

Short communication

## Rediscovery of *Chacodelphys*: A South American marsupial genus previously known from a single specimen

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*Chacodelphys formosa*, a small didelphid marsupial, is one of the least known living mammals of the world. It was originally described by Shamel (1930a) as *Marmosa muscula* on the basis of a single specimen collected at Linda Vista, 15 km northwest of Comandante Fontana, Formosa province, Argentina. After being renamed *M. formosa* (Shamel 1930b) to avoid homonymy with *M. muscula* Cabanis (= *M. murina* Linnaeus) its taxonomic status shifted between being considered either as a synonym of other small marsupial taxa or as a valid species (see an account on its taxonomic history in Voss et al. (2004a). Recently, during a new examination of the holotype, Voss et al. (2004a) considered that *formosa* exhibit a unique combination of characters states that does not fit the diagnoses of the other marmosine genera, and erected the genus *Chacodelphys* to include this single species. No records of this small marsupial have been obtained after the collection of the holotype (e.g., Massoia 1970; Massoia et al., 1997, 1999; Heinonen Fortabat 2001). Therefore, *Chacodelphys* remains known from a single specimen, and aspects of the natural history of its unique species are almost unknown. Not surprisingly, *C. formosa* has been almost forgotten in the posterior literature (e.g., Gardner 1993). As a result, it is not listed in

references of endangered or threatened species (e.g., Díaz and Ojeda 2000). The aim of this study is to present new records of *Chacodelphys formosa* resulting from the analyses of pellets of the barn owl (*Tyto alba*; Tytonidae, Strigiformes) and from the study of museum collections.

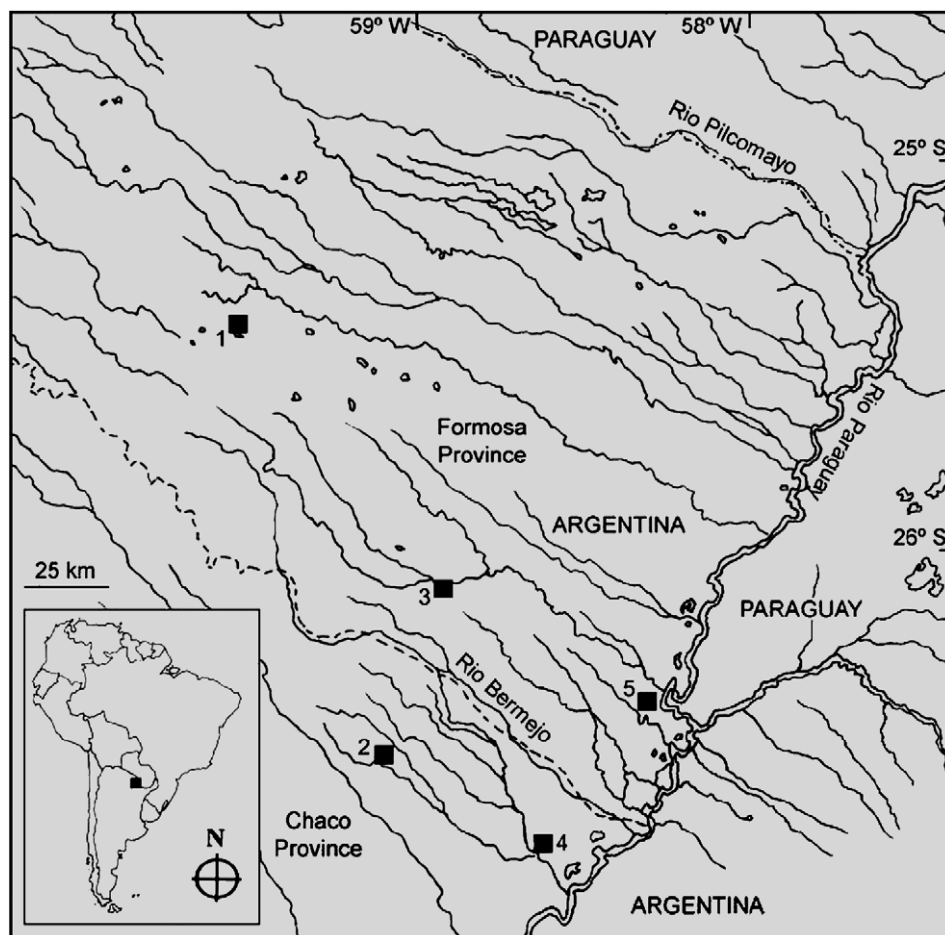
Owl pellets samples were collected mostly during winter of 2000 from human buildings at 12 localities along the Río de Oro basin in the Argentinean provinces of Chaco and Formosa. Due to the humid condition of this part of the South American Chaco, pellets rapidly disintegrate (< 1 month); therefore, the precise number of pellets that were analyzed is unknown. Osteological remains were identified by comparison with reference material housed at the mammal collection of the Centro Nacional Patagónico, Puerto Madryn, Argentina, and the literature (e.g., Voss et al. 2004a, 2005). The examined specimens (Tab. 1) are preserved in the Centro Nacional Patagónico (CNP). Craniodental measurements were taken with manual calipers and recorded to the nearest 0.1 mm. The following dimensions were measured as illustrated by Voss et al. (2004b): condylobasal length (CBL); nasal breadth (NB); least interorbital breadth (LIB); zygomatic breadth (ZB); palatal length

