



Borneo Earless Monitor Lizard (*Lanthanotus borneensis*)

Borneo Earless Monitor Lizards, also known as just the “Earless Monitor Lizards”, are a very unique species of highly semi-aquatic lizard indigenous only to the Southeastern Asian island of Borneo, or more specifically from Sarawak in East Malaysia, as well as West and North Kalimantan in Indonesia. It is currently the only living species within the family Lanthanotidae, and is distantly related to other “true” species of varanids, or monitor lizards. First described in 1878 by Australian zoologist and herpetologist Franz Steindachner, its genus name of “*Lanthanotus*” refers to “hidden ear” and its species name “*borneensis*” to its home island range of Borneo. Primarily a nocturnal species, the Borneo earless monitor generally tends to remain inactive in burrows under or near water, where they periodically raise their heads and necks above the surface for air. It is also speculated that they use their prehensile tails for gripping around rocks, roots, or other debris to avoid being swept away by the current or during flooding.

These unique lizards have a somewhat elongated, cylindrical body, relatively short limbs, and six rows of heavily keeled scales or osteoderms along their dorsums and lateral sides. The eyes are small and reduced, and their lower eyelids are semi-transparent, an adaptation which lends well to their semi-aquatic lifestyles. The head is fairly long and broad, and is only somewhat distinct from their necks. They can also occasionally make vocalizations such as squeaks as well. Despite their name “earless” monitor, and having no external tympanums or “ears”, these lizards are still capable of hearing, and also use their dorso-laterally flattened tails and bodies for swimming in shallow water. Like their varanid lizard relatives, earless monitors are oviparous, or egg-laying, although still little is known about their breeding and reproduction. Coloration usually ranges from an orangish-brown to dark grayish or olive-brown, and the sexes are similar in size, except for males having larger and broader heads and broader bases of their tails than do females.

In recent years, the Borneo earless monitor has become an increasingly popular species to keep in the paludarium by the more advanced reptile keeper, and has even been successfully bred in

captivity.

Taxonomy

Life: All living, physical, and animate entities

Domain: Eukaryota

Kingdom: Animalia

Phylum/Sub Phylum: Chordata/Vertebrata

Class: Reptilia

Order: Squamata

Suborder: Anguimorpha

Superfamily: Varanoidea

Family: Lanthanotidae

Genus: Lanthanotus

Species: *Lanthanotus borneensis*

**Taxonomy subject to change and revision.*

Lifespan and Longevity

The lifespans of these lizards are yet to be definitively known, although at least 10 years have been recorded in captivity. They have the potential of living at least 10 to 15 years or more under correct care and conditions.

Distribution and Habitat

The Borneo Earless Monitor, as its name might imply, is indigenous only to the Southeastern Asian island of Borneo, or more specifically from Sarawak in East Malaysia, as well as West and North Kalimantan in Indonesia. Within this range, these highly unique lizards tend to favor lowland semi-aquatic habitats alongside or near streams, marshes, or other bodies of water. These habitats can be found in rainforests, but can also include more degraded habitats as well such as along agricultural lands, palm plantations, and rice paddies. These lizards most often prefer rocky semi-aquatic habitats with ample aquatic vegetation and burrows within and along the water for hiding, and clear water neutral in pH.

Experience Level Required

Intermediate/Moderate to Advanced.

Size

An average snout-to-vent (SVL) length for these lizards has been recorded from between 6.1 to 8.7 inches in wild-collected males, or 15.6 to 22 cm., and 6.9 to 8.7 inches, or 17.4 to 22 cm in wild-collected females. These lizards can reach a maximum of a total snout-to tail length of about 17.4 to 20 inches in length, or 44.1 to 51 cm. As hatchlings, they are about 2 to 4 inches in length, or 5 to 10 cm.

Housing and Enclosure

Enclosure System: Semi-Aquatic.

As hatchlings, earless monitors can be housed in groups/clutches, or separately in an approximately 5 to 10 gallon or similarly sized plastic container, glass enclosure, or other enclosure with a shallow layer of fresh water for them to be able to still extend their heads and necks out of for air. Sphagnum moss can be added as another layer for the hatchlings to hide underneath or climb onto. A plastic hiding box they can hide underneath or on top of, and another layer of cork bark should be given to provide them with ample hiding opportunities. A small air stone and filter can also be added to the enclosure to prevent bacterial buildup in the

water and to help maintain water cleanliness and clarity.

