



A new locality record of the enigmatic *Calyptophractus retusus* (Cingulata: Chlamyphorinae) in the Paraguayan Chaco

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Abstract

We report a new record of *Calyptophractus retusus*, a rare species of armadillo, for the Paraguayan Chaco and include photographic records from local media, the iNaturalist platform, and technical reports, counting 11 known records in the country. Some of the records presented extend few kilometers the known range of the species in the Paraguayan Chaco.

Key words: Data Deficient, Distribution range, Greater Fairy Armadillo, Xenarthra.

Resumen

Reportamos un nuevo registro de *Calyptophractus retusus*, una rara especie de armadillo, para el Chaco Paraguayo e incluimos registros fotográficos de medios locales, la plataforma iNaturalist e informes técnicos, contando 11 registros conocidos en el país. Algunos de los registros presentados amplían unos kilómetros el área de distribución conocida de la especie en el Chaco Paraguayo.

Palabras clave: Área de distribución, Datos Deficientes, Pichiciego Mayor, Xenarthra.

Calyptophractus retusus (Burmeister, 1863), commonly known as the Greater Fairy Armadillo or Pichiciego Mayor, is exclusively found in the Chaco region, encompassing parts of Bolivia, western Paraguay, and northeastern Argentina (Torres *et al.*, 2015; Smith and Owen 2017). This species strongly associates with the Chaco biome, favoring habitats characterized by soft, sandy terrain (Torres *et al.*, 2015). Despite its ecological significance, *C. retusus* remains one of the least studied armadillo species, emphasizing the need for further research (Superina *et al.*, 2014). The confirmation of its presence in Paraguay was established through the report by Myers and Wetzel (1979), with distribution records predominantly concentrated in the extreme northwest of the Chaco, primarily based on scarce specimens (Smith and Owen 2017).

In Paraguay, *C. retusus* is classified as Least Concern at the national level (Saldívar *et al.*, 2017). However, globally it is categorized as "Data Deficient" by the International Union for Conservation of Nature (IUCN) (Cuellar *et al.*, 2014). This classification stems from the limited knowledge available about this species, coupled with its patchy distribution across microhabitats that are susceptible to ongoing habitat loss (Cuellar *et al.*, 2014).

C. retusus faces significant threats from habitat loss within the Chaco region, such as the conversion of natural environments for agriculture and cattle ranching (Cuellar *et al.*, 2014). Additionally, it is subjected to persecution due to entrenched cultural beliefs regarding the animal as a harbinger of disaster. Sightings of this species, possibly attributed to its distinctive physical features or rarity, are often associated with ominous predictions, such as foretelling death in the family (Cuellar *et al.* 2014; Noss *et al.*, 2008).

Recently, the distribution of *C. retusus* within the country has been documented (Smith and Ríos 2018), drawing upon specimens housed in museums, records from literature, and photographic evidence (Myers and Wetzel 1979; Smith 2008; Smith and Ríos, 2018; Vinke and Vinke 2014).

Here, we introduce a new capture of *C. retusus* found beyond its known range. In addition, we incorporate records from technical reports and other photographic records (Table 1).

The area of this record belongs to the Chaco Seco Ecoregion (Olson *et al.*, 2001). The landscape is composed of pastures for livestock production and windbreaks formed by native vegetation. The new record of *C. retusus* was obtained by one of the authors near the premises of the cattle ranch (21°40'02.9"S 60°18'48.7"W) in August 2023, during the afternoon hours (Figure 2).

