

# Eye on Nature

FALL 2013

A publication of the Wildlife Division — *Getting Texans Involved*

## Contentious Coalitions for a Conservation Conundrum

By Donnie Frels

Some things just go together – biscuits and gravy, hot coffee on a cold morning, camp fires and old friends. It seems easy and comfortable to relate these associations, almost natural. Other things just don't mix – Aggies and Longhorns, ex-wives and girlfriends, Seinfeld and Newman. Most folks would put hunters and birders in the latter category although I might disagree. Having experienced both activities and associated with each group, I often hear of hunters enjoying the art of bird watching, albeit most are novices, while sitting in a deer blind enjoying the antics of a cautious roadrunner or curious green jay. However, in my unscientific survey, it seems fewer birders participate in hunting or appreciate the positive ecological impacts regulated hunting activities may produce. In one particular instance, hunters will have a key role in the recovery efforts of an endangered Texas songbird.

When the Endangered Species Act (ESA) of 1973 was initially passed by the 93rd Congress and signed by President Richard Nixon, it was met with some skepticism by suspicious landowners leery of federal government intrusion in matters involving private property rights. Perhaps nowhere in Texas was this more apparent than the biologically diverse and ecologically sensitive Edwards Plateau ecoregion in Central Texas. Depending on your point of view, perhaps landowners had reason for concern as the stated purpose of the ESA is to protect imperiled species and also "the ecosystems upon which they depend." Others felt the Act may even encourage preemptive habitat destruction by landowners who fear losing the use of their land because of the presence of an

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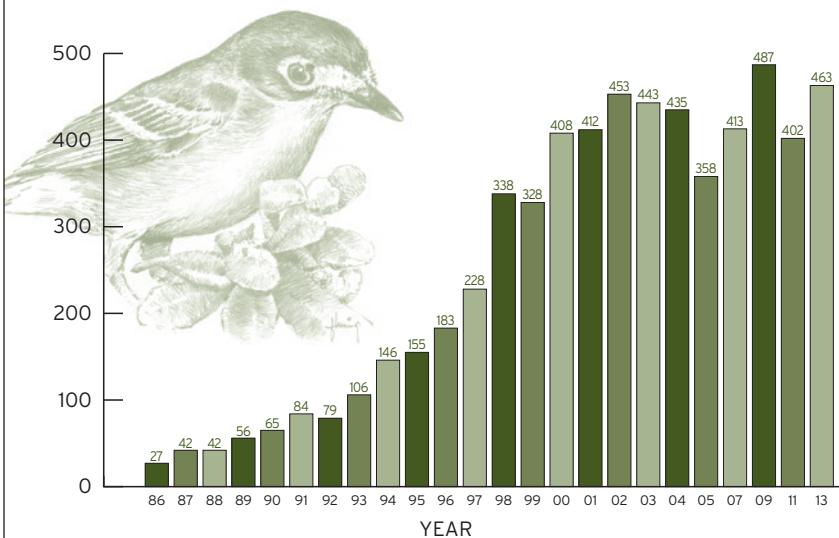
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## Forty Years of the Endangered Species Act

In 1973, President Richard Nixon signed a law that has been a cornerstone of endangered species management in the United States since that day. Like it or hate it, the Endangered Species Act has served to guide species and habitat management, leading to such success stories as the Whooping Crane, the Bald Eagle and others. In this newsletter, field biologists and program staff discuss how they have worked with the Endangered Species Act to benefit wildlife in Texas.

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## [Contentious Coalitions for a Conservation Conundrum, continued from page 1]

endangered species; known colloquially as "Shoot, Shovel and Shut-Up." One example of such perverse incentives is the case of a forest owner who, in response to ESA listing of the Red-cockaded Woodpecker, increased harvesting and shortened the age at which he harvests his trees to ensure that they do not become old enough to become suitable habitat. Add two endangered songbirds to the fray in Central Texas and you get misinformation, contentious meetings, suspicious landowners, and locked gates. U.S. Fish and Wildlife Service personnel referred to themselves as "combat biologists" while TPWD wildlife biologists who historically nurtured and enjoyed a trusting relationship on private lands, found themselves without a key.

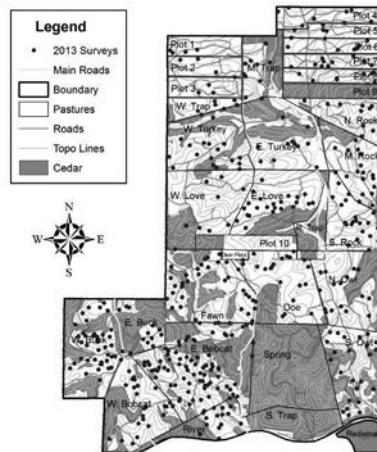
If Black-capped Vireos (BCVI) were the battle, Golden-cheeked Warblers were the war. Although both occurred in the Edwards Plateau, they were not common neighbors as each searched for very specific habitat requirements within the central part of the state. Simply stated, the warbler preferred old growth while the vireo needed new growth. As fate would have it, Black-capped Vireos (*Vireo atricapilla*) were of particular interest to a group of enterprising biologists and technicians working on the Kerr Wildlife Management Area (WMA) in western Kerr County. Owned by the Texas Parks and Wildlife Department, this 6,493-acre research and demonstration area led by Donnie Harmel and Bill Armstrong, was fast becoming known for innovative ideas and a holistic approach to land management focusing on the health of the ecosystem rather than the individual inhabitants.

