



*A Sulcata Tortoise (Geochelone sulcata) emerging from a burrow in its enclosure.*

Turtle  
of the  
Month

## African Spurred Tortoise (*Geochelone sulcata*)

### A Sulcata Here, A Sulcata There, A Sulcata Everywhere

*text and photography by Dave Friend, President, CTTC, Santa Barbara-Ventura Chapter*

In 1986 my wife and I fell in love with the Sulcata Tortoise and decided to purchase a pair. Yes, *purchase*. Twenty-three years ago there were not many Sulcatas available. We found a “BREEDER” in Riverside, CA. Made the contact and brought the pair home to Ventura, CA. So began an adventure that we still enjoy today.

We were told they were about seven years old; the male, captive raised, the female, wild caught. The female’s carapace was smooth but angled sharply from the front to the back. The male was a little larger and his carapace nice and smooth. The female was very shy and reclusive, and we did not see her eat or come out for several weeks. The male explored everything right away.

The breeder said to feed them pumpkin and alfalfa. There was not a lot of diet information available then. We did not have good luck with the breeder’s diet. They preferred the Bermuda grass, rose petals and hibiscus flowers in the back yard. We gave them other treats once in a while: apples, squash, and other vegetables. Pumpkin never was high on their list of treats! They also loved to drink from a running hose laid on the lawn.

Our yard was about three thousand square feet. Thirty-seven thousand square feet is too small!!! These animals, once they became comfortable with their new home, promptly began to destroy it. The worst damage started at about thirty pounds. The strength of these torts for their size is herculean to say the least.

All the stucco along the side of the house as far as they could ram was broken. The male more than the female did the greater damage. Our youngest son had the outside corner bedroom upstairs, every night after he would go to bed I could here him hollering at that %#@\* turtle. The Sulcata would start ramming the side of the house. I would go down and move him, put things in his way, lock him in his heated house. Then he would ram that trying to get out. He also turned over the barbeque, broke the wood fence and any thing else he could ram. Oh yeah – I should have mentioned he did not like to go to bed at night, I think he just stayed up to pester my son.

Two eighty-pound Sulcatas were way too big to keep in our small backyard. By now (1999) the environmental stress for these big torts and us started taking its toll. Not a blade or sprig of green left, the grocery bill now seemed to exceed that for the family and the torts certainly had a healthier diet!

After a lot of discussion we realized it was not fair to the animals to keep them so confined. We could not find anyone with a large area to keep them. What to do? I heard about some research on Sulcatas at the San Diego Zoo. I called, and yes they were interested and would adopt our babies for their Wild Animal Park. May 16th, 1999 we made the trip from Ventura, CA. to the San Diego, CA. Zoo. And I am here to tell you a couple hour trip with two Sulcatas in a vehicle can be a bit odorific!!

Later that year we bought twelve acres in the San Antonio Creek Valley of Ojai, CA. During the last six years we have rescued over fifty Sulcatas for many different reasons. The most prevalent reason: "I did not know it was going to get so big and destructive!! Our yard is just too small and he is starting to ram everything."

We have over an acre enclosed for our Sulcatas. Two heated mini barns, one 16'L x 6'W x 6'H and one 14'L x 8'W x 6'H. Most of the torts come in every night by themselves. When we get a new resident, it takes about two weeks to train them to come in. Our winters can be as low as 14°F, the summers' highs can be in 120's. The torts learn quickly where the heat is.



Right now we are not taking any more rescues. I do not want to overcrowd the area. When the economy turns around I hope to be able to enclose another acre and continue rescues. There are now so many Sulcatas that need to be rehomed and just not enough places with large enough area for them. A quarter acre per animal is about right. They require a lot of exercise, a lot of grazing area with good water, mud holes, shade, and protection from predators and weather.

The African Sulcatas are a magnificent species, sturdy, stubborn survivors of many different climate changes. Because they are so adaptable, the Sulcata can endure a lot of not-so-good animal husbandry.

I grew up in western Missouri and, as a kid of five years old, I was fascinated with box turtles. I would pick up the injured ones hit by cars and try to put them back together. The ones that did not make it I took apart, then always buried them facing the east so they could see the morning sun. My grandfather (part Native American) lived in the Ozark Hills. He could not read or write and lived off the land, but he was oh so intelligent about life! He told me to listen to the earth and the animals and observe all of nature. Then I would learn what I needed to know.

