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ABOUT SWCHR
Originally founded by Gerald Keown in 2007, SWCHR is a 501(c)(3) non-profit association, governed by a board of directors and dedicated to promoting education of the Association’s members and the general public relating to the natural history, biology, taxonomy, conservation and preservation needs, field studies, and captive propagation of the herpetofauna indigenous to the American Southwest.

THE SWCHR LOGO
There are several versions of the SWCHR logo, all featuring the Gray-Banded Kingsnake (Lampropeltis alterna), a widely-recognized reptile native to the Trans-Pecos region of Texas as well as adjacent Mexico and New Mexico.

ON THE COVER: Balcones Barking Frog (Craugastor angusti latrans), Val Verde County, Texas (Kyle Elmore). With this photograph, Kyle won the SWCHR 2015 Award for Excellence in Herpetological Photography.

BACKGROUND IMAGE: Gates’ Pass, Tucson Mountains, AZ (Bill White)

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A CALL FOR PAPERS

Are you a field herpetologist or a herpetoculturist working with species native to the American Southwest? Do you have a paper or an article you have written for which you would like to find a permanent repository? Want to be assured you will always be able to share it with the world? Submit it to the SWCHR Bulletin for possible publication. Submitted manuscripts from SWCHR members, as well as non-members, will be considered. There are NO page charges to have your articles appear in the SWCHR Bulletin, as some other publications are now requiring.

To be accepted for publication, submissions must deal with herpetological species native to the American Southwest. Such topics as field notes, county checklists, range extensions, taxonomy, reproduction and breeding, diseases, snake bite and venom research, captive breeding and maintenance, conservation issues, legal issues, etc. are all acceptable. For assistance with formatting manuscripts, search 'scientific journal article format' on the internet and tailor the resultant guidance to suit.

Previously published articles or papers are acceptable, provided you still hold the copyright to the work and have the right to re-publish it. If we accept your paper or article for publication, you will still continue to be the copyright holder. If your submission has been previously published, please provide the name of the publication in which it appeared along with the date of publication. All submissions should be manually proofed in addition to being spell checked and should be submitted by email as either Microsoft Word or text documents.

Send submissions to swchrbulletin@swchr.org.
A Message from the President

Happy 2016 to our readers worldwide! Now in its sixth year, the SWCHR Bulletin reaches members across the United States as well as select colleges and universities around the globe. It provides a means to gain insight into the herpetofauna of the American Southwest specifically, as well as a space for publishing observations and other notes warranting more than just casual mention in a local herp society newsletter but not quite to the level required of a peer-reviewed journal. This issue features our new background photograph—SWCHR member Bill White’s modern, color recreation of Manny Rubio’s inspirational photo of Gates’ Pass in southeastern Arizona; the original of which was included in Carl Kaufeld’s famous book Snakes: the Keeper and the Kept, published way back in 1969. Also gracing the cover this year is Kyle Elmore’s award-winning photograph of a Balcones Barking Frog (Craugastor augusti latrani), a not-too-commonly seen amphibian of western Texas. Congratulations, Kyle, for receiving SWCHR’s 2015 Award for Excellence in Herpetological Photography!

If there is a theme to this first issue of the year, it is citizen science. We lead off this issue with Robert Twombly’s recap of the various county records, natural history notes, and peer-reviewed articles for the SWCHR six-state region of interest as reported in the Society for the Study of Amphibians and Reptiles’ Herpetological Review. The recap is followed by a “behind the scenes” look at what goes into taking an observation from the field to publication as relayed by Jeff Adams. You’ll notice in the Herp Review recap there are 70 new county/locality records reported from our region in just the last year. Are these species expanding their range due to factors like climate change, human alteration of habitat, etc., or have they merely gone unnoticed all these years? Citizen science can definitely play an important role in answering these questions. Herpetology is far from “settled science.” New discoveries are out there waiting to be made, and YOU could be making them!

Next, past SWCHR president Tom Lott continues his examination of the complex history of extant vouchers of the Smooth Green Snake (Opheodrys vernalis) in Texas. It’s an interesting tale of a variety of human foibles as they pertain to herpetology—misidentification, uncertain locales, and good old-fashioned stubbornness when early herpetologists were confronted with new information. Tom has definitely done his homework on this species; perhaps some aspiring citizen-scientist may soon find modern examples of this snake still hanging on in the state.

Jane “Spider” Fawke then brings us a look into her experiences with captive propagation of Desert Night Lizards (Xantusia vigilis vigilis). Night lizards are an intriguing complex of small lizards in the Southwest, perhaps most intriguing because they are truly viviparous. Our final article is a fine book review by Tom Lott of The Texas Tortoise: A Natural History. Tom gives an even-handed look at the good and bad of this volume on one of Texas’ most endearing herps.

We hope you enjoy this issue and that it inspires you to carefully observe and record what you discover, both in the field and in husbandry techniques. You could be the first person to document something others overlooked! Based on the Herp Review recap, perhaps our Nevada and Utah members will be able to fill in some of those gaps in our knowledge.
Synopsis of SWCHR Region Notes from 2015 *Herpetological Review* Issues

Compiled by Robert Twombly

SWCHR publishes these abbreviated accounts of Geographical Distribution, Natural History Notes, and Peer Reviewed Publications, so our readers may be aware of these items pertaining to the herpetofauna of the American Southwest (Arizona, California, Nevada, New Mexico, Texas, and Utah). Accounts are listed by state, then by class/order/suborder as follows: salamanders and newts, frogs and toads, turtles, lizards, and snakes.

Only natural history notes observed in the SWCHR region of interest are included, though other observations may have been recorded from elsewhere in a given species’ range. For the full, original accounts, please see the four 2015 issues of *Herpetological Review*, published by the Society for the Study of Amphibians and Reptiles (2015 was Volume 46 of *Herpetological Review*; issue number is appended to each listing below).

Geographic Distribution

ARIZONA

*Hyla wrightorum*, Arizona Treefrog, Cochise County (updated county record). (4)

*Trachemys scripta elegans*, Red-eared Slider, Cochise County (county record). (3)

*Trachemys scripta elegans*, Red-eared Slider, Gila County (county record). (3)

*Aspidoscelis neomexicana*, New Mexico Whiptail, Navajo County (county record). (4)

*Gambelia wislizenii*, Long-nosed Leopard Lizard, Navajo County (first records from Petrified Forest National Park). (4)

*Heloderma suspectum*, Gila Monster, Santa Cruz County (first record from the Atascosa-Pajarito Mountains Complex). (3)

*Crotalus cerberus*, Arizona Black Rattlesnake, Mohave County (first confirmed record from the Cerbat Mountains). (1)

*Sistrurus tergeminus edwardsii*, Desert Massasauga, Graham County (new elevational maximum). (4)

*Trimorphodon lambda*, Sonoran Lyresnake, Mohave County (100-km range extension). (2)

CALIFORNIA

*Anolis carolinensis*, Green Anole, Los Angeles County (county record and second state record). (4)

*Hemidactylus garnotii*, Indo-Pacific House Gecko, Los Angeles County (county record). (4)

*Heloderma suspectum cinereum*, Banded Gila Monster, San Bernardino County (first record from the Mesquite Mountains). (3)

*Hemidactylus turcicus*, Mediterranean House Gecko, Orange County (county record). (1)

*Hemidactylus turcicus*, Mediterranean House Gecko, Ventura County (county record). (1)

*Plestiodon gilberti*, Gilbert’s Skink, Yolo County (county record). (4)

*Tantilla bobartsmithi*, Smith’s Black-headed Snake, Inyo County (new locality in the Argus Mountains). (1)

*Tantilla bobartsmithi*, Smith’s Black-headed Snake, Inyo County (new locality in the Kingston Mountains). (1)

*Tantilla bobartsmithi*, Smith’s Black-headed Snake, Inyo County (first record from the Clark Mountains). (1)

*Tantilla bobartsmithi*, Smith’s Black-headed Snake, Inyo County (first record from the San Bernardino Mountains). (1)

NEVADA—(No new distribution records published).

