herpy

POISON DART FROGS

Strawberry Poison Frog

Oophaga pumilio

Oophaga pumilio is a small, diurnal poison frog of 17-24 mm from the rainforests of Central America, known for its many colour forms and an unusual form of parental care: the female feeds each tadpole with unfertilised eggs. It is fascinating to watch, but requires experience, small feeder insects and patience.

Family: Dendrobatidae Former name: *Dendrobates pumilio*

KEY FACTS

THE ANIMAL

Adult size	**17-24 mm** snout-vent length
Lifespan	**10-15 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	**Experienced**

CARE

Min. enclosure	**45 × 45 × 45 cm** L × W × H for 4 adults
Temperature, day	**22-26 °C**
Temperature, night	**19-21 °C**
Humidity	**70-100%**
Water	**Water dish** depth 1 cm
UVB	**Optional** Ferguson zone 1
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**
Sexually mature	**10 months**
Eggs per clutch	**3-5**
Hatching	**10-14 days**
Larval period	**42-56 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	**Least Concern (LC)**

About the species

Oophaga pumilio is one of the smallest poison frogs. Adults measure 17-24 mm from snout to vent, most about 18-22 mm, and the females are slightly larger than the males. The body is compact with small adhesive discs on fingers and toes. The species name *pumilio* is Latin for dwarf.

Colour is the species' hallmark. About 15-30 local colour forms are known, and most are assumed to breed true. They range from the red body with blue legs that is widespread in Costa Rica and on the Panamanian mainland to green, yellow, orange, blue and spotted forms on the islands of Bocas del Toro in Panama. Many of the populations have been separated for over

10,000 years. Keepers must know the animals' locality and keep the forms apart.

The species was formerly called *Dendrobates pumilio*, and the name is still seen in older literature. The genus name *Oophaga* means "egg eater" and refers to the tadpoles, which feed only on eggs from the mother. The closest relatives are thought to be *O. arborea* and *O. sylvatica*.

Skin toxicity: The poison comes from the diet. In the wild the frog takes up alkaloids, including pumiliotoxins, from mites and ants and stores them in the skin. *O. pumilio* is the most toxic species in its genus, but not among the most toxic poison frogs. Captive-bred animals on fruit flies and springtails lack the poison or have very little of it, whereas wild-caught animals can take several years to lose it. Skin toxicity is therefore regarded 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: Rearing tadpoles Read more: Buying animals: captive-bred, wild-caught and transport

Distribution and habitat

Oophaga pumilio lives on the Atlantic side of Central America, from eastern central Nicaragua through Costa Rica to north-western Panama. Records are almost all in Costa Rica and Panama, with fewer in Nicaragua. In Panama the many colour forms are found on the islands of the Bocas del Toro archipelago and on the coast opposite them.

The species is common throughout its range. Records from outside Central America are due to escaped or released terrarium animals and are not part of the native distribution.

> **Native range:** Nicaragua, Costa Rica and Panama.

HABITAT

Oophaga pumilio lives in humid lowland rainforest and on the lower mountain slopes from sea level up to about 950 m, and large populations are also found in disturbed areas such as cacao and banana plantations. The frog is diurnal and mostly ground-dwelling and hunts in the leaf litter among roots and fallen leaves, but also often climbs in lianas and trees. Ants make up the largest part of the diet.

The males defend small territories with calling sites, feeding sites and breeding sites, and the females distribute themselves according to where there are places to deposit tadpoles. The tadpoles grow up in small bodies of water in leaf axils, especially in bromeliads, but also in tree crevices and in rubbish such as cans. In the forest the frogs are exposed to temperatures up to about 27 °C, and in open, cleared areas it gets warmer.

Care

THE ENCLOSURE

A pair or a small group of up to four animals needs a vivarium of at least 45 × 45 × 45 cm (length × width × height). More animals require more floor area. The height gives room for bromeliads, which the frogs use both as shelter and as breeding sites, and the floor gives room for territories.

Build up the floor with a drainage layer of expanded clay pebbles or coarse gravel, an insect mesh or a fibre mesh, and a moist substrate of coconut fibre, peat or moss, preferably mixed with orchid bark. Lay large, firm leaves, for example magnolia and oak, on top. They give shelter and keep alive the small animals that the frogs hunt. Plant creeping fig, philodendron and above all bromeliads.

The vivarium must have a glass lid with a ventilation panel so that the air changes without drying out. Cover all gaps, because such small frogs escape through very small holes. Newly acquired animals and juveniles can be kept in simple set-ups with kitchen paper as the floor until they have settled in.

Read more: Terrarium construction and bioactive substrate

TEMPERATURE

By day the temperature should be 22-26 °C, preferably about 24 °C, and at night 19-21 °C. Temperatures below 18 °C or above 32 °C for any length of time can be fatal.

Place the vivarium in a cool spot without direct sun, and use lighting that gives off little heat. No heat spot is needed. A cool night is part of the natural rhythm. Winter rest is not documented for the species.

HUMIDITY AND MISTING

Humidity should be high, 70-100 %. Aim for 70-80 % during the day and up to 100 % at night, for example by misting four times a day with an automatic system. A timer-controlled rain system is therefore a great advantage.

The floor should be moist all the time, but not waterlogged, and some places may be a little drier than others. Mist with dechlorinated tap water or spring water. If the air becomes too dry, the frogs hide, and young easily dry out. If the air is stagnant and wet, mould grows.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

A shallow water dish is enough, but the water must be no more than about ¾ of the frog's height, in practice under 1 cm, because the species swims poorly and can drown. Use a flat dish with a ramp of stones or moss, and change the water often.

