CHACO MOUSE OPOSSUM

Cryptonanus chacoensis (Tate, 1931)

FIGURE 1 - (FPMAM14PH) Adult, Estancia Nueva Gambach, PN San Rafael, Departamento Itapúa (Flavia Netto December 2008).

TAXONOMY: Class Mammalia; Subclass Theria; Infraclass Metatheria; Magnorder Ameridelphia; Order Didelphimorphia; Family Didelphidae; Subfamily Thylamyinae; Tribe Marmosopsini (Myers et al 2006, Gardner 2007). The genus *Cryptonanus* was defined by Voss, Jansa & Lunde, 2005. There are five known species according to the latest revision (Gardner 2007) one of which is present in Paraguay. The generic name *Cryptonanus* is taken from the Greek meaning "hidden dwarf", in reference to the fact that this cryptic genus had been overlooked for so long. The species name *chacoensis* refers to the Chaco biome which makes up part of this species range. The species is monotypic.

This is a recently recognised species in a recently described genus that has for many decades been consistently confused with *Gracilinanus agilis* in the published literature. See the similar species section for distinguishing features. Tate (1933) reported both *Marmosa agilis agilis* and *Marmosa agilis chacoensis* (=*Cryptonanus chacoensis*) from Sapucaí, Departamento Paraguarí, Paraguay but made no effort to explain how two distinct subspecies could occur in the same locality. Recognising the anomaly Cabrera (1958) synonymised the two under *M.a.agilis* but apparently did not study the type material in doing so. In fact the

characters stated for Tate´s "subspecific" differentiation closely correspond to the characters that distinguish *Gracilinanus agilis* from *Cryptonanus chacoensis* and his split was good, though it belonged at the generic and specific level rather than the subspecific level (Voss, Lunde & Jansa 2005). Synonyms adapted from Gardner (2007):

Marmosa agilis chacoensis Tate 1931:10. Type locality "Sapucay" =Sapucaí, Deparatmento Paraguarí, Paraguay.

Marmosa [(*Thylamys*)] *agilis agilis* Cabrera 1958:27. In part. Not *Grymaeomys agilis* Burmeister (1854).

Gracilinanus agilis Gardner & Creighton 1989:5. In part. Not *Grymaeomys agilis* Burmeister (1854).

Cryptonanus chacoensis Voss, Lunde & Jansa 2005:1. First use of current name combination.

ENGLISH COMMON NAMES: Chaco Mouse Opossum (Gardner 2007).

SPANISH COMMON NAMES: No known names.

GUARANÍ COMMON NAMES: No known names.

DESCRIPTION: A tiny slender mouse opossum with short, smooth pelage and very short, inconspicuous guard hairs. Dorsally the pelage is uniformly brownish-grey, lacking patternation. Ventral pelage buffy-white, self-coloured to the base (ie not grey-based) and with at least the median line whitish. Head scarcely paler than dorsum, rarely with slight suggestion of a median line and with narrow black periocular patches. Males possess a gular gland. Ears moderately large and rounded, light fuscous-brown in colour. Vibrissae short. Plantar epithelium of tarsus naked. Central plantar surface of manus only sparsely tuberculated. Manus digits 3 and 4 of subequal length and longer than digits 2 and 5. Claws shorter than fleshy digital pads. Lateral carpal tubercles are present in adult males. Pedal digit 4 longer than adjacent digits 3 and 5. Tail greyish-brown, lightly bicoloured (darker above and paler below) and 1-1.2x head and body length. It is prehensile, lacking hair on the ventral surface at the tip. Caudal scales are arranged in annular series and bearing sparse, almost invisible hairs, three per scale. Females lack a pouch. Abdominal-inguinal mammae 4-1-4 = 9. (Tate 1933, Voss, Lunde & Jansa 2005).

