HUSBANDRY

Emerald Gems (*Corallus caninus*): Captive Husbandry and Propagation

Part II: Acquisition, Maintenance, and Diet

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Photographs by the author.

With the largest known range of any currently recognized species of boid and a fascinating and beautiful variety of morphologies, one might logically assume that the Emerald Tree Boa (*Corallus caninus*) would be among the most recognizable and widely kept species in herpetoculture. However, it is only recently that a broader understanding of the species has enabled prospective keepers to adapt and develop the environmental regimes necessary for this highly specialized snake to thrive in captivity.

The first installment (*Iguana* 13(1): 37–41) proposed a set of guidelines for the acquisition and preparation of enclosures appropriate for housing the species. Part II presents one sound strategy for the acquisition of healthy, viable specimens as well as some of the more technical details associated with husbandry.

Prospective purchase of an Emerald Treeboa (*Corallus caninus*) should only be considered when the snake's outward physical appearance conforms to criteria established for robust, healthy animals.

INTRODUCTION

Preparation and forethought equal to that employed during the conceptualization, procurement, and setup of the enclosure should now be addressed to acquiring a snake. One of the best resources for today's herpetoculturists is the internet. This interactive knowledge base provides access to reams of information, anecdotal experiences, and live response forums linking new keepers with those who have already had success with Emerald Tree Boas. Judicious use of the internet can help prospective keepers form realistic expectations, minimize the likelihood of unpleasant surprises, and provide a generous sounding board for those actively seeking answers to specific questions. Researchers involved primarily with species classification and the study of natural history have long benefited from the publication and dissemination of scientific information. The information-sharing capabilities of the internet have resulted in an exponential increase in interest and success for herpetoculturists involved with the captive husbandry of this and other species.

SPECIMEN ACQUISITION

As with habitat selection, personal taste and practical affordability are important factors during the selection of an animal. The uninitiated often tend to overlook the subtleties that differentiate individuals within any given species. For *C. caninus*, this can

A healthy Emerald Treeboa (*Corallus caninus*) is robust, unblemished, brightly colored, and active, coiling tightly on elevated perches and responding quickly to stimuli.

lead to an "all emeralds are more or less equal" mindset, which may place too much weight on the physical beauty of an individual specimen. This is one of the most common mistakes first-time keepers are likely to make. As with icebergs, within the *Corallus* complex, what lurks beneath the surface is what needs to be evaluated in order to make a wise decision. The temperament and physical condition of animals available on the open market varies widely and individuals inexperienced with the species do not have the odds in their favor. Wild-caught animals, especially those that have not been in a stable, controlled environment for a minimum of one year, should never be considered by any but the most seasoned of veterans.

Acclimating wild-caught treeboas is no simple undertaking. Any reputable dealer, even those with years of experience, will tell you that the mortality rate of imported specimens of this species is appallingly high. Statistics indicate that more than 50% of captives of all ages die during the first year. For those specimens that do survive the initial acclimation period, chances of survival in the long term (> three years) are equally grim. Although I have not been able to collect empirical data, my own numbers reflect a survival rate of just over 65% for adult treeboas and just over 70% for animals acquired prior to their ontogenetic change.

Therefore, as a rule, only captive-born and bred specimens (subsequently referred to as CBB), purchased from well-established, reputable sources should be considered. Where *C. caninus* is concerned, "impulse buying" more often than not leads to an unfortunate experience. Morphological conformation notwithstanding, prospective acquisitions should only be considered if and when their outward physical appearance conforms to the criteria describing a robust, healthy animal. Animals that appear skinny, dehydrated, blemished, dull, sluggish, or gaping, or those that are loosely coiled or not perched at all should be dismissed out of hand. For the purposes of this article I will restrict all future references and recommendations to those applicable to CBB specimens.

Wild-caught animals, especially those that have not been in a stable, controlled environment for a minimum period of one full year, should never be considered by any but the most seasoned of veterans. This individual, although superficially healthy, was dead on arrival at the facilities of a dealer in tropical reptiles.

