herpy

POISON DART FROGS

Dyeing Poison Frog

Dendrobates tinctorius

Dendrobates tinctorius is one of the largest poison frogs and the one that varies most in colour: black with yellow, white or blue markings that change from region to region, and some forms are almost entirely blue. It is diurnal, grows to 4-7 cm and is the most commonly kept poison frog in terrariums.

Family: Dendrobatidae

KEY FACTS

THE ANIMAL

Adult size	**4-7 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	**Beginner**

CARE

Min. enclosure	**45 × 45 × 45 cm** L × W × H for 2 adults
Temperature, day	**20-26 °C**
Temperature, night	**18-22 °C**
Humidity	**80-100%**
Water	**No water dish**
UVB	**Optional**
Diet	**Small invertebrates (springtails, fruit flies)**
Kept	**In pairs**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles carried to water**
Egg-laying site	**On the ground**
Sexually mature	**10-18 months**
Eggs per clutch	**5-10**
Hatching	**14-18 days** at 24-25 °C
Larval period	**35-84 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	**Least Concern (LC)**

About the species

Dendrobates tinctorius is one of the large poison frogs. Most forms measure about 5 cm from snout to vent, the smallest about 4 cm and the largest up to 7 cm. The base colour is typically black with irregular yellow or whitish stripes over the back, sides and head, and the legs are often blue, from pale blue to deep cobalt. Some forms are almost entirely blue, entirely yellow or entirely whitish. Many local forms are known, each belonging to a particular area, and individuals also vary among themselves. The forms also differ in size and temperament.

The species was described by Cuvier in 1797. The blue form from southern Suriname was formerly regarded as a separate species, *Dendrobates azureus*, but is now considered a form of *D. tinctorius*. The species name means something like "the dyer" and is linked to accounts of indigenous people using the frog's poison to change the colour of parrot feathers. Whether this is true is not documented.

The female is normally slightly larger and plumper than the male. The male has broader, more heart-shaped toe pads, while the female's are round, and seen from the side the female has a more pronounced bend in the middle of the back.

Skin toxicity: Poison frogs do not make their own poison. In the wild they take up alkaloids from ants, mites and other small arthropods and store them in the skin, and wild *D. tinctorius* can be so toxic that holding one makes the arm go numb. Captive-bred animals that live on fruit flies and springtails lack the poison or have very little of it, while wild-caught animals can keep it for a long time. The skin toxicity is therefore rated as mild. Do not handle the frogs, wash your hands after working in the terrarium, and do not touch your eyes or mouth afterwards.

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

Distribution and habitat

Dendrobates tinctorius lives in the eastern part of the Guiana Shield: in French Guiana, Suriname, eastern Guyana and northern Brazil. Records are concentrated in French Guiana and Suriname, with fewer in Brazil and only a few in Guyana. The populations live scattered as isolated patches, and each region has its own colour form.

The blue form is found only in southern Suriname, in small forest islands in the Sipaliwini savanna at 315-430 m elevation. The species as a whole has been found up to about 600 m. Records from outside the range, for example in Panama and the Dominican Republic, are not native distribution and are not included on the map.

> **Native range:** French Guiana, Suriname, Guyana and Brazil.

HABITAT

Dendrobates tinctorius lives in tropical rainforest, often in hilly terrain and at the foot of mountains, but also near sea level. The frog stays mostly on the forest floor among leaf litter, roots and stones and climbs very little. It lives close to water, and the blue form lives in humid forest islands surrounded by dry savanna.

In the wild the species breeds in the rainy season, in the case of the blue form in February and March. In captivity it can breed all year round. Measurements of temperature and humidity at the species' habitats are not documented, so the figures under husbandry are based on practice in captivity.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

A pair of *Dendrobates tinctorius* needs a terrarium of at least 45 × 45 × 45 cm. Allow for at least about 38 litres per adult frog and a terrarium that is wider than it is tall, because the frogs spend most of their time on the floor. The 45 × 45 × 45 cm (about 90 litres) stays within that rule. Bigger is better, especially for the large forms.