At that time, cows were king and livestock grazing was the primary use of Hill Country range land. In order to be credible to landowners, most TPWD management plans had to consider livestock grazing and the Kerr WMA had discovered a way for cows and critters to coexist. For promoting attendance at their annual seminars, proper stocking rates and rotational grazing was part of the message while production of big antlered bucks was the carrot. Problem was, cows attracted Brown-headed Cowbirds (*Molothrus ater*) and cowbirds have a disdain for proper parenting. Instead, they prefer foster parents who build cup-shaped nests just like the Black-capped Vireo, to incubate, feed, and raise their demanding offspring – often to the detriment of the rightful recipients. As a result, the Fish and Wildlife Service had cattle grazing on the Kerr in the crosshairs.

Ever diligent, our habitat heroes teamed with Joe Grzybowski of Central State University in Oklahoma to devise a research project investigating the real obstacles to BCVI population growth. Two overwhelming factors emerged: lack of proper nesting habitat and nest parasitism. To address the latter, cowbird trapping proved effective as captured cowbirds off the

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Kerr WMA  
 Black-capped Vireos  
 2013 Survey  
 463 Singing Male Territories



## The End of Hard Copies

As we have been saying for the past three editions, this will be the last hard copy of *Eye on Nature* that we mail out. Beginning with our April edition, the newsletter will only be available on our website at: [www.tpwd.texas.gov/publications/newsletters/eye\\_on\\_nature/](http://www.tpwd.texas.gov/publications/newsletters/eye_on_nature/). On this site, you will actually receive a larger, more detailed newsletter than what you have been receiving through the email, since our size is not restricted by page counts.

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We hope you have enjoyed the newsletter as much as we have enjoyed producing it.

# An Endangered Bat with a Tequila Connection

By Jess Lucas

**M**ost people have few encounters with bats – they may be seen flying overhead at dusk, drinking from ponds and pools, or if you’re lucky, you may have seen them roosting in a tree, cave, or old building. While some might not consider seeing a bat a positive sign, some cultures believe bats to be a symbol of good fortune and luck. Whatever your belief, bats are an ecological wonder, providing pest control, seed dispersal, and pollination around the world.

If you still find you can’t see bats in a positive light, consider this. Texas has a very special resident, the Mexican long-nosed bat, without which there would be no tequila.

The Mexican long-nosed bat (*Leptonycteris nivalis*) makes a seasonal foraging trek to West Texas every year, migrating north from Mexico. While most bats found in Texas are insectivorous (insect-eating), this bat is specially built to consume nectar and pollen, primarily from the flowers of the agave. You may already know that tequila is made using agave plants, but you likely didn’t know bats have made it all possible.

The migration of the Mexican long-nosed bat appears to follow the range of the agave plant and the progression of the plants as they flower. The agave opens its flowers at night, and attracts the bats with large amounts of nectar. When the bats are feeding on the nectar and pollen, they pick up some pollen on their fur and faces, and transfer the pollen on to the next plant they visit, cross-fertilizing the agave. The bats and the agave are mutually dependent – the bats need the food, the plants need to reproduce. Likewise, the tequila industry benefits from the genetic diversity of the

agave plants, which helps build resistance to disease and pests.

However, this relationship is in danger. In parts of the bats’ range (primarily in Mexico and Central America) wherever bat roosts are found, entire colonies (usually containing multiple species) have been deliberately poisoned and roosts have been vandalized, primarily because of social stigmas regarding bats. In Latin America, vampire bats are considered harmful to livestock and stigmatized as being “evil,” and all bats seem to get the same treatment. Unfortunately, Mexican long-nosed bats were hard hit by the blanket exterminations.

Additionally, the range-wide source of the agave plants on which the bats depend has also been decimated, and the continuous migration and foraging route of the bats now has gaps. In many cases, the loss of agave plants can be attributed to the production of regional bootleg liquor. To make the liquor, the plant is “beheaded” – the center of the plant (the part that will form a flower

stalk) is cut out, and when the plant base is deemed ripe it is trimmed and cut off the ground. This cone-looking part of the plant is full of fluids used to produce liquor. Unfortunately, flowering is a rare event in agaves, with some species gaining the name “century plant” for the time it takes them to bloom. Additionally, each plant only blooms once, and then the agave dies. When agaves are cut before blooming, a loss of genetic diversity for the agave species occurs – as does a loss of feeding opportunity for bats.

These two major issues led to the addition of the Mexican long-nosed bat to the U.S. Fish and Wildlife Service Endangered Species list in 1988. Incidentally, the species is now protected wherever found in the U.S., and additionally, Mexico has afforded it similar protection. Fortunately, over the past 20 years, educational efforts by bat conservation groups have helped turn public opinion on bats, and conservation efforts have begun on the Mexican side of the border,



Agave flower.  
© Travis Fisher

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**[Contentious Coalitions for a Conservation Conundrum, continued from page 2]**

Kerr perched on the Pearly Gates by the hundreds. Providing proper nesting structure proved problematic.

Although the requisite four-foot-high nesting structure is readily available for BCVs in the Edwards Plateau, it seems white-tailed deer and other exotic mammals literally eat them out of house and home. What is one animal's home is another animal's hamburger. Unfortunately for the endangered songbird, landowners like deer, and in Central Texas, they're thicker than bugs on a bumper. With arguably the highest white-tailed deer density in the world and a monetary incentive for landowners to tolerate them, BCVs literally got the short end of the stick.