CRANIAL CHARACTERISTICS: Maxillary palatal vacuities, rostral process of the premaxillae and a secondary foramen ovale all absent. Palatal process of premaxilla reaches C1 on each side. Nasal wider anteriorly than posteriorly with tips extending to I1. Maxillary turbinals large and branched. Supraorbital margins large and unbeaded. Interorbital and postorbital constrictions present in juveniles and young adults. No sagittal crest. Parietal and alisphenoid contact. Petrosal exposed laterally in fenestra between parietal and squamosal. Maxillopalatine fenestrae large and palatine fenestrae present. Posterolateral palatal foramina does not extend lingual to M4 protocones. Posterior palate with conspicuous lateral corners. Maxillary and alisphenoid do not contact on orbital floor. Transverse canal foramen present. Paroccipital process of exoccipital small. Dorsal margin of foramen magnum formed by supraoccipital and exoccipitals. Angular process acute and strongly inflected. The following measurements are taken from Voss, Lunde & Jansa (2005) for specimens from Paraguay (n=3 males, n=3 females): *Condylobasal Length:* male 24.7mm, female 23.97mm (23.5-24.7mm); *Width of Nasals*: male 3.17mm(3-3.3mm), female 2.7mm (2.3-2.9mm); *Least Interorbital Width:* male 4.6mm, female 4.2mm (4-4.3mm); *Zygomatic Width:* male 14.13mm(13.9-14.4mm), female 13.4mm (13.2-13.6mm); *Palate Length:* male 13.7mm, female 12.9mm (12.6-13.3mm); *Palate Width:* male 7.73mm (7.7-7.8mm), female 7.67mm (7.6-7.8mm).

DENTAL CHARACTERISTICS: I5/4 C1/1 P 3/3 M 4/4 = 50. Crowns of I2-I5 rhomboidal, increasing in width from front to back. C1 with accessory cusps, posterior being more distinct than anterior. P1 present but small. P2 < P3, the latter lacking a cutting edge. Upper molars dilambdodont and highly carnassialized, increasing in width from front to back. M1 with ectoflexus shallow, but becoming deeper towards M3. Lower incisors with lingual cusp. Lower c1 usually with small posterior accessory cusp, but rapidly lost even with minor wear. p2>p3. Lower m3 with hypoconulid labially salient and twinned with large entoconid (much taller than hypoconulid). Molars small. Incomplete anterior cingulum on M3. The following measurements are taken from Voss, Lunde & Jansa (2005) for specimens from Paraguay (n=3 males, n=3 females): *Length of Maxillary Row of Molars:* male 9.83mm(9.7-10mm), female 9.57mm (9.3-9.8mm); *Length of Molars:* male 5.3mm(5.2-5.4mm), female 5.23mm (5.2-5.3mm); *M1-M3 Length:* male 4.63mm(4.6-4.7mm), female 4.6mm.

GENETIC CHARACTERISTICS: 2n=14.

TRACKS AND SIGNS: No information.

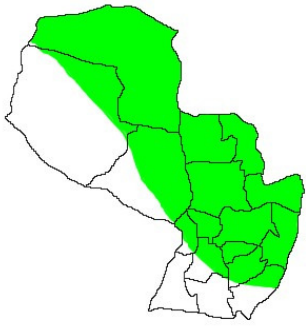
EXTERNAL MEASUREMENTS: The smallest of the Paraguayan Mouse Opossums. The following measurements are taken from Voss, Lunde & Jansa (2005) for specimens from Paraguay (n=3 males, n=2 females): **HB:** male 9.5cm (8.9-10cm), female 8.6cm (8.4-8.8cm); **TA:** male 11.93cm (11.5-12.6cm), female 11cm (10.9-11.1cm); **FT:** male 1.57cm (1.5-1.6cm), female 1.5cm; **EA:** male 1.77cm (1.7-1.8cm), female 1.65cm (1.6-1.7cm); **WT:** male 16g, female 15g (14-16g).