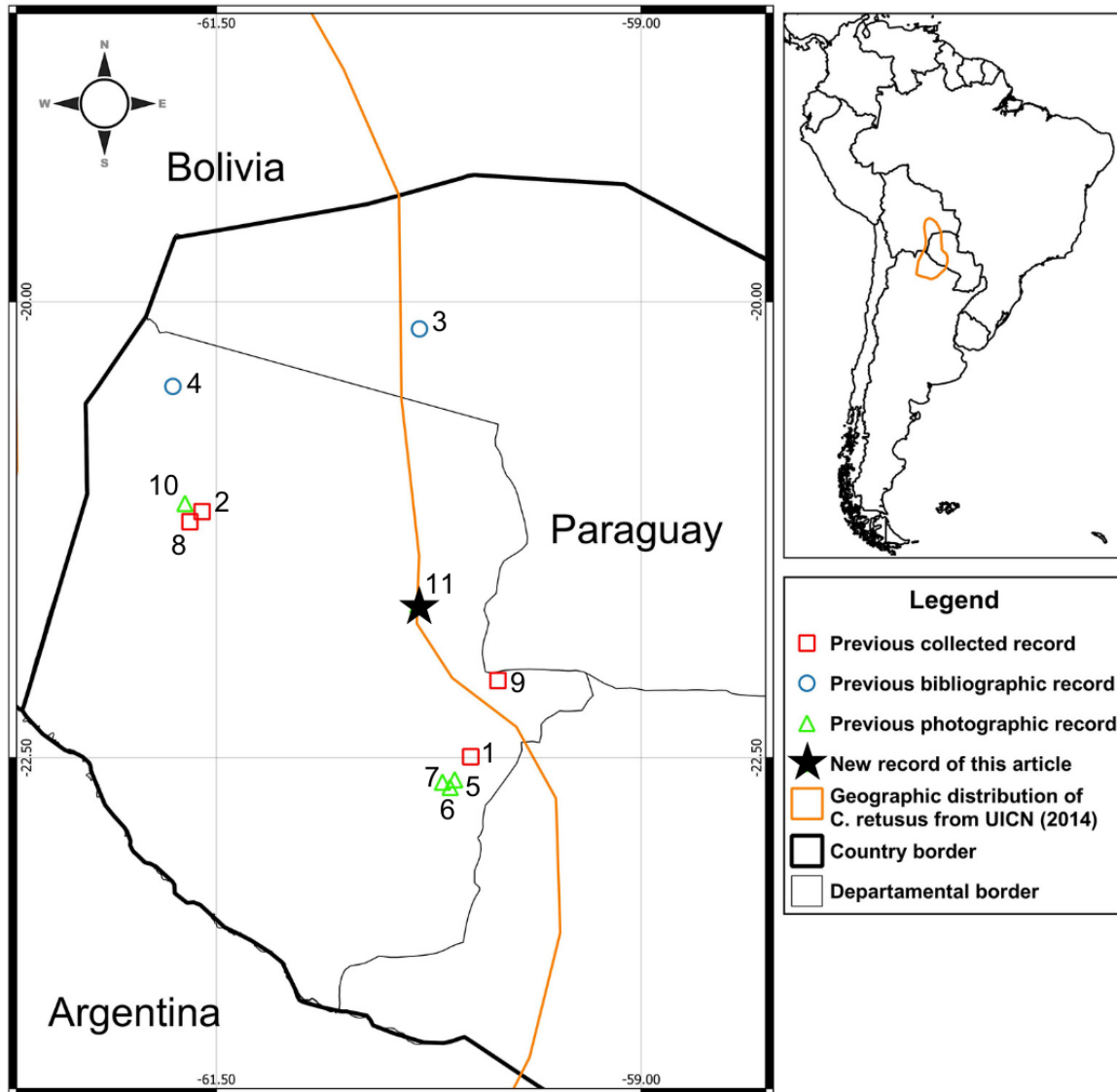


FIGURE 1. Orange shows the distribution proposed by Cuellar *et al.*, (2014) and in different symbols we present records of *Calyptophractus retusus* in Paraguay. Information on the points is found in Table 1.

