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FROGS

Black-webbed Treefrog

Rhacophorus kio

Rhacophorus kio is a large, grass-green flying frog from the rainforests of southern China, Laos, Thailand and Vietnam. Females reach up to 8 cm. The webbing is orange-yellow with a black spot at the base of each finger and toe, and the frog spreads it out when it glides between the trees. The species is nocturnal and shy, and little is known about its care in captivity.

Family: Rhacophoridae

KEY FACTS

THE ANIMAL

Adult size	**6-8 cm** snout-vent length
Lifespan	**5-10 years**
Active	**At night**
Lifestyle	**Arboreal**
Habitat	**Rainforest and montane forest**
Skin toxins	**None known**
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 45 × 90 cm** L × W × H for 3 adults
Temperature, day	**21-24 °C**
Temperature, night	**18-21 °C**
Humidity	**70-90%**
Water	**Water dish** depth 2-3 cm
UVB	**Recommended** 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	**130-180**
Hatching	**5 days**
Larval period	**45-85 days** from hatching to metamorphosis
Larval diet	**Algae/plants and complete diet**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Rhacophorus kio is a large, slender tree frog with long legs, large adhesive discs and strong webbing between both fingers and toes. The back is grass green with darker green patches and small white spots, the flanks have yellow spots and are dark brown lowest down, and the belly is yellow. The thighs are green, orange-yellow at the rear. There is a large, distinct black spot in the armpit. The webbing is orange-yellow, and the longitudinal lines in it are orange and yellow. The black spot in the webbing sits only at the base of the fingers and toes, so the webbing looks paler than in *Rhacophorus reinwardtii*, where black extends all the way to the edge.

Adults measure 6-8 cm from snout to vent, and females are largest. The weight is not documented. The frog spreads its webbing when it jumps from a high branch and glides along a sloping path to a lower point. The hands are mobile, so the frog can grasp branches, and the adhesive discs hold firmly on wet surfaces.

The species was described in 2006 by Annemarie Ohler and Magali Delorme. Until then it was counted as *R. reinwardtii*, but studies of body shape and DNA showed that the flying frogs of mainland South-East Asia are a separate species. The frog is rare in museum collections because it is hard to find outside the breeding season. Animals in the trade are often sold under the name *R. reinwardtii*, so the origin cannot always be relied on.

The species has no known toxic skin secretion. Even so, wash your hands before and after working in the terrarium, and do not touch your eyes or mouth afterwards. In captivity it probably lives 5-10 years.

Distribution and habitat

Rhacophorus kio lives in South-East Asia: in China in the provinces of Yunnan and Guangdong, in Laos, in northern Thailand and in Vietnam. The records in Thailand are from the areas around Chiang Mai and Tak, and in Laos and Vietnam the species has been found in a number of provinces from the northern mountains down to central Vietnam.

The frog has been recorded from about 200 to 1,800 m above sea level. Populations are fragmented, because the species is tied to undisturbed forest with ponds and marshes nearby. Occurrence in neighbouring Myanmar is not confirmed, so the map shows only the four countries above.

> **Native range:** China, Laos, Thailand and Vietnam.

HABITAT

Rhacophorus kio lives in the tree canopy of undisturbed, evergreen rainforest with a dense canopy, in both primary and secondary forest. The frog most often sits in the understorey beneath the uppermost branches, where the foliage protects against weather and predators, but in southern China it has also been seen right at the top of the canopy, 57 m above the ground. It is nocturnal and hides in the foliage by day.

The breeding season runs roughly from April to July. Males call from the trees above breeding ponds, marshes and waterholes. The female lays the eggs in foam, which she wraps in leaves above the water. When the tadpoles hatch, they fall into the water and develop in the pond.

The climate in the area is tropical to subtropical with a rainy season, during which the frogs breed. Its diet in the wild is poorly known, but consists of insects and other arthropods. The species is threatened above all by deforestation for agriculture and by pollution of the breeding ponds.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Little is known about keeping *Rhacophorus kio*. The recommendations are based on the size and habitat of the species and on the closely related *Rhacophorus reinwardtii*; the figures are borrowed from there and adjusted, because *R. kio* is larger.

The terrarium must be tall and airy. Two to three captive-bred adults need at least 60 × 45 × 90 cm. Larger is better for a frog that glides, and wild-caught animals need much larger terrariums and can still easily injure themselves when they leap around at night. Buy captive-bred animals whenever possible.

The furnishings must provide many perches and room to jump. Use vertical branches, a cork back wall and plants with large, sturdy leaves that can support a heavy frog, for example *Philodendron* and *Epipremnum*. Keep the middle of the terrarium fairly open, and plant densely in front of the glass, so that the frog does not collide with large, open glass surfaces. The substrate can be a moisture-retaining, living substrate with sphagnum and dead leaves, or a foam sheet that holds moisture and is easy to clean. A mesh across the whole lid ensures that the air does not stand still.

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

TEMPERATURE

Keep the terrarium at 21-24 °C by day, corresponding to ordinary room temperature, and let it fall to 18-21 °C at night. The frog tolerates short periods up to 27-28 °C, but the temperature must not exceed 28 °C. Do not use heat lamps, watch the room temperature in summer, and check with a digital thermometer.

A cool resting period in winter is not necessary.

HUMIDITY AND MISTING

Humidity should be 70-90 %, lowest by day and highest at night. Mist the terrarium regularly with dechlorinated tap water, rainwater or reverse-osmosis water, and let it dry out a little during the day, so that the air does not stand still. Live plants keep the air humid, and a mesh across the whole lid together with a shallow water bowl helps with both.

