

# Eye on Nature

SPRING 2004

A publication of the Wildlife Diversity Branch

Getting Texans Involved

## Diamonds in a rough

### Hummingbird diversity in West Texas highest in the state

By Kelly Bryan

**D**riving across West Texas on I-10 most people have little knowledge of what lies beyond the horizon. Thus is the vision of the land west of the Pecos, a landscape dominated by tumbleweeds, cacti and stubby little trees with thorns. To the eye of a seasoned biologist, especially one familiar with the region, the Trans-Pecos of Texas holds a treasure chest of jewels. Among these is a rich and diverse birdlife, at last count 508 species strong representing more than 80% of the species known to occur in Texas. Of any family group found there, the hummingbirds compete for top honors as a sought after group for birders to observe. Within the region, 16 species have been noted out of the 18 species known to regularly occur in the state. Only Buff-bellied Hummingbird and Green-breasted Mango have not been reported as yet. Here we briefly examine the status and occurrence of these species, including a 17th species that came "oh so close" to being recorded within Texas in the El Paso area.

The hummingbirds of West Texas can be categorized into three basic sub-groups; those that breed in the region, those that simply migrate through the region and those that would be considered vagrants in the region. Before we examine these species groups lets first look at the occurrence of these 17 species in selected areas within the region. The attached table presents that information (see page three).

Species that would be listed in the group of hummingbirds that currently breed within the Trans-Pecos of Texas include the following: Blue-throated, Magnificent, Lucifer, Black-chinned, Anna's (only 2 records) and Broad-tailed. The Black-chinned Hummingbird is by far the most common and widespread species nesting in West Texas. It can normally be found in any location and is excluded as a nester from

only the highest portions of the Davis and Guadalupe mountains. Individuals arrive in mid-March and are usually gone by the end of November. The second most common nesting species would be the Broad-tailed Hummingbird. It migrates through most habitats and breeds only in the pine-oak woodlands of the upper elevations of the Chisos, Davis and Guadalupe mountains. Recently, the Broad-tailed has been overwintering in the El Paso area and in the Davis Mountains, spring birds normally arrive there on Feb. 28, some years with snow still on the ground. The Blue-throated Hummingbird and the Magnificent Hummingbird share a similar breeding range to the Broad-tailed but are only occasionally seen during migration at lower elevations. The primary haunt of the Blue-throated is undoubtedly the Chisos Mountains — it is far less common in summer in both the Davis and Guadalupe mountains. The Magnificent is much more common in the Davis Mountains as compared to the other two ranges. The Anna's Hummingbird can be claimed as a Texas breeding bird based on two observations; the first in Musquiz Canyon in the Davis Mountains in April 1976 and more recently in El Paso in Feb. 2000. Normal occurrence of this species, a common resident bird of the West Coast of the United States, is to enter West Texas in September, peak in late October and early November, then linger through winter into February.

Species that migrate through the region would include the Ruby-throated, Calliope and Rufus. The Ruby-throated Hummingbird is

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# Rare Species

## Eye On Nature Spring, 2004

Texas Parks and Wildlife Department

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## Last stand for mussels of the Rio Bravo?

By Robert G. Howells

Freshwater mussels are the fastest disappearing group of animals in North America. Sadly, this includes mussel populations in Texas as well as elsewhere in the United States. Among the Lone Star mussels, those in the Rio Grande (or the Rio Bravo, as it is called on the south bank of the river) are not only some of the most unique, but are also among the rarest and most immediately threatened species.

These mollusks are important elements in aquatic ecosystems. They are Mother Nature's biofilters removing organic particles, bacteria and plankton from the water. Freshwater mussels are also sensitive indicators of environmental quality. When the environment changes or degrades, they are the first organisms to disappear.

Native mussels live partially buried and unnoticed in mud, sand and gravel on the bottoms of Texas rivers, streams and reservoirs. Most people remain completely unaware of them. In the past, some species were harvested to make mother-of-pearl buttons. In recent years, shells of certain species have been used to make cultured pearl nuclei and still others produce gem-quality pearls themselves. Most of us rarely notice their presence — or their absence.

Mussels in the Rio Grande include representatives of North American species that reach their southern range limits in the waters of the Rio Bravo and others from Central American origins that reach their northern limits there. Some, like Texas lilliputs (*Toxolasma texasiensis*), are small and rarely grow more than an inch long. Others like the washboard (*Megaloniais nervosa*) reach nearly 12" in length, weights of 4 lbs., and can live over a century. Tampico pearlymussels (*Cyrtonaias tampicoensis*) and others can produce pearls. Several occur nowhere else in the world. At least 16 species have been documented in the Rio Grande basin.



