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June 14, 2018

FIVE NEW SPECIES OF SNAIL-SUCKING SNAKES DISCOVERED

STUDY ALSO PRESENTS NEW TREE OF LIFE FOR DIVERSE GROUP

New research led by the Museum has uncovered five new species of snakes in Ecuador and Peru with peculiar dining etiquette: they suck the viscous bodies of snails out of their shells. The new species, most of which are considered endangered or vulnerable, are described in a study published today in the journal *Zookeys*, which also includes a new evolutionary tree for the diverse group of snail eaters in Central and South America.

“Believe or not, there is an entire group of snakes for which snails are food from the gods,” said lead author Alejandro Arteaga, a comparative biology Ph.D.-degree student in the Museum’s Richard Gilder Graduate School. “But sadly, four of the five species we discovered are already facing the possibility of becoming extinct, as the forests remaining for them to survive are almost completely destroyed.”

With more than 70 currently recognized species, snail-eating snakes are among the most diverse groups of tree-dwelling snakes. These snakes possess uniquely modified jaws, which give them the ability to suck the slimy body of a snail from its shell.

Arteaga collaborated with Alex Pyron from The George Washington University to conduct a series of expeditions to rainforests in Ecuador between 2013 and 2017, which led to the discovery of three of the five new species: *Dipsas bobridgelyi*, considered endangered under International Union for Conservation of Nature (IUCN) criteria, *Sibon bebridgelyi*, considered vulnerable; and *Dipsas klebbai*. During the same period of time, two new species

were also found in dry forests by scientists based in Ecuador and Peru: *Dipsas oswaldobaezi* and *Dipsas georgejetti*, both considered vulnerable.

The most threatened of the newly discovered species, *D. bobridgelyi*, is known only from four patches of forest lacking connectivity between them, and its habitat is severely fragmented and declining in extent and quality due to deforestation. Only two of the localities where *D. bobridgelyi* is found – the Buenaventura Reserve in Ecuador and the Tumbes National Reserve in Peru – are currently protected.

To confirm these five snakes as new species, the researchers gathered measurements from more than 200 museum specimens and extracted DNA from nearly 100 individual snakes. They also used the data to build an evolutionary tree that includes 43 snail-eating snake species, 24 of which hadn't been included in previous analyses. In addition to describing the five new species and redefining limits of genera, species, and species groups among the snakes, the researchers made changes to the known geographic distribution of several Andean species. But they note that more work lays ahead.

“Our results and the results of other recent researchers indicate that more taxonomic changes are needed,” Arteaga said. “And we suspect that there are numerous additional species to be described across all genera of this group. Unfortunately, our time to find them is likely running short. These snakes are harmless to humans, but humans are not harmless to them.”

Other researchers involved in this work include David Salazar-Valenzuela, Nicolás Peñafiel, and Juan Guayasamin from the Universidad Tecnológica Indoamérica; Konrad Mebert from the Universidade Estadual de Santa Cruz; Gabriela Aguiar from Tropical Herping; Juan Carlos Sánchez from the Museo de Zoología de la Universidad del Azuay; Timothy Colston from The George Washington University; Diego Cisneros-Heredia from the Universidad San Francisco de Quito; Mario Yáñez-Muños from Instituto Nacional de Biodiversidad; Pablo Venegas from Centro de Ornitología y Biodiversidad; and Omar Torres-Carvajal from Pontificia Universidad Católica del Ecuador.

Fieldwork was made possible with the support of Tropical Herping; Universidad Tecnológica Indoamérica; Pontificia Universidad Católica del Ecuador; and Secretaría de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT). Laboratory work was carried out at Universidad Tecnológica Indoamérica and Pontificia Universidad Católica del Ecuador in Quito. Sequencing was made possible with support of The George Washington University, Universidad Tecnológica Indoamérica, the U.S. National Science Foundation (grant #s DBI-0905765 and DEB-1441719), Universidad Tecnológica Indoamérica, and Pontificia Universidad Católica del Ecuador and SENESCYT under the 'Arca de Noé' Initiative.

Zookeys paper: <https://doi.org/10.3897/zookeys.766.24523>

AMERICAN MUSEUM OF NATURAL HISTORY (AMNH.ORG)

The American Museum of Natural History, founded in 1869, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses 45 permanent exhibition halls, including those in the Rose Center for Earth and Space and the Hayden Planetarium, as well as galleries for temporary exhibitions. It is home to the Theodore Roosevelt Memorial, New York State's official memorial to its 33rd governor and the nation's 26th president, and a tribute to Roosevelt's enduring legacy of conservation. The Museum's five active research divisions and three cross-disciplinary centers support approximately 200 scientists, whose work draws on a world-class permanent collection of more than 34 million specimens and artifacts, as well as specialized collections for frozen tissue and genomic and astrophysical data, and one of the largest natural history libraries in the world. Through its Richard Gilder Graduate School, it is the only American museum authorized to grant the Ph.D. degree. Beginning in 2015, the Richard Gilder Graduate School also began granting the Master of Arts in Teaching (MAT) degree, the only such freestanding museum program. Annual visitation has grown to approximately 5 million, and the Museum's exhibitions and Space Shows are seen by millions more in venues on six continents. The Museum's website, mobile apps, and MOOCs (massive open online courses) extend its scientific research and collections, exhibitions, and educational programs to additional audiences around the globe. Visit amnh.org for more information.

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