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MONITOR LIZARDS

Banded Tree Monitor

Varanus scalaris

A small, slender tree monitor from the savanna woodlands of northern Australia that basks on trunks and ambushes insects from a hiding place in a hollow branch. The species is rare in captivity, and many of the husbandry figures are borrowed from its closest relative.

Family: Varanidae Former name: *Varanus timorensis scalaris*

KEY FACTS

THE ANIMAL

Adult size	**45-59 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Savanna**
Difficulty	**Experienced**

CARE

Min. enclosure	**80 × 80 × 130 cm** L × W × H for 1 adult
Temperature, day	**25-30 °C**
Basking spot	**40-45 °C**
Temperature, night	**22-25 °C**
Humidity	**60-80%**
UVB	**Recommended** Ferguson zone 3
Diet	**Insects and vertebrates**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**24 months**
Clutch size	**3-18 eggs**
Incubation	**120-136 days** at 28-29 °C

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Least Concern (LC)**

About the species

Varanus scalaris is one of the smallest monitors in the subgenus *Odatria*. It reaches up to 59 cm in total. The head is short and deep and gives the species a profile reminiscent of a seal. The sides of the head and neck and often the top of the head are spotted, the legs are relatively short, and the tail is round in cross-section with strongly keeled, pointed scales. Males have several rows of small, narrow, white, thorn-like scales on the underside of the tail just behind the vent. This is the clearest sign of sex, apart from the male being slightly larger with a broader head and heavier neck. The name *scalaris* probably means "ladder-like" and alludes to the ladder-like pattern on the back of animals from the type locality.

The species was described in 1941 as a subspecies of *V. timorensis* and was given status as a separate species in 1983. The taxonomy is still in flux. *V. similis* is regarded by some as a separate species and by others as an eastern form of *V. scalaris*; on the IUCN Red List it is merged with *V. scalaris*. At the same time a revision of the *V. timorensis* group indicates that the forms *kuranda* and *pengilleyi* from Queensland deserve to be reinstated as separate species, and in recent years *kuranda* has been treated as a separate species. It is therefore uncertain what an animal sold as *V. scalaris* really is, and *V. scalaris* in the broad sense probably covers several species. Ask for the collection locality and documentation.

In the wild *V. scalaris* is a cunning ambush hunter that sits still on a tree trunk or in a hollow branch and waits for prey. It is territorial. All monitors have venom glands in the lower jaw, and in *V. scalaris* the venom is among the most anticoagulant of any monitor. A bite therefore often causes heavier bleeding than the injury itself would suggest, even though the species is small.

The species is very rare in captivity, and many of the figures for husbandry and breeding are therefore borrowed from its closest relative, *V. similis*.

As an adult the species requires a large, tall and warm terrarium with a basking spot and UVB, live insects several times a week for many years and a keeper who can cope with a bite from an animal that is not accustomed to the presence of people. It is not a beginner's species.

Read more: Lighting and UVB Read more: Heat and temperature

Distribution and habitat

Varanus scalaris lives in northern Australia. The type locality is Beagle Bay on the Dampier Peninsula in north-western Western Australia, and the species is known from the Kimberley region and the Top End of the Northern Territory. On the narrowest view it is found only in a relatively small area around the type locality. Older accounts also include the northern parts of Queensland, among them the Cape York Peninsula, but whether the eastern populations belong to *V. scalaris*, *V. similis* or *V. kuranda* depends on which taxonomy is followed.

There are a few recorded finds in Papua New Guinea and one in Germany. They probably represent the closely related *V. similis* and an animal in captivity. The map shows only native distribution in Australia, and the map's records from Queensland should be read with the taxonomy in mind.

> **Native range:** Australia.

HABITAT

Varanus scalaris lives in savanna woodland and open forest in tropical northern Australia, where the year is divided into a wet and a dry season. The animals are found on tree trunks and in hollow branches, where they both bask and hide. The species forages in the trees and occasionally on the ground, and the diet consists of insects and other invertebrates, but also small vertebrates. The animals act as ambush hunters that hold on to an area and are territorial towards others of their species.

The animals can be seen resting on tree trunks in the savanna woodland late in the afternoon. Temperature, humidity and seasonal rhythm in the habitats are not known in detail. Husbandry is therefore based on the animal being diurnal, basking, using trees and shelters in hollow trunks and living in a climate with a distinct wet and dry season.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

An adult needs a terrarium of at least 80 × 80 × 130 cm (length × width × height), and a pair at least 100 × 100 × 200 cm. The height is important, because the species is a climber, and it must have both vertical and sloping branches to move on.