NEW MEXICO

*Arizona elegans*, Glossy Snake, Los Alamos County (county record). (1)

*Crotalus atrox*, Western Diamond-backed Rattlesnake, Curry County (county record). (1)

*Crotalus viridis*, Prairie Rattlesnake, Harding County (county record). (1)

*Trimorphodon viklinsonii*, Texas Lyresnake, Hidalgo County (county record). (4)

*Trimorphodon viklinsonii*, Texas Lyresnake, Luna County (first record from the Carrizalillo Hills). (4)

TEXAS

*Eurycea quadridigitata*, Dwarf Salamander, Grimes County (county record). (2)
*Eurycea sosorum*, Barton Springs Salamander, Travis County (county record). (4)
*Siren intermedia*, Lesser Siren, Williamson County (county record). (1)
*Anaxyrus woodhousii*, Woodhouse’s Toad, Madison County (county record). (1)
*Anaxyrus cognatus*, Great Plains Toad, Andrews County (county record). (2)
*Anaxyrus debilis*, Chihuahuan Green Toad, Andrews County (county record). (2)
*Anaxyrus speciosus*, Texas Toad, Ector County (county record). (2)
*Craugastor augusti*, Barking Frog, Brewster County (county record). (4)
*Eleutherodactylus cystignathoides*, Rio Grande Chirping Frog, Fort Bend County (county record). (2)
*Eleutherodactylus cystignathoides*, Rio Grande Chirping Frog, Robertson County (county record). (2)
*Eleutherodactylus cystignathoides*, Rio Grande Chirping Frog, Colorado County (county record). (4)
*Eleutherodactylus cystignathoides*, Rio Grande Chirping Frog, Bell County (county record). (4)
*Gastrophryne olivacea*, Western Narrow-mouthed Toad, Rockwall County (county record). (2)
*Gastrophryne olivacea*, Western Narrow-mouthed Toad, Midland County (county record). (4)
*Incilius nebulifer*, Gulf Coast Toad, Erath County (county record). (1)
*Incilius nebulifer*, Gulf Coast Toad, Rockwall County (county record). (1)
*Incilius nebulifer*, Gulf Coast Toad, Jim Hogg County (county record). (4)
*Scaphiopus hurterii*, Hurter’s Spadefoot, Guadalupe County (county record). (1)
*Spea bombifrons*, Plains Spadefoot, Hall County (county record). (4)
*Apalone spinifera guadaluensis*, Guadalupe Spiny Softshell, Guadalupe County (county record). (4)
*Chelydra serpentina*, Snapping Turtle, Guadalupe County (county record). (3)
*Chelydra serpentina*, Snapping Turtle, Caldwell County (county record). (4)
*Graptemys pseudogeographica kohnii*, Mississippi Map Turtle, Brazoria County (county record). (4)
*Kinosternon subrubrum*, Eastern Mud Turtle, Rockwall County (county record). (1)

*Sternotherus odoratus*, Eastern Musk Turtle, Jackson County (county record). (1)
*Trachemys scripta*, Pond Slider, Ector County (county record). (1)
*Hemidactylus turcicus*, Mediterranean House Gecko, Kerr County (county record). (4)
*Hemidactylus turcicus*, Mediterranean House Gecko, Kimble County (county record). (4)
*Holbrookia maculata perspicua*, Prairie Earless Lizard, Brisco County (county record). (4)
*Phrynosoma cornutum*, Texas Horned Lizard, Yoakum County (county record). (2)
*Ophisaurus attenuatus attenuatus*, Western Slender Glass Lizard, Jim Hogg County (county record). (3)
*Scoloporus consobrinus*, Prairie Lizard, Robertson County (county record). (2)
*Arizona elegans*, Glossy Snake, Parker County (county record). (1)
*Coluber constrictor*, North American Racer, Floyd County (county record). (2)
*Crotalus atrae*, Western Diamond-backed Rattlesnake, Gaines County (county record). (2)
*Crotalus viridis*, Prairie Rattlesnake, Gaines County (county record). (4)
*Hypsiglena jani*, Chihuahuan Nightsnake, Gaines County (county record). (4)
*Lampropeltis calligaster*, Prairie Kingsnake, Guadalupe County (county record). (4)
*Lampropeltis getula splendidula x bolbrooki*, Desert/Speckled Kingsnake intergrade, Hall County (county record). (4)
*Micruroides tener*, Texas Coral Snake, Starr County (first vouched county record). (4)
*Regina grahamii*, Graham’s Crayfish Snake, Rockwall County (county record). (2)
*Rena disjecta*, New Mexico Throatsnake, Gaines County (county record). (4)
*Sistrurus tergeminus edwardsii*, Desert Massasauga, Presidio County (county record). (2)
*Sonora semiannulata*, Western Groundsnake, Andrews County (county record). (2)
*Tantilla nigriceps*, Plains Black-headed Snake, Gaines County (county record). (4)
*Tropidoclonion lineatum*, Northern Lined Snake, Armstrong County (county record). (4)
Natural History Notes

ARIZONA

*Dipsosaurus dorsalis*, Desert Iguana, persistence in urban habitats (xero-riparian corridors and altered habitats) in Phoenix. (1)

*Heloderma suspectum*, Gila Monster, probable courtship and mating behavior. (2)

*Sceloporus uniformis*, Yellow-backed Spiny Lizard, first documentation of two regenerated tail sections in a single tail. (1)

*Coluber flagellum*, Coachwhip, escape behavior involving climbing up a Giant Saguaro *Carnegiea gigantea*. (1)

*Crotalus molossus*, Black-tailed Rattlesnake, courtship/reproductive behavior. (1)

*Crotalus scutulatus*, Mohave Rattlesnake, maximum size record. (2)

*Crotalus willardi*, Ridge-nosed Rattlesnake, male combat. (2)

*Crotalus willardi*, Ridge-nosed Rattlesnake, pregnancy, maternal care, and male activity toward pregnant and post-partum females. (3)

*Gyalopion quadrangulare*, Thornscrub Hook-nosed Snake, cloacal-popping defensive behavior. (2)

CALIFORNIA

*Plastiodon gilberti*, Gilbert’s Skink, male combat. (1)

*Plastiodon gilberti*, Gilbert’s Skink, first known record of predation by a Northern Pygmy-Owl (*Glaucidium gnoma*). (2)

*Xantusia gracilis*, Sandstone Night Lizard, foraging behavior, insect prey (Coleoptera) and possible insect prey (Pallid-winged Grasshopper, *Trimerotropis pallidipennis*). (1)

*Coluber constrictor*, North American Racer, first known record of foraging behavior within the intertidal zone. (4)

*Coluber taeniatus*, Striped Whipsnake, rain-harvesting behavior. (4)

*Crotalus oreganus*, Northern Pacific Rattlesnake, non-rattling tail display. (2)

*Crotalus oreganus*, Northern Pacific Rattlesnake, scavenging of a dead-on-road Long-eared Chipmunk (*Tamias quadrimaculatus*). (3)

*Crotalus oreganus bellarri*, Southern Pacific Rattlesnake, scavenging of a Western Brush Rabbit (*Sylvilagus bachmani*) partially eaten by another predator. (4)

*Lampropeltis zonata*, California Mountain Kingsnake, predation by an Island Fox (*Urocyon littoralis*) on Santa Catalina Island. (4)

*Thamnophis sirtalis terraeanta*, San Francisco Garter Snake, upland forest habitat use. (1)

NEVADA—(No natural history notes published).

