



## Royal Animal Hospital – Tortoises

*The following information applies to most land turtles. Please contact us if you have any specific enquiries.*

### Housing

Tortoises will not tolerate climates that have a relative humidity in excess of 50% for extended time periods. Tortoises are extremely susceptible to a disease referred to as Upper Respiratory Tract Disease (URTD)-(See Health section), and high humidity seems to be a factor in the development of this condition. Tortoises have the reputation of a difficult captive, and they are. Providing desert tortoises with the right captive conditions is not impossible, but does take significant effort. This species is not as forgiving of husbandry errors as other tortoise species such as the African spur-thighed tortoise. Provided with the correct captive conditions however, a tortoise pet may well outlive its owner. Tortoises are best housed outside in conditions similar to their natural habitat.



Fences must be sunk at least six inches into the ground to discourage this behavior. Also, lush backyards with automatic sprinkler systems are not advised for tortoise housing, again because these areas have a much higher relative humidity than the natural habitat of tortoises. If the backyard is natural desert, with intact native vegetation, it is ideal for housing tortoises.

Tortoises must have an area of the yard that is shaded, so that they may thermoregulate properly. Some owners use dog houses placed in shaded part of the yard. Other options include the construction of an underground tortoise den. In an area of the yard that is safe, dig a burrow that allows the tortoise to fit its entire body inside, and enables it to turn around easily. Make sure to fortify the tunnel with wood or other substances to keep it stable and prevent a collapse. In the wild, tortoises spend 80% of their time inactive in burrows (called shelter sites). Shelter sites in the wild can be anywhere from 3 to 30 feet in length, the artificial burrow should be just long enough for someone to reach in and retrieve the tortoise in case of an emergency. If this area is safe and maintains the correct temperature, it can be used for hibernation. Another important aspect of tortoise housing is to make sure to remove all toxic plants from the yard. Tortoises will try anything they can reach. Check your local herpetological or turtle and tortoise society for a list of toxic plants. Dogs and tortoises generally do not mix well, dogs seem to consider tortoise legs a delicacy and will often chew them off (YUCK!).

## Housing Young Tortoises Indoors

An enclosure no smaller than a standard 20 gallon long should be used to house baby tortoises indoors. This species requires a well-defined thermal gradient, and any enclosure that is not at least 2 feet in length cannot provide for this necessity. Basically, you will need an enclosure measuring 2 x 2 x 1 feet (l x w x h) to house baby tortoises. On one end of the enclosure, provide a heated area of 88-90 degrees F, and on the other end, provide temperatures of 75-80 degrees F. A heated area can be provided by using either a heat lamp or undertank heating pad. For heatlamps, I myself prefer the spot bulbs manufactured by ZooMed, for a tank of the above dimensions; you will need at least a 50 watt bulb to raise create a basking spot of the appropriate temperature. This will, of course, vary with the ambient room temperature. The best way to ensure the proper temperature is to purchase a digital thermometer with an external probe. These can be purchased for about \$20 at Radio Shack. To check the temperature correctly, allow the spot bulb to run for two hours before checking the temp. Place the external probe in the area where the baby tort would be basking. Give it a few minutes to stabilize. If the temperature is higher than 92 degrees F, you need a lower wattage bulb. Undertank heating pads can be used, but they often do not get warm enough for tortoises. They can be used however, in conjunction with a heat bulb to provide the correct temperature. This has the added advantage of night heating. An undertank heat pad may be left on at night for supplemental heating without disturbing the baby's sleep. Another important aspect of housing baby torts indoors is full spectrum lighting.

If a baby tortoise is housed indoors for more than one month and is not allowed access to natural, unfiltered sunlight, a full-spectrum light that emits UVB must be included in the enclosure. Irradiation with UVB is essential in the production of vitamin D3, and the subsequent absorption of dietary calcium. If your tortoise is housed inside, and not provided with full-spectrum lighting for an extended period of time, it may develop a calcium deficiency. There are also dietary causes of this malady (see nutrition). For artificial lighting to be effective in promoting vitamin D3 synthesis, it must be at least 12 inches away from the subject. That is why I do not recommend that baby tortoise indoor housing is higher than 1 foot. Also, the bulb must be left on 10-12 hours a day, and must be replaced every 6 months, even though it will not burn out before this time.

There are a few other important factors when housing a baby tort inside.

Substrates: Do not use newspaper as a substrate for baby tortoise housing. Newspaper does not provide enough resistance and can cause toenail ripping. I recommend either alfalfa rabbit pellets or alfalfa hay. Many people have had good results with natural substrate collected from the habitat as well babies must also be provided with hiding spots on both the cool end and the warm end of the enclosure. This is so the tortoise may feel secure in either temperature. The enclosure should have good ventilation, to prevent the buildup of humidity. A small shallow water dish can be left in with the baby at all times, provided that it is sturdy enough not to get tipped over. You want to avoid high humidity in the enclosure like the plague. Some people have suggested that you should not offer desert tortoises water on a regular basis, and should instead, soak the babies once a week in lukewarm water for 10-15 minutes. DO NOT DO THIS. This has caused more respiratory infections in captive desert tortoises than I care to consider. The best way to deal with water is to always have a small, shallow, stable container available.

