



Three-toed Box Turtle

Terrapene carolina triunguis

So many people love box turtles. Some people keep these long-lived chelonians for years, giving them names or calling them “boxies.” Many of us have heard stories of back yard box turtles that learn to come to the back door for food. Our affection for box turtles has supported a large scale and destructive trade in which thousands used to be collected and sold in the U.S., Europe, and elsewhere. What makes them so attractive to us? Some would describe their faces as cute or engaging, as they look around them or check out a food morsel by putting their noses to it as if nearsighted. The fact that captives can learn to recognize feeding situations,

coming out as if to “beg” for food, draws people to them even more. Their behavior in the wild can be appealing, too, as they look around as if contemplating their next move and then set out in a particular direction or chase down an insect.

In Texas, we have three subspecies of box turtles, one of which can sport a variety of brilliant colors, adding yet another way that they are attractive to humans. That subspecies is the three-toed box turtle.

Classification

To start with, the status of all turtles as “reptiles” is in some doubt. Some have proposed that turtles are in a class by

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themselves – literally. Instead of being an order within class Reptilia, they would stand alone as class Testudines. Unless you are very interested in phylogeny, for now it still makes practical sense to speak of them as reptiles. (The extent to which classification is being turned upside down is illustrated by the fact that birds are now lumped in with other reptiles. What a crazy world it seems, when turtles are not reptiles but birds are!)

Now let's talk about the turtle vs. tortoise issue, which is

not about scientific classification. Instead, "tortoise" is used differently in different parts of the world, and often refers to land-dwelling species. In the U.S., the only tortoises are in the genus *Gopherus* – the Texas, gopher, and desert tortoises. So, despite being a "land" turtle, the box turtle is not a tortoise. In fact, they belong in the family Emydidae, which includes such semiaquatic turtles as the red-eared slider.

Box turtles, genus *Terrapene*, include four species, two of which are found in Mexico. The remaining two species in the U.S. are *ornata* (the ornate and desert box turtles) and *carolina* (the eastern, three-toed, Florida, gulf coast, and two other Mexican subspecies). The tendency of some biologists to recognize only species resulted in some confusion when Texas Parks & Wildlife Department, in its survey of box turtles in the state, referred to the "eastern" box turtle as occurring in Texas. That is true in the sense that the 3-toed box turtle is a subspecies of what is called the eastern box turtle.

Description

These box turtles have a fairly high-domed carapace, compared to the ornate box turtle. At the posterior, the shell may flare out to varying degrees. The carapace ordinarily has a short keel running from front to back at the top of the shell. In adults, the length of the shell may be 4.5 to 5 inches, with a record length of 7 inches according to Conant & Collins (1998). In color, the carapace may be a plain, light brown or honey color, or it may be darker with small, light streaks or, at times,



A shy individual from the Big Thicket area, closed up and waiting for us to leave.

spots.

The plastron (bottom shell) is at least as long as the carapace, and is hinged where the shells come together behind the front limbs. While some turtles have a rigid, bony bridge connecting the two shells, box turtles do not. The hinge allows the two lobes of the plastron to be pulled up against the carapace, closing the turtle inside.

The 3-toed box turtle's plastron is a light yellowish or

light brown, perhaps with some dark edging along the scutes.

Box turtles have hard beaks for biting and shearing off pieces of food. The beaks and faces of these turtles, along with the throats and areas between the neck and forelegs, may be spotted and mottled with various colors including orange, white, black, and golden brown. On some turtles, these areas are more plainly marked. Adult males often have red eyes, while females may have yellowish or brown eyes.

The hind feet may end in three claws, while those of most other box turtles end in four. However, the occasional 3-toed box turtle will have four toes on the hind feet. These claws are commonly larger and more curved in males. Additionally, the plastron of the male may have a slightly concave area in the posterior lobe. The tail of the male is longer and thicker than that of the female.

Habitat

Dixon (2000) shows the 3-toed box turtle range covering east Texas west to Grayson, Tarrant, and Bosque counties in the north, and further westward with sparse records in the Hill Country as far west as Kerr County. The lower range is marked by Bexar county and, on the coast, Aransas county. This subspecies does best in areas of woodland and greater rainfall, and its range in Texas ends with the more arid, open areas to the west and the thorn scrub in the south. Outside of Texas, the 3-toed box turtle ranges up through eastern Oklahoma and through most of Missouri. Along the gulf, it is found as far east

as Alabama.