Blister disease can be debilitating; acquiring an animal with the intent of nursing it back to health is a bad idea, even for an experienced keeper.

The above-mentioned physical conditions are often symptomatic of a variety of potentially serious pathologies. One of the few true challenges associated with this species is that even the most common ailments are often difficult to detect. Devoid of compassion or sympathy for the infirm, nature provides many species, including *C. caninus*, with the instinct to mask illness. Emeralds are so adept at this practice that by the time a problem becomes obvious the individual is often beyond salvage. For this reason, animals with a history of illness, however minor, should be dismissed from consideration.

The previously mentioned statistics largely reflect the more commonly available "Northern" variety of the species. Although susceptible to the same maladies, stress-related illnesses, and parasitic infestations, the Amazon Basin variety appears to benefit from two factors that may be largely responsible for the differences seen between the two populations. First, the Basin form is widely believed by those intimately familiar with both varieties to be hardier and more resilient. Although this disparity itself is undocumented and remains largely unexplained, one popular belief is that this form's larger geographic distribution has provided for an inherently wider set of environmental tolerances. The other more prosaic factor has been the lack of ready availability of Basins to the export trade. Local restrictions and the logistical challenges associated with their collection have kept the exported numbers of Basins very low for over three decades and the prices charged for these rarely seen but highly prized exports have tended to be very high. With the laws of supply and demand keeping prices high, improved care at every stage of the importation process provides better returns for importers.

Currently, a relatively strong U.S. community of well known, reputable breeders is involved with the propagation and sale of both Northern and Basin varieties. On the whole, these

The "Northern" variety of *Corallus caninus* (left; this animal is from Suriname) is more commonly available, although the Amazon Basin variety (right) appears to be hardier and more resilient.

individuals happily offer support and guidance before, during, and sometimes after the sale. This type of networking acts as an invaluable safety net for those interested in keeping this species. By availing themselves of the knowledge and experiences of others, prospective keepers are able to tip the scales steeply in their favor, drastically reducing the duration of the *C. caninus* learning curve.

Husbandry Basics

The essentials of effectively keeping *C. caninus* in captivity can be broken down into three categories: environment, diet, and record keeping. The first installment discussed the importance of stabilizing environmental factors prior to the introduction of a live animal. Although *C. caninus* is not an overly delicate species, keepers can be quickly overwhelmed with health issues when tolerances are violated.

Until such time as accurate DNA-profiles of the species allow for a classification by which herpetologists can identify and differentiate individual populations, accurately fine-tuning individual environmental variables to specific animals remains impossible. Locality data on imported specimens are non-existent, and morphological differentiation is far too imprecise to provide even the most remote hope of accuracy. Therefore, today's Emerald specialists have chosen to employ a range of temperature and humidity standards derived from averages gathered from across the entire range of the species. Tables 1 & 2 list average temperature and relative humidity levels from across the species' natural range for periods ranging from 4–23 years.

I have derived the following environmental maintenance schedule from these data. Averaging the recorded temperature data and buffering them by 4 °F toward the median, provides a temperature range within which any individual, regardless of geographic origin, can thrive. Recommended daytime high and nighttime low temperatures for captive *C. caninus* should be 84 °F (DTHT) and 74 °F (NTLT), respectively.

Although some keepers use the same data to regulate relative humidity (RH) levels, years of experimentation have led me to depart from levels found in the wild. Table 2 reflects daytime relative humidity highs (DTRH) and nighttime relative humidity lows (NTRH) averaged from eleven locations across the species' range. The data from which these averages were derived were collected over periods from 2–21 years. The reason I choose to deviate from these natural averages is the negative effect of sustaining such high RH levels within enclosures. Without the natural cleansing processes found in nature, black molds tend to grow in very high concentrations. These molds produce spores that become air-born and eventually settle on and adhere to every porous surface in an enclosed habitat. Even over relatively short periods, such concentrations present an unnaturally high risk of infection or allergic reactions for both snakes and human handlers.

