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FROGS

Chapa Bug-eyed Frog

Theloderma bicolor

Theloderma bicolor is a small, moss-green frog from the damp mountain forests of northern Vietnam and southern China. It is flattened and covered in knobbly warts, so it almost vanishes among moss and lichen. The species is nocturnal and needs a cool, humid enclosure with a water section, because it does not tolerate heat. Its care is similar to that of the other moss frogs, but several breeding figures are borrowed from related species.

Family: Rhacophoridae Former name: *Rhacophorus leprosus bicolor; Rhacophorus bicolor*

KEY FACTS

THE ANIMAL

Adult size	**4-6 cm** snout-vent length
Lifespan	**5-10 years**
Active	**At night**
Lifestyle	**Arboreal**
Habitat	**Montane forest and rocky terrain**
Skin toxins	**None known**
Difficulty	**Intermediate**

CARE

Min. enclosure	**50 × 30 × 40 cm** L × W × H for 4 adults
Temperature, day	**16-20 °C**
Temperature, night	**13-18 °C**
Humidity	**80-90%**
Water	**Water section** depth 5-10 cm
UVB	**Optional** Ferguson zone 1
Diet	**Insects**
Kept	**In pairs or in groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles in water**
Egg-laying site	**On leaves over water**
Sexually mature	**8-10 months**
Eggs per clutch	**3-25**
Hatching	**9-22 days**
Larval period	**75-180 days** from hatching to metamorphosis
Larval diet	**Complete diet**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Theloderma bicolor is a small frog in the genus *Theloderma*, which hobbyists call moss frogs. The body is flattened, and the skin on the back is very rough, with large, prominent warts among purplish-red knobs. The back and the upper surface of the limbs are light green to olive green, and the limbs have dark olive and purple crossbands. From the armpit down the side of the thigh the skin is black with irregular yellow-green markings, while the belly is smooth and dark brown with white spots. The adhesive discs on the fingers and toes are orange-red. The species name *bicolor* means two-coloured.

Females typically reach about 5 cm from snout to vent, and large females reach 6 cm. Males are smaller, have an internal vocal sac and a yellowish to pink nuptial pad on the first finger. Lifespan is not documented for the species; the figure in the specification box is borrowed from *Theloderma asperum*, and moss frogs can generally live for many years in captivity.

Toxic skin secretions have not been described, but always wash your hands before and after touching a frog or the water in the enclosure. The species is for looking at, not for handling. It was described in 1937 by René Léon Bourret as a subspecies of *Rhacophorus leprosus* and has since been known as *Rhacophorus bicolor*.

Distribution and habitat

Theloderma bicolor was described from Sa Pa in Lao Cai Province in north-western Vietnam. It lives in mountain forest at 1,400-1,800 metres above sea level in northern Vietnam, from Lao Cai south to Quang Tri, and in central and south-eastern Yunnan in China.

The range is small and tied to an upland area with few suitable habitats. The population has declined sharply in Vietnam but is stronger in China. The animals in the hobby come from imports from Vietnam and are now bred regularly in captivity; captive-bred animals are therefore the right choice.

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

> **Native range:** Vietnam and China.

HABITAT

Theloderma bicolor lives in evergreen mountain forest with small to medium-sized trees and in moss-covered rainforest. It sits on broad-leaved plants close to the trees and by streams, and is also found in limestone gorges. The eggs are laid above the waterline in water-filled hollows in trees and plants, so the tadpoles drop into the water when they hatch.

The climate in the uplands is cool and humid, with a cool, slightly drier season and a warmer rainy season. The frogs stay close to water and in damp hollows all year. The species is listed as Least Concern (LC), but it was assessed as threatened until 2022. Deforestation, agriculture and hydroelectric dams are the greatest threats.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

The care of *Theloderma bicolor* is similar to that of its relatives *Theloderma corticale* and *Theloderma asperum*, but the species must be kept cooler. It thrives only in an enclosure where the temperature can be kept low. An enclosure of 50 × 30 × 40 cm (length × width × height) is suitable for a small group of four animals. The enclosure needs a permanent water section and dense plant cover.

Set it up as a paludarium: cork tubes and cork bark slanted over the water, branches, moss and plants such as pothos, peace lily and water lettuce. Cork tubes with an internal diameter of at least 7 cm, standing partly in the water, serve both as hiding places and for egg laying. A drip wall of cork or artificial rock, where water runs down over the surface, imitates the limestone gorges. Make an easy route from water to land so that newly metamorphosed froglets can climb out. The lid should retain humidity but allow ventilation. Quarantine new animals for six weeks.

Read more: Humidity, misting and ventilation Read more: Quarantine and hygiene

TEMPERATURE

The species is a mountain frog and does not tolerate heat. By day the temperature should be 16-20 °C and at night 13-18 °C, which matches the climate in the uplands. For short periods it tolerates down to about 10 °C. Above 25 °C is a warning sign, and above 27 °C the frogs can die. If the enclosure cannot be kept below 25 °C in summer, the species is not suitable.

Measure with a digital thermometer, and keep the enclosure away from south-facing windows and heat sources. Heat lamps have no place here. On warm days, misting with cold water, ice cubes made from reverse osmosis water in the water section, a fan in front of the enclosure or a cooling element will help. The species does not need a true winter rest.