## Diet

Proper nutrition is the cornerstone of good husbandry. Many, many health problems can be avoided by providing the proper diet. As stated before, tortoises are herbivorous, and in the wild their diet consists primarily of desert grasses, forbs, shrubs, and cacti. In captivity tortoises must be provided with a diet that is high in fiber and calcium, and low in water and phosphorous. Variety is the key to a balanced diet. A diet that follows these guidelines can be composed from the following elements:

70-80% of the diet should be high calcium, high fiber greens and grasses such as:

- Bermuda grass (*Cynodon dactylon*)
- Mustard greens
- Collard greens (be careful not to offer too much of these, they have a high oxalate content)
- Alfalfa Hay (be careful on this green too, it is very high in protein)
- Mulberry leaves
- Endive
- Watercress

Completely avoid iceberg and romaine lettuces; these are very high in water content and very low in nutrition. Also avoid, or offer only occasionally, spinach. Spinach contains a compound called oxalic acid, which binds to dietary calcium, making it unavailable to your tortoise.

20-30% Fruits, vegetables, and flowers such as:

- Prickly pear fruit and pads
- Squash blossoms
- Pumpkin
- Yellow squash
- Carrots
- Hibiscus flowers
- Nasturtium flowers
- Zucchini

Avoid or feed sparingly: Broccoli, Cabbage, Cauliflower, Brussel Sprouts. Vegetables in this family contain a compound that may cause an iodine deficiency.

Less than 5%-High water fruits

High water fruits like strawberries, raspberries, melon, papaya, apricot, mango, kiwi, and grapes should only be offered occasionally as treats. Adult desert tortoises can be fed three times a week, baby and juveniles should be fed four to five times a week. A high quality calcium supplement should be lightly sprinkled over the salad once or twice a week for adults and three times a week for babies and juveniles. If the diet is sufficiently varied, not vitamin supplementation should be necessary.



If you have room in your backyard, consider collecting seeds from some plants that compose some of the natural diet of tortoises.

## **Water and Desert Tortoises**

Desert tortoises should have a shallow container of clean water available at all times. Some breeders of other desert tortoise species do not have water available regularly; instead they soak their animals once a week for 20 minutes or so. **DO NOT DO THIS WITH DESERT TORTOISES!!!!!!** Desert tortoises are very susceptible to URTD, and soaking in water is a good way to make your tortoise sick. Even babies that are housed indoors should be offered a sturdy water dish on the cool end of the enclosure. Although desert tortoises receive the majority of their water requirement from the food they consume, they should always have access to water when they desire it.

## **Tortoise Health**

There are several problems that plague desert tortoises, the foremost, being Upper Respiratory Tract Disease.

### **What is Upper Respiratory Tract Disease?**

URTD is a chronic respiratory infection caused by a class of bacteria known as mycoplasma. Mycoplasma lacks a cell wall, which differentiates them from other types of bacteria. URTD has noticeable symptoms such as wheezing and runny exude from the nostrils. The incidence of URTD has been linked to several factors, most notably, stress from such events such as poor diet, incorrect environmental conditions, and crowding. Captive tortoises are often subject to stress from one or a combination of the above factors, making them very susceptible to URTD. It is therefore imperative to NEVER release a captive tortoise into the wild, as this may inadvertently introduce URTD to wild populations. If your tortoise shows any signs of URTD, take it immediately to a qualified reptile veterinarian for diagnosis and treatment.

### **Other Health Problems**

Tortoises in general are relatively hardy reptiles. Many health problems stem from incorrect husbandry practices. The most commonly seen problems that fall under this category are as follows:

**Gout:** Gout occurs when there is too much animal protein in the diet. Tortoises are entirely herbivorous, and as such, require no animal protein. Gout occurs when crystals of uric acid are deposited in joints or soft body tissues, resulting in a painful and often debilitating condition. Gout will be entirely avoided by not offering a desert tortoise animal food products such as monkey chow, dog food, hamburger etc.

**Nutritional Secondary Hyperparathyroidism:** (often referred to as "Metabolic Bone Disease or in tortoises and turtles, "Soft Shell Disease"): NSHP is caused by a number of factors, one dietary, and one environmental. The dietary cause is from feeding a diet that has the incorrect calcium to phosphorus ratio. The environmental cause is from not allowing tortoises access to natural unfiltered sunlight, or an

artificial source of UVB light. UVB irradiation is thought to prompt the creation of vitamin D3, which in turn, encourages calcium absorption from dietary components. This sounds complicated, but your tortoises will not suffer from this disorder if you offer a correct diet, calcium supplementation, and a source of UVB.

#### Pyramiding of the Scutes:

Tortoises that are fed a diet with too much animal protein will sometimes develop a condition where the scutes seem to be making a pyramid shape. This can be avoided by offering the proper diet.

#### How Can I Tell the Age of my Tortoise?

If your tortoises have reached its full, mature size, distinguishing age is difficult.

Counting grow rings does not work, as tortoises can grow more than one ring in a season if the conditions are favorable. Some biologists use a measurement on wild tortoises' c called "shell wear". The degree of shell wear can give a vague idea of age, tortoises with extensive wear are older than tortoises with less shell wear. Unless you hatch the tortoise yourself, or know the person who did, it is difficult to estimate the age of a mature desert tortoise.

