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FROGS

Cowan's Mantella

Mantella cowanii

Mantella cowanii is a small, diurnal frog from the highlands of central Madagascar, glossy black with bright red to orange limbs. It grows to about 2-3 cm and is one of the most heat-sensitive in the genus: the enclosure must be kept cool all year round. The species is threatened in the wild, so only captive-bred animals should be considered.

Family: Mantellidae

KEY FACTS

THE ANIMAL

Adult size	**2-3 cm** snout-vent length
Lifespan	**5-10 years**
Active	**By day**
Lifestyle	**Terrestrial**
Habitat	**Montane forest and wetland**
Skin toxins in the wild	**Mild**
Skin toxins in captivity	**None** Captive-bred animals. Wild-caught animals can keep their toxins for a long time
Difficulty	**Experienced**

CARE

Min. enclosure	**45 × 45 × 30 cm** L × W × H for 4 adults
Temperature, day	**18-21 °C**
Temperature, night	**16-18 °C**
Humidity	**60-80%**
Water	**Water dish**
UVB	**Optional** Ferguson zone 1
Diet	**Small invertebrates (springtails, fruit flies)**
Kept	**In groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles in water**
Egg-laying site	**On the ground**
Sexually mature	**12-18 months**
Eggs per clutch	**50-130**
Hatching	**3-12 days**
Larval period	**56-98 days** from hatching to metamorphosis
Larval diet	**Algae/plants and complete diet**
Parental care	**None**

PROTECTION AND PAPERWORK

CITES	**Appendix II**
IUCN	**Endangered (EN)**

About the species

Mantella cowanii is a small, boldly marked frog. The head, back and flanks are glossy black, while the joints, parts of the upper arms, the thighs and the lower legs are reddish orange, occasionally yellow. The belly is blackish grey with large, pale bluish patches. The markings are so distinct that the species is easy to tell apart from other frogs. The colours are a warning coloration: the skin contains toxins (alkaloids, especially pumiliotoxins), which the frog takes up from the ants, millipedes and mites in its diet and does not produce itself.

The females reach 25-31 mm and the males 22-27 mm from snout to vent. The species was described in 1882 by George Albert Boulenger. It belongs to the same species group as *Mantella baroni*, *Mantella haraldmeieri* and *Mantella nigricans*. In the wild, hybrids with *M. baroni* occur, and they threaten the distinctiveness of the species.

The poison is mild for humans, but hands should be washed after any contact with animals or enclosure. In animals fed on cultured feeders the source of the poison is missing, so it disappears over time. Lifespan is not documented for the species itself; 5-10 years is borrowed from *M. baroni*.

Read more: Feeder animals: keeping and breeding

Distribution and habitat

Mantella cowanii is found only in Madagascar, in four separate areas of the central highlands: Antakasina, Antoetra, Betafo and Itremo. There are no belts of forest between the areas, so the populations are isolated.

The species is listed as Endangered (EN) on the IUCN Red List because of the very small range. Collecting for the pet trade caused the populations to fall sharply in the past. Export of wild-caught animals was stopped, and an export ban for the species was introduced in 2003. Today the threats are deforestation, fires, agriculture, grazing, drainage and inbreeding in the small populations. The species is on CITES Appendix II.

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

> **Native range:** Madagascar.

HABITAT

The frog lives in forest and grassland near water at 1,300-2,140 metres above sea level and is tied to narrow belts of forest along streams. The highlands are cool, and this explains the species' sensitivity to heat in the enclosure.

The species is most active in the warm rainy season in October and November, when the males call with short, single clicks. Mating, egg laying and the development of the tadpoles have never been seen in the wild. In captivity the eggs are laid on the ground close to water, as in the rest of the genus.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Little is known about keeping *Mantella cowanii*. The species is rare in captivity and is mostly kept without breeding. The figures in the box are therefore borrowed from *Mantella baroni*, its closest relative in the central highlands, while the temperature follows what is known for this species: it must be kept cooler than the rest of the genus.

Four adults need an enclosure of at least 45 × 45 × 30 cm, and more animals require more floor area. The frog lives on the ground, so floor area is more important than height. The males are territorial, so provide many hides and visual barriers. Build up the base with a drainage layer of expanded clay pebbles, a mesh, and on top damp sphagnum or a soil mix without fertiliser. Lay leaf litter over it, and add cork bark, roots and small plants. The lid should be partly mesh so the air does not stand still, and partly solid so the humidity is retained.

Read more: Humidity, misting and ventilation Read more: Terrarium construction and bioactive substrate

TEMPERATURE

The temperature should be 18-21 °C during the day and 16-18 °C at night. This is cooler than for other species in the genus, because the species comes from the highlands at 1,300-2,140 metres above sea level. Prolonged time above 21 °C causes heat stress and can be fatal, and heat should be avoided all year round. The night temperature is borrowed from the genus.

In an ordinary living room it often becomes too warm in summer. A cool room, a cellar or an air-conditioned room is the safe choice. Use LED or other light that does not give off heat, and measure the temperature with a digital thermometer at the animals' level.

HUMIDITY AND MISTING

Humidity should be 60-80 % (borrowed from *M. baroni*), and the substrate damp but not waterlogged. Mist the enclosure daily with decalcified water. Put glass or plastic over parts of the mesh lid to hold the humidity, but let part of the air move.

