herpy

MONITOR LIZARDS

Bluetail monitor

Varanus doreanus

Varanus doreanus is a large, powerful rainforest monitor from New Guinea and the northernmost part of Australia, with a grey-blue body and a pale blue tail with black bands. Experience with its care and breeding is very limited, and several of the figures are borrowed from close relatives.

Family: Varanidae

KEY FACTS

THE ANIMAL

Adult size	**100-135 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**By day**
Lifestyle	**Arboreal and terrestrial**
Habitat	**Rainforest**
Difficulty	**Experienced**

CARE

Min. enclosure	**300 × 150 × 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**
Water temperature	**26-28 °C**
UVB	**Recommended** Ferguson zone 3
Diet	**Insects and vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**4-9 eggs**
Incubation	**164-166 days** at 29 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus doreanus is a powerful monitor with a large, bulging head and strong limbs. The ground colour is grey-brown to blue-grey, and on the neck, back and legs there are transverse rows of black spots with pale centres. The throat is whitish with dark marbling, the tongue is pale, and the tail is laterally compressed with a distinct double keel. The tail is light blue with black cross-bands, and it is this that gave the species its English name. In adults the blue fades, and young animals have a more contrasting pattern than old ones.

The species was described in 1874 by A. B. Meyer from animals from the north-western part of New Guinea. For about 120 years it was regarded as part of *Varanus indicus*, and the animals went by names such as *V. indicus kalabeck*. Only in 1994 was it reinstated as a separate species. It belongs to the group around *V. indicus* in the subgenus *Euprepiosaurus*, but together with *Varanus finschi*, *Varanus semotus* and *Varanus yuwonoi* forms its own species group. The type specimen was destroyed during World War 2, and a new one was designated in 1994. *V. doreanus* resembles *V. indicus* and *Varanus jobiensis* so closely that animals in the trade and in museums have long been confused. A pale tongue, marbled throat and blue tail are the most useful distinguishing features.

The total length is normally up to about 135 cm, but some animals grow larger. Males can reach 154 cm (snout-vent length 63 cm and tail 91 cm), and at a snout-vent length of 84 cm the total length exceeds 174 cm. Size at sexual maturity and adult weight are not known.

The temperament has not been described. The species is one of the rarest monitors in zoos (fewer than ten animals worldwide), but is seen regularly in the trade. Expect a strong, fast and defensive animal until proven otherwise.

An adult requires a room of its own or a large home-built enclosure, daily attention and a food budget for whole prey such as mice, rats and fish. Lifespan is not known, but as in related monitors it is a commitment of a decade or more.

Distribution and habitat

Varanus doreanus is found throughout New Guinea, both in the Indonesian part (Papua) and in Papua New Guinea, and on some of the surrounding islands. The best-known localities are in the north-western part of New Guinea, where the type specimen was collected, and in Milne Bay in the south-east. In the 1990s the first signs emerged that the species also lives on the Australian mainland, and this has since been confirmed: it is found on the northernmost tip of the Cape York Peninsula and in the mountains further south, including Iron Range, McIlwraith Range and Kawadji-Ngaachi Range.

Its occurrence in the Bismarck Archipelago, including New Britain, is uncertain, because the species has been confused with related species there. The species has also been reported from islands such as Biak, Salawati and Waigeo. Finds come from the lowlands and up to at least about 450 m altitude.

> **Native range:** Indonesia, Papua New Guinea and Australia.

HABITAT

The species is tied to rainforest. On Cape York it stays deep inside semi-deciduous rainforest and only comes out into open eucalypt forest within 50 m of the rainforest. In New Guinea it lives in rainforest, often at dry riverbeds and along watercourses. It uses both the forest floor and the trees, climbs at least 10 m up the trunks and probably raids birds' nests and eggs.

The climate is warm all year. In the northern part of Cape York the daytime temperature is typically 27-33 °C, and the average rainfall is about 1,700 mm a year, mostly in the monsoon from December to April. The rest of the year is dry.

