

Leopard Tortoise Care and Breeding

Leopard tortoise care and breeding information.

By Ed Pirog

The leopard tortoise (*Geochelone pardalis*) is an easily recognizable tortoise species with a distinctive shell pattern and fairly unique body form. The leopard tortoise's shell is relatively high-domed with a height usually greater than half its length.

The color and pattern of the leopard tortoise's carapace (a straw yellow background color with splashings of jet-black evenly dispersed over the shell) give this tortoise its common name. Adult leopard tortoises can obtain a size of 43 kilograms (95 pounds) but are more typically found in the range of 10 to 15 kilograms (22 to 34 pounds). As far as adult tortoise dimensions go, the range is between 40 to 50 centimeters (16 to 20 inches) in length for a typical adult leopard tortoise. Leopard tortoises are captive-bred in substantial numbers. This is an attractive "high yellow" morph that was produced in a captive collection.

Photograph by Bill Love

Among taxonomists, there is one recognized species (depending on whom you talk to) with the battle lines being drawn for the naming of more than one species or subspecies. Two subspecies, *Geochelone pardalis pardalis* and *Geochelone pardalis babcocki*, have been recognized in the past, and the most distinguishing difference between the two is the shell pattern of juveniles. Juvenile *G. p. pardalis* are recognized by multiple spots on the center of each individual carapace scute, while *G. p. babcocki* will vary from not having any spots, to one spot, to one spot attached to a scute border. A few other characteristics, such as size of adults and shell shape, have also been mentioned. However, these characteristics cannot be used for definitive identification purposes because of the extensive range and overlap of leopard tortoise populations. So, for now at least, there is only one recognized species of leopard tortoise, *Geochelone pardalis*.

Distribution and Habitat

The leopard tortoise range extends from Namibia, ranging south throughout the southern continent of Africa, moving up on the east coast occurring generally east of the western rim of the Rift Valley, up to southern Sudan.

This leopard tortoise seems quite versatile in its selection of preferred habitat. It has been found in semi-deserts, grasslands, scrublands and forests. This has actually added to the argument for the recognition of more than one subspecies or species, because there has been some speculation that the populations found in their respective habitats fail to do well in the habitat of the others. This might be a reason why some of the tortoises that are taken out of the wild fail to adapt to captivity: Keepers assume they all come from the same habitat or same general conditions.

Captive Care

By far the best housing location for leopard tortoises is, of course, outdoors where the tortoises can benefit from natural sunlight and graze on plant matter. Not only is it the best for the health and well being of these tortoises, but it is the easiest to maintain if the setup is right.

The minimum area for a leopard tortoise should be no less than 5 square meters (54 square feet) for a pair or trio of adult leopard tortoises. The area should be well sodden with a high-quality grass, because these tortoises are very active grazers, and grasses should make up a major portion of their diet. Use solid fencing that prevents the animals from seeing outside their enclosures to contain them. Keepers have found that this cuts down on the tortoises' attempts to plow through the fence and escape. Do not be concerned about the depth the fence is buried into the ground, because leopards are not very active burrowers. They are quite content to just plow into a corner when they are in need of rest and choose to bed down. For this reason, it is a good idea to provide some low-lying shrubs or bushes. The shrubs will give them a secure hiding place in addition to providing some insulation from the evening chill during cool weather.

Provide a heating structure for leopard tortoises in areas where temperatures are expected to drop below 15 degrees Celsius (59 degrees Fahrenheit). Such a structure may be constructed out of a 1/4-inch plywood shell with a 2-inch foam inner lining and a 1/4-inch inner shell on all six sides. Provide a removable lid to access the inside for cleaning and monitoring the tortoises, and cover the door opening with any available fabric that will minimize circulation with the outside air but will allow some air exchange during cold weather. With this construction you can heat a 1-square-meter structure to 25 degrees Celsius (77 degrees Fahrenheit) with an outside air temperature of zero degrees Celsius (32 degrees

Fahrenheit) with one 50-watt unit. You can use a ceramic heating element, bulb or heating pad of any type. Cover the floor with plastic or linoleum to keep the wooden floor from rotting out. I do not recommend heating entirely from underneath.

Furnish the leopard tortoise pen with some sort of structure, such as rocks or logs, in order to provide some exercise and to break the animals' line of sight should more than one tortoise be kept in a single enclosure. This also aids in the escape of tortoises that prefer to ignore unwanted advances or aggressive behavior from another pen mate, and it can reduce unnecessary injury due to such behavior.

I also highly recommend a water bowl or pool where clean fresh drinking water is available for the leopard tortoise at all times. This can be sunken into the ground so the rim is just slightly above ground level, making it easy for the tortoises to drink. Leopard tortoises have a tendency to drink vast amounts of water if it is available, and I believe this is a very important consideration in the animals' well being when maintaining them in captivity. The water containers may be easily cleaned and filled by a garden hose on a daily basis.