NEW MEXICO

*Aspidoscelis inornata*, Trans-Pecos Striped Whiptail, life history at northern distributional limit. (2)

*Coluber flagellum*, Coachwhip, highest voluntary ultraviolet-B exposure recorded for a diurnally active snake (field study also took place in west Texas). (4)

*Hyposglena jani*, Texas Night Snake, attempted predation on a Texas Horned Lizard (*Phrynosoma cornutum*). (2)

TEXAS

*Siren intermedia*, Lesser Siren, excavated mass estivation and artificial hibernacula. (2)

*Kinosternon birtipes*, Rough-footed Mud Turtle, maximum size record and description of its spring-fed natural wetland habitat. (1)

*Malaclemys terrapin littoralis*, Texas Diamond-backed Terrapin, social/group burrowing with possibility of mating aggregation. (1)

*Trachemys scripta elegans*, Red-eared Slider, anthropogenic mortality due to being trapped in a cattle guard. (2)

*Aegisthodon contortrix*, Copperhead, first known record of the Common Spotted Whiptail (*Aspidoscelis gularis*) as a prey item. (4)

*Aegisthodon piscivorus*, Cottonmouth, first known record of predation by a Roadrunner (*Geococcyx californianus*). (2)

*Coluber flagellum*, Coachwhip, general ecology (home range, movement rate, habitat, microhabitat, and body temperatures) of a radio-tracked specimen. (2)

*Coluber flagellum*, Coachwhip, first known record of the Trans-Pecos Striped Whiptail (*Aspidoscelis inornata*) as a prey item. (2)
Crotalus atrox, Western Diamond-backed Rattlesnake, attempted cannibalistic predation of a dead-on-road conspecific. (2) Crotalus lepidus, Rock Rattlesnake, scavenging of a dead-on-road Texas Earless Lizard (Cophosaurus texanus). (2) Drymarchon melanurus eremennus, Texas Indigo Snake, first known record of scavenging; consumed a dead Western Diamond-backed Rattlesnake (Crotalus atrox) draped over a barbed-wire fence two days prior. (2) Sistrurus tergeminus edwardsii, Desert Massasauga, first known record of the Trans-Pecos Striped Whiptail (Aspidoscelis inornata) as a prey item. (2)

UTAH—(No natural history notes published).

Peer Reviewed Publications


The Importance of Citizen-Science Observations

by Jeff Adams

[EDITOR’S NOTE: This is a companion article describing the story behind a range-extension note in the March 2016 Herpetological Review.]

Cope’s Gray Treefrog (Hyla chrysoscelis), new county record from Medina County, Texas. Photo by the author.

It was one of those nights: two days after a rain, falling barometric pressure, temperature of 80 degrees Fahrenheit at dark, and major storms all around the area. This was one of the nights we all dream about. Stories have been written about the night the Scram Brothers and others found numerous Gray-banded Kingsnakes (Lampropeltis alterna) on a night just like this.

Now that I have your attention—we all have these stories we like to sit around and tell; the fun times passing on to others the tale of those perfect nights of hunting, where the snakes crawled into our car when we left the door open while we were “answering nature’s call.”

A couple of things occurred to open my eyes to the importance of proper documentation. First and foremost, a great friend, Jack Reid, a degreeed herpetologist who did not work as a professional in the field but had once been quite active with the late Johnny Werler in herpetological discoveries in Mexico, passed away. He was a dear friend and I was fortunate to have grown up with his son as one of my lifelong best friends.
Growing up under Jack Reid’s tutelage taught me so much. By the time I was in fifth grade, he had taught me to do scale counts along with other things in the herping world.

It was not till last year that I realized how much I had learned from Jack Reid. I discovered a story Tom Lott had posted on the SWCHR website paying homage to Jack after his death. This all came about in a strange way. I ran into Judith Bryja with the Houston Zoo and we started swapping stories. We got on the subject of the late Johnny Werler and started talking of Jack Reid and others. Judith said, “I have a shoe box of photos we discovered and cannot identify everyone in these photos with Werler.” I offered my assistance and she emailed me the photographs. I drew a blank with some of these photos so I sent them over to Jack’s son, my best friend Jeff Reid. He was able to identify some of the “old timers.” Judith and I emailed back and forth, and she sent me the story Tom Lott had put together, as well as a paper Tom and Jack had published way back when Tom was still a youngster. Let’s just say that was a long time ago!

This simple history note was like finding a gold mine and I was so pleased to find this, I passed it on to all of Jack’s children. The joy of reading this now 50-year-old publication was priceless. Right then I knew the legacy we leave, no matter how small, is one of the greatest gifts to give your family. This natural history note was passed around like a kid sharing an A+ report card—it meant the world to the ones left behind from his passing.

One of the other things crucial to this article occurred in 2012, the first year of the Snake Days event in Sanderson, Texas. Troy Hibbitts presented attendees with a great lecture of proper documentation of natural history notes. He noted that without proper documentation, “it’s only a story.” This hit home with such force that Snake Days coined one of its slogans, “IT’S ONLY A STORY,” directly from Troy’s lecture. So many of us have these great stories, but the importance of proper documentation and recording the natural history in scientific journals is completely lacking. I myself have some great ones but never properly recorded the events and thus my stories were never taken seriously. Several range extensions and feeding habits are all preserved only in my brain, and are anecdotal due to improperly documenting the event.

These things have been weighing on me over the last couple of years. Everywhere I turn I see friends and acquaintances with great stories we all tell time and time again (especially if sipping some type of alcohol). These stories tend to become more elaborate either due to the intoxication level, or just maybe as we all age, the details of the event naturally become more grandiose with time.

Fast forward to July 30th, 2015. I was at a job site in Medina County waiting for my client. As I sat on the ground a small, bright green frog traversed this rural acreage home, to where I had parked my backside. I snapped a few photographs of the frog and watched it for a couple of minutes when my client showed and it was time to get back to work. Trying to identify the frog was a little difficult, and passing the photographs around to get a positive identification proved inconclusive. We knew it was a Gray Tree Frog, but without associated calls we could not identify it as *Hyla versicolor* or *H. chrysocelis*, so for the time being it was just “*Hyla.*”

With so much effort going into trying to identify the little guy, I discovered Medina County had no records of either species; so no matter what this was a range extension. Hey, that’s pretty cool, right? Mayra Oyervides prodded me a little (okay, a lot) to publish it, so I set out to do just that. But how, with only ‘*Hyla sp.*’ as the species? It just so happened that a friend, Eric Timaeus, lives close to this area of Medina County, and said he has seen this frog there. Now I had a break. Over the next three months I located three sites with the frogs, and recorded five more specimens from Medina County in the iNaturalist database.

Cope’s Gray Treefrog displaying the green coloration which first caught the author’s attention. Photo by the author.
I also obtained one specimen to try to use for a positive identification.

I learned of a method the Hibbitts brothers knew to identify *Hyla* by using a microscope to look very closely at the skin cells on the feet and between the toes. Bingo! I had a way to accomplish identification without having to wait for the 2016 breeding season to record frog calls from the three sites. I used a high-power digital microscope and took digital photographs of the specimen’s feet and toes, and sent the photographs to Dr. Toby Hibbitts. He identified the new county record as *Hyla chrysoscelis*, Cope’s Gray Treefrog.

