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MONITOR LIZARDS

Golden speckled tree monitor

Varanus boehmei

A slender, black tree monitor with golden spots in V-shaped rows, found only on the island of Waigeo off New Guinea. The species is rare in captivity and poorly known, so the care advice here is based on figures from close relatives. It needs a large, tall and humid enclosure, daily misting and a keeper with experience.

Family: Varanidae

KEY FACTS

THE ANIMAL

Adult size	**70-90 cm** total length incl. tail
Lifespan	**8-12 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Rainforest**
Difficulty	**Experienced**

CARE

Min. enclosure	**150 × 100 × 150 cm** L × W × H for 1 adult
Temperature, day	**26-30 °C**
Basking spot	**38-45 °C**
Temperature, night	**22-25 °C**
Humidity	**60-90%**
UVB	**Recommended** Ferguson zone 2
Diet	**Insects**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**3 eggs**
Incubation	**157-161 days** at 29-30 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus boehmei is a slender, long-tailed tree monitor with a black ground colour and golden spots arranged in V-shaped rows across the back. It belongs to the *V. prasinus* group, a series of closely related, diurnal tree monitors from New Guinea and the surrounding islands. Here the ground colour is black with pale spots, whereas *V. prasinus* is green and *V. macraei* is black with blue spots. The species was described in 2003 by H.J. Jacobs, after the animals had already been seen in the trade, and is named after the German herpetologist Wolfgang Böhme. The group has been placed in the subgenus *Euprepiosaurus* and has later been moved to *Hapturosaurus*.

The species reaches about 90 cm in total. Snout-vent length, weight and lifespan are not known, and the figures in the fact box are based on the closest relatives *V. prasinus* and *V. beccarii*, which as adults measure 61-86 cm and weigh 111-305 g.

V. boehmei is one of the least known monitors in the hobby. It is only reliably known from the type locality, and its way of life in the wild is almost unknown. Husbandry is therefore based on the close relatives *V. beccarii*, *V. prasinus* and *V. macraei*. The species has been bred in captivity, but rarely, and in 2016 it was kept in only one zoo in the world. There is illegal trade in the species.

The species is a long-term commitment. An adult needs an enclosure the size of a small wardrobe, daily attention and live insects every week, and there is the cost of light and heat and the time needed for misting and cleaning. The animal probably lives for many years. The species cannot be called beginner-friendly, and since the supply of captive-bred animals is very small, it can be difficult to obtain a healthy animal at all.

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

Distribution and habitat

Varanus boehmei is found only on Waigeo, a mountainous island in the Raja Ampat archipelago off the north-western tip of New Guinea (the Vogelkop Peninsula) in Indonesia. The type specimen comes from Waigeo, and the species is regarded as endemic to the island. On the neighbouring islands of Batanta and Misool live related tree monitors (*V. macraei* and *V. reisingeri*), but not this species.

There are only a handful of recorded finds from the eastern and south-western parts of Waigeo. A single find on Java comes from an animal outside the species' natural range and is not counted in the distribution.

> **Native range:** Indonesia.

HABITAT

There is almost no information about the species in the wild. The islands in the area are covered in tropical rainforest, and relatives in the *V. prasinus* group live in the trees, where they hunt insects and other small animals. *Varanus boehmei* is probably a similar diurnal tree dweller, but this is not documented.

The climate is warm and humid all year. For the close relative *V. beccarii* from the Aru Islands, the temperature in the wild is around 25 °C at night and 31 °C by day, with about 2,000 mm of rain a year. Waigeo probably has a similar climate: stable warmth, plenty of moisture and no cool season.

Care

THE ENCLOSURE

Varanus boehmei is a climber, so height is more important than floor area. An adult needs an enclosure of at least 150 × 100 × 150 cm (length × width × height), and a pair needs more, preferably about 160 × 120 × 180 cm. It is usually a custom-built cabinet, for example of phenolic-coated plywood with cork on the sides and back wall and a tight-closing door.

Furnish the enclosure like an artificial canopy: many branches of different thicknesses and heights, some free-floating, so that the animal has to coordinate its movements. Drill holes in some of the branches and put small pieces of food in them, so that the animal has to search for food. Use robust live plants with large leaves as hides and sleeping places. Put up egg-laying boxes with leaf litter (for example 25 × 15 × 15 cm), even if you keep only a female.

