herpy

MONITOR LIZARDS

Mitchell's water monitor

Varanus mitchelli

Varanus mitchelli is a slender, semi-aquatic monitor from northern Australia, typically 60-70 cm and at most about 1 m long with a laterally compressed swimming tail. The species is shy, almost unknown in the hobby and assessed as critically endangered, because the poison of the introduced toad *Rhinella marina* has decimated populations. There is little care experience, and it belongs with the very experienced.

Family: Varanidae Published 16 November 2026

KEY FACTS

THE ANIMAL

Adult size	**60-96 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**By day**
Lifestyle	**Arboreal and semi-aquatic**
Habitat	**Savanna and wetland**
Difficulty	**Expert**

CARE

Min. enclosure	**200 × 100 × 150 cm** L × W × H for 1 adult
Temperature, day	**28-32 °C**
Basking spot	**40-50 °C**
Temperature, night	**22-25 °C**
Humidity	**50-80%**
Water	**Water section** depth 20-30 cm
UVB	**Recommended** Ferguson zone 3
Diet	**Insects and vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**7-27 eggs**
Clutches per year	**2-6**
Incubation	**90-289 days** at 26-31 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus mitchelli is a small to medium-sized monitor from the subgenus *Odatria*. It is smooth and slender, and the tail is 1.7-2.1 times as long as the body and strongly compressed from the sides on everything but the base. The compressed tail goes with a life in the water. The species is told apart from *V. mertensi* by smaller size, a tail that is not quite as strongly compressed, fewer scale rows at midbody and a darker underside with a heavily cross-banded throat and a dark underside of the tail. In *V. mertensi* both the throat and the underside of the tail are pale.

The species was described in 1958 by Robert Mertens from an animal collected at Oenpelli in the Northern Territory. It is shy and cryptic in its behaviour and is rarely seen in the wild. It is both semi-aquatic and semi-arboreal: it swims, hunts by the water and climbs in trees and bushes along the bank.

The figures given for size range from 69 cm to 96 cm in total length, and a snout-vent length of up to 35 cm is given. Most adults are under 1 m. The weight of adults is not documented. Newly hatched juveniles are 14-18 cm in total, of which the body is 5-7 cm, and weigh 2.6-4.5 g.

The greatest threat is the toad *Rhinella marina*, which has been introduced to Australia. When the monitors eat the poisonous toads, they die, and after the toads' arrival sharp population declines and local extinctions have been seen. The species is now assessed as critically endangered on the IUCN Red List.

Distribution and habitat

Varanus mitchelli is found only in northern Australia: in northern Western Australia and in the Northern Territory, and it reaches just into north-western Queensland. The type locality lies about 8 km west of Oenpelli in Arnhem Land in the Northern Territory. The species does not occur outside Australia.

The distribution is not precisely delimited, and the species is so secretive that records are sparse. The map's frame is an estimate, and the records on the map give the best picture of where it has been recorded.

> **Native range:** Australia.

HABITAT

Varanus mitchelli is regarded as a species that belongs by fresh water: streams, banks and wetlands in the tropical north, where there is a distinct wet season and dry season. It is semi-aquatic and semi-arboreal and seeks cover in bankside vegetation and trees by the water. It sleeps under loose bark, in rock crevices, in hollow trees and on branches over the water.

More recent observations from Darwin show that the species also lives in brackish and salty surroundings, including in mangrove and other coastal habitats, so its niche is broader than was previously thought. Activity varies with the season, and the species is very hard to spot. Precise figures for temperature and humidity in the animal's habitats are not documented. The climate in the tropical north is warm all year, and the wet season and dry season govern when there is water.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

There is almost no documented experience with keeping *Varanus mitchelli*, and the following is therefore cautiously borrowed from a related species, the dry-country *V. acanthurus*, and from the one documented breeding of the species. The figures here are an estimate, not a definitive answer.

An adult monitor from the subgenus *Odatria* of that size needs a large, tall terrarium with a deep substrate. A common rule of thumb for climbing monitors is at least 5 × 2 × 4 times the snout-vent length (length × width × height), which for an animal of 35 cm gives about 175 × 70 × 140 cm. For the dry-country and smaller *V. acanthurus* at least 150 × 75 × 120 cm with 31-46 cm of substrate is recommended. *V. mitchelli* also needs a permanent water section, so a suitable minimum for one adult is 200 × 100 × 150 cm with at least a third of the floor as water. Larger is always better. It is a home-built terrarium or a small room and not something you buy ready-made. Juveniles can be put in the same terrarium if they have dense cover and food is easy to find, otherwise they start in a smaller box for a few months.

