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REDISCOVERY OF MARCGRAVE'S CAPUCHIN MONKEY AND DESIGNATION OF A NEOTYPE FOR *SIMIA FLAVIA* SCHREBER, 1774 (PRIMATES, CEBIDAE) ¹

(With 7 figures)

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ABSTRACT: Georg Marcgrave described for the first time animals and plants from Brazilian northeastern Atlantic Forest in a work published in 1648. He mentioned a capuchin monkey referred to as “caitaia” which according to the description and a painting reproduced in the “Libri Principis” published in 1995, corresponds perfectly to the species of *Cebus* (*Sapajus*) which occurs in the Atlantic Forest of the states of Paraíba, Pernambuco, and Alagoas. This species is distinct from those in neighboring areas, *Cebus xanthosternos* and *C. libidinosus*. Until recently there were no specimens of this species in scientific collections. For this reason the animal depicted in plate 31-b of Schreber's (1774) work, named *Simia flavia*, was never properly identified and over the years has been the subject of extensive but inconclusive discussions among taxonomists as to its origin and identity. Specimens of capuchin monkeys we have examined from the referred region show clear similarity to Schreber's plate 31-b. *Simia flavia* Schreber, 1774, therefore, is the oldest name available for this species. To define objectively this nominal taxon and clarify its taxonomic status, a neotype for *Simia flavia* is designated and the combination *Cebus flavius* is established. A description of *Cebus flavius* and comparisons with neighboring species of capuchin monkeys is given.

Key words: *Simia flavia* Schreber. Neotype designation. Northeastern Atlantic Forest. Capuchin monkey. *Cebus flavius*.

RESUMO - Redescoberta do macaco-prego de Marcgrave e designação de um neótipo para *Simia flavia* Schreber, 1774 (Primates, Cebidae).

George Marcgrave descreveu pela primeira vez os animais e plantas do nordeste da Mata Atlântica do Brasil em obra publicada em 1648. Ele mencionou um “macaco-prego” chamado de “caitaia” que segundo a descrição e a sua ilustração reproduzida nos *Libri Principis*

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publicados em 1995, corresponde perfeitamente à espécie de *Cebus* (*Sapajus*) que ocorre na Mata Atlântica dos estados da Paraíba, Pernambuco e Alagoas. Esta espécie é distinta das que ocupam as áreas vizinhas, *Cebus xanthosternus* e *C. libidinosus*. Até recentemente não existiam em coleções científicas exemplares dessa espécie. Por este motivo o animal ilustrado na prancha 31-b publicada por Schreber em 1774, com o nome de *Simia flavia*, nunca foi corretamente identificada e, ao longo dos anos, tem sido objeto de extensas mas inconclusivas discussões entre taxonomistas a respeito da sua origem e identidade. Espécimes examinados de “macaco-prego” da referida região mostraram clara semelhança com o animal ilustrado na prancha 31-b, sendo então *Simia flavia* Schreber, 1774, o nome mais antigo disponível para a espécie. Para definir objetivamente este táxon nominal e esclarecer seu estado taxonômico é designado um neótipo para *Simia flavia* e a combinação *Cebus flavius* é estabelecida. Uma descrição de *Cebus flavius* e comparações com outras espécies vizinhas de macacos-prego são fornecidas.

Palavras-chave: *Simia flavia* Schreber. Designação de neótipo. Nordeste da Mata Atlântica. Macaco-prego. *Cebus flavius*.

INTRODUCTION

The first author to mention a capuchin monkey from the northeastern Atlantic Forest of Brazil was GEORG MARCGRAVE (1648). Under the name “caitaia”, he described a monkey that had long hair (longer than the “Cagui” [= *Callithrix jacchus*] which he was describing beforehand) which was bright yellow; its head was rounded and lacked a prominent forehead this being “almost null”; its nose was small and flattened; it had an arched tail, and its only charm was its smell of musk. Marcgrave noted that it had to be handled gently, otherwise it would scream and would easily become furious. An illustration (small line drawing) of the “caitaia” is on page 226 of MARCGRAVE (1648), and was reproduced in HERSHKOVITZ (1987).

