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MONITOR LIZARDS

Large-scaled water monitor

Varanus nuchalis

Varanus nuchalis is a large, powerfully built water monitor from the central Visayan islands of the Philippines, formerly regarded as a subspecies of *Varanus salvator*. It is recognised by its greatly enlarged nuchal scales and is either marked with pale spots or almost black. Almost nothing is known about the care of this particular species, so much of the advice is borrowed from related water monitors.

Family: Varanidae Former name: *Varanus salvator nuchalis; Hydrosaurus nuchalis*

KEY FACTS

THE ANIMAL

Adult size	**100-150 cm** total length incl. tail
Lifespan	**15-20 years**
Active	**By day**
Lifestyle	**Arboreal, terrestrial and semi-aquatic**
Habitat	**Rainforest and wetland**
Difficulty	**Expert**

CARE

Min. enclosure	**300 × 150 × 150 cm** L × W × H for 1 adult
Temperature, day	**27-32 °C**
Basking spot	**52-60 °C**
Temperature, night	**21-24 °C**
Humidity	**60-70%**
Water	**Water section** depth 35-50 cm
UVB	**Essential** Ferguson zone 3
Diet	**Insects, vertebrates and worms/snails**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**5-10 eggs**
Clutches per year	**1-3**
Incubation	**187-220 days** at 27-31.5 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus nuchalis is a large, heavily built monitor in the *Varanus salvator* complex. It is best recognised by the strongly enlarged scales on the nape, by a flesh-coloured tongue that is dark only towards the tips, and by pale markings on the head. The back often carries a pair of large, oval spots or eyespots on each side of the spine, and some animals have a pale stripe down the neck and back.

Colour varies greatly, from animals with large, clear spots to almost entirely black ones, and the types do not follow the islands. The species was described in 1872 and was regarded as a subspecies of *V. salvator* in much of the 1900s. Since 2007 it has again been regarded as a separate species. It is not divided into subspecies.

The size is not documented for the species. A range of 100-150 cm total length is used as a framework, borrowed from the closely related *Varanus cumingi*; related water monitors grow far larger, and this species may reach more. Snout-vent length and weight are not known, and the lifespan of 15-20 years is an estimate based on related water monitors.

The dark animals are easily confused with the plant-eating *Varanus mabitang* on Panay, even by biologists. *V. nuchalis* is told apart from other water monitors by the nuchal scales and by scale counts, so have the species carefully identified when buying.

Treat it as a large, diurnal and powerful monitor for experienced keepers. An adult needs an enclosure the size of a small room, a large water basin that must be changed often, and whole prey every week for many years. The care described below is based on close relatives in the *V. salvator* group.

Distribution and habitat

Varanus nuchalis is endemic to the Philippines. It lives on the islands of Negros, Panay, Cebu, Masbate and Ticao in the central part of the country. The type locality was given broadly as the Philippines and has since been narrowed to Negros.

The other water monitors in the country each have their own range: *Varanus cumingi* on Mindanao, *Varanus marmoratus* on Luzon and *Varanus palawanensis* on Palawan. Water monitors outside the five islands belong to other species.

> **Native range:** Philippines.

HABITAT

Varanus nuchalis lives in many kinds of habitat, above all mangrove and lowland forest, including undisturbed forest, but also cultivated land. It is tied to water, which water monitors use both for hunting and for escape.

The climate in the Visayas is tropical, warm and humid, with a wet season and a dry season. Temperature and humidity in the species' habitats are not documented, so the figures for the enclosure are borrowed from related water monitors from similar tropical regions. The diet has not been studied for the species itself; related water monitors eat many kinds of animals and carrion.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

Little is known about the care of *Varanus nuchalis*. The figures are borrowed from close relatives in the same group, especially *Varanus cumingi* and *Varanus salvator*.

An adult *Varanus nuchalis* needs a custom-built enclosure or a whole room of at least 300 × 150 × 150 cm (length × width × height), and larger is better. The size is an estimate based on the rule of thumb for monitors: at least 5 × 2 × 2 times the snout-vent length (here about 60 cm, as in *V. cumingi*), with extra height for species that climb. On top of the floor area comes a water section that the animal can get fully into. A pair intended for breeding needs a far larger setup.

Juveniles can start in an enclosure of about 120 × 60 × 60 cm, but water monitors grow quickly and outgrow it within a few months. Plan for adult size from the start.

Fit it with a large, sturdy water basin in which the animal can lie submerged (see the section on water). For the land section, use deep substrate to dig in, for example a damp mixture of soil and coir or bark chips, plus plenty of hides and stable branches at several levels that can bear the animal's weight. Water monitors like to climb. Live plants seldom survive.

Doors must be solid and secured so that the animal cannot lift or push them open. All heat sources must be guarded, because monitors easily burn themselves on lamps they can reach.

TEMPERATURE

Varanus nuchalis needs a background temperature of 27-32 °C by day. The basking spot should have a surface temperature of 52-60 °C, measured with an IR thermometer on the basking spot itself, not in the air. At night the temperature may fall to 21-24 °C. There must be a wide temperature gradient so that the animal can choose between warm and cool.

Use several light and heat sources side by side, so that the basking spot is wide enough to warm the whole body at once. Otherwise the animal may burn itself on the spot nearest the lamp. A monitor that basks for a while, goes exploring and returns is doing well. If it lies under the lamp almost all the time, it is too cold; if it never basks, it is too hot. Control all heating with a thermostat.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should be 60-70 %. A large water basin keeps humidity up on its own, and a damp, deep substrate gives the animal somewhere to retreat to.