Rio Grande freshwater mussels. Only two Mexican fawnsfoot mussels (top right) have been found alive in over three decades. Texas hornshell (bottom right) found in New Mexico and in Texas. Three living Salina muckets (top left) found in 2003 may be the only members of their species ever seen alive.

Human modification of the Rio Grande and its waters started almost as soon as Europeans arrived in the area. By the 1970s, all mussel species had seriously declined and several either slipped into extinction totally or were lost locally from the system. One endemic species (found nowhere else) called Rio Grande monkeyface (*Quadrula couchiana*) was last seen alive near Brackettville in 1898. Mexican fawnsfoot (*Truncilla cognata*) and Salina mucket (*Potamilus metnecktayi*) were last found near Del Rio in 1972. Texas hornshell (*Popenaias popeii*) was last seen about that time as well. In 1992, Texas Parks and Wildlife Department (TPWD) personnel found shells of Texas hornshell and Salina mucket between Big Bend and the mouth of the Pecos River. In the late 1990s, a small population of Texas hornshells was found alive in the Black River. These findings generated new interest in Rio Grande mussels and brought federal funding to support survey efforts to find other survivors in both Texas and New Mexico. When these survey efforts were completed in 2001, no new populations of any rare mussel species had been found in either state.

In March 2002, an instructor at Laredo Community College (LCC) reported to TPWD discovery of a recently dead washboard in the river near that school. Shortly thereafter in 2002 and 2003, TPWD and LCC personnel made a series of wonderful discoveries in the Webb County area. Nine living washboard mussels were located; rare Texas hornshell was also discovered alive (nearly 30 living specimens); as was yellow sandshell (*Lampsilis teres*); and two living Mexican fawnsfoot mussels were also documented. In summer 2003, three living Salina muckets were found in the Rio Grande representing the only members of their species ever to be seen alive.

This unbelievably good news was tempered with a sour dose of reality. The only known surviving specimens found in the Rio Grande were in areas experiencing major development and modification, separated by saline waters of the Pecos River that prevent interbreeding, and were rapidly being smothered by massive silt loads. All have been subject to drought-related dewatering and controlled water-level fluctuations. In view of projected increases in development and water demands within the Rio Grande basin, the future for its mussels seems very dim indeed.

Robert is a researcher at the Heart of the Hills Fisheries Center in Ingram.

[Diamonds in a rough – Continued]

considered a rare spring migrant, but can be a fairly common fall migrant. Most spring migrants occur from late April–May; in fall individuals begin showing up in mid-August, peak in September and move on by the end of October. The first winter record was a bird photographed in Fort Davis in December 2002. The Calliope Hummingbird is also a rare migrant in spring within the region. In fall the first individuals can arrive in early July with most moving south by mid-September. There is usually a clear separation between migrant adult males and females/juveniles of this species. Adult males are typically gone by the first of September. During some years females and juvenile birds can be unusually common well into October. The final regularly occurring migrant is the Rufus Hummingbird. Without a doubt this little feisty bird, when present, can dominate any feeder. Although very rare in spring just like our other two migrant species, fall migrants can be quite abundant. The first individuals make an appearance in early July becoming quite common by the end of the month. Numbers peak in September but numerous individuals stay through late November and a handful of hearty birds tough it out through winter departing by February.



The final group of West Texas hummingbirds includes the rarer species that would be considered vagrants within the region. Included here are the Green Violet-ear, Broad-billed, White-eared, Berylline, Cinnamon, Violet-crowned, Costa's, and Allen's. The most recent addition to the region's list is the Green Violet-ear. An immature individual of this tropical low-

land species made an appearance at 6,100 feet elevation in the Davis Mountains from July 1–8, 2003. This represented only the second record from the mountainous west. The Broad-billed Hummingbird is somewhat of an enigma. Historically, the species nested along the Rio Grande near Castolon (late 1930s). Although there are no contemporary nesting records, summer sightings of the species still exist. Most recent observations have occurred in spring; a male graced a Fort Davis feeder five of the last six years arriving the last week of April. This has probably been the same individual each season. Two recent winter records have been obtained from the El Paso area. Prior to 1993, very few Texas records existed for the White-eared Hummingbird. During that year at least three different individuals were found in the Davis Mountains with at least one present from late May through early September. One of the individuals, clearly a juvenile, was first observed on June 13 and photographed on June 21. The opinion of many ornithologists is that this bird was reared locally and most likely represents a Texas nesting record. Presently 12 of 14 Texas records are from this region. The stunning Berylline Hummingbird was first reported in Texas from the Chisos Mountains; however, the second occurrence and first fully documented record was from the Davis Mountains in August 1997. Additional individuals made an appearance, also in the Davis Mountains, in 1999 and 2000.

