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FROGS

Bernhard's Mantella

Mantella bernhardi

Mantella bernhardi is the smallest frog in the genus, only 19-22 mm, with black flanks and orange undersides on the limbs. It lives in humid lowland forest in south-eastern Madagascar. The species is vulnerable in the wild, and almost nothing is known about its care, so this guide is based on the requirements of the genus: cool, humid and small arthropods.

Family: Mantellidae

KEY FACTS

THE ANIMAL

Adult size	**19-22 mm** snout-vent length
Lifespan	**4-8 years**
Active	**By day**
Lifestyle	**Terrestrial**
Habitat	**Rainforest 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	**Intermediate**

CARE

Min. enclosure	**45 × 45 × 30 cm** L × W × H for 4 adults
Temperature, day	**20-23 °C**
Temperature, night	**16-18 °C**
Humidity	**70-100%**
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	**12-30**
Hatching	**3-12 days**
Larval period	**56-112 days** from hatching to metamorphosis
Larval diet	**Algae/plants and complete diet**
Parental care	**None**

PROTECTION AND PAPERWORK

CITES	**Appendix II**
IUCN	**Vulnerable (VU)**

About the species

Mantella bernhardi is a small and subdued frog in a genus otherwise known for strong colours. The back is greyish to blackish brown, the flanks are black, and the undersides of the limbs are orange. The belly is black with some large, bluish white spots, and on the throat there is a horseshoe-shaped patch, which is most pronounced in the males. Towards the head there are hints of grey.

The species measures 19-22 mm from snout to vent and is the smallest in the genus. It was described in 1994 by Miguel Vences, Frank Glaw and colleagues and today stands alone in its own species group in the genus. The scientific name honours Bernhard Meier. The sizes of females and males are not documented separately.

The males have a call that differs from the rest of the genus: a trill of several clicks in a row. The other males in the genus call with one or two notes.

The genus takes up toxins (alkaloids) from the ants and mites it eats and does not produce them itself. Animals fed on cultured feeders lose the poison over time. The poison is mild for humans, but hands should be washed after any contact with animals or enclosure. Lifespan is not documented for the species; 4-8 years is borrowed from *Mantella aurantiaca* and *Mantella madagascariensis*.

Read more: Feeder animals: keeping and breeding

Distribution and habitat

Mantella bernhardi is found only in Madagascar and only in the south-eastern part of the island. Known records lie in a band from the area around Tolongoina in the north to Vangaindrano and Manombo in the south, including the forests near Vondrozo. The elevation is 60-630 m above sea level, so the species is a lowland frog.

The population is split into a few separate occurrences. The forests are under pressure from clearance for agriculture, burning, logging and charcoal production, from grazing and from settlement, and collecting for the pet trade is strongly restricted because it can threaten the population. The species is listed as Vulnerable on the IUCN Red List and is on CITES Appendix II.

> **Native range:** Madagascar.

HABITAT

The frog lives on the forest floor in humid, tropical lowland forest and is also found along streams and in swamps and in heavily disturbed, former forest. It stays among leaf litter, moss and roots and is active during the day.

The life of the genus follows the seasons. The males call most in the wet season from December to February, when the females feed on ants, mites and other small arthropods. The eggs are laid on land in damp hollows close to water, and heavy rain washes the tadpoles into the water. In the cooler, dry months the animals are less visible and live hidden in the leaf litter. The seasonal variation has not been studied for this species; the description is borrowed from the genus.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Almost nothing is known about keeping *Mantella bernhardi*, and the species is only rarely kept. Its care is therefore based on the habitat in humid lowland forest and on the requirements of the genus. The figures are borrowed from *Mantella aurantiaca* and *Mantella madagascariensis*, and the most obvious species to compare with are *Mantella baroni* and *Mantella pulchra*, which are better known in captivity.

Four adults need an enclosure of at least 45 × 45 × 30 cm, and more animals require more floor area. The species is small and lives on the ground, so floor area matters more than height. The males defend territories, so choose a larger rather than a smaller enclosure with many visual barriers.

Build up the base with a drainage layer of expanded clay pebbles or pea gravel, a mesh, and on top damp sphagnum or a soil mix with coconut fibre. Spread leaf litter over the base, and provide many hides of cork bark, roots and half coconut shells. Plants can stand directly in the substrate or in pots. Do not use ordinary garden soil with fertiliser, and rinse the plants for pesticides. The lid must retain humidity, but part of it must be mesh so the air does not stand still.

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

TEMPERATURE

The temperature should be 20-23 °C during the day and 16-18 °C at night. The figures are borrowed from *M. aurantiaca*. The species lives in the lowlands, but whether it tolerates more heat than the other species in the genus is not documented. Heat is the most common cause of losses in the genus, and over 27 °C can quickly become fatal.

Most living rooms are suitable, but a south-facing windowsill is not. Use LED or other light that does not give off heat over the enclosure, and measure the temperature with a digital thermometer at the animals' level. Winter rest is not documented for the species.

HUMIDITY AND MISTING

Humidity should be 70-100 %. Mist the enclosure daily with decalcified water, heavily in warm weather and a little less when it is cold. The substrate should be damp, but not waterlogged. Put glass or plastic over parts of the mesh lid to hold the humidity, and make sure that the air can still move.

