

Taming and Behavior of Reptiles

Our topics for this week are:

- Proper Care of Reptiles
- History of Companion Reptiles
- Natural Behavior of Reptiles

Reptiles are animals with scales or scutes for a body exterior that lay eggs and are cold-blooded. Reptiles include chelonians (turtles, terrapins, and tortoises), lizards, snakes, and crocodylians (crocodiles and alligators). No reptile is domesticated, but some chelonians, lizards, and snakes can become semi-tame, but crocodylians do not.

Many reptiles are docile and can be kept as pets, although they do not tolerate, nor can they endure, much handling. The reptiles that are commonly kept as pets are the Orders of *Chelonia* (turtles, terrapins, and tortoises) and *Squamata* (lizards and snakes). More than seven million reptiles are currently kept as pets in the U.S. It is estimated that 50-90% die in the first year of captivity, in large part due to owners being unprepared to provide proper environment, housing, and diet. Of those reptiles that survive, many will escape, or will outlive their owners leading to abandonment. Some will be abandoned from lack of interest or due to management expense.

Among reptiles, the snake has occupied a special place in human history and religion. In Egyptian history, the Nile cobra adorned the crown of the pharaoh. Snakes were worshiped as one of the gods, and was used to kill adversaries and to commit ritual suicide. For example, Cleopatra committed suicide with the bite of an Egyptian cobra. Greeks also held snakes in high esteem, believing that being able to shed their skin, snakes had healing powers. As a result, snakes are part of today's medical symbols, i.e., the bowl of Hygieia (pharmacy), the Caduceus (U.S. Medical Corps), and Staff of Aesculapius (practice of medicine).

There are more than 10,000 species of reptiles which include 400 species of chelonians and the much larger order, *Squamata* (snakes and lizards). There are 3,400 species of snakes (suborder *Serpentes*) and more than 5,600 species of lizards (suborder *Sauria*).

The most popular pet turtles in the U.S. are the red-eared slider (*Trachemys scripta elegans*), eastern box turtle (*Terrapene carolina carolina*), western painted turtle (*Chrysemys picta bellii*), map turtle (*Graptemys geographica*), and wood turtle (*Glyptemys insculpta*). The most popular pet snakes are the ball python (*Python regius*), corn snake (*Pantherophis guttata*), California kingsnake (*Lampropeltis getula californiae*), rosy boa (*Lichanura trivirgata*), and gopher snake (*Pituophis* spp.). Popular pet lizards include the bearded dragon (*Pogona vitticeps*), gold-dust day gecko (*Phelsuma laticauda*), leopard gecko (*Eublepharis macularius*), crested gecko (*Correlophus ciliatus*), and blue-tongue skink (*Tiliqua scincoides intermedia*).

NATURAL BEHAVIOR OF REPTILES

All reptiles are “cold-blooded” (*poikilotherms*, ectotherms), i.e., they do not have a fixed body temperature, but they do have a preferred body temperature for maximum activity. They

normally have a relatively low metabolic rate and eat infrequently compared to mammals. The preferred body temperature range enables the most activity, optimum reproductive functions, and the ability to digest food. The immune system is also most responsive at the preferred body temperature. It is important to provide the correct environment that is appropriate for the species, which can vary from rain forest to desert. With the exception of some lizards, most reptiles cannot outrun a predator. Because of this, their first means of defense against a perceived predator is to hide. Other defense methods among reptiles are varied. Coloration of their body aids in hiding in their natural habitat. Chameleons and anoles are able to vary their coloration to become less conspicuous. Reptiles can move quickly but only for short periods of time. They have little capacity for prolonged exertions. If unable to hide, snakes and lizards will attempt to rush to a nearby safer location. Tortoises and some turtles can retract their head and legs into their shells for defense. If capture is eminent, many snakes and lizards will use a rolling maneuver to evade capture. Many lizards and a few snakes are also able to shed the end of their tail and lost portion will continue to wriggle to distract an attacker. Some snakes (eastern hog-nosed snakes and grass snakes) will fake death to avoid attackers. Tail waving can be a distraction for predators from a snake's head and body to allow a biting strike by the snake to be more successful. Large snakes may regurgitate to distract a potential predator while the snake tries to escape. Lizards and turtles often urinate or secrete musk odors when picked up to distract a perceived predator, the handler.

