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MONITOR LIZARDS

White-throated Monitor

Varanus albigularis

Varanus albigularis is a powerful, diurnal monitor that loves to dig, from savannas and dry woodland in southern and eastern Africa. It grows to 100-200 cm, is inquisitive and can become very tame, but it needs a room rather than an enclosure, a large food bill and many years of careful husbandry.

Family: Varanidae

KEY FACTS

THE ANIMAL

Adult size	**100-200 cm** total length incl. tail
Weight	**3,000-12,000 g**
Lifespan	**10-20 years**
Active	**By day**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Semi-desert and savanna**
Difficulty	**Expert**

CARE

Min. enclosure	**300 × 200 × 150 cm** L × W × H for 1 adult
Temperature, day	**24-26 °C**
Basking spot	**35-45 °C**
Temperature, night	**19-21 °C**
Humidity	**30-60%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 3
Diet	**Insects, vertebrates and worms/snails**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**16-65 eggs**
Clutches per year	**1-2**
Incubation	**150-180 days** at 28-31 °C

PROTECTION AND PAPERWORK

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

About the species

Varanus albigularis is a heavy, compact monitor with a rounded, bulbous snout, strong forelimbs and sharp, powerful claws. The head is grey or brown above, while the throat is clearly paler, especially below the dark temporal band that runs from the eye to the shoulder. The body has dark rings with pale centres, but the pattern becomes indistinct in old animals and then looks more like bands around the ribs. The species name comes from the Latin albus, white, and gula, throat.

The species was described in 1802 and was for a long time regarded as a subspecies of *Varanus exanthematicus*. Differences in the structure of the hemipenes led to its recognition as a separate species. Three subspecies are distinguished: *V. a. albigularis* in southern Africa, *V. a. angolensis* in Angola, Zambia and neighbouring countries and *V. a. microstictus* in East Africa. The status of the fourth name, *V. a. ionidesi*, is unresolved. The two species are easily confused in the trade, even though *V. albigularis* grows much larger.

Adults typically grow to about 150 cm in total, and a few exceed 200 cm. Wild adults have a snout-vent length of 50-70 cm. A smaller adult of 41 cm from snout to vent and 90 cm in total weighs about 1.5 kg, while tame animals in captivity of 140-160 cm weigh 7-12.5 kg.

The species is clever. It can distinguish between quantities of up to six snails, remembers for several days where it has found food, and systematically revisits earlier finding places. When given a dead animal that is too big to swallow, it bites down and rolls around its own longitudinal axis to tear skin and flesh free, like a crocodile. It is thus not an animal that you simply put in an enclosure and look at.

An adult needs a whole room or a custom-built setup of several square metres, heat and UVB on a large scale, food in large quantities, a deep substrate to dig in and daily attention for many years. It is a species for someone who wants to build and furnish for a large animal, and not a species for the flat. The juveniles are only about 25 cm at hatching, but grow quickly.

Read more: Lighting and UVB

Distribution and habitat

Varanus albigularis is widespread in large parts of southern and eastern Africa, from Namibia, Botswana and South Africa in the south to Angola, Zambia, Tanzania, Kenya and Uganda and on to southern Ethiopia and Somalia. It is also found in Zimbabwe, Mozambique, Malawi, Eswatini, Lesotho and southern Congo.

V. a. albigularis lives in southern Africa northwards to Angola, Zambia and Mozambique, *V. a. angolensis* in Angola, Zambia and adjoining parts of Congo, and *V. a. microstictus* in Ethiopia, Somalia, Kenya and Tanzania. The species is absent from the south-western corner of the continent. It is found in many national parks, including Kruger, Etosha and South Luangwa, and is abundant where there is suitable habitat.

> **Native range:** Angola, Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Somalia, Eswatini, Tanzania, Uganda, South Africa, Zambia, Zimbabwe and Congo - Kinshasa.

HABITAT

The species lives in savanna, open woodland, scrub and dry areas. It is terrestrial and spends most of its time foraging along the ground, but digs its own burrows and can climb trees to raid birds' nests, rest or flee. The animals are diurnal, bask in the morning and then go hunting.

The climate has a clear rainy season and dry season. In southern Africa mating takes place from the end of August to the middle of November, and eggs are laid a few weeks later. In the cool season activity and appetite fall. The habitats burn regularly, and animals that move over embers or heated ground can suffer severe burns on feet and tail.

Care

THE ENCLOSURE

An adult *Varanus albigularis* needs at least 300 × 200 × 150 cm (length × width × height) and preferably a whole room. The largest animals, of about 200 cm, need more, e.g. 300 × 230 × 240 cm, and a group of seven adults needs a room of about 18.5 m². The small sizes the trade sells for young animals are only a temporary solution.