Sometimes conditions make it inevitable that the leopard tortoise must be maintained indoors. For this, I suggest setting aside an area away from children, household pets and other family members. Try to provide ample room for the tortoises, which can be difficult to accomplish indoors.

For indoor leopard tortoise housing, you may want to consider constructing a corral out of a 4- by 8-foot sheet of 3/4-inch plywood cut widthwise into 2-foot-wide strips. Secure the ends with wood screws so the structure can be assembled and disassembled as needed. You can cover the floor with any thick-grade landscaping plastic to keep the floor from being soiled. For bedding, you can use landscaping bark or hay. Again, be sure to provide a water dish with clean water at all times. A glazed flower pot saucer is a good container for the water. The glazing makes it easy to clean and difficult for unwanted matter to adhere to the bowl.

If you need to construct such a structure, chances are you are going to need to provide heat. For this, you can use a clip-on bell-shaped lamp that can be found at most hardware stores. A 75- to 100-watt flood bulb should provide an adequate warm spot. If it is necessary, use more than one lamp. The 4- by 4-foot area should provide more than ample space for a pair or a trio of tortoises on a temporary basis. Usually, during periods of cool conditions, the leopard tortoises will slow down and not require much space, or feeding, for that matter. Indoor tortoises require ample UV lighting.

You can maintain juvenile leopard tortoises in a container no less than 1 by 2 feet. Plastic sweater boxes or even an old fish tank are good enclosures. If using a fish tank, be sure to provide adequate ventilation to avoid excessive heat build up. If conditions are right, these little tortoises can be very active, and by nature they like to wander, so provide as much space as is practical. For cage flooring, indoor/outdoor carpeting with no backing is useful for providing adequate footing and ease of cleaning. Provide shredded newspaper or hay for security and added roughage (in the case of hay). A jar lid or any low dish 1/4 inch or less in depth will effectively provide water for hatchlings and juveniles. The tortoises will utilize this daily, so you should clean, wash and fill the dish at least this often.

Another way to provide water is to soak the leopard tortoise in very shallow water every couple of days, but this is not recommended for various reasons, such as leopards seem to have a preference for drinking great amounts of water. Also, providing water at all times allows the tortoise to determine its own drinking schedule. When providing heat, always try to arrange the heat source so it is radiating from above for a more natural provision of thermal regulation. Be careful not to go overboard on the heat source. Although it may not feel like it to you, the heat source may very well burn the animal if the heat is too close to the shell.

Captive Conditions

An appropriate climate for leopard tortoises is what might be considered a comfortable climate for most people. Temperatures should range from 20 to 30 degrees Celsius (68 to 86 degrees Fahrenheit), although the tortoises can tolerate temperatures down to 5 and up to 33 degrees Celsius (41 to 91 degrees Fahrenheit). As an example of a leopard tortoise's tolerance, one particularly large female was noted nesting when the outside air temperature dropped to 10 degrees Celsius (50 degrees Fahrenheit). She continued digging, laid her eggs and completed the nesting process with no adverse effects, although she did take five hours.

Preferred relative humidity is believed to be approximately 40 to 50 percent, although leopard tortoises have shown increased activity on both overly dry and overly humid days. Established animals do not seem to have any actual preference to humidity or the lack of it, although during days where the humidity climbs above 70 to 80 percent, the incidences of runny noses seem to increase.

During cooler temperatures it is quite important to keep the leopard tortoise as dry as possible and pay particular attention

to any sign of respiratory problems, especially if the cool temperatures are accompanied by higher humidity. During these periods, leopards seem to be overly sensitive to respiratory ailments. Checking for this can be accomplished by gently poking the tortoise in the nose, causing it to quickly withdraw, expelling what air it has in its lungs. This is accomplished with the tortoise's head near your ear. (Be careful that your ear is not mistaken for a tasty morsel of cauliflower!) If you hear a guttural sound in the nasal passage or throat, seek veterinary care for the animal immediately. Also, when performing this test, keep in mind you want to lightly and gently tap the tortoise on the nose.

Most, if not all, leopard tortoises seem to fare better if they are made to feel secure. The leopard tortoise is no different. Be sure to provide hiding places either in the form of hide boxes or, more preferably, a substrate where the tortoises can plow and nest. For this, you can use hay, clean dry leaves or shredded paper. The tortoise doesn't seem to mind what it is as long as it feels hidden.

Feeding

Once a newly acquired leopard tortoise has its physical needs met and appears to feel relatively comfortable, it will usually begin to explore and go looking for food. The leopard tortoise is no different, although wild-caught imports are notorious for taking longer than usual to acclimate to their new surroundings. If they acclimate at all.