Sixty-three years later I am still picking them up, putting them together and taking them apart! Now I have a few more modern tools to use: a microscope, scales, heat

and humidity stuff and of course the almighty computer, better glue and tape. Oh, and better drugs.

It is not my intent with the rest of this article to tell you there is an absolute right or wrong way to raise your torts. I am relating my personal experiences with Sulcatas over the last twenty three years. I have learned and am still learning a lot. Most of my knowledge has come from the animals themselves! As I just stated ... observe, observe, observe.

Let's start with what comes out the back end to see if what goes in the front is good.

Check the solid droppings very closely, when fresh (come on, don't be squeamish) pick it up pull it apart, and, yes, smell it! Is it firm? It should be, with a lot of long fibers (unless they are eating short grass). It should not smell rotten, but kind of like "dark green." Runny is usually not good. Could be too many store-bought greens, early spring weeds, or too many cactus pads. Observe and adjust their diet accordingly.

Let some droppings dry in the sun and inspect them the same way. You may find seeds, small stones, and bits of plastic. You may find small bones and fur from field mice and an unfortunate bird now and then. When you feed different foods, do the same thing and note the differences. Also note how long it takes for different foods to pass thru. Food, weather, and environment will make a difference. Okay, so some of you will actually do this. Now what? Using a long-fiber grass diet as your litmus test, you will know when they are not getting enough fiber in their diet. Adjust what is going in the front.

Now the liquid stuff: the white goop is urates, the salts of uric acid. It is natural and should be the consistency of sour cream. If it gets lumpy or grainy, start checking what's going in the front end. Make sure the torts have plenty of fresh water to drink and to soak if they want. Some torts will drink and pee a lot, some drink and do not pee as much. Some do not drink as much and hold their fluid. No right or wrong, each tort is different. The fluid, in my experience, is about the color of weak tea and pretty much smells like Sulcata pee! The diet can sometimes change the color.

I have some torts that soak and drink everyday, they do not pee everyday. Some I have never seen soak but they do drink from



a running hose or water dish. A couple of torts go to the water hole (mud hole) only to sling mud on their backs. One female sits in the water hole, drinks, makes bubbles and slings mud. She will do this for an hour or more. It is her beauty treatment time and she does not want anyone else to join her! I use ratchet type sprinklers so they can play in the rain; they love the rain and the mud they can sling on their backs. In fact all Sulcatas should have their own mud hole to soak in.

Here's what my Sulcatas eat: about half of their diet is Bermuda grass (*Cynodon dactylon*), native to Africa. The rest is naturally occurring "weeds," some native and some non-native to this area. Rye grass, dock bur clover, mustard (and stuff I don't have a clue about). I use overhead ratchet type sprinklers to keep the Bermuda grass green. The rest dies down as summer heats up.

The Bermuda grass is the majority of their diet. In the early spring, the bur clover pops up with a vengeance bent on taking over the world. The Sulcatas love it like candy. This weed sure makes for runny back-end stuff, sort of like soft tar. It still smells okay, but there is not enough fiber. Knowing this I

animals and they will tell you what they need. The torts also get grape leaves and some of the grapes. The grapes grow on the fence and they keep the grapes trimmed as high as they can reach. They also eat mulberry and sycamore leaves, pumpkin and pumpkin leaves, wild purslane, amaranth, and some fruits once in awhile. Note: pumpkin in itself is not a dewormer, it is in the seeds. The torts do not digest the seeds. They have to be prepared. Every fall when I was a kid my grandmother made my brother and I drink pumpkin seed tea to get rid of worms (she did not know if we had worms, it was just a precaution). I am here to tell you after you drank that stuff (shudder, shudder) you weren't going to have any worms anyway, they were not going to come near you! Don Williams, of CTTC's Kern County Chapter has a good recipe for the pumpkin seed application. I suggest contacting him off list for the information.

We also use the Mazuri tortoise chow occasionally. I do not recommend this chow as a main staple of their diet. We do feed small amounts of alfalfa. I have not had a problem with the protein.



back end stuff a couple of days later, I found some fur and small bones. This tortoise will sit and watch and when he sees a gopher digging he moves up slowly, waits some more and grabs them and has his snack. We tend to think of tortoises as being slow. Not so! This guy is so quick, I did not see the actual catch. Sometimes he will sit by an old mound, but not too long. He sits by the newer mounds longer. I think he knows by sight, and maybe by smell, which mound is active.