Young of about 25 cm can start in an enclosure of 100 × 50 × 50 cm, preferably several together, as long as they eat insects, with newspaper or kitchen roll as the floor for the first weeks. After that they are moved to ever larger set-ups as they grow. Within a few years they become animals of 100 cm or more, so plan the large set-up from the start.

In the wild the species digs its own burrows, so provide at least 30-40 cm of loose, damp mixture of soil and sand in an area where the animal can dig and lie hidden. There must be several hiding places, large stone slabs, thick branches and pieces of bark that can bear the weight of a heavy animal. A large water tub in which the animal can lie down completely is part of the set-up. All heat sources must be shielded so the animal cannot burn itself, and the doors must be lockable, because a large, strong animal can otherwise escape. Ventilation must be good.

For breeding there must be a nest box with at least 35 cm of deep, damp sand and soil mixture. Females without a suitable nest scatter the eggs in the enclosure.

TEMPERATURE

As a diurnal basker, *Varanus albigularis* requires a large temperature gradient. The air temperature is 24-26 °C by day and 19-21 °C by night. The basking spot must be a large, open area with a surface temperature of 35-40 °C and a hottest point of up to 45 °C. This is surface temperature, measured with an IR thermometer on the surface itself, not with a thermometer hanging in the air.

Use several heat bulbs or infrared lamps over the basking spot so a large animal can lie fully in the heat, and warm the air in a large enclosure with heaters on the walls. Leave part of the enclosure cooler so the animal can choose. In addition to shielding, all heat sources must be controlled by a thermostat. Measure the surface temperature regularly with an IR thermometer.

Read more: Heat and temperature

HUMIDITY AND WATER

The species comes from dry to semi-humid savanna country, and the right humidity in the setup is not documented with figures. Keep the air relatively dry (30-60 %, an estimate), and leave part of the substrate damp, so that the animal can dig and find a damper burrow to lie in. A constantly wet substrate and stagnant air cause skin problems.

Drinking and bathing water must be fresh and in a large tub, and the animal must be able to cover itself completely. Change the water regularly so that it is clean.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

Varanus albigularis is a diurnal sun-basker and needs strong light. Use compact fluorescent tubes with a high UVB share (the 10 % class) or mercury vapour lamps with UVB together with infrared bulbs and spot lamps over the basking spot. Place the UVB source over the basking spot, so that the animal receives a UV index corresponding to Ferguson zone 3, and let it be able to move into shade. Replace the bulbs according to the manufacturer's instructions, because the UVB output falls before the light looks weaker.

Keep the light on for 12 hours a day in summer and slightly shorter in winter, controlled by a timer. At night it must be dark.

FEEDING

In the wild *Varanus albigularis* is a true generalist. It eats snails, grasshoppers, millipedes, beetles and other invertebrates and occasionally snakes. The species thus eats broadly, and a diet consisting only of rodents does not correspond to nature.

The diet in captivity should be varied. Juveniles get crickets, grasshoppers and cockroaches from hatching, later also giant mealworms and newborn mice. Adults can be given insects, fish (trout and smelt), small chicks and chicken parts, mice, rats and occasionally hard-boiled eggs. Adults are fed from 1-2 times a week to 5 times a week, depending on what they get; juveniles are fed more often. In winter appetite may fall: females often eat less from the end of October for two to three months, and some weeks without food at all are not unusual.

When rodents become the main food, many monitors become too fat, which shortens life. Choose a mixture with many insects, snails and fish, and add calcium and vitamins. Mice should only be given when the animal has passed the previous meal, and juveniles that get too many mice vomit them up again. Keep the food separate when several juveniles live together, because they fight over the prey.

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

BEHAVIOUR AND HANDLING

Varanus albigularis is not a pet in the usual sense. Wild animals are shy and flee or bite if they are caught, and even tame animals have strong jaws, sharp claws and a tail that can lash. Tail whipping is common in monitors, and the tail of a 150 cm animal can do damage. A bite from a large animal causes deep wounds, and the claws can tear the skin. Use long tweezers or tongs when feeding, and avoid sudden movements.

Taming requires calm and time. Give new animals at least a couple of weeks without handling, talk calmly, and feed from tweezers or tongs instead of the hand. When the animal no longer flees, you can begin to touch it. Always lift with both hands under the body and support the tail. Tame adults can become calm enough to walk freely about, but all animals can react violently to stress or hunger.

