

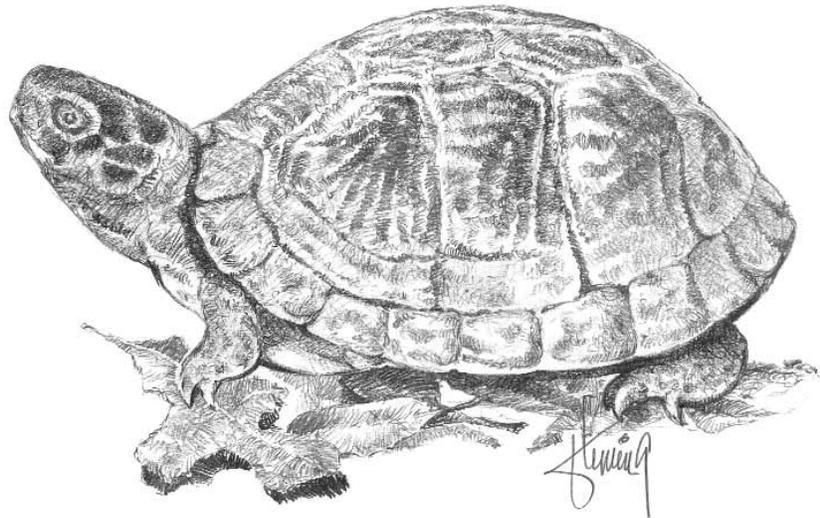
TEXAS PARKS AND WILDLIFE

AN INTRODUCTION TO

# Texas Turtles



Mark Klym



## An Introduction to Texas Turtles

Turtle, tortoise or terrapin? Many people get confused by these terms, often using them interchangeably. Texas has a single species of tortoise, the Texas tortoise (*Gopherus berlanderi*) and a single species of terrapin, the diamondback terrapin (*Malaclemys terrapin*). All of the remaining 28 species of the order Testudines found in Texas are called “turtles,” although some like the box turtles (*Terrapene* spp.) are highly terrestrial others are found only in marine (saltwater) settings. In some countries such as Great Britain or Australia, these terms are very specific and relate to the habit or habitat of the animal; in North America they are denoted using these definitions.

**Turtle:** *an aquatic or semi-aquatic animal with webbed feet.*

**Tortoise:** *a terrestrial animal with clubbed feet, domed shell and generally inhabiting warmer regions.*

Whatever we call them, these animals are a unique tie to a period of earth’s history all but lost in the living world. Turtles are some of the oldest reptilian species on the earth, virtually unchanged in 200 million years or more! These slow-moving, toothless, egg-laying creatures date back to the dinosaurs and still retain traits they used

to survive then. Although many turtles spend most of their lives in water, they are air-breathing animals and must come to the surface to breathe.

If they spend all this time in water, why do we see them on logs, rocks and the shoreline so often? Unlike birds and mammals, turtles are ectothermic, or cold-blooded, meaning they rely on the temperature around them to regulate their body temperature. Basking on a log or rock is a convenient way for them to warm their bodies. Like most ectothermic animals, they do not tolerate radical temperature swings well.

## **So Why is Texas Home to So Many Turtles?**

As with other animal and plant groups found in Texas, our diverse geography, topography and geology has contributed to the diversity in this group. Some of the species found in Texas occupy a very limited range consisting of one or more river drainages. Others, like the ornate box turtle (*Terrapene ornata*) or red-eared slider (*Trachemys scripta elegans*) are much more widespread, being found over most of the state. The limiting factor with turtles is usually water, so in West Texas these animals may be found only in the river bottoms, while in East Texas, where rivers are more common, they will be more dispersed.

Generally, turtle distribution in Texas is based on watersheds. Range maps of some species look surprisingly like a river map. These species, like the Cagle's map turtle (*Graptemys caglei*) or the Ouachita map turtle (*Graptemys ouachitensis*) are often more adversely impacted by changes in habitat quality than are the more widespread species.

