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POISON DART FROGS

Lehmann's Poison Frog

Oophaga lehmanni

Oophaga lehmanni is a rare, diurnal poison frog from a small area in western Colombia, black or dark brown with broad bands of red, orange or yellow. It is critically endangered in the wild, and only captive-bred animals belong in an enclosure. The species requires an experienced keeper: it does not tolerate heat, and the tadpoles live exclusively on unfertilised eggs from the female.

Family: Dendrobatidae Former name: *Dendrobates lehmanni*

KEY FACTS

THE ANIMAL

Adult size	**3-4 cm** snout-vent length
Lifespan	**4-15 years**
Active	**By day**
Lifestyle	**Terrestrial**
Habitat	**Rainforest and montane forest**
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	**60 × 60 × 60 cm** L × W × H for 2 adults
Temperature, day	**22-24 °C**
Temperature, night	**17-19 °C**
Humidity	**70-100%**
Water	**No water dish**
UVB	**Optional** Ferguson zone 1
Diet	**Small invertebrates (springtails, fruit flies)**
Kept	**In pairs**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles carried to water**
Egg-laying site	**On leaves over water**
Eggs per clutch	**3-10**
Hatching	**14-28 days**
Larval period	**60-90 days** from hatching to metamorphosis
Larval diet	**Unfertilised eggs from the female**
Parental care	**Guards the eggs, carries the tadpoles and feeds the tadpoles with eggs**

PROTECTION AND PAPERWORK

CITES	**Appendix II**
IUCN	**Critically Endangered (CR)**

About the species

Oophaga lehmanni is a relatively large poison frog with smooth skin and distinct warning colours. The ground colour is black or dark brown, and over it lie two broad bands of vivid colour: one just behind the head and the other around the rear part of the back. The bands can be red, orange or yellow, and there are further coloured bands on the legs and on the belly. The dark ground colour breaks the bands irregularly, so no two animals are quite alike. The tips of the toes are white or bluish-white, and the first toe is shorter than the second. The frog grows to 3-4 cm from snout to vent, and the sexes look alike.

The species was described in 1976 by Charles Myers and John Daly and was formerly called *Dendrobates lehmanni*. The species name honours the Colombian biologist Federico Carlos Lehmann. *O. lehmanni* closely resembles *Oophaga histrionica* and can hybridise with it, both in enclosures and in the wild, where the ranges of the two species meet. It has long been debated whether it is a separate species at all. The clearest difference is the poison: *O. lehmanni* lacks the histrionicotoxins that *O. histrionica* has. In addition, the colour pattern with the broad bands and the pale toe tips distinguishes it from its relatives.

In the wild the frog gets its poison from its food, especially from small arthropods. The skin contains several alkaloids, including fairly large amounts of pumiliotoxin B, and wild animals can be very poisonous. How dangerous the poison is on skin contact is not documented, and the rating mild is an estimate. Captive-bred animals do not get the necessary substances in their food and are therefore without poison. Wash your hands after contact all the same, and do not touch the animals unnecessarily.

The species is one of the most sought-after and at the same time most threatened poison frogs. The wild populations have shrunk sharply, and for many years almost all animals in the trade were illegally collected. Today captive-bred animals are available from licensed farms in Colombia, but the species is still only rarely bred in enclosures. It belongs to the genus *Oophaga*, whose tadpoles eat only eggs, and this makes it a demanding species to keep and above all to breed.

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

Distribution and habitat

Oophaga lehmanni is found only in western Colombia, on the slopes of the Cordillera Occidental. Reliable records are known from two areas: the drainage of the Anchicayá River west of the town of Dagua in the department of Valle del Cauca, where most of the populations live, and an area in the department of Chocó. The species has also been recorded in Farallones de Cali National Park, and it is fully protected in Colombia.

The range is very small and split into several separate populations. The area where the species actually occurs is smaller than 10 km², and the species, which was once common in its small area, is now very rare. For the sake of the species, the precise localities are not given here.

> **Native range:** Colombia.

HABITAT

Oophaga lehmanni lives in humid rainforest on the mountain slopes from about 550 to 1,200 metres above sea level. On the ground it lives in the leaf litter, in forest clearings and at forest edges, and it is occasionally seen in low bushes and trees. Males hold territories and call, also along noisy mountain rivers, where the calls are higher in pitch than in populations away from streams.

The forest is premontane and montane cloud rainforest, and the climate is humid and cooler than in the lowlands. There is a rainy season, and breeding takes place at its end. Eggs and tadpoles use small bodies of water, for example tree hollows, the water-filled leaf axils of bromeliads and bamboo stems. It is the conditions of leaf litter, humid air and small puddles that are imitated in the enclosure.

Care

THE ENCLOSURE

A pair of *O. lehmanni* needs a vivarium of at least 60 × 60 × 60 cm (length × width × height), and larger is better, especially for breeding. The species is fairly large and territorial, so extra space and many hiding places prevent quarrels. The frog is diurnal and lives mostly on the ground, but also uses branches and the leaves of the plants, so there must be something to climb on.

