herpy

MONITOR LIZARDS

Black Tree Monitor

Varanus beccarii

A small, black, arboreal monitor from the Aru Islands off New Guinea with a prehensile tail and unusually long forelimbs, which it uses like hands when hunting. The animal is nervous, needs a tall, warm enclosure with high humidity and is difficult to breed, so it is only suitable for an experienced keeper.

Family: Varanidae Former name: *Varanus prasinus beccarii; Monitor beccarii*

KEY FACTS

THE ANIMAL

Adult size	**80-120 cm** total length incl. tail
Weight	**220-300 g**
Lifespan	**11-17 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Rainforest and wetland**
Difficulty	**Experienced**

CARE

Min. enclosure	**150 × 100 × 150 cm** L × W × H for 1 adult
Temperature, day	**26-30 °C**
Basking spot	**35-40 °C**
Temperature, night	**22-24 °C**
Humidity	**55-70%**
UVB	**Recommended** Ferguson zone 2
Diet	**Insects and vertebrates**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**3 eggs**
Incubation	**157-203 days** at 29-30 °C

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Data Deficient (DD)**

About the species

Varanus beccarii is a relatively small monitor lizard of 80-120 cm including the tail. The snout-vent length is about 27-30 cm, so the animal consists mostly of tail: it can make up to two thirds of the total length and is used as a prehensile tail to stabilise the body in the branches. Unlike many other monitors, the species does not use the tail for striking. Adults typically weigh 220-300 g, and the males are slightly larger than the females.

Young are dark grey with regular rows of bright yellow-green spots, especially on the back. With age the spots are lost, and adults are entirely black. The forelimbs are among the longest and slenderest of any monitor and end in long toes with large claws and adhesive pads. The teeth are unusually long for a monitor of this size, which probably makes it easier to hold on to prey up in the treetops.

The species was described in 1874 as *Monitor beccarii* and was later regarded as a subspecies of *Varanus prasinus*. A review in 1991 gave it species status again because of the black colour and the keeled scales on the neck. Genetic studies support that the two are different species, but *V. beccarii* still belongs to the *V. prasinus* group. The scientific species name alludes to the collector Odoardo Beccari.

The species is intelligent and uses its forelimbs with great precision. It can push a forelimb into narrow cavities and hook prey out with its claws when the snout cannot reach in. In the wild the animal is nervous and flees when frightened. If handled roughly, it bites and scratches and defecates on whoever is holding it. It is not an animal that tolerates much handling.

Keeping the species is a long-term commitment. The animal needs a tall, warm and humid enclosure, often home-built, and live insects several times a week. The species can live 11-17 years in captivity, and the maximum lifespan is not known. Breeding succeeds only rarely, so the animals in the trade are probably largely wild-caught.

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

Distribution and habitat

Varanus beccarii is known only from the Aru Islands in eastern Indonesia, an island group off the south-western coast of New Guinea. The type locality is the island of Wokam, and the species is endemic to the island group. The local name is waweyaro.

The range is small. The size of the population is little known, and the species is listed on the IUCN Red List as data deficient (DD). Deforestation, agriculture spreading into the forest and the international trade in vivarium animals are mentioned as possible threats.

> **Native range:** Indonesia.

HABITAT

Varanus beccarii is strongly arboreal and lives in humid lowland forest and in mangrove swamps. It stays in the canopy and on the trunks and rarely comes down to the ground. The prehensile tail and the long, slender forelimbs are adapted to a life in the branches.

The food consists mostly of insects, but smaller lizards, small mammals such as shrews, scorpions, eggs and nestling birds are also included. The species has been seen eating plants in captivity, but no plant material has been found in the stomach contents of wild animals. Egg laying in the wild is almost unknown: the species and its closest relatives are presumed to lay their eggs in termite nests high up in the trees, where the surface is relatively dry even though the humidity inside is very high.

