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POISON DART FROGS

Blessed Poison Frog

Ranitomeya benedicta

Ranitomeya benedicta is a small, diurnal poison frog of 16-20 mm from the lowland forest of northern Peru. The bright red head and the black body with a blue net pattern make it one of the most colourful in the genus. Until 2008 it was regarded as a subspecies of *Ranitomeya fantastica*. In the wild it is vulnerable, but captive-bred animals breed willingly in a well-furnished enclosure.

Family: Dendrobatidae

KEY FACTS

THE ANIMAL

Adult size	**16-20 mm** snout-vent length
Lifespan	**5-10 years**
Active	**By day**
Lifestyle	**Arboreal and terrestrial**
Habitat	**Rainforest**
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	**40 × 40 × 40 cm** L × W × H for 2 adults
Temperature, day	**21-26 °C**
Temperature, night	**18-22 °C**
Humidity	**70-100%**
Water	**Water dish** depth 1-2 cm
UVB	**Optional**
Diet	**Small invertebrates (springtails, fruit flies)**
Kept	**In pairs or in groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles carried to water**
Egg-laying site	**On the ground**
Eggs per clutch	**2-6**
Hatching	**10-14 days**
Larval period	**60-114 days** from hatching to metamorphosis
Larval diet	**Algae/plants and complete diet**
Parental care	**Guards the eggs and carries the tadpoles**

PROTECTION AND PAPERWORK

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

About the species

Ranitomeya benedicta is one of the larger species in the genus, but is still only the size of a fingernail. Males reach about 16-17 mm from snout to vent, females about 18 mm, and a few females reach 20 mm. The head is clearly red, and black markings around the eyes form a W-shaped mask in some animals. Legs, back and belly are black with a blue net pattern. In some populations the net pattern is absent, and parts of the legs or back are instead uniformly blue, or blue is lacking entirely. The head is redder than in *R. fantastica*, whose head is closer to orange.

The species was described in 2008 by Brown, Twomey, Pepper and Sanchez-Rodriguez and had previously been regarded as a subspecies of *R. fantastica*. The species name means "blessed" and alludes to Pampas del Sacramento, where the species lives. Two forms are known in the hobby. 'Shucushuyacu' has a light blue net pattern over the black and has been in captivity the longest. 'Pampa Hermosa' lacks the net pattern and is instead hazy blue or entirely red and black.

The male's call is a soft, short buzz. The call has never been heard in the wild, but in the enclosure the males call at all times of day. Young animals are nervous, whereas adults in a densely planted enclosure are seen most of the day, and some males sit openly and call while work is going on in the enclosure alongside. In captivity the species lives 5-10 years, and a few animals live longer.

Skin toxicity: *R. benedicta* does not make its own poison. Wild animals take up alkaloids from small arthropods in their diet, probably mainly ants and mites, and store them in the skin glands. The toxicity is modest compared with the large poison dart frogs. Captive-bred animals that live on fruit flies and springtails lack the poison, while wild-caught animals can retain it for a long time. Do not handle the frogs, and wash your hands after working in the enclosure.

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

Distribution and habitat

Ranitomeya benedicta is found only in Peru, east of the Andes. The species lives in the lowland forest in Pampas del Sacramento in southern Loreto and eastern San Martín, and the range is estimated at about 19,000 km². It is found in, among other places, the Cordillera Azul National Park.

The species is assessed as vulnerable (VU) on the IUCN Red List because of the limited range, loss of habitat and collection for the pet trade. Large parts of the area are uninhabited and without deforestation, but other parts are cleared for agriculture and logging. Shortly after the description, collecting the species for the international market began, in some cases by felling trees to search the bromeliads. It is also legally bred in captivity, so buy only captive-bred animals.

> **Native range:** Peru.

HABITAT

Ranitomeya benedicta lives in undisturbed rainforest and older secondary forest in the lowlands. Most records lie around 150 m above sea level, but the species has been seen up to 405 m. It is diurnal and moves both on the forest floor and in the low vegetation, in tangled branches and in fallen, dead trees. It readily climbs but stays closer to the ground than most species in the genus.

The eggs are laid in the leaf litter on the forest floor. The tadpoles grow up in pools of water in leaf axils and in old bamboo. Since the parents do not feed them, larger pools of water are used, where there are enough algae and small animals to live on.

The climate is warm and uniform: the annual mean temperature in the range is about 25 °C, with an average of about 21 °C in the coldest month and about 29 °C in the warmest. Humidity in the wild is not documented.