In the wild the species eats reptiles, eggs (especially turtle eggs) and insects, including beetles, and probably also nestlings and birds' eggs. *Varanus indicus* lives in the same area, but on Cape York it has only been seen in mangroves and coastal forest, not inside the rainforest, where *Varanus doreanus* lives. Males fight rearing up on their hind legs, and young animals are taken by the snake *Aspidites melanocephalus*.

Care

THE ENCLOSURE

Varanus doreanus needs a large enclosure with a water pool in which it can swim and dive. Dimensions, temperatures, feeding and breeding figures are based on the species' size and way of life and on the related *Varanus melinus* in the same species group.

An adult of 100-135 cm needs a room or a large home-built enclosure of at least 300 × 150 × 150 cm (length × width × height). A pair needs even more space and an enclosure that can be divided in two. Height is important, because the species climbs, and the floor area must give room to run.

Young can start in a glass enclosure of about 100 × 50 × 60 cm, but they grow quickly and need a larger enclosure within the first or second year. Plan the large enclosure from the start, and do not buy a small one.

Furnish with deep, moisture-retaining substrate such as coarse bark chips, soil and leaf litter to at least 20-30 cm, so the animal can dig and sleep buried. Provide many hiding places at several heights, cork tubes and thick branches for climbing and a large, stable basking spot. A water container in which the animal can swim and dive is necessary, from about 70 litres up to a pool 120 cm in diameter and 80 cm deep. Make a laying box with damp soil and sphagnum.

All heat sources must be shielded, so the animal cannot burn itself, and the doors must be lockable. Monitors can open simple latches and lift loose lids. Ventilation must be good, but it must be possible to maintain the humidity.

Read more: Heat and temperature Read more: Humidity, misting and ventilation

TEMPERATURE

By day the enclosure for *Varanus doreanus* should be 26-33 °C, with a basking spot of 40-45 °C. This is the surface temperature at the basking spot measured with an IR thermometer, not the air temperature. There must be a large gradient, so the animal can choose between a warm and a cool end and withdraw from the heat. At night the temperature may fall slightly, to 24-26 °C. The water should be kept at 26-28 °C. For heating, use halogen or HQI lamps, in all cases shielded. Ceramic heaters give no light, and monitors do not always notice how hot they are.

An animal that stays on the basking spot for several hours and will not eat is too cold. An animal with its mouth open that seeks the water is too hot.

HUMIDITY AND WATER

The species lives in rainforest with about 1,700 mm of rain a year on Cape York and more in parts of New Guinea. Keep the humidity at 60-80 %. Spray the enclosure daily, and keep the floor damp, but not wet. A dry, dusty floor makes shedding difficult, and a constantly wet floor causes fungus and skin problems.

The water pool provides extra moisture, and the animal drinks from it. Change the water often, because monitors often empty their bowels in the water.

LIGHTING AND UVB

The species is diurnal and uses basking spots, so UVB is recommended, and Ferguson zone 3 is suitable. Use a full-length T5 tube or a mercury vapour or metal halide lamp over the basking spot at a distance that gives a UV index of about 3-5 at the animal's back, and leave a large part of the enclosure in shade. Replace the tubes every 12 months.

Keep the light on for 12 hours a day and dark at night. A full-spectrum light with a high Ra over the plants and the basking spot makes the enclosure brighter and the animal more active.

Read more: Lighting and UVB

FEEDING

In the wild *Varanus doreanus* eats reptiles, eggs (especially turtle eggs) and insects such as beetles, and probably also nestling birds. In the enclosure large insects, mice, fish and crabs are suitable.

- Adults: once a week a whole mouse, a small rat, a chick or fish, and also grasshoppers, crickets or other large insects, with a few days between meals. Crustaceans such as crabs can be given for variety.
- Young: grasshoppers and crickets every other day, and baby mice now and then. Give the food with tweezers, so everyone gets the same amount.
- Whole prey normally cover the need for calcium. For insects use calcium with D3, and now and then a vitamin product.

Obesity is a risk, especially if rodents become the main food. Keep the animal lean, and weigh it regularly. A varied diet with many insects and fish is better than mice every week.

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

BEHAVIOUR AND HANDLING

Adults are powerful and fast and can cause serious injuries. A bite from a monitor of a metre or more can go deep, the claws are sharp and can tear the skin, and the tail is used as a whip. The temperament of tame animals of *Varanus doreanus* has not been described, so treat an adult with great respect, and use gloves or a towel until you know the animal.