Set up with a permanent, secure water section with a gradual entry or rocks, so that the animal easily gets out, and the water must be able to be changed and kept clean. Provide slanted branches, roots and cork for climbing and basking over and by the water, many hiding places (cork tubes, hollow roots, rocks) and a moist substrate of soil and coconut fibre where the animal can dig. Keep the air moving with mesh sections. All doors must have secure closing mechanisms, because monitors are strong and persistent. All heat lamps and heat sources must be shielded, so that the animal cannot burn itself on them.

TEMPERATURE

The temperature conditions are not documented for the species, and the figures given here are an estimate based on the tropical northern Australian climate and relatives in the same subgenus. Monitors of this type are sun lovers that warm up on basking spots and seek shade and water when it gets too hot. It is therefore more important to provide a large temperature gradient than to hit one figure.

Set the background temperature during the day to about 28-32 °C, and let a basking spot reach 40-50 °C measured as surface temperature with an IR thermometer. Dry-country species such as *V. acanthurus* get far hotter basking spots of 70-78 °C, but that is a desert species and no model for a species that lives by water. At night the temperature should fall to 22-25 °C, and the heat is switched off. Use several halogen bulbs or other heat sources side by side, so that the whole body is warmed evenly, and control them with a thermostat. The water temperature is not documented; keep it moderate and free of cold draughts.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity is not documented, but the species belongs by water and in the tropical north, so a moderate to high humidity of about 50-80 % is a reasonable estimate. Let it vary: slightly higher at night and by the water, drier at the basking spot. Dry-country species are kept at 20-50 %, and that is too low here.

The water section and a moist substrate keep humidity up. Air movement must be good, so that the substrate does not become sour or mouldy, and the skin and claws must not keep standing in a wet substrate. A moist hide box for shedding helps.

WATER AND WATER QUALITY

The species is semi-aquatic, so a permanent water section is part of the terrarium and not merely a drinking bowl. Make the water large enough for the animal to swim, and deep enough for it to dive, but with a gradual entry or rocks, so that it can always get out. A good starting point is 20-30 cm at the deepest spot; the exact depth is not documented.

Monitors often defecate in the water, so it must be changed often and have powerful filtration or a drain option. Keep the water clean, so that the skin and mucous membranes are not attacked by bacteria, and wash your hands after every contact with the water.

LIGHTING AND UVB

The species is diurnal and basks, so UVB is strongly recommended, but no figures are documented for it specifically. For a sun-loving species such as *V. acanthurus* a strong UVB light in Ferguson zone 3 is used, and the same is a reasonable starting point here. Mount a T5 tube (10-12 %) or a powerful combination lamp over the basking spot, so that the animal can get close and go out into shade.

UVB tubes must be replaced according to the manufacturer's instructions, typically after 12 months, and the UV index should be checked with a meter. Keep the light on about 12 hours a day, slightly longer in summer and slightly shorter in winter, and control it with a timer. The basking spot should be the brightest place in the terrarium, because monitors associate light with warmth.

Read more: Lighting and UVB

FEEDING

In the wild the species eats mainly grasshoppers, spiders and fish, but also other invertebrates, amphibians, reptiles and their eggs, small mammals and birds. Insects are therefore a good foundation, supplemented with small fish. Give well-fed crickets, locusts, dubia roaches, discoid roaches and the like, preferably the size of the animal's head or slightly smaller. Small monitors should be fed daily, and adults a few times a week in small meals, so that they do not become too fat. Hang the food up high, or give small, whole fish in the water, so that the animal gets to hunt.

Dust the insects with calcium and a multivitamin, and use vitamin D3 cautiously, as long as the animal has UVB. Feeder insects must be bred and have been given good food beforehand. Rodents are only a small part of the diet in the wild and easily cause obesity and liver damage, so they should at most be a rare treat. Thawed small fish or eggs can be used for variety. Quantity and feeding interval are not documented for the species, and the plan here is borrowed from *V. acanthurus*, so follow the animal's weight and shape.

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

BEHAVIOUR AND HANDLING

Varanus mitchelli is a shy and cautious species that hides a lot and is not an animal you pick up every day. Bites are not documented as a serious danger for such a small monitor, but the claws are sharp and can cause scratches, and a bite can cause an infection. The animal is fast and can escape if let loose, but it does not cause the serious injuries that large monitors can.