Reptiles often carry salmonella, and almost half of all pet reptiles (48 %) are carriers. Wash your hands thoroughly after any contact with the animal, the enclosure and the equipment, and keep children and pregnant women away from cleaning.

The species can be kept singly or in pairs. Females can bite each other hard around the nest box, and juveniles living together in groups start to fight when they are to begin eating mice. Larger groups, for example four females and three males, can be kept in a large room with many hides and a large water container. If in doubt, keep the animals apart.

Read more: Quarantine and hygiene

Breeding

SEXUAL MATURITY AND SEXING

The size difference between the sexes is not clear-cut: the male can be largest (200 cm against 130-160 cm in the females), but the female can also be longest in snout-vent length (about 70 cm against about 50 cm). The sex is difficult to determine reliably in young animals and should be decided by a vet with monitor lizard experience. The exact age at sexual maturity is not known. Females of four to five years and males of seven years can be used for breeding. The female should be fully grown and in good condition before she is used for breeding.

MATING

Mating takes place in spring and through the summer, depending on warmth and lighting. In captivity in Europe the animals mate from May to August. The male typically shows head movements and tongue flicking around the female's neck and body for about a week. The mating itself can last up to an hour and a half and is repeated several times a day for three to four days. The pairs often sleep together in the same hide afterwards.

Put the male in with the female in her setup, and watch for bites. Several females in the same setup can fight violently over the nest box. Winter rest is not necessary for breeding, but the females eat less in the winter half of the year.

EGG-LAYING AND CLUTCHES

The female lays the eggs about 30-48 days after mating. A clutch is 16-55 eggs, in rare cases up to 65. The eggs are white and leathery, about 6-7 cm long and 4 cm wide, and weigh 48-55 g. In captivity the female usually lays 1-2 clutches a year.

The female digs and often stays in the nest box for several days, and her appetite disappears in the days before laying. She can defend the nest box aggressively against both other females and you. The eggs are often laid at night. Some females ignore the nest box and lay the eggs openly on the floor, which often results in poor fertilisation and hatching. The best nest is a deep, loose and damp box, preferably with a hollow log or a similar cave.

When the female has finished, you should remove the eggs, and she should be allowed to rest and have extra food.

INCUBATION

The eggs are placed in a box with air holes, partly buried in a mixture of vermiculite and water at a weight ratio of 1:1, and incubated at 28-31 °C, preferably 29-30 °C. Humidity must be 70-95 %. Check the eggs weekly, and add only a little water if the weight falls; in the last three weeks no water is added.

The incubation time is 150-180 days. Infertile eggs turn yellow and soft over time and smell bad, and dead embryos and deformed young occur. The hatching rate varies greatly from clutch to clutch and is often low, without the cause being clear. The young hatch on their own over several days without help.

Read more: Incubating eggs

REARING THE YOUNG

The juveniles of *Varanus albigularis* are about 25 cm long and weigh 30-40 g at hatching. Remaining yolk sacs and umbilical cords fall off by themselves when the juvenile rubs its belly against the substrate. They begin to eat crickets after about 48 hours.

Keep them in a clean box with newspaper or kitchen roll, a hide, a water bowl with room to bathe and a heat lamp over a basking spot. For the first months give them only insects (crickets, grasshoppers, cockroaches), then giant mealworms and small rodents. They may live together as long as they eat insects, but are separated at the first mouse. Add vitamins and calcium. They grow quickly and need larger spaces as they go. Plan for each juvenile eventually becoming a monitor of 100-200 cm.

Health and common mistakes

Animals of *Varanus albigularis* in the trade are often imported or come from imported parents, including wild-caught animals from Tanzania. Wild-caught animals can have ticks and other parasites, be stressed and have a low body weight. Insist on an animal that eats, has clear eyes and a smooth, full body, and have the droppings examined at a vet experienced with reptiles before the animal is introduced to others.

Typical problems and husbandry mistakes are:

- Obesity when rodents are the main food, and calcium deficiency (soft skeleton, tremors) from too little calcium and UVB, especially in young animals.
- Burns on the belly and feet from unshielded heat sources.
- Too low temperatures and wrong humidity, which cause poor digestion, loss of appetite and respiratory infections.
- Ticks and other external parasites, especially in newly bought animals.
- Bites and injuries from other animals in the same setup.
- Poor fertilisation and problems laying eggs when the female does not have a suitable nest box.

See a vet experienced with reptiles if the animal loses weight, does not eat for several weeks outside the cold period, breathes heavily, gets swollen joints or jaws or has changed droppings.

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.