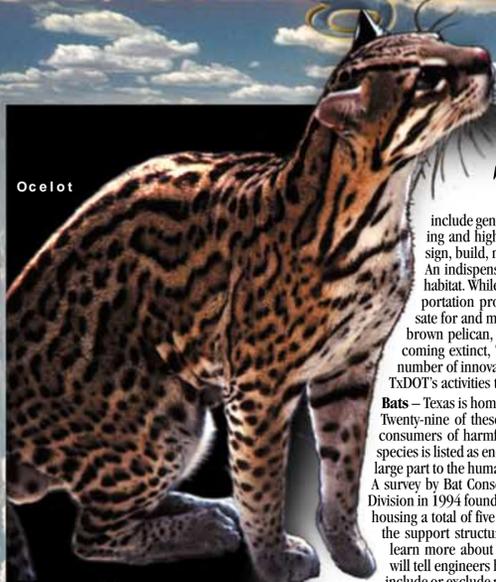


Endangered species & TxDOT

Ocelot



The Texas Department of Transportation (TxDOT) not only builds and maintains highways, but has grown to include general aviation airports, ferries, tourism, landscaping and highway beautification. It's a huge job to plan, design, build, maintain and operate this transportation system. An indispensable aspect of this is to protect wildlife and its habitat. While losing some habitat is inevitable with some transportation projects, TxDOT actively seeks to avoid, compensate for and minimize such losses. To keep wildlife such as the brown pelican, ocelot and Comanche Springs pupfish from becoming extinct, TxDOT is committed to doing its part through a number of innovative programs. The following is a look at some of TxDOT's activities that benefit threatened and endangered species.

Bats – Texas is home to 33 of the 44 species of bats in North America. Twenty-nine of these species are insect-eaters and are beneficial as consumers of harmful agricultural pests. Although only one of these species is listed as endangered, bat numbers have been declining due in large part to the human destruction of roosting sites in caves and mines. A survey by Bat Conservation International (BCI) and TxDOT's Design Division in 1994 found bat colonies under 59 TxDOT maintained bridges, housing a total of five to six million bats. TxDOT has fitted bat houses to the support structure of bridges favored by these flying mammals to learn more about bat roosting preferences in bridges. Study results will tell engineers how to design bridges and other structures to either include or exclude potential bat habitat. A number of TxDOT-maintained culverts are home to transitory colonies of some non-crevice dwelling bat species, such as **Cave myotis**, a species experiencing declining population figures. (Photo by Merlin D. Tuttle/Bat Conservation International)

Jaguarundi – A federally listed endangered cat, jaguarundis are slender, spotted cats about twice the size of a large domestic cat, and can be gray, red or black in color. This extremely rare species inhabits the brush land of the lower Rio Grande Valley and adjacent South Texas. Jaguarundis have been driven to the brink of extinction in Texas from habitat loss and predator control activities. TxDOT-constructed cat crossings, 48-inch pipes under a number of South Texas highways, designed to be used by these elusive felines and other small mammals to safely cross under roadways. (Photo by Gary Halvorsen/U.S. Fish & Wildlife Service)

Ocelot – The ocelot is a federally listed endangered species, a medium-sized, spotted and blotched cat with a moderately long tail. Native to South Texas, several of these nocturnal cats have been struck by vehicles on State Highway 100 in Cameron County at night. To reduce the possibility of motorists hitting ocelots, TxDOT installed 48-inch pipes beneath the road grade on this and a number of other South Texas highways to allow these cats to cross under the roadway, away from traffic. TxDOT is monitoring these sites for use by ocelots and jaguarundis. TxDOT and the Kleberg Wildlife Institute are conducting research to determine the precise range of ocelots. (Photo by Glen Mills/Texas Parks & Wildlife Department library)

American alligator – A large (up to 16 feet long) grayish-black, lizard-like reptile with a broadly rounded snout, the American alligator is found in the rivers, streams, marshes, bayous and swamps of Coastal and East Texas. In Texas, this species is classified as threatened due to its similarity in appearance to the endangered American and African crocodiles (to avoid the illegal marketing of products made from the alligator being sold as crocodile). An important benefit of wetland mitigation sites - natural areas purchased by TxDOT and set aside for preservation and wildlife habitat (such as Orange County's Blue Elbow Swamp) - is the conservation of habitat for these reptiles. (Photo by Mario Gonzalez/Texas Parks & Wildlife Department library)

