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CAECILIANS

Kaup's Caecilian

Potamotyphlus kaupii

Potamotyphlus kaupii is a fully aquatic, eel-like caecilian from the river systems of the Amazon and Orinoco. It has a smaller head and a paler colour than *Typhlonectes* and needs clean, well-oxygenated water. The species gives birth to live young and is harder to keep than the related *Typhlonectes* species.

Family: Typhlonectidae Former name: *Potomotyphlus kaupii* **Mild skin toxins**

KEY FACTS

THE ANIMAL

Adult size	**30-70 cm** total length incl. tail
Weight	**60-114 g**
Lifespan	**16 years**
Active	**By day, at dusk and at night**
Lifestyle	**Aquatic**
Habitat	**Rainforest and wetland**
Skin toxins	**Mild** Wash your hands after contact and keep your fingers away from your eyes and mouth
Difficulty	**Experienced**

CARE

Min. enclosure	**100 × 45 × 45 cm** L × W × H for 3 adults
Temperature, day	**26-29 °C**
Temperature, night	**26-29 °C**
Humidity	**100%**
Water	**Aquaterrarium** depth 30-35 cm
Water temperature	**26-29 °C**
UVB	**Not required**
Diet	**Insects, complete diet, vertebrates and worms/snails**
Kept	**In groups**

BREEDING

Reproduction	**Live-bearing**
Development	**Live-bearing**
Litter size	**1-9 young**
Gestation	**180-300 days**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Potamotyphlus kaupii is an aquatic caecilian that looks like a smooth eel. The animal has neither legs nor a true tail and grows to 30-70 cm in length. The body is divided into transverse rings, and a low fin and sometimes a low ridge run along the back. The colour ranges from dark greyish brown to pale purplish grey, with darker, purple-tinged grooves between the rings. The skin is very rich in blood vessels and can look pink. The name is also spelt *Potomotyphlus kaupii*.

The head and forebody are smaller than in *Typhlonectes natans* and *Typhlonectes compressicauda*, and the teeth are numerous, slender and pointed. The vent disc is keyhole-shaped with an elongated front section, and this and the colour make the species easy to recognise. Adults in captivity weigh 60-114 g; females are heavier and thicker than males. The species can live for at least 16 years in captivity.

The skin accounts for a large part of oxygen uptake. The left lung is broad and sac-like without respiratory tissue and probably works as a swim bladder, and the small buccal pump makes the species more dependent on its skin than *Typhlonectes*. The oxygen content of the water therefore matters more for this species.

The skin releases a secretion when the animal is stressed or handled. The secretion can kill fish in the same aquarium, and mucus from aquatic caecilians causes a burning sensation in the eyes and in wounds; this is why the skin toxicity is listed as mild. Wash your hands after handling.

Distribution and habitat

Potamotyphlus kaupii lives in the river systems of the Orinoco and Amazon, mainly below 500 m above sea level. The species is known from Colombia, Ecuador, Peru, Venezuela, Brazil and French Guiana and may also occur in Suriname and Guyana. How far south its range extends is poorly known.

The species is hard to find because it lives in rivers, and its ecology is poorly known. It is assessed as Least Concern (IUCN: LC) because of its wide range, but the assessment is old.

> **Native range:** Brazil, Colombia, Ecuador, Peru, Venezuela and French Guiana.

HABITAT

Potamotyphlus kaupii lives in rivers, streams, large and small lakes and on flooded plains, and it is found under stones in shallow water. Whether it burrows is not known. The water at its habitats is very soft, at around pH 7 and 27 °C. The species lives in more oxygen-rich water than *Typhlonectes*, which copes in muddy, oxygen-poor water.

Its activity pattern in the wild is not known. Its diet in the wild has not been studied, but the species is caught in traps baited with shrimp and fish.

Care

THE ENCLOSURE

Potamotyphlus kaupii is kept in an aquarium. Its care is less well known than that of *Typhlonectes*, and the aquarium should imitate rocky, oxygen-rich streams rather than muddy, still water. Three adults need at least 100 × 45 × 45 cm (about 180 litres) with a large external filter. The greater the volume of water, the more stable the water quality. The species does not go on land and needs no land area.

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.

