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MONITOR LIZARDS

Banggai Island monitor

Varanus melinus

Varanus melinus is a medium-sized, yellow monitor from the Sula Islands in Indonesia. Adults are intensely yellow, and the juveniles are black with yellow spots. The species needs a large enclosure with a pool and very warm basking spots, feeds on insects and vertebrates, and is threatened in the wild, so it suits only an experienced keeper.

Family: Varanidae

KEY FACTS

THE ANIMAL

Adult size	**90-130 cm** total length incl. tail
Lifespan	**8-15 years**
Active	**By day**
Lifestyle	**Terrestrial**
Habitat	**Rainforest**
Difficulty	**Experienced**

CARE

Min. enclosure	**300 × 120 × 150 cm** L × W × H for 1 adult
Temperature, day	**26-33 °C**
Basking spot	**40-45 °C**
Temperature, night	**24-26 °C**
Humidity	**60-80%**
Water	**Water section** depth 80 cm
UVB	**Recommended** Ferguson zone 3
Diet	**Insects and vertebrates**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**2-12 eggs**
Incubation	**164-171 days** at 28-29 °C

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Endangered (EN)**

About the species

Varanus melinus is a monitor of 90-130 cm including the tail. Adults have an intense yellow ground colour on the head, body, legs and tail, with a more or less distinct dark net pattern on the neck, limbs and tail base. The tongue is pink, and the underside is unmarked. The tail is laterally compressed towards the tip and is not prehensile. The species name *melinus* means quince-yellow. The juveniles, by contrast, are black with transverse rows of yellow eye spots on the back. In time the head and neck turn yellow, and the black edges around the spots become thinner and can leave an irregular net pattern. By about five months of age the juveniles already have yellow heads and necks.

The snout-vent length in adults is about 40-51 cm. Females reach about 95 cm in total (40 cm snout-vent and 55 cm tail), and males grow larger, up to about 128 cm.

The species was described in 1997 by Wolfgang Böhme and Thomas Ziegler from animals in the pet trade. It belongs to the group of monitors that includes *V. indicus*, and can be confused with *V. indicus*, *V. jobiensis* and *V. doreanus*. *V. melinus* differs in its yellow ground colour, the uniformly pink tongue, the absence of blue or turquoise colour on the tail and a low number

of scales around the middle of the body. The species is known in the pet trade and has been caught in large numbers, see the section on health.

This is a species for the experienced keeper. Adults need a large enclosure or a small room with a pool, they eat mouse-sized prey every week, and the animals can live more than eight years in captivity. The upper limit of 15 years in the box is an estimate based on related monitors of the same size. Experience with the species is limited, and sexing and sexual maturity are not known. Allow for many years of costs for space, food and electricity and for time for daily care, and for the fact that adults often cannot be kept together.

Distribution and habitat

Varanus melinus is found only in Indonesia, on the Sula Islands in the Moluccas east of Sulawesi. Confirmed finds from the wild are known from the islands of Mangole and Taliabu. Other islands in the area, including Sanana, Banggai and Bowokan, have been mentioned as possible habitats but have not been confirmed by fieldwork.

The first description gave the island of Obi as the habitat, because the first animals arrived through the trade. This was later corrected, and fieldwork has confirmed that the species does not occur on Obi. Records from Obi on distribution maps are therefore errors. The range is small.

> **Native range:** Indonesia.

HABITAT

The species lives in tropical lowland forest. It occurs in inland forests on Taliabu with many dipterocarps, but probably prefers more open terrain away from the mangrove belt to the coastal forest itself. Its life in the wild is only poorly known.

The diet in the wild consists of insects, amphibians and bird eggs. The climate is tropical and humid with small variations in temperature all year. That is what you need to imitate: warm days, only a small drop at night and high humidity.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

A single adult needs at least 300 × 120 × 150 cm (length × width × height), and larger is better. A pair needs at least 400 × 120 × 150 cm, which can be divided into two equal halves, so that the animals can be separated. The water section can be anything from a tub of 70 litres to a pool 120 cm in diameter and 80 cm deep. Dimensions that are only large enough for juveniles are not enough for a full-grown animal. The practical choice is therefore a home-built enclosure, for example of laminated wood, or a whole room.

Newly hatched juveniles can live in a glass terrarium of 100 × 50 × 60 cm and must be moved at six months to about 165 × 140 × 120 cm, where two or three young animals can live together. The juveniles grow quickly and must be moved up in good time.

Use coarse pine bark as substrate, in large setups on top of a layer of gravel. Furnish with many hides of cork tubes and cork bark, strong branches and climbable walls of coarse stone with raised resting places, and plants such as *Ficus* and *Pandanus*. A hollow log or wooden box for resting and egg-laying is part of it. The pool must be large enough for the animal to swim and dive, and it must be easy to empty and clean. The enclosure must have secure doors, and the heat lamps must be shielded, so that the animal cannot burn itself.

TEMPERATURE

The background temperature in the enclosure is 26-33 °C during the day, and the basking spot under the heat lamps should reach 40-45 °C, measured as surface temperature with an IR thermometer. Use several lamps so that a large temperature gradient arises from the warmest spot to a cooler corner. Allow two 160 W heat lamps per 200 × 100 × 150 cm of enclosure, and in large setups a 400 W HQI lamp and several 160 W lamps.

