

Introduction to Care of Tortoises

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The cold New England winters limit the tortoise species we can successfully keep in captivity. The larger species such as the African spurred tortoise, the marginated tortoise, the leopard tortoise, the hingeback tortoise, the Burmese brown tortoise, the elongated tortoise and the red-footed tortoise are unsuitable pets in this area. Choose a species that stays small and is an "easy keeper" such as the spur-thigh tortoise (sometimes sold as a "Greek" tortoise) or the Hermann's tortoise.

Your best bet is to purchase a tortoise that is captive bred- one born in captivity rather than collected from the wild. Captive bred animals make better pets. They are healthier, tend to be more interactive and are accustomed to life in captivity. Animals collected from the wild are subjected to a great deal of stress during shipping which makes them susceptible to disease. Many of these tortoises die in transport. The ones that survive arrive quite sick. By purchasing a captive-bred animal, you will help discourage the inhumane importation of wild caught tortoises and end up with a happier, healthier pet as well.

Habitat

The ideal habitat for your pet depends on her particular species and the conditions she would normally be living in if she were in the wild. Spend a little time learning about your tortoise's natural habitat and do what you can to mimic it in captivity. The more closely you can simulate her normal living conditions, the healthier your pet will be. At the end of this handout, we list a few resources for more information.

Provide as large an enclosure for your tortoise as you can. At a minimum, provide an area that is 6 times as long and wide as your pet. For example, a 6 inch tortoise should have an enclosure that is at least 3 feet by 3 feet. A large plastic storage tub is a good place to start for smaller animals. They are inexpensive, easy to clean, and safe for your pet. Other options include glass aquariums, small children's wading pools, or custom-built wooden enclosures.

Substrate

Newspaper is perhaps the best choice for lining the floor of your tortoise's enclosure. It is inexpensive, safe and easy to replace daily to maintain hygiene. Some substrates are dangerous. Never place sand, cat litter, corn cob or walnut shells in your tortoise's enclosure. Some tortoises ingest these substrates and end up with impactions of their gastrointestinal systems. Impactions can be difficult to treat and occasionally are fatal.

Other substrates include alfalfa (rabbit) pellets, bark mulch, potting soil and sphagnum moss. With the exception of alfalfa pellets, be sure that your tortoise does not actively eat these substrates. Materials of this type tend to hold water and can become moldy. Overly damp, soggy or wet substrate can be a source of shell and/or skin problems as well as respiratory disease. Keep your pet's enclosure as clean as possible by removing soiled substrate daily and replacing all of the substrate at least once weekly. Another option is to line your tortoise's enclosure with artificial grass or "Astroturf". Astroturf is inexpensive, safe and easy to clean.

Temperature

Tortoises are reptiles. Reptiles cannot maintain their internal body temperature by shivering or sweating the way we do. The only recourse they have for cooling or warming themselves is to move to a cooler or warmer spot in their environment. Therefore, a heat lamp must be used.

To create an air temperature similar to your tortoise's habitat, place a heating pad under three-quarters of the length of the enclosure. The remaining $\frac{1}{4}$ should be left free to provide a cooler spot. Place a heat lamp at the end of the enclosure that has the heating pad underneath it and measure the temperature at "tortoise height" under the lamp. The warmest spot should ideally be 95 degrees Fahrenheit. The opposite end of the enclosure should have neither a heat lamp nor a heating pad. This will provide your tortoise with several locations in her habitat that are different temperatures, allowing her to regulate her temperature effectively by moving from one spot to another.

Monitor the temperature in your tortoise's habitat with several thermometers and be sure to check them at least twice daily. You will want a thermometer on the heated portion of the floor, one at "tortoise height" by the heated basking spot, and one at the opposite end of the enclosure without heat. It is of utmost importance that the floor of the enclosure be no more than 85 degrees Fahrenheit. Be sure the heating pad under the enclosure does not overheat and burn your tortoise! To be safe, purchase a temperature sensor with an alarm that can warn you when the enclosure is too hot.

Do a little research to discover the typical low and high temperatures in your tortoise's natural environment. Use these temperatures as targets for the low and high temperatures in your habitat. Turn the heat lamp off at sunset to help simulate the normal daily temperature change in the wild.

Nutrition

All tortoises are vegetarians. Their diet should consist of approximately 80% fresh greens, 10% fresh vegetables and 10% fresh fruits. Do not feed any greens, fruits or veggies to your tortoise that you would not eat yourself! All food should be thoroughly washed before offering it to your pet. The most important consideration in feeding a tortoise is to always offer a variety of greens, vegetables and fruits. This is necessary for a diet well balanced in nutrients, minerals and vitamins.

Add calcium carbonate (approximately 1% by weight of the daily food intake) to your tortoise's food 2 or 3 times weekly. Also, lightly dust your tortoise's food every one to two weeks with a powdered vitamin/mineral supplement. Be sure the supplement contains vitamin D3. Do not over-supplement, however, as too much vitamin D3 can be harmful. Ask your veterinarian for exact amounts.

Greens

Dark, leafy greens such as romaine lettuce, kale, collard, mustard and dandelion greens should make up the bulk of the diet. Other greens to try include: bok choy, red leaf or green leaf lettuce, butter lettuce, water cress, escarole, parsley, turnip greens and green onions.