I was now on my way to publishing the paper on the range extension of the Cope’s Gray Treefrog. Those of you who know me also know this is not my forte, and writing such things as a simple paper is a little work. The first time you do anything there is a learning curve, but after a few times it gets easier. I had a species name, photographs, GPS coordinates, date, and time—now what? I asked a few people for input and had great success from Dr. Travis LaDuc, Gerry Salmon, and of course the ‘needle’ Mayra Oyervides (both Gerry and Mayra have published numerous times). Now I needed to voucher a specimen with a natural history museum. Of course I chose the University of Texas with Dr. LaDuc to send the information and receive a voucher number to be used in the paper.

I finally had my paper written and submitted to all three of my chosen reviewers. I now discovered all three had some slight differences in how they do things. I therefore took a little from each person and applied their ideas to my paper. How great it is to have such friends as those three, and being afforded their great knowledge as well as their taking the time to teach me.

I got my paper back from Dr. LaDuc and it looked like he graded it like a final exam. There was markups all over the page, including one issue I felt was the most advantageous piece of advice. I had recorded the range extension from the county line with neighboring Bexar County. Dr. LaDuc had a note that said he didn’t let his students publish from a county line, so where is the closest Bexar County specimen to this new find? I didn’t know!

Dr. LaDuc was looking at me as one of his students. How cool is that? He was as demanding of me as if I was one of his advanced students working on a research project. This really gave me pride. I immediately dropped everything and back to the websites I went, searching universities’ documentation to ensure this had never been published—and where is the closest Bexar County specimen?

I made all the corrections, dotted my “I”s, crossed my “T”s, and submitted it to the Society for the Study of Amphibians and Reptiles’ *Herpetological Review* for peer review and publication, receiving a confirmation. After about a month as it was going through review, I received an email asking for clarification of one of the roads mentioned. Shortly thereafter I received an email basically stating my paper had cleared peer review and would be published in the March 2016 issue.

**HYLA CHRYSOSELIS** (Cope’s Gray Treefrog). USA: TEXAS: MEDINA CO.: 2601–2799 Country Road 454, (29.35005°N, 98.99563°W; WGS 84). 30 July 2015. Jeffery Patrick Adams. Verified by Toby Hibbitts. Biodiversity Collections, University of Texas at Austin (TNHC 96605, photo voucher). A single adult individual was found traversing a residential yard on the east side of County Road 4514 at 0855 h. This is a new county record for Tex (Dixon 2013. Amphibians and Reptiles of Texas: with Keys, Taxonomic Synopses, Bibliography, and Distribution Maps. Texas A&M University Press, College Station, Texas. 447 pp.), and the first record of the species in Medina County. Microscopic examination of the interdigital membrane was necessary and submitted to Toby Hibbitts to differentiate this specimen from *H. versicolor*. This record extends its known distribution 48.46 km west of the closest known record from Bexar County (UTEP Herps H-8868). Subsequently, three additional adult *H. chrysoscelis* have been observed within the vicinity of the initial find and were recorded in the iNaturalist Herps of Texas database (#1823942, #1900763, and #1900768). These four Medina County specimens complete our understanding of this taxon’s distribution in part of the south-central region of Texas, surrounded by other records from Atascosa, Bandera, Bexar, Frio, and Uvalde counties.

JEFFERY PATRICK ADAMS, 403 Shropshire Drive, San Antonio, Texas 78217, USA; e-mail: jeff32@satx.rr.com.

Distribution note for the new county record as published in *Herpetological Review*.

Like everything else in life, this story has an agenda and message from which to learn. We all have great stories we share amongst our friends (or anyone who will listen). I have heard so many of these stories so many times it’s almost like I was there to experience them. The animation of some herpers in a ‘Paul Harvey’ type of way really helps envision the event. The sad part of it, though, is when these older herpers pass away these stories will be gone forever. So many of the stories include great natural history notes that can be preserved forever with just a little effort on the individuals’ part.
No matter how trivial it appears today, the information you preserve may have relevance beyond your imagination 50 years from now. As I write this piece, Gerry Salmon and Dr. Harry Greene are collaborating on a Copperhead (*Agkistrodon contortrix*) feeding study. Some of the natural history observations and preserved specimens were recorded 50-plus years ago. Do you think the individuals that provided these natural history notes and preserved specimens would have ever imagined someone would be looking at the stomach contents and documented feeding habits 50 years later?

We all have an obligation for species preservation, and that starts with natural history. It’s great that so many of us will move a snake off the road, put flipped rocks back how we find them, etc., but the next time you find an animal look a little closer. Has that animal been recorded at this location? What was the animal doing? The information obtained may one day be priceless, but if you don’t record it, “it’s only a story!” Take just a little time out of your schedule and publish important information for the next generations to use, and leave a legacy for your children and grandchildren. They will appreciate it.

The Emerald Ghost: A History of the Smooth Green Snake (*Opheodrys vernalis*) in Texas and Adjacent States (Serpentes: Colubridae)

by Tom Lott

As I discussed in an earlier article (Lott 2015), the history of the Smooth Green Snake (*Opheodrys vernalis*) in Texas has been controversial, largely due to the doctrinaire insistence by the chief authority on the species (the late Arnold B. Grobman, 1918-2012) that all such records of this snake were erroneous, the actual specimens being the result of human introduction. This intransigence was also applied to purported records from several other southern states and, indeed, some of those reports have been shown to be incorrect. However, there is ample cause to believe that viable, indigenous, but largely relicual populations of this secretive, cryptically-colored snake exist in Texas and some of its surrounding states.

In 1973 Richard B. Worthington thoroughly reviewed all of the available records of *O. vernalis* from Texas, including a road-killed specimen he had collected nine years earlier in what is now urban Houston (Worthington 1973). No known new specimens have appeared from that state during the forty-three years since Worthington’s paper, despite the dogged efforts of a number of enthusiasts at identified localities and other areas deemed ecologically plausible habitat. Nevertheless, the time appears appropriate for a new summary to consolidate our sparse understanding of possible remaining populations at the southern terminus of its once even more substantial range.

![Smooth Green Snake (*Opheodrys vernalis*) specimen from an Iowa sand prairie within its usual range. Photo by Don Becker; Creative Commons license CC BY-SA 4.0.](image)

![Cope’s Gray Treefrog displaying the bright orange coloration on the inner leg and foot, typical of the *Hyla chrysoscelis/H. versicolor* complex. Photo by the author.](image)
Although the Smooth Green Snake has been listed as a “threatened” species in Texas for almost forty years, that recognition has not led to any appreciable increase in the understanding of its actual status. Unfortunately, “protection” at the state level is mostly an ineffectual “feel-good” measure in that it really only prevents exploitation by the pet trade, which for this species has never been an issue. In fact, state listing might instead serve to effectively stifle the awareness of any newly discovered specimens because such events are likely to be highly serendipitous, with a high probability that the lucky discoverers will not be in possession of the necessary permits required to collect even a road casualty.

The recent rediscovery of the Smooth Green Snake in Kansas (Shofner 2011), where it had been effectively considered extirpated (Rundquist 1979), should prove inspirational to field workers in the intervening states (especially Oklahoma and Arkansas) to investigate appropriate habitat where relictual populations of this secretive snake might well remain.

The Early Texas “Specimens”

“Owasse,” Texas (1883)—A specimen purported to be from “Owasse,” Texas by Yarrow (1883) exists in the United States National Museum (USNM 1489). According to Worthington (op. cit.) the ventral counts on this female snake (125) place it in the nominate subspecies, rendering it highly unlikely to have originated from Texas. Additionally, since no settlement of that name appears to exist within the state, it would seem the locality datum on this particular specimen is in error and that it is not from a Texas locality.

