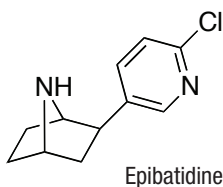
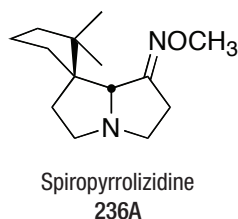
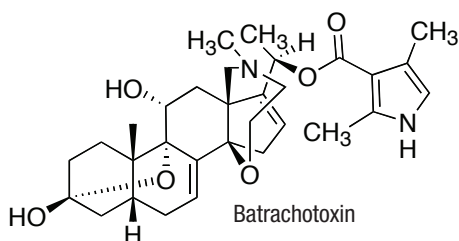


# Aposematic Poison Frogs (Dendrobatidae) of the Andean Countries: Bolivia, Colombia, Ecuador, Peru and Venezuela



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## Phantasmal Poison Frog

*Epipedobates tricolor* (Boulenger, 1899)

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### Names

Phantasmal Poison Frog (Frank and Ramus, 1995); *Rana Tricolor Ecuatoriana* (IUCN Red List of Threatened Species™, version 2011.2). The specific epithet *tricolor* refers to the coloration of this species, as does the English vernacular name Phantasmal Poison Frog. The Spanish vernacular name *Rana Tricolor Ecuatoriana* is both descriptive and indicative of the country of origin, Ecuador.

### Taxonomic Comments

From a taxonomic standpoint, *E. tricolor* has a complicated history due to misidentifications between *E. anthonyi* and *E. tricolor* in much of the scientific and popular literature (see Lötters *et al.*, 2007). Boulenger (1899), using the now-disregarded genus *Prostherapis* Cope, 1868, described *E. tricolor* based on specimens collected in the Province of Bolívar, municipality of El Porvenir, Ecuador. These were *E. anthonyi* and not *E. tricolor*; however, Barbour and Noble (1920) placed this species in *Phyllobates*. Although this placement was based on Peruvian specimens that were a doubtful match to the endemic Ecuadorian *E. tricolor*. Myers *et al.* (1978) placed the species in *Dendrobates*. Later, Myers (1987) assigned it to the genus *Epipedobates*. Rivero (1991) placed *E. tricolor* in *Colostethus*, using the specific epithet *paradoxus*. Rivero and Almendáriz (1991 “1992”) reverted to the placement in *Epipedobates* as *bicolor* (misspelling for *tricolor*). Duellman and Wild (1993) placed the species in synonymy with *E. anthonyi*. Frost *et al.* (2006) removed *tricolor* from *Epipedobates*, and by implication placed it in *Ameerega*. The implied status of this species as a member of the genus *Ameerega* is not generally accepted.

### Identification and Description

A medium-sized *Epipedobates* with an adult snout-vent length (SVL) of 19.0–21.0 mm in males; females are larger with a SVL range of 20.0–23.0 mm (see Lötters *et al.*, 2007). Dorsal skin is smooth. The first finger is longer than the second finger. The ground color is dark brown with a wide, irregularly splotched (on the margins) and/or broken light green or yellow-green longitudinal stripe from snout to posterior dorsum. Light green longitudinal, dorsolateral stripes begin on the snout, where they





join the mid-dorsal pattern. These stripes cover the orbits and continue dorsolaterally to the groin. Supralabial stripes run along the upper jaw and continue onto the forearms where they terminate. The venter is usually marbled brown and green, and is occasionally entirely green. Conspicuous fuchsia-red flash marks occur near the axillary, the groin, behind the knee, and at the axis of the foot joint. The limbs are typically spotted or blotched with green (see Lötters *et al.*, 2007).

## Identification and Description of Larvae and Froglets

The larvae have not been formally described. The froglets have a similar pattern to adults but are paler.

## Similar Species

No other poison frog within the range of *E. tricolor* has a bold, green-striped pattern on a brown ground color with bright red flash marks.

## Alkaloid Profile

This species has been confused with *E. anthonyi* in previous publications (see Lötters *et al.*, 2007), and concerning the alkaloid epibatidine (Neuwirth *et al.*, 1979; Myers and Daly, 1983; Daly *et al.*, 1999, 2005), and in fact *E. tricolor* may have never been tested for alkaloids (M. Garraffo, pers. comm.). See Appendix 4.1 under *E. anthonyi* for additional comments and a complete alkaloid profile. See Lötters *et al.* (2007) for a detailed discussion of the confusion between *E. anthonyi* and *E. tricolor*.

## Natural History and Ecology

The Phantasmal Poison Frog is terrestrial and diurnal, and may be found on steep hillsides in premontane and submontane mesic forests, close to streams and other wet depressions in the leaf litter. It has been found sleeping on plant leaves above ground at night (D.F. Cisneros-Heredia, pers. obs.). It has adapted to live in substantially altered habitats where little or no primary or old-growth secondary forest remains.

## Reproduction

Reproduction was presumed by Lötters *et al.* (2007) to be similar to *E. anthonyi*. Eggs are laid in the leaf litter and larvae are transported by the male parent to running or standing water where they complete their development, independent of further parental care, as free-swimming tadpoles (IUCN Red List of Threatened Species™, version 2011.2). Larvae have been found in streams, water-filled depressions in the substrate, and even in depressions of water-filled cattle tracks (Christmann, 1994).

## Calls and Vocalizations

The call is a long, loud “trill” (Lötters *et al.*, 2003; T.R. Kahn, pers. obs.).



## Distribution

Endemic to Ecuador, this species occurs mainly in the provinces of Bolívar and Cotopaxi. It may occur in border areas with the provinces of Cañar, Guayas and Chimborazo, at elevations of 600 to 1800 meters (see Lötters *et al.*, 2007).

## Threats

The primary threat to *E. tricolor* is the accelerated loss of original forest cover on the Pacific slope (western versant) of the Ecuadorian Andes where it lives. Additional threats are the agrochemical pollution of waterways and ongoing habitat loss due to land conversion. Virtually all the primary forest where this species originally occurred has been logged, burned, or transformed for pasture and smallholder farming. Some of the declines seen in this species appear to have taken place in suitable habitat, so chytridiomycosis cannot be ruled out as a cause, although direct evidence is lacking. The Phantasmal Poison Frog is sought for the international pet trade (IUCN Red List of Threatened Species™ version 2011.2).

## Conservation Status

*Epipedobates tricolor* is classified as Endangered (EN) on the IUCN Red List of Threatened Species™ (version 2011.2) because its Extent of Occurrence (EOO) is <5000 km<sup>2</sup>, it is known to inhabit <10 locations, and there is a continuing decline in the extent and quality of its habitat. The overall number of mature individuals has decreased. It does not occur in any protected area. Management plans for its remaining habitat are recommended (IUCN Red List of Threatened Species™ version 2011.2). It is listed in Appendix II of CITES.



*Epipedobates tricolor*

Morph



— = 5 mm





*Epipedobates tricolor*

## Map