Use coconut fibre or 5-15 cm of forest soil with dry oak leaves as substrate. The substrate is misted daily and retains moisture, and droppings are removed every day. A large, heated water basin helps with the humidity. Provide good ventilation, both low and high, and place lamps and heat sources behind guards so that the animal cannot burn itself. This is especially important because tree monitors jump and climb right up under the lamps.

Hatchlings are first kept in a small quarantine box (for example 40 × 30 × 25 cm) with moist kitchen paper and thin branches. Active juveniles can move into an enclosure of about 80 × 60 × 110 cm after about a month.

Read more: Humidity, misting and ventilation Read more: Quarantine and hygiene

TEMPERATURE

The figures for *Varanus boehmei* are borrowed from *V. beccarii* and other species in the group. By day the air should be 26-30 °C, coolest at the bottom and warmest up at the basking spot.

The animal must be able to choose. Provide a basking spot high up, where the surface under the spot is 38-45 °C measured with an infrared thermometer, and a cooler area lower in the enclosure, so the animal can regulate its own body temperature.

At night the temperature should fall to 22-25 °C. Use a thermostat on all heat sources and a digital thermometer both at the top and at the bottom.

Read more: Heat and temperature

HUMIDITY AND WATER

Species in the *V. prasinus* group dry out easily and are harder to keep than many other monitors. Humidity should be 60-90 %: high at night and after spraying and slightly lower later in the day, so the floor and branches can dry. A heated water pool at 27 °C and automatic spraying six times a day for one minute at a time keeps the humidity up; daily spraying of the floor alone is not enough.

An automatic mister is a great help, but ventilation must be good, so the air does not become stagnant. The animal drinks drops from leaves and walls, so spray until there are drops to take. An animal that does not drink can get water by direct spraying from a short distance, and this also works on young.

Change the water in the pool regularly. A dirty, constantly wet floor causes fungus and infections.

LIGHTING AND UVB

Varanus boehmei is probably diurnal and basks high in the trees, so light means both heat and UVB. Use several powerful metal halide spots (5,600-6,500 K) over the basking spots, supplemented with halogen spots, so that there is a clear light gradient and clear shade further down.

Aim for Ferguson zone 2 with a UV index of about 2-3 under the basking spot. Measure the UV index with a meter, keep the lights on for 12 hours a day with a timer, and replace the UVB source according to the manufacturer's instructions, because it weakens over time. There must always be areas without direct light, and it must be dark at night.

Read more: Lighting and UVB

FEEDING

Relatives in the group live mostly on insects and other invertebrates, and this probably also applies to *Varanus boehmei*. Over 90 % of the food (by weight) should be insects such as cockroaches and larvae of *Pachnoda* and *Zophobas*, and occasionally fish, eggs (also with shell) or a day-old chick can be given. Live cockroaches make a good staple, with larvae of *Zophobas* and *Pachnoda* as a supplement once a week.

Adults are fed once or twice a week with a total of 10-20 g of food per animal per week. Let the insects run free in the enclosure or put them in the drilled branches, so that the animal has to hunt and search. The insects themselves must be well fed, and the food is dusted with calcium and alternately a vitamin and mineral preparation with vitamin D3. Rodents do not belong in the diet, and too much fat from eggs and chicks causes obesity.

Juveniles of species in the group may refuse to eat for up to two weeks after hatching, in some cases even longer. Give them peace, moisture and daily misting, and see a vet if they lose weight.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Varanus boehmei is small and lightly built, and an adult of 70-90 cm has sharp claws and can bite, but the injuries are not comparable with those from large monitors. How hard this particular species bites, and whether it whips its tail, is not documented. Animals in the group are nervous and fast, so work calmly, never grab the tail, and keep sessions short. Fleeing and stress are more common than attacks, and stress is a common reason for an animal to stop eating.

Taming takes time. Let the animal get used to you by being close to the enclosure and opening the door calmly, and offer food from the hand only when the animal no longer flees. Many tree monitors remain shy and are better as animals to watch than to pick up.