Read more: Humidity, misting and ventilation Read more: Rearing tadpoles

Care

THE ENCLOSURE

A pair of *R. benedicta* can be kept in an enclosure of 40 × 40 × 40 cm. Two pairs need a horizontal enclosure of about 75 litres, and bigger is always better, because a large enclosure keeps the climate more stable. The species jumps lightning fast and readily slips out when the door is open at feeding, so a horizontal enclosure or one that opens from the top is easier to work in than a tall one.

Set up with a drainage layer of at least 5 cm, a mesh over it and a substrate that holds moisture without turning sour. Put a good layer of dead leaves on top, preferably magnolia or Indian almond leaves, which last long. The frogs become bolder when there is leaf litter to hide in. Provide branches and cork to climb on, and plant densely with small bromeliads, creeping fig and other shade-tolerant plants. Black film canisters in the leaf litter and on the walls with suction cups are used both as hides and as laying sites. Woodlice and springtails in the substrate keep the enclosure clean and are food at the same time.

The species is less territorial than many other *Ranitomeya* and can be kept as a pair, trio or small group when there is room. Allow at least 4 litres extra per extra animal. A few animals can become aggressive when they reach sexual maturity and must then be removed. Keep only one form in the enclosure, and never put different species together, so you avoid crossbreeding.

Read more: Terrarium construction and bioactive substrate

TEMPERATURE

Keep the enclosure at 21-26 °C by day and 18-22 °C at night. The species thrives best at about 21-24 °C, and the temperature must not exceed 27 °C for long periods. Heat is more dangerous than cold: a few hours at about 29-30 °C can kill the frogs, and even minor heat stress can lead to illness and a slow death. Below 16 °C they can also die or suffer lasting damage.

Extra heat is rarely necessary in a heated living room; the light for the plants often provides enough. Never put the enclosure on the windowsill, because sun through the glass quickly makes it dangerously hot. Watch out for air conditioning and radiators in the room, and measure with a digital thermometer both at the top and at the bottom. A small, closed room that can be heated in winter and cooled in summer makes it easier to keep the temperature stable. A cool rest period is not documented for the species.

HUMIDITY AND MISTING

Humidity should be 70-100 %. A good rhythm is almost 100 % morning and evening and 70-75 % in the middle of the day, so the enclosure dries out a little between mistings. The frogs cope briefly down to 50 %, but only if they have clean water to sit in. Prolonged drought is dangerous for such small animals.

Poison frogs tolerate limited ventilation, so with a glass lid where only a small part is mesh, it is easy to keep the humidity high. How often you need to mist depends on the enclosure: from twice a day in an airy enclosure to every second or third day in a tight one. Use reverse-osmosis water, rain water or distilled water, so the glass does not get limescale deposits. A fogging system or rain system on a timer can take over the misting, but provide a little air exchange, so there is no still air with mould.

WATER AND WATER QUALITY

A shallow water dish or a bromeliad with water in the leaf axils is enough. The frogs are poor swimmers, so the water must not be deeper than that the smallest frog can sit in it with its head and upper body above the water. 1-2 cm is a suitable level, and the dish must have an easy way up, e.g. a stone or a branch.

Change the water when it becomes cloudy, and use reverse-osmosis water, rain water or dechlorinated tap water. Amphibians absorb substances through the skin, so never use soap or cleaning products in the enclosure; rinse with warm water instead. The water in film canisters and bromeliads with tadpoles must be topped up and changed regularly, so it does not become murky and stagnant.

LIGHTING AND UVB

R. benedicta is diurnal, and the lighting is first and foremost for the plants. Give 12-14 hours of light a day with fluorescent tubes or LED on a timer, all year round, and darkness at night. This corresponds to the day length in the tropics. It is not documented that the species needs UVB. If you choose a weak UVB source anyway, make sure there is plenty of shade, so the frogs can choose for themselves. Take care that the lighting does not heat the enclosure above 26 °C.

Read more: Lighting and UVB

FEEDING

The staple food is small live arthropods. Animals of all ages take flightless fruit flies (*Drosophila melanogaster*), and adults can also take the larger *D. hydei*. Springtails are a good addition, and tropical woodlice in the enclosure are eaten along the way. Newly hatched crickets and aphids can be used for variety.

Adult frogs are fed every second day with about 20-30 flies per frog, but never more than is eaten by the next feeding. Never give so many flies that they crawl around on the frogs, because that stresses them. Young must be fed every day. The animals can be shy and difficult to feed while you stand at the enclosure, so give them peace.

