

# The Odonata of Doña Ana County and the Black Range

## Volume One: Dragonflies - A Natural History

Photo Documentation and narrative by James Von Loh
Supplemented by material from Gordon Berman, Bob Barnes, and Others.
Version 2, June 2025

# A Natural History of
# The Odonata of Doña Ana County:
## Volume One - The Dragonflies

### With Notes on the Black Range

**James Von Loh** of Las Cruces is the primary author of this work. He is the photographer who took most of the images and the author who wrote most of the text. If a photograph or statement is not attributed to someone else, it is safe to assume that he is the originator and holds the copyright. His photo-documentation occurred entirely within Doña Ana County, New Mexico during the 2019-2024 field seasons.

Some of the material in this work is presented in the first person pronoun because we wished to capture the experience. Unless stated otherwise, the pronoun refers to James Von Loh.

Several other individuals have contributed to this work in significant ways. Primarily Gordon Berman of Las Cruces and Robert Barnes of Hillsboro. Their contributions, and the contributions of others, are annotated.

Except as noted elsewhere, contributors retain all copyright to the material which they have generously allowed us to use. Generally, narrative specifically referencing the Black Range, and involving data mining of iNaturalist and other sources, was provided by Bob Barnes - this material is usually indicated by "Barnes:".

*A Natural History of The Odonata of Doña Ana County With Notes on the Black Range* is an effort of the Black Range project and is hosted on the *Black Range website*, where it may be downloaded for personal use or read on line, www.blackrange.org. There are two volumes. Volume One covers the dragonflies and Volume Two covers the damselflies.

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This is the second version of *A Natural History of The Odonata of Doña Ana County With Notes on the Black Range*. As of the date of publication no decision has been made about future versions. However, *The Black Range Naturalist* will continue to publish updates on this topic as contributors submit material. (Generally the publication date is about a year following the observation date - postings to iNaturalist are encouraged.)

Please help us make this work better. Let me know if you find errors of omission or commission so that future versions (if any) can be corrected. If you have material which would benefit our larger community please share it with us so that it can be included in possible future versions and/or in The Black Range Naturalist updates. And, if you know of someone who might want to access this work please pass the link information on to them so that they can download or read on line.

Bob Barnes, Editor
*rabarnes@blackrange.org*

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## THE COVERS

Front Cover: Red Rock Skimmer, *Paltothemis lineatipes* (Karsch, 1890) Hillsboro, Bob Barnes

Back Cover: Red Saddlebags, *Tramea onusta* (Hagen, 1861), Las Cruces, James Von Loh

# Species Included In This Work

## First Page of the Species Account is Indicated

**The Order *Odonata* consists of two suborders; *Epiprocta* (which includes *Anisoptera* [dragonflies]) and *Zygoptera* (damselflies).**

**In this work, species are not presented in strict taxonomic order. We start with the dragonflies (Volume 1) and then proceed to the damselflies (Volume 2). Species are grouped first by family then by genus.**

## Dragonflies - *Anisoptera*

### The Darner Family - *Aeshnidae*

**Mosaic Darners**

**9. *Aeshna persephone* (Donnelly, 1961) Persephone's Darner**

**Green Darners**

**11. *Anax junius* (Drury, 1773) Common Green Darner**

**19. *Anax walsinghami* (McLachlan, 1883) Giant Darner**

**Riffle Darners**

**20. *Oplonaeschna armata* (Hagen, 1861) Riffle Darner**

**Neotropical Darners**

**21. *Rhionaeschna dugesi* (Calvert, 1905) Arroyo Darner**

**22. *Rhionaeschna psilus* (Calvert, 1947) Turquoise-tipped Darner**

**25. *Rhionaeschna multicolor* (Hagen, 1861) Blue-eyed Darner**

### The Clubtail Family - *Gomphidae*

**Ringtails**

**29. *Erpetogomphus compositus* (Hagen in Selys, 1858) White-belted Ringtail**

**34. *Erpetogomphus designatus* (Hagen in Selys, 1858) Eastern Ringtail**

**38. *Erpetogomphus heterodon* (Garrison, 1994) Dashed Ringtail**

**40. *Erpetogomphus lampropeltis* (Kennedy, 1918) Serpent Ringtail**

**Leaftails**

**41. *Phyllogomphoides nayaritensis* (Belle, 1987) West Mexican Leaftail**

**Hanging Clubtails**

**42. *Stylurus intricatus* (Hagen in Selys, 1858) Brimstone Clubtail**

**44. *Stylurus plagiatus* (Selys, 1854) Russet-tipped Clubtail**

### The Skimmer Family - *Libellulidae*

**Clubskimmers**

**50. *Brechmorhoga mendax* (Hagen, 1861) Pale-faced Clubskimmer**

**Pondhawks**

**54. *Erythemis collocata* (Hagen, 1861) Western Pondhawk**

**61. *Erythemis simplicicollis* (Say, 1839) Eastern Pondhawk**

**Dragonlets**

**62. *Erythrodiplax basifusca* (Calvert, 1895) Plateau Dragonlet**

**King Skimmers**

**69. *Libellula croceipennis* (Selys, 1868) Neon Skimmer**

**70. *Libellula luctuosa* (Burmeister, 1839) Widow Skimmer**

**73. *Libellula nodistict*a (Hagen, 1861) Hoary Skimmer**

**75. *Libellula pulchella* (Drury, 1773) Twelve-spotted Skimmer**

**79. *Libellula saturata* (Uhler, 1857) Flame Skimmer**

**Tropical King Skimmers**

**84. *Orthemis ferruginea* (Fabricius, 1775) Roseate Skimmer**

**Blue Dasher**

**89. *Pachydiplax longipennis* (Burmeister, 1839) Blue Dasher**

**Rock Skimmer**

**104. *Paltothemis lineatipes* (Karsch, 1890) Red Rock Skimmer**

**Rainpool Gliders**

**107. *Pantala flavescens (*Fabricius, 1798) Wandering Glider**

**110. *Pantala hymenaea (*Say, 1839) Spot-winged Glider**

**Amberwings**

**116. *Perithemis intensa (*W. F. Kirby, 1889) Mexican Amberwing**

**127. *Perithemis tenera* (Say, 1840) Eastern Amberwing**

**Whitetails**

**133. *Plathemis lydia* (Drury, 1773) Common Whitetail**

**Filigree Skimmers**

**135. *Pseudoleon superbus (*Hagen, 1861) Filigree Skimmer**

**Meadowhawks**

**138. *Sympetrum corruptum* (Hagen, 1861) Variegated Meadowhawk**

**156. *Sympetrum illotum* (Hagen, 1861) Cardinal Meadowhawk**

**158. *Sympetrum semicinctum* (Say, 1839) Band-winged Meadowhawk**

**163. *Sympetrum vicinum* (Hagen, 1861)* Autumn or Yellow-legged Meadowhawk**

**Saddlebags**

**164. *Tramea lacerata (*Hagen, 1861) Black Saddlebags**

**167. *Tramea onusta* (Hagen, 1861) Red Saddlebags**

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***Included in this survey as a species of comparison.**

## Volume 2 Addresses the Damselflies of Doña Ana County and the Black Range

**The species covered in Volume Two include:**

### Broad-winged Damselfly Family *Calopterygidae*

**Rubyspots**

***Hetaerina americana*** **(Fabricius, 1798)**
**American Rubyspot**

### Narrow-winged (or Pond) Damselflies Family *Coenagrionidae*

**Dancers**

***Argia apicalis*** **(Say, 1840) Blue-fronted Dancer**
***Argia lugens*** **(Hagen, 1861) Sooty Dancer**
***Argia moesta*** **(Hagen, 1861) Powdered Dancer**
***Argia munda*** **(Calvert, 1902) Apache Dancer**
***Argia pallens*** **(Calvert, 1902) Amethyst Dancer**
***Argia plana*** **(Calvert, 1902) Springwater Dancer**
***Argia sedula*** **(Hagen, 1861) Blue-ringed Dancer**

**American Bluets**

***Enallagma civile*** **(Hagen, 1861) Familiar Bluet**
***Enallagma praevarum*** **(Hagen, 1861) Arroyo Bluet**
***Enallagma semicirculare*** **(Selys, 1876)**
**Claw-tipped Bluet**

**Painted Damsels**

***Hesperagrion heterodoxum (Selys, 1876)***
**Painted Damsel**

**Forktails**

***Ischnura damula*** **(Calvert, 1902) Plains Forktail**
***Ischnura demorsa*** **(Hagen, 1861) Mexican Forktail**
***Ischnura hastata*** **(Say, 1839) Citrine Forktail**
***Ischnura ramburii*** **(Selys, 1850) Rambur's Forktail**
***Ischnura denticollis*** **(Burmeister, 1839)**
**Black-fronted Forktail**

**Firetails**

***Telebasis salva*** **(Hagen, 1861) Desert Firetail**

### Spreadwing Family - *Lestidae*

***Archilestes***

***Archilestes californicus*** **(McLachlan, 1895)**
**California Spreadwing**
***Archilestes grandis*** **(Rambur, 1842)**
**Great Spreadwing**

***Lestes***

***Lestes alacer*** **(Hagen, 1861) Plateau Spreadwing**

### Reference Material

**There is a great deal of material to access if you have an interest in the *Odonata*. We can't cover it all but the following may be useful.**

**A substantial amount of this material originally appeared in the Black Range Naturalist (BRN). It has been added to and reformatted for this publication.**

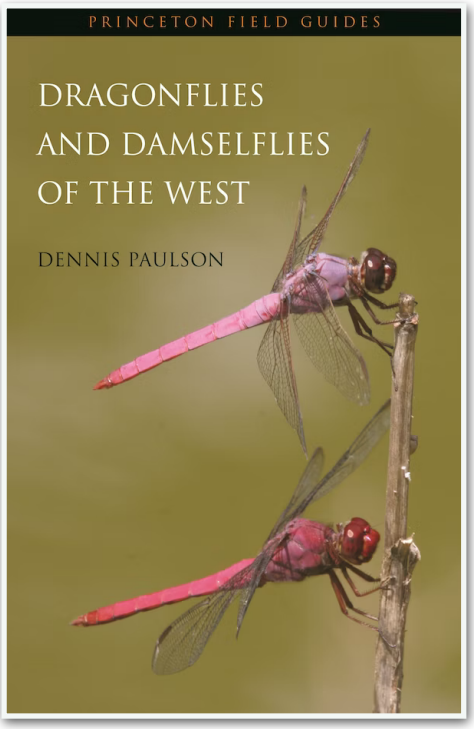
**Arizona Dragonflies**

**Dragonflies and Damselflies at thehibbits.net - the extensive photographic record of Terry and Diana Hibbitts**

***A Checklist of North American Odonata 2024 Edition - Paulson, Johnson, and Dunkle***

**Have an interest in dragonflies? If so, the Dragonfly Society of the Americas is a valuable resource.**

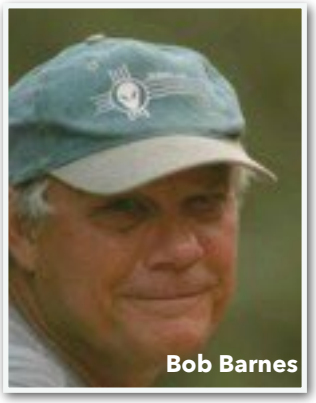
ODONATA CENTRAL

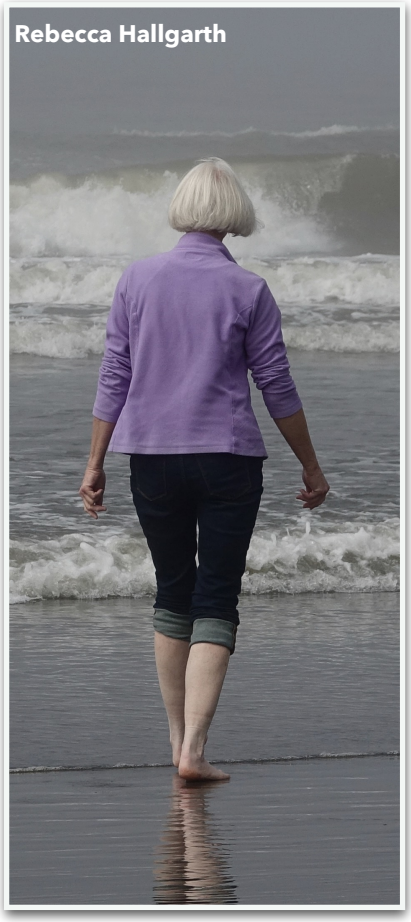



***Dragonflies and Damselflies of the West*****, Dennis Paulson, 2009, Princeton University Press, is a primary reference source used in this survey of the dragonflies and damselflies of Doña Ana County, New Mexico and adjacent areas. The link above will take you to the Princeton University Press site, other websites may offer this reference at a lower price.**

**The cite used to refer to this reference is simply "Paulson (2009)". This source is used to explore a wide variety of identification points and behaviors in this work. In particular: Perching; Sleeping; Flight; Vision; Feeding; Predators and Predator Defense; Sexual Patrol; Courtship and Mating; Egg Laying and Hatching; Larval Life History; and Metamorphosis and Emergence.**


Gordon Berman

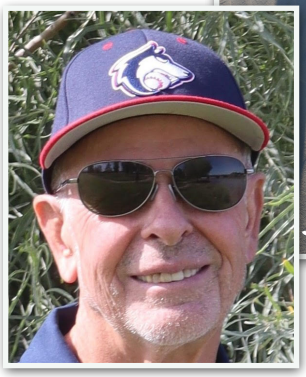

Bob Barnes


Rebecca Hallgarth

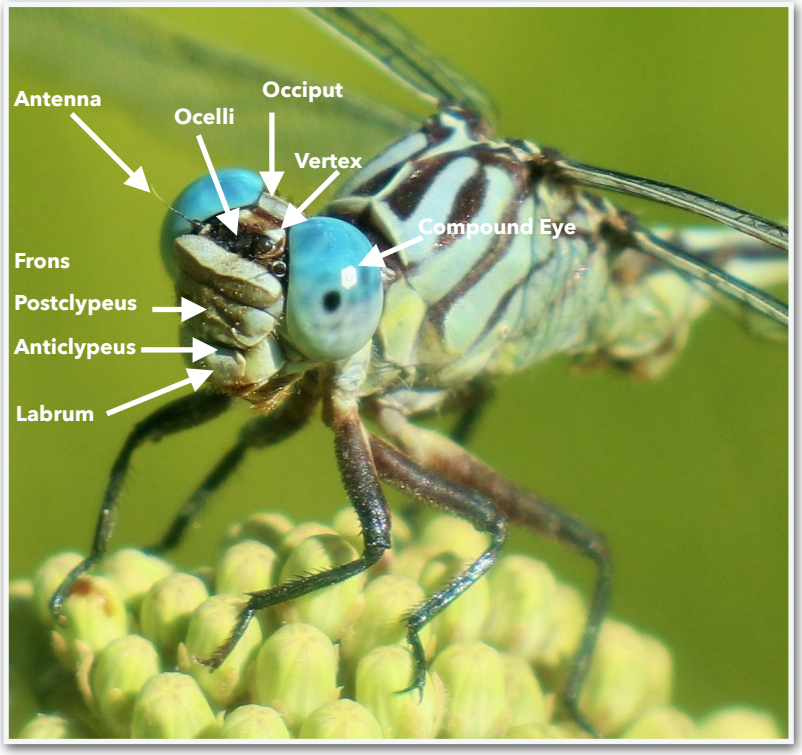
## Some of The Contributors

**We would really like to include the image of your choice here!**


James Von Loh





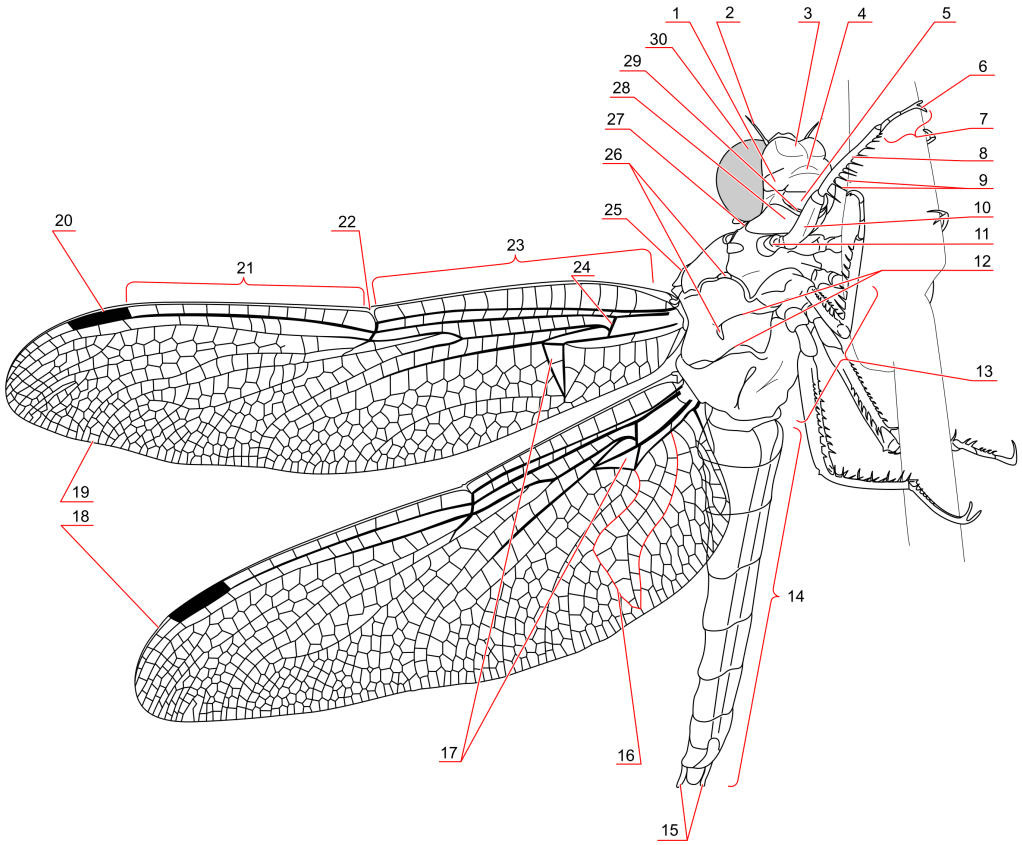

Top: Plateau Dragonlet
Lower Left: Russet-tipped Clubtail

## Anatomy

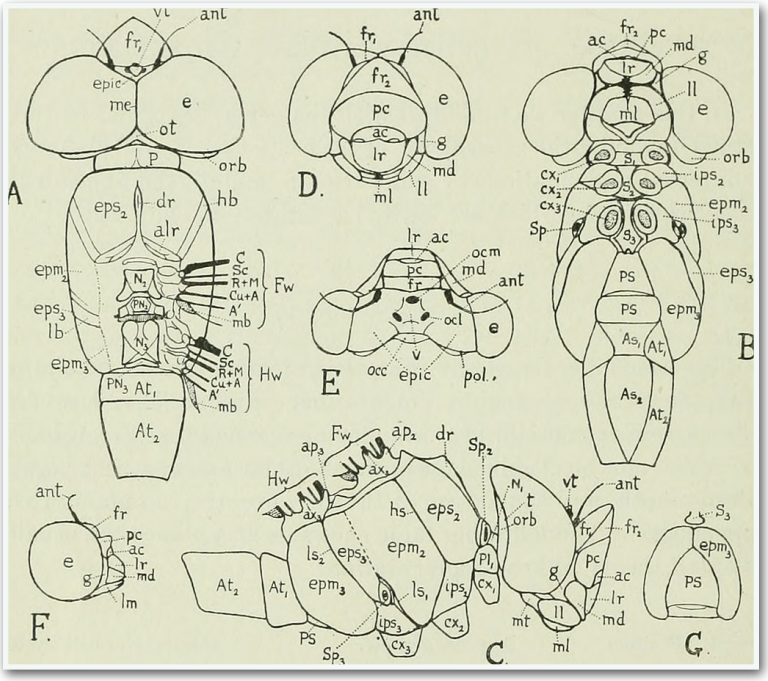
**Following Page Top - Caption From Original Work: 1: Clypeus, 2: Antenna, 3,4 Frons, 5: Labrum, 6: Claw, 7: Tarsus 8: Tibia, 9: Spines, 10: Femur, 11: Coxa, 12: Sutures, 13: Thorax, 14: Abdomen (S1-S10), 15: Appendages (claspers), 16: Anal loop, 17: Triangles, 18: Rear wing, 19: Front wing, 20: Pterostigma, 21: Postnodal cross-veins, 22 : Node, 23: Antenodal cross-veins, 24: Arculus, 25: Synthorax, 26: Humeral and antehumeral stripes, 27: Prothorax, 28: Labium, 29: Mandibles, 30: Compound eye**

**Released to public domain by the artist, Mouagip.**

*Orthetrum cancellatum*




**Right:** ***The biology of dragonflies (Odonata or Paraneuroptera),*** **Robin John Tillyard, 1917. Caption from original work reads: Exoskeleton of head, thorax, and first two abdominal segments:[3] A. *Austrophlebia costalis* (dragonfly), female; dorsal view. B. The same, ventral view. C. The same, lateral view. D. Head of the same, front view. E. Head of *Lestes* (damselfly), dorsal view. F. The same, lateral view. G. Metathorax of *Orthetrum* (dragonfly), ventral view. An analis (anal vein); A' secondary analis (anal vein); ac anteclypeus; alr ante-alar ridge; ant antenna; ap costal process; As urosternite; At urotergite; ax axillary; C costa (vein); Cu cubitus (vein); cx coxa; dr dorsal carina; e eye; epic epicranium; epm epimerum; eps episternum; fr frons; $fr_1$ its superior, $fr_2$ its anterior portion; Fw fore-wing; g gena; hs humeral suture; Hw hind-wing; ips infra-episternum; ll lateral lobe of labium; lm labium; lr labrum; $ls_1$ first, $ls_2$ second lateral suture; M media (vein); mb membranule; md mandible; me median eye-line; ml median lobe of labium; mt mentum; N notum; occ occiput; ocl lateral ocellus, ocm median ocellus; orb orbit; ot occipital triangle; P prothorax; pc postclypeus; Pl pleurum; PN postnotum; pol postocular lobe; PS post-sternum ; R radius (vein); S sternum; Sc subcosta (vein); Sp spiracle; t temple; v vertex; vt vertical tubercle.**



# Dragonflies of Doña Ana County

James Von Loh

**Whenever possible we use the first person pronoun when describing observations because the Odonata are about art as much as they are about science.**

**Version 2.0 of *A Natural History of The Odonata of Doña Ana County With Notes on the Black Range* reflects 6 seasons (2019 - 2024) of photo-documenting dragonflies within Doña Ana County. During this time I focused on diverse habitats in and near Mesilla and Las Cruces (particularly along the Rio Grande and on the Organ Mountains). As a result I have been able to photograph and identify a number of *Odonata* species, including some local variations/forms of widespread populations. These species have ranged in size from tiny, quarter-sized Amberwings to large, nearly four-inch long (both face-to-abdomen tip and wingtip-to-wingtip measurements) Darners; taxonomically, 80% of identified species are members of the Skimmer Family (*Libellulidae*). Dennis Paulson (2009) - see reference section on page 3 - states: "Skimmers *comprise the largest odonate family and are the species most likely to be seen by a casual dragonfly watcher*".**

**Images presented herein were primarily collected by the author, with important and welcome contributions from Las Cruces naturalist, Gordon Berman and others. Any errors in text or interpretation are the responsibility of the author and editor. Please contact the editor, Bob Barnes, about suggested changes and or additions (rabarnes@blackrange.org).**

**Dragonflies may occur anywhere within Doña Ana County when they are migrating or hunting. However, they require habitat for egg laying and the development of aquatic larval stages to reproduce. Such habitats occur along the Rio Grande drainage (and its associated irrigation, storm runoff, and wastewater canal networks), natural springs and seeps along the slopes and within canyons of the Organ Mountains, monsoon season (July-September) temporarily-filled ponds and intermittently-flowing drainages, and water/wetland features used for micro-habitats, livestock management, landscaping, or otherwise occurring in developed areas. Where similar habitat is found in the Black Range, *Odonata* are found.**

**My goals in presenting dragonfly information to *The Black Range Naturalist* at the invitation of editor, Bob Barnes, was to inform the readers of that journal of an incredibly interesting area of potential research, perhaps spark interest in someone to consider entomology as an educational pursuit, preserve representative images and observations within the *Black Range Naturalist* framework, and to provide local information to the regional scientific community. This work grew out of earlier article in the *Black Range Naturalist*.**

**Throughout the ensuing discussion I have included locally-collected images of winged immature and/or adult dragonflies, behavior types as defined in Paulson (2009), and information to help readers identify dragonflies to both sex and species.**

**Summaries of each species distribution and general natural history were prepared using Paulson (2009) and informed with comments from our local field observations. Distribution maps are from the Global Biodiversity Information Facility.**

**General dragonfly behaviors, identified while evaluating field-collected images are noted and discussed herein. Behaviors presented and defined in Paulson (2009), are: *Perching; Sleeping; Flight; Vision; Feeding; Predators and Predator Defense; Sexual Patrol; Courtship and Mating; Egg Laying and Hatching; Larval Life History; and Metamorphosis and Emergence*.**

**So, as you gear-up and run out to photograph dragonflies, remember that being quiet, calm, and patient are virtues; but if you feel the need to - sneak up on them in our snap, crackle, pop, and crunch environment (approach from behind those giant eyes); and always remember that dragonflies have the finest vision in the insect world; compound eyes in the largest species have up to 30,000 simple eyes perceiving all around them; the simple eyes are individual receptors creating a mosaic; and dragonflies are very good at detecting movement (Paulson 2009).**





**There are a variety of habitat elements along the Rio Grande Recreational Trail (walk/run/bike) and within Mesilla Valley Bosque State Park (walk) that support dragonfly species through their life cycle.**



**The waterfall and spring of upper Soledad Canyon has provided a dependable habitat to support many arthropod species.**



**Habitat supporting Odonates within Leasburg Dam State Park on the Rio Grande at Radium Springs.**

## The Darner Family *Aeshnidae*

Darners are among the largest of dragonfly species within the United States, which also makes them a challenge to bring into focus and photograph in crisp detail due to length, width, and depth elements.

Besides the Blue-eyed and Green Darners, I have rarely viewed but never clearly photographed Giant Darners, *Anax walsinghami* McLachlan, 1883), which fly continuously, may hover intermittently, then hang vertically when perched (Paulson 2009). A chance 2024 encounter with a Turquoise-tipped Darner (*Rhionaeschna psilus* [Calvert, 1947]) added another species to the Doña Ana County records. My encounters with darners have been mostly while investigating riparian and wetland habitat along the Rio Grande and the associated irrigation ditches, and rarely near small livestock and detention/retention ponds which fill following monsoon rainstorms.

## Persephone's Darner *Aeshna persephone* (Donnelly, 1961)

Species entry by Barnes: Persephone's Darner is one of the Mosaic Darners and is named after Persephone, the Queen of Hades. Perhaps that alludes to the movement of this species in and out of the shadows. It is found along rivers, including intermittent rivers when there is water. NatureServe reports the habitat of this species as high to moderate gradient creeks.

Its range within the United States is limited and its range within Mexico is poorly understood.

The larvae of this species overwinter. The flight season is thought to be between August and late October, which comports with the sightings reported here.

At the time that Thomas W. Donnelly described this species he was a professor of Geology at Rice University in Houston Texas. He originally collected the species at Cave Creek in the Chiricahua Mountains in southeastern Arizona.

We include the original description here (by link) because it is not only full of the natural history of the species but that description is woven into the personal experience of Dr. Donnelly. For example: *"The name is suggested by the habitat of this large and colorful dragonfly. In contrast to the sunny streams and ponds favored by most of its North American congeners, it inhabits mountain streams which are lighted by the sun's rays for only a few hours each day, though it ascends periodically through the forest gloom to the sun-lit mountain slopes."*

Grant County sightings include an individual near Sherman on October 8, 2011 by Tony Godfrey.







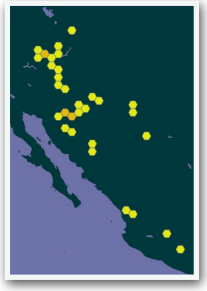






The images on the preceding page were captured in the Palomas drainage on the east slopes of the Black Range, Sierra County by Lauren Leach who has provided permission to use the images.

The images on this page were taken by "mmatthiessen" in August 2015 north of Silver City. They are posted on iNaturalist and are shown here under a Creative Commons License.



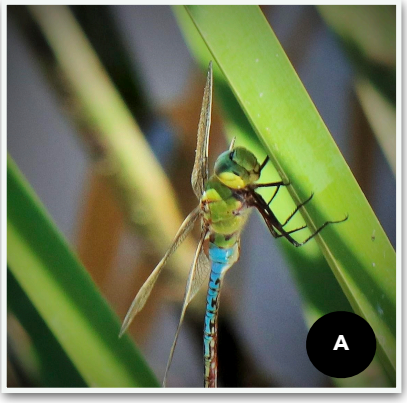
Recorded sightings from the Global Biodiversity Information Facility (12/2023).



## Common Green Darner
## *Anax junius*
### (Drury, 1773)

Common Green Darners are widespread throughout the US. They use nearly all open water and marshy habitats. Their flight season within New Mexico ranges between February and December (my earliest observation is a breeding pair flying in tandem over the Rio Grande on March 31, 2022). In Doña Ana County I have observed this species using ponds filled during monsoon rainstorms and habitats along the Rio Grande and its associated irrigation and wastewater return canals. I have observed Common Green Darners roosting in the shade of Coyote Willow tall shrubs and within stands of Southern Cattail, hunting over all available habitats, patrolling/hovering/hunting by hawking over open water adjacent to Southern Cattail and Three-square Bulrush emergent stands, and ovipositing on floating vegetation mats on the Rio Grande and its canals.

A. A male sleeping/hunting on/from Southern Cattail leaf growing within a return water canal. This is the common position taken by adults for sleeping behavior; usually Southern Cattail and Coyote Willow provide the habitat structure they seek.
B. Subject species.





















**C.** I typically observe pairs of Common Green Darners ovipositing adjacent to floating vegetation in shallow water of canals serving the Rio Grande. The males lead while the females deposit eggs side-to-side along floating stems and leaves.

**D.** However, this lone female Common Green Darner, exhibiting well-worn wing edges, is ovipositing in shallow water over submerged vegetation within the retention pond near Dripping Springs Visitor Center in the Organ Mountains/Desert Peaks National Monument.

**E.** This close-up of a male shows its basal wing and dorso-lateral head and thorax structure and color patterns.

**F.** This close-up of a female shows her basal wing and dorso-lateral head and thorax structure and color patterns. Note: she is in tandem with the male's two cerci attached to the rear of her head/ "neck".

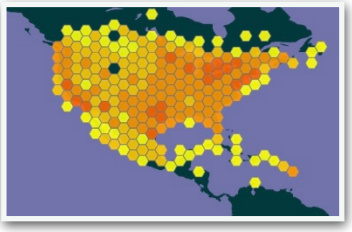
**G.** A post-copulating Common Green Darner pair (male above, female below - in tandem with his cerci engaged behind her head/"neck"). She is preparing to oviposit on floating plant stems within this return water canal. Note that mature females (and sometimes males) develop an amber coloration on their wings.




**H.** **A pair oviposit among a mat of floating stems, leaves, and fruits of an irrigation canal. Note the dorsal abdomen color differentiation between the male (on the left - black) and the female (on the right - brown).**

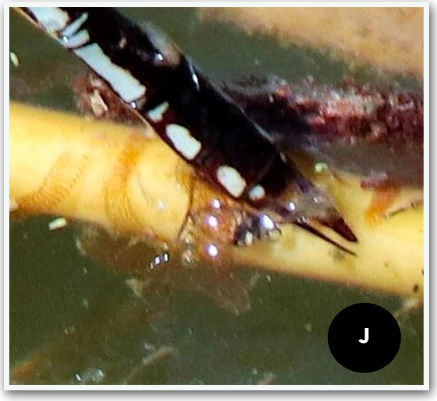
**I.** **Tandem pairs fly from site to site (selected by the male) to oviposit over a large area of canal, landing where floating debris and emergent plants occur. The total length, width, and depth of field of the pair create a challenge for collecting a clear and detailed photograph.**

**J.** **Eggs produced by the female are deposited on both sides of, and in the water under, floating stems and other debris as the pair moves along the stem (in this example).**



**Recorded sightings from the Global Biodiversity Information Facility (12/2023).**


















**K.** A green lacewing (*Chrysoperia* sp.) appears to be foraging on freshly-deposited eggs, an identified food source for the species. Familiar Bluet damselflies occasionally visited the tandem Common Green Darner pair during egg deposition, but I am unsure if they were foraging or perhaps attempting to harass the pair from the site.

**L.** Male bluet damselflies often approach or perch adjacent to ovipositing tandem pairs of Common Green Darners. I don't know if they forage on the newly-deposited eggs or perhaps are simply interested in other odonates within their territory.

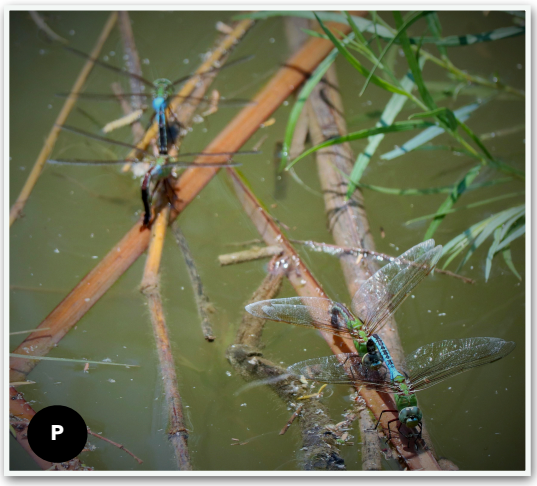
**M.** Single males often approach tandem pairs and attempt to land upon them.

**N.** Uncharacteristically, several eggs are released above the water surface from this elevated perch selected by the male.

**O.** This tandem pair uses, in addition to floating woody plant materials, the leg and claw of a Red Swamp Crayfish as an egg deposition substrate.

**P.** Next page. Preferred mass of floating stems in calm water for ovipositing Common Green Darners.

**Q.** Next page. The pair lifts-off and makes a short flight to the next ovipositing site.



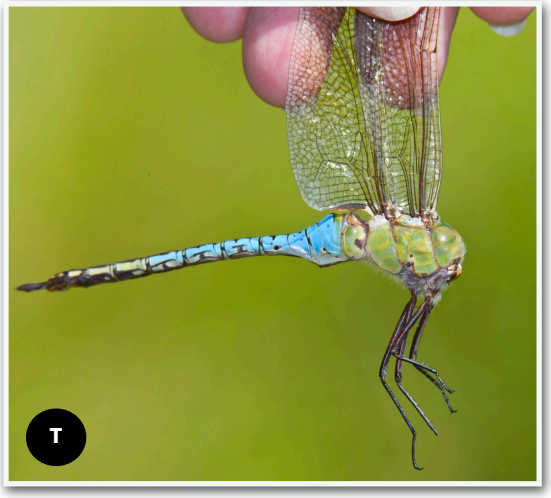




**R. This Common Green Darner male is avoiding buffeting by wind gusts to ~40mph by perching over calm water below an embankment on a floating Southern Cattail stalk (perhaps also to warm in the sun, rest, and hunt). Horizontal perching is rare behavior as they typically fly incessantly or sometimes hover over the water and adjacent vegetation, preferring to hang from leaves, twigs, and branches to sleep.**






**S.** The larvae of these Common Green Darners will develop through the summer, feeding on aquatic insect larvae and small animals, and offspring will emerge during late summer, migrating in their immature colors (Paulson 2009).

**T.** Among the sightings of Common Green Darner in the Black Range is the individual shown to the left. The photograph, by Greg Lasley, was taken at Bear Canyon Reservoir in Grant County on August 30, 2015. It is shown here under a Creative Commons License via iNaturalist.

A series of photographs, by Bob Barnes, of a tandem pair of Common Green Darners at Phillip's Hole, Hunt's Windmill, in the Potrillo Volcanic Field west of Las Cruces on 9/6/2014 may be viewed at this link.

Common Green Darners are well-represented within the Rio Grande Valley of southern New Mexico, where they use tall, dense habitats of Southern Cattail, Johnson-grass, and/or Coyote Willow adjacent to slow-moving water, primarily.

**During 2024, photo-documentation allowed further descriptions for the species, including an immature male from Mesilla Valley Bosque State Park; ground-level images illustrating ovipositor use during egg deposition behavior (all damselfly species and some darner species have ovipositors, used to pierce/slit plant epidermis and bark (Paulson, 2009)); and the compression applied to female eyes when attached in tandem-linkage to the male's epiproct and cerci during egg-deposition behavior.**

**U. Enlargement of head and thorax illustrate the immature male's brown eyes rimmed by chartreuse; chartreuse face with distinct black marks; and generally green thorax (note brownish color at wing base attachment) with a faint ventral blue spot at the juncture with his pinkish-red abdomen (S1). This immature male flew to, and perched within, shaded hiding cover ~2.5m high on a Coyote Willow tall shrub within Mesilla Valley Bosque State Park. 08/23/24.**

**V. Enlarged view of the female's posterior abdomen illustrates the extended black oviposiiter, lower right, and possibly with an egg in view. 11/10/24**

**W. The female uses the curved ovipositor to pierce/slit plant tissues (floating Southern Cattail stem), providing a site to insert eggs. 11/10/24**

**X. Typically, saturated floating stems and branches are selected as ovipositing sites, with most of the eggs deposited below the water surface. 11/10/24**

**Y. Next page. Enlargement of the immature male's abdomen illustrates the green 1st segment and the consistently pinkish-red color of the S-2 to S-6 area which blends into a brownish-red terminal color and the paddle-shaped appendages. 08/23/24**

**Z. Next page. Ground-level images of Common Green Darner pair in tandem-linkage while depositing eggs allowed identification of the female's (L) ovipositor. 11/10/24**

**AA. Next page. Male (L) in tandem linkage with female (R) as he leads her from site-to-site to deposit eggs on/along saturated, floating stems and leaves on a Rio Grande irrigation ditch. 06/30/24**

**BB. Next page. A view of the depth of compression by the male epiproct grasp at the top of each female eye (while in tandem-linkage). 06/30/24**

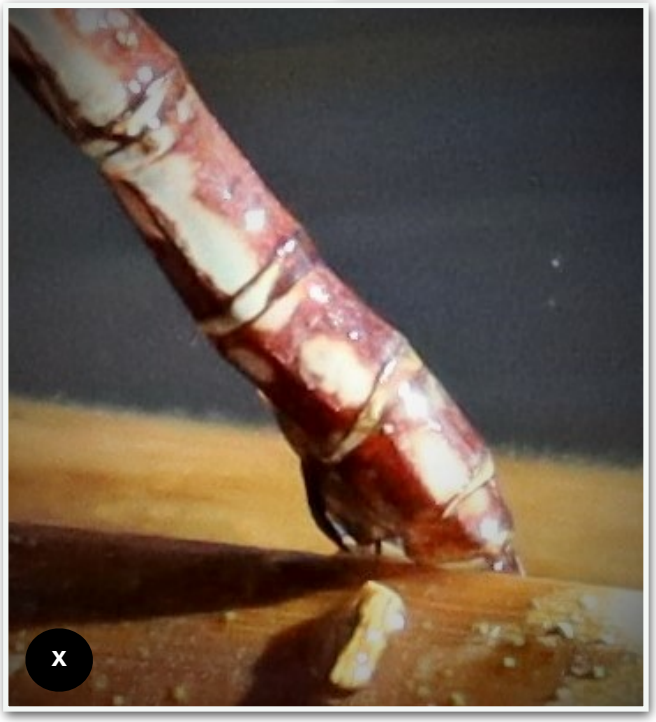
**CC. Next page. A slightly different sun angle/image enlargement clearly outlines the compression zone on the top of each female eye resulting from the male epiproct grasp (while in tandem-linkage the male's cerci are clamped on both sides of the female's 'neck' behind the eyes), as the male guides the female between egg-deposition sites that he selects. 06/30/24**

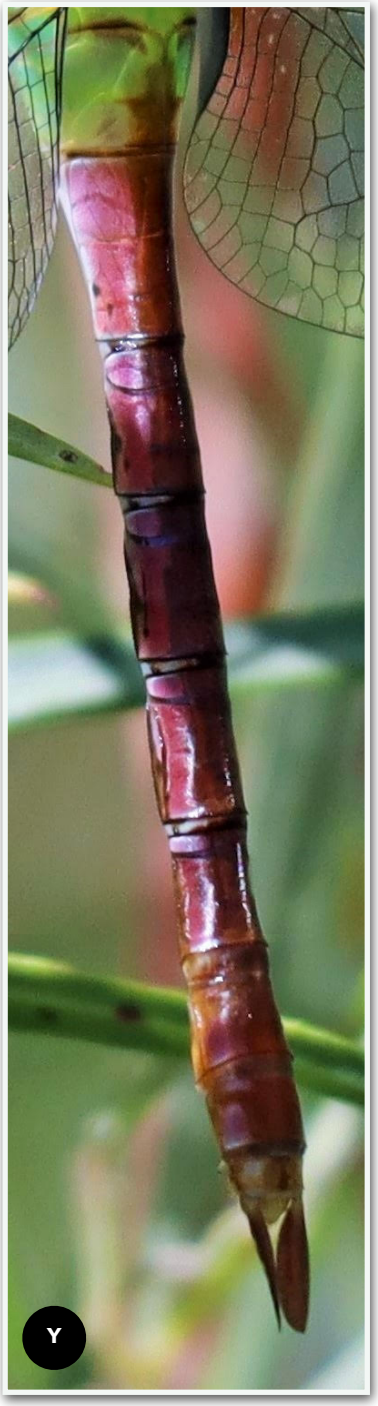






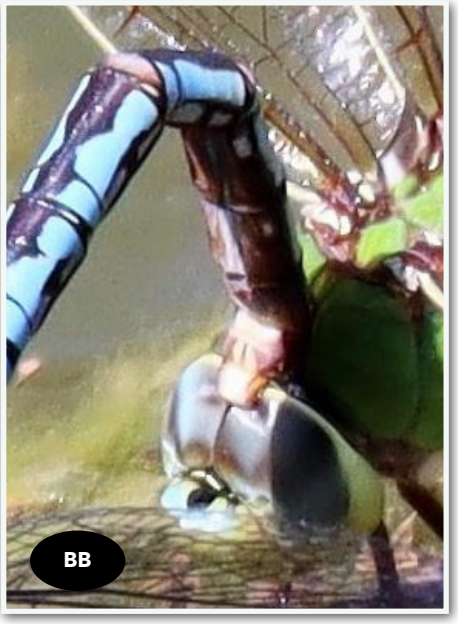


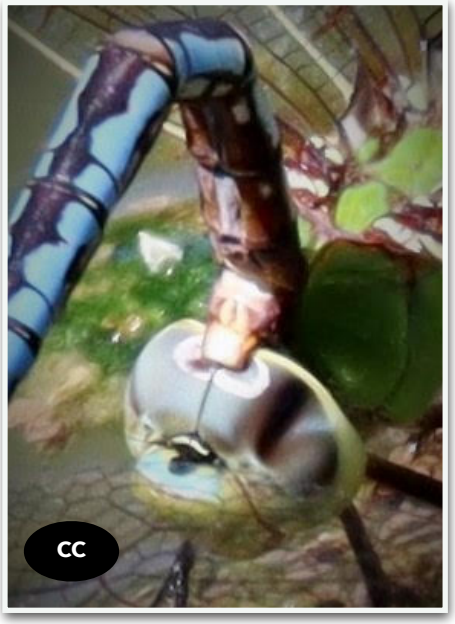




Y


Z


AA


BB


CC

## Giant Darner
## *Anax walsinghami*
## (McLachlan, 1883)

**Species entry by Barnes.**

**The Giant Darner (alternatively Giant Green Darner) is found in the southwestern United States south into Central America. This is the largest dragonfly species found in the contiguous United States with wingspans up to 4.7 inches and body length up to 4.6 inches - note that it is not the largest dragonfly in the United States. The Giant Hawaiian Darner is larger. The flight season for the Giant Darner is between April and October. It is often found in canyons and along slow streams with emergent vegetation along the banks.**



**Recorded sightings from the Global Biodiversity Information Facility (12/2023).**

**On 30 August 2011, Mara Weisenberger recorded a Giant Darner at San Andres Spring on the San Andres National Wildlife Refuge. Odonata Central record #332517.**



**Giant Darner photographed at the River Ranch Wildlife Management Area near the City of Rocks State Park in Luna County by M. L. Watson, illustrating a female, depositing eggs into a grassy bed in shallow water. Shown here via a Creative Commons License at iNaturalist.**

## Riffle Darner
## *Oplonaeschna armata*
## (Hagen, 1861)

**Species entry by Barnes.**

**Among the sightings of Riffle Darner in Grant County was the immature individual shown to the right. This photograph was taken by Bruce Taterka on June 23, 2022. The photograph is shown here under a Creative Commons License via iNaturalist.**

**An excellent identification resource for this species is Arizona Dragonflies. Greg Lasley photographed this species in southeastern Arizona before he died.**

**Although this species looks like a mosaic darner there are some points to notice in the identification process. The wings are clear and have a short pterostigma which is fairly dark (note the brownish cell along the leading edge of the forewing near the tip). The back of the head is tan. The front cream colored stipe on the thorax is indented at about its half point (rather than being the same width through-out its length. At segment 10 of the abdomen there is a dorsal projection, looking somewhat like a spur.**

**Other sightings in Grant County include one by Stephen Falick who photographed one a little northeast of San Lorenzo in July 2023 and one by Emily Hjalmarson who observed one in the range on July 5, 2018.**



**Recorded sightings from the Global Biodiversity Information Facility (12/2023).**





**Left: Riffle Darner, photographed on August 10, 2024, by Mike Andersen in the area of Railroad Canyon, Black Range, shown here under a creative commons license.**

**Odonata Central records include #358672 at Upper Gallinas Campground, Black Range, by John Abbott on 30 July 2000 and #452313 at Bear Creek by Jonathan Batkin on 4 August 2016.**

## Arroyo Darner
## *Rhionaeschna dugesi*
## (Calvert, 1905)

**Species entry by Barnes.**

**The Arroyo, Turquoise-tipped, and Blue-eyed are the Neotropical Darners found in Doña Ana County and/or the Black Range.**



**Recorded sightings from the Global Biodiversity Information Facility (12/2023).**




**A. The Arroyo Darner is an endangered species and the exact location of the individual shown here is not shown on iNaturalist, it may be in southeastern Grant or northeastern Luna County. The photograph to the right was taken by Justin Jones on August 27, 2015.**




**B. "mmatthiessen" posted these images on iNaturalist, of an observation in August 2015, near Gila Hot Springs. An Arroyo Darner male (Upper, blue markings), perched on a cattail leaf and forming a mating wheel with a female (Lower, yellow markings) to fertilize her eggs prior to oviposition (egg-laying).**

**C. Same as "B". Male abdomen tip illustrating his long, black cerci.**




**"tjay13" posted an observation of this species from roughly the same area as the observation as "B", in October 2023, it may be viewed at this link.**

**Odonata Central record #452500 is an individual photographed in Hillsboro, by Jonathan Batkin, on 21 September 2015. In an email to the editor (3/1/25) Batkin noted "That specimen was worn, soiled, and faded, but it exhibited the rearward extension at the top of the anterior lateral thoracic stripe and had a bluish spot at the anterior end of the side of segment 2, showing weakly through the wing in the side photo and barely visible in the photo shot from above. Those are widely considered diagnostic features, ruling out Blue-eyed (see Paulson's comments on this in his description of Blue-eyed). However, there remains a possibility that the specimen was an aberrant Blue-eyed. If Arroyo Darner is a breeding species in the Black Range, Palomas Creek might be the place to look."**

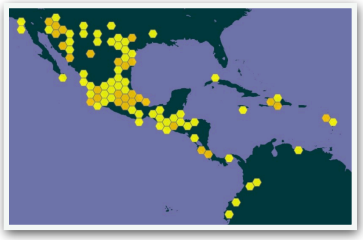
**Jonathan Batkin also noted that the Arroyo and Blue-eyed Darners are very similar in appearance. When evaluating the differences between males of two species note the differences between anterior lateral thoracic stripes and cerci (see "C").**

## Turquoise-tipped Darner
## *Rhionaeschna psilus*
## (Hagen, 1861)

A small darner, the female Turquoise-tipped Darner shown here represents the first reported photo-documentation (November 10, 2024) in New Mexico (Jonathan Batkin 2024). A second observation of this female (she has easily identifiable, opaque wing margins) depositing eggs on wet Southern Cattail stems and a saturated Tamarisk branch, floating in a shallow pool, was documented on December 04, 2024, and is yet another first photo-documentation (of breeding) in New Mexico.