Texas came "oh so close" to being able to claim the Cinnamon Hummingbird on its list. A single individual representing the second record for the United States was present at a feeder in Santa Teresa, New Mexico from Sept. 18–21, 1993. There are now seven accepted records of Violet-crowned Hummingbird from Texas, four of which have occurred in this region. Two are from El Paso, one from Big Bend National Park (along the Rio Grande at Boquillas) and most recently from the Clay and Jody Miller Ranch at the base of the Sierra Vieja. This bird was present from May 24–



June 6, 2002. Next on the list is the Costa's Hummingbird. Most of the records of this diminutive species are from the El Paso area recorded in March, April, September and October through December. There are now two records from the lower Big Bend area; the first summer record and only record from the Davis Mountains was an adult male present from June 10–Sept. 1, 2002. Finally, the confusing Allen's Hummingbird completes the list of species occurring here. Only adult males are identified with certainty in the field; thus, females and immature birds will be overlooked unless captured and measured. The only records currently existing are from the El Paso area and the Davis Mountains; however, without a doubt, a few individuals annually go unnoticed hiding among the swarms of closely-related Rufous Hummingbirds that are so abundant throughout the region in late summer and fall.

So seize an opportunity to visit the Trans-Pecos of Texas and find a few jewels of your own, you never know what species it might be!

Kelly is currently a consultant in West Texas having retired from TPWD. He works out of Fort Davis.

Species	El Paso Area	Guadalupe Mts. Area	Davis Mts. Area	Big Bend Area	Del Rio Area
Green Violet-ear			X		
Broad-billed	X		X	X	X
White-eared	X	X	X	X	
Berylline			X	X	
Cinnamon*	X				
Violet-crowned	X		X	X	X
Blue-throated	X	X	X	X	X
Magnificent	X	X	X	X	
Lucifer	X	X	X	X	
Ruby-throated	X	X	X	X	X
Black-chinned	X	X	X	X	
Anna's	X	X	X	X	X
Costa's	X		X	X	
Calliope	X	X	X	X	
Broad-tailed	X	X	X	X	X
Rufous	X	X	X	X	X
Allen's	X		X		
<b>Total (17)</b>	<b>15</b>	<b>10</b>	<b>16</b>	<b>14</b>	<b>8</b>

\*Actually observed in Santa Teresa, NM, approximately one mile from El Paso, TX.

# Wildlife Viewing at Old Tunnel Wildlife Management Area

By Amy Sugeno

Old Tunnel Wildlife Management Area (WMA) is home to 1-3 million Mexican Free-tailed bats (*Tadarida brasiliensis*) and 1,000-3,000 Cave Myotis (*Myotis velifer*) from March to October. Located on the Balcones Escarpment south of Fredericksburg, this 920-foot, abandoned Central Texas railroad tunnel was purchased by Texas Parks and Wildlife Department in 1991 to protect and manage the bats found in the tunnel. Though it is only 16 acres, 10,000-15,000 visitors come each season to Old Tunnel WMA to enjoy the bats' spectacular nightly emergence.

After returning to Texas from their wintering grounds in Mexico, many females find a "maternity roost" where they give birth to one pup, usually in June. While there are at least 10 major Mexican Free-tailed Bat maternity roosts in Texas, Old Tunnel is not considered a maternity roost. Rather, it is a "pseudo-maternity roost" because, while pregnant and lactating females use the tunnel, pups are not born there. Maternity roosts typically require very stable temperature and relative humidity levels. Because Old Tunnel is open at both ends, it is thought these levels vary too greatly to support a maternity colony. However, Old Tunnel does provide important roosting habitat throughout spring and fall migration and during the breeding season for pregnant and lactating females as well as volant pups.

