Care of Desert Tortoises
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Natural History: Desert tortoises (Gopherus agassizii), also known as gopher tortoises and desert turtles, are found in the southwestern United States and northern Mexico. They live in burrows under bushes, overhanging soil or rock formations, or in the open during the day and come out to eat during dawn and dusk. They are a federally listed endangered species, and it is illegal to remove these animals from the wild. Captive tortoises should not be released to the wild as they can potentially carry a highly contagious and fatal upper respiratory disease to the wild population; they are also not accustomed to fending for water and food for themselves and would not survive long on their own.

Special Characteristics
- Longevity: In captivity, desert tortoises can live up to 60 years or more with proper care. They become sexually mature when they reach about 5-10 years old in captivity.
- Size: Adults usually grow to be 9-15 inches long.
- Anatomy: Once they reach sexual maturity, desert tortoises can be sexed. Males have a concave plastron while the female’s is flat. Males also have a longer tail and enlarged glands under the chin.

Captive Care Requirements
- Lighting: UVB is essential for tortoises to synthesize Vitamin D. The best source of UVB is the sun; allowing the tortoise to be outdoors for 30 minutes or more a day is ideal. If housed indoors, a special fluorescent bulb containing no less than 5% UVB (should say so on package) can be purchased from a pet shop. This bulb must be placed no more than 12 inches from the basking site, and should be on a timer to provide about 12-14 hours of daylight during warmer months and 10 hours during the winter. It must be replaced every 3-6 months, because the UVB fades even though visible light is still emitted. Light bulbs with a screw-in end (even those sold as “full spectrum” bulbs) provide heat, but not UVB. A hidebox should be provided for a dark, dry retreat on the opposite corner of the basking light.

- Temperature: If housed indoors, the daytime temperature of the enclosure should be between 70 and 90F. One corner should have a 100W heat lamp positioned for basking at 95F. This will provide a temperature gradient with one side being warmer than the other. Under tank heaters are useful to gently raise the overall temperature of the tank, but should be used with a thermostat or rheostat to accommodate changing ambient temperatures. At night the temperature should drop to 70-75F. When room temperatures are below 70F, use an under tank heater or a ceramic heat emitter. Obviously, at least two thermometers must be in use to monitor these temperatures, but digital thermometers that can measure ambient temperature are now readily available. Care must be taken to prevent
burns to the tortoise. Heating elements can be dangerous if not used properly, and a smoke alarm is recommended.

Desert tortoises housed outside must have an area where they can get shade as direct sun can kill a tortoise in an hour or less on a hot day. A shelter from sun and cold and place to retire at night can be provided in the form of a box or overhang.

**Enclosure:**

Outdoors is by far the best place to keep a desert tortoise. Each side of the enclosure should be at minimum 6 times the length of the tortoise to allow for plenty of room to browse and exercise. The height should be twice the length of the tortoise and should be at least one foot underground to prevent escape via burrowing. The area should be predator proof with a screen or wire mesh overhead and be fenced off from any pools or ponds. Make sure there are no poisonous plants, chemical pesticides or fertilizers in the enclosure. An artificial burrow can be constructed to mimic their natural environment.

If housing must be indoors, an all glass vivaria can be used. To make sure the tortoise has enough room to exercise, the enclosure should be at least 2x3 feet for one small tortoise. Increase the enclosure size as the number and size of the animals increases.

Males should be housed separately as they can fight and possibly get flipped onto their back, which can be fatal if no one is around to right him. Females get along better and can be housed in groups.

**Substrate:**

Outdoor enclosures can have a planted soil substrate with a dry surface. For an indoor enclosure, the bottom should be covered with something safe and easy to clean. Newspaper or indoor/outdoor carpeting are easy to change/clean and inexpensive. If you want something more aesthetically pleasing or natural looking, grass hay can be laid down, which should be removed when wet or spoiled, or sterile potting soil can be used, which can be spot cleaned every few days and changed every 6 weeks. Never use sand, wood chips, mulch, or gravel as they can be ingested and cause impaction of the GI tract.

**Water:**

As we cannot exactly duplicate their environment, water should always be offered in a dish large enough for soaking and filled shallow enough so it will not drown. Soak the tortoise for 20 minutes in warm water once a week to help maintain hydration.

**Feeding:**

Desert tortoises are strictly herbivores and need a high fiber, moderate protein, low fat, and calcium rich diet. Eighty-five percent (85%) of the diet should consist of grasses, weeds, and dark, leafy greens while only 15% should be hard vegetables. Grasses and weeds include alfalfa hay, Bermuda grass, fresh clover, clover hay, mallow, Opuntia cactus pads (prickly pears) and flowers, rye grass, rice grass, and sowthistle. The following dark greens should make up no more than half of the forage: collards, dandelion greens and flowers, escarole, endive, grape leaves, mustard greens, turnip greens, and watercress.

These vegetables can be mixed to make up the rest of the diet: acorn squash, red and green bell peppers, butternut squash, carrots, green beans, lentils, peas, pumpkin and other winter squash, snow peas, sweet potatoes, and turnips.

The following should **be fed sparingly** as occasional treats: cabbage, chard, and kale are high in calcium oxalates which can cause metabolic bone disease; spinach, broccoli, and parsley are high in goitrogens which decrease thyroid function; corn, cucumbers, radishes, sprouts, and zucchini are low in nutrition. A number of fruits (without seeds or pits) and flowers can be added as treats as well: apples, apricots, bananas,
berries, cantaloupe, figs, grapes, mangos, oranges, papayas, peaches, pears, plums, tomatoes, *Ficus benjamina*, geraniums, hibiscus flowers and leaves, pansies, petunias, pothos, rose petals and leaves, snail vine, and violets.

**Do not** feed any type of lettuce as they provide no nutrition.

**Supplements:** As we cannot replicate their natural diet, we must supplement their food with calcium. This can be in the form of a calcium carbonate powder that can be sprinkled on moistened food daily. A weekly vitamin supplement should also be sprinkled on the salad to ensure proper nutrition.

**Hibernating:** In late October when the days become cooler, the tortoise will eat less, bask less, and appear sluggish. In captivity you're taking a chance allowing your animals to hibernate in the back yard. A combination of wet and cold will kill a digging or burrowing chelonian, even though our California winters are temperate by the nation's standards. A cardboard box deep enough that the tortoise cannot climb out lined with newspaper is fine for hibernation. This can be put in a cool, dry place kept between 39°F and 50°F. The tortoise should be checked on periodically; it will move when touched if sleeping. In the spring when the days are warmer, the tortoise will become active in its box. A warm soak should be given at this time. In a week or two, it will resume its normal activity.

**DO NOT** hibernate your tortoise if you suspect it is at all ill or injured, as this will exacerbate its symptoms. Bring your tortoise indoors and keep it at a warm temperature (75-85°F) to keep it active. If brought indoors, the tortoise must be provided enough room to exercise and eat.

**Handling:** Because all reptiles are potentially infected with *Salmonella* bacteria, which can be transmitted to humans, routine cleanliness and hygiene are essential.

For more information on desert tortoises, here are some useful resources:

California Turtle and Tortoise Club.  Care of Desert Tortoises.
   http://www.tortoise.org/general/descare.html