Taming must go slowly. Sit quietly by the terrarium, let the animal get used to your hand and your scent, and offer food from tweezers. Do not grab the animal from above, because a hand from above resembles a bird of prey. Do not hold it firmly by force; short moments in the hand are enough. How tame the animal becomes is not documented.

Reptiles can carry salmonella. Always wash your hands after touching the animal, the water, the substrate and the tools, keep children and pregnant women away from cleaning, and do not use kitchen utensils for the terrarium. The species is kept singly, because it is not documented how two animals behave together, and males should not be kept together. Stress shows as fleeing, an open mouth, hissing, avoiding food and too much time in hiding.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

Sex differences, sexing and age at sexual maturity are not documented for the species. In related *Odatria* species the males are typically slightly larger than the females, and a vet with reptile experience can sex the animal. In *V. mitchelli* it is not documented.

The animals are sexually mature at a snout-vent length of about 22 cm (sex not stated), but age and weight at sexual maturity are not documented. Only breed adults that are in good condition, and do not let young females lay before they are fully grown.

MATING

Mating and breeding season are not documented in detail. The species has been bred in a mixed water exhibit with several species, so it can breed in captivity, but only a few animals are documented. It is unknown whether the species needs a cooler period, and therefore you should not introduce a winter rest without reason.

Introduce the male to the female's terrarium and watch them closely. If the male is too eager, he must be removed immediately. Give the female plenty of food and calcium throughout the season. After egg-laying the female should have extra food.

EGG-LAYING AND CLUTCHES

In the wild clutches of 7-12 eggs have been found. In captivity a single female laid 11 clutches of 13-27 eggs (on average 20) from 2002 to 2005. She laid both double and triple clutches, and there were 41-60 days (on average 48 days) between layings. With 7-9 weeks between clutches, up to six clutches in a season are given. The eggs weighed 3.0-6.1 g (on average 4.8 g) and were 23-32 mm long and 11-19 mm wide.

Place a laying box with moist soil or vermiculite in the terrarium, so that the female can bury the eggs. If there is no suitable place, monitors often lay in unfortunate places or hold on to the eggs, which can cause egg binding. Contact a vet with reptile experience if the female digs without laying, seems ill or sits heavily for several days.

Read more: Common diseases and signs of illness

INCUBATION

The eggs are carefully moved to an incubator without being turned. Place them in semi-moist vermiculite or perlite in a closed box with small air holes, and keep a stable temperature. In captivity eggs have been incubated at 26-31 °C, and the juveniles hatched after 157-289 days. In the wild 90-150 days is given. The long and highly variable incubation time means you must be patient.

Which temperature gives the best results within the range is not documented. Eggs that collapse or become mouldy should not be removed until you are sure that they are dead.

Read more: Incubating eggs

REARING THE YOUNG

Newly hatched juveniles weigh 2.6-4.5 g and are 14-18 cm long in total with a snout-vent length of 5-7 cm. The body grows to about 10 cm in 7-8 weeks, and after that it goes more slowly: about 5 cm more over the next two years. They are so small that they need small feeder insects such as newly hatched crickets, springtails and small mealworms, dusted with calcium. Feed them daily and give water in a shallow dish where they cannot drown. Keep them separately, because the juveniles show dominance behaviour towards each other.

For juveniles a smaller terrarium with a shallow water section and plenty of hiding places is best. Weigh them every two weeks, and move them to a larger terrarium as they grow.

Health and common mistakes

There are no documented diseases or veterinary experiences for *Varanus mitchelli* specifically, so the following applies to monitors in general and is borrowed from related species:

- Too low a temperature or a missing basking spot causes poor digestion, loss of appetite and a weakened immune system.
- Too little UVB and calcium cause brittle bones with soft jaws, bent limbs and tremors. Dust the food and use a proper UVB light.
- Obesity and liver damage if the food contains too much fat, especially if rodents are given.
- Skin problems and fungi in a substrate that is constantly wet, or in dirty water.
- Parasites and stress in wild-caught animals, which often have intestinal worms and other parasites. Have a faecal sample examined by a vet, and keep new animals in quarantine.
- Egg binding in females without a suitable egg-laying site.

A healthy animal has clear eyes, a round tail and an even, smooth skin and is active. Seek a vet with reptile experience if the animal loses weight, does not eat for several weeks or looks listless. The species is very rare in private collections, so find a vet in good time.

Animals in the trade are rare. No actual breeding line in the hobby is documented. The species has been seen in illegal trade. Where an animal is wild-caught, you must expect parasites, stress and poor weight.

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.