Our *sulcata* live in a large area. They are outside 24/7, 365 days a year. When we first moved to Ojai from the east end of Ventura, I built a mini barn 8' x 6' (now expanded to 14' x 8') with an earthen floor. I hung a 250-watt red light from the ceiling and that was it for three years.

The temperatures in our area range from 120°F (49°C) plus in the summer to 14°F (-10°C) in the winter. Right now, on February 18<sup>th</sup> at 1:30 PM, it is 69°F (21°C) and the humidity is 49%. This morning at 6:30 AM it was 33°F (0.6°C) with light frost and humidity at 95%. Right now, the tortoises are out grazing on the new bur clover which is about a quarter of an inch high. They don't want to miss out on any new clover. They start grazing their way back to the barn on their own around 3:30 PM.

After talking to Don Williams about his research, I bought scales and equipment to measure temperature and humidity. I started testing to see how my animals were doing. I checked the temperatures in their barn. OMG! It was 38°F (3°C)! And the humidity was 45%. The body temperatures surprised me: after sleeping all night, the coolest body was 51°F (11°C). I do keep 12" (30 cm) or more of good straw for them to sleep in. I change their bedding every couple of months or more often as needed. They actually seem to like the straw not-so-clean. When the bedding is fresh, it takes them a lot longer to settle down. They do have their favorite spots to sleep and have to rearrange everything I "messed up."



feed some dried orchard hay to keep things firm and provide enough long fiber. The long fiber also keeps the food in the gut longer, so the tort can absorb more nutrition from what it eats. The faster it comes out the less nutrition. As the Bermuda grass starts to recover from winter die-back, I cut the bur clover down. Keep all things in moderation.

All year they eat about equal amounts of green and dry matter. Again observe the

And a gopher on occasion might be a tasty treat. I walked out to make sure everyone was all upright and found bright red blood all over the face of one of the torts. I thought a larger male might have bitten the smaller one (he is twenty to thirty pounds or so). I rushed him in to the barn and washed him looking for the injury. I could not find a mark of any kind. I did not know what the heck was going on. Well guess what, when I was checking the



I insulated the 14' x 8' barn and it now has two 250-watt lights. I insulated the newer 16' x 6' barn as I built it, and it has only one light that keeps it warm not hot.

I just checked the temperatures in the barns and the temperatures of the tortoises outside. In the 14' x 8' barn it is 65°F (18°C); in the 16' x 6' barn, 60°F (16°C). The *sulcata* body temperatures measured as follows: carapaces low- to mid-80°F (27°C) range, skin temperatures mid-70°F (21°C) range.

When the tortoises go in for the night, their core temps have not cooled down very much. Plus the thick straw helps insulate and keep the core temp from cooling down too fast. After six years in this climate, I find no ill effects due to *sulcata* dropping below 50°F (10°C). In fact I think it is healthier to let them cool down in the evening. They settle down sooner and do not move around as much during the night. They will still be in the same place in the morning.

The summer time is a different story. They move all over the place ramming and pushing for their favorite spot, and then decide they want to go back outside! Then they try to climb over each other, clog the door and just can not settle down. I do not care if they do not come in at night in the summer and about half of them stay outside. The ones sleeping outside find their spots and sleep all night in the same place.

### Humidity

I don't worry too much about humidity. The ratchet sprinklers run every day and a lot of times all night in the summer. This serves two purposes: (1) it keeps the Bermuda grass alive in 120°F (49°C) temperatures; and (2) it keeps the area nice and humid, and the grass is drenched when they start to eat. I think this is why some of the tortoises do not need to drink very much; they ingest a lot of water as they eat.

As for the humidity in their sleeping

barns, there is no manufactured flooring, just an earthen floor and the straw. A certain amount of moisture accumulates from the tortoises just like a natural burrow. If I notice a tortoise with a runny nose or tearing eyes, and the outside is good and moist, I check their sleeping area. If it is too dry, I will moisten the straw. In a couple of days, the noses or eyes clear up. Pay attention to your tortoises, and they will tell you what they need.

I am not trying to tell you that what works for Maree and me is the way you should raise your tortoises. We have not lost any *sulcata* to sickness or disease, nor have we not lost any to coyotes, mountain lions, bob cats, raccoons or other wild animals. I can not cover twelve acres very easily, nor do I not lock them in their barns at night.