Georg Marcgrave was one of the first naturalists to publish detailed descriptions of the fauna and flora of the Neotropics and, in his case, of northeastern Brazil. He was based in Pernambuco, Brazil, where the Count Maurice v. Nassau, Dutch Governor of Brazil between 1637 and 1644, brought together several scientists and painters to study the natural history of the New World. Among the treasures which Maurice v. Nassau took back to Holland were two bound collections of drawings and watercolor paintings, known as the “Manuals” or “Libri Principis”, the authorship of which has yet to be established – they may have been painted by Marcgrave, Zacharias Wagener or even Albert Eckhout (TEIXEIRA, 1995). The *Libri Principis* were published recently by Editora Index (FERRÃO & SOARES, 1995a). On page 23 of the second volume (T.2) there is a picture of a monkey with an astonishing resemblance to the capuchin monkey of NE Atlantic Forest (see Fig.1). Marcgrave described 32 mammals, of which 15 received scientific names – 12 from Linnaeus in 1758 and 1766 and three from other authors between 1776 and 1788. Among the 17 animals remaining was the “caitaia” (HERSHKOVITZ, 1987).



Fig.1- A drawing in the “Libri Principis” of a monkey that resembles very closely the species here described and agrees very well with the description of the “caitaia”. Although the head differs in the black and white drawing of p. 226 of Marcgrave’s work, the two illustrations share the turned down tail and the characters described by him. (Taken from FERRÃO & SOARES, 1995a).

The “caitaia” has been identified by a number of authors. FISCHER (1829) used the name *Cebus flavus* Geoffroy, 1812 for the “caitaia” of Marcgrave, and OKEN (1833) (*apud* SAWAYA, 1942) likewise. MARTIUS (1867) (*apud* SAWAYA, 1942) used the name *Simia Cebus flavus* Geoffr., and SAWAYA (1942) also identified the “caitaia” as *Cebus flavus*. ELLIOT (1912) considered *C. barbatus* Geoffroy, 1812 a synonym of *C. flavus* (*sensu* Elliot, not SCHREBER, 1774). Finally, HERSHKOVITZ (1987) identified Marcgrave’s “caitaia” as *Cebus apella libidinosus* (Spix, 1823). At least three names, therefore, have been used for the “caitaia” of Marcgrave: *Simia flavia* Schreber, 1774, *Cebus flavus* Geoffroy, 1812 (not Schreber, 1774), and *Cebus libidinosus* (Spix, 1823). In the following paragraphs we will discuss the taxonomic status of each of them.

Simia flavia – This name is based on plate 31-b of SCHREBER (1774), no written description accompanied the name.

Cebus flavus – In GEOFFROY’S (1812) list of the species of *Cebus*, under *C. flavus* there is a reference to “*Simia flava* [sic] Schreb., Fig.31, b” and a very short description, “Pelage entièrement fauve”. It was certainly based on a plate in SCHREBER (1774; plate 31-b). The suffix was changed in the new combination to agree in

gender with *Cebus*. It was evidently not a new name. GEOFFROY (1812) made no reference to any specimens. A mounted specimen in the Paris Museum (Nr. 562) was erroneously considered by RODE (1938) to be the type. He was probably following ELLIOT (1912), who described this specimen as the type. Specimen 562 is not a type, as it was attributed to *Cebus flavus* only by ELLIOT (1912) and later authors but not by Geoffroy. KÜHL (1820) referred to plate 31-b of SCHREBER (1774) when discussing *C. flavus*, and FISHER (1829) included *S. flavia* Schreber, 1774 under *C. flavus*. HERSHKOVITZ (1949) argued that "Being based on an actual specimen, *flavus* Geoffroy is not strictly the same as *flavia* Schreber, though the latter was cited in the description of the former." This is a misleading statement because further down he wrote "In any case, the question remains whether the specimen determined as *flavus* by Geoffroy is to be regarded as a type or simply as a specimen referred to the amended form of the name *flavia* Schreber" and, as seen above, Geoffroy referred to no specimens. Hershkovitz further indicated that "*C. flavus* may be identical with *C. gracilis* (= *unicolor*), also from Brazil, as WAGNER (1855, p.90) suggested". CABRERA (1958) considered *S. flavia* as an unidentifiable nominal form of *Cebus*. TATE (1939), however, considered that it was not possible to identify the animal of plate 31-b of SCHREBER (1774) as a capuchin of the genus *Cebus*, a position also adopted by DEFLER & HERNÁNDEZ-CAMACHO (2002).