## **General Turtle Life History**

All turtles are egg layers. Females may travel great distances over land in search of suitable soil or leaf litter in which to lay their eggs. Nest sites are often on a sunny slope where the eggs and young, which are not cared for by the mother, can be warmed readily by the sun. Turtle eggs are generally spherical to elongated with shells of varying degrees of hardness.

Even in the nest, temperature can play a vital role in the life of the turtle. Studies have shown that with several species, temperature in the nest will determine the dominant gender of the young – warm nests produced primarily female turtles, while cooler nests produced primarily male young.

Eggs and young turtles are eagerly sought prey species for many animals, resulting in most of the young being eaten by birds, raccoons, skunks, mink, coyotes, dogs, and even people. Thus, a large number of eggs does not guarantee the survival of the species, nor of a specific genetic line. It also means that some of our turtles, even though they are producing a lot of young, can be very vulnerable.

Turtles are long-lived creatures, with some individuals exceeding 100 years. However, this characteristic can also work against a species, since long-lived animals generally do not mature until later in life. A late-maturing animal must survive all the perils and threats for several years before contributing its genes to future generations. In this case, loss of near-mature individuals is a significant threat to the future of the species. Unfortunately, near adults are often the very individuals in greatest demand for harvest.

On reaching maturity, a turtle will often travel considerable distances over land in search of nesting sites. This poses yet another danger in the world of the 21st century – collision with cars. Turtles crossing roads are among the wildlife victims of our fast-paced society, often in very significant numbers.

So, all in all, the turtle's life is hardly an easy one – a fact which makes turtles a very special part of our Texas natural history.

## **Family Accounts**

### ***Sea (Marine) Turtles***

In Texas we have one species each in four families of sea turtles that visit our shorelines. Loggerheads are generally large turtles with powerful jaws. Their reddish-brown, heart-shaped upper shell helps with their identification. Green sea turtles have a relatively small, lizard-like head on a large body. Hawksbills are smaller sea turtles with a sharp, curved bill and numerous splashes of yellow and orange on a red-brown shell. Ridley sea turtles in Texas are represented by the Kemp's ridley sea turtle, one of the smallest of sea turtles with a gray to olive color.

Sea turtles have faced a number of challenges, including the pressure for tortoise shell materials which are collected primarily from hawksbill sea turtles. Another important factor in sea turtle population decline is human demand for beach areas for recreation – especially during prime sea turtle nesting periods. This is especially critical for the Kemp's ridley sea turtle.

Kemp's ridley sea turtles are noted for a very unique nesting behavior. Each year, large numbers of these turtles will congregate in "arribadas" just offshore of their nesting beaches. Groups of females will move onshore and lay their eggs en masse, resulting in a near-simultaneous hatch and "predator swamping" by the young turtles returning to the sea. This technique raises the probability that at least one young from each nest will survive.

*Kemp's ridley sea turtle. TPWD*



Close monitoring of known sea turtle nests, turtle exclusion devices on shrimp trawlers, and other conservation efforts have helped to save the sea turtle. In 2007, 128 Kemp's ridley sea turtle nests were found on Texas beaches, including 81 on North Padre Island and four on Mustang Island.

Green sea turtles are primarily herbivorous, while loggerheads, hawksbills and ridleys feed primarily on invertebrates and mollusks.



*Green sea turtle. USFWS*

## ***Freshwater Turtles***

Since they are encountered more frequently than sea turtles, these turtles are more familiar to Texans. The diversity within this group is impressive. Though mostly aquatic, some species spend considerable time out of the water. Mostly vegetarian, there are some species that diet heavily on meat and some that are essentially carnivorous.

### ***Box Turtles***



*Box turtle. TPWD*

Box turtles are characterized by high, domed shells that are hinged so the animal can completely enclose itself to escape predation. Box turtles have been documented to live up to 50 years, and commonly live to 20 years. There are reports of box turtles achieving 100 years.