The water should be at least 27 °C. The night temperature is not known; a small drop to about 24-26 °C suits a tropical lowland species. Measure with thermometers at the basking spot, in the background and near the floor.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should be high, about 60-80 % as in related species in the group that includes *V. indicus*. Mist the juveniles daily with rainwater; the pool also adds to the humidity. Ensure good ventilation and change the water regularly. The eggs have other requirements, see under breeding.

LIGHTING AND UVB

The species is diurnal and basks a lot. Provide UVB from fluorescent tubes or heat lamps with UVB, so that the animal can choose its dose (Ferguson zone 3). T5 tubes of 80 W and 160 W heat lamps that also give UVB are suitable, in large enclosures supplemented with lamps of 300-400 W. UVB equipment must be replaced according to the manufacturer's instructions, because UVB declines before the light does.

Keep the light on for about 12 hours and off for 12 hours. There must be shade and hides, and the basking spots are placed so that the animal can climb up into the heat. The heat sources must be shielded with grilles so that the animal cannot burn itself.

Read more: Lighting and UVB

FEEDING

The species is carnivorous. Adults are fed twice a week with insects, especially grasshoppers and crickets, as well as earthworms and wax moth larvae, and at most once a week with vertebrates: mice, small rats, fish, chicken meat and occasionally chicks. Chopped ox heart mixed with egg and dusted with calcium can be given as a supplement. Generous amounts of vertebrates make the animals fat, so let the insects make up most of the diet.

Offer newly hatched juveniles crickets after four to five days; they often take them only after the tenth day. A couple of weeks later small newborn mice are added. After that they get crickets and grasshoppers every other day and an occasional mouse. The juveniles are voracious, so feed them with tweezers so that everyone gets the same amount; some still grow faster than others. Dust the insects with calcium.

Read more: Feeder animals: keeping and breeding Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Adults of this size have teeth and claws that can cause deep wounds, and the tail is compressed and can be used to whip. How powerful the bite and tail whip are in this particular species is not documented. Approach the animal calmly and predictably, do not grab at it, and use long gloves when it has to be moved. Taming takes time. Wash your hands after touching animals, the enclosure and the water, because reptiles can carry salmonella.

Two or three young animals can be kept together without conflict, but among adults the largest animal becomes dominant and aggressive towards the smaller ones, and the bite injuries can be fatal within a few days. Keep adults apart for that reason. A pair can only be kept together if the animals are tested and watched closely, and in an enclosure that can be divided in two. Adult males can be aggressive.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

Age at sexual maturity and reliable sexing are not known for the species. The first clutch can come as late as about seven years of age, but that is not necessarily the lower limit. Breeding animals should be fully grown and in good condition.

MATING

Matings are not tied to a particular season and have been seen all year, on the ground, on cork tubes and directly under the basking spot. Putting the male in with the female triggers mating, and the male is moved out again after about two weeks. Gravidity shows mostly as a growing, ravenous appetite and only a little in the girth of the body.

Always test whether the animals can be kept together, and follow them closely. Preferably pair unrelated animals: eggs with conjoined twins and embryos with malformed skulls occur, and the cause has not been established.

EGG-LAYING AND CLUTCHES

Clutches contain 2-12 eggs, with about 3-8 months between clutches. Place an egg-laying box in the enclosure. A hollow log of 80 × 50 × 25 cm, half filled with peat, leaves and a layer of sphagnum, works well. The eggs are about 5-6 cm long and 3-4 cm wide.

Move the eggs immediately after laying so that the female does not damage them. Some eggs are infertile or do not develop, so allow for losses.

INCUBATION

The eggs are laid on top of the substrate in plastic boxes half filled with vermiculite and sand in the ratio 2:1 and are not turned. The opening of the box is covered with plastic film to keep the air saturated and keep flies and cockroaches out, and the film is removed at least once a week to air it out.

At 29 °C the eggs hatch after 164-166 days, and at 28.5 °C after 168-171 days. Eggs that develop a persistent dent may contain a dead embryo. Eggs without development can be removed after a few days.

REARING THE YOUNG

At hatching the young are about 21-28 cm long and weigh 21-35 g, and they are black with yellow spots. Keep them in glass enclosures with branches, cork and bamboo tubes, plants, a water dish and pine bark, and mist daily with rainwater. The temperature should be 26-32 °C with up to 40 °C under the basking spots and UVB from tubes and heat lamps.

They take crickets after about ten days and later small newborn mice. After 5.5 months they measure about 37-40 cm and weigh 41-55 g, and the colours begin to change.

Health and common mistakes

Animals in the trade are often wild-caught. The species has been heavily collected, and wild-caught animals can have parasites and be stressed and emaciated on arrival. Captive-bred animals also exist, but supply is small. Quarantine new animals and have a vet with reptile experience take a faecal sample.

Typical problems in kept animals are:

- Infections such as bacterial blood poisoning, pneumonia and skin diseases, as well as large cysts in the abdominal cavity.
- Bite injuries between animals kept together. Separate them at the first sign of unrest.
- Obesity when vertebrates are the staple food. Go easy on mice and rats and give insects dusted with calcium.
- Too little heat or too little UVB, which causes poor appetite and weakens the skeleton.
- Malformations and dead embryos in the eggs when the parents are closely related.

The skin sheds in small pieces and individual scales without a clear shedding cycle. A healthy animal is alert and active during the day and has a plump tail. See a vet if the animal loses weight, does not eat for several weeks or seems listless. Remember hand hygiene: reptiles can carry salmonella.

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

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.