

## Frequently Asked Questions About Bladder Stones in Tortoises

**1. What is a "bladder stone" anyway?** When tortoises urinate, the urine has two main components: a clear watery part and a semi-solid whitish part. Ideally, the whitish part should be similar in consistency to goey bird dropping, but it can also be gritty and similar to wet concrete. The solid components of the urine are called "urates." If the urates are **not** excreted, they collect in the tortoise's bladder and gradually create a solid, rock-like sphere after layer upon layer of urates accumulate. Eventually the "stone" may reach the size of a tennis ball. Some of the smaller stones may be passed if the animal is soaked properly (talk to your vet) but the larger stones require surgery to remove. Left untreated, a bladder stone can be fatal to your tortoise.

**2. How do I know if my tortoise has a bladder stone?** If you see urates excreted from your tortoise on a regular basis and it is eating and otherwise acting normal, there is probably no reason to worry about a blockage. However, the only way to be certain is with an X-ray.

**3. What are the symptoms associated with a bladder stone?** The symptoms of a large bladder stone are generally behavioral in nature. The tortoise just doesn't seem to be himself. This may include a decreased appetite, loss of interest in mating, an overall decrease in activity and a general downhill trend in the animal's health. In female tortoises, a bladder stone can present an especially serious problem if it blocks the passage of eggs. Left uncorrected, bladder stones in male or female tortoises will result in a weak and debilitated animal, and surgery on a weaker animal poses greater risk.

**4. What causes bladder stones and are they preventable?** Veterinarians attribute dehydration as the main cause of bladder stones in tortoises. It is absolutely **not true**, that tortoises obtain all the water that they need from their food! The following recommendations will help to prevent the occurrence of bladder stones:

a. A large shallow pan of fresh water must be available to tortoises at all times. This pan should be sunk into the ground so that tortoises can easily walk in and out.

b. Tortoises should have a 20-30 minute weekly soak in a tub of lukewarm water deep enough to cover the bottom of the shell when the tortoise is standing. The tub itself should be deep so that the animal cannot climb out.

c. Since many tortoises will not drink from a dish of standing water, but will hotfoot over to a puddle, use a sprinkler or hose to create a more "natural" water source for them.

d. Feed your tortoise an appropriate diet, one that is varied, high in fiber (grass, weeds and flowers) and low in fruits. See individual species care sheets for more information on proper diets.

e. If your tortoise desert tortoise has never been x-rayed, you should consider having it done.

### **5. What happens in the surgery?**

The tortoise is anesthetized. A "window" is cut in the plastron (Bottom of the shell) and set aside. The stone is removed and the bladder is stitched. The top of the plastron that was removed is secured to the shell with epoxy. Careful observation and antibiotics follow. Most tortoises will survive this procedure and go on to live long, happy and healthy lives.