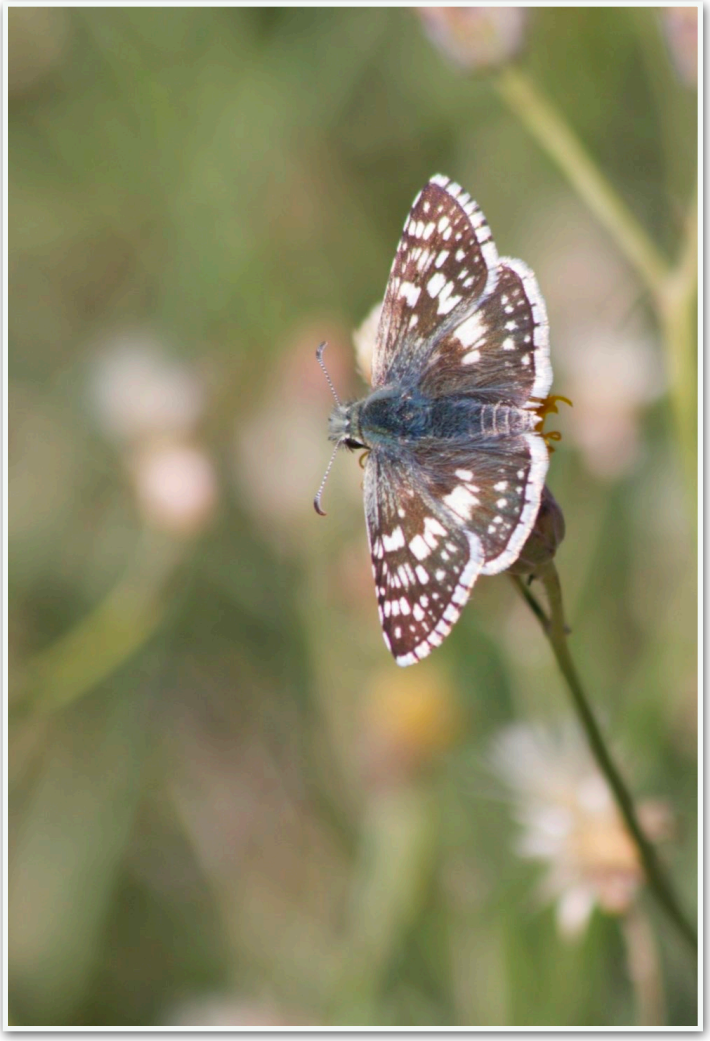


***Burnsius albescens*, White Checkered Skipper**
**Photographed in Hillsboro, Black Range, October 2021.**

## Common & White Checkered-skipper
## *Burnsius albescens/communis*

**James Von Loh took the first two photographs, of White Checkered-skippers, *Burnsius communis* (Grote, 1872), taking nutrients from moist soil and gravel at the Soledad Canyon Trailhead, Organ Mountains. Note the cautionary note at the lower right.**

**James Von Loh took this image (right) of a White Checkered-skipper, Burn*sius albescens* (Plotz, 1884) (Burnsius Complex) along the Rio Grande. This individual's dorsal wing surface reflected coppery in the sun.**



***Burnsius communis*, Common Checkered Skipper**
**This individual was photographed in the Florida Mountains. Other gallery images are from Wicks Canyon east of Hillsboro, Black Range.**

**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.**

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

***Callophrys gryneus*, Olive Juniper Hairstreak**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**

***Callophrys gryneus* instar.**
**Photograph by Nicky Davis. (CC BY-NC-SA 2.0)**

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

## Fulvia Checkerspot, *Chlosyne fulvia*

**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.**

## Bordered Patch
## *Chlosyne lacinia*

**Gordon Berman photographed the instars of a Bordered Patch, *Chlosyne lacinia*, at his home in Las Cruces, just west of the Rio Grande (below and at the top of following page).**

**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**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**

## Theona Checkerspot
## *Chlosyne theonas*

**James Von Loh took the photographs of Theona Checkerspot, *Chlosyne theona* (Menetries, 1855), shown at the right and at the top left of the next page. The first two photographs were taken on the Crawford Trail in the Organ Mountains, and the bottom photograph was taken along the Soledad Canyon Trail. In the first photo the ventral wing is exposed, while in the next two the dorsal view of the wings is shown.**

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

## Red Satyr
## *Cissia rubricata*

**The Red Satyrs, *Cissia rubricata* (W. H. Edwards, 1871) pictured below 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 nominate subspecies. The subspecies found west of the Rio Grande is *C. r. cheneyorum;* its coloration is more subdued than the nominate subspecies.**

**La Esperanza Vineyard and Winery, in Sherman on the west side of the Black Range, produces a wine called "Born in Space". The name of the wine refers to the town of Santa Rita, which was located (at ground level) in the middle of what is now the Chino**

open pit copper mine. The old townsite is literally in thin air. Those born there were "born in space". One of those individuals was Harrison Schmitt, former U. S. Senator from New Mexico and NASA astronaut. (He walked on the moon as part of the Apollo 17 mission.) He is shown collecting rock samples on the moon in the NASA photo above, by Eugene Cernan.

In 1949, at the age of 14, Schmitt collected a *C. r. cheneyorum* specimen in or near Silver City. That specimen is now in the collection of the Natural History Museum of Los Angeles County (18Q-04181-4182).

Orange Sulphur, *Colias eurytheme* (Boisduval, 1852). Commonly seen nectaring from Spine-aster flowers. Photographs immediately above and above right are by James Von Loh.

This group of images of the life stages of an Orange

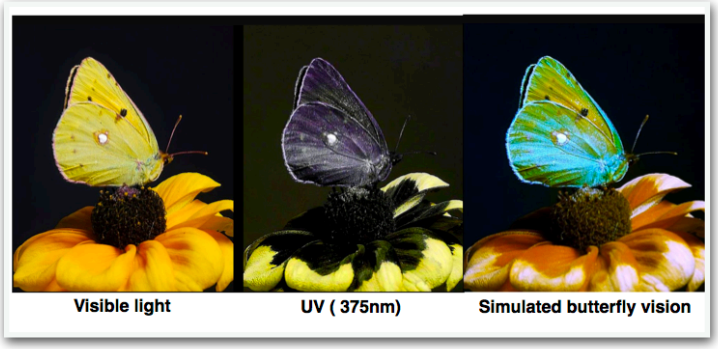
***Colias eurytheme*, Orange Sulphur**
**Photographed in Percha Creek, Black Range.**

**Clouded Sulphur taking nutrients from moist soil near the Soledad Canyon Trailhead in the Organ Mountains. Photographs by James Von Loh.**

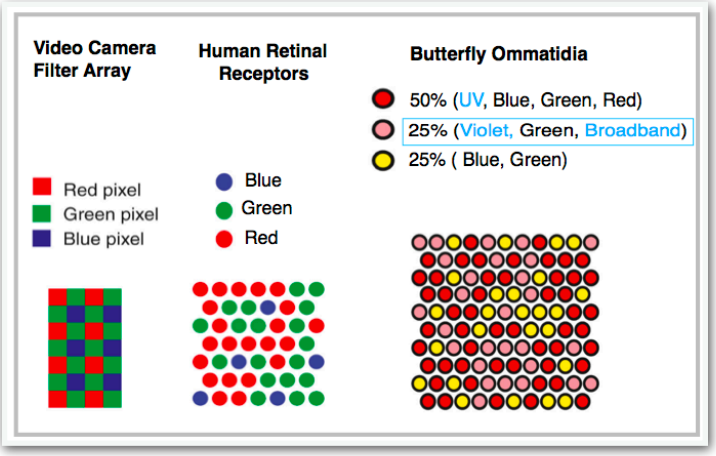
## Clouded Sulphur
## *Colias philodice*

**Clouded Sulphur, *Colias philodice* (Godart, 1819), 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, lower left, 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". This entry describes the eyesight (workings, capabilities, etc.) of butterflies in wonderful detail, and reading it is time well spent. The image below is from the same blog entry and is adapted from Almut Kelber, *Current Biology* 26:R900-902, 2016.**




**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*.**

## Canyonland Satyr
## *Cyllopsis pertepida*

**As of publication, the image directly below records the latest record in a year of Canyonland Satyr, for New Mexico (November 13, 2021). The photograph was taken in 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. Unlike many of the species referenced in this issue, the adults of this species rarely feed.**

**This species was first described by Harrison Gray Dyar , Jr. in 1912, but (probably) 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.**

**Canyonland Satyr, *Cyllopsis pertepida***

**Two images Above: These photographs were taken at the fist stream crossing on Middle Percha Road heading north out of Kingston.**
**Left: This image from May 26, 2020, was taken in Drummond Canyon, off South Percha Creek**

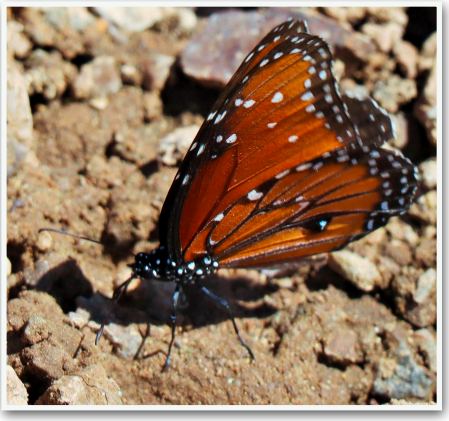
## Queen
## *Danaus gilippus*

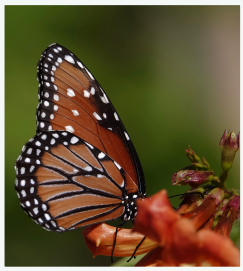
The Queen, *Danaus gilippus* (Cramer, 1775), is the most commonly observed large puddler in our area (see later article). In the two photographs of the imago stage to the right, the adult butterfly is taking nutrients from soil and water near the trailhead of Soledad Canyon in the Organ Mountains (photographs by James Von Loh).

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 to the right). 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.

Sometimes a photographer will be able to capture a good portion of both wing surfaces, as Nichole Trushell did in the bottom image on the following page. But that can be very difficult.

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. It is known as Mullerian mimicry when two species with similar natural defenses and common predators evolve to look alike, "to spread the fear".

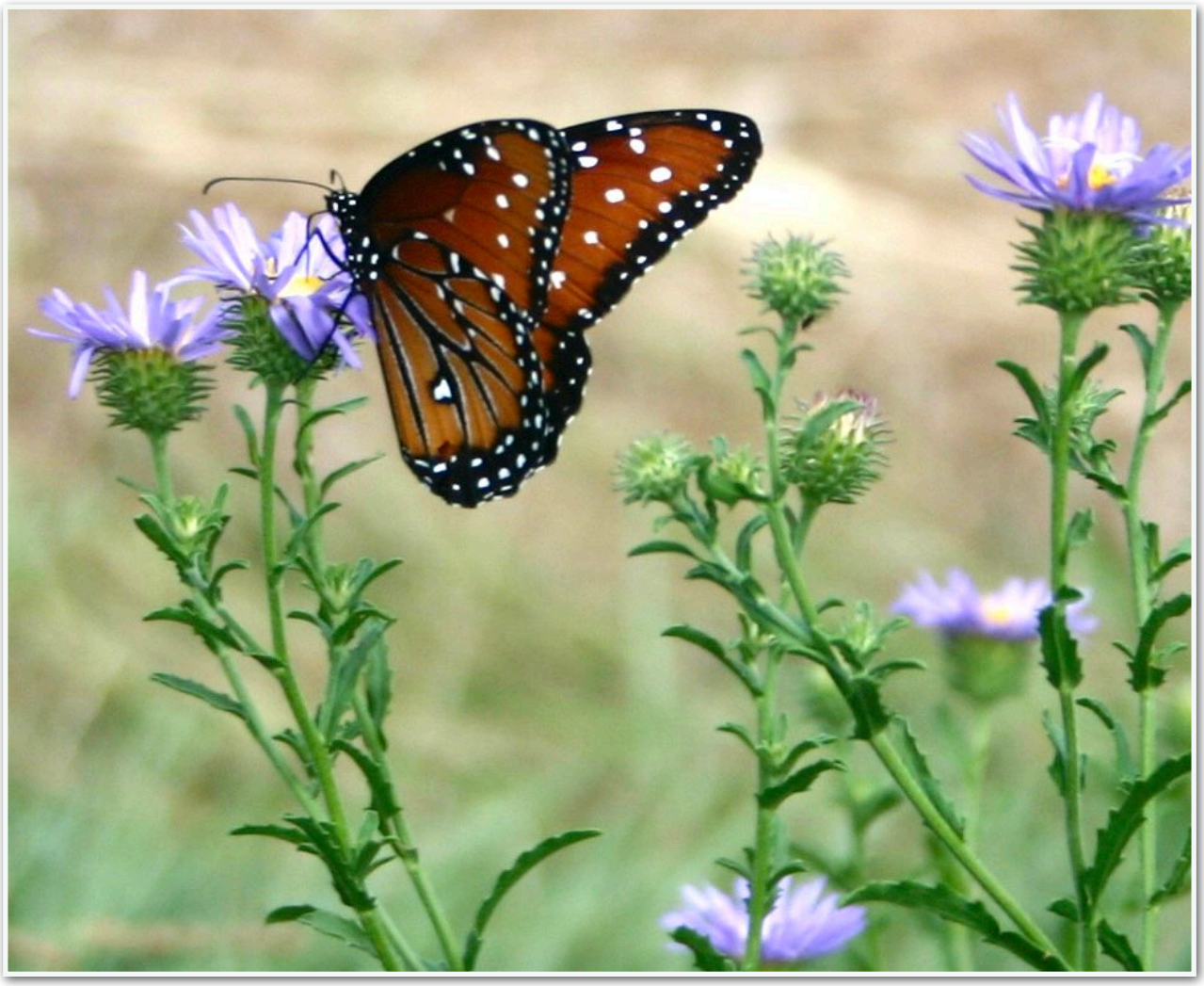




**Telling them apart: Forewing and hindwing of Queen (left) are same color; they are different colors in the Monarch (right). Monarchs do not have white spots within the orange of the forewing; Queens do.**

**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 on the previous page. The images of the pupa are of the same individual taken one day apart and were identified with the assistance of Steve Cary.**

**The butterfly stage of this species is shown to the right in a photograph taken in Hillsboro, Black Range. Video of the butterfly may be viewed here. Nichole Trushell photographed the Queen pictured below at her home in Kingston, Black Range.**



## Monarch
## *Danaus plexippus*

**There 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.**

**The photograph of the Monarch imago (butterfly) stage 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.**

**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).**

## Tiny Checkerspot
## *Dymasia dymas*

**James Von Loh took the photograph (immediately below) of two Tiny Checkerspots, *Dymasia dymas* (W. H. Edwards, 1877), 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.**

**Immediately Above: Gordon Berman took the photograph 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.**

## Giant Northern Flag Moth or Giant Northern Flag
## *Dysschema howardi*

**This species is found in Arizona, New Mexico, southwestern Texas, and Mexico.**

**The instar (left) 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.**

## Reakirt's Blue
## *Echinargus isola*

***Echinargus isola*, Reakirt's Blue**
**Photographed east of Hillsboro, Black Range, July 2017.**

**Reakirt's Blue, *Echinargus isola* (Reakirt, 1867), taking nutrients from a muddy flat near livestock pond at the Sierra Vista Trail, Organ Mountains. Photograph by James Von Loh. See instar at Berry Nall's site.**

## Sleepy Duskywing
## *Erynnis brizo burgessi*

**This Sleepy Duskywing, *Erynnis brizo* (Boisduval & Le Conte, 1837), 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.**

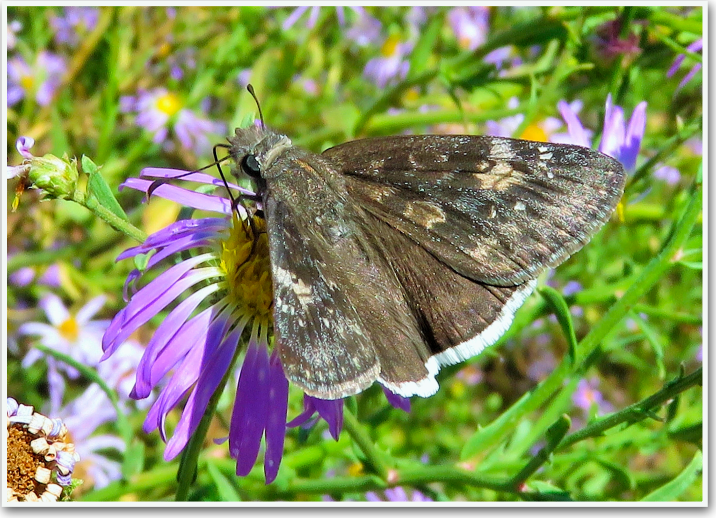
**This is a butterfly of higher elevations, from a mile to a mile-and-a-half (5200' to about 7800'). This is the life zone of several of the host plants that larvae feed on, especially oaks like *Quercus gambelii* and *Quercus emoryi* in our area.**

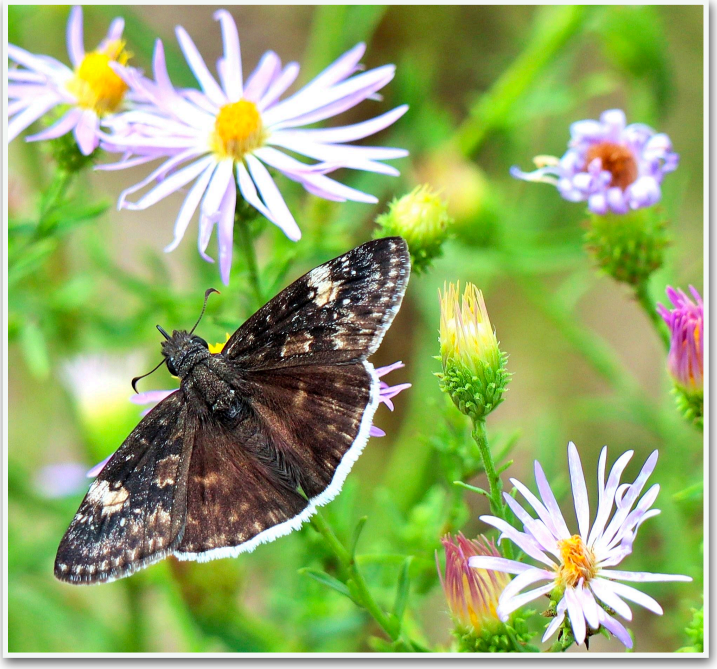
**The last instar of the larval stage will overwinter (hibernate). There is one flight per year.**

## *Erynnis funeralis*, Funereal Duskywing
**(Scudder & Burgess, 1870)**

**Top Left: Photographed on Sawyers Peak, Black Range, June 2019. 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 Spiny Aster flowers.**

**This species is found at a wide range of elevations, from about 4,000 feet to 11,00 feet.**



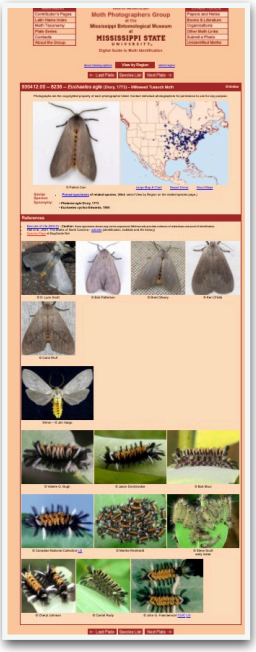


**Instar of Funereal Duskywing, an image from Berry Nall's excellent website, shown under a Creative Commons Attribution-NonCommercial 4.0 International License.**

***Erynnis telemachus*, Rocky Mountain Duskywing**
**Photographed 5 miles north of Kingston, Black Range**

**Mournful Duskywing, *Erynnis tristis* (Boisduval, 1852), taking nutrients from moist soil under gravel near the Soledad Canyon Trailhead. Photograph by James Von Loh.**

**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*

**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).***

## Dun Skipper
## *Euphyes vestris*

**The Dun Skipper, *Euphyes vestris* (Boisduval, 1852), 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, records from 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.**

**Variegated Fritillary**
***Euptoieta claudia***

**The mating Variegated Fritillaries shown above were photographed in Railroad Canyon, the individual to the right at the Hillsboro Cemetery, both locations in the Black Range. The two photographs at the bottom are by James Von Loh and Gordon Berman.**

## Tailed Orange
## *Eurema proterpia*

**These images of a Tailed Orange, *Eurema proterpia*, 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 *Pyrisitisa proterpia* by some authorities.**

**Elsewhere we note the variability found in butterflies (imago) and their instars (caterpillars) - especially in the caterpillars. The 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.**

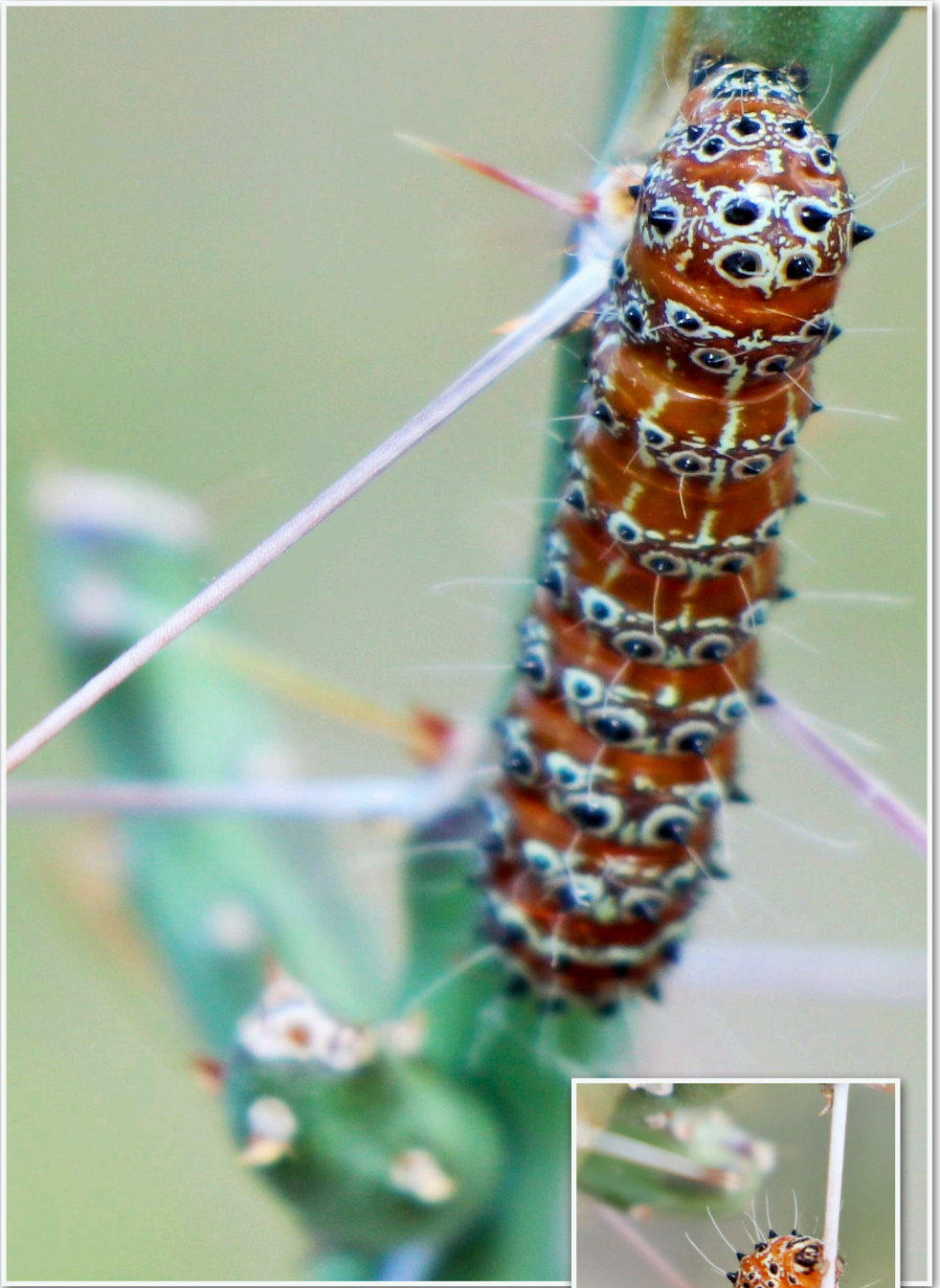
## Staghorn Cholla Moth
## *Euscirrhopterus cosyra*

**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.**

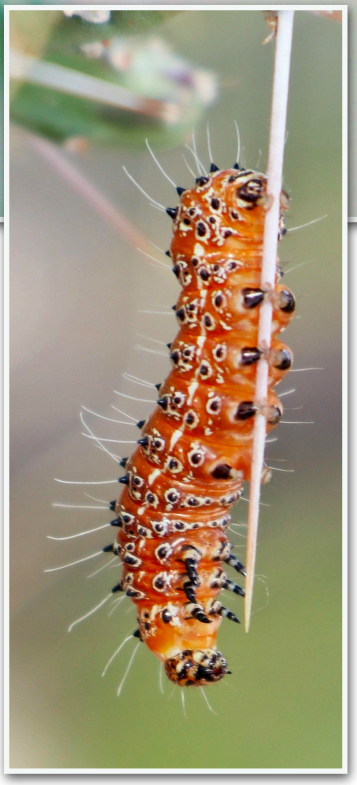
**The imago stage of the Staghorn Cholla Moth (Hodges#9308) is quite striking (shown below in an image from Wikipedia).**

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

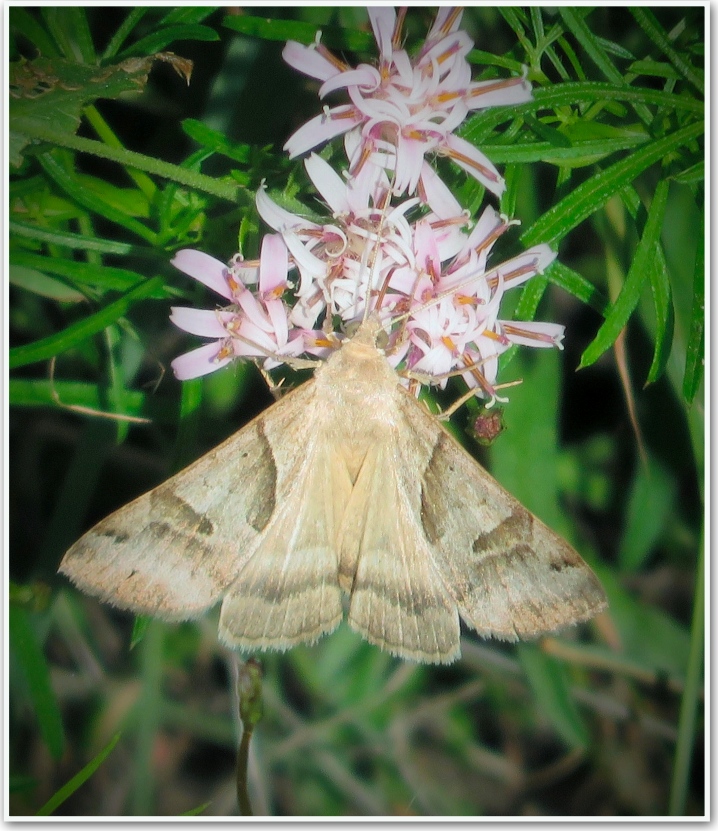


## Purslane Moth
## *Euscirrhopterus gloveri*

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

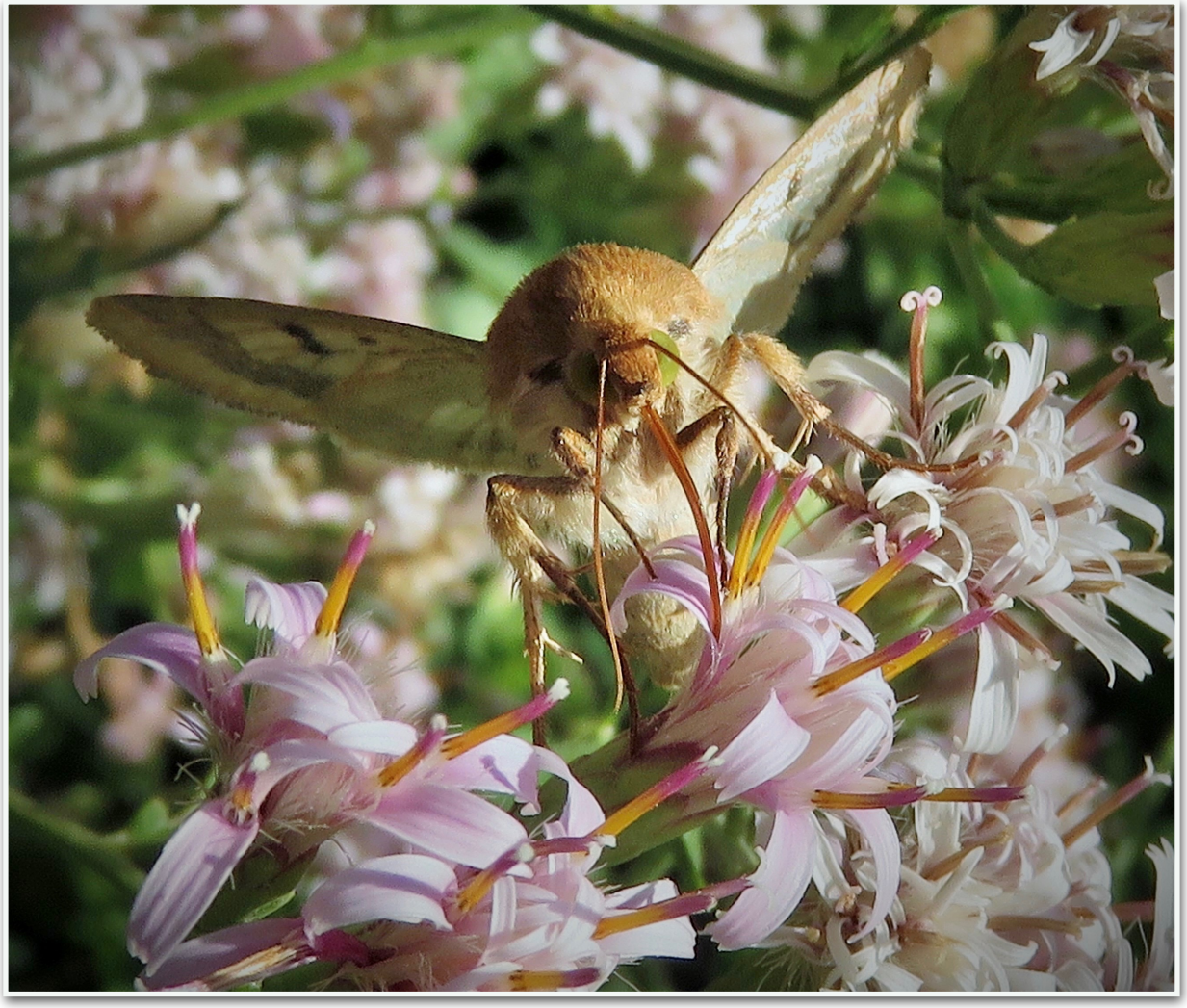


***Gyrocheilus patrobas*, Red-Rim Satyr**
**Photographed in Railroad Canyon, Black Range.**



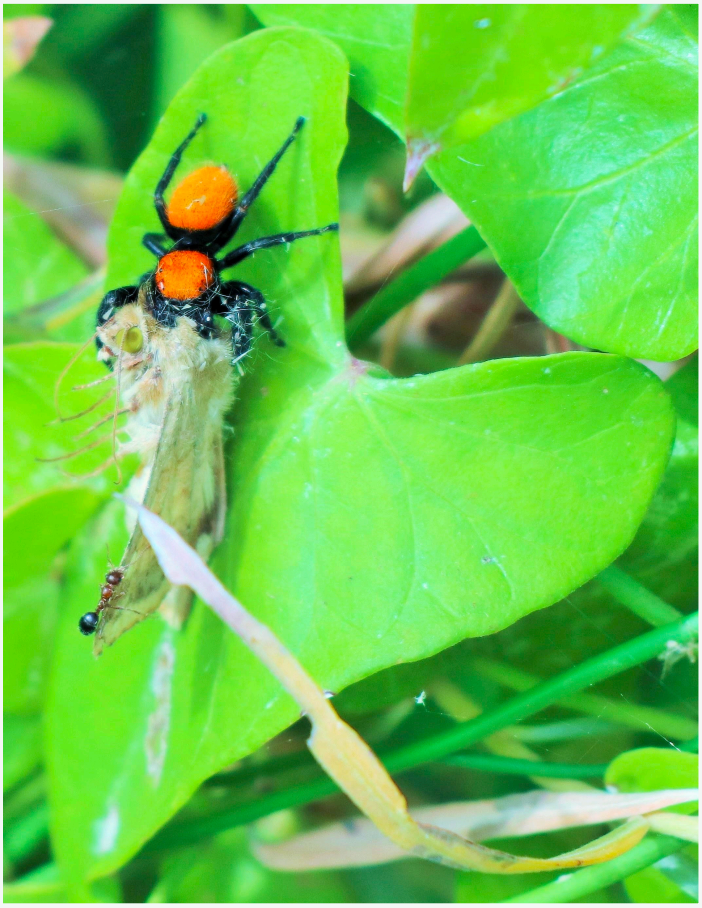
## Corn Earworm Moth
## *Helicoverpa zea*

**The Corn Earworm Moth (*Helicoverpa zea* (Boddie, 1850) shown on this page was photographed by Gordon Berman. 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.**

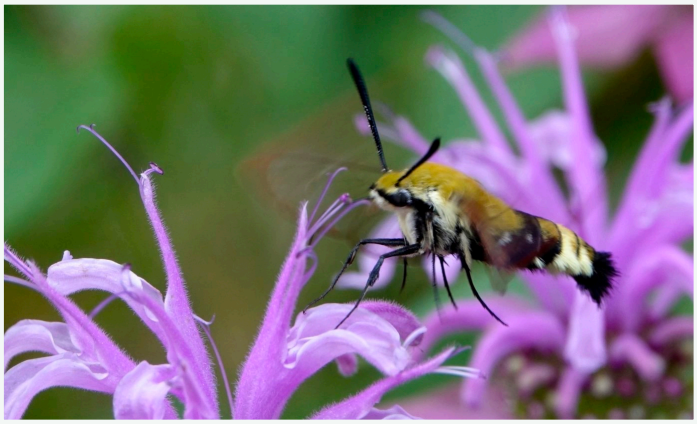


**This species will go through four to six instars. During the initial instars, many caterpillars are found eating together. During later instars they become more aggressive and cannibalistic, and fewer are found feeding together. The larvae image is from the University of Minnesota.**

**The green eyes of the imago stage are a diagnostic feature when identifying the species.**



**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).**



***Hemaris diffinis/thetis*, Rocky Mountain Clearwing**
**Photographed in Railroad Canyon, Black Range.**

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

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

Fiery Skipper, *Hylephila phyleus* (Drury, 1773) along the Rio Grande at Las Cruces. Photograph by James Von Loh.

