herpy

FROGS

Four-lined Tree Frog

Polypedates leucomystax

Polypedates leucomystax is a slender, nocturnal tree frog of 4-9 cm from South-East Asia, which lays its eggs in a foam nest by the water. It is adaptable, readily lives close to people and is easy to keep, but does not tolerate heat above 29 °C. Breeding is triggered in a rain chamber.

Family: Rhacophoridae

KEY FACTS

THE ANIMAL

Adult size	**4-9 cm** snout-vent length
Lifespan	**5 years**
Active	**At night**
Lifestyle	**Arboreal**
Habitat	**Dry forest, rainforest and wetland**
Skin toxins	**None known**
Difficulty	**Intermediate**

CARE

Min. enclosure	**45 × 45 × 60 cm** L × W × H for 2 adults
Temperature, day	**23-27 °C**
Temperature, night	**18-22 °C**
Humidity	**60-70%**
Water	**Water dish**
UVB	**Optional** Ferguson zone 1
Diet	**Insects**
Kept	**Singly, in pairs or in groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles in water**
Egg-laying site	**In a foam nest**
Eggs per clutch	**100-400**
Hatching	**3-4 days**
Larval period	**49-70 days** from hatching to metamorphosis
Larval diet	**Algae/plants**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Polypedates leucomystax is a medium-sized, slender tree frog with an angular head and a pointed snout. The female is markedly larger than the male: males measure about 4-6 cm and females 6-9 cm from snout to vent. The female also has a broader and heavier head and easily weighs one and a half times as much as the male.

The colour varies greatly: grey, green, yellow, reddish or dark brown, often plain light brown to golden yellow, at other times spotted or with dark X-shaped markings on the back and often four thin, dark stripes down the back. The underside is white or cream-coloured. The tip of the snout sometimes has a distinct white spot. The skin is smooth, the hind feet are webbed, and the fingers and toes end in large adhesive discs.

The species was described as *Hyla leucomystax* by Gravenhorst in 1829 and is in reality a species complex. Genetic studies suggest that only the animals from Java and Sumatra belong to the true species, while the populations on the Malay Peninsula, northern Borneo, Sulawesi and northern Philippines are probably unresolved species. Animals in the trade can therefore belong to several different species, and that may explain some of the variation in colour and size.

Skin toxicity: The species has no known skin toxicity, but the skin of all amphibians is delicate and can carry bacteria, so wash your hands after contact.

The temperament is calm; the frog sits hidden during the day and becomes lively when darkness falls.

Distribution and habitat

Polypedates leucomystax lives in South-East Asia. The boundary with the closely related *P. megacephalus* lies at the Isthmus of Kra, so the species is found from southern Thailand down across the Malay Peninsula and Singapore. In Indonesia it is found over large parts of the archipelago, including Sumatra, Java, Borneo, Sulawesi, Bali, Lombok, Sumbawa, Sumba, Flores and Timor, and it also lives in the Malaysian part of Borneo, in Brunei and in the Philippines. In the Philippines and Indonesia it has spread as forest has turned into farmland, and it is easily spread with agricultural goods between the islands. Older reports of a range from India to Vietnam and southern China cover related species and are not included on the map.

The species has been introduced to Papua and to Okinawa and a number of smaller islands in Japan. The introduced populations are not part of the native range.

> **Native range:** Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand.

HABITAT

P. leucomystax is a generalist found in many kinds of habitat: moist and dry forest, montane forest, scrub, grassland, swamps, lakes, ponds and watercourses, and it does well in farmland, plantations, gardens, suburbs and cities. It sits mostly in trees and bushes, but also in tall grass.

The frog is nocturnal. The males gather and call from the ground at the edge of small, shallow ponds and waterholes with a high, deep, duck-like croak. In humid regions the animals are seen all year, while in drier regions the breeding season is limited to the start of the rainy season. Temperature and humidity at the habitats are not documented.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

Two adult *Polypedates leucomystax* need a glass terrarium of at least 45 × 45 × 60 cm, and that is enough for up to four animals. The species jumps far and benefits from more space. The lid must be mesh or have a large mesh section, because ventilation is essential.

The substrate can be fine coconut fibre, sphagnum, peat or damp kitchen paper. Sphagnum must be pressed flat so that the frog does not swallow loose pieces; avoid gravel, small bark pieces and rough carpet. Kitchen paper is changed 2-3 times a week, while soil substrate lasts longer. Provide driftwood, cork tubes, vines and broad-leaved plants as perches and cover, and fit a background on three sides so that the frogs feel safe. Several hiding places reduce stress when the animals are kept together.

TEMPERATURE

Keep the terrarium at 23-27 °C by day and 18-22 °C at night. The upper limit is important: above 29 °C can quickly become fatal, especially if the frog also lacks water or moisture.

A weak heat bulb is enough if the room is cool. Measure with a digital thermometer near the frog's perches. Winter rest is not necessary.

HUMIDITY AND MISTING

Keep the humidity at 60-70 %. This is managed with a hand sprayer, fogging system or rain system, several times a day as needed. Good ventilation is essential: still, humid air quickly causes bacterial skin infections, so at least half of the lid should be mesh. Mist with dechlorinated tap water, rain water or spring water.