These turtles are generally found in or near hardwood or mixed pine and hardwood forests with understory shrubs and soils that hold moisture. They take advantage of edge habitat or open areas depending on the season and time of day. At night, box turtles tend to dig into the soil or leaf litter to a shallow depth where the top of the shell may still be exposed. This shallow retreat is called a "form." In winter, they dig deeper to the depth necessary to prevent freezing.

As more roads infiltrate the woods and fields, and more land is converted to housing, box turtles turn up in backyards, parks, and streets. Their shells offer some protection from cats and smaller dogs, but these turtles are often run over by cars or picked up by humans. Displaced box turtles tend to wander and come to an untimely end in urban and suburban areas.

Diet

One of the things people find charming about box turtles is their taste for some of the foods that we eat. Berries such as strawberries or blackberries are particularly favored, and most will eat squash, corn on the cob, melons, and greens. Box turtles also eagerly pursue and eat insects and worms, and will also take carrion. Wild 3-toed box turtles eat flowers and fruits, snails and slugs, mushrooms and other fungi, and other plant and animal matter.

In captivity, it is essential that box turtles receive a varied diet that includes sources of calcium, such as turnip greens or kale. Lettuce is of little nutritional value and should not be given. Neither should they be given high-fat meat such as hamburger or cheap dog food. Berries should be considered a treat and given sparingly; like people, box turtles will over-indulge in things that are not good for them.

Behavior

Box turtles are diurnal, and as the season gets hotter they are more active in the morning and late afternoon. Spring showers also tend to bring them out. Box turtles get to know a relatively small area in which they stay: their "home range." A box turtle learns to recognize major landmarks within this home range, often following fence lines and making regular use of sources of water, shelter, and sun. If displaced, they have some degree of homing ability and often will wander in search of home, without settling down in a new area.

Individual box turtles vary in temperament. If approached

or picked up, some close themselves within the shell and only emerge after some time has passed. Others may try to run away or may struggle to pull out of a captor's grasp. Such a turtle may gape with jaws open and can give a painful nip if it can reach a finger.

Reproduction

Male box turtles are notorious for courting and mounting almost anything that looks like a box turtle (in one of his studies, Bill Belzer moved such things as a skeletal box turtle carapace or a toy army helmet, and males would follow and court them). No matter how willing to mate, the turtles find each other visually and apparently do not track each other by scent



or other means. If a population is thinned too much, males may not be able to find females. Copulation between high-domed turtles would seem to be awkward and difficult. Males use the larger, curved claws on the hind feet to hook under the female's carapace, and the slight concave area of his plastron may help, but mating between box turtles still looks like a difficult and awkward feat.

Female box turtles lay a small number of eggs, usually four or five. Some of these may be infertile. In the south, a female may lay multiple clutches, but this still does not constitute a very high reproductive output (especially when loss of eggs to predators is factored in).

Three-toed box turtles have temperature-dependent sex determination. When eggs are incubated at 27°C (80.6°F) or below, the babies are primarily male. When incubated at 28.5°C (83.3°F) or greater, the babies are mostly female.

Like many other turtle species, the box turtle life history depends on adults living a long time and

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continuing to reproduce, while few of the young make it to adulthood. Since there are few eggs and some may be infertile, and since predators eat a lot of turtle eggs and many of the babies are eaten as well, the only way for the turtles to survive is for the adults to live a long time and keep laying eggs over a span of many years. An average life span for these turtles may be 30 to 40 years or longer.

Conservation Issues

A number of studies have shown declines in box turtles, and where the studies have not been done, people often remember a time when the turtles were much more numerous than they are now. There are a number of threats to

box turtles, including loss of habitat and being run over on the roads, being collected or displaced by people, increases in subsidized predators of eggs and babies (such as raccoons), and the potential for climate change to result in eggs disproportionately hatching as females.

It is now illegal in Texas to collect box turtles for commercial purposes or to sell them. A decrease in collection for the pet trade will be helpful, although loss of habitat, road mortality, and the other threats continue to take a toll that may not be sustainable. The DFW Herpetological Society and other



Hatchling 3-toed box turtle.

organizations and individuals have worked within the Box Turtle Partnership of Texas to educate and to advocate for conservation measures. Those interested in box turtle conservation will want to visit www.btpt.org for further information. Additionally, Texas Parks & Wildlife Department has been encouraging citizens to report sightings of box turtles. Anyone can do this by going to www.gctts.org/BTPT/wild-sighting.html.

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