Jonathan Batkin (2024) stated while providing a draft review of this entry: "The fact that she has mated suggests the presence of at least two individuals. The species can be frustratingly secretive, and males and females sometimes take perches deep in foliage for long periods of time. It is no surprise that you have not seen a/the male". The Dona Ana County site providing habitat along the Rio Grande (~300 square meters) is approximately 40 miles north of another Turquoise-tipped Darner individual documented in 2022 along the Rio Grande in El Paso, Texas.

Population centers occur across southern Arizona and southern Texas with individual outliers in Orange County, California and Lubbock County in the Texas panhandle (Odonata Central 2024). The November and December sightings in southern New Mexico are in concert with flight seasons reported in neighboring states, Arizona (April-December [12/30] and Texas (March-December [12/10]; Turquoise-tipped Darners extend south to Mexico and Argentina (Paulson 2009).



Recorded sightings from the Global Biodiversity Information Facility (12/2023).







Selected habitats are usually pools of slow-flowing wooded streams and shaded forest ponds; I documented this individual associated with ponded water connected to the perennial, treated wastewater stream discharged to the Rio Grande west of Las Cruces and Mesilla, New Mexico; the adjacent banks are wooded with Coyote Willow, Mulesfat Baccharis, and Tamarisk - tall, riparian shrublands and woodlands. Several of the woody plants and Southern Cattail overhang the pool habitat. See photograph at top of the next page, a shallow pool with floating, Southern Cattail and Tamarisk debris and overarched by dead Tamarisk branches and twigs, provided egg-deposition habitat for the Turquoise-tipped Darner female. Winter-season perennial water in the Rio Grande channel is from the City of Las Cruces, J. H. Hand Wastewater Treatment Plant, discharged ~150 M north of the I-10 overpass.

Generally, males and females exhibit slightly notched, lateral, thoracic stripes that are extended and are chartreuse in color (as are prominent frontal stripes) and all markings are greenish-yellow (patterning is the same for males and females). The female's cerci are longer than its S8-S10 abdominal segments (Paulson 2009). Females are apparently not polymorphic; generally polymorphism is less common among subtropical species (Paulson 2009).

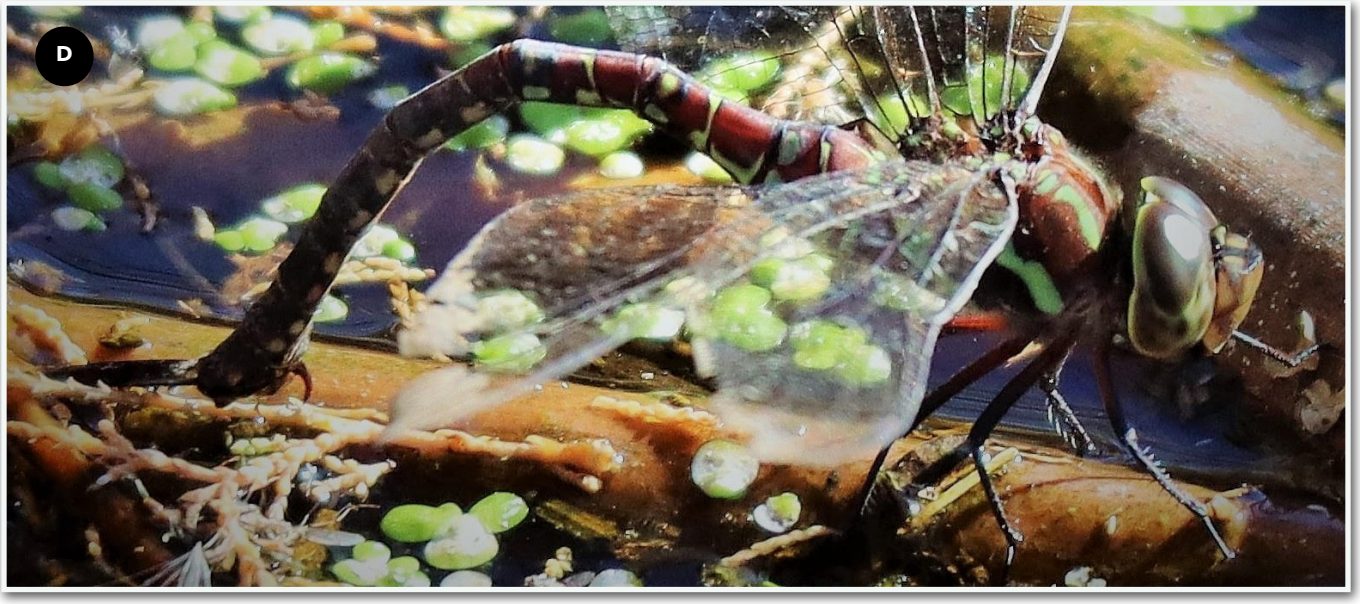
A. This Turquoise-tipped Darner is perched in a sunny spot in otherwise dense foliage, she hangs by dark brown legs on a dried stem of Three-square Bulrush, within a small stand of 2m-3m tall Southern Cattail growing adjacent to a shallow pond. Her face is brownish surrounded by white; eyes are banded light blue above and behind and brown through the middle; thorax is dark brown with bold chartreuse and elongate/notched lateral stripes and chartreuse frontal stripes; the abdomen continues the dark brown, chartreuse spots (rimmed by black) color pattern.
B. Her cerci extend prominently from the terminal abdomen, approximately equal in length to or longer than the combined S8-S10 abdominal segments.





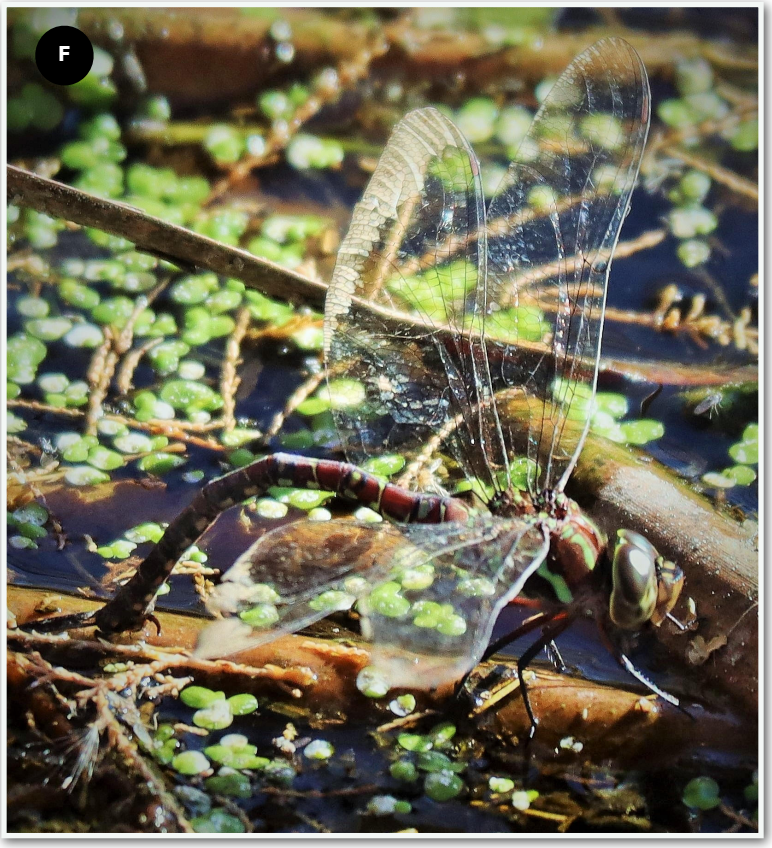

Eye color for Turquoise-tipped Darners is variable and fascinating to contemplate. For example, Paulson (2009) described the female's eyes and face as brownish and male eyes as turquoise and face as blue while "Bailowitz et al. in the AZ field guide, describe the species' eyes as "mottled," which also doesn't quite fit" per Jonathan Batkin (2024) who also shared his notes and thoughts for eye color, as follows: "I think Dennis Paulson's description of male eyes as turquoise does not do them justice. In your first photo of the female, you can see bands of blue and brown in the upper eye. Every Turquoise-tipped Darner I have photographed shows this, and it is true of all or almost all photos of others that show the eyes clearly on Odonata Central records in AZ. The lower eye is blue on two males in my photos, and brownish on other males, as it is on your female; they are brownish on many or most specimens on Odonata Central. One male I photographed has alternating bands of olive green and brown in the upper eye, which shows in shots that I got from both sides and from above while on the same perch. It is possible that the colors we see in the eyes vary depending on the light and angle of view, and I have been trying to get more photos to figure that out". See also, images D, E, and F which show the solidly brown eye color of this female under bright, late afternoon, low-angle sunlight.

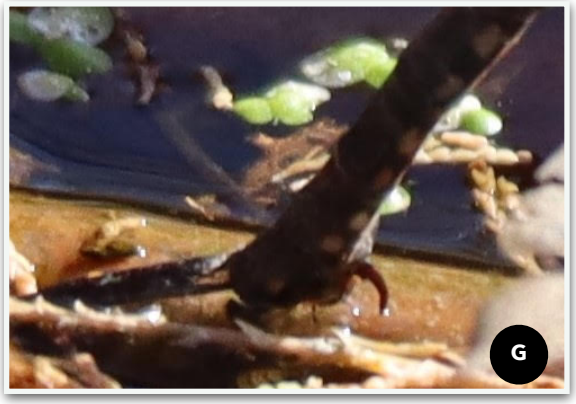
C. The Turquoise-tipped Darner is considered a small darner (Paulson 2009) but is distinctly longer than the skimmer species present this late in the flight season and somewhat shorter than the Blue-eyed Darners and Common Green Darners which were also present in this habitat on 11/10/24. I cannot explain the filmy/opaque areas on her middle through lower abdomen segments and hind-wing edges. It may be caused by a thin layer of dried mud, possibly collected while depositing eggs, as Turquoise-tipped Darners use floating wood/vegetation and mud as substrate for egg-laying (Paulson 2009).
D. Next Page. Using her ovipositor, the same female deposits eggs on/along floating Tamarisk leaf/stem detritus 12/04/24.
E. Next Page. There is at least one egg, at the tip of her ovipositor, near the leaf of a floating Duckweed plant.
F. Next Page. Depositing eggs individually on a floating, saturated Southern Cattail stem, the female performs the behavior solo, without remaining in tandem linkage with a male, as occurs with Common Green and Blue-eyed Darners in this same habitat (12/04/24). Note the numerous Duckweed (*Lemna* sp.) plants floating on the shallow pool surface, they attract ducks to forage within this habitat, particularly Mexican and Northern Mallards.
G. Next Page. Extended ovipositor releases an egg to be deposited on the damp surface, note the already deposited eggs to the left and also behind her cerci. The tip of her ovipositor is sharp and typically pierces the substrate prior to egg release (Paulson 2009).











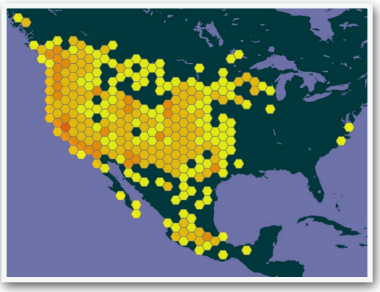


**H. It is interesting to view the amount of chipping to the female's trailing wing edges that has occurred over the 24-day period of time. That the opaque trailing wing edge has persisted through several rain-producing storms leads me to also suggest this condition may have occurred during the emerging process when her wings were pumped full of fluid and perhaps dried unevenly in the immature/juvenile stage of development.**

## Blue-eyed Darner
## *Rhionaeschna multicolor*
## (Hagen, 1861)

Blue-eyed Darners are Neotropical Darners which are widespread throughout the western and central US and generally occur from Mexico to Canada, east to Iowa, and south to Texas. They may use nearly all open water and marshy habitats of open sites; their flight season within New Mexico ranges between March and November.

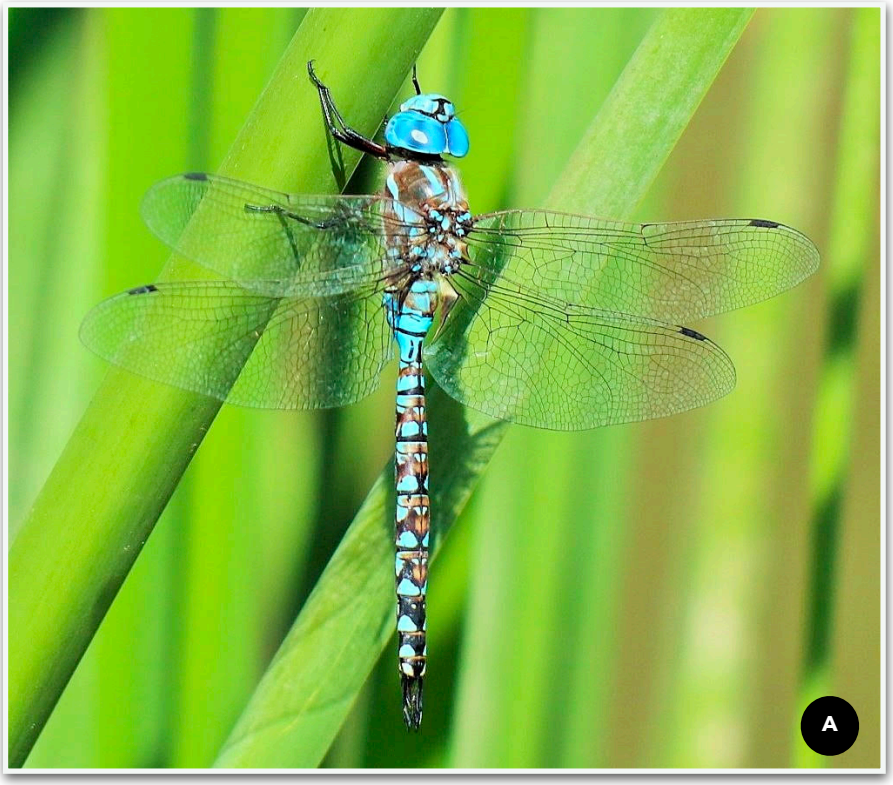
In Doña Ana County I have observed Blue-eyed Darners rarely to occasionally along the Rio Grande and its associated irrigation canals and along wastewater return canals where they may perch to sleep in the shade of Sandbar Willow and Tamarisk tall shrubs/trees. In these areas they hunt over all available habitats, and patrol/hover/hunt within Southern Cattail and three-square bulrush emergent wetland stands. Ovipositing occurs within Southern Cattail stands along the Rio Grande and its canals.



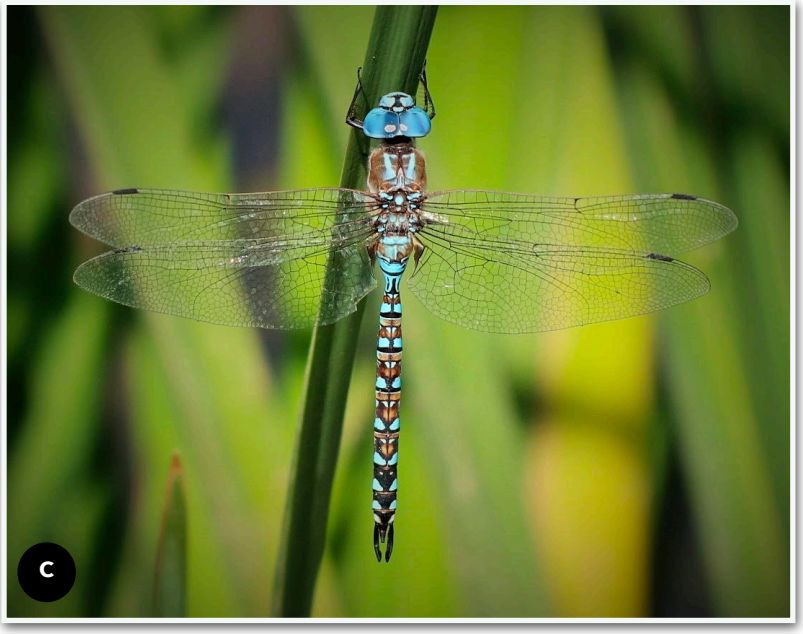
Recorded sightings from the Global Biodiversity Information Facility (12/2023).

On one occasion, I was lucky to photo-document a pair of Blue-eyed Darners post-rendezvous (mate selection area), already mating (in copula) while hanging from the lower leaf of a Southern Cattail plant. In a summarized sequence from Paulson (2009): the mature male had captured the mature female with his legs and clasped her with his terminal appendages (clasped her head/"neck" on either side with two cerci, while pressing his epiproct tightly against the top of her head) creating a tandem linkage. At this stage the male transfers sperm from the genital opening under his ninth abdominal segment (S9) to store in the terminal vesicle under his second abdominal segment (S2), after which the female contorts to join him in the mating wheel (arguably heart-shaped) stage typical of many dragon and damselfly species.

A. A Blue-eyed Darner male perches by hanging from a southern cattail leaf (perhaps to warm in the sun, rest, hunt, and/or to display to attract a mate). Often, darners hang in shady areas within cattail stands and within the canopy of tall riparian shrubs and/or trees to sleep.
B. Blue-eyed Darner From iNaturalist, a photo by "miguel1958" taken at Elephant Butte Dam on September 19, 2023. Used here under a Creative Commons License.
C. Next Page. Male Blue-eyed Darners sleeping in a shaded location in a Southern Cattail stand which is established in a small (continued on next page)






C. (continued from previous page) irrigation canal. They are able to hunt from this position by hawking, e.g., releasing from the perch and capturing other flying insects.

D. Male hovering, patrolling territory, and hunting by hawking among Southern Cattail leaves along the Las Cruces wastewater outfall near the Rio Grande.

E. Same as "C"

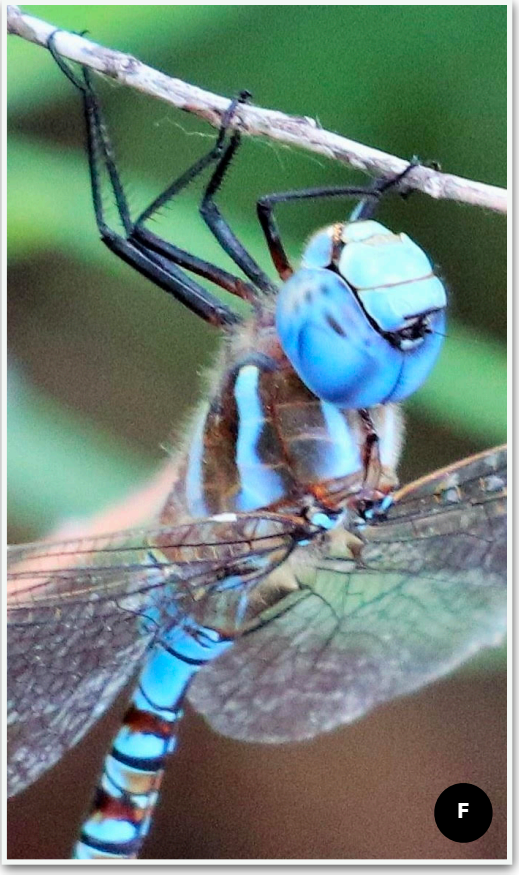
F. This male Blue-eyed Darner is sleeping under a Coyote Willow tall shrub twig along the Rio Grande (close-up of his blue face and eyes plus the thorax/abdomen color patterns).

G. On a hot afternoon, a mature male with torn and tattered wings is sleeping while hanging from a partially shaded perch under a Tamarisk tree branch, adjacent to the Rio Grande.
















H. This male was hovering, using a light wind to stay aloft while rarely moving its wings, and hunting for small flies and other prey over a field of damp grass in Wooten, NM, Otero County. This method of hunting is known as hawking, which dragonfly species known as "fliers" use to capture other flying insects (Paulson, 2009).







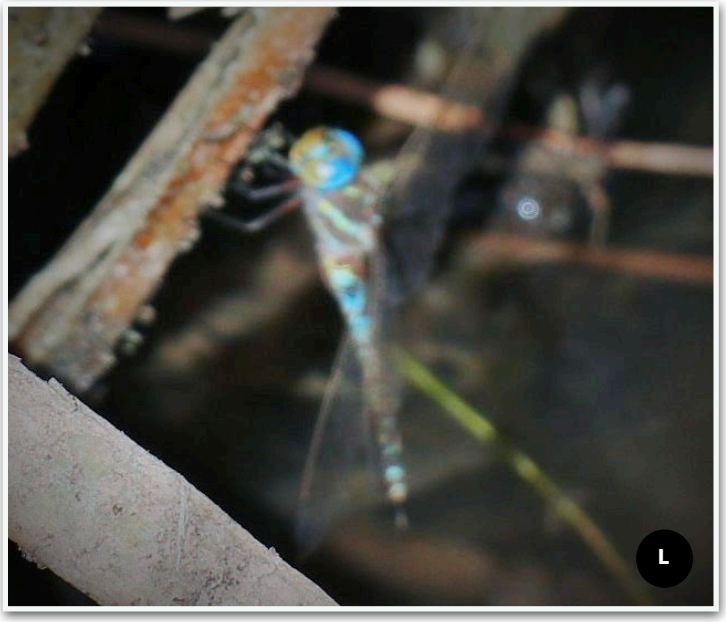
I. A Blue-eyed Darner pair is in copula (in the mating wheel configuration) while hanging from a Southern Cattail leaf. Note the female has attached her 9th abdominal segment (S9) to the male's S2 for transfer of his sperm to her vagina, where it is available to fertilize eggs prior to their deposition into the perennial aquatic habitat.

J. The enlarged detail shows the S9/S2 connection site, male epiproct location on head and cerci attachments (head/ "neck") and the color/pattern detail between the male (upper) and female (lower). Note the female's partially brown eye color, lighter color shades of the thorax, and that more areas of yellow color are distinguishable.

K. This pair of Blue-eyed Darners is separating following copulation yet still in tandem linkage due to male epiproct contact and cerci emplacement. Copulation performed by this pair took over an hour. Now she will be lowered, by the male, to the water surface and begin egg deposition.

L. This post-copulation female is now free from the tandem linkage, and has moved deep into the base of the cattail clump to deposit eggs at the water surface. Eggs hatch into aquatic naiads which feed on other aquatic insect larvae and freshwater shrimp, small fish, and tadpoles. Naiads swim by propulsion, ingesting and forcing water from the abdomen. The several larval instar stages require several years to mature, at which time immature Blue-eyed Darner emerge from the water during the night and climb onto vegetation to molt the naiad exoskeleton and expose the immature form.



# The Clubtail Family - *Gomphidae*

Barnes: When considering this family, James Von Loh focuses on two genera, *Erpetogomphus*, the Ringtails and *Stylurus*, the Hanging Clubtails. In particular, he includes species accounts of: *Erpetogomphus designatus* (Hagen in Selys, 1858), the Eastern Ringtail; *Erpetogomphus compositus* (Hagen in Selys, 1858) the White-belted Ringtail; *Stylurus plagiatus* (Selys, 1854), the Russet-tipped Clubtail; and *Stylurus intricatus* (Hagen in Selys, 1858), the Brimstone Clubtail.

Other sightings of the Ringtail species focused on by Von Loh include an Eastern Ringtail from Percha Dam State Park and near Elephant Butte Dam and a White-belted Ringtail near Arrey.

Additional Ringtail species have been reported from the Black Range. A Serpent Ringtail, *Erpetogomphus lampropeltis* was reported from San Lorenzo (Grant County) and at the River Ranch Wildlife Management Area south of Faywood along the Mimbres. A Dashed Ringtail, *Erpetogomphus heterodon*, has been reported at the Royal John Road crossing along the Mimbres, at the River Ranch Wildlife Management Area south of Faywood along the Mimbres, at the Alamosa Warm Springs (Socorro County), and near Grapevine Campground along NM-15 on the west side of the Black Range.

These reported sightings are tantalizing and are reason for naturalists in the Black Range to closely monitor dragonfly populations for these species.

In the genus *Stylurus* only the Russet-tipped has been reported in Sierra County, near Elephant Butte Lake Dam and at Caballo Lake State Park. This species has also been reported from Broad Canyon in northern Doña Ana County. The Brimstone Clubtail, has been reported from Bosque del Apache and farther south along the Rio Grande.

The Gray Sandragon, *Progomphus borealis*, has been observed several times in the vicinity of Cliff (Grant County), it is not included in our survey because it is just outside our range.

James Von Loh photographed the species he provides accounts for in Doña Ana County, NM. His discussion of the Clubtail Family follows.

Von Loh: Habitats particularly attractive to the Clubtail Family include the Rio Grande drainage (along the western community boundaries of Las Cruces and Mesilla), south to Mesilla Valley Bosque State Park and its associated irrigation and wastewater canals. Represented herein are adult individuals (Ringtails and Clubtails). Their behavior types as defined in *Dragonflies and Damselflies of the West* (Paulson, 2009) are described here and when possible, instances of predation by these dragonflies is described. Because dragonfly species have an aquatic larval stage that rarely can be photographed in situ, each species presentation, by design, is incomplete (with a gap following egg laying/deposition behavior and before immature dragonfly presence).

Clubtails (including Ringtails) are considered the most exciting group of dragonflies by many enthusiasts, because they are alert and fast-flying, many are rare, local, and have brief flight seasons (Paulson 2009). Even though there is great diversity within the family, their behavior is poorly known; I have photo-documented one mating pair encounter for White-belted Ringtails and three for Russet-tipped Clubtails among otherwise perching, sleeping, and hunting behaviors.

Clubtail morphology and elusiveness present a challenge to photograph (e.g., bring into focus and photo-graphing in crisp detail due to length, width, depth, color, and behavioral elements. They tend to perch vertically, hanging in a large cross, sometimes horizontally across leaves or near the ground, or they obelisk, perching with their abdomen held nearly straight-up. At times, their abdomen tip or club is also curled downward.

Locally, clubtails use the Rio Grande and associated riparian habitats, beginning when the river is flowing bank-to-bank providing irrigation water and delivering downstream water to deliver compact volumes (typically June-September).

Construction of the levee and canal system occurred between 1938-1943 under the *Rio Grande Canalization Project,* authorized by Congress in 1936 under the 1906 U.S./Mexico Convention. The floodplain width (between levee banks) is ~2,100 feet, while the normal flow channel, locally, is ~500 feet wide; the channel capacity is 1,200 cubic feet per second locally with average water depth between 3'and 5'.

When release of water from upstream reservoirs ceases (typically during August-September), clubtails rely on surface flow (perennial springs) downriver at Leasburg Dam and the length of the state park near Radium Springs, and a perennial, low-flow reach (~3km long) downriver from the City of Las Cruces, Jacob H. Hands Wastewater Treatment Facility outfall. Discharge of treated, disinfected wastewater into the Rio Grande channel occurs north of I-10 and the clear-water surface flow extends south under the Calle del Norte bridge into Mesilla Valley Bosque State Park.

The Clubtail Family species I discuss in this section perched, hunted, sunned, and/or slept; a pair of Ringtails and three pairs of Clubtails joined in mating wheels. Common perches were tree branches/twigs, shrub leaves and branches, and leaves and stems of herbaceous grass and forb species. Perching site heights ranged from near ground level to over head-high (~2.5m). Also documented was the presence of a regional variant of Russet-tipped Clubtail that normally occurs in the Colorado Desert of southeastern California and south-western Arizona. The local clubtail flight season occurs from July to October.

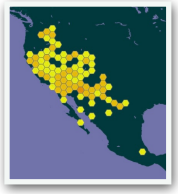
Please see page 176 for an article about a specimen of clubtail which was observed at Broad Canyon north of Las Cruces, on the Rio Grande.

This specimen may be an undescribed species or perhaps *Stylurus falcatus*, far north of its normal range.

## White-belted Ringtail
## *Erpetogomphus compositus*
### (Hagen in Selys, 1858)

I have observed White-belted Ringtails in two of the past four flight seasons along the Rio Grande, late in the monsoon season (between the dates of August 9 and September 30). However, Paulson (2009) reports the New Mexico flight season occurring between June-August, matching the beginning of monsoon season.

White-belted Ringtails commonly use open, sandy, streams, rivers, and irrigation canals/ditches of desert environments. Males may perch on the ground, among grass and forbs, or in low branches. Both sexes use the water to perch and hunt during the warmer part of the day, and use adjacent shrubs and trees to perch and sleep at the hottest part of the day and through the night (Paulson 2009).



Recorded sightings from the Global Biodiversity Information Facility (12/2023).

A. Female White-belted Ringtail dorsal view while perched on (obelisking) and hunting from a dead Southern Cattail stem. (Note: perch height is ~2.5m as illustrated with upward photograph angle.)

B. Male White-belted Ringtail head and thorax detail with light blue eyes and white face. Note the solid brown thorax stripes against the white-to-light green matrix color.

There are Doña Ana, Sierra, Grant, and Luna County records on Odonata Central. From Broad Canyon Ranch these include: OC# 333976 Weisenberger and OC# 333906 by James N. Stuart from 02 Oct 2011; and OC# 330247 by James N. Stuart on 21 Jul 2011. Jonathan Batkin noted in a review of a draft of this monograph: "On 1 July 2023, I had the first Luna County record of the species on the Mimbres River at River Ranch, OC# 2713681. I was extremely surprised that Jim Stuart had not documented it in the many times he surveyed that location. I found four specimens there on 12 July 2024 (all records on OC)."


















C. Female detail. Note her pale blue eyes and whitish face; thorax is yellow to pale green in front and on sides, and there are four thick, dark brown stripes with two bright yellow bands and her white belt in-between.

D. Female facial detail. Note the widespread, light bluish eyes; black ocelli and antennae between the eyes; yellowish (upper) postfrons and antefrons; whitish (middle) postclypeus and anteclypeus; whitish (lower) labrum; and black (lowest) mandible.

E. Male horizontally perched on a Tamarisk branch. Note his abdomen is black-and-white ringed and the last four segments (S7-10 - the club area) are yellow-to-brownish-black.

F. A female White-belted Ringtail perches horizontally on a low forb emerging from Bermuda grass has only a slightly wider abdomen tip, colored yellow-to brownish-black (S7-10) and preceded by five distinct rings.

G. Next Page. A female horizontally perched on a low branch and hunting for small insects. The white-colored leading edge of each wing is common to the species.

H. Next Page. Male horizontally perched on a Johnson-grass stem. Note that the males have conspicuous abdominal clubs (S7-10) that may be colored a mixture of yellow, brown, and black. The abdomen is strongly black-and white striped and the wing bases are clear on males.

I. Next Page. This White-belted Ringtail was photographed near Arrey just east of the Black Range by Mike Andersen on 11 September 2023 used here from iNaturalist and a Creative Commons license.



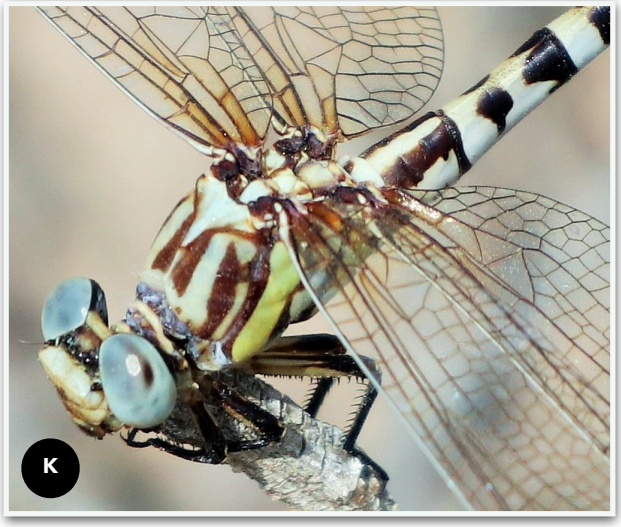













**J. Female perched near ground-level on a dead forb stem, avoiding strong wind while hunting for insects on the lee side of Coyote Willow tall shrubs. (Note: distance from flowing water is ~25m.)**

**K. Detail of female's head, eyes, thorax, wing bases, and abdominal segments S1/S2. Note: the wing bases of females have brownish coloration.**

**L. Next page. Female perched on and hunting from an ~2.5m tall Southern Cattail stem. This more vertical perching behavior/form is called obelisking" (Paulson 2009).**

## White-belted Ringtail Mating

**I have observed a mating pair of Ringtails once (08/09/2020). Achieving a mating wheel configuration required the following behavioral activities: 1) breeding-ready male perching in a likely habitat to locate an available female; 2) male flying periodic sexual patrols to search for females and perhaps defend a territory by being aggressive towards other males; 3) male locating and grabbing/capturing a female (attaching his paraprocts [located S10] to the back of her head, thus forming a tandem linkage); 4) female must choose whether to mate or not; 5) male sperm transfer from his genital opening (located S9) to his seminal vesicle (located S2); and female attaching her genital pore (located S9) to his penis (located S2); to form the mating wheel (for sperm transfer to her vagina for fertilization of eggs).**




**An allotype is a paratype, that is, a specimen of the opposite sex to the holotype, but which is in the initial series of specimens used to define the species. The two images shown at the right are of a specimen described as an allotype of White-belted Ringtail. The specimen is maintained at the Natural History Museum, London, England. (Barnes)**









**M.** Mating wheel lateral view detail with male (R) supporting the pair and female (L). Note connection of male paraprocts (S10) attaching behind the female's head and her genital pore (S9) joined with his penis (S2) to transfer sperm and fertilize eggs in her vagina. The pair may mate for an hour or more in this configuration, then disconnect and the female deposits eggs. Note: I did not observe this pair engage in egg-laying in the adjacent Rio Grande.

**N.** Mating wheel dorsal view with male (upright vertical, note his clear wing bases) and female (below, note her brownish wing bases). This pair perched low (<0.5m) on a Coyote Willow branch, located on the shady side of a dense, tall stand; the afternoon temperature was hot.



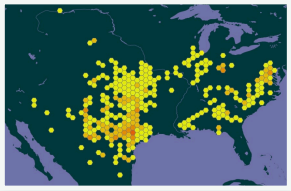
## Eastern Ringtail
## *Erpetogomphus designatus*
## (Hagen, 1858)

Gordon Berman was fortunate to photo-document an Eastern Ringtail once at Mesilla Valley Bosque State Park (MVS) (07/11/2020); another image was collected near the I-10 bridges (08/12/2024), both of them along the Rio Grande.

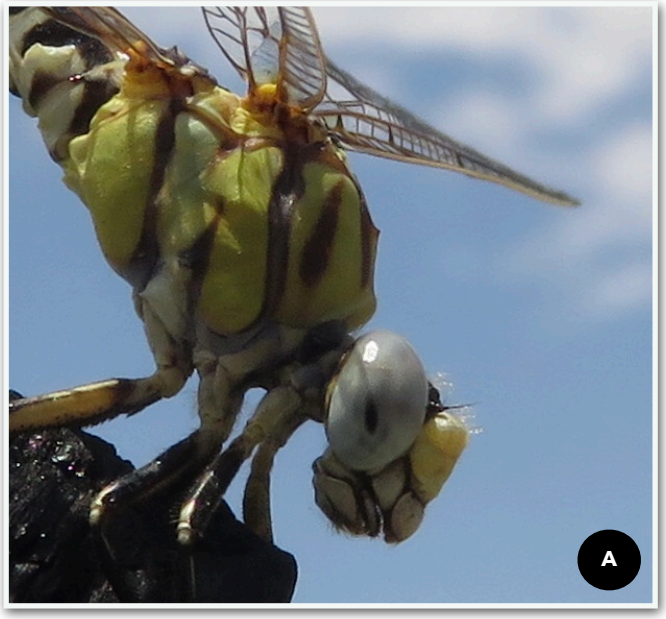
When considering the range of this species note that Paulson (2009) describes a small area of occupied habitat north of the New Mexico Bootheel and the other sightings referenced here. As noted below there have also been sightings near Elephant Butte Dam in Sierra County.

The Eastern Ringtail flight season in New Mexico occurs between May-September, before the beginning and after the end of the monsoon season.

Eastern Ringtail behavior includes using sandy and gravelly streams and rivers. Both sexes perch from ground level to head-high and can be some distance from the water. The males fly up-and-down riffles while occasionally hovering facing into the wind; they then perch on rocks and low vegetation (Paulson 2009). Females oviposit in pools, erratically with a single tap about a meter apart.



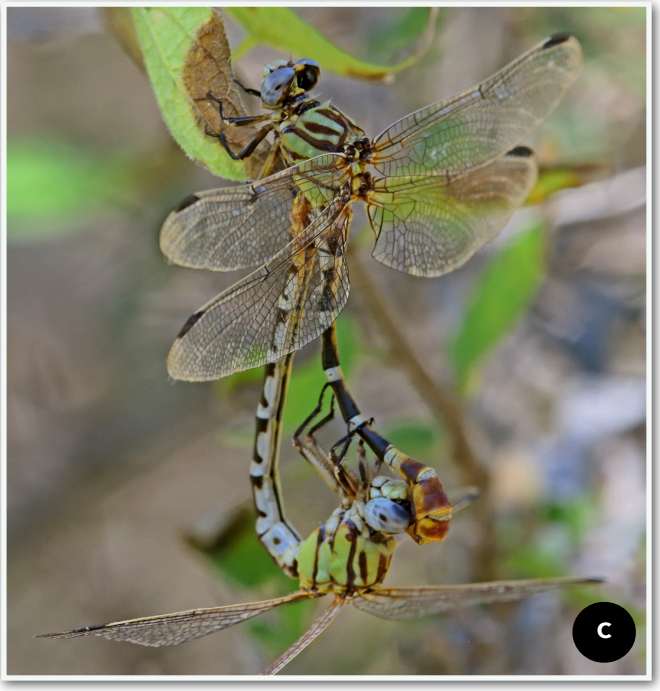
Recorded sightings from the Global Biodiversity Information Facility (1/2024).




A. Male Eastern Ringtail head and thorax detail. Note his pale blue eyes and whitish/yellowish face; thorax is bright yellow in front and on sides, and there are four, brown stripes outlining two bright yellow bands with the light yellow belt in-between. Photo by Gordon Berman at MVS.




B. Male facial detail. Note the widespread, light bluish eyes; black ocelli and antennae between the eyes; yellowish (upper) postfrons and antefrons; whitish (middle) postclypeus and anteclypeus; whitish (lower) labrum; and dark (lowest) mandible. Also note the brown, incomplete stripes on the yellow thorax front that are important in ID within the iNaturalist.org and Paulson (2009) literature sources. Photograph by Gordon Berman at MVS.




C. Photograph by Ad Konings in the area of Elephant Butte Dam in Sierra County on September 28, 2022. Shown here via iNaturalist and a Creative Commons License.




D. Male Eastern Ringrtail lateral view of him obelisking while perched on the burned end of a branch, hunting near the Rio Grande. Note that his club is bent down while perching, a behavior sometimes exhibited by individuals in the Clubtail Family. Photo by Gordon Berman at MVS.

E. Male Eastern Ringtail frontal/dorsal view of him obelisking while perched on the burned end of a branch, hunting near the Rio Grande. Note his light blue eyes, whitish face, dark stripe on front of his thorax, and dorsal stripe and ring pattern of the abdomen segments (S1-S6). Photo by Gordon Berman at MVS.

One Eastern Ringtail was observed/ photo documented during 2024. (Two ringtail species have occurred along the Rio Grande in low numbers between the 2019-2023 summer/autumn seasons.) The individual observed in 2024 often perched on a low twig and hunted over an open stand of Bermuda Grass near the bank of the Rio Grande (and was tolerant of my collecting numerous, sharp images within 1m distance). Three images ("F", "G", and "H") of this individual are shown on the following two pages, all taken on August 12, 2024.









**F.** **Male, southwestern form (Paulson, 2009), with light grayish-blue eyes, whitish face, thorax is yellow with narrow and well-developed stripes (T-1 stripe incomplete at both ends), abdomen mostly black (S-1 to S-6) with white basal rings and yellow dorsal stripes per segment, S-7 to S-10 with brownish orange (darker above).**

**G.** **Note his posterior abdomen with long points of the cerci (top pair of sharply pointed appendages, used for**



G. (Continued from previous page.) tandem linkage when mating and depositing eggs, by clamping them on either side of the female's 'neck' located behind her eyes) and clear view of the epiproct (lower curved appendage which clamps against the female's eyes/head to firmly grip during tandem linkage); colors range from yellowish-brown to brown throughout S-7 to S-10 of this southwestern form.

H. Face and thorax enlargement illustrating grayish blue eye color, white face with faint brownish lines, thorax is whitish-yellow with narrow well-developed brown stripes, T-1 stripes are incomplete at both ends.

I. Christopher Rustay photographed this Eastern Ringtail on August 4, 2024 near Percha Dam State Park. This image is shown here under a creative commons license.

James N. Stuart made an observation of this species at Percha Dam State Park on August 2, 2013.

Jonathan Batkin notes that "Eastern Ringtail is known in Arizona from a single record of two specimens collected by Donnelly and Beatty (I imagine this was George H. Beatty but could be mistaken) at Coon Bluff Campground on 19 September 1954. Coon Bluff is now part of the Salt River Recreation Area near Phoenix. The specimens are at FSCA and their identification was recently re-confirmed by Bill Mauffray. Pierre Deviche, Rich Bailowitz, Doug Danforth, and others have surveyed this area many times and never seen the species." (Pers. corresp. 01 March 2025.)



## Dashed Ringtail *Erpetogomphus heterodon* (Garrison, 1994)

Species entry by Barnes.

The Dashed Ringtail is found in the southwestern United States and in Chihuahua. In the area of the Black Range this species has been found in the Mimbres River drainage where there are several reports.

It is considered a threatened species by the IUCN. It is known from a few sites in west Texas, Chihuahua, and New Mexico. Overgrazing and forest fires represent the major threats to this species. As of 2004, the larva had not been described.

A. This Dashed Ringtail was photographed by Diana & Terry Hibbitts on September 2, 2012 near the Mimbres River crossing on NM-152 (at San Lorenzo). Shown here via iNaturalist under a Creative Commons License.
B. Seth Shively took this photograph on September 6, 2024 near Gila Hot Springs. Detail shown here and full image on the following page. Shown here under a creative commons license.
C. Next Page: This Dashed Ringtail was photographed by Greg Lasley at the Royal John Road/Mimbres River crossing on August 24, 2013. Shown here via iNaturalist under a Creative Commons License.









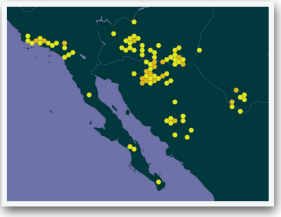



**Jonathan Batkin notes: "Dashed Ringtail is reliable on the Mimbres River at Royal John Mine Road, and one that I photo'd there last year was evidence that the species survived the flooding and deep black goo from the Black Fire. At the same time, I was unable to locate several species that I had seen before on the Mimbres River, or that had been documented by Jim Stuart at River Ranch. There are several other records of Dashed Ringtail on OC from the river crossing at RJ Mine Road. Jim Stuart has a record from Socorro County, on private land above Monticello Box Canyon. He observed two gomphids in flight and smartly induced them to land by placing large rocks in the stream for them to perch. They obliged, and he got good photos (OC). Could this species also occur on Palomas Creek?" (Pers. corresp. 01 Mar 2025)**

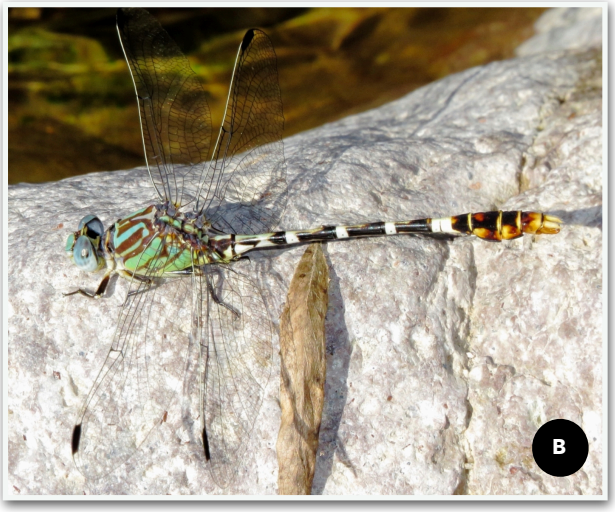
## Serpent Ringtail
## *Erpetogomphus lampropeltis*
## (Kennedy, 1918)

**Species entry by Barnes.**

**You may encounter this species under the binomial, *Erpetogomphus natrix*, which was a term used in Williamson & Williamson in 1930. Although individuals found in the western (California) populations look quite different from those found in our area and adjacent Chihuahua/Texas they are the same species.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024). (Serpent Ringtail)**







A. Diana & Terry Hibbitts photographed this species on September 2, 2012 near the NM-152 river crossing San Lorenzo (Mimbres River). It is shown here under a creative commons license.
B. This individual was photographed by Bill Carrell on August 12, 2017 at Casitas de Gila east of Cliff, New Mexico. It is shown here under a creative commons license.
C. Danny Tipton took this photograph near City of Rocks State Park on September 24, 2023. Shown here under a creative commons license.



## West Mexican Leaftail
## *Phyllogomphoides nayaritensis*
## (Belle, 1987)




Entry by Barnes except where noted. There is only one record of this species in the United States. An observation by Tony Godfrey at the Rotary Park in Truth or Consequences on 19 August 2014. See "Phyllogomphoides nayaritensis (West Mexican Leaftail) in Southwestern New Mexico, a New Dragonfly Species for the United States", Dennis Paulson, *Argia* 29(1), 2017 for an account of this record, including the photograph of the observation. There are no sightings of the species on iNaturalist (2/6/25).

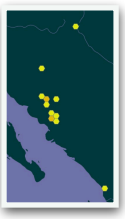



See the GBIF link to the right for a detailed species description.

A. Observation by Ryan Sawby in Sonora, Mexico on July 23, 2005, shown here under a creative commons license.
B. *Phyllogomphoides nayaritensis* (Belle, 1987), Observed in Sonora, Mexico by Eric Hough (licensed under http://creativecommons.org/licenses/by-nc/4.0/).

