

The Captive Husbandry of the Boa Constrictor (*Boa constrictor* spp)

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INTRODUCTION

The boa constrictor (*Boa constrictor* spp.) is amongst the most popular of all snakes. This is hardly surprising considering the gracious shape, coloration and relative docile nature of this medium-sized constrictor. The genus, *Boa*, can be subdivided into around nine separate species with the most commonly encountered and captive bred being the *Boa constrictor imperator*, common/Colombian boa constrictor. Most species of boa constrictors are protected but some, such as the true red-tailed boas are still imported despite dwindling wild populations. Wild caught specimens are poor substitutes for captive bred animals and therefore in the hope of encouraging conservation and captive breeding this paper will concentrate on the frequently captive bred Colombian boa constrictor. Nevertheless, the general care of all large boas and pythons is largely the same.

Captive bred boas are to be preferred over imported specimens which are invariably parasitized, may carry infectious diseases and are often vicious taking several months or even years to settle down to captivity, and even then they are difficult to breed. Captive bred boas are often available from specialist breeders and retail outlets, with neonates often available from April to September at around £80-£100 (\$120-\$150) each. These snakes are fast growing reaching 1.2-1.5 m (4-5 ft) within a year. Most specimens will attain a length of 1.8-2.4 m (6-8 ft), although under exceptional circumstances a female may reach a length of 3.05 m (10 ft) and a weight of 27 kg (60 lb). Boas are amongst the longest lived of all snakes with life-spans of 20 yr and more not uncommon.

Vivarium design and the captive environment

Upon making the decision to obtain a snake that may eventually grow to require a large vivarium and a steady food supply of rodents or rabbits, it is vital that the correct environment is created. In general, the square foot floor area of the vivarium must not be less than the length of the snake in feet. Therefore, for a snake that may potentially reach 10 ft, the minimum floor area is 10 ft² or 5x2 ft. This is the minimum guide and efforts should be made to provide the largest possible enclosure for adults. As a rule adults are best kept singly in 6x2x2 ft vivaria, while breeding groups of 3-5 adults can be accommodated in 8x4x4 ft vivaria. The vivarium should be of wooden construction, preferably melamine board (plastic-coated chipboard) which can be washed and cleaned with ease. Wooden construction also provides greater security for the snake and better insulation, preventing excessive heat loss. There should be at least 60 cm (24 in) of height to the vivarium, to enable lights and heaters to be situated on the ceiling out of the way of the inmates. Sufficient height will also enable a strong branch to be included for use by this partly arboreal species. Ventilation is probably the

most overlooked factor to successfully keeping boas, and many succumb to respiratory infections if adequate ventilation is not provided and drafts are not eliminated. For a vivarium 1.82x0.61x 0.61 m (6x2x2 ft), the best approach is a 5 cm (2 in) strip of fine mesh running along the middle of the back wall of the vivarium, with two 30x7.5 cm (12x3 in) controllable ventilation panels at one end and another at the opposite end. This produces a total ventilation area of approximately 1500 cm² (250 in²). Never reduce ventilation for prolonged periods of time when trying to maintain a high degree of humidity, such actions often result in respiratory disease. Finally, and least important of all from the snake's perspective, are the sliding glass doors which should be 6 mm and mounted on a 6 in strip of melamine to provide the snake with some sense of security and to prevent any substrate from accumulating in the glass runners. Needless to say, the glass doors must have smooth edges and be adequately secured using a cage lock or wedge.