SIMILAR SPECIES: Long confused with *Gracilinanus agilis*, this species is separated with care when using external characters only. Measurements and examination of skull characteristics may be necessary in some cases. Typically the tail of *Cryptonanus* is shorter when compared to head and body length (usually <1.2x) than that of *Gracilinanus* (1.2-1.5x) though there may be some overlap at the extremes and this character should not be used alone for specific designation. Tail length is typically in the range 95-117mm for adult *Crytponanus* and 110-165mm for *Gracilinanus*. More reliable is the ratio of premolar heights, with P2<P3 in *Cryptonanus* and the two of approximately equal height in *Gracilinanus* - though be aware of the affects of teeth wear in older specimens. On the canine C1 accessory cusps are present basally in *Cryptonanus* that are absent in *Gracilinanus*. Dorsally this species is brownish-grey in colour, *Gracilinanus* is on average somewhat browner, though this character can be difficult to judge. Ventral pelage is usually somewhat greyish basally in *Gracilinanus* and buffy basally in this species. Upon direct comparison *Gracilinanus* has larger ears, longer vibrissae and broader ocular rings than *Cryptonanus*, but these characters are difficult to measure when presented with a single specimen. Cranially maxillary palatal vacuities, rostral process of the premaxillae and a secondary foramen ovale are all present in *Gracilianan*us but absent in *Cryptonanus*.

The species can be easily separated from the two species of Paraguayan *Thylamys* by the fact that members of that genus have distinctly tricoloured pelage, whereas *Cryptonanus* is uniformly-coloured dorsally. *Thylamys* also habitually exhibit some degree of incrassination (fat deposits) in the tail and have highly granular surfaces to the feet, neither character being exhibited by *Cryptonanus*. Furthermore the species occurring in eastern Paraguay, *Thylamys macrurus*, is considerably larger than *Cryptonanus*.

Micoureus paraguayanus is much larger with thick woolly pelage and broadly pale-tipped, bicoloured tail. (Voss, Lunde & Jansa 2005).

DISTRIBUTION: Occurs from northwest Argentina (Provincias Chaco and Jujuy) and Paraguay, south and east to Provincia Buenos Aires, Argentina, Rio Grande do Sul in Brazil and probably northern and western Uruguay, though the species has yet to be recorded in that country (Gardner 2007). Flores (2006) considers that all records of *Gracilinanus agilis* for Argentina refer to this species, though Chebez (2009) notes that skulls of at least one *Gracilinanus* species (*agilis* or *microtarsus*) exist from Provincia Misiones without providing further details. Anderson (1997) reported the species from extreme southern Bolivia at Tarija but Voss, Lunde & Jansa (2005) stated that at least one of the four specimens mentioned was actually an unidentified species of *Marmosops,* whilst the other three specimens were unavailable for examination. Voss, Lunde & Jansa (2005) list the following specimens from Paraguay: Estancia Doña Julia, Departamento Alto Paraguay (TK 61053, 61072, 61074, 61103); Estancia Dos Marias, Departamento Caazapá (GD 521); 13.3 km north of Curuguaty by road, Departamento Canendiyú (UMMZ 137143); Palmar de las Islas, Departamento Alto Paraguay (TK 65331); Concepción, Departamento Concepción (BMNH 11.11.19.23), Río Aquidaban at Paso Horqueta, Departamento Concepción (UMMZ 134552); 1.6 km south of Tobatí by road, Departamento Cordillera (UMMZ 126105); Sapucaí, Departamento Paraguarí (BMNH 4.1.5.48, 5.8.1.8); Estancia La Victoria, Departamento Presidente Hayes (TK 60201). The species is apparently very widespread in Paraguay and likely occurs throughout the country in suitable habitat.



