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CAECILIANS

Rubber Eel

Typhlonectes natans

Typhlonectes natans is a fully aquatic, limbless amphibian from Colombia and Venezuela with a long, smooth, dark bluish-grey body, small eyes beneath the skin and a low dorsal fin. The species gives birth to live young and is kept in a warm, soft, well-filtered aquarium with a heavy, tight-fitting lid.

Family: Typhlonectidae

Mild skin toxins

KEY FACTS

THE ANIMAL

Adult size	**25-73 cm** total length incl. tail
Weight	**40-250 g**
Lifespan	**10-14 years**
Active	**By day, at dusk and at night**
Lifestyle	**Aquatic**
Habitat	**Savanna and wetland**
Skin toxins	**Mild** Wash your hands after contact and keep your fingers away from your eyes and mouth
Difficulty	**Intermediate**

CARE

Min. enclosure	**120 × 45 × 50 cm** L × W × H for 3 adults
Temperature, day	**24-30 °C**
Temperature, night	**24-30 °C**
Humidity	**100%**
Water	**Aquaterrarium** depth 30-40 cm
Water temperature	**24-30 °C**
UVB	**Not required**
Diet	**Insects, complete diet, vertebrates and worms/snails**
Kept	**In groups**

BREEDING

Reproduction	**Live-bearing**
Development	**Live-bearing**
Sexually mature	**48 months**
Litter size	**1-11 young**
Gestation	**210-300 days**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Typhlonectes natans is a caecilian, that is, a limbless amphibian (order Gymnophiona) that looks like an eel but is related to frogs and salamanders. Adults are 25-73 cm long. The body is smooth and glossy, dark purplish-grey to bluish-grey with a paler belly, and is divided into transverse rings by distinct grooves. A low fin runs along the back. The eyes are small and covered by skin, and the snout projects beyond the mouth. The animal has no true tail; the cloaca sits in a small disc at the very rear of the body.

Wild adults weigh around 40-170 g, and pregnant females can double their weight and reach 250 g. The species can live for at least 14 years in captivity.

T. natans closely resembles *Typhlonectes compressicauda*, but is often glossier, with more distinct ring grooves and a lower dorsal fin. The most reliable distinguishing feature is the cloacal disc: its front half is divided into four sections in *T. natans* and five in *T. compressicauda*.

The skin secretes large amounts of mucus when the animal is handled. Mucus in the eyes and in wounds causes a burning sensation, and prolonged contact can cause tingling in the hands; this is why the skin toxicity is rated as mild. Wash your hands after handling, and do not touch your eyes. The species does not bite and is not dangerous to humans.

Distribution and habitat

Typhlonectes natans lives in Colombia and northern Venezuela. In Colombia it belongs to the river valleys and floodplains along the Magdalena and Cauca. How far south the species reaches in the upper Magdalena Valley is not settled.

The species is not threatened (IUCN: LC) because of its wide range, a degree of tolerance of degraded habitats and a presumed large, stable population. Released or escaped aquarium animals have been found in Florida; they are not part of the native range.

> **Native range:** Colombia and Venezuela.

HABITAT

In the wild *Typhlonectes natans* lives in rivers, swamps and lakes, most often in open country and often in floating mats of aquatic plants. It is rarely seen on land and is also found in nutrient-rich water close to towns. In the rainy season the animals migrate upstream onto the floodplains.

The water in the Magdalena Valley is 28-31 °C, slightly acidic to neutral (pH 6-7) and soft, and the temperature varies with the seasons. The species eats small animals and carrion, and readily gathers around fish offal that fishermen throw into the water.

Care

THE ENCLOSURE

Typhlonectes natans is kept in an aquarium. Three adults need at least 120 × 45 × 50 cm (around 250 litres) with a large external filter. The larger the volume of water, the more stable the water quality.

The lid is the most important piece of equipment: it must be heavy and fit completely tight, including around cables and hoses. The animals squeeze through small gaps, and an animal that escapes quickly dries out and dies.

