

SULCATA (AFRICAN SPURRED TORTOISE) (*Geochelone sulcata*)
& LEOPARD TORTOISE (*Geochelone pardalis*) (Not shown in photo)
(Care sheet is the same for Leopard Tortoise and Sulcata Tortoise)

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GENERAL: This care sheet was prepared to assist you in providing proper care and maintenance of a *Geochelone sulcata* (Sulcata or African spurred tortoise) should you determine that this is the right tortoise for you, your family, and your yard.

Before you decide to take one of these cute little hatchlings home, please consider that this tortoise represents the world's largest mainland tortoise. Only the giant tortoises of the Galapagos and Aldabra Islands exceed the Sulcata in size. The adorable hatchling that fits in the palm of your hand can in five short years weigh more than 50 pounds and when fully grown can weigh from 140 to 200 pounds. These tortoises, when well cared for, can live for over 100 years.

The Sulcata requires a large grassy area and constant access to clean water. This species of tortoise does not hibernate and does not tolerate damp or cold weather. Even in southern California, an outdoor heated house that provides constant heat during the winter and nightly heat during the summer is an absolute requirement. These tortoises have tremendous strength

and can also be serious diggers. They must be kept in a secure yard surrounded by very sturdy fencing or a solid wall.

Because of the size, strength, and occasional aggressiveness of Sulcatas, allowing children to interact with these tortoises without adult supervision is not recommended.

The Sulcata became part of the pet trade in the 1990s. Because of its personable nature, generally hardiness, and relatively low price, the Sulcata soon became the most commonly purchased pet tortoise in North America. Many people purchase these tortoises without taking the time to learn more about them. They make their purchases without understanding what it takes to care for a Sulcata and without understanding how quickly they grow. Unfortunately, when the size and strength of this species becomes apparent, many people are either unable or unwilling to continue to care for them. As a result, they attempt to donate them to zoos, which will not take them; "release them back into the wild" (that is, release them in a field or other remote open area where they will ultimately be killed by a predator, die of starvation, or be crushed by a car); or they relinquish them to a tortoise rescue society (like this Society) that will have great difficulty placing them in new homes. These animals can live a long time and should not be viewed as a short-term whim, but rather as a long-term commitment.

PHYSICAL CHARACTERISTICS: Sulcatas are characterized by the two or three large, prominent spurs or tubercles found on their thighs. They have a broad, flattened carapace that is tawny-yellow to sandy brown in color with darker brown borders on the pronounced growth rings bordering the scutes. The plastron is ivory to light tan in color with deeply notched anal scutes and forked gulars. Their skin color varies from golden yellow to light tan and large, thick overlapping scales protect their forelimbs. Males are generally larger than females.

NATIVE HABITAT: In the wild, *Geochelone sulcata* occurs within a narrow sub-Saharan strip of habitat that spans across the African continent and includes the countries of Mauritania, Ethiopia, Sudan, Niger, Chad, Senegal, and Mali. In these areas, the Sulcata inhabits arid savannah and acacia scrublands. To escape from extreme temperatures and long periods of drought, they will excavate long burrows in the ground. Burrows may average 30 inches in depth, with some extending 10 feet or more underground. These burrows are used to escape from extreme high and low temperatures.

CAPTIVE ENVIRONMENT: It is important to understand that all tortoises should spend most of their lives outdoors with easy access to natural sunlight. Tortoises should never be raised in a glass tank! In addition, all tortoises should be provided with adequate shade to escape the hot sun and should also have access to fresh water on a daily basis. Depending upon the age and size of your Sulcata, housing and outdoor enclosure requirements will vary.

Sulcatas, particularly males, can be very aggressive to one another when sharing an enclosure. This activity should be closely monitored, and if the aggression continues, the individuals should be permanently separated.

Tortoise Yard: Your Sulcata should be provided with a large, grassy outdoor yard free of any pesticides, herbicides, or fertilizers. This area must be securely enclosed. Remember, these tortoises have great strength and can easily push through a flimsy chain-link fence. A wall or other sturdy, permanent fencing material is recommended. Sulcatas have also been known to excavate a large hole in a very short period of time, so your enclosure should include a barricade that extends approximately six inches into the ground below the fence. It is also advisable to locate your Sulcata enclosure within a larger enclosed area, such as a fenced backyard. This will provide an added barrier, should your Sulcata somehow escape from its enclosure. Be sure to include a shady area within your enclosure.