## White-lined Sphinx
## *Hyles lineata*

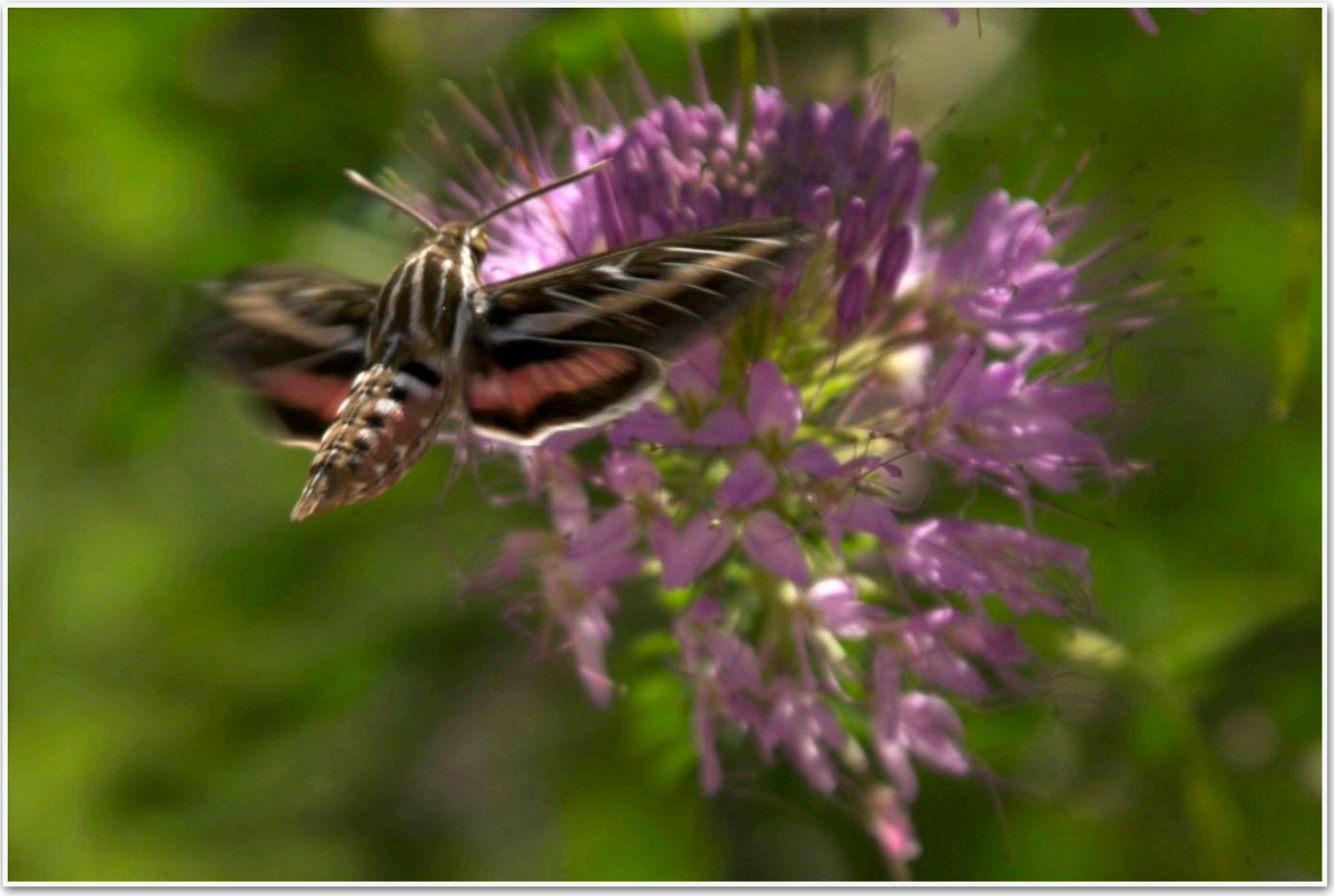
The White-lined Sphinx is found in most of the Americas, as far north as southern Canada and as far south as Argentina. Its range includes the West Indies. Previously, this species was considered conspecific with *Hyles livornica,* which is found in parts of Eurasia and Africa. As might be expected with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



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

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.

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.

We 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 I have rarely seen. The bottom photograph on the next page was taken at Soledad Canyon Spring.

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 this Sphinx nectars on are shown on the following page.**

**-Photos and video by**
**James Von Loh**
**Las Cruces**

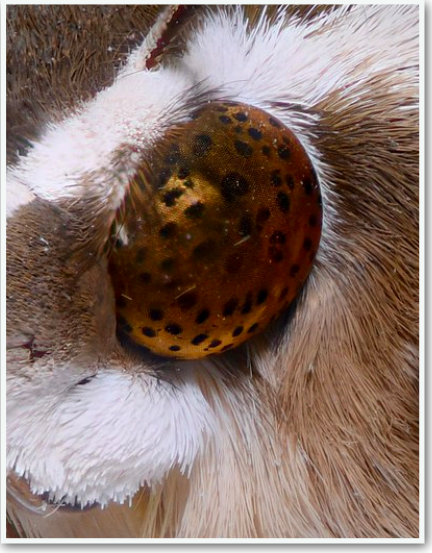
**White-lined Sphinx nectaring;**
**(Images by James Von Loh)**

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*, Fluffroot.**

**The two caterpillars shown on this page and the ones shown on pages 40 and 43 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 regional differences as well.**

**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 photo-graphs on previous pages, a wonderful adaptation.**



## Fall Webworm Moth
## *Hyphantria cunea*

***Hyphantria cunea*** **(Hodges 8140), 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.**

**Lupine Blue, *Icaricia lupini* (Boisduval, 1869), taking nutrients from moist soil near the trailhead of Soledad Canyon. Photograph by James Von Loh.**

## Common Buckeye
## *Junonia coenia*

**The Common Buckeye (also, just Buckeye), *Junonia coenia*, was first described by Jacob Hübner in 1822. The plate that accompanied his description is shown below (Sammlung exotischer Schmetterlinge (1819 -1827) Vol. 2 Plate 32.**

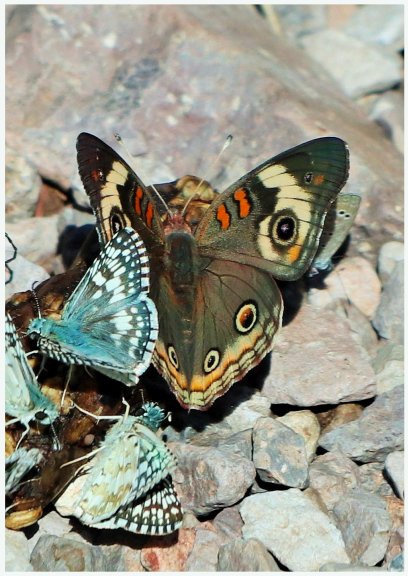
***Junonia coenia*, Buckeye**
**Photographed at Bloodgood Spring (Kingston), July 2017.**

**The Common Buckeye, photographed near Kingston (above center), will have a range which is described as east of the Rocky Mountains if you have the most current field guide. 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 into 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!**

## Gray Buckeye
## *Junonia grisea*

**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* (Hübner, 1822). 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. 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 to the left, 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.**

**Dark-ribboned Wave, see following page.**

## Dark-ribboned Wave
## *Leptostales rubromarginaria*

**The Dark-ribboned Wave pictured at the bottom of the previous page was located along the Hillsboro Peak Trail in the Black Range.**

**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.**

## Marine Blue
## *Leptotes marina*

**Marine Blue, *Leptotes marina* (Reakirt, 1868), taking nutrients from moist rock near the Soledad Canyon Trailhead. Photograph by James Von Loh.**

**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.**

***Leptotes marina*, Marine Blue, photographed in Lake Valley, Black Range, by Debora Nicoll.**

## *American Snout, Libytheana carinenta*

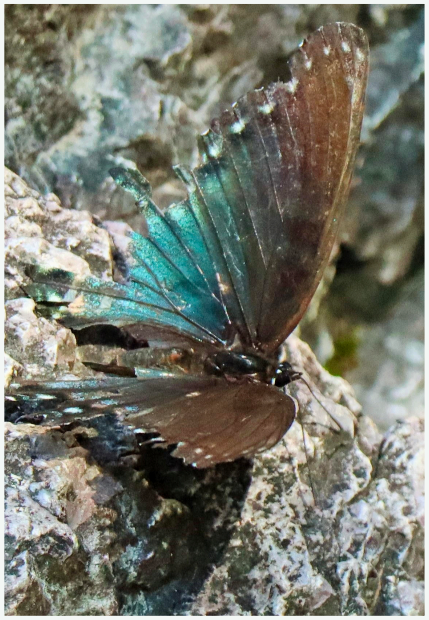
**The American Snout, *Libytheana carinenta* (Cramer, 1777), pictured below was photographed by James Von Loh at the Dripping Springs Visitor Center in the Organ Mountains. This is one of the smaller solitary puddlers (see later article) which were present during the 2021 season. It is taking nutrients from the moist soil of a retention pond.**

## Red-spotted Admiral
## *Limenitis arthemis arizonensis*

**The Red-spotted Admiral, *Limenitis arthemis* (Drury, 1773), which is found in our area is one of the Red-spotted Purple subspecies. The range of these subspecies is limited to parts of Arizona, New Mexico, and Texas in the U. S. and to the northern states of Mexico.**

**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.**

**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 below. 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 above was taking nutrients from outcropping bedrock forming Soledad Canyon Waterfall, photograph by James Von Loh.**

**Photographed in Mineral Creek, Black Range, September 2017.**

**This Red-spotted Admiral is taking nutrients from the bedrock surfaces forming Soledad Canyon Waterfall. Photograph by James Von Loh.**

***Limenitis weidemeyerii*, Weidemeyer's Admiral**
**Photographed in Railroad Canyon, Black Range, July 2017.**

## Litocala Moth
## *Litocala sexsignata*

**The Litocala Moth shown to the right and on the following page was photographed 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 this magazine, 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.**

**The previous articles in this magazine were an inspiration. Why not try to photograph small flitty brown things?**

**The 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.**

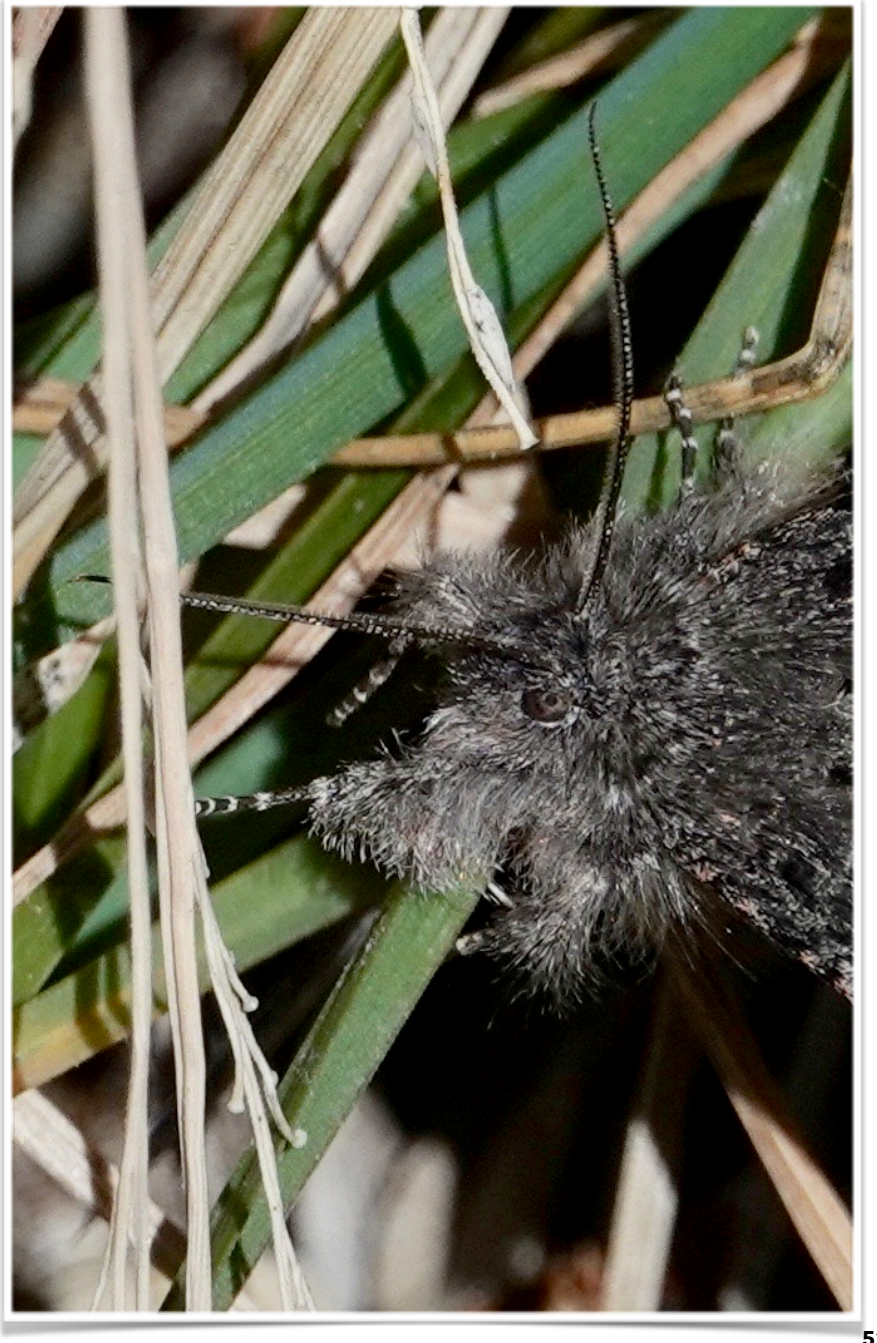
**The moths would flit about, rarely flying more than 20' before landing and crawling into the grass. Sometimes they would land on a rock or on the mud. Not always easy to see. Did I mention they were small?**

**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.**

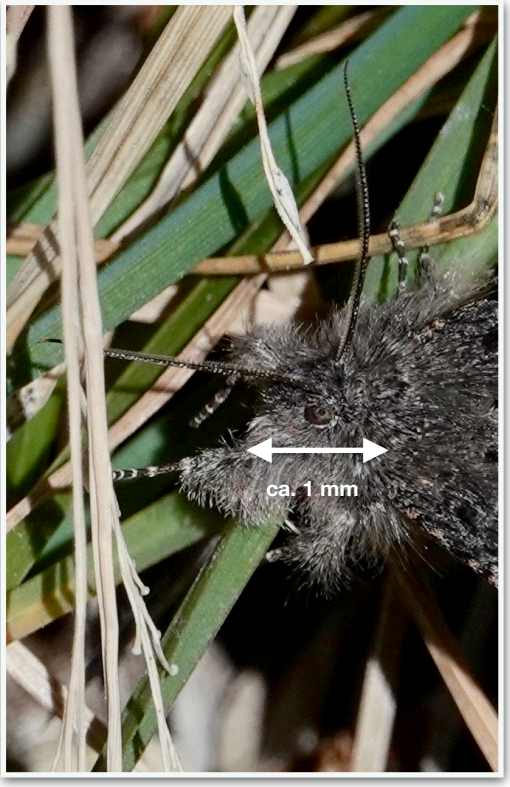
**The authoritative website bugguide.net, notes that the adults fly from March until June. The species is diurnal and often nectars at flowers (including willow catkins, per Pacific Northwest Moths). It is often seen sipping water from mud. The larvae feed on oak.**

**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.**



***Lon taxiles*, Taxiles Skipper**
**Photographed in Railroad Canyon, Black Range.**



***Loxostege* (species)**
**Photographed in Railroad Canyon, Black Range, July 2017.**

## Five-spotted Hawkmoth *Manduca quinquemaculata*

**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.**

**Left: Five-spotted Hawkmoth - *Manduca quinquemaculata*. Caterpillar: Tomato Hornworm. Hillsboro, New Mexico**

***Mestra amymone*, Common Mestra**
**Photographed in Lake Valley, Black Range by Debora Nicoll.**

**Dainty Sulphurs, *Nathalis iole* (Boisduval, 1836), taking nutrients from moist soil at the arroyo edge near the beginning of Soledad Canyon Trail. Photographs immediately above and two below by James Von Loh.**

***Nathalis iole*, Dainty Sulphur**
**Photographed east of Hillsboro, Black Range.**

**Dainty Sulphurs, above and to the right, were abundant along the Rio Grande, nectaring from Spine-aster flowers.**

## Morning Cloak
## *Nymphalis antiopa*

**The Mourning Cloak, Nymphalis antiopa (Linnaeus, 1758), is a cosmopolitan species, being found in much of the northern Hemisphere. 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 this magazine, for more information about this species.**

***Nymphalis antiopa*, Morning Cloak, photographed along North Percha Creek, Black Range.**

**Mourning Cloak ventral wing view, taking nutrients while puddling. Photograph by James Von Loh.**

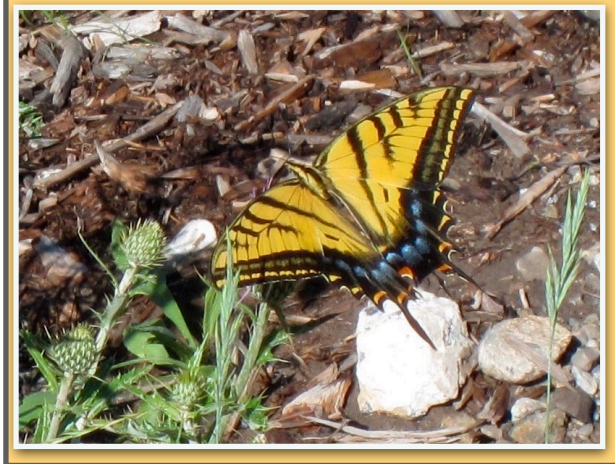
***Pachysphinx occidentalis*, Big Poplar Sphinx**
**Photographed in Railroad Canyon, Black Range, July 2017.**

## Two-tailed Swallowtail
## *Papilio multicaudata*

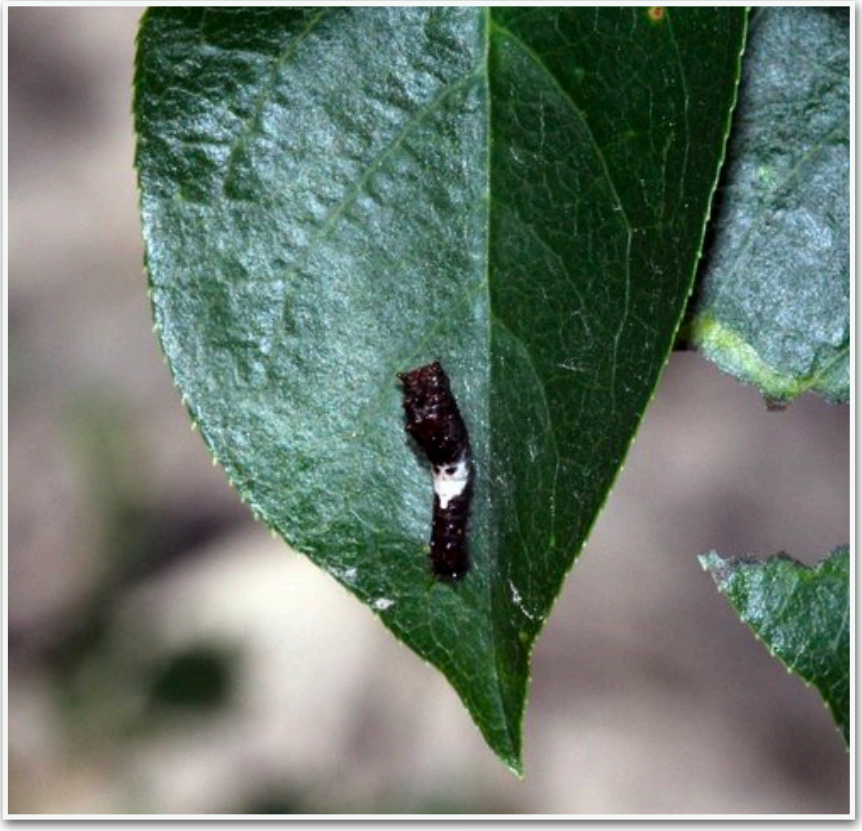
**At every stage of life, the Western Tiger Swallowtail and the Two-tailed Swallowtail can be difficult to tell apart and, of course, their ranges overlap. The imago stage of the two species is shown to the right. One of the ways they are told apart is by the width of the black bars which start at the 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 pages. 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.**



**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.**



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**

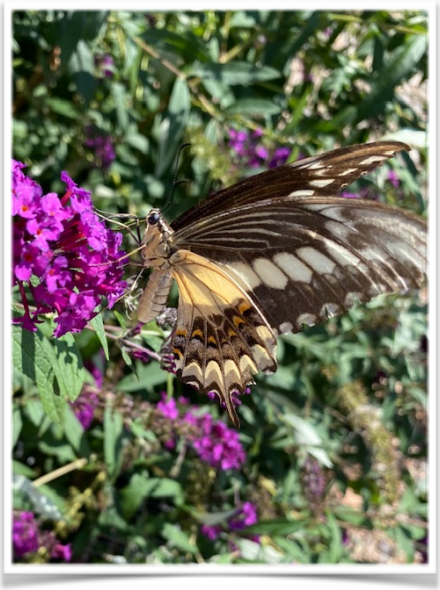
**Todd Stout's website, Raising Butterflies, has a wealth of information on the life stages of butterflies. If you are interested in raising butterflies from eggs or larvae, his website sells materials which will be helpful.**

Fifth instar of Two-tailed Swallowtail, immediately above and to the left. Photos by Todd Stout.

**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.**

## Ornythion Swallowtail
## *Papilio ornythion*

**Rare in New Mexico, this Ornythion Swallowtail was photographed in Hillsboro by Jan Richmond in August 2021. See the January 2022 issue of this magazine for more details.**



**Black Swallowtail**
***Papilio polyxenes***

**Above: *Papilio polyxenes*, Black Swallowtail, photographed in Kingston, Black Range, by Véronique De Jaegher. This species 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.**

**Photos Immediately above and to the left: Nichole Trushell photographed the Black Swallowtails, *Papilio polyxenes (imago and instar)*, at her home in Kingston, Black Range.**

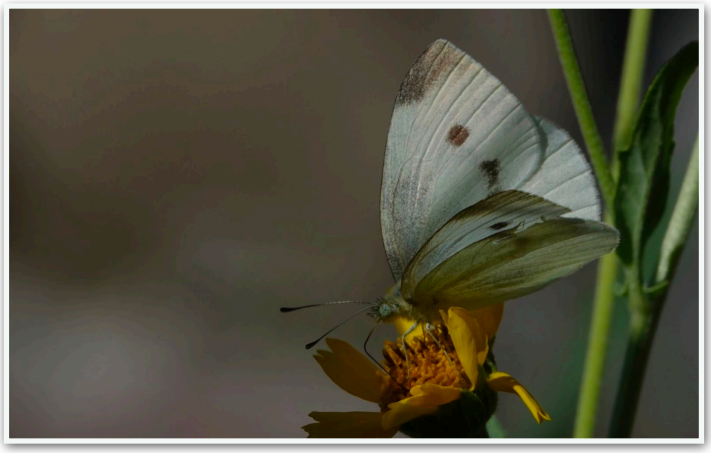
***Phoebis sennae*, Cloudless Sulphur**
**Photographed in Hillsboro, Black Range.**

## Common Sootywing
## *Pholisora catullus*

**The two Common Sootywing, *Pholisora catullus* (Fabricius, 1793), butterflies shown below were photographed by James Von Loh at the Soledad Canyon Trailhead in the Organ Mountains.**

***Phyciodes pulchella*, Field Crescent**
**Photographed in Railroad Canyon, Black Range, June 2019.**

**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.**



***Pieris rapae*, Cabbage White**
**Photographed in Hillsboro, Black Range.**

***Plebejus acmon*, Acmon Blue**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**

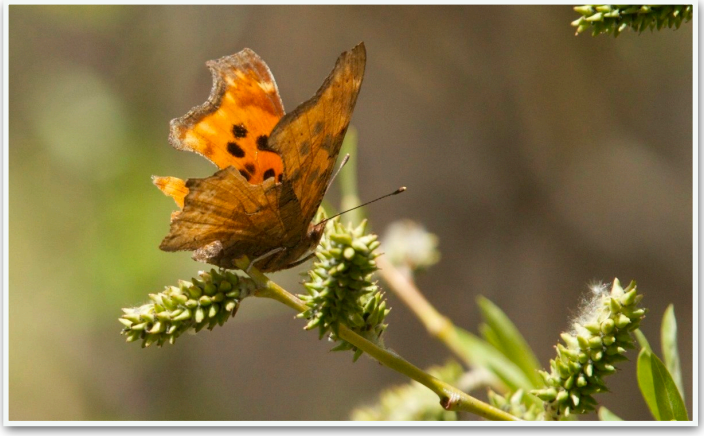
***Polygonia gracilis*, Hoary Comma**
**Photographed on McKnight Mountain Road, Black Range, by Steve Morgan.**

## Question Mark
## *Polygonia interrogationis*

**In the Black Range, we are at the western edge of the range of this species. The photographs at the top of the next column and at the following page were taken in the Organ Mountains, only slightly east of the western edge of its range, by James Von Loh.**

**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 red form of the species (left center) was photographed by Bob Barnes in the Percha Creek drainage of the Black Range.**

**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.**



**The larva of the Question Mark is an image by Berry Nall from his website. Shown here under a Creative Commons Attribution-Non-Commercial 4.0 Inter-national License.**

**James Von Loh's photographs of a Question Mark were taken at a water seep (spring).**

***Polygonia satyrus*, Satyr Comma**
**Photographed in Railroad Canyon, Black Range, March 2018.**

**The *Pontia protodice*, Checkered White (left) was photographed in San Lorenzo, Black Range. The *Pontia sisymbrii*, Spring White (below), was photographed in Railroad Canyon, Black Range, March 2018.**

***Pterourus rutulus*, Western Tiger Swallowtail**
**Photographed in Railroad Canyon, Black Range, June 2019.**

**Yellow-striped Armyworm, photograph by James Von Loh**

## Yellow-striped Armyworm Moth
## *Spodoptera ornithogalli*

**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 the next page is on a Wright's Beebalm.**

***Spodoptera ornithogalli*, imago and instar, University of Georgia. Shown under a Creative Commons License 3.0.**

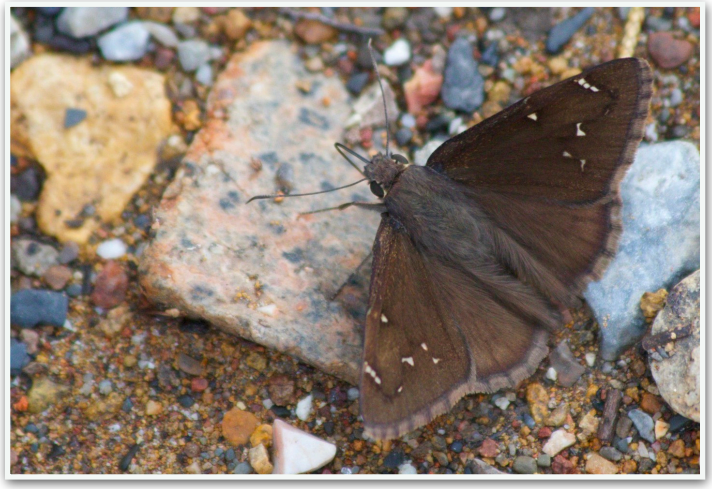
## Yellow-striped Armyworm (con't)
## *Spodoptera ornithogalli*

**Caterpillar images by James Von Loh. Caterpillars are foraging on Apache Plume at left and on desert willow below left.**

***Staphylus ceos*, Golden-headed Scallopwing**
**Photographed east of Hillsboro, Black Range.**

***Strymon melinus*, Gray Hairstreak. Photographed in Lake Valley, Black Range, by Debora Nicoll.**

## Northern Cloudywing
## *Thorybes pylades*



***Thorybes pylades*, Northern Cloudywing**
**Photographed north of Kingston, Black Range.**

**The Northern Cloudywing, *Thorybes pylades* (Scudder, 1870), butterflies were taking nutrients from moist bedrock of the Soledad Canyon Waterfall. The photograph immediately above was taken by Gordon Berman, the one below by James Von Loh.**

## Red Admiral
## *Vanessa atalanta*

**Red Admiral taking nutrients from large gravel below the Soledad Canyon Waterfall in the Organ Mountains, photograph by Gordon Berman.**

**Red Admiral, *Vanessa atalanta* (Linnaeus, 1758), does 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.**

***Vanessa atalanta*, Red Admiral**
**Photographed in Lake Valley, Black Range, by Debora Nicoll.**

**Red Admiral larva, March 24, 2012 by Berry Nall.**

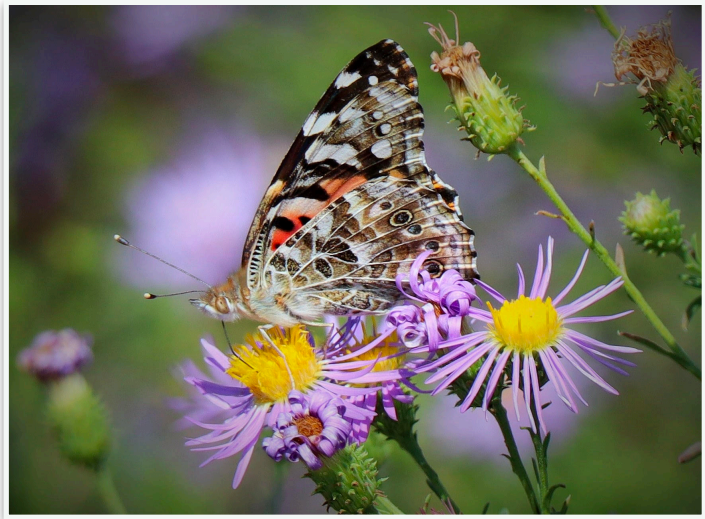
## Painted Lady
## *Vanessa cardui*

**Painted Lady, *Vanessa cardui* (Linnaeus, 1758), 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 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.**