Deming’s Bridge, Matagorda County (1890)—The official history of the Smooth Green Snake in Texas begins in 1890 when F.W. Walmsley collected two specimens near Deming’s Bridge in Matagorda County. These specimens were described by Samuel A. Garman in 1892 and apparently, at least, one is still extant under the catalog number 19887 in Harvard University’s Museum of Comparative Zoology. The Deming’s Bridge locality cannot be found on modern maps as it has not existed since near the turn of the nineteenth century, but it is well known in the area and is represented by a state historical marker. Thus, at least one of the original specimens reported from Texas is genuine. This discovery was not particularly controversial at the time, given the rudimentary state of herpetological knowledge in Texas in the 1890s (Garman 1892).

Armstrong County (1905)—The next purported *Ophedrys vernalis* specimen from Texas was reported by Vernon Bailey in his 1905 “Biological Survey of Texas.” This specimen was allegedly from the Panhandle community of Washburn, Armstrong County. Bailey made no reference to the ultimate disposition of this specimen and Grobman (1941) was unable to locate it for his revision of the species 36 years later. Grobman rejected this record due to his observation that, “The accepted records that are represented by reliable museum specimens and that are south of the junction of the Ohio and Mississippi Rivers are from the mountains, which is not true for any of the Texas locality records” (Grobman, op. cit.). With this statement, any future specimens from Texas became controversial.

Bosque County (1907)—Another *O. vernalis* supposedly collected at Clifton, Bosque County, Texas, by Atkinson and Link on May 29, 1907, was assigned the catalog number 442 in the collection of the Carnegie Museum. In correspondence with M. Graham Netting, of the Carnegie Museum, Arnold B. Grobman (op. cit.) was able to determine the scalation of this specimen would place it in the eastern race of the species, unlikely to be found as far southwest as Texas. Additionally, Netting noted the reliability of the collectors’ records was highly questionable. Worthington (op. cit.) further questioned the validity of this specimen and the locality was regarded as erroneous (without comment) by Dixon (1987).

Ellis County (1931)—Grobman apparently also came across an additional record from Texas during his examination of museum specimens for his upcoming revision. Collected by a well-known herpetologist of the time, Charles Burt, specimen UMMZ 84096 in the University of Michigan’s Museum of Zoology bore the collecting datum “10 miles south of Waxahachie [sic][Ellis County], Texas” and was collected in April 1931. Grobman rejected this more recent Texas specimen on the basis of its distance from the normal range of the species, pending the collection of additional specimens from the same area. Richard D. Worthington (op. cit.), however, expressing doubt Grobman actually examined UMMZ 84096, came up with an even better reason for rejecting this particular specimen: it was actually a misidentified Rough Green Snake (*Ophedrys aestivus*).
The Grobman Monograph (1941)

In 1941, Arnold B. Grobman published his monograph on the Smooth Green Snake and it remains the seminal document regarding this species. Grobman personally examined more than eight hundred examples of *O. vernalis* from the collections of many different museums and included additional data acquired for him by others. This massive accumulation of scale counts was entered onto the then state-of-the-art sorting medium of IBM punch-cards and was analyzed by “various interpreting machines.” Grobman acknowledges receiving “information on biometrical methodology” from Lawrence M. Klauber, an engineer by training who was instrumental in establishing statistical techniques in herpetology in the early twentieth century. Clearly this monograph was technologically advanced for the time in any of the biological disciplines.

The main conclusion of this research, however, was that *O. vernalis* was comprised of two geographical races diagnosable by ventral count and that each race occupied a distinctive habitat. The new, western race was named *Opheodrys vernalis blanchardi* in honor of Dr. Frank N. Blanchard, “in recognition of his remarkable achievements in herpetology.” Despite all the biometry that went into its discovery, the diagnosis of the new race was remarkably simple: “A smooth-scaled *Opheodrys* usually with less than 140 ventrals in the females and 131 in the males.” All of the unequivocal Texas specimens of *O. vernalis* are referable to the race *blanchardi*.

Grobman was somewhat dogmatic, however, concerning his paradigm of the acceptable range and habitat that could be occupied by *O. vernalis*. He was apparently impressed by the observation of Roger Conant (1938) in Ohio, where both races are found, that the Smooth Green Snake occurred only in localities that had been glaciated during the Pleistocene (north of the red line in the map below). Plotting of his locality records confirmed this was the southward limiting factor in populations located below 1000 feet in elevation, at least in the eastern portion of the continent.

Ironically, confusion with the superficially similar Rough Green Snake, *O. aestivalis*, seems to be involved with a number of controversial records of putative Smooth Green Snakes from other southern and Midwestern states, even though Grobman stated in the introduction of his revision, “As a species it [*Opheodrys vernalis*] is remarkably distinct and cannot conceivably be confused with any other American species” (Grobman, *op. cit.*).

![Distribution of specimens of *Opheodrys vernalis* available to Grobman for his monograph. (After Grobman, 1941).](image)

The Post-Grobman Specimens

**Austin County 1 (1949)**—On April 23, 1949, William B. Davis and a group of his students from Texas A&M College stopped along a roadside about 2.5 miles west of Sealy, Austin County, Texas to examine a temporary rain pool in the open prairie. In the short grass of the highway right-of-way, they discovered and collected a single specimen of *O. vernalis*. Davis gave few details about the snake other than it had 137 ventrals and, therefore, was referable to Grobman’s newly proposed western race *blanchardi*. Unthinkable by today’s standards, neither the collection in which the specimen was deposited nor its catalog number or sex were mentioned in the published note in the journal *Copeia*.

Instead, Davis chose to confront Grobman’s apparent dogmatism in refusing to accept records of *O. vernalis* from Texas (as well as several other southern states) as genuine; Grobman had in fact dismissed these records with the almost flip comment that they “are obviously in error.” Davis’ irritation is apparent when he writes, “His main points of argument are that specimens were either outside *his* [emphasis Davis]’ accepted range or that the collector’s data are unreliable.” Davis instead proffered an analogy between the isolated Texas records for the Crawfish Frog, *Rana areolata*, which his group also collected at the same location and the disjunct nature of *O. vernalis* populations in Texas. “Because of this recent capture of *veralis*, I am inclined to accept the records from Bosque, Ellis and
Matagorda counties, "Texas as authentic" (Davis 1949). Unfortunately for Davis, Grobman was eventually shown to be correct (perhaps for the wrong reasons) about the first two of those three localities. This specimen is located in the Texas Cooperative Wildlife Collection at Texas A&M University under the catalog number TCWC 3273 (Worthington, op. cit.).

Austin County 2 (1953)—Four years after reporting an O. vernalis from near Sealy, Austin County, Texas (Davis, op. cit.), W. B. Davis reported another specimen, a female, from 8 miles south of Sealy. Scale counts are given, which also place this specimen in the subspecies blanchardi, as would be expected. The snake was collected in a "meadow" and presented to the author. Davis then devotes the remaining three paragraphs of the short four paragraph paper to again refuting Grobman’s (op. cit., 1950) claims that the Texas specimens could not be naturally occurring. Unfortunately, Davis again refers to the Ellis County (Waxahachie) specimen, which was later shown to be a misidentification, and to a mysterious "southern Oklahoma" specimen (doubtless KU 2537, although not cited as such) (Davis 1953). Again the disposition of the specimen is not stated in the note reporting its existence, but according to Worthington (op. cit.), it is in the TCWC as #10589.

