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MONITOR LIZARDS

Bengal Monitor

Varanus bengalensis

Varanus bengalensis is a terrestrial monitor lizard from India and much of South Asia, one of the most widespread monitors of all, ranging from Iran to Myanmar. It grows up to 175 cm long, is diurnal and digs burrows. The species is rare in captivity and there is almost no reliable husbandry experience, so this guide is based on other large terrestrial monitors and on the species' way of life in the wild.

Family: Varanidae

KEY FACTS

THE ANIMAL

Adult size	**100-175 cm** total length incl. tail
Lifespan	**10-22 years**
Active	**By day**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Semi-desert, savanna and dry forest**
Difficulty	**Expert**

CARE

Min. enclosure	**375 × 150 × 150 cm** L × W × H for 1 adult
Temperature, day	**24-38 °C**
Basking spot	**50-55 °C**
Temperature, night	**20-25 °C**
Humidity	**60-70%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 3
Diet	**Insects and vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**30-36 months**
Clutch size	**20 eggs**
Clutches per year	**1-2**
Incubation	**168-254 days** at 28-30 °C

PROTECTION AND PAPERWORK

CITES	**Appendix I**
EU annex	**Annex A**
IUCN	**Near Threatened (NT)**

About the species

Varanus bengalensis is a slender to robust, long-tailed monitor with a pointed snout and a tail that is compressed along its whole length and has a low, double-toothed crest on top. Adults are light brown to grey with dark spots that give a mottled appearance. Juveniles are far more colourful: they have dark crossbands on the neck, back and tail and yellow spots on the back, and the belly is white with dark bands.

The species reaches up to 175 cm in total length, of which roughly 75 cm is snout to vent and about 100 cm tail. Males are larger than females and in the wild about 40 % heavier. The heaviest wild animals weigh almost 7.2 kg, and a few captive animals have been measured at around 10 kg. Newly hatched young weigh about 80 g. The species can live about 22 years in captivity, and the animals become sexually mature after 2.5-3 years.

The taxonomy has changed. Populations from southern Myanmar and eastwards were formerly regarded as a subspecies and are now treated as the separate species *Varanus nebulosus*, which is distinguished by a row of enlarged scales above the eyes. *V. bengalensis* in the strict sense lives from Iran to Myanmar. The form *V. irrawadicus* from western Yunnan in China is mostly regarded as a synonym. Figures for weight and reproduction partly date from the time when the two species were regarded as one.

The species is demanding and rare in captivity. An adult monitor needs a large, custom-built enclosure or a whole room, deep substrate, intense heat and plenty of food, and the animals can live for more than 20 years. This is a commitment that must be in place before the animal is acquired.

Distribution and habitat

Varanus bengalensis has one of the largest ranges of any monitor. The species lives from south-eastern Iran and the Kabul River valley in easternmost Afghanistan through Pakistan, India, Nepal, Bhutan, Bangladesh and Sri Lanka to Myanmar. The form from western Yunnan in China is also assigned to the species.

Populations in southern Myanmar, Thailand, Cambodia, Vietnam, on the Malay Peninsula and on Java belong to *Varanus nebulosus* and are not included on the map. Exactly where the boundary between the two species runs in Myanmar has not been settled. *V. bengalensis* occurs from sea level up to about 1,500 m.

> **Native range:** Iran, Afghanistan, Pakistan, India, Nepal, Bhutan, Bangladesh, Sri Lanka and Myanmar (Burma).

HABITAT

Varanus bengalensis lives in an unusually wide range of habitats: from dry, semi-desert river landscapes and thorn scrub to humid deciduous, semi-deciduous and evergreen forests. It prefers forest with large trees and is also found on farmland. The annual mean temperature across its range is about 24 °C, and rainfall varies from under 200 mm to about 2,200 mm a year.

The animals are diurnal, live mostly on the ground and are for the most part solitary. Juveniles are often seen in trees, and large animals also climb well, but prefer to flee across the ground. The species swims well and can stay underwater for at least 17 minutes. It sleeps and takes shelter in self-dug burrows, rock crevices, hollow trees and termite mounds, and it often gets going around six in the morning by warming itself in the sun. In the northern and western regions, where winters can be cold with snow, the animals pause in winter and do not eat. Adults spend about a quarter of the day basking and almost as much time foraging; the rest goes on resting and moving about.