Ventilation must be good so that the air does not become stagnant, and the floor should be able to dry out partly. Constantly wet conditions and stagnant, humid air cause skin infections and fungus.

WATER AND WATER QUALITY

The species is tied to water, so a large water section is not optional. It must be big enough for the whole animal to lie submerged and swim, and the depth should be 35-50 cm for an adult. The water section needs a solid edge or ramp so that the animal can easily climb out again.

Monitors often defecate in the water, so it must be changed daily unless there is a powerful filter. Make sure the filter intake is not so strong that the animal can be sucked against it and drown. The water must not be cold, but should be at roughly the same temperature as the background of the enclosure.

LIGHTING AND UVB

The species is diurnal and basks, so strong light and UVB are essential. It belongs to Ferguson zone 3, like other diurnal monitors that bask a great deal. Use powerful UVB lamps or mercury vapour lamps suited to a large, open installation, with no glass between lamp and animal.

Keep the lights on for about 12 hours a day, preferably controlled by a timer. Replace the lamps according to the manufacturer's instructions, because UVB output declines long before the lamp stops giving light.

Read more: Lighting and UVB

FEEDING

The diet of *Varanus nuchalis* in the wild has not been studied. Related water monitors eat many kinds of animals and carrion, and the diet below is borrowed from them.

Juveniles are strongly insectivorous and live mostly on feeder insects such as crickets and cockroaches, ideally supplemented with small fish. They are fed every day or every other day in the first year. Gradually move on to whole prey of a suitable size: fish, chicks, eggs, large insects and rodents. One-year-olds are fed three to four times a week with whole prey, adults over two years two to three times a week, adjusted to the animal's weight and condition.

Water monitors rarely refuse food and easily become overweight. Rodents as the only food cause obesity and fatty organs, so they should be only part of a varied diet. Feeder insects should be dusted with calcium and vitamin D3, while whole prey already contains most of what the animal needs.

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

BEHAVIOUR AND HANDLING

Varanus nuchalis must be handled like other large water monitors. Even a medium-sized monitor has sharp teeth, strong claws and a powerful tail that it can lash with. A bite can cause deep wounds, and the claws can tear the skin. Large water monitors can cause serious injuries if they become frightened or stressed.

Juveniles are often nervous and quick to defend themselves. Taming takes time and short, calm and predictable sessions with the same approach every time. Approach from below and not from above, because a hand coming from above is seen as a predator. It often helps to begin in shallow water, where water monitors feel more secure. Never use handling as punishment, and do not disturb the animal while it is feeding.

Monitors carry salmonella, so wash your hands thoroughly after any contact with the animal, the water and the equipment. Keep the animal out of the kitchen and away from small children. The species is best kept singly. Keep males apart from females outside the mating period, so that the females are not stressed.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

Sex is difficult to determine in monitors. In *Varanus salvator*, adult males are larger than the females with a heavier and broader snout and have distinct hemipenal bulges, while the females have a slimmer and more pointed snout. Reliable sexing requires ultrasound, X-ray or endoscopy by a vet with reptile experience. Age and size at sexual maturity are not documented for *Varanus nuchalis*; for related water monitors the estimate is about two years.

MATING

Captive breeding of *Varanus nuchalis* is not documented. In *Varanus cumingi*, mating may take place in both October and April, and no cool period or other seasonal control is known. The animals must be put together under close supervision, because the male can be rough with the female, and it must always be possible to separate them quickly. A pair intended for breeding needs a larger setup than a single animal.

Read more: Buying animals: captive-bred, wild-caught and transport

EGG-LAYING AND CLUTCHES

Varanus nuchalis is egg-laying. Clutch size is not documented; in *Varanus cumingi*, a clutch is 5-10 eggs, and a female may lay up to three clutches a year. A nesting box or a deep layer of damp substrate is necessary: the female digs a hole, lays the eggs and covers them, often after several trial holes, and the same female returns to the same spot. Without a suitable nesting site she may retain the eggs, which is life-threatening.

INCUBATION

The eggs are removed and placed in damp substrate, such as perlite or vermiculite, in an incubator. The figures are borrowed from *Varanus cumingi*: at 29-31.5 °C the eggs hatch after 187-192 days, at lower temperatures, down to 27 °C, after up to 220 days. Move the eggs as little as possible, and do not turn them.

Read more: Incubating eggs

REARING THE YOUNG

The size of newly hatched young of *Varanus nuchalis* is not documented. In *Varanus cumingi*, the young measure about 30 cm in total length. Keep the young singly in an enclosure with a damp floor, hides and a water bowl, and offer small insects from the first days. The young grow very quickly, so plan from the start for a home that can be used when they are adult.

Health and common mistakes

The usual problems of water monitors in captivity are expected to apply to *Varanus nuchalis* as well, but nothing is documented for the species itself:

- Parasites and stress in newly acquired animals. Wild-caught animals can be weakened, dehydrated and carry intestinal worms. Quarantine them for at least six weeks, and have a faecal sample examined by a vet with reptile experience.
- Metabolic bone disease from too little UVB and calcium. It shows as soft jaws, bent limbs and tremors.
- Obesity and fatty organs from rodents as the main food and too little exercise.
- Burns from unguarded lamps or basking spots that are too small, and snout injuries from bumping into the glass in enclosures that are too small.
- Skin infections and fungus if the water is dirty or the floor is constantly wet.
- Salmonella can infect humans, so hygiene is important.

How many captive-bred and how many wild-caught animals of the species are in the trade is not documented. Captive-bred animals are generally preferable, because they are less stressed and less often have parasites. See a vet if the animal loses weight, does not eat, is lethargic or has swellings.

Read more: Common diseases and signs of illness

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.