Due to long-term trends derived from annual vegetation lines and deer surveys, Kerr WMA staff were keenly aware of the predictable cyclic fluctuations – as the deer population increased, vegetative diversity and abundance declined. To address the situation, biologists recommended reducing deer density by half on several occasions. While public hunters enjoyed and appreciated the increased opportunity, success at maintaining the desired density proved temporary as deer from adjoining properties packed their bags and moved to the lush accommodations provided at Club Kerr. Staff then reached into their management toolbox and pulled out an uncommon one for a state agency at the time – deer-proof fencing. Soon our four-legged

friends across the fence would peer through the net wire and opine that the grass is indeed greener on the other side of the fence.

A cadre of camo-clad hunters served as willing participants in the battle for black-capped bungalows. Without the constant browsing pressure of deer and exotic ungulates, low-level structure returned to the motte producing species like shin oak and live oak which provide the majority of nesting substrate for these and many other passersines.

With Aldo Leopold's tools of wildlife management firmly in place, the Kerr WMA was now operating like a well-tuned ecological machine.

- Prescribed burning was reducing Ashe juniper while rejuvenating grass and brush species.
- Rotational grazing proved the importance of rest and recovery for grass species while utilizing the range properly
- Hunters and the high fence maintained deer density at appropriate levels so browse and forbs flourished
- Cowbird trapping was reducing nest parasitism not only for BCVs but numerous species of other songbirds

While avoiding the temptation to concentrate management efforts on just birds, cows, or deer, Harmel and Armstrong built an ecosystem capable of producing a variety of desirable products appreciated by both birders and hunters.

A quick glance at the graphs provided will attest to the success of the ecosystems approach to proactive BCVI management rather than strict preservation of existing limited habitat. As Armstrong was fond of saying, "Black-caps are the poster child for good deer management."

Today, public opinion of the Endangered Species Act varies depending on personal perspective. Generally speaking, I would surmise a definite shift in general landowner attitudes with regards to private property impacts. Where landowners once feared the yoke of federal regulation, many now embrace the Act as a vehicle for property protection when threatened by proposed road or utility projects while others enjoy the monetary benefits now associated with recreational birding for rare and endangered species. Often in nature beneficial associations formulate over time out of necessity.

Although hunters and birders both enjoy a quest for quarry and an appreciation for things wild, they often seem to possess opposing ecological ideologies. Understanding the niche each occupies in natural resources conservation and management may assist us all in effectively navigating the road to recovery for our endangered resources.

Donnie is Wildlife Management Area Project Leader responsible for the Kerr, Muse and Mason Mountain WMAs. He works out of the Kerr WMA.

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**[An Endangered Bat with a Tequila Connection, continued from page 3]**

improving the situation. Frequent population counts on the species have shown the situation is less dire than it was in the past.

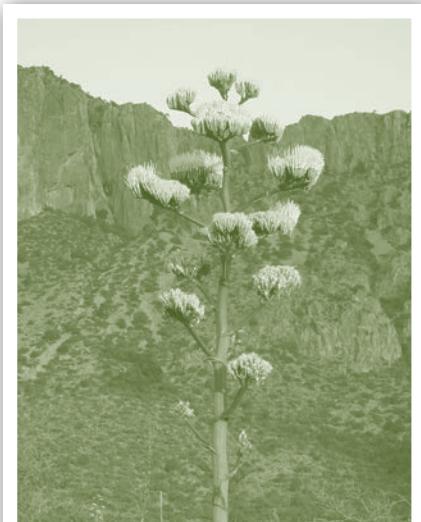
The Mexican long-nosed bat is a part-time resident of West Texas, where it has been captured by researchers in Brewster and Presidio counties. It is known to roost in caves and mines, but there is only one known roost for the species in the United States, and that is within Big Bend National Park. This colony varies in size, but up to 10,650 individuals have located to the cave seasonally.

If you live in the Trans Pecos, you can help support the Mexican long-

nosed bat in a couple of ways. Locate a reputable source for local agave plants, and find a place in your garden for them. It will take years for the agave to bloom, but they provide nice greenery in the meantime. When the flower stalk does appear, it will provide food for bats, moths, and many other species.

If you don't have space for an agave plant, or desire a quicker turnaround, you can hang out a hummingbird feeder or two, and there's a chance the bats may visit the feeders for a quick snack at night.

Jess was a non-game data specialist working with the Bat Working Group out of the Austin headquarters office.





By Donna J. Shaver, Ph.D.

# The Endangered Species Act Helps Restore the Endangered Kemp's Ridley Sea Turtle

When I began working with the Kemp's ridley sea turtle restoration effort at Padre Island National Seashore (PAIS), Texas in 1980 the population was plummeting. Several agencies and many people were working together to try to save the species, but some feared that it could already be too late. Fortunately, all these years later, the Kemp's ridley population has increased and the outlook for the population is much more optimistic, thanks in large part to the U.S. Endangered Species Act of 1973 (ESA).

The first published record of a Kemp's ridley nesting in the wild was an individual found nesting in 1948 at what later became PAIS. Although PAIS is the most important Kemp's ridley nesting beach in the U.S., by far most nesting by this species occurs in Mexico. However, for many years, biologists did not know where most of the Kemp's ridley population nested. A Mexican engineer filmed a synchronous nesting emergence of Kemp's ridleys in 1947 at Rancho Nuevo in Tamaulipas, Mexico. Dr. Henry Hildebrand from Corpus Christi, Texas, discovered that film and showed it at a herpetological conference in the early 1960s. Based on this film, the number of turtles nesting at that time was estimated to be over 40,000.

