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FROGS

## Marbled Reed Frog

# *Hyperolius marmoratus*

A small, adaptable savanna frog from southern and eastern Africa, whose colours and patterns vary enormously from region to region and between day and night. *Hyperolius marmoratus* is nocturnal, sleeps on leaves by day, feeds on small insects and breeds in water when the rainy season begins.

Family: Hyperoliidae

KEY FACTS

### THE ANIMAL

| | |
|---|---|
| Adult size | **3-4 cm**<br>snout-vent length |
| Lifespan | **4-5 years** |
| Active | **At night** |
| Lifestyle | **Arboreal** |
| Habitat | **Savanna and wetland** |
| Skin toxins | **None known** |
| Difficulty | **Intermediate** |

### CARE

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|---|---|
| Min. enclosure | **60 × 30 × 40 cm**<br>L × W × H for 4 adults |
| Temperature, day | **22-27 °C** |
| Basking spot | **28-30 °C** |
| Temperature, night | **16-20 °C** |
| Humidity | **60-80%** |
| Water | **Water dish**<br>depth 3-5 cm |
| UVB | **Optional**<br>Ferguson zone 1 |
| Diet | **Insects and small invertebrates (springtails, fruit flies)** |
| Kept | **In groups** |

### BREEDING

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|---|---|
| Reproduction | **Egg-laying** |
| Development | **Tadpoles in water** |
| Egg-laying site | **In water** |
| Eggs per clutch | **150-650** |
| Hatching | **5 days** |
| Larval period | **64-100 days**<br>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

*Hyperolius marmoratus* is a small tree frog in the family Hyperoliidae. Adults reach about 4 cm, and males and females are almost the same size. The species is one of the best examples of variation within a single species: colours and patterns occur as stripes, spots, marbling and fine stippling, and each population has its own pattern. Some are light brown with dark spots, others are striped in black and white with a yellow stripe down the middle, and others again have reddish-brown spots on a pale ground. The populations have previously been described as subspecies and as separate species, and the species' long list of synonyms reflects this. The pattern is therefore the most important distinguishing feature, and animals from different regions should not be mixed if they are to breed.

The species was described in 1842 by Wilhelm von Rapp. The toes have large adhesive discs that make it easy to climb up grass stems and reeds. The pupil is horizontal, which distinguishes the genus *Hyperolius* from the Madagascan relatives, whose pupil is vertical.

By day the colours are often pale and subdued, while the night dress is strong and conspicuous. In adults the final pattern develops when the frog reaches sexual maturity. In the dry season, especially in strong heat, the frog can turn white, because tiny crystals in the skin reflect the sunlight and keep the animal cool. The skin loses unusually little water.

Skin toxins have not been documented in the species, but amphibians should not be handled unnecessarily, and hands are washed after contact with the animals or the terrarium. The males call loudly and can be heard from a long way off, so the species does not belong in a bedroom. The species can live at least 4-5 years in captivity.

## Distribution and habitat

*Hyperolius marmoratus* has a large range in southern and eastern Africa. It is found in southern Kenya, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe, Angola, Botswana, South Africa, Eswatini and Lesotho. It is common throughout the area and in recent years has begun to spread into the winter-rainfall region of the Western Cape in South Africa.

The species also lives in and around human settlements and has been seen on pasture, in rural gardens and in urban areas. It is not threatened.

> **Native range:** Kenya, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe, Angola, Botswana, South Africa, Eswatini and Lesotho.

### HABITAT

The species lives in savanna, scrubland, open woodland and grassland along streams, ponds, marshes and lakes and in lowlands with temporary pools in the rainy season. It is one of the few frogs that thrive alongside people. By day it sits motionless on reeds, grass stems and leaves close to water, often in full sun, and at night it becomes active and the males begin to call.

The rainy season, from the first rains of spring to late summer, is the breeding season. In the dry season the frog stops eating, lowers its metabolism to about half and sits still on a single leaf all day in a water-saving posture. Specific figures for temperature and humidity at the habitat are not documented.

Read more: Humidity, misting and ventilation

## Care

### THE ENCLOSURE

Four adults need a terrarium of at least 60 × 30 × 40 cm (length × width × height). The frogs are fast and use the whole terrarium, so a group of five to ten animals needs a larger terrarium, for example 80 × 40 × 50 cm. A terrarium with a front door is better than one that opens from the top, because the frogs easily hop or run upwards when the lid is opened. The lid must fit tightly and have fine mesh, so the air can change and none escape.

The genus sleeps on vegetation by day, so planting is important. Suitable plants are mother-in-law's tongue, small bird's-nest ferns, philodendron with large leaves and golden pothos. Rinse the plants thoroughly and let them stand outside the terrarium for a few weeks, so that remnants of fertiliser, leaf shine and pesticides disappear. Artificial plants also work. Add branches of driftwood, bamboo and cork bark as perches and thin stems or bamboo canes as an imitation of reeds.