ELLIOT (1912) rejected *S. flavia* Schreber because of the lack of a description ("*desc. nulla*") and included it in the synonymy of *C. flavus*. However, according to Article 12.2.7 of the Code (ICZN, 1999), a name accompanied by an illustration published before 1931 is available. In agreement with its own interpretation, ELLIOT (1912) considered *C. flavus* a good species, referring as a holotype to the specimen kept in the Paris Museum under Nr. 562. As mentioned previously, it is not in fact a holotype but merely a specimen referred to *C. flavus* by later authors. CABRERA (1917) wrote "*Cebus flavus* fue establecido por Geoffroy sin otra base que una figura publicada por Schreber en la lámina XXXI, B de sus *Saugethiere*, en 1775, bajo el nombre de *Simia flavia*, y sin ninguna descripción ni dato algún de localidad. Esta figura, que parece tomada de algún ejemplar mal disecado, representa un mono de color leonado-amarillo brillante, uniforme con una banda frontal blancuzca y una cola muy delgada, como la de un mono del Antiguo Mundo. Por lo uniforme del pelaje se parece al *C. unicolor*, pero nada puede afirmarse por ser una estampa muy defectuosa, sin el menor valor científico ni artístico".

Later, CABRERA (1958) conceded that the nominal form *Simia flavia* Schreber, 1774 was based on an animal of the genus *Cebus*, but believed it to be unidentifiable from a taxonomic point of view. HILL (1960) shared this opinion and considered also as unidentifiable *Cebus barbatus* Geoffroy and the "*Cebus flavus*" (sensu Elliot).

Not knowing that *C. flavus* Geoffroy was not a new name and that there was no associated type specimen led DEFLER & HERNÁNDEZ-CAMACHO (2002) to consider *C. flavus* a junior synonym of *Cebus albifrons* (Humboldt, 1812). The monkey in

Schreber's plate 31-b does not have the dark crown characteristic of *C. albifrons*. The switch from *Simia flavia* or *S. flava* [sic] to *Cebus flavus* made by GEOFFROY (1812) is not a case of amendment (ICZN, 1999, Articles 60-61), or a case of homonymy (Article 58.15) as was suggested by DEFLER & HERNANDEZ-CAMACHO (2002), but evidently a typographical error and a subsequent change in spelling. This is a case of mandatory change in spelling consequent upon changes in rank or combination (ICZN, 1999, Article 34). We conclude that *flavus* Geoffroy, 1812 is *flavia* Schreber, 1774 changed in gender to agree with *Cebus*.