In addition to experiencing the nightly bat emergence from May to October, many visitors also enjoy the year-round daytime wildlife viewing opportunities at Old Tunnel WMA. Picnic tables are available near the parking lot, and a half-mile hiking trail meanders through upland savannas dominated by Live Oak (*Quercus virginiana*) and Little Bluestem (*Schizachyrium scoparium*), canyon slopes that support species such as Texas Oak (*Quercus buckleyi*) and Escarpment Black Cherry (*Prunus serotina* var. *eximia*), and canyon bottoms dominated by Hackberry (*Celtis* spp.) and Arizona Walnut (*Juglans major*).

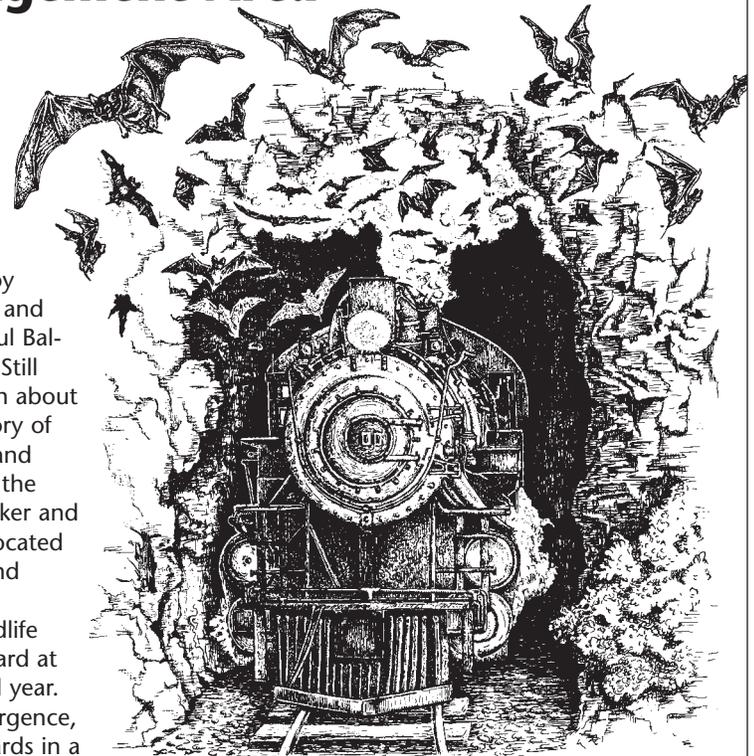
Many visitors use the trail guide to

learn about a few of the more than 170 species of plants marked along the nature trail. Others simply hike the trail to enjoy the scenery, wildlife and views of the beautiful Balcones Escarpment. Still others come to learn about the bats or the history of the railroad tunnel and spend time reading the Texas Historical Marker and educational kiosks located at the parking lot and along the trail.

A variety of wildlife can be seen and heard at Old Tunnel WMA all year. During the bat emergence, the bats spiral upwards in a counter-clockwise direction in order to gain altitude. Red-tailed and Swainson's hawks are often observed catching bats as they emerge, and Raccoons can sometimes be seen feeding on fallen bats. From the nature trail, bats can also be seen flying around the tunnel during the day, and visitors may also watch the bats return to the tunnel in the morning.

In addition to watching the fascinating nightly emergences, a variety of birds can be seen at Old Tunnel WMA. Old Tunnel WMA supports at least 100 species of migrant and resident birds. One can usually observe birds common to the Hill Country, such as Eastern Phoebe, Spotted Towhee, Carolina Chickadee, Bewick's Wren, Ladder-backed Woodpecker and Hermit Thrush. If lucky, visitors may also spot common, but not readily seen, species such as the Great-Horned Owl or Sharp-Shinned Hawk swooping silently over or through the woodlands. If especially lucky, visitors may also observe less-common species such as the Winter Wren or Peregrine Falcon.

While keeping their eyes up in search of birds, visitors are encouraged to also keep an eye on the ground. The impressive Texas Alligator Lizard may be



seen slowly moving among the leaf litter. As its name implies, this species looks like a small, pale alligator. It has yellowish eyes, is covered in plate-like scales, and can reach almost two feet in length!

The soft trill of the Cliff Chirping Frog, which, in Texas, is known only from the southern portion of the Hill Country west to the Del Rio area in Texas, can often be heard during the bat emergence from the cliffs outside the tunnel. While walking along the nature trail, visitors may also catch a glimpse of the Northern Fence Lizard. If observed while sunning itself, one cannot help but admire its beautiful neon-blue belly patches.

Old Tunnel WMA is open year-round from sunrise to sunset. From May to October, visitors can watch the bat emergence from either an upper viewing deck, which is free of charge, or lower viewing deck. Lower viewing deck prices range from \$0 to \$5 per person and include an educational presentation and up-close view of the emergence.