In 1995 box turtles were added to the CITES Appendix II. This means that an export permit is required from the country of origin for international trade. Before such permits can be issued, a biological assessment must conclude that such export will not be detrimental to the survival of the species.

Texas is home for three species of box turtle with at least one species being found throughout the state. Desert box turtles are found west of the Pecos River and are a deep brown to reddish brown with very narrow radiating lines on each scute of the carapace. Ornate box turtles are absent west of the Pecos River and, growing a little smaller than the desert box turtle, have wider yellow radiating lines on their shell. The three-toed box turtle, named for the usual number of toes on the back feet, is found in the eastern portion of the state west to McCulloch and Kimble counties.

In recent years, box turtle numbers have declined. A project tracking box turtles is looking to Texans for reports on where these beautiful animals are found. You can help by completing the form at [www.tpwd.state.tx.us/boxturtles/](http://www.tpwd.state.tx.us/boxturtles/) each time you see

these turtles. Managing your property to produce native forbes and fruit-bearing plants will help to provide habitat for these turtles.

Generally omnivorous, box turtles tend to become more herbivorous with age. Meat items consumed are primarily insects, slugs, snails and carrion, although three-toed box turtles have been known to consume virtually anything they can get into their mouths. Fish are not mentioned as a significant diet item in any of the papers.

### **Map Turtles**



*Cagle's map turtle. TPWD*

This diverse group of aquatic turtles occurs from Texas to Florida and north to Quebec and the Dakotas. Most map turtles will have a well-defined keel running down the middle of the carapace distinguishing them from the sliders. They generally get their name, though, for the fine lines decorating the shell and skin, lines that resemble a map.

Five species of map turtle are found in Texas, limited to eastern regions of the state west to Throckmorton and Shackelford counties. Mississippi map turtle, the most widespread of the family, is a brown turtle with a crescent-shaped spot behind the eye and a patterned carapace. Females may be twice the size of males. The Ouachita map turtle is found only along the Red, Neches and Sabine rivers in East Texas. It is recognized easily by the three large white blotches behind the eyes. Its head and limbs are decorated by light yellow lines. Generally considered a subspecies of the Ouachita map turtle, the Sabine map turtle is found along the Sabine River between Texas and Louisiana and has two yellow circular spots on top of its head and less noticeable spotting below the eyes. The Texas map turtle is found in fast-moving waters of the Colorado River and its drainages from the Central Texas Hill Country downstream past Columbus. It is easily identified by three yellow or orange spots on the bottom of the head. Cagle's map turtle is found in 11 counties along the San Antonio, San Marcos and Guadalupe river drainages. They can be identified by numerous cream and yellow lines on the head and the steeply keeled, serrated shell. Map turtles are generally insect and mollusk eaters, with some known to consume vegetation. The one reference to fish in the diet referred specifically to dead fish.

Cagle’s map turtle is on endangered species lists in the state, as state-listed threatened species. The Cagle’s map turtle, while common where it occurs, has a very limited range. Water quality and flow volumes are critical to this species.

### **Chicken Turtles**

There are three subspecies of this turtle found in the United States, only one of which, the western chicken turtle or *Deirochelys reticularia miaria*, can be found in Texas. It is found in the eastern third of the state at least as far west as the Dallas–Fort Worth area, where it is found in shallow lakes and drainage ditches. This turtle has a long, narrow head that comes to a point and a long, striped neck.

Chicken turtle populations are considered stable throughout their range, but they are facing a lot of threats including habitat loss, losses to automobile collisions during migration, and loss of foraging areas.

Chicken turtles are omnivorous with a diet that includes crayfish, fish, fruit, invertebrates and plant materials.

### **Slider Turtles**

Found over much of the southeastern United States and ranging north into Ohio in the midwest, these turtles prefer to feed on vegetation when they mature. They are active throughout the year except for a brief hibernation period which varies in duration depending on climate.

*Red-eared slider. TPWD*



Found statewide, these turtles like slow-moving waters with mud bottoms. Strong currents are generally avoided. While young, sliders eat 70 percent animal materials, but as they age their diet transitions to about 90 percent plant material. They eat insects, some fish, plants, tadpoles, crustaceans and mollusks.

