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MONITOR LIZARDS

Samar water monitor

Varanus samarensis

Varanus samarensis is a large, black water monitor with big yellow eyespots, endemic to Samar, Leyte and Bohol in the Philippines. The species is rare in captivity, and much of the care is borrowed from related water monitors.

Family: Varanidae Former name: *Varanus cumingi samarensis*

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 samarensis is a large, heavily built monitor in the *Varanus salvator* complex. The base colour is black, and across the back there are 5-8 transverse rows of large yellow eyespots, spots or markings. The top of the head is mostly black with more or less symmetrical yellow markings, and there is no pale stripe down the middle of the neck and back. This distinguishes it from the yellower *V. cumingi* from Mindanao.

The species was described in 2010 as the subspecies *V. cumingi samarensis* from animals from Samar and has since been raised to a separate species. Several of the species in the group are genetically very young, and the taxonomy may still change.

The size is not documented for the species; 100-150 cm total length is borrowed from its closest relative, *V. cumingi*. Treat it as a large, diurnal and powerful monitor that requires experience. 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 lifespan is not known; 15-20 years is an estimate based on related water monitors.

Have the species carefully identified when buying, because the Philippine water monitors are easily confused with one another. The care described below is based to a large extent on close relatives in the *V. salvator* group.

Distribution and habitat

Varanus samarensis is endemic to the Philippines and is known from the islands of Samar, Leyte and Bohol in the eastern part of the archipelago. The type locality is at Gandara on Samar. The three islands lie separate from Mindanao, where *V. cumingi* lives.

The distribution within the islands is poorly known, because the species has only recently been separated out.

> **Native range:** Philippines.

HABITAT

The habitat of *Varanus samarensis* is only sparsely described. Its closest relative, *Varanus cumingi*, lives in mangrove and humid forest, but also near fish ponds and on cultivated land, and water monitors are always tied to water.

The climate on the islands is tropical, warm and humid all year with plenty of rainfall. 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 this species; 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 samarensis*. The figures are borrowed from its closest relative, *Varanus cumingi*, and from *Varanus salvator*.

An adult *V. samarensis* of about 150 cm 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), with extra height for species that climb. On top of the floor area comes a water section that the animal can get fully into. The setup should be large and varied, with several light and heat sources and a large water basin that helps keep humidity up.

Juveniles can start in an enclosure of about 120 × 60 × 60 cm, but water monitors grow very quickly: *V. cumingi* goes from about 30 cm at hatching to 85-100 cm in a year. Expect to rebuild several times in the first year, and plan from the start for adult size.

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 branches that can bear the animal's weight. Water monitors like to climb, so there must be stable climbing opportunities at several levels. 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 samarensis 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 different light and heat sources in the setup, so that the animal can choose between several basking spots. For a large animal the basking spot must be wide enough to warm the whole body at once, for example with several spotlights side by side. 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, and position them so that the animal receives a suitable UV index at the basking spot.

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 the species 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 live mostly on insects such as crickets, grasshoppers 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 samarensis is large and powerful, and 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. 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, including *Varanus samarensis*. In water monitors, adult males are often larger than the females with a heavier and broader snout, but reliable sexing requires ultrasound, X-ray or endoscopy by a vet with reptile experience. Age and size at sexual maturity are not documented for the species; in related water monitors it is reached after

about two years. Even a whole group can turn out to consist only of males, so the sex should be established before a pair is planned.

MATING

Captive breeding of *Varanus samarensis* 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. Otherwise keep males and females apart.

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

EGG-LAYING AND CLUTCHES

Varanus samarensis is egg-laying, like the rest of the genus. 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 is necessary: the female needs a deep spot of damp substrate to dig in. 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 samarensis* is not documented. In *Varanus cumingi*, they measure about 30 cm in total length and take small insects and small fish from the first days. Keep the young singly in an enclosure with a damp floor, hides and a water bowl. The young grow 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 also apply to *Varanus samarensis*:

- 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.

The species is rare in the trade, captive breeding is not documented, and animals in the trade may be wild-caught. 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.