A substrate is not necessary, but a thin layer of sand or fine gravel allows the animals to burrow. 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 during shedding, but they must not be sharp. Rooted plants are often dug up, so floating plants are a better choice.

TEMPERATURE

The water temperature should be 26-29 °C and kept stable; the species breeds without a change of seasons. During gestation 29 °C is good, as it produces more viable young. Around 32 °C causes heat stress in aquatic caecilians.

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 brumation.

Read more: Brumation and the seasons

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 the quality of the water; 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 to stand for a day at the aquarium's 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.

Oxygen matters more than for *Typhlonectes*. Use an air stone and let the filter outlet break the water surface. Moderate flow prevents oxygen-poor pockets, but there must be hides sheltered from the current.

The species does well both in soft water at around pH 7, as at its natural habitats, and in medium-hard water (about 7 °dH) with a pH of up to 8, and it breeds in both. Avoid extremes and rapid swings: 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; 30-35 cm is suitable.

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

Read more: Lighting and UVB

FEEDING

Potamotyphlus kaupii eats meaty foods like the related *Typhlonectes* species: earthworms, crickets, beetle larvae, shrimp and other crustaceans, bloodworms, thawed fish and prepared amphibian food. The mouth is smaller than in *Typhlonectes*, so offer smaller pieces. The food should lie on the bottom or on branches and in hides, because the animal finds its food by smell and does not notice food that drifts or floats. Earthworms and insect larvae are taken alive, but fish and other vertebrates must be dead.

Feed two to three times a week, and juveniles 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 salmonid fish are very fatty. Vitamin supplements are hard to give in water, so a varied diet is the best protection against deficiencies.

Place the food in several spots, or offer it with tweezers, so that all animals get 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 animals are social and lie together in hides, and they are kept in groups. During feeding they may bite each other in their eagerness for food. In the aquarium they are active both day and night.

The species is not kept with fish: secretions from stressed animals kill fish in the same aquarium, and dead and weakened fish are eaten. It can be kept with *Typhlonectes natans*, but needs more oxygen.

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

Breeding

SEXUAL MATURITY AND SEXING

The male has a flat, round rear end and a broader and longer vent disc than the female, whose vent disc is more elongated and slit-shaped. The difference only appears as the animals approach adult size, so sex can only be determined reliably in sexually mature animals. Females are heavier and thicker than males. The age at sexual maturity is not known.

MATING

Mating has not been described in detail for the species; fertilisation is internal, as in all caecilians. The species breeds in captivity without changes in temperature or water chemistry. Stability is what matters most: the same aquarium, the same hides, the same group and steady water quality.

EGGS AND LARVAE

Potamotyphlus kaupii 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. Gestation is estimated at 6-10 months. The female becomes distinctly round, and large females carry more embryos than small ones.

The female gives birth to 1-9 young, rarely up to 14. Birth can cause complications, so a pregnant female is monitored closely.

METAMORPHOSIS

There are no free-living larvae and no metamorphosis in water. The young are born fully developed with very transparent external gills, which often fall off during birth and otherwise within a few hours. After that they are miniature versions of the adults.

Read more: Rearing tadpoles

REARING THE YOUNG

The young can stay with the adults, because they gather naturally. Provide extra floating plants, cork bark and branches so that the young can rest at the surface, because they swim poorly and can drown. It can take several weeks before they begin to eat. After that they are fed more often than the adults, with small pieces of the same foods. 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 or poor water. Skin diseases are the most common cause of death, and mortality in captivity is higher for this species than for *Typhlonectes*. Requires a vet.
- Lack of oxygen and high ammonia or nitrite: requires better aeration and water changes.
- Burns from unguarded heaters: even small burns easily become infected and can kill the animal.
- Escapes and injuries in filters: the animals crawl into filters and out of the aquarium. Mesh and tight lids are essential.
- Redness at the vent disc and lethargy: signs of blood poisoning, often after poor water.
- Parasites under the skin, which cause swellings and white coatings.
- Complications during pregnancy and birth.

The chytrid fungus *Batrachochytrium dendrobatidis* (Bd) occurs in caecilians both in the wild and in captivity, even in animals without symptoms. New animals are quarantined and tested, and nets, equipment and hands are washed between aquariums. *Batrachochytrium salamandrivorans* attacks tailed amphibians, and caecilians are believed to be resistant.

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

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.