The climate is warm and humid all year. There are no measurements of temperature and humidity from the species' own habitats, so the figures in the husbandry sections are based on conditions that have worked in captivity and on closely related species in the *Varanus prasinus* group.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

An adult needs a tall enclosure of at least 150 × 100 × 150 cm (length × width × height), and larger is better. A pair needs more space, so the female can get away from the male. Height is important, because the species lives in the branches; it is therefore not an animal for a low standard enclosure. The animal must be able to choose between a warm and a cool zone, and a home-built enclosure or a whole room is often best. The doors must close securely, because the animal is fast and a skilful climber.

The young, which are about 9 g at hatching, can at first be kept in a smaller enclosure with cork, a live plant and branches, so they easily find the food and get used to the conditions. Move them to a large enclosure as they grow.

Furnish with many thick and thin branches at different angles and heights, cork, plants and hiding places. The species sleeps and seeks refuge in cavities, and an artificial hollow log or a box with an opening of about 8 cm and a damp floor of coconut fibre, sphagnum and mulch works both as a sleeping place and as a nesting chamber. For the floor use a mixture of coconut fibre and dry leaves, sprayed daily. Remove droppings and dirt every day. Heat sources must be out of reach or shielded, so the animal does not burn itself when climbing.

TEMPERATURE

The daytime temperature in the enclosure should be about 26-30 °C, but may range from 24 to 35 °C across the enclosure. Under a heat lamp there must be a basking spot of 35-40 °C. This is the surface temperature at the basking spot, measured with an IR thermometer, and there must be a large temperature gradient, so the animal can choose between a warm and a cool zone.

At night it should be 22-24 °C. The night temperature is not documented for the species and is an estimate based on closely related species. Measure at several heights with digital thermometers, and use a thermostat on all heat sources.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should be 55-70 %, with fluctuations over the day. Spray the floor daily with fresh water so the humidity rises, and let it dry out a little again during the day. The young are kept at over 60 % with daily spraying.

The animals drink water droplets from leaves and branches, so spray the enclosure thoroughly. Preferably also provide a shallow bowl of fresh water. Good ventilation is important, so the air does not become stagnant, and the floor and branches do not become constantly wet.

LIGHTING AND UVB

Varanus beccarii is diurnal and should have UVB light. Use a combined heat and UVB lamp of 100-160 W over the basking spot, preferably supplemented with filtered daylight. Mount the lamp high enough that the animal can choose between shade and light, and aim for Ferguson zone 2; the exact zone is not documented for the species and is borrowed from related forest-dwelling monitors. Too little UVB, calcium and vitamin D3 causes metabolic bone disease (calcium deficiency), especially in young animals.

The light is switched on for 12 hours a day and off at night. Replace the UVB lamps according to the manufacturer's instructions, even if they still light up.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements Read more: Common diseases and signs of illness

FEEDING

The species lives mostly on live insects. Adults are fed cockroaches (e.g. *Blaptica dubia*) supplemented with mealworms, superworms (*Zophobas morio*), crickets and larvae of rose chafers (*Pachnoda*). Feed three times a week, and dust the insects at every feeding, alternating between calcium and a vitamin and mineral supplement with D3. One of the week's meals can be a newborn mouse, a hard-boiled egg or a quail chick. Rodents should be only a small part of the diet, because the animal otherwise easily becomes fat.

It is best to feed from tweezers or from the branches, so the animal learns to hunt. The species benefits from enrichment: let insects crawl into small holes in cork or wood, so the animal can use its forelimbs to hook them out. Weigh the animal regularly, and adjust the amount.

Newly hatched young can refuse to eat for more than two weeks. Weight fluctuates, even once the young animal has begun to eat on its own, and force-feeding is seldom necessary. If the young animal clearly loses weight, seek help from a vet. The young gradually accept crickets, newborn mice, mealworms and cockroaches.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

Varanus beccarii is nervous and easily stressed by handling. Bites and claws are a real risk: the teeth are long, the claws sharp, and a frightened animal can also kick and defecate on the person holding it. The species does not lash with its tail. On the other hand, the species is small, and the injuries are far less than with large monitors; they can, however, end in an infection, so wash and disinfect all wounds.

