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Desert Tortoise Care

The Desert Tortoise (*Gopherus morafkai* and *agassizii*) is endangered in the wild and protected by both federal and state laws. These tortoises can be adopted if they are captive born. Wild tortoises should remain in the wild (unless severely injured or ill). If an owner is keeping a tortoise without proper permits, he or she may turn their tortoise in to Game and Fish or apply for permits to comply with the law. Permits must be obtained from Game and Fish and proper facilities must be provided. The commitment for owning a tortoise is 60-80 years (leave them to a responsible person in your will), as this is the longevity of a perfectly kept tortoise. Once a tortoise is in captivity, IT SHOULD NOT BE RELEASED due to potentially infectious diseases being spread and carried by captive stressed or exposed tortoises. Unwanted tortoises should be returned to the AZ Game and Fish for re-adoption.

Housing

Outside natural habitat is the best type of housing. Shelter and burrowing areas should be landscaped into the yard. The bigger the yard, the better. The area should be escape proof and fenced off. This requires burying the fence or cement blocks below the ground surface. Toxic plants (Oleander) should be removed from the grazing environment and the environment should be fertilizer and pesticide free. If outside habitat is unavailable, the Desert Tortoise should not be kept as a pet.

Diet

Healthy tortoises should eat every day. Natural diet should be provided when possible (various native plants and flowers). Fresh graze should be the predominant part of the diet (Bermuda grass is excellent). The diet should be supplemented with dark green leafy vegetables as needed (collard, mustard, turnip, and dandelion greens). Grass hay (timothy or orchard) should be provided free choice. Bulky, watery vegetables (zucchini, squash, tomatoes, etc.) should be given only rarely because their waste content may be associated with doming of the scutes on the carapace (upper shell). The tortoises tend to grow slower on non-watery diets but ultimately will be healthier. Calcium supplementation is not needed if the tortoise is on a good diet and is outside.

NATIVE PLANTS FOR DESERT TORTOISES by Mary Cohen

The Desert Tortoise Natural Area (DTNA) is a 39.5 square mile area of prime natural habitat located in the Mojave Desert of California on the slopes of the Rand Mountains. This desert ecosystem includes over 160 different species of plants. Many of the animal inhabitants of the

DTNA feed upon these plants. One such inhabitant is the desert tortoise (*Gopherus (Xerobates) agassizii*), Official Reptile of the State of California.

The desert tortoise meets its nutritional needs by consuming a wide variety of plant materials. This article does not presume to be a complete listing of all the food plants growing in the DTNA; in fact, it profiles only a fraction of the plants growing there. The article concentrates on DTNA plants stocked by the Theodore Payne Foundation, which is currently the only source that many of these native California plants can be purchased from. All the plants mentioned in this article are available as seed in packets and sometimes in bulk; a few are available as container stock. Seed can be mail ordered directly.

Desert tortoises in their native habitat feed on annual wild flowers, annual and perennial grasses, and the pads and buds of some cactus species. The term “annual” designates plants that complete their life cycle in one season. These plants germinate, grow, flower, set seed, and die in one growing season. The seed they have set will germinate and grow under the right conditions the following season. Perennial plants may live through several to many seasons. The roots and underground of some perennial plants remain alive through the seasons even when the above ground portions of the plants die back each year. These are known as herbaceous perennials.

NATIVE PLANTS continued . . .

Seeds of many of the annual wildflowers on which desert tortoises feed are available from Theodore Payne Foundation. The following paragraphs describe these annuals in more detail.

Leafy-Stemmed Coreopsis (*Careopsis calliopsiclea*) grows from 4 to 20 inches (10-50 cm) in height and bears 1 to 3 inch (2.5-7.5 cm) wide golden flowers. Whispering Bells (*Emmenanthe perululiflora*) grow from 4 to 20 inches (10-50 cm) in height and bear small, yellowish cream flowers resembling bells.

The California Filago (*Filago californica*) is a small, white, woolly annual growing from 2 to 12 inches (5-30.5 cm) in height/spread and bearing minuscule flowers. Gold Fields (*Lasthenia chrysotoma*) is a slender annual growing 2 to 10 inches (5-25 cm) tall with small yellow flowers, and which carpets the desert after the winter rains. White TidyUps (*Layia glandulosa*) grow 12 to 24 inches (30-60 cm) in height and bear numerous flowers that are 1 inch (2.5 cm) across and white with yellow centers.

Desert Dandelion (*Malacothrix glabrata*) is a many-stemmed annual 4 to 15 inches (10-38 cm) tall which bears numerous pale-yellow, fragrant flowers. Owl’s Clover (*Orthocarpus purpurascens*) is also known as Pink-Brush, referring to its appearance in flower. It grows 4 to 15 inches (10-38 cm) in height and bears striking flowers, which are greenish-purple at the base and reddish-purple at the tip.