Mexican biologists began studying and protecting the nesting turtles and nests on the beach at Rancho Nuevo starting in the mid-1960s, but they found that the population had plummeted. Despite continuing protection by the Mexican government, by the mid-1980s the population had decreased to an estimated 300 nesting females. This precipitous decline was due primarily to

poaching of eggs for use as a supposed aphrodisiac and incidental capture of juveniles and adults by shrimp trawling. As a result of this drastic population decline, Kemp's ridley sea turtle was listed as endangered throughout its range on December 2, 1970, and the species has received federal protection under the ESA for the last 40 years.

The purpose of the ESA is to protect and recover threatened and endangered species and the ecosystems they depend upon, so that they ultimately no longer need protection under the ESA. The ESA provided the framework and authority for the U.S. to aid with recovery efforts for this imperiled species. In 1977, a bi-national Kemp's Ridley Recovery Program was formed involving the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), National Park Service (NPS), Instituto Nacional de la Pesca of Mexico, and Texas Parks and Wildlife Department (TPWD). As part of this bi-national program, the U.S. joined the on-going protection efforts on the nesting beach at Rancho Nuevo. In addition to trying to protect the nesting population in Mexico, another goal of

the bi-national program was to form a secondary nesting colony of Kemp's ridley turtles at PAIS, as a safeguard against extinction in case a political or natural disaster was to occur in Mexico. PAIS was selected as the location for this effort since the nesting habitat is preserved and protected as a national seashore and it is within the documented historic nesting range of the species.

From 1978-1988, 22,507 Kemp's ridley eggs were collected at Rancho Nuevo, packed in North Padre Island sand, and transported to PAIS for hatching. The hatchlings were released on the PAIS beach, allowed to crawl into the surf, and captured using aquarium dip nets after a brief swim in the Gulf of Mexico. It was hoped that this exposure to Padre Island sand and surf (termed "experimental imprinting") would cause the turtles to return to PAIS to nest when they reached adulthood. The captured hatchlings were transported to the NMFS Laboratory in Galveston, Texas, where they were reared in captivity for 9-11 months. This "head-starting" allowed the turtles to grow large enough to be

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tagged for future recognition and avoid most predators after release. Finally, the one-year-old turtles were released permanently, most into the Gulf of Mexico off Mustang and North Padre islands.

PAIS began patrols to find and protect nesting Kemp's ridleys and their eggs on North Padre Island in 1986. Patrol programs began later on other Texas beaches, and today patrols are conducted to some extent on all Texas Gulf of Mexico beaches annually, from April through mid-July. The six patrol programs in Texas are administered by Texas A&M University-Galveston, U.S. Fish and Wildlife Service, ARK, NPS, and Sea Turtle, Inc. Hundreds of dedicated staff members and volunteers conduct these patrols with the support of several organizations such as TPWD. Sea Turtle Restoration Project sponsors a toll-free telephone number (1-866-TURTLE5) to report nesting and stranded sea turtles in Texas.

Patrols are conducted primarily during daylight hours since Kemp's ridleys nest mostly during the day. Most nests are found by the sea turtle monitoring patrols, but some are found by other individuals working or recreating on the beach, especially in the developed areas of the coast. Eggs from nests found on PAIS and northward in Texas are transported either to the PAIS incubation facility or protected enclosures on the beach called corrals and the resulting hatchlings are released at PAIS, to help reinforce the bi-national effort to form a secondary nesting colony there. Eggs from South Padre Island are brought to a protective corral on South Padre Island for incubation, and the emerging hatchlings are released nearby. The public is invited to attend many of the hatchling releases held at PAIS and on South Padre Island, free-of-charge.

Texas waters also provide very important habitat for Kemp's ridley

turtles. Kemp's ridleys forage in Texas Gulf of Mexico and bay waters at various stages of their life cycle. Adult males and females feed in nearshore Gulf of Mexico waters, and a large portion of the adult female population uses these waters as a migratory corridor between foraging grounds in the northern Gulf of Mexico and nesting beaches in Mexico and Texas.

The Kemp's Ridley Sea Turtle Recovery Plan not only focuses on protection of the turtles on nesting beaches, but also in their marine habitat where these turtles spend the majority of their lives. This is addressed through the requirement of shrimp fishery to use turtle excluder devices (TEDs) to prevent incidental capture. Shrimping closures established by TPWD during the Kemp's ridley nesting season in Texas have also been extremely beneficial to the conservation of the species, while at the same time allowing shrimp to grow to a larger, more valuable size prior to market.

Several other recovery task priority items are also outlined in the Kemp's Ridley Recovery Sea Turtle Plan. One of these is operation of the Sea Turtle Stranding and Salvage Network. Many groups and individuals help find and document sea turtles stranded (washed ashore, alive or dead) in the U.S. and Mexico. Live stranded turtles are transported to rehabilitation facilities to receive care, with the objective of returning as many of those turtles as possible to the wild so that they can contribute to the population.

After years of effort from multiple agencies and federal protection under the Endangered Species Act, Kemp's ridley nesting has increased substantially from the population low of only 702 nests world-wide in 1985. A record 209 nests were recorded in Texas (including 106 at PAIS) and nearly 22,000 in Mexico during 2012. Some turtles from the

experimental imprinting and head-starting project have been confirmed nesting in the wild, mostly on North Padre and Mustang islands. They have contributed to the increase in nesting in Texas during recent years, but by far most nests found in south Texas are from turtles from the wild stock that are repopulating the area.

The substantial growth of the Kemp's ridley population is encouraging. The Kemp's ridley population can be down-listed to threatened status after a number of milestones outlined in the Kemp's Ridley Sea Turtle Recovery Plan are met. One of those milestones is 10,000 females nesting in a season. It will take more years to achieve this goal since each nester produces 2.5-3.0 nests within a season, and the rate of nesting increase has noticeably slowed since 2009. In order to continue to make progress towards population recovery, the ultimate goal of the ESA, conservation efforts in Mexico and the U.S. must continue.