Hearing and sight are not a reptile's primary means of determining threats. Reptiles have a low respiratory rate which does not move air quickly to smell odors in the way that mammals smell. Instead, reptiles primarily assess their environment by smell using their tongue. Snakes and lizards flick their tongue to be able to deliver odors to the vomeronasal organ rapidly for the perception of smell.

Lizards have ear drums, but snakes and chelonians do not. Snakes and chelonians hear by feeling vibrations from the ground or in water and transmitting the information to their inner ears. Lizards have upper and lower eyelids. Snakes have a transparent spectacle (eye covering) which clouds their vision during shedding.

Adult male reptiles usually do not tolerate each other, particularly during breeding seasons. They associate rapid movement with aggression. Chelonians and lizards are more territorial than snakes. Aggression and defense are demonstrated in lizards, snakes, and some chelonians by elevating the body, open mouth threats, vocalizations, tail flicking, and head bobbing. Resentment of invasion of personal space or territory can cause eliminations, such as urine or foul-smelling musk.

Chelonians

Turtles live most of their lives in or near water. They have webbed feet with long claws. Tortoises are terrestrial and have thick elephant-like feet with stubby claws. Terrapins are semi-aquatic, hard-shelled chelonians. The term terrapin is ill-defined and is derived from a term used by the early European colonists in North America for edible turtles.

Turtles move faster than tortoises. Both protect themselves by hiding, when possible. A unique form of defense for chelonians is to draw a portion, or all of their feet, head, and tail within their shell. Coloring to match environment colors provides some additional protection. Bottom dwellers, like alligator snapping turtles, have spikes on their *carapace* (upper shell) to catch algae for camouflage.

Snakes

Snakes will usually attempt to avoid perceived danger by hiding. If this is not an option or is ineffective, some species will fake death, secrete foul odors, make threatening noises, flick or shake their tail, or inflate their body with air or spread the skin on their head to appear larger. For example, hognosed snakes when frightened can inflate their bodies, flatten their necks, raise their head, and hiss, appearing like a cobra. Some snakes are usually gentle, such as ball pythons, corn snakes, western hognosed snakes, and gopher snakes. Kingsnakes may or may not be gentle. Other snakes may be typically bad-tempered, such as water and bull snakes.

A snake's tongue is located in a sheath in the front of the mouth. It is flicked to obtain chemical particles and deposit them in the vomeronasal organ in the roof of the mouth to determine the smell of the particles. Flicking the tongue indicates alertness.

Vision is best in arboreal snakes. Better vision is required for them to hunt birds. Burrowing snakes have poor vision. Snakes do not have ear canals nor ear drums. Low frequency sound vibrations are transmitted via their body, particularly their jaw when it is on the ground, to the columella in their inner ear.

All snakes are carnivorous. Most eat rodents. They swallow their food without chewing. Food that is three times the diameter of a snake's head can be swallowed because they can disarticulate their jaws. The limiting factor in size is how much the mouth and throat can stretch. Digestion of whole food is a slow process (two or more days) in their GI tract. The trachea opens just behind the tongue sheath in the front of the mouth. This allows the snake to breathe when has its mouth full of prey and involved in the slow swallowing process.

Lizards

Lizards also prefer to hide for defense. Lizards that cannot hide may resort to aggression. Bobbing of the head up and down in lizards is a warning of possible aggressive defense. When threatened, bearded dragons will flare out the skin of its throat, gape its mouth, and bob its head up and down to bluff its threat to move away. Some lizards have autonomous tails that can be released while making an escape. A regrown autonomous tail is off-color from the lizard's body color. Horned lizards can constrict the muscles in their neck to elevate their blood pressure enough to rupture small blood vessels near their eyes. The result is squirting blood from their eyes toward their perceived threat. Chameleons move very slowly. Rather than hurrying to hide, they change their body color in an effort to hide.

Lizards shed skin in patches. Failure to shed skin completely (*dysecdysis*) can allow the drying dead skin to constrict around the toes and end of the tail. Normal shedding (*ecdysis*) takes 5-7 days. Dysecdysis can be caused by lack of sufficient humidity or poor nutrition.

Now, let's recap the key points to remember from today's episode:

- The most common health problems in reptiles are caused by improper containment and diet.
- The first defense method of reptiles is to flee and hide.

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine

book supply sources.

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.