The use of chain-link fencing is not recommended because a tortoise can become injured during an escape attempt. If chain-link fencing is used, it should consist of commercial grade heavy-duty galvanized chain link. In addition, a barrier, such as wooden boards, that are at least 18 inches in height should be placed at the bottom of the fence on the inside of the enclosure. This will prevent the tortoise from seeing the area outside the fence, as well as eliminate the potential for neck and leg injuries that would occur if the tortoise were to attempt to break through the fence.

It is essential that a juvenile tortoise also have access to natural sunlight. During the day whenever the weather permits, a juvenile Sulcata should be maintained outside in a protected, secure enclosure. These enclosures can be portable, consisting of 2"x12" boards linked together to form a square or rectangle. Place the bottomless enclosure in a grassy area in order to provide foraging for the tortoise. Wire or cloth mesh should be placed over the top of the enclosure to protect the tortoise from predation. Always provide a shady spot within the enclosure to allow the tortoise to escape the heat of the direct sunlight. In addition, you should place a small hide box in the enclosure to make the young tortoise feel more secure. Be certain that you have not inadvertently provided an escape path under the enclosure due to an uneven ground surface. Monitor your small tortoise's activities while outside and always bring it back inside before temperatures drop and/or dampness sets in.

To contain a sub-adult tortoise, the enclosure should be somewhat sturdier. One example is an enclosure made up of various lengths of boards, 18 inches high by 3/4 inches thick and held upright and into the ground by 10-inch spikes secured by fencing nails to the boards. These boards can then be moved around the yard as required depending on sun direction and access to shade. Be sure to include a water dish and hide box within this portable, daytime enclosure.

Shelter: Unless you are prepared to give up a portion of your yard to a Sulcata and to include within its enclosure room-size housing, a Sulcata is probably not the best choice for you. Sulcatas do not tolerate damp or cold weather. They must be provided with a dry, heated house. There are a variety of suitable housing designs to consider. These include modifying an extra large Dogloo or similar molded plastic dog house to fit your tortoise's needs, or constructing what is best described as a moderately sized playhouse, complete with linoleum flooring and an asphalt-shingled roof. The structure must be designed to ensure that no moisture is permitted to collect within the housing. To maintain a warm temperature within the house, a very heavy piece of plastic or rubber matting that has been cut from the bottom into strips can be installed over the doorway. Sulcatas can be very messy; therefore, your housing must be easily cleaned out, as well.

When designing your Sulcata house, remember to plan for the future. A 20-pound Sulcata will eventually grow to a 100+ pound animal, and will need more room in the house to move around. To give a moderately-sized tortoise a feeling of greater security within a larger house, you can always insert a smaller hide box into a corner of the house, but be sure to leave plenty of room for the tortoise to bask under your heat source.

This species requires constant access to a warm, dry area, therefore, no matter what type of housing you select, you will have to install a heat source. An incandescent red spot lamp or infrared dull emitter must be installed in the ceiling of the shelter to provide basking heat. This heat source must always be kept at least 12 inches from the top of the tortoise's shell. The Tortoise Trust states that a temperature gradient is vital, therefore, your house should be of adequate size to allow your tortoise the movement it needs to find a comfortable temperature. The Tortoise Trust also recommends that the house be kept at a range of between 72° F and 88°F. The use of a thermostat is recommended to better regulate the temperature inside the house. Providing basking heat for your tortoise will ensure normal activity and feeding, particularly during the winter months.

Some Sulcata owners use a pig blanket to keep their tortoise warm. Because Sulcatas in the wild use the radiant heat of the sun to thermo regulate, we recommend the use of an overhead heat source rather than a pig blanket. Consult your veterinarian if you have concerns about heating.

Most Sulcatas will find their way into their houses before nightfall, but it is recommended that you always check your tortoise at night to be certain that it is inside its house. Tortoises that are permitted to sleep in damp conditions can contract colds and pneumonia.

During the juvenile and sub-adult stages of your tortoise's life, you must be willing to accommodate your tortoise within your home. It cannot be left outside at night or during periods of inclement weather. Predators, cool temperatures, and dampness, even in southern

California, are all threats to your young tortoise's health and well-being. Your young Sulcata needs the security and added heat provided within your home, not a poorly insulated garage or enclosed porch.