Provide a small, wet land area, such as a floating piece of cork bark or a dense mat of floating plants, where the animals can lie with the body partly out of the water. If the animals spend a lot of time on the land area, it is a sign of poor water or the wrong temperature.

Substrate is not necessary, but a thin layer of fine sand or fine gravel lets the animals dig, and they like to lie buried. A thick layer of sand can produce toxic hydrogen sulphide. Hides made of PVC pipe, stones, bogwood or terracotta with narrow openings give a sense of security; rough edges help with shedding, but they must not be sharp. Do not tie plants down with fishing line, because the animals can become trapped in it. Rooted plants are often dug up, so floating plants are a better choice.

TEMPERATURE

The water temperature should be 24-30 °C. A natural seasonal variation within that range imitates the rivers of the native range and can help encourage breeding. Around 32 °C causes heat stress. Newborn young are more prone to fungal infections below about 26 °C.

The animals often lie coiled around heaters and can suffer serious burns. Use heaters with protective guards or an in-line heater on the filter hose, and preferably two heaters, so that a failure does not cause a sudden drop in temperature. The air under the lid is at the same temperature as the water. There is no winter rest.

HUMIDITY AND MISTING

Air humidity is irrelevant, because the animal lives in the water. The air under a tight-fitting lid is saturated with moisture, which is why the box says 100 %. What counts is water quality; see the section on water.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

Caecilians absorb substances through the skin, so water quality is crucial. The filter must be cycled before the animals go in. Tap water is treated with a water conditioner, aerated and left for a day at the aquarium temperature before it is added. Pure reverse-osmosis water and pure rainwater are too pure and upset the animal's salt balance; use them only remineralised or mixed with tap water.

The water must be soft and stable, around 3-5 °dH; water harder than about 6 °dH can be fatal to the species. A pH of 6-7 is suitable. Tannins from dead oak leaves, peat or bogwood lower the pH and have a mild antibacterial effect, but test: too much tannin can push the pH below 5 and make the animals ill. Stable values matter more than perfect ones.

Test ammonia, nitrite, nitrate, pH and hardness every week. Change 10-20 % of the water regularly, preferably after feeding, so that leftovers are removed before they rot. The water must be deep enough for the animals to swim freely and reach the surface without losing contact with the bottom, plants or hides; 30-40 cm is suitable.

The species is messy when it eats and sheds its skin often, so the filter must be large. An external filter or a large, air-driven sponge filter is best; an internal box filter is enough only for young animals. All openings to the filter must be closed with mesh or silicone, and intakes and outlets must have a strainer that is tied firmly in place, because the animals crawl into filters and can be injured or drown. Rinse the filter media in aquarium water, not tap water.

LIGHTING AND UVB

Ordinary aquarium lighting for 12 hours a day is enough. The animals prefer darkness, so there must always be dark hides. The need for UVB is not known, and UVB lighting makes no demonstrable difference to the bones, so it is not necessary. Plants in good growth help to keep the water clean.

Read more: Lighting and UVB

FEEDING

Typhlonectes natans eats almost any meaty food: earthworms, crickets, beetle larvae, prawns and other crustaceans, mussels, bloodworms, thawed fish, newborn mice and prepared food for amphibians. The food must lie on the bottom or on branches and hides, because the animal finds food by smell and does not notice food that drifts or floats. Earthworms and insect larvae are taken live, but fish and other vertebrates must be dead. Live invertebrates are an advantage, because they do not pollute the water straight away.

Feed two to three times a week, and young animals in their first year at least three times a week. Vary the food: carp-like fish contain the enzyme thiaminase, which breaks down vitamin B1, and salmonids are very fatty. Vitamin supplements are difficult to give in water, so varied food is the best protection against deficiencies.

Place the food in several spots, or give it with tweezers, so that every animal gets some; the largest eat fastest. Remove leftovers and change water after feeding.

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

BEHAVIOUR AND HANDLING

The species is peaceful, not territorial, and does best in a group in which the animals share hides. During feeding they can bite each other in their eagerness for the food, and in the breeding season males can be aggressive towards each other and chase the females. Do not introduce a new male into a group with both sexes in the breeding season.