Build the vivarium as a bioactive vivarium with a drainage layer at the bottom (for example expanded clay pebbles), a separating mesh and a layer of substrate of fertiliser-free soil, orchid bark and sphagnum. Cover with a thick layer of leaf litter, which holds moisture and gives the frogs somewhere to hunt and hide. Leave out coconut fibre, which rots and can cause skin infections. Plant with bromeliads, ferns, climbers and moss, and add cork bark, hollows and branches. Bromeliads with broad, strong leaves and large, water-filled leaf cups carry the frogs' weight and serve as breeding sites; smaller bromeliads can be used as decoration and visual barriers.

The vivarium should be almost closed for the sake of humidity, but the air must not stand still. A rain system and a fogger are a great help. A glass lid with a narrow mesh strip or small mesh openings often works well. Newly acquired animals are first quarantined for at least a week in a small plastic box with moist sphagnum and leaf litter, with three of the four sides covered.

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

TEMPERATURE

O. lehmanni comes from cool mountain rainforest and is more sensitive to heat than most poison frogs. It does best at 22-24 °C during the day, and 24-25 °C should not be exceeded, not even briefly. At night the temperature should fall 4-5 degrees, to 17-19 °C. The night drop is important for wellbeing and a precondition for getting the animals to breed. The species is viable only at low temperatures.

Place the enclosure somewhere cool without direct sun, and remember that the lighting makes the enclosure a couple of degrees warmer than the room. Measure the temperature with a digital thermometer, and test the set-up for a couple of days before the frogs move in. In hot summers a cooler, a cool room or air conditioning is often necessary. The species has no documented winter rest.

HUMIDITY AND MISTING

Humidity should be 70-100 %: high in the morning and evening, preferably with fog so that it reaches 100 %, and a little lower in the middle of the day, down to about 70 %. Mist the enclosure thoroughly with rainwater, reverse osmosis water or dechlorinated tap water, or use a rain system and a fogger that runs for a short time a couple of times a day. The frogs do not drink, but absorb water through the skin from the air, the foliage and droplets on the leaves.

If the air is too dry, the frogs hide and rarely come out. If, on the other hand, it is constantly completely stagnant and saturated, it can cause fungal and bacterial infections. A closed cover with a little ventilation and a good drainage layer gives the right balance. A hygrometer shows whether the humidity holds, and the frogs' behaviour is the best sign of whether conditions suit.

WATER AND WATER QUALITY

The frogs do not need a water bowl, because the humidity covers their needs. A bowl of water can nevertheless be an advantage if it is completely shallow, so no one risks drowning, and the water is changed often, because stagnant water quickly grows bacteria. Never use tap water straight from the tap: chlorine and other substances are absorbed through the skin.

If you want offspring, there must be small bodies of water that imitate tree hollows and the leaf axils of bromeliads: water-filled bromeliads or film canisters fixed at an angle on the back wall so that they always hold a little water. Each body of water is used by one tadpole at a time, because tadpoles can eat one another. Replace the water in the canisters if it begins to smell or become cloudy, but only when there is no tadpole in them.

LIGHTING AND UVB

The frog is diurnal and lives in shade under the forest canopy. There is no documentation that the species needs UVB when the food is dusted with vitamin D3, but weak UVB lighting (Ferguson zone 1) can be used without harm. The lighting must in any case be strong enough to keep the plants alive, for example LED or T5 tubes of about 6,500 K. Avoid incandescent bulbs and other light sources that give off heat, because the species does not tolerate heat.

Keep the light on for 10-12 hours a day and dark at night. Make sure there is shade and dense foliage, so the frogs can always withdraw from the light.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements

FEEDING

O. lehmanni eats only live, small arthropods. The staple food is flightless fruit flies, and the species is large enough to take the larger *Drosophila hydei* as well. In addition give springtails, small isopods, pinhead crickets and small crickets, preferably also somewhat larger than the very newly hatched ones, for variety.

Young animals are fed every day with 20-30 fruit flies at a time. Adults can eat 50-75 fruit flies a day and are fed four to five times a week; when they are well established and have plump bellies, every other day is enough. All food is dusted with calcium and vitamin D3, and a vitamin mix is used once or twice a week. Feeder insects must not be wider than the distance between the frog's eyes, otherwise there is a risk of choking.

Fruit flies can be cultured at home in cultures with fly medium. A culture typically lasts a month and must be started before the previous one runs out, so there is always food on the shelf. Insects caught outdoors can carry parasites and pesticides. A one-sided diet causes deficiencies, and the food must therefore be varied.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

O. lehmanni is diurnal and calm, but the males are territorial and call from fixed spots. Keep the species in pairs. Males are very aggressive towards one another and suppress one another, and the subordinate male may die of stress. Two females should not be kept together either, if the pair is to breed in peace. If unrest or injuries occur, the animals must be separated.

