herpy

POISON DART FROGS

Golfodulcean Poison Frog

Phyllobates vittatus

Phyllobates vittatus is a black poison frog with two bright orange or yellow stripes down the back and blue marbled legs. It occurs only in the lowland forest around the Golfo Dulce in south-western Costa Rica. In the terrarium it is diurnal, vocal and a prolific breeder, and the male carries the tadpoles to water himself.

Family: Dendrobatidae

KEY FACTS

THE ANIMAL

Adult size	**3-4 cm** snout-vent length
Lifespan	**10-20 years**
Active	**By day**
Lifestyle	**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	**60 × 45 × 45 cm** L × W × H for 4 adults
Temperature, day	**21-25 °C**
Temperature, night	**18-21 °C**
Humidity	**70-100%**
Water	**Water dish** depth 1-2 cm
UVB	**Optional** Ferguson zone 1
Diet	**Insects and 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**
Sexually mature	**8-10 months**
Eggs per clutch	**7-21**
Larval period	**45-80 days** from hatching to metamorphosis
Larval diet	**Complete diet**
Parental care	**Guards the eggs and carries the tadpoles**

PROTECTION AND PAPERWORK

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

About the species

Phyllobates vittatus is a fairly large poison frog of 3-4 cm from snout to vent. Females are typically a little larger and sturdier than males, but size is not a reliable way of sexing them. The ground colour is black, often with a glittering sheen, the legs are marbled in blue, and the flanks often have a blue or green marbled pattern. Two stripes run from the tip of the snout almost all the way to the vent; they are usually fiery orange, but can also be golden, yellow or green. The species name *vittatus* means "striped". The back slopes evenly, and the shoulder blades are not normally visible through the skin as in *Phyllobates bicolor* and *Phyllobates terribilis*, so the frog looks a little plump. In the American hobby there is an orange line with broad yellow-orange to red-orange stripes and a rarer red line with narrow red stripes.

The species was described by Edward Drinker Cope in 1893. The genus *Phyllobates* comprises five species, and *P. vittatus* is most closely related to the other Central American species, *Phyllobates lugubris*.

In the wild *P. vittatus* has only small amounts of the genus's famous poison, batrachotoxin, and the species has long been regarded as almost non-toxic. In 2019, however, skin from wild frogs in Costa Rica gave mice symptoms suggesting an effect on the heart; no mice died at the doses tested, and they recovered fully. The skin probably contained three toxic alkaloids. The poison comes from the diet in the wild, and captive-bred animals lack it. The skin can irritate mucous membranes, so wash your hands and do not handle the animals. Wild-caught animals can retain the poison for a long time and must always be treated with caution.

In the terrarium the species is lively and often visible, but it can also be somewhat shy. It uses the forest floor most, but climbs smooth surfaces easily with its adhesive pads.

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

Distribution and habitat

Phyllobates vittatus occurs only in Costa Rica, in the lowlands around the Golfo Dulce on the country's southern Pacific side. Almost all records lie between about 8.2 and 9.3 degrees north and 83.1 and 83.9 degrees west. A few records from outside Costa Rica come from animals in captivity.

The range is small, and the forest is being cleared. The IUCN assesses the species as Vulnerable (VU).

> **Native range:** Costa Rica.

HABITAT

Phyllobates vittatus lives in humid and wet lowland forest, both primary and secondary forest, from about 20 to 550 m above sea level. It is diurnal and terrestrial and associated with streams, especially slow-flowing streams with small side pools where the male can deposit the tadpoles. The eggs are usually laid on leaves above the ground, and the tadpoles are carried to puddles, water in palm leaves or water-filled tree holes.

The climate is warm and very humid with heavy rainfall. Precise measurements of temperature and humidity in the animals' range are not documented; the figures under care are based on experience in the terrarium.

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

Care

THE ENCLOSURE

Up to four *Phyllobates vittatus* need an enclosure of at least 60 × 45 × 45 cm. A group of 5-6 animals needs more space, e.g. 100 × 60 × 60 cm, which also gives room both to move on the ground and to climb. The species mostly uses the floor, so floor area matters most.

Build up the floor with about 5 cm of clay-pebble drainage layer, a cloth and about 5 cm of well-drained substrate, e.g. an orchid or ABG mix, with a thin layer of long-fibre sphagnum and a good layer of leaf litter on top. The leaf litter must be clean and free of mould, as fungi can be fatal to amphibians. Springtails and woodlice keep the floor clean. Plant densely with live plants, provide plenty of hiding places and a small water area, and set up several egg-laying sites, e.g. broad, smooth leaves or a Petri dish under half a coconut shell.

Phyllobates species climb glass easily and find every crack, so the enclosure must be able to close completely tight. Ventilation must keep the panes free of condensation without drying out the air.

Read more: Terrarium construction and bioactive substrate Read more: Feeder animals: keeping and breeding

TEMPERATURE

During the day *Phyllobates vittatus* needs 21-25 °C and at night 18-21 °C, which most living rooms provide. The species tolerates short periods down to 16 °C, but like all poison dart frogs it is very sensitive to heat, and the temperature must not exceed 27 °C for any length of time.

Avoid direct sun and lamps that heat up the enclosure, and measure with a digital thermometer down in the enclosure. Extra heat is rarely necessary in an ordinary living room. No winter rest has been documented.

HUMIDITY AND MISTING

Humidity should be 70-100 %. The species tolerates down to 50 % for short periods if it has access to water, but low humidity without water can quickly become fatal. Mist daily with reverse-osmosis or rain water, or use a rain or fogging system on a timer.