Leaftails have conspicuously ringed abdomens (in side view) and males exhibit a moderate club made wider by substantial flanges on S-8 and S-9 edges. "Oddly, size of flanges varies somewhat in both sexes of each species so tails are more or less leafy in different individuals." Presence of a small epiproct in males and absence of extended corners on S-10 distinguishes them from Greater Forceptails at close range. Their cerci are long, pale, and forceps-like in males, with a small tooth on the inside; they are long and white in females. Leaftails are a diverse group of stream dwellers from Mexico to southern South America. (Von Loh)

Recorded sightings from the Global Biodiversity Information Facility (2/2025). (West Mexican Leaftail)



## Brimstone Clubtail
## *Stylurus intricatus*
### (Hagen in Selys, 1858)

**I was fortunate to photo-document a Brimstone Clubtail once (09/23/2019) in the past five seasons of photo-documentation inventory along the Rio Grande.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**

**The Brimstone flight season in New Mexico occurs between June-August, typically the beginning-to-middle of the monsoon season. The individual depicted here was nearly a month outside [September] of the stated flight season.**

**A. Apparently a female, horizontal view (same individual as "B"), site is within 2m of the Rio Grande bank.**
**B. Perched vertically on a Johnson-grass leaf adjacent to the Rio Grande. Note that the club of her tail is quite narrow when compared to other Clubtail Family species. The morning was cool and humid but sunny, following an intense early morning rainstorm.**









**Brimstone Clubtail behavior includes using slow-flowing and warm muddy rivers and irrigation canals supporting riparian shrub and woodland plant communities. Females are typically observed perched low in shrubs near the water while males tend to perch on streamside shrubs or on logs. The males fly rapidly back-and-forth, low over water, and sometimes hover (Paulson 2009).**

**C. Detail of a Brimstone Clubtail female head, eyes, thorax, wing bases, and abdominal segments S1/S2 dorsal view. Her eyes are separated and light blue, face pale yellow, thorax narrow, abdomen yellow with black hourglass markings on sides, but with few other dark markings.**

**D. Mike Hannisian took this photograph near the Bosque del Apache National Wildlife Refuge on June 28, 2023. (Barnes)**

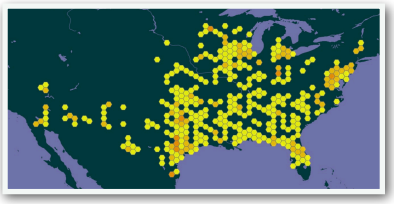





## Russet-tipped Clubtail
## *Stylurus plagiatus*
### (Selys, 1854)

I have photo-documented the Russet-tipped Clubtail along the southern Rio Grande in four of the five flight seasons of my survey.

Locally, Russet-tipped Clubtails use the Rio Grande and associated riparian habitats, beginning when the river is flowing bank-to-bank providing irrigation water and delivering downstream (between the months of August and October); they are predominantly observed late in the monsoon season (August/September). However, Paulson (2009) reports that the New Mexico flight season occurs between June-August, matching the typical beginning of monsoon season.

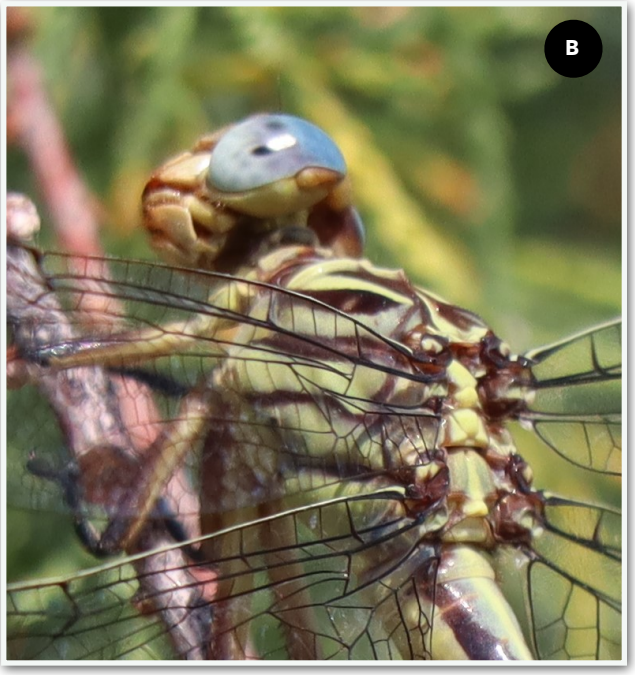


Recorded sightings from the Global Biodiversity Information Facility (1/2024).

Russet-tipped Clubtails commonly use slow-flowing rivers and streams, however large drainage/irrigation canals/ ditches are used in desert environments at the western end of their range (Paulson 2009). In the eastern portion of their range they occur mostly in trees when not at/over the water surface. Along the southern Rio Grande, they use riparian habitats characterized by herbaceous, shrubby, and small tree communities in addition to surface water.

Males and females often are perched, hanging vertically in trees and sometimes horizontally on leaves. The males may conduct sexual patrols, flying back-and-forth over water/ breeding habitats (preferring riffles in streams) but I have not observed this behavior to date. Females are rarely observed and when mating, pairs perch high, at head-height; females rapidly deposit eggs into open water during flights (Paulson 2009). I have been fortunate to observe several perching females in addition to the males discussed in this account.







A. Male vertically perched on, and hunting from, a Palmer's Amaranth flower spike along the bank of the Rio Grande. Note that Palmer's Amaranth, a tall, weedy forb, is common within the Rio Grande riparian zone and may reach 1.5m tall.
B. Head and thorax detail of a male Russet-tipped Clubtail. Note his light-to-medium blue eye color, light yellowish face color, and the pattern of brown, vertical stripes positioned nearly directly across from each thoracic segment (T1-T4).
C. A female Russet-tipped Clubtail hanging from/vertically perched on, and hunting from a Kochia/Summer Cypress/Mexican Fireweed tall forb (~2.5m tall) growing ~35m from the Rio Grande bank. Note the lack of a prominent club at the S7-S10 abdominal segments.
D. Next Page. This male is vertically perched on, and hunting from, a Johnsongrass leaf along the bank of the Rio Grande. Note his expanded S7-through-S10 segments which resemble a club.
E. Next Page. Male perched vertically on, and sleeping on, a twig in the shade of Coyote Willow tall shrubs along the bank of the Rio Grande. Note his widely separated, light blue eyes, white face, and thoracic striping pattern.







**Next Page.**

F. **Male perched vertically on, and hunting, from a small branch of a Tamarisk/Salt Cedar tree established along the bank of the Rio Grande. Note his high perch site (2.5-3.0m) from the upward angle of the image.**

G. **Female perched vertically on, and hunting from, a Russian-thistle forb growing near the Rio Grande bank.**

H. **Perched on Tamarisk.**

I. **Female Russet-tipped Clubtail perched vertically on a Southern Cattail leaf while ingesting a captured insect, likely an *Orthoptera* species (grasshopper, mantis, katydid, etc.).**

J. **Male perched horizontally on, and sunning and hunting from, a dead forb stem lying close to the soil surface along the bank of the Rio Grande. Note he is avoiding**

**(continued on next page)**
















**J.** **(continued from previous page) gusting wind (to 40mph) by using this low perch located behind a dense stand of Coyote Willow tall shrubs which act as a wind-break.**

**Paulson (2009) recognizes a southwestern form of Russet-tipped Clubtail, stating: "Populations in the Colorado Desert (southwestern Arizona and southeastern California) are rather different and do not bring to mind 'Russet-tipped' when sighted. They are paler overall, with narrower thoracic stripes, middle abdominal segments whitish, terminal segments yellowish rather than russet, and with contrasting brown markings, and abdomen with bold black stripes that**

**give them much more patterned look than their relatives to the east. In this population, eyes quite blue and club wider."**

**In determining the species of the "southwestern form" shown below and on the following pages I relied on Paulson's description and on the comments provided by experts who identified images I posted to the iNaturalist site for guidance in my attempts to avoid any ID mistakes.**

**K. A male Russet-tipped Clubtail southwestern form, is horizontally perched on, and hunting from, horsetail milkweed flowers and buds, growing adjacent to the Rio Grande. Note the medium-blue eye color, blue thorax and abdomen base color, narrow and black thoracic stripes, and his expanded club at S8-S10.**

**L. Male Russet-tipped Clubtail southwestern form perched on, and hunting from, Horsetail Milkweed flower buds adjacent to the Rio Grande. Note his light bluish face, light-to-medium blue eyes, light blue thorax base color, and narrow black (instead of wide brown) vertical stripes.**

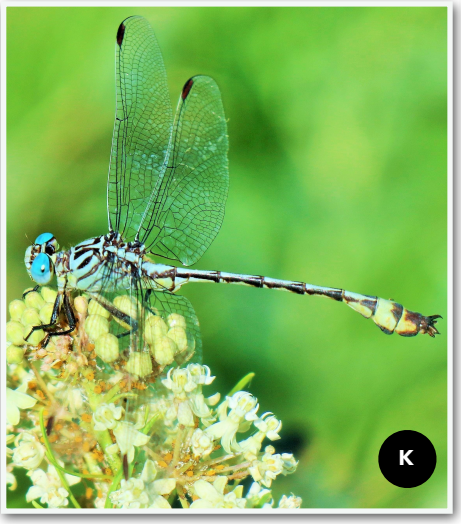
**M. Male (probable southwestern form) horizontally perched on, and hunting from, dried Johnsongrass leaf adjacent to the Rio Grande. Note his mostly yellow and light brown club coloration.**

**N. Next page: Male (probable southwestern form) vertically perched and sleeping on a dried Climbing/Twinvine Milkweed stem, draped over Coyote Willow tall shrubs (continued below)**







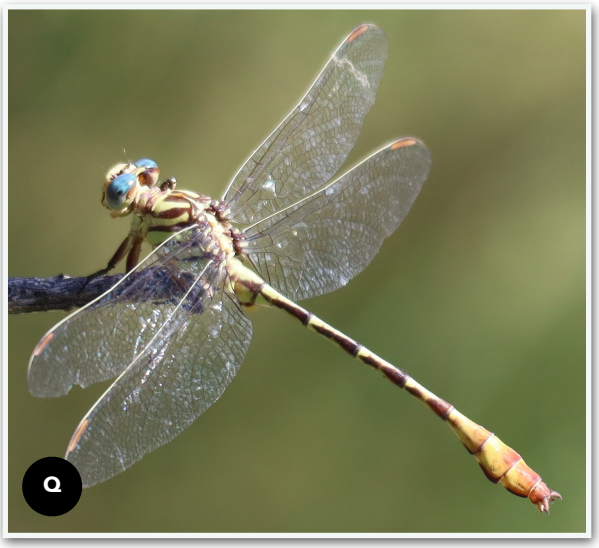



**Russet-tipped Clubtail**

**adjacent to the Rio Grande. Note his narrowed middle abdomen, expanded club, and yellow and brown club coloration.**

**Russet-tipped Clubtail were present in low numbers along the Rio Grande during the late summer and early autumn seasons of 2024 but perceptibly fewer than in earlier years (2019-2023)**










**O.** Face and thorax enlargement illustrating turquoise-blue over gray eye color, circular black ocelli distinct between the eyes, yellowish-white face with layers of the frons and clypeus clearly visible, thorax is yellowish-green with narrow, wavy brown stripes. 10/18/24.

**P.** Lateral view of his face clearly illustrates the frons and clypeus segments, a jutting labrum with mandible below, and the bicolored blue and gray layers of the eye. 10/18/24

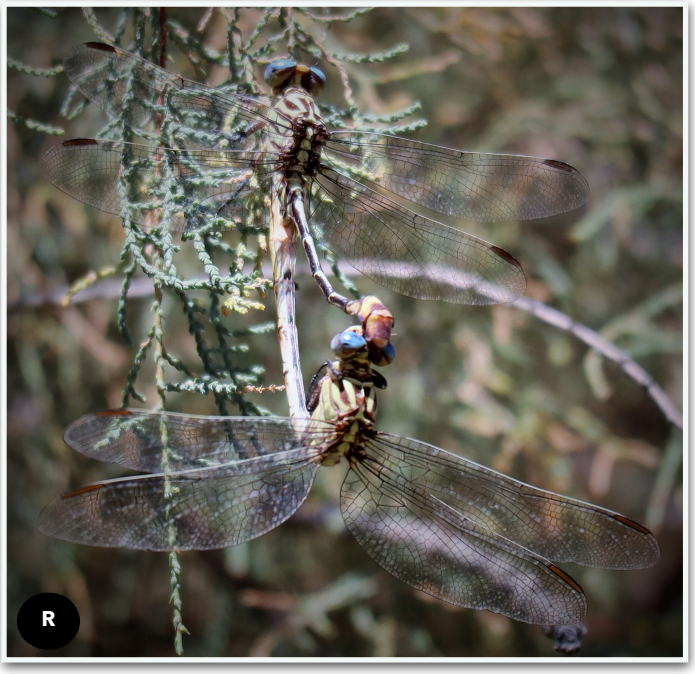
**Q.** Southwestern male Russet-tipped Clubtail, hunting insects from a Honey Mesquite twig perch along the Rio Grande. It is paler than eastern forms and has narrower thoracic stripes. In addition, the middle abdominal segments are white over brown and the terminal segments are yellowish-to-yellow-orange rather than "russet" colored. 09/18/24

**R.** Next Page. Pair connected into a mating wheel as the male (U) transfers sperm to the female fertilizing her eggs (L); the male has selected a perch on the blue-green leaves of a Tamarisk tree along the Rio Grande. I have noticed that the typical greenish color forms tend to perch against similarly-colored Tamarisk leaves while the southwestern yellowish color forms select from a wider variety of background colors for perching, including Coyote Willow and twigs over dry, yellow Bermuda Grass plants. 10/21/24

**S.** Next Page. Male (L) transfers sperm from his seminal vesicle/penis located on his S-2 segment into the female's (R) genital pore/vagina located on her S-8 segment while coupled in the mating wheel. 10/21/24

**T.** Next Page. Tandem linkage during the dragonfly mating wheel behavior occurs when the male 'grabs' the female by grasping her head between his epiproct (forward appendage, now hidden from view) and cerci (two longer, pointed appendages that attached on either side of the female's 'neck' behind the eyes - visible above just below the blue eye edge). 10/21/24

**U.** Next Page. Doug Jenness took this photograph at Percha Dam State Park on October 13, 2010. Shown under a creative commons license. (Barnes)



















**V.** Steve Mlodinow **took this photograph near Las Cruces on November 4, 2018. It is shown here under a creative commons license. (Barnes)**

**W. Same as "V".**

## The Skimmer Family - *Libellulidae*

Skimmers comprise the largest Odonate family and are typically the species a casual observer will see when visiting likely habitats (Paulson 2009). Skimmers exhibit nearly every dragonfly color, some species have complex patterns and many display diagnostic wing colors and patterns. Obvious family characteristics include large eyes that touch in the middle, the foot-shaped anal loop in hind-wings, male and female hindwings are similar, typically males are brightly colored and females duller, often brown, and males typically have a longer, tapered, and pointed abdomen, while female abdomens are thicker, blunt, or truncate (Paulson 2009).

Most Skimmers are "perchers" except for some genera of tropical origin which are "fliers". Perchers feed from a stationary site (e.g., leaf, stem, twig, rock, etc.) flying up to capture small flying insects (sallier-style); but perchers also spend time flying when conducting sexual patrols. Fliers rarely perch, instead flying incessantly to feed (by diving down on small flying insects [hawking-style]) and conduct sexual patrols. They perch by hanging vertically on leaves and branches (with their head pressed against the perch) in dense vegetation to "sleep" in the hottest part of the day and at night when it is cool.

## Clubskimmers *Brechmorhoga*

Relatively large skimmers with expanded abdomens resembling clubtails with narrower clubs. Similar to leaftails, they fly over open areas then perch at tips of twigs or hang from branches; they have large spots on the dorsal S7 abdomen segment which is conspicuous when in flight.

## Pale-faced Clubskimmer *Brechmorhoga mendax* (Hagen, 1861)

Large skimmer of streams and rivers, typically feeding over riffles; locally they feed along linear Coyote Willow stands adjacent to the Rio Grande. Both sexes display striking spots on their dark abdomens. Occurrence in Doña Ana County is within the species' long, narrow principal range.



Recorded sightings from the Global Biodiversity Information Facility (1/2024).

The New Mexico flight season is May-October; I have observed them in June, August, and September locally along the Rio Grande bank. They hunt for small flying insects and perch/hang from twigs in dense Coyote Willow and Honey Mesquite tall shrubs.

A. Male hanging from a Coyote Willow twig perch within a dense stand along the Rio Grande. (continued on next page.)



A. (Continued from previous page.) This photograph shows his clear wings, slightly clubbed posterior abdomen, and diagnostic markings. Note that the large posterior abdomen spot is all you can see when tracking his speedy flight against Coyote Willow leaves and shadows and when locating his perch within the shrubs.

B. This image is by Greg Lasley and was taken near Sherman (west-side of the range along NM-61, on August 30, 2015 - it is provided here under a Creative Commons license). (Barnes)

C. This image, by Hannah Girgente, was taken along NM-15. It is shown here under a Creative Commons license. (Barnes)

D. Male head, thorax and upper abdomen detail illustrates a bit of his white (pale) face; light blue-gray eyes; thorax striped dark brown (fine hairs give these areas a lavender caste) and light gray-blue; and extensive whitish markings around the upper abdomen which is mostly black.

E. Male dorsal abdomen, thorax, and head detail, illustrating the diagnostic, creamy-white narrow line, narrow rectangles, and the large posterior spot; the two small spots below the large spot can be diagnostic but are not always present (Paulson 2009). Note the thorax appears lavender-colored likely due to hairs and pruinosity on the dark brown basal color.

F. This image, by Steven Mlodinow, was taken on August 19, 2023 at Elephant Butte Dam and is provided here under a Creative Commons license. (Barnes)

G. This image, by Ad Konings, was taken in the vicinity of Elephant Butte Dam on September 28, 2022. It is provided here under a Creative Commons license. (Barnes)



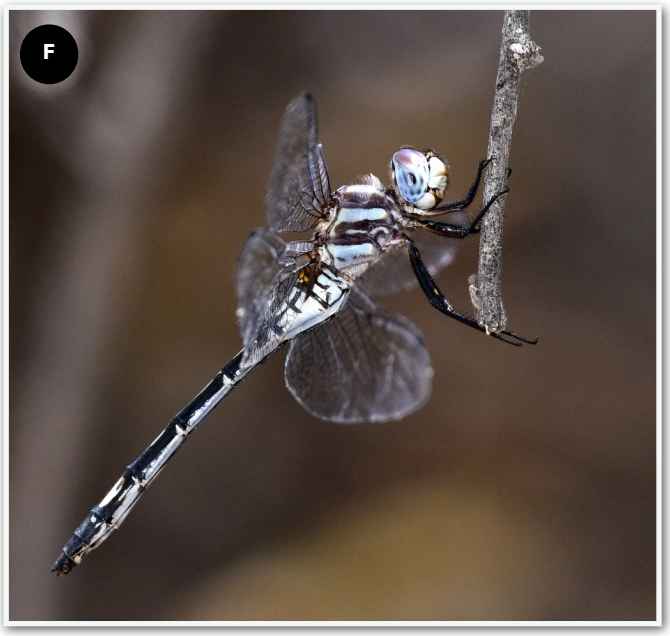





















**During the summer of 2024 at Mesilla Valley Bosque State Park, two illustrative images were collected of perching female and male Pale-faced Clubskimmers; it can be difficult to identify the sexes from one another. Generally, these large, fast-flying dragonflies have not been observed locally until the past 2-3 years, using tall Coyote Willow shrublands along the Rio Grande for habitat.**

**H. With its face oriented upward, a perched/sleeping female (09/09/24) presents a clear dorsal view of her light brown face, light brown over blue-gray eyes, dark brown thorax (colored same as male) with an intricate, yellowish spot pattern, linear yellowish markings on the dorsal abdomen segments, abdominal club is less evident because the abdomen base is somewhat thicker, and it's pronounced yellowish pair of large spots, nearly touching on S7. Note the very clear representation of wing cells due to excellent backlighting through the Honey Mesquite tall shrub canopy; with age the wing color becomes entirely brown (Paulson 2009). This female perched nearly 250 meters west of the Rio Grande bank where a few males were active.**

**I. Lateral view of perching male (08/08/24) on a twig at Mesilla Valley Bosque SP provides, through the wing bases, a view of its dark brown thorax with broad, light blue stripes, in addition to light blue eyes and light brown face; additionally, note the angularity of his posterior abdomen (club). Prior to perching, this male conducted many foraging/sexual patrol passes, flying back-and-forth rapidly along a dense Coyote Willow tall shrub stand established on the Rio Grande bank.**







**J.** **Enlargement of the female's head with creamy yellow face and fine brown hairs, thorax with distinct yellowish spot pattern (mostly in lines of three) and fine brown hairs, and wing bases with small but distinct brown spots. Note her upper thorax color is dark brown and devoid of fine hairs, and spots are paired into squarish, tee, and trapezoid shapes.**

**K.** **Enlargement of the female abdomen which is dark brown and has distinct whitish streaks on S4, S5, and S6 (progressively diminishing in length); S7 is nearly filled with two large whitish, oblong spots.**

## Pondhawks - *Erythemis*

The Pondhawks are medium-to-large skimmers which are appropriately named as they are voracious predators of other insects including damselflies and dragonflies (up to their own size) (Paulson 2009). The genus is characterized by extra-large, hind femur spines, a likely adaptation to capture large prey. Pondhawks perch and fly low, often on the ground, on broad leaves, or on logs. Low perching probably facilitates capturing larger prey, and this behavior (sallier) is common among Skimmers. They typically hold their wings flat when perching on higher twigs, but may also project them aggressively forward.

## Western Pondhawk *Erythemis collocata* (Hagen, 1861)

The Western Pondhawk is a robust skimmer that typically perches on the ground or close to the ground/water surface, where they capture/consume insects up to damselflies and small dragonflies in size. Locally I have observed them feeding on flies and on the Familiar Bluet, *Enallagma civile* (Hagen, 1861), eating the bluet's head and thorax and discarding the abdomen.

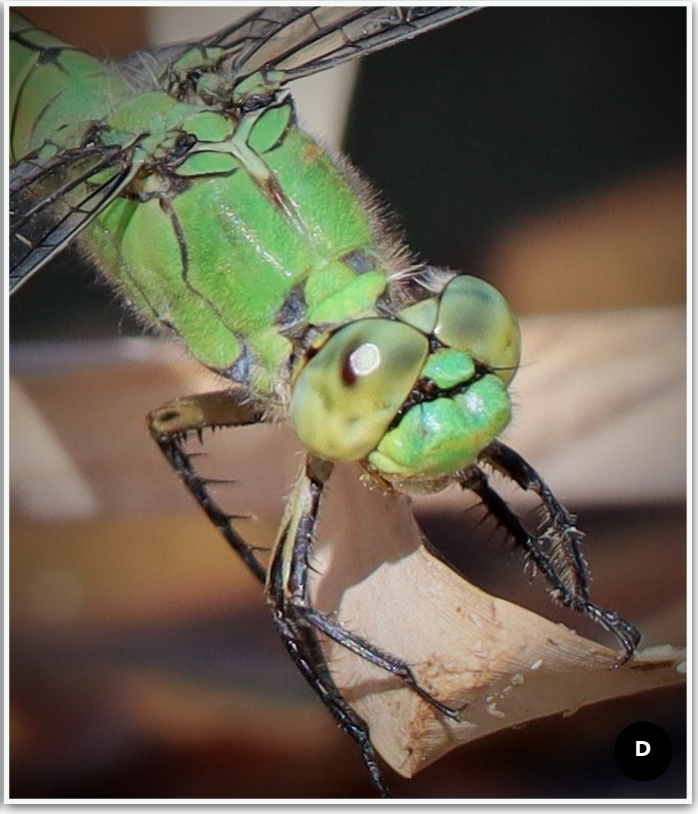



A. This male Western Pondhawk, on a hot afternoon, is exhibiting 'sleeping' behavior with its eyes/head pressed against a Coyote Willow branch to shade them from the sun's direct rays. I normally see dragonflies at willow shrubs or tamarisk trees with leafy canopies that provide complete shade for sleeping dragonflies (evening/night/morning/hot afternoon). Note his eyes are dark bluish-green, his thorax and abdomen are entirely pruinose blue (abdomen is expanded at the base) with bluish-black cerci at the tip.
B. A female Western Pondhawk resting on Southern Cattail leaves.

Additional photographs of Western Pondhawk may be viewed on the Black Range Website. (Barnes)






**Habitats include a variety of still water types, including lake-shores, ponds, canals, slow streams, and springs; locally I have observed them along the Rio Grande and associated irrigation canals, and in the small La Mancha Wetland a restored site adjacent to the Rio Grande levee. Occurrence in Doña Ana County is within its principal distribution.**



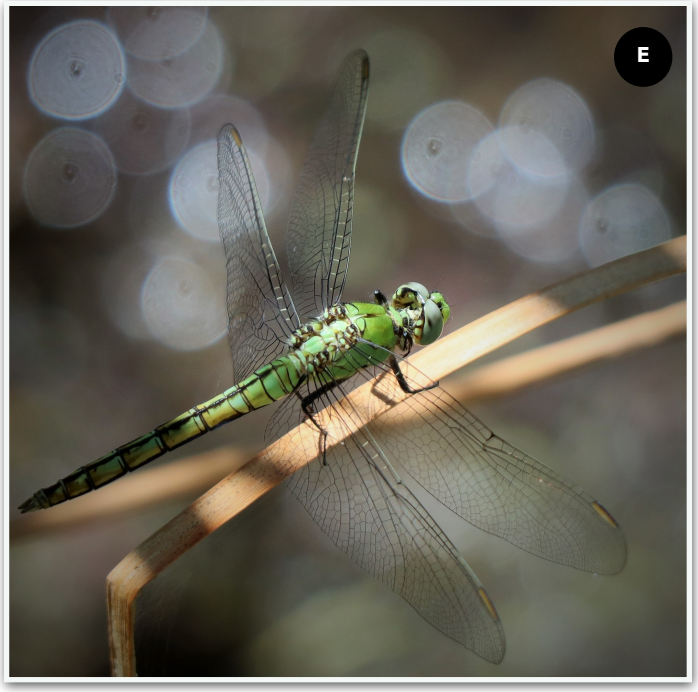
**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**

**Their flight season occurs from March to November in New Mexico; I have observed them from June through September.**

**C. Enlargement of a male's head, thorax, and upper abdomen illustrating his jade green face, dark blue eyes, pruinose blue thorax and upper abdomen, and black legs. Note the pruinosity extends onto his wing bases.**

**D. Enlargement of the female's head, thorax, and upper abdomen illustrating her green face, green-grayish eyes, green thorax and upper abdomen, and black legs with gray stripes. Note that a few black spots and stripes occur within the green thorax matrix.**

**E. Female perches low on a dead Southern Cattail leaf at a shaded site, to hunt for small-to-large flying insects and display to attract a mate. Note impurities in the water reflect dappled sunshine and create rounded patterns.**




**F. Next Page. Young female perches by hanging from a Southern Cattail leaf where she is resting/sleeping in the shade of the stand.**

**G. Next Page. Female perches low on dead cattail stems to hunt for small-to-large flying insects and is displaying to attract a mate. Note her striking green color in bright sunlight.**

**H. Next Page. A male perches on Johnsongrass stem, low over an irrigation canal to hunt for small-to-large flying insects, defend his territory, and is likely displaying to attract a mate. Note how he turns his attention towards me, standing straight above his perch.**










**I. Next Page. This male has captured a Familiar Bluet and is consuming its head and thorax. Note the male Familiar Bluet is still attached to a female, in tandem linkage, as they were ovipositing (egg-laying) at the time of capture.**

**J. Next Page. A rare image of a male and its dazzling powder-blue color (they are quite furtive and flighty), but this Western Pondhawk had just captured a tandem-linked, egg-depositing pair of bluets and was engaged in chewing the eyes and head (continued on next page)**

J. (continued from previous page) off the male bluet. The female bluet's abdomen and wings show behind as she clings to a dried grass stem. Pondhawks (Western and Eastern) commonly include smaller odonates in their diet, including damselflies and small dragonflies (Paulson 2009).

K. Having finished chewing and swallowing the eyes and head, this male Western Pondhawk begins to ingest a mouthful of the captured male bluet's thorax where the large flight muscles occur. A portion of the bluet's abdomen shows behind the pondhawk's second leg. At the same time a portion of the female bluet abdomen and wings show below the pondhawk's abdomen.

L. Enlargement of the dorsal abdomen from the individual at the bottom of the previous page illustrates pale blue (pruinose) color, a thin black central line, and his black cerci which are diagnostic.

M. Next Page. As the pondhawk feeds on the male bluet, the female bluet, still connected to the male bluet's abdomen, continues to cling to the dried grass stem.

N. Next Page. The male pondhawk ingests the last of the male bluet's flight muscles, located at the back of its thorax and adjacent to its abdomen.

O. Next Page. And the female bluet, still connected to the male's abdomen, continues to cling to the stem.

P. Next Page. Having completed ingesting the bluet's eyes, head, and thorax, the male Western Pondhawk drops the female bluet into the water with the male bluet's intact abdomen still attached by its cerci to her prothorax.

























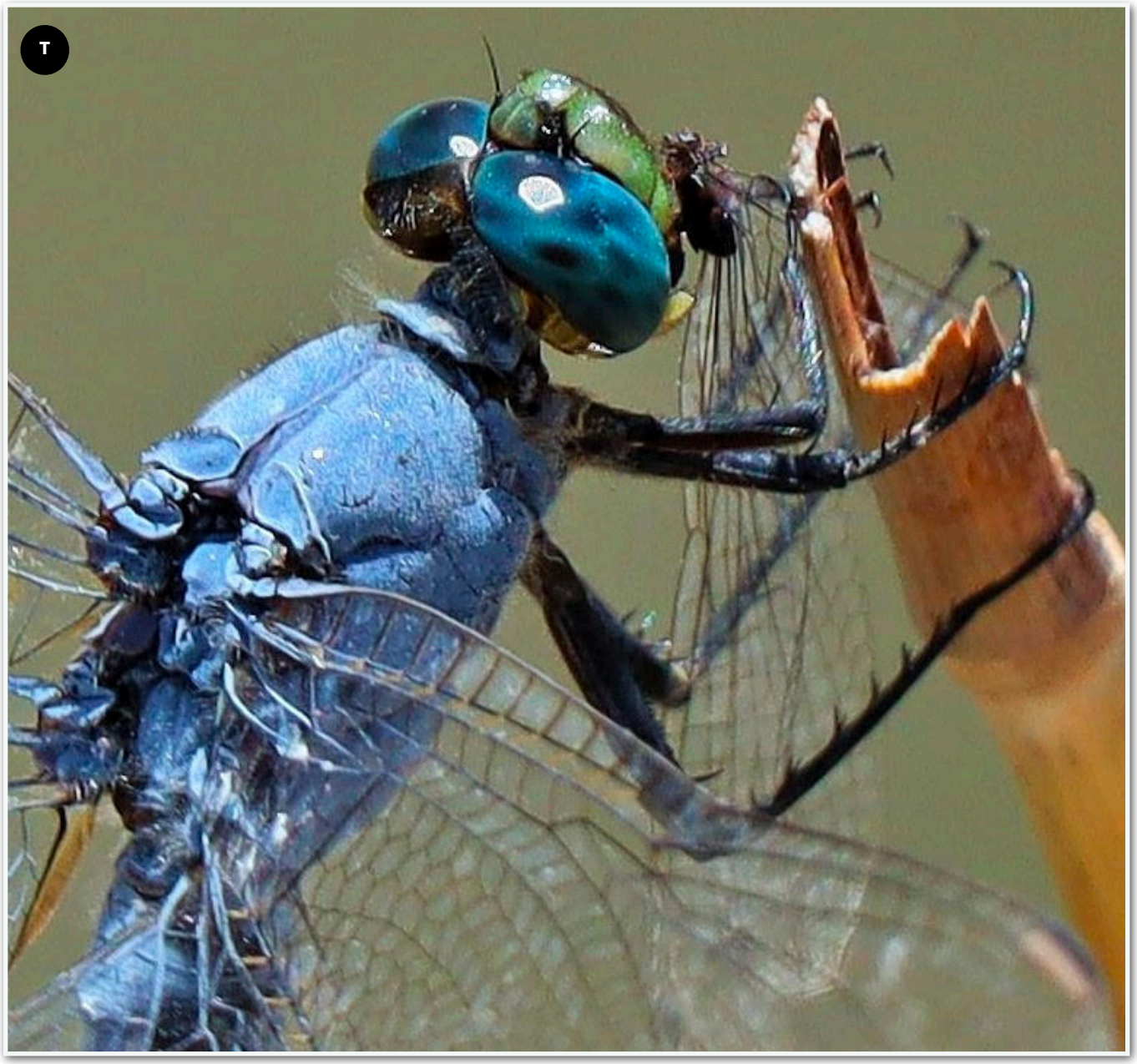





**Q.** **Finally, the male Western Pondhawk examines the male bluet's wing bases for remaining muscle tissue, but he's already eaten them clean. He then also releases them into the water.**

**R.** **The male western pondhawk also appeared to be chewing along the top of the damselfly wings for a period of time.**






**S.** **Previous Page. This image was taken on July 9, 2014 by M. L. Watson, in northern Luna County. (Barnes)**

**T.** **The day before, the same male Western Pondhawk (as "R") spent quite an amount of time tearing at and ingesting muscle tissue away from another pair of wing bases, likely of another captured bluet (based on wing shape and color/shape of the 'pterostigma', the colored cell near the wing margin).**

**U.** **Next Page. My last, blurry image of this pondhawk is of him flying to somewhere more secluded, and taking the bluet wings with him.**

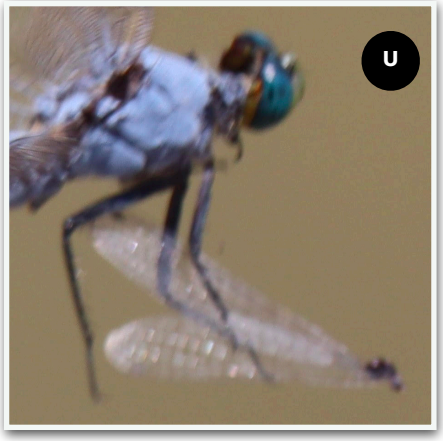
**V.** **Next Page. This female Western Pondhawk has captured and is ingesting an unknown species of fly (*Diptera*).**

**W.** **Next Page. The Western Pondhawk female selected a floating mat of predominantly Mexican Mosquito Fern as her egg deposition site.**

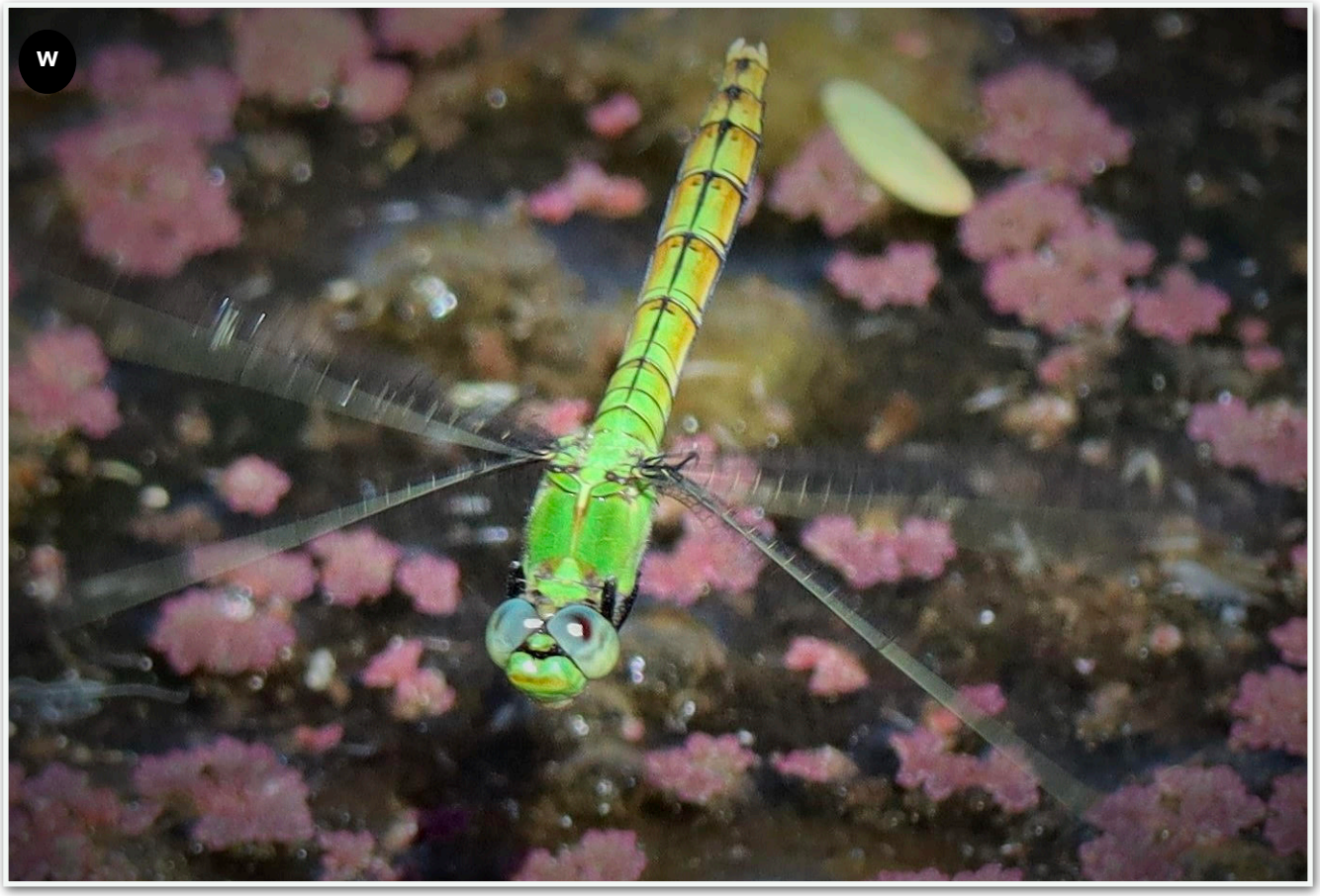
**X.** **Next Page. This female pondhawk was depositing her own fertilized eggs, unassisted, into the shallow water (while on the fly). The male with which she had recently mated flew wide circles and high arcs over her during this process.**

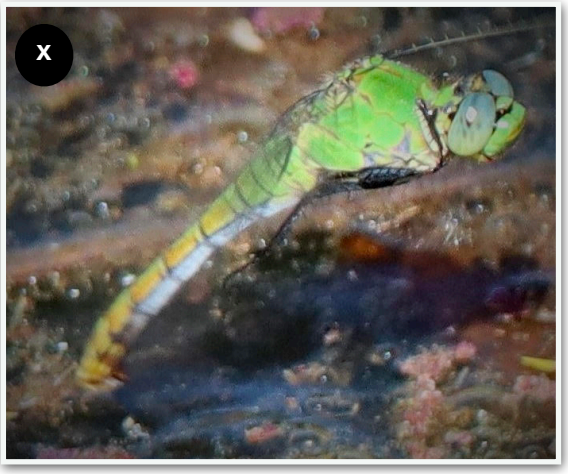
**Y.** **Next Page. Pair, perched on a floating mat of Mexican Mosquito Fern, has formed a mating wheel to transfer his sperm (penis located on abdominal S2) to her eggs (vagina located on abdominal S8). Note the male is on right (upper) and the female is on left (lower); he has attached his abdomen tip (cerci) behind her head (tandem linkage) to initiate the exchange.**

**Cautionary Note (Jonathan Batkin 01 Mar 2025 pers. correspondence): Western and Eastern Pondhawks "are essentially identical in size and males are identical in coloration or nearly so (females are easier to identify, though some of them also fall into a gray zone). Their ranges overlap in eastern NM, makes identifying and separating them difficult. The features that are used to separate male Eastern are its whiteish cerci and constricted abdomen."**


U


V


W


X


Y

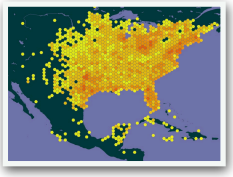
## Eastern Pondhawk
## *Erythemis simplicicollis*
## (Say, 1839)

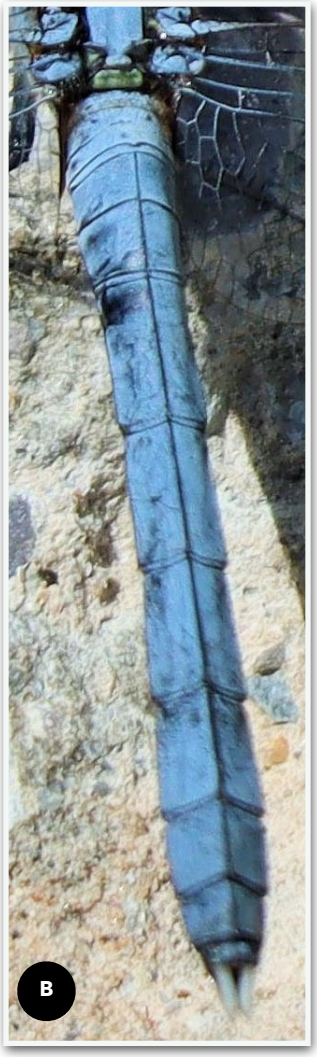
The Eastern Pondhawk is a robust skimmer which perches on the ground or close to the ground/water surface. They commonly consume insects up to dragonflies the size of Blue Dashers, *Pachydiplax longipennis* (Brauer, 1868), or immature King Skimmers. Habitats include a wide variety of still water with emergent vegetation including lakeshores, ponds, canals, slow streams, and springs; locally I have observed only one male along an irrigation canal from the Rio Grande.

Occurrence in Doña Ana County is on the western edge of its principal U. S. distribution. Their flight season occurs from May to October within southeastern New Mexico.

Recorded sightings from the Global Biodiversity Information Facility (1/2024).

Paulson (2009) commented that in some areas both Eastern and Western Pondhawks occurred together and that in the southern plains and southwest they may constitute a hybrid swarm (indicating they may be the same species). Because typical populations of both species are quite different (distinguishable and somewhat different in natural history), they are kept as separate species for convenience.






Photographs "A" and "B" are by James Von Loh. Photo "C" was taken on 24 August 2023 by Jonathan Batkin at Mesilla Valley Bosque State Park (OC# 2712365), used with permission.

James N. Stuart reported a sighting of this species near Elephant Butte Dam on August 3, 2018. (Barnes)

Gordon Berman reported a sighting of this species from Las Cruces on 9 July 2020.

Note that there have been reported sightings as far west as Arizona. See for example, the 29 July 2018 sighting just east of Mt. Graham, by Laurens R. Halsey.






## Dragonlets
## *Erythrodiplax*

Dragonlets are small-to-medium skimmers that use marsh habitats in New World tropics (few of the many species reach the United States [Paulson 2009]; only one species has been observed locally, to date. At rest, Dragonlets hold their wings level or project them forward, often aggressively. Usually they perch parallel to a branch or twig and during the hot part of the day they obelisk (point abdomen vertically to reduce area exposed to sun). Females, typically brown or gold in color, are difficult to identify to species, exacerbated by mature female resemblance to immature forms. Males range from black to bicolored (reddish-black head thorax and abdomen tip with a pruinose [powder blue] abdomen).

## Plateau Dragonlet
## *Erythrodiplax basifusca*
## (Calvert, 1895)

The Plateau Dragonlet is a small skimmer of shallow marshes, often with dense grasses and/or sedges, and similarly vegetated pools in streams. Males perch low above the water on an emerging twig or grass stem and immatures perch away from the water on leaves and twigs.

Males aggressively defend small territories and under hot sunshine, they elevate their wings and abdomen (obelisk).

While described as a marsh species, I have observed them using mostly open irrigation ditches and small canals (e.g. an irrigation canal of the Rio Grande west of Mesilla and at the La Mancha Wetland along the Rio Grande levee) and have observed a female oviposit among grass stems on a canal bank fed by Rio Grande flow. Plateau Dragonlets also used a retention pond, densely vegetated at the margin and receiving monsoon season runoff from the Dripping Springs Visitor Center in the Organ Mountains.

Most of the observations noted here occurred during the hot monsoon months of June-to-August 2022. Plateau Dragonlets were present in low numbers and photo-documented during 2020 (post-emergent immatures only) and they were common during the 2022 flight season.

Occurrence in Doña Ana County is within its principal southwestern distribution. Their flight season in New Mexico is from June through September; I have observed them locally during June, July, August, and September.



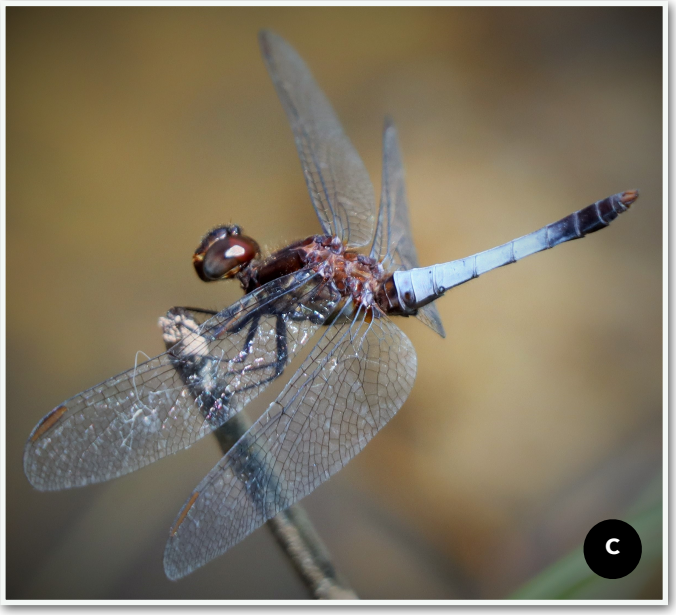


Recorded sightings from the Global Biodiversity Information Facility (1/2024).

Per Paulson (2009) and my observations, males perch low in emergent vegetation, aggressively defending small territories, often raising their blue abdomen in display. In the midday sun, males greatly elevate both wings and their abdomen (obelisk); while perching they typically project (droop) their wings aggressively forward. Pairs are rarely seen (I observed only one pair). Females and immatures occur anywhere near water with immatures common at-or-near breeding sites.

A. Previous page. A male perches by hanging from a twig during the heat of the day, perhaps to avoid overheating; he is also defending his territory, hunting small flying insects, and likely displaying to attract a mate.
B. Male, perched on an emergent Johnsongrass stem with wings projected aggressively forward. He likely is hunting for prey or defending his selected territory.
C. Male perching over water on a stem, watches and reacts to either a competitor invading his territory or a small flying insect to capture. Note his dark brown eyes, metallic blue-black face, dark brown to blackish-red thorax, mostly pruinose abdomen and dark brown to black abdomen tip (segments S7-S10).
D. Male head, thorax, upper abdomen, and wings (projected aggressively forward) while perched on a Green Sprangletop leaf. This image illustrates his dark brown eyes, metallic blue-black face, and blackish-brown thorax. Segments S3-S6 are pruinose (powdery-blue/white).
E. Obelisking over water on a Johnsongrass stem, male defends his territory, hunts small flying insects, and is likely displaying to attract a mate. Note how backlighting results in face, eyes, and thorax color appearing black.










F. Next page. Immature male perched on the tip of a Southern Cattail leaf and hunting for small flying insects; his abdomen has a blackish dorsal ridge and blackish rectangles low on the sides of abdominal segments, becoming more pronounced and fused at the abdomen tip. Note his wings are projected aggressively forward with an obvious brown, basal hindwing spot.










