



Tortoise Ecology on the Rio Grande Plains

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Photos by ROSS O. COUVILLON

Down in South Texas, the only tortoise found in the state lives among the thornscrub, mesquite, cacti and grasslands that characterize the Rio Grande Plains. Considering how dense and thick the vegetation here can be, most people's first sighting of a Texas tortoise is usually on a dusty road or empty highway. If you are lucky, you might find a small, black tortoise with golden blotches on its shell ambling out of the brush during the cooler hours of the morning or evening, or after a rain shower.

The Texas tortoise is the smallest of five species of tortoises in North America. They can be found south of a line connecting Del Rio, San Antonio, and Victoria. Texas tortoises feed on forbs, grasses, prickly pear pads and tunas (prickly pear fruit) during the cooler times of the day. To escape the heat, tortoises seek shelter under prickly pear or bunch grasses and, sometimes, in the burrows of other animals. Unlike the other tortoises in North America, Texas tortoises do not dig their own burrows. Instead they will scrape away a depression in the ground, referred to as a "pallet," usually only enough to partially conceal themselves.

This species is poorly known, with only limited research conducted in Texas and none in Mexico. However, some interesting information has emerged from past studies and our current investigation. Coastal populations (the study sites were close to Brownsville) seem to differ from inland populations. Generally, individuals along the coast live longer, attain larger sizes and may occupy different habitats. Texas tortoises on the coast occupy the thornscrub covered *lomas*, or clay dunes, that dot vast marshes. Further inland, tortoises appear to inhabit a variety of vegetation communities.

The age of Texas tortoises can be determined by counting the growth rings on their shell but after about 20 years of age, the rings grow very close together and are too difficult to differentiate. As they age shells become worn, and tortoises older than 20 years may have entirely smooth shells. You are more likely to find a tortoise with many growth rings or a smooth shell in a coastal area than one inland, and tortoises on the coast can be about an inch longer.



Texas tortoises include ripe tunas (prickly pear fruit) in their diet while they are available.

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Growth rings are very obvious on the shell of this young Texas tortoise.

The Caesar Kleberg Wildlife Research Institute is currently in the middle of a project studying an inland Texas tortoise population in Jim Hogg County which is only the second inland site where these tortoises have been studied in Texas. During 2015, researchers radio-marked and followed 10 adult Texas tortoises to study home range size, habitat use and other ecological traits. Home range sizes varied greatly among individuals, and males had some of the largest home ranges. Some tortoises stayed in the same 2-5-acre area the entire year. Another individual seemed to make himself at home about three miles away from where he was first caught.

Tortoises most commonly escaped the heat of the day by hiding under bunch grasses which were often under small patches of woody vegetation or at the edge of a brush mottle. Tortoises were found over most of the study site, but researchers found the most tortoises in areas where brush mottes were close together. However, they do not seem to be found in thick brush cover very often. Whenever a tortoise was found in very thick brush—the kind of brush you get through by taking two steps forward and one step back—it would not stay there very long. This project will continue through the end of 2016 and will include some of the individuals studied in 2015.

Texas tortoises are considered a threatened species by the Texas Parks and Wildlife Department. Invasion of exotic grasses, gas and oil development, excessive brush control and habitat loss to agriculture or urbanization all cause habitat fragmentation. Tortoises of certain sizes can get caught in deer fencing and perish in the heat or be easily caught by predators. Collisions with heavy equipment or vehicles result in direct mortality of Texas tortoises. Large land holdings in South Texas are currently

a stronghold for Texas tortoises. But even here they cannot get away from the threat of truck and tractor tires. This is partly due to the tortoises' apparent affinity for roads, particularly two-track ruts that crisscross hunting and cattle ranches. Tortoises will wander down these ruts, sometimes for quite some distance, possibly because it is easier to move along the tire ruts rather than through thick grasses.

To minimize accidental tortoise deaths, we recommend keeping vegetation low along two-track roads and driving slowly. During the hottest months of the year, tortoises are mostly active during the first and last 2 1/2 hours of daylight. They can remain active later into the day and become active earlier in the afternoon in the spring and fall. Limiting tractor work like discing and mowing to the middle of the day could keep tortoises out of harm's way, since they will have retreated to a brushy spot. Controlling brush with herbicide instead of heavy equipment, when possible, also could save Texas tortoises.

Managing habitat for game species, particularly the Northern Bobwhite, is a major land use objective for many ranches in South Texas. While researchers assume that habitat management for bobwhites benefits other non-game species, few studies have addressed this question directly.

The overall goal is to see how tortoise habitat use compares to bobwhite habitat use. This research will tell us what habitat components tortoises and bobwhites share and which habitat components are species specific. Our aim is to determine the landscape features used by these two iconic species so that South Texas will remain a stronghold for both bobwhites *and* Texas tortoises. 🌟