If you see wrinkled skin or a sluggish frog, increase the humidity and lower the temperature immediately.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

Place a stable, shallow water bowl in the terrarium, which the frog can sit in at night. 2-3 cm of water is enough, so that the frog easily gets out again. Change the water as soon as it is dirty, and preferably every day or every other day. Use dechlorinated tap water, rainwater or reverse-osmosis water, and never use soap or cleaning products near the water, because amphibians absorb substances through the skin.

The water must be at the same temperature as the air.

LIGHTING AND UVB

The frog is arboreal, and a weak UVB source of the type used for tropical forest animals is recommended. A low UV index on the uppermost leaves (Ferguson zone 1) is a cautious starting point. Always provide shaded places where the frog can retreat.

Use LED lighting that is strong enough for the plants, and avoid lamps that give off heat. Keep a fixed daily rhythm with about 12 hours of light. The frog is nocturnal and becomes stressed by disturbance in the terrarium during the day.

Read more: Lighting and UVB

FEEDING

Rhacophorus kio eats live insects. Crickets can be used throughout its life, from small newly hatched ones to large ones, supplemented with small cockroaches, soldier fly larvae and an occasional wax moth larva as a treat. Adults take crickets of up to about 25 mm, and young frogs of 2-3 cm take crickets of about 6 mm.

Give small portions twice a week to adults and three to four times a week to juveniles, and remove feeder insects that are not eaten. All feeder insects must be gut-loaded and dusted with calcium, and now and then with a vitamin supplement containing D3.

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

BEHAVIOUR AND HANDLING

The species is nocturnal and shy and spends the day hidden among the leaves; most of the time it sits on the glass or on the furnishings. It lives mostly on its own, but can be kept in small groups with little aggression outside the breeding season. Keep a pair or a small group in a spacious terrarium with many perches.

The frog should be handled as little as possible, because the skin is thin and sensitive. During cleaning it is moved with a damp, soft plastic tub. It jumps and glides wildly when startled, and wild-caught animals often hit the glass.

Breeding

SEXUAL MATURITY AND SEXING

Females are larger and sturdier than males, and the eggs can be seen through the skin when they are developed. Males are smaller and slimmer and call especially when the terrarium is kept very humid. In closely related flying frogs the difference between the sexes becomes clear at an age of 12-14 months, and the males then develop visible nuptial pads.

When *Rhacophorus kio* reaches sexual maturity is not documented, and young animals are hard to sex. Keep several animals together, and sort them when the sexes can be seen.

MATING

In the wild the species breeds from about April to July. Males call from the trees above the breeding ponds, and the female arrives. During mating the pair produces a sticky foam of eggs, mucus and sperm, which they whip with their hind legs.

In the terrarium, flying frogs need a seasonal cycle and a rain chamber in order to breed, like other tropical tree frogs; for *Rhacophorus kio*, breeding is only sparsely described. In the related *Zhangixalus arboreus*, breeding is triggered by misting the terrarium every evening for a period, giving extra food and then running a rain system for 20 minutes at a time at intervals of about three hours during the day and for one hour straight at night. The males then begin to call almost immediately.

EGGS AND TADPOLES

When the foam has been whipped, the male leaves the female. The female draws her hind legs in towards her body and wraps leaves around the foam. She repeats this three times with new leaves, so that the nest becomes elongated, and remains sitting still for about 20 minutes until it is finished. The foam hardens on the outside into a crust, so that the eggs stay moist, and the leaves hide them from predators. The parents leave the nest and care for neither eggs nor tadpoles.

The number of eggs per nest is not documented for the species; the figure in the box is borrowed from *Rhacophorus reinwardtii*, which lays 130-180 eggs.

When the tadpoles hatch, they fall into the water beneath the nest. Provide a water area of at least 8 cm beneath the leaves where the frogs can lay, or cut the leaf off and hang it above an aquarium.

The care of the tadpoles is not known for the species. The care of *Zhangixalus arboreus* can be used as a starting point: 18-20 °C, 8 cm of water with pieces of cork and aquatic plants, and a daily water change of 5-10 %. The tadpoles eat spirulina tablets, which sink to the bottom.

METAMORPHOSIS

The eggs hatch after about 5 days, and fully developed tadpoles are 43-52 mm long. The larval period is not documented for *Rhacophorus kio*. In *Zhangixalus arboreus* it takes about six weeks and in *Rhacophorus reinwardtii* about 12 weeks, so the figures in the box are only a guide.

When the forelimbs appear, the tadpoles stop eating and need easy access to land: lower the water level, put cork or branches in the water, and keep a lid or mesh on the aquarium, so that the newly metamorphosed froglets cannot escape. Provide a moist transition to land with plants and wet hiding places.

REARING THE YOUNG

The newly metamorphosed froglets go into a small, humid terrarium with damp kitchen paper, plants and a shallow water bowl. Humidity must be high at first, 80 % or more. Give small, dusted crickets or fruit flies, a few and often, once the tail has been absorbed, and sort by size, so that the smallest are not outcompeted. At 2-3 cm the young take crickets of about 6 mm. Keep them in a smaller terrarium until they are large enough to cope among the adults.

Health and common mistakes

Common problems in tree frogs in terrariums are:

- Desiccation and too high a temperature. The signs are lethargy, wrinkled skin and outstretched legs. The species prefers it cool, so keep an eye on the thermometer and hygrometer.
- Injuries from jumping against the glass. Wild-caught animals in particular hurt themselves when they glide around at night.
- Infectious diseases and parasites, especially in wild-caught animals. Buy captive-bred animals, quarantine new animals, and use separate equipment.
- A one-sided diet or a lack of calcium and D3, which can cause weakened bones. Vary the food.

See a vet with expertise in amphibians if the frog stops eating, has sores, swellings or reddish areas on the skin, or sits listlessly on the floor.

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.