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# First record of ectrodactyly in the family Mabuyidae: aphalangia on the posterior extremities of *Notomabuya frenata* (Cope, 1862) from Guairá Department, Paraguay

Nicolás Martínez[1,*], María E. Tedesco[2] and Martha Motte[1]

Bone malformations such as polydactyly, brachydactyly, ectrodactyly among others observed in different animal groups. Numerous authors consider that one of the most common morphological anomalies in tetrapods is polydactyly, which is frequently found in amphibians (Borkin & Pikulik, 1986, Lada, 1999, Diego-Rasilla, 2000, Piha et al., 2006, Sas & Kovacs, 2006, Cruz-Pérez et al., 2009, Galan, 2011, Hinckley et al. 2015). However, bone malformations in reptiles seem to be rare, although the rising number of reported cases can indicate that such events are increasing, or could equally reflect greater effort by researchers irrespective of the actual incidence rate. The most common are dicephalus cases in Testudinids and Serpentes (Payen, 1995, Albuquerque et al., 2010), and polydactyly in Testudinids, Chamaeleonids, Iguanids, Gekkonids and Lacertids (Carretero et al., 1995, Cuadrado, 1996, Martínez-Silvestre et al., 1998, Pelegrin, 2007, Minoli et al., 2009, Bauer et al., 2009, Lazié & Crnobrnja-Isailović, 2012, Megía, 2012, Monte de Andrade et al., 2015).

Ectrodactyly is defined by Meteyer (2000), as a missing finger including the metatarsal and the phalanges. Other authors such as Rothschild et al. (2012) consider ectrodactyly as the absence of one or more fingers and call "aphalangia" the absence of some phalanges or bones of the finger. In this report, we follow the terminology of Rothschild *op.cit*.

In this contribution, the first record of ectrodactyly is reported on the posterior limbs of a *Notomabuya frenata* lizard, the only species of this genus and widely distributed across Paraguay, Brazil, Bolivia, and Argentina. A case of aphalangia was registered in a single specimen of *N. frenata,* captured and sacrificed by intraperitoneal injection of Thiopental Sodium® with a dose of 0.8 mg (range recommended by manufacturer is up to 100 to 150 mg/kg) (Green, 1979), on June 5th 2016 during a field trip to Cerro Mymyi hill, Villarrica, in Guaira, Paraguay (Fig. 1) (25°49'54.9" S, 56°17'29.1" W), that took place from June 4th 2016 to June 6th 2016, by one of the authors of this report (MM). The lizard was found at the base of the hill where the Atlantic Forest ecosystem is predominant with various elevations pertaining to the Ybyturuzu mountain range.

The specimen presents a total length of 141.47 mm, snout-vent length 65.40 mm, forelimb length 19.05 mm, hind limb length 24.33 mm, and total weight 5.1 g. The posterior extremities were photographed and x-rayed.

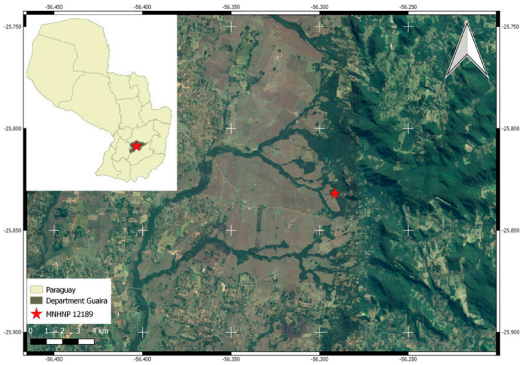


**Figure 1.** The red star indicates the site where the specimen MNHNP 12189 was collected.

[1] Museo Nacional de Historia Natural del Paraguay, Ruta Mcal. Estigarribia, Km 10,5, San Lorenzo, Paraguay.
[2] Facultad de Ciencias Exactas y Naturales y Agrimensura, Universidad Nacional del Nordeste. Corrientes, Argentina.
* Corresponding author e-mail: nicolasmartineztorres.py@gmail.com


**Figure 2. a)** Dorsal radiographic image of the posterior limbs. The arrow indicates the metatarsal of finger I, b) Ventral image of the affected limbs. The arrow indicates the metatarsal of finger I.

The specimen is deposited with the National Museum of Natural History of Paraguay (MNHNP 12189), and collected with Collect Permit Number 133/15.

The photographic and radiolographical analyses of the specimen provide evidence of aphalangia in both hind limbs. The phalangeal formula of the posterior extremity is: 2, 3, 4, 5, 4. In addition, the image shows a fracture in the femur, which occurred during the accommodation of the already sacrificed and prepared museum specimen for the radiograph.

On both posterior legs the metatarsals are present; however, on the right leg the metatarsals on the III and IV fingers are observed to be attached by the basal extremity, then separated and attached again on the distal side forming a small tubercle. Note the absence of the phalanges which form the fingers. On finger II, in addition to the metatarsal the first phalanx is thinner and ends in a small tubercle, the second phalanx being absent. On the left leg, finger I is reduced to the metatarsal.

This is the first report of aphalangia in this family and the radiographic samples reveal that these amputations are not predator related but of bone origin.

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