Heating

In order to provide some degree of back-up safety, it is advisable to use more than one heat source and an accurate thermostat. Many reptiles can be maintained using a crudely controlled temperature gradient, since many reptiles can regulate their own body temperature by basking behavior, relocation and sheltering etc. However, boa constrictors are largely nocturnal with the majority of captive specimens having originated from the equatorial rain forests of northern South America where the ambient temperature does not fluctuate dramatically. Consequently, due to the near constant temperatures experienced in the wild, boas are less able to control their body temperature between extremes and therefore, it is important to provide a more accurately controlled temperature gradient which ranges from a maximum basking area at one end to a minimum cool area at the other. Ceramic heaters, soil-warming cables and heater mats can be used to provide day and night heating, while illuminating spot-lights can only be used during the day. All heating devices, especially those which have a high surface temperature must be screened off from the snakes if fatal or disfiguring burns are to be avoided. Ceramic heaters and spot lights can be housed within mesh cages while heater mats and warming cables can be hidden under a false floor. Proportional auto-dimming thermostats will reduce high surface temperatures, prolong heater life and create a more natural environment without temperature cycling and changing temperature zones. In all cases check the performance of thermostats with an accurate thermometer. There are several reliable herp thermostats commercially available.

Vivarium furnishings

Remember that the vivarium is first and foremost to meet the needs of the snake, with the aesthetic requirements of the owner and onlooker being secondary. All vivaria, whether they are for new-born neonates or gravid females, should be properly furnished to meet the needs of the individual snake.

Substrate: The floor substrate should be non-toxic, uncontaminated, absorptive, cheap and easy to replace. Newspaper is readily used, but a more pleasing effect can be created by using artificial turf (Astroturf). For reasons of hygiene wood shavings, bark chippings, gravel, sawdust and soil are best avoided.

Shelters: Many specimens will fail to settle down, feed or breed unless they are provided with the security of hide boxes or shelters. Cardboard boxes are cheap and disposable but cork bark is more attractive and provides a better surface on which to shed. However, cork bark is more expensive, difficult to clean and may harbor mites. A humidifying shelter may be useful especially when a high humidity is required, e.g. sloughing, birth. A humidifying shelter can be made from a polystyrene box with a hole cut in one side and a deep layer of damp vermiculite or clean sphagnum moss in the container.

Branches: Boas, especially when small, are eager to climb and therefore a branch should be provided, which will also add to the attractiveness of the set-up. Ensure that all branches are secure so that falling and crushing accidents do not occur.

Water container: Boas are amongst the most aquatic of all boid snakes, and therefore a water container large enough for the snake to completely immerse itself is essential, especially if ecdysis (sloughing) is to occur normally.

Environmental monitoring

An accurate minimum/maximum thermometer and humidity meter should be permanently positioned within the vivarium for daily observation.

Environmental conditions

In general, adult boas should be maintained at 50-90% humidity and with an air temperature of 77-90 °F (25-32 °C), however a more detailed approach is necessary.

A day time high temperature (DTH) of 86-90 °F and a basking area of 90-95 °F will provide a day time temperature gradient of 86-95 °F. A night time low temperature (NTL) of 80-82 °F and a reduction of the basking temperature to 86 °F will provide a night time temperature gradient of 80-86 °F. Young specimens prefer a higher temperature range with a DTH of 86-90 °F, a basking area of 95-98 °F, and a NTL of 84-86 °F. It is obvious that an accurate thermostat is essential if these temperature regimes are to be accurately controlled and maintained. It is important to remember that temperature requirements may vary between individuals due to age, sex, and breeding status. Therefore observe the snake; if the snake is always basking increase the vivarium temperatures slightly. If the snake is always in the coolest area decrease the vivarium temperatures slightly.

When breeding boas, a reduction in the night time temperature to 70-75 °F is important to induce reproductive function. It is vital that the day time temperatures are maintained as stated previously if immunosuppression and infections are to be avoided.

Humidity presents more of a problem since temperature, water surface area and ventilation all interact to produce the level of humidity. Low to moderate humidity can be achieved by placing the large water container at varying distances from the main heat source. Closer to the heat to increase evaporation and humidity, and vice versa. Lightly spraying the vivarium once a day will maintain a relatively higher humidity, and this may be useful when attempting to breed from certain animals. Light, both intensity and quality, is less important to boas and the use of spot lights to provide a daytime basking area can also be relied upon to provide the necessary 12-14 hr of daylight per 24 hr cycle.