Cebus barbatus – Another name that needs to be considered in the context of *Cebus flavus* is *Cebus barbatus* Geoffroy, 1812. This form could be termed unidentifiable on the basis of the original description alone (HERSHKOVITZ, 1949; CABRERA, 1917a). No specimen was referred to this new species by Geoffroy in the original description. There is a mounted specimen in the Museum d'Histoire Naturelle, in Paris, No. 561, erroneously considered as the holotype of *C. barbatus* by RODE (1938). The original description contains no reference to this specimen which cannot, therefore, be considered a holotype. According to HERSHKOVITZ (1949), Geoffroy's synonymies make *barbatus* a composite species, since he cited the *sajou gris* of Buffon and Daubenton, a "tufted" *Cebus apella*, and the "*Sai* Var. A. Aud., *jam.* 5, sec. 2, fig. 6". The figure 6 cited belongs to the *Sai variete* B of Audebert, not *variete* A as was given by Geoffroy. ELLIOT (1912) described a supposed holotype of *C. barbatus* although, as stated above, no specimen was mentioned in the original description by GEOFFROY (1812). ELLIOT (1912) compared the specimen labeled "*C. barbatus*" with the specimen labeled "*C. flavus*" in the Paris Museum and concluded that they were conspecific and both attributable to *C. flavus*. *Cebus barbatus*, however, cannot be a synonym of *Simia flavia* because neither the *sajou gris* of Buffon and Daubenton nor the *Sai variete* B of Audebert, belong to the same species as *Simia flavia*, and further *Cebus barbatus* Geoffroy, 1812 is preoccupied by *C. barbatus* Humboldt, 1812, which in turn is a junior synonym of *Cebus apella* Linnaeus. HERSHKOVITZ (1949) concluded "1 - the lectotype of *C. barbatus* Geoffroy, perhaps from the Guianas, is an "untufted" *Cebus* but otherwise unidentifiable. Its name is preoccupied by *C. barbatus* Humboldt (1812, p.356). 2 - Humboldt (1812) cited only the *sajou gris* as a basis for his name *barbatus*. Consequently, *C. griseus* Desmarest, based primarily on the *sajou gris* of Buffon and Daubenton, is an absolute synonym of *barbatus* Humboldt and both are equal to *Cebus apella* Linnaeus. No locality for either *barbatus* or *griseus* was given." CABRERA (1958) placed *barbatus* Humboldt, 1812 (credited to Geoffroy) in the synonymy of *Cebus apella apella*. It may be concluded that the name *C. barbatus* Humboldt, 1812 is a junior synonym of *Cebus apella* Linnaeus and cannot be used for Marcgrave's "caitaia" or to any capuchin monkey of the northeastern Atlantic Forest of Brazil.

Cebus libidinosus Spix, 1823 – As mentioned above, HERSHKOVITZ (1987) identified the “caitaia” of Marcgrave as this species. Below we show that the *Cebus* of the northeastern Atlantic Forest of Brazil is not *C. libidinosus* but a different species.

As seen above, identifying the *Simia flavia* depicted in Schreber’s work has been the cause of confusion and inconclusive debate for former authors. Most of them considered it unidentifiable or anomalous. We believe that the main difficulty was the lack of actual specimens with characters which comply with those of the monkey of Schreber’s figure 31-b. Comparison of the figure 31-b with our specimens from the northeastern Atlantic Forest of Brazil left little doubt on their similarity (see Figs.2-3). The illustrations accompanying Schreber’s work were based on live animals, certainly kept in menageries, an opinion shared by HERSHKOVITZ (1949). It is very unlikely that the animal depicted was a dead, preserved, specimen at the time. Therefore, (a) based on the narrow resemblance of Schreber’s picture with capuchins from the northeastern Atlantic Forest of Brazil, (b) considering that the name has been used by several authors in the past for the animal described by Marcgrave, and (c) in view of the considerable confusion occurred in the past in using the names *Simia flavia* and *Cebus flavus*, (d) we believe that the designation of a neotype for *S. flavia* will define this nominal taxon objectively, clarifying its taxonomic status and guarantying an adequate name for the species of capuchin monkey occurring in northeastern Atlantic Forest. Examined specimens are housed in the mammals collections of the Universidade Federal da Paraíba, João Pessoa, Paraíba, Brazil (UFPB), Museu Nacional, Rio de Janeiro, Brazil (MN), and Museu de Zoologia, Universidade de São Paulo, Brazil (MZUSP).



Fig.2- *Simia flavia*. Plate 31-b in SCHREBER (1774).



Fig.3- Lateral view of the neotype of *Simia flavia*, UFPB 5091.