Like many tortoises, Sulcata juveniles do not do well in an enclosed terrarium. It is recommended that you use an open-topped enclosure that provides both security and a well-ventilated environment. You can build a wooden box with 6 to 8-inch sides and line the bottom with linoleum, or use a sweater box for a very small tortoise. Line the bottom of your enclosure with paper towels. They are inexpensive and easy to replace. We do not recommend alfalfa pellets because the pellets make normal walking difficult for a baby tortoise. Indoor/outdoor carpeting is also discouraged because young tortoises catch their toenails in the fibers, which also can make walking difficult. Under no circumstances should you place sand in your enclosure as sand is easily ingested and can result in serious health problems.

In addition to an enclosure, you will need a heat lamp, UVB lighting, timers, a hide box, a water dish and a relatively flat food dish. As your tortoise grows, so must your indoor enclosure. A small tortoise can quickly outgrow its hide box, water dish, and eventually its original enclosure. Once again, always be sure that your enclosure has both a basking area and a cool area. This will allow your Sulcata to regulate its own body temperature.

Most importantly, when the weather outside is warm and sunny, move your young Sulcata to its outside enclosure. Natural sunlight is essential to your tortoise's long-term health.

DIET: In captivity, Sulcatas require a very high fiber diet. A lack of fiber can result in digestive tract disturbances, diarrhea, and can increase susceptibility to flagellate and worm problems. The feeding of fruit will result in similar problems. Fruit, if given at all, should only be an occasional treat. A grassy area within the enclosure is essential, as it will provide a good source of fiber for your Sulcata.

Grasses and hays are a critical component of the Sulcata's diet. Experts recommend that mixed grasses comprise 70-75% of your Sulcata's diet. The following grasses are considered suitable fodder grasses: buffalo grass, Bermuda grass, bluegrass, Darnel rye grass, western wheat grass, blue grama grass, and a variety of *Fescue* sp. Grass hay (not alfalfa hay), which is available at local feed stores, can also be provided. Avoid hays with excessively "prickly" seed heads, such as Timothy hay, as these can injure mouths and eyes.

This grass-based diet should be supplemented with flowers as frequently as possible. Edible flowers and weeds that should be included in a regular diet include: hibiscus flowers and leaves, wild dandelion flowers and leaves, petunia, Viola sp., thistle, chickweed, opuntia cactus, plantain and clover. Be sure all flowers and weeds are free of pesticides and herbicides, and avoid

picking plants from roadside areas where plants are routinely subjected to vehicle exhaust and chemical spraying.

For more information regarding sources for grass hay and appropriate seed mixes consult your veterinarian or the websites provided on page 10.

Grocery store produce should represent only a very small part of your Sulcata's total diet. Acceptable produce includes chicory, dandelion greens, collard greens, endive, mustard greens, romaine lettuce, shredded carrots and pumpkin.

Although Sulcatas will eat animal protein, DO NOT feed them anything containing animal protein, as it will cause carapace deformity. It should also be noted that excessive quantities of beans, bean sprouts, peas and similar vegetables rich in protein can lead to scute pyramiding. A high protein diet will also cause rapid growth, kidney failure and a shortened life span.

Vegetables such as broccoli, brussel sprouts, kale and varieties of cabbage can lead to goiter and hypothyroidism and should be avoided or provided on only rare occasions. Greens high in calcium oxalate such as parsley and spinach can bind calcium, which could lead to metabolic bone disease. These greens should be avoided. Collards also contain calcium oxalate and therefore if provided should be done so in very limited quantities.

The ideal Sulcata diet should be: high in fiber; low in fats, oils and protein; and rich in minerals, trace elements and vitamins.

Many experts also strongly recommend against the use of commercially-available "tortoise diets." If you are considering feeding these diets to your Sulcata, please consult with your veterinarian before doing so.

Another essential component of your daily feeding routine is the provision of clean water. A combination wallow and water dish should be provided even though your tortoise may seldom drink from it. A large plastic flowerpot dish set into the ground works well for this purpose. The dish should be cleaned frequently and the water replaced daily. In addition, juvenile and sub-adult Sulcatas should be soaked weekly to ensure adequate hydration. Use a container large enough to accommodate the tortoise, add tepid (not hot) water that is no deeper than is necessary to cover the edge of the carapace. Allow your tortoise to soak for 15 to 20 minutes. Tortoises will generally take advantage of this time to replace their water stores, voiding the old, and replacing it with fresh. Even large adult Sulcatas should be soaked several times a year. For a very large tortoise, you may need to insert the contained into the ground and encourage it to enter the water for several minutes.