For more information about Old Tunnel WMA, please visit the web site at [www.tpwd.state.tx.us/wma/find\\_a\\_wma/list/?id=17](http://www.tpwd.state.tx.us/wma/find_a_wma/list/?id=17)

**Amy is manager of the Old Tunnel Wildlife Management Area.**

# How the Puzzle Sunflower changed its name

By Jackie Poole

Most plants that occur in the desert have adaptations for the arid conditions. They cover their leaves and stems with waxes and/or hairs to prevent moisture loss. Succulent plants like cacti, yuccas and agaves store water for future use in their stems and leaves. Creosote bushes have long, shallow roots to efficiently gather any drop of moisture that falls. But even in the desert, sources of water do exist, and a few plants have successfully managed to exploit this habitat.

The Pecos sunflower (*Helianthus paradoxus*) grows in cienegas (spring-fed desert marshes), particularly saline ones, along tributaries of the Pecos River in Texas (Pecos and Reeves counties) and along the drainages of the Pecos River and Rio San Juan in New Mexico. This tall (to 10 feet) elegant sunflower has lance-shaped leaves with three distinct nerves and similarly shaped bracts at the base of the flower head. Because of its preference for saline soils, the Pecos sunflower attracted the attention of the agricultural research community who wanted to develop a sunflower crop that could grow under saline conditions. The species name, *paradoxus*, as well as its original common name, puzzle sunflower, refers to the difficulty researchers had in relocating the species. Even in the original description, the author thought that the plant he was describing might

already be extinct! One would think that it should be easy to find a 10-foot tall sunflower, but there were several reasons why the species remained mysterious.

Pecos sunflower blooms much later (September and October) than other sunflowers. It does not even begin to form a flower stalk until late August. Botanists may have been looking for it too early in the season. Numbers of individuals in populations can fluctuate widely from year to year due to the plant's annual nature. In a dry year a site may appear to have no Pecos sunflowers even though hundreds of dead stalks from a previous wet year are present.

Much of the Pecos sunflower's original cienega habitat has been destroyed or highly altered by over-pumpage of groundwater. Pecos sunflower only grows in marshy habitats with standing water or very shallow water tables, heavy soils, and saline conditions. Soil surveys for Pecos and Reeves counties indicate many areas of soils that were formed in spring-fed marshes. According to Gunnar Brune, author of *Springs of Texas*, beginning around 1946, groundwater levels fell as much as 120 meters in Pecos County and 150 meters in Reeves County causing almost all of the springs to go dry. Six out of 36 springs in Pecos County and seven out of 25 springs in Reeves County were dry by the 1970s. He attributed the drop in the

## Did You Know?

With more than 1,295 plant taxa from ferns and their allies through flowering plants, the 32,000 square miles of the Trans-Pecos region is one of the most biologically diverse regions of North America. This region contains 131 rare plant taxa, nearly three times the number of rare plants for the rest of the state!

water table to heavy pumping for irrigation. As the springs dried up, the plant community changed from wetland species such as rushes, sedges, saltgrass and various salt-tolerant herbs to species such as mesquite and sacaton that require less water. In cases where the water disappeared long ago, creosote bush and other desert shrubs invaded. The soil was no longer saturated with water and only occasionally inundated by floods. Pecos sunflowers disappeared from these sites along with the water.

During the 1980s a controversy arose over whether the Pecos sunflower was a recently formed unstable hybrid between the common annual sunflower (*Helianthus annuus*) and the prairie sunflower (*Helianthus petiolaris*) that resulted from human disturbance (irrigation ditches). Or was the Pecos sunflower a distinct species capable of reproducing on its own? After over 10 years of detailed genetic work, Dr. Loren Rieseberg and his students from Indiana University have shown Pecos sunflower to be the result of a one-time hybridization between the common and prairie sunflowers that took place 75,000 to 208,000 years ago, long before humans came to the western United States. The product of this hybridization evolved into a new species by exploiting a habitat (ciénegas) where neither of its parents could exist.

Although much of the mystery surrounding the Pecos sunflower has been solved, the species' future remains uncertain. As the human population continues to grow, so do demands on groundwater. Will there be enough water for both? Only time will tell.

Jackie is a botanist for the Wildlife Diversity program working out of Austin.



# Creating Habitat in West Texas

By Carolyn Ohl

**G**reater plant diversity attracts a greater diversity of wildlife species. In West Texas the reward for creating a diverse habitat is enhanced because of its contrast to the surrounding vegetation, or lack thereof.

