

# Reptile Habitats

## The Enclosure

Housing the animal is usually the first order of business. As poikilothermic (cold blooded) animals, herpetologic subjects are even more dependent upon their environment than homeotherms (warm blooded animals). Often the enclosure and its associated hardware and furnishings are the most significant costs associated with the maintenance of reptiles and amphibians. Failure to meet the basic needs of the animal will result in disastrous consequences. The enclosure should be set up and equilibrated prior to the introduction of the animal. **Size** of an enclosure is the first consideration. No animal will thrive when cramped into inadequate space. It is important that owners of juvenile specimens of large species be aware of the requirements of the adult. A 30 gallon aquarium is suffi-

cient for a hatchling iguana, but a full grown iguana needs a cage the size of a walk-in closet. For terrestrial species, especially tortoises, horizontal space is the most important. Vertical space is more important for arboreal species. In general cages cannot be too big; however, very large cages may be more difficult to regulate with respect to climate parameters.

Reptile enclosures must be **escape proof**. Reptiles that escape are subject to many hazards, including chilling, predation by cats, dogs, or children, injury from household furnishings or appliances, and many more. In addition, some large species can injure children or pets, and can pose a health risk by contamination of human living areas. On top of these factors, irresponsible owners allowing escapes of



Reptile cages need to be escape-proof

specimens give ammunition to groups that would like to ban the ownership of reptiles. All enclosure openings should be securely latched. Venomous reptiles (which should only be kept by professionals) should have locked access.

## Furniture

**Climbing:** Branches, ropes, vines, and ladders can be provided for forest dwelling species. Rocks, cacti, and branches can be used for desert dwellers.

**Hiding:** This type of furniture serves to reduce stress. Boxes, molded caves, rock crevices, burrowing materials, and artificial foliage can all be used to help reptiles feel "out of sight".

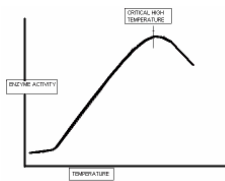
**Basking:** A basking site offers a place to regulate temperature and absorb UV light. A log, a stone, a shelf, or other site close to heat and UV source. The basking site should be no closer than 12" to the heat source.

### Inside:

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### Habitat Keys

- Size
- Orientation
- Temperature range
- Humidity
- Lighting
- Social arrangement
- Substrate
- Sanitation



Efficiency of body functions vs. temperature in reptiles

## Temperature

Poikilothermic animals are completely dependent upon their environment for maintenance of their body temperature. Preferred temperature ranges for the various species represent the temperature range within which normal activity can occur. Many of the body's functions are driven by enzymes. These enzymes tend to increase in activity with increasing temperatures until the point where they denature. This point is known as the critical high temperature. Most poikilotherms engage in

behavioral thermoregulation. Rather than producing heat or increasing and decreasing insulation, these animals move toward or away from heat sources, angle their bodies to control heat gain, bask in the sun, etc. To provide them with the opportunity to engage in these important behaviors, a thermal gradient should be provided. Preferably, the entire preferred optimum temperature zone (POTZ) for the species should be available in various parts of the cage. In addition, most reptiles

benefit from some degree of circadian and circannual variation in temperature. Heat sources that can be used to regulate the temperature in herptile habitats include light bulbs, porcelain heaters, heating pads, heat tape. All heat sources should be shielded from direct contact with the animal. It is critical that a thermometer is used to monitor the temperature. The thermometer should be put in various parts of the cage at different times to get a true indication of temperature range.

*“To provide them with the opportunity to engage in these important behaviors, a thermal gradient should be provided.”*



Seasonal changes in temperature can be beneficial for temperate zone reptiles.

### Preferred Optimum Temperature Zones

Species	Coolest	Hottest	Nighttime
Boa constrictor	80	93	75-80
Rosy boa	80	85	70-75
Ball python	80	93	75-80
Burmese python	80	92	75-80
Corn snake	77	85	70-75
Kingsnakes	78	84	70-75
Garter snake	75	80	65-70
Green iguana	80	100	70-80
Basilisks	82	95	75-80
Leopard gecko	77	92	70-75
Day geckos	80	90	75
Mountain chameleons	77	85	60-70
Lowland chameleons	80	90	75-80
Bearded Dragons	84	100	68-74
Uromastyx lizards	80	110	75-80
Monitors	80	90	75-80
Aquatic turtles	76	92	76
Box turtles	75	90	70-75
Tortoises	80	98	75-80

## Lighting

### Intensity

Lighting in a reptile enclosure takes on more importance than in most other types of animals. First, reptiles are frequently kept for the purpose of display. The light intensity and color should be appropriate for display of the specimen and the decorations of the enclosure. It is critical that herps have access to areas to get out of the light. This allows a feeling of security. Many fossorial (burrowing) and nocturnal species feel stressed when exposed to light.



Light for reptile enclosures should be the right intensity, wavelength, and photoperiod.