G. Immature female perched on the tip of a Southern Cattail leaf and hunting for small flying insects; her thorax is light brown and her abdomen has a few well-spaced brownish rectangles low on the sides to the rear. Note her wings are projected somewhat forward.

H. Enlargement of mature female's head, thorax, upper abdomen and wing bases illustrates her dark brown eyes over brownish-gray below, yellowish-brown-to-brown face, brown to grayish-brown thorax, and brown upper abdomen. Her wings are clear at the base.

I. Next Page. This female was ovipositing or depositing eggs into the shallow-water edge of a small irrigation canal. The uniformly brown-colored female Plateau Dragonlet is unusual to observe in the open as they are quite secretive. Her entire abdomen is brown as are her legs, and a broad grayish band between her wing bases and on the thorax dorsal surface is evident.

Oviposition is reported in Paulson (2009) to occur in tandem, "however this may not be the normal mode", he further states. I observed one ovipositing female depositing eggs alone (using tapping and aerial release approaches) in shallow water (covering an ~30cm x 30cm area along the vegetated bank of a small canal); she regularly perched between ovipositing flights with the male either perched on nearby twigs, guarding her, or was hovering over her throughout the behavior.

The author has had several encounters with recently emerged Plateau Dragonlet juveniles that perched primarily on Southern Cattail leaves along the La Mancha Wetland pond edge. Their presence indicates that additional mature females oviposited but were difficult to observe, providing a challenge for future surveys in subsequent flight seasons. It is not possible to visually determine the sex of a developing, immature PD (Paulson 2009).




J. An immature Plateau Dragonlet perches horizontally with its wings projected aggressively forward while hunting for small, flying insects from a Southern Cattail leaf along the La Mancha Wetlands pond.

K. M. L. Watson photographed this Plateau Dragonlet south of City of Rocks State Park on 9 July, 2014. Shown here under a creative commons license. (Barnes)

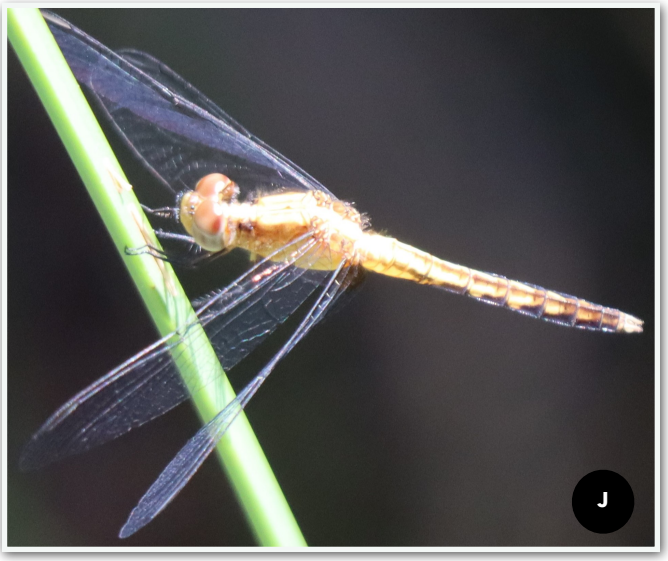
L. On August 27, 2015 Greg Lasley photographed this individual a bit farther down the Mimbres from the sighting of "K". Shown here under a creative commons license. (Barnes)

M. Joanne Cockerill photographed this specimen in Grant County during May 2023. Shown here under a creative commons license. (Barnes)

N. Next page. Enlarged frontal image of a male's head, thorax, and S1-S2 abdominal segments. Note his dark red-brown eyes, metallic blue-black face, black thorax and S1 abdominal segment (when back-lit), wings are clear and legs are dark/blackish.

O. Next page. Male, with wings horizontal, perches in obelisk style on a dried stem in shade along the La Mancha Wetland pond while hunting and defending breeding territory.

P. Next page. Male with wings horizontal, hangs vertically while sleeping in the shade of a Southern Cattail leaf along the La Mancha Wetland pond during a hot afternoon.







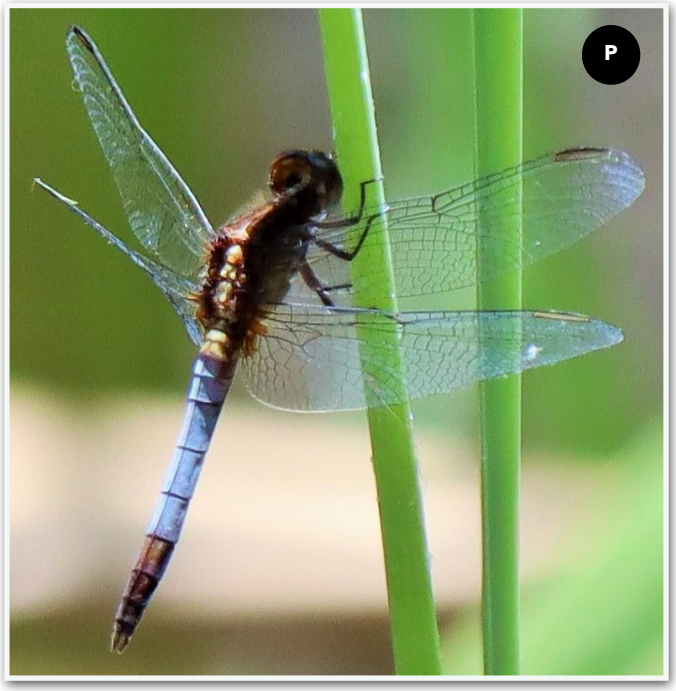


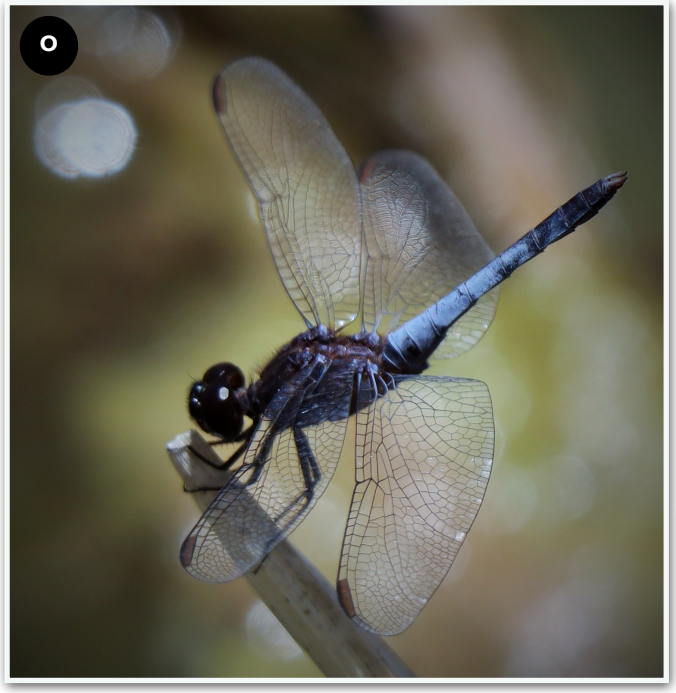




James N. Stuart reported this species from Elephant Butte Dam on August 29, 2019. (Barnes)










**Q.** **Immature male perched on the tip of a Southern Cattail leaf and hunting for small flying insects; with blackish rectangles low on the sides of abdominal segments, becoming more pronounced and fused at the abdomen rear. Note his wings are projected forward with an obvious brown, basal hindwing spot.**

**R.** **Detail of the immature male "Q". Showing his face, thorax, upper abdomen, and legs; his eyes are reddish brown over grayish-tan, face is dark tan, thorax is yellow with brown humeral stripes, abdomen is yellow, and legs are yellow on femurs and black below.**







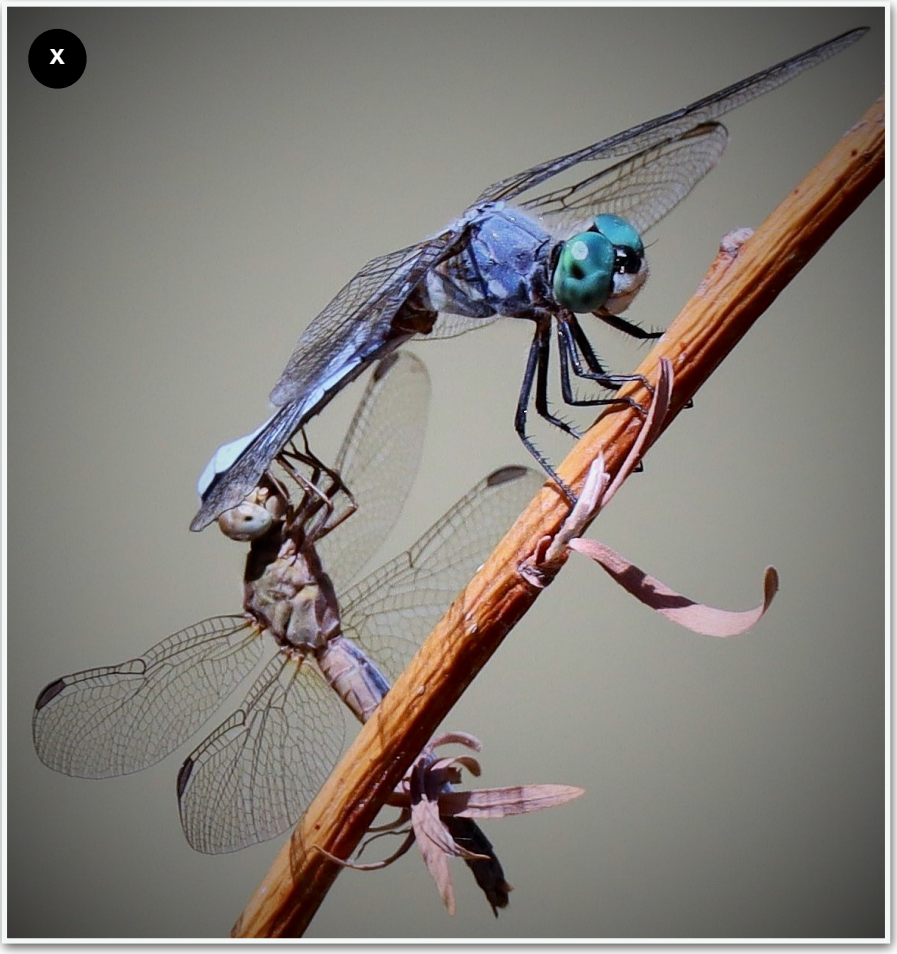
**S.** Plateau Dragonlet female perching horizontally on a Johnsongrass stem over shallow canal water, she is resting and sunning between ovipositing flights.

**T.** She hovers above the water surface while releasing four eggs. Note there are a few other of her eggs in the field-of-view.

**U.** She flies slowly over her small, shallow water area and selects spots to deposit eggs on or under ("tapping" method) the water surface.

**V.** She reacts, by elevating her abdomen, to her mate who has perched nearby to guard her and possibly re-mate (see background form with elevated abdomen). Note there are many of her previously deposited eggs in the field-of-view.

**W.** Image shows her prominent white, dorsal thorax line.










**In mid-June, while collecting dragonfly images along an irrigation canal from the Rio Grande to adjacent pecan orchards, I noticed a flurry of activity and then a male Blue Dasher in tandem linkage with a female Plateau Dragonlet; they were perched on an emergent Coyote Willow stem. After a few seconds, they flew from this perch to a secluded position in a shrub on the canal bank (for 5-10 seconds), then rapidly flew out of sight. I do not know if they completed this mating attempt (but am doubtful).**

**At first, I assumed the female was also a Blue Dasher, but as I cropped and enlarged the image her features/color pattern did not support this species assignment. I further cropped the image to feature the female and tested it with the *iNaturalist* algorithm which listed Plateau Dragonlet as its first choice for an identification.**

**X. A male Blue Dasher (upper right) has grabbed a female Plateau Dragonlet (lower left) and attached his cerci behind her head forming a tandem linkage (in an attempt to mate). It is likely that the female refused to mate. ". . . males will often attempt to mate with females of other species, most females are apparently able to detect by touch whether the male that grabs them is their own species." Paulson (2009)**

**Y. Same as "X".**

**Z. Enlarged lateral image of a male Plateau Dragonlet's head, thorax, and S1-S3 abdominal segments. Note his dark brown eyes, metallic blue-black face, reddish-brown thorax and S1 abdominal segment, abdominal segment (S2-S3) is pruinose (whitish-blue in color), wings are clear with a small, brownish basal spot on the hindwing.**

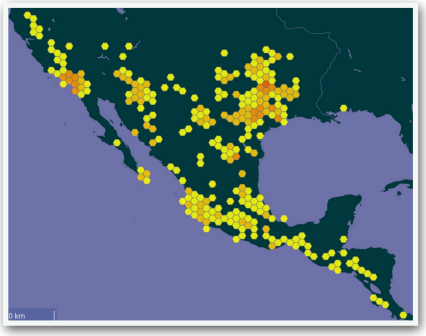
# King Skimmers
## *Libellula*

**Large, conspicuous, and often with distinctive colors and wing patterns, these dragonflies are quite common, ranging across the Northern Temperate Zone they also extend south into the mainland American Tropics (Paulson 2009). They are perchers, salliers, and often fold their front pair of legs behind their head when perching. Most North American species fall into distinct species pairs or trios, are similar to one another, and can make identification challenging.**

## Neon Skimmer
## *Libellula croceipennis*
## (Selys, 1868)

**The dragonfly shown at the upper right has been identified (tentatively) as a Neon Skimmer. The image was taken by "miguel1958" (iNaturalist) on September 19, 2023 near the Elephant Butte Dam site in Sierra County. It is shown here under a Creative Commons license. Note however, that this may be a Flame Skimmer. (Barnes)**

**M. L. Watson took the photograph at the bottom right near Faywood in Grant County on July 9, 2014. It is shown here under a Creative Commons license. (Barnes)**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**





***"Their mating ritual is quite entertaining to watch, while the males can be seen on the lookout for females from tall spears of grass, females are often oblivious to their counterpart's presence. Males typically approach females with an inflated abdomen clearly visible by her and observers.***

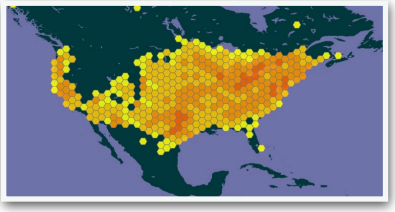
***With this, the neon skimmer's characteristic courtship begins, females often flee and cause what one would describe as a wild goose chase as the male follows her. Once successfully courted, the Neon Skimmer is observed mating, no longer than 30 seconds, on twigs or occasionally in flight. The female's process of laying eggs is quite the show! While she quickly flies, hovering over the water, she glides her abdomen in the water then flings the egg with droplets of water on shore, while the male temporarily stands guard by threatening other males by lowering their abdomen."*** **Quote from www.austintexas.gov.**

**"There are two Neon Skimmer records in Doña Ana County, photographed 4 August 2007 (OC # 333947) and 28 August 2009 (OC # 333946) by Mara Weisenberger at San Andres Spring, San Andres NWR." (Jonathan Batkin)**

## Widow Skimmer
## *Libellula luctuosa*
### (Burmeister, 1839)

**A big and showy species with dark wing bases unique to this skimmer group. Occurrence in Doña Ana County is well-within its principal distribution. The New Mexico flight season is May-November.**

**Locally, I have observed them during the months of June, July, August, and September. Occurring along lakes, ponds, and pools within slow streams (with mud bottoms) and at farm ponds and created habitats; uses sites with much vegetation in both open and wooded areas. Locally, they have been observed perched/hunting from shoreline vegetation along the Rio Grande bank, associated irrigation ditches, and in the nearby restored wetland/pond (La Mancha Wetland). This skimmer is uncommon to occasional in our locale and is usually observed as an individual male. They are quite wary and difficult to approach.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**

**Among the sightings in Sierra County are those by "miguel1958" and Ad Konings. (Barnes)**






**A. Previous page. Male perches by hanging from a Southern Cattail leaf where he appears to be resting/sleeping. His large size and striking wing patterns (smoky-black wing bases bordered by white patches) along with the pruinose/pale blue thorax and abdomen are diagnostic.**

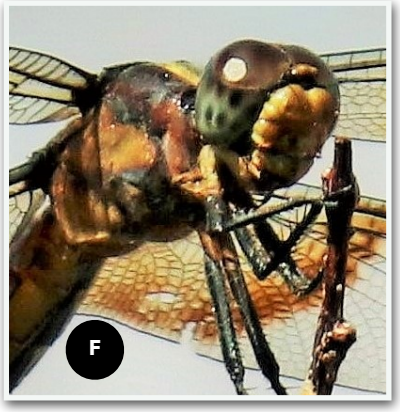
**B. Previous page. The only female I've photographed, perched high on a Coyote Willow twig over the Rio Grande. Her wing bases are dark, smoky but not black like the male's, and the dark wing-tip spot is diagnostic. She would periodically leave the perch to capture a small flying insect and is likely displaying to attract a mate.**















C. Previous page. Male perching on a twig over the water and hunting for small flying insects while likely displaying to attract a mate (a typical observation); females are rarely observed.
D. Previous page. Male perches on a stem by hanging while occasionally capturing small flying insects; and perhaps displaying to attact a mate.
E. Previous page. Same as D.
F. Previous page. An enlarged view of the female's head and thorax illustrates her brown over green eyes, light brown-yellowish face, and her dark brown thorax with large tan spots low on the sides.
G. Previous page. Male rests/sleeps in the shade of Johnsongrass leaves exiting occasionally to patrol his territory and to hunt for small flying insects.
H. This female Widow Skimmer was photographed by Matilde Holzwarth along Animas Creek in the Black Range on July 10, 2012.
I. Same as "H".
J. Same as "H".



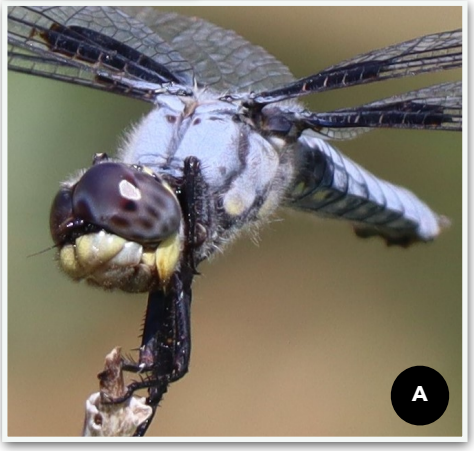



## Hoary Skimmer
## *Libellula nodisticta*
### (Hagen, 1861)

**A large skimmer with two dark spots on each wing that are smaller than in other, similar species. Occurrence in Doña Ana County is south of its principal distribution.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**







**The New Mexico flight season is June-August). This species typically occurs along marshy slow streams, ponds, and/or seeps and springs; observed hunting along the Rio Grande bank and in the large arroyo draining the Organ Mountains from dried stem perches. I observed individuals only twice in June and August of 2022.**



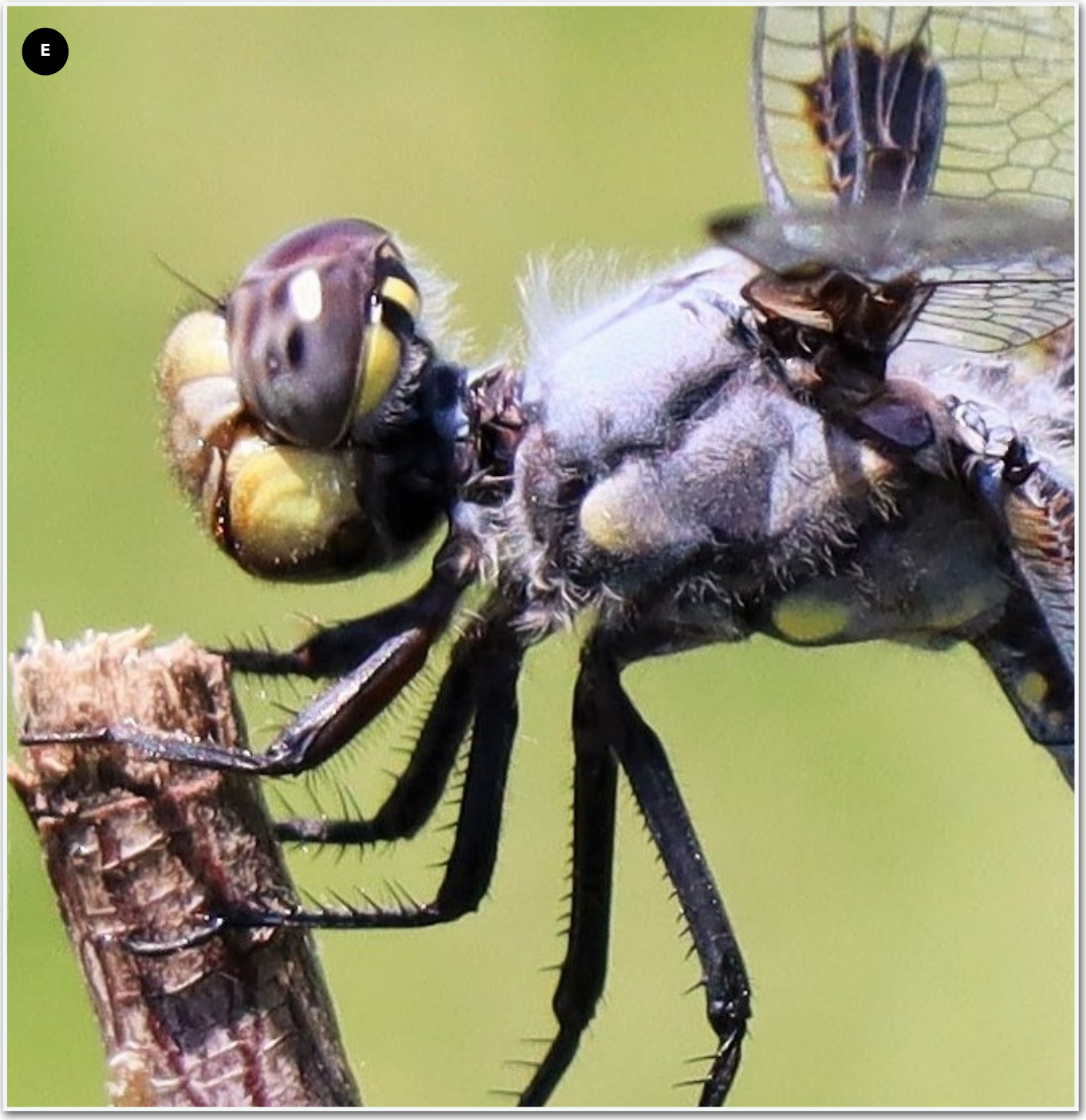

**A. Perched and hunting for small flying insects from a stem; this image shows the male's face, upper thorax (note heavy pruinosity resulting in medium blue color that extends to abdomen and yellow spot on lower corner), basal wings (note the diagnostic black spot on each wing base), and black legs. His eyes are grayish to lavender (in frontal view they appear dark reddish-brown), and face is yellowish (note postfrons, antefrons, postclypeus, anteclypeus, labrum, and mandible in open display).**

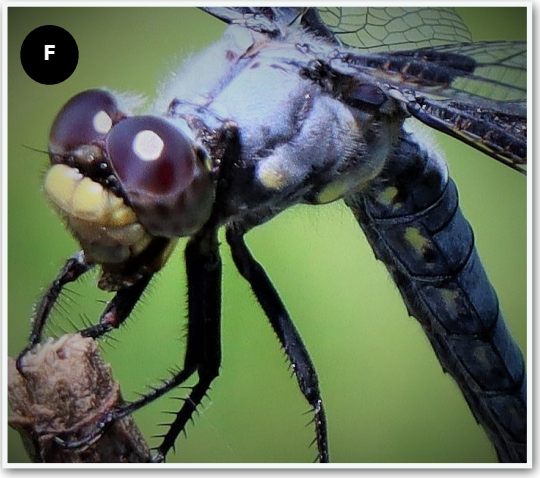
**B. The same male perched along the Rio Grande, with abdomen pointed downward. His diagnostic wing spots, larger black on basal portion and small black spots on the wing nodum are prominent. Note that his entire thorax and abdomen are covered in powdery blue pruinosity as is the wing base at the edge of each large black spot.**

**C. In bright sunshine, the Hoary Skimmer droops its abdomen downward to minimize exposure and overheating (Paulson 2009).**

**D. Ventral view of another male hunting from a high perch along Arroyo Trail of the Organ Mountains. Note the wing spot distribution and size - the nodal spot is larger on this individual.**






**E. The male turns his head to study each potential prey fly-by; the yellow spots of his lower thorax are prominently displayed. Note the dense, cilia-like hairs that cover his thorax and define, in part, his "hoary" (whitish-blue color/appearance).**

**F. A more frontal view of the male's yellow-colored face illustrates a darker eye color, mostly lavender, his yellow thorax spots and lateral yellow spots on the near abdomen segments (S1-S4).**

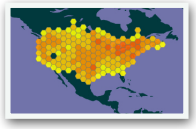
**In commenting on a draft of this material Jonathan Batkin (01 March 2025) noted: " Outside of its "reliable" location in Catron County at/near Apache Creek (where it is not all that easy to find), there are few NM records, they are scattered widely, and mapping them doesn't show a pattern. They are not known to be a breeding species in those locations. The fact that you (JVL) have had this twice in Doña Ana County is stunning, and both specimens appear to have been fresh."**




## Twelve-spotted Skimmer
## *Libellula pulchella*
## (Drury, 1773)

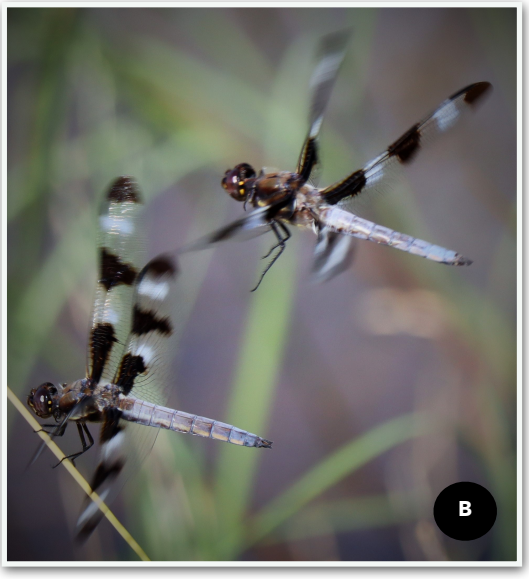
**A large and striking skimmer with three big black spots on each wing.**

[Recorded sightings from the Global Biodiversity Information Facility (1/2024).]



**Occurrence in Doña Ana County is well-within its principal distribution. The New Mexico flight season is June-October. I have observed several locally during August and September.**

**This species occurs along lakes and ponds with emergent vegetation; in Doña Ana County, it has been observed perching/hunting and/or mating/egg-laying along the Rio Grande bank and in a retention pond at the Dripping Springs Visitor Center of the Organ Mountains. Large and beautiful, Twelve-spotted Skimmers are only occasionally observed and of those observations, nearly all are perching males.**



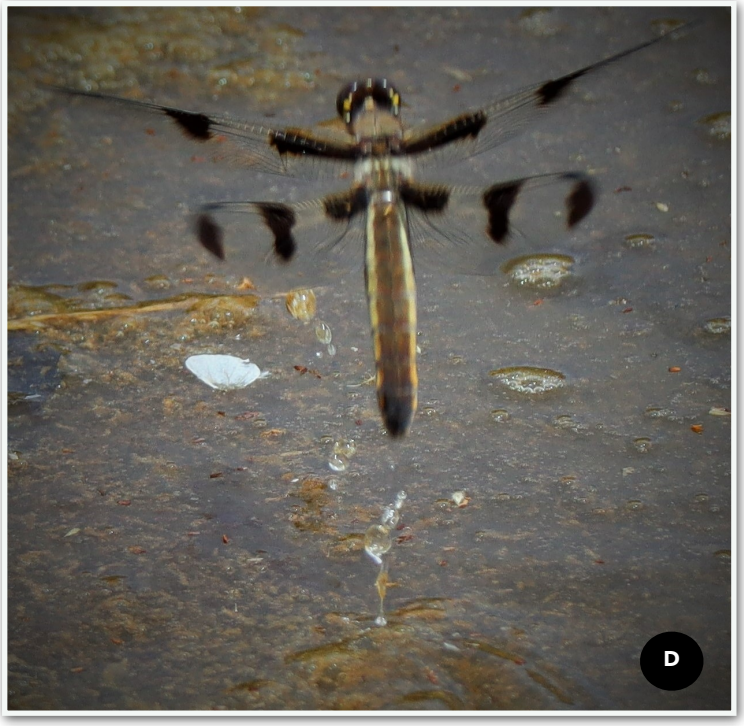
A. Previous Page. Male (one of the two shown in "B") appears to have won this perch where he hunts small flying insects and likely displays to attract a mate. Note the three black spots on each wing and additionally, two white spots per wing.
B. Previous Page. On a small retention pond near Dripping Springs Visitor Center, two males challenge one another for a prime perch/territory of emergent Green Sprangletop stems. This perch was used to mark territory, hunt for small flying insects, and possible displaying for mate attraction.
C. A post-mating female overflies the small retention pond to locate ovipositing (egg-laying) sites, typically within 1-5 feet of the pond edge. Note that females have three black spots on each wing, equalling 12-spotted common name but that there are no white spots, which a male would have. The female face, head, and thorax are colored like the male's except her thoracic stripes are all yellow; her abdomen is brown dorsally with continuous yellow stripes on each side.
D. Over appropriate habitat (shallow water with an algae bed at this site), the ovipositing female would hover near the water surface and tap her abdomen tip into the water to deposit eggs. She continued flying and ovipositing many times over a 20-30 minute time period.
E. Male perches on grass stem to hunt for small flying insects. Note his abdomen is mostly whitish-blue (pruinose) but underneath, on worn spots the base color is brownish, similar to the female's abdomen color.

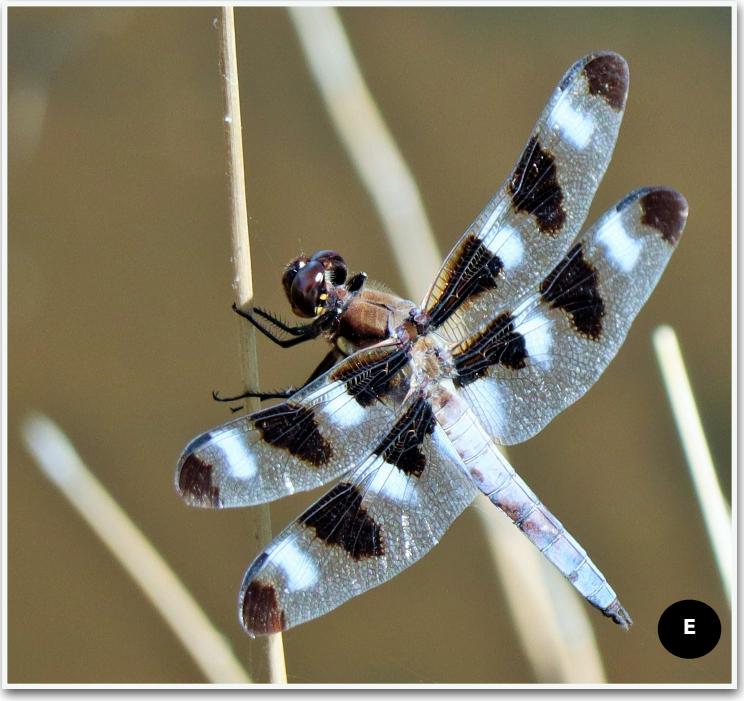
**Next Page**

F. This male perches on Curly Dock fruiting stems emerging from the Rio Grande and hunts small flying insects while likely displaying to attract a mate.
G. An enlarged view of the male head and thorax illustrates his face and eyes are dark brown and his thorax is brown with two pale stripes (gray above and bright yellow below) on both sides.
H. Perching low on a Silverleaf Nightshade stem along the Rio Grande bank, this male is hunting for small flying insects. Note that in late afternoon sunshine, collecting images into the sun produces backlighting and also reflects off impurities floating in the water, producing a sparkling affect.
I. Perched on a Switchgrass stem within a dense stand, a male presses his face/eyes forward to rest/sleep. Note the brownish area of his abdomen, likely exposed by a female during mating(s) (she clasps his abdomen when in the "mating wheel" configuration).

This species was often present, both males and females, at the Dripping Springs Visitor Center stormwater retention pond during the monsoon seasons of 2021 through 2023, two males were the only Twelve-spotted Skimmers observed during 2024.




G
F


H


I










**J.** Male perched on a Switchgrass stem while hunting for small flying insects over the Dripping Springs Visitor Center retention pond habitats; his face and eyes are dark brownish-black, thorax is brown with two lateral stripes that transition from gray above to yellow below, the abdomen is gray-pruinose. 09/09/24

**K.** Enlargement of the male head and thorax illustrates the brown face is lighter on the sides with yellow spots and the dorsal thorax is gray with brown hairs. 09/09/24

**L.** Male perched in a lateral view shows that an area of the abdomen has less pruinosity, perhaps resulting from scraping (female leg bristles) during mating behavior earlier in the summer; the wings each have three large dark spots (base, nodus, and tip) and two large, pruinose white spots in-between. 08/21/24




## Flame Skimmer
## *Libellula saturata*
## (Uhler, 1857)

**A common large and robust, bright orange skimmer with extensive orange wing bases. Occurrence in Doña Ana County is well within its principal distribution.**

**The New Mexico flight season is March-November and I have observed them during the months of May-November (inclusive) locally.**

**They occur within a broad habitat selection including ponds, lakes, slow streams, and adjacent uplands; and perch/hunt along the Rio Grande banks, associated irrigation ditches, in the retention pond at the Dripping Springs Visitor Center and constructed La Mancha Wetland, and in the canyons (Achenbach, Soledad, Fillmore, etc.) draining the Organ Mountains.**

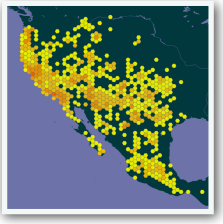
**A. Male perches high and horizontal on a branch, providing a rare ventral image. He's hunting for small flying insects, defending and patrolling around his territory, and likely is displaying to attract a mate. Note the extent of the orange from wing base to mid-wing, orange along the leading wing edges, and his entirely orange body.**




**B. Enlarged view of male's head and thorax illustrates his red-orange face and eyes, orange thorax and wing bases, and orange legs as he perches against a Soft-stem Bulrush.**

**C. Next Page. Male perched on a branch with his abdomen at a downward angle is warming in the sun, likely is displaying to attract a mate, and hunting for small flying insects. Note nearly any opportunity to photograph this skimmer, at any angle, will usually result in a memorable image/ series.**

**D. Next page. Male exposes the white dorsal midline of his thorax while hanging from overnight perch and warming in the morning sun. Note the dark, elongated orange-red spots at each wingbase.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**





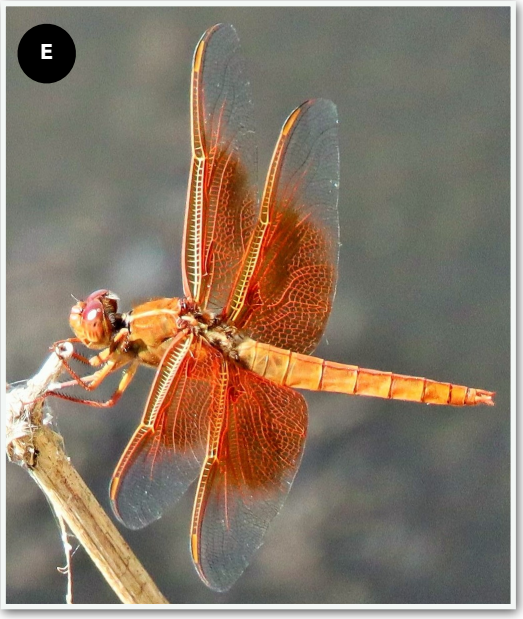


**E.** Next page. Male exhibiting typical horizontal perching style for this species as he hunts small flying insects and likely displays to attract a mate.

**F.** Next page. An enlarged view of the most common female face and thorax illustrates her brown face and eyes and pale brown thorax and legs.

**G.** Next page. "Some females may have a bright orange body and much orange in the wings, similar to males" (Paulson 2009).

**H.** Next page. Same as "G".





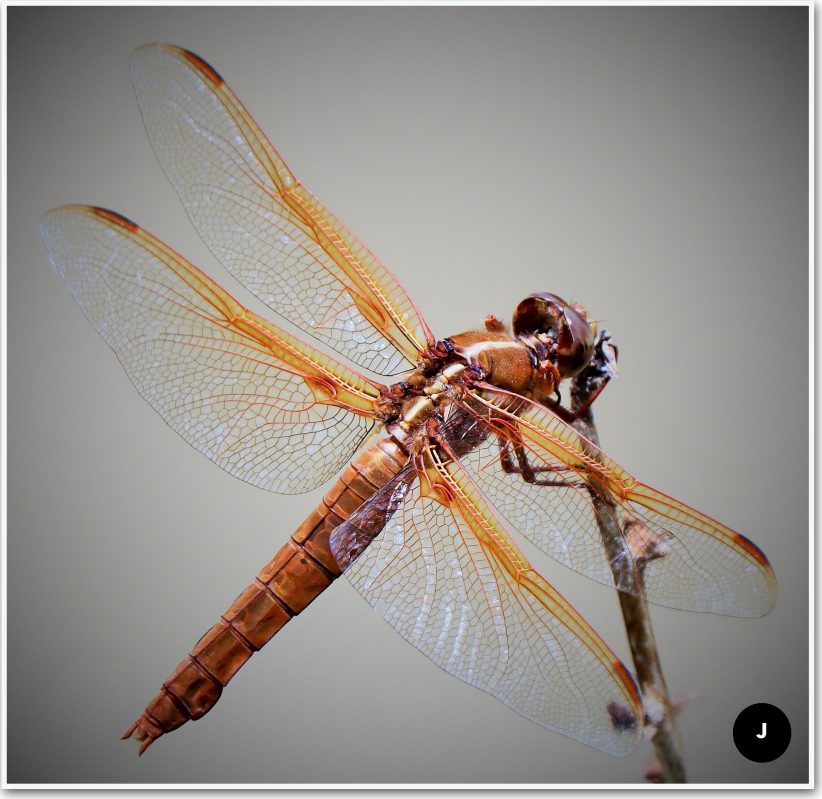











I. **Ventral view of a pale brown-colored female, in her typical perching form on a branch, e.g., hanging with abdomen pointed down (likely to avoid overheating in bright sunshine) while hunting for small flying insects.**
J. **Female perches on a Cocklebur stem; early afternoon lighting enhances her wing color pattern along each leading wing edge. Note her abdominal widening at the S8-S9 segments; this flange aids in depositing eggs in water.**













**K.** Female in dorsal view, perched by hanging from a twig, illustrating the white mid-dorsal line on her thorax, and the extent of coloration along the leading wing edges. She avoids sun exposure by lowering her abdomen while hunting small flying insects.

**L.** Following mating, female deposits fertilized eggs by tapping her abdomen tip into the water and releasing several of them with each tap. While she is ovipositing, the male flies back and forth over her and challenges competing males and possible predators.

**M.** The egg-laying female (typical tannish-brown form) landed about a foot from me following egg deposition into the near-bank water. She was resting/sleeping with her eyes pressed on a dried stem while the male continued to fly around her, perhaps for her protection or just as likely for an opportunity to re-mate.

**N.** Three groups of eggs were deposited by this female tapping her abdomen tip into the water, to release and spread eggs while she flew steadily back and forth along a canal bank. Note how eggs in the water are effectively highlighted/reflected in angled sunlight.

Barnes: Reported sightings in the Black Range include:

**O.** One by Jan Richmond on September 1, 2023 in Hillsboro;

**P.** Two by Bob Barnes in the Percha Box east of Hillsboro;

**Q.** Same as "P"; and

**R.** An August 2, 2020 observation by Andrew Cannizzaro along Palomas Creek.

Others include Greg Lasley's sightings from August 30, 2015 at Bear Canyon Reservoir; Bill Carrell's observations from August 12, 2017 at the Nature Conservancy's Mimbres River Preserve; and Cole Wolf's sightings along NM-35 on June 30, 2023.


O


P


Q


R

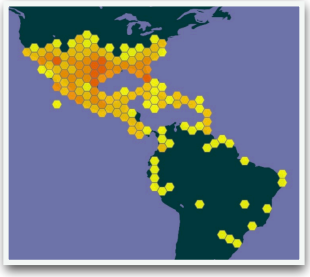



## Tropical King Skimmers - *Orthemis*

Tropical King Skimmers are like King Skimmers in shape and size, these large dragonflies replace the temperate species in the New World tropics (Paulson 2009). Their presence at ponds of lower western latitudes show the tropical affinities of these latitudes. Males of most species are red and the females are brown. Wing venation is similar, as well with many antenodals and wavy distal veins. They also perch with front legs folded up behind the head and usually with wings and abdomens level as do King Skimmers. Mating pairs are uncommonly seen because copulation occurs briefly in-flight; males guarding ovipositing females sometimes present to watchful naturalists.

## Roseate Skimmer *Orthemis ferruginea* (Fabricius, 1775)

The Roseate Skimmer is a large, rosy-purple skimmer of southern states. Occurrence in Doña Ana County is well within its principal distribution.



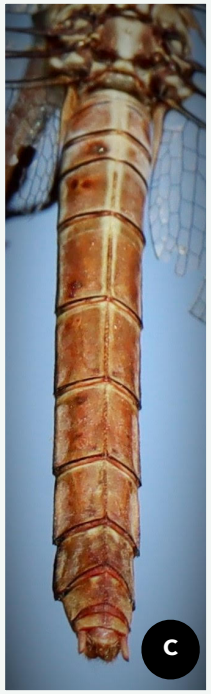
Recorded sightings from the Global Biodiversity Information Facility (1/2024).

The New Mexico flight season is March-October). Locally, I have documented this skimmer in May, June, July, August, September, October, and November.

Individuals occur within a broad habitat tolerance based on mud bottoms for larval habitat. Habitats include ponds, ditches of all sizes, stock tanks, slow-flowing streams, and marshes. I have observed them perched/hunting, defending mating territories, mating and egg-laying along the Rio Grande banks, associated irrigation ditches, and in the retention pond at Dripping Springs Visitor Center.

A. A male Roseate Skimmer perches on a Coyote Willow twig and examines the area overhead for the small flying insects and other dragonflies moving through his territory. This prominent perch allows him to display to attract a mate, as well.
B. Next page. The male abdomen is red, pruinosity (whitish coating) results in it reflecting pinkish-red.
C. Next page. The female abdomen is distinct from male's with dull reddish-brown color, and a white double midline stripe below thorax. Note old females can become dull and even somewhat purplish-pruinose in color (Paulson 2009).
D. Next page. M. L. Watson photographed this Roseate Skimmer at the River Ranch Wildlife Management Area (New Mexico Department of Game and Fish) near City of Rocks State Park in northern Luna County, on July 9, 2014. (Barnes)













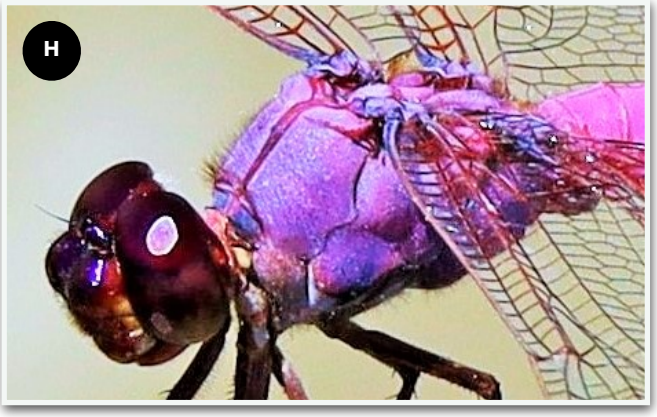
**E.** Using a dried Johnsongrass stem to perch, this male droops his abdomen downward, possibly to reduce overheating under the hot sun. He is hunting small flying insects. Note his wings are unmarked/clear and the veins are reddish-colored.

**F.** Male perches low over the Rio Grande, horizontally on a branch to warm in the sun. Note his facial iridescence from this angle.

**G.** Next page. Perching horizontally on a Cocklebur stem emerging from an irrigation canal, male hunts small flying insects, defends and patrols his territory, and is likely displaying to attract a mate.

**H.** Next page. Enlarged image of the male face, eyes, and thorax illustrates his metallic, dark red-violet face (whitish-yellow on edge), dark red over grayish-lavender eyes, and his purplish thorax overlain by matte pruinosity.







I. Mature female with some wing-tearing, perches by hanging vertically from a Tamarisk twig to sleep overnight and warm in the morning sun. Note, I had a difficult time observing females until searching shortly after sunrise along Coyote Willow tall shrub stands facing the sun, where I found them sleeping against branches. They were sunning themselves to warm up for hunting when small flying insects began their flights.

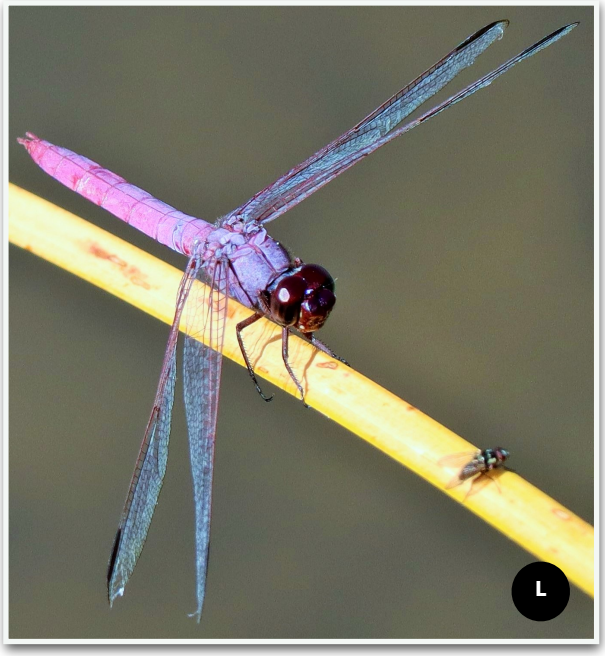
J. Enlarged view of female face, eyes, and thorax shows her dull brownish face, eyes are reddish-brown above and tan below, and her thorax is brown with a complex pattern of pale yellowish stripes and black markings on the sides (also extend ventrally).

K. Perching on a Coyote Willow twig to warm in the sun and begin hunting small flying insects, female scans upward for insects and potential mates. Her abdomen shows little pruinosity, indicated by the shiny surface - compare with thorax.