Furnish with several hollow cork tubes, which the animals use as sleeping places, and cover the back wall with cork sheets so that they can climb. Large potted plants such as yucca and philodendron provide cover. The floor can be a five cm layer of bark chips mixed with potting soil; the species is not known to dig and does not need the deep layer that ground-dwelling monitors need. The species is territorial, so keep only one animal or one pair in the terrarium, and give the pair many hides.

For egg-laying there must be a nest, e.g. a wooden box filled with half soil and half sand, mounted high on the back wall, which the female uses year after year. Heat sources must be shielded: bulbs and spots must sit behind mesh or a guard, so that the animal cannot burn itself when it climbs up towards the light. The door must be lockable, because monitors are strong and fast, and an animal that escapes is hard to catch again. For the first six months young animals can be kept in a terrarium of 60 × 30 × 30 cm with cork tubes and a shallow water bowl, but this is only a temporary solution.

TEMPERATURE

The air in the terrarium for *Varanus scalaris* must be about 30 °C in the upper parts and 25 °C down at the bottom. A 150 W halogen spot can heat a basking spot on a branch, and a 20 W under-floor heating cable can heat the bottom a little. Measure the surface temperature of the basking spot with an IR thermometer and the air with a digital thermometer, and provide a large temperature gradient so that the animal can choose between warm and cool.

The basking spot must have a surface temperature of 40-45 °C. This is less than for desert monitors such as *V. acanthurus*, which live under different conditions and are not a guide for an arboreal monitor. At night the heat is switched off, and the temperature may fall to about 22-25 °C. A cool brumation is not recommended.

Read more: Brumation and the seasons

HUMIDITY AND WATER

For *Varanus scalaris*, a daily spraying in the evening gives a suitable humidity of 60-80 %. Spray less in periods when the animals are less active and more hidden, and more again in the following rainy period. Ventilation must be good, because stagnant, humid air causes mould and skin problems.

Always keep a bowl of fresh water available and change it daily. The species is not semi-aquatic and does not need a pool. It drinks from the bowl and from droplets on plants and glass. Humidity is of less importance than temperature and light, but too low humidity makes shedding and egg laying more difficult.

LIGHTING AND UVB

Varanus scalaris is diurnal and basks, so it needs a bright, warm basking spot and UVB. A UVB tube about 30 cm above a favourite resting place, supplemented with a 150 W metal halide daylight lamp, gives good light, and a powerful 300 W UV lamp can also be switched on for about 20 minutes each day. A T5 tube in a reflector, as used for sun-loving reptiles, is a good modern solution: mount it over the basking spot and measure the UV index with a UV meter. Aim for a UV index of 2-4 under the basking spot (Ferguson zone 3), and make sure there is always shade so that the animal can withdraw.

Keep the light on for about 12 hours a day, and let the day length follow the seasons a little. Do not use light or heat around the clock, because the animal needs a dark and cooler night. Replace UVB tubes according to the manufacturer's instructions, even if they still light up.

FEEDING

In the wild *Varanus scalaris* takes insects and other invertebrates, but also small vertebrates. In captivity insects are the staple diet, mostly dubia roaches and other cockroaches of suitable size, with grasshoppers as a popular change. Desert locusts are hunted more eagerly than migratory locusts, especially when they flutter their wings. Occasionally the animals can have newborn mice, smelt or mussel meat, especially a gravid female.

Adjust the amount and frequency to the animal's body shape. A low-fat diet of well-fed insects and only occasional vertebrates, as for *V. acanthurus*, is also right here. Newborn mice and eggs are energy-rich and must be given sparingly. The species accepts almost anything and easily becomes too fat, so weigh the animal regularly and adjust the amount. Choose insects that are at most about as large as the animal's head.

Calcium supplements are necessary, because captive-bred insects are low in calcium. Use calcium with D3 for most meals and a multivitamin a couple of times a month. Females that lay eggs must have extra calcium and nourishment.

Read more: Calcium, vitamins and supplements Read more: Buying animals: captive-bred, wild-caught and transport

BEHAVIOUR AND HANDLING

Safety first: all monitors can bite, and they have claws. *Varanus scalaris* is small, so the bite does not do the same damage as a bite from a large monitor, but the wounds bleed unusually heavily, because the venom inhibits blood clotting. The claws can also scratch and the tail can whip. Always wash your hands after touching the animal, enclosure or food, because monitors can carry salmonella, and wash wounds thoroughly. See a doctor for a deep bite or if the bleeding does not stop.

