herpy

MONITOR LIZARDS

Northern Blunt-spined Monitor

Varanus primordius

A small, diurnal ground monitor from the tropical northern part of the Northern Territory in Australia. *Varanus primordius* digs and basks in intense heat and lives on insects, small reptiles and their eggs. The species is rare in captivity, and there are few reliable care figures, so it is only for the experienced keeper.

Family: Varanidae Former name: *Varanus acanthurus primordius; Worrellisaurus primordius*

KEY FACTS

THE ANIMAL

Adult size	**30-46 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**By day**
Lifestyle	**Rock-dwelling, terrestrial and burrowing**
Habitat	**Savanna and rocky terrain**
Difficulty	**Experienced**

CARE

Min. enclosure	**120 × 60 × 60 cm** L × W × H for 1 adult
Temperature, day	**24-38 °C**
Basking spot	**55-65 °C**
Temperature, night	**22-26 °C**
Humidity	**20-50%**
UVB	**Essential** Ferguson zone 3
Diet	**Insects and vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**8-14 months**
Clutch size	**2-5 eggs**
Clutches per year	**1-5**
Incubation	**80-120 days** at 28.5-30.5 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus primordius is one of the smaller monitors in the subgenus *Odatria*, the Australian dwarf monitors. The species was described by Robert Mertens in 1942 as a subspecies of *V. acanthurus* and today stands as a separate species. The scientific name comes from the Latin word for "original" and refers to Mertens seeing the keel of scales on the tail as a primitive form of the more strongly keeled tail of *V. acanthurus*.

Adults reach 30-46 cm including the tail. The body reaches up to 19 cm from snout to vent, and the tail is 1.4-1.5 times as long as the body. The animals are sexually mature at a snout-vent length of 12-13 cm, corresponding to about 30 cm in total. The weight of adults is not documented.

The taxonomy has been changeable. The species has stood as a subspecies of *V. acanthurus* and has also been assigned to the genus name *Worrellisaurus*, but is today used as *Varanus primordius*. It can be confused with *V. acanthurus* and other small terrestrial monitors from northern Australia, so always demand a photograph and information on the parent animals, if you can find an animal at all.

The species is very rare in captivity. In 2016 it was kept in only one zoo in Europe and nowhere else in the world, and in the Japanese pet trade only one animal has been seen. Practical experience with the species is therefore sparse. Breeding figures are documented for the species, but the husbandry below otherwise rests on the few details about the species itself and on the closely related *V. acanthurus*, and borrowed figures are marked in the text.

V. primordius is small and does not have a large monitor's food costs, but it requires a home-built, dry and very warm terrarium with deep substrate, UVB light, live insects all year round and a keeper who is willing to work without a ready-made recipe. The lifespan is not documented. The closely related *V. acanthurus* can live over 15 years, and the figure in the fact box (10-15 years) is an estimate based on it.

Read more: Lighting and UVB

Distribution and habitat

The species is found only in Australia and only in the northern part of the Northern Territory, the so-called Top End. The records cluster in a strip from the area around Darwin eastwards to the areas near Arnhem Land, roughly between 12.4 and 15.9 degrees south and 130.5 and 135.9 degrees east. The range is small and covers only a fraction of what several other small Australian monitors do.

No introduced populations outside Australia are known.

> **Native range:** Australia.

HABITAT

The species lives in tropical Australia in the northern Northern Territory, where the climate is a monsoon climate with a distinct wet season and a long dry season. In summer, in the wet season, it is hot and very humid, and the rain comes in heavy downpours. In the dry season there is very little rainfall, the days are hot and sunny, and the nights are cooler.

The species is a small, shy and secretive ground monitor that lives in various types of open woodland and at times of the year among boulders on rocky outcrops. It seeks cover in crevices and in burrows under rocks. More detailed measurements of temperature and humidity in its hiding places are not documented.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

Varanus primordius is a small but very active ground-dwelling monitor. An adult needs at least 120 × 60 × 60 cm (length × width × height), preferably larger, and a home-built terrarium with front doors is often best. The height must leave room for a deep substrate, so that the animal can dig burrows.

The substrate must be at least 30 cm deep and consist of a mixture of unfertilised topsoil and sand (e.g. two parts topsoil to one part play sand), moistened enough that it clumps and can hold a burrow. Avoid calcium sand. In the wild the species seeks shelter in crevices and under stones, so lay flat stones, stacked slate slabs, cork bark and tubes on top as hides and a basking spot, and provide at least two hides, one at the warm and one at the cool end. The basking spot must be the highest point of the terrarium.

The young can start in a smaller but still deep faunarium, but are moved early to a large terrarium. The terrarium must have good ventilation, secure doors and shielded heat sources, so that the animal cannot burn itself on the bulb.

Read more: Heat and temperature Read more: Calcium, vitamins and supplements

TEMPERATURE

V. primordius is a sun-seeking animal and needs a lot of heat. Measure the surface temperature of the basking spot with an IR thermometer, not the air. The basking spot must have a surface temperature of 55-65 °C. The figures for this particular species are not documented, and the temperatures are a cautious estimate based on the closely related *V. acanthurus*, so start at the low end, and watch how the animal uses the gradient.

