herpy

CAECILIANS

Ringed Caecilian

Siphonops annulatus

Siphonops annulatus is a blue-black, burrowing caecilian with white rings from South America east of the Andes. The female lays eggs in the soil and tends the young for about three months: they eat the outer layer of her skin and drink a fat-rich fluid from her cloaca. Little is known about the care of the species.

Family: Siphonopidae **Mild skin toxins**

KEY FACTS

THE ANIMAL

Adult size	**29-45 cm** total length incl. tail
Lifespan	**5-10 years**
Active	**At night**
Lifestyle	**Burrowing**
Habitat	**Savanna and rainforest**
Skin toxins	**Mild** Wash your hands after contact and keep your fingers away from your eyes and mouth
Difficulty	**Experienced**

CARE

Min. enclosure	**60 × 40 × 45 cm** L × W × H for 1 adult
Temperature, day	**22-25 °C**
Temperature, night	**21-23 °C**
Humidity	**90-100%**
Water	**No water dish**
UVB	**Not required**
Diet	**Insects and worms/snails**
Kept	**Singly or in groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Direct development (no larvae)**
Egg-laying site	**On the ground**
Eggs per season	**5-16**
Clutches per year	**1**
Hatching	**30-60 days**
Parental care	**Guards the eggs**

PROTECTION AND PAPERWORK

CITES	**Not listed**
EU annex	**Not listed**
IUCN	**Least Concern (LC)**

About the species

Siphonops annulatus is a caecilian: a legless, burrowing amphibian that looks like a large earthworm. Adults are 29-45 cm long. The body is cylindrical, blue-black to slate grey, smooth and glossy, and the annular grooves, which run all the way around the body, have white to cream-coloured edges. The head is strongly ossified and is used for boring. The eyes are small but visible, and a small tentacle sits between the eye and the nostril. Weight and lifespan are not known; the lifespan in the box is an estimate.

The skin has two kinds of glands, each with its own function. On the head there are many mucous glands, which lubricate the head and ease digging. At the rear of the body there are large poison glands, whose secretion acts against predators and microorganisms and damages blood cells and the heart. The effect on humans has not been described; the skin toxicity is listed as mild because the poison glands have been demonstrated. Wash your hands after handling, and do not touch your eyes or mouth.

The species is known for its parental care, in which the young feed on the mother's skin. There are no larvae in water.

Distribution and habitat

Siphonops annulatus lives in South America east of the Andes: from Colombia, Venezuela and the Guianas through Ecuador, Peru, Bolivia and most of Brazil to north-eastern Argentina, mainly below 800 m above sea level. Occurrences in Paraguay and Suriname are unconfirmed. The species probably has the largest range of any terrestrial caecilian, but its delimitation should be investigated further. It is not threatened (IUCN: LC) and tolerates disturbed habitats.

> **Native range:** Brazil, Argentina, Bolivia, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela.

HABITAT

Siphonops annulatus burrows in damp, humus-rich soil, usually in the top 20 cm, and is found in rainforest, dry and humid savanna, scrub, flooded grassland, pastures, plantations and village gardens. It is especially common in damp soil rich in organic matter and small animals, e.g. in cocoa plantations, but also tolerates drier conditions under rotting logs.

Mating takes place from late August to early October, and the eggs are laid in November-December, when the rains peak. The nest lies shallow in the soil between the roots at the foot of large trees.

Care

THE ENCLOSURE

Little is known about the care of *Siphonops annulatus*. The care is based on experience with terrestrial caecilians of the same size that are kept in the same way, including *Dermophis mexicanus* and *Geotrypetes seraphini*.

S. annulatus is kept in a tight box of thick-walled plastic or an enclosure with a fixed lid and a deep substrate to dig in. An adult needs at least 60 × 40 × 45 cm, so that there is room for 25-35 cm of substrate and an air space above. The lid must fit tightly and have a weight on top: an animal that can reach the lid escapes through the smallest gap, and feeder worms also crawl out. Make ventilation with small holes in the sides just under the rim, covered with fine mesh; there should be no holes in the lid.

The substrate is the most important decision. Unbleached paper fibre (unscented paper-based bedding) is well proven: it holds moisture, the worms live in it, and the caecilians clearly prefer it to coconut fibre. Sterilised, unfertilised topsoil can also be used. Coconut fibre alone is not recommended: it is dusty, clings to the skin and has been found packed into a hard plug in the gut of dead animals. Replace the substrate every 4-5 months, or sooner if it becomes dirty, and check the animal at the same time.

Place a flat piece of heat-treated bark or wood on the surface. The animals like to lie just under it, and it makes it easy to check on them without digging. Live plants are not necessary.

TEMPERATURE

Keep 22-25 °C by day and 21-23 °C at night. The temperature must be stable and vary by no more than about 3 °C; rapid and large swings are poorly tolerated. If the box stands in a room with an even temperature, heating is rarely needed. A heat mat under one end gives a temperature and humidity gradient that the animal can choose from; the substrate dries out a little over the heat, so keep an eye on the moisture. If the animal stays on the surface instead of burrowing, the temperature, moisture or substrate is wrong.