Although the pleasure and satisfaction of such a project is immeasurable, it should be undertaken only after a careful examination of what is involved. The first consideration is an ability to provide adequate water. The next is the degree of commitment one is willing to undergo for many years.

Without sufficient watering, the project is often unfeasible in West Texas. Flash flood runoff and roof catchment are good options to provide additional water, though some well water irrigation may be required. Roof catchment alone will probably work only for a small backyard habitat and have a very large roof. The most environmentally responsible system is to trap flood waters. This enhances the use of plants that are native to West Texas.

To trap flood waters it is necessary to build a diversion dam in an arroyo that floods during rains of one-half inch or more. The dam backs up water that will run into a channel you dig, which in turn empties into a tank. The top of the tank has to be lower



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than the creek bed. The top of the dam has to be lower than the ground above the creek so that when your tank is full the surrounding land won't be flooded and possibly washed away. Some years your tank (or tanks) may stay full and other years you may have to depend on other water sources.

It is best to start with a small planting area and expand as water and enthusiasm permit. Be sure to group plants according to their water needs, scattering the more drought tolerant plants toward the perimeter. Don't plant in unnatural looking rows — even your walkways should be in curved patterns. If you decide to add water features such as streams, waterfalls or bogs, all will blend together nicely.

Start with fast-growing native trees such as Arizona Cypress or Nettle Hackberry. While hackberry is often considered a junk tree, even their detractors will note that birds love them. Although short lived, hackberry will provide you with ample off-

spring and require limited water. Once a canopy of shad begins to develop, oaks, pinions and maples can be planted beneath it. Bushes should be added as well, although this may be helped along by the wildlife you should already be enjoying.

While noxious weeds will need to be controlled, many of the "volunteer" plants you may find can be allowed to grow. Mesquite and acacia should start on their own, but persimmons, Mexican redbud and a number of other wonderful native plants may have to be started. Remember, variety is better.

Mulching is vital — about four inches deep twice a year around each planting to at least cover the root zone will help maintain a moist soil. I make basins around each plant to hold water. As the trees grow, I enlarge the basin area, always filling it with mulch. Weight the mulch by covering it with weighted netting to keep it in place.

Resist the urge to prune whenever possible — you are doing it for yourself and not for the plants. If you must prune, limit it to your paths, allowing easier access to the habitat but still maintaining the shelter for the animals.

**Carolyn Ohl lives in Alpine. She created a beautiful mountain habitat near Terlingua where she has hosted many species of birds, butterflies and other wildlife in even the driest of conditions.**

## Wildlife Diversity Conference Aug. 18-20

By Steve Bender

In a response to widespread public and congressional support for the Conservation and Reinvestment Act (CARA), the federal State Wildlife Grant (SWG) program was created in 2001. This program has provided 200 million dollars to state, territory and Native American, tribal groups to provide support for wildlife programs. In order to continue funding, a statewide comprehensive wildlife conservation strategy must be drafted and submitted to the U.S. Fish and Wildlife Service by Oct. 1, 2005. Texas Parks and Wildlife Department (TPWD) has been tasked with the production of this plan with the help and input of Texas based non-profit organizations, other Texas based agencies and the public. In order to facilitate the active input of the non-profit and Texas agencies the TPWD Wildlife Diversity Branch is sponsoring a three-day conference Aug. 18–20 in San Marcos, Texas, that will include speakers from across Texas and from a number of other agencies and

non-profit groups. The first day of the conference will focus on the state of habitats and communities in the different ecoregions of Texas. The speakers will be asked to discuss those habitats that are potentially unique and possibly threatened by habitat loss or other issues. The second day of the conference will consist of at least six concurrent sessions focused on species and species groups of interest in the different ecoregions of Texas. Speakers will discuss species that may be in decline or species that have limited data and require further inventories or research. Sessions will include information on birds, mammals, reptiles and amphibians, aquatic species, invertebrates and habitats or plant groupings. The final day of the conference will include sessions on conservation management tools including the use of GIS for the production of a Wildlife Diversity Atlas for the State of Texas as well talks on Ecoregional Planning by the TNC. The final sessions of the conference will be break-out discussion groups, on species groups that will culminate in a final group discussion concerning the SWG wildlife conservation strategy. This

process will lead to the development of species working groups that will consist of a cross section of professional biologists and ecologists from across the state. These working groups will then put together a list of species and other information that will be placed directly in the final conservation strategy. Once a basic strategy has been conceived it will be open for public comment. We hope to have the strategy done by early 2005 and be prepared for public comment in the spring of 2005. While the Wildlife Diversity conference will be opened to mostly Texas biological professionals, the public comment portion of the plan will be open to any and all individuals. As a public agency it is very important to TPWD that this document be put in front of the citizens so they can have a true impact on the outcome of how this plan is drafted. Please be looking for opportunities to comment on the strategy, we will be posting it on the TPWD Web site. [www.tpwd.state.tx.us](http://www.tpwd.state.tx.us)

