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Museum Koenig Bonn

Discovery of a new, possibly arboreal, rice rat species in southeastern Ecuador

New rat species of the little known and rare genus *Mindomys* described: Three expeditions led an international research team with participation from the Leibniz Institute for the Analysis of Biodiversity Change (LIB) to the nearly inaccessible Cordillera de Kutukú, an isolated mountain range in the province of Morona Santiago in southeastern Ecuador, to find just a single specimen of the previously unknown species. The researchers named the new species *Mindomys kutuku*. Little is known about its natural history and ecological importance. The find in the Amazonian side of the Andes underlines the valuable biological role of this mountainous region.

"In total, the expeditions to the Kutukú region involved 1,200 trap nights, but only one specimen of the new species was found," says Dr. Claudia Koch, curator of herpetology at the LIB, Museum Koenig Bonn, explaining the effort that went into locating the rare animal. From the collected specimen, the dry skin, skeleton and tissue were preserved for the collections. Preservation will allow future research to detect environmental changes, learn more about the ecology of the animals and plants - and securely document the new species description, which was published in late February in the prestigious journal *Evolutionary Systematics*. The rice rat genus *Mindomys* was previously considered monotypic and included only the type species *Mindomys hammondi*. This species is known from only a few specimens, all of which were collected in the foothill forests of the Andes in northwestern Ecuador.

Using computed tomography images obtained for the new species at LIB and for the holotype (specimen from which a species was described) of *Mindomys hammondi* at the Natural History Museum in London, the researchers Jorge Brito of the Instituto Nacional de la Biodiversidad (INABIO), Claudia Koch, Nicolás Tinoco from the Pontificia Universidad Católica del Ecuador (PUCE) and Ulyses Pardiñas from the Instituto de Diversidad y Evolución del Sur (IDEAus-CONICET) were able to compare the skulls of the two species in great detail in a 3D model.

According to Jorge Brito, INABIO's mammal curator, the new species is easily distinguished from *Mindomys hammondi* by a number of anatomical features: "These include larger jugals, "wings" of the parietal bone extending to the zygomatic roots, larger otic capsules, narrow zygomatic plates almost without upper free borders, a posteriorly oriented foramen magnum (large occipital hole), larger molars and an accessory root of the first upper molar."

The adult male of *Mindomys kutuku* measures just under 35 cm from snout to tip of tail, of which the tail makes up about 20 cm. It has a dark reddish-brown dorsal coloration and a pale yellow ventral fur.

The only specimen found could not be observed in its habitat, as it was captured using a ground trap set by the researchers.

Thus, as with its sister species *Mindomys hammondi*, which was described in 1913, virtually nothing is known about the natural history of the new species. The scientists suspect that both of them could be arboreal species. A tail that is significantly longer than the body length and also covered with long hairs could be two features that indicate an arboreal lifestyle. However, arboreality is the least studied way of life within the New World mice and a reliable study of the anatomical aspects typical of this way of life is still lacking.

Previously, *Mindomys* records were restricted to the western Andean foothills of Ecuador. The Kutukú material now shows that the genus also occurs on the Amazonian side of the Andes and underscores the valuable biological importance of the isolated mountain ranges in eastern Ecuador.

Source

Brito, J., Koch, C., Tinoco, N., Pardiñas, U. F. J. (2022): A new species of *Mindomys* (Rodentia, Cricetidae) with remarks on external traits as indicators of arboreality in sigmodontine rodents. *Evolutionary Systematics* 6 (2022): 35–55. DOI: 10.3897/evolsyst.6.76879
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About the LIB

The LIB is dedicated to researching biodiversity and its changes, the results of which are disseminated to the wider society in an educational manner. In order to better understand the current mass extinction of flora and fauna, researchers are looking for connections and causes of – often – man-made changes. The goal is to develop solutions for the preservation of ecosystems and species in order to maintain the basis of current life.

About the Leibniz-Association

The Leibniz Association combines 96 independent research institutes. Their focus ranges from the natural, engineering, and environmental sciences to the humanities and the business, space, and social sciences. The Leibniz institutes focus on relevant social, economic, and ecological issues. They perform knowledge-oriented and applied research (also among the cross-disciplinary Leibniz research alliances), are or support scientific infrastructures, and offer research-based services.



Caption: The new species *Mindomys kutuku* (drawing by Glenda Pozo).

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