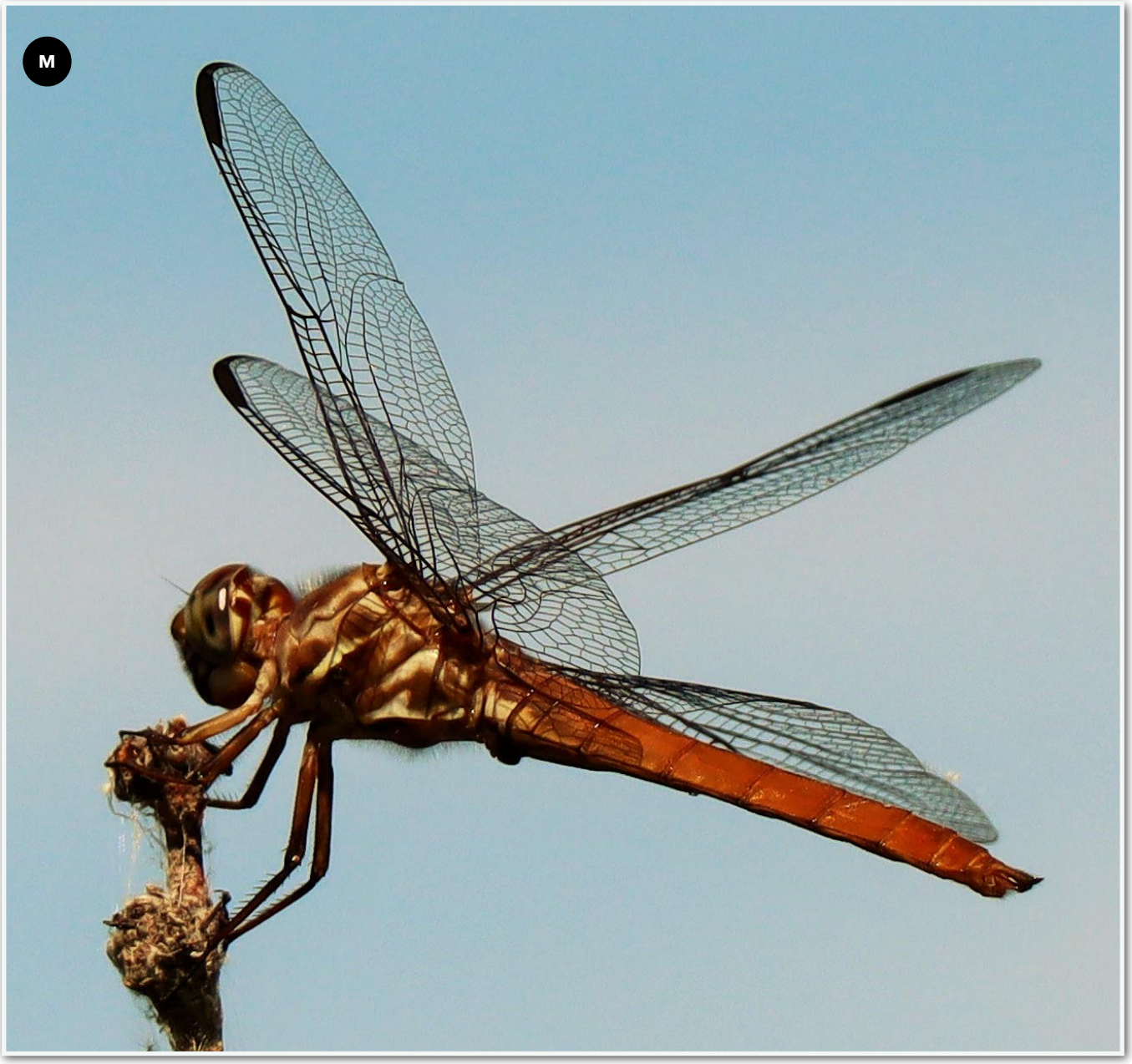









L. Male seems to show interest in this Tachinid Fly (*Tachinidae*) as they share a Three-square Bulrush stem perch over the Rio Grande.




**M.** Female perches on a Honey Mesquite twig and hunts small flying insects along the Rio Grande. Note her abdomen has a distinct bright reddish-brown color and is shiny, indicating little pruinosity.

**N.** Observed near Radium Springs by Steven Mlodinow on November 4, 2018. (Barnes)

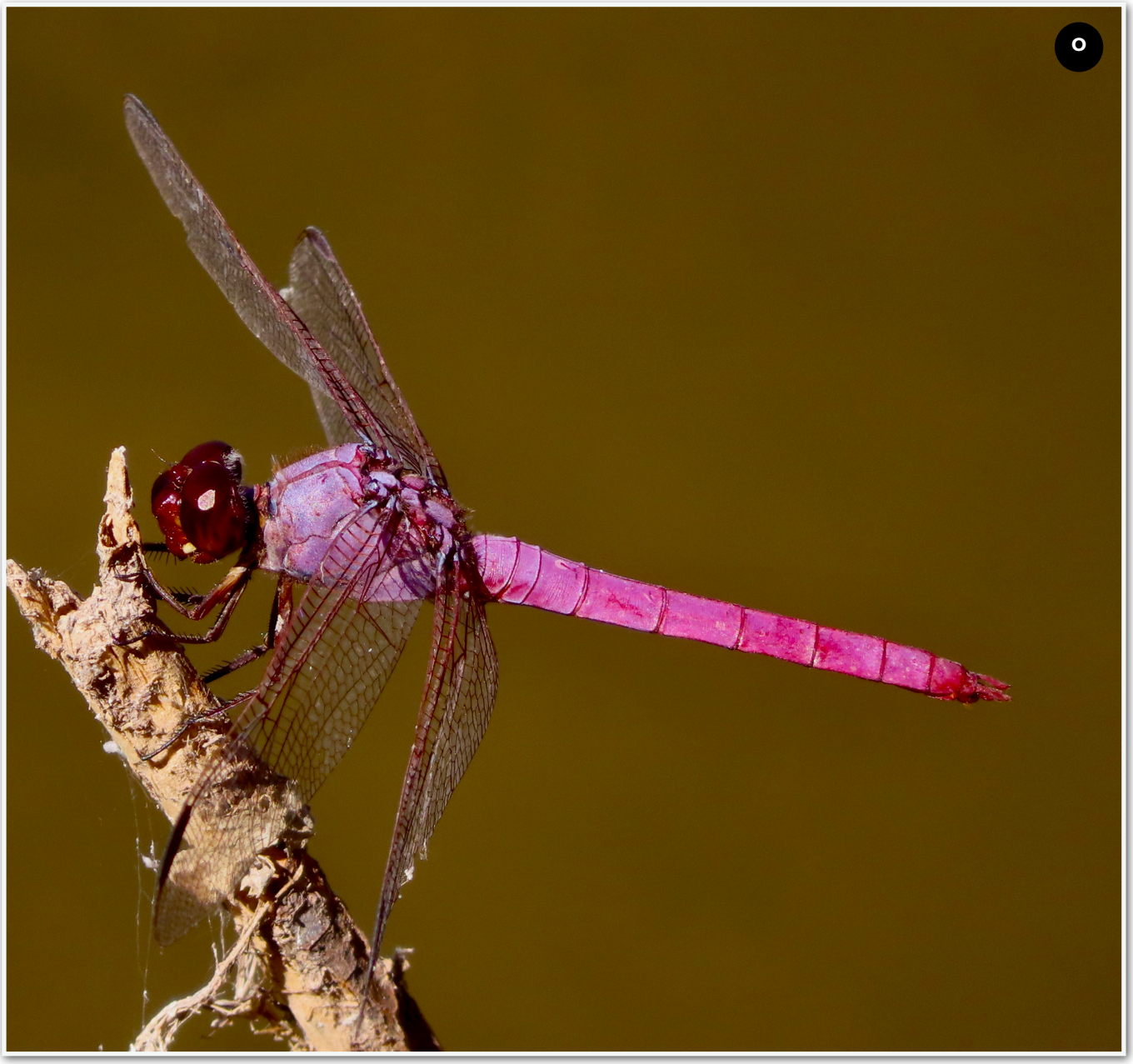
**O.** Next Page. Photographs by Gordon Berman on 10/25/2024 along the Rio Grande below the I-10 Bridge in Dona Ana County. Berman notes that he took the photographs at river's edge (treated waste water after the upstream flow was cut off) where he found a Roseate Skimmer perching atop its favored stick. For at least an hour and a half, it took wing only to drive off flybys or feed on mid air bugs.

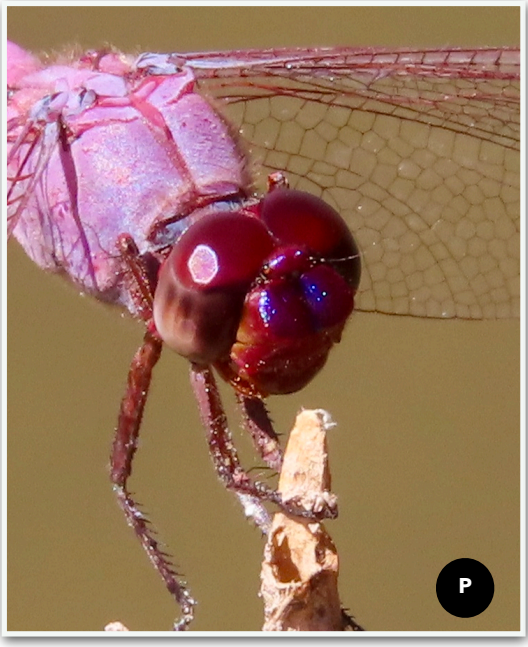
**P.** Next page. See "N".

**Q.** Next page. See "N".

Barnes: This species has also been observed by "valleygal" (iNaturalist) on May 20, 2022.




O


P

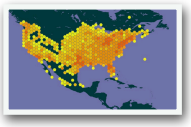

Q

# Dashers
# *Pachydiplax*

**The genus *Pachydiplax* is a monotypic genus, the Blue Dasher is its only species.**

## Blue Dasher
## *Pachydiplax longipennis*
## (Burmeister, 1839)

**In Doña Ana County, I have observed Blue Dasher dragonflies along the Rio Grande west of Las Cruces and Mesilla between 2019 and 2024 during the hot, monsoon-season months of June-to-October. They were present and photo-documented during 2019 and 2021 and abundant during 2020 and from 2022 to 2024 (the Blue Dasher flight season in New Mexico is March through October). (See *The Black Range Naturalist* for updates.)**



**Global Biodiversity Information Facility 1/2024**

**Typically, the Blue Dasher uses any body of standing water with some aquatic (floating or emergent) vegetation, as occurs along lake shores, ponds, ditches, and wooded wetlands (Paulson 2009). They used riparian and wetland habitat established immediately adjacent to the Rio Grande bank, along irrigation ditches, and in a small constructed wetland (La Mancha Wetland, maintained by Nuestra Tierra) during the time period when the river channel supported bank-to-bank flow (June-September/October).**

**Per Paulson (2009) and my observations, Blue Dashers often perch high above the water on small trees, tall shrubs, or on taller emergent plants like cattail and bulrush species. When perching they typically project (droop) their wings aggressively forward; during the sunny midday they hold their abdomen high (obelisking). Both sexes defend small feeding territories away from water and are reported to capture tiny prey on 75% of foraging flights. Males spend most of their time perching and defending breeding territories, aggressively. They display to perched females by swinging back-and-forth with a raised abdomen. Mating pairs are rarely seen, copulating in-flight briefly (10-40 sec). Females oviposit among vegetation by "tapping" numerous times in one spot while hovering, before moving slowly to another spot; they lay some 300-700 eggs in about 35 seconds (Paulson 2009).**

**The Blue Dasher's size is variable, trending from large in the spring to small in autumn (more pronounced in the eastern US than the desert west). They have short abdomens, thus their specific epithet '*longi-pennis*' or "long-winged" (relative to abdomen length). Along the Rio Grande, large-sized, grayish-blue males may be superficially confused with larger Western Pondhawk, *Erythemis collocata* (Hagen, 1861) skimmers when determining identification.**










**A. Male Blue Dasher (Western color variant) perched on a Southern Cattail leaf over the Rio Grande. Note the aquamarine-blue-green eyes, white face, and vertical wavy-white thorax stripes.**

**B. Male Western Pondhawk (Western color variant) perched over the Rio Grande. Note the dark blue eyes, jade-green face, and no thorax striping.**

**C. Barnes: In Sierra County, Blue Dashers have been seen at the Elephant Butte Dam site. On September 19, 2023 by "miguel1958" (iNaturalist) and by Steven Mlodinow on August 19, 2023 (this image - shown here under a Creative Commons License), among others.**

**In Grant County this species has been seen at Bear Mountain Lodge near Silver City (on August 17, 2022 by "assmann" (iNaturalist). Nearby along the Mimbres River, in northern Luna County, Laura Gaudette observed a Blue Dasher on August 27, 2015.**
















**D.** This Blue Dasher male perches or hangs vertically on/from a Southern Cattail leaf where he is likely sleeping or hunting for small, flying insects at the La Mancha Wetlands pond. Note the solidly pruinose coloration from his thorax through abdomen dorsal surfaces and his clear wings showing both wing veins and cell distribution (including the colored stigma cells of the wings) plus the brown basal hindwing spots.

**E.** Note the pronounced brown spots on his basal hindwings.

**F.** Perched in the shade under a Rio Grande Cottonwood.

**G.** This male has extensive thorax-through-abdomen dorsal pruinose coloration.

**H.** Male Familiar Bluet, an average-sized and common damselfly, approaches a male Blue Dasher (upper right), the small skimmer perched on and hunting from a Southern Cattail leaf over the Rio Grande.

**I.** Next page. Male Familiar Bluet, an average-sized and common damselfly, perches below a male Blue Dasher.

**Blue Dashers are among the smallest dragonfly species using Rio Grande habitats and it is useful to relate this differential as part of field identification record. It is also interesting to observe which species tend to accept each other's presence or otherwise interact.**
















J. Male obelisks while perching/hunting on a web-shrouded Curly Dock fruiting raceme. Probably the most interesting wing edge loss I have ever observed.

K. A large male Roseate Skimmer perches on and hunts from a Southern Cattail leaf as does the small male Blue Dasher, which obelisks while hunting for small flying insects and perhaps to provide a territorial signal to the nearby much larger skimmer.

L. The small-sized male Blue Dasher skimmer perches on a Southern Cattail leaf while closer to the water surface, the smallest skimmer locally, a male Eastern Amberwing perches in an obelisk position to hunt for small flying insects and to display for a potential mate.

M. Along the Rio Grande, a small-sized male Blue Dasher skimmer perches in an obelisk-style to hunt from a mature grass panicle while a Long-jawed Orb Weaver (*Tetragnatha* sp.) waits for prey while hunting below the panicle (lower right). Note the overall extended length of this common orb weaver.

N. Next page. Eastern color variant Blue Dasher male perched with wings held horizontally, on a Southern Cattail leaf while hunting for small flying insects. Note his broad dark blue thorax matrix color.

## Possibility of Eastern and Western Blue Dasher Color Variants Along the Rio Grande

**Along the Rio Grande, I have observed and photo-documented a few Blue Dasher males that appear to represent the Eastern color variant in having broad, dark blue-to-black/creamy-white, alternating vertical stripes on the thorax and a pinkish-orange, triangular, ventral spot on the S1, S2, and S3 abdominal segments. Similar coloration and patterns also occur on the female Blue Dasher, eastern color variant shown at the top on the next page.**










**O. Male of the eastern color variant hunting for small flying insects. Note his dark bluish-black thorax matrix stripes and the triangular pinkish-orange spot on his ventral abdominal S1-S3 segments.**

**P. Enlargement of the Eastern color variant image ("O"), providing detail of his dark blue-and-white thorax striping pattern.**

**Q. Next page. Image by Gordon Berman, Michigan, 2022. An Eastern color variant Blue Dasher female perched horizontally on a branch, with wings aggressively projected forward, while hunting for small flying insects. Note her reddish-brown over greenish-white eye color, dark brown thorax matrix and alternating yellow thorax stripes, black dorsal abdomen surface, and the triangular pinkish-orange spot on her ventral abdominal S1-through-S4/S5 segments.**

**R. Next page. Male of the western color variant with pruinose color spreading along his basal wing veins and cells as he perches horizontally to hunt from the fruiting spike of Curly Dock. Note his faint thorax striping, as occasionally occurs in this population.**


Q


R

S. Male western color variant, enlarged lateral image of his face, head, thorax, and S1-S3 abdominal segments. Note his typical blue overall color, the prominent white and wavy vertical stripes on his thorax, aquamarine blue eyes, white face, and black legs.

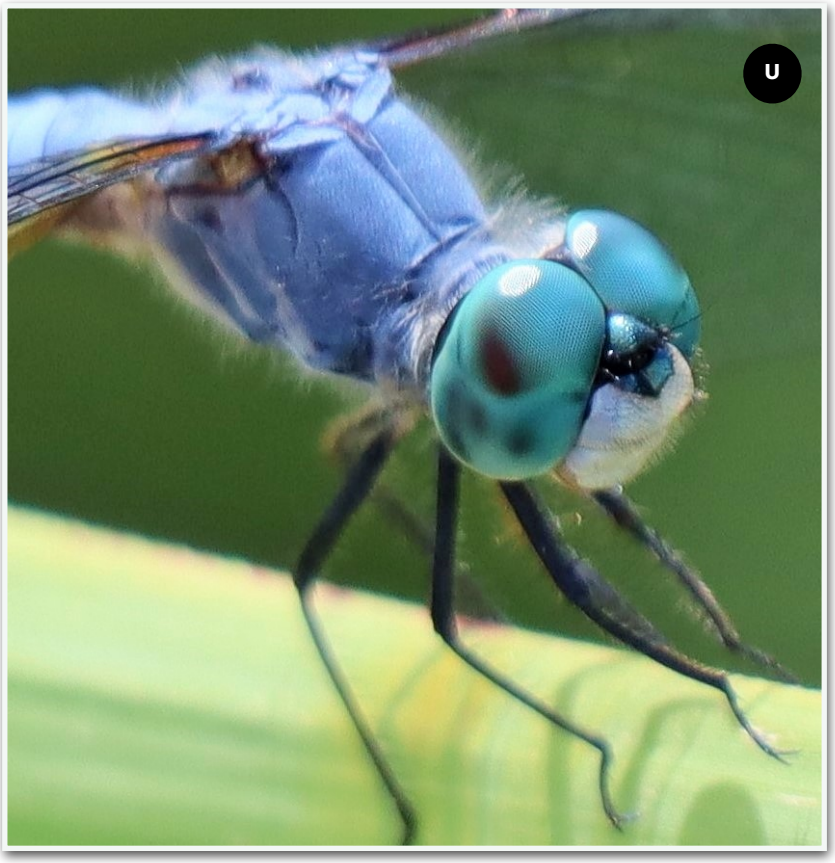
T. Male western Blue Dasher color variant perched, with his wings horizontal and askew following landing, on a dried stem while hunting for small flying insects. Note his blue thorax matrix and white stripes, basal spots on wings, and unusual whitish color of his basal wing veins.

U. Male western color variant, enlarged lateral image of his face, head, thorax, and S1-S2 abdominal segments. Note his blue overall color, the white vertical stripes on his thorax, aquamarine blue eyes, white face, and black legs.

## Perching, Flight, and Hunting Behaviors

As a biologist, the most interesting aspects of observing and photo-documenting insects and attempting to understand a species is identifying habitat preference/use, group/individual/pair behavior and group dynamics, and local/regional variation within the population. When an individual dragonfly is "perching" it is likely performing several behaviors at once which may include: 1) surveying for predators; 2) warming in the sun or protecting themselves from hot sun (obelisking or shady place); 3) hunting for small flying insects and returning to ingest them; 4) defending a breeding territory from competing males; 5) conducting sexual patrols to locate a potential mate; 6) performing mate attraction displays; 7) resting/sleeping, particularly in the shade; 8) grabbing or catching a potential mate in






tandem linkage (males only); 9) pairing and mating in a wheel formation; and 10) nocturnal sheltering.

V. Shaded area within a Southern Cattail stand provides a leaf-perch from which this male hunts small flying insects and defends his breeding territory during the heat of the day.

W. A dried stem along the Rio Grande provides a perch from which this male hangs to sleep, while prominently displaying his dorsal surface with intense brown basal wing spots.

X. Next page. Perching on a Coyote Willow twig with abdomen partially elevated (obelisks), a female Blue Dasher projects her wings forward and hunts for small flying insects and likely monitors for sexual display cues from nearby males.

Y. Next page. The egg mass shown in this image (like the one shown in photo NN on page 100, over which a Blue Dasher is perched) is being secreted from an ovipositing Bee-killer Robber Fly, *Mallophora fautrix* (Osten-Sacken, 1887), which is a bumble bee mimic. Note the egg mass size and many-layered/stacked-chips appearance.

Z. Next page. A female obelisks her abdomen while perching on a twig, likely to decrease exposure to the hot sun. She holds her wings horizontally which fully exposes the brown, basal wing spots (a possible sexual cue to males in the vicinity) while she hunts for small flying insects.

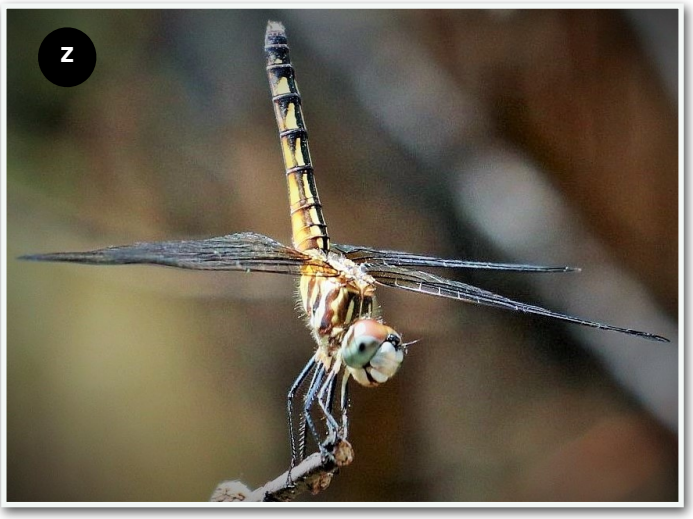











**AA.** **Next page. A female perches horizontally on a twig and projects her wings forward, a typical behavior used often within the local population. She hunts for small flying insects and monitors the area for a potential mate.**

**BB.** **Next page. A female perches horizontally on a twig and holds her wings horizontally, exposing her brown basal wing spots. She hunts for small flying insects, rests/sleeps, and likely monitors the area for a potential mate.**






















**CC.** An enlarged lateral image of a female's head, thorax, and S1-S2 abdominal segments. Note her dark-brown-and-yellow overall color, the cream-colored and brown vertical stripes on her thorax, light-lavender over grayish-white eyes, white face, black legs, and dark yellow of the exposed lateral abdominal area.

**DD.** An enlarged image of a female, presenting with unusual green hues for eyes, face, and thorax with yellowish-green between brown striping. This is my only Blue Dasher image in this series with this coloration.

**EE.** Blue Dasher photographed at the La Mancha Wetland Restoration Project Site. May 2024.

**FF.** Female photographed at La Mancha Wetland Restoration Project Site. May 2024.

**GG.** Eastern Form. Photographed at the La Mancha Wetland Restoration Project Site. May 21, 2024.




**HH. Photograph by Gordon Berman of a female showing green eye color most common in older individuals (Paulson 2009). The brown and green thorax pattern is clearly shown in these images.**

**II. Same as "HH".**

**JJ. Next page. A male defends his perch and breeding territory (fruiting raceme of Curly Dock emerging from the Rio Grande). He is being challenged by an**

**(continued on next page)**



## Defending Breeding Territory and Mate Selection

Once a Blue Dasher male establishes a breeding territory, patrols and defends the territory, and attracts and captures a suitable female for mating, the copulation process is brief, less than one minute (Paulson 2009). Paulson (2009) further states that "*females often peak at breeding habitats in late afternoon after male numbers decline*." I have been fortunate to witness and photo-document three Blue dasher mating and one oviposition events.



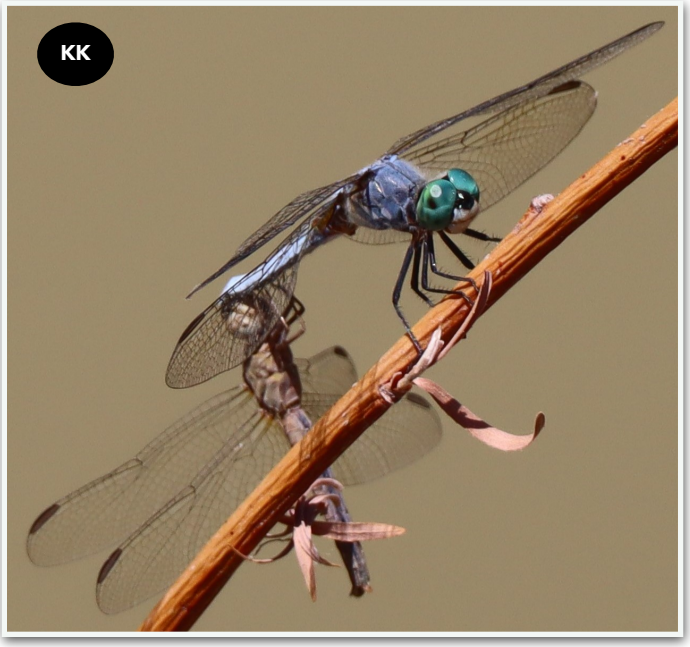

JJ. (Continued from previous page). aggressive male. Note that a "chase" event typically follows such encounters and the perched individual returns to display and hunt for small flying insects. I have observed good-to-high fidelity to a perch once it is selected.

## Tandem Linkage, Mating, and Oviposition

Males seize approaching females in-flight to mate, however, they may, at times, capture a female of a different species (I base this statement on Paulson [2009] and a personal observation with the supporting images below, collected over a medium-sized irrigation canal). Copulation is brief, less than one minute (10-40 seconds per Paulson [2009])) and occurs in-flight (however, I have observed pairs within mating wheels perch briefly on nearby vegetation and rocks). Females oviposit on surface vegetation often with the male guarding her from a nearby perch or while hovering over her (Paulson 2009).

KK. A blue Dasher male grabs/ captures and forms a tandem linkage (male firmly clasps the back of the female's prothorax with his two cerci and his two paraprocts, to the top of her prothorax) with this female dragonfly, then perches briefly on a Coyote Willow branch emerging from a shallow irrigation canal. Note that the female is brown in color with no striping patterns, because she is the same size as the Blue Dasher male, I believe her to be a female Plateau Dragonlet.

LL. The male is likely transferring sperm from his S9 abdominal segment to the seminal vesicle of his S2 segment prior to an attempt at forming a mating wheel with the brown female. Typically, he would then swing her abdomen forward to contact and clasp her vagina (located S8) over his penis (located S2); and thus form the "mating wheel" and they would copulate for a short period of time to complete sperm transfer for egg fertilization; however this non-Blue Dasher female likely would reject his mating attempt. Note the difference in her eye shape and color and face color versus the male's for the same attributes.












**MM.** A pair of Blue Dashers are perched on a Coyote Willow branch. The male (upper) has formed a mating wheel to transfer his sperm (penis located on abdominal S2) to her eggs. Her vagina is located on abdominal S8. He has attached his abdomen tip (cerci) behind her head (tandem linkage) to initiate the exchange.

**NN.** This immature male is perched on a stem and hunting for small flying insects and could possibly be displaying to attract a mate. The old, whitish egg mass beneath the perch was likely deposited by a Bee Killer Robber Fly as previously described and illustrated in image Y.

**OO.** The wings of this immature male are projected aggressively forward and he has elevated his abdomen. He is perching on a Coyote Willow twig.












**PP.** Blue Dashers (female is left/bottom and male is right/top) linked into a mating wheel where he transfers his sperm to her vagina during rapid flight, as stated by Paulson (2009). The speed of their flight among Southern Cattail leaves and dappled sunlight results in this blurred image.

**QQ.** However, I have observed a mating pair, attached in a wheel (female left/bottom, male right/top), making brief stops by perching on a Southern Cattail leaf at a pond edge, as in this image.

**RR.** A different pair (female is left/bottom and male is right/top) perching briefly on a concrete block used for wetland/pond embankment hardening.

**SS.** Blue Dasher female, following copulation, oviposits (perhaps more than 300 eggs) "tapping" on submerged Southern Cattail stems and leaves in shallow water of a pond at the base of the Rio Grande levee.

**TT.** She then moves a very short distance to another site on the same stems and leaves, and hovers.

**UU.** Then dips her abdomen ("tapping") to lay/oviposit additional eggs.







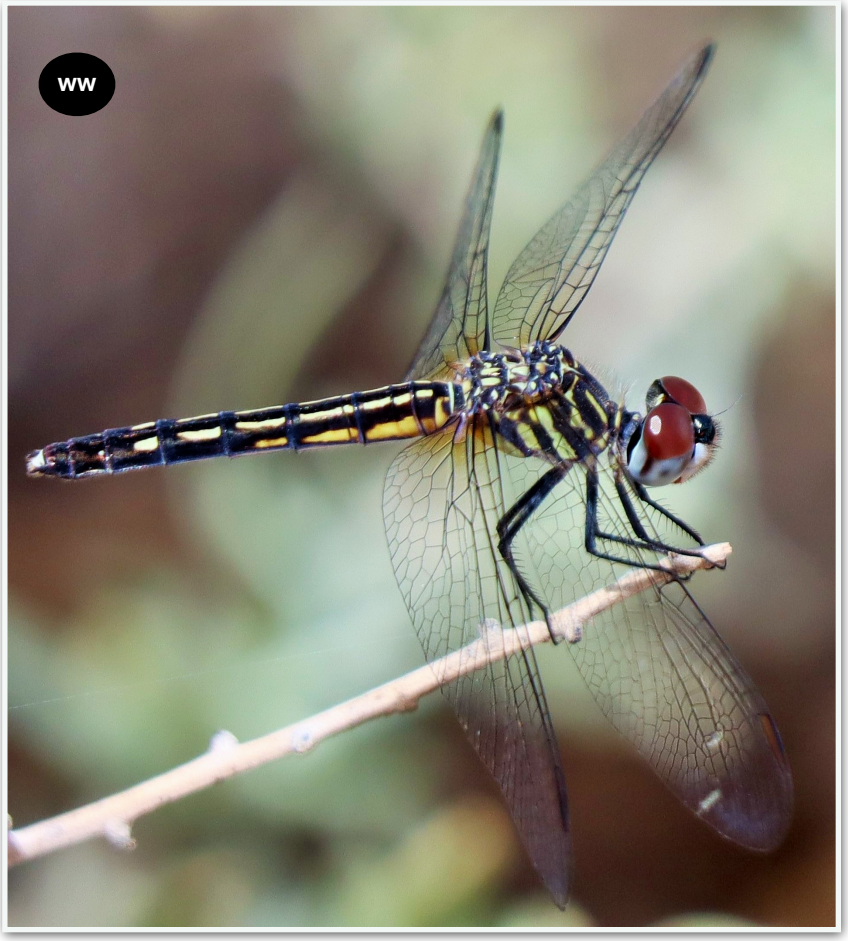





**VV. Her presumed mate, this male Blue Dasher, perched nearby (obelisking on an emergent twig), and sometimes was over-flying her as she deposited her eggs in the shallow water.**

### Immature/Perching BD

**There were many encounters with post-emergence, immature Blue Dasher that were perching on a variety of shrubs near a pond edge and along the Rio Grande riparian corridor.**




**WW. An immature female Blue Dasher perches horizontally with wings held moderately forward, while scanning and hunting for small flying insects from a twig along the Rio Grande. Note row of yellow rectangles high on sides of abdominal segments, they shorten and disappear towards the rear.**




XX. Immature female Blue Dasher, enlarged lateral image of her head, thorax, and S1-S2 abdominal segments. Note her black-and-yellow overall color, the yellow and black vertical stripes on her thorax, reddish-brown over bright-white eyes, white face, black legs, and wings are clear with small, brownish basal spots.




YY. An immature female perches somewhat elevated with wings held moderately forward, while scanning and hunting for small, flying insects from a Four-wing Saltbush fruit above a pond. Note yellow rectangles high on sides of abdominal segments, they shorten and disappear towards the rear.

ZZ. An immature female perches and obelisks with wings held horizontally, while scanning and hunting for small flying insects from a Four-wing Saltbush fruit above a pond. Note prominent brown basal wing spots and yellow rectangles high on sides of abdominal segments, they shorten and disappear towards the rear.



# Rock Skimmers
# *Paltothemis*

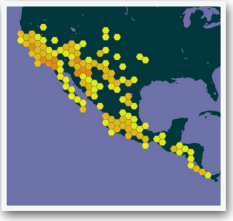
**There are three species in the *Paltothemis* genus. Only *P. lineatipes* is found in our area. (Barnes)**

## Red Rock Skimmer
## *Paltothemis lineatipes*
## (Karsch, 1890)

**Species entry by Barnes.**

**Males of this species are primarily orange but lack any pruinosity. The basal parts of the wings are orangish (varies).**

**Alcock noted that males of this species sometimes defend territories "that contain one or more patches of barely submerged fine gravel over which water is flowing moderately rapidly", sites which may be used by their mates to lay eggs. His study was conducted along the middle fork of Cave Creek in the Chiricahua Mountains in southeastern Arizona during June and July 1987. (Alcock, John. "Oviposition Resources, Territoriality and Male Reproductive Tactics in the Dragonfly *Paltothemis Lineatipes* (*Odonata*: *Libellulidae*)." *Behaviour* 113, no. 3/4 (1990): 251–63. http://www.jstor.org/stable/4534858. p.252).**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**





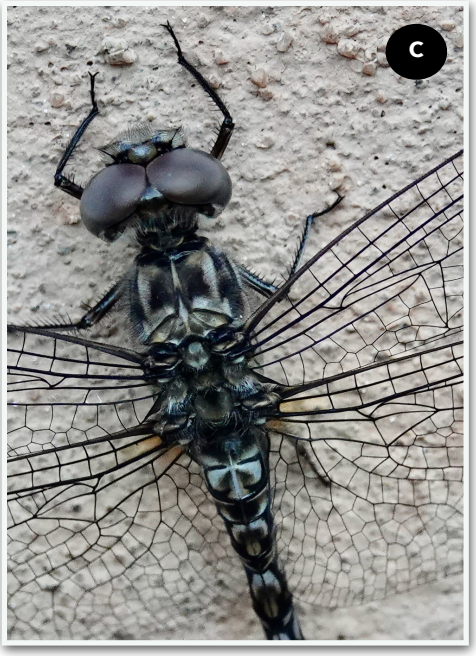


**A. Christopher Rustay took this photograph on October 2, 2021 near NM-152 on the west slope of the Black Range. Shown here under a Creative Commons license. Within Sierra County, there is a report from Kingston on August 5, 2023 by "darlescharwinii" iNaturalist.**

**B. Bob Barnes photographed the individual shown here on August 8, 2023 in Hillsboro.**

**C. Same as "B"**
**D. Same as "B".**
**E. Same as "B".**

**Note that the orange color at the base of the wings is mostly absent in this specimen. When photographed this individual was on a stucco wall and remained immobile for several minutes. The photograph was taken early in the morning and the temperature was somewhat cooler, which may have affected color.**









**E.** Gsato (Satomi) Lander's photographs of a Red Rock Skimmer, from Kingston in mid June 2023 exhibit the coloration which most references depict.

**F.** Same as "E".

**G.** Same as "E".

**H.** M. L. Watson took this image in Palomas Creek on 1 January 2000. It depicts a more traditional coloration. Date may be suspect.

How and why color variation can occur in dragonfly species has been discussed in several issues of *The Black Range Naturalist,* including the January and April issues of 2024.

"There is a record of this species from Doña Ana County, photographed by Mara Weisenberger on 29 August 2009 at San Andres Spring (OC # 315134)." (Jonathan Batkin )












## Rainpool Gliders
## *Pantala*

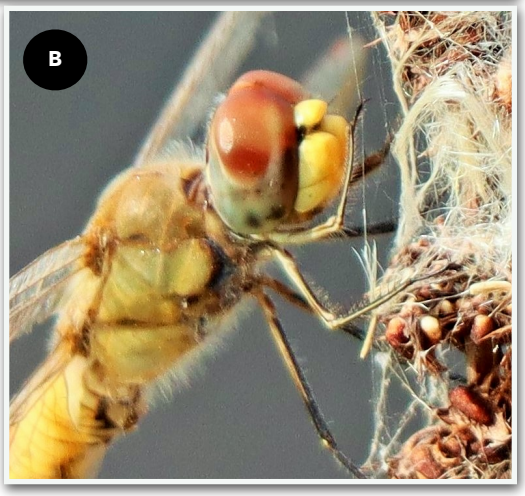
**Broad-winged Skimmers, described as the champion gliders among *Odonates*, are on-the-wing for hours and even days at a time as they wander, even across oceans (Paulson 2009). This ability results in one species being the only dragonfly with world-wide tropical distribution. Their very broad hindwings represent an important adaptation for gliding in addition to their ability to deposit fat and use it for energy during long flights - just like migratory birds (Paulson 2009). Further, perching is always by hanging, unlike most skimmers, and their abdomens are held "drooped" in-flight at midday to reduce heat-load from the sun.**

## Wandering Glider
## *Pantala flavescens*
### (Fabricius, 1798)

**The Wandering Glider is a large glider of open country (when feeding they may swarm with saddlebag species), temporary ponds and pools, and may appear at new wetlands immediately. They also use canals and large, shallow pools of rivers. A prerequisite for breeding habitat is the absence of fish, as their larvae are conspicuous. The sexes are remarkably similar in color (yellow to yellow-orange in flight with females lacking reddish-orange colors, as appear on the male) and large size. The female's cerci are slightly longer, more slender, and of a less pale color at the base than those of the male. Doña Ana County is within its wide principal distribution.**

**The Wandering Glider flight season occurs from May-October in New Mexico. I have observed them from June to October (inclusive) locally along the Rio Grande bank and principal irrigation canals and smaller ditches, and on a retention pond at the Dripping Springs Visitor Center, Organ Mountains. I have observed them perching (hanging) and sleeping from leafless Coyote Willow stems, hunting along the Rio Grande and ditch banks, and mating/ovipositing in large irrigation ditches. The best time to observe and photograph them is during the hot part of the afternoon and early in the morning as they perch in dense vegetation seeking protection from both high (daytime) and low (nighttime) temperature. It is difficult to determine female versus male in this species, I have provided guidance for the ensuing images.**




**A. This male is perching against a Tamarisk branch, he avoids both wind and sun exposure while resting/ sleeping. Note his brown apical wing spots and the reddish color on his dorsal abdomen which are both male attributes.**

**B. This enlarged image of face, head, and thorax of a Wandering Glider, may illustrate either a male or female with yellow face, reddish over gray eye color, and yellow thorax**

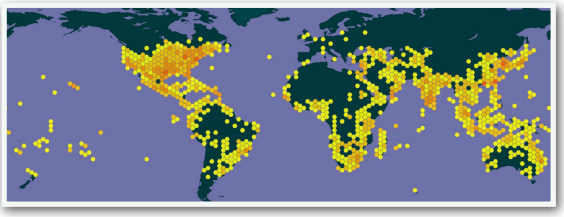
**C. Next Page. Perching from a Southern Cattail leaf, female oriented horizontally to avoid afternoon hot sun exposure; she has received some wing damage. Note there are no brown spots at the apical wingtips nor is there any reddish color on the dorsal abdomen, which denotes a female.**

**D. The male Wandering Glider was photographed along an irrigation canal in the Rio Grande Valley at Las Cruces.**

**E. Same as "D".**

**F. Perching from a stem within a Coyote Willow stand, male hangs (typical perching style) from a twig to avoid afternoon hot sun exposure. Note the brown spot at the apical wingtips, which along with reddish color on dorsal abdomen, denotes a male.**



Recorded sightings from the Global Biodiversity Information Facility (12/2023).










G. Next page. Mated pair, fly in tandem linkage with the male (note brown apical wing spot) to the right, selecting oviposition sites. Male moves over the water surface selecting a site, dives to near the surface and hovers briefly while the female taps the water with her abdomen tip to release eggs.

H. Next page. Female taps the water surface with her abdomen tip, releasing eggs into the water. The pair continues this pattern until she has released all her eggs.

I. Next page. Abhishek N. Prasad took this photograph on September 4, 2022 in Mesilla. Shown here under a creative commons license.

J. Next page. Joel DuBois took this photograph on July 17, 2018 in Las Cruces. Shown here under a creative commons license.













**K.** **Steven Mlodinow took this photograph at the Bosque del Apache National Wildlife Refuge on July 29, 2022. It is shown here under a creative commons license.**



## Spot-winged Glider
## *Pantala hymenea*
### (Say, 1839)

**The Spot-winged Glider is a robust dragonfly of open country (when migrating southward they may swarm with several species). This species breeds in temporary wetlands of newly-filled, shallow and open basins; they also breed in constructed wetlands, ponds, and pools without fish. The sexes are remarkably similar in color (brown with two gray lines on thorax; complex pattern of fine lines on sutures of abdomen) and large size, females with lighter reddish face and cerci that are slightly longer and more slender.**

**Doña Ana County is within the wide principal distribution of this species.**

**Their flight season occurs from May-October in New Mexico; I have observed them in May, June, July, September, and October, locally along the Rio Grande bank and principal irrigation canals and smaller ditches, and on a retention pond at the Dripping Springs Visitor Center, Organ Mountains. I have observed them perching (hanging) and sleeping from leafless Coyote Willow stems, Honey Mesquite trees, and Desert Willow trees and hunting along the Rio Grande and ditch banks, and mating/ovipositing in and emerging from larvae at the Dripping Springs Visitor Center retention pond.**

**Spot-winged gliders are very cool large dragonflies that never stop flying and hovering when out to hunt and to find mates - I've only seen them stop to rest during the heat of the day and at night where they hang from willow and mesquite branches to "sleep" until mid-morning. Those images are below. Strong flyers, they occur from the tip of South America to the northern edge of North America.**



**Recorded sightings from the Global Biodiversity Information Facility (12/2023).**

**Serenity is an odd state of being that is rarely attained by humans. But I have witnessed it, as performed by a Spot-Winged Glider that was "hanging" effortlessly in an updraft of wind blowing against the underside of a Tamarisk tree. The wind exited from a small opening ~3m high in the foliage, where the glider chose to hang. Rather than start this species entry with a bit of scientific insight, I would like to provide some insight of a different kind.**

**The look on the glider's face was pure serenity as it barely moved its wings while floating/hovering in the updraft. It readjusted only to move an inch or two to nab small flies, then settled back into the floating state. This series of stills I collected while being a bit amazed at the sight still pleases me. It lasted at least a couple of minutes until a bicycler swooshed by and scared it away...**



***...happy just hangin' in the breeze and noshin'...***



***...look ma - no hands...***



***...could life be any easier...***



***...don't think so...***



***...ooohhh breakfast...***



***...gotcha...***



*...yum...*



*...adjust left...*



*...and back (glider yoga)...*



*...ahhh, brunch...*



*...it's sushi...*



*...you should try it (fly-on-the-fly)...*



*...sleeping on a willow branch at mid-morning...*



*...sleeping on a honey mesquite branch on a hot afternoon...*



*...newly emerged from the larval exuvia, drying in the warm desert air...*



**Taking a different perspective on much of the same material - consider the following.**

**A. Perched on and hanging from a Desert Willow branch, this individual is resting/sleeping during the heat of the afternoon. Note the long, narrow cerci protruding from the distal abdomen and the lack of visible red around her face; leads me to identify as a female.**

**B. Enlarged image of abdomen illustrating brown with complex but not conspicuous pattern of fine lines on sutures, also black median line slightly expanded on each segment, expanded into spots on S8-S10. Note the long cerci (slightly shorter and enlarged) protruding from the distal abdomen; leads me to identify as a male.**

**C. Enlarged image of abdomen illustrating brown with complex but not conspicuous pattern of fine lines on sutures, also black median line slightly expanded on each segment, expanded into spots on S8-S10. Note the long, narrow cerci protruding from the distal abdomen; leads me to identify as a female.**

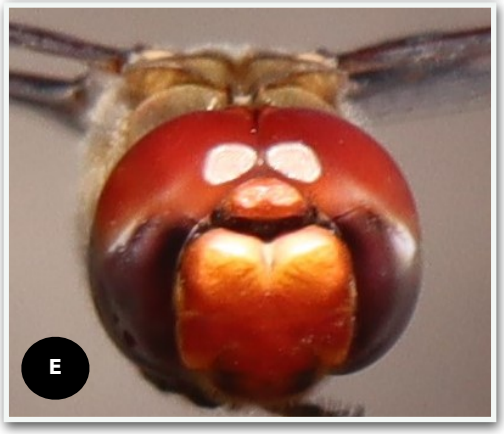











D. Enlargement of an immature dorsal abdomen illustrates "*color pattern is more contrasty, actually quite striking*" (Paulson 2009). Note the nicely displayed wing-spots on basal hindwings and the long cerci protruding from the distal abdomen; leads me to identify as a probable female.

E. I am cautious in determining the sex of individuals of this species, and references vary on reliable characteristics; one reference states that mature males, like in this enlarged view, have red faces. Another reference states the female face is colored and shaped as male but the face is lighter red. Also, the cerci protruding from the distal abdomen are described as being "*slightly longer and more slender*" on females.

F. Perched on and hanging from Mesquite leaves, this immature individual is resting during the heat of the afternoon. Note the long, narrow cerci protruding from the distal abdomen and the lack of visible red around her face; leads me to identify as a probable female.

G. Perched on and hanging from a Desert Willow branch, this immature individual is resting during the heat of the afternoon. Note the long cerci (slightly shorter and enlarged) protruding from the distal abdomen; leads me to identify as a probable male.







H. Perched on and hanging from a Desert Willow branch, this immature individual is resting during the heat of the afternoon. Note the long, narrow cerci protruding from the distal abdomen and the lack of visible red around her face; leads me to identify this individual as a probable female.

I. Next page. An individual, newly emerged and with torn wing, pulls itself out of the pond and hangs on dry twigs.

J. Next page. A newly emerged individual, with folded wing, swims/floats on pond surface to find perch on which to dry.

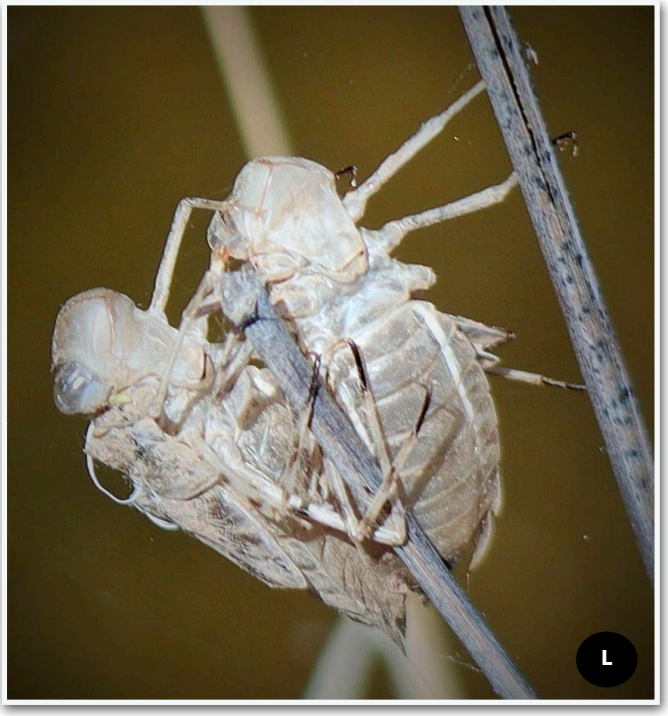

















**K.** Immature soft-body (teneral) stage, of unknown sex, climbing on vegetation and allowing wings/body to dry and harden. Note that the right hind wing was torn in half during the emergence process.

**L.** Larval exuvia, the cast skin of emerging dragonflies. These two may have encased spot-winged gliders until their successful emergence.

**M.** Immature, of unknown sex (eye color suggest male), perched and sleeping over an irrigation canal on a Cocklebur stem following a cool night and a cloudy morning. Enlarged image of face, eyes, and thorax illustrate the eyes are mostly gray with a red cap; the face is reddish-yellow; and the thorax is brown with two light yellowish-white areas on each side.