Thistle Sage (*Salvia carduacea*) is an annual growing with a rosette of prickly leaves at the base of 12 to 24 inch (30-60 cm) tall stalks of lavender-fringed flowers each about 1 inch (2.5 cm)

long. Chia (*Salvia columbariae*) grows in well-drained locations to a height of 4 to 20 inches (10-50 cm), bearing clusters of blue-purple flowers and edible seeds

Theodore Payne also offers a desert-annual seed mix composed of many plant species, some of which are native to the DTNA and some of which are not.

Several perennials native to the DTNA are available as seed or 1 gallon container plants. Among these are Bluedicks (*Dichelostemma pulchellum*), which send up a few grass-like leaves and numerous flower stalks 12 to 24 inches (30 -60 cm) tall from small onion-like bulbs (grassnuts). Bluedicks have pale-blue to purple flowers. Mojave Aster (*Machaeranthera tortifolia*) is a shrubby perennial growing 12 to 27 inches (30-70 cm) in height, and bearing yellow 2-inch (5 cm) wide flowers in the spring. Desert or Apricot Mallow (*Sphaeralcea ambigua*) is a desert cousin of tropical hibiscus, blue hibiscus, and Chinese lantern. Growing 20 to 40 inches (50-100 cm) in height, desert mallow bears beautiful apricot to peach red to grenadine-colored flowers, which are relished by desert tortoises.

Several native grasses occur at DTNA. Indian Ricegrass (*Oryzopsis hymenoides*) is a slender, perennial bunchgrass which, including florets (the “flowers” of grasses), reaches a height of 12 to 24 inches (30-60 cm). Desert Needlegrass (*Stipa speciosa*) is also a perennial bunchgrass reaching a height of 12 to 24 inches (30-60 cm). These two grasses are similar enough to hybridize naturally. Grow Desert Needlegrass with CAUTION! Needlegrass may cause mechanical injury from the sharp florets becoming embedded in the skin or mouth. It may also aggravate hay fever and asthma conditions.

Theodore Payne offers several shrubs native to the DTNA. Cattle Spinach (*Atriplex polycarpa*) is an intricately branched, grey saltbush reaching a height of 3 to 6 feet (1-2 m). It bears minute male and female flowers on the same plants. California Buckwheat (*Eriogonum fasciculatum*) is a low, spreading shrub with many 24 to 48 inches (60-120cm) long stems. The stems terminate in clusters of tiny pinkish flowers.

NATIVE PLANTS continued . . .

Beavertail Cactus (*Opuntia basilaris*) offers tortoises edible pads, buds, flowers, and fruit. This low spreading cactus has grayish stems 4 to 12 inches (10-30 cm) long and showy rose-orchid flowers. Spines are absent, but “glochids” (tiny, sharp, bristle hairs) are present. Glochids easily detach from the plants and embed in the skin. If this occurs, moisten the area with water and vigorously rub ordinary table salt on the place of intrusion. This will provide relief and will help work the glochids out of the skin. It is nearly impossible to remove them with tweezers, as they are very small and break off at the skin surface very easily.

Creosote Bush (*Larrea tridentata*) is NOT a food plant but provides shelter and shade, and tortoise burrows are often located at their base. The dominant shrub in the DTNA, it grows 4 to 10 feet (1-3 m) tall, and bears small yellow flower throughout the year. Its strong-flavored, resinous sap gives the leaves a polished look and deters browsing by animals.

Theodore Payne Foundation is a non-profit, unendowed foundation dedicated to the propagation and preservation of California native flora. Its nursery, which includes a hillside wildflower walking trail, stocks a wide variety of California native plants. It provides educational events on topics ranging from native-plant care to basketry. The bookstore offers many volumes on native plants and natural history. The reference library features an extensive horticultural and botanical literature. In the spring (March-May) its wildflower-hotline (818) 768-3533 provides current reports on the best areas in the southland to see wild flowers in bloom.

Breeding

Sexual maturity is more size dependent than age dependent. Wild caught tortoises are generally mature between 10-15 years of age. In captivity, they will generally reach breeding size in 7-9 years because food is more readily attained. Males have concave plastrons (under shell) at maturity, longer tails, faster sloping carapaces (upper shell), larger mental glands (under the chin), and longer gular scute (front part of plastron). Males begin pursuing females shortly after coming out of hibernation. The males will fight amongst each other for breeding rights. Usually between May and July, gravid females began excavating a carefully picked egg laying spot where they will lay 2-12 ping pong ball sized eggs. Females can clutch twice in a season.