Use a planted, living terrarium with a drainage layer, a mesh barrier, a moist substrate and a thick layer of sterilised leaf litter on top. Moss looks nice, but leaf litter is what the frog naturally walks on, and it provides food for springtails and isopods, which keep the floor clean. Plants, cork, roots and coconut shells provide hiding places and territories. A living terrarium is regarded as a prerequisite for keeping the species long term.

The lid should be mostly glass to keep the humidity in. A mesh section 4-5 cm wide across the full width gives air exchange without drying out the terrarium. Fully open mesh lids are unsuitable.

Keep each pair in its own terrarium, and never mix different forms, because this produces hybrids that do not exist in nature. Young animals can grow up in a group, but adult females often fight over the male.

Read more: Terrarium construction and bioactive substrate

TEMPERATURE

Dendrobates tinctorius thrives at 20-26 °C by day and 18-22 °C at night. Heat is the species' greatest danger: above 27 °C the frog becomes stressed, and prolonged heat can kill it. No heat lamp should be used.

Keep the terrarium cool and out of direct sun. If the room is too cold in winter, a heat mat on the side or back can warm the water in the drainage layer and thereby the whole terrarium gently; do not place it under the base. As an emergency measure during a power cut in a heatwave, a bag of ice can be laid on top of the glass lid so that condensation drips cool into the terrarium. Measure the temperature at the height of the frogs, not at the top.

Read more: Heat and temperature

HUMIDITY AND MISTING

Humidity should stay above 80 %, preferably 80-100 %. Mist at least twice a day with dechlorinated tap water, reverse osmosis water or spring water. Avoid bottled water with added salt and other substances, and avoid distilled water.

Frogs do not drink but absorb water through the skin, so misting is vital. A timer-controlled rain system makes it easy to keep the humidity stable, even when you are away. A little air movement is good for both frogs and plants, so that the air does not become stagnant.

WATER AND WATER QUALITY

Dendrobates tinctorius does not need a water dish or waterfall when the terrarium is built correctly and misted regularly. Standing water in open dishes quickly grows bacteria, so leave out water dishes unless you want tadpoles.

For breeding, put in at least two small cups of water where the male can deposit the tadpoles. Use reverse osmosis water with a piece of Indian almond leaf, so that the water turns brown and tannin-rich like the pools in nature. Frogs absorb substances through the skin, so never use soap or cleaning products in the terrarium.

Read more: Rearing tadpoles

LIGHTING AND UVB

No need for UVB has been documented in *Dendrobates tinctorius*, so UVB is optional. The plants need light, so use an LED plant lamp above the terrarium. Give 12 hours of light a day. Make sure the lamp does not heat the terrarium, and provide both bright and shaded areas.

Read more: Lighting and UVB

FEEDING

Dendrobates tinctorius eats small arthropods. Newly metamorphosed froglets take *Drosophila melanogaster* (small, flightless fruit flies) and soon become large enough for *D. hydei*. Springtails are good for the smallest, and in an established terrarium the frogs find springtails and small isopods in the leaf litter themselves. Feeder insects should be under about 3 mm.

Give as many flies as the frogs eat in 15-30 minutes. Start with about ten per frog and adjust from there: if there are many flies left after about an hour, that was too many, and too many flies stress the frogs. Newly acquired animals often do not eat on the first day or two.

Cultured feeder insects do not have the nutritional content of wild prey and must be dusted. Put a little powder in an empty cup, add the flies and shake gently. Use a mix of calcium and multivitamin for all feedings, a carotenoid supplement once a week and a vitamin A supplement once a month. Start your own feeder cultures before the frogs arrive.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Dendrobates tinctorius is diurnal and bold and often sits out in the open on the floor. The male's call is a low, quiet buzz that often cannot be heard from outside the terrarium. Most forms are best kept in pairs. Some are more aggressive than others, and if you see wrestling or one frog chasing another away from the food, they must be separated. Do not keep large and small frogs together, because the small ones get too little food.