There are several species and subspecies of sliders in North America, the red-eared slider and the Big Bend slider being found in Texas. Red-eared sliders are most easily identified by the red patch, often a stripe, behind the ear. Big Bend sliders have an orange-yellow oval bordered in black behind the eye.

### **Softshell Turtles**

Aggressively sought for commercial trade – more for food markets than the pet industry – are the softshell turtles. These turtles are amazingly camouflaged, with a very flat shell that matches the bottom of the pond or stream perfectly. The shell is also very flexible, making them unlike any other turtles.

*Texas spiny softshell turtle. USFWS*



There are five species of softshell turtles noted within the state. While their individual ranges are somewhat specific, soft-shelled turtles can be found through most of the state. The Midland smooth softshell is rare in the eastern half of the state but is found in rivers with large sandbars. They lack spines or bumps on their leathery shell, and are the smallest of our soft-shelled species. The Texas spiny softshell is

found in the Rio Grande and Pecos drainages. Whitish spots on the rear third of the carapace are an identifying mark of this turtle. Areas of the Nueces and Guadalupe rivers and their tributaries with only a small amount of aquatic vegetation are home for the Guadalupe spiny softshell. Whitish spots cover the whole carapace of this turtle, sometimes interspersed with small black dots. Found only in the extreme northern panhandle of Texas, the western spiny softshell prefers waterways with sandy bottoms. This gray or olive turtle has dark spots and a sandpaper-like texture to its shell. The carapace is bordered by one dark marginal line. The pallid spiny softshell is found through most of northeast Texas from the upper Red River drainages and water east of the Brazos River draining into the Gulf. This pale turtle has white tubercles on the back two-thirds of its shell.

Heavy harvesting is causing some concern among biologists about the stability of some softshell turtle populations. Softshells are invertebrate eaters.

### ***Cooters***

These familiar large turtles are fond of basking. They are strong swimmers with webbed hind feet. They are generally large turtles that are some of the most common turtles seen on rivers and streams.

Texas has two species of cooter – the Missouri river cooter is found in large waterways with moderate current and abundant vegetation in Gray and Oldham counties. They are dark turtles with intricate yellow patterns on both shell and body. Texas river cooters are also known as Texas sliders and are found in Colorado, Brazos, Guadalupe and San Antonio river drainages of Central Texas. They are green with yellow markings that fade with age.

Cooters are primarily herbivorous, although Texas river cooters are carnivorous, feeding on invertebrates and fish, as young. Missouri river cooters may also consume crayfish, tadpoles and small fish.

### ***Painted Turtles***

These familiar turtles are widespread and nearly continent-wide, ranging from Mexico to Canada. Two species, the western painted turtle and the southern painted turtle, are known from Texas, with the western painted turtle having a limited distribution in West Texas and the southern painted turtle being found only in the Caddo Lake region of Texas. These turtles are not widespread in Texas.

The western painted turtle has a smooth upper shell and olive to near-black shell with irregular yellow lines and a reddish-orange outer edge. Southern painted turtles are noted by a red, yellow and orange line running the length of the shell. Both subspecies are omnivorous, eating progressively more vegetable matter as they age.



*Western painted turtle. USFWS*

### ***Snapping Turtles***

Generally large and mostly carnivorous, these turtles are noted for their powerful bite. They have a reputation for being aggressive (only if picked up), but in most cases they will retreat when threatened. These turtles can not pull their head entirely into their shell. Two species are found in Texas from two distinct genera.



*Alligator snapping turtle. USFWS*

The common snapping turtle is found throughout Texas except from the Trans-Pecos and the South Texas brushlands. It inhabits lakes and streams with lots of plants and is known by a large keel that flattens with age, large head and blunt, protruding snout. The

alligator snapping turtle is found in the Trinity and Sabine river watersheds and is found close to large water bodies when found in stable populations. This state-listed threatened species is distinguished by its tail and its three rows of raised plates on the shell.