### Some thoughts, based on my own experiences

**Do not** hatch *sulcata* to sell or to add to your collection. There are way too many *sulcata* that need to be rescued, and there are not enough proper homes to accept them. This is true coast to coast. I think it is irresponsible, unfair to the animals, and just plain wrong to make money without caring what happens to these great tortoises. They are cute when they are small. However, 150 lbs. (68 kg) later, what are you going to do with them? Some of mine are getting close to the 200-lb. (91 kg) mark! *Sulcata* **do not** need companions, and the males and females should be housed separately!

I have intentionally not talked about pyramiding before now. I do not hatch babies. I do rescue, so a lot of the animals I take in already show pyramiding. The new growth starts to flatten out in their new environment.

The worst pyramiding cases we have seen are from the rescues we take in. The majority have been raised inside and almost always in an aquarium. Being confined to a small, indoor environment deprives them of vitamin D, exercise, and proper humidity. Stale air, over-feeding and no soaking area, can contribute to pyramiding. In our opinion, overfeeding causes the body to grow faster than the carapace. At about eight years old, the organs continue to grow, pushing against the lungs and heart killing the tortoise. Unfortunately we see the consequences

of what went in the front end and the total impact of their environmental stresses.

In the wild, *sulcata* roam large areas, sometimes miles, just to meet their daily food requirements. In the heat of the summer, they will stay in their burrows for weeks at a time estivating. The temperature in a burrow in the wild is generally in the mid-50°F (10°C) to the low 60°F (16°C) range.

At our home, we believe it does not hurt to let *sulcata* cool down at night, in fact it is probably healthier for them. Since their metabolism slows down, they sleep more soundly and do not excrete as much, which seems to help keep the core temperature up.

*Sulcata* in captivity, especially those being raised in small areas such as neighborhood back yards, sheds in northern states, basements, or any other small area are being overfed. In captivity we provide food 365 days a year, and keep them warm all night with no cool-down. We start this a matter of days after they are hatched and never let up, causing their shells to grow too fast. Without the proper balance of nutrients, this overfeeding may lead to unbalanced bone growth causing pyramiding.

All things must be balanced. Maybe this should be added to the front of the list: overeating plus the lack of vitamin D and calcium, too little exercise and humidity.



A lot of old ideas, myths and misinformation have sadly been accepted as fact. We still have a lot to learn about these great creatures. These are living fossils that grow large and strong. They do not belong in every backyard, basement, apartment or condo. Nor should they be kept in cold climates where they have to stay in small enclosures for weeks or months at a time. They deserve a proper and humane environment to grow in. *Sulcata* are not like mammal pets: they do not sit up, rollover or do other tricks. If you want this type of pet, please get a cat or dog that is bred to be domesticated.

I recommend that caregivers seek the services of a qualified veterinarian that knows tortoises. Check the CTTC website, or ask other tortoise keepers, for recommended veterinarians.

We had one clutch hatch about three years ago. Never again! Our juveniles (now three years old) have been raised outside without any ill effects or pyramiding. They soak when and if they want to. Their diet is the same as the adults, and the temperatures are about the same as the adults. We do not keep the juveniles any warmer than the big guys and gals.

Before you acquire a *sulcata*, please do your homework and consider all the needs of the tortoise. Think about the possible vet bills. This tortoise could easily out live you. No one sets out to intentionally provide a bad diet or environment. However, if you do not educate yourself about all the consequences of your decision, I may well end up with your *sulcata*!

We are driven by our human traits to own and to possess, and sometimes this tendency clouds our better judgment. If you must have a *sulcata*, please adopt and do not purchase. I suggest you should visit someone that has the older and larger animals for a reality check.

We accept visitors and donations (smile). Seriously, you are welcome to visit and get a first hand look at the size and amount of space required. Bring your camera and the kids. A note of caution: as *sulcata* get larger, some will ram humans. Do not **ever** leave your children unattended around the larger *sulcata*. They can knock children to the ground and keep ramming, resulting in serious injury.

Be considerate and responsible and continue to educate yourself on your animals' needs. With the proper care and environment you and your *sulcata* can enjoy many years together. Be kind to Mother Nature; she keeps us in her care forever.

You may contact me at my email address <dfriend449@aol.com> ☐



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