Brazoria County (1961)—Under the "news and notes" section of the Texas Herpetological Society News Letter, which he edited, John E. Werler (1962, page 4) describes finding large concentrations of snakes on high ground south of Angleton, TX, the previous fall, as a result of flooding associated with Hurricane Carla. Among them were three Opheodrys vernalis. These specimens were taken to the reptile house at the Houston Zoo where, upon their failure to thrive, they were preserved and apparently kept at that facility. In fact, shortly thereafter I was personally shown a jar containing one of these snakes, which had assumed the characteristic post-mortem bluish coloration (it had apparently been green in life). Although the reptile house staff was aware of the significance of these specimens, the snakes apparently were never placed into a permanent collection.

In their magnum opus on the snakes of Texas, Werler and Dixon (2000) added very little information to that contained in the newsletter 38 years earlier:

Most smooth green snakes found in Texas were discovered during late April and early June, usually following rain showers. An opportune time to find these elusive snakes is immediately after a hurricane or severe storm, when the rising waters have inundated the low-lying coastal prairies, forcing many of the local terrestrial snakes from their hiding places. It was after such a hurricane that two smooth green snakes were discovered near Anleton, crawling over clumps of grass on one of the few available spits of high ground (Werler and Dixon 2000).

Unexplained is how the number of snakes taken changed from three in the original newsletter report into two in the subsequent account. Regardless, given the reputation of John Werler, plus the fact that I personally saw one of the preserved specimens, I accept this sketchy evidence as valid, especially so considering how few Texas records exist. Interestingly, even though Werler himself collected the Brazoria County specimens, he and Dixon (op. cit.) declined to include this record via a dot in their distribution map for this species (the maps in this volume tend to be extremely conservative—although highly detailed—generally omitting records for which extant museum specimens could not be located).

Harris County (1964)—On June 15, 1964, Richard D. Worthington collected a fresh road casualty O. vernalis just south of Hobby Airport. The specimen was a small adult male, 33.2 cm in total length (TTL) and was described as being light brown dorsally with a faint olive tint. Worthington speculated that the locality and brownish coloration of this specimen might indicate some affinity with the species then known as Opheodrys mayae of the Yucatan Peninsula in Mexico (now Symphimis mayae). He then reviewed the status of all specimens of O. vernalis known from Texas at that time represented by vouchers. He did not mention the unfortunately no longer extant Brazoria and Bexar county specimens. Worthington’s specimen resided in his personal collection (RW 2185) at the time it was reported, some 9 years subsequent to its collection. It is now located in the collection of the University of Texas at El Paso (UTEP H-3675). (Worthington, op. cit.)

Chambers County (1969)—A remarkably brief note in the journal Southwestern Naturalist described the first Chambers County, Texas record of a species that had not been reported in the literature for Texas (excluding the 1961 Werler specimens) for more than 12 years at the time. W. L. McClure described the habitat as "coastal prairie with native short grasses the dominant vegetation. Rice fields are nearby. Elevation is 7 feet above sea level." The female specimen was said to be light green in coloration and was deposited in the collection of a school
district in the Houston area (Spring Branch Science Center #ZV 364) (McClure 1969).

Uncertain Texas Locality Records

Bexar County (Helotes)—See Lott (2015) for a detailed discussion of this alleged locality.

Guadalupe Mountains (Culberson Co., TX/Eddy Co., NM)—In 1979 J. W. Mecham addressed the likelihood of this species occurring in the Guadalupe Mountains, which straddle the Texas-New Mexico border in the Trans-Pecos region:

The inclusion of Ophedrys vernalis [in the herpetofauna of the Guadalupe Mountains] is based primarily on a recent sight record of the species in the McKittrick Canyon area by Mr. Tony Burgess, although a rancher some years ago gave the writer a good description of what apparently was this species in the vicinity of the ruins of Queen, New Mexico (northern Guadalupe Mountains, 6000 ft). The form is known as a sub-Recent fossil (Logan and Black 1977), and occurs nearby in the Sacramento Mountains (Mecham 1979).

A year later, in his Annotated checklist of the amphibians and reptiles of the Guadalupe Mountains National Park, J. W. Grace (1980) says, under “possible species:” “Smooth Green Snake, Ophedrys vernalis. Skeletal remains from upper west side, sighting from McKittrick Canyon; to be expected at intermediate elevations; secretive, color blends with vegetation.”

In 1990, Dennis Parmley confidently identified late Pleistocene Ophedrys vertebræ from Fowlkes Cave, a limestone sinkhole in the barren southern end of the Apache Mountains, about 55 miles (89 km) south-southeast of the southern terminus of the Guadalupe Mountains, as O. aestivus rather than O. vernalis. This locality, however, is at least 2000 feet (~610m) lower in elevation than most currently appropriate vernalis habitat in the Guadalupe. These two vertebræ were also associated with other snake fossils characteristic of more xeric zones.

Adjacent States

Louisiana—Dundee and Rossman (1989) in their treatment of that state’s herpetology include no reference to O. vernalis. It should be noted, however, the prairies and marshes of southwestern Louisiana, especially Cameron Parish, are ecologically similar to and geographically proximate to the Chambers County, Texas record.

Arkansas—Trauth, Robison, and Plummer (2004), under “Amphibian and Reptile Species Erroneously Reported from Arkansas,” state, “The distributional limits of several species in neighboring states may actually extend into Arkansas, but Arkansas specimens have not been unequivocally verified.... Liopeltis vernalis...” (Dellinger and Black, 1938). Apparently, however, these authors, as well as Schwartz (1938), were following Hurter and Streekcr (1909) who originally listed an O. vernalis from Arkadelphia, Arkansas, based upon FMNH 405, which was subsequently correctly identified as actually an Ophedrys aestivus (Walley 2003). Interestingly, however, Werler and Dixon (op. cit) and Dixon and Werler (2005) provide a color plate (plate 85 in the former, p. 221 in the latter) of an O. vernalis described as an “Adult from Arkansas.”

Oklahoma—A single specimen of this species was first reported from Oklahoma by Hobart M. Smith and Arthur Leonard (1934), who provided remarkably little information about the specimen in question other than it was from “southern Oklahoma.”

Webb (1970), under the heading “Unverified, Problematical, and Probable Species,” states, “Aside from KU 2357 [a specimen from ‘Southern Oklahoma,’ described as a single ‘soft, dark colored male having 129 ventrals’ in the collection of the University of Kansas], no other smooth green snakes have been discovered in Oklahoma.”

Herpetologist Shane Lowe, then residing in Oklahoma, contacted the University of Kansas concerning KU 2357 and was informed the specimen is indeed an O. vernalis and not an O. aestivus. The only new information obtained about the purported sole Oklahoma specimen is that it was collected by an enigmatic “Dr. Miller” ca. 1916 (D. [Shane] Lowe, pers. comm.).

New Mexico—Although well known from the northern portion of the state (Degenhardt et al. 1996), this species is apparently absent from the Madrean ranges of southwestern New Mexico and southeastern Arizona (and, in fact, is completely unknown from the state of Arizona). Curiously, Grobman (op. cit.) accepted and mapped a specimen with obviously incorrect
locality data stating it was from Las Cruces, Doña County, New Mexico.

Chihuahua—The following account is given by Van Devender and Lowe (1977):

*Ophiocryptotis vernalis schwarzii* Grobman (Western green snake). Locality: 2.6 km N Pedernales or 38.4 km SE Guerrero on Mexico 16, 2185 m (UAZ 34416). A single specimen of *O. vernalis* was collected in plains grassland on the continental divide. This is the first record for the state of Chihuahua, and for Mexico. The nearest *O. vernalis* population known is in the Sacramento Mountains of New Mexico, northeast of El Paso, Texas, some 480 km to the northeast (MALB 769-770: NW Ruidoso). The disjunct populations of *O. vernalis* in Chihuahua and New Mexico suggest that these may be relics of the Wisconsin glacial period when conditions were cooler and/or moister, and mesic vegetation more continuous between the Rocky Mountains and the Sierra Madre Occidental. This record of dispersal is especially interesting because *O. vernalis* is a terrestrial, non-riparian species.