In a cool, dry period the enclosure is misted only every fifth to seventh day (see Mating). As long as there is clean water in the dish, the animals tolerate it.

WATER AND WATER QUALITY

Place a shallow water dish in the enclosure, and keep it full. The frogs are poor swimmers, so the dish must be so shallow that they can easily get out. The depth is not documented; a couple of centimetres is plenty. Use rainwater, reverse osmosis water with added minerals or tap water treated against chlorine and heavy metals, and change it every day or every other day. Use no cleaning products on the dish.

LIGHTING AND UVB

The UVB requirement is not documented for the species, but it is diurnal, so a weak UVB light (Ferguson zone 1) is probably an advantage, provided there is shade and plants so the animals can choose. Light for the plants should not give off heat. Keep the light on for 10-12 hours a day and dark at night.

Read more: Lighting and UVB

FEEDING

In the wild the species feeds on ants, millipedes and mites. In the enclosure it is fed small arthropods: springtails, wingless fruit flies, newly hatched crickets, woodlice, small black soldier fly larvae and small cockroach nymphs. Variety prevents deficiencies.

Give small portions daily, or 5-10 feeder insects per frog every other day, and adjust according to the condition of the animals. In the cold, dry season one or two feedings a week are enough. Spread the food in several places so that weak animals also get something to eat. Dust the feeder insects with calcium and vitamin powder at every second or third feeding. The amounts are borrowed from related species.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Mantella cowanii is diurnal and can be seen patrolling and hunting for food for most of the day. The males call with short, single clicks and defend their territory. The animals are best kept in a group with many hiding places and space.

Frogs should be handled as little as possible, because the skin is delicate and absorbs substances from the hands. If a frog has to be moved, use a small, clean plastic container. Newly bought animals are quarantined for several weeks in a simple enclosure. Choose captive-bred animals, because export of wild-caught animals has been stopped and the species is threatened in the wild.

Breeding

SEXUAL MATURITY AND SEXING

The females are larger and plumper, and only the males call. Sexual maturity is not documented for the species itself; 12-18 months is borrowed from other species in the genus. A group with more males than females breeds most easily, and the surest way to get both sexes is to let a group of juveniles grow up together.

MATING

The genus breeds after a cool, dry period. For two to three months the light is cut down to about 10 hours a day, the food is reduced, and misting is cut down to every fifth to seventh day, while clean water is available at all times. The temperature is kept low, as during the rest of the year. After that, return to daily misting and plentiful, varied food. The males begin to call, and the females swell with eggs a few weeks later. The cold period is a strain on the animals, so monitor their weight, and move animals that lose a lot of weight. The procedure is borrowed from the genus; for *M. cowanii* it is not described in detail.

EGGS AND TADPOLES

The eggs are laid on land in dark crevices, for example under cork bark over damp moss, close to water. The number per clutch is not documented for the species itself; the box shows 50-130 eggs, borrowed from *M. baroni*. Fertilised eggs show a dividing line after a few days, while unfertilised ones become discoloured.

The eggs are moved with a plastic spoon to a closed container with damp moss and a humidity close to 100 %. When the tadpoles can be seen in the jelly, water is added so that they swim freely, and they are moved to an aquarium with a sponge filter. There is no parental care. Feed the tadpoles daily with fish flakes, algae tablets, bloodworms and daphnia, plus spirulina or chlorella several times a week. Remove uneaten food the next day. The water should be about 20 °C and treated against chlorine and heavy metals.

METAMORPHOSIS

The tadpoles leave the eggs after 3-12 days. At about 20 °C the first metamorphose after about two months, and the rest follow over the next 4-6 weeks (56-98 days in total), because tadpoles from the same clutch develop at different rates. The figures apply to the genus and have not been measured for the species itself.

When the front legs appear, the tadpole is moved to a container with a little water, Java moss and a tight-fitting lid. When the tail is almost absorbed, the little frog is moved to a small land enclosure with damp kitchen paper or sphagnum.

REARING THE YOUNG

The newly metamorphosed frogs are under 1 cm and need plenty of the smallest arthropods: newly hatched springtails, wingless fruit flies and newly hatched crickets. Keep them in small containers, and dust the food with calcium and vitamins. The young are more subdued in colour, and the full colours come during the first year. They are kept cool, like the adults.

Health and common mistakes

Mantella cowanii is sensitive to heat, and most problems are caused by too high a temperature. The typical mistakes are:

- Too high a temperature. Prolonged time above 21 °C causes stress and poor appetite and can kill the animals. Keep the daytime temperature at 18-21 °C.
- Air that is too dry or misting that is too infrequent, which dries out the skin. The animals lose weight.
- Lack of calcium and vitamins because the feeders are not dusted. This causes poor growth and crooked legs.
- Weak animals that are chased away from the food. Feed in several places.
- A dirty substrate and stagnant air, which cause bacteria and fungus. Change the substrate and clean the water dish regularly.
- New animals placed straight in with the old ones. Quarantine prevents parasites and diseases from spreading.

A healthy animal has clear eyes and a plump body and is active by day. See a vet with amphibian expertise if the animal loses weight, does not eat for several weeks, or has sores or swellings.

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.