The frogs should not be handled. The skin is thin and absorbs substances from your hands, and even captive-bred animals may carry a little poison. If a frog has to be moved, for example during cleaning, coax it into a small, clean cup with a lid instead of picking it up by hand.

Breeding

SEXUAL MATURITY AND SEXING

The male is smaller and slimmer than the female, has wider toe pads and an evenly curved back, whereas the female is plumper with a distinct bend in the back. The sex can usually be seen at 10-12 months of age, and a calling animal is always a male. The animals are sexually mature at 10-18 months, and the first good eggs are often seen at around 14 months. The safest approach is to buy a sexed pair of the same form or to raise several young together and let a pair find each other.

MATING

In the wild the species breeds in the rainy season, but in captivity it can breed all year round. If the pair has not laid eggs, a period of lighter misting followed by heavy misting and plentiful feeding can kick things off. There is no known winter dormancy.

The male calls and leads the female to a hidden spot, where they touch each other. There is no amplexus: the female lays the eggs, and the male fertilises them afterwards. Keep only one adult female per terrarium, because females can fight hard over the male. The first clutches of a season often fail, until the second or third clutch develops normally.

Read more: Brumation and the seasons

EGGS AND TADPOLES

Dendrobates tinctorius lays its eggs on land, in a hiding place with a smooth surface: a film canister, a coconut shell over a petri dish or a smooth leaf. A clutch is 5-10 eggs. The male guards the eggs and keeps them moist, and when they hatch he carries the tadpoles on his back to water.

The eggs can stay in the terrarium, where the male moves the tadpoles to a cup that has been set out. This is easiest but gives slightly fewer young. Alternatively, the eggs are carefully moved to a clean petri dish, where they are surrounded by (not covered in) reverse osmosis water with a drop of methylene blue per about 4 litres against fungus, and hatched at 24-25 °C. This takes practice but gives the most young.

The tadpoles are cannibals and are raised separately in cups of about ½ litre, filled two thirds with reverse osmosis water, a piece of almond leaf and a little moss. Wait 2-3 days before feeding. Then give a little spirulina, prepared tadpole food and no more than one bloodworm at a time. Feed every 3rd-4th day at first and more often towards metamorphosis, and do not give more until the old food has been eaten.

METAMORPHOSIS

The eggs hatch after 14-18 days. Metamorphosis takes place after 35-84 days depending on temperature and food; in the blue form it often takes 10-12 weeks. The hind legs appear first, then the front legs.

One day after the front legs have appeared, the froglet is moved to a rearing container with easy access to land and a little water, for example a tilted box with sphagnum. The newly metamorphosed frog does not eat until the tail has been absorbed and the mouth is fully developed.

REARING THE YOUNG

The young do not eat until the tail is gone. They then take *Drosophila melanogaster*, and the smallest get springtails. Dust all food with calcium and vitamins; use a calcium and vitamin mix every day, a carotenoid supplement weekly and vitamin A every other month for young.

A small rearing container with leaf litter, plant cuttings and a population of springtails is ideal. No more than 4-5 young in a temporary terrarium of about 21 litres, but more space is better. After 6-8 weeks the young can move to a more permanent home. Keep young of the same size together, and watch for aggression.

Health and common mistakes

An actual list of diseases for the species is not documented, so consult a vet with amphibian expertise if in doubt. The main pitfalls are:

- Overheating. Above about 27 °C the frog becomes stressed, and prolonged heat can kill. Measure the temperature at the frogs' level, and cool the terrarium in summer.
- Lack of calcium and vitamins. Cultured feeder insects must be dusted. Vitamin A deficiency is a possible cause of weak, thin legs in newly metamorphosed froglets (spindly leg syndrome).
- Poor water quality. Leftover food in tadpole cups and standing water grow bacteria and fungus.

- Stress and aggression. Too many flies and females fighting can cost animals their lives. Separate rivals.
- A terrarium that is too dry. Humidity below about 80 % and too little misting.

Contact a vet if a frog stops eating, loses weight, sits lethargically with closed eyes or has sores or discoloured skin. Keep newly acquired animals separate for a period so that infection does not spread.

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.