Monitors can carry salmonella, like all reptiles. Always wash your hands after contact with the animal, the enclosure and the food, and keep the enclosure away from the kitchen and from small children, pregnant women and people with weakened immune systems.

The species is kept singly or in pairs. The male may chase the female through the enclosure, so pairs need plenty of space, many hiding places and visual barriers, and preferably a sliding door so that the animals can be separated. Do not keep two males together.

Breeding

SEXUAL MATURITY AND SEXING

Age and weight at sexual maturity are not known for *Varanus boehmei*. In related tree monitors in captivity, animals over two years old with a length of at least 60 cm and a weight of at least 110 g are considered adult. In *V. beccarii*, males of about 74 cm and 210 g and females of about 80 cm and 214 g are able to breed.

The sex is most reliably determined by cloacoscopy (endoscopic examination) at a vet before two animals are put together.

MATING

Varanus boehmei is only rarely bred in captivity, and the mating sequence is borrowed from *V. beccarii*.

When the animals are put together, the male pursues the female with frequent tongue-flicking, and she usually flees to a hiding place. Mating lasts about two hours, while the animals hang on the back wall. After mating, the female is fed every other day in smaller portions (7.5-9 g at a time). If the male keeps seeking the female, the pair is divided with a sliding door. Monitor the mating, and separate the animals if there is injury.

EGG-LAYING AND CLUTCHES

Clutch size and number of clutches per year are not known for *Varanus boehmei*; the figures are borrowed from *V. beccarii*, where a clutch is three eggs. The eggs are white, weigh 11-13 g and measure 45-46 × 20-23 mm.

The female buries the eggs in moist substrate, for example next to the water pool. She may be exhausted after laying, but there are no visible signs beforehand, so check the enclosure thoroughly after a mating, and keep an eye on the female's condition and appetite.

INCUBATION

Place the eggs individually in boxes with small air holes and vermiculite, moistened 1:2 by weight with distilled water. The temperature in the box should be 29-30 °C and the humidity about 95 %. The incubation time is 157-161 days.

The biggest problem in tree monitors is that fully developed embryos die shortly before or during hatching, often without a visible cause. Eggs can also split long before hatching, e.g. after 118-136 days. A split egg can be repaired with paraffin and a piece of latex glove, and the young can still hatch about 39 days later. This is a technique for the experienced.

Read more: Incubating eggs

REARING THE YOUNG

Juvenile *Varanus boehmei* are kept in a small quarantine box with moist kitchen paper and thin branches. In *V. beccarii* the young weigh 8-9 g at hatching. Juveniles can refuse food for up to two weeks and in some cases longer. A juvenile that does not feed on its own can be force-fed for a period until it eats by itself, possibly only after a month. Spraying it directly makes the juvenile drink.

In the first weeks the juveniles may take only small flies, and after about five months they can take live cockroaches. How fast the juveniles grow and how long they should be kept apart is not known, so keep them singly.

Health and common mistakes

Varanus boehmei has the same typical problems as other species in the *V. prasinus* group:

- Dehydration. Tree monitors dry out easily and are harder to keep than other monitors. Signs are sunken eyes, thick saliva and limp, wrinkled skin. Keep the humidity up, and let the animal drink.
- Calcium deficiency and brittle bones from wrong food, calcium and UVB. This causes soft jaws, bent limbs and tremors.
- Parasites and stress in wild-caught animals. Have a faecal sample examined, and keep new animals in quarantine for at least four weeks.
- Bacterial infections. Atypical mycobacteria can kill even older, captive-bred animals, so infection and long-term illness are a real risk.
- Egg problems: cracked eggs and dead, fully developed embryos.
- Salmonella, which all reptiles can carry. Keep good hand hygiene.

See a vet with experience in reptiles if the animal loses weight, does not eat for more than two weeks, lies flat and passive or has difficulty breathing.

Animals from Indonesia are sometimes sold as farm-bred, but this is rarely documented, so they should be regarded as wild-caught. The species is subject to illegal trade and smuggling. Wild-caught tree monitors are often stressed, dehydrated and full of parasites, and they do worse than captive-bred animals. Because the species is found on only one small island, pressure from the trade is a problem for the population, and the IUCN has too little data to assess it. Preferably choose a captive-bred animal from Europe.

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.