HABITAT: There is some suggestion that this species prefers open, grassy and often wet habitats. Paraguayan distributional records reflect areas of palm savanna (humid Chaco and Pantanal), marsh and seasonally-inundated grassland. Voss, Lunde & Jansa (2005) describe capture sites in Paraguay as in a hollow log (Sapucaí), on a wood pile (Sapucaí), on wet ground in a marsh (Tobatí), on the ground in high grass at the edge of a marsh (Paso Horqueta) and on the ground at the base of fruiting bromeliad stalks

(Curuguaty). A specimen at PN San Rafael was taken close to human habitation at the interface of secondary humid forest and agriculture (P.Smith pers. obs.). This data suggests that they are able to tolerate the close proximity of humans more so than other small marsupials.

ALIMENTATION: Presumably largely insectivorous, no published data exists that can be unequivocally attributed to this species.

REPRODUCTIVE BIOLOGY: No data unequivocally referring to this species is available. Massoia & Fornes (1972) stated that *Marmosa agilis chacoensis* in Rio Grande do Sul, Brazil gave birth to litters of up to 12 young, but given that the number of teats is nine the possibility of misidentification means that the data must be treated with caution.

GENERAL BEHAVIOUR: ***Activity Levels*** All Paraguayan specimens have been taken on the ground despite simultaneous trapping efforts in trees, suggesting an at least partially terrestrial existence, whilst the prehensile tail and digit arrangement indicate that they are adapted for climbing. ***Mortality*** González et al (1999) report remains of this species in Barn Owl *Tyto alba* pellets in Rio Grande do Sul, Brazil, though it was reported as *Gracilinanus agilis*.

VOCALISATIONS: No information.

HUMAN IMPACT: None.

CONSERVATION STATUS: Globally considered to be of Low Risk Least Concern by the IUCN, on account of its wide distribution, large population, occurrence in protected areas, and tolerance of habitat modification. See http://www.iucnredlist.org/details/21867 for the latest assessment of the species. They are apparently adaptable and occur in a variety of open habitats. Unlike other small marsupials this species has been frequently trapped in areas close to human habitation, suggesting that they are less susceptible to habitat modification than other species. At this stage it is difficult to draw any firm any conclusions about population trends in Paraguay owing to the confusion in the literature between this species and *Gracilinanus agilis*, but it would seem to be under less threat than most other Didelphids. The species is one of the more commonly captured small marsupials in Paraguay and may even be benefitting from deforestation of the Atlantic Forest and expanding its range (de la Sancha in litt to IUCN).

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CITATION: Smith P 2009 - FAUNA Paraguay Handbook of the Mammals of Paraguay Number 34 *Cryptonanus chacoensis* - www.faunaparaguay.com/cryptonanuschacoensis.html.

FIGURE 2 - (FPMAM15PH)
Chaco Mouse Opossum *Cryptonanus chacoensis.*
Adult dorsal. Estancia Nueva Gambach, PN San Rafael, Departamento Itapúa, December 2008.
Photo Flavia Netto.

FIGURE 3 - (FPMAM16PH)
Chaco Mouse Opossum *Cryptonanus chacoensis.*
Adult head detail. Estancia Nueva Gambach, PN San Rafael, Departamento Itapúa, December 2008.
Photo Flavia Netto.

FIGURE 4 - (FPMAM18PH)
Chaco Mouse Opossum *Cryptonanus chacoensis.*
Adult frontal. Estancia Nueva Gambach, PN San Rafael, Departamento Itapúa, December 2008.
Photo Flavia Netto.

FIGURE 5 - (FPMAM17PH)
Chaco Mouse Opossum *Cryptonanus chacoensis.*
Adult dentition. Estancia Nueva Gambach, PN San Rafael, Departamento Itapúa, December 2008.
Photo Flavia Netto.

FIGURE 6 - (FPMAM19PH)
Chaco Mouse Opossum *Cryptonanus chacoensis.*
Adult hind foot. Estancia Nueva Gambach, PN San Rafael, Departamento Itapúa, December 2008.
Photo Flavia Netto.