



Flag #83 Expedition Log

Biodiversity Discovery Expedition – Río Manduriacu Reserve

Expedition Date: Nov 23, 2019 to Dec 17, 2019

Scott Trageser & Ross Maynard
The Biodiversity Group
Tucson, Arizona, USA
scott.trageser@biodiversitygroup.org

A three-week expedition was mounted into the recently established Río Manduriacu Reserve (RMR) located on the Andean slopes in northwestern Ecuador. This site has proven to be a site of high conservation value as it harbors a range of threatened species, including several species endemics. This expedition is the fifth in a series of efforts to expand the database of known biodiversity from this unique canyon ecosystem. As with each prior trip, this expedition pushed further into the reserve, surveyed new areas for the first time, and covered a different calendar period to capture temporal variations in behaviors and observed diversity. Prior expeditions have yielded two novel frog species (*Nymphargus manduriacu* and *Noblella worleyae*), a putative new species of frog in the genus *Pristimantis*, the rediscovery of two 'lost' species of frog (*Rhaebo olallai* and *Nymphargus balionotus*), numerous herpetofaunal range extensions, at least three novel orchids, and a novel species of *Magnolia* tree. This trip yielded first ever recordings of *R. olallai* and *N. balionotus*, the second observation of *Cochranella megista* in Ecuador; eleven species added to the reserve's list including one endangered (*Andinosaura oculata*) and two vulnerable (*Pristimantis latidiscus* and *Trachyboa boulengeri*, and potentially two novel species (*Echinosaura* sp. and *Andinosaura* sp.).

Each Biodiversity Discovery expedition to RMR has expanded on our understanding of the unique and diverse assemblage of life that resides in the reserve. Such information is not just essential for assessing the true diversity of endemic and threatened species that rely on the protected forest of RMR, but also for calculating other measures of diversity that further refine our understanding of the complex biogeographic region in which the reserve is situated (i.e. Western Montane Forest). Moreover, the rate of discovery of newly documented species within the reserve has yet to plateau, indicating that additional biodiversity is yet to be discovered. This exciting and time-sensitive work at the reserve has enabled our collaborative team to increase awareness of the conservation importance of RMR to the public via promotional media, which will in turn bolster the ability of RMR's managing organization (Fundacion EcoMinga) to defend its autonomy from active mining and logging threats. Importantly, our data demonstrates an alarming reality: many of the globally threatened species discovered in the reserve are likely unable to survive outside of the mature forest protected by the reserve.

Currently, a mining company, Cerro Quebrado, a subsidiary of BHP Billiton, is interested in mining gold and copper in the reserve. In Ecuador, mineral rights are retained by the government and thus are available for sale if deemed to be in the Nation's interest. Cerro Quebrado has made several illegal prospecting incursions into the reserve, however their latest attempt in August 2019 was blocked by members of the adjacent community of Santa Rosa de Manduriacu. Such rewarding accounts serve to inspire our ultimate goals of demonstrating how poorly understood the biodiversity of Andean forests are, and that the conservation of these unique assemblages of life require cultivating meaningful, long-standing relationships with local communities.

Title Photo: Expedition team (lower reaches)

Front row from left to right: Jaime Culebra (Photo Wildlife Tours), Scott Trageser (President of The Biodiversity Group, MN'18), Leslie Rochefort (expedition medic/assistant), Rolando Peña (reserve guard), Marcelo Lesano (reserve guard); Back row from left to right: Jimmy Álvarez (field assistant/local community member), Ross Maynard (Principal Investigator), Ryan Lynch (Executive Director of Third Millennium Alliance), José María Loaiza (coordinator).

(Photo credit: Scott Trageser/NatureStills LLC)

Figure 1: Endangered *Andinosaura oculata* (Photo credit: Ross Maynard)



Figure 2: Ross Maynard with the Critically Endangered Tandayapa Andes Toad (*Rhaebo olallai*), which is currently only known from the Río Manduriacu Reserve. (Photo credit: Scott Trageser/NatureStills LLC)