For the leopard tortoise, a diet high in fiber and low in protein is the rule, as it is for most tortoises, which are grazers. Never feed leopards animal protein. If the tortoise has access to the outdoors, this should not be a problem, because it will spend most of its active time grazing on whatever grass is available. This may be sparingly supplemented with squash, lettuce (not iceberg), carrots, kale, endive or any dark green leafy greens. Avoid spinach. Feed broccoli, kale and cabbages sparingly, if at all. Fruit should be fed sparingly.

On a weekly basis, lightly coat the leopard tortoise's food with one of the many multiple vitamins available on the market. There is some anecdotal evidence to suggest that a good multivitamin to use is one called Centrum. (Yup, the stuff you've been taking for years if you are one of the health-conscious types.) Some keepers believe that the ratio of elements in this multivitamin is one of the most balanced as far as metabolic requirements. The tablets can be ground into a fine powder that can be very lightly sprinkled on food items. It is a common and expensive mistake to overuse supplements. Using the vitamin once a week should be more than adequate. Also provide a calcium supplement on a regular basis, preferably in any form of calcium carbonate. Leopards seem to actually show an attraction to cuttlebone, which is a chalky structure, found in cuttlefish. This can be purchased at any feed or pet shop. It has been used as a calcium supplement for birds for many years. Tortoises, both juveniles and adults, will chew and scrape at the cuttlebone with apparent pleasure. This action actually has a second very important benefit: It keeps the beak and nails down, which eliminates the need for pedicures and beak trims. I cannot stress the importance of providing calcium enough, particularly in the case of juveniles and nesting females. The cuttlebone can also be ground in a grinder or blender, which will ground it into a very fine powder that can be easily sprinkled over food. This should be done on a regular basis.

If you are limited to keeping the leopard tortoises indoors, provide meals as close to the previously mentioned diet as possible, keeping in mind that they are primarily grazing animals. As far as grazing goes, there has been some success in growing grazing material in plant flats or flat plastic trays placed near windows and allowing smaller tortoises to use this daily for grazing.

Breeding

Once leopard tortoises are acclimated, warm, secure and well fed they tend to become, well, frisky. At least the males do. About the time February or March rolls around in the Northern Hemisphere, male leopards are on the prowl. They actively hunt for females with which to mate.

If and when one is found, a male leopard tortoise will become quite persistent in his pursuit. He will begin by walking or even running up to the female and begin courtship by ramming and bumping the female and bobbing his head. He does this to get the female to notice him and stand still if she is actively feeding. As a general rule, the female will respond in typical female fashion and either ignore him or continue grazing. But the male, in typical male fashion, continues his advances until the female finally accommodates him. The male will climb the back of the female's carapace and try to wrap his long tail under her shell until he succeeds in copulation. He will work very hard to accomplish his goal. While mounted on the female, he will open his mouth very wide and emit a rasping kind of wheeze, or grunt, with each motion. The female usually just continues grazing through the entire process until the male loses interest or tires and finds something else to occupy his time. This process can occur throughout the spring and the summer on a daily basis. Come September, this behavior eventually subsides, and the male will try to mate only occasionally throughout December. The female will begin to nest in September at the earliest and can continue to lay through March at roughly 30-day intervals.

Nesting

When the female leopard tortoise is ready to nest, she will indicate this by continuously pacing as if she is a tortoise with a mission, which actually she is! This will occur a few days before she nests. Selection of a suitable site seems to be an individual preference among females. It seems that the selection of the nesting site roughly correlates to areas exposed to the sun for the greatest part of the day, but some tortoises have nested in concealed areas with no direct exposure to the sun at all.

When the leopard tortoise finds an area to nest, she will begin by scraping the surface in circular motions alternately with her hind legs. Her long toenails will begin to loosen the dirt. The loose dirt is then picked up with the long nails and deposited to either side of the tortoise. If the dirt becomes too hard, the tortoise will moisten the dirt in the hole with fluids stored in her bladder. She does not use all the fluid at one time. She will do this a few times in the course of digging the nest. It is amazing that the amount of fluid stored can turn the dirt to a very muddy consistency. The hole itself is not much bigger than the eggs that will pass into it. The cavity opens up below the surface to roughly 4 to 5 times the diameter of an egg in a flask-shaped cavity. The farthest length of the outstretched hind leg determines the depth of the cavity. If an obstruction is encountered, such as a root or rock, the tortoise will usually dig around it. A leopard will very rarely start a nest and abandon it, as some other tortoises will.