Donna J. Shaver is Chief of the Division of Sea Turtle Science and Recovery for the National Park Service at Padre Island National Seashore near Corpus Christi, Texas.

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# Threatened and Endangered Fishes of Texas

By Gary Garrett and Megan Bean

To a great extent, the Endangered Species Act works as intended and helps us to address issues of threat and work to avoid losses to our natural resources. Not only does the ESA provide legal protection, but the U.S. Fish and Wildlife Service convenes teams of experts (Recovery Team) to assess status and make recommendations for protection and recovery. Unfortunately however, we have already lost as many fish species (8) in Texas as are now listed. One, Rio Grande Silvery Minnow, was extirpated but is now in the process of being repatriated. An additional 50 species of freshwater fishes are recognized by TPWD as Species of Greatest Conservation Need (face the threat of extirpation or extinction but lack legal protection). In 1991 a study by TPWD and the University of Texas revealed that 25% of the native freshwater fishes of Texas were already lost or faced extirpation or extinction. Today that number has grown to 40%.

We hope the Rio Grande Silvery Minnow (*Hybognathus amarus*) story is one with a happy ending. This fish used to be one of the most common fishes in the Rio Grande, from the Texas coast into northern New Mexico. By the late 1960s it had disappeared from the Texas part of its range and all that remained in New Mexico was in a short stretch of river around Albuquerque. We may never know what caused their demise, but it was likely a combination of factors such as drought, pollution, dewatering, etc. In 1994 it was listed as endangered and in December 2008, the U.S. Fish and Wildlife Service, the National Park Service, Texas Parks and Wildlife Department, and other partners began releasing silvery minnows into their former home in Big Bend. These recovery actions are designed to reestablish the minnow in Texas with the ultimate goal of eventually removing the need to have it listed. So far, we have released over two million young silvery minnow and biologists continue monitoring (and hoping) for a self-sustaining population.

Many of our T&E species occur in the relatively harsh habitats of West Texas. Our portion of the Chihuahuan Desert region contains a wide variety of habitats and many uniquely adapted plants and animals. Unfortunately, the limited aquatic habitats of this ecosystem have undergone substantial modifications in the last hundred years. One of the most heavily impacted habitats is the desert springs and their associated wetland habitats (ciénegas). These ecosystems were seldom damaged on purpose; put simply, water is rare in the desert and people want it for a variety of uses. The

ways in which ecosystems have been destroyed include grazing and watering livestock, draining to move water more efficiently to agricultural fields, and over-pumping of aquifers.

Over half (63%) of the native fishes of the Chihuahuan Desert are threatened with extinction or are already lost. Documented extinctions from this area include the Maravillas Red Shiner (*Cyprinella lutrensis blairi*), the Phantom Shiner (*Notropis orca*), the Rio Grande Bluntnose Shiner (*Notropis simus simus*), and the Amistad Gambusia (*Gambusia amistadensis*). Extirpations include the Rio Grande Silvery Minnow (*Hybognathus amarus*), Pecos Bluntnose Shiner (*Notropis simus pecosensis*), Rio Grande Cutthroat Trout (*Oncorhynchus clarkii virginalis*) and Blotched Gambusia (*Gambusia senilis*) in Texas.

Here is a brief summary of two remaining federally listed fishes of Texas. You can find a description of the remaining listed species in this article in our e-newsletter.

## Devils River Minnow

(*Dionda diabolii*) – Threatened 1999



The Devils River Minnow was originally discovered and described from Baker's Crossing on the Devils River, Val Verde

County. It is known to occur in Texas in the Devils River, San Felipe Creek, Sycamore Creek and Pinto Creek. They have been extirpated from Las Moras Creek, Kinney County. There are also historic records of occurrence in two small streams in Coahuila, Mexico, the Río San Carlos and Río Sabinas. Their current status in Mexico is unknown but, at best they are thought to be rare. Historically, the Devils River Minnow was one of the most abundant fishes in the Devils River. Their numbers began dropping in the 1970s and they became quite rare. The upper and lower portions of its range in the Devils River are gone, due to reduced spring flows in the headwaters and impoundment of Amistad Reservoir in the lower portion. The biome created by the overlap of the Chihuahuan Desert, Edwards Plateau, and South Brush Texas ecosystems yields a unique fish fauna of which the Devils River Minnow is part. A Conservation Agreement was developed in 1998 among the Texas Parks and Wildlife Department, the City of Del Rio and the U.S. Fish and Wildlife Service and is designed to foster research to "eliminate or significantly reduce the probability that potential threats to the minnow will actually harm this species and to recover populations of the minnow to viable levels." Although first proposed for endangered status under the Endangered Species Act in 1978, the Devils River minnow wasn't listed until 1999. A critical subset of the range of *D. diabolii* is now owned by the Texas Parks and Wildlife Department and the Nature Conservancy of Texas.

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# Texas Prairie Dawn Conservation Success in Houstlandia

By Jason Singhurst

**T**exas prairie dawn (*Hymenoxys texana*) or prairie dawn is a member of the sunflower family and a globally rare endemic plant (found nowhere else but Texas). Prairie dawn is a small, slender, tap rooted annual with one to seven stems that range between 1.5 to 7 inches tall. The plants are erect to spreading and usually leafless below branches. The plants arise from a rosette in late December or January with somewhat fleshy leaves. The yellow flowering plants bloom from late February through April.