Therefore, over the years, I have adopted modified RH levels that have proven completely adequate, enabling me to main-

Table 1. Temperature (°F) and precipitation (inches) averages across the range of *Corallus caninus*. Portions of the species' range are indicated by N (= north), S (= south), E (= east), and W (= west). RF = rainfall.

Area	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
N-Hi	86	86	87	88	87	88	89	90	92	92	90	87
N-Lo	72	72	72	73	74	73	73	74	74	74	74	73
RF	8.2	5.6	6.1	8.4	11.7	11.7	9.1	7.0	3.6	3.6	4.8	7.4
S-Hi	91	91	90	90	88	88	90	92	93	93	91	90
S-Lo	72	73	72	70	66	63	61	64	69	72	72	73
RF	10.0	8.6	8.1	4.0	2.2	0.5	0.3	1.1	1.8	5.2	6.0	8.1
E-Hi	87	86	86	87	88	89	88	89	90	90	90	90
E-Lo	76	76	75	75	75	75	75	75	76	76	77	77
RF	10.5	10.0	11.8	12.0	10.5	8.2	6.4	6.5	7.5	9.1	9.8	10.2
W-Hi	88	87	87	87	86	85	85	87	88	88	88	88
W-Lo	73	73	73	73	73	72	71	72	72	72	73	73
RF	10.5	10.0	11.8	11.9	10.5	8.2	6.4	6.5	7.5	9.1	9.8	10.2

Table 2. Relative humidity table (%) averaged from across the entire range of *Corallus caninus*. DTRH = daytime relative humidity highs; NTRH = nighttime relative humidity lows.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DTRH	94	94	94	95	95	93	92	91	91	91	91	93
NTRH	76	78	77	78	77	72	68	66	66	67	70	76

tain a healthy population of tropical species while minimizing the excessive formation of fungal pathogens. While actual RH numbers for each individual facility will vary according to the fundamental variables of area versus air circulation, DTRH levels from 65–75% and NTRH levels from 45–55% have proven ideal.

Diet

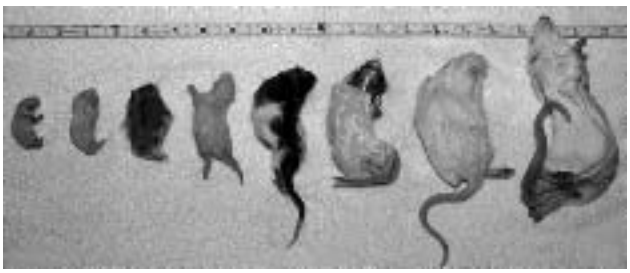
Like that of most opportunistic ambush predators, the natural prey of *C. caninus* in the wild is known to vary widely. For the purposes of captive maintenance, we deal with three major sources of nutrition, all rodents. Rats, mice, and Siberian Dwarf Hamsters are most commonly used. Each species may be fed at various stages of a snake's development. I use the following guidelines in my facility (species may vary, but approximate sizes should be watched closely):

- Siberian Dwarf Hamsters (live crawlers, ± 8 g): Initiating the natural feeding response in neonate snakes.
- Pink rats (live or frozen/thawed, ± 8 g): Neonate maintenance once a solid feeding response has been established.
- Fuzzy rats (frozen/thawed, ± 16 g): Neonates > 60 g.
- Rat pups (frozen/thawed, ± 25 g): Yearling snakes > 200 g.
- Weanling rats (frozen/thawed, ± 35 g): Two-year old snakes > 350g.
- Small rats (frozen/thawed, ± 75 g): Sub-adults > 500 g.
- Medium rats (frozen/thawed, ± 150 g): Adult animals > 900 g.
- Large rats (frozen/thawed, ± 250 g): Adult females > 1500 g.