Weeks or months of drier conditions followed by heavy misting can trigger breeding behaviour (see Mating). If the air is too dry for a longer time, the skin dries out and the animals lose weight.

WATER AND WATER QUALITY

Place a shallow water dish in the enclosure, and keep it full at all times. The frogs are poor swimmers, so the dish must be so shallow that they can easily get out, and it must not take up much of the floor. The depth is not documented for the species, but at most a couple of centimetres is plenty.

Amphibians absorb water and substances through the skin, so use only rainwater, reverse osmosis water with added minerals or tap water treated against chlorine, chloramine and heavy metals. Change the water every day or every other day, and scrub the dish clean without cleaning products.

LIGHTING AND UVB

UVB is not documented as necessary for the species. A weak UVB light (Ferguson zone 1) is an option when there is shade and plants so the animals can choose, but it is optional. 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

M. bernhardi is the smallest in the genus, so the food must be smaller than for the others. The genus hunts ants, mites and other small arthropods. In the enclosure it is fed springtails, wingless fruit flies, newly hatched crickets, aphids, small woodlice and small cockroach nymphs. Variety prevents deficiencies.

Give 5-15 feeder insects per frog every other day, and adjust according to how plump the animals are. In cool weather one feeding a week is enough. Spread the food in several places, otherwise weak males are chased away from the food. Dust the feeder insects with calcium and vitamins at every second or third feeding, and at every feeding for juveniles. The amounts are borrowed from *M. aurantiaca*. Fruit flies and newly hatched crickets are seldom available in pet shops and must be cultured yourself or ordered from a large supplier.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

M. bernhardi is diurnal. The males call from the leaf litter, and they defend territories against one another. The animals are best kept in a small group with many hiding places and plenty of space.

Frogs should as far as possible not be handled. 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 must be quarantined for several weeks in a simple enclosure. Preferably choose captive-bred animals.

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

Breeding

SEXUAL MATURITY AND SEXING

The males are recognised by the call, a trill of several clicks. The females are probably slightly larger and plumper, as in the rest of the genus, but this is not documented for the species. Sexual maturity probably occurs at 12-18 months; the age is borrowed from *M. madagascariensis*. A group with more males than females breeds most easily.

The surest way to get both sexes is to buy a small group of juveniles and let them grow up together.

MATING

Breeding in the species itself has not been described in detail, and the procedure is borrowed from *M. aurantiaca*. Mating follows the rainy season. After 2-3 months of lower temperature (at most 22 °C), a shorter day of about 10 hours of light, misting a couple of times a week and less food, heavy daily misting and plentiful food follow, and then the males begin to call.

The dry season is a strain, so weigh and observe the animals, and end it if some lose weight.

EGGS AND TADPOLES

The female lays the eggs on land, in damp hollows close to water. The number of eggs is not documented for the species; 12-30 eggs per clutch is borrowed from *M. aurantiaca* and *M. madagascariensis*. Often only some of the eggs are fertilised.

The eggs are placed on damp sphagnum in a closed container. When small tadpoles can be seen wriggling in the jelly, water is poured on so that they swim freely, and after a couple of days they are moved with a pipette to an established aquarium with a sponge filter. There is no parental care. For the first few days the tadpoles live off the yolk. After that they are fed daily or every other day with algae such as spirulina and chlorella, fish flakes and daphnia. The water should be 18-26 °C without large fluctuations, 3-5 cm deep for the first few weeks and later up to about 10 cm, and it must be treated against chlorine and heavy metals. Do not overfeed, because the water then deteriorates.

METAMORPHOSIS

The tadpoles break out of the egg about 3-12 days after laying, and the timing is borrowed from *M. madagascariensis*. They develop front legs after 8-16 weeks (56-112 days), and that timing is also borrowed. Tadpoles from the same clutch develop at different rates, and in cooler water it takes longer.

When the front legs appear, the tadpole is moved to a container with at most 1 cm of water and a tight-fitting lid. When the tail is being absorbed, the little frog is moved to a land enclosure with damp kitchen paper and a hiding place of, for example, a pothos leaf or a dry oak leaf.

REARING THE YOUNG

The newly metamorphosed frogs are very small, and for this species the size is not documented. Feed them newly hatched springtails and the very smallest fruit flies, and always give a little food, dusted with calcium and vitamins at every feeding. Keep them in small containers, singly or two to five together.

When they are 2-3 months old, they can be moved to a larger enclosure with moss or soil, bark and plants and cared for like the adults. The colour pattern develops over a few months.

Health and common mistakes

Mantella bernhardi is sensitive to heat and dryness, and most problems come from wrong climate or food. The typical mistakes are:

- Too high a temperature. Keep the daytime temperature at 20-23 °C; over 27 °C can quickly kill the animals.
- Air that is too dry or misting that is too infrequent, which dries out the skin. The animals lose weight.
- Feeders that are too large for such a small frog, or that are not dusted with calcium and vitamins. This causes poor growth and crooked legs.
- Weak animals that are chased away from the food. Feed in several places, and separate the animals if some are bullied.
- A dirty substrate and stagnant air, which cause bacteria and fungus. Change the substrate and clean the water dish regularly.
- Wild-caught animals, which often arrive emaciated and with parasites. Quarantine and a vet are necessary.

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.