Prairie dawn is restricted to the Gulf Coastal Prairies in the upper coast of Texas with its core range centered on Houston (Fort Bend and Harris counties) with two disjunct isolated prairie populations, one in Greg County and one in Trinity County. The species was first collected in 1889 near Hockley, Texas, in Harris County, by F.W. Thurow. Hockley is renowned by many geologists for its famed Hockley Salt Dome, a mound or columns of salt that rise above parent geology to the surface. Until 1970, the prairie dawn species appeared to have vanished from Texas botany. It is not listed in *Texas Plants – A Checklist and Ecological Summary* by Dr. Frank Gould (1962). Correll and Johnston (1970), in the *Manual of the Vascular Flora of Texas*, state "Rare in sandy soils near Hockley and Houston, Harris County, probably extinct (no known collections after 1900)." In 1981, James W. Kessler discovered three populations growing in "buffalo wallows" or small depressions in Harris County, these being the first known collections of this species since 1889-90 (Mahler 1983).

Prairie dawn is limited to 'saline prairies' with cryptogamic soils within the Houston Coastal Prairie dominated by gulf coast muhly (*Muhlenbergia capillaris*). Many of the species that occur in these rare saline prairies are absent from or uncommon in adjoining vegetation. These soils are shallow, saline, and support a moderate diversity of annual and perennial herbs that commonly occur in barren slicks and at the base of mima mounds (Bierner 2005). It is thought that the natural pattern of disturbance (droughts, fires, and floods) is necessary to maintain the areas, though the exact role disturbance may play is not clear.

Prairie dawn was listed as endangered by U.S. Fish and Wildlife Service (1986). The founding information was assembled by Bridges (1988). Approximately 60 occurrences (TxNDD 2013) of prairie dawn have been recorded, these primarily in Harris County. Unfortunately, many of these occurrences have been lost to development. Today, there are only 11 occurrences; nevertheless, huge conservation strides have moved the bar forward

towards recovery of this species in 'Houstlandia' (greater Houston area).

After the 1981 rediscovery, prairie dawn was documented at Addicks and Barker reservoirs in 1986, lands owned by the United States Army Corps of Engineers (USACE). Addicks and Barker reservoirs are located near the intersection of Interstate 10 and State Highway 6, in the upper watershed of Buffalo Bayou. The 26,000 acres that make up Addicks and Barker reservoirs are publicly accessible and provide flood damage reduction along Buffalo Bayou downstream of the reservoirs and through the center of the City of Houston. This amazing tract of land also contains large populations of prairie dawn. Since the 1986 discovery, extensive botanical surveys have been conducted, which has resulted in many populations of prairie dawn found throughout this landscape. USACE has conducted annual monitoring surveys and population estimates. USACE has also utilized Geographic Information Science (GIS) and Global Position System (GPS) tools to map populations and provide this data to Texas Parks and Wildlife



Dr. Larry Brown,  
Anita Tiller, and  
Nancy Shackelford  
estimate prairie  
dawn populations  
in a saline prairie.  
© Jason R. Singhurst

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Department's Texas Natural Diversity Database. USACE has also mapped invasive plants that occur adjacent to or within the saline prairies that prairie dawn inhabits. USACE is utilizing this digital data within their natural resource plan with application to reduce invasive plants such as Chinese tallow, Macartney rose, and deep-rooted sedge that threaten prairie dawn populations.

Katy Prairie Conservancy (KPC), is a local land trust organized for the preservation of the remaining Katy Prairie remnants in northwest Harris County, near the city of Katy. KPC owns and manages a total of 18,000 acres of conservation land which includes two extremely significant prairies, Warren Prairie (285 acres) and Jack Road Prairie (511 acres) that were purchased as conservation areas to preserve two large prairie dawn populations. Warren and Jack Road prairies lie adjacent to the Hockley Salt Dome. These prairie dawn populations have been surveyed almost annually since 2003, and in 2008-2009, a census was conducted by Wesley Newman, KPC Conservation Stewardship Director, Nancy Shackelford (University of Western Australia) and Jason Singhurst (Botanist, TPWD) to estimate the population size.

A population of prairie dawn documented back in 1988 was purchased through mitigation funds and is now owned by Harris County Parks and called Prairie Dawn Preserve. This preserve is being managed by Anita Tiller, a botanist

with Mercer Arboretum, in north Harris County.

Harris County Parks also owns a tract of land in southeast Harris County called the Native Coastal Prairie Preserve, adjacent to Ellington Field Airport. This prairie landscape is also referred to as Armand Pothole and sits on a salt dome. This preserve, also purchased through mitigation funds, had been neglected for several years which has allowed invasive woody plant growth (primarily Chinese tallow). However, recent discussion with Harris County Parks and Coastal Prairie Partnership to conduct ecologically sound management of invasive plants within the preserve looks promising.

Harris County Flood Control owns Willow Water Hole Prairie in south Harris County and is restoring this natural pocket prairie and planning interpretive signage. Not yet open to the public, plans for public visitation are in the works.

These are some of the gold star highlights with respect to migration towards recovery of prairie dawn throughout its restricted global range. Prairie dawn is also accompanied in the highly restricted saline prairie habitat with several other globally rare endemic plants, including coastal gayfeather (*Liatris bracteata*), Houston daisy (*Rayjacksonia aurea*), Texas windmill grass (*Chloris texana*), and three-flowered broomweed (*Thurovia triflora*). Therefore, each conservation success for prairie dawn benefits one or more additional globally rare

plants. The road to full recovery for prairie dawn since its rediscovery in 1981 is still far out on the horizon, but these land acquisitions, restoration, management, and partnerships are making great progress for this unique yellow flowering Texas wildflower.

