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Enclosures for Snakes and Lizards

Our topics for this week are:

- **General requirements for reptile enclosures**
- **Proper snake enclosures**
- **Proper lizard enclosures**

Reptile health is highly dependent on their containment. They are high maintenance animals because of the complexities of maintaining an environment appropriate for their species. Enclosures must match the species native region's humidity, temperature, exposure to light, color of surroundings, walking surface, climbing options, hiding places, access to water, and sometimes, social interactions.

Cramped containment, improper heating, difficult shedding, and territorial issues with others in the enclosure are just some of the ways in which containment can affect the attitude of reptiles and their handling safety.

General Considerations

Vivariums are enclosures designed to mimic a natural environment. A terrarium is an enclosure for terrestrial (land) animals. Terrariums may be desert-like, and some may be forest-like, including trees for arboreal reptiles to climb. An aquarium is for a water environment. Some reptiles are semi-aquatic and require a combination environment in their enclosure. Enclosures for reptiles should always mimic their natural environment.

Terrestrial species need horizontal elongated enclosures. Arboreal, that is tree-dwelling, species require tall enclosures. Burrowing species need an extra deep substrate. All reptiles should have a place to hide in their enclosure to reduce stress. In general, the space required per reptile is at least 1½ ft per 1 ft of reptile. More active reptiles need additional space. Larger reptiles will usually bully smaller reptiles and opportunistic feeders can cannibalize others, so group housing should be restricted to reptiles of approximately the same size.

All reptiles require secure containment since they are all escape artists, especially snakes. Lids made of wire mesh or plexiglass with holes should be used to prevent escape but permit ventilation.

Wood cages should not be used because of the inability to be properly sanitized. All reptiles need appropriate space and hiding areas. Cage furniture that blends with the reptile's coloring should be provided to reduce stress. Mirrors should not be present in enclosures due to males being stressed over apparent invasion of their territory by a rival male and may injure themselves fighting their reflection. Males should also not be in view of other males in nearby enclosures. Therefore, transparent wall enclosures are generally undesirable.

Reptiles also all require an area to bask in warmth and a hiding location to relieve stress. Adaptation of about a week to new environments should be permitted prior to handling. Cages may be warmed with basking lamps or heating pads placed underneath the cage. Heat rocks often cause thermal injuries and should not be used. Because of the use of water and high humidity in many vivariums, all electric circuits should be wired with Ground Fault Interrupters (GFI) to disconnect the electricity in situations that could cause electrical shock to the animals or handlers.

Hide boxes, which may be fashioned from stacked rocks and a piece of slate or branches, are useful to relieve stress and reduce the risk of becoming aggressive or overly defensive.

Arboreal lizards and snakes need enclosures with vertical space and structures to climb and rest on. Branches from hardwood trees may be used, but prior treatment by baking, boiling, or soaking with diluted bleach solution is necessary to prevent introducing pathogens from wild reptiles or birds to the enclosure.

Snake Containment

Appropriate enclosures for snakes vary widely because, depending on the species, the snake may be burrowing, arboreal, or semi-aquatic. Humidity should be maintained at 50 to 70% relative humidity for species from temperate climates, 30 to 50% for desert species, and 70 to 90% for tropical species. Low airflow is needed in the enclosure to maintain humidity. Snakes that need higher humidity should be kept in glass or plexiglass tanks with adequate hiding areas to relieve stress of threatening activities that might go on outside the transparent walls. Enclosures should have tightfitting lids and free of sharp protrusions. King snakes must be housed alone since they will eat other snakes.

Minimal size of the enclosure should be at least the length of the snake. Adult snakes should be in at least the size of a 30-gallon aquarium with a secure lid to prevent escape. Rough rocks or branches should be provided to aid in shedding.

Substrates are play sand for burrowing snakes, and newspaper, brown packing paper, indoor/outdoor carpeting; or aspen shavings for surface dwelling snakes, including semiaquatic snakes. All snakes should have access to a large and heavy enough bowl of water to permit them to soak their entire body to aid in shedding. Arboreal snakes need branches or platforms sturdy enough to easily support their body weight to climb on. Hide boxes should be placed at each side of enclosure so the snake will not limit its movement due to stress of being in the open. The temperature needed throughout the day by reptiles fluctuates within their POTZ. The POTZ for species from temperate climates is 78 to 86F. Tropical species should be maintained at 82 to 92F, and desert species should stay at 84 to 96F.