**N.** A full body view of the individual ("M"), illustrates long cerci at the brown and light-yellow abdomen-end and the possible assignment as a male.

**O.** Next page. A male Spot-winged Glider will face into the wind on a bright sunny day (Screwbean Mesquite canopies overhead); coasting and gliding 15'-20' high in the updraft between tree canopies, slowly moving, almost floating, back and forth until he sees a small flying insect and sharply roll and dive downward for the capture.







**P.** **Then brunch-on-the-fly. It takes only a small alteration of the wing to shift position and catch a small fly and enjoy a meal without ever touching down.**

**Q.** **Same as "P".**

**R.** **Same as "P".**






# The Amberwings
## *Libellulidae*

**Amberwings are tiny, mostly tropical, skimmers. The males have striking bright yellow-to-orange wings and the females have complex and variable brownish-gold wing patterns.**

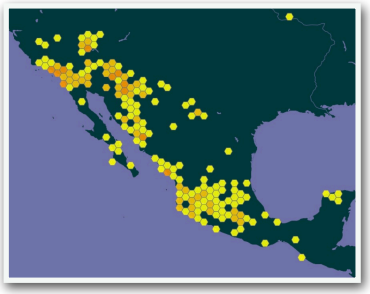
**Their abdomens are spindle-shaped (narrow at the front and back) and legs are long, supporting their small bodies well above substrates and perches.**

**Both sexes occur from ground or water level to high in trees (where they appear to be wasp mimics to avoid predation or cause hesitancy by predators). Males perch on twigs in or over open water and females perch nearby, usually over vegetation or land.**

**Amberwings are the smallest dragonflies within New Mexico, beautiful to observe, and due to their size possess a high "cuteness" factor.**

## Mexican Amberwing
## *Perithemis intensa*
### (W. F. Kirby, 1889)

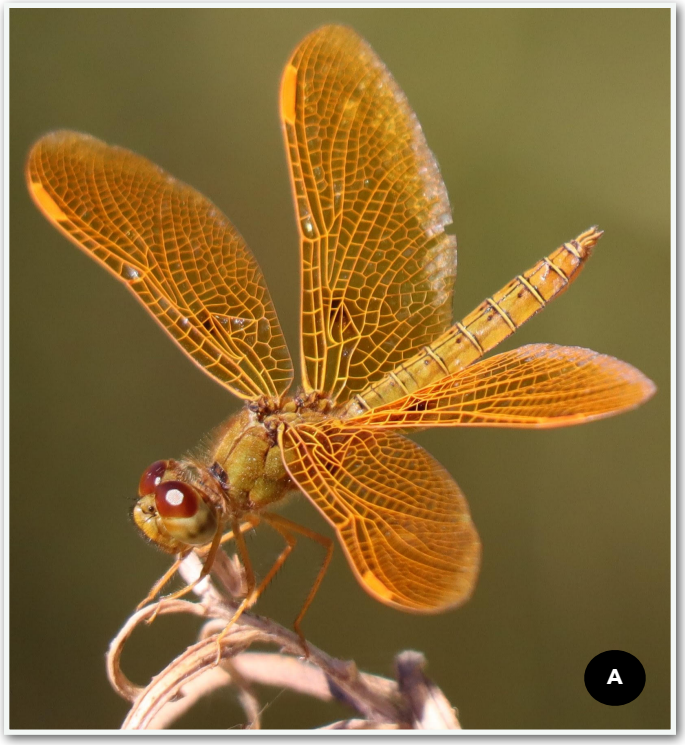
**The Mexican Amberwing is a skimmer that perches on twigs or vegetation emerging from or hanging over shallow water. They consume small flying insects captured over mud-bottom lakes, ponds, ditches, pools in streams and rivers, and along riverbanks. I have observed them locally along the Rio Grande and associated irrigation canals, and in the small La Mancha Wetland a restoration site adjacent to the Rio Grande levee. Occurrence in Doña Ana County is east of their principal southwestern distribution.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**

**Their flight season occurs from July to September in New Mexico (Paulson 2009); however I have also observed them in June, October, and November locally.**

**Sightings of the Mexican Amberwing within Grant County include one by Diana and Terry Hibbitts on September 18, 2012, near Bill Evans Lake. (Barnes)**







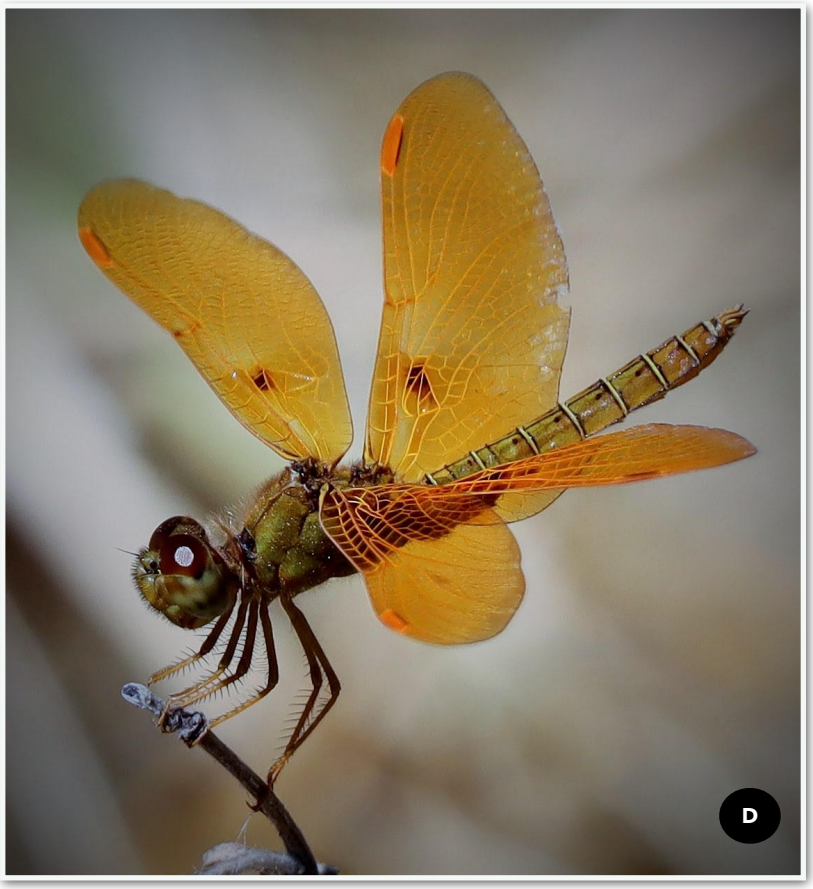
**A. A lateral view of a male allows inspection of his wing stigma cells (near the tips) which are yellow-orange. His wings reflect orange to orange-yellow (with veins prominent), legs are orange, thorax is unstriped and greenish-brown, and the cerci (at the abdomen tip) are yellow. Perching/obelisking on dried willow leaves, this male hunts for small flying insects, defends his territory, and likely is displaying to attract a mate.**

**B. This detail allows closer inspection of his brownish-red eyes above and pale greenish below; as well as the other features mentioned above.**

Per Paulson (2009) and my observations, Mexican Amberwings perch on emerging or jutting twigs near the water surface of ditch and Rio Grande banks. When perching they typically hold their wings flattened but may elevate their wings and abdomen high during the sunny midday (obelisk). Males spend much of their time perching while defending breeding territories from other males; they also spend time examining potential ovi-position (egg-laying) sites. Females approaching males are quickly led to egg-laying sites, copulate briefly (less than one minute), and oviposit by hovering in one spot (splashing eggs onto floating branches, plant roots, algae mats, or other surface objects) (Paulson 2009). Like most skimmers, they are salliers, watching for flying prey from a perch then flying up to make the capture.




C. Perching/obelisking on dried Southern Cattail leaf, a male hunts for small flying insects, defends his territory, and is likely displaying to attract a mate. Note that in autumn light he reflects orange to orange-yellow, except for his reddish-brown eyes.



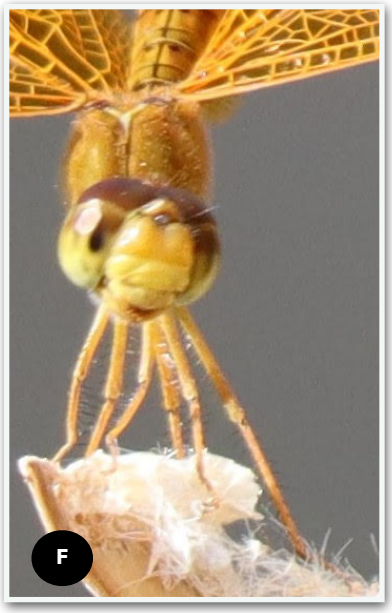

D. This male exhibits dark brown wing spots between the base and nodus (~mid-point) of each wing.

E. Always take time to enjoy those moments when a quarter-sized skimmer tosses a playful look (and maybe a smile) your way from his perch at the tip of an autumn Southern Cattail leaf.

F. Next page. Enlargement of a male in frontal view. Note his lower eye color as pale greenish and his well-displayed facial features, in order from top to bottom: vertex (nose-like), ocelli, postfrons, antefrons, postclypeus, anteclypeus, labrum, and mandible. Note also his leg segments from top to bottom: femur, tibia, and tarsus (foot-like).

G. Next page. Enlarged dorsal view of the male abdomen and its spindle shape (narrower at both ends like that of wasps). Note the pair of faint black dots/short lines along the midline and the brownish overall color of this individual.












**H.** Enlarged dorsal view of the female abdomen and its spindle shape. Note the pair of faint black dots/short lines along the midline and the brownish overall color of this individual.

**I.** Enlargement of a representative male abdomen with his yellow cerci at the tip; a pair of bold, dark dots on most segments (often short and faint black diagonal lines on many males), narrow creamy-white rings (bordered with black) at each segment, and the generally yellow-orange color.

## Female Morphology and Perching

**J.** Next page. The female body is colored the same as the male thus not diagnostic, her wings are clear with orange to brownish-orange crossbands (one between the base and nodus [mid-wing] and the other just past the nodus), either or both crossbands can contain a dark brown spot (as in the near-basal band of this individual) or rarely be entirely brown (Paulson (2009).

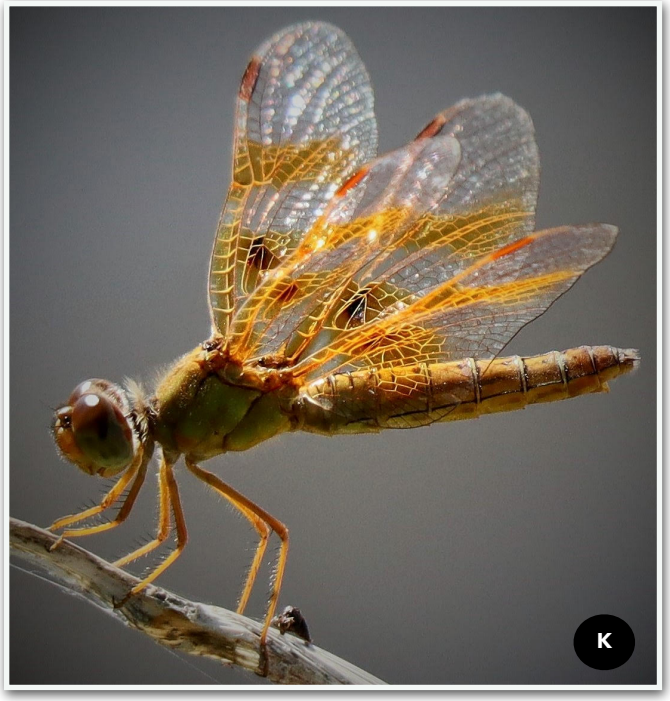
**K.** Next page. Same as "J".

**L.** Next page. Dorsal wing view of the same female Mexican Amberwing on a more shaded perch that eliminates bright reflection of sun rays. The resulting effect allows inspection of spot-pattern

(continued on next page)









L. (Continued from previous page.) shapes and color density, including a dark brown spot in each color patch. Note, however, that the wings of some females are entirely washed with orange.

M. Perching horizontally on a dried, web-covered twig, female hunts for small flying insects and displays to attract a mate. Note that in autumn light she reflects orange to orange-yellow, except for the clear wing areas.







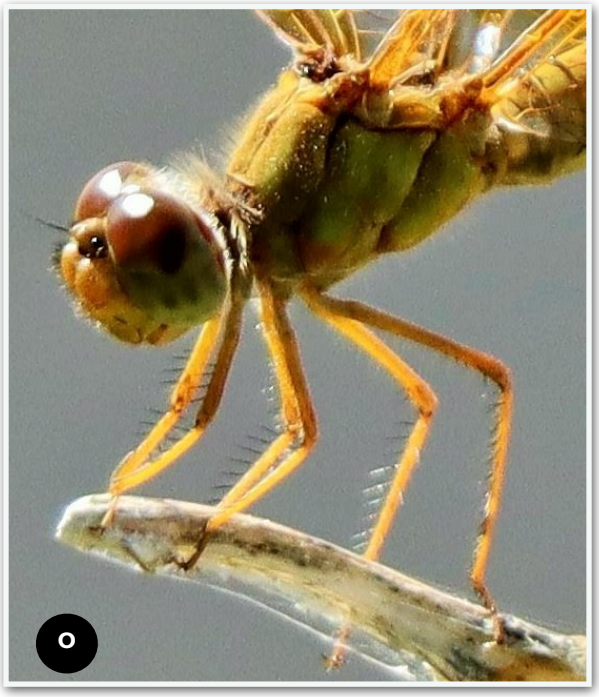
N. Female, in a hanging perch to rest and sleep, exhibits her diagnostic wing-spot pattern; wings clear with orangish-brown crossbands, one (smaller) between the base and nodus, and another (larger) just past the nodus (either or both spots can contain a dark brown spot or uncommonly be entirely brown).

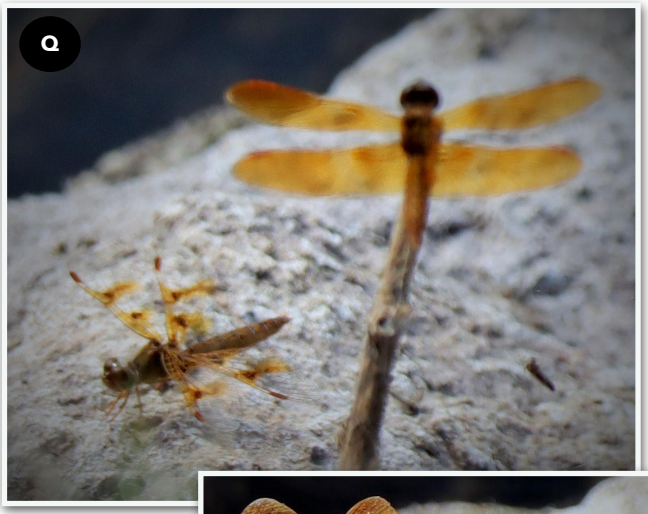
O. Next page. Enlargement of this female Mexican Amberwing head, thorax, and legs in dorso-lateral view illustrates how similar in color she is to the male. Her eyes are brownish-red above and pale greenish below, thorax greenish-brown (broad stripes may be interpreted here), and legs yellow to brownish-tan. Generally, her thorax is a lighter, continuous yellowish-green.

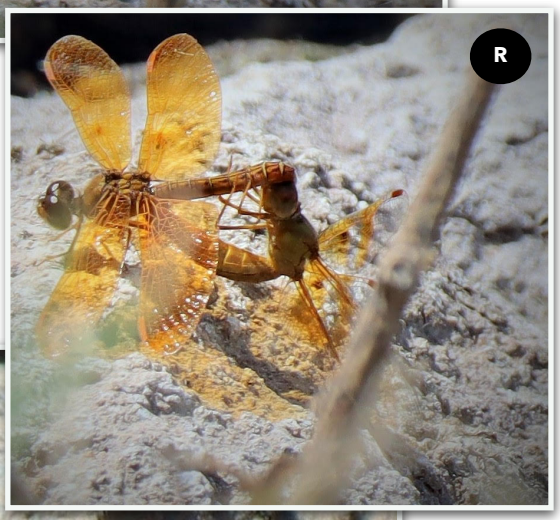
P. Next page. Wing translucence of this male Mexican Amberwing makes images more interesting by coloring his shadow during the lower sun angle of late afternoon. He is displaying to attract a female that has flown nearby to his perch along the Rio Grande.

## Sexual Patrol, Courtship, Mating, and Egg-laying

Males spend much of their time perching while defending breeding territories from other males; they also spend time examining potential oviposition (egg-laying) sites. Females approaching males are quickly led to egg-laying sites, copulate briefly (less than one minute on average), and oviposit by hovering in one spot (splashing eggs onto floating branches, plant roots, algae mats, or other surface objects) (Paulson 2009).


O


Q


R


P




**Q.** **Previous page. Female (left) and male (right) court with the female displaying on a rock at the edge of the Rio Grande, while the territorial male perches above, on a stem.**

**R.** **Previous page. The Mexican Amberwing male (upper) grabs the female (lower) using his two cerci to clasp behind her head; he then swings the female forward so her abdomen tip contacts his genitalia, their sexual structures lock together forming the mating wheel seen in this image, and he transfers sperm through his penis through her genital pore and vagina (Paulson 2009).**

**S.** **This male's obelisking perching style may have several functions related to temperature regulation during the hot portion of the day, displaying to warn off competing males, and/or displaying to attract females to mate in the egg-laying territory he has selected.**

**T.** **Next page. Following mating and egg fertilization, the egg-laying female Mexican Amberwing flies from the rock, over oviposition sites, where she hovers to splash eggs onto floating branches, plant roots, other surface objects, and algal mats while the male guards her during the egg-laying behavior (Paulson 2009).**

## Feeding

**U.** **The male shown here and at "V" is feeding following a successful hunt from this Southern Cattail leaf perch. I cannot identify the small arthropod (with long appendages) that has been captured and is being ingested.**

**V.** **See "U".**





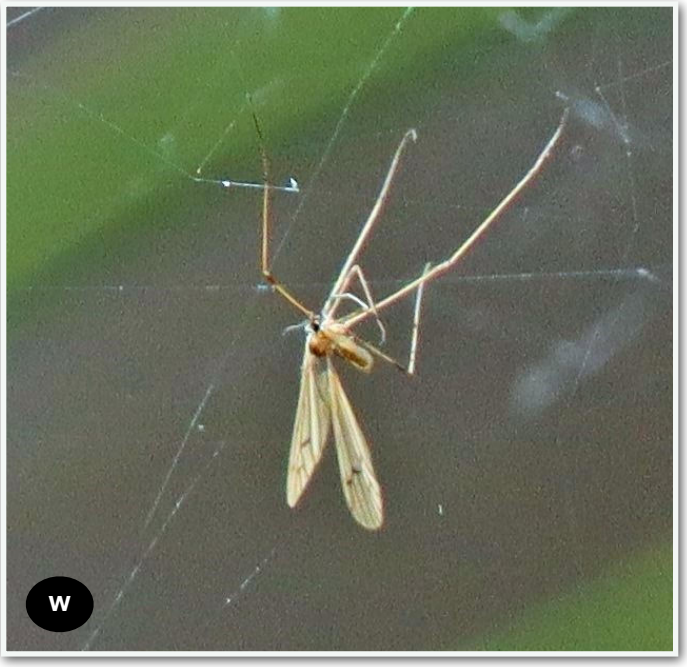


**W.** Next page. Perhaps the captured, long-legged arthropod is a species of Crane Fly (Family: *Tipulidae*) similar to this individual that has become ensnared in a spider web over the Rio Grande on the same day.

**X.** Next page. Perched and hunting female Mexican Amberwing with a partially eaten/consumed small fly laying between her legs/tarsi.

**Y.** Next page. Male (left) shares a perch site with a large, male Flame Skimmer, *Libellula saturata* (Uhler, 1857), (right) over a shallow pool of the Rio Grande. Note the obvious difference in color (yellowish vs. red-orange), wing placement (flat vs. projected forward), position on perch (tip vs. side), and size (length, width, and mass).















**Z.** The same skimmer species perched a short distance away from the water in denser Coyote Willow shrubs. Note the male Mexican Amberwing selects a perch to hunt closer to the water and the male Flame Skimmer uses the higher hunting perch, selects the tip, and has flattened his wings.

**AA.** Next page. In the image series, on the following page, of a male, perched and hunting/defending mating territory over a flowing irrigation ditch, he shares the perch with one male Familiar Bluet, *Enallagma civile* (Hagen, 1861) which is apparently sleeping on the shaded side of the stem. Another Familiar Bluet male investigates the perch area. These damselflies are of moderate size among the species using Rio Grande habitats. Note the bright orange and gold colors of the Mexican Amberwing under full sunshine vs. the light blue- and black-striped bluets, the perching site and style differences, the Mexican Amberwing's shorter body length but stout shape and mass, and the slender and elongate bluet shape. Also note the perched male Familiar Bluet's downward-pointed abdomen tip, likely a visual cue to ward off a sexual approach by the investigating male.

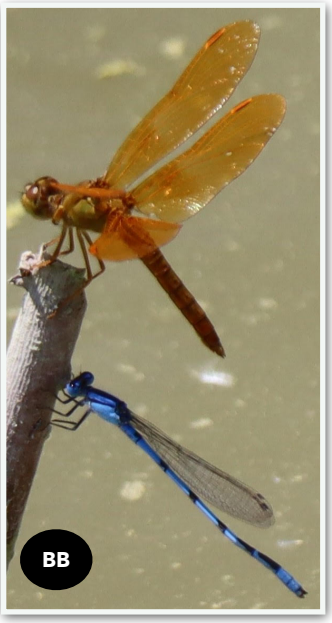
**BB.** The Familiar Bluet male appears to be using the perched male Mexican Amberwing as additional shade to block the overhead sun; the likely bluet behavior is sleeping.

**CC.** Perched hunting and territorial male Mexican Amberwing and possibly sleeping Familiar Bluet are joined by a male (upper) and a female (lower) Familiar Bluet, in copula (formed into a mating wheel to transfer his sperm into her vagina for egg fertilization prior to ovipositing [in tandem] on nearby floating twigs and branches).

## Potential Mexican Amberwing Predation

**I have yet to observe active predation of Mexican Amberwing individuals but there are many potential predators present in Rio Grande habitats. Spider species may ensnare and consume dragonflies from their net traps and two observations of how spider predation could occur are presented later.**







**DD. Next page. A female Mexican Amberwing seemingly tempts fate while perching to hunt and display near large orb-weaver spiders (Family: *Araneidae*). The spiders, effective predators of insects, have woven webs between several dead branches of Spiny Chloracantha which is common along the Rio Grande channel banks.**

**EE. Next page. Similarly, this male perches to hunt on and defend selected territory from Spiny Chloracantha stems and on significant spider web strands below, however no spider is visible.**

## Potential Amberwing Wasp Mimicry

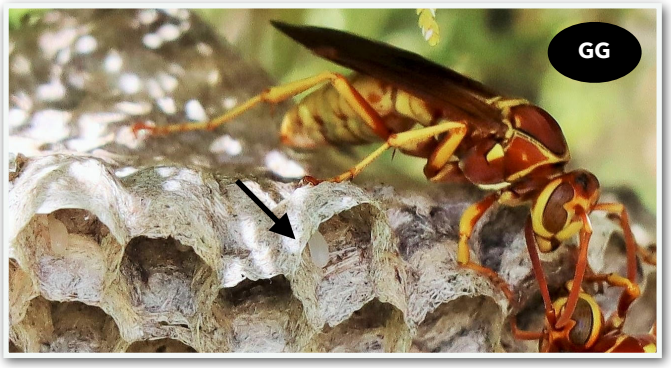
**Several species of wasps occur within the Rio Grande habitats and in my experience, the most common wasps locally are Paper Wasps of the Family *Vespidae*, Subfamily *Polistinae* (see "HH"). Golden Paper Wasps, *Polistes aurifer* (Saussure, 1853), can be observed daily in the habitats used by Amberwing skimmers and are closest in morphology and color patterns**









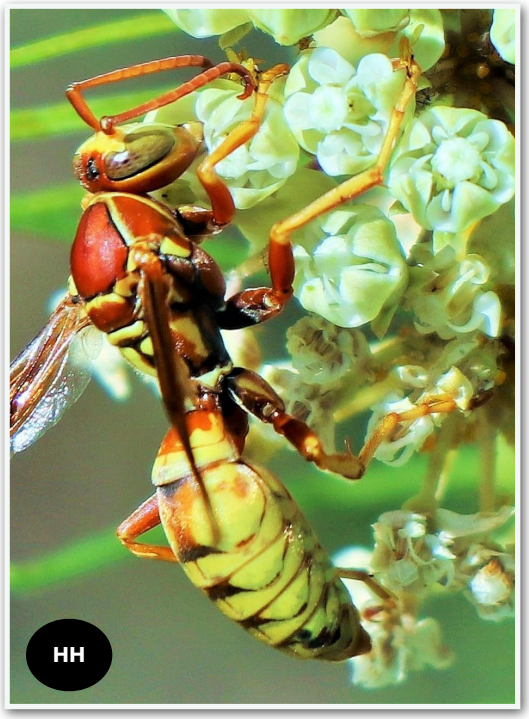

with the slightly larger dragonflies. A brief introduction to these wasps appears below illustrating potential wasp mimicry examples.

Please note: I have not experienced wasp species along the Rio Grande to be aggressive in over five years of visits and encountering several species and thousands of individuals (including ~2"-long Tarantula Hawks [Family *Pompilidae*; Tribe *Pepsini*]); however, wasps should be respected by being calm and using non-intrusive/threatening movements when working among them!

FF. Golden Paper Wasp nest constructed in the dense portion of a small Tamarisk tree growing from the Rio Grande bank. Paper wasps use fibers from dead wood and plant stems, mixed with saliva, to build the thin-walled cells within the umbrella-shaped structure (they are also commonly named "Umbrella Wasps"). Note the lower left cells, each containing an individual egg, have been sealed for incubation by the attending wasp.

GG. Visible eggs have been recently deposited in the upper two of the open cells left of this wasp; these cells will soon be sealed for incubation, as well.

HH. See earlier discussion.

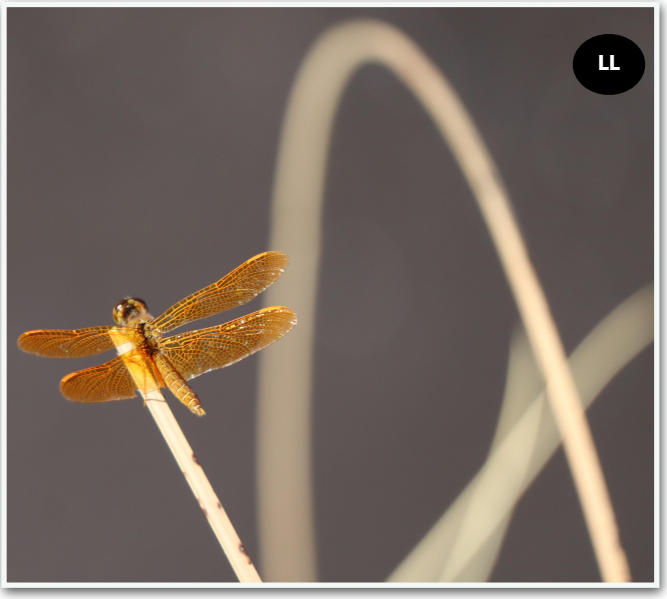











## Individual Mexican Amberwings as Art Forms

**Because Mexican Amberwings are small, boldly-colored, shine brightly in the sunshine, and perch to hunt and defend territory over the water surface, I find it tempting to consider them as temporary natural art subjects. Typically I focus on the individual, observing and photo-documenting various behaviors, but the camera sometimes collects much more including physical detail, minor color interactions, shadowing, perch detail, and interesting backgrounds. I think the images shown here have natural artistic qualities as collected through my camera lens.**

**II. Southern Cattail stem hosts perching male and spider webs in a diagonal arrangement: "The Slide".**

**JJ. Web-covered twig perch for a male displaying front and hind wings in tandem over the Rio Grande: "Rocky".**

**KK. Tiny male perching on an arcing, Southern Cattail leaf-tip that is undergoing a multi-hued color transition during autumn drying: "Influencer".**

**LL. Over the Rio Grande, a dried Three-square Bulrush allows the perching male to hunt and defend his territory among dried Southern Cattail leaves: "Southern Cross".**

**MM. Reflectance from the Rio Grande enhances a backlit male perching on the spider web-supporting Southern Cattail stem and hunting with his compound eyes: "Moonskimmer".**

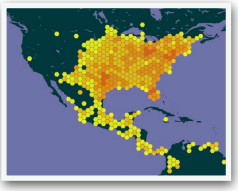
**NN. "The Arch".**






## Eastern Amberwing
## *Perithemis tenera*
### (Say, 1840)

**The Eastern Amberwing is a skimmer that perches on twigs or vegetation emerging from or hanging over shallow water. They commonly consume small flying insects over mud-bottom lakes, ponds, ditches, pools in streams and rivers, and along riverbanks, locally I have observed them along the Rio Grande and associated irrigation canals, and in the small La Mancha Wetland a restored site adjacent to the Rio Grande levee. Occurrence in Doña Ana County is within their principal southwestern distribution. Their flight season occurs from May to October in New Mexico. I have observed them during June through September locally.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**



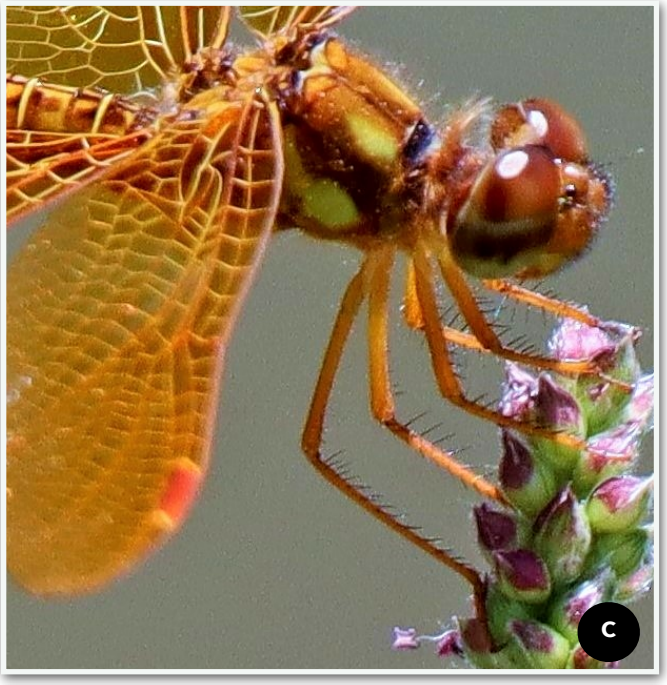


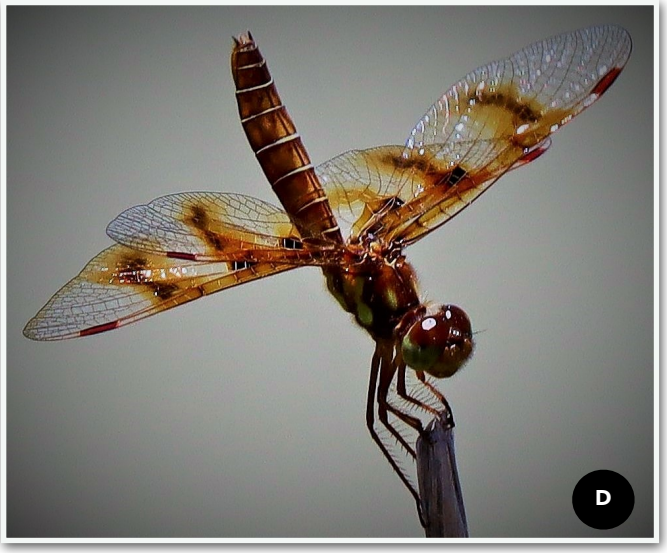


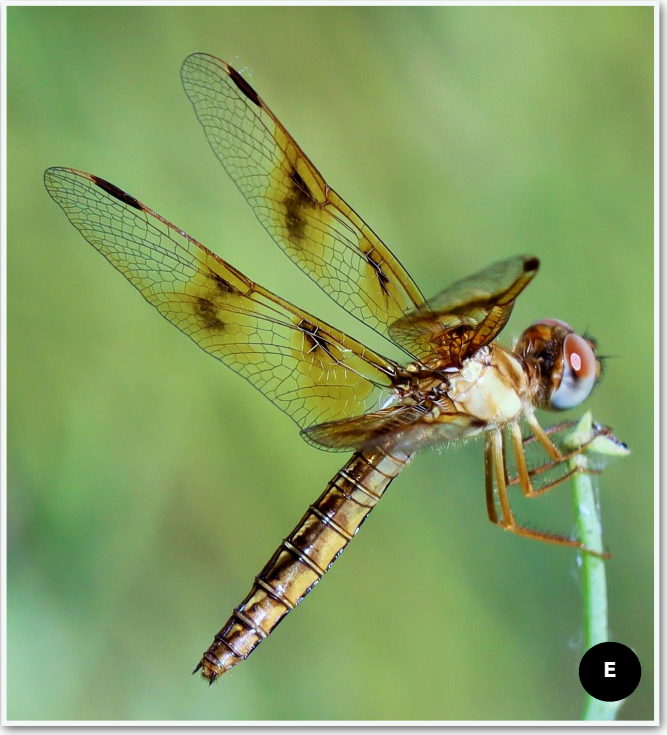
**A. Eastern Amberwing female, ventral view, has a wasplike shape, e.g., spindle-shaped abdomen, similar color, and long legs as she perches (obelisk style) while hunting from Water Smartweed flowers growing in shallows at the edge of the Rio Grande.**

**B. Eastern Amberwing male, dorsal view, uses a similar, obelisk perching style, exhibits a wasplike shape, and moves his wings often, however his abdominal and wing colors are more bold than that of Golden Paper Wasps (see the Mexican Amberwing entry), while his head and thorax color and patterns are more similar to them.**

**C. Next Page. An enlarged view of the male Eastern Amberwing. Note his face, thorax, upper abdomen, legs, his reddish-brown eyes above and pale greenish below, face orangish-brown, thorax brown with yellow anterior stripes, a prominent yellow lateral stripe, upper abdomen is overall orangish-brown, and legs yellowish-orange.**







D. Female, obelisking on her stem perch to hunt for small flying insects, exhibits her diagnostic wing-spot pattern; wings clear with irregular orangish-brown cross-bands, one (smaller) between the base and nodus, and another (larger) just past the nodus (either or both spots can contain a dark brown spot or uncommonly be entirely brown).

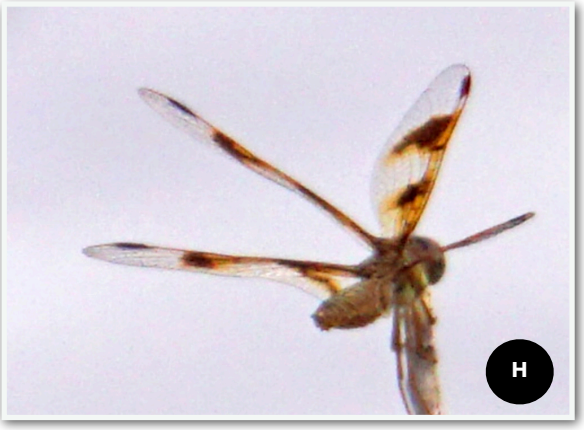
E. Perching on a Spiny Chloracantha stem and hunting small flying insects, an immature female illustrates reddish-brown over gray eye color, a cream-colored wash over the thorax and upper legs, and a tannish-brown to dark brown abdomen.

F. An enlarged view of the face, thorax, and legs of "D" illustrates her reddish-brown eyes above and pale greenish below, thorax brown with yellow anterior stripes and two prominent yellow lateral stripes.

G. Next Page. Sightings of the Eastern Amberwing in Grant County include one at Bear Canyon Reservoir on August 30, 2015 by Greg Lasley. The photograph of this individual is provided under a Creative Commons license. (Barnes)

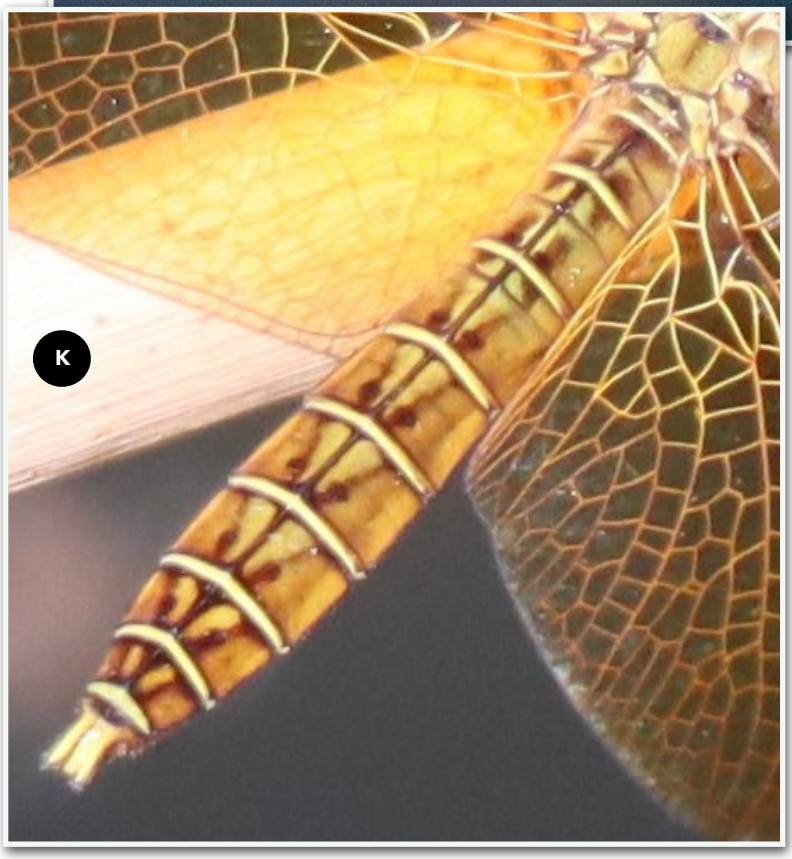
H. Next Page. Emily Hjalmarson took this image on 7 July 2018 near Caballo Reservoir in Sierra County. It is provided here under a Creative Commons license. (Barnes)


G


H


I







I. Previous Page. Perching low on a twig with abdomen lowered, this male Eastern Amberwing hunts for small flying insects, defends his territory, and likely is displaying to attract a mate. Note that in spring light his wings look smooth and reflect brownish-orange, and his cerci (at the abdomen tip) are whitish-yellow.

J. Dorsal view of male perching low on a Southern Cattail leaf, hunting for small flying insects, defending his territory, and likely displaying to attract a mate. (Continued on next page.)

**J.** **(Continued from previous page.) Note that his thorax is brownish-orange and that his wings look textured, reflect orange, and his cerci are whitish-yellow.**

**K.** **Previous page. Detail of "J". An enlarged view of the male's abdomen illustrates his yellowish-orange base color, with a narrow brown midline, a dark brown dot and line at an angle away from the midline (framing a light yellow triangle), narrow creamy-white rings (bordered with black) at each segment, and whitish-yellow cerci.**

**L.** **Previous page. Always take time to enjoy those moments when a quarter-sized skimmer, in long afternoon light, resolutely scans his territory from his perch at the tip of a Southern Cattail leaf tip.**

**M.** **Pair form a mating wheel to transfer the male (U) sperm to fertilize the female (L) eggs; he selects a twig over the water to perch, but will not remain in tandem linkage with her when the eggs are deposited (he will remain nearby to ensure that another male does not attempt to mate with her). 08/24/24**

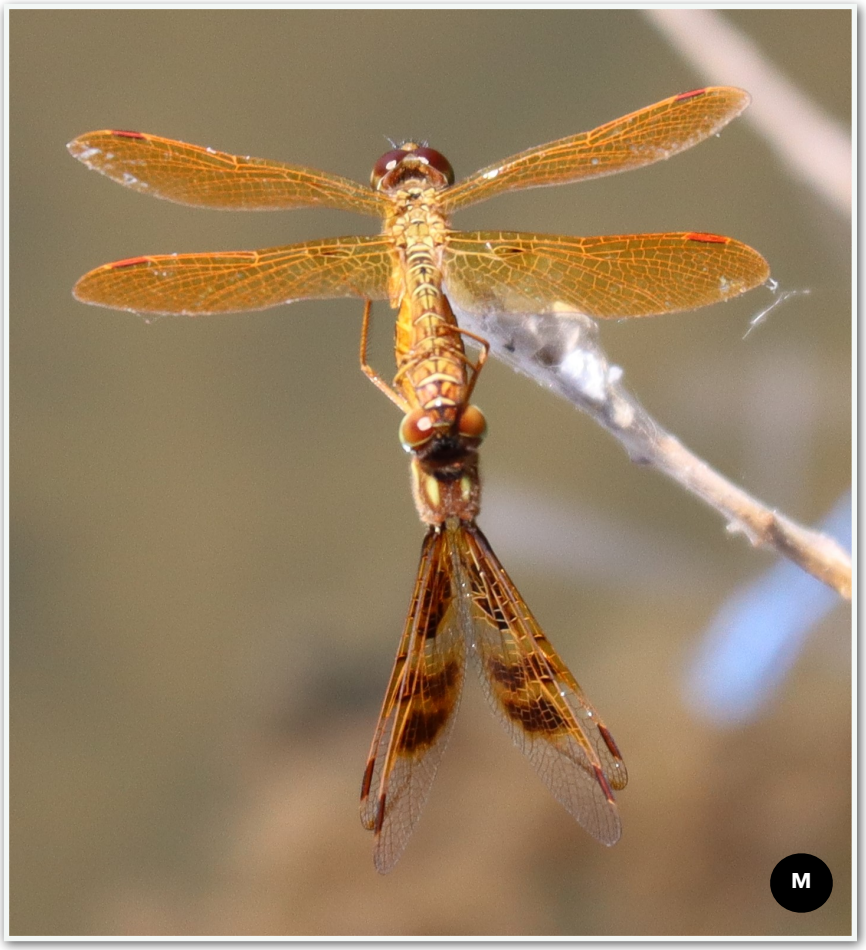
**N.** **Mated female hovers over the saturated, algae-covered branch she has selected to deposit her eggs; the male perches on a twig above to challenge any other males that may arrive to attempt mating with her. Note what appear to be two larval Water Striders (Family: *Gerridae*) near her abdomen tip. 08/24/24**

**O.** **Next Page. Mated female increases wingbeats to dip her abdomen tip onto the algae surface to deposit eggs. 08/24/24**

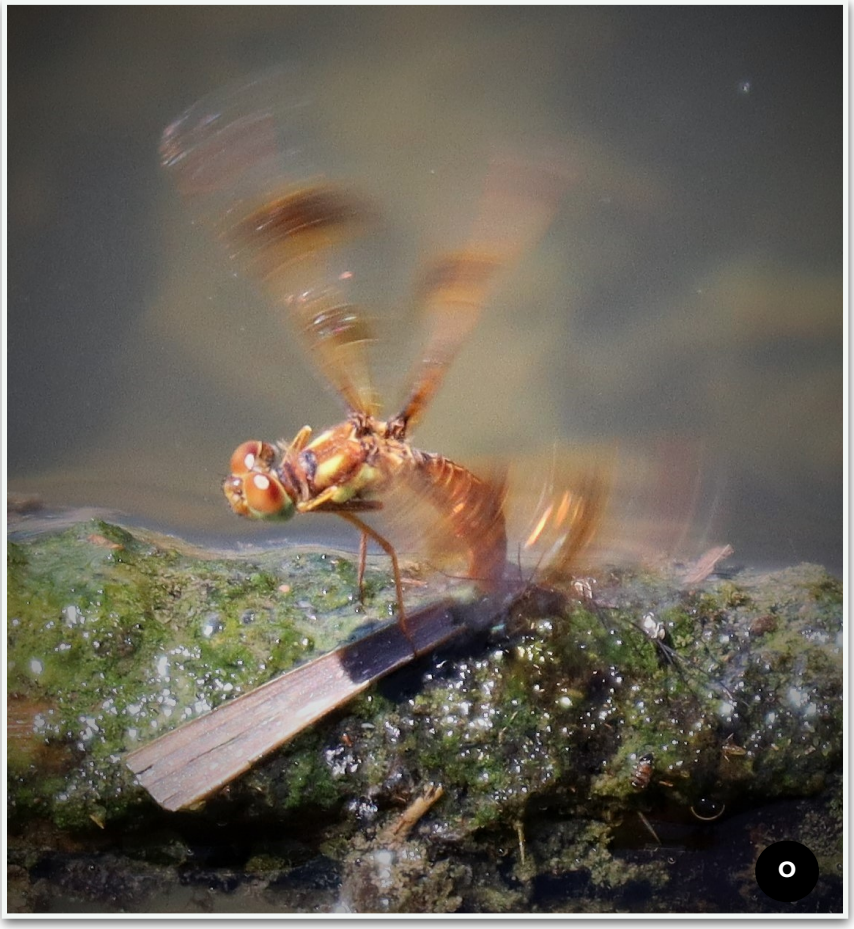
**P.** **Next Page. An unidentified minnow (UL) watches mated female deposit eggs, and is likely to feed on any that float into the water of this wastewater outfall canal to the Rio Grande. 08/24/24**

**Q.** **Next Page. Immature female, in dorsal view, perches in the shade on a Dogbane leaf along an irrigation canal, captures small flying insects, and awaits to mate with an available male. Her typically bright and shiny colors are muted in the shade. The**

**(continued on next page)**



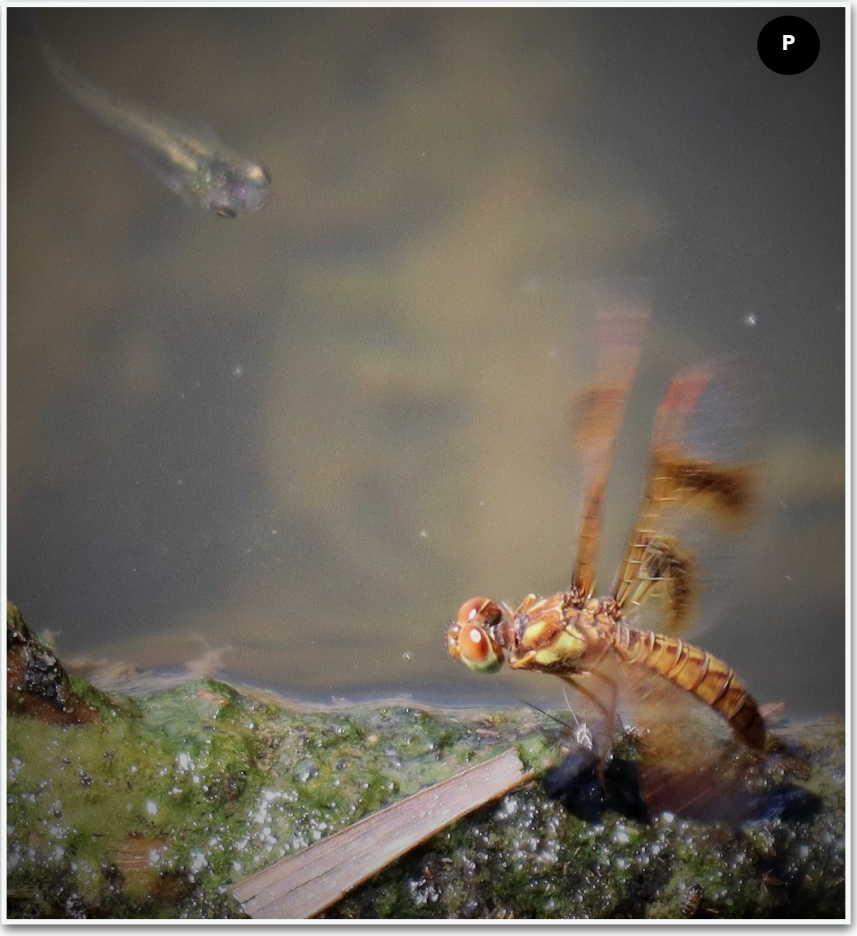









**Q.** **(Continued from previous page.) clear wings with large, narrow brown spots and abdominal pattern of brown dorso-lateral streaks and series of yellow triangles down the midline are characteristic. 08/28/24**

**R.** **Female, in dorso-lateral view, hides in the shade of dense Johnsongrass cover along an irrigation canal, captures small flying insects, and awaits to mate with an available male (she appears to be defecating a liquid bubble). Her eyes are brown above and greenish-yellow below, the face is brown, wing and abdomen patterns are as described above, and her brown thorax with small, yellow anterior stripes and prominent yellow, forward lateral stripe are clearly presented. 08/28/24**

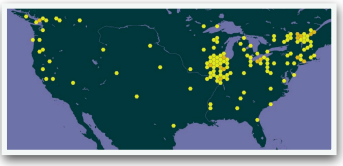
**Eastern Amberwing occurred from late summer through autumn in 2024, using habitats of an irrigation canal off the Rio Grande and the wastewater return canal outlet near the I-10 overpasses, primarily. Their low population size is consistent with that noted during prior years (2019-2023) and they shared habitat with the few Mexican Amberwing, *Perithemis intensa*, (W.F. Kirby, 1889) arrivals during the late summer-autumn time period.**

## Whitetails, *Plathemis*

The Whitetails are stocky skimmers of muddy ponds and slow streams that spend much time perching on rocks, logs, and other flat sites (Paulson 2009). They have striking wing markings and males have very heavily pruinose abdomens.