Keep a calm routine. Tame the animal slowly: open the enclosure calmly, speak softly, and let it come to the hand rather than grabbing down over it. Avoid taking hold of the tail or holding it tightly. Short, calm sessions of a few minutes are plenty, and many animals should not be handled at all. Wash your hands thoroughly after touching the animal, enclosure and food, because reptiles often carry salmonella.

The species is mostly kept singly or in pairs. During mating the larger male chases the female, and they must always be able to get away from each other. Watch for bites and stress, and separate them if it goes wrong.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

Age and weight at sexual maturity are not documented for the species. Animals in the *Varanus prasinus* group can be regarded as adult from about two years of age, at a weight of at least 110 g and a total length of at least 60 cm. The male is slightly larger than the female. Reliable characteristics for sexing are not documented for the species; have an experienced vet determine the sex.

Females should be in good body condition and have plenty of calcium and D3 before egg laying, because calcium deficiency can give weak eggshells and eggs that are not viable.

MATING

The male chases the female aggressively during courtship, and mating can take place high up in the branches and last up to two hours. The enclosure must be large enough for the female to get away. There are no documented figures for the breeding season or a cool resting period in the species.

Give the animals time to settle into the enclosure before a breeding attempt.

EGG-LAYING AND CLUTCHES

Clutches are small, about three eggs; the figure is based on a single clutch. The number of clutches per year is not documented. The female buries the eggs in damp substrate, in the enclosure e.g. in a bucket hidden in an artificial log, with an opening of about 8 cm and a damp, but not wet, layer of coconut fibre, sphagnum and mulch. The eggs are about 46 × 21 mm and weigh about 13 g.

Give the female a nesting chamber. If she lacks a suitable place, the eggs may be retained longer, and the shells may become too thick for the young to break through; whether this is a real cause has not been clarified. A lack of minerals and vitamins in the female before laying is another possible cause of weak eggs.

INCUBATION

The eggs are carefully moved to a clear plastic box with a small air hole, partly buried in medium-coarse vermiculite moistened with roughly 0.9 part water to 1 part vermiculite by weight. Do not turn the eggs. The incubator is kept at a constant temperature of about 29-30 °C. The box can be weighed regularly to follow the moisture loss, and water is added to the substrate far from the egg.

Incubation takes a long time: 157-203 days. Getting the young to hatch is a challenge. A common cause is that the embryo dies just before hatching, possibly because the substrate is too moist in the last third. A slightly drier substrate towards the end may help, but is no guarantee. Sudden changes in moisture must be avoided. A cracked eggshell can be patched with a piece of latex and paraffin wax, and the egg can still hatch.

Read more: Incubating eggs

REARING THE YOUNG

A newly hatched young weighs about 9 g and is dark grey with yellow-green spots. Place it in a small enclosure with cork, a live plant and natural branches, with a basking spot and UVB, and keep the humidity above 60 % with daily spraying. Within a few days the young begins to eat live invertebrates.

The young grow slowly and gain only about 6 g in the first five months. Offer small insects several times a week, dusted with calcium and D3. Keep the young singly, and weigh them regularly.

Health and common mistakes

Varanus beccarii usually comes into the trade as wild-caught animals, and many problems are caused by stress, lack of fluids and wrong husbandry. The typical mistakes are:

- Stress and dehydration in newly arrived wild-caught animals. Provide peace, warmth, humidity and water, and have a faecal sample examined for parasites.
- Metabolic bone disease (calcium deficiency) with too little UVB, calcium and D3, especially in young animals and in egg-

laying females. Dust the food and use correct UVB lighting.

- Too low humidity, which causes problems with shedding and dry eyes, or a constantly wet substrate, which gives mould and skin problems.
- Obesity and a wrong diet, if the food consists of many fatty prey animals or too little variety.
- Eggs that crack or do not hatch. This is a known problem with artificial incubation of the species.
- Bite and scratch wounds on the keeper. Clean the wound, and see a doctor if there are signs of infection.

See a vet with experience in reptiles if the animal does not eat for several weeks, loses weight, looks limp or has soft or swollen bones. Blood reference values exist for three species in the group, which the vet can use to assess the animal's health. Animals in the trade are probably usually wild-caught, so quarantine for at least three months with a faecal sample is a good idea.

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.