Jason Is a botanist with Texas Parks and Wildlife Department working out of the Austin Headquarters.

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### [Threatened and Endangered Fishes of Texas, continued from page 7]

The other locations for Devils River Minnow have been severely affected by drought and water use (Pinto Creek and Sycamore Creek) and establishment of the exotic armored catfish (San Felipe Creek).

#### Arkansas River Shiner

(*Notropis girardi*) – Threatened 1999



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The Arkansas River Shiner is a small, streamlined minnow that has evolved for life in shallow braided channels of wide sandy prairie rivers in the Arkansas River system. Like many prairie minnows, they spawn after heavy summer rains and their eggs drift with the water current and develop as they are carried downstream. Historically, the Arkansas River Shiner occupied all of the major river tributaries to the Arkansas River in the Great Plains including the Cimarron, North Canadian and Canadian rivers as well as the Arkansas River. This species has been in decline since the 1950s, and has been extirpated from nearly 80% of its historic range. The current range of the Arkansas River Shiner is mainly in the

Canadian River in Oklahoma, western Texas and eastern New Mexico. An isolated population occurs in the Pecos River in southwestern Texas where they were accidentally introduced. Channelization of the Arkansas River has permanently altered and eliminated suitable habitat and is largely responsible for the extirpation of the species within the Arkansas River in Arkansas and Oklahoma. In addition, habitat loss, alteration of river flow from reservoir construction and pumping from the watershed for irrigation has had detrimental effects.

Gary Garrett is Program Director for Watershed Conservation at Texas Parks and Wildlife working out of Mountain Home. Megan is a Watershed Biologist.



# From Fatmuckets to Pimplebacks

By Marsha May

**T**here was once a time in Texas when all its rivers and streams supported dense populations of freshwater mussels. These invertebrates were the greatest biomass in these systems. Now many of their populations are dramatically in decline or gone, not only in Texas but nationwide. So why are mussels that look so much like rocks, so important?

Well, these amazing bivalves serve vital functions in aquatic ecosystems, and one of the most vital functions is as a natural vacuum cleaner. Their main diet consists of bacteria and plankton (tiny plants and animals). They keep the water clean and clear as well as serve as habitat for other aquatic animals such as benthic microinvertebrates (hellgrammites, dragonfly larva, damselfly larva, etc.). Why are we losing these important animals? Scientists believe that there are a number of reasons, but the number one reason is loss of habitat. The environments where these animals live are impacted by a host of hardships from siltation from construction sites, building of dams changing the dynamics of the habitat, and runoff of pollutants from the surrounding terrain, to name a few.

As many as 52 out of the 300 or so species of freshwater mussels found in North America inhabit Texas' water bodies. Texas heelsplitter, threehorn wartyback, Rio Grande monkeyface and

western pimpleback epitomize some of the wacky names of these once abundant creatures. The Rio Grande monkeyface has not been seen alive in Texas since 1898. This species is presumed to be extinct. Only one mussel species in Texas is listed as federally endangered, the Ouachita rock-pocketbook. Most surviving populations of this species are restricted to Oklahoma and Arkansas. Texas has only two records and neither were found alive. In January of 2010, 15 native freshwater mussel species in Texas received a state status of threatened. Six of those 15 species are now candidates for federal listing. Those six species are: Texas hornshell, Texas fatmucket, golden orb, smooth pimpleback, Texas pimpleback, and Texas fawnsfoot. The last five of those six species can be found in the rivers and streams of Central Texas.

Texas Mussel Watch is a Texas Parks and Wildlife Department project designed to get citizens involved in

collecting important data on Texas' freshwater mussels. Through attending a workshop, volunteers are placed on a Texas Mussel Watch scientific permit allowing them to legally handle animals and shells in the field. Data collected on rare species by Texas Mussel Watch volunteers goes directly into the Texas Natural Diversity Database ([www.tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/txnnd/](http://www.tpwd.texas.gov/huntwild/wild/wildlife_diversity/txnnd/)). The mission of the Texas Natural Diversity Database is to manage and disseminate scientific information on rare species, native plant communities, and animal aggregations for defensible, effective conservation action.

You can find more information on Texas Mussel Watch along with workshop dates and information on other Texas Nature Tracker projects at [www.tpwd.texas.gov/tracker](http://www.tpwd.texas.gov/tracker).

Marsha is a Program Specialist coordinating the Texas Mussel Watch out of Austin.

## [The Back Porch, continued from the back]

and so the species is proposed for listing simply to protect it from our lack of data. Other causes for listing a species might be rapidly declining or fragmenting habitat or a habitat feature that is experiencing increased or diverse pressure from development.

Whatever the cause, the most effective tool in determining whether a species should be listed, or should not be listed, is a good data set that we can turn to in order to make meaningful decisions about the status of the species in question. In Texas, this data set is the Texas Natural Diversity Database, housed and maintained at Texas Parks and Wildlife Department. This database is populated from many sources, some of which are our citizen science projects, our biological assessment teams and data from

our various biologists across the state obtained with permission from landowners and observations.

Another great tool in preventing the listing of a species comes with the implementation of conservation agreements in which stakeholders in the area affected by the listing agree to cooperate in identifying, protecting and enhancing critical habitat features for the benefit of the species. This has been used in a number of cases, one of the most notable being the development of ciénegas in West Texas to protect desert pupfish.

Texas currently faces the potential listing of a large number of species, many of which we simply do not have the necessary data to act on. You can help by getting

involved in various citizen science projects looking for and monitoring species of concern, or by simply providing data when species we track through the TXNDD are seen.