Feeding

All snakes are carnivorous, and the boids are best fed on rodents or rabbits of an appropriate size, i.e., of approximately the same girth as the snake. Fowl, especially chicks, are not a suitable foodstuff and despite being relished should be avoided since they cause foul smelling, fluid-like feces and produce poor conformation and muscle tone in adults. As a general rule, snakes up to 3 ft should be fed 1-2 appropriately sized mice every 7 day. From 3-6 ft they should be fed 1-2 rats every 7-10 day, and from 6 ft and over, progressively more rats or a rabbit every 2-4 wk or so. It has become apparent that sticking to such a steadfast feeding schedule is less than ideal since no two

snakes or vivarium environments are identical, and well acclimatized snakes may become accustomed to eating regularly whether they are hungry or not, thus, quickly leading to obesity. In many cases it is more appropriate to offer the correct size and number of prey items as and when the snake is hungry. Hunger for food is most obviously observed as increased activity and movement throughout the vivarium. By providing food at the most appropriate time, growth is optimized and not merely maximized which reduces the possibility of obesity and premature death due to liver lipidosis. Captive bred boas maintained in a proper manner will invariably take frozen food items that have been completely defrosted and warmed. Frozen food has many advantages over live prey and should always be used in preference. It is safer for the snake if properly thawed, will guard against disfiguring or fatal rodent bites, is more humane to the rodents, will help prevent the transmission of food associated diseases including parasites, and is more convenient for the owner.

There have been reports that the process of freezing destroys certain vitamins, in particular vitamins B and C. However, snakes fed solely on frozen foods over many years have failed to exhibit any deficiency diseases. Conversely, live rodents can be nutritionally deficient, for example, fat laboratory rats may well be lacking in vitamin E and selenium causing steatitis. If high quality, lean mammalian prey cannot be guaranteed then supplementation with a multivitamin/mineral powder is advisable. All snakes can be offered Avi-Mix (Vet-Ark), while young growing snakes and breeding females may gain greater benefit from more frequent supplementation.

Needless to say, nutritional management would not be complete without the constant provision of fresh drinking water in a container large enough for the snake to bathe. Water should be replaced every day, or sooner if contaminated.

Vivarium maintenance

Vivarium maintenance is often a matter of common sense with the vivarium and its inmates checked at least twice each day (e.g. when turning the thermostat up in the morning and again when turning it down in the evening). All fecal material, shed skins, soiled substrate etc. must be removed as soon as possible. Once each week, the water bowl should be thoroughly cleaned to reduce bacterial contaminants, and the vivarium should be thoroughly inspected for soiled material missed during the past week. Every 3 mo the vivarium should be totally emptied and cleaned with a suitable disinfectant such as a quaternary ammonium compound (Ark-Klens, Vet-Ark) or povidone-iodine solution (Tamodine-E, Vet-Ark). The vast majority of household disinfectants are toxic to reptiles and must not be used, however Milton Sterilizing Solution (sodium hypochlorite) can be used as a 2% solution with care. When cleaning, remove and discard all substrate and disposable items. Disinfect and rinse the vivarium and all permanent furnishings including any branches, cork shelters and water containers. Add new floor substrate, clean furnishings, and finally replace the snake(s).

Record keeping

Another important aspect of successful husbandry is record keeping. Details such as dates of purchase, sloughing, accepted and refused feeds, diseases and treatments, regular measurement of weight and length, and anything else of interest can be included. Accurate records will help to resolve any management errors and will be of help when investigating a disease problem. Record keeping is absolutely essential if breeding is to be attempted.

REFERENCES AND FURTHER INFORMATION

- de Vosjoli, P. (1990). The General Care and Maintenance of Red-tailed Boas. Advanced Vivarium Systems, California.
- Divers, S.J. (1993). Captive Husbandry of the Colombian Boa Constrictor. The Reptilian 1(8): 24-29.
- Mattison, C. (1989). Keeping and Breeding Snakes. Blandford Books.
- Mattison, C. (1987). The Care of Reptiles and Amphibians In Captivity. Blandford Books.
- Stafford, P. (1986). Pythons and Boas. TFH Publications.