The substrate matters little, because the frogs seldom go on the ground, but it must be easy to keep clean. A layer of gravel under a mesh and a layer of moist sphagnum on top keeps the moss from becoming waterlogged, and the moss needs replacing only every few months, as long as the terrarium smells fresh. Coconut fibre also works, and moist kitchen paper is a simple solution for a quarantine box but must be changed several times a week. A newly acquired group is kept for about a month in a simply furnished terrarium, so the animals are easy to monitor.

Read more: Quarantine and hygiene

### TEMPERATURE

By day the temperature in the terrarium should be 22-27 °C, and at night it may fall to 16-20 °C. That suits a savanna climate with warm days and cooler nights. A small heat lamp over a branch at one end gives a warm basking spot of 28-30 °C, where the frogs often sleep and show their strongest colours. The rest of the terrarium should be cooler, so the animals can choose. Switch off all lighting at night.

The species tolerates heat well, because the skin loses very little water, but it must always be able to get away from the basking spot. Measure the temperature in several places with a digital thermometer, and keep the terrarium away from south-facing windows. Signs of too low a temperature are loss of appetite and animals sitting hunched up.

Read more: Heat and temperature

### HUMIDITY AND MISTING

Humidity should be 60-80%. The species tolerates dry periods unusually well, but in the terrarium the humidity is kept even. Mist the terrarium with lukewarm, clean water every evening when the frogs wake, and preferably lightly again during the day. The frogs drink and absorb water from leaves and walls, so damp leaves are important. Keep the air moving with mesh openings, so the terrarium does not become stagnant and mouldy.

In the wild the humidity alternates between rainy and dry season, and the terrarium can imitate this by being a little drier for a period and then misted heavily several times a day. It works as a signal of the rainy season and encourages breeding. A small drop in humidity during the day is normal, but the animals must not dry out.

### WATER AND WATER QUALITY

Place a wide, shallow water dish 3-5 cm deep in the terrarium, and keep it full at all times. The frogs often sit in the water at night and dive down when startled, because they have webbed feet and are good swimmers. Give them an easy way out of the dish with stones, bark or a plant. The water must not contain chlorine or chloramine. Use tap water with a water conditioner, rainwater or reverse-osmosis water with added minerals for aquariums. Change the water every day, and remove dead feeder insects and droppings at once.

Amphibians absorb water and dissolved substances through the skin, so cleaning products, soap, cream and hand sanitiser must not come into contact with the dish or the terrarium. Rinse the dish with clean water, and do not use soap.

### LIGHTING AND UVB

The species sits in full sun in the wild and does best in a brightly lit terrarium. Use fluorescent tubes or LEDs with a colour temperature of 5,000-6,500 K that cover the whole length of the terrarium, and switch them on 12 hours a day on a timer. Strong white light encourages colour and activity. An ordinary incandescent bulb gives heat but not good light.

No UVB requirement has been established for the species, so UVB is optional. The frogs often sleep in open terrain, so a fluorescent tube or compact bulb with low UVB output is still a reasonable addition (Ferguson zone 1). Place it over the mesh on one side, so the frogs can choose shade in the rest of the terrarium, and always provide plants that give cover during the day.

Read more: Lighting and UVB

### FEEDING

The frog is a lively little hunter that takes most insects the size of its head or smaller. The staple is small crickets of 6-10 mm and flying fruit flies. Vary with houseflies and small moths. Houseflies can be bought as larvae, are allowed to pupate and can be stored as adults in the fridge for up to a month. Sprinkle the cold, stiff flies into the terrarium, where they wake up and give the frogs something to chase.

Feed 2-4 times a week, with so much that everything is eaten overnight. If feeder insects are left in the morning, too much has been given. If everything is gone in a few minutes, it is too little. Allow 3-6 small crickets per frog per feeding. Young frogs are fed every day with fruit flies and very small crickets.

Dust the food with a phosphorus-free supplement with calcium and vitamin D3, and use a supplement with vitamin A in the form of retinol, not beta-carotene, which amphibians cannot always use. Dust every other feeding, and more often for young animals. Discard supplements once they have been open for three to six months.

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

### BEHAVIOUR AND HANDLING

*Hyperolius marmoratus* is nocturnal. By day the animals sit still on leaves, stems and panes, and at night they hunt, swim in the water dish and call. The male's call is a short, high whistle, and the vocal sac is large, so the call carries far. The males defend a perch by kicking at rivals and keep about half a metre apart. The terrarium therefore does not belong in a bedroom.