Fruit flies and springtails are not a complete diet on their own. Dust the feeder insects at every feeding, preferably alternating between calcium, a vitamin and mineral supplement and a supplement with vitamin A. Some vitamins are dangerous in large doses, so follow the manufacturer's instructions. Start fruit fly and springtail cultures before the frogs move in, and start new fruit fly cultures every week.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

R. benedicta is diurnal and can be a little shy, especially as a juvenile, but in a densely planted enclosure with hiding places adult animals are seen a lot. The male sits openly and calls. The species is less territorial than many other *Ranitomeya*, but animals of the same sex can come into conflict. What looks like mating is often two animals in a territorial fight, because poison frogs do not have true amplexus.

The frogs should not be handled. The skin is thin and permeable, and residues of soap, cream and oil from the hands can harm them. If a frog has to be moved, lure it into a transparent tub, or use powder-free gloves. If a frog escapes, it must be caught quickly, because it hides and dries out fast; in an emergency, wet, clean hands are better than nothing. Keep an eye on animals that hide all the time, lose weight or are chased, and move them in good time.

Breeding

SEXUAL MATURITY AND SEXING

The sexes look alike. Females are slightly larger and sturdier than males (about 18 mm versus 16-17 mm), but the difference is hard to see, and in juveniles impossible. The only sure sign is that the male calls. Age and size at sexual maturity are not documented for the species; poison frogs typically mature at around one year of age.

The surest way to a pair is to start with at least four juveniles, so that both sexes are very likely to be included, and let them pair up themselves.

MATING

R. benedicta breeds fairly easily in the enclosure when temperature, humidity and food are in order. When the male is mature, he sits openly and calls with his soft buzzing. The female follows him around and nudges him until they reach a quiet, hidden spot, often a film canister or a bromeliad, where the eggs are laid and fertilised.

Give the pair several film canisters and bromeliads to choose from, and leave them in peace. A particular triggering signal such as a rainy season or a drop in temperature is not documented for the species.

EGGS AND TADPOLES

In the wild 2-6 eggs are laid at a time in the leaf litter on the forest floor. In the enclosure the pair readily uses a dry film canister set horizontally on the back wall, and on rare occasions the water in a bromeliad. The male keeps the eggs clean and guards them until they hatch.

When the eggs hatch, the male carries the tadpoles on his back to separate pools of water, in the wild typically a leaf axil or old bamboo. Parental care then ends. There is nothing to suggest that the female feeds the tadpoles with eggs, as in *R. imitator*, and the tadpoles live on algae and small animals in the water.

Tadpoles that are allowed to grow up with the parents become larger than those that are removed. If you remove eggs or tadpoles, keep the tadpoles separately in small containers of about 10 × 10 × 10 cm with reverse-osmosis water, a couple of oak leaves and a little hornwort. Change two thirds of the water every second to third day, and feed with finely ground algae food and fish food.

METAMORPHOSIS

The eggs hatch after about 10-14 days. The tadpoles typically metamorphose after 60-80 days, but at a constant 24 °C development from free-swimming tadpole to finished frog takes up to about 114 days.

When the front legs appear, the tadpole stops eating. Put a piece of cork on the water surface so it can climb out, and move it to a container with a good land area, a layer of dead leaves and a small water dish when the tail is nearly absorbed. The water must be shallow, so it does not drown.

REARING THE YOUNG

The newly metamorphosed frogs are very small. Keep them in a small, moist rearing container with air holes, dead leaves, cork and a shallow water dish. Feed daily with springtails and the smallest fruit flies, and dust the food lightly with vitamins and minerals.

Juveniles can go together in a small group of similarly sized animals. As they approach sexual maturity, watch for aggression and divide them into pairs or trios. Juveniles are typically sold when they are 3-6 months old and cannot yet be sexed. Choose animals with clear eyes and a body that is not distinctly narrower than the head.

Health and common mistakes

R. benedicta is hardy when temperature and humidity are right, and most problems are caused by the care:

- Heat above about 27 °C, e.g. from sun through a window or a failing climate system, causes stress, loss of appetite and, at worst, death. Around 29-30 °C is life-threatening.
- Cold below 16 °C, e.g. during a power failure in winter, can also cause lasting damage or death.
- An enclosure that is too dry or too wet and stagnant causes dehydrated animals, skin infections and mould.
- Feeder insects without a vitamin and mineral supplement cause weakened bones. Overdosing of certain vitamins can also be harmful.
- A thin frog without a clearly round belly can be due to too little food, parasites or competition. Check that all animals get food.
- Fights between animals of the same sex. Remove the frog that fights.

A healthy frog has intact skin without sores or red, cottony or fungal areas, particularly around the vent and on the inside of the hind legs. Signs of illness can be frequent shedding, a balloon-like body, lethargy or restlessness, loss of appetite and dull, dry skin. Isolate sick animals, and seek a vet with amphibian experience quickly.

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.