Vegetables

Offer your tortoise a variety of vegetables (up to 10% of the daily rations). Try cabbage, Napa cabbage, carrots, Brussels sprout, sweet potatoes, cauliflower, broccoli, green beans, yellow wax beans, radish and red/green/yellow bell peppers. Also try cucumber, peas, corn, lima beans, bean sprouts, winter or summer squashes. Experiment and try to discover your tortoise's favorites. Remember that variety is the key to a healthy diet.

Your tortoise may enjoy eating flowers. There are several edible flowers that you can grow on your own or buy in the produce section (not flower section) of the grocery store or plant nursery. Be sure that they have not been treated with pesticides of any kind. Edible plants include: hibiscus (flowers and leaves), nasturtium (flowers and leaves), rose petals, violets (flowers and leaves) and geraniums.

Fruits

These are treats! Offer small amounts of raisins, grapes, apples, oranges, pears, peaches, plums, nectarines, melons, strawberries, raspberries, bananas, mangos, kiwi fruit or papaya.

Light/Dark Cycles and Ultraviolet Light

Try to provide lighting that mimics the light cycle in your tortoise's natural environment. Most often, 10-14 hours of light per day is optimal. Never leave a white light on for 24 hours a day. Plugging your light into a timer is the best way to ensure regular light cycles.

All tortoises need ultraviolet light (UVA and UVB) in order to synthesize the vitamin D they need. Be sure your bulb produces UVB in addition to UVA. Many bulbs only produce UVA which is not adequate. Without enough UVB light, a tortoise will lose bone density, predisposing him to fractures. This condition is called metabolic bone disease (MBD) and has several causes. See the section on common health problems below for more information.

Most UV bulbs stop producing ultraviolet light long before they burn out. UV light is invisible! Replace your ultraviolet bulbs at least every 6 months! Most bulbs no longer produce UV light after 6 months of use.

Another option is to purchase a UV meter to directly measure the amount of UV light your bulb is emitting. Unfortunately, good UV meters are expensive and not readily available. Most meters detect UV light accurately only within a limited range of wavelengths. Your bulb may produce adequate UV light outside of this range, causing you to discard a bulb that is perfectly fine. Your best bet is to purchase a new UV bulb every 6 months.

Salmonella

Any reptile may be carrying salmonella, even animals that are perfectly healthy. Many reptiles are persistently infected. This means that they harbor the bacteria in their bodies and at times of stress begin to shed the bacteria into their environment. The most common sources of stress are inappropriate habitats and poor diet. If you follow the guidelines in this handout, you will be doing everything you can to keep your tortoises healthy and stress-free. The healthier your tortoises are, the less the risk that they will shed salmonella.

It is safest, however, to assume that your reptile is always shedding salmonella. Be sure to wash your hands after handling your tortoise. It is especially important to supervise any small children. Prevent access to your tortoise's enclosure when you are unable to watch them. Children and immunosuppressed individuals are at most risk of serious illness. Instruct older children of the importance of hand washing after touching a tortoise or anything in its habitat.

Common Health Problems

Observe your tortoise's appearance and behavior closely to learn what is normal for her. Unusual behavior or change in normal habits can be a sign of disease. Watch for non-specific

signs of disease such as reluctance to eat, listlessness, weight loss or abnormal/runny stool. If you notice any of the above, please call us.

Metabolic bone disease (MBD)

This condition has more than one cause. Turtles that do not get enough UVB light or have little calcium in their diet are predisposed. When MBD is advanced, the turtle's bones break easily and the result can be many painful fractures. Be sure to supplement your turtle's diet with a vitamin and mineral supplement containing calcium. Also, provide UV light (both UVA and UVB) at least 8 to 12 hours daily and change your UV bulb at least every 6 months even if it still appears to work!

Shell rot

A tortoise's shell is primarily composed of bone. Tortoises wear most of their skeleton on the outside! Shell rot occurs when the bone becomes infected and can be a very serious problem. Enclosures that are constantly damp or wet predispose a tortoise to shell rot. If you ever notice a portion of your tortoise's shell becoming soft, call us right away for an appointment.

Hypovitaminosis A

Your tortoise will not have this problem if you supplement her diet with a multivitamin and mineral powder. There are many available at your local pet store. Sprinkle your tortoise's food once or twice a week. Feed plenty of romaine. This leafy green is high in vitamin A. If your tortoise's eyes appear swollen, he may need a vitamin A injection. Please call us if you notice swollen or shut eyes in your tortoise.

Respiratory infections

Unfortunately, respiratory infections, including pneumonia, are common in tortoises. Watch for these signs: bubbly nose, open-mouth breathing or bubbly mucus at mouth edges. Call us right away if you notice any of the above. The sooner we can diagnose and treat a respiratory infection, the better our chances of success.

Preventative Healthcare

We recommend a yearly checkup for your adult tortoise and twice yearly exams for juveniles. Signs of disease can be subtle and if we catch a problem sooner rather than later, we will have a better chance of successful treatment. At your pet's annual exam, we will check her eyes, ears, nose, beak, mouth, shell, limbs, cloaca and general body condition including weight and shell appearance. We will also discuss with you any new information we have regarding tortoise care. Each year there are advancements in the preventive health of these "exotic" animals!

For More Information

We recommend the following book for additional information about the care of your tortoise:

Popular Tortoises by Philippe de Vosjoli

1996 Advanced Vivarium Systems, Inc.

Here is a website with some good information about reptiles in general and also some information about specific species. Tortoises are "chelonians" so be sure to check out the chelonian links:

www.anapsid.org