Amphibians absorb water and substances through the skin. Use dechlorinated tap water or spring water, and avoid soap, cleaning products and traces of hand cream on your hands. For the tadpoles there must be small water-filled sites: bromeliads or small tubes and film canisters with water (see Eggs and tadpoles).

LIGHTING AND UVB

Give 12 hours of light a day, so that the plants thrive. An LED plant lamp that does not give off much heat is a good choice. UVB is optional: the need has not been documented for the species, and the species does fine without, but a weak UVB source can be an advantage. If you use it, stick to Ferguson zone 1 with plenty of shade, and check that the lamp does not heat the terrarium.

Read more: Lighting and UVB

FEEDING

Oophaga pumilio needs very small feeder insects, at most about 2 mm. Small, flightless *Drosophila melanogaster* and springtails are the staple, supplemented with aphids, termites and other small feeders. Large flies such as *D. hydei* are too big for many animals.

As a starting point feed adults 3-4 times a week, and do not add new flies until only a few are left from last time. Too many flies stress the frogs. Dust the adults' feeders with calcium and vitamins at least once a week and the juveniles' at every second feeding. The fruit flies may be reared on a carotenoid-enriched substrate.

Keep your own cultures of fruit flies and springtails. A female that has to feed tadpoles with eggs needs plentiful and varied food, because a poorly fed female does not lay viable eggs.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Oophaga pumilio is diurnal, bold and inquisitive and moves about a great deal in the leaf litter. The males defend territories with a buzzing, cricket-like call and may fight other males. The females typically choose the nearest calling male.

A pair or a small group with more females than males can work, but if two males fight, they must be separated. Wild-caught animals are often stressed and hard to settle, so buy captive-bred animals, and never mix wild-caught and captive-bred animals.

The frogs should not be handled, because the skin is sensitive and the animals easily become stressed. If an animal has to be moved, coax it into a small cup.

Breeding

SEXUAL MATURITY AND SEXING

The sexes are hard to tell apart by size, because the females are only slightly larger. The most reliable feature is the male's buzzing call, and the most reliable proof of a female is eggs. Both sexes become sexually mature at about 10 months. The easiest approach is to let several young grow up together and see who calls.

MATING

The male calls from an elevated spot, for example a bromeliad leaf, and the female approaches. After a short period of mutual touching, the male leads her to an egg-laying site, often a leaf near the water-filled centre of the bromeliad. There is no amplexus.

The species breeds all year round. A female tends only one clutch of tadpoles at a time and is not receptive to mating during that period. In captivity well-fed pairs lay more and larger clutches than in the wild, but each laying takes its toll on the female.

EGGS AND TADPOLES

The female lays 3-5 eggs in moist leaf litter, on a leaf or in a bromeliad axil, in captivity preferably in a film canister. The male guards the eggs, removes fungus and keeps them moist by emptying water from his cloaca over them. Many clutches fail.

When the eggs hatch, the female carries the tadpoles on her back, usually one at a time, each to its own small body of water, typically a bromeliad axil. The tadpoles feed exclusively on unfertilised eggs that the female lays for them. They must have the first egg within three days, and thereafter the female comes every day or every other day with 1-5 eggs, until metamorphosis.

Rearing without the female's eggs has succeeded only in rare cases, and no food matches the eggs. Do not therefore remove eggs or tadpoles, but let the female tend them. Provide many small water-filled sites: bromeliads or small tubes and film canisters with about 20 ml of water. Four tubes per pair is suitable.

METAMORPHOSIS

The eggs hatch after 10-14 days. The tadpoles metamorphose after 6-8 weeks. The time depends on temperature and on how many eggs the female can supply.

When the front legs appear, the tadpole stops eating and lives off its tail. The froglet stays near the water for a couple of days while the rest of the tail is absorbed. Make sure there are moist leaves or moss right at the edge so that it can climb out easily.

REARING THE YOUNG

The newly metamorphosed froglets are very small and need the very smallest feeder insects: springtails and the smallest fruit flies. Keep them in a small rearing box with high humidity, moss, leaf litter and a good population of springtails, and separate them from the adults, so that they do not have to compete for food.

The young of this species are known to be difficult to rear. Calcium deficiency, parasites and unexplained failure to thrive are common problems. Dust the food with calcium and vitamins, and do not move the young to a larger terrarium until they eat reliably and grow steadily.

Health and common mistakes

A full list of diseases for the species is not documented, but some problems recur:

- Too high a temperature or stagnant air. The frogs become lethargic and hide. Lower the temperature, and improve the ventilation.
- Calcium deficiency, especially in young. Dust the feeder insects with calcium and vitamins.
- Parasites, which cause emaciation despite a good appetite. Wild-caught animals are a particular risk and should be kept completely separate from captive-bred ones.
- Unexplained failure to thrive in young. Dead animals should be autopsied by a vet, so that the cause can be found before more die.
- Chytrid fungus (*Batrachochytrium dendrobatidis*), a serious amphibian disease. Keep newly acquired animals isolated for some weeks.

Longevity has not been documented for the species. The figure in the box is a general figure for poison frogs in captivity (10-15 years). Contact a vet with amphibian expertise if a frog stops eating, loses weight or has swellings or sores.

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.