The species is a generalist and eats about 200 known prey species. Small animals feed mostly on beetles and their larvae, grasshoppers, millipedes, scorpions, crabs and snails. Larger animals also take toads, frogs and their eggs, fish, lizards, snakes, rats, squirrels, hares and birds, and also eat carrion. The female digs a nest in flat ground or an earth bank, fills it in again and often digs false nests nearby. The species is declining locally because of hunting for food, medicine and skins, and because of pesticides that reduce its prey.

Care

THE ENCLOSURE

Little is known about keeping *Varanus bengalensis*. The figures for enclosure, temperature, humidity and feeding are therefore borrowed from other large, terrestrial, burrowing monitors, especially *Varanus panoptes*; *Varanus gouldii* and *Varanus griseus* have similar requirements.

The enclosure follows the general rule for terrestrial monitors: at least five times as long, twice as wide and twice as tall as the animal's snout-to-vent length. Large animals have a snout-to-vent length of up to 75 cm and need at least 375 × 150 × 150 cm (length × width × height). A whole room is better. Young can start in a smaller but deep enclosure and must be moved up as they grow.

The substrate is the most important thing. The species digs burrows in the wild, and a deep substrate of sandy soil with 25-50 % coconut fibre, at least 30 cm and preferably 60 cm deep, lets the animal make its own tunnels. Use soil free of fertilisers and pesticides. The heavy substrate means the load-bearing capacity of the floor must be checked. The substrate is kept moist a few centimetres down and dry on the surface.

Provide many hides of different sizes, such as cork tubes and slabs set on wedges, and add a couple of strong branches and pieces of rock, because both juveniles and adults climb. Secure all heavy items to the wall and floor, so a digging monitor cannot bring them crashing down. The lid must be closed and lockable, and heat sources must be shielded and placed out of the animal's reach.

Read more: Humidity, misting and ventilation

TEMPERATURE

There must be a large temperature gradient. The air is kept at 24-38 °C from the cool to the warm end. The surface temperature of the basking spot, measured with an IR thermometer, should be 50-55 °C. Use several halogen spots or heat lamps side by side, so the whole body is warmed evenly and a single narrow beam does not cause burns.

It is the surface temperature that counts, not the air temperature. The animal must also be able to cool off in shade or in a burrow. At night the heat is switched off and the temperature may fall to around 20-25 °C. Whether the species needs a cool period in captivity is not documented. Day length governs mating behaviour, so breeding animals should have shorter days in winter and longer ones in summer.

Read more: Heat and temperature

HUMIDITY AND WATER

The species lives in both dry and humid regions. Humidity should be 60-70 % in the middle of the enclosure. This is best achieved by keeping the substrate moist a few centimetres down and leaving the surface relatively dry, so the animal can choose for itself by digging in. An enclosure with an open mesh lid and a heat lamp above the mesh dries out too much; cover most of the mesh. Humidity also helps during shedding. If the animal lies in the water for many hours, the enclosure is probably too dry.

WATER AND WATER QUALITY

Varanus bengalensis swims well, and a large water container is part of the set-up. Use a container in which the whole animal can lie, such as a concrete mixing tub or a large basin for large animals. Change the water often, because the animal urinates and defecates in it. The tub must stand firmly so it cannot be knocked over, and the animal must be able to get in and out easily.

LIGHTING AND UVB

Keep the light on for about 12 hours a day. UVB is recommended for animals that do not get unfiltered sunlight, because the skin produces vitamin D3 under UVB. Use a UVB tube or a combined lamp above the basking spot corresponding to Ferguson zone 3, so the animal can choose its dose. Place the lamps out of the animal's reach, and replace UV tubes according to the manufacturer's instructions, even if they still light up.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements

FEEDING

Varanus bengalensis is a purely carnivorous predator and a generalist with about 200 known prey species. In the wild the diet of the smallest animals consists mostly of beetles and other invertebrates, while large animals also take vertebrates. The staple diet is therefore varied: large insects such as crickets, mealworms, superworms and cockroaches, snails and crayfish, supplemented with whole prey such as thawed mice, day-old chicks, fish and eggs. Dust the insects with a good mineral supplement several times a week.