(PL); palatal breadth (PB); maxillary tooth-row length (MTR); length of molars (LM); length of M1–M3 (M1–M3); and width of M4 (WM4). All measurements and qualitative character data were obtained from adult specimens as determined by dental criteria according to Voss et al. (2005).

Examination of several thousands remain of micromammals recovered from pellets collected in eastern parts of the Argentinean provinces of Chaco and Formosa resulted in

the rediscovery of the rare marmosine *Chacodelphys formosa*. Other small marsupials found in the samples were *Cryptonanus chacoensis* and *Thylamys* sp. Diagnostic characters of these taxa were widely discussed by Voss et al. (2004a, b, 2005).

*Chacodelphys formosa* is known only from the type locality: Riacho Pilagá, at the Estancia Linda Vista ( $25^{\circ}13'S$ ,  $59^{\circ}47' W$ ; Fig. 1), 15 km northwest of the locality of Comandante Fontana, Formosa province, Argentina (Voss et al.



**Fig. 1.** Recorded localities of *Chacodelphys formosa* in the Argentinean provinces of Chaco and Formosa: 1 – Riacho Pilagá, Estancia Linda Vista (Type locality); 2 – Selvas del Río de Oro; 3 – Reserva El Bagual; 4. – 5 km N General Vedía; 5. – Escuela No. 33, Herradura.

2004a). The following four localities (Fig. 1), all in north central Argentina, constitute new records: (1) 5 km N General Vedia (26°54'16S, 58°37'53W) Bermejo department, Chaco Province. This is the southernmost known locality of *C. formosa*, and is about 220 km to the SE of the type locality. The larger number of available specimens comes from this locality. This is probably due to the fact that the pellet sample from this locality was the largest one. (2) Selvas del Río de Oro (26°48'S, 58°57'W), Libertador General San Martín department, Chaco province. (3) Escuela No. 33, Herradura

(26°29'15"S, 59°15'38"W) Misión Laishi department, Formosa province. This is the eastern most known locality of this species. (4) Reserva El Bagual (26°10'S, 58°56'W), Misión Laishi department, Formosa province. From this locality comes the second known trapped specimen of *C. formosa*. This specimen (CNP 639), collected on 5 October 2002 was originally referred to *Gracilinamus agilis* (Chebez et al. 2005), and preserved as skull and hemimandible (Fig. 2). Therefore, the postcranial skeleton and most of the soft anatomy of *C. formosa* remains unknown. Cranial measurements of



Fig. 2. Lateral, dorsal and ventral views of the skull of *Chacodelphys formosa* (CNP 639) from the Reserva El Bagual, Formosa Province, Argentina. Scale=5 mm.

this specimen are as follows (measurements of the holotype are given in parenthesis): NB=2.3 (2.3); LIB=3.7 (3.4); ZB=12.9 (11.6); PB=7.3 (7.1); CBL=22.9 (20.6). Dental measurements of this specimen and of those recovered from owl pellets (for which due to their fragmentary nature no additional measurement was recorded) are summarized in table 1.

