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CHARACTERISTICS OF THE DESERT TORTOISE
(Gopherus agassizii)

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Various species of desert tortoises have roamed the earth for at least 60 million years. Climatic changes that spelled extinction for the dinosaurs did not cause the same result for the desert tortoise. This exceptional creature adapted to the changes and survived.

**TORTOISE VS
TURTLE**

Turtles are defined as any of a large and widely distributed order (Chelonia) of land, freshwater, and saltwater reptiles having a toothless beak and a soft body encased in a hard shell into which, in most species, the head, tail, and four legs may be withdrawn. Although water

(especially sea) species are usually called turtle, and land species are usually called tortoise, the terms are properly interchangeable for all species. (Webster's New World Dictionary, second collection).

PHYSICAL CHARACTERISTICS

Appearance

An adult desert tortoise has a domed upper portion of the shell called the carapace and a relatively flat, unhinged lower or belly part underneath called the plastron. Both portions have two layers, an inside one consisting of tightly jointed bones which is covered over by a layer of shields. Shell color is brownish, with yellow to tan scute centers and mottling on the plastron. The tortoise can completely withdraw their head and stocky limbs within this shell, leaving only horny scales visible to potential predators. This unique

ability is therefore a very important mechanism of defense.

The forelimbs are specifically adapted for digging, with laterally extended limbs and flattened feet, enlarged and horny scales, and broad nail-like claws.

These front legs are built like shovels and therefore are very useful for burrowing. Rear legs are short, rounded and elephantine with four tough toenails on the feet. The rear legs are used to push the soil when the tortoise is burrowing.

The head is rounded in the front and has a blunt, horny beak; eyes have greenish

irises. Skin that is unprotected by horny plates is thin and easily penetrated. The gular horn protrudes out from the front of the plastron, serving as both a weapon during fighting and to help the tortoise push through the desert soil. Above the mouth are two tiny nostrils which open into the throat, allowing the tortoise to breathe.

The tortoise is able to differentiate between some colors and has a well-developed sense of touch allowing it to sense the tip of a straw on its skin. The tortoise has an eardrum, middle ear and an inner ear but does not have an external ear. Hearing is possible except for sounds above its head. Otherwise the tortoise depends on feeling sounds through vibrations. The tortoise also has some sense of smell.



Photo by D. Bradford Hardenbrook

Males are distinguished from females by the shape of their shell. Males have a rounded posterior carapace; longer, upcurved gular horn; chin glands or knobs on the chin; concave plastron (a dish-shaped depression on the underside of the shell near the tail); and a longer tail. Females may have longer toenails for digging nests, a smaller gular horn, a flat plastron, and no obvious chin glands. The sex is difficult to determine until the tortoise is about seven inches in carapace length.

Size

Generally, adult desert tortoises range in size from 9.25 to 14.5 inches (23.5 to 36.8 cm). Hatchlings are about the size of a silver dollar, 1.4 to 1.8 inches long (36 to 45 mm). Hatchlings are much like adults except their shells are spongy and paler and their eyes are more gold. Their shells harden considerably by the time they reach approximately five years of age or about 3 inches (80 mm) in length. Epidermal scales, or scutes, form conspicuous growth annually, which wear away due to abrasion with soil and rocks and as a result, the shells of old tortoises are quite smooth and somewhat concave in the scute centers.

The largest captive tortoise is a 17.3-inch male, who lives with his proud owners in Las Vegas. The largest wild tortoises include a 14.5 inch male found on the Desert Tortoise Natural Area, and a 15 inch female in Lucerne Valley.

The Bureau of Land Management (BLM) has categorized tortoise size based on the following classes: hatchlings are very young tortoises (4 inches), juveniles (4 to 7 inches), subadults (7 to 8.5 inches) and adults (>8.5 inches). These are commonly used but are artificial.

To measure a tortoise calipers are used (instruments consisting of a pair of movable curved legs fastened together at one end and used to measure the length of the shell). One end of the caliper is placed at the edge of the carapace immediately above the head and the other end is placed on the carapace edge above the tail. The straight line distance is considered the length of the carapace.

Age

Long-lived and durable are two words to describe the desert tortoise. One captive female tortoise lived to be 80+ years. Verification of tortoise age in the wild has not been possible but the life span of a desert tortoise has been estimated at 50 to 100 years. Mortality is highest in the early years and

decreases with size and shell ossification. The longevity of the desert tortoise helps compensate for their variable annual reproductive success, which is associated with environmental conditions.

Age structure has been difficult to determine as hatchlings and juveniles are difficult to detect. Desert tortoises are considered as a species with low birth rates, low recruitment of juveniles into the breeding population, low mortality in older age categories, and a low population turnover rate. These characteristics suggest that the number of adults in the tortoise population could be stable for a very long time but any disturbances causing a few years of shortage of juveniles could also highly effect the population for a number of years.

HABITAT CHARACTERISTICS

Vegetation and Soil

The characteristics of the habitat occupied by the tortoise is dependent on availability of suitable soils and terrain for constructing a burrow and must have adequate annual and perennial plants in the spring and/or summer for forage. Perennial vegetation is essential to the desert tortoise, providing occasional cover and also protecting some types of annuals found in the understory. The roots of the perennials also provide stability to soils, thereby improving the stability of burrow sites.

Tortoises living north and west of the Colorado River-Grand Canyon complex (California, southern Nevada, southwestern Utah, and extreme northern Arizona) occur in valleys, flat areas, fans, bajadas and washes. These tortoises live in the Mojave and Colorado deserts and are generally found below 4,000 feet in tree yucca (Joshua tree and Mojave yucca) communities, creosote bush and saltbush scrub habitats, and in some ocotillo-creosote habitats. The soil type can vary widely from sand dunes to rocky hillsides, and from caliche caves in washes to sandy soils and desert pavements.

Elevations

Tortoises are primarily found between 1,300 and 4,000 feet elevations, coincident with climatic conditions. In Nevada tortoises have been found as high as 4,800 feet.