Desert Tortoise Hibernation

October/November is usually the time that tortoises become more sluggish, eat less, and bask less. A suitable hibernation place needs to be provided. An insulated doghouse with dry soil on the floor and a tarped entrance works well. The doghouse or natural burrow should be kept in a non-flood zone area. Some keepers prefer to hibernate their tortoises inside (garage, closet, or basement). A deep, newspaper insulated, cardboard box works well. The box should be covered with a blanket and kept off the floor. If keeping the tortoise in the garage DO NOT IDLE YOUR CAR (carbon monoxide poisoning). The incubational temperature should be between 50-60 degrees Fahrenheit.

Hibernating tortoises should be checked weekly and should respond when touched on the feet. Around March or April, tortoises become active in their hibernation areas and should be taken out of hibernation. At this time, soaking them in 1" of lukewarm water will stimulate them to drink. Within a week or two, they should resume normal activity. If not, consult your veterinarian.

A desert tortoise should weigh an adequate amount before hibernating.

Mohave Desert Tortoise: (Shell Length (cm) x Width (cm) x Height (cm) x .66) = ideal weight in g/kg

Sonoran Desert Tortoise: (Shell Length (cm) x Width (cm) x Height (cm) x .6) = ideal weight in g/kg

Desert Tortoise Hibernation continued . . .

If the tortoise weights more than 5% less from its ideal weight, it should not be hibernated. Do not hibernate sick or injured tortoises. These tortoises need to be brought inside, kept at 85 degrees, and nursed back to health (underlying problems should be diagnosed and discussed with your veterinarian). All tortoises should have a pre-hibernation exam and fecal test before going into hibernation. Hatchlings and tortoises under 2 years old should not be hibernated.

When concepts below are followed, hibernation can be done safely. The incidence of death during or shortly after hibernation is higher than at any other time of the year for Desert Tortoises. Questionable health before hibernation lends itself to post-hibernation death if or when the tortoise is deemed potentially ill, it should be evaluated further medically by routine blood analysis, x-rays, and potentially cultures.

Tortoises begin the process of hibernation when nighttime temperature drops are into the 60's for several consistent days. Feeding slows markedly a month or so prior to hibernation. In Arizona this time of slowdown is usually mid-September to mid-October. Supplemental feedings (if started) in a healthy tortoise should stop when natural eating begins to slow down to prepare the bowel for hibernation.

Healthy tortoises should be allowed to naturally hibernate as the process is important for reproductive health, is part of their natural behavior, and probably has other unknown benefits. During hibernation, the decreased temperature causes the body's natural processes to slow down. As a result, the immune system functions less effectively, making it easier for a tortoise to become ill. Therefore, it is important for a tortoise to have a pre-hibernation exam to ensure overall health. Health can be determined by accessing body weight compared to body measurements, fecal parasite exams, as well as physical exams.

Hibernation is a natural process for a Desert Tortoise. In the wild, mountains, weather, and freedom allow a tortoise to pick an appropriate area in which to hibernate. In a captive back yard environment, selection of an appropriate burrow is significantly limited. Burrow optimization for hibernation requires understanding and implementation of methods to control burrow flooding, excess humidity, and temperature regulation. Hibernation temperature should ideally be 60 degrees or less and always above freezing.

The goal of the hibernating tortoise is to avoid winter freezing and flooding. On the valley floor, the burrow opening direction is not as important as it is in the mountains (the floor of the desert is warmer which is the goal for tortoises in the winter). In the wild, the base of the mountains facing south to west would be the most ideal burrow sites to accomplish both goals. Avoiding flooding can be more challenging on the desert floor in a back yard environment as burrows are often not built out of the floor pane. When roofs are pitched toward the burrow or in a flood area, hibernating tortoises may drown or possibly wake up extremely ill. Outside hibernation should not be attempted in such burrows. Drip and sprinklers systems may also get damaged by the tortoise or develop leaks that will result in the tortoise developing similar problems. Burrows over and around such areas should be avoided.

Hibernation Indoors (not usually recommended):

The process of hibernation can be started outside. When temperature dictates the tortoise's hibernation activities, it can be collected and brought inside a cooled garage to complete the process. Tortoises can be placed in a cardboard box with shredded paper or hay. Garage temperatures below 60 degrees are adequate for hibernation and result in less weight loss through it. The tortoise can be soaked in a shallow tub of water in order to avoid significant weight loss or dehydration.

Hibernation continues throughout the spring and females begin to come out in April and May. Most males wake up around the same time, although in the wild hibernation is usually about a month longer. Waking up is also a process. Most tortoises begin by drinking only until sufficient enough temperature is achieved to aid in digestion.