

## DIVERSITY AND CONSERVATION OF BRAZILIAN AMPHIBIANS

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*Figure 1. Female of *Fritziana tonimi* transporting eggs. This marsupial tree frog was described recently from the Atlantic forest of Espírito Santo state, as a result of the project. Photo by João L. Gasparini.*

The degradation of natural ecosystems by human action has generated an unprecedented crisis in the biota of the planet. Besides the environmental deterioration caused by man, through fragmentation, degradation, or complete destruction of ecosystems, there are other serious problems, such as the introduction of exotic species, diseases, pollution / contamination, climate change, and the synergistic interaction of these factors. Among the organisms most affected are the amphibians, which are facing serious population declines, local extinctions or even species extinctions. Alongside this framework of loss of diversity, the number of new species described is increasing in tropical regions as a result of investments in faunal surveys. The Brazilian official list of threatened amphibians has just been published and the picture in it is alarming, with an increase in the number of threatened species of the order of 150%. About 20 new species of amphibians have been described each year in Brazil, but it is difficult to determine today what will be the approximate final number, given the uncertainties and the vast areas of the country not yet prospected. Therefore, there is both a need for a better understanding of our diversity of amphibians, not completely described yet, as well as a need to better understand the roles played by the different factors that threaten Brazilian species. This project proposes approaches to evaluate these two major issues.

## SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

For the evaluation of the Brazilian diversity of amphibians, our first goal in this project, we described 17 new species of amphibians after two years of studies (Figure 1), and produced articles on anurofaunistic surveys, morphology, cytogenetic, phylogeny, and phylogeography. Besides the evaluation of diversity, these articles focus on understanding the processes of evolution and diversification in this vertebrate group. We published several articles on the natural history, behavior, bioacoustics, and ecology of amphibians that, in addition to their academic importance, contain relevant information for the conservation of the species. To detect new species we are using DNA barcodes. This approach is allowing the discovery of numerous species morphologically cryptic and a more accurate understanding of the real diversity of amphibians in Brazil. For the conservation, the second major issue in this project, we produced, until now, five articles on chytridiomycosis, a disease that has become a major concern for the conservation of amphibians, because it is causing population declines or even extinctions of amphibian species worldwide. Still associated to the conservation, we produced an article on microbiota associated to amphibians and two articles using the environmental DNA as a way to find rare and threatened species in the environment. As an important result, one species that was disappeared for about 35 years was rediscovered (Figure 2). In total, we produced, until now, around 60 scientific publications, like those exemplified below.



Figure 2. *Scinax pinima*, a microendemic species of tree frog from Serra do Cipó, Minas Gerais state, Brazil, was disappeared for about 35 years. Recently it was rediscovered as a result of the project.  
Photo by Célio F. B. Haddad.

## MAIN PUBLICATIONS

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