By day the air must be 29-38 °C at the warm end and 24-28 °C at the cool end. At night the heat is switched off, and the temperature falls to 22-26 °C. The terrarium must have a large temperature gradient, so that the animal can always get away from the heat. Use a halogen bulb or another bulb that gives both light and heat, on a thermostat, and check the temperature regularly, as the bulb loses heat output over time.

HUMIDITY AND WATER

The air must be dry, 20-50 % relative humidity. More important than the air is the humidity of the substrate. The substrate must be moist enough that it clumps and holds burrows, and the burrow climate must be humid, while the surface dries out. Moisten the substrate by pouring water in, not by spraying.

The animal must have a stable bowl of fresh water that is large enough to drink from. Change the water daily. Keep an eye on the air with a hygrometer, and check the moisture of the substrate at depth, so that you know when it needs moistening again.

LIGHTING AND UVB

Diurnal, sun-seeking monitors need strong UVB light. Use a powerful UVB tube or a metal halide lamp in a reflector fitting, mounted at a safe distance from the basking spot, and count on Ferguson zone 3. The UV index must be measured with a UV meter, not guessed. There must be a possibility of going out of the UVB light and into shade.

Keep the day length at about 12 hours or let it follow the seasons in northern Australia, where it varies only slightly, because the area lies close to the equator. Replace UVB tubes according to the manufacturer's instructions, even if they still shine.

FEEDING

In the wild *Varanus primordius* lives on insects, small reptiles and reptile eggs. In captivity the aim is a varied, low-fat diet: well-fed live insects such as crickets, grasshoppers and cockroaches, occasionally supplemented with small, thawed lizards. Fish, rodents and birds' eggs are energy-dense and must be used very sparingly, otherwise the animal quickly becomes too fat.

The young are fed as much as they can eat. Adults are given as much as they can eat in 5-10 minutes, and frequent small meals are better than large, infrequent ones. Give insects of about the same size as the animal's head. Dust the insects with calcium, and occasionally give a supplement with vitamins. Remove uneaten insects, or feed them, so that they do not gnaw at the monitor. Never catch insects in the wild, as they can carry parasites. Lizards should be frozen and not live or freshly killed, so that parasites are not transmitted.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

V. primordius is small, so bites and claws are seldom serious, but small monitors can still cause scratches that bleed. Always keep a high level of hygiene and wash hands after touching, because monitors can carry salmonella. Do not hold the tail.

Small monitors are curious and clever, but young animals flee by instinct from anything large. Give a new animal a couple of weeks in peace, and then accustom it to your presence by sitting quietly by the terrarium and letting your hand rest in it. Do not force an animal to be handled. Taming takes weeks to months. Keep the species singly.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

The sexes can be determined by looking at the base of the tail. In small terrestrial monitors the hemipenis bulges can be seen by illuminating the base of the tail from below in a dark room, and the method works well as long as the tail is less than 10 mm thick. In the species the hemipenes can partly evert when the animal is handled, so sexing can be easiest when the animal is cool. The animals become sexually mature at a snout-vent length of 12-13 cm, corresponding to 60-70 % of adult length, at an age of 8-14 months. Weight at sexual maturity is not documented.

MATING

Breeding in captivity is rare, and season, rest period and introduction of the animals are not documented. Keep the animals separate and put them together only under supervision, and be ready to separate them if they become restless.

EGG-LAYING AND CLUTCHES

The species is oviparous. A clutch numbers 2-5 eggs, and a female can lay up to five clutches in a year. The egg-laying site in the wild is not documented. Give a digging female a deep, moist and clumping substrate or a laying box with at least 20-30 cm of soil and sand, so that she can dig a nest. A female that lays several clutches in a row is quickly drained of calcium and reserves and must have plenty of food and calcium.

INCUBATION

The eggs are carefully lifted out, without being turned, and placed in moist substrate such as vermiculite in a tight box at a stable temperature. At 28.5-30.5 °C the eggs hatch after 80-120 days. Substrate and humidity in the incubator are not documented for this particular species. If in doubt, contact an experienced monitor keeper.

Read more: Incubating eggs

REARING THE YOUNG

The juveniles measure 4-5 cm from snout to vent at hatching and weigh 1-2 g. They grow quickly and can be sexually mature before they are a year old. The rearing itself has not been described in more detail for the species, but small monitors hatch as independent, carnivorous animals. Keep the juveniles singly in small, deep terrariums with hiding places and a basking spot, give them as many small, calcium-dusted insects as they will eat, and weigh them regularly. Watch for biting and stress.

Health and common mistakes

Diseases in the species are not documented. Common problems in small monitors are:

- Temperatures that are too low. This causes poor digestion, a weakened immune system, obesity and gout.
- Too little UVB and calcium. This causes brittle bones.
- A diet that is too fatty, especially when rodents and eggs become a regular part of the menu.
- A substrate that is too dry and too little water, which cause problems with shedding and the kidneys.
- Internal and external parasites, especially in animals caught in the wild. Have a sample examined by the vet.

In captive-bred animals of the species, malformations of the hyoid skeleton have been seen, where elongated bones show as spikes in the throat. The cause is not known.

Australia does not permit commercial export of live animals. The recorded international trade from 2001 to 2017 was predominantly captive-bred animals and a few wild-caught for scientific purposes, so an animal offered should be captive-bred and have papers that document it.

Seek a vet with reptile experience if the animal loses weight, will not eat, has swollen joints or sits limp and passive.

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.