

Pyramiding; Cause and Effect

by Jacqui Castro

This is probably the most frequently asked question received by anyone that is considered "knowledgable" on tortoise care. So let's try to clear this up by giving you all a somewhat simplified answer based on the research I've been able to collect.

Pyramiding is a form of metabolic bone disease. Less severe cases usually aren't a problem unless dietary deficiencies are also a factor. However, severe cases inhibit lung function causing weakness or paralysis their limbs, arthritis, nail problems, and in some cases a slow death. The condition usually occurs in the first 2-5 years of life. If the tortoise's basic needs are not being met then the scutes begin growing vertically instead of horizontally resulting in the "pyramids". This condition is rarely, if ever, found in the wild and is not treatable or reversible. Optimally shell growth should be smooth and domed.

Pyramiding is caused by any or all of the following conditions:

#1 Low humidity

#2 Lack of, or insufficient sun exposure (glass blocks the critically needed UVB rays)

#3 Sedentary life (not enough exercise, too small of an enclosure)

#4 Inadequate diet (overfeeding, lack of fiber, grain based diet, too much protein, low calcium/vitamin D, inadequate ratio of calcium to phosphorus)

#5 Disease of the thyroid or parathyroid glands

Now the good news....
Pyramiding is preventable!
Just follow these four easy guidelines:

A. Provide a balanced diet high in fiber (grass, weeds, flowers, cactus), calcium fortified foods (mulberry leaves, dandelions, cuttle

bones), and low in proteins and fats

B. Humidity: the tortoise should always have access to water and have weekly soakings

C. Appropriate temperatures are considered to be between 80-90 degrees which increase activity and digestion

D. The tortoise enclosure should be in proportion to their size allowing them plenty of room to graze and explore to their heart's and leg's content

**Spaghnum moss is a desirable substrate as it retains moisture but inhibits mold and fungi.

**Protein in and of itself isn't considered detrimental. However, phosphorus is primarily found in protein. Too much phosphorus binds the absorption of calcium as does broccoli, kale, and spinach.

Now that we're all knowledgable on this subject and the New Year is just days away let's take inventory of how we can create a healthier environment for these wonderful pets that will be with us for many years to come.

***Resources include data collected from Richard & Jerry Fife, A.C. Highfield, Kamp Kenan, Ojai Sulcata Project, Tortoise Trust



TORTOISE HOUSING

by Jacqui Castro

Are you wondering what to do with all this newfound time on your hands? How about revamping or putting together a tortoise habitat that will be the envy of all your fellow tortoise loving friends?

Since I started answering the Society's "hotline" a few months ago, I've come to realize that the 2nd most frequently asked question (the first being, "What can I do with this red-eared slider?") is, "What should I do to make my tortoise/turtle habitat safe and functional?" Oh, let me count the ways.



A Secure House - All turtles & tortoises need protection from

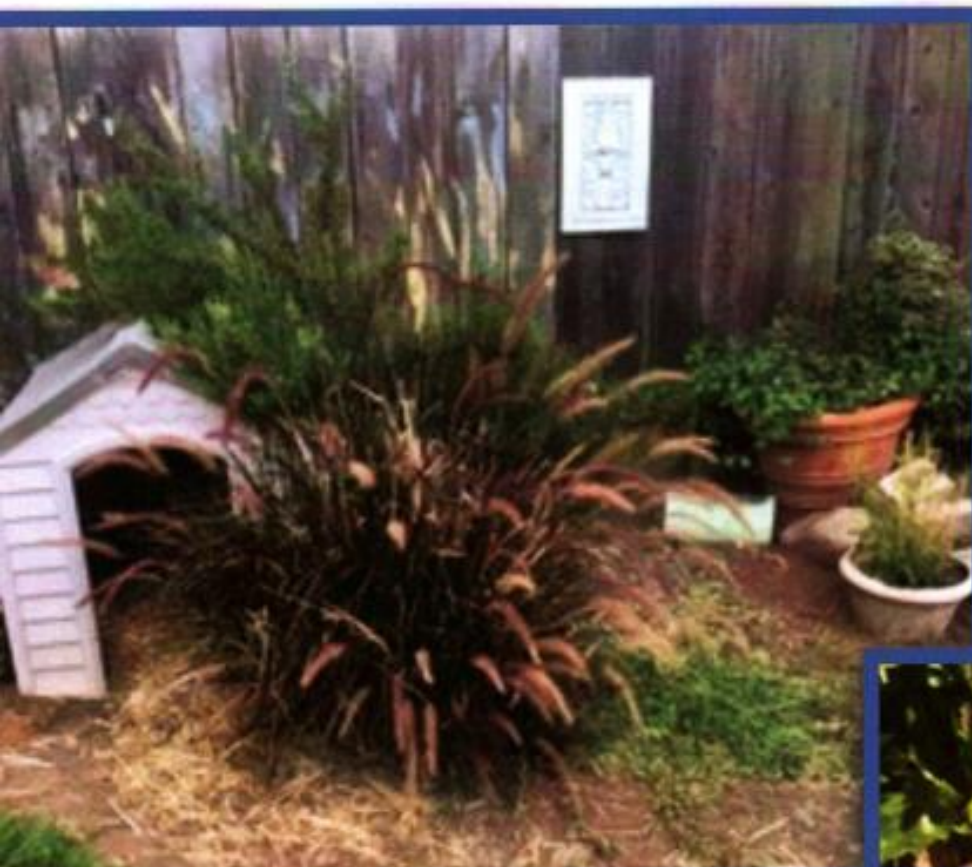
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raccoons and coyotes. For the larger species, a 4'x4' house will do. For the smaller species, a 2'x2' is sufficient with a latchable entry ramp. Keep in mind that these guys prefer a tunnel effect, not a cave option.