When the nest is complete, the female leopard tortoise can deposit anywhere from five to 21 eggs, depending on the size of the tortoise. The average clutch size for a 13-kilogram (28.7-pound) tortoise is 10 eggs, with the tortoise nesting usually four to five times in a given season. As each egg is deposited, it is slowly lowered into the cavity by the viscous fluid that surrounds it as it exits the cloaca of the female tortoise. Each egg is then carefully repositioned in the nesting cavity to make room for the next. When the tortoise is finished depositing the eggs, she reverses the process used for digging the hole to cover it up. She will then stamp down the dirt with her plastron and proceed to rough up the dirt over the nest and the area around it with her hind feet in what appears to be an attempt to conceal the nest. When the whole process is complete, it is very difficult to find the nest if you did not see it being constructed.

You can then carefully excavate the leopard tortoise eggs and place them in an incubator. It is very important to be extremely careful removing the eggs, because the eggs themselves are very slippery and they are usually being removed through a small hole. The problem is compounded by the fact that there are usually eggs under the one being removed and if dropped can easily crack the egg being dropped in addition to the ones under it.

Eggs and Incubation

Egg size seems to be determined by the size of clutch and not by the size of the leopard tortoise. Large numbers of eggs usually result in smaller eggs and smaller clutches result in larger eggs. The average egg size for a 13-kilogram (28.7-pound) tortoise is 46 by 41 millimeters (1.8 by 1.6 inches), with an average weight of 49 grams. I measure the eggs, number them in pencil in large numbers and record them in a data book. I then place them on vermiculite, moistened one time with water in a 1:1 ratio (by weight) in a plastic box with holes for ventilation. I do not add water for the duration of the incubation. I place the box in an incubator at 30 degrees Celsius (86 degrees Fahrenheit). I intentionally allow the temperature to vary between 28 to 30 degrees Celsius (82.4 to 86 degrees Fahrenheit) in an attempt to produce both sexes; the sex of the tortoise is very likely the result of a particular temperature at a particular stage of development of the embryo as it is with many turtles and tortoises. At these incubation temperatures, the eggs take anywhere from 88 to 163 days to hatch, with an average duration of 129 days. There are reports of leopard tortoise eggs hatching after more than 400 days, but this is far from typical.

When hatching, the baby leopard tortoise will punch a small hole in the egg with what is referred to as an "egg tooth." This egg tooth is nothing more than a sharp protrusion on the tip of its upper beak which eventually wears away as the tortoise matures. In theory, the tortoise will sit in the egg until all the yolk is absorbed. Captive leopards usually hatch with a good portion of the yolk sac still unabsorbed. In this case, I place the baby upright in a teacup or small container with moistened paper towel in the bottom. This keeps the yolk sac moist and the tortoise restrained so the yolk sac is not damaged until the yolk is fully absorbed, which takes a few days.

When the yolk absorbs, I move the leopard tortoise to a plastic shoe box lined with a thin layer of moist paper towels. The lower shell (plastron) is not fully flattened yet because the tortoise hatches kind of folded in half, with the shell still not fully hardened. If you place the tortoise on a hard, flat, moist surface, the plastron will properly flatten out before hardening. All along, the tortoise is still in the incubator. When removed from the incubator and placed in suitable quarters, the hatchling tortoise is ready to be introduced to food and water. The average size for a hatchling in this case is 47 millimeters (1.85 inches) straight-line carapace length, with an average weight of 27 grams.

Development of the Young

When feeding the young leopard tortoise, you must provide a high fiber diet and make sure to avoid excessive protein, in addition to providing adequate hydration and calcium supplementation. I suggest you treat the hatchlings as you would the

adults, with the exception that I recommend that you chop up the food for the hatchlings into roughly 1/4-inch pieces and mix it together so the tortoise will be sure to get a balanced diet at each feeding. Finally, there is no substitute for natural sunshine. Sunshine and a proper diet will ensure a well-formed and healthy tortoise. In the absence of sunshine, provide a good artificial UV light as the next best substitute.

When following the above regimen, expect normal growth at a rate of 1 inch per year. Be sure vitamin D3 is available to the leopard tortoise if adequate UV light is not provided. Without this, the calcium cannot metabolize into bone.

Conclusion

The above information is the result of owning two male and three female leopard tortoises that I maintained over a period of 15 years. The breeding notes were obtained over a five-year period, from 1994 to 1998. During that time, 357 eggs were deposited (mainly by two females) with 234 eggs hatching. This gave a hatch rate of 66 percent.

Unfortunately, in today's day and age everything requires a disclaimer. This is no exception. I obtained the knowledge I share here from observations I made and experiences I had with one group of leopard tortoises. The suggestions and recommendations that appear here are just methods that have worked for me. Do not be afraid to experiment (within reason). I recommend learning as much as you can about a species and try to provide whatever makes your little tortoise healthy and robust, or, in people terms, happy.