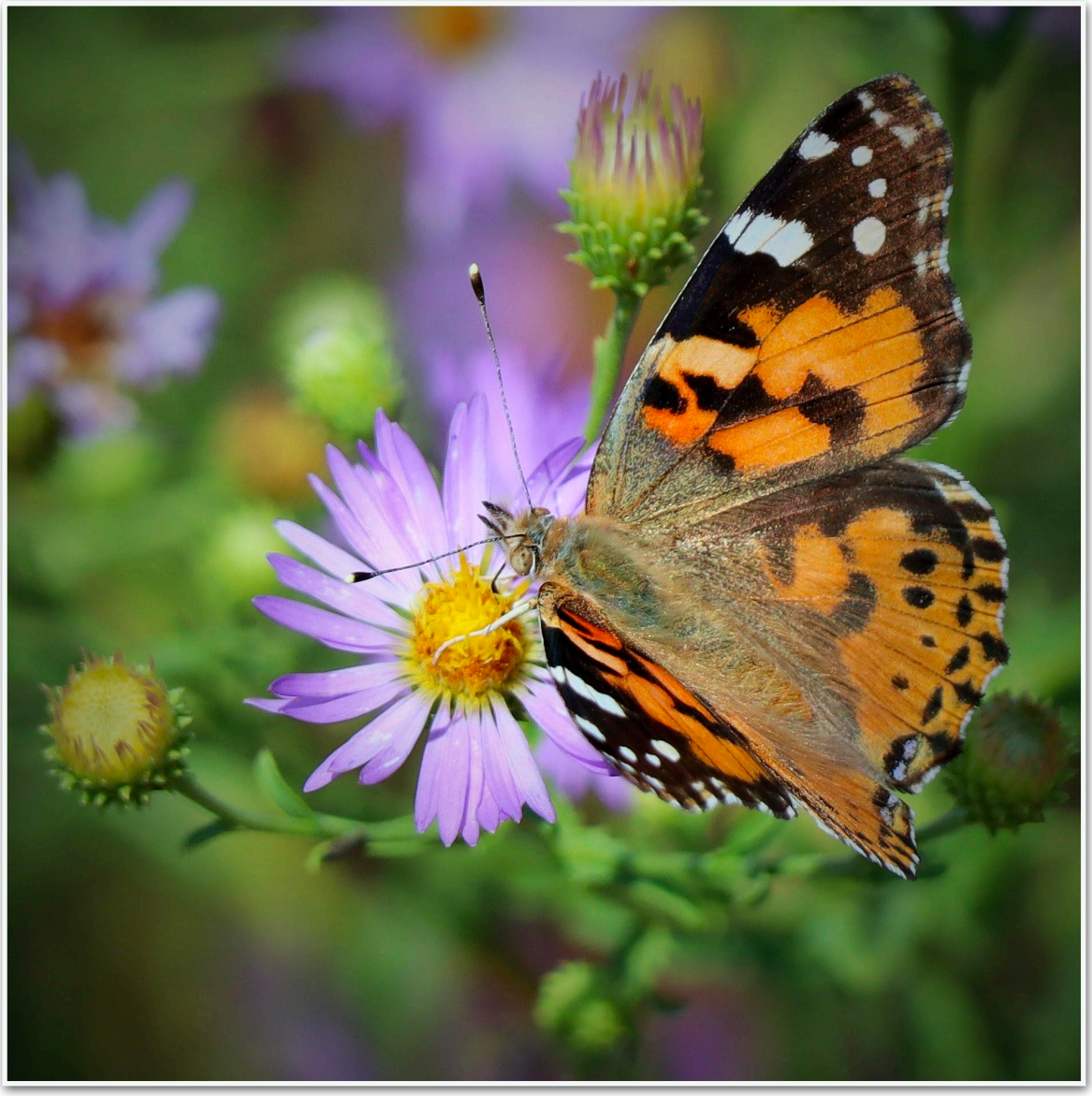
***Vanessa cardui*, Painted Lady, Photographed along the Hillsboro Peak Trail, Black Range, October 2017.**

**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). Photographs by James Von Loh.**

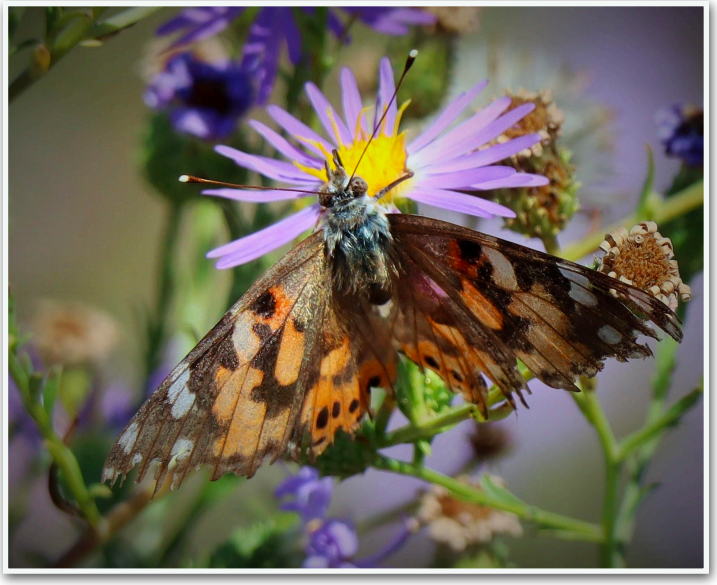


**Instars seem to prefer thistles but also feed on a variety of other composites.**

**Although the spring migration north is easy to predict the number of individuals involved is not. Numbers will fluctuate significantly from year to year.**

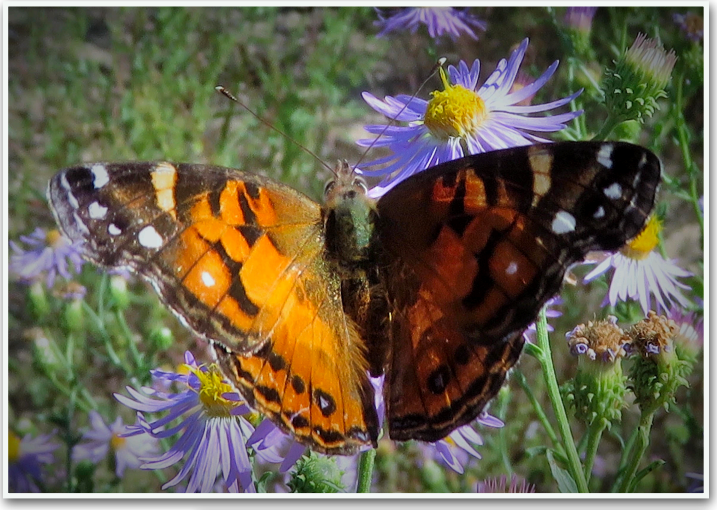


**Above and Left: Painted Lady, *Vanessa cardui* (Linnaeus, 1758). The individual at left is showing the tattered wings and wing-tears common to many butterflies migrating during 2021. Photographs taken by James Von Loh along the Rio Grande at Las Cruces.**

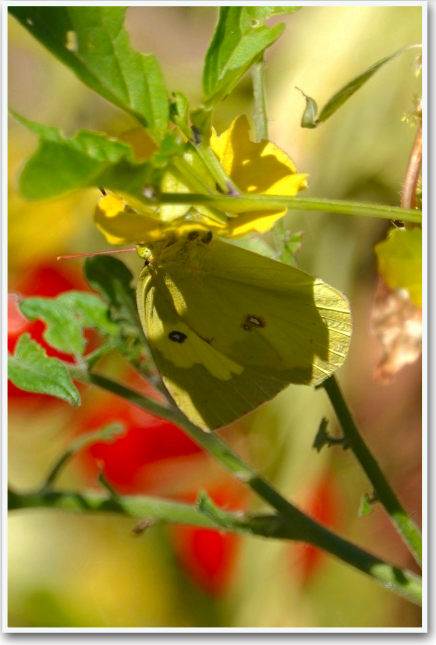


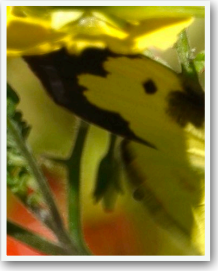
***Vanessa virginiensis*, American Lady**
**Photographed in Railroad Canyon, Black Range.**

**American Lady, *Vanessa virginiensis* (Drury, 1773. Nectaring from Spine-aster flowers, where it was uncommon. Photographs by James Von Loh (photo above) and Gordon Berman (two photos below), from the Rio Grande at Las Cruces.**



**James Von Loh took the two photographs at the top right, of Southern Dogface, *Zerene cesonia* (Stoll, 1790), along the Rio Grande at Las Cruces. This species is a common-to-abundant butterfly nectaring from Spine-aster flowers.**





***Zerene cesonia*, Southern Dogface**
**Photographed in Hillsboro, Black Range, October 2021. Your field guide may list this species as *Colias cesonia*.**

# Puddle Clubs

## Photographs, Video, and Article by James Von Loh

White Checkered-skipper puddle club, near the Soledad Canyon Trailhead.

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).

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.

So, enjoy a taste of 2021 club puddlers, using selected Organ Mountain habitats, through my camera lens and that of Gordon Berman.

White Checkered-skippers puddling in/on a typical substrate.

### White Checkered-skipper
### *Burnsius albescens* (Plotz, 1884)

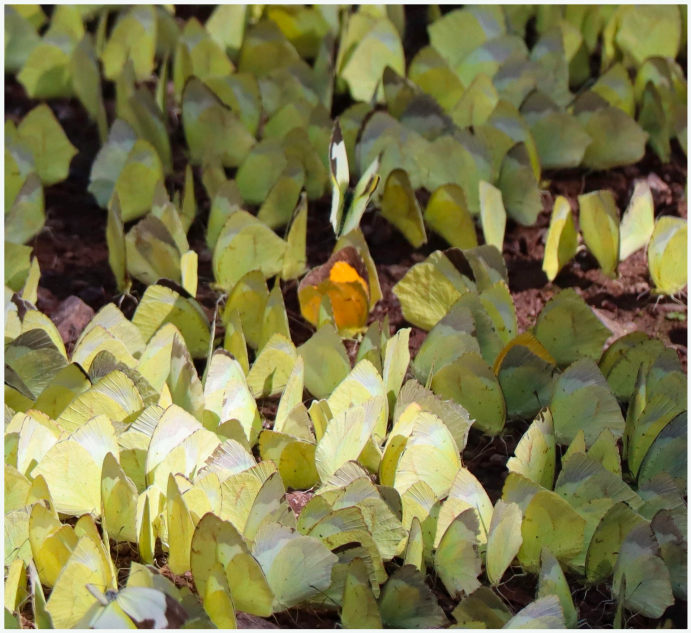
These small skippers formed puddle clubs, near the Soledad Canyon Trailhead, numbering between 5-10 individuals up to 20-30 individuals. They exhibited a patchy distribution on moist sand covered by pebbles and small rocks. Often a few individuals joined other small puddle clubs with mixed species of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

### Mexican Yellows
### *Abaeis mexicana* (Boisduval, 1836)

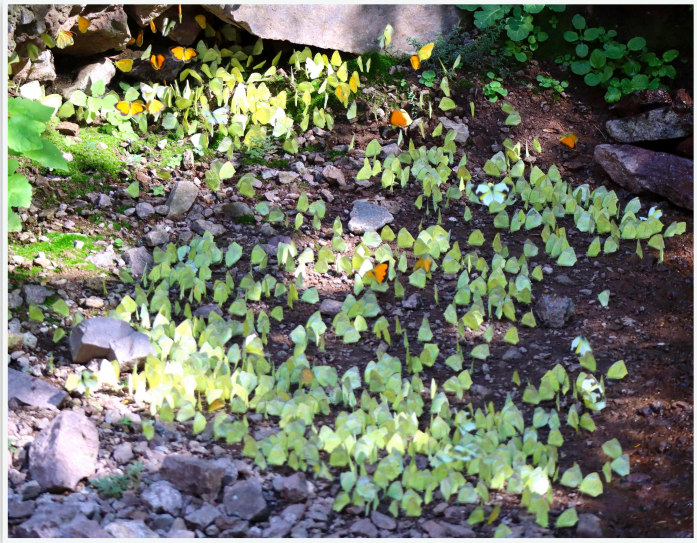
This abundant species of the Soledad Canyon formed large puddle clubs near the Soledad Spring headwall. Preferred soils were saturated sand with small gravel and occasional larger rocks; shallow pools of water, when present, were avoided by Mexican Yellows. Puddle clubs included numerous individuals 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.

**White Checkered-skippers joining a small puddle club with mixed species of sulphurs. Sleepy Orange, *Abaeis nicippe* (Cramer, 1779) and Southern Dogface, *Zerene cesonia* (Stoll, 1790), are both present here. As are marine blues, *Leptotes marina* (Reakirt, 1868), and individuals of other butterfly species.**

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



Mexican Yellows in a closer view from the scene on the previous page are joined by an individual Sleepy Orange.



Mexican Yellow puddle club that includes several Sleepy Orange individuals.

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

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.

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

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.

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

**Sleepy Orange**
***Abaeis nicippe* (Cramer, 1779)**

**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.**

**Mixed Sulphur Species**

**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. They formed puddle clubs on moist soil and seeps, as near the Soledad Canyon Trailhead. On these sites, they formed open and often widespread clubs that included several sulphur species and, often, other butterfly species as well.**

**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.**

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

**Sleepy Oranges also form smaller clubs where water flows over or splashes onto bedrock at the Soledad Canyon Waterfall Image contributed by Gordon Berman.**

**Sleepy Orange and Mexican Yellow puddlers mix on drier rock and gravelly substrates near the Soledad Canyon Waterfall. Image contributed by Gordon Berman.**

**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). Image contributed by Gordon Berman.**

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

**Above: Non-sulphur butterfly species occur with more common sulphurs, puddling together from 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.**

# Solitary Puddlers

## Article by James Von Loh
## Photographs by James Von Loh (unattributed) and Gordon Berman

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.

large puddler, Question Mark, *Polygonia interrogationis* (Fabricius, 1798).

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.

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

Monarch, above, at Fillmore Falls (photo by Gordon Berman) and Red-spotted Admiral (Purple) at the Soledad Canyon Waterfall, below.

This article documents random observations of individual puddlers encountered during recent hikes in canyons of the Organ Mountains.

Puddlers of all sizes take nutrients from moist soil, often as individuals or pairs; shown above (L-to-R) are two small puddlers, White Checkered-skipper, *Burnsius communis* (Grote, 1872), a medium-sized puddler (Painted Lady, *Vanessa cardui* (Linnaeus, 1758), and a

which exhibit this behavior are Mexican yellow, Cloudless Sulphur, Clouded Sulphur, and Sleepy Orange.

Hackberry Emperor, *Asterocampa celtis* (Boisduval & Le Conte, 1835)), taking nutrients from bedrock seeps of upper Soledad Canyon. →

**Mourning Cloak (above), *Nymphalis antiopa* (Linnaeus, 1758), one of the large solitary puddlers, used both moist and saturated soils to take nutrients near the Soledad Canyon Trailhead. It was one of the rarest puddlers at this location. Another large puddler, the Question Mark, *Polygonia interrogationis* (Fabricius, 1798) was at the same location (below).**

Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775), 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.

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.

Tiny Checkerspot, *Dymasia dymas* (W. H. Edwards, 1877), below Soledad Canyon Falls. Photograph by Gordon Berman.

American Snout (*Libytheana carinenta*, Cramer, 1777), taking nutrients from moist substrate below the Fillmore Canyon Waterfall. Photograph by Gordon Berman.

Common Sootywing, *Pholisora catullus* (Fabricius, 1793), taking nutrients from moist sand under gravel at the Soledad Canyon Trailhead.

Theona Checkerspot, *Chlosyne theona* (Menetries, 1855), with its ventral wing exposed, taking nutrients from moist soil under gravel of the Crawford Trail, Organ Mountains.

White Checkered-skippers, *Burnsius communis* (Grote, 1872), at the Dripping Springs Visitor Center.

Northern Cloudywing, *Thorybes pylades* (Scudder, 1870), taking nutrients from moist soil under gravel near the Soledad Canyon Trailhead.

**Reakirt's Blue, *Echinargus isola* (Reakirt, 1867), taking nutrients from a muddy flat near livestock pond at the Sierra Vista Trail.**

**Dainty Sulphur, *Nathalis iole* (Fabricius, 1775), taking nutrients from moist soil around the retention pond at Dripping Springs Visitor Center.**

**Goatweed Leafwing, *Anaea andina* (Scudder, 1875), rarely makes an appearance in the United States. It 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. Photograph by Gordon Berman.**

# Butterfly Species Observed During 2021 Using Mammal Scat as a Moisture and Nutrient Source

**Photographs and Article by James Von Loh**

**Entomologists and naturalists alike have observed many insects, including butterflies, collecting nutrients from moist substances including mud, rotting plant matter, carrion, and dung. This summer 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 (photo above), *Junonia grisea* (Hubner, 1822), was documented, in addition to White Checkered-skipper, Burnsius Complex and Reakirt's Blue, *Echinargus isola* (Reakirt, 1867), individuals which were attracted to this scat to acquire nutrients. Nearby to this site, and on a site in Fillmore Canyon, the Hackberry Emperor (photo below), *Asterocampa celtis,* Boisduvall & Le Conte, 1835, was documented extracting nutrients from domestic dog scat piles.**

# Thousands of Butterflies Sail New Mexico's Southern Sea

**by James Von Loh**

**Several ancient cultures related colors to the cardinal directions, i.e., often using black to the north, red to the south, green to the east, white to the west; these color concepts likely are reflected in our current names for the Black (north) and Red (south) Seas, for example. Following monsoon rainstorms during the summer of 2021, thousands upon thousands of butterflies "navigated" southern New Mexico's "Red Sea" in the canyons and arroyos of the Black Range and Organ Mountains!**

**Red morning-glories covered and colored these east-facing (Black Range) and west-facing (Organ Mountains) landscape features to the degree that the phenomenon (both red morning-glory cover AND butterfly numbers) had to be seen to be believed!**

**Scarlet (Trans-Pecos) Morning-glories (*Ipomoea cristulata* Hallier f.) covered much of the landscape and adorned portions of the sky within many mountain canyons and arroyos, principally during August/September 2021. Several species of blue and purple morning-glories sometimes accompanied the scarlets in lesser density/cover values. The Common Morning-glory, *Ipomoea purpurea* (L./ Roth) pictured to the left were taken along the Pine Tree Trail (top two photographs) and Soledad Canyon (bottom photo) in the Organ Mountains. All photographs in this article are by James Von Loh.**

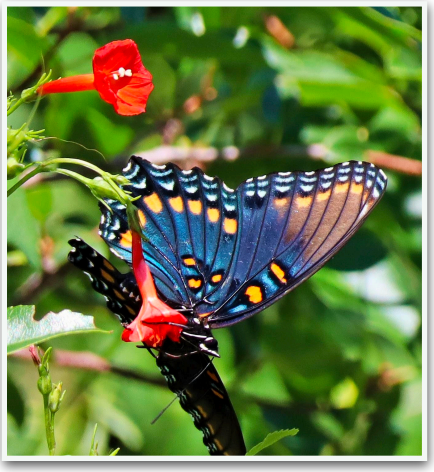
Tall shrubs like Black cherry (*Prunus serotina* Ehrh.) and Apache plume (*Fallugia paradoxa* (D. Don) Torrey) have become cloaked with Scarlet Morning-glory vines, an effect of monsoon rainfall in Soledad Canyon.

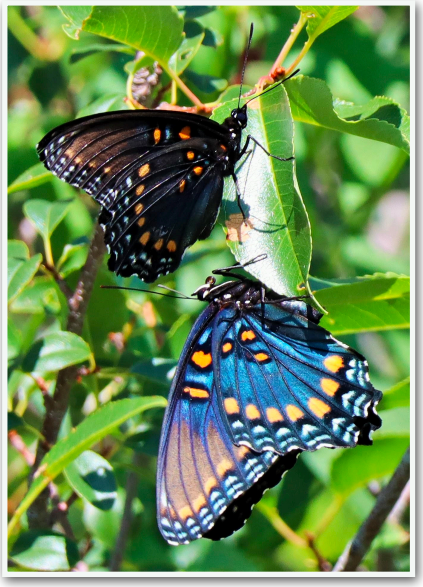
Above: Two-tailed Swallowtail, *Pterourus multicaudata* (W.F. Kirby, 1884), nectaring from a Scarlet Morning-glory flower in Soledad Canyon.
Below: Queen nectaring from the same species in Fillmore Canyon.

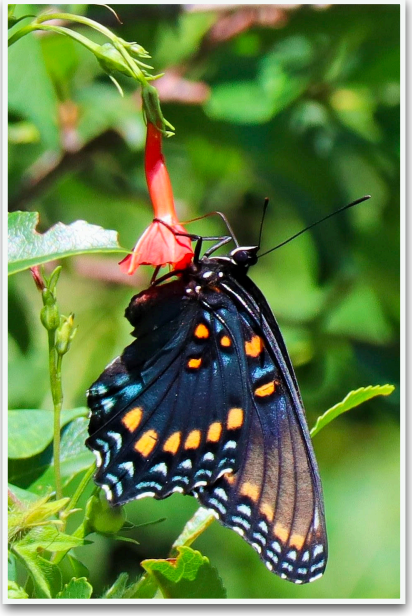
Following a September field visit to the Organ Mountains, Steve Cary, New Mexico lepidopterist, wrote: "The real butterfly excitement came when we walked into drainages or canyons where plant diversity increased, along with damp soil and even flowing water. Vines of various red and blue/purple morning glories sprawled across the shrub tops. Most butterflies will not go to red flowers, which are chiefly designed for hummingbird partnerships. Sulphurs and Swallowtails are exceptions, however, and the blizzard of sulphurs found plenty to imbibe" (https://peecnature.org/our-chihuahuan-desert-jungle).

There is something elegant about observing large butterflies and moths while nectaring from striking, brightly-colored, and long-tubed morning-glory flowers and something approaching comical about small butterflies attempting the same feat! Large Red-spotted Admiral, *Leminitis arthemis arizonensis* (Drury 1773), Pale Swallowtail, *Pterourus eyrymedon* (Lucas 1852), Pipevine Swallowtail, *Battus philenor* (Linnaeus 1771), and Queen, *Danaus gilippus* (Cramer 1775) butterflies nectar from Scarlet Morning-glory flowers while the large moth, White-lined Sphinx, *Hyles lineata* (Fabricius 1775), often visits blue and purple morning-glory flowers to nectar.

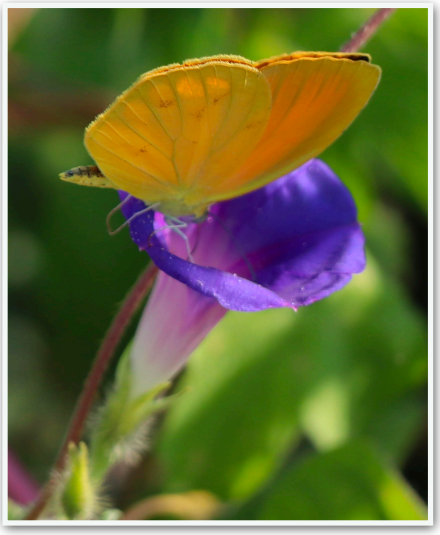
In the three images at the bottom of the page, Red-spotted Admirals are nectaring from a Scarlet Morning-glory which adorns a tall Black Cherry shrub. In the middle photo of the series, a pair of Red-spotted Admirals is in the Black Cherry. They were also in a nearby Apache Plume, which also had Scarlet Morning-glory intertwined with its branches. The top butterfly in the middle photo is laying eggs on a Black Cherry leaf.

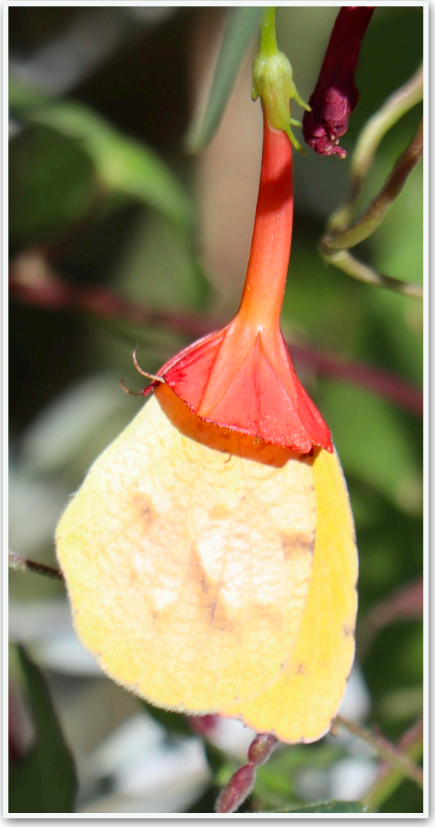






**Smaller, mostly Sulphur, butterfly species nectared predominantly from Scarlet Morning-glory flowers in large numbers, with some selection observed for nectaring from blue morning-glory flowers. Because of their massive numbers (thousands upon thousands), their friendly nature, and their mechanics of obtaining nectar from the long, tubular, morning-glory flowers, I developed a particular affection towards Sleepy Orange, *Abaeis nicippe* Cramer (1779) butterflies. Given the time in which we live, rather than nectaring, I thought of them being cautious with the large number of unmasked and noisy humans hiking through their habitat, and that they were responsibly "masking"**

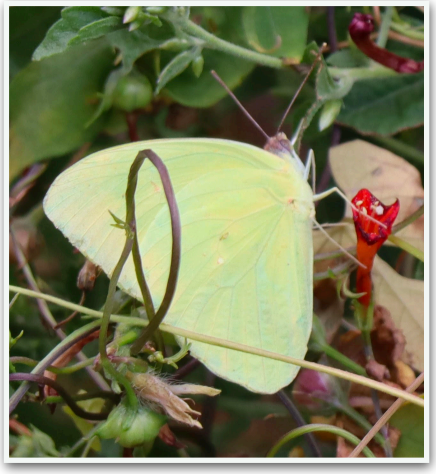




**Sleepy Orange butterflies nectaring from Scarlet Morning-glory and from a blue-flowered morning-glory (uncommon observation).**

**In the photographs to the left, Mexican Yellow, *Abaeis mexicana* Boisduval (1836), 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.**

**In the photo above, a Mexican Yellow nectaring from a blue morning-glory flower and Dainty Sulpher, *Nathalis iole* Boisduval (1836), (flies just above). In the two photos at the right, Cloudless Sulphur, *Phoebis sennae* Linnaeus (1758), are seen nectaring from Scarlet Morning-glory flowers.**



**Cozy Scarlet Morning-glories appear to be snuggling within fuzzy, silky-soft Winterfat (*Krascheninnikovia lanata* (Pursh) A.D.J. Meeuse and Smit) short-shrub leaves.**

# Selected Highly-Visited Nectaring Plants for Butterflies: *Acourtia wrightii* (Gray) Reveal & King (Fluffroot, Brown foot)

**Photographs and Article by James Von Loh**

**Fluffroot, *Acourtia wrightii*, from 0.5m to 1.5m tall, in full-flower by mid-August 2021. (Soledad Canyon Arroyo bank).**

**Fluffroot distribution includes the upper and lower Chihuahuan and Sonoran deserts of the southwestern USA (AZ, NM, NV, TX, UT) and from northern to central Mexico (Chihuahua, Coahuila, Durango, Nuevo Leon, San Luis Potosi, Sonora, Zacatecas) within the range of migrating butterfly species. Our observations of butterfly nectaring activity presented herein are local for this report and focused on Fluffroot plants growing in Fillmore and Soledad canyons of the Organ Mountains during 2021. Flowers were abundant and fully opened in mid-August, following monsoon rainstorms, and provided a highly-visited nectaring source until seed formation in mid-September.**

**Though butterflies are the focus for this report, other arthropod species including bees, wasps, ants, flies, beetles, bugs, and spiders readily visit Fluffroot flowers to nectar, forage, predate, etc. When butterfly activity is high in patches of Fluffroot, it is easy to become enamored by and collect images from the larger, showier, and more iconic species (e.g., Monarch and Queen), thus overlooking smaller, abundant species (e.g., sulphurs and whites). In addition to butterflies, the large White-lined Sphinx Moth, Corn Earworm Moth, and smaller moth species were observed nectaring from Fluffroot flowers. This article photo-documents selected butterfly, moth, bee, and beetle species nectaring and foraging from Fluffroot flowers.**

**A butterfly attractor like the Fluffroot enables a student to study many different species in a relatively short period of time and within a limited area. Species like the Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775), immediately to the right, and Question Mark, *Polygonia interrogationis* (Fabricius, 1798), lower right corner, are found in close proximity to look-a-likes – see the Queen and Monarch on the next page. A species like Fluffroot can easily turn into an outdoor laboratory on a summer's day; a sampling of the species nectaring on Fluffroot is shown here and on the next pages.**

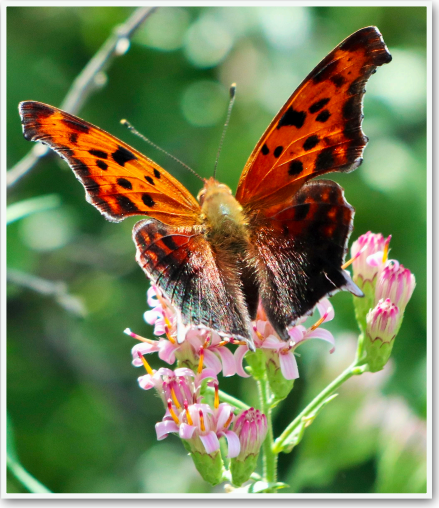
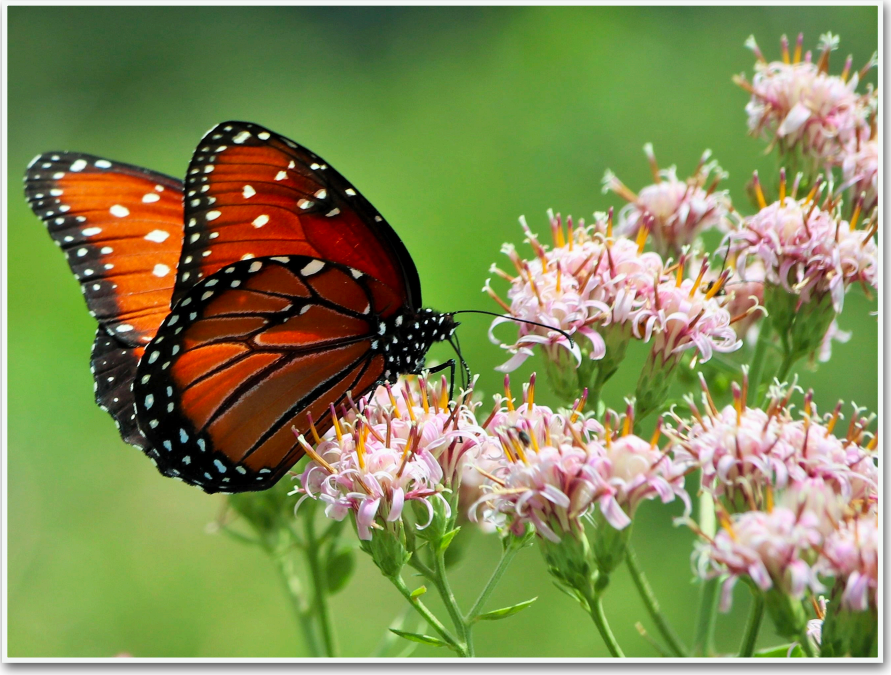
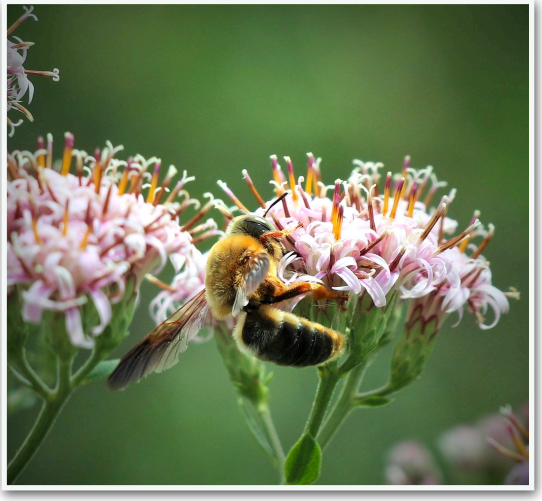


**Photo by Gordon Berman**

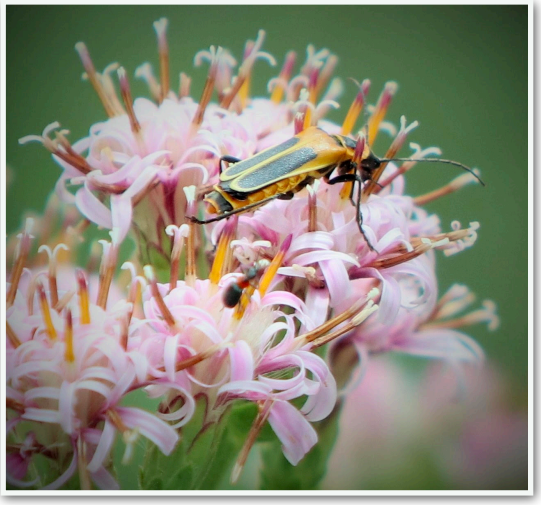


**Above: Queen, *Danaus gilippus* (Cramer, 1776).**
**Immediately Below: Monarch, *Danaus plexippus* (Linnaeus, 1758).**
**Bottom: Green Fig Beetle, *Cotinus mutabilis* (Gory & Percheron, 1883)**

**Above and immediately below: Painted Lady, *Vanessa cardui* (Linnaeus, 1758).**



**Above: Glorious Protoxaea Bee, *Protoxaea gloriosa* (Fox, 1893). Below: Soldier Beetle, *Chauliognathus lewisi* (Crotch, 1874) - also unidentified beetle below the Soldier Beetle.**