**Steve is a wildlife planner with the Wildlife Diversity program out of Austin.**

*[The Back Porch – Continued]*

irregularly shaped ranges of igneous origin, intervened by expansive basins, plains and plateaus. The overall visual effect is one of great openness. My wife contends that the Trans-Pecos looks like it “fell out” of her native state of Chihuahua, Mexico, and I agree.

Ecologically, the Trans-Pecos defines the Chihuahuan Desert portion of Texas. In turn, the Chihuahuan Desert, largest of the four American deserts, roughly coincides with the Mexican Highlands. The desert’s climate is shaped by the Sierra Madre Occidental shielding the interior highlands from moisture-laden winds coming off the Pacific Ocean. Solar radiation, dry-warm air, and low precipitation rates are the defining ingredients of the desert climate and these have a profound influence on the biotic communities in the Trans-Pecos.

Mountain ranges with sufficient mass and elevation to produce a cooler, wetter climate, such as the Guadalupe, Sierra Diablos, Sierra Viejas, Chinatis, Davis Mountains, Del Norte and Chisos, represent the “sky island” gems of the Trans-Pecos. Above 1,600 elevation, these ranges support various forms of evergreen oak and mixed conifer woodlands most often with uniform grass stands at ground level. In the Guadalupe, Davis and Chisos mountains, relict stands of Ponderosa and other large pines form forested islands primarily at elevations above 2,000 meters. Springs and seeps remain relatively common in these mountains and occasionally produce perennially flowing streams. Collectively, the “sky island” ranges occupy less than 10% of the Trans-Pecos surface area, but support disproportionately high regional biodiversity.

The region’s two major river drainages — the Rio Grande and Pecos River — are good examples of obvious, ongoing unnatural change. Floodplain clearing, damming (upstream and downstream), water withdrawal, contamination, and invasion by exotic plants have dramatically changed the flow dynamics and appearance of these rivers and their riparian corridors. Only small fragments of the native cottonwood bosque that historically lined some stretches the Rio Grande remain and the banks of both rivers are choked with either giant reed or salt cedar. Spoiled and impoverished as it is, I am strongly attracted to the Great River.

Several historic sources hint at landscape changes in the Big Bend region of the Trans-Pecos. Brevet Second Lieutenant, William H. Echols, who led the

now-famous “Camel Expeditions” through the southern portion of the Trans-Pecos in 1859 and 1860, described waste-high grasses at Tornillo Flats and along Terlingua Creek. Today these landscapes support sparse desert scrub and highly eroded, bare ground. In the mid-1880s, the G-4 Ranch stocked 30,000 head of cattle in the lower Big Bend, suggesting there must have been forage and grasslands in this region far beyond the proportions found there now. Present day Big Bend lowlands mostly support varied forms of desert scrub and large amounts of bare ground, giving little clue that grasslands might have occupied many sites 100 years ago.

During June 2003, my participation in annual pronghorn surveys provided some disturbing observations. As the plane weaved methodically over the expansive grasslands of northern Brewster and eastern Presidio counties in search pronghorns, two things jumped out at me. Over extensive tracts of grassland on the plains and basins, 30% to 60% of the surface area is barren ground. The bare ground I refer to is not the normal interstitial space between individual perennial grass tufts characteristic of these grasslands, but rather a repeating pattern of bare, elongated polygons or bands oriented perpendicular to the terrain’s slope.

The overall pattern is a vermiculation of grass and bare ground banding. It was difficult to judge dimensions precisely from our airplane, but I estimate that the irregularly shaped bands of bare ground averaged 5-20 ft. in width and 10-100 ft. in total length. Orientation of the sheet-eroded surfaces across the slope seems counter-logical. From the ground, these same grassland surfaces have a much more intact and healthy appearance, especially after a good monsoon season and the addition of new top growth to the remaining grasses and forbs.