Offer rodents dead, because a live mouse can leave deep wounds. Keep rodents as part of the diet, not as the main food, because the species has fat stores in the tail and body and easily becomes overweight in captivity. Juveniles are fed every day or every other day with insects. Adults are fed 2-3 times a week and weighed regularly. Feed animals separately, and use long tongs so you do not get bitten.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

In the wild *Varanus bengalensis* is shy and avoids people. The animal has sharp eyesight and notices movement at a distance of about 250 m. When caught, only a few bite, and it is rare. Little is known about temperament in captivity, so the animal should be regarded as one to watch, not to handle. When threatened it may rear up on its hind legs, hiss and lash with its tail.

Bites, claws and tail whips must be taken seriously in an animal of up to 175 cm. The teeth are compressed and razor-sharp, and even a quick bite can cause deep lacerations that bleed heavily and heal slowly; the claws can cause deep scratches. The species also has venom glands, but only one disputed case of serious poisoning after a bite has been described. Use long tongs when feeding, avoid having your hands in the enclosure when food is nearby, and let the animal come to you instead of grabbing at it. Taming comes down to calm, predictable routines.

Reptiles often carry salmonella. Wash your hands thoroughly after any contact with animals, water, substrate and food. Children must not have contact with animals, substrate or water without supervision.

Keep the animals singly. Males fight for dominance by rearing up on their hind legs and wrestling, and they can injure each other. A pair can only be kept together under supervision and with the option of separating them.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

The animals become sexually mature after 2.5-3 years, when body weight is above about 0.4 kg. Males are larger and more robust than females and have more small pores in the scales. Juveniles are hard to sex, so a vet experienced with reptiles should do it. Females can store sperm and lay fertilised eggs even if they have been kept alone for a long time.

MATING

In the wild mating takes place from June to early August, but males begin fighting as early as April. Longer days make the males fight and mate earlier in the year. Females mate with one or two males during a season. How a pair should be housed in captivity is not documented, and a divider should be possible.

EGG-LAYING AND CLUTCHES

In the wild egg-laying takes place from July to early September, about two weeks after mating. Normally one clutch of roughly 20 eggs is laid per year, and in areas with two monsoon periods there can be two clutches 23-30 days apart. The female digs a nest chamber in flat ground or an earth bank and often makes false nests. A deep, moist substrate makes it easier for her to lay. After laying she must be fed generously.

INCUBATION

Incubation is long and varies greatly with temperature: in the wild the eggs hatch after 168-254 days, and at different temperatures the time can range from 70 to 327 days. Within the same clutch, hatching can be spread over up to 105 days. The best temperature is not documented for the species. The eggs are placed in a moist medium such as vermiculite or perlite at 28-30 °C, as for other large monitors. About 80 % of eggs normally hatch in the wild. Be patient, and do not discard eggs too early.

Read more: Incubating eggs

REARING THE YOUNG

Newly hatched young weigh about 80 g and are more colourful than the adults. Rearing in captivity is only sparsely described, so the young are cared for like the young of other terrestrial monitors: a deep, moist substrate, a warm basking site, hides and small insects. In the wild only about half of the young survive the first two years. Keep the young apart at feeding, because they can injure each other, and move them up to larger enclosures quickly.

Health and common mistakes

There are almost no documented data on the health of *Varanus bengalensis* in captivity. The typical problems in large terrestrial monitors are:

- Burns from overly concentrated or unprotected heat. Use several bulbs and shield them.
- Brittle bones (metabolic bone disease) from too little calcium, vitamin D3 and UV, especially in juveniles and egg-laying females.
- Overheating. The animal must be able to cool off in shade or burrows.
- Dehydration and skin problems in an enclosure that is too dry with an open mesh lid. If the air is too humid, scale infections can develop.

- Bites from live mice, which can cause deep, infected wounds. Offer prey dead.
- Obesity, because the species has fat stores in the tail and body. Weigh the animal regularly and limit fatty food.
- Parasites and stress, especially in wild-caught animals. A faecal sample should be examined, and the animal needs time to settle in.
- Injuries from fighting when animals are kept together.
- Egg-laying problems in females without a suitable place to dig. Contact a vet if the female digs for several days without laying, seems limp or has a swollen rear body.

A healthy animal is active, has bright eyes and a plump tail base and eats well. Seek a vet experienced with reptiles if the animal loses weight, does not eat for several weeks or seems limp.

Read more: Common diseases and signs of illness 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.