# Selected Rio Grande Nectaring Plants for Butterflies: *Chloracantha spinosa*

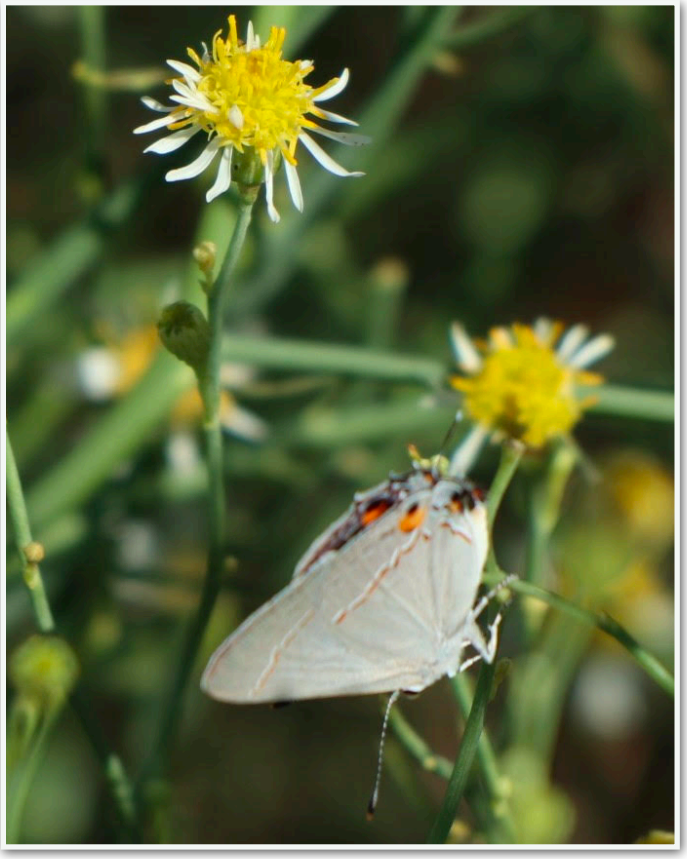
## Photographs and Article by James Von Loh

**From April 2020 through June 2021, drought (<2" of precipitation recorded for Las Cruces) resulted in few flowering plants to support migrating/nectaring butterflies. In early spring 2021, I observed a few butterflies arriving sporadically along the Rio Grande reach west of Mesilla and Las Cruces beginning in March. During May, Spiny Chloracantha, *Chloracantha spinosa*, a common deeply rhizomatous floodplain aster, flowered profusely. Stands and large patches have become established on the river (canal) bank and in patches and stands between the levee and the recreational trail. (Note: the Rio Grande was "canalized" between 1938 and 1944 to prevent annual flooding events and support irrigation of cropland; surface flow release time and water volume from upriver reservoirs is presently regulated by availability and legal commitments.)**

**Spiny Chloracantha provided nectar, forage, and shelter sites for butterflies and other arthropods until the more desirable milkweed flowers became available for nectaring from late June to September, and these were followed by (purple) Spiny-aster flowers from late August through October. In April-May it seemed improbable, in the face of continued drought conditions, that many Milkweed or Spiny-aster flowers would be produced during 2021. For this reason, I photo-documented nectaring butterflies and selected additional insect use of Spiny Chloracantha to account for its importance during the spring season.**

***Chloracantha spinosa* (Benth.) G. L. Nesom), Spiny Chloracantha, Mexican Devilweed. Synonyms include: *Aster spinosus, Chloracantha spinosa var. spinosa, Erigeron ortegae, Leucosyris spinosa***

**Following is a series of images documenting butterflies and selected arthropods visiting/using Spiny Chloracantha flowers to nectar and/or forage. Images entered herein are ordered chronologically, by species, from the date nectaring/presence was first photo-documented during the spring season in 2020; a relative abundance note is provided for each. Photographs on this page are from 2020 while the remainder are from 2021 (except as noted).**



**Gray Hairstreak, *Strymon melinus* (Hubner, 1818) on May 22. Occasional.**

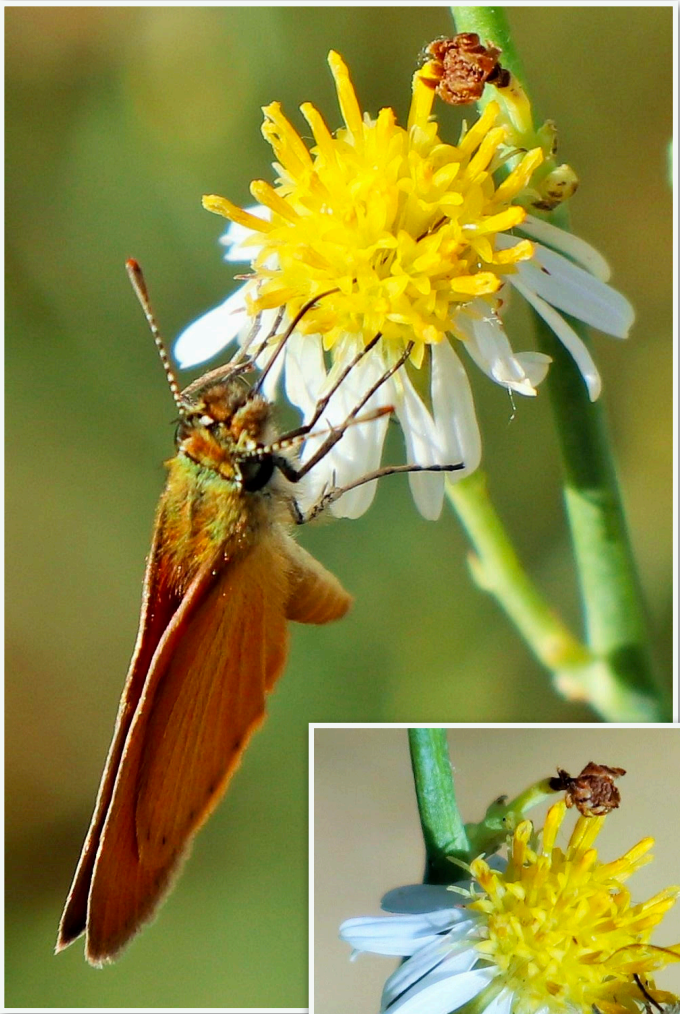
**European Cabbage White, *Pieris rapae* (Linnaeus, 1758) on May 26. Occasional.**

**Checkered White, *Pontia protodice* (Boisduval & Le Conte, 1830), and foraging Weevil Wasp, *Cerceris* (Latreille, 1802) sp., on May 26. Common.**

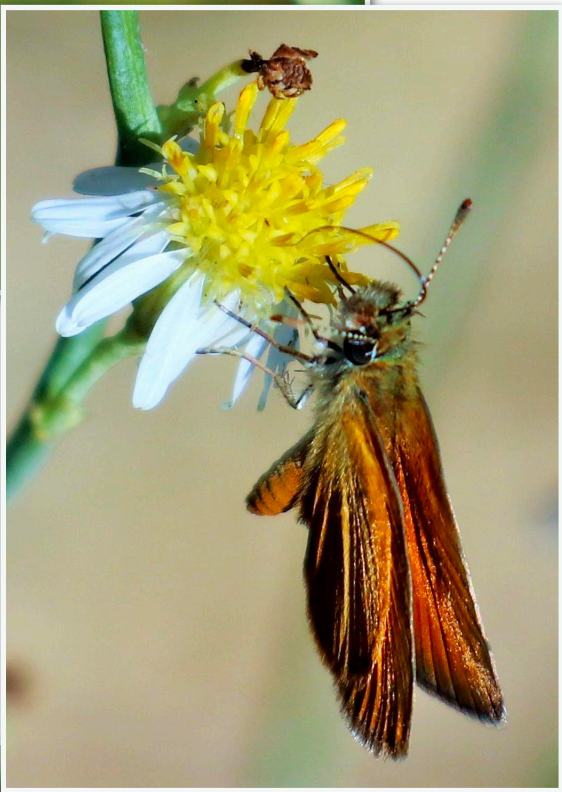
**Gray Buckeye, *Junonia grisea* (Austin & Emmel, 1998), on May 27. Uncommon.**

**Water released through the Caballo Dam arrived in the Las Cruces/Mesilla reach of the Rio Grande on June 1, 2021 when the drought was still occurring and the previous 10-month rainfall total was ~2".**

**At this point we pick up the record for 2021; the following photographs are from that year.**



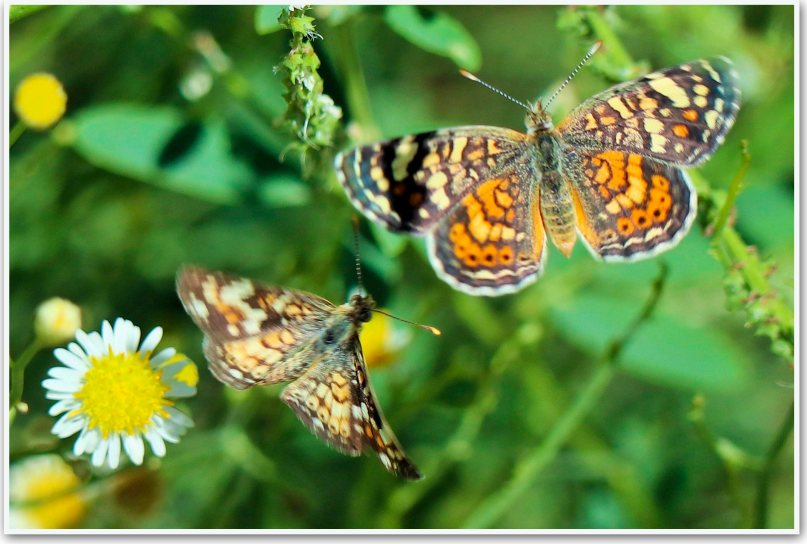
During this period, Bluet, *Enallagma* sp., a damselfly, was using Spiny Chloracantha stems for perching to rest and hunt for small prey. On June 3. Sporadic.



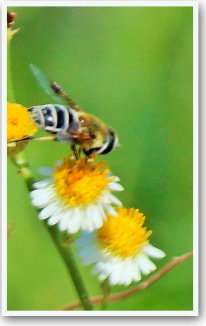
Tropical Least Skipper, *Ancyloxypha arene* (W. H. Edwards, 1871), on June 2 (above and right) and June 14 (below). Uncommon.

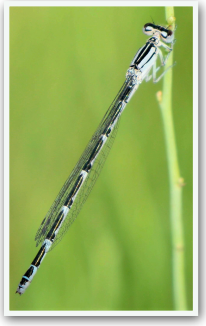
Marine Blue, *Leptotes marina* (Reakirt, 1868). Observations from June 6 and June 7. The two images to the right are from July 16. Common.

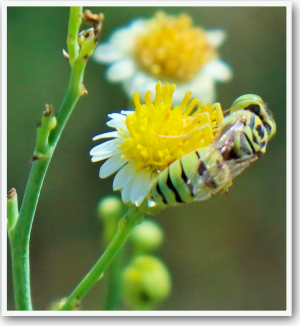
**Painted Crescent, *Phyciodes picta* (W. H. Edwards, 1865). Above on June 22, on June 8 to the right, and on June 17 below. Abundant.**



**Sporadic visitors during this time frame included Bee-fly, *Villa* sp. (Lioy, 1864), on June 24 (above) and Familiar Bluet, *Enallagma civile* (Hagen, 1861) on June 23 (right). The Bluets were using Spiny Chloracantha stems for perching to rest and hunt for small prey.**







**Left to Right Across The Bottom: Yellow-shouldered Drone Fly, *Eristalis stipator* (Osten Sacken, 1877) on June 11, uncommon. A species of Bluet, *Enallagma* sp., on June 24, sporadic. Sand Wasp, *Crabronid*; *Bembicini*; *Steniolia* (Say, 1837) sp., on June 27. Sporadic.**

**Fiery Skipper, *Hylephila phyleus* (Drury, 1773), on June 22. Uncommon.**

**White Checkered-skipper, *Burnsius albescens* (Plotz, 1884) above. From June 15 - July 25 this species was common.**

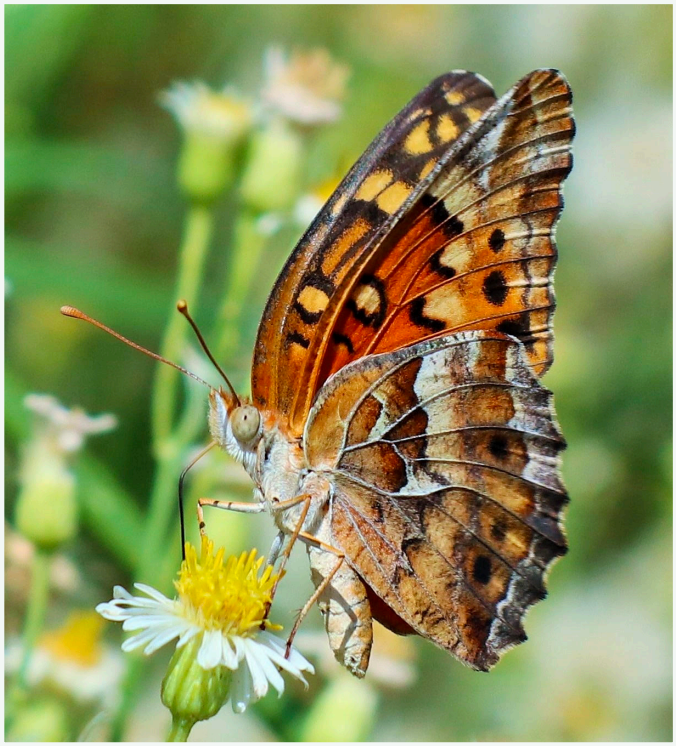
**Reakirt's Blue, *Echinargus isola* (Reakirt, 1867), on June 25. Common.**

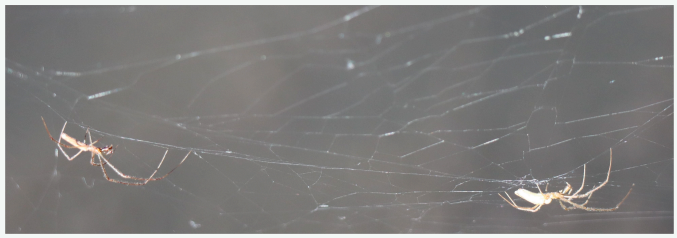
**Checkered White, *Pontia protodice* (Boisduval & Le Conte, 1830), was common through most of June and July, above on June 15 and to the right on June 22.**

**The Dainty Sulphur, *Nathalis iole* (Boisduval, 1836) was common during June with photographs from June 14, June 16 (left), June 18, and June 19.**

**Sleepy Orange, *Abaeis nicippe* (Cramer, 1779), above on June 17, were abundant, and Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775), below on the same day, were common during this period.**

**Orange Sulphur, *Colias eurytheme* (Boisduval, 1852), above on June 18, were common but Queen, *Danaus gilippus* (Cramer, 1775), like the one bottom left on June 22 and the one with frayed wings on June 27 (below), were uncommon.**

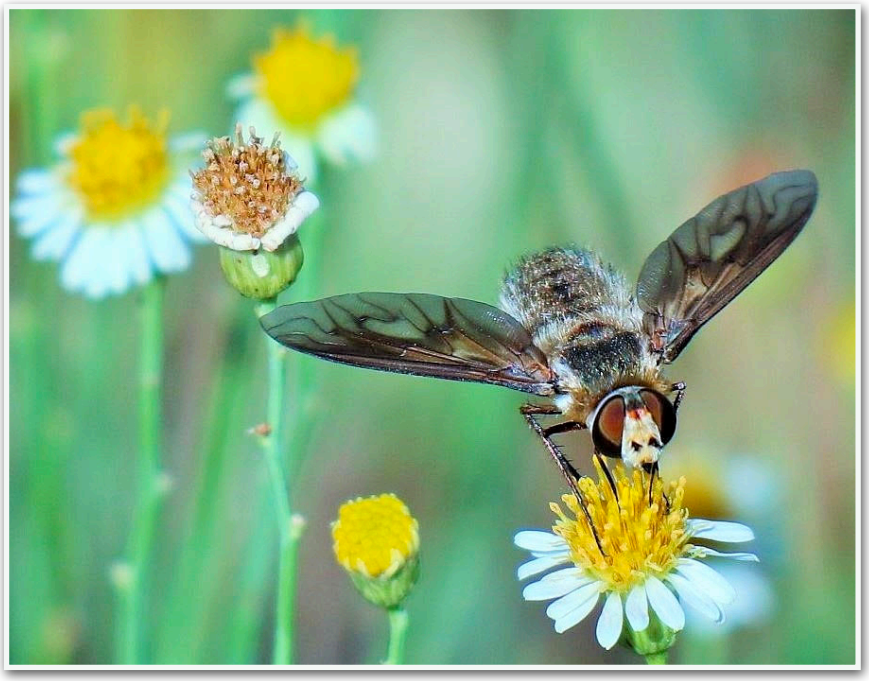




**Grass Orb-web Spiders, *Larinia* (Simon, 1874) sp., are common predators of butterflies and other insect species, building extensive webs within Spiny Chloracantha and adjacent plants. They were abundant, above on November 7.**

**Checkered White, *Pontia protodice* (Boisduval & Le Conte, 1830), captured within a spider web October 13.**

**Orb-weaver (Family: *Araneidae*) encapsulating captured insects in silk on September 26.**



**During the drought period in October 2020, a remarkable occurrence of many large, *Anthracine* bee-flies foraged from Spiny Chloracantha flowers. Anthracine Bee-fly, *Poecilanthrax* (Osten Sacken, 1886) sp., like the one to the left and on the following page, were uncommon. Both images were taken on October 14, 2020.**

**During the final week of June through September 2021, monsoon rainstorms (totaled ~6 inches, measured in Las Cruces) and groundwater percolating outward from the flowing channel (June to August) initiated prolific growth and flowering by Whorled (Horsetail) Milkweed, *Asclepias subverticillata* (A. Gray, Vail), Climbing (Twinvine) Milkweed, *Funastrum cynanchoides* (Decne., Schltr.), and Spine-aster (*Dieteria* sp.), among other flowering plants established along the Rio Grande. Discussions of these species relative to large numbers of nectaring butterflies appear later in this series.**

## Selected Rio Grande Nectaring Plants for Butterflies: *Asclepias subverticillata and Funastrum cynanchoides*

**Photographs and Article by James Von Loh**

**Milkweed species represent important nectaring/foraging sources for many insects including butterflies. In the genera *Asclepias* (L.) and *Funastrum* (E. Fourn.) of the family *Apocynaceae,* (Juss.), over a dozen species grow on the landforms of the southern Rio Grande. Two milkweed species occurring west of Mesilla/Las Cruces and in the Gila are discussed herein (for more detailed species information, and images see: https://wnmu.edu/academic/nspages/gilaflora/index.html).**

**From mid June until early-September, 2021, Horsetail Milkweed, *Asclepias subverticillata* (A. Gray/Vail), also known as the Western Whorled Milkweed, and Climbing Milkweed, *Funastrum cynanchoides* (Decne./Schultr.), also known as Fringed Twinvine, grow in these areas.**

**Horsetail Milkweed is a common, greenish-to-white-flowered, 0.5-1.0 meter tall, perennial/rhizomatous, riverbank and floodplain milkweed. Climbing Milkweed is a common, white-to-purplish-flowered, perennial/long-vining, riverbank milkweed. Both flowered sparsely during the drought period into early July, then profusely following monsoon rainstorms totaling ~6 inches of precipitation (beginning the last week of June). The Milkweed stands and patches I visit regularly have become established along the Rio Grande east bank and floodplain between Calle del Norte Highway bridge to north of La Llorna Park (a distance of approximately 3.5 miles).**

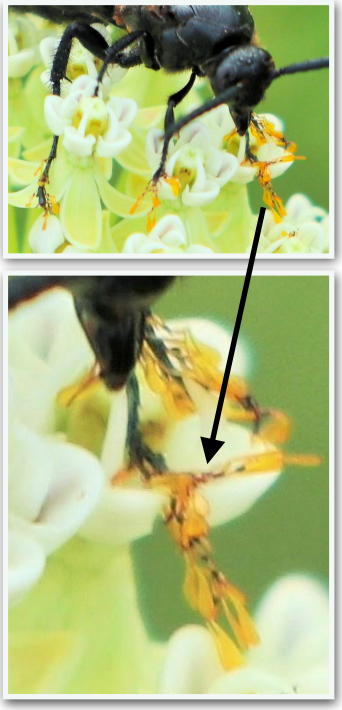
**Dense, linear stands of Horsetail Milkweed have become established on some segments of open riverbank and extend well into the floodplain, as open stands, where sufficient groundwater percolates from the flowing river during the growing season. Climbing Milkweed plants have become established on the riverbank and vine densely through the other vegetation, primarily over Coyote/Sandbar Willow, *Salix exigua* (Nutt.), tall shrubs (to 4-8 meters tall) and Tamarisk/Saltcedar, *Tamarix ramosissima* (Ledeb.), small trees (to 6-10 meters tall).**

**Horsetail and Climbing Milkweed flowers provide copious nectar, pollen, and forage for butterflies and other insects during the late spring (mid June) to late summer (September) migration**

A band of Horsetail Milkweed established along the canal bank and open stand where groundwater percolates laterally from the Rio Grande canal, north of La Llorona Park. View is northwest towards the Robledo Mountains.

Dense, narrow, band of Horsetail Milkweed established on the east Rio Grande canal bank just north of Calle del Norte Highway bridge.

Veil of Climbing Milkweed vines established along the Rio Grande canal bank and covering much of Coyote/Sandbar Willow tall shrubs in this stand, south of La Llorona Park.



Flower wasps, such as this Mexican Scoliid, *Scolia mexicana* (Saussure, 1858), are effective pollinators of Milkweed flowers, as seen by the number of pollinarium/pollinaria collected on the legs and available for transfer to other flowers as the wasp forages within the stand.

Black-headed structure is the corpusculum with two translators attached to pollen sacs (pollinia) alongside the stigmatic slit in these Horsetail Milkweed flowers. Note the lower right flower has one corpusculum/translator/pollinarium already removed.

Horsetail Milkweed umbel/corymb with flower buds and recently opened flowers.

Horsetail Milkweed fruits, here providing an egg deposition site for this Monarch. The fruits are also preferred forage, often selected by Monarch caterpillars.

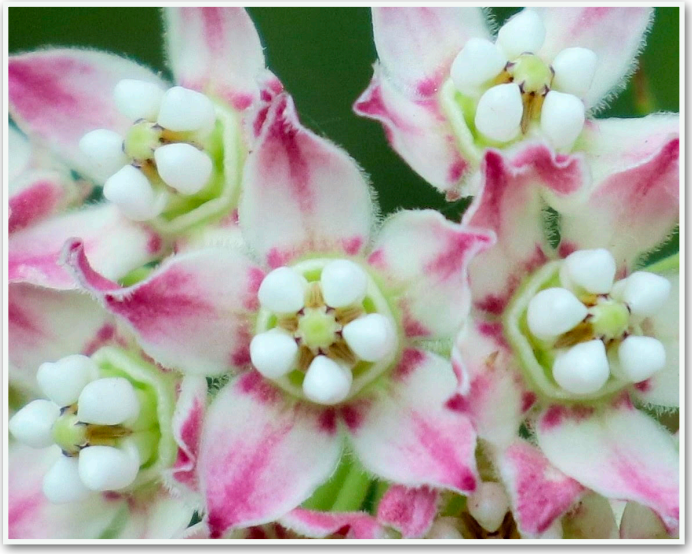
Horsetail Milkweed plant illustrating typical progression of leaf distribution, flower development, and nectaring opportunities available to migrating butterflies such as this Queen.

period. For this reason, I have photo-documented nectaring/foraging bees, wasps, flies, and butterflies and selected additional insect use (particularly predators of foraging insects) of Milkweeds between the 2019-2021 growing seasons to account for Milkweed importance to the insect community during the summer/early autumn seasons. (Note that a portion of the Horsetail Milkweed habitat established as patches and open stands on the floodplain portion becomes unavailable to butterflies for nectaring due to annual maintenance mowing, typically beginning in August.)

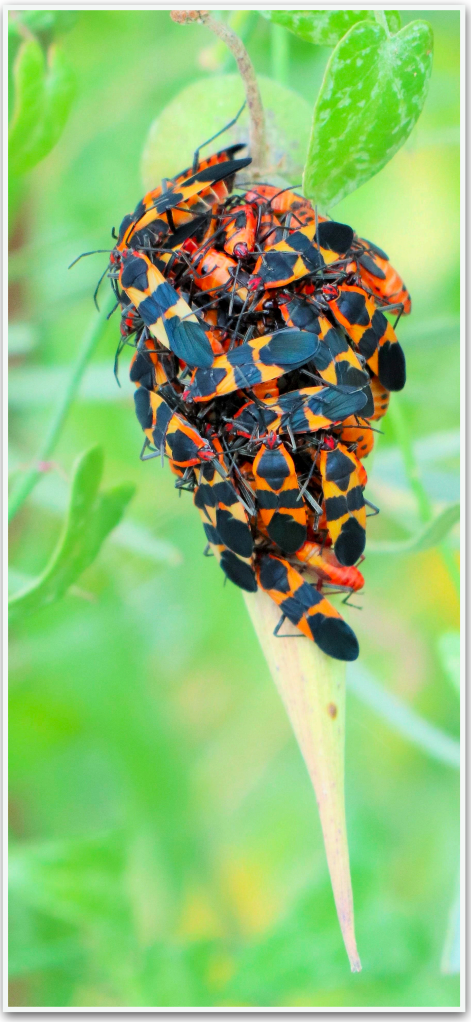
The flowering Milkweeds visited by insects, in return, receive pollen exchange among flowers to support fruit production and seed maturation/ dissemination. However, Milkweed flower pollination is complicated: 1) pollen is stored in the pollinium (a flattened, elongated sac within the anther) containing up to 200 pollen grains; 2) two pollinia, each connected to a corpusculum by thread-like translators, comprise a pollinarium; and 3) to pollinate another flower, the pollinarium must be physically removed from the anthers by an insect large enough to insert its long leg into a stigmatic slit (located between anthers), draw its leg upward to exit the slit, and in the process, snag the translator(s) on leg hairs, bristles, spines, or hooks, thus withdrawing the pollen sacs for potential transfer to another flower by the same method.

As seen in the photograph below, Horsetail Milkweed fruits may provide foraging opportunities for other insects, including these yellow Oleander Aphids, *Aphis nerii,* (Fonscolombe, 1841) which feed from the sap by piercing the fruit epidermis and inserting their stylus into the phloem layer. Also present are foraging larvae of Convergent Lady Beetles, *Hippodamia convergens* (Guerin-Meneville, 1842) and unidentified small insects.

Climbing milkweed



**Top: umbel/corymb fully in flower. Bottom Left: umbel/corymb with flower buds, recently opened flowers, and associated leaves. Bottom Right: Black-headed structure is the corpusculum with two translators attached to pollen sacs (pollinia) alongside the stigmatic slit in these Climbing Milkweed flowers.**



**Top: 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.**
**Bottom Left: Climbing Milkweed fruits.**
**Right: Climbing Milkweed fruits may provide foraging opportunities for other insects, including Large Milkweed Bugs, *Oncopeltus fasciatus* (Dallas, 1852), which feed from developing seeds within the follicle by piercing through it with their proboscis.**

# Selected Rio Grande Nectaring Plants for Butterflies: *Dieteria canescens*

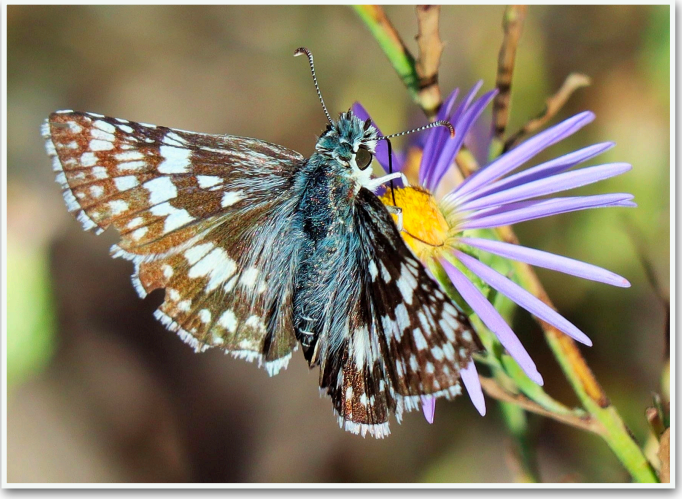
## Photographs and Article by James Von Loh

**From mid-September until the end of October, 2021, Spine-aster, *Dieteria canescens* (Pursh) A. Gray, (a.k.a. Hoary Aster) flowered profusely following monsoon rainstorms totaling ~6 inches of precipitation. It is a common, purple-flowered, 0.5-1.5 meter tall, tap-rooted, floodplain aster. Individual plants to small patches became established on the river (canal) bank, primary irrigation and return-water channel banks, and in larger patches, to a nearly 0.5-acre stand (northeast of the Calle del Norte bridge), between the levee and the recreational trail.**

**Spine-aster flowers provided nectar, pollen, and forage for butterflies and other arthropods during the late summer to early autumn migration period, after the very desirable milkweed flowers became unavailable (mid to late September, 2021) for nectaring/foraging. For this reason, we photo-documented nectaring butterflies and selected additional insect use of Spine-aster to account for its importance to migrating butterflies during the late summer/early autumn seasons. Images presented herein represent butterflies and other insect species encountered visiting Spine-aster flowers along an ~4.0-mile reach of the canalized Rio Grande. Many hundreds of butterflies nectared from Spine-aster flowers to provide energy/nutrients for their migration progress. It is likely that other photographers visiting habitats/sites like these during 2021 collected similar, uniquely beautiful images, of these and other butterfly species, during the massive summer/fall migrations.**

**Above: Early flowers of the Spine Aster became available as a nectar source in mid-September on plants commonly 0.5-1.0 meters tall. Below: This individual exceeds 2 meters in height, growing from a moist irrigation ditch bank.**

**Western Pygmy Blue, *Brephidium exile* (Boisduval, 1852) is a common butterfly nectaring from Spine-aster flowers; it is sometimes overlooked because of small size.**



**White Checkered-skipper, *Burnsius* (*Pyrgus*) *albescens* (Plotz, 1884). A common butterfly nectaring from Spine-aster flowers. See the species listings earlier for a comment on separating this species from the Common Checkered-skipper.**

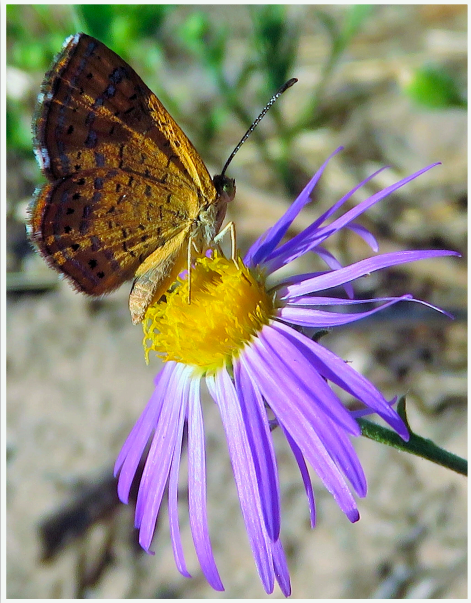
**Reakirt's Blue, *Echinargus isola* (Reakirt, 1867)**

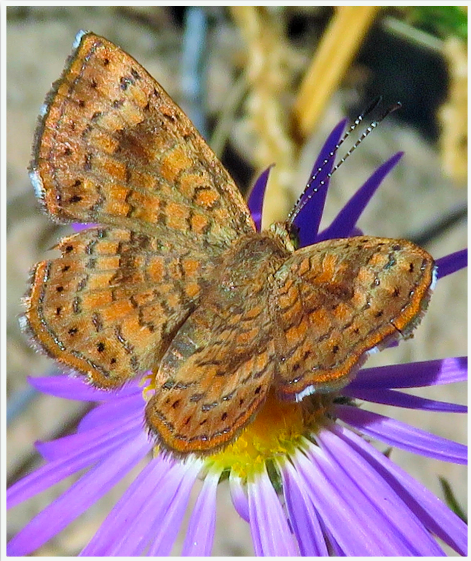
**Gray Hairstreak, *Strymon melinus* (Hubner, 1818)**

**Right Column: Fiery Skipper, Hylephila phyleus (Drury, 1773).**
**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.**

