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MONITOR LIZARDS

Northern Pilbara Rock Monitor

Varanus pilbarensis

A small, reddish-brown rock monitor from the Pilbara in north-western Australia, with large, pale grey eye spots on the back and a long, distinctly banded tail. *Varanus pilbarensis* grows to 45-50 cm long and is shy and diurnal. It needs a very warm basking spot, rock structure to climb and hide in, and a cool period in winter.

Family: Varanidae

KEY FACTS

THE ANIMAL

Adult size	**45-50 cm** total length incl. tail
Lifespan	**12-20 years**
Active	**By day**
Lifestyle	**Rock-dwelling**
Habitat	**Semi-desert and rocky terrain**
Difficulty	**Intermediate**

CARE

Min. enclosure	**120 × 60 × 60 cm** L × W × H for 2 adults
Temperature, day	**26-32 °C**
Basking spot	**45-50 °C**
Temperature, night	**18-20 °C**
Humidity	**50-70%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 3
Winter rest	**18 °C** 8-9 weeks
Diet	**Insects and vertebrates**
Kept	**Singly, in pairs or in groups**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**2-9 eggs**
Incubation	**100-120 days** at 29 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus pilbarensis is a small monitor in the subgenus *Odatria* and a specialist in rocky terrain. The body is slender, and the tail is long and thin: between 170 and 211 % of the snout-vent length, which reaches about 18 cm at most. The ground colour is light reddish brown, and on the back, sides and limbs there are rows of large, pale grey eye spots that can resemble transverse bands. The tail has distinct alternating light and dark bands. The nostrils sit high up on the snout, and the scales on the back are elongated and slightly keeled. The claws are short, thick and strongly curved, which suits a climber that moves on rock faces.

The species was described in 1980. In 2014 genetic and morphological studies showed that the population south of the Fortescue River is a separate species, *V. hamersleyensis*, which is darker and has small whitish spots only on the limbs and a tail that is almost without bands. *V. pilbarensis* is thereafter restricted to the northern part of the Pilbara. Older care information and pictures published as *V. pilbarensis* may therefore concern the sister species.

Females grow to about 45 cm and males to about 50 cm including the tail. Weight is not documented. In the wild the animals are shy and almost invisible on the red rocks; the females' flight distance is over ten metres, and the males are slightly bolder. It is a species for those who want to observe an active animal in a well-furnished enclosure, not a species to be handled a great deal. It is rare in the hobby, and the animals in the trade are captive bred.

Keeping the species takes sustained effort: a large enclosure with strong heat and UVB, live insects several times a week for many years and a regular cool period. The lifespan in captivity is more than 12 years.

Read more: Lighting and UVB

Distribution and habitat

Varanus pilbarensis is found only in the northern Pilbara in Western Australia. The type locality is the Chichester Range, and the species is known from, among other places, Woodstock, Millstream Chichester National Park, the Burrup Peninsula, Meentheena, Wodgina and the areas around Pannawonica and Goldsworthy. There are also records on islands off the coast, for example West Intercourse Island.

The range lies north of the Fortescue River catchment. South of the river, in the Hamersley Range, lives the sister species *V. hamersleyensis*, and further north-east, in the Kimberley, lives the related *V. kingorum*. Neither of them overlaps with *V. pilbarensis*.

> **Native range:** Australia.

HABITAT

The species is tied to rocky terrain: gorges, rock escarpments and stony slopes with spinifex and low scrub vegetation, often close to watercourses in the gorges. The landscape is hot, dry and open, and the animals bask on red rocks and retreat into crevices and between stones when disturbed or when they need to rest. They are good climbers but move mostly horizontally on the rock faces.

The species is diurnal. The food consists of insects, other invertebrates and smaller reptiles. The climate in the Pilbara has a very hot summer and a cooler winter, and that is the reason the species is given a cool period in winter in captivity.

Care

THE ENCLOSURE

An adult pair needs an enclosure of at least 120 × 60 × 60 cm (length × width × height), and larger is better. The species is active and roams around on the rock faces, so floor area is more important than height. Juveniles can start in a smaller enclosure, where they easily find their food, but must be moved to the large one as they approach adult size. Do not let them stay too long in the small enclosure.

Furnish with sturdy rock slabs, stones and branches at several heights, so that the animals can climb almost vertical surfaces and bask close to the lamp. Stones must lie firmly and must not be able to topple when the animals dig under them. Make many narrow hides and crevices that the animal can squeeze into. Also provide a damp hide, for example a plastic box with sphagnum and a hole in the side, where the animal can shed and rest.

A mixture of sand and clay that can be dug in and holds its shape works as substrate. Lamps and heat sources must be shielded, so that the animals cannot burn themselves, and the lid must be lockable, because the species is fast and agile. An enclosure of film-faced plywood or PVC holds heat better than glass.

TEMPERATURE

The species needs a large temperature gradient. On the basking spot under the lamp, stone or branches must have a surface temperature of 45-50 °C, measured with an IR thermometer. The air in the rest of the terrarium must be 26-32 °C by day, coolest at the opposite end, so that the animal can choose for itself. At night the temperature is lowered to 18-20 °C.

The temperatures and UVB values are borrowed from related rock monitors, because there are only a few measurements for this particular species. If the animal pants with its mouth open on the basking spot, it is too hot. If it sits all day in the cool corner, it is too cold, or the lamp is too weak. A cool winter period of about two months at 18 °C stimulates mating in animals to be used for breeding; under normal care the night temperature can simply be kept a little lower in winter.