## Common Whitetail
## *Plathemis lydia*
### (Drury, 1773)

Small, quite active skimmers that may be observed along lakes, ponds, and slow streams, including those constructed by humans. Occurrence in Doña Ana County is well within its wide principal distribution.



Recorded sightings from the Global Biodiversity Information Facility (1/2024).

The New Mexico flight season is July-September (Paulson 2009), however, I have observed them in October and November along the Rio Grande and Gordon Berman documented one in April 2023 within Soledad Canyon.

I have observed them hunting along the Rio Grande bank and at a runoff retention pond at the Dripping Springs Visitor Center parking area; they used dried stem perches, rocks, and logs and branches exposed above the shallow flow. It can be a challenge to collect images of them due to wariness and typically males are present, without females.

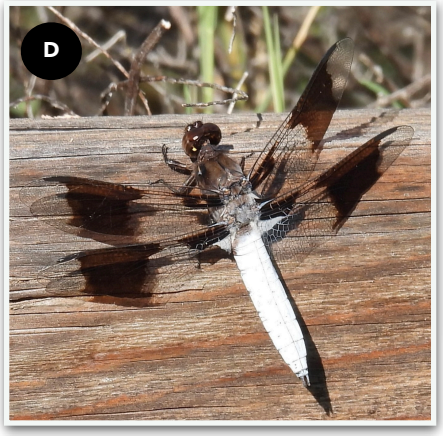






A. Gordon Berman collected amazingly clear close-up images of a female in Soledad Canyon, which he graciously shares. Her eyes and face are brown and her thorax is brown to brownish-tan with two white stripes (turning yellow at the end) on the side. She is perched on a rock to warm and to hunt small flying insects, her abdomen is brown with white to pale yellow spots (outlined in black) along each side (forming lines on S2-S3 and extending diagonally on S4-S8), her wings each have three equidistant black marks that differ from those on the male's wings.
B. Same as "A"
C. Next page. "miguel1958" (iNaturalist) photographed the individual at the top left of the following page in northern Luna County on October 9, 2023. (Barnes)
D. Next page. "cjgoin" (iNaturalist) photographed this individual on September 21, 2021 near Radium Springs in Doña Ana County. "C" &* "D" are shown here under a Creative Commons license. (Barnes)
E. Next page. Male perches on dark rocks to warm in the sun, hunt for small flying insects, and likely is displaying to attract a mate. Note he holds his wings slightly "drooped" forward on this perch.



















**F.** Female perched on leaf litter behind a linear stand of Spiny Chloracantha along the Rio Grande bank to find protection from a cold November wind. Note her wingspot pattern; her nearly uniform brown face, eyes, thorax, and abdomen; and the pale yellow rows of spots on each side of her abdomen. She was nearly invisible, even at close range.

**G.** From a rock perch, this male's face, eyes, thorax, and abdomen are evenly dark brown. Note also his uniformly pruinose, white to pale blue abdomen.

**H.** The wings of the male have wide black crossbands nearly to the tip and a narrow black rectangle at the wing base; behind the basal wing spot is an area of white on mature individuals. Note the intensity of his pruinose, white abdomen color on this cloud-dimmed day.

**I.** Male perched on a low twig is short and stocky, however, he appears very large when compared to the male Desert Firetail, *Telebasis salva* (Hagen, 1861), a small and slender damselfly often observed in the same habitat.

# Filigree Skimmers *Pseudoleon*

***Pseudoleon*** **is an unusual genus of Skimmer that inhabits rocky rivers and may be most closely related to pondhawks and dragonlets (Paulson 2009). But their color pattern, which is well-adapted to rocky habitats, is distinct from all other Skimmers.**

## Filigree Skimmer *Pseudoleon superbus* (Hagen, 1861)

**The Filigree Skimmer is an unusual and unique, rocky-stream skimmer with exceptionally intricate/fancy wing and body patterns (Paulson 2009). Occurrence in Doña Ana County is within its principal distribution.**



**Recorded sightings from the Global Biodiversity Information Facility (1/2024).**

**The New Mexico flight season for this species is March-August but I have only recorded this species in July.**

**A. Gordon Berman collected this vertical/dorsal male image perched on a white-crusted rock in an arroyo bottom. Note the notched appearance of the wing tips, the pattern within the dark color "wash" covering the white rock below, and the triangular dorsal abdomen shape.**

**B. Male perching low on a rock in an arroyo hunting for small flying insects; he was difficult to approach. Note the complex wing pattern represented as a shadow on the rock surface.**

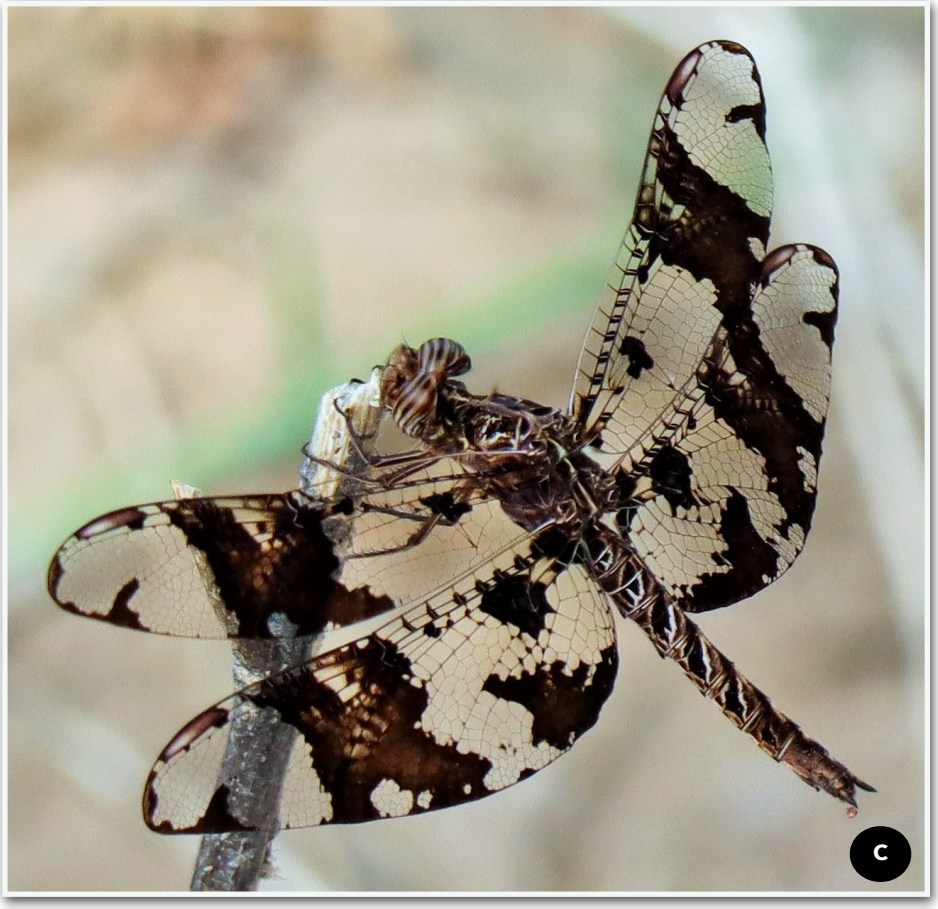


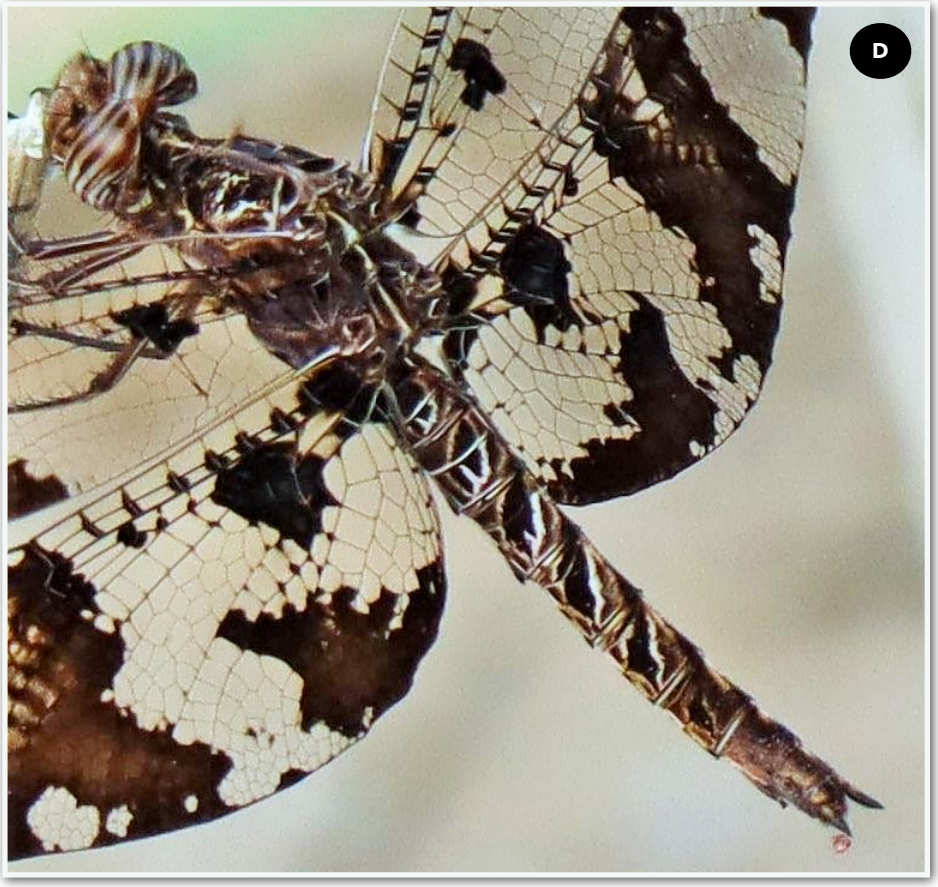



**The Filigree Skimmer occurs along rocky rivers and streams with slow to moderate current (and adjacent ponds), and on some narrow streams with riparian growth; observed resting in the shade at La Mancha Wetland on the Rio Grande levee and hunting from rock perches on Arroyo Trail (a large arroyo draining the Organ Mountains).**

**There are some things that cannot be described in words, they include the colors and patterns of this dragonfly. I very much enjoyed reading Paulson's (2009) discussion:**

***"...exceptionally fancy wing and body patterns...thorax indescribably variegated, mostly brown with scattered black markings and fine whitish and tan lines scrawled all over...abdomen brown with complex V-pattern of alternating dark blotches and pale wavy fine lines on each segment..."***




**C. Female perched on and resting/ hunting from a low twig over shade-dappled bare soil under a Rio Grande Cottonwood tree. Note the difference (more clear areas) in her wing color pattern versus the male's (see "B").**

**D. Enlarged view of the female's complex variegated pattern and transitions along her head, thorax, and abdomen. Note the narrow, white band at each abdomen segment except the S9/S10 joint. Her eyes are finely barred with wavy dark brown and whitish lines as is a small portion of her face which is mostly brown; the thorax is variegated with a complicated pattern and a single central white line dorsally.**

**E. Next page. A more distant and brightened view of the female's overall shape and patterning. Note the triangular shape of her abdomen is more pronounced in this view.**

**F. Next page. Enlarged view of the female's head, thorax, and upper abdomen. Note the light brown wash at the base of each wing, comprising small spots mixed with black.**




G. M. L. Watson photographed the individual shown here near City of Rocks State Park in Grant County on July 9, 2014. The photo is made available under a Creative Commons license. (Barnes)




Joshua Butler photographed an individual at Elephant Butte State Park in Sierra County on July 17, 2020. (Barnes)

## Meadowhawks *Sympetrum*

Meadowhawks are the only small red skimmers present over most of North America and across Eurasia (Paulson 2009). Females are typically brown and can be mistaken for other species, particularly dragonlets; however, there is little overlap in range as meadowhawks are temperate while dragonlets are tropical in origin (Paulson 2009). They may use habitats far away from water. This is especially true for the migratory Variegated Meadowhawk. I have observed groups of this species perching and hunting along the west-facing middle slopes of the Organ Mountains. Perching with wings "drooped" forward (often aggressively so), is common for this family.

All meadowhawks oviposit when in tandem linkage and may fly long distances in tandem between mating and egg-laying sites (Paulson 2009).

Habitats attractive to meadowhawks include the Rio Grande drainage, Mesilla Valley, and surrounding Chihuahuan Desert flats, slopes, and mountains.

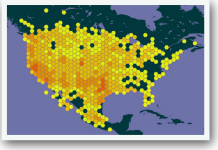
Meadowhawks are numerous and relatively calm/approachable. These traits and their compactness of form make them easy to photograph. They tend to perch horizontally, may obelisk (extend abdomen nearly vertically), and often perch on or near the ground. At times, their abdomen may be angled downward from the perch, which usually occurs at the hottest part of the day.

During my observations meadowhawk species perched, hunted, sunned, slept, conducted sexual patrols, mated, deposited eggs, emerged as mature larvae, and developed into flying immature individuals. Common perches were tree branches/twigs, shrub leaves and branches, leaves and stems of herbaceous grass and forb species, on the bike path along the Rio Grande, and on bare ground, particularly Southern Pocket Gopher, *Thomomys umbrinus* (Richardson, 1829) excavated soil mounds. Perching site heights ranged from ground level to over head-high (~3.0m).

## Variegated Meadowhawk *Sympetrum corruptum* (Hagen, 1861)

The Variegated Meadowhawk is abundant and migratory (tending to "wander"). It commonly uses shallow, open or marshy (often alkaline) ponds and lakes. Locally they use nearly any water source including pools below waterfalls in mountains, the Rio Grande and its associated irrigation ditches and wastewater inflow channels, restored wetlands, and temporary pools in catchment basins/livestock ponds (they will forage over dry upland sites, as well). Both sexes perch on shrubs, trees, and low vegetation, typically over/near water; in the cooler months they spend considerable time on bare ground, rocks, and litter accumulated on the ground to warm and to hunt.

Occurrence in Doña Ana County is within its wide principal distribution. Their flight season occurs all year in New Mexico.



Recorded sightings from the Global Biodiversity Information Facility (1/2024).

Locally, Variegated Meadowhawks use the Rio Grande and associated riparian habitats year-around and upland habitats as the temperatures warm during the daytime. Peak use occurs from July-to-October and we documented mating and egg-laying




**A. Male Variegated Meadowhawk perched on, and hunting from, a twig over the Rio Grande, note his abdomen orientation is downward, a behavior often associated with hot air temperature. Note also that his anterior wing veins appear a coppery-red color and may reflect brightly under the sun similar to a shiny, new penny. August 21, 2019.**

through November. Irrigation and water compact flows carried in the Rio Grande between June and September enhances the available habitat for meadowhawks. Mountain arroyo, slope, spring and pond use reaches peak beginning in August continuing through October with mating and immature emergence each month.

I have observed Variegated Meadowhawks in all months locally, in many habitats, but they are concentrated along the Rio Grande where perennial treated wastewater is available. This is the most common and abundant dragonfly species in Doña Ana County, year-around and is very likely the flying insect making the shadows you see on the ground when using the Rio Grande Recreational Trail.

In each habitat used by this meadowhawk, areas with adjacent herbaceous, shrub, and/or tree growth are preferred for breeding/egg-laying sites.

Variegated Meadowhawks typically perch horizontally or they obelisk while hunting/seeking mates from twigs, stems, leaves, low-growing grass and forb species, and on bare soil. They usually perch vertically when sleeping within shrub and tree stands during the hottest part of the day and at night. When seen perching during the hottest part of the day they will often have dropped their abdomen downward. Variegated Meadowhawks make frequent flights over water and following mate selection/mating behaviors, pairs oviposit in tandem while flying low over water and dropping to the surface where the female "taps" eggs into the water or on floating aquatic plants during the flights.




B. Perhaps the most fun you will have in the field is when you spend time photographing the ubiquitous Variegated Meadowhawk; scientific jargon is pushed aside for terms like "cutie", "pal", "buddy", etc. This red-eyed/orange-red-faced male is perched vertically on a twig at knee-height, hunting for small insects and likely attempting to locate a mate.









C. Previous page. Male perched horizontally and hunting/sexually displaying from a Three-square Bulrush stem over-arching the Rio Grande.

D. Previous page. Younger males, which are common away from breeding habitats (Paulson 2009), have much red coloration on their abdomen but retain the lateral white spots characteristic of females. This individual is perching on Curly Dock fruits to hunt small flying insects.

E. Younger male obelisks from a stem perch and hunts for small flying insects. He is also displaying to attract a potential mate.

F. Young female perched on a stem to hunt for small flying insects. She is displaying to attract a mate. Her thorax color has darkened to brown and the two white stripes boldly contrast, terminating into yellow spots on the lower thorax corners. Note her prominent white lateral spots on abdominal segments S3-S8 in contrast to a greenish-gray dorsal matrix and golden-brown segment joints.

G. Male perched horizontally on, and hunting from flower buds of a tall, lavender-flowered mallow growing adjacent to the Rio Grande Trail. Variegated Meadowhawks commonly perch and hunt in the open, from almost any available, open perch at ground level to over 2.0m high.



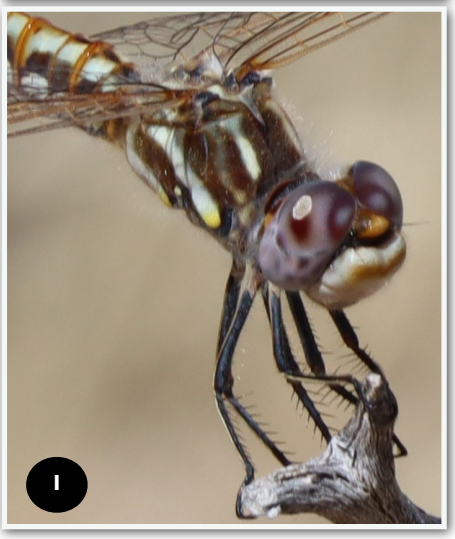




H. Next page. Young female perches low on a Curly Dock fruiting stem to hunt for small flying insects and possibly is displaying to attract a mate.

I. Next page. Female Variegated Meadowhawk head and thorax detail. Note the two prominent, yellow spots on her lower thorax at termini of white thoracic stripes, (continued on next page)







I. (continued from previous page). important for positive identification; her predominantly white face; mostly lavender eye color; brownish thorax base color; and grayish-green dorsal abdominal base color, between yellowish-orange segment sutures.

J. Female Variegated Meadowhawk perched horizontally at ground level on a mat of dried grass, leaves, and twigs. This species often perches (and hunts by flying upward to capture prey) at ground level on bare soil and on litter, more so in colder/windy weather conditions. Note how well-camouflaged she is.







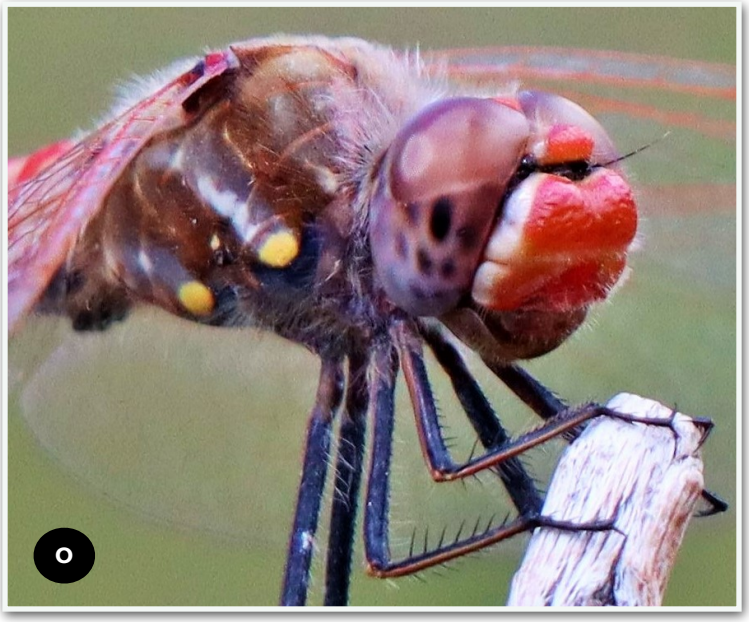
K. Male Variegated Meadowhawk perched horizontally on and hunting from a twig along the Rio Grande. Note the conspicuous yellow spots at the base of its thorax; immature of both sexes are more vividly marked including bright white spots low on the abdomen bordered with black stripes and the richer orange-brown bands at segment sutures.

L. Male perched in an obelisking form on a small twig over the Rio Grande. Note his visual scan of a large area in front of the perch and his dark, brownish-red thorax. August 26, 2019










**M.** Male perched horizontally on, and hunting from, a dried twig adjacent to the Rio Grande. His wings are projected forward. There are two prominent yellow spots at the base of his thorax and his abdomen is patterned and orange-red in color.

**N.** Female perched horizontally on and hunting from a dead Creosote Bush branch on the east-facing lower slope of Tortugas Mountain. The habitat is a desert grassland with low cover from desert short-shrubs; most plants were dormant during the early April timeframe due to drought conditions. Note the prominent yellow spot on her basal thorax, and the grayish-green color of abdominal segments between the yellowish-orange cross-stripes.

**O.** Male head and thorax enlarged to illustrate the two wide (turn white with age) thorax stripes each with a terminal, prominent yellow spot within a dark brown matrix color; his eyes are red above and pinkish to gray below and his face is red in front and white turning brownish with age, on the sides. Note his legs are bi-colored, black with a brown stripe on the outside of the femur and tibia.

**P.** Enlargement of the female face and thorax illustrate her brownish-tan eyes and brownish-white (turns brownish-tan with age) face; her thorax is medium-brown with yellow spots.






**Q.** **Mature female Variegated Meadowhawk perches on a Curly Dock fruiting stem (in the obelisk position) to hunt for small flying insects and possibly to find a mate.**

**R.** **Next page. Male Variegated Meadowhawk (upper), a relatively small dragonfly, perched horizontally on a Barnyard Grass flowering spike along the Rio Grande. Image provides an opportunity to compare his size and gross morphology versus that of the female American Rubyspot, *Hetaerina americana* (Fabricius, 1798) (lower) a larger-sized damselfly.**

**S.** **Next page. Male, a relatively small dragonfly, perched vertically on rock along the Rio Grande, provides an opportunity to compare his size and gross morphology versus that of the male Desert Firetail, *Telebasis salva* (Hagen, 1861) a near average-sized damselfly at the lower left.**



















**T.** Male perched horizontally on dried Horsetail Milkweed fruits along the Rio Grande, provides an opportunity to compare her size and gross morphology versus that of the large milkweed bug, *Oncopeltus fasciatus* (Dallas, 1852) at the lower left. Note that the Variegated Meadowhawk has 'drooped' his wings forward, a trait of meadowhawk species.

**U.** Female perched in an obelisk position on a dried Southern Cattail leaf tip adjacent to the Rio Grande. She is hunting for flying insects and may be posing to attract a mate. Note her head placement as she views the space around her.

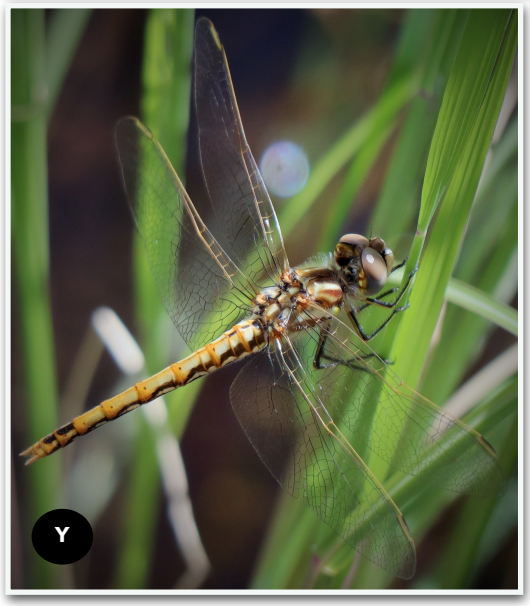
**V.** A female ingests a captured arthropod along the Rio Grande.

**W.** A male does the same.

**X.** Next page. Immature stage of the Variegated Meadowhawk following emergence, where the individual is capable of flight but spends time drying/hardening while resting and hiding among dense Switchgrass stems.

**Y.** Next page. Same as "X".







**Z. Soft-bodied (teneral) emerence stage, individual has climbed a grass stem, filled both its abdomen and wings with fluid, and is allowing the wings to dry and harden.**

## Courtship and Mating

**Dragonfly courtship and mating is a complex behavior, it happens over a relatively short time-span, and often in secluded sites. I have collected the images narrated below to show as many traits/steps (possible sexual display, tandem linkage, mating wheel, egg deposition) as possible. One behavioral trait illustrated in the following four images intrigues me because I am ignorant of how to interpret the activity. It is my hope that a knowledgeable reviewer or *Black Range Naturalist* reader is able to enlighten me/us!**

**It has been documented by researchers and illustrated below that mated Variegated Meadowhawk lay/deposit their eggs in water while flying in tandem. Therefore, I believe the following images document sexual display behavior, where rapid up-and-down movement of the abdomen by an individual attracts a potential mate in the vicinity.**

### Possible Sexual Display

**AA.** **Female Variegated Meadowhawk perches on a twig over the Rio Grande and begins to elevate her abdomen as a precursor of sexual display to attract a potential mate in the vicinity.**

**BB.** **The same female rapidly flexes her abdomen downward to create a near circular arc to attract a mate during her sexual display. I have observed/documented three species of spreadwing damselflies where the females lay eggs into plant bark and stem tissue, over water, and when the eggs hatch the larvae fall directly into the water. Their abdomen arcs in a similar fashion as they deposit eggs. Males of these spreadwing species perch and actively raise and lower their abdomens into an arc as a form of sexual display to attract a mate.**

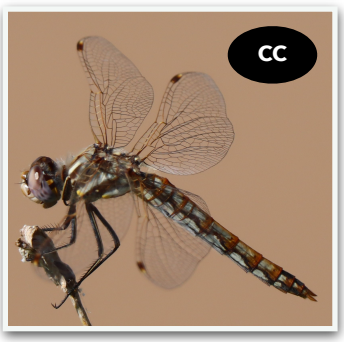
**CC.** **The same female then rapidly straightens abdomen to again raise it and repeat the sexual display motion and attract a nearby mate.**

**DD.** **A mature female with obvious wing damage, performs the same sexual display behavior.**












## Tandem Linkage

**EE.** A male (upper) and female (lower) perched vertically, hanging from a dried stem, and in pre-mating tandem linkage. The male is likely transferring his sperm from his genital opening located S9, to his seminal vesicle, located S2.

**FF.** A male Variegated Meadowhawk (upper) and female (lower) perched vertically, hanging from a Mule's Fat leaf, and in pre-mating tandem linkage. To reach this behavioral stage, the male located and captured/grabbed this female with his legs; attached his cerci and epiproct firmly behind her head/prothorax; and flew her to this perch. He is likely transferring his sperm from his genital opening located S9, to his seminal vesicle, located S2.







## Mating Wheel

**GG.** A male (upper left) and female (lower right) are forming a mating wheel where the female attaches her genitalia (S9) to the male genitalia (S2). This female has not yet become fully attached to the male.

**HH.** Next page. The female (lower right) has just extended her abdomen tip to the male's (upper left) upper abdomen, and will move the tip forward until her genital pore (S9) locks onto the male's genitalia (S2). This pair was perched, hanging from a Johnsongrass leaf ~0.5m above the ground.

**II.** Next page. The mating wheel is completed with female's (lower) genitalia (S9) locked onto the male's (upper left) genitalia (S2). The male of this pair selected a warm sand and gravel site adjacent to the Rio Grande Trail to complete his sperm transfer to her vagina over several minutes. Also note her typical action, in copula, is to grasp the male's abdomen with her legs.

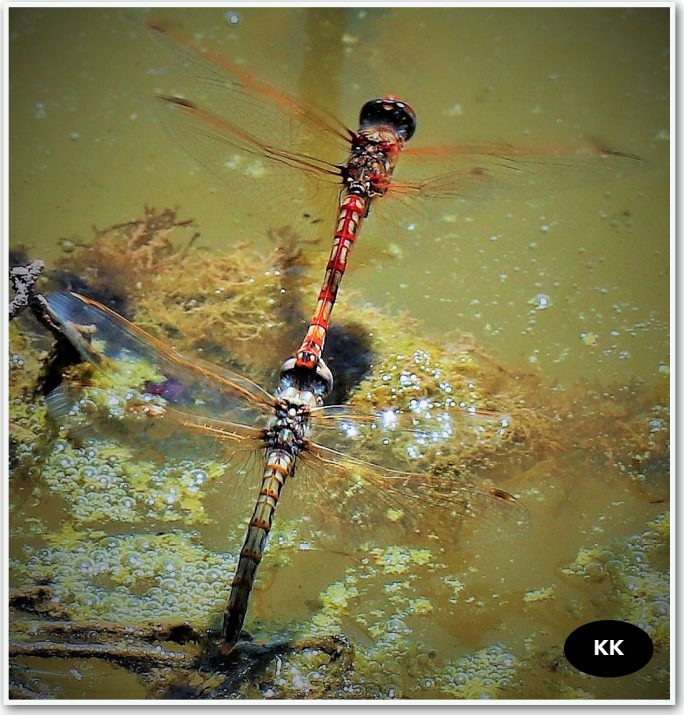
**JJ.** Next page. The female detaches from the male's genitalia when sperm transfer is completed.

**KK.** Next page. Once detached the pair forms a tandem linkage and flies to a site to begin egg laying deposition directly into the water. (Continued later.)




HH


JJ


KK


II

**KK.** Previous page. Additional comments. The male (front) provides a "tow service" to guide the female (rear) over water in a small irrigation canal (from the Rio Grande) where she will deposit her eggs into the water (using a strong tapping motion with her abdomen curved downward).

**LL.** A different pair of mated Variegated Meadowhawks overflies a retention pond to deposit eggs near the Dripping Springs Visitor Center of the Organ Mountains. She deposited eggs in open water, primarily, but they also focused on the saturated, floating algal mat at the lower left.

**MM.** She drops her abdomen to "tap in" eggs near the floating algal mat.

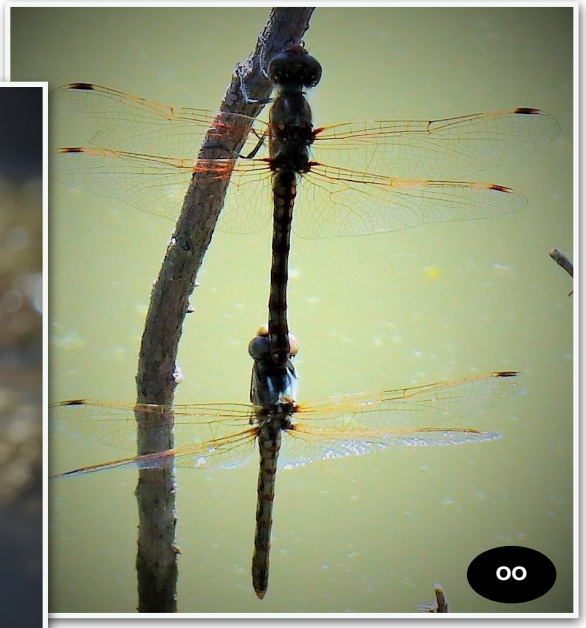
**NN.** A few eggs produced by a female Variegated Meadowhawk emerge prematurely prior to her next "tap in".

**OO.** During the egg deposition overflights, this mated pair rests as the male perches on the shaded side of an emergent stem. Paulson (2009) refers to this perch type under the "Sleeping" behavior. The coppery, shining wing venation is an unmistakable field cue for this species.












## Larval Emergence

**An entry at the end of this volume addresses the larva stages of dragonflies and it includes several references to the Variegated Meadowhawk. Here we pick up where that chapter ends.**

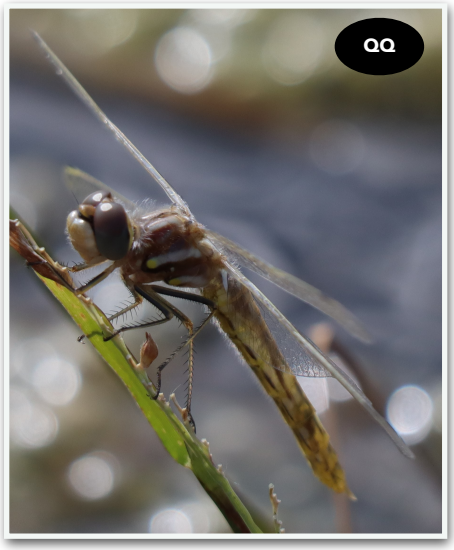
**PP. Once the immature Variegated Meadowhawk emerges it is fully formed and rapidly drys. During this period its abdomen expands and straightens notably as the fluid pumps back from the wing veins. The facial and thorax coloration deepens during the drying process, its wings become clearer and harden as the moisture evaporates, and the thorax markings become prominent.**

**QQ. Immature meadowhawks perch on grass stems and Palmer's Amaranth while they prepare to launch into their first flight. At this point, their bodies (head, thorax, legs, and wings) are fully formed and gaining adult coloration, however coloration of the abdomen lags.**

**RR. Same as "QQ".**

**SS. Same as "QQ".**

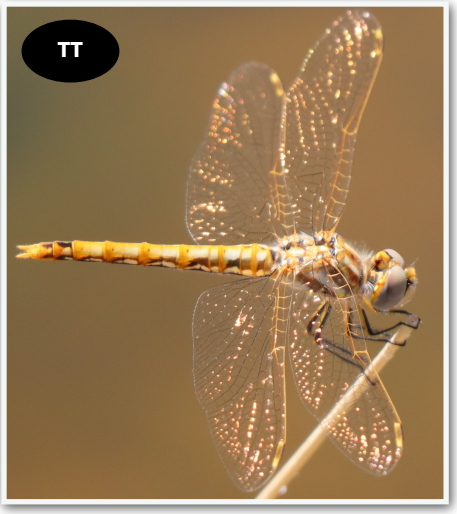




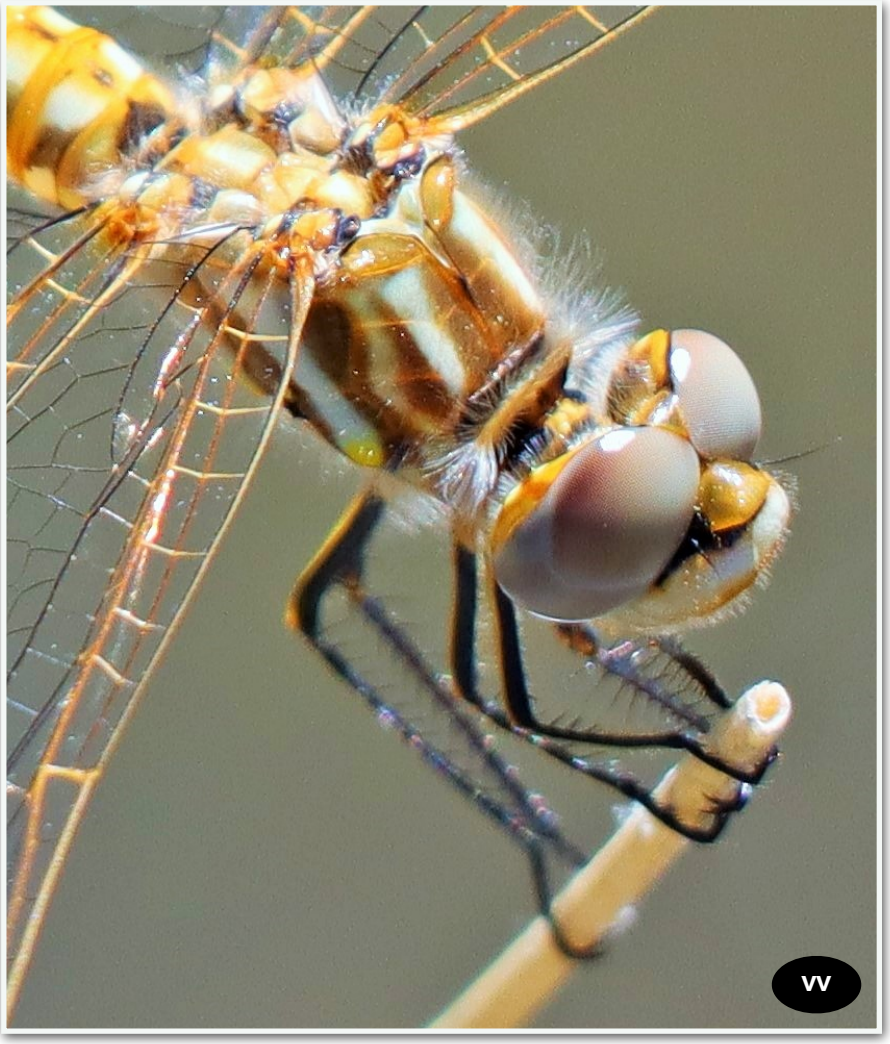













**TT.** Even as an immature dragonfly the perching angle relative to sun angle produces the distinctive coppery sheen unique to this small skimmer species.

**UU.** A lateral view of an immature Variegated Meadowhawk illustrates its developing abdominal color pattern and anterior wing-vein coloration as it perches horizontally on a twig along the Rio Grande.

**VV.** A more detailed view of its head and thorax; the eyes are light brown fading to creamy, the vertex between them is bright yellow, and the frons is white on top and yellow on its front. The base thorax color is yellow-brown with white humeral and lateral stripes; the yellow spot at the base of the lateral stripes is diagnostic. S1 (first abdominal segment) has yellow bands with white-and-black checkering between. Wing bases show the yellow-copper color of the veins. The legs are black with a yellow stripe on the back of each.

**WW.** Next page. This immature Variegated Meadowhawk perches vertically and warms and hunts from Brickellbush leaves near a retention pond. The newly hardened wings are transparent and provide near-perfect examination of venation patterns.

**XX.** Next page. This immature individual perches at an angled position in the shade of Green Sprangletop leaves where it sleeps with its head against the leaf growing in shallow water of the retention pond.
















**YY.** This immature Variegated Meadowhawk perches/hangs vertically and hunts from dried panicles of Switchgrass near the retention pond. The colors have darkened; the banding and spot patterns are readily recognizable throughout.

**ZZ.** This immature individual perches horizontally and hunts from a branch adjacent to the Rio Grande. The darker colors trending towards grayish-green on the abdomen suggests that this is a female.

**AAA.** Young adult male Variegated Meadowhawk perched horizontally on a twig, with wings aggressively pitched forward, while hunting for insects, defending territory for mating, and conducting occasional sexual patrols looking for a mate.

**Following Three Pages**
**Entry and photographs by Barnes.**

**Variegated Meadowhawks are one of the most frequently observed dragonflies in the Black Range.**

**I took the photographs on the next two pages in Tierra Blanca Canyon on the east slope of the Black Range on April 20, 2020. I took the photographs on the page following that, in Hillsboro. Additional photographs from these series may be viewed at the Black Range Website.**



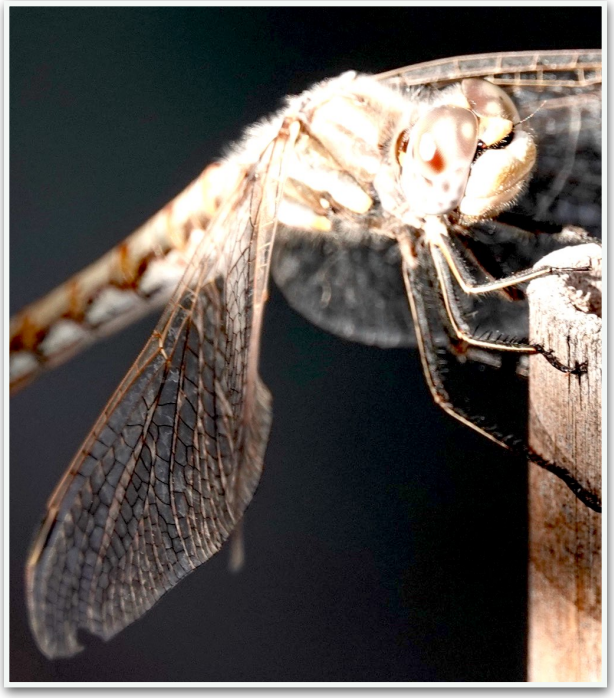










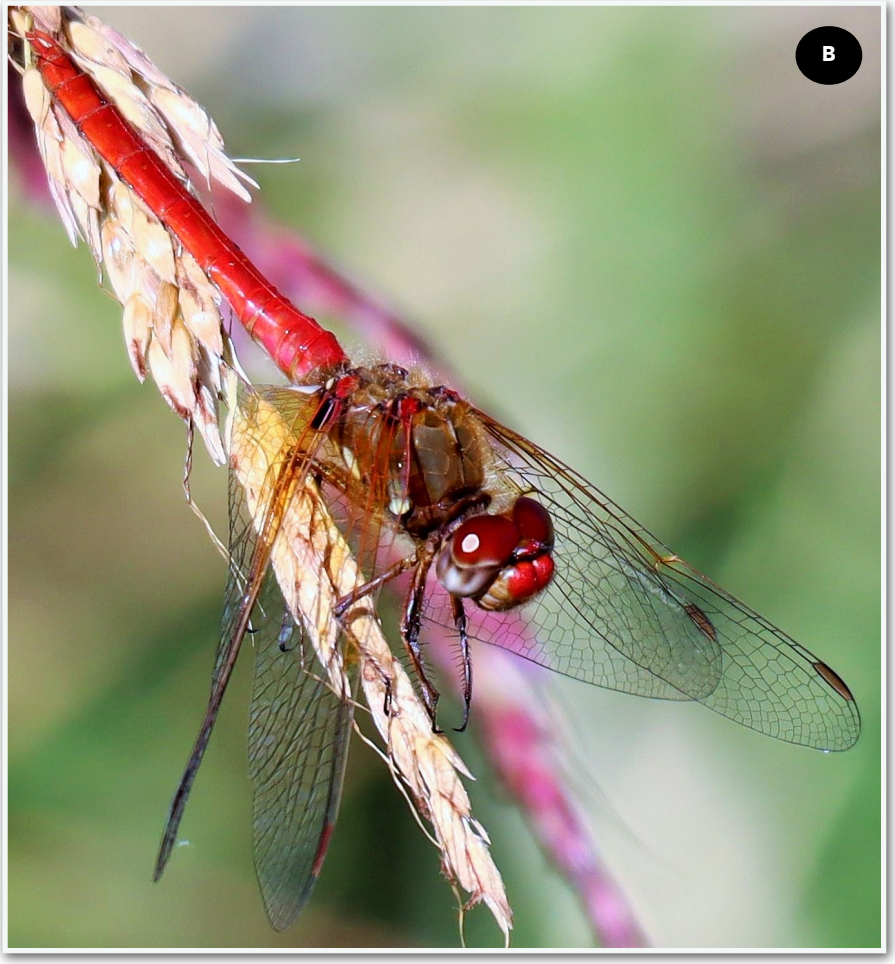




## Cardinal Meadowhawk
## *Sympetrum illotum*
### (Hagen, 1861)

**Three Cardinal Meadowhawk males were observed during October and November 2023, along the Rio Grande (perched on and hunting from grass seed panicles and Tamarisk twigs) in Doña Ana County. They are rarely observed in New Mexico with sightings scattered per the iNaturalist database. Habitats used in southern locales are typically pools in rocky streams (Paulson 2009). Two areas of distribution occur in the US: 1) along the Pacific Coast of southern British Colombia and Washington; western half of Oregon and along the Columbia River; and most of California except the southeastern deserts, also 2) southeastern Arizona, southern New Mexico and up the Rio Grande basin to Albuquerque, and western Texas, then south in uplands to Panama (Paulson 2009). No flight season is listed for New Mexico, however the Arizona flight season is April to November and the west Texas flight season is April to May (Paulson 2009).**




**A. Enlarged lateral view of the head, thorax, and first abdominal segment shows the strongly-colored spots (white and white/yellow) on the lower abdomen, the dark red upper eye in contrast to the brown lower eye, and the bright orange-red upper face in contrast to the tannish/ brown lower face.**

**B. Hunting for small flies on the Rio Grande bank while perched on a grass seed panicle, this Cardinal Meadowhawk projects his wings forward.**

**C. Next page. Enlargement of dorsal face, eyes, thorax, wing-bases, and first abdominal segment showing his eyes are dark red above and tan below; face is red-orange with tan below; the thorax is brown; wing bases with reddish-brown veins and dark brown streaks (note the single black cell); and the abdomen (S1) is bright orange-red.**

**D. Next page. The abdomen is wide and brightly red-orange in color, the same color as his upper face. Note the distribution pattern of the brownish-orange basal wing and vein color.**

**E. Next page. Male perches on a Tamarisk twig to hunt for small flying insects and patrol the adjacent river to find a mate; he had many interactions with Variegated Meadowhawk males which were present in large numbers.**

**F. Next page. Same male as "E" with its wings projected forward, briefly selects a Mulesfat branch on which to perch and hunt. Lateral view reveals four white spearpoint marks along the mid-abdominal ventral surface (S3-S6) and a better view of the orange basal wing/vein coloration pattern.**


C


D


E


F

## Band-winged Meadowhawk
## *Sympetrum semicinctum*
### (Say, 1839)

The Band-winded Meadowhawk is a small skimmer and is the only meadowhawk species that has extensive orange-brown patches at the bases of all wings (Paulson 2009). They commonly use open ponds and marshes, that are typically permanent, and adjacent meadows. Along the southern Rio Grande, they use riparian habitats characterized by herbaceous, shrubby, and small tree communities in addition to surface water; often they are perched on branches from 1.0m-4.0m high. They fly back and forth over clearings, some flying 10m high, stopping to hover many times. These may be feeding individuals or possibly they are on sexual patrol (Paulson 2009). Pairs are frequently observed away from water, flying in tandem cross-country. The conspicuous wing colors may help individuals find each other when away from breeding sites; pairs probably join away from water.