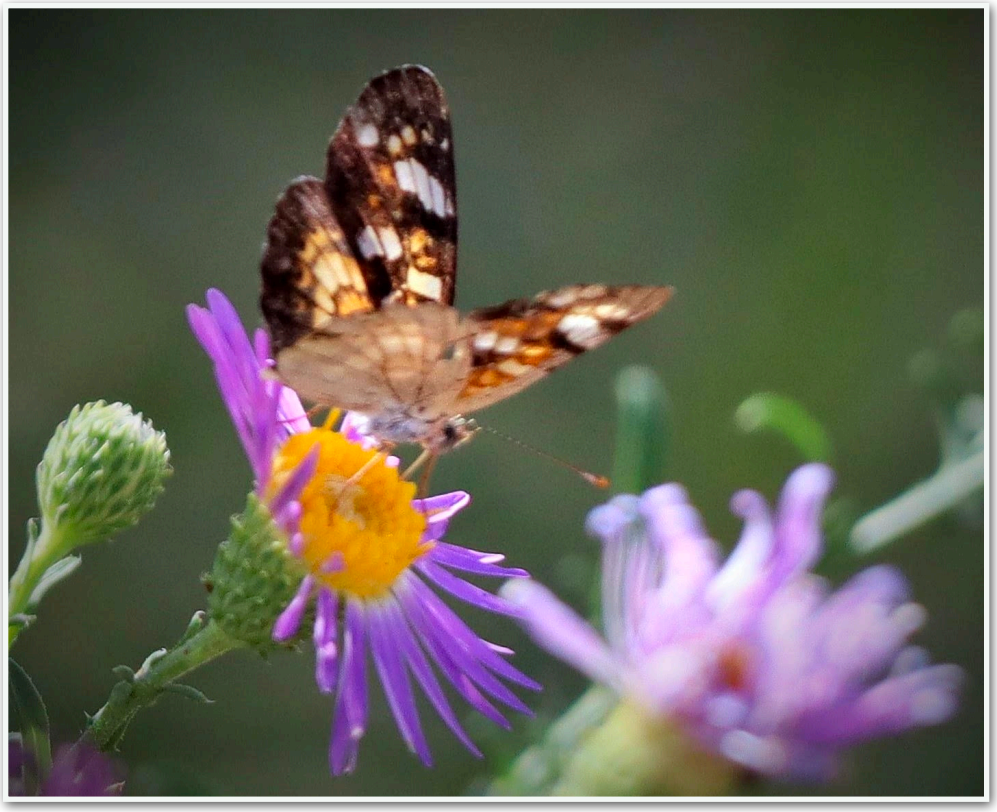
**Carus Skipper, *Polites* (*Yvretta) carus* (W.H. Edwards, 1883). An uncommon butterfly nectaring from Spine-aster flowers. Photograph by Gordon Berman.**

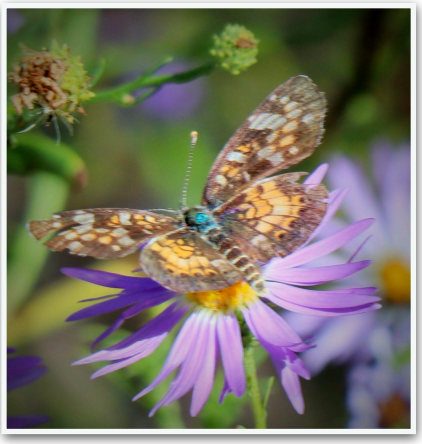
**Gray Buckeye, *Junona grisea* (Austin & Emmel, 1998)**





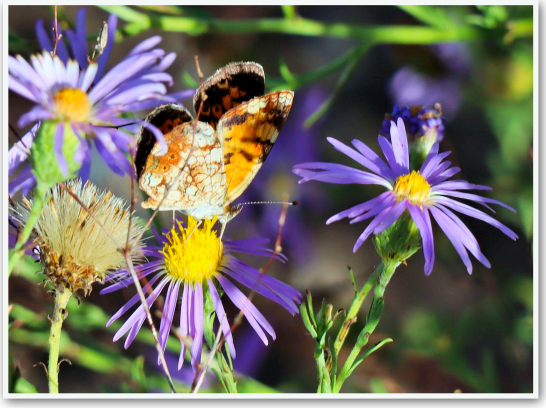
**Left and two above: Fatal Metalmark, *Calephelis nemesis* (W.H. Edwards, 1871). Photographs by Gordon Berman.**

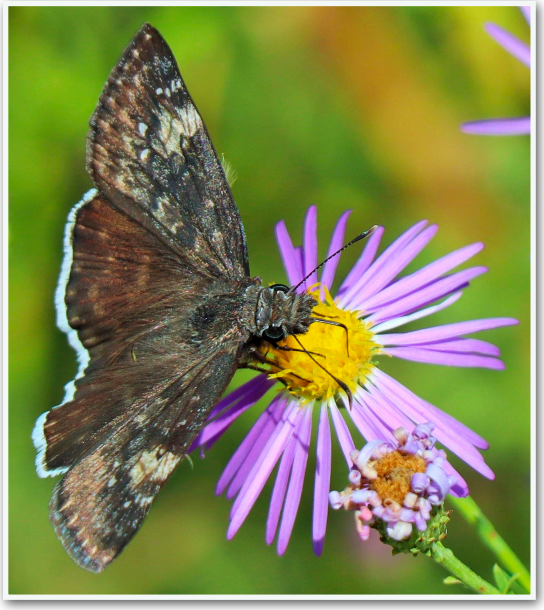


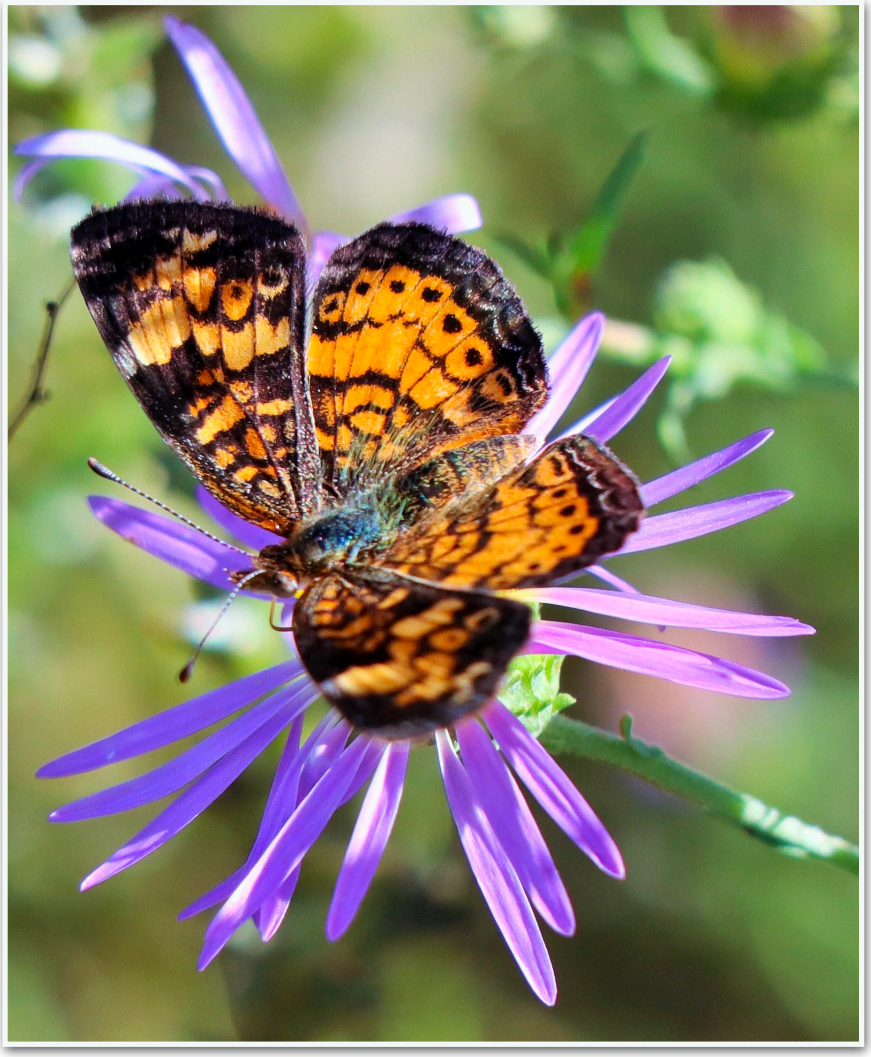


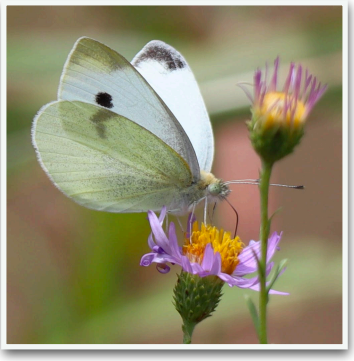
**Above and Left: Painted Crescent, *Phyciodes picta* (W.H. Edwards, 1865). A common butterfly nectaring from Spine-aster flowers.**

**Below and Center left: Pearl Crescent, *Phyciodes tharos* (Drury, 1773). A rare butterfly nectaring from Spine-aster flowers.**
**Below Left: Funereal Duskywing, *Erynnis funeralis* (Scudder & Burgess, 1870).**

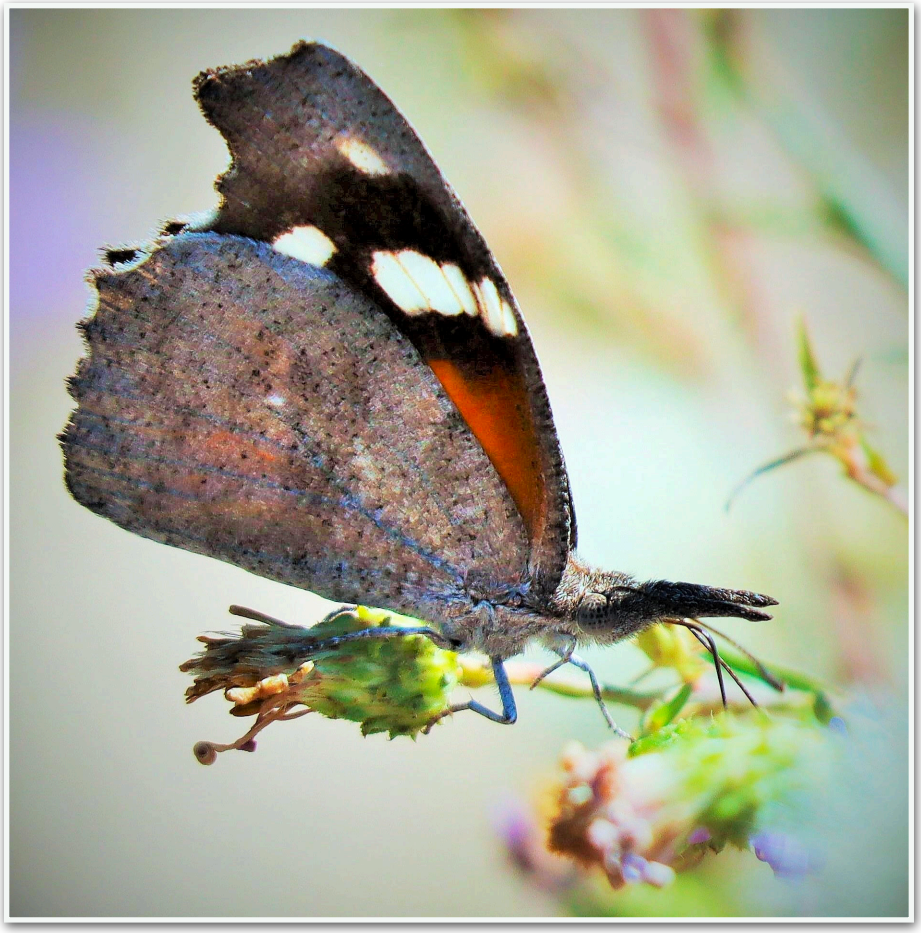






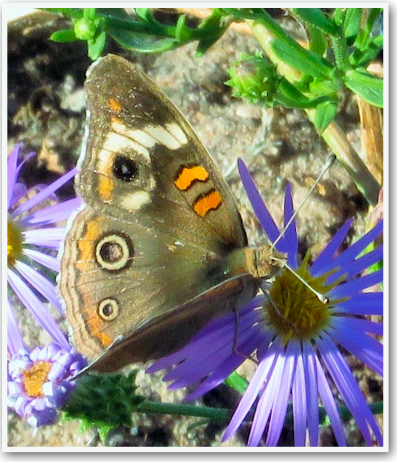


**Above and three to left: European Cabbage White (*Pieris rapae*, (Linnaeus, 1758). A common butterfly nectaring from Spine-aster flowers.**

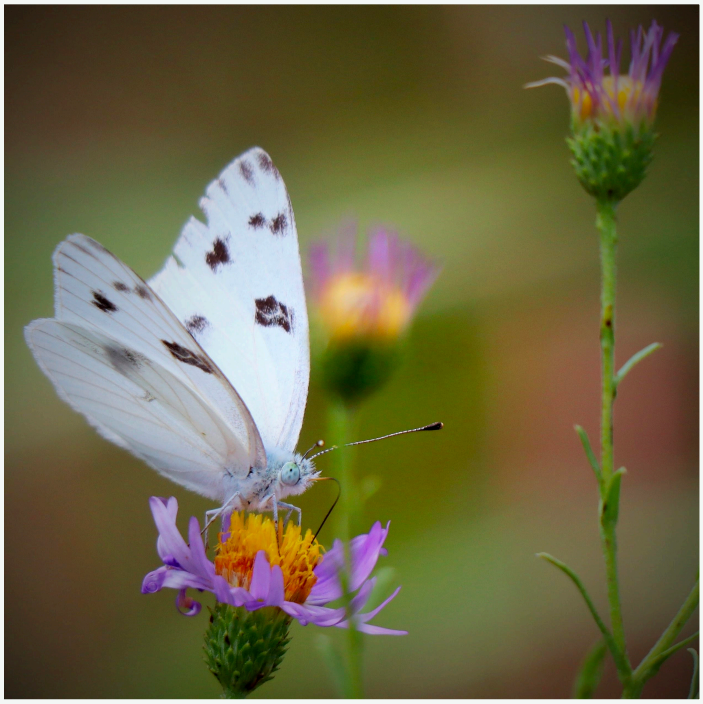


**Left and two above: American Snout, *Libytheana carinenta* (Cramer, 1777). An abundant butterfly nectaring from Spine-aster flowers. As shown to the left, individuals became darker in color in later days near the end of October.**

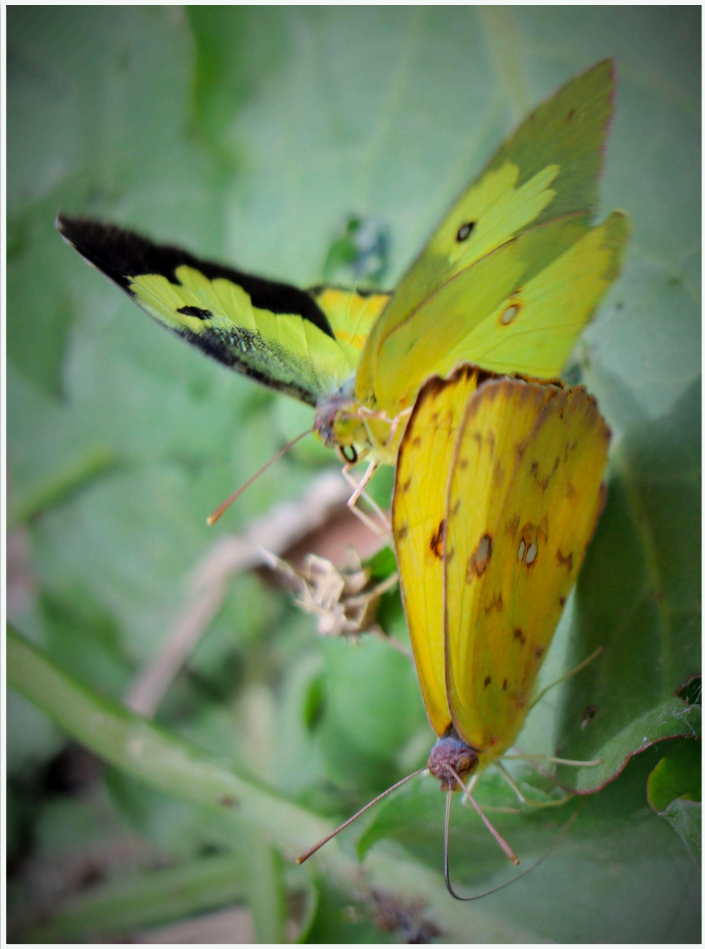
**Gray Buckeye, *Junona grisea* (Austin & Emmel, 1998), stops nectaring from Spine-aster flowers to bump several times into White Checkered-skipper, *Burnsius* (*Pyrgus) albescens* (Plotz, 1884) that appeared to be displaying to attract a mate. This behavior occurred over several minutes and several "bumping" incidents.**



**Photographs to left by Gordon Berman.**



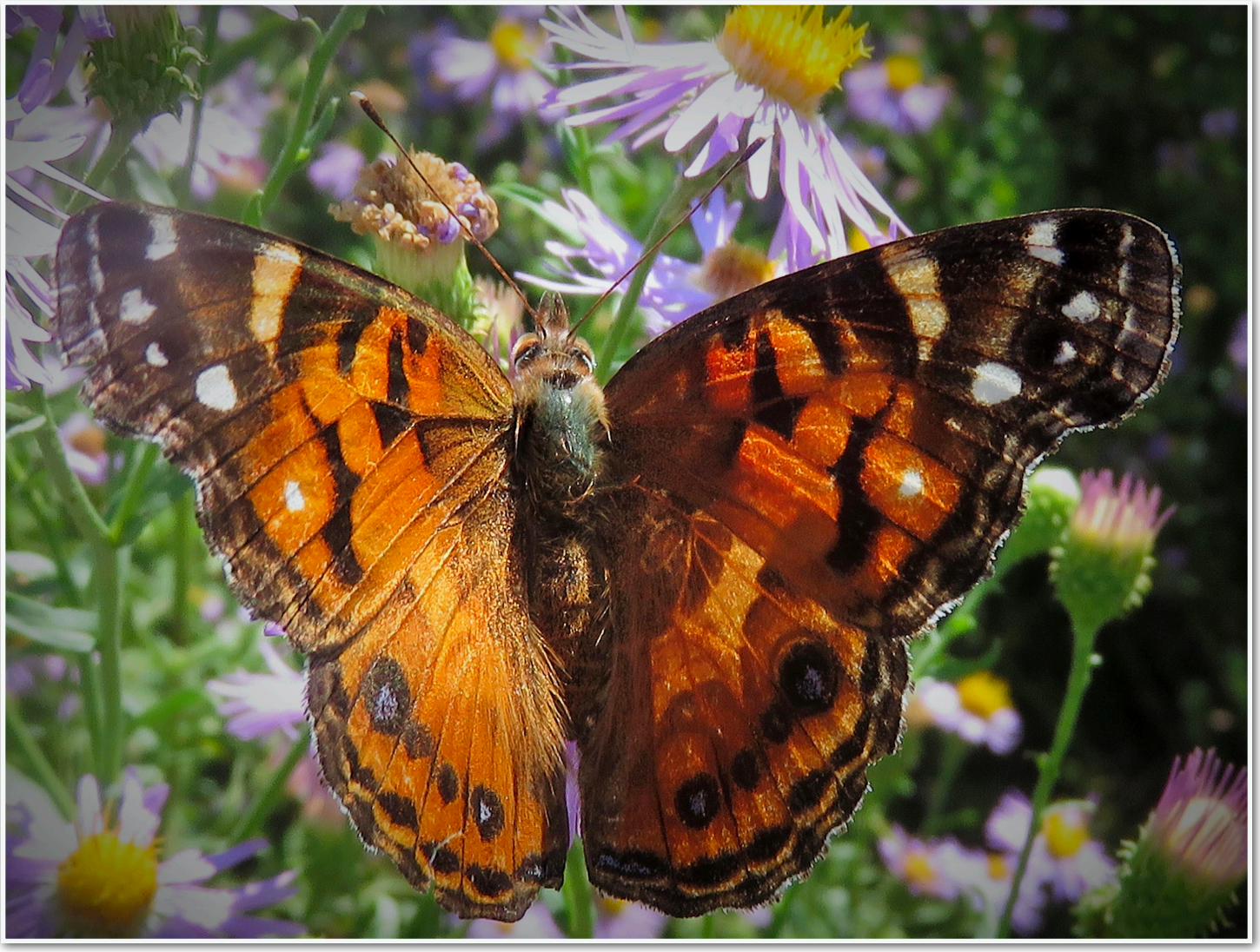
**Checkered White, *Pontia protodice* (Boisduval & Le Conte, 1830)**



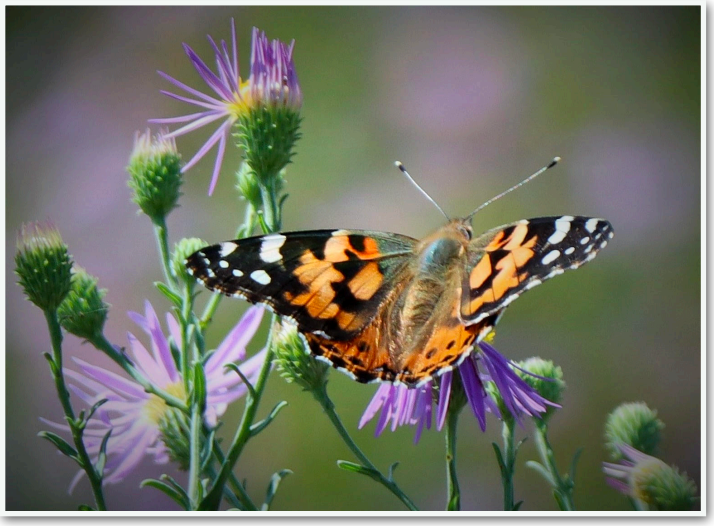
**Southern Dogface, *Zerene cesonia* (Stoll, 1790), formerly *Colias cesonia*.**

**Both the Sleepy Orange, *Abaeis nicippe* (Cramer, 1779), pictured above and Mexican Yellow, *Abaeis mexicana (Boisduval, 1836),* see species listings, were formerly in the *Eurema* genus. Above Sleepy Orange are nectaring on the Spine-aster flowers.**

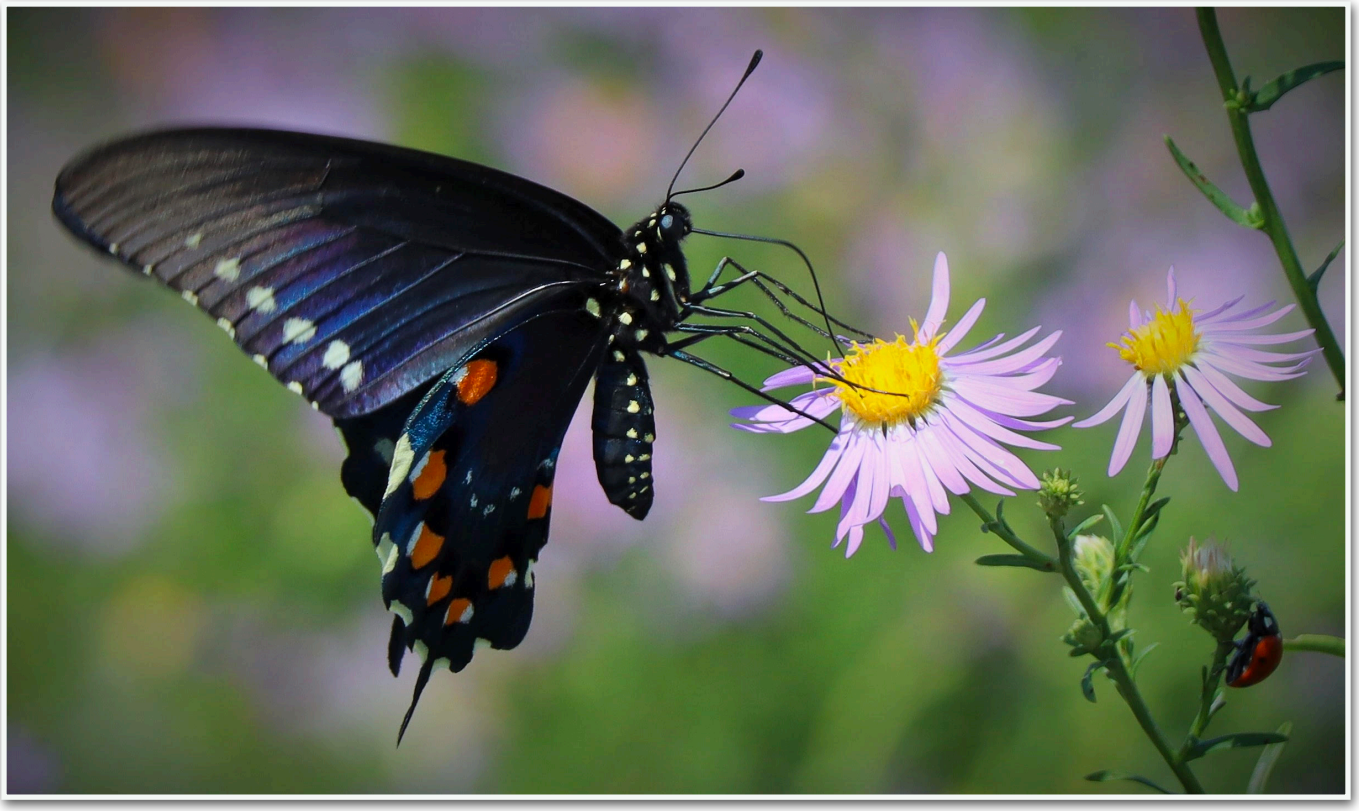
**Orange Sulphur, *Colias eurytheme* (Boisduval, 1852)**



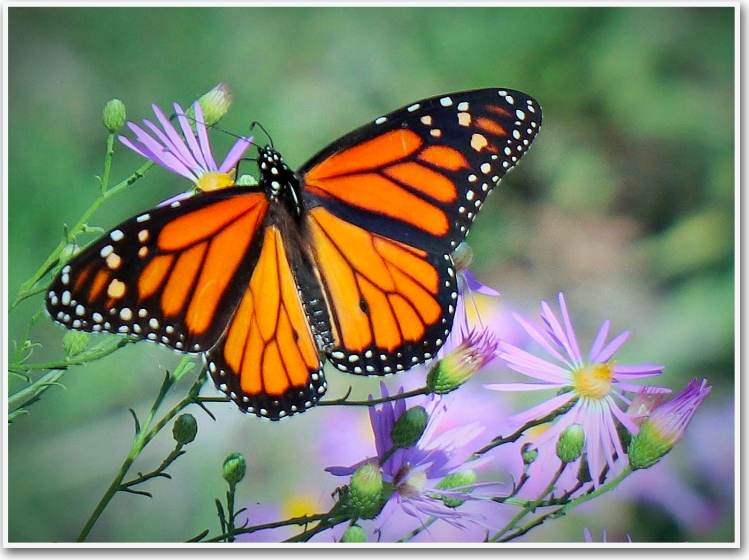
**American Lady, *Vanessa virginiensis* (Drury, 1773). Photograph by Gordon Berman.**



**Above: Painted Lady, *Vanessa cardui* (Linnaeus, 1758), was common on the Spine-aster flowers. Photo by James Von Loh. Right: Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775) was an often-observed butterfly nectaring from Spine-aster flowers. Photograph by Gordon Berman.**



**Pipevine Swallowtail, *Battus philenor* (Linnaeus, 1771).**



**Above: Monarch, *Danaus plexippus* (Linnaeus, 1758). Uncommon on Spine-aster flowers.**
**Left: Queen, *Danaus gilippus* (Cramer, 1775). A common large butterfly nectaring from Spine-aster flowers .**

**Monarch images to the left have been entered on the Journey North page on this species.**

# Late Bloomers in the Black Range, Nectaring Plants for Butterflies: *Ericameria nauseosa & Tagetes lemonii*

**Photographs and Article by Nichole Trushell**

**Fall 2021 was a long, slow, gentle event in southern New Mexico. But even with this unhurried season, most flowering plants faded as late October and November arrived. Interesting are the species who flower late or keep their flowers long into the fall as their standard expression. Some remarkable diversity can be found observing the importance of these late bloomers to insects, as shown in these photographs from Kingston.**

**A year ago (Vol. 4, No. 2) I wrote about enhancing home backyard habitat to create small but critical oases for a wide variety of resident and migratory species. As I highlighted then, the importance of individual efforts in creating habitat should not be undervalued. Linked, these home habitats can be significant. Adding late blooming species can be critical support through fall, as these oases offer needed resources for birds and butterflies along their migratory routes.**

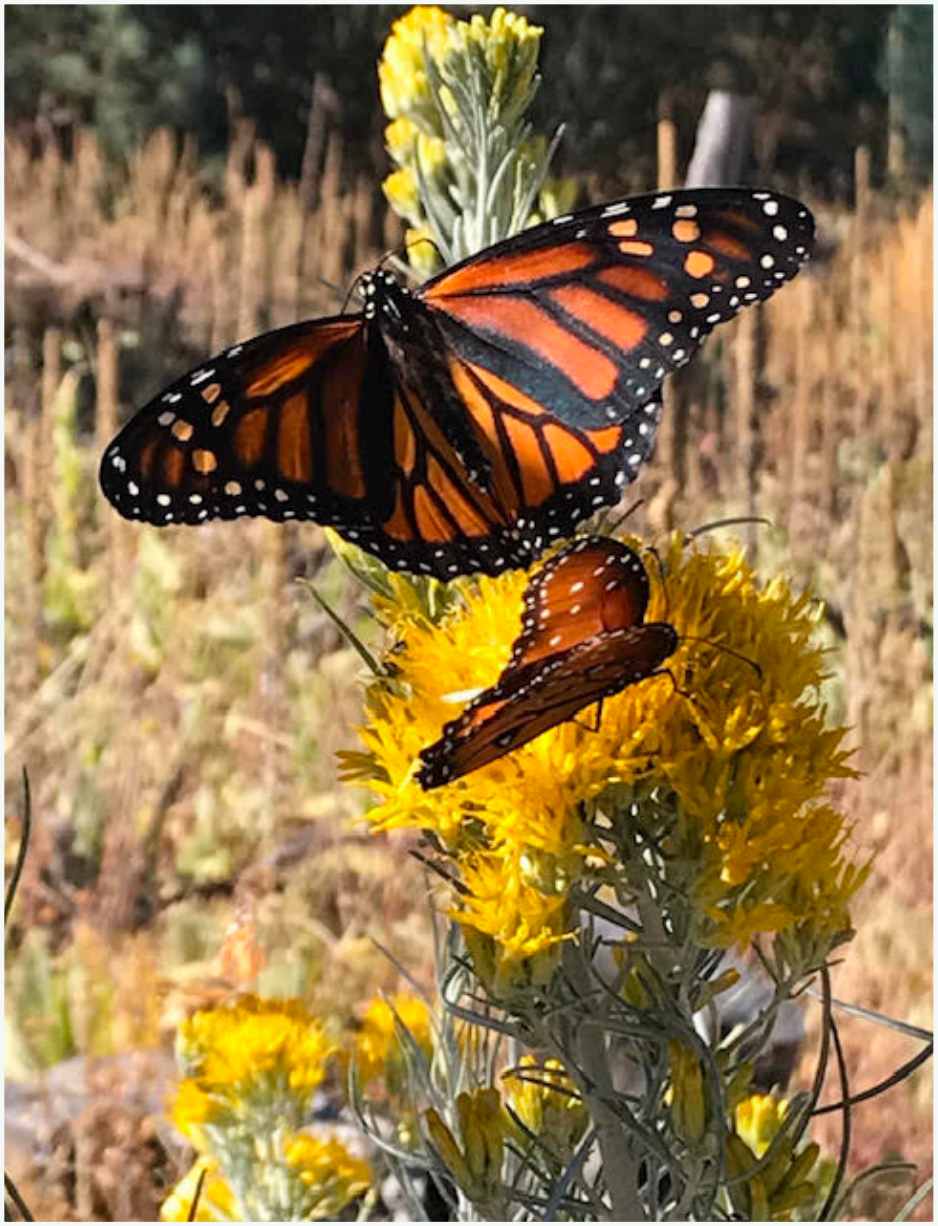
**Chamisa (*Ericameria nauseosa)* with Monarch (*Danaus plexippus),* American Lady *(Vanessa virginiensis),* Orange Sulfur (*Colias eurytheme),* Common Checkered Skipper (*Pyrgus communis)* and others.**

**Queen (*Danaus gilippus*) on Chamisa**

**In this issue I offer some snapshots of two members of the sunflower family: *Tagetes lemonii* and *Ericameria nauseosa*. Both were still flowering in Kingston New Mexico, elevation 6400' in November 2021 and in the case of the *Tagetes* in my yard, well into December. Many insects continued feeding on the resources of nectar and pollen these late flowers provided; and in the case of predators like the Mantis, the food resource provided by those who visit flowers. The late bloomers also gave me a joyful element of summer into late fall after most of my yard had faded. Two other noteworthy flowering shrubs that bloom for a long period and well into fall are *Salvia greggii* and *Anisacanthus*.**

***Tagetes*, known as Copper Canyon Daisy, Mountain Marigold, and Mexican Marigold, grows each year to an aromatic, shrubby plant about 3-4' tall and wide. The dark green leaves have a very unique, intense, citrus-herb fragrance; flowers are a showy dark yellow-orange. They begin blooming in late**

**Above: Variegated Fritillary, *Euptoieta claudia*, and Orange Sulfur, *Colias eurytheme*, on Chamisa.**
**Below Left: Southern Dogface, *Zerene cesonia*, and Western Pygmy Blue, *Brephidium exilis*, on Chamisa.**
**Below Right: Western Pygmy Blues, *Brephidium exilis*, and Ceraunus Blue, *Hemiargus ceraunus*, on Chamisa.**
**Photographs on this page by Steve Morgan.**



summer and continue until a hard freeze ends their show. Plants become stout quickly, but die back to the ground when winter arrives in Kingston. They do best with good drainage and full sun. The species is native to northern Mexico and southern Arizona. *Tagetes* can readily be found in the native plant nursery industry, and I have even found them at a Lowe's garden section.