Concho water snake – The Concho water snake, a federally listed threatened species, is usually less than 3 feet long, and has 21 to 23 dorsal scale rows and four rows of dark blotches on a grayish or reddish-brown dorsal surface. This snake is found in creeks and rivers of the Colorado River watershed north and east of San Angelo, and favors shallow, rocky stream beds. When TxDOT built a bridge across the Colorado River in Runnels County, home to the snake, engineers made a

number of design and construction modifications to reduce the impact of the bridge on the snake's habitat and well-being. (Photo by Martin Whiting/Texas Parks & Wildlife Department library)

Houston toad – The Houston toad, a federally listed endangered species, is 2 to 3.25 inches long, ranges in color from light brown to gray or purplish gray, and is native to portions of Central and East Texas. In order to help preserve dwindling numbers of this species, TxDOT built a series of tunnels and barriers along a section of Texas 21 in Bastrop County, an area favored by the Houston toad. These barriers and tunnels are designed to encourage the toads to cross under the highway, instead of taking their chances with passing vehicles. (Photo Texas Parks & Wildlife Department library)

Texas blind salamander – A federally listed endangered species, the Texas blind salamander is a cave-dwelling salamander that is white or pinkish in color with blood-red external gills and toothpick-like legs. This species grows to a length of about 4.7 inches. This salamander is found only in the Edwards Aquifer and San Marcos Pool in Hays County. (Photo Texas Parks & Wildlife Department library)

San Marcos salamander – The San Marcos salamander is a 1.5- to 2-inch-long, light-brown salamander with yellowish spots that is found in the aquifer-fed San Marcos Springs and San Marcos River. This salamander is federally listed as a threatened species. As with the Texas blind salamander above, TxDOT helps preserve the San Marcos salamander by involvement in aquifer protection. Through efforts such as posting signs notifying motorists of sensitive aquifer recharge zones and highway runoff studies, TxDOT is helping to preserve endangered species that depend on clean water from our aquifers. (Photo by D. Terry/Texas Parks & Wildlife Department library)

Comanche Springs pupfish – The Comanche Springs pupfish, a federally listed endangered species, is 1.3 to 1.8 inches long and colorful in appearance. This species is found in springs, streams and irrigation canals in portions of West Texas. In an effort to preserve this species in its native habitat, TxDOT, along with a number of other state and federal agencies, took part in a desert wetland re-creation - the Balmorhea Cienega Project. This project reconstructed a once existing desert wetland in an area where the wetlands had been destroyed to make way for agricultural irrigation canals. (Photo by J.E. Johnson/Texas Parks & Wildlife Department library)

Pecos gambusia – The Pecos gambusia, a federally listed endangered species, is 1.2 inches long and distinguished by a dark lateral stripe. This gambusia is found in small, clear, shallow springs in portions of West Texas. The species shares a similar habitat with the Comanche Springs pupfish, whose chances for survival were greatly enhanced by the Balmorhea Cienega Project, detailed above. (Photo by Dave Schleser/Texas Parks & Wildlife Department library)

San Marcos gambusia – A federally listed endangered species, the San Marcos gambusia is a 1.2-inch-long bluish fish with yellow fins and is found exclusively in the upper portion of the spring-fed San Marcos River in Hays County. Through efforts such as posting signs notifying motorists of sensitive aquifer recharge zones, highway runoff studies, and ponds designed to catch and filter runoff, TxDOT is helping to preserve endangered species such as the San Marcos gambusia that depend on clean water from our aquifers. (Photo Texas Parks & Wildlife Department library)

Bald eagle – The bald eagle, a federally listed threatened species and our national bird, is a large hawk-like bird with a white head, neck and tail, a dark body and a 6.5- to 7-foot wingspan. Bald eagles are found along the coast and lakes where tall trees or cliffs are nearby for nesting and roosting. Because these birds are particularly sensitive to noise, TxDOT has instituted "construction windows," specific times when construction and maintenance can occur on highways near nesting sites. TxDOT transportation projects are also designed to give bald eagle nesting sites a

wide berth. (Photo Texas Parks & Wildlife Department library)

Black-capped vireo – A federally listed endangered species, the black-capped vireo is a 4.5-inch-long insect-eating bird. Males have black caps and are olive green with white undersides. Females have slate gray crowns, are a duller shade of olive green, and have greenish-yellow undersides. This species is found in wooded areas of Central and West Texas. TxDOT is involved in a number of research projects studying these birds and their habitat. (Photo copyright Mark W. Lockwood)