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

HUMIDITY AND MISTING

The substrate should be evenly damp, but not so wet that you can squeeze water out of a handful, and there must never be standing water at the bottom of the box. The air in the box is as good as saturated with moisture (90-100 %). Maintain moisture by misting and occasionally turning the substrate, and feel free to leave one end slightly drier than the other. Use bottled water, rainwater or tap water that has stood for a day.

WATER AND WATER QUALITY

There should be no water bowl. The animal gets water from the damp substrate and from condensation on the walls of the box, and a water bowl easily makes the substrate too wet. Water is used only to moisten the substrate.

LIGHTING AND UVB

The species lives underground and does not need UVB or special lighting. An ordinary daily rhythm in the room with 10-14 hours of light is enough. The box should not stand in direct sun.

Read more: Lighting and UVB

FEEDING

Earthworms are the staple and are taken by almost all terrestrial caecilians. Use small to medium earthworms, e.g. compost worms, and cut them into pieces for juveniles. Put 10-15 worms in the box every other week. In a damp paper substrate the worms live on without rotting. Which prey the species takes in the wild has not been studied, but it lives where there are many earthworms and other small animals.

The animal finds its food by smell and its tentacles and is rarely seen eating. Dig through the substrate regularly: many worms left over mean overfeeding or an animal that is not eating. Count the worms in and out when an animal is new. The nutritional value of the worms is increased by sprinkling calcium and vitamin powder into their soil 4-6 days before feeding.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Siphonops annulatus lives hidden and spends almost all its time buried. If the animal lies on the surface a lot, the substrate is too wet, too dry, too cold, too warm or chemically unpleasant, or a hide on the surface is missing; if so, replace the substrate and check the temperature.

One animal per box makes it easy to monitor weight and health and rules out conflicts. Several animals of the same species can also be kept together if you check regularly for bites and injuries, and that gives a better chance of young. The female guards eggs and young, so a pair is kept only with a plan for the young. Handle the animal as little as possible and only with clean, wet hands free of cream or soap residue.

Breeding

SEXUAL MATURITY AND SEXING

Age and size at sexual maturity are not known, and the sexes cannot be told apart reliably from the outside. Females tending young are distinctly paler than other adults.

MATING

Fertilisation is internal. Mating is brief, and the pair lie belly up. In the wild the species mates from late August to early October. In captivity males and females come into breeding condition at the same time, but without the signals of the seasons reproduction rarely goes further, and captive breeding has not been described.

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

EGGS AND LARVAE

The female lays 5-16 large, transparent eggs in a small cavity in the soil, where she lies coiled around them. The eggs are joined in strings like a bunch of grapes. She does not defend them aggressively, but stays with them until they hatch about one to two months later, from late December to early January.

The young hatch white and unfinished, about 4 cm long and with a head that is much broader than the body. They stay with the mother, whose skin becomes pale and full of fat during parental care. With special spoon-shaped teeth with small claws, the young peel the outer skin layer from her. All the young feed at the same time for about 7 minutes and then rest for a couple of days while the mother's skin grows back. The young also drink, for about two months, a fat-rich fluid that the mother releases from the cloaca when the young touch her and call with small clicks.

METAMORPHOSIS

There are no larvae and no metamorphosis: the young hatch as small, pale versions of the adults. The whole period of parental care from egg-laying to independent young lasts about three months, and the young grow quickly; the oldest young in the nest measure about 14 cm.

Read more: Rearing tadpoles

REARING THE YOUNG

The young must stay with the female until they dig and eat on their own, and the female must not be disturbed during that period. After that they are kept in a small, deep box with the same substrate as the adults and fed small earthworms or pieces of worms. Keep them damp and stable, and weigh them regularly. Rearing in captivity has not been described in detail.

Health and common mistakes

Illness is seen late in an animal that lives buried. The main problems are:

- The animal lies on the surface: wrong moisture, temperature or substrate, or a missing hide. Correct the conditions.
- Plug in the gut: coconut fibre has been found packed into the gut of dead animals. Use paper fibre or sterile soil.
- Skin problems: fungal and bacterial infections, often after a dirty substrate or injuries. Requires a vet.
- Parasites: roundworms, tapeworms and single-celled parasites are often found in caecilians in captivity. Have a faecal sample examined.
- Escape: the animal gets out through small gaps and dries out. Use a tight lid with a weight.

The chytrid fungus *Batrachochytrium dendrobatidis* (Bd) occurs in caecilians. New animals are quarantined and tested, and equipment and hands are washed between boxes. Keep a new animal for the first month in a small box where you can count worms in and out and see whether it eats. See a vet with expertise in amphibians if the animal does not eat for several weeks, loses weight, develops sores or stays on the surface.

Read more: Quarantine and hygiene

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.