#2

Room to Roam - The area you provide for these guys will be their whole living environment. Make it as roomy as possible in comparison to their size. Sulcatas; a LARGE yard. Deserts; minimum 15'x15'. Box turtles 10'x10'.



#3

Grass - Yummmmm. Chelonians are natural grazers. In the wild, they spend most of their day searching for food. 80% of a tortoise diet should be weeds and grass. Never use gravel or concrete as a substrate as it's very abrasive to their plastron (bottom shell).

#4

Plants - Red hibiscus, Thompson seedless grapevines, spineless cactus, mulberry tree, rosemary, aloe vera, gazanias, roses, succulents, wandering jew, creeping Charlie, and dandelions are just some of the many options that provide shade, hides and an edible landscape for your shelled pet.

#5

Secure Borders - For desert tortoises and smaller, a 12" solid border should work, although you may find that some are climbers so you'll need to go higher. Sulcatas are generally good at 18".



HIBERNATION

By Jacqui Castro

Yep, it's that time of year when most turtle and tortoise owners face a bit of trepidation. Common concerns are:

Should they or shouldn't they hibernate? Which ones don't? Which ones do? Will they be ok if they don't?

Are they ok in the garage, a closet, or better in the yard?

Why aren't they going down when they usually do (November)?

Should I make sure they're well fed before they hibernate? Well-hydrated?

How do I know when they're ready to come out of hibernation (March)?



Well, folks, sit back and enjoy reading what the experts say.

Hibernation. The breeds of tortoises that do require hibernation do so for health reasons. Irregular hibernation will adversely affect the tortoise's health and lifespan. Most Mediterranean breeds (box turtles, water turtles, deserts, Russians, Greeks, Hermann's) are biologically set to hibernate (November-March). It is unnatural for them to be awake and eating 365 days a year. Hibernation is an essential part of their life cycle. For the most part, tropical tortoises such as leopards, sulcatas, radiated, and redfoots should not hibernate. As a general rule of thumb, Mediterranean tortoises do hibernate, and tropical tortoises don't hibernate.

Monitor your tortoise closely as Fall approaches. Usually starting in late September or early October, as the nights begin to cool into the 60s, you will notice your outdoor tortoise becoming less active. At this time, stop feeding your tortoise any supplemental produce (i.e., Kale, Lettuces, Collard Greens, etc.). A small amount of grass ingested before hibernation usually isn't harmful, but a stomach full of food can be. Undigested foods left in

the digestive tract will not be digested during hibernation and will rot. Before hibernation, it is essential to soak your tortoise often in a shallow soaking dish. This will help them to build up water reserves and stimulate them to empty their bladder and bowels. Whenever possible, hibernating them outdoors naturally is recommended. Garages can be noisy, and closets are usually too warm. Tortoises will not hibernate unless the temperatures in the environment cue them to do so. When hibernation outside is not an option, as a last resort, place your tortoise inside in a sturdy box and keep him in a quiet part of the house or garage that stays between 40°F and 55°F. If it is much warmer, your tortoise may not be able to hibernate properly and become ill. If it drops much below 40°F, your tortoise runs the risk of damage from the cold temperatures.

A hibernating tortoise should be checked periodically. A sleeping tortoise will usually respond if it's foot is touched. If the tortoise should awaken during a mid-winter warm spell, water may be offered, **BUT DO NOT FEED**. As the weather cools again, encourage the tortoise to return to sleep. When the days begin to warm, the tortoise will become active in its storage box around March or April.

At this time, a warm bath should be given, and the tortoise will often take a long steady drink. Now it's time to put him in his outside habitat. Within a week or two, he should resume his normal eating, exercising, and basking activity. You cannot trick Mother Nature without consequences. If your Mediterranean tortoise is awake every winter, the increased food intake can lead to abnormal growth and, in turn, cause Metabolic Bone Disease, lumpy shells, and sometimes even kidney and bladder stones.

The positives of hibernation far outweigh the negatives!

BE AWARE...Hibernating can be risky for tortoises under two years. Never allow a sick or underweight tortoise to hibernate if he has not eaten well throughout the summer or is dehydrated. **DO NOT HIBERNATE A SICK OR INJURED TORTOISE!** Nor one that has been treated the previous summer for respiratory infection such as URTD/RNS/URDS! While hibernating, protect your sleeping tortoise from rodents, raccoons, and ants. Keep them dry!

Resources: CTTC tortoisetrust.org
tortoise.org tortoise owner thetortoiseshop.com