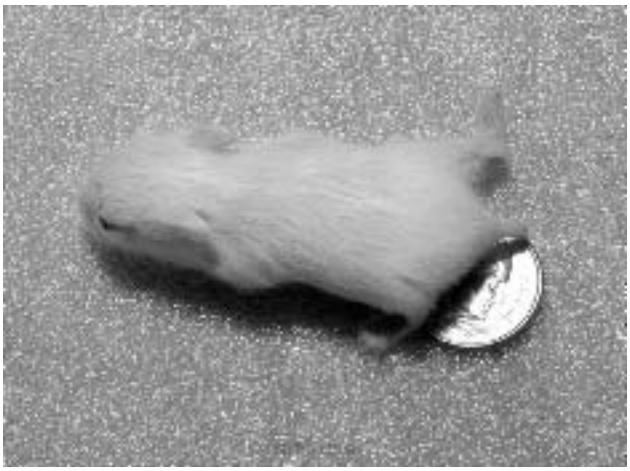
In an effort to promote optimum fitness while avoiding obesity, which may shorten lifespan and reduce reproductive productivity, feeding schedules and maintenance records on every individual should be meticulously maintained. Such records are a crucial tool in managing these snakes, given their naturally low activity levels, which, exacerbated by captivity, are susceptible to a number of GI-related maladies. Avoiding these illnesses is relatively easy, given the proper tools and understanding their use.

Feeding frequency at my facility varies according to age and sex. Younger specimens are fed most frequently, on a 10–14-day schedule from 30 days until approximately eight months of age. The latter frequently coincides with ontogenesis, which is signified in *C. caninus* by a change in ground color from neonatal red, green, or yellow to the familiar adult shade of green. However, this change, which is itself an energy-related process, is not inherently tied to age.

Neonates whose GI tracts are fully engaged at an early age, process meals and eliminate wastes on a fairly regular, predictable schedule. Such individuals will benefit from being kept on a 10-day feeding interval. Animals with tendencies to process meals less quickly should be held to a longer 14-day period. Under no



Frozen food size references.



Live Siberian Dwarf Hamster (crawler) with dime for size reference.

An 18-month-old *Corallus caninus* on a scale for size reference.

Adult animals should receive food commensurate with their size; in this instance, an adult female boa consumes a large rat.

Highly arboreal treeboas rarely descend from elevated perches, even to consume large prey.

circumstances should a neonate be fed more than two meals without a bowel movement. A majority of neonates will eliminate the waste products from its previous meal within a few days. This waste is literally being moved out in order to make room for the wastes generated by the digestion of newly ingested prey. Should an animal take two meals and fail to produce a bowel movement, one should induce elimination. This can be most easily accomplished by encouraging simple exercise on approximately day eight following the second meal. Allowing the animal to crawl freely over one's open fingers from hand to hand for a period of ten minutes is usually enough to produce the desired result within hours of the session.

For animals from 8 months to three years of age, a 14-day interval between meals is appropriate. From this stage forward, no individual should be given more than three meals between bowel movements. Once an animal has begun eating small rats weighing > 75 g, feeding frequency can be reduced from 14 to 18 or even 21 days. Females can remain on this schedule, but males, having reached sexual maturity (at approximately four years of age) should be shifted to a monthly feeding routine. The one exception to these adult feeding schedules is made in preparation for breeding. Because cessation of feeding is common for both males and females during different stages of the breeding process, "padding" the energy reserves of both during the weeks prior to the onset of the breeding season is prudent. For animals slated for breeding in a given calendar year, I reduce the number of days between feedings to the shortest periods mentioned previously for their respective sexes. Males will be fed (offered food) every 21 days and females every 18 days beginning 60 days prior to introductions and lasting throughout the entire breeding season. Many males will lose interest in feeding shortly after an initial introduction and may not feed again for the rest of the season. By contrast, females will usually feed ravenously throughout the season and stop only after ovulation.

Occasionally, males that are not actively breeding will also stop feeding during this period. For this reason, sexually mature, non-actively breeding males should be removed from the immediate area in which breeding pairs are being housed.

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