As the sun was setting, the air came alive with the high pitched trill of toads – the Houston toad was calling again. That was several years ago, too. Since then, development has moved into the area and the tank they once used is all but gone – and the night has gone silent around my home. With your help and using the tools available including the Endangered Species Act, we can keep this from happening elsewhere.

Mark is an Information Specialist working with the Texas Nature Trackers program out of Austin HQ.

# Habitips

## In General

- Monitor grazing pressure on rangelands and move livestock accordingly
- Continue controlling feral hogs
- Preserve brushy fence rows, shelterbelts and critical wildlife cover by fencing
- Order survey kits for Texas Nature Tracker programs such as Hummingbird Roundup and Texas Horned Lizard Watch

## November

- Monitor use and condition of key vegetation going into winter
- Move livestock off of fall food plots for wildlife
- Order spring-planted annual seedlings
- Construct brush piles needed for winter cover
- Begin developing winter prescribed burn plans
- Disk fire lanes as needed
- Clean up leaf litter within your firewise defensive zone

## December

- Prepare fireguards for prescribed burning program
- Disk in proximity to woody cover to provide habitat interspersions for game birds
- Get prescribed burn equipment ready
- Strip disk to encourage native food resources
- Focus on providing travel lanes and cover for birds

## January

- Prepare fireguards for prescribed burning program
- Disk in proximity to woody cover to provide habitat interspersions for game birds
- Get prescribed burn equipment ready

Simple things you can do on your land to enhance wildlife value.

- Strip disk to encourage native food resources
- Focus on providing travel lanes and cover for birds

## February

- Conduct prescribed burns as needed
- Begin planting annual seedlings—perennials should be planted in fall
- Monitor turkey flocks
- Conduct mechanical brush control as needed
- Disk wetland areas to encourage moist soil plants as needed
- Look for early spring wildflower blooms—mostly gold colored flowers
- Hummingbird migration begins
- Repair and install nestboxes for the nesting season

## March

- If trained begin trapping brown-headed cowbirds
- Plant native grasses, forbs and legumes
- Conduct prescribed burns as needed
- Watch for developing wildflower blooms
- De-water flooded areas to encourage wetland vegetation

## April

- Monitor grazing to provide nesting cover and plant diversity
- Clean and store prescribed burn equipment
- Develop a checklist of birds you see in various locations—note habitat use
- Continue trapping brown-headed cowbirds if trained
- Protect turkey roosts in areas with limited numbers of large trees
- Continue monitoring wildflower blooms

# Wild Stuff!



## Wildlife Posters

Migratory Landbirds of the Southeast

Common Feeder Birds of Eastern North America

Common Feeder Birds of Western North America

You Can Help Texas Turtles (pictured)

\$2 each plus \$3 shipping and handling for up to 4 posters. Add \$1 for each additional poster.

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## Show Your Support for Wildlife!

Help protect native non-game species like the Horned Lizard with the purchase of the Horned Lizard license plate. The cost is just \$30\*, with \$22 going directly to benefit the conservation of wildlife diversity in Texas.

Order online today and get your plate in just two weeks!

[www.conservation-plate.org/nature](http://www.conservation-plate.org/nature)

\*In addition to regular vehicle registration fees



# The Back Porch

## Recovery and the Endangered Species Act



KEEP TEXAS *wild!*

By Mark Klym

It was early evening and we were nearing the end of a long ride. As we were driving across a long stretch of highway, a juvenile Bald Eagle chose to swoop gracefully down and glide almost effortlessly in front of the car – “drafting” off the vehicle in front of us and keeping pace with us as we both wound our way through the mountains.

That experience several years before I came to Texas almost did not happen. Threatened by habitat loss, persecution and food contamination, the Bald Eagle nearly disappeared from the lower 48 states. In 1963, counts indicated there were 487 nesting Bald Eagle pairs in the lower 48, despite the Bald Eagle and Golden Eagle Protection Act which had been in place since 1940. The continuing decline was attributed to the pesticide DDT.

An insecticide, DDT was used on crops to reduce insect damage. Animals that ate the contaminated insects were eaten by the birds, and the contamination built at each successive level. Not only were the adult

birds harmed, but successive generations were harmed as many pair began producing “soft shelled” eggs that would crack during incubation or worse, would never hatch due to the contamination in the egg. In 1972, the use of DDT in the United States was banned except in certain restricted cases for public health reasons. As early as the 1930s, people became concerned about the status of our national symbol – the Bald Eagle. The passage of the Bald Eagle Act in 1940 reduced the harassment and persecution of the bird, but it continued to decline. In 1967, the Bald Eagle was officially declared endangered in all areas of the United States south of the 40th parallel. With the passage of the Endangered Species Act in 1973, this endangered bird was afforded protection south of the 40th parallel and in 1976, it was officially listed as endangered nationwide.

That was not the end of the story, however. This bird did begin to recover with the various actions taken and by 2006,

the count of nesting pairs had increased to 9,789 in the lower 48 states, many of those nests found right here in Texas. On June 28, 2007, the United States Department of the Interior declared the species recovered enough to remove it from the Endangered Species List entirely – something that has happened for very few species in the history of the Endangered Species Act!

Nobody likes to see an animal or plant added to the Endangered Species List – especially not the biologists and managers that work with these animals on a daily basis. Often the reason for listing is not as obvious as it was in the case of the Bald Eagle – a once plentiful bird was declining in numbers so rapidly it could not be missed. In some cases, there may be plenty of individuals where they are found, but the range may be so limited that one natural or man-made disaster could wipe them out entirely. Another scenario might be that we simply do not know enough about the species, its population and its habitat needs,

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