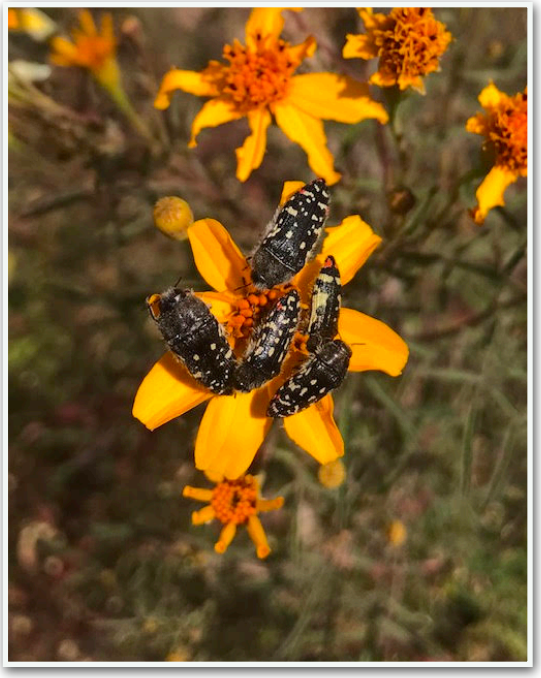
*Ericameria* is known as Chamisa, Rubber Rabbitbrush and Gray Rabbitbrush. Plants are vigorous and grow to a large multi-branched shrub, 4-7' tall. The leaves are gray-green and narrow, the flowers are brilliant yellow. Plants bloom from early summer through October. Full sun and good drainage are best, and the species is drought tolerant once established. Chamisa should be planted where it has room to be wild and to spread. The plant is tolerant of saline soils. *Ericameria* has a wide range from northern Mexico through the western US and into western Canada. Specimens are very common in the native plant industry.

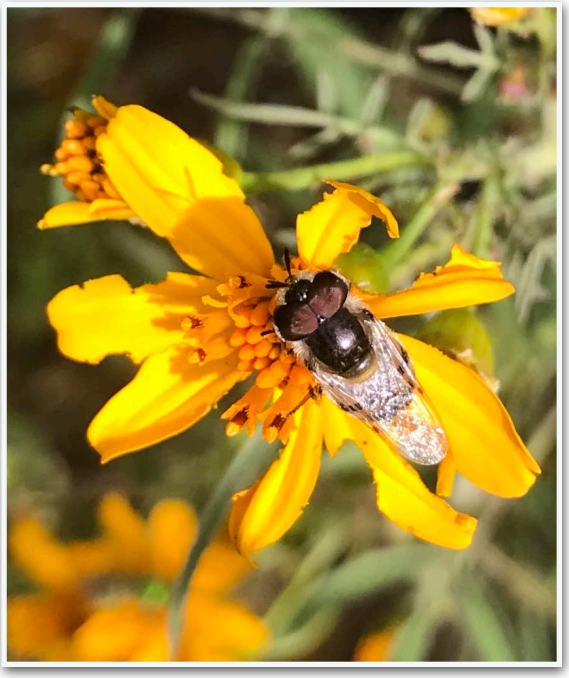
These species can be planted in the late spring and should provide flowers the first year. Both do well in Kingston, but in surrounding desert communities they will truly thrive. The warmer temperatures will offer an even longer flowering period and more vigorous growth. Neither requires a lot of water, but any regional native, planted in your yard, requires some supplemental water. Of these two, Mountain Marigold will need more care than Chamisa.

Top: Monarch and Queen on Chamisa.

Right: Jewel Beetles - Buprestid Beetles, genus *Acmaeodera* on *Tagetes*.

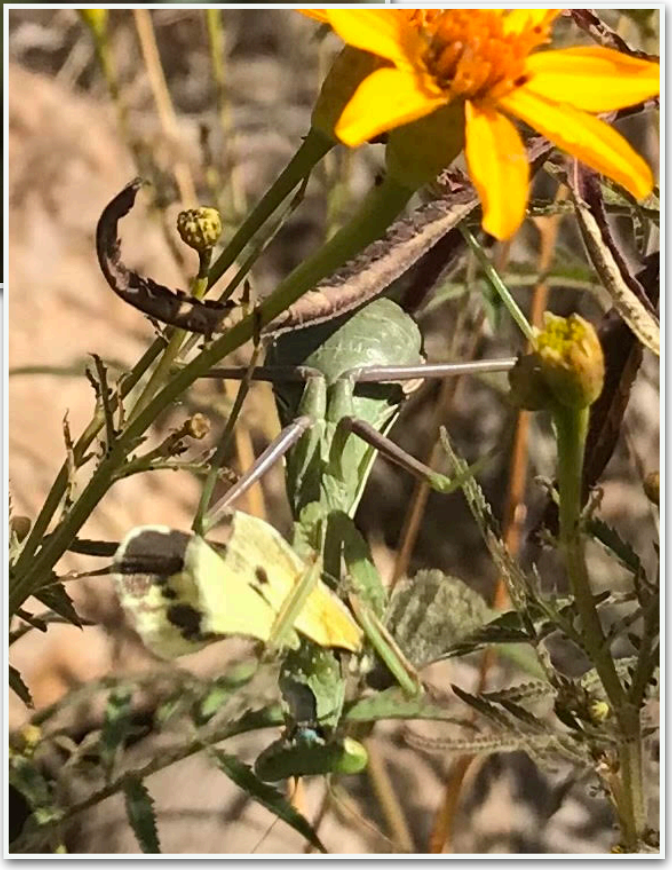
Far Right: A syrphid fly, *Copestylum marginatum*, feeding on flowers of *Tagetes*.

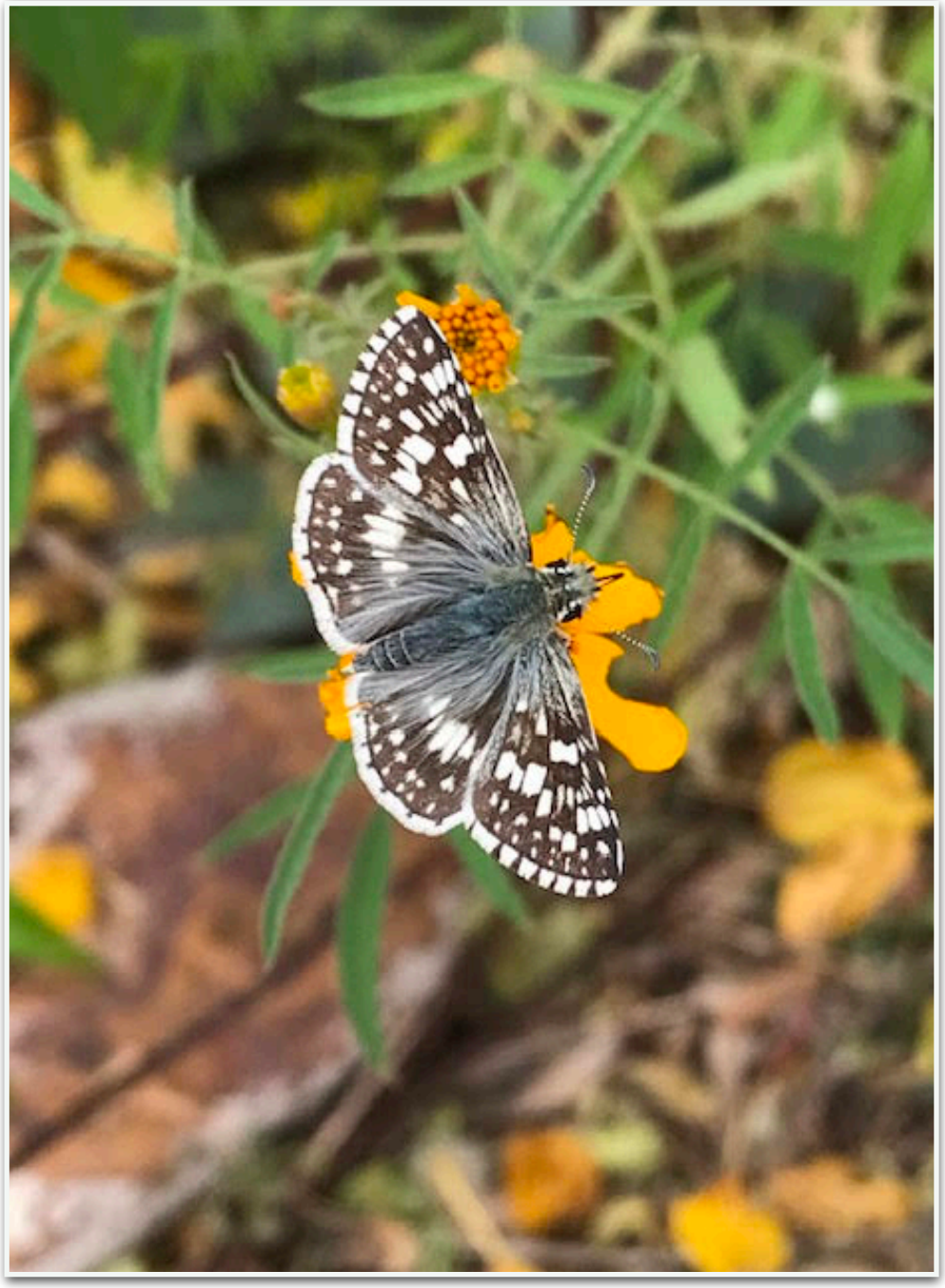




**Above and left: Peridot Bee, *Augochlorella pomoniella*, on *Tagetes lemonii***

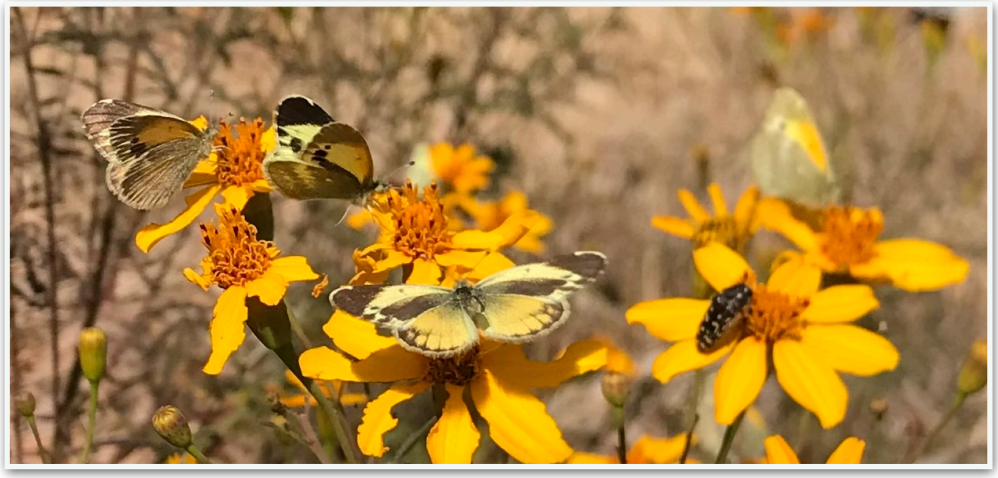
**Photos Below: Preying Mantis, genus *Stagmomantis*, hunting for and catching butterflies**





**Right: Common Checkered Skipper or Cuadrícula Común, *Burnsius communis*, on *Tagetes***

***Below:* Multiple Dainty Sulphur, *Nathalis iole*, on *Tagetes***



# Butterflies of the Rio Grande - Article and Photographs by James Von Loh

**In the following series of mini-articles I deal with butterfly groups which I observed along the Rio Grande, grouped by bright color (the royals), size (large, medium, and small), and the small brown things (skippers, et al.)**

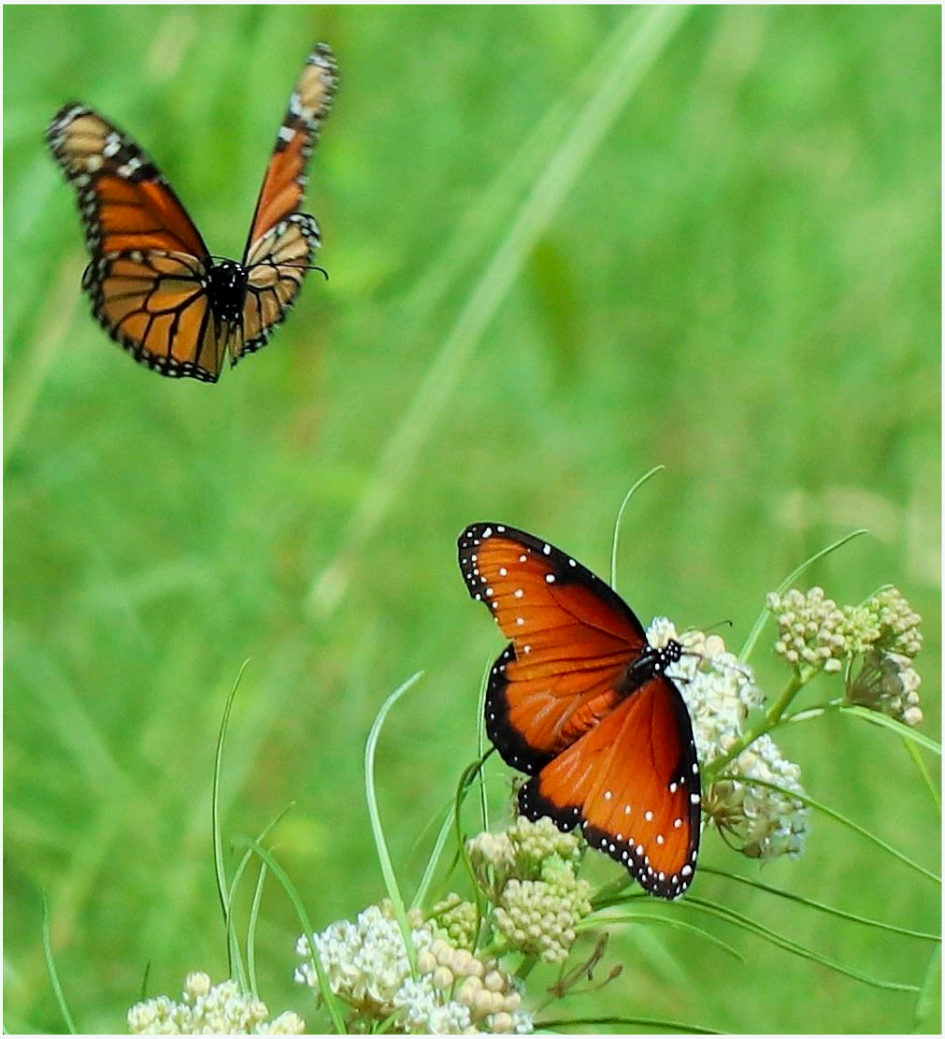
## Rio Grande Royalty: Monarchs, Queens, and Viceroys

**The iconic large, orange-to-brown butterflies relying on milkweeds to acquire nectar, mate, deposit eggs, and produce foraging larvae are the Monarch, *Danaus plexippus* (Linnaeus, 1758), and Desert Queen, *Danaus gilippus* (Cramer, 1775) *thersippus* (H. Bates, 1863). Along the Rio Grande reach I visit regularly, Desert Queens are common to abundant while Monarchs are uncommon in terms of the number observed.**

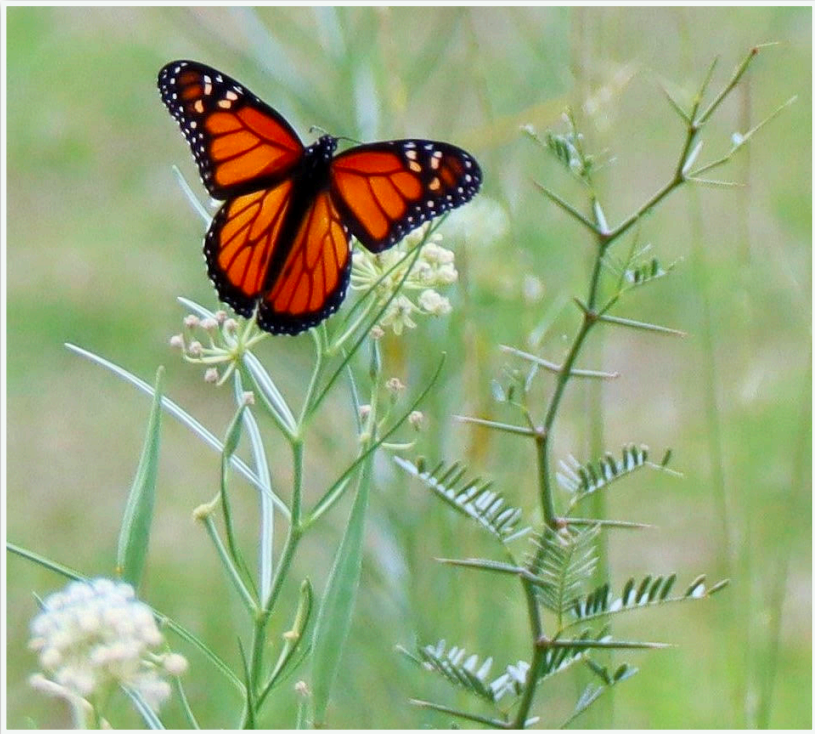
**(Note: all photo-documented sightings of Monarchs and their larvae were recorded into the Journey North database: https://journeynorth.org/monarchs).**

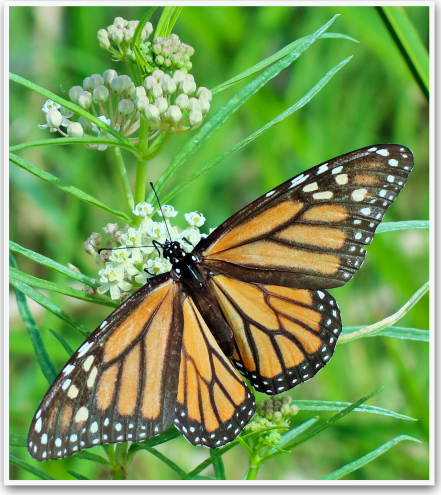
**Desert Queens nectar from both Horsetail and Climbing Milkweed flowers, while Monarchs appear to exclusively nectar from Horsetail Milkweed flowers. (I observed only a single Monarch nectaring from Climbing Milkweed flowers, in 2019). Also, for the first time in three seasons of observation, a Desert Viceroy, *Limenitis archippus* (Cramer, 1775) *obsoletus* (W. H. Edwards, 1882), nectared from Climbing Milkweed flowers during 2021 (right); I have not made observations of Desert Viceroys nectaring from Horsetail Milkweed flowers in the past three years.**

**Monarchs have legs that are long and strong enough to extract pollinia (see pollen sac on left front leg in the center image on the following page); however, I would consider them a rare pollinator of Milkweed flowers and an uncommon flower visitor along this Rio Grande reach.**

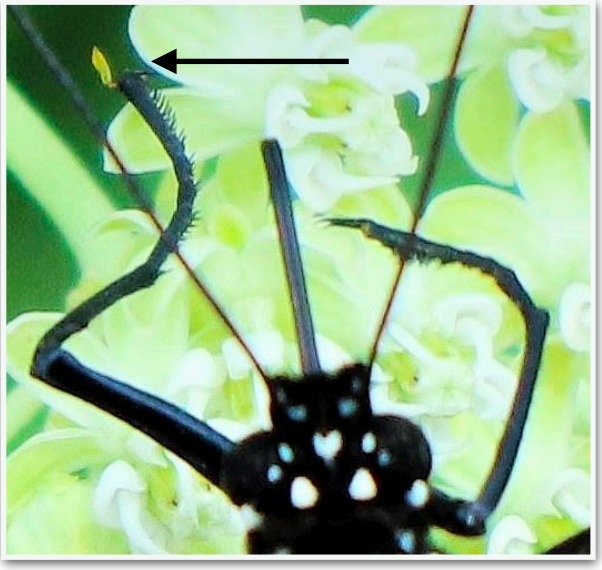


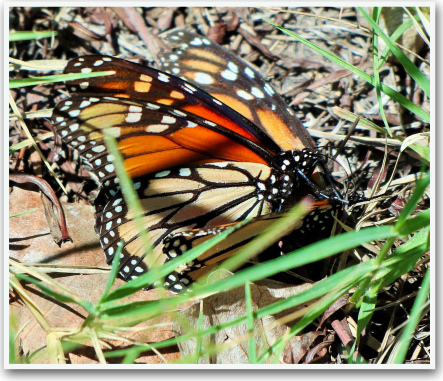
**Above: Monarch (in-flight) investigates Desert Queen nectaring from Horsetail Milkweed flowers. Generally, Monarch wings are orange-colored dorsally with orange and beige colors ventrally while Desert Queen wings are shades of brown-to-brownish orange in color, both dorsally and ventrally.**



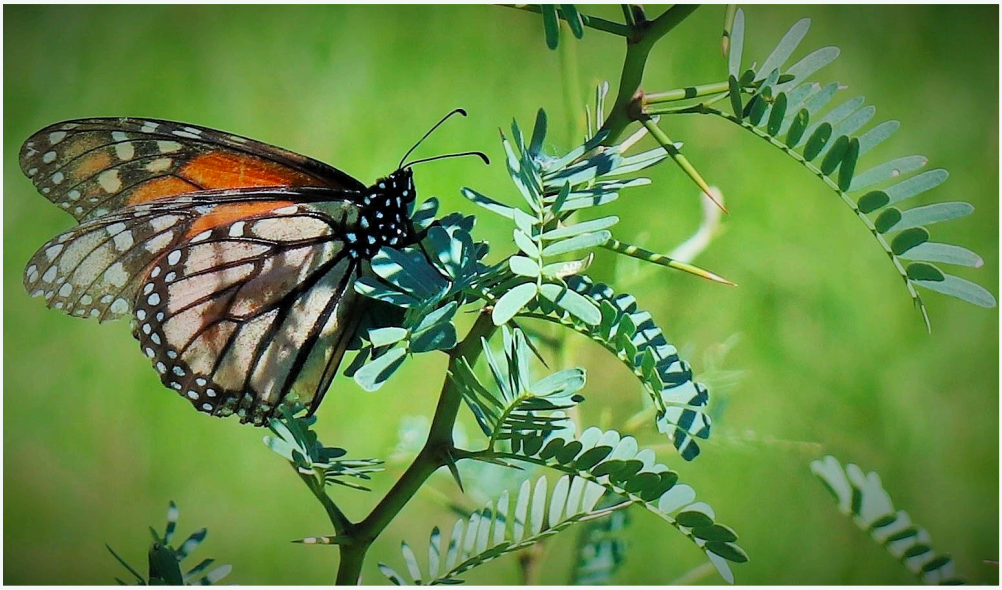


When photographing many butterfly species, like this Monarch (top right), back-lighting will often enhance the wing colors. However, their wings will exhibit dull orange color under a cloudy sky (second photo from top, at right).

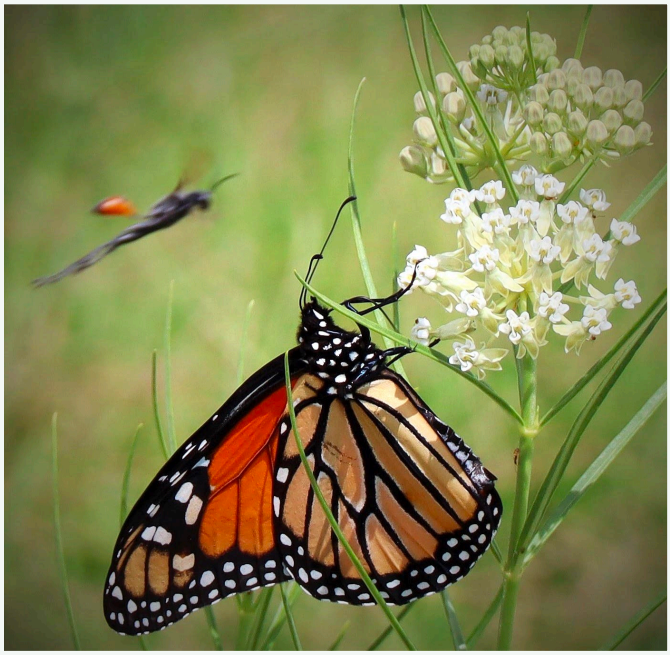




The pair of Monarchs pictured center right were mating in Bermuda Grass, *Cynodon dactylon* under Horsetail Milkweeds. The butterfly in the foreground exhibits the large beige color patches on the ventral wings which are one of the keys to the identification of the species.

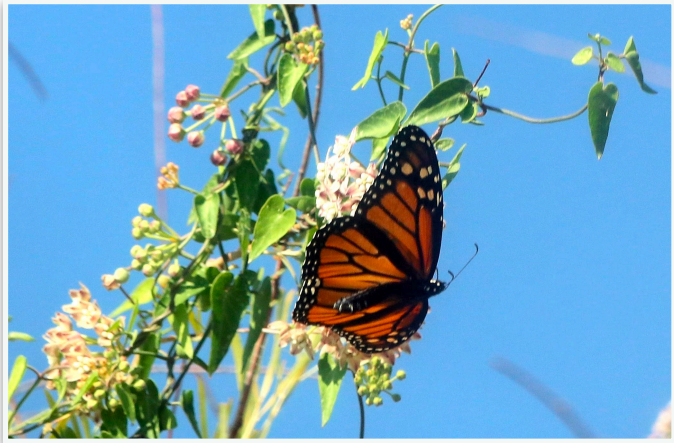


**Monarchs are well known for laying eggs on milkweed species, as is shown below. Note, however, that the Monarch in the bottom photograph on the previous page is depositing eggs on a Honey Mesquite, *Prosopis glandulosa* (Torr.), which was within a Horsetail Milkweed stand. Above, a Monarch nectars on Horsetail Milkweed, while a larva of the species munches on the same plant below - the plant is in flower and seed.**



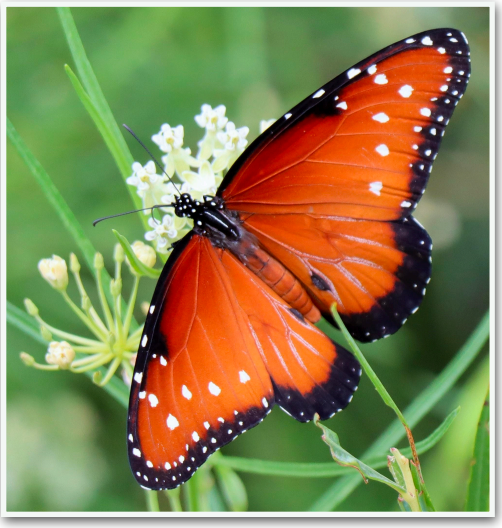
**Monarchs nectaring on Horsetail Milkweed flowers are sometimes harassed by Ashmead's Digger Wasp, *Sphex ashmeadi* (Fernald, 1906) - at left - and Hymenoptera (Linnaeus, 1758) wasps - above.**

**This is the only Monarch (dorsal wing view below and ventral wing view to the left center) I have observed nectaring from Climbing Milkweed flowers, during three seasons of observation/photography, The Desert Viceroy pictured at the bottom of this column (dorsal wing view) is the only one I observed nectaring from Milkweed flowers. This individual is nectaring from Climbing Milkweed flowers.**



**Horsetail Milkweed mature fruit opening along the single suture and releasing seeds during late summer.**

**This Page: Desert Queen butterflies nectared from both Horsetail and Climbing Milkweed flowers consistently over three growing seasons per my observations/photographs.**



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

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

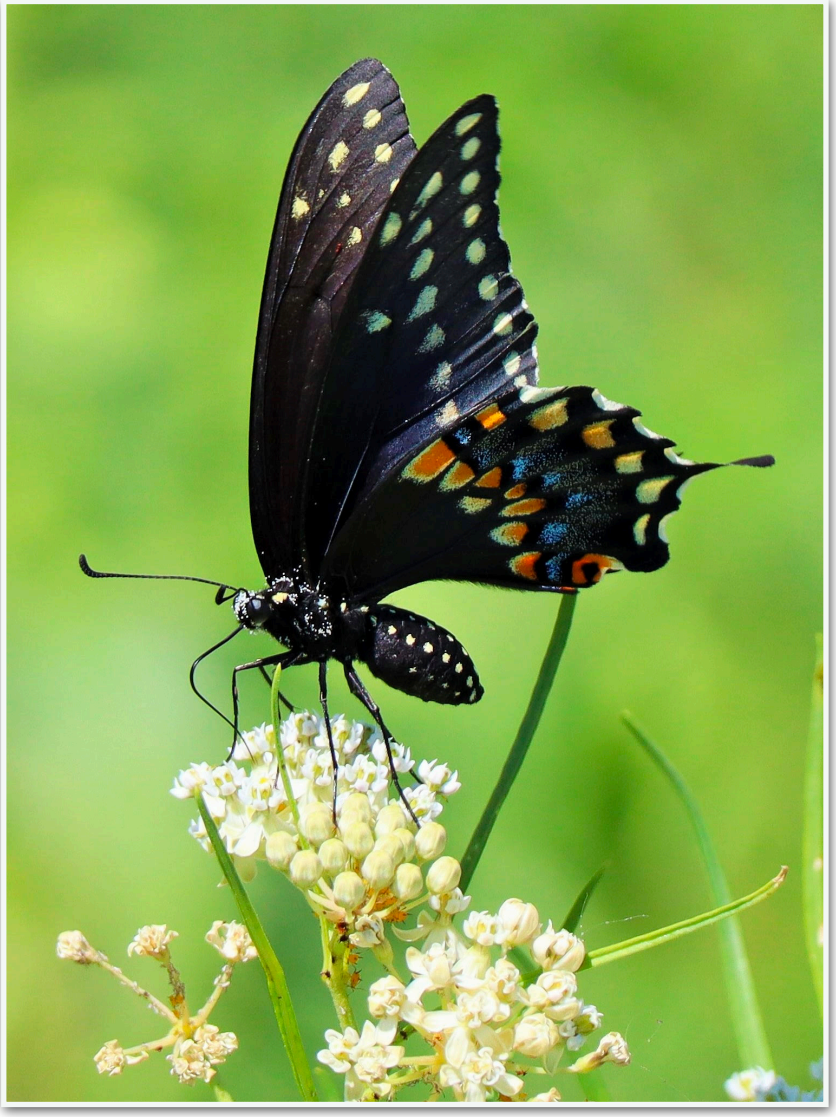
## Rio Grande Larger Butterfly Species

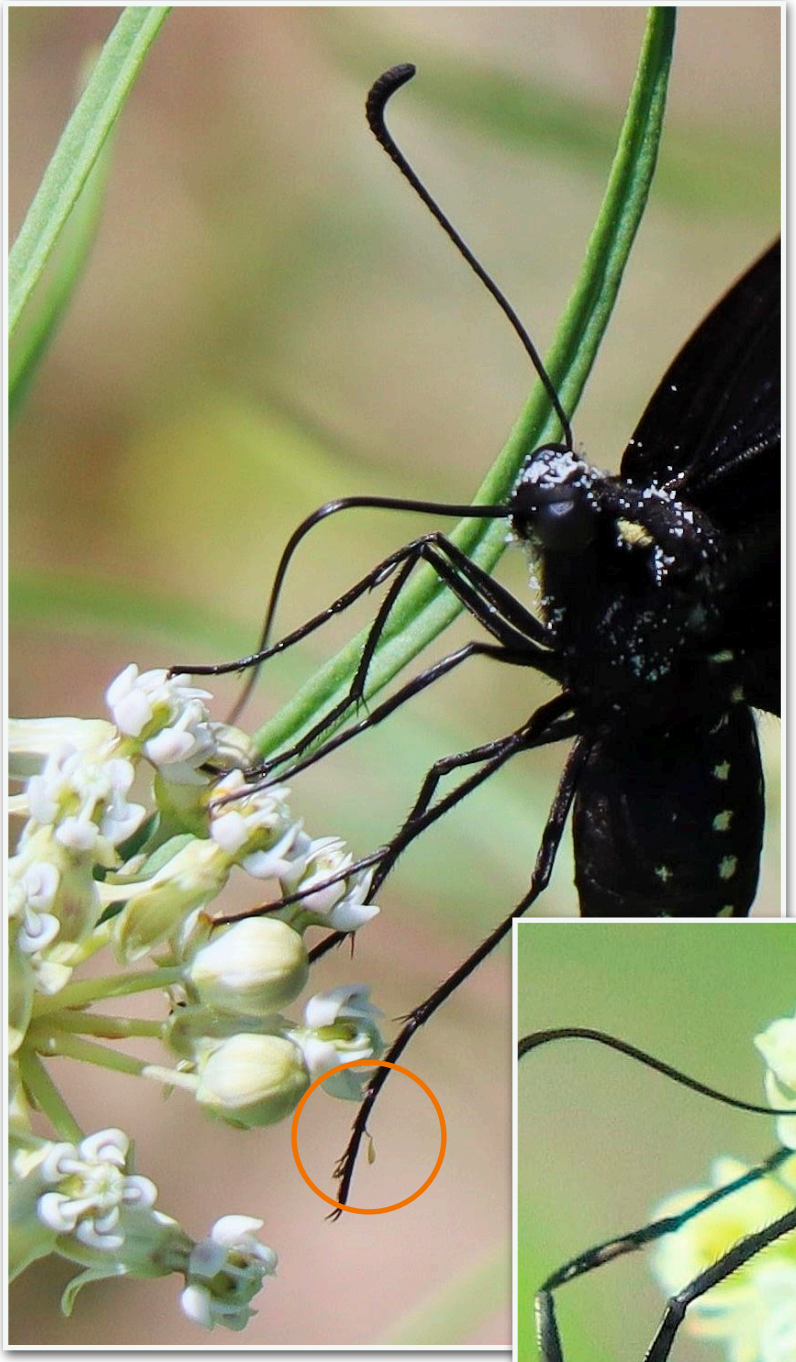
**Additional larger butterfly species were observed visiting Milkweed habitats along the Rio Grande during 2019 and 2021; they include Mourning Cloak, *Nymphalis antiopa* (Linnaeus, 1758), Black Swallowtail, *Papilio polyxenes* (Fabricius, 1775), Pipevine Swallowtail, *Battus philenor* (Linnaeus, 1771), 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.**