WATER AND WATER QUALITY

P. leucomystax must always have access to clean water in a large, shallow dish that is easy to clean and that the frog can easily climb out of. The frog uses the dish as a toilet, so change the water every day, and scrub and disinfect the dish regularly, e.g. with a weak chlorine solution (5 %), which is rinsed off thoroughly afterwards, because amphibians absorb substances through the skin.

Use tap water treated with a water conditioner, so that chlorine, chloramine and heavy metals are removed, or bottled spring water. Never use soap or ordinary cleaning products.

LIGHTING AND UVB

The species does not need any light other than what the plants require. There is no documentation that it needs UVB, but a weak UVB source can be used for the plants and also has an antibacterial effect. UVB is therefore optional (Ferguson zone 1, with plenty of shade). Keep a fixed day-night rhythm with dark nights.

Read more: Lighting and UVB

FEEDING

P. leucomystax is an insectivore, and crickets can be the staple food, supplemented several times a month with waxworms, silkworms, moths, flies, small earthworms and small cockroaches. Mealworms are not healthy in the long run and should be given only rarely. Juveniles of 3 cm take crickets of about 6 mm, at 5 cm they can take crickets of about 13 mm, and adults take crickets of 19 mm or fully grown.

Adults are fed 2-3 times a week with 2-8 crickets per frog, depending on the size of the food and the frog. Juveniles are fed daily, as much as they can eat. Dust the food with calcium and vitamins: for juveniles every time, for adults at every or every other feeding and with a multivitamin once a week. The frog takes only live, moving food, so dried insects are usually refused. Feed in the evening, and make sure everyone gets enough, because the juveniles can compete for the food.

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

BEHAVIOUR AND HANDLING

P. leucomystax is nocturnal and sits hidden among plants and branches during the day, but readily snaps up a feeder insect that passes by. It jumps far and climbs well, but does not glide through the air like some of its relatives in the family. The males call loudly with a deep, duck-like sound.

The species is easily kept in groups of similarly sized animals, especially as juveniles. The males can, however, harass the females with constant mating attempts; if this happens, separate the sexes, or lower the humidity. Do not keep it with larger frogs that could eat it. Like other frogs, it should be handled only when necessary. Use wet, soap-free hands or a smooth plastic tub when the animal has to be moved.

Breeding

SEXUAL MATURITY AND SEXING

The sexes are easy to tell apart as adults: the female is about 2-3 cm longer, has a broader and heavier head and weighs at least one and a half times as much as the male. The male calls loudly. Juveniles cannot be sexed, so buy several animals if you want a pair. The animals are almost fully grown after 12-18 months; the age at sexual maturity is not documented.

MATING

In the wild the species breeds all year in humid regions and at the start of the rainy season in drier regions. The males call from the ground at the water's edge, and the females come down from the trees. In captivity breeding is triggered in a rain chamber, where heavy artificial rain imitates the rainy season. During mating the male clasps the female, and the pair whip up the foam together.

EGGS AND TADPOLES

The female lays 100-400 eggs in a foam nest, which the pair whip up together. The nest sits on plants, stones or other objects over or right at the edge of the water, sometimes floating on the surface. The eggs are about 2 mm in diameter, and the foam protects them from drying out. There is no parental care.

The tadpoles develop first in the nest and then drop into the water, sometimes from a height of several metres. They are large, 3-5 cm, and live in still water, where they mostly scrape organic material from the bottom, but also filter small particles from the water. What they should be fed in captivity is not documented; algal film and plant material supplemented with ordinary tadpole food is the obvious choice. Provide a large tub of clean, still water under the nest.

Read more: Rearing tadpoles

METAMORPHOSIS

The eggs hatch after 3-4 days, and the tadpoles transform after 7-10 weeks. The young are relatively large when they leave the water.

When the forelegs appear, the tadpole must be able to get out of the water. Lower the water level, and add sloping stones, cork or floating plants so it can climb out and not drown.

REARING THE YOUNG

In the wild the newly metamorphosed young stay along the edge of the pond before climbing up into the trees. Captive-raised young of about 3 cm are 8-10 weeks old, grow to about 5 cm in a further 2-3 months and are almost adult after 12-18 months. The young take small crickets; the food in the very first days after metamorphosis is not documented, but fruit flies and newly hatched crickets are the obvious choice. Feed daily, dust the food every time, and make sure everyone gets enough, because the young compete for the food.

Health and common mistakes

P. leucomystax is robust, but several mistakes recur:

- Bacterial skin infections from still, humid air and poor ventilation. Provide a mesh lid and a clean enclosure.
- Heat stress: above 29 °C can be fatal, especially together with a lack of water and moisture.
- Constipation or blockage of the intestine (impaction) when the frog swallows loose substrate such as sphagnum or small stones. Press the moss flat, and avoid gravel and small bark.
- Poor hygiene in the water dish, which the frog uses as a toilet. Change the water daily.
- Lack of calcium and vitamins from a one-sided diet. Dust the food, and vary the feeder insects.

Many animals in the trade are wild-caught, so preferably buy captive-bred animals, and quarantine new animals. Never release frogs or tadpoles into the wild; the species has already been introduced in several places outside its native range. Seek a vet with amphibian expertise if the animal stops eating or seems lethargic.

Read more: Quarantine and hygiene 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.