Both species are carnivorous, eating fish, ducklings and carrion. Alligator snapping turtles are also noted as heavy plant eaters.

## ***Mud and Musk Turtles***

Mud turtles are small, generally reaching about 5 inches. These turtles may live 30 to 50 years and usually mature late. They have fleshy barbels on the chin and are capable of secreting a musky smell if threatened.

These turtles have hinged lower shells that will work independently, allowing them to close access to their head, limbs and tail.

Three species of mud turtle and two species of musk turtle are known from Texas. The Chihuahuan mud turtle is very limited, known only from Presidio County in Texas. The yellow mud turtle is found statewide, though rare in the eastern third of the state. It is olive-colored with yellow areas on its throat, head and neck. The eastern mud turtle is found from the Pineywoods to the eastern edge of the Hill Country. A small, dark brown to olive turtle, it has a spotted head but no stripes. Mud turtles feed on tadpoles, insects, worms and small mollusks as well as plants and decaying matter.

The razorback musk turtle is found in slow-moving streams and swamps of the eastern third of Texas. It has a high triangular keel when viewed from the front. The common musk turtle is known from mud-bottomed lakes, ponds and swamps in the eastern part of the state except from the rolling plains and South Texas brushland. The steeply peaked shell and two light stripes on the side of the head help identify this turtle.

Musk turtles are omnivorous, eating snails, insects, crustaceans, clams, amphibians and plants.

## **Other Testudines**

### ***Texas Diamondback Terrapin***

Occurring from the Sabine River to Corpus Christi, the Texas diamondback terrapin shows a brackish to saltwater preference. Found in estuaries, tidal creeks and salt-water marshes, sometimes with salinity approaching that of the ocean, in Texas this terrapin can be found from Orange County to Nueces County, seldom more than two counties from the coast.

A 4- to 9-inch terrapin with a dark shell, diamond shaped scutes and strongly webbed feet, are characteristic of this animal. Diamondback terrapins serve as an ecological indicator species in the Gulf of Mexico.

The males will reach maturity in about three years, but females don't mature until six years. Terrapins can live up to about 40 years.

Crabs, shrimp, bivalves, fish and insects are the principal diet of the Texas diamondback terrapin.

### ***Texas Tortoise***



*Texas tortoise. TPWD*

Texas is the northern end of this state-listed threatened tortoise range, with much of their distribution being in the Mexican states of Tamaulipas, Coahuila and Nuevo Leon. This tortoise is a terrestrial animal, found in dry scrub and grasslands.

The Texas tortoise has a yellowish-orange shell with cylindrical columnar hind legs. It will grow to have a shell length of about 8.5 inches.

Primarily vegetarian, some captive specimens have been known to eat meat at times. They feed heavily on the fruit of prickly pear and other succulent plants.

## What's in the Future for Turtles?

Between the desire for homes, roads and hotels along waterways where turtles come to lay their eggs; the desire to keep these beautiful creatures as pets; and the appetite of some for turtle meat, pressures on turtles are constant. Adding the impact of fishing without effective turtle exclusion devices, and these threats increase. Effective management and education can help these animals to survive.



*Kemp's Ridley sea turtles. TPWD*

## What Can I Do?

By far the greatest threat to turtles comes from habitat destruction. How many people, when looking out over a swamp, will see a valuable natural resource critical to wildlife? How many see a muddy stream and think of wildlife habitat? Dredging, channeling and altering the course of rivers can permanently remove needed habitat for turtles. Draining swamps, converting land for agricultural uses, water pollution, and other human activities in and around water can permanently displace turtle populations. Building along stream banks often paves over or alters critical nesting sites.

Needless shooting of turtles that are simply left to rot is a waste of this valuable resource. Turtles are often wrongfully blamed for depleting fish populations. Taking

the life of a non-game animal for target practice or from misguided zeal to protect fishing grounds does not demonstrate good outdoor ethics.