The frogs are kept in a group of at least four animals. With only a pair, only part of the behaviour is seen, and they breed less often. Take care that the terrarium does not become overcrowded, so the males can keep their distance.

The frogs should preferably not be handled. They are small and delicate, and the skin absorbs substances from the hands. If it is necessary, hands must be wet and clean, without soap and cream. Move the animals with a small plastic container when cleaning, and open the terrarium slowly, because the animals easily jump up towards the opening.

## Breeding

### SEXUAL MATURITY AND SEXING

Males are recognised by the call and by the vocal sac, which is often coloured after a night of calling. When a female is ready to lay eggs, the round eggs show through the skin of the belly. Age and size at sexual maturity are not documented for the species. The adult colouring develops at sexual maturity. For breeding, the group should have at least three to four females and as many males or more, and the animals should come from the same region, so the pattern is kept pure.

### MATING

The species breeds in the rainy season, from the first rains of spring to late summer. Imitate this by feeding generously, preferably daily and varied, until the females are clearly full of eggs, and by misting at least once a day and once at night. The males call loudly at night, and often by day too after misting. Slightly less ventilation can raise the humidity to 80-100%, and this may encourage breeding.

The females prefer a male that calls alone, loudly and often. The female seeks out the male, who grasps her from behind in the mating embrace (amplexus). It lasts several hours, so a male mates with only one female per night.

### EGGS AND TADPOLES

The eggs are laid in water in clumps of about 20 eggs, which are attached to aquatic plants. A clutch is 150-650 eggs, on average 300-400. Each egg is about 1.5 mm and sits in a jelly capsule. They are pale yellow with a dark brown end, in some blue-green. In captivity the females can lay new eggs every second to third week for 14 months or more. There is no parental care: the parents do not look after eggs or tadpoles.

A shallow water dish is seldom enough. A larger body of water with aquatic plants works better. Move the group to a terrarium with 5-12 cm of water in the bottom, or put the existing terrarium partly under water after removing any substrate layers that rot. Let driftwood and cork bark float or stick up out of the water, and cover the water with aquatic plants such as milfoil, hornwort and Java moss. Long trailing stems of golden pothos over the water can also be used.

Water quality is decisive. Remove dead feeder insects and droppings, and change at least half the water every week, which can also encourage egg laying. If nothing happens after a few weeks, the frogs are moved back to the normal setup, and a month later the attempt can be repeated.

The tadpoles are brown with spotted fins and a pointed tail with a black tip. They reach up to about 4 cm long including the tail, and stay near the bottom in shallow, vegetated water. Flakes or pellets for aquarium fish are enough as food, and algae are a good addition.

Read more: Rearing tadpoles

### METAMORPHOSIS

The eggs hatch after about 5 days. The tadpoles grow, and the little frogs are fully developed after 64-100 days (the figure applies to captivity). Keep the water clean and at 21-24 °C, preferably with an aquarium heater, and avoid overfeeding.

When the forelegs appear, the little frogs climb up the side of the aquarium. They can then be picked up and moved to a small ventilated plastic box with no more than 1 cm of water and some leaves to rest on. The tail disappears within a few days, and only then should they be fed. Make sure they can get out of the water and that the newly metamorphosed frogs do not drown.

### REARING THE YOUNG

The newly metamorphosed frogs are very small and need very small live feeder insects. Fruit flies and small crickets, about a week old, make up the bulk and must be dusted with supplements at every feeding. Feed them every day, and keep an eye on the smallest, who may be outcompeted. Sort them into separate boxes until they have gained size.

Keep the young in ventilated plastic containers with a moist substrate, plant leaves and light misting. The adult pattern comes only when the animals reach sexual maturity, so young animals look different from their parents. Move them to a larger terrarium when they are big enough to take larger prey, and put them together with frogs of the same size.

## Health and common mistakes

*Hyperolius marmoratus* is hardy once it has settled in, but wild-caught animals often have a hard time behind them. The typical problems are:

- Thin or starved animals after transport. Choose animals with a plump, slightly rounded body, and feed regularly for the first weeks.
- Lack of calcium and vitamins, which shows as weakness, bent legs and tremors. Use a phosphorus-free supplement with calcium, D3 and vitamin A in the form of retinol.
- Poor water quality, which can cause skin and fungal problems. Change the water daily, remove dead feeder insects, and avoid chlorine, soap and other chemicals.
- Too low humidity or too much heat, which dries out the skin. Keep the humidity at 60-80%, and make sure the animals can get away from the basking spot.
- Stress and frightened animals that injure themselves when they dash about. Use a terrarium with a front door and open it calmly.

A healthy animal is fast, flees when disturbed and has smooth skin without scrapes. See a vet with amphibian expertise if a frog loses weight, does not eat, has sores, swellings or red skin, or sits limp and sluggish.

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.