

# THE AMERICAN BIOLOGY TEACHER



## About Our Cover

The cover photo depicts the red-headed poison frog, *Ranitomeya fantastica*. Poison frogs, family Dendrobatidae, get their common name from their chemical defenses. These chemicals are alkaloids, which they sequester from their arthropod prey. Many of these species are very brightly colored and conspicuously patterned. This combination of a conspicuous appearance and chemical defense is a trait known as *aposematism*. Predators that sample aposematic species quickly learn that these animals are toxic or unpalatable.

As a result of their stunning appearance and complex parental care, dendrobatids have become a fixture in zoological exhibits as well as in the homes of hobbyists. While there are legal pathways, much of this demand has led to decades of illegal smuggling out of their native lands. Frogs (and other animals as well) are typically smuggled in deplorable conditions, crammed inside water bottles until there is no room for individuals to move. In some instances, hundreds of these animals die before reaching their destination. Illegal smuggling has been linked to the complete destruction of some frog populations, and societal change is needed to prevent this going forward.

Although smuggling has negatively affected many species, the major concern for many poison frog species is habitat loss, generally via deforestation. Numerous species of dendrobatids have very small geographic ranges. Unfortunately, the impact of human activities such as mining has wiped out large portions of Amazonian Peru, Brazil, and Ecuador. Mining activities also often leach devastating chemicals into surrounding areas and downstream, a particularly concerning issue in the tropics, where many species have evolved to live in unique niches. Destruction of this nature puts many species at risk of losing the entirety of their suitable habitat.

Pathogens also threaten amphibian groups. The fungal pathogen chytrid (*Batrachochytrium dendrobatidis*) has been negatively affecting frog populations worldwide for decades. Chytrid has wiped out entire populations and is implicated in the extinction of several frog species. Amphibian populations worldwide are facing an unprecedented danger from emerging pathogens, many of which are transported worldwide via human trade and transport.

This photo was taken in a field near Tarapoto, Peru, by Adam Stuckert, a Ph.D. candidate at East Carolina University, using a Nikon D3100 and a Nikkor 85mm micro at ISO 200, f/13, 1/200 sec, with a flash.

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