Taking an animal home as a “souvenir” of your visit to turtle habitat often results in a “pet” that meets a slow demise through neglect or ignorance. While often promoted as good pets, turtles, like any other animal, require attention and care. While it is legal to keep turtles as pets in Texas, check the regulations to ensure that you remain within the legal framework. They can be found at [www.tpwd.state.tx.us/business/permits/land/wildlife/media/nongame\\_regulations\\_faqs.doc](http://www.tpwd.state.tx.us/business/permits/land/wildlife/media/nongame_regulations_faqs.doc). This page will also give you information on collecting animals commercially, which is regulated in Texas.

Many turtles meet an untimely demise while trying to move across lanes of traffic while moving between waters. Seeing a turtle trying to cross the road is an increasingly common occurrence, especially during nesting seasons. Helping the turtle cross the road is the humane thing to do and might even save the animal’s life. Relocating it to a supposed “better home” can be detrimental to the animal’s future. Turtles, like other animals, have established home ranges and are likely to leave the “paradise” you found and try to return home. This is likely a death sentence for the turtle. Traveling until exhausted while looking for familiar grounds, and trying to avoid additional threats, they are likely to cross several roads and get crushed.

## **Creating Habitat for Turtles**

Gardening for wildlife is becoming a growing hobby in Texas, with many of your neighbors and friends considering the needs of birds, butterflies, squirrels, and even toads in their landscaping decisions. Why not consider a turtle habitat as a portion of your backyard habitat? When you install your pond, consider using mud or sand as a substrate for at least part of the area. Install plants that will be used by the turtle both as shelter and as food resources. Be careful to add a gently sloping entrance/exit from the pond. Sand and soft soil to a depth of several inches should be available near the pond for egg laying. Rocks, logs and other basking surfaces, with easy access to the water, should be available.

Resist the temptation to go out and “adopt” a turtle to move to your habitat. If the conditions are right, the turtles will find and use the habitat you’ve created. Become a member of a local herpetological society, where you can learn more about turtles and tortoises; often these societies help place unwanted turtles and other reptiles in new homes with informed people.

## **Additional Information**

This introduction to turtles can serve as a quick summary of Texas turtles. For more detailed information, see the following resources.

### **Books**

Dixon, James R. 2000. *Amphibians and Reptiles of Texas*. Texas A&M University Press. College Station.

### **Web sites**

[www.texasturtles.org](http://www.texasturtles.org)

Biology, conservation, ecology and natural history of Texas turtles

[www.zo.utexas.edu/research/txherps/turtles/](http://www.zo.utexas.edu/research/txherps/turtles/)

University of Texas range and diagnostic features of Texas turtles

[www.tpwd.state.tx.us/huntwild/wild/species/#reptiles](http://www.tpwd.state.tx.us/huntwild/wild/species/#reptiles)

Fact sheets on some Texas reptiles

### **General Turtle Information**

<http://herpcenter.ipfw.edu/index.htm?http://herpcenter.ipfw.edu/outreach/accounts/reptiles/turtles/>

Center for Reptile and Amphibian Conservation and Management



4200 Smith School Road • Austin, Texas 78744

[www.tpwd.state.tx.us](http://www.tpwd.state.tx.us)

PWD BK W7000-1672 (9/08)

Dispersal of this publication conforms with Texas State Documents Depository Law, and it is available at Texas State Publications Clearinghouse and/or Texas Depository Libraries.

TPWD receives federal assistance from the U.S. Fish and Wildlife Service and other federal agencies. TPWD is therefore subject to Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, in addition to state anti-discrimination laws. TPWD will comply with state and federal laws prohibiting discrimination based on race, color, national origin, age, sex or disability. If you believe that you have been discriminated against in any TPWD program, activity or event, you may contact the U.S. Fish and Wildlife Service, Division of Federal Assistance, 4401 N. Fairfax Drive, Mail Stop: MBSP-4020, Arlington, VA 22203, Attention: Civil Rights Coordinator for Public Access.