Héctor Cadena-Ortiz*, Alexis Barahona-V. and Jorge Brito New records of *Isothrix* (Wagner 1845) (Rodentia: Echimyidae) from Ecuador

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Abstract: We report two new records for an arboreal rat of the genus *Isothrix* in Ecuador, where only two previous photographic records of *Isothrix bistriata* existed. We highlight that geographic and ecological knowledge about these rodents and many other canopy species remain scarce.

Keywords: Amazonian; distribution; Echimyidae; rainforest canopy; Yasuní.

The genus *Isothrix* Wagner, 1845 (Echimyidae) is distributed across northern South America and includes six known species: *I. barbarabrownae* Patterson and Velazco, 2006, *I. bistriata* Wagner, 1985, *I. negrensis* Thomas, 1920, *I. orinoci* Thomas, 1899, *I. pagurus* Wagner, 1845, and *I. sinnamariensis* Vié, Volobouev, Patton and Granjon, 1996 (Patton and Emmons 1985, Patterson and Velazco 2006, 2008, Upham et al. 2013, Emmons and Patton 2015). The ranges of each are allopatric, so species assignments of museum specimens can be confidently made using morphology coupled with distributional data (Emmons and Patton 2015); yet because relatively few specimens have been collected, geographic ranges are still incompletely known (Patton et al. 2000).

The six Isothrix species can be separated into two groups based on body size and by pelage color and

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Here, we report two photographic records of Isothrix. On distributional grounds, our record could be assigned to *I. bistriata* since *I. negrensis* occurs in central Amazonian Brazil; *I. orinoci* in upper Orinoco drainage of Venezuela; *I. barbarabrownae* in eastern Andean slope of southern Peru; *I. pagurus* in east-central Amazonian Brazil and *I. sinnamariensis* in Guyana (Emmons and Patton 2015).

The Yellow-crowned Brush-tailed Rat (*Isothrix bistriata*) occurs in the western Amazon basin of Peru, Bolivia, Ecuador, Brazil and probably Colombia (Emmons and Patton 2015). For Ecuador there were only two previous records, neither represented by museum vouchers (Tirira 2007). Emmons and Patton (2015) could not confirm identification to the species level of either of Tirira's records; and they also mentioned an unpublished visual record of *Isothrix* sp. observed by L. H. Emmons in a riverine forest near the mouth of the Río Napo, close to one of Tirira's localities.

Our first record was on 13 March 2013 in Tambococha, inside of Yasuní National Park (0°58'37.97" S, 75°25'33.28" W, 190 m a.s.l.). The individual was seen and photographed (with low resolution) at 21 h 30 min. The animal was perching on a horizontal vine about 10 cm in diameter and approximately 5 m above the ground. Initially it stood and exhibited no fear, even when the camera flashed as it was being photographed, but then with agility it quickly climbed to the canopy.

Our second record of was on 4 December 2014 near the village of Boca Tiputini, buffer zone of Yasuní National Park ($0^{\circ}50'13.2''$ S, $75^{\circ}32'43.4''$ W, 197 m a.s.l.). It was seen and photographed at 10 h 00 min on a cloudless

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Figure 1: Isothrix sp.photographed at Boca Tiputini, Orellana province, Ecuador (Photo: Andrés Darquea).

day (Figure 1). This individual was moving through the branches of trees. When the rat realized the presence of people, it stood at the base of a tree branch 12 m above the forest floor. After being photographed, the rat quickly climbed into the canopy where it disappeared.

The site of the second record was visited three times a week for 5 months, but the species was not seen again and was never recorded by the camera traps installed there. Additionally, since 2011 this area has been monitored environmentally without additional records of Isothrix which is further evidence that these rats are either rare or difficult to observe.

The present report adds two records for this genus in Ecuador (Figure 2). The previous records are photos of *Isothrix bistriata* taken at Sacha Lodge and Laguna Grande within the Cuyabeno Reserve (Tirira 2007), both in Sucumbios province and north of the Napo River. In contrast, our two new records are in the Orellana province south of the Napo River; one inside and the other along the border of Yasuní National Park, within a lowland evergreen rainforest of the Napo-Curaray ecosystem (Guevara et al. 2013). These four records were registered inside or close to protective areas with intact forest habitats, which points to the importance of preserving forest for this genus in Ecuador.

Information about the ecology of many species of small mammals is scarce. For example in Ecuador, a mega diversity country for mammals, records for many species are supported only by specimens from type locality, and



Figure 2: Observations of *Isothrix* in Ecuador. Black stars represent the new records of *Isothrix* sp. The black circles represent literature records of *I. bistriata* from Tirira (2007).

their distributional ranges are poorly documented (e.g. Schliemann 1982, Ledesma et al. 2009). We draw attention for the need to increase sampling efforts including capture methods adapted to the canopy (e.g. Patton et al. 2000, Voss et al. 2001) and camera traps (e.g. Olson et al. 2012, Gregory et al. 2014). An increase in effort and methodology, for example during the course of rapid research or environmental consulting, will help us learn more about the biology of arboreal species and the existence of species not previously described. **Acknowledgments:** We would like to thank William R. Teska, Francois Catzeflis and two anonymous reviewers for their valuable comments on the original manuscript; Andrés Darquea (Drama Films) for sharing the photos; and Sebastián Dávalos for elaborating the map. Research in the Boca Tiputini region was funded by Petroamazonas EP and was undertaken with the participation of Walsh Environmental Scientists and Engineers. Comments, interpretations or conclusions are those of the authors, and are not necessarily agreed with or supported by Petroamazonas EP or Walsh Environmental Scientists and Engineers.

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