The leaf litter should be moist, but the substrate must not become waterlogged; if the substrate smells of rotten eggs, it is too wet. Balance misting and ventilation so that the air is not stagnant and damp all the time.

WATER AND WATER QUALITY

Provide a shallow water dish or a small water feature with 1-2 cm of water and a stone or a piece of bark so the animals can climb out easily. The frogs moisten themselves in the water, and the male may use it to deposit tadpoles.

Use reverse-osmosis water, rain water or dechlorinated tap water. Amphibians absorb substances through the skin, so chlorine, copper, soap and hand cream must not get into the water. Change the water often, and scrub the dish without soap. The water should be the same temperature as the air; a filter is not necessary.

LIGHTING AND UVB

The lighting is for the plants. LED bars or fluorescent tubes on a timer for 10-12 hours a day are enough, and the night must be dark. Provide shade, and never place the enclosure in direct sun.

A need for UVB has not been documented for the species. A weak UVB light in Ferguson zone 1 is optional as long as there is shade and cover.

Read more: Lighting and UVB

FEEDING

Phyllobates vittatus is unusual in that adults take larger prey than most poison frogs. All ages eat wingless fruit flies of the species *Drosophila melanogaster*, and adults also take the larger *Drosophila hydei* and crickets up to about 6 mm. Springtails, woodlice, aphids, bean beetles, flour beetles and small waxworm larvae provide variety.

Dust all feeder insects with a vitamin and mineral powder for amphibians. How often and how much adults should be fed is not documented for the species; the usual practice for poison frogs is to feed every second or third day, as much as the frogs eat up within a short time, and daily feeding of juveniles. The hardest part of keeping the species is maintaining a constant supply of small live feeder insects, so keep your own cultures of fruit flies and springtails.

BEHAVIOUR AND HANDLING

Phyllobates vittatus is diurnal, and the males have a high, trilling call. The species can be kept in pairs or groups. Groups of 4-6, where the males call from their own spots in the enclosure, often work well, but adults are also often kept in pairs. The reason is that the dynamics in a group can change at sexual maturity, and the females may eat each other's eggs. Provide plenty of hiding places and visual barriers, and watch for animals that are chased or lose weight.

Frogs should only be handled when they have to be moved. The skin is thin, and salt, soap and cream can damage it. Use a clean plastic tub, and wash your hands before and after working in the enclosure. Never mix different species or colour forms of poison frogs.

Breeding

SEXUAL MATURITY AND SEXING

The species is difficult to sex until it is about a year old. Females are larger and sturdier than males, but this is not a reliable sign, and a female often reveals herself only by laying eggs. Males begin to call at 6-8 months. The animals become sexually mature at 8-10 months and can exceptionally breed as early as six months. Buy several juveniles and let them grow up together; this considerably increases the chance of a pair.

MATING

Phyllobates vittatus breeds easily once it gets going. The male calls from cover to lure a female to a suitable egg-laying site. More frequent misting that imitates the rainy season often sets off breeding; this is not documented specifically for the species. The pair can stay in the enclosure, but in a group other females may eat the eggs.

EGGS AND TADPOLES

In the breeding season the female lays eggs every week or every second week, 7-21 eggs per clutch. In the terrarium they are laid on a smooth, broad leaf or in a Petri dish under half a coconut shell. The male looks after the eggs and keeps them moist by watering them. When they hatch, he sits down next to them and treads lightly on the substrate, and the tadpoles climb onto his back within about ten minutes. The trip to the water can take 1-2 days. The tadpoles are dark brown.

In captivity the eggs or tadpoles are often removed and reared individually in small tubs of reverse-osmosis or rain water at the same temperature as the enclosure. The food is not described specifically for the species; poison frog tadpoles are normally given prepared tadpole food and fine fish food in small portions, with the water changed regularly.

METAMORPHOSIS

The eggs probably hatch after anything from a few days to a week. This is shorter than in most poison dart frogs and not confirmed, so the hatching time is uncertain. Metamorphosis takes place after about 45-80 days.

When the forelegs appear, the tadpole must have easy access to land. Lower the water level to 1-2 cm, or tilt the tub, and add stones or bark so that the little frog can climb out. It lives off its tail until the tail has been absorbed.

REARING THE YOUNG

Newly metamorphosed juveniles are almost black with a red-orange, U-shaped marking on the back, which spreads with age and turns into the two stripes. Keep them in a small rearing enclosure with moist leaf litter, moss and plenty of cover, and feed daily with springtails and small fruit flies dusted with vitamin and mineral powder.

The juveniles grow quickly and are 2-3 months old and about 16 mm when they are typically sold. Sort them by size so the smallest do not lose out in the competition for food.

Health and common mistakes

Poison frogs are hardy when the climate is right, but they react quickly to mistakes. The typical problems are:

- Too high a temperature, above 27 °C for a prolonged period. This causes stress and loss of appetite and can kill the frogs.
- Desiccation, when humidity is low and there is no water. This can quickly become fatal.
- Calcium and vitamin deficiency, especially in juveniles and breeding animals, which shows as weak legs, tremors and soft jaws. Dust the food.
- Fungi and bacteria in a substrate that is too wet or in mouldy leaves. Use clean leaf litter and good ventilation.
- Parasites such as roundworms and flagellates, which cause emaciation despite a good appetite. Have a vet examine a faecal sample.
- Chytrid fungus (*Batrachochytrium dendrobatidis*). Quarantine new animals, and do not share equipment between enclosures.

See a vet with amphibian experience if a frog loses weight, does not eat for several days or develops sores and skin changes.

Read more: Calcium, vitamins and supplements 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.