Adults and older specimens can be set-up and housed in a similar fashion to the young, except for providing a larger enclosure (at least a 40 gallon for a single adult, or 120 gallon or larger sized enclosure for a trio) also with deeper water which adults can still reach the surface to for breathing. Water should generally be about 4 $\frac{3}{4}$ to 6 inches deep for adults. Provide a filtration mat roughly in the middle of the enclosure, as well as ample plastic hide boxes and layered cork bark for them to hide underneath or on top of. Adults should generally be housed separately from one another, although with a large enough enclosure, a trio of one male and two females may be housed together. Adult males should not be housed together, as they will certainly fight. A substrate can also be added and used for the adults, which can be gravel or sand, although sand may be preferable due to its smaller particle size than gravel if accidentally ingested. Duckweed and driftwood and other live plants such as Ficus sakita, neo begonias, and pentas can also be added to the adult enclosure as well as a tiered area roughly one third of the enclosure being a land area with a deep substrate of leaves and sphagnum moss for them to be able to get out of the water and burrow into completely should they choose to.

Earless monitors are not overly active lizards, but will move around to hunt for food and different hiding opportunities. A screen or mesh top is not required, as these lizards are poor climbers, but providing one can help better regulate temperature and ventilation in the enclosure if need be. Plenty of hiding places in and out of the water, and deep enough water for them to be able to swim and hunt for food while still being able to reach the surface for air are the two most important considerations to keep in mind when keeping these unique lizards in captivity. Height is not as important, as these lizards are not strong climbers. A small and simple internal filtration system can also be used to maintain water cleanliness for the adults and cleaned at least once per week or so. A small external filter may also be used. With the correct filtration system, substrate, and live plants, good water quality and parameters should be relatively easy to maintain for these lizards. Overall humidity is not as important for these lizards, as much of their paludarium will be water.

Temperature, Lighting, and Humidity

Being primarily a nocturnal species, earless monitors will not prefer overly bright lighting or conditions. For lighting, use a small “shade-dweller” light for providing the necessary UVB, and a 13 to 15 watt compact light for heating. This, along with any ambient room lighting, will be more than sufficient lighting for these secretive lizards. A submersible water heater should maintain water temperature conditions of about 75 to 80 degrees F. Ambient and water temperatures should be kept constant at about the same parameters. Provide a cover to the heater to prevent any thermal burns or injuries to the animal or from other manual damage as a result of cleaning and maintenance around the heater. Water parameters should be maintained at around a PH level of 7, and also ensure that mineral content remains low. Providing a 50% tap water and then adding reverse osmosis water can help reduce or maintain mineral levels in the water.

Feeding, Diet, and Nutrition

Carnivorous; In the wild, Borneo earless monitors are primarily carnivorous, and will feed on earthworms, small crustaceans and other invertebrates, and small fish which they are able to catch.

In captivity, earless monitors are not difficult to feed, and can be given worms such as earthworms, nightcrawlers, or red worms, small feeder fish, and other pieces of meat such as chicken, shrimp, and even pre-killed pinky mice on occasion. They will also eat insects such as crickets or roaches if given to them as well. Plant and other vegetable matter is consumed less

often by them. Hatchlings and young can be fed every other day, and adults can be fed once or twice per week. No other dietary or nutritional supplementation is typically required for these lizards although insects should be gut-loaded or dusted with D3 for optimal nutrition.

Handling

The Borneo Earless Monitor is not a species which generally tends to enjoy or benefit from frequent and prolonged handling. They have relatively sensitive skin, and can also become stressed from too much handling, and may potentially bite. If this species is to be handled, be sure to do so gently and carefully, and only for short periods of time while supporting their bodies in the palms of one's hands in order to avoid stress and injury to them. These lizards generally tend to be a more "hands-off" species. They may also twitch their tails when stressed or as a defense as well, especially hatchlings.

****Also be sure to practice basic cleanliness and hygiene associated with proper husbandry after touching or handling any animals or animal enclosures to prevent the possibility of contracting salmonellosis or any other zoonotic pathogens****

Contact

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