In the aquarium the animals are active both day and night. They come up regularly to breathe, and you can hear a small squeak as the air is drawn in. *Typhlonectes natans* can be kept together with *Typhlonectes compressicauda* and *Potamotyphlus kaupii*. Fish are not recommended: dead and weakened fish are eaten, mucus from stressed caecilians can kill fish, and fish from other regions can carry disease.

Handle the animal as little as possible; it is smooth, slimy and wriggles. Use a firm container rather than a net, which can wear away the slime layer and cause skin infections.

Breeding

SEXUAL MATURITY AND SEXING

The sexes can only be told apart reliably in sexually mature animals: the male has a larger, more rounded rear end and a broader cloacal disc, while the female's cloacal disc is more elongated and slit-shaped. Females become sexually mature at around four years of age; this figure is based on few animals. The animals continue to grow after sexual maturity.

MATING

In captivity the species mates all year round, in the wild in the rainy season. Fertilisation is internal: the male has an everting copulatory organ and winds himself around the female, cloaca to cloaca, or lets himself be towed around by her. The pair can remain joined for several hours.

An artificial dry season can set mating in motion: the water level is lowered to about 18 cm, the hardness is halved (not below 1 °dH), and the pH is lowered slightly. A stable group in an unchanged aquarium also often breeds.

EGGS AND LARVAE

Typhlonectes natans does not lay eggs. The foetuses develop in the female's oviducts, first on the yolk and later on nourishment from the lining of the oviducts, which they scrape with special foetal teeth. The foetuses have large, leaf-shaped gills. Gestation lasts around 7-10 months. The female becomes noticeably round, and the foetuses can be seen with ultrasound and, from around the fifth month, on X-ray.

The female gives birth to 1-11 young, 1-3 at a time over up to a week, often at night or early in the morning, and she may carry the young up to the surface for their first breath. Birth can go wrong, and females can die with dead young in the body. A heavily pregnant female should therefore be watched closely; a change in conditions, such as a lower water level for a few days or, conversely, deeper water and more current, can trigger birth.

METAMORPHOSIS

There are no free larvae and no metamorphosis in water. The young are born fully developed with external gills, which drop off within a few hours and leave a small depression in the nape of the neck. After that they are small versions of the adults.

Read more: Rearing tadpoles

REARING THE YOUNG

The young can stay with the adults; they gather in a group, and the risk of the adults eating them is small. Provide extra floating plants, cork bark and branches so that the young can rest at the surface, because they swim poorly and can drown. The water must be at least 26 °C.

It can be several weeks before the young begin to eat. After that they are fed more often than the adults with smaller pieces of the same food animals; dead fish are also readily taken. Their weight doubles in around three months. Have a plan for the young before the animals are allowed to breed.

Health and common mistakes

Aquatic caecilians are hardy in stable, clean water. The most common problems are:

- Skin inflammation: white, cottony patches from fungi or bacteria, often after injuries, poor water or too low a temperature. Needs a vet.
- Kidney disease: together with skin diseases the most common cause of death in adult animals in captivity.
- Burns from unguarded heaters: even small burns easily become infected and can kill the animal.
- Escape and injuries in filters: the animals crawl into filters and out of the aquarium. Mesh and tight lids are essential.
- Redness at the cloacal disc and lethargy: signs of blood poisoning, often after poor water.
- Parasites under the skin, which cause swellings and white coatings.
- Complications of pregnancy and birth.

The chytrid fungus *Batrachochytrium dendrobatidis* (Bd) is found in caecilians both in the wild and in captivity, including animals without symptoms. Quarantine and test new animals, and wash nets, equipment and hands between aquariums. *Batrachochytrium salamandrivorans* attacks salamanders and newts, and caecilians are thought to be resistant.

See a vet with amphibian expertise if the animal is not eating, has white coatings, sores or redness, or lies out of the water for a long time.

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.