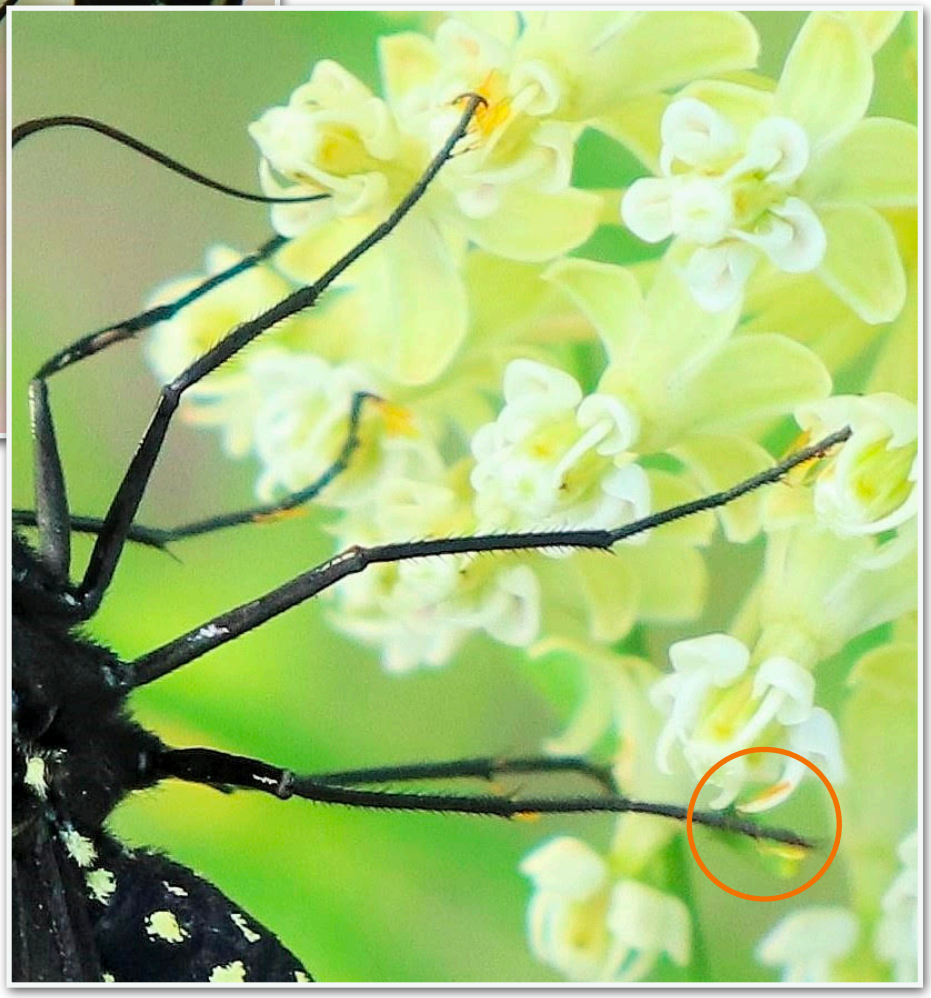
**Black and Pipevine Swallowtails and Variegated Fritillaries flutter their wings while nectaring and often make a challenging photographic target. I counter this somewhat by visiting the habitats when temperatures are cooler and collect images while they perch to warm in the sun's rays. Mourning Cloaks were rarely observed in prior years, but a few arrived during the 2021 migration. Therefore, images presented below represent my first observations and photo-documentation of Mourning Cloaks nectaring from Horsetail and Climbing milkweed flowers.**

**Above and below: Mourning Cloak, *Nymphalis antiopa* (Linnaeus, 1758), nectaring from Horsetail Milkweed.**

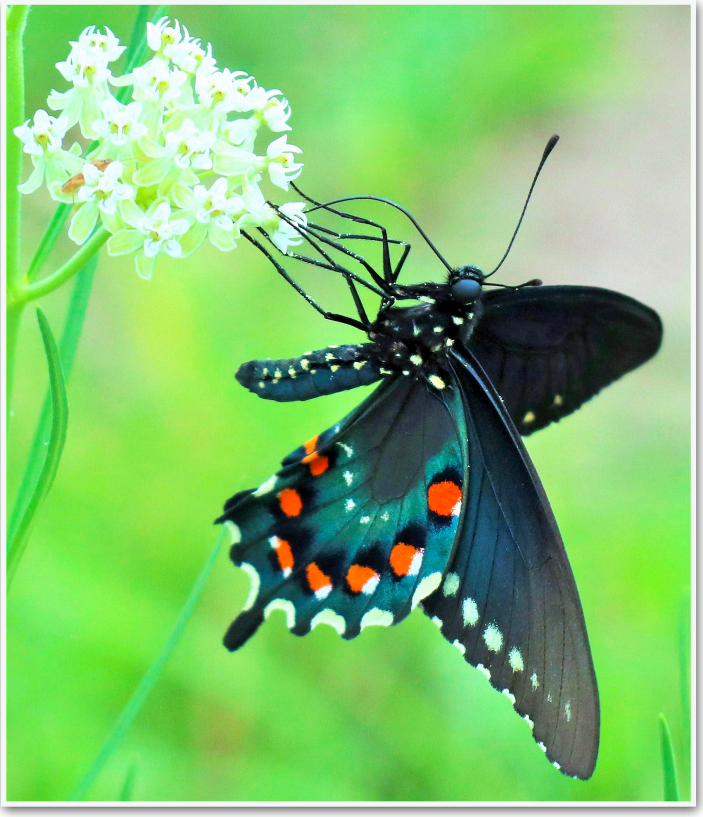
**This column: Black Swallowtail, *Papilio polyxenes* (Fabricius, 1775), nectaring from Climbing (above) and Horsetail (below) Milkweed flowers.**





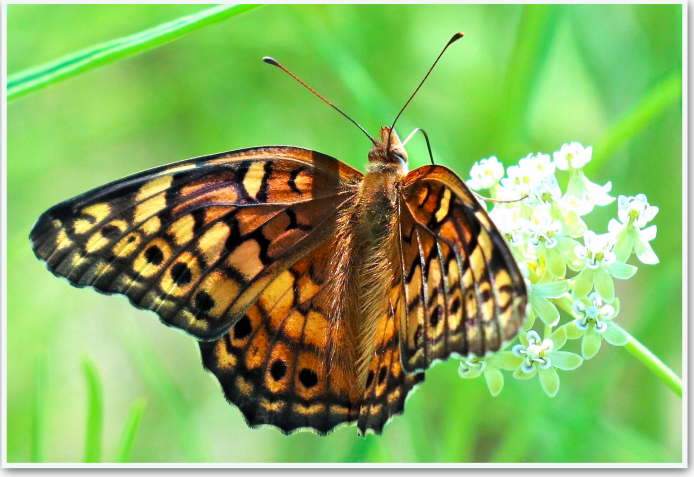


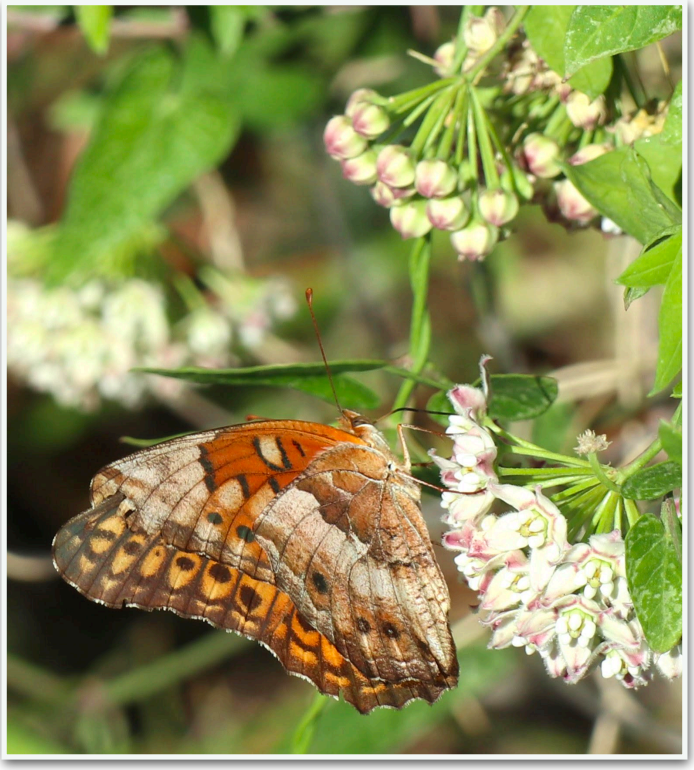
**Black Swallowtail nectaring from Horsetail Milkweed flowers. Note that multiple pollinaria have been extracted and cling to the legs where they could be transferred into another flower, thus achieving pollination. When present, Black Swallowtails could represent efficient pollinators of Milkweed flowers.**



**Left Column: Pipevine Swallowtail, *Battus philenor* (Linnaeus, 1771), nectaring from Horsetail (top two photos) and Climbing (bottom) Milkweed flowers.**

**Below: Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775), nectaring from Horsetail (top) and Climbing (bottom) Milkweed flowers.**





**Top Left, Following Page: 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.**

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

## Rio Grande Intermediate-sized Butterfly Species

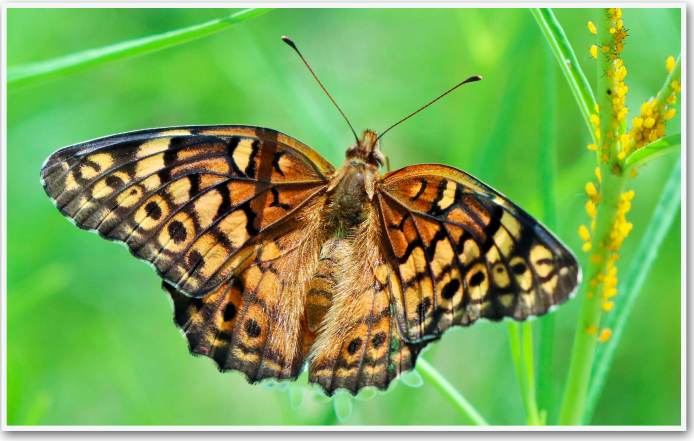
**In addition to the larger butterfly species observed visiting Milkweed habitats along the focus Rio Grande reach, an intermediate-sized group of butterfly species occurs. They include ten species which are most commonly observed nectaring from Milkweeds. This group includes Orange Sulphur, *Colias 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.**

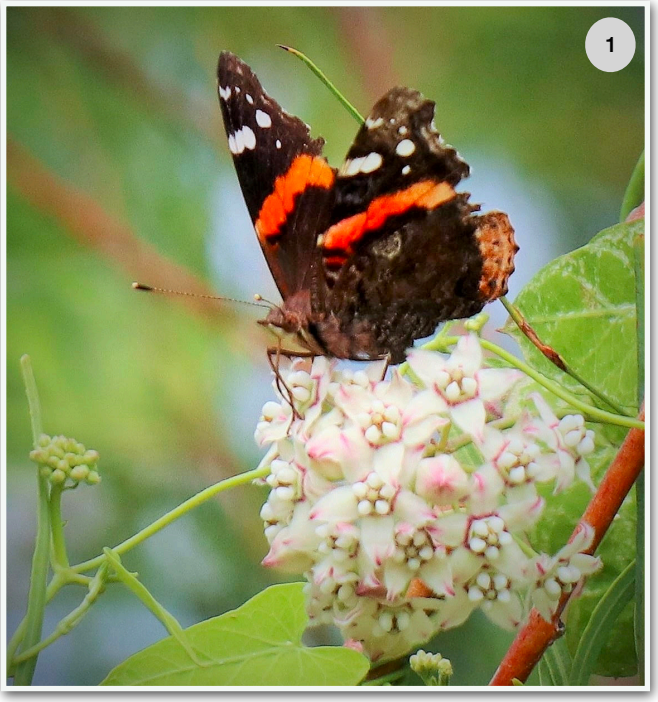
**It is not uncommon for butterfly species of this group and smaller butterflies to have difficulty pulling their legs from the stigmatic slit of Milkweed flowers. This struggle is also true of bees the size of Western Honey Bee, *Apis mellifera* (Linnaeus, 1758) and smaller. Sometimes individuals become 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.**

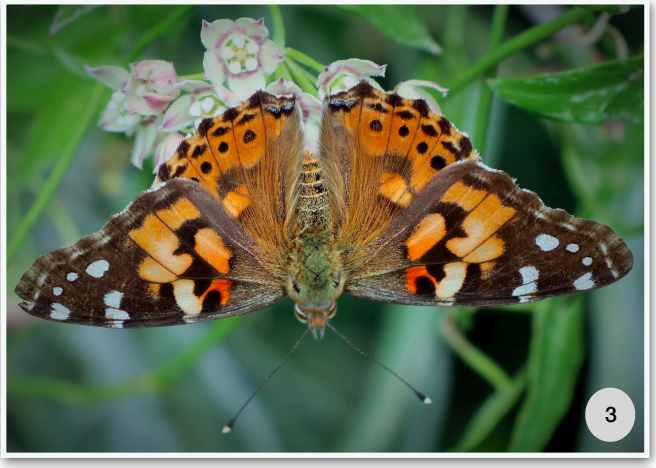
**Orange Sulphur**

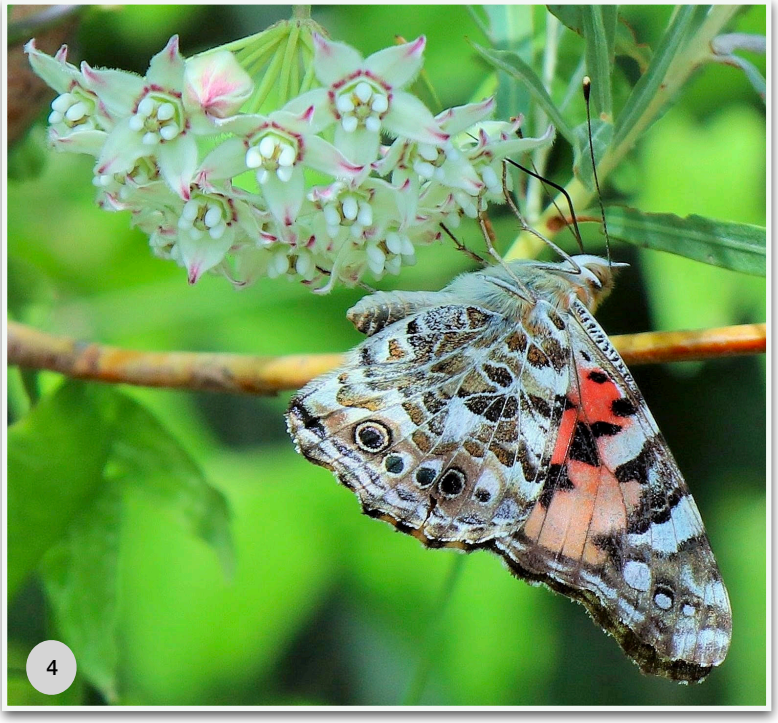
**Checkered White**

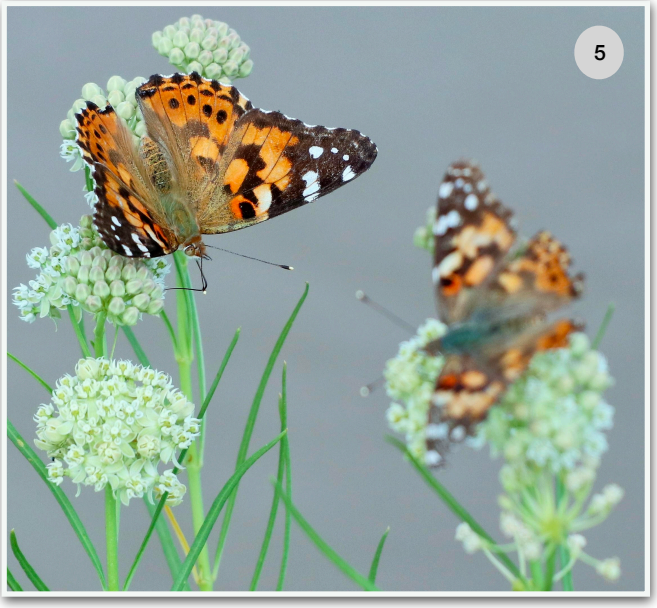


**Southern Dogface, Zerene cesonia (Stoll, 1790)**

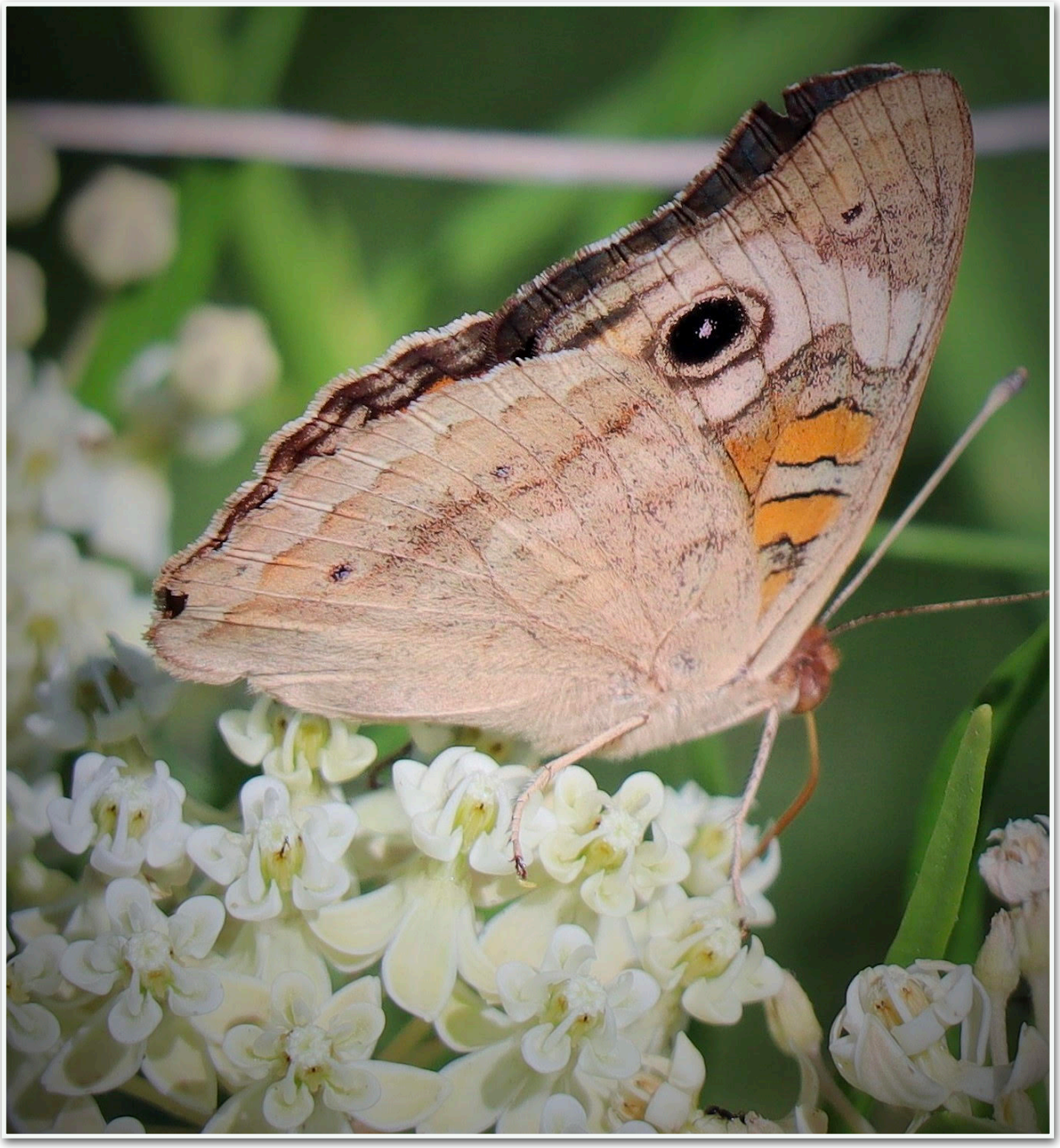


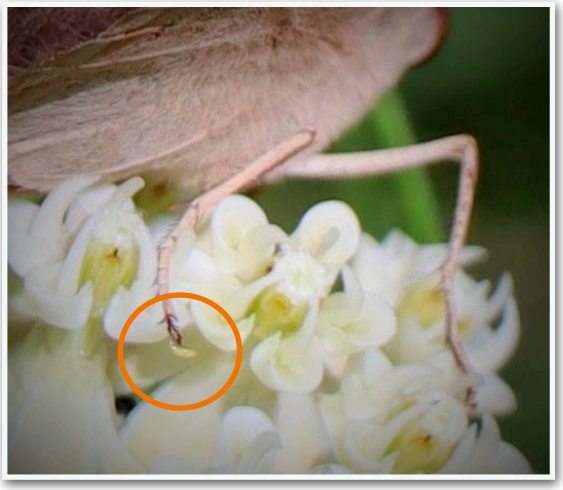


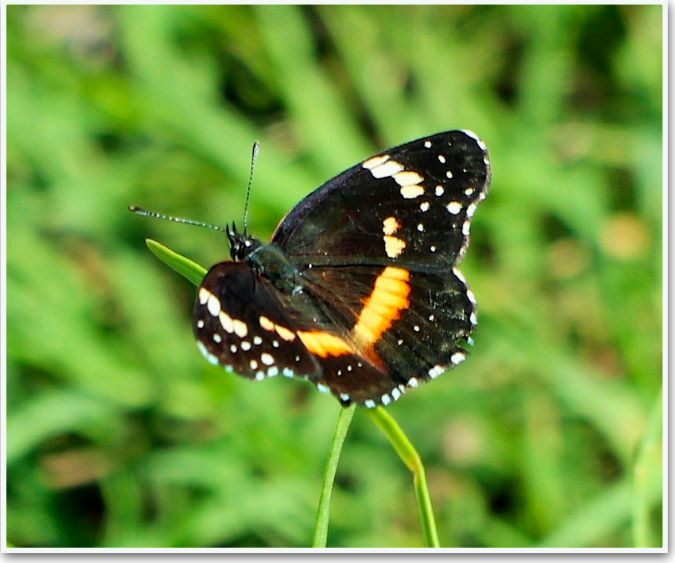



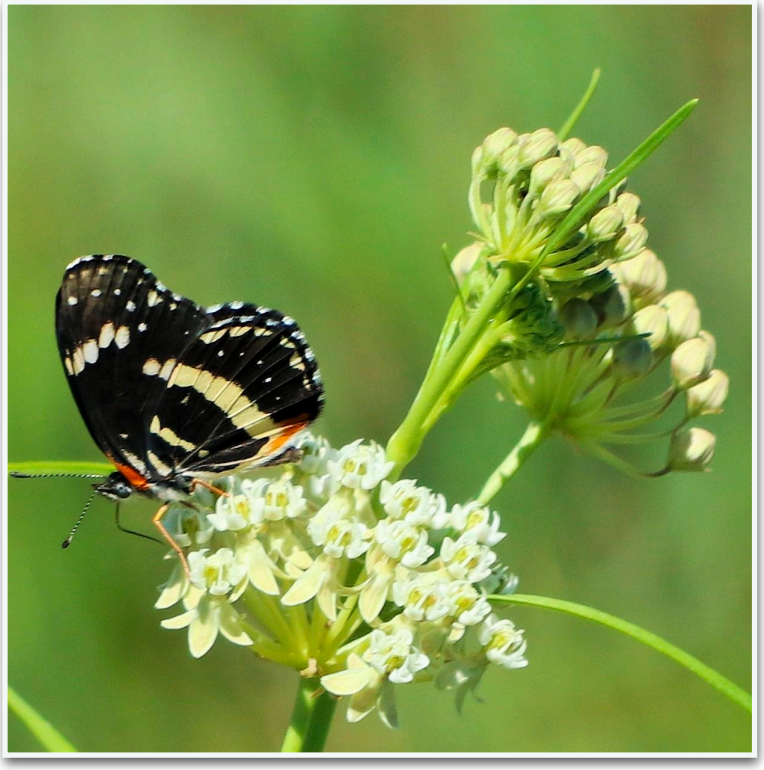
**1 & 2: Red Admiral, *Vanessa atalanta* (Linnaeus, 1758), a rare observation, nectaring from Climbing Milkweed flowers.**
**3 & 4: Painted Lady, *Vanessa cardui* (Linnaeus, 1758), nectaring from Climbing Milkweed flowers.**
**5: Painted Lady nectaring on Horsetail Milkweed.**
**6: Gray Buckeye, *Junonia grisea* (Austin & Emmel, 1998), nectaring from Horsetail Milkweed flowers.**

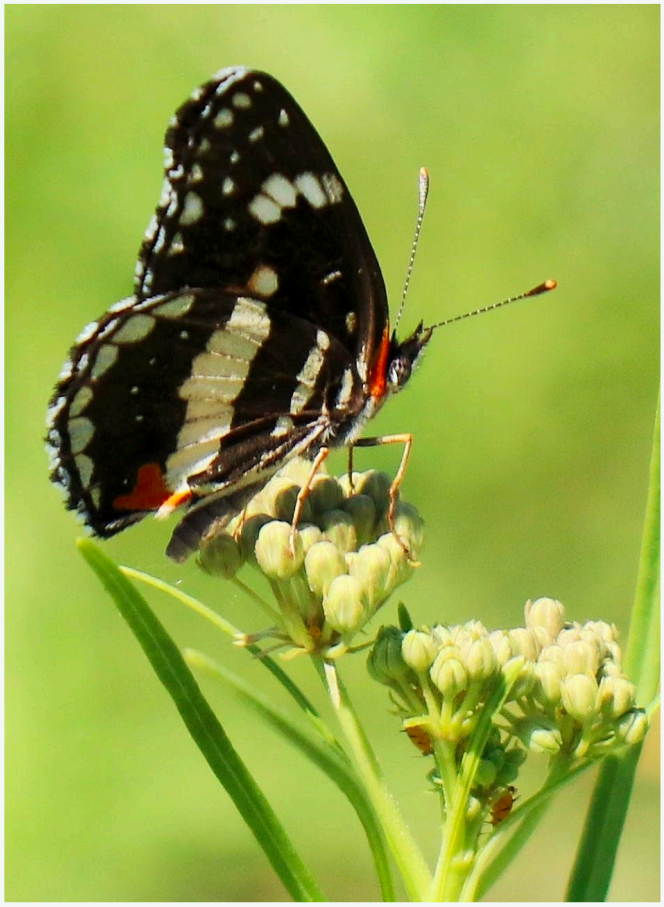


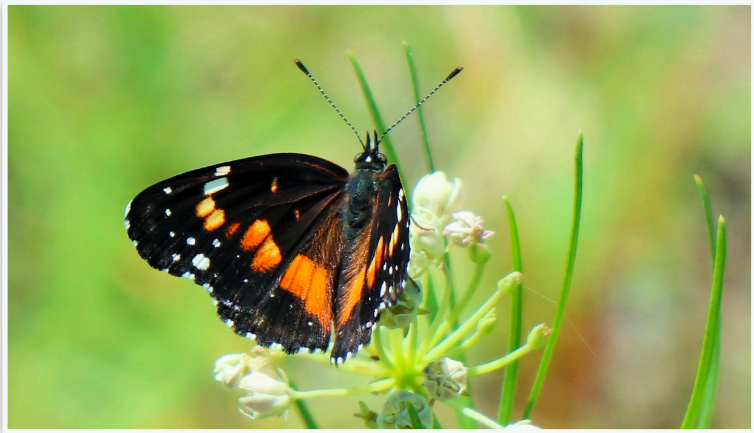


**Gray Buckeye, *Junonia grisea* (Austin & Emmel, 1998) nectaring on Horsetail Milkweed flowers. In image above, and enlargement to left, note that a single pollinarium has been extracted via the stigmatic slit and clings to the leg where it could be transferred into another flower, thus achieving pollination.**

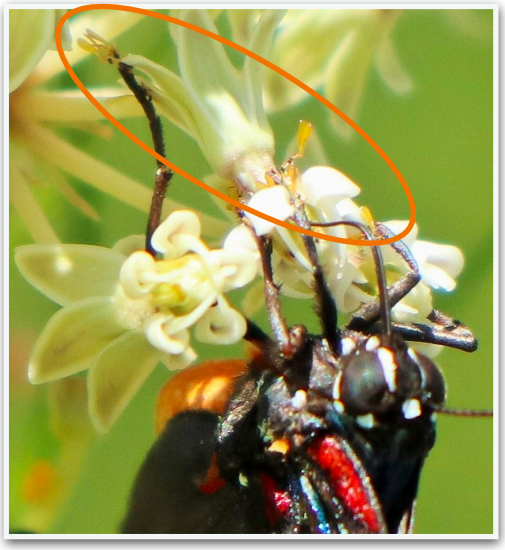




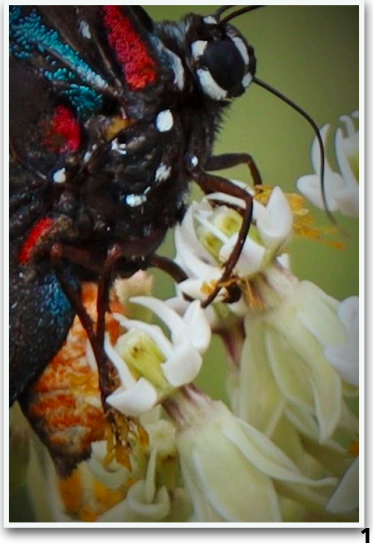




**Bordered Patch, *Chlosyne lacinia* (Geyer, 1837), perched and nectaring from Horsetail Milkweed flowers. Note that in the image to the right a single pollinarium has been extracted via the stigmatic slit and clings to the leg where it could be transferred into another flower, thus achieving pollination.**



**Great Purple Hairstreak, *Altides halesus* (Cramer, 1777), 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.**



**Above and at right: European Cabbage White (*Pieris rapae* (Linnaeus, 1758). 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. Below: Cloudless Sulphur, *Phoebis sennae* (Linnaeus, 1758). Nectaring from Climbing Milkweed flowers.**

**Above: Orange Sulphur, *Colias eurytheme* (Boisduval, 1852), nectaring from Climbing Milkweed flowers**

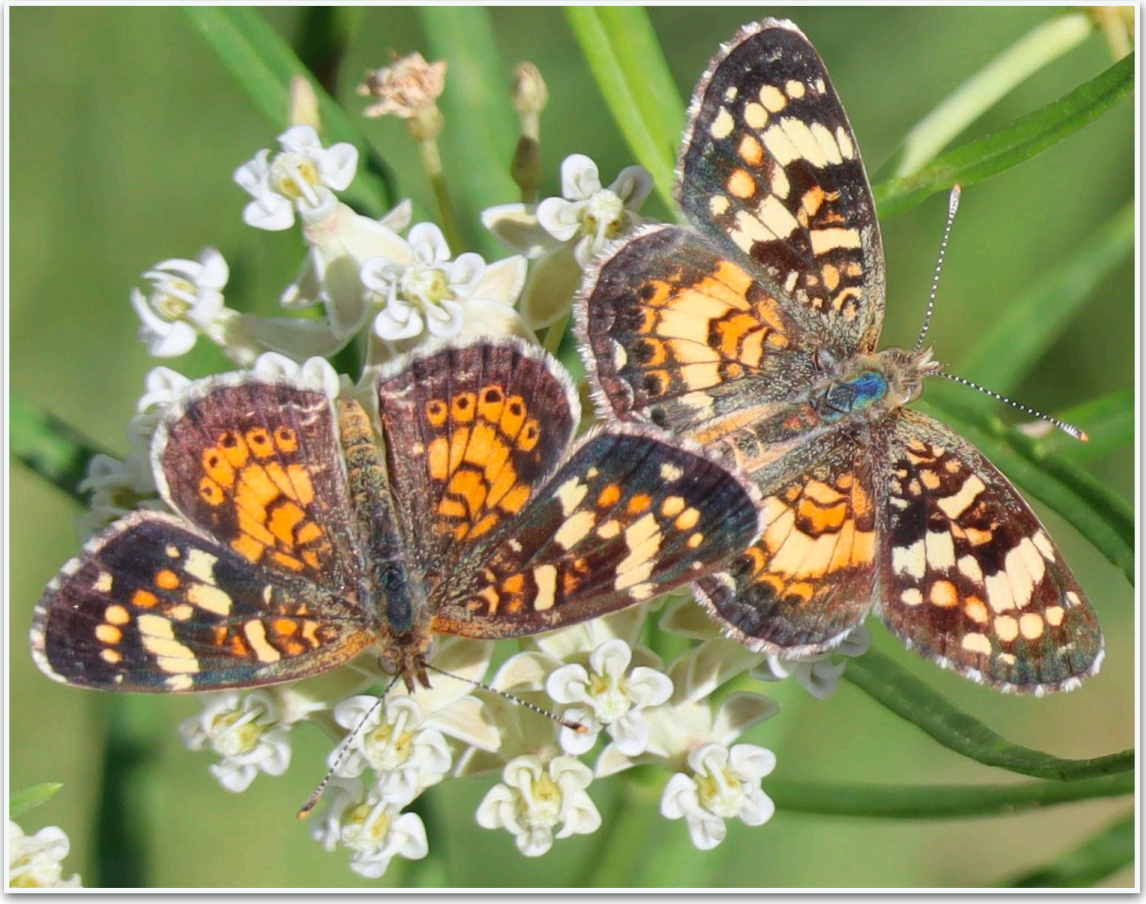
## Rio Grande Small-sized Butterfly Species