Brown pelican – A federally listed endangered species, the brown pelican is a dark gray-brown water bird with a long pouched bill and a 6.5-foot wingspan. This bird is found along the entire length of the Texas Gulf coast. After a number of these birds were struck by motorists on the Queen Isabella Causeway connecting Port Isabel and South Padre Island, TxDOT launched a multi-faceted effort to enhance the safety of the pelicans. Steps taken included installation of "pelican crossing" and "reduce speed" signs, adjusting causeway lights to turn on earlier, and installation of windsocks and banners on light poles to give the birds a visual cue to steer clear of the bridge. (Photo Texas Parks & Wildlife Department library)

Golden-cheeked warbler – The golden-cheeked warbler, a federally listed endangered species, is 4.5 to 5 inches long and has a 7.75-inch wingspan. The male has a black back, throat and cap, and yellow cheeks with a black stripe through the eyes. Females are similar, but less vivid in coloring. This species is found in woodlands of the Edwards plateau, where nesting occurs. The golden-cheeked warbler spends its winters in Central America. TxDOT participates in the Balcones Canyonlands National Wildlife Refuge and in other mitigation sites within the golden-cheeked warbler's habitat. These efforts preserve this species' environment and breeding area. (Photo copyright Mark W. Lockwood)

Endangered cave invertebrates – Include the Bee Creek Cave harvestman, Bone Cave harvestman, Coffin Cave mold beetle, Kretschmarr Cave mold beetle, **Tooth Cave ground beetle**, **Tooth Cave pseudoscorpion**, and **Tooth Cave spider**. These small (2-8 millimeter long) invertebrates are each federally listed as endangered, and are found in caves and sinkholes of Travis and/or Williamson Counties. Each of these species has been adversely effected by habitat loss through development and the introduction of non-native fire ants into their environment. By agreement with the U.S. Fish and Wildlife Service, TxDOT is conserving 35 caves where these species are found. This plan will include the maintenance of each site, biological monitoring and research activities. (Photos by Wyman Meinzer/U.S. Fish & Wildlife Service)

Ashy dogweed – A federally listed endangered species, the ashy dogweed is a perennial wildflower with grayish-green stems and leaves, with daisy-like bright golden yellow flowers and is found only in Zapata County. A maintenance agreement with Texas Parks and Wildlife Department details how and when TxDOT will mow and use herbicides near these plants, as well as other preservation efforts. (Photo by Jackie Poole/Texas Parks & Wildlife Department library)

Navasota ladies' tresses – A federally listed endangered species, this member of the orchid family is an erect, slender-stemmed perennial herb 8 to 15 inches tall. The plant is found in portions of Central and East Texas. TxDOT helps preserve these rare plants through the use of set-aside areas (habitat preserved in an undisturbed state) as well as maintenance agreements with Texas Parks and Wildlife Department that detail how to care for these plants. (TxDOT photo)

Texas poppy mallow – A federally listed endangered species, the Texas poppy mallow is 10 to 50 inches tall, with slender taproots up to 4 feet long, and produces one or several stems. This species occurs in deep sandy soil in the Colorado River watershed. This species is also a subject of set-aside areas, protective zones and maintenance agreements that TxDOT uses to help preserve Navasota ladies' tresses. (Photo Texas Parks & Wildlife Department library)

Texas wild-rice – A federally listed endangered species, Texas wild-rice is an aquatic perennial with a narrow stem up to 7 feet long, topped by branching stalks. This species is found only along the upper four miles of the aquifer-fed San Marcos River in Hays County. By efforts such as posting signs notifying motorists of sensitive aquifer recharge zones and highway runoff studies, TxDOT is helping to preserve endangered species that depend on clean water from our aquifers. (U.S. Fish & Wildlife Service photo)

Tobusch fishhook cactus – The Tobusch fishhook cactus, a federally listed endangered species, is a rounded, biscuit-shaped cactus usually 2 to 3 inches tall and up to 3.5 inches in diameter. The species is found in portions of Southwest Texas. In advance of a TxDOT construction project in Val Verde County, the population of this species was removed for propagation and eventual replanting at the direction of the U.S. Fish and Wildlife Service. (Photo copyright Mark W. Lockwood)

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San Marcos gambusia



Pecos gambusia



Tooth Cave spider



Texas blind salamander



Tooth Cave ground beetle



Jaguarundi

Cave myotis



Bald eagle



Black-capped vireo



Golden-cheeked warbler



Brown pelican



Texas poppy mallow



Texas wild-rice



Ashy dogweed



Concho water snake



American alligator



Comanche Springs pupfish



San Marcos salamander



Tobusch fishhook cactus



Navasota ladies' tresses