Occurrence in Doña Ana County is south of its large principal distribution range making our observations southern outliers to the general distribution.

Their flight season occurs from June-to-October (the monsoon season) in New Mexico.

Gordon Berman and I have photo-documented this species in two of four flight seasons (2019- 2022) along the southern Rio Grande (between the dates of July 17 and September 6). Locally, they are predominantly observed late in the monsoon season (August/September).

Paulson (2009) states: "Western populations of this species were long considered a separate species, Western Meadowhawk, *Sympetrum occidentale* (Bartenef, 1915). Subsequently, intermediate specimens have been found just east of region, but no one has conducted thorough study to document extent of intermediacy." He further notes that there are three subspecies named from the west: Northwest = *S. s. occidentale*; Great Basin = *S. s. californicum*; and Rockies and Great Plains = *S. s. fasciatum*. There is much variation, and more research is required to accurately define ranges and subspecies validity.

Ovipositing occurs in tandem, in shallow open water, often among emergent plants.

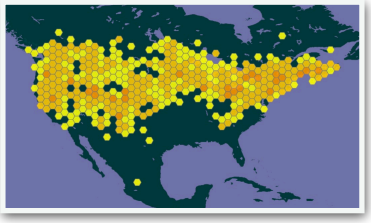
A. Male Band-winged Meadowhawk perched on a small branch while obelisking (raises abdomen nearly vertically upwards), surveying the adjacent habitat, and hunting. Note the bold, extensive orange-brown wing markings beginning at wing bases; also his bright red abdomen. Note also his head position and eyes scanning in all directions to locate small, flying insects to capture and ingest; full display of wing patches may also serve to attract a female to mate.
B. Male perched horizontally on a small branch, surveying the adjacent habitat, and hunting. Note the prominent black spots on dorsal abdomen of segments S8/S9; also his red-brown over greenish-tan eye colors.







C. Next page. Male Band-winged Meadowhawk head and thorax detail. Note the yellowish facial color, brownish-red over greenish-yellow eye color, orangish-brown thorax front color (and cover of fine hairs) and the orangish-brown basal wing coloration with reddish spots where the wings connect to the thorax.
D. Next page. Meadowhawks, like this Band-winged male often hold their wings positioned aggressively forward when perched (sometimes described as allowing them to "droop" forward), which is also effective in displaying their prominent wing patches and brightly colored abdomen. Image provided by Gordon Berman, collected in Mesilla Valley Bosque State Park.
E. Next page. Female along the Rio Grande, perched horizontally on a dried Three-square Bulrush stem with wide visual field to hunt for flying insects and possibly to display to attract a male. Note how she droops her wings slightly forward, also note that her abdomen color is grayish-green rather than yellow; Paulson (2009) exhibits a similarly-colored female occurring in Oregon.
F. Next page. Male perched horizontally on a twig to hunt and possibly to attract a female to mate. Note his full visual field and display of prominent wing patches and bright red abdomen.



Recorded sightings from the Global Biodiversity Information Facility (1/2024).












**G. Female within Mesilla Valley Bosque State Park, perched horizontally on a small branch (~3.0m high) with open visual field to hunt for flying insects and possibly to display to attract a mate. Note how the backlighting allows examination of the size and color of her large, bright wing patches, their prominent display, and wing venation pattern.**

**H. Next page. Female perched horizontally on a small branch along the Rio Grande providing a wide visual field, hunting for flying insects, while projecting her wings forward. Note the bold, extensive yellow-brown wing markings beginning at wing bases, her bright yellow thorax and abdomen, and the brownish-red over mostly yellowish-green eye color.**

**I. Next page. Note the bright yellow abdomen and wing patches on drooped wings, of this female. This display may serve to attract a male to mate.**

**J. Next page. Note that she appears to have a parasitic red mite attached to her foot.**

**K. Next page. Note her well-exposed, bright yellow abdomen dorsal surface and black lateral surface.**

**L. Next page. Mature male displaying his bright red abdomen with black median spots on S8-S9 and black lateral striping at abdomen tip. Note the bright red basal wing color over the thorax.**




H


I


J


K


L




**Photographs and information on this page by Gordon Berman.**

**M. Male Band-winged Meadowhawk perched on a stem with his wings held aggressively forward and exposing the broad wing spots and his bright red abdomen. Note his conspicuous black ventral stripe on S2-S10.**

**N. Female returning to the perch following a short flight, and holding her wings horizontally while slightly elevating her prominently displayed abdomen. Note that at this angle her wing spots brightly reflect sunlight, potentially important in mate attraction.**

**O. Female head and thorax detail. Note the yellowish facial color, brownish-red over yellow eye color, brownish thorax front color and bright yellow color of the sides with black, narrow, vertical stripes, and the orangish-brown basal wing coloration.**



## Autumn (Yellow-legged) Meadowhawk
## *Sympetrum vicinum*
### (Say, 1839)

The photographs of an Autumn (a. k. a. Yellow-legged) Meadowhawk male in McKittrick Canyon, Guadalupe Mountains National Park shown on this page were taken in November 2022 by Gordon Berman. This species occurs in two disparate populations, one in the Pacific Northwest (southern British Colombia to northern California). Another, larger population, occurs from southeastern New Mexico and northwestern Texas, north to the Canadian border, and east to Nova Scotia and south to Florida (Paulson 2009). **While distributed east of our area and unlikely to be observed locally, these images are important to illustrate similarities and differences in the morphology of the Autumn and Band-winged Meadowhawk species.**

Habitats commonly used by both species include permanent open ponds/lakes in wooded country (Paulson 2009). Males of both species are red in dorsal view but the Band-winged Meadowhawk has two black abdominal spots (S8/S9) while Autumn Meadowhawk has a single black abdominal spot (S8). There is a black line on the lateral abdomen of the Band-winged Meadowhawk, the Autumn Meadowhawk is entirely red; and the Band-winged wing spot is prominent in size and deep color while the Autumn has only small, brownish-red spots at the wing bases.

Generally, Autumn Meadowhawk adults occur in clearings and at forest edges near breeding sites. They perch from ground level to high branches and leaves. Pairs arrive at water in tandem linkage near mid-day, accumulate on dense vegetation at water, and often make wide-ranging flights around the area prior to egg-laying. Ovipositing occurs in tandem, in shallow open water, on wet vegetation (moss-covered logs, wet mud, floating aquatic mats).

Paulson (2009) states that Autumn Meadowhawks are the latest species to fly from northern habitats, remaining until the first heavy frosts; they maintain activity by constantly basking in the sun. Along the southern Rio Grande, this is the same behavior exhibited by Variegated Meadowhawks which are the only dragonfly species observed locally from December-to-February most years.









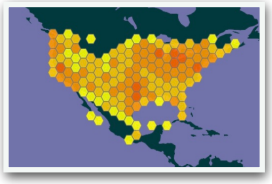
A. Male perched vertically on a cobble while sunning and hunting within the Guadalupe Canyon bottom. Note that Autumn has small, brownish-red basal wing spots when compared with the large wing spots of the the Band-winged; eyes reddish-brown over lavender compared to reddish-brown over brownish-yellow of the Band-winged.
B. Male perched horizontally on a cobble. Note that his thorax color is similar to that of the Band-winged (brownish-red with many fine hairs); abdomen of Autumn is all red with no black line on the lateral side; on segment S8 there is a single black dorsal spot compared to two black dorsal spots (S8/S9) on the Band-winged.
C. Male perched horizontally over small gravel. Note his legs are light reddish-yellow in comparison to the black legs of the Band-winged.

## Saddlebags
## *Tramea*

Saddlebags are gliding broad-winged skimmers with large, dark markings at the hindwing bases; they fly continuously over open areas and then perch at the tips of twigs or hang from branches (Paulson 2009). When perching horizontally or while in-flight they may "droop" their abdomens straight downward to reduce heat-load from the sun. The wide hindwing markings place our two species (the Red and Black Saddlebags) into the "broadsaddle" division of this family.

## Black Saddlebags
## *Tramea lacerata*
## (Hagen, 1861)

The Black Saddlebags is a medium-sized glider of shallow open lakes and ponds with much aquatic vegetation. It wanders far and wide away from open water (Paulson 2009). Both sexes display striking wing markings but overall the males are darker/brighter in color versus the duller, brownish females. Doña Ana County is well within its wide principal distribution.



Recorded sightings from the Global Biodiversity Information Facility (12/2023).

The New Mexico flight season is March-October; I have observed them in June, July, and August, along the Rio Grande.

Locally, this species occurs along principal irrigation ditches associated with the Rio Grande and the restored La Mancha Wetland. I have observed them perching on leafless stems and Southern Cattail leaves, hunting along the ditch banks, and mating/ovipositing in the constructed wetland.




A. Briefly perching (and backlit) on a Southern Cattail leaf-tip during sexual patrol, male defends his territory while displaying to attract a mate over a small restored wetland pond.
B. Gordon Berman contributed these detailed images of an immature female Black Saddlebags, perching on a light standard. Her prominent saddlebags are perfectly displayed, along with the entire dorsal view. Her abdomen is black, showing faint to strong yellow markings/squares from S2-S7 indicating immaturity; her cerci are black and very long.
C. Same as B.















**D.** **Female obelisks while perched on a Four-winged Saltbush stem.**

**E.** **Female, released by the male, drops to the water surface and taps her abdomen tip into a floating algae bed to release her eggs. This process occurs several times and at several sites within the pond.**

**F.** **Enlargement of female head and thorax, lateral view illustrating dark purple face, dark brown eyes, and dark brown to blackish thorax.**

**G.** **Mated pair in tandem linkage, fly over a small pond ovipositing. The male (left, with mostly black abdomen) selects egg-laying sites after long flights over/around the pond, then guides the female (right, with mostly brown and yellow abdomen) to the water surface where he releases her and she deposits eggs by tapping the water surface with the tip of her abdomen.**

**H.** **Next page. Male, head and thorax enlargement illustrating blue-black eyes, dark blue face, and bluish-gray thorax. 08/09/24**

**I.** **Next page. Male dark blue and black face and eyes, gray thorax, and bluish (appears pruinose) abdomen with long cerci; perched on small tree branch while hunting for flying insects along the Rio Grande. 08/09/24**

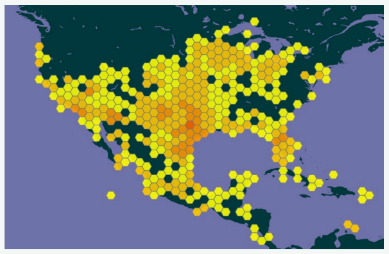



H


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## Red Saddlebags
## *Tramea onusta*
## (Hagen, 1861)

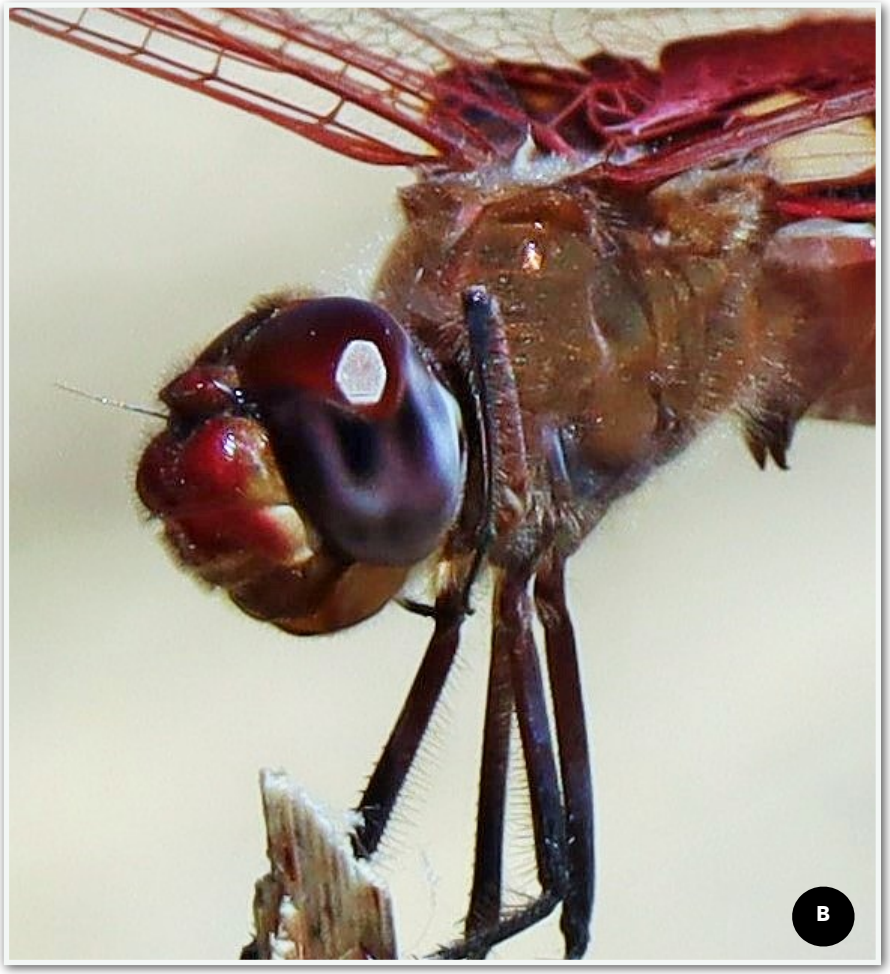
**The Red Saddlebags is a medium-sized glider of lakes and ponds, canals and ditches, and large pools of slow rivers. They often feed far from water and in swarms with Black Saddlebags and gliders (Paulson 2009). Both sexes display striking wing markings but overall the males are brighter red in color versus the duller, brownish females. Doña Ana County is within the wide principal distribution of this species.**



**Recorded sightings from the Global Biodiversity Information Facility (12/2023).**

**The New Mexico flight season is March-October; I have observed them in June, July, and October, locally along the Rio Grande bank and principal irrigation canals and smaller ditches, and on a retention pond at the Dripping Springs Visitor Center, Organ Mountains. I have observed them perching on leafless stems and sleeping in a tall Switchgrass stand, hunting along the Rio Grande and ditch banks, and mating/ovipositing in an irrigation ditch and a small pond.**



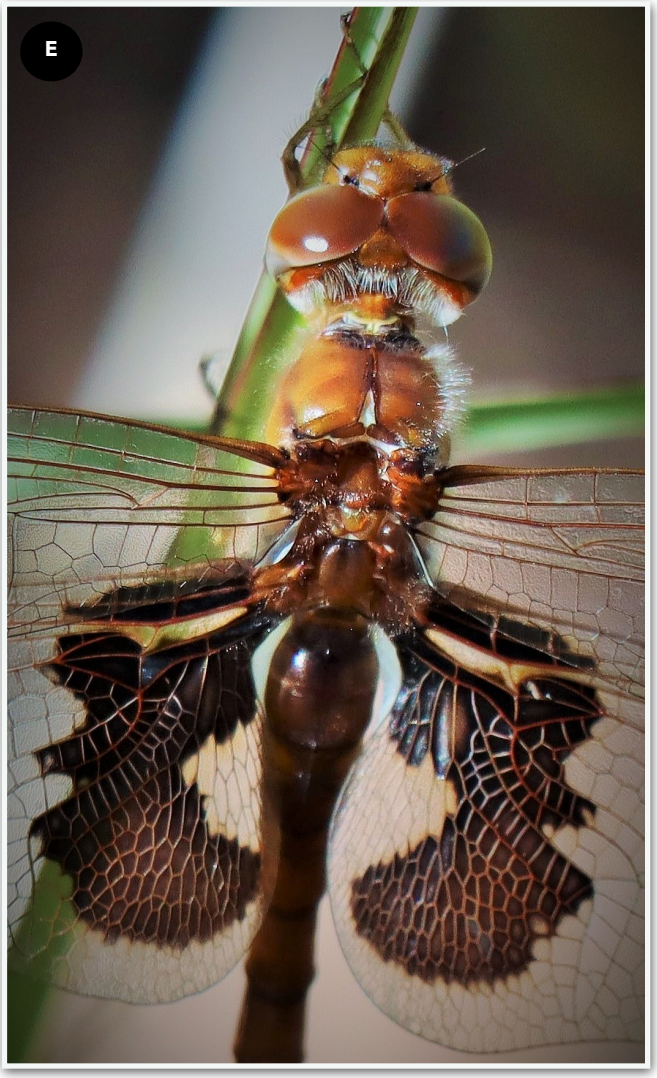

**A. Male in dorsal view illustrates his dark red eyes, reddish-brown thorax, bright red abdomen with black spots on the S8-S9 segments and his long cerci (reddish at base). His wingspots are dark red and the basal wing veins are red.**

**B. Enlarged view of the male head and thorax illustrates his face. It is bright red (top of frons purplish) blending to cream-colored areas along the edge, eye tops are bright red over purplish below, and the thorax is reddish-brown.**

**C. Emily Hjalmarson took the photograph of a Red Saddlebags, shown to the right on July 7, 2018 in Sierra County at the southern end of Caballo Reservoir. Shown here under a Creative Commons license via iNaturalist.**









**D.** This image of a male Red Saddlebags shows his abdomen and basal wings, illustrating his bright red abdomen with black spots on the S8-S9 segments and his long tan cerci (reddish at base). His wingspots are dark red with a blackish rim and the basal wing veins are red.

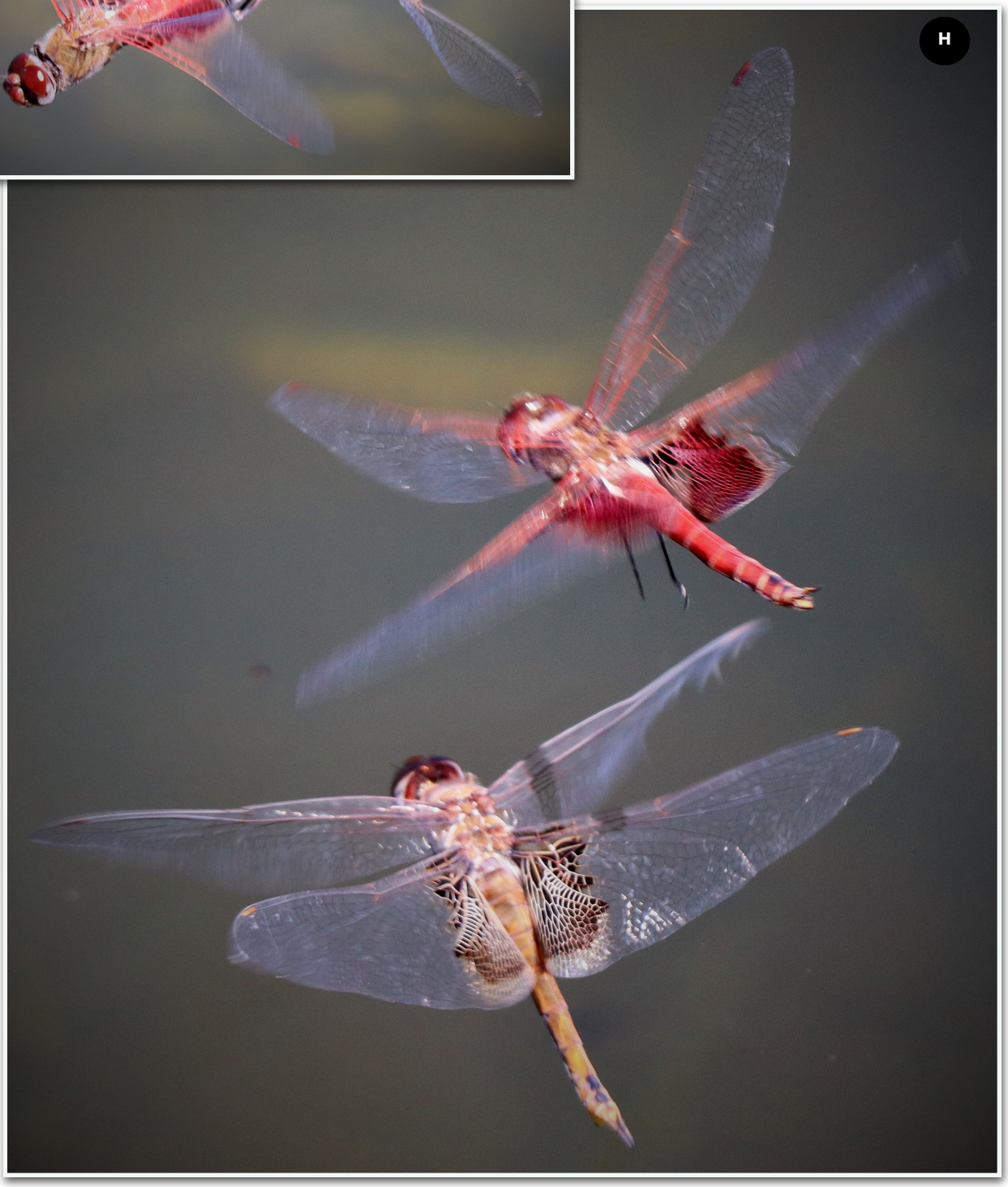
**E.** This image of a female head, thorax, and basal wing illustrates her tannish-brown face, brown eyes, and brown thorax; these tan-to-brown markings indicate an immature. Her wingspots are dark brown-to-blackish.

**F.** Perching to hide/sleep within a dense stand of Switchgrass around a small retention pond, this female hangs from a grass stem.




**G.** **Mated male (left) and female (right) flying in tandem linkage around a small pond, the male selected sites for the female to deposit her eggs (oviposit). Note the male uses his cerci to attach to the female's head during mating and egg deposition flights.**

**H.** **Male (upper) and female (lower), when ovipositing, separate from tandem linkage, she taps her abdomen tip into the water several times and releases a portion of her eggs, then flies up to reattach to the male, they then fly to another site but may return to the original site.**

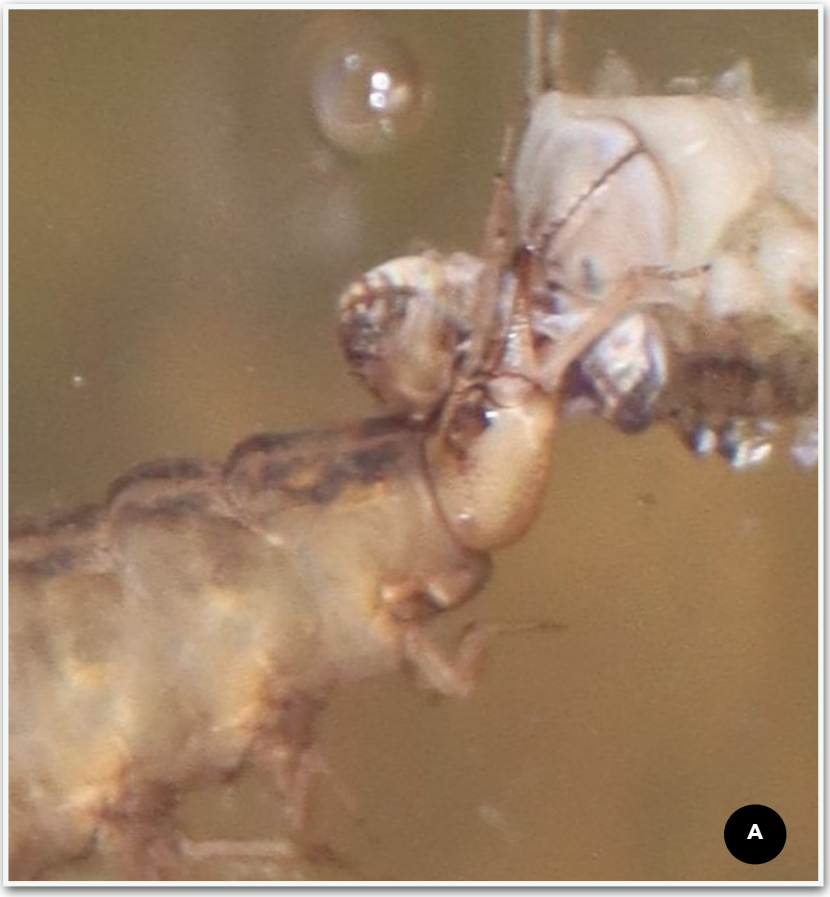


## A Little About Larvae

**At all stages of their lives, damselflies and dragonflies (*Odonates*) are predators, primarily of other arthropods but also of each other! Humans most often encounter and observe them in the colorful, adult form when energy/behavior is directed towards migrating to and from suitable habitats, hunting to maintain health and vitality, and reproducing (mating and ovipositing). However, much of the *Odonata* life cycle occurs underwater as nymphs/larval stages (instars) that after hatching from an egg may require a few weeks to a few years (up to 4-6 years have been recorded – due to hibernation in cold, temperate climates) to mature (and 10-12 or more molting events as they become larger) and emerge in observable immature forms which grow into the colorful adults.**

**Viewing a small retention pond near the Dripping Springs Visitor Center of the Organ Mountains, allowed me to photo-document some stages and behaviors of larval feeding (Predaceous Diving Beetles only), emergence (dragonflies and damselflies), and transformation to the flying, immature form (dragonflies and damselflies). Several dragonfly and damselfly species mated and deposited eggs in this pond during the 2022 monsoon season (Spot-winged Glider, Twelve-spotted Skimmer, Flame Skimmer, Red Saddlebags, Common Whitetail, Variegated Meadowhawk, Plateau Spreadwing, Familiar Bluet, and Mexican Forktail). The most common emerging larvae/immature *Odonates* I observed were Spot-winged Gliders (large dragonfly), Variegated Meadowhawks (small-medium dragonfly), and Plateau Spreadwings (medium-large damselfly).**

**Odonate larvae are carnivorous and are among the top predators in the aquatic food chain; examples of prey captured and consumed include water beetle and mosquito larvae, damselfly and dragonfly larvae, worms, tad-poles, small fish, etc. They are equipped with a lower jaw that is both flexible and extendable, contains hooks and sharp teeth, and is rapidly "launched" at passing prey, this form of ambush hunting is efficient and effective.**




**All odonate larvae can breathe by sucking water into their abdomens, through internal gills (larvae can also eject the water forcefully to propel themselves for a quick escape). Damselfly larvae are mostly slender and elongated with leaf-like external appendages known as caudal lamellae (function as external gills to breathe).**

**A. A large Giant Water Scavenger Beetle, *Hydrophilus triangularis* (Say, 1823), larva (left) captures a smaller dragonfly larva that had reached its final instar (note the thickened exuvia/larval skin) and was ready to emerge. Based on size and commonness, I believe this to be a Variegated Meadow-hawk (right) dragonfly.**

**B. This photograph shows the caudal lamellae of a Plateau Spreadwing damselfly final larval instar as it emerges from the water. Note that at this stage, these external gills have ceased to function and the larval damselfly is breathing air on its own.**





C. Caudal lamellae, attached to the exuvia, drying in the warm temperature and light wind of early morning as an immature Plateau Spreadwing damselfly works free from this thickened skin.



D. Giant Water Scavenger Beetle larvae are typically robust and can be quite large, almost caterpillar-like when viewed. Here a large larva is shown with its abdomen tip opened at the water surface to take air into its tracheal system, e.g., a network of tiny tubes throughout its body that allows it to transport oxygen from trapped air bubbles to its tissues (Wilson, 1923). A useful reference for this species is: Wilson, C.B. 1923. *Life History of the Scavenger Water Beetle, Hydrous (Hydrophilus) triangularis, and its Economic Relation to Fish Breeding*. Bulletin of the Bureau of Fisheries, Fairport, IA. 38pp.





## Predation

E. A Giant Water Scavenger Beetle larvae (L) feeds voraciously on a smaller dragonfly instar (R); its rolling, diving, surfacing, and sideways motions churned and rippled the water, attracting me to this portion of the retention pond, where I collected the image series.

F. At times, the large larva would feed below while elevating its abdomen tip vertically to the water surface to take in water and air through the internal gills.

G. The head and thorax area of the small larva are thoroughly ripped apart at this feeding stage.

H. About half of this small larva has been eaten from inside the relatively thick skin (exuvia - shown in more detail on the following page).

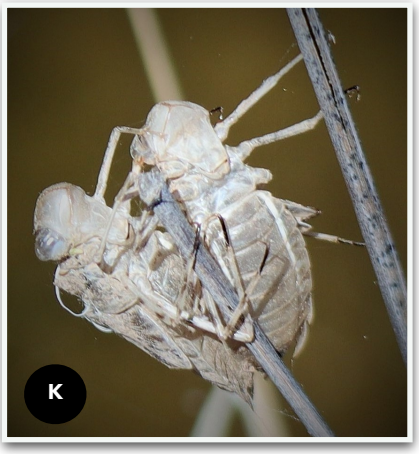








When ready to emerge as immature (soft-bodied teneral) damselflies and dragonflies, the final larval instars climb from the water, often onto an emergent plant stem or twig. At this stage they no longer use the larval (external/internal) gills and are capable of breathing air. The larval skin is ruptured as the immature damselfly/ dragonfly pumps bodily fluids throughout to expand its head, thorax, abdomen, and wings; it will be ready to fly after the body cuticle and the wings air-dry and harden, usually after an hour or more. The empty skin remains attached to the anchoring substrate, e.g., leaf/ stem/twig/etc.



I. Abandoned dragonfly exuvia. The larva emerges through the thorax area - behind the head but in front of the wing bases where the white, thread-looking connective tissue is exposed.

J. I believe exuvia of this relatively small size were produced by Variegated Meadowhawks.

K. A pair of large exuviae that I believe were abandoned by Spot-winged Glider immatures.










**L.** This abandoned exuvia is being examined by a Long-jawed Orb-weaver spider, perhaps as a place to hide and capture visiting scavengers or maybe to feed on organic material left behind following emergence.

**M.** The narrow, elongated exuvium to the left was abandoned by a Plateau Spreadwing damselfly and the wide, compact one to the right by a dragonfly. Note, it is not clear to me that this dragonfly larva completed a successful emergence.

Emerging from the exuvium is an elaborate and fascinating process. Shown here are the efforts of an immature Plateau Spreadwing. At the lower right it is still encased within its larval skin and has climbed out of the pond onto an emergent grass fruiting panicle. Note its four wing bundles bulging on the thorax area.

**N.** Climbing out of the water, this Plateau Spreadwing is preparing to emerge from its exuvium.

**O.** Next page. Plateau Spreadwing immature (soft-bodied teneral form) emerges from its exuvium as it expands in size by pumping body fluids into the wing and body/abdomen segments.

**P.** Next page. Variegated Meadowhawk soft-bodied immature form, posing for "selfie" with its former self. Note that air-drying of its cuticle and wings may require over an hour.

**Q.** Next page. Variegated Meadowhawk immature takes its first flight to hiding cover while completing the drying/maturation process.

**R.** Next page. Plateau Spreadwing soft-bodied immature form, posing for "selfie" with its former self. Air-drying of its cuticle and wings may require over an hour.

**S.** Next page. Plateau Spreadwing immature takes its first flight to hiding cover while completing the drying/maturation process.



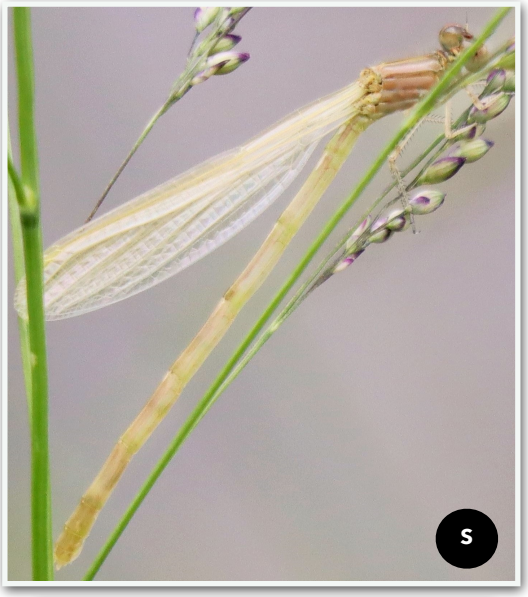


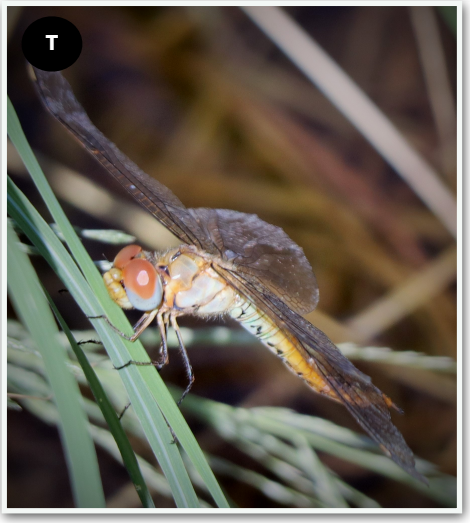








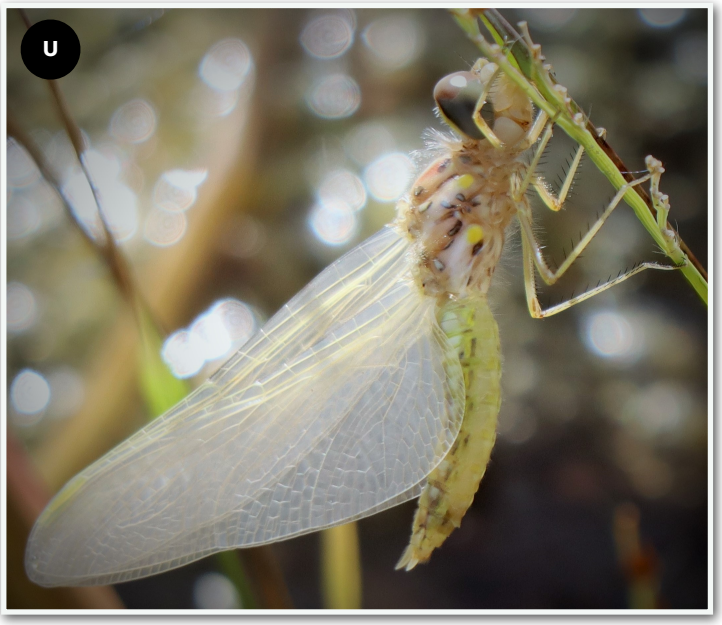



**T.** **Spot-winged Glider immature has nearly completed expanding its body and wings through pumped fluids and is air drying prior to flight to more protective cover.**

**U.** **Variegated Meadowhawk immature has nearly completed expanding its body and wings through pumped fluids and is air drying prior to flight to more protective cover.**

**V.** **Abandoned exuvium, likely of a Spot-winged Glider, remains attached to grass stem, at the water surface.**







# Plant Species Referenced in This Work

**English common names are used for plant species mentioned in this work. The following list (arranged in alphabetical order of English common name) includes the Latin binomial for these species.**

**Barnyard Grass, *Echinochloa crus-galli* ([L.] P. Beauv.)**
**Bermudagrass, *Cynodon dactylon* ([L.] Pers.)**
**Brickelbush, *Brickellia* sp. (Elliot 1823)**
**Climbing Milkweed (a.k.a. Twinvine), *Funastrum cynanchoides* ([Decne.] Schltr.)**
**Cocklebur, *Xanthium strumarium* (L.)**
**Common Reed, *Phragmites australis* ([Cav.] Trin. ex Steud.)**
**Common Sunflower, *Helianthus annuus* (L.)**
**Coyote (Sandbar, Narrowleaf) Willow, *Salix exigua* (Nutt.)**
**Creostebush, *Larrea tridentata* ([DC.] Coville)**
**Curly Dock, *Rumex crispus* (L.)**
**Desert Willow, *Chilopsis linearis* ([Cav.] Sweet)**
**Duckweed, *Lemna* sp. (L.)**
**False Indigobush, *Amorpha fruticosa* (L.)**
**Four-wing Saltbush, *Atriplex canescens* ([Pursh] Nutt.)**
**Globemallow, *Sphaeralcea* sp. (A. St. Hil.)**
**Green Sprangletop, *Disakisperma dubium* ([Kunth] P.M. Peterson & N. Snow)**
**Honey Mesquite, *Prosopis glandulosa* (Torr.)**
**Horsetail (a.k.a. Scouring-rush), *Equisetum* sp. (L.)**
**Horsetail Milkweed, *Asclepias subverticillata* ([Gray] Vail)**
**Johnsongrass, *Sorghum halepense* ([L.] Pers.)**
**Kochia (a.k.a. Summer Cypress, Mexican Fireweed), *Bassia scoparia* ([L.] A.J. Scott)**
**Mexican Mosquito Fern, *Azolla mexicana* (Schltdl. & Cham. ex Kunze)**
**Mule's Fat (a.k.a. Seepwillow), *Baccharis salicifolia* (Ruiz & Pav. [Pers.])**
**Palmer's Amaranth, *Amaranthus palmeri* (S. Wats.)**
**Paspalum, *Paspalum* sp. (L.)**
**Rio Grande Cottonwood, *Populus deltoides* (W. Bartram ex Marshall) ssp. *wislizenii* ([S. Watson] Eckenwalder)**
**Rush, *Juncus* sp. (L.)**
**Russian-thistle, *Kali tragus* ([L.] Scop.)**
**Sandbur, *Cenchrus echinatus* (L.)**
**Screwbean Mesquite, *Prosopis pubescens* (Benth.)**
**Seepwillow (a.k.a. Mule's Fat), *Baccharis salicifolia* (Ruiz & Pav.[Pers.])**
**Silverleaf Nightshade, *Solanum elaeagnifolium* (Cav.)**
**Softstem Bulrush, *Schoenoplectus tabernaemontani* ([C.C. Gmel.] Palla)**
**Southern Cattail, *Typha domingensis* (Pers.)**
**Spiny Chloracantha, *Chloracantha spinosa* ([Benth.] G.L. Nesom)**
**Summer Cypress (a.k.a. Kochia, Mexican Fireweed) *Bassia scoparia* ([L.] A.J. Scott)**
**Switchgrass, *Panicum virgatum* (L.)**
**Tamarisk (a.k.a. Saltcedar), *Tamarix ramosissima* (Ledeb.)**
**Three-square Bulrush, *Schoenoplectus pungens* ([Vahl] Palla)**
**Trailing Snapdragon, *Maurandya scandens* ([Cav.] Pers.)**
**Water Smartweed, *Persicaria* sp. (Mill. 1754)**
**Water Speedwell, *Veronica anagallis-aquatica* (L.)**
**White Sweetclover, *Melilotus albus* (Medic.)**

# Potential New Species of Gomphidae (Clubtail Family); Hanging Clubtail; Stylurus species for Doña Ana County and for New Mexico

by James Von Loh









**Have you seen this dragonfly? It is OdonataCentral record OC#333894. It has not been identified to species although nearly everyone agrees that is in the genus *Stylurus*.**

**The three images, above, are the original submittals for this record. The image to the left is a detail of the image directly above it and has been manipulated to remove noise and sharpen the features by Bob Barnes.**

**The following discussion shows how the sausage making of science works best.**

**While researching the Odonata Central online database Jonathan Batkin found an 01 October 2011 specimen (OC#333894 posted by user_5535); that was photo-documented at the Broad Canyon Ranch; in the Rio Grande channel; Doña Ana County, New Mexico, United States (32.516, -106.9833). This site is located about 15 miles north of Las Cruces, New Mexico. Notes related to the collection read: "Found the clubtail drowning in the river where we removed it from the water where we photographed it before it flew away. We were not aware that it could have been an unusual species for the area, as none of us really know how to ID species in Odonata."**

**This adult specimen, represented by three clear images (see previous page) was initially identified as a Russet-tipped Clubtail (*Stylurus plagiatus*), however the Decision Notes suggested a different ID conclusion, as follows: "27 November 2018: originally submitted and confirmed as *Stylurus plagiatus*. D. Paulson, J. Abbott and G. Lasley subsequently reviewed and indicated it is not that species. Paulson suggested it might be closest to *S. falcatus* of southern Mexico but might be a described species of *Stylurus*. Presently not identifiable. An addition to the earlier note was made on 2/2019: The species ID was changed from *Stylurus plagiatus* to "Unknown Dragonfly" in 2018 but left as a confirmed record, which was incorrect. I have changed it back to *S. plagiatus* but unconfirmed it, pending further evaluation of the ID. -- jns". As a result the Current Status of OC#333894 was reassigned as "Declined".**

**Subsequent vetting of this record by several knowledgable individuals has yielded the following:**

**Comments from Odonatologists and Informed Individuals in Review of Record (OC#333894)**

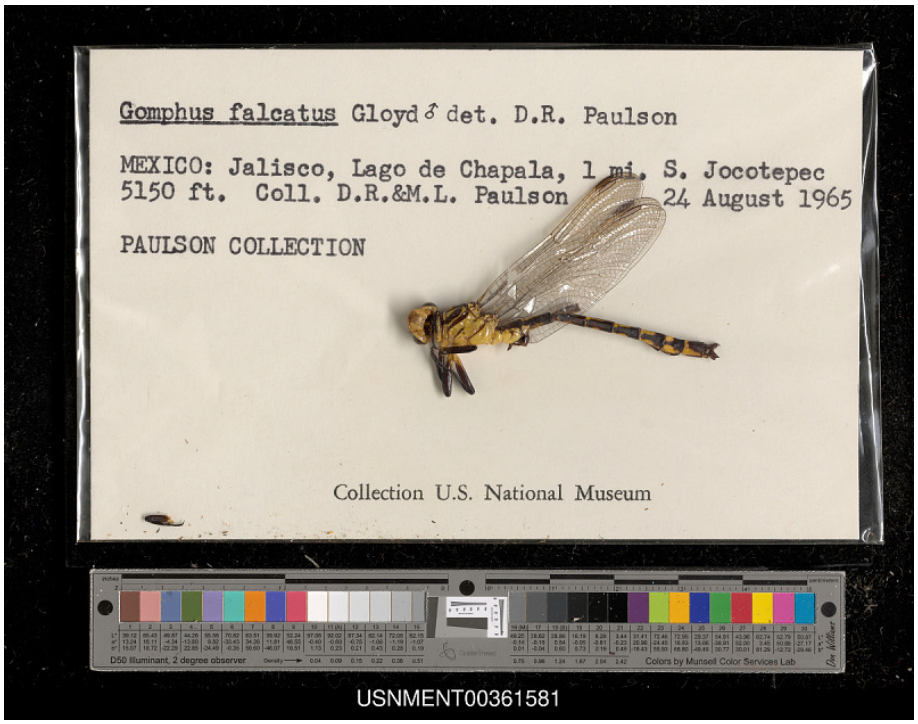
**Jonathan Batkin (JB) began this vetting process by using the most effective method to resolve his research questions - collaboration! The email chain he contacted resulted in several comments, allowing him to move forward to further investigate this possibly new/unnamed species of clubtail dragonfly in the genus *Stylurus*.**

**Collaborative Inquiry by Jonathan Batkin (Odonate Researcher; 04/27/25): "I'm writing some of you because of your overall interest in odonates, others for your interest in odonates/nature in Doña Ana County. . . . Below is a link to a "declined" record on Odonata Central of an apparent hanging clubtail that could not be identified and presumably is unknown/undescribed. I didn't know this record existed until yesterday (04/26/25). Declined records are commonly those which lack voucher material. I believe this is the only declined record from New Mexico for which voucher material exists, but nobody knew what to do with it. I'm interested in any thoughts people might have about this specimen and how it might be brought to light."**

**James Von Loh (JVL) (TBRN Contributing Biologist; 04/27/25) response to JB: "Great sleuthing, Jonathan!! The 2011 images are high quality, so I believe the knowledgeable Odonata professionals will likely settle on an ID at the genus level. Dr. Paulson does suggest that it resembles the Aztec Clubtail (*Stylurus falcatus*) and within iNaturalist there is only one observation as of May 17, 2025 - of an individual from Durango, Mexico (https://www.inaturalist.org/observations/175668573) by Alexis Salazar, shown below under a creative commons license."**



(JVL Continues): "In addition, Dr. Paulson and Mary Paulson provided a voucher specimen of Aztec Clubtail (1965) to the Smithsonian (shown at the right under a creative commons license)."




Jonathan Batkin response to JVL on 04/27/25: "Thanks for the quick response. This is such a remarkable record that even if nobody can pin it down beyond the genus level, it is worthy of a note. It is certainly up there with the *P. nayaritensis* that Tony Godfrey found at Rotary Park! To publish the photos, Wayne may know who would have used NMSU as an identity, or John Abbott might guide us on how to access them"*.

Doug Danforth response to JB on 04/27/25: "Thanks for sending the info about this fascinating record. I found one photo of *Stylurus falcatus* on iNaturalist and it does not look like that species. Perhaps as Dennis suggested it is an undescribed species. I would say it is definitely not *plagiatus*. There sure have been some nice records from the Rio Grande in New Mexico."

Wayne Steffens, NMSU response to JB on 04/28/25: "Interesting, nonetheless. I will double check the putative *plagiatus* in NMSU collection just in case something different slipped by. Thanks for bringing this to my attention!"

Pierre Deviche, Ph.D., Professor Emeritus, ASU response to JB on 04/28/25: "What an interesting find! I can't add anything to what Doug wrote and you heard from Dennis. This individual does definitely not look like anything I am familiar with or, for this matter, like any *Stylurus* that is normally found here in the US. Please let us know when/if you learn more about it."

Jack Holloway, Odonate Researcher response to JB on 04/28/25: "This is fascinating! I am unfamiliar with this mystery individual and, sadly, also not familiar with the species within this genus from further south in Mexico."

Jonathan Batkin response to all email recipients on 04/28/25: "Thanks Doug, Pierre, Jack, Jim, and Wayne. It's really a stunning record, whatever it is. I think Jim, Bob, and others involved with *Black Range Naturalist* may consider bringing it to light."

James Von Loh response to all email recipients on 04/28/25: "Hi Jonathan and everyone on this email link! I can't thank you enough, Jonathan, for sharing your research, and focusing our attention on the exceptional West Mexican Leaftail record from Truth or Consequences and the wonderful unidentified *Stylurus* sp. from Broad Canyon - you are amazing!! The southern Rio Grande is slowly giving up its secrets as we also photo-documented a Turquoise-tipped Darner last winter. Thank you all for your comments the past couple of days relative to Jonathan's find, they help a great deal to verify this individual's importance."

Rebecca Hallgarth, TBRN Staff Editor response to JVL on 04/29/25: "This is a fascinating discussion, not just because of the discovery itself but also because of so much collective knowledge and collaboration. I think that a note in *The Black Range Naturalist* would be interesting to its readers, too."

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* *Editor's Note: As this process developed there was some concern about the use of the photographs used for this record (OC#333894) because of a lack of clarity about copyright.

Mike Moore (Odonata Central Support Team) provided me with a possible contact email for the original observer. The observation was submitted from an institutional account (Wildlife Society of New Mexico State University) and it is taking some time to identify the original observer, and it may not be possible to do so. We will provide that information when it becomes available - in an issue of *The Black Range Naturalist*.

Mike Moore noted Odonata Central's copyright policy: "*Photographs* submitted to OdonataCentral are done so with the acceptance of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. This is the most restrictive of the CC licenses and only allows non-commerical use of unaltered images." It is under this provision that we include the images on page 176. The use of the image at the lower left on page of 176 has been authorized.



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