We have incorporated two additional recent photographic records. The first was captured near the record published by Vinke and Vinke (2014) and subsequently published in local press media (ABC Color, 2015). The second record, documented in February 2024, was recorded on the iNaturalist platform under the username "michael_schroeder" and originated from a nearby location (iNaturalist, 2024). These points are recorded in Figure 1 and Table 1 as numbers 6 and 7 respectively. Furthermore, we have included two reports extracted from the management plans of protected areas within the Paraguayan Chaco. The initial report is featured in the management plan of the Parque Nacional Defensores del Chaco (Secretaría del Ambiente, 2016a), detailing a rapid ecological assessment conducted in 1999. The second report is incorporated into the management plan of the Parque Nacional Médanos del Chaco (Secretaría del Ambiente, 2016b), corresponding to an

update of a rapid ecological assessment conducted in 2003 (Figure 1). The data corresponding to the known records of the species are detailed in Table 1. Due to the lack of precise georeferenced for some records included in this article, we have considered the record sites mentioned by the authors in these cases and included them in Table 1 with the note “Estimated coordinates”. In cases with known georeferenced, these are detailed with the note “Georeferenced”.

TABLE 1. Localities, geographical coordinates, year of record, record type and references of historical and new records of *Calyptophractus retusus* in Paraguay. The number (N°) column corresponds to symbols in Figure 2,

N°	Locality	Longit ude	Latitu de	Year	Record type	Note	Reference
1	Filadelfia	-60,00	-22,49	1979	Collected	Estimated coordinates	Myers and Wetzel (1979)
2	Teniente Enciso	-61,65	-21,21	1979	Collected	Estimated coordinates	Myers and Wetzel (1979)
3	Defensores del Chaco	-60,30	-20,15	1999	Bibliography	Estimated coordinates	Secretaría del Ambiente (2016a)
4	Médanos del Chaco	-61,76	-20,47	2003	Bibliography	Estimated coordinates	Secretaría del Ambiente (2016b)
5	Neu Halbstad	-60,12	-22,64	2013	Photography	Estimated coordinates	Vinke and Vinke (2014)
6	Colonia Neuland	-60,13	-22,65	2015	Photography	Estimated coordinates	ABC Color (2015)
7	Neu Halbstad	-60,13	-22,65	2024	Photography	Georeferenced	michael_schroeder in iNaturalist (2024)
8	Teniente Enciso	-61,65	-21,21	Unknow	Collected	Estimated coordinates	Smith and Ríos (2018)
9	Campo Loro Indigenas Reserve	-59,84	-22,08	Unknow	Collected	Estimated coordinates	Smith and Owen (2017)
10	Teniente Enciso	-61,65	-21,21	Unknow	Photography	Estimated coordinates	Smith (2008)
11	Mariscal José Félix Estigarribia	-60,31	-21,67	2023	Photography	Georeferenced	This article

Three records included in this article are beyond the recognized distribution limits of the species. The capture presented in this article (0,3 km from the limit), the historical record from the Campo Loro Indigenous Reserve (Myers and Wetzel, 1979, 15.5 km from the limit), and the report extracted from the management plan of Parque Nacional Defensores del Chaco (Secretaría del Ambiente, 2016a, 11.5 km from the limit. See Figure 2). Although the

reliability of the latter may be uncertain, this could indicate the presence of the species outside the known range to the east (Smith and Owen 2017) and north (Peñaranda-Barrios 2020). Although due to the cryptic behavior of *C. retusus*, further efforts should be made to confirm these assumptions.



FIGURE 2. Specimen of *Calyptophractus retusus* recorded in the district of Mariscal José Félix Estigarribia in August 2023. a: lateral view; b: dorsal view; c: caudal view.

This work broadens the knowledge about the distribution of *C. retusus* in the Paraguayan Chaco and confirms the importance of the records made in urban areas by local inhabitants. Furthermore, we highlight the ecological importance of these areas for virtually unknown species such as *C. retusus* and motivate future studies on this species to support conservation actions at an ecoregional scale.

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