Read more: Heat and temperature

HUMIDITY AND WATER

The humidity should be 50-70 %. It is a species from dry rocky terrain, so the enclosure should not be wet, but a damp hide must always be available, so that the animal can shed without problems. Put in a plastic box with damp sphagnum and an entrance hole in one side, and keep the moss damp.

Put a wide water bowl on the floor and change the water every day. The species uses the water bowl for drinking and occasionally for getting wet, but it is not aquatic. Use a digital hygrometer. Keep the substrate dry, except in the damp hide, so that mould and skin problems do not arise.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is diurnal and spends a lot of time basking, so light and UVB are a cornerstone of care. Use fluorescent tubes or LEDs for ordinary daylight and a powerful spotlight over the basking spot for heat. Provide UVB for Ferguson zone 3, e.g. with a T5 tube of 10-12 % mounted over the mesh lid, so that the UV index on the basking spot is about 3-4 and the animal can retreat into shade. Replace the UVB tube according to the manufacturer's instructions, often after 6-12 months.

Keep the light on for 12 hours a day in summer and 10 hours in winter, controlled by a timer. At night it must be dark.

FEEDING

In the wild, *Varanus pilbarensis* eats insects, other invertebrates and small reptiles. The staple diet is therefore crickets, grasshoppers, dubia roaches and other insects of a suitable size, possibly supplemented with small lizards and frogs. Small pieces of adult mice can be given rarely as a supplement, but rodents should not be the staple: they easily cause obesity and fatty liver in a species that is built for insects.

Juveniles are fed every day, subadults every other day and adults two to four times a week. Give only what the animal eats up, and do not leave live insects in the enclosure. Dust the food with calcium and a multivitamin preparation with D3. Calcium at most feedings and vitamins once a week is a reasonable rhythm. Calcium is particularly important for females in the breeding season. The species has small jaws, so choose soft prey that is no larger than the distance between the animal's eyes.

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

BEHAVIOUR AND HANDLING

Varanus pilbarensis is shy and fast and not an animal to be handled a great deal. It can bite if grabbed, but the jaws and claws are small, and the injuries are seldom serious. The claws can, however, scratch the skin. Never take hold of the tail, and do not lift the animal from above, because a hand from above looks like a predator. Instead let it climb onto the hand from the side, and keep sessions short. New animals should be left in peace for several weeks before they are handled. Juveniles may puff themselves up with air when they become frightened.

All reptiles can carry salmonella. Wash your hands with soap after every contact with the animal, enclosure and furnishings, and keep them away from the kitchen.

Keeping pairs and groups is possible, but two males must not be kept together. Always watch for bites and fights, and be ready to separate the animals. Kept singly, the species has no problems.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

Males grow slightly larger than females, and the sex can in practice be hard to determine in young animals. In subadults the differences are not always clear. The differences in colour and pattern between animals are also large, so colour says nothing about the sex. Age and weight at sexual maturity are not documented for this particular species. Give the female plenty of time, and wait until she is fully grown before she is bred, because egg laying costs a lot of calcium.

MATING

A cool period of about two months at about 18 °C stimulates mating. Afterwards the temperature and day length are raised again, and the animals are put together. Pairs and small groups can be kept together, but never two males. Watch the male's eagerness, especially the first few days, and separate the animals if the female bites back or is injured. Mating can be violent, and the female may get bite marks on the neck.

EGG-LAYING AND CLUTCHES

A clutch consists of 2-9 eggs, and several clutches a year are possible. The female must have a lay box or a cave with damp sand deep enough that she can dig down and lay undisturbed. If she lacks a suitable place, she occasionally lays the eggs on the surface, and they dry out. Give her extra food and calcium throughout the season, and stop breeding if she loses weight.

INCUBATION

The eggs are carefully moved to an incubator without turning them and laid half buried in damp vermiculite or perlite. They are incubated at about 29 °C, and hatching takes place after 100-120 days. Eggs that collapse, turn yellow or go mouldy are usually dead. Leave them until you are sure. The humidity of the substrate must be high enough that the eggs do not dry out, but they must not lie in water.

Read more: Incubating eggs

REARING THE YOUNG

The hatchlings are small, fast and shy. Keep them in a small, dry plastic box with hides and a basking spot, and give them a damp hide. Give them small insects daily, dusted with calcium. They grow quickly and must be moved to a larger enclosure as they grow. Keep them singly or in small groups of the same size, and separate them if there are bites or injuries to toes and tail tip. It is a normal stress reaction when the hatchlings puff themselves up. Growth rate and time to adult size are not documented.

Health and common mistakes

Varanus pilbarensis is hardy when temperature and light are right, but most problems are caused by wrong heat, too little UVB and a poor diet. Typical mistakes are:

- A basking spot that is too cold, or a gradient that is too small. The animal eats poorly, becomes lethargic and has a weakened immune system.
- Lack of UVB or calcium and D3. This causes metabolic bone disease with soft jaws and bent limbs, especially in young animals and breeding females.
- Obesity and fatty liver if the animal is fed too many rodents or too much in total.
- Shed skin stuck on the toes and tail tip if there is no damp hide.
- Intestinal and skin parasites in wild-caught animals. Animals in the trade are captive bred, but a parasite examination of a faecal sample is a good idea if the animal loses weight.
- Burns from unshielded lamps.

A healthy animal has clear eyes, a plump tail and a quick, tight grip. Contact a vet experienced with reptiles if the animal loses weight, does not eat for several days or has problems shedding.

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.