**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 as previously discussed. Representative individuals of these species were photo-documented nectaring from both Horsetail and Climbing Milkweed flowers, as presented herein.**

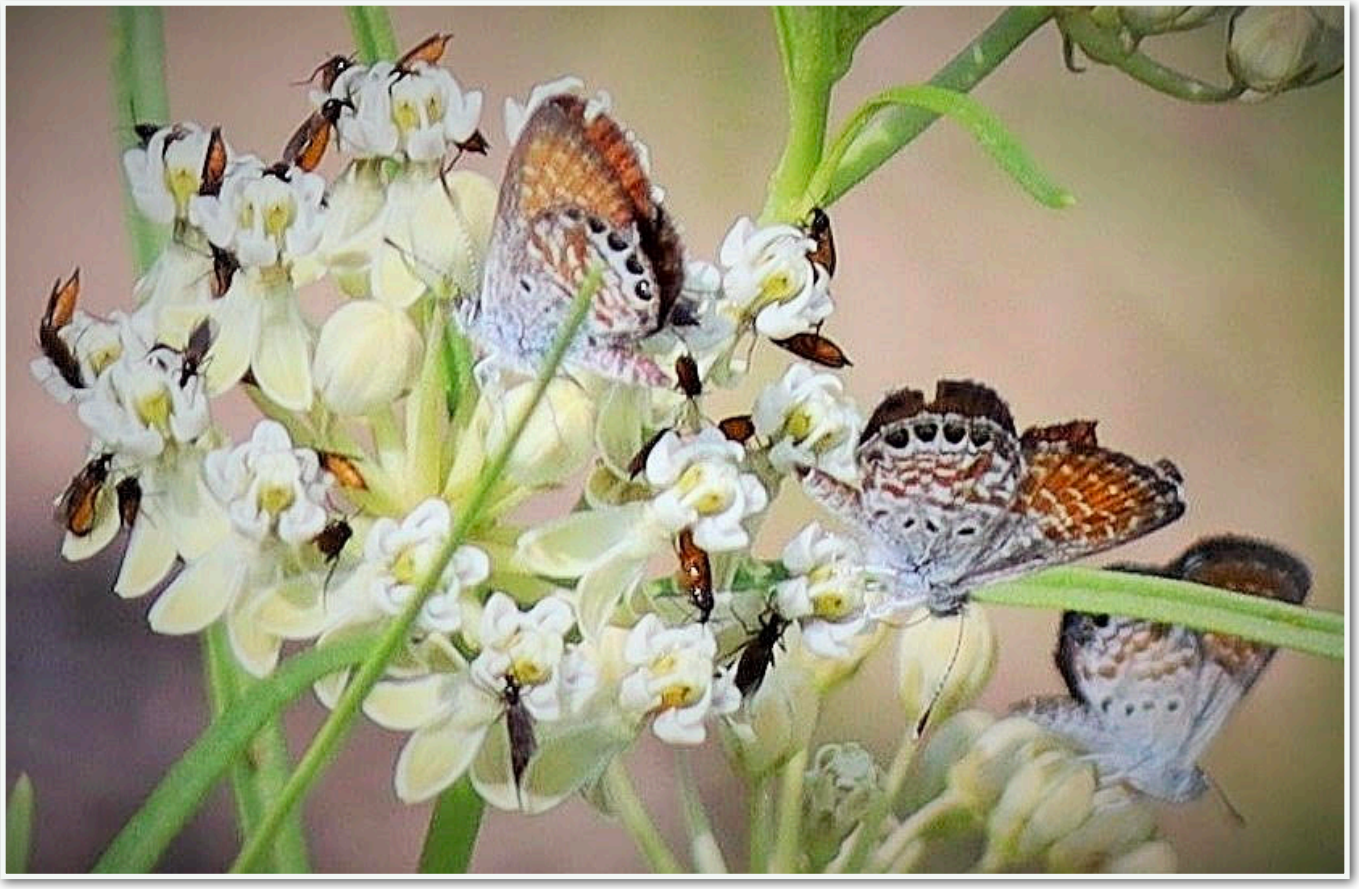
**Above: Fatal Metalmark, *Calephelis nemesis* (W. H. Edwards, 1871), nectaring from Climbing Milkweed flowers. Following Page at Top: American Snout, *Libytheana carinenta* (Cramer, 1777), nectaring from Horsetail Milkweed flowers.**

**Left: Dainty Sulphur, *Nathalis iole* (Boisduval, 1836), nectaring from Horsetail Milkweed flowers.**
**Right: Gray Hairstreak, *Strymon melinus* (Hubner, 1818), nectaring from Horsetail Milkweed flowers.**

**Painted Crescent, *Phycoides picta* (W. H. Edwards, 1865), 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.**



**Above: Marine Blue, *Leptotes marina* (Reakirt, 1868), nectaring from Horsetail Milkweed flowers. These small butterflies were abundant regionally but less well represented along the Rio Grande in 2021. Below and right top: Melissa Blue, *Plebejus melissa* (W. H. Edwards, 1873), nectaring from Horsetail Milkweed flowers near to a paper wasp (Hymenoptera (Linnaeus, 1758 - Family: Vespidae) foraging through flowers of an adjacent umbel. Right below: Melissa Blue on Horsetail Milkweed.**



**Above: Western Pygmy Blues, *Brephidium exilis* (Boisduval, 1852), nectaring from Horsetail Milkweed flowers along with several unidentified beetles - *Coleoptera* (Linnaeus, 1758) - foraging among the flowers.**
**Below Left: The Western Pygmy Blue is a resilient species and was present along the Rio Grande at the end of November 2021 and nectaring from Water Speedwell, *Veronica anagallis-aquatica*, flowers.**

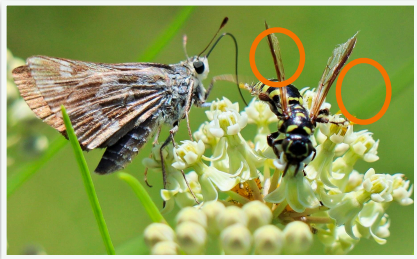
**Western Whorled/Horsetail Milkweed, *Asclepias subverticillata*, with developing and mature fruits and seed emergence in late summer.**

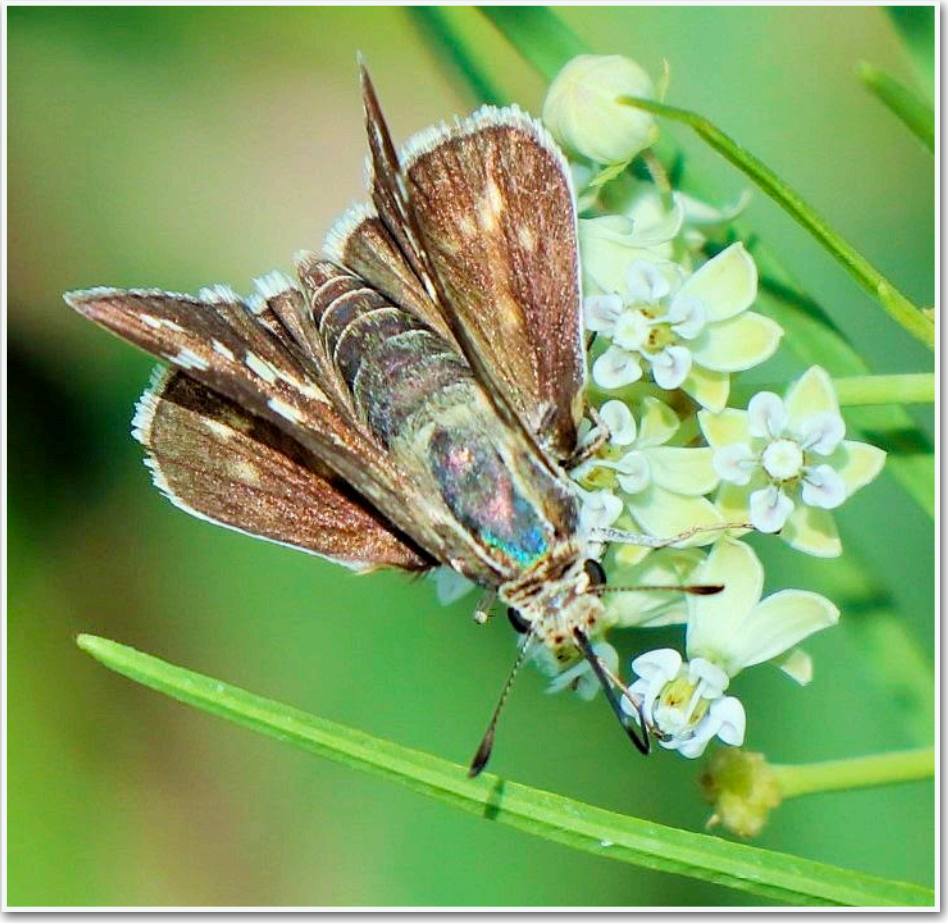
## Skippers

**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).**

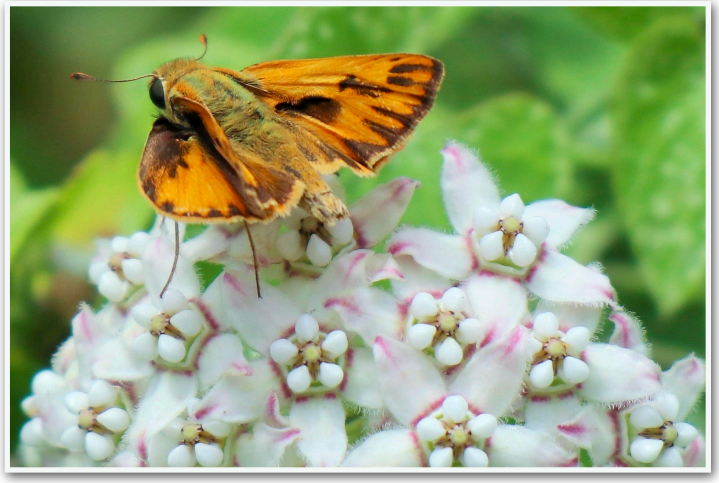
**While visiting the more exposed Horsetail Milkweed flowers, skippers may be quick to fly during photo-documentation attempts and are often subject to interruption/harassment by aggressive bees and wasps. I have found it somewhat easier to photograph skippers nectaring from Climbing Milkweed flowers 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).**

**Carus Skipper, Polites (*Yvretta) carus* (W. H. Edwards, 1883), 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.**

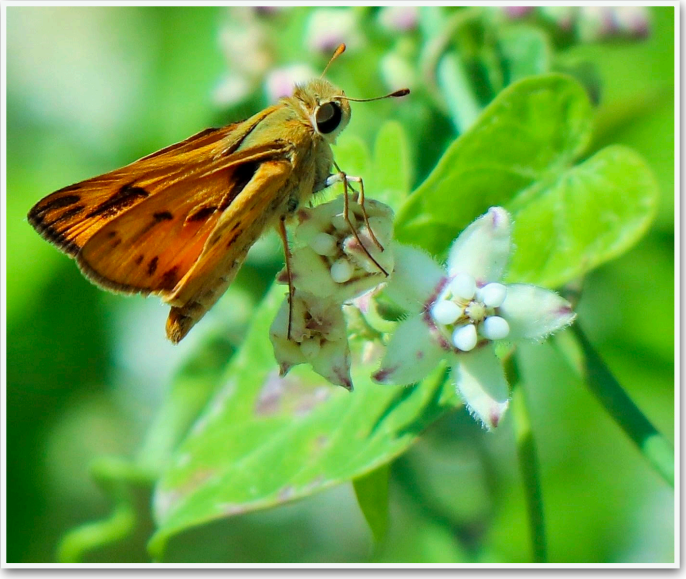




**Bottom Left: Carus Skipper nectaring from Climbing Milkweed flowers.**
**All Others: Carus Skipper nectaring from Horsetail Milkweed flowers.**

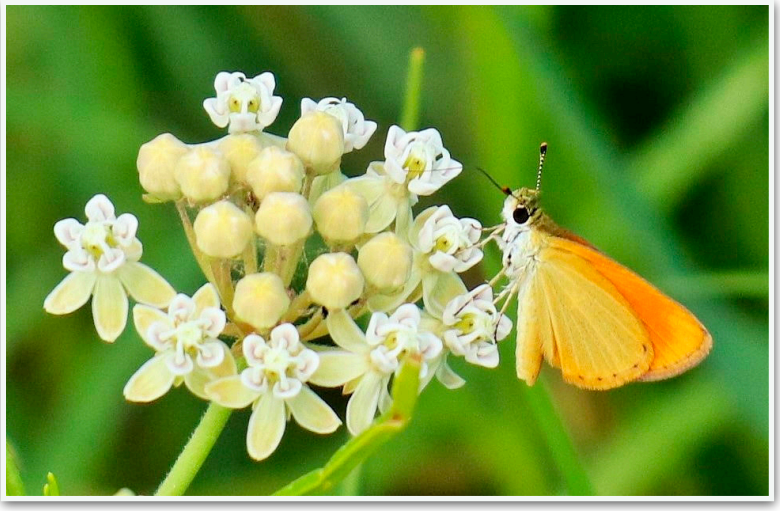


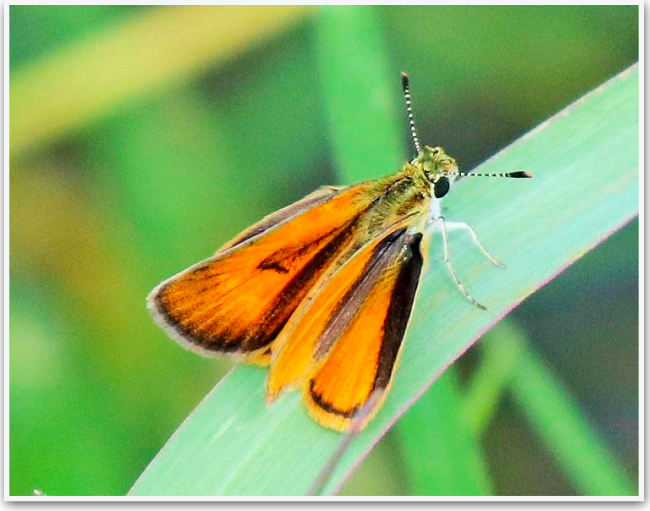
**Above: Fiery Skipper, *Hylephila phyleus* (Drury, 1773), nectaring from Climbing Milkweed flowers.**
**Left: On Horsetail Milkweed flowers.**
**Following Row (3 Right Images): Sachem Skipper, Atalopedes campestris (Boisduval, 1852), on Climbing Milkweed flowers.**



**The Sachem Skipper, *Atalopedes campestris* (Boisduval, 1852), is rarely observed. At left it is nectaring from Climbing Milkweed flowers, above on Horsetail Milkweed flowers.**

**The autumn cottonwood and tamarisk leaf colors along the Rio Grande (Thanksgiving week, 2021) match the colors of the Tropical Skipper and Orange Skipperling on the following page.**



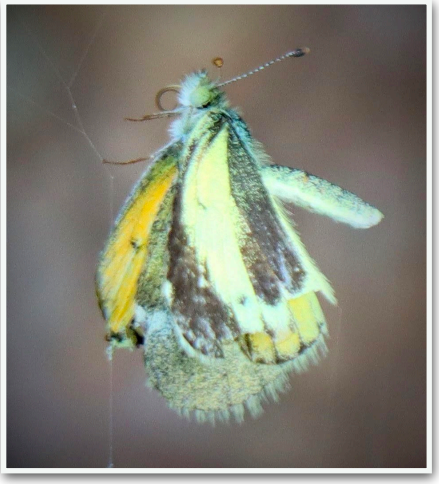


**Above: Tropical Least Skipper, *Ancycloxypha arene* (W. H. Edwards, 1871), nectaring from Horsetail Milkweed flowers at left and perched on Johnson grass in a stand of Horsetail Milkweed at the right. This species has rarely been documented, typically at the beginning of the Milkweed flowering period.**

**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 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.**

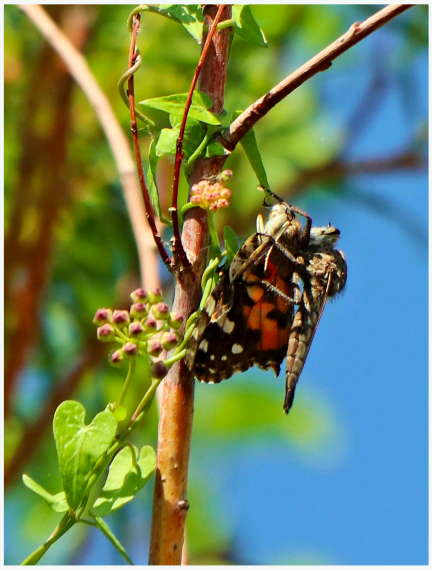
## Predation

**Butterflies attracted to Milkweed flowers as a nectar source (and their eggs and larvae) are subject to predation by a variety of arthropods and vertebrates ranging from spiders, bugs, beetles, damsel/dragonflies, robber flies, mantis, toads/frogs, snakes, lizards, shore/wading birds, insectivorous (with nestlings)/carnivorous birds, and mammals, including feral cats. Sometimes evidence of past butterfly predation is observed during photographing of live butterflies or actual predation may be occurring while images are collected.**



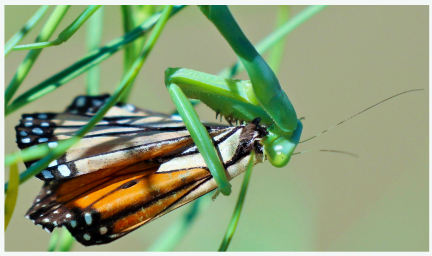
**Dainty Sulphur, Nathalis iole (Boisduval, 1836), has become recently ensnared on a sticky spider web strand and will eventually be consumed.**

**Wings, like these of a Southern Dogface, *Zerene cesonia* (Stoll, 1790), lying under perching sites, are often evidence of butterfly predation by dragonflies. I have observed wing traces of butterflies to the size of Queens, *Danaus gilippus* (Cramer, 1775), near stands of Milkweeds.**



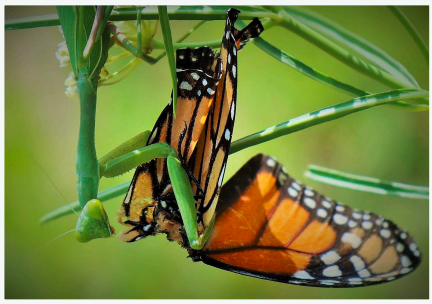
**Hunting around Climbing Milkweed vines and flowers, this Giant Robber Fly, *Proctacanthus* (Macquart, 1838) sp., has captured and is ingesting nutrients/fluids from a Painted Lady, *Vanessa cardui* (Linnaeus, 1758). Below: When I began digitally recording this event, the Robber Fly moved higher up the Climbing Milkweed vines to find additional visual cover and more distance.**

**Above: The Bordered Mantis, *Stagmomantis limbata* (Hahn, 1835), is the color of Horsetail/Whorled Milkweed leaves and stems. Here one hangs patiently near a flower cluster. The top three images in the next column and the two on the following page document a successful hunt. The Mantis captures and ingests a Monarch, *Danaus plexippus* (Linnaeus, 1758), which was seeking nectar from the Milkweed flowers.**



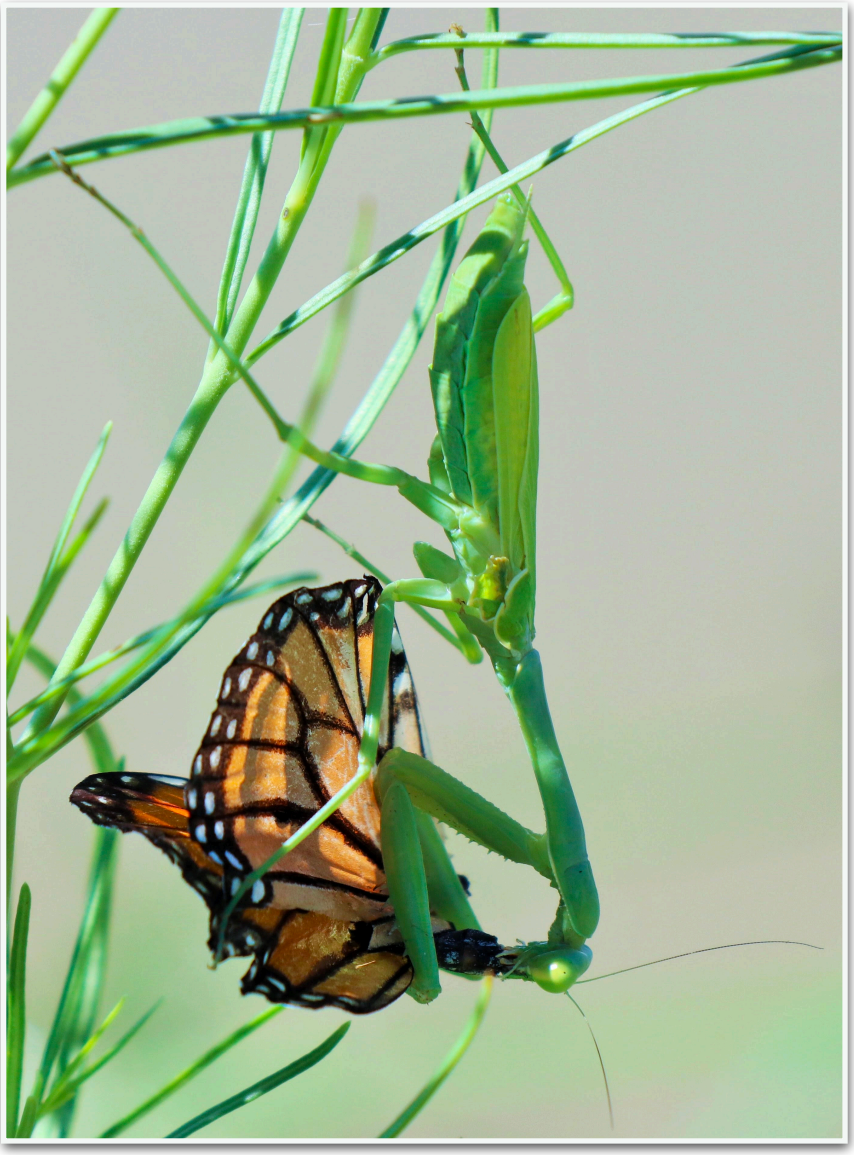
**Mantises begin ingesting butterflies and other insects from the head, proceeding downward and allowing the wings to fall below as detritus, food for scavenging beetles, ants, etc.**

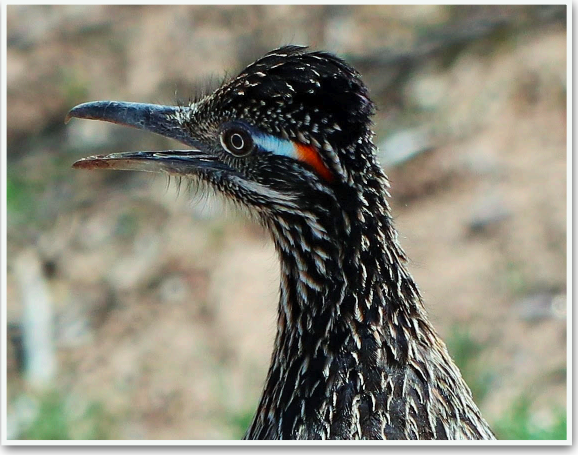
**This Mantis keeps constant eye contact and slowly moves into denser leaves for visual cover while I'm collecting images of its feeding process.**



**One morning, while I adjusted my camera lens to focus on a Queen nectaring from Horsetail/Whorled Milkweed flowers, a skinny form leapt from the grass, ~15" high, grabbed the butterfly, and landed with a "splot" in the mud adjacent to the Rio Grande. It was a Southern Leopard Frog, *Rana sphenocephalus* (Cope, 1889), and I was too surprised to even attempt a shot!**

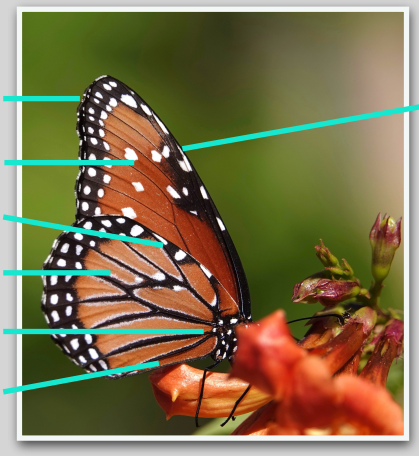
**Left: This image has been rotated (actual aspect below left) to present a side-view of feeding Mantis. Because of their size, color, long legs, antennae, and plant material, it is very difficult to bring an entire mantis into focus. Below: Occasionally, lizards (Spiny, Whiptail, etc.) hunt for arthropods, including butterflies, among the vines, leaves, flowers, and fruits of Climbing Milkweeds. It should be noted that late in the flowering season, Climbing Milkweed vines also trail across the understory grasses and bare ground. The hunting Spiny Lizard, *Sceloperus* (Wiegmann, 1828) sp., caused me a small adrenalin rush as I was looking upward for insects to photograph and saw its intense gaze from a few inches away.**





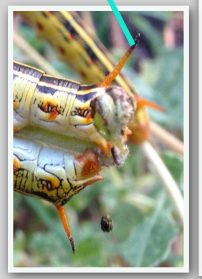
**Butterflies and other insects seeking nutrients from Climbing Milkweed plants along the Rio Grande Trail attract the steady gaze of this Greater Roadrunner, *Geococcyx californianus* (Lesson, 1829).**

Perhaps a footnote in butterfly lore; at the end of every rainbow rests a pot of nectar. Photograph by James Von Loh.

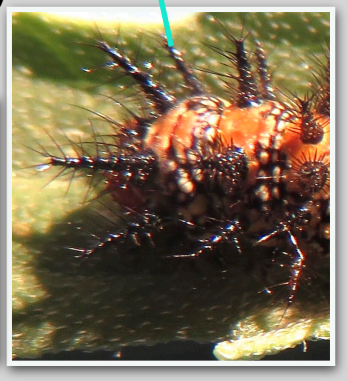


Growths from body may be called bristles, horns, hairs, or filaments.

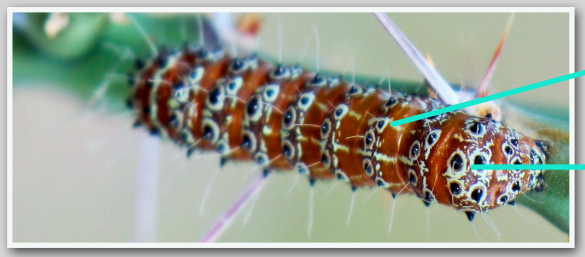
Horns are generally rigid and pointed.



Gordon Berman



Gordon Berman

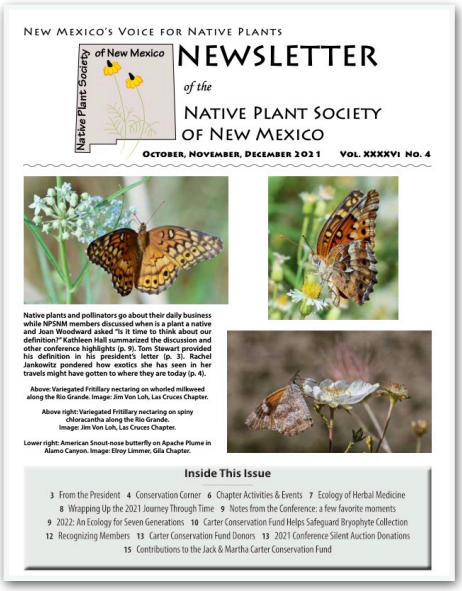



James Von Loh

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

# Butterflies & Caterpillars - A few Sources for Additional Information

Additional material on butterflies and caterpillars is available from myriad sources. Here are some which you may not have come across.



New Mexico's Voice for Native Plants

Native Plant Society of New Mexico

NEWSLETTER of the Native Plant Society of New Mexico

October, November, December 2021 Vol. XXXXVI No. 4

Native plants and pollinators go about their daily business while NPSNM members discussed when is a plant a native and Joan Woodward asked "Is it time to think about our definition?" Kathleen Hall summarized the discussion and other conference highlights (p. 9). Tom Stewart provided his definition in his president's letter (p. 3). Rachel Jankowitz pondered how exotics she has seen in her travels might have gotten to where they are today (p. 4).

Above: Variegated Fritillary nectaring on whorled milkweed along the Rio Grande. Image: Jim Von Loh, Las Cruces Chapter.

Above right: Variegated Fritillary nectaring on spiny chloracantha along the Rio Grande. Image: Jim Von Loh, Las Cruces Chapter.

Lower right: American Snout-nose butterfly on Apache Plume in Alamo Canyon. Image: Elroy Limmer, Gila Chapter.

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12 Recognizing Members 13 Carter Conservation Fund Donors 13 2021 Conference Silent Auction Donations
15 Contributions to the Jack & Martha Carter Conservation Fund

Native Plant Society of New Mexico provides a substantial amount of information about plant pollinators, like butterflies, on its website and in its newsletter. The cover of the October-December 2021 issue is shown above. There are several chapters of the New Mexico Native Plant Society, and they all are wonderful sources of information.

For instance, the Las Cruces Chapter has provided recordings of its Covid-era "zoom meetings", which are of special interest here. See two presentations by James Von Loh:

- Spring and Summer Floristic Images From Around Las Cruces; and
- Milkweed Menagerie on the Rio Grande.

Southwestern Moths, and the Links page in particular.

Seven Backyards - Macro-Moth Study - Noel McFarland [1938-2018] (References link page)

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

Butterflies of New Mexico at the Pajarito Environmental Education Center website. Steve Cary's definitive effort. If you are interested in NM butterflies this site should be in your bookmarks bar at the top of your computer screen.

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.

BugGuide. Thousands of images, guides, taxonomic information, etc.

North American Moth Photographers Group. Extensive information, references, distribution maps, and images.

Butterflies and Moths of North America. Images, distribution maps, references, information.

# Our Covers

The Question Mark, *Polygonia interrogationis*, on the back cover was photographed at a water seep by James Von Loh.

The Monarch, *Danus plexippus*, caterpillar on the front cover was photographed by Nichole Trushell in Kingston.

Contact the Editor: Bob Barnes (rabarnes@blackrange.org) or
The Associate Editor - Harley Shaw
The Black Range Naturalist is a "Not For Revenue" Publication
Previous editions are available for download at this link
(www.blackrange.org/the-black-range-naturalist/)

Unattributed material is contributed by the editor.

# First Photograph of Wind

PRESS RELEASE: APRIL 1, 2022

After seven years and four months the Hillsboro Research Institute (HRI) has succeeded in taking an image of wind. Most of us have seen things being blown around by the wind (trees, flags) or have seen things (dust, roof tops) being carried by the wind. Until now, however, an image of the wind (known in some circles as Mariah and in others as Sirocco, Xlokk, or Zephyr) has alluded humankind.

The image below is a framegrab of a video clip of wind. We apologize for the low resolution of the image but DARPA has impounded the original material.

Even though the framegrab is low resolution, its great clarity results from an exceedingly high frame rate utilized by a bank of 14 high speed video cameras with lighting furnished by an array of 27 super-fast flashes and four 8' x 5' banks of high intensity LEDs (each providing light in a different wavelength). Unfortunately the exact specifications of the equipment used has been sequestered by DARPA, so we are unable to share the details with you.

HRI wishes to extend its sincerest apology for the power outage which occurred during this effort.

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