

AMPHIBIAN CONSERVATION IN ECUADOR

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A NEW FROG FROM THE CHOCÓ

An undescribed species surfaces from the endangered South American rainforest thanks to the efforts of Universidad Indoamérica, Tropical Herping and Mashpi Lodge



The genus *Hyloscirtus* is part of the diverse tree frog family *Hylidae*, and represents a conspicuous component of the anuran fauna in the Andean foothills and cloud forests. This genus currently contains 34 recognized, extant species, all of which reproduce in streams. Most of the species are restricted to specific microhabitats.



The habitat of the Mashpi Torrenteer is located in the Ecuadorian Chocó forest, one of the most threatened ecosystems in South America.

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PHOTOS BY LUCAS M. BUSTAMANTE AND
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*The recently described Mashpi Torrenteer *Hyloscirtus mashpi* increases the already numerous array of amphibians in Ecuador to more than 550 species.*

"The first time I saw it was four years ago, while doing night photography besides one of the streams of the reserve" says Carlos Morochz, Research Director at Mashpi. "I sensed it was something different, so I went to Luis Coloma, of Centro Jambatu, who suggested that the frog required more detailed study".

"This kind of frogs live associated with water bodies. They call at night along the stream banks. In the particular case of this new species, we are pleased to see that this frog is quite abundant in the reserve and its reproductive cycle goes throughout the year" says Juan M. Guayasamin, director of the Center for Biodiversity and Climate Change, at Universidad Tecnológica Indoamerica. This institution and Tropical Herping maintain a research agreement with Mashpi since 2013, with the aim of studying the communities of amphibians and reptiles in the reserve.

Since that year, we began monitoring all streams at Mashpi. "We started to take pictures of all the individuals we found because they had a lot of color variation. In addition, we made recordings of their calls, chytrid analysis- the fungus that infects amphibians- and blood samples for genetic and molecular studies" adds Carlos Morochz.

"Although we had hints that it was a new species, it was exciting to confirm it with the genetic analysis" continues Alejandro Arteaga, researcher at Tropical Herping. "With such news we knew immediately that there was a great urgency to describe the species to assign accurate conservation priorities".

But one of the things that called scientists' attention about the discovery of this new species is that researchers managed to record videos of the as yet unknown reproductive behavior of this group of frogs. "Males of Torrenteers of the bogotensis group have a gland on the chin (upper throat) which was suspected to be used to stimulate the female at the time of courtship. With these video recordings we have now evidence of such behavior. This becomes

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Metamorph of *H. mashpi* at Reserva de Biodiversidad Mashpi, Ecuador. This is a nocturnal species restricted to riverine vegetation in primary evergreen foothill forests, which perches on leaves and branches 30–400 cm above ground/stream level, and is active under a variety of climatic conditions.



The Chocóan rainforest as seen from the verandah of Mashpi Lodge, one of National Geographic Unique Lodges of the World. Universidad Tecnológica Indoamérica and Tropical Herping maintain a research agreement with Mashpi since 2013, with the aim of studying the communities of amphibians and reptiles in the reserve.



Abundance is patchy and can be as high as four adults per square meter; frogs have been found either hidden between leaves or exposed.

an unprecedented record of the natural history of these enigmatic species” continues excitedly Mauricio Correa Rivera, co-author and researcher at the Herpetological Group of Antioquia in Colombia. Additionally, a good news is that the species is able to survive with abundant populations, despite it resulted positive for the analysis of the chytrid fungus. “This could give us some guidelines for searching methods or strategies to protect those species that have been brought to the brink of extinction by the fungus” confirms Arteaga.

The habitat of the Mashpi Torrenteer is located in the Ecuadorian Chocó forest, one of the most threatened ecosystems in the country and in South America in general. Urban sprawl deforestation, monocultures and logging are the main reasons that make less than 2% of the Ecuadorian Chocó remain intact. To Roque Sevilla, majority Mashpi shareholder and mentor of the project, this finding only confirms the importance of conserving these forests. *“It has been a great joy because it endorses what I felt the first time I went to Mashpi: a sublime place full of life and biological value; much of which has not been registered by science or perceived by us, the Ecuadorians. Therefore I felt it was a moral obligation and a great dream to preserve such a rich area”.*

Roque decided to start research projects parallel to ecotourism projects in Mashpi Lodge, which since this year was declared as one of the National Geographic Unique Lodges of the World. *“Travelers who pass through the experience at Mashpi, become true ambassadors of nature conservation, which is definitely the major success. However, the aim is also to show that it is possible to carry out a viable economic project and still be respectful with our environment. Both aspects are being achieved at Mashpi”* adds Sevilla. To Roque, the discovery of the Mashpi Torrenteer is only the beginning of a major long-term preservation project, which works thanks to a strong and successful institutional collaboration on behalf of the study of biodiversity in Ecuador.

The scientific paper that describes the new species was published on August 28, 2015, at the Neotropical Biodiversity journal, an initiative from the Ecuadorian Secretary of Higher Education, Science, Technology and Innovation, to promote the publication and dissemination of biodiversity research in Latin America. All the articles are freely available. You can access the publication on this link: <http://www.tandfonline.com/doi/full/10.1080/23766808.2015.1074407> - .VeTNQLRCnIM



The diversity of neotropical frogs, particularly Andean groups such as *Hyloscirtus*, has been drastically underestimated, as revealed by the number of recent descriptions of new species. This underestimation of diversity highlights the continued need for field expeditions to under-studied areas and habitats such as Andean torrents.



H. mashpi n. sp. is an abundant species with seemingly healthy populations.



The chytrid fungus *B. dendrobatidis* (Bd) was found in 6 of 34 adults of *H. mashpi*.

Typical specimen of *Hyloscirtus mashpi* from Reserva de Biodiversidad Mashpi.



A variation of *H. mashpi* n. sp. from Reserva de Biodiversidad Mashpi.



The word *mashpi* is a Yumbo word that means "friend of water" - a precise description of this treefrog, which is always found along pristine streams.