DIETARY SUPPLEMENTS: Tortoises that graze outdoors and have a healthy diet do not require great amounts of vitamin and/or mineral supplements. In fact, A.C. Highfield, in his book, The Tortoise and Turtle Feeding Manual (2000), states, "There is a great deal of misunderstanding concerning the role of vitamins and minerals. Many people believe that the more you get of both the better - this is categorically not true, indeed, some vitamins and minerals can be positively dangerous if taken in excess." Highfield recommends that you provide your tortoise with as varied a diet as possible. Never give your tortoise "pure" vitamins unless under veterinary direction. If you give vitamins, provide them orally rather than by injection unless under veterinary direction.

Tortoises need significant quantities of calcium, particularly as they are growing. Unfortunately, in the captive environment, it is difficult for them to obtain all the calcium they need from their diet alone. It is recommended that you occasionally sprinkle their food with a calcium supplement, preferably formulated for tortoises. The best supplements for tortoises are phosphorus-free, contain a wide range of trace elements, and are free of added amino acids (these supplements generally include vitamin D3 as well). Tortoises that are maintained outdoors throughout the year should not need D3 supplements. Raw calcium lactate, calcium carbonate, ground oyster shells or cuttlefish bones are also good sources of calcium. The need for extra calcium is especially high in females and hatchlings. Consult your veterinarian for specific information regarding frequency and amount of supplements required for your tortoise.

SHELL MAINTAINANCE: The carapace and plastron of a tortoise are comprised of living tissue that needs oxygen and exposure to sunlight to keep healthy. No preparations, such as glycerin or oils, should be placed on the shell. In fact, the Tortoise Trust states that the build-up of soils, waxes, oils, or other preparations is actually harmful to a tortoise's shell. The keratin and bony layers contain millions of microscopic pores, and things such as the products mentioned actually clog the pores, causing problems.

The Tortoise Trust also recommends occasionally giving your tortoise a bath. As indicated on their website (www.tortoisetrust.org), all one needs is a toothbrush, a tub of some sort large enough to accommodate the tortoise, and tepid water, no deeper than is necessary to cover the entire plastron, and an inch or so of the carapace. Take the toothbrush and gently brush the entire carapace particularly the areas of build up between the scutes. Clean the area beneath the carapace as well. Be careful of any areas not covered with scales, as these areas can be more sensitive. Repeat the same procedure with the plastron, paying careful attention that all dirt is removed from between the scutes. Finally, rinse well. DO NOT use any type of detergent, shampoo, or other product unless recommended by your veterinarian.

ALIMENTS: Sulcatas are especially susceptible to respiratory ailments. Some of the signs to watch for are a runny nose, loss of appetite, gasping and lack of activity. These symptoms can also be signs of mouth rot, bladder stones, or parasites. These indications are warning signals

that something very serious is wrong with your tortoise. Left untreated, the tortoise may die. Someone experienced in treating tortoises, should be consulted immediately. Contact this Society for the name of a veterinarian in your area experienced in treating tortoises.

BREEDING: The San Diego Turtle and Tortoise Society does not recommend the breeding of Sulcatas due to the current overpopulation of Sulcatas in captivity. Just one clutch can consist of 20 or more eggs, and a healthy female can lay up to four clutches a year. There are numerous societies throughout California, including this Society, that have Sulcatas available for adoption. This situation will only get worse as more people decide that they no longer are able or willing to care for the tortoise that once fit in the palm of their hand.

HIBERNATION: As discussed previously, Sulcatas DO NOT hibernate. They must be kept warm throughout the year and need a large, heated house to stay healthy and dry during inclement weather.

FOR MORE INFORMATION: There are several websites available that provide reliable information about Sulcatas and tortoises in general. Some of these sites are listed below, along with some very good publications. If you have questions or concerns, contact this Society or a veterinarian with experience in treating tortoises.

San Diego Turtle and Tortoise Society www.sdturtle.org

The Tortoise Trust

www.tortoisetrust.org

California Turtle and Tortoise Club

www.tortoise.org/geninfo.html

TortoiseAid International

www.tortoiseaid.org/sulcata.html

Highfield, A.C. 1996. Practical Encyclopedia of Keeping and Breeding Tortoises and Freshwater Turtles. Carapace Press, London.

Highfield, A.C. 2000. The Tortoise and Turtle Feeding Manual. Carapace Press, London.

Wilson, Richard and Robyn. 1997. The Care and Breeding of the African Spurred Tortoise *Geochelone sulcata*. Carapace Press, London.

With contributions from the
Tortoise Adoption Committee and Rosanne Brown, D.V.M.