Poison frogs should not be handled. The skin is thin and sensitive, and every handling stresses the frog. If an animal has to be moved, catch it carefully in a small, clean cup, and wash your hands after contact. Do not use soap or cleaning products in the enclosure. New frogs are shy and hide for the first weeks, and it is then important to keep things calm around the enclosure.

Breeding

SEXUAL MATURITY AND SEXING

The sexes look alike, and juveniles are difficult to sex. The surest sign is behaviour: only the males call, and a female reveals herself when she lays eggs. Poison frogs can usually be sexed only when they are about a year old, and the age at sexual maturity is not documented for *O. lehmanni*. To be sure of a pair, you can buy a small group of unsexed juveniles and keep them together until the sexes show, and then move a pair to a separate enclosure.

MATING

In the wild mating takes place at the end of the rainy season. The male chooses a breeding site, often a leaf a little above the ground near water, and calls repeatedly to attract a female. During courtship the male calls towards the female, stands still and stamps one front foot on a bromeliad leaf, as if showing her the spot. The female goes to him, circles round and scrapes across the leaf with her hind legs, often in a submissive posture. They then sit vent to vent, without the male clasping the female, and the female lays the eggs.

A shorter period of less misting followed by frequent misting and plentiful feeding can get the animals going, and the night-time drop in temperature is important. An extra supplement of vitamin A about once a month supports the female's egg production. Stable conditions, few disturbances and a calm pair matter more than any technique. *Oophaga* species are difficult to breed because the female herself has to feed the tadpoles, and *O. lehmanni* has been bred only a few times. Experience with easier poison frogs is a good preparation.

EGGS AND TADPOLES

The female lays a small number of large eggs on a leaf, in the wild up to 120 cm above the forest floor and in the vivarium, for example, on a bromeliad leaf. The number is not documented for the species, and the figure of 3-10 eggs is borrowed from *Oophaga pumilio*. The male fertilises the eggs and keeps them moist.

The eggs hatch after 14-28 days, and the tadpoles are then carried one at a time on the back to a small pool of water each, because they can eat one another. It is the female who carries the tadpoles, as in the other *Oophaga* species. In the wild this is a tree hollow, a bromeliad leaf or a bamboo tube, in the vivarium a water-filled bromeliad or a film canister. The female remembers where she has placed each tadpole and returns regularly to lay infertile eggs in the water. The tadpoles live exclusively on these eggs and die without them. No food can replace the eggs, so eggs and tadpoles must stay with the parents. Leave the water in the canisters undisturbed as long as there is a tadpole in them.

METAMORPHOSIS

The eggs hatch after 14-28 days, and the tadpoles then develop for 60-90 days before they get legs and metamorphose. The times depend on temperature and on how often the female feeds. Keep the temperature stable at 22-24 °C.

When the front legs appear, the tadpole must be able to get out of the water. Make sure there are leaves or branches right by the leaf axil or canister, so the little frog can climb up onto land. The newly metamorphosed young at first sit still and live off the remains of the tail. Do not touch them during this period.

REARING THE YOUNG

The newly metamorphosed young are very small and vulnerable, and the hardest part of the whole process is getting them to eat. In *O. lehmanni* there are only a few documented breedings, and very few young have reached adulthood. Keep them in a small enclosure or a small box with damp sphagnum, leaf litter and hiding places, and make sure there are plenty of small springtails and the very smallest fruit flies (*Drosophila melanogaster*). Several springtail cultures must be available, so the food does not run out.

Feed the young every day, and dust the fruit flies with calcium and vitamins. Young animals can stay in the parents' enclosure if there is a thick layer of leaf litter, but a separate rearing container makes it easier to keep an eye on whether they are eating. Move them to a larger enclosure when they are well established and eating well. Keep track of which parents the young come from, so they can later be paired with unrelated animals.

Health and common mistakes

Oophaga lehmanni is, like other poison frogs, sensitive, and most problems are due to the wrong environment or a one-sided diet. The typical mistakes are:

- Heat above 24-25 °C. This causes stress, loss of appetite and, in the worst case, death, especially if the temperature stays high for several hours.
- Stagnant, waterlogged air and a substrate that rots, which causes fungal and bacterial infections. Poor drainage and ventilation are often the cause.
- Lack of calcium and vitamins, especially vitamin A. It can show as a short or sticky tongue, with which the frog cannot catch prey, and as weak bones.
- Feeder insects that are too large, causing choking or digestive problems, for example too many bean beetles.
- Water straight from the tap or residues of cleaning agents, which are absorbed through the skin.

A healthy animal has a plump body, clear eyes and eats quickly. Contact a vet with amphibian expertise if the frog loses weight, does not eat for several days, has sores or a bloated body.

Lifespan is not documented for *O. lehmanni*. Poison frogs generally live 4-8 years, and 10-15 years with good care.

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.