The Smooth Green Snake would appear to be an element of the Rocky Mountain faunal assemblage and consequently unlikely to be found further south in Mexico.

Literature Cited


Lowe, D. (Shane). Personal communication.


Captive Husbandry of the Desert Night Lizard, Xantusia vigilis
(Lacertilia: Xantusidae)

By Jane “Spider” Fawke

There are eight species of night lizards (Xantusia spp.) living in the southwestern deserts of the United States and Baja California. They are small, 50-70 mm snout-vent-length lizards, once thought to be geckos. They are live-bearing (viviparous), which attracted me to the species in the first place. The males have enlarged pre-anal pores and are easy to sex from the females.

Night lizards are very secretive lizards, rarely leaving their territories, which can be as small as one fallen Joshua Tree (Yucca brevifolia) or Yucca bush (Yucca spp.). Some species inhabit rock crevices. I find these lizards regularly in the sliding door slots in my cabin in North Joshua Tree! For specifics on the ranges of various species, refer to Lizards of the Southwest by Lawrence Jones and Robert Lovitch, the Stebbins field guide, or Stoops and Wright’s Snakes and Other Reptiles of the Southwest (See ‘References’).

I was herping one spring, in 1990, near Zzyzx in San Bernardino County, California, in typical Mojave Desert Creosote Bush (Larrea tridentata) and Joshua Tree scrub, with a small group of members of the Southwestern Herpetological Society. We were turning over items in a trash pile at a derelict house, when suddenly, under a pile of old tar roofing tiles, I saw many Desert Night Lizards (Xantusia vigilis vigilis) scurrying about. I caught
about a dozen before getting the right ratio to create a “harem”—one male and three females. One female was larger than the other two females, so I had a good age ratio, too.

![Mojave Desert Joshua Tree-Creosote Bush scrub. North Joshua Tree, California. Photo by the author.](image)

If you are collecting night lizards and/or accessories for their enclosure, do so within Federal and state regulations. Joshua Trees are protected at the Federal level in every stage of their life cycle, so be very careful what types of vegetation you pick up, many species of cacti and succulent are protected at both state and federal level too, so you should check the State Fish and Wildlife listings before your trip. Never take any animals, plants or rocks without a State Department of Fish and Wildlife fishing license—it’s a small price to pay rather than a very heavy fine if you are caught without one by a Game Warden or Park Ranger.

![Desert Night Lizard on yucca, Mohave County, Arizona. Photo by Michael Cravens; used with permission.](image)

I would not recommend keeping this species unless you have some experience with fragile lizards and geckoes such as *Phelsuma*, as night lizards are very small and delicate, and have specialized needs such as tiny food insects, heat, lighting, and moisture. I only ever handled mine to check on the females’ pregnancies.

I set up the group in a 40-gallon glass terrarium, with a 100-watt incandescent bulb for heat over a flat rock basking spot. The substrate was desert sand with lots of rock piles and dead bits of Creosote Bush and Yucca. I was living in New York at the time, so the tank needed more heat than, say, keeping these lizards in the southwestern U.S. The group also had a fluorescent UV desert vivarium daylight fixture. Even though the Night Lizards are nocturnal, I tried to mimic their desert habitat as closely as possible. The terrarium had a basking spot that ran between 85° and 100° Fahrenheit from March until September because of the air conditioning in my apartment. All the lights were on a timer and provided a temperature gradient from 60° Fahrenheit in the cool spots under the vegetation and burrows, up to 100° Fahrenheit on the basking rock. Before and after brumation, the terrarium was left at room temperature due to the excessive New York steam heat. From early November until the end of January, the animals were brumated in a shredded newspaper-filled shoebox in a basement in New Jersey where temperatures were a constant 50-55° Fahrenheit.

![40-gallon terrarium setup for a Night Lizard 1.3 “harem.” Photo by the author.](image)

The substrate underneath the rocks and dead brush was wetted down to create damp areas, and one side of the glass was sprayed daily in order to create moisture. The night lizards became accustomed to the spraying and licked water from the glass. I fed them pinhead and small House Crickets (*Acheta domestica*) and hatchling Mealworms (*Tenebrio molitor*), dusted twice a week with calcium powder, every time I sprayed the tank. The
night lizards became very tame and would take insects from my fingers.

The Arizona Night Lizard (Xantusia arizonae), one of the recently-split X. vigilia complex. Yavapai County, Arizona. Photo by Michael Cravens; used with permission.

After about a year in captivity, I noticed the larger female was getting quite fat. I soon realized she was pregnant, and at the end of two months, she was so huge she could not move or eat. Therefore, I sprayed her very gently with water which she lapped, so she could at least stay hydrated. I stayed up two nights watching her until she eventually gave birth to a baby about half her size. The baby began eating and drinking approximately two days later, and I was able to sex it when it was about three months old.

I never witnessed any kind of courtship or mating between the male and the females, and I left the group completely alone except for daily feeding and watering. In late November, I turned the heat and lights off, and gradually stopped feeding to encourage brumation. I did put a small water dish in the tank in case a warm spell brought the night lizards out. They usually came out of brumation around the end of February, at which time I turned the UV and heating lights back on and resumed feeding and spraying.

I really enjoyed keeping these night lizards, and they lived and reproduced for many years. I relocated to Los Angeles in 1997 and I passed them onto a fellow enthusiast, who also had success in breeding them until the harem eventually died out due to old age.

References


Book Review: *The Texas Tortoise: A Natural History*

by Francis L. Rose and Frank W. Judd
Hardcover. xviii + 188 pp., including 34 color plates, 34 figures, and 3 maps.
List: $35.96, Amazon: $33.96, Ebook version currently unavailable
ISBN 978-0806144511

Review by Tom Lott

This slender volume efficiently summarizes the current understanding of the natural history of the Texas Tortoise (*Gopherus berlandieri*), which is the smallest and most sexually dimorphic of the five surviving species of North American tortoises. (*A sixth “species” of North American tortoise (*Gopherus yagodeti*) has recently been proposed [Edwards et al. 2016] by a splitting of the southern populations of *G. morafkai* in Sonora and Sinaloa.) Much of that information has been discovered by the authors themselves during their extensive joint and individual field studies conducted on the south Texas coastal plains populations within the past forty-plus years. A great deal of the natural history of this species, however, remains unknown, and the authors are careful to point out specific areas where more study is needed and where they have extrapolated data from other species to fill in some of the gaps.

The introduction includes details of the life and travels of Jean Louis Berlandier, a Frenchman dispatched to Mexico (including what became Texas) in 1826, principally as a botanist to collect plants. The type specimen of the tortoise named in his honor by Harvard’s Louis Agassiz was obtained by Lieutenant Darius Couch in 1853 from Berlandier’s widow in Matamoros, after his untimely death by drowning in 1851.

The authors subsequently provide a general description of the Texas Tortoise and delve into its relationship to the other North American species of *Gopherus*, none of which are currently sympatric, but some of which likely were during the Pliocene and Pleistocene Epochs. Also, during those periods, there were at least six additional species known from fossils sharing the continent with the currently extant five. Some of the extinct forms were quite large in comparison to the surviving representatives of the genus.