HUMIDITY AND MISTING

Humidity should be 80-90 %, and never below 60 %. The water section holds much of the humidity, so frequent misting is not necessary: mist two to three times a week with cold water, so that droppings are rinsed off cork and glass into the water, and more often on warm days, because it also cools. Moss, leaf litter and plants keep the substrate damp. The air must not stand completely still, so the ventilation must work.

WATER AND WATER QUALITY

The water section is a permanent part of the enclosure. Provide 5-10 cm of water, with cork bark and cork tubes as land and hiding places. Use reverse osmosis water with minerals added for amphibians, and add tannins from *Terminalia catappa* leaves, oak leaves or a tannin-rich water conditioner, so that the water turns tea-brown. Current and a filter are not necessary, and water that is too clean can cause eye problems. Change about two thirds of the water every two to three weeks. Drowned feeder insects are removed at the water change.

LIGHTING AND UVB

The species is nocturnal, so the lighting is mainly for the plants. A 6,500 K fluorescent tube for 12 hours a day is enough for plants such as pothos and peace lily. A weak UVB tube for shade-dwelling species (Ferguson zone 1) is optional, and the frogs must always be able to retreat into shade. The light must not warm up the enclosure. A dim red night light or a moon lamp makes it possible to see the frogs when they are active.

Read more: Lighting and UVB

FEEDING

Theloderma bicolor eats live insects. Use crickets as the staple, supplemented with waxworms, dubia roaches, flies and soldier fly larvae. Feeder insects should be no longer than the distance between the frog's eyes. Dust the food with calcium with D3, alternating with a multivitamin and occasionally vitamin A.

Feed just after the lights go out, when the frogs become active. Place the food on cork tubes and bark, or put out a small feeding dish that floats on the water so that crickets do not drown. Adults get four to six feeder insects two to three times a week. Overfeeding must be avoided.

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

BEHAVIOUR AND HANDLING

Theloderma bicolor sits hidden among plants and in cork by day and comes out when it gets dark. The animals can be kept in pairs or in a small group of three to four, when the enclosure has enough space and hiding places. The males call at night with a soft, hooting sound that can be heard in a quiet house.

The species is not suited to handling. If an animal has to be moved, use a small, damp container, or pick it up with wet, clean hands. Do not keep the species together with other frog species.

Breeding

SEXUAL MATURITY AND SEXING

Sexual maturity is not documented for the species; the figure in the specification box is borrowed from *Theloderma corticale*, where the animals are sexually mature after eight to ten months. Only then can the sex be seen. Females are largest, and males have a yellowish to pink nuptial pad on the first finger. Tadpoles that grow up in warm water become almost exclusively males; cool water gives more females (see Eggs and tadpoles).

MATING

The species is bred regularly in captivity in the same way as the other moss frogs. Keep males and females together, feed a little more than usual so that they build up fat reserves, and provide plenty of partly submerged cork tubes. Weekly water changes with cooler water usually set off mating within a few days. The male calls, and the pair goes into amplexus (the male grips the female behind the forelimbs). The season and rest period in the wild are not documented.

EGGS AND TADPOLES

The eggs are laid on the inside of cork tubes standing partly in the water, or on the underside of bark slanted over the water, so that the tadpoles drop into the water at hatching. The number of eggs per clutch is not documented for the species; in the genus, the small species lay 3-5 eggs and the large ones up to about 25. Leave the eggs in place and keep them damp. The parents do not care for the eggs or tadpoles.

Move the tadpoles to a small container with 10 cm of water from the enclosure and *Terminalia catappa* leaves, which they also gnaw on. They eat drowned feeder insects and tadpole food twice a week; change half of the water every week. Keep the water cool, 13-16 °C, so that more females result.

METAMORPHOSIS

The incubation and larval periods are not documented for the species; the figures in the specification box are borrowed from *Theloderma corticale*, where the eggs hatch after 9-22 days. Metamorphosis takes several months, in cool water up to six to eight months.

When the forelimbs appear, the water must be lowered to no more than 5 cm, and there must be an easy route onto land with cork, roots or floating plants. The froglets begin to eat after they have been on land for about a week.

Read more: Incubating eggs

REARING THE YOUNG

Newly metamorphosed froglets are moved to a small enclosure with 2-5 cm of water, floating cork bark and a few pothos cuttings, but without cork tubes, so that they are easy to keep an eye on. The temperature is kept at 16-20 °C. The first food is springtails, fruit flies and the smallest crickets, fed every other day and dusted with calcium and vitamins. After a few months they can move to a larger enclosure.

Health and common mistakes

Theloderma bicolor tolerates heat and fluctuations poorly and is more vulnerable than *Theloderma corticale* and *Theloderma asperum*. The typical problems are:

- Too high a temperature. Above 25 °C is a warning sign, and above 27 °C can be fatal. Cool immediately.
- Air that is too dry, without access to water.
- Water that is too clean, which can cause eye problems.
- Lack of calcium and vitamins, especially in females and froglets. Dust the food.
- Chytrid fungus and other infections. Keep new animals in quarantine for six weeks.

See a veterinarian with amphibian expertise if a frog loses weight, stops eating, develops sores, discoloured skin or cloudy eyes.

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.