All recorded localities of *C. formosa* are situated on the right bank of the Paraguay-Paraná rivers (Fig. 1), in the humid Chaco eco-region (Burkart et al. 1999). The absence of *C. formosa* in pellets samples from Corrientes province (cf. Pardiñas et al. 2005) suggests that this species may be endemic to the humid Chaco. Similar distributional patterns in Argentina are observed in the sigmodontine rodents *Pseudoryzomys simplex* and *Oligoryzomys chacoensis* (Pardiñas and Teta 2005).

The humid Chaco is a mosaic of several kinds of habitats; moist and flooded grassy savannas scattered with thorny trees and palms develop beside riparian forests that grow along the abundant watercourses. The absence of any significant relief, coupled with heavy seasonal rainfall, favors the formation of numerous shallow lagoons, bogs, and other wetlands regionally known as “esteros” or “canchas” (Maturó et al. 2005). Mean annual temperature in the nearby city of

Formosa (26°11'S, 58°11'W) during 1981–1990 was 22.2°C, with monthly means ranging from 16.3°C in July to 27.5°C in January, and annual rainfall was 1362.2 mm (mean = 113.5 mm/month), with monthly means ranging from 55.5 in July to 212.5 mm in April (<http://www.meteofa.mil.ar>).

Wetmore (1926; see Voss et al. 2004) described the landscape at the type locality of *Chacodelphys formosa* as “Open savannas, often a marshy nature, mingled with scattered groves, while near the small sluggish streams, known as riachos, were extensive forests with a jungle undergrowth... The savannas were grown with bunch grass that seldom attained great height as it was burned yearly by de Indians to drive out concealed game... It is inundated extensively during summer rains.” As discussed by Voss et al. (2004a) the recorded information does not allow to discriminate in which habitat (i.e., riparian forest or savannas) the holotype of *C. formosa* was taken. The specimen from Reserva El Bagual (CNP 639; see Chebez et al. 2005, listed as *Gracilinanus agilis*) was caught in a pit fall trap set in tall grasses of “espartillo” (*Elionurus muticus*) and “chajapé” (*Imperata brasiliensis*). This constitutes the first data on the habitat preference of this species. Other small mammals caught in

**Table 1.** Dental measurements of *Chacodelphys formosa* from the humid Chaco of Argentina.

	MTR	LM	M1–M3	WM4
5 km N General Vedía (CNP 836)	8.2	4.6	4.0	1.7
5 km N General Vedía (CNP 837)	8.3	4.7	4.1	1.8
5 km N General Vedía (CNP 838)	8.3	4.9	4.2	1.8
5 km N General Vedía (CNP 839)	8.6	4.9	3.9	1.8
5 km N General Vedía (CNP 840)	8.1	4.8	4.1	1.7
5 km N General Vedía (CNP 841)	8.3	4.9	4.2	1.7
5 km N General Vedía (CNP 842)	8.2	4.7	4.1	1.8
5 km N General Vedía (CNP 843)	8.3	4.9	4.2	1.9
5 km N General Vedía (CNP 844)	8.6	4.8	4.3	1.7
Escuela No 33, Herradura (CNP 845)	—	4.5	—	—
Reserva El Bagual (CNP 639)	8.7	4.5	4.0	1.8
Riacho Pilagá, Estancia Linda Vista (USNM 236330, holotype)	8.2	4.7	4.2	-
Selvas del Río de Oro (CNP 846)	8.3	4.7	4.1	1.8
Selvas del Río de Oro (CNP 847)	8.5	4.7	4.1	1.8
Selvas del Río de Oro (CNP 849)	8.6	4.5	3.9	1.8

the same trap line as specimen CNP 639 include the marmosine marsupials *Cryptonanus chacoensis* and *Thylamys* sp. and the sigmodontine rodents *Akodon azarae*, *Calomys callosus*, *Necomys temchuki*, *Oecomys* sp., *Oligoryzomys fornesi*, and *Pseudoryzomys simplex*.

Recording localities of *Chacodelphys formosa* enclose an area of about 10,000 km<sup>2</sup> in the South American humid Chaco. However (although no information is available concerning the preferences for *Chacodelphys* by barn owls) judging from its low frequency in owl pellet samples and trapping lines it seems this is a rare species, being less common than *Cryptonanus chacoensis*, another small marsupial (<25 g) found in sympatry. Taking into account the criteria of the IUCN, *C. formosa* should be listed as vulnerable.

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