Despite local and landscape reductions in biodiversity, the Trans-Pecos has retained much of its rich natural heritage and remains on the high end of the biodiversity scale for Texas.

In desert environments, biodiversity conservation issues frequently revolve around water. The Trans-Pecos is no different. Diversion and contamination of scarce surface water, withdrawal of the seemingly endless supplies of ground water, and the apparent (and not so apparent) ramifications to biodiversity are high on my list of conservation priorities. The Rio Grande and Pecos River are the best known and

largest scale examples of imperiled riverine ecosystems within the Trans-Pecos and nearly so for the American Southwest. The threat extends to the aquatic and riparian communities associated with numerous seeps, springs, cienegas, and a handful of intermittent and permanent streams scattered across the region’s mountain and basin landscape. The current prospect of large-scale pumping of Trans-Pecos groundwater for export to water-hungry urban markets has far reaching implications to the region’s biodiversity.

Perhaps there has never been a time more favorable toward good land stewardship and biodiversity conservation in the Tran-Pecos than the present one. I like to think that public awareness, technical understanding, strategic thinking, funding, and social will for the advancement of biodiversity conservation goals are at record peaks of abundance and gaining. Needed are active partnerships between interested citizens, private landowners, non-government organizations, private industry, academic institutions and government agencies to bear on the issues of strategic planning and actual implementation of a comprehensively integrated Trans-Pecos biodiversity conservation effort.

Texas is a private-land state. Meaningful conservation on a landscape scale cannot be achieved without the region’s landowners. Further, development of meaningful economic incentives and ecotourism will be needed to enlist the interests and support of these landowners. The integrated use of existing public and private conservation lands, land easements, and federal and state cost-share incentives on private lands, combined with the potential for other tools, offer an example of how effective conservation programs could be fueled and sustained in the future.

I find myself returning to the Great River for refreshment of mind and spirit. In this harsh environment of muted colors, thorny plants and barren surfaces, it is the exception rather than the rule. Anyone who has ever lived and worked in the desert knows the magic of running water. From a rocky promontory near Lajitas, I get an idealized view of the fabled river. The distant green bordered, silvery thread below winds a course of alternating rushing chutes and quiet reaches through the rugged mountains.

*Dave is a regional diversity biologist working out of Alpine.*



KEEP TEXAS *wild!*

# The Back Porch

## First Impressions: Coming into the Trans-Pecos

by Dave Holderman

The Trans-Pecos — the country beyond the Pecos River as viewed from the rest of Texas. I don't know the origin of the name, but it has obvious frontier and directional inferences. European settlement of North America, Texas included, followed a generally east to west pattern, and for most of the 19th century the Pecos River marked the far western frontier of Texas. Prior to the Civil War, Texas lands west of the Pecos River remained largely unsettled, the exceptions were a handful of widely separated military outposts, remote stageline stations, and Spanish settlements along the Rio Grande at Presidio del Norte (Presidio) and El Paso del Norte (El Paso). There was good reason for this. The region was the fiercely protected domain of Mescalero Apache and Comanche tribes and to a lesser extent the Kiowas and

Lipans. Settlement did not come to the Trans-Pecos until the Indian threat was suppressed in the late 1870s and the arrival of the Texas and Pacific Railroad in 1881. Stockmen were quickly attracted to the region by the seemingly endless supply of grass. Ranching continues to be the major industry in the Trans-Pecos. It accounts for about 2% of all cattle production in Texas.

I came to Texas and the Trans-Pecos in 2002. I grew up in Pennsylvania and went west nearly 35 years ago. I have spent the vast majority of my adult life in Alaska, Montana and New Mexico. I made first contact with the American Southwest in New Mexico, where it was "love at first sight." The climate, border culture and desert environment suit me. Unlike the late 19th century settlers of this region, I came into the Trans-Pecos region of Texas

from the west.

Although the Trans-Pecos is a human abstraction, it is well defined geographically. The southeasterly-trending, lower Pecos River forms the eastern boundary; the 32 parallel along the New Mexico-Texas border between El Paso and the Pecos River forms the northern boundary; and the Rio Grande from El Paso downstream to the confluence of the Pecos below Langtry closes the loop. It encompasses approximately 32,000 square miles or 11% of Texas' surface area, equivalent in size to South Carolina or Maine. Nine counties, individually some of the largest in Texas, and a portion of a tenth (Val Verde) fit within the region.

The landscape is dominated by northwest-southeast trending, fault-blocked limestone ranges and

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