Rose and Judd next re-examine the various systematic proposals that have been proffered for the present members of the genus. The best current evidence suggests that the Texas Tortoise and the Desert Tortoise (*sensu lato*) are very closely related, and the authors of the recent Desert Tortoise split (Murphy et al. 2011) are taken to task for failing to include the Texas Tortoise in their genetic analysis. Given Rose and Judd’s rather critical account of North American tortoise systematics, I was hoping for a more detailed response to the splitting of *G. morafkai* from *G. agassizii* (Murphy et al., op. cit.) regarding whether these taxa should have been treated as full species or as subspecies, since this is the only instance of purported parapatric speciation within the genus. This is especially desirable, since virtually all the available literature refers to both “species” collectively as “Desert Tortoises.”

The second chapter provides an extensive analysis of the various physiographic factors defining the geographical range of the Texas Tortoise, which neatly coincides with the Tamaulipan
Biotic Province (Dice 1943, Blair 1950); in fact, *G. berlandieri* might well be considered an index species for that province. There is a well-informed discussion of the climatic, edaphic, vegetational, and other influences serving to delineate and/or limit the distribution of this species in south Texas and northeastern Mexico, including the effects of the persistently high relative humidity enjoyed (or endured) throughout much of its range.

In the chapter entitled “Animal Associates and Relationships,” Rose and Judd examine the dietary preferences of the Texas Tortoise, which is essentially a herbivore although it may occasionally ingest animal matter opportunistically. Interesting is the tortoises’ marked tendency to consume grasses even though they do not possess the gut microbes required to digest the high-energy cellulose portion of the plants; presumably, the grasses provide roughage necessary for the efficient movement of food through the digestive tract.

Predators are briefly discussed, with the usual suspects (raccoons, coyotes, foxes, etc.) exacting the heaviest tolls, with the possible and ominous exception of the population explosion of feral hogs, which, although its effects on tortoises are as yet unstudied, almost certainly have had serious consequences. As with most species, however, predation pressure on tortoises appears to lessen as the juveniles gain some size—apparently at a carapace length of about 100 mm (3.9 inches). This chapter also discusses a host of diseases and maladies from which the tortoises may suffer due to the effects of various microbes, fungi, and parasites.

Most interesting for this reviewer, however, was the authors’ detailing of the mutualistic relationship that exists amongst what they refer to as the “cactus-tortoise-wood rat-rattlesnake community,” which should be immediately familiar to any naturalist who has spent time afoot in the brushlands of south Texas (rather than relying on road sightings). They have even determined that the passage of Prickly Pear (*Opuntia engelmannii*) seeds through the gut of a tortoise rendered them ten times more likely to successfully germinate.

In the chapter on “Morphology and Anatomy,” as the authors themselves admit, they may have expounded a bit much on this topic, but after slogging through the 18 pages, the reader will emerge a bit worn but much wiser regarding tortoise anatomy.

Nevertheless, this diversion does seem a bit out of place in a natural history treatise.

In the section entitled “Size, Growth, and Sexual Dimorphism,” the authors return to topics more typically associated with natural history. The Texas Tortoise is unique among its congeners in producing eggs that vary in shape from nearly spherical to elliptical (the more usual shape); this varies with clutch size. There is no relationship between the size of the female and clutch size, as is seen in most species of turtles. Some sources have erroneously asserted that the eggs are flexible and soft when laid, contending that, otherwise, they would not be able to pass through the posterior opening between the carapace and the plastron. However, Rose and Judd contradict this with their observations that shelled oviparous eggs in road-killed females, as well as freshly laid ones, were already hard-shelled. The solution to this perceived problem proved to be a slightly hinged posterior plastron, which was sufficiently flexible to allow the passage of hard-shelled eggs. The Texas Tortoise lays eggs between April and mid-September. The eggs may hatch from late August to early November. Hatchlings exhibit no growth from early November until March.

Seven additional chapters deal in detail with the other known aspects of this tortoise’s natural history, even including suggestions regarding their captive husbandry, for, despite the authors’ frequent repetition that these turtles are “protected” in the state of Texas, they recognize that many continue to be thoughtlessly “adopted.” The primary factor justifying their stance against tortoises as pets involves the fact that these are long-lived animals that frequently outlast their benefactors (or the interest thereof), causing them to be neglected or released back into the wild population with the attendant risk of introducing captive-acquired pathogens into the wild inhabitants (as has been well-documented with Desert Tortoises).

If one was active in the field in south Texas prior to the 1970s, he can probably appreciate how abundant the Texas Tortoise actually was, once upon a time. Along with the Texas Horned Lizard (*Phrynosoma cornutum*) and the Ornate Box Turtle (*Terrapene ornata*), it constituted a trio of iconic, charismatic herps that have since suffered cataclysmic declines in abundance, especially in the northern portions of their south Texas distribution. The coincidence of this decline with the dispersal of the Imported Fire Ant (*Solenopsis invicta*) is essentially discounted by Rose and Judd with respect to the Texas Tortoise,
given that their eggs are hard-shelled, rendering them more or less impervious—at least at that stage of vulnerability in many reptiles. They do concede, however, that hatchlings may be susceptible to ants during the drawn-out process of actual hatching. Rather, the authors tend to place the blame for the decline on agricultural practices (especially where the native habitat is completely cleared for monoculture) and road casualties, particularly in those areas of high oil and gas drilling activities, which are unfortunately concentrated in the middle of the tortoise’s inland south Texas range.

Although the Texas Tortoise was one of the first reptiles to receive state “protection” in Texas almost fifty years ago, its “threatened” status has done little to stem its decline due to causes other than the pet trade. In the latter category of threats, however, some success has been achieved. Prior to 1967, this tortoise was collected in vast numbers and frequently stored in inhumane conditions prior to and during shipment. This disgrace has disappeared in Texas, but unfortunately G. berlandieri enjoys no protection in neighboring Mexico where, as the authors note, freeze-dried specimens may still be sold as tourist curios playing miniature faux banjos.

In summary, Rose and Judd have achieved a long-overdue triumph in this compendium of the known natural history of the Texas Tortoise, which should become a classic in the genre. Their writing contains an unabashed passion for the welfare of these gentle creatures: “Of the five species of North American land tortoises, Texas Tortoises have been the most neglected by biologists and wildlife personnel charged with their welfare. . . . Laws and state regulations enacted to protect tortoises are only as effective as the level at which they are enforced. No gold stars will be given to those saddled with that challenging responsibility in Texas” (Rose and Judd 2014).

Dr. Francis L. Rose, long associated with the biology faculty of Texas Tech University, is currently a professor at Texas State University. Dr. Frank W. Judd has long been a professor at the University of Texas - Pan American.

Literature Cited


SWCHR CODE OF ETHICS

As a member of the Southwestern Center for Herpetological Research, I subscribe to the Association’s Code of Ethics.

Field activities should limit the impact on natural habitats, replacing all cover objects, not tearing apart rocks or logs and refraining from the use of gasoline or other toxic materials.

Catch and release coupled with photography and the limited take of non-protected species for personal study or breeding use is permitted. The commercial take and sale of wild-caught animals is not acceptable.

Collecting practices should respect landowner rights, including but not limited to securing permission for land entry and the packing out of all personal trash.

Captive-breeding efforts are recognized as a valid means of potentially reducing collection pressures on wild populations and are encouraged.

The release of captive animals including captive-bred animals into the wild is discouraged except under the supervision of trained professionals and in accordance with an accepted species preservation or restocking plan.

The disclosure of exact locality information on public internet forums is discouraged in most circumstances. Locality information posted on public internet forums usually should be restricted to providing the name of the county where the animal was found. When specific locality data is provided to one in confidence, it should be kept in confidence and should not be abused or shared with others without explicit permission.

Other members of the Association are always to be treated cordially and in a respectful manner.