### Wavelength

Wavelengths of the lighting should include the visible spectrum as well as ultra-violet wavelengths. Near wave (UVA) appears to stimulate more normal behavior in some species. Middle wave ultraviolet (UVB) light, at approximately 300 nm wavelength, is required for activation of vitamin D. Natural sunlight is the best means of providing this light. In most parts of the United States, however, this can only be done during a limited time during the year. Full spectrum fluorescent tubes must be provided for some species when sunlight cannot be used. "Plant lights" do not produce the correct UV spectrum and are no more useful than standard bulbs. A general rule is that most lizards and turtles should have a full spectrum light, in snakes it is optional. It should be remembered that glass and clear plastic filter out the UVB light. Sunlight through the window does not provide for the production of vitamin D. Nor does a full spectrum lamp if it is outside of a glass or plastic cage cover or light fixture. Light tubes should be replaced every 6-12 months even though they still put out visible light.

### Light Cycles

Photoperiods, or day/night light cycles, are important for stimulating many hormonal cycles. Continuous exposure to light becomes very stressful for all animals. They need dark periods as well. Timers are useful for setting the photoperiod. For species native to temperate regions, seasonal variation of the photoperiod can be important for stimulating brumation and



*Association of Reptile and Amphibian Veterinarians*



While some reptiles will tolerate others, most should be housed individually.

## Social Arrangement

Social arrangement within the cage should be appropriate for the species. Most reptiles are territorial and will be stressed when kept in cages with conspecifics. Even though they may be seen piled up together, one will eventually fail to thrive. If multiple animals must be housed together, there should be adequate access to resources for all specimens. This includes food, hiding areas, basking sites, and water.



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Customized instructions	°F or %
Daytime temperature range	
Nighttime temperature range	
Humidity range	
UVB light required	

## Humidity

The humidity, or moisture content of the air, is very important for maintaining the health of reptiles. A humidity gauge should be placed in the cage. The range of acceptable humidity depends on the individual species. Low humidity species should be kept at 30-40% relative humidity. High humidity species should be kept at 60-80% relative humidity.

The humidity can be raised by reducing ventilation and by adding water to the system. Covering some of the open areas with foil during winter months can help temporarily reduce ventilation. Water can be added by spraying the cage and substrate, by adding soaked porous terra cotta pots as hiding areas, or by adding other humidity chambers (plastic boxes with moist moss or paper towels and a hole for entry). Putting the water closer to the heat will increase evaporation.

If humidity needs to be lower, increasing the ventilation should help. Radiant heat sources will tend to dry the air as well. Using a very dry and absorbent substrate can also reduce humidity.

## Substrates

Substrates are the flooring of the enclosure. There are various materials that can be used successfully. The cage floor can be left bare for some specimens. This is most appropriate for those that are arboreal and spend little time on the bottom. Disposable paper liners are, perhaps, the safest and most sanitary type of substrate. They are extremely easy to change, making frequent changes more likely. They also do not hide waste material, allowing earlier detection of diarrhea, or other problems with the droppings. Multiple layers can be used to allow burrowing in those species inclined to do so. Newsprints used today are non-toxic, allowing the use of this free resource. Specially made disposable liners are also available. Artificial turf provides a more attractive display and can be easily cleaned. Extra sets are needed to allow one to be cleaned while the other is used. Artificial turf mats can be cleaned with a hose or in a washing machine. These types of mats should be discarded when the edges start to fray. Particulate beddings such as shavings and pellets allow burrowing, but also have many disadvantages. Because they hide wastes, and are cumbersome to change completely, they tend to be cleaned infrequently. This can cause parasites, bacteria, and molds to accumulate and cause infections,

particularly in the skin and respiratory tract. Additionally, these beddings are often intentionally or accidentally ingested by herps, leading to impactions. Certain types should never be used, such as cedar shavings, clay cat litter, gravel, and dirt. Cedar contains aromatic compounds that can be irritating to membranes and may cause liver problems. Clay litter can desiccate small specimens, is very dusty, and poses a serious threat if ingested. Gravel is likely to cause impactions, and dirt is very unsanitary. Sand is also an ingestion hazard. Cellulose (paper based) litters or those made of grasses are among the safest of the particulate litters. Alfalfa base pellets such as rabbit pellets have the advantage of being edible if ingested but tend to promote bacterial and mold growth. Also, since they are edible, they make ingestion of contaminated litter more likely.



Artificial turf is a good substrate for some specimens.

## Sanitation

Once the habitat is set up, it important that it is maintained as a sanitary environment. Wild reptiles may live in the dirt and it may seem unnatural to have a sanitary environment. However, in the wild, a well developed ecosystem provides for the breakdown of waste products from the various flora and fauna living in a given area. In addition, through the movements of the animals they can and do separate themselves from wastes and detritus.

In captivity we have to take the place of the ecosystem. Wastes should be scooped out whenever they are produced. In addition, a complete change of the substrate should be done at regular intervals, the frequency depending on the species, the size of the enclosure, population density within the enclosure, and many other factors.

Occasionally, disinfection of the premises is needed. The water container should be washed daily as this is the area where bacteria will build up most easily. If disinfectants are needed, chlorhexidine, which can be purchased in our clinic makes a safe and

effective disinfectant. If a more potent disinfectant is needed, diluted bleach can be used. One ounce per quart of water will kill most bacteria, fungi, viruses, and parasites. This chemical is harsh and should be used when the animal is away from the enclosure, and should be thoroughly rinsed and aired before returning the inhabitants.

Wooden furnishings can be scraped to remove debris. If there is a major disease, these furnishings should be discarded and replaced. The pores in the wood will harbor organisms and protect them from disinfection. When trying to eliminate parasites, using disposable furnishings will help. These can be discarded and replaced as needed, and will help reduce reinfestation with the parasites.