Wild-caught animals are shy and flee or hide when they see a person. That is natural for an ambush hunter and not a sign that something is wrong. Do not, therefore, keep hides away, and if possible choose animals that were born in captivity. Taming happens slowly: be present in the room, work calmly in the enclosure, feed with tweezers and let the animal come to you. Do not grab the animal when it is hiding, and never grab the tail. Some animals never get used to being held in the hand, and that must be respected.

The species is territorial. Keep males apart, and keep a pair together only if the enclosure is large and well furnished; watch them closely. The female is not aggressive towards the male during gravidity.

The animal probably lives 10-15 years, so it is a long commitment: a large enclosure, live insects several times a week and regular checks of light and heat. The cost of food and lamps is ongoing.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

In *Varanus scalaris* the male is recognised by the small, white, thorny scales on the underside of the tail just behind the vent, and it is slightly larger with a broader head and heavier neck. In the closely related *V. similis* the thorny scales are absent, and bulges at the hemipenes are not a reliable sign. With good feeding the animals probably become sexually mature after about two years, as in *V. similis*.

MATING

The animals mate every year at the same time. In the period of lower activity they are more hidden, and less spraying is done. When the humid period begins, more spraying is done, and the animals get more food. After four to five weeks the male begins to chase the female around the terrarium, lick her with his tongue and scratch her back to get her to raise her tail. The mating itself is not necessarily visible, but the female's growing appetite and girth show that it has succeeded. The male can stay in the terrarium throughout the gestation.

EGG-LAYING AND CLUTCHES

A clutch is 3-18 eggs. The largest clutches of 15-18 eggs come only from well-fed animals and are far more than is normal in the wild. The eggs are laid 4-6 weeks after mating, mostly at night, and the eggs are buried deep and carefully covered. Shortly before laying, the hip bones can be seen through the skin. Provide several nest boxes with soil and sand placed in different locations, and keep the temperature at the nest site at no less than 27 °C. After laying, the female must have the same good food as during gestation, so that she can recover.

INCUBATION

The eggs are incubated at 28-29 °C in groups of three to four in closed plastic boxes with a little perlite, only half buried, so that signs of dead eggs can be seen. Eggs tolerate dryness better than too much moisture: a substrate that is too wet makes the eggs sweat or burst, while one that is too dry causes dents in the shell. After two to three weeks the substrate is moistened lightly by dripping water into the corners without hitting the eggs. The young hatch after 120-136 days and free themselves from the egg within a day. Mark the top of the eggs with a cross so that they are not turned.

REARING THE YOUNG

For the first six months the young of *Varanus scalaris* can be kept in a glass terrarium of 60 × 30 × 30 cm with cork tubes, a shallow water bowl, a heat spot and a UVB tube. The floor is kitchen roll until the navel has healed. From as early as the fourth day the young take small crickets, cockroaches and pieces of smelt and newborn mice from tweezers, and the food is dusted with vitamins and minerals. The young are greedy, and a large group of 15-18 young must be divided up, so that you can control how much each one gets. Growth is not documented, so separate the young early, and weigh them regularly.

Read more: Feeder animals: keeping and breeding

Health and common mistakes

Varanus scalaris has the same typical problems as other small monitors, such as *V. acanthurus*:

- Obesity. The species takes almost anything, and energy-rich food such as newborn mice and eggs makes the animal fat. Weigh the animal regularly and keep the food insect-based.
- Lack of calcium and UVB, which causes a soft jaw, bent limbs and tremors (bone disease).
- Too low temperatures, which cause poor digestion, reduced appetite and a weaker immune system. The animal must be able to warm up fully.
- Egg-laying problems in females without a nest site or without sufficient calcium. Always provide a nest.
- Parasites and stress in wild-caught animals. Have newly bought animals checked for intestinal and blood parasites by a vet with reptile experience, and keep them in quarantine.
- Burns from unshielded bulbs.

Animals in the trade are rare compared with other small monitors. *V. scalaris* is not bred regularly, and animals in the trade are probably wild-caught or of unclear origin, which increases the risk of parasites and stress. Contact a vet if the animal stops eating for more than a couple of days, loses weight, breathes heavily or sits with its mouth open, has swellings or a soft jaw, or if the female is carrying eggs without laying them.

Always ask someone who knows

This guide is a good place to start, but it cannot replace experience. Animals differ, and much of what matters most is learned from people who have kept the species for years. Talk to a breeder, an experienced keeper or a vet who knows reptiles and amphibians before you get the animal - and again if anything looks wrong.