Heat is provided in a basking area of the enclosure to allow self-adjustment by the reptile moving closer or away from the basking area. The differential between basking areas and resting areas should be about 15 F. Heat lamps should be 50 to 75 watts and positioned so that there is no chance of the reptile directly contacting it. Basking surfaces for most species should be 90-100F. Basking lights should be at least 18 inches from the substrate. Ultraviolet lamps provide heat to objects in the enclosure without raising the air temperature. Supplemental heat can be

provided with under tank heaters that cover no more than 1/3 of the enclosure's floor. Overhead heat sources should be used for diurnal species and under tank heaters for nocturnal species. Extra care is warranted for under tank heaters which can be hazardous for burrowing reptiles.

Snakes should be fed in a separate container than their main enclosure. They may strike at anything that is within reach if excited about being fed. The lid of the feeding box can serve as a shield while presenting the food, e.g., a thawed frozen mouse, in the feeding enclosure. Any uneaten food after 12 hours should be removed. Feeding enclosures should not contain substrate to prevent accidental ingestion and resulting impaction.

Snakes only have one fully functional lung, the right lung. The left lung is vestigial or absent. Their containment must be kept clean to reduce the risk of lung infections. They cannot cough to clear their lungs of exudate.

Lizard Containment

The most popular lizards kept in captivity are the bearded dragon, leopard gecko, uromastyx, blue tongued skink, and green iguana. All but the iguana and gecko are terrestrial lizards from arid or semiarid environments. The iguana and gecko are arboreal from tropical forests. Many male lizards (geckos, water dragons, bearded dragons) are territorially aggressive and must be housed alone or with females.

Smaller lizards require at least 20 to 50 gallon enclosures depending on species age, size, and number of individuals. Small lizards should have at least 12 X 12 inches and 16-inch high enclosure or at least four times the width and four times the length of a smaller lizard should be provided for an enclosure. Small terrestrial species can be maintained in glass aquariums or plastic bins with screened or ventilated tops

Large lizards, i.e., iguanas, need an enclosure at least 80 X 60 inches and 60 inches high or at least as tall as the lizard, including its tail; a depth of 2/3 the lizard's length; and a width of twice the length of the lizard. The minimum size enclosure for a young iguana is 50 gallon aquarium. Enclosure requirements will increase with growth of the lizard. Enclosures for all lizards need tight lids to prevent escape. Glass tanks are acceptable for small lizards, but larger lizards need hand-built structures.

Arboreal species (iguanas, anoles, chameleons, and some geckos) require branches and perches to climb on. Arboreal lizards need good air circulation and should not be enclosed in solid wall enclosures. Mesh sided enclosures should rather be used.

Arid and semiarid origin lizards should be provided with full spectrum UV light (UVA and UVB). The resting end of the enclosure should be about 80^{o}F during the day and the basking area should be 90^{o}F to 100^{o}F, or higher for uromastyx. Light sources should be mounted outside the cage and 18 to 24 inches above a basking surface. Adding peat moss to the hide box and spraying it with water daily can add moisture that aids with shedding. If more than one lizard is in the same enclosure, each needs its own hide box.

Heavy objects in an enclosure, such as water bowls, should be wide based with a smooth bottom to prevent them from tipping over onto a reptile. Ceramic bowls are heavy and can be used for drinking and bathing water. Aquatic or semi-aquatic species should have 2/3 of

the enclosure water with the remainder for basking. Lizards often defecate in water bowls. Water should be changed daily.

Small lizards such as chameleons drink water that accumulates from condensation on leaves. Misting the environment or providing a drip system is needed to encourage water consumption in these species.

If you have comments or you're interested in particular animal handling subjects contact us at CBC@BetterAnimalHandling.com

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

1. **Reptile enclosures should not be made of wood.**
2. **A snake's enclosure should be at least the same length as its body.**
3. **Aboreal lizards need climbing opportunities and mesh wire cages for ventilation.**

More information on animal handling can be found in my book, ***Animal Handling and Physical Restraint***, published by CRC Press and is available on Amazon and from many other fine book supply sources. My new spiral-bound handbook, ***Concise Textbook of Small Animal Handling*** was recently published and is available from all major science book supply sources.

Additional information is provided at: www.betteranimalhandling.com . This website has more than 150 past podcasts with notes on handling of dogs, cats, other small mammals, birds, reptiles, horses, cattle, small ruminants, swine, and poultry.

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.