Give new animals two to four weeks in peace before you start touching them. Move calmly, speak softly, and let the animal come to you. Feeding with tweezers and later from the hand can build trust. Keep the sessions short. A stressed animal hisses, puffs itself up, lashes with its tail and opens its mouth wide; stop then, and let the animal calm down.

Monitors can carry salmonella. Wash your hands thoroughly after touching animals, enclosure and water, and do not let small children or weakened persons touch the animal.

Keep the animals singly. Group keeping can end in fatal bite wounds. A pair can be tried if the enclosure is very large and can be divided with a partition, but the males fight over females and territories.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

Age and weight at sexual maturity are not known for *Varanus doreanus*. In *Varanus melinus* it can take about seven years before a pair produces its first clutch. In *V. melinus* the male grows clearly larger than the female, and the largest known *V. doreanus* are males with a powerful head. Sex is hard to see, and probing is not reliable in monitors because females have similar pockets at the base of the tail. Reliable sexing requires endoscopy, ultrasound or X-ray by a vet with reptile experience.

MATING

Mating in *Varanus doreanus* is probably not tied to the season, but is triggered when the male is put in with the female. Separate the pair again after about two weeks.

Use a very large enclosure with a partition, where the animals can be kept apart and only put together under supervision. Animals that are put together can die of bite wounds. Pregnancy is more easily seen from a voracious appetite than from the body. Give pregnant females plenty of food and calcium.

EGG-LAYING AND CLUTCHES

A clutch in *Varanus doreanus* is probably 4-9 eggs, and the female can lay clutches about three months apart.

Give the female a laying box of 80 × 50 × 25 cm or larger, half filled with damp peat, leaf litter and sphagnum, so she has somewhere to dig. Without a suitable box she can retain the eggs, which is life-threatening. A female that digs restlessly, refuses food and becomes thick is probably pregnant. Watch appetite and weight.

INCUBATION

In a mixture of vermiculite and sand (2:1) the eggs hatch after 164-166 days at 29 °C.

Place the eggs on top of the medium without turning them, and cover the egg box with plastic film, so the air is kept saturated with moisture. Remove the film at least once a week to air it out. Eggs without development can be removed after a few days, but some eggs may contain dead embryos. Incubation takes more than five months, so be patient, and do not open the eggs too early.

Read more: Incubating eggs

REARING THE YOUNG

Newly hatched young of *Varanus doreanus* probably weigh about 33-35 g and measure 27-28 cm in total. Keep them in glass enclosures with branches, cork tubes, plants and drinking bowls, and spray daily.

Offer crickets after four to five days; the young often take them only after the tenth day. A few weeks later baby mice are added, and after that the diet consists of crickets and grasshoppers every other day and baby mice now and then. The young are voracious, and you must take care that they do not become overfed, so feed each separately with tweezers. Some grow faster than others. Separate them if they become aggressive, and expect them to outgrow the young enclosure within a short time.

Health and common mistakes

Diseases of *Varanus doreanus* have not been described specifically. The following applies to monitors in captivity in general:

- Parasites and stress in wild-caught or farmed animals. Animals in the trade are probably mostly wild-caught in New Guinea, and captive breeding is not documented. Keep a new animal in quarantine for at least six weeks, and have a vet examine faecal samples for intestinal worms and other parasites.
- Too little heat or UVB causes a weakened immune system, poor appetite and bone disease. Measure the surface temperature of the basking spot with an IR thermometer.
- Obesity and fatty liver, if the animal is given too many rodents and too little exercise.
- Shedding problems in air that is too dry: remnants on toes and tail. Provide a damp hide box and baths.
- Pneumonia and mouth rot from cold and a substrate that is too wet, with mucus, wheezing and breathing through the mouth.
- Bite injuries between animals if they are kept together, and burns from unshielded lamps.
- Salmonella can be transmitted to humans, so wash your hands after touching the animal, enclosure and water.

Contact a vet with experience in reptiles if the animal loses weight, does not eat for a couple of weeks, or has swellings, mucus or weakened limbs.

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.