Simia flavia Schreber, 1774

Neotype – UFPB 5091, field number CBP3, female skin, skull, and post cranial skeleton, collected by P.Laroque on 4/VI/2005. By present designation.

Type-locality – BRAZIL: PERNAMBUCO: Municipality of Goiana, Usina Maravilha, Corrego do Inferno (7°28'35.95"S, 34°59'4.85"W).

Common name – We suggest the common name “Marcgrave’s capuchin monkey”, based on his description of the “caitaia” monkey (MARCGRAVE, 1648).

Diagnostic characters – Forehead and crown with short hairs directed backwards so that the head shows a rounded frontal profile without tufts or crest or pads. The hairs of the forehead have a whitish yellow-buff color, not contrasting with that of the crown that has yellow-buff color. Extremities slightly darker than dorsum and sides but without sharp contrast.

Description of the neotype – External characters. In a general view, the animal shows some bright golden-colored hairs that give it a characteristic appearance. The forehead is covered with whitish yellow-buff hairs that follow the curvature of the head and continue over the anterior part of the crown. The crown has short hairs measuring from 10 to 15mm, directed backwards, similar to the crown of *Cebus xanthosternos* and different from that of *C. libidinosus*, which has the crown with erected hairs (Fig.6). The anterior portion of the crown is whitish yellow-buff, and the posterior portion has a yellow-buff color that extends

over the nape and the mid-dorsal region. There is no mid-dorsal line. The pre-auricular stripe is reddish yellow-buff and extends to the crown. The beard is reddish yellow-buff and its hairs measure 15 to 20mm. The hairs of the throat are yellow-buff, and the underparts of body are reddish yellow-buff. The dorsum and flanks are yellow-buff. The outer side of thighs is yellow-buff, and the outer side of the legs and the feet are slightly darker yellow-buff. The inner side of thighs and legs is reddish yellow-buff. The front of the arms is yellow-buff and the front of forearms and hands are a slightly darker yellow-buff. The rest of the forelimbs is partially yellow-buff and partly reddish yellow-buff. The proximal third of dorsal surface of the tail is yellow-buff. The middle third is yellow buff with a reddish wash, and the distal third is yellow-buff not contrasting strongly with the medial third. External measurements are given in table 1.

TABLE 1. External measurements of *Cebus flavius* taken from specimens labels.

MUSEUM NUMBER	SEX	MEASUREMENTS					
		HB	T	FC	FS	E	Weight (g)
UFPB 5091*	♀	351	384	107	106	37	1800
UFPB 5104	♂	368	378	120	119	42	3000
UFPB 5100	♀	361	380	112	108	35	2500

(HB) Head and body length, (T) tail length, (FC) foot length with claw, (FS) foot length without claw, (E) ear length, (*) neotype.

Similarity with Schreber's plate 31-b – Our comparison is based on plate 31-b of the copy of Schreber's book in the library of the Museu de Zoologia, Universidade de São Paulo (Fig.2). The plates of Schreber's work were painted individually for each copy over a printed black and white drawing, as was usual at the time. As such, each plate is unique, and small differences may be. The neotype and Schreber's plate 31-b are similar in the coloration and morphology of the head, with a rounded frontal profile, lacking tufts, crest or pads, with short hairs on the forehead and crown directed backwards, of whitish yellow-buff color in the neotype and whitish yellow in Schreber's plate 31-b. Neither have a dark coronal spot. The pre-auricular stripe, beard, and throat of the neotype are similar in color to the plate 31-b. In both, the extremities are slightly darker than the body side but without sharp contrast.

Cranial characters – Qualitative morphological characters are very variable in *Cebus* (*Sapajus*) and not useful for distinguishing species. Differences among species are better detected through morphometric analyses (TORRES, 1983; SILVA JÚNIOR, 2001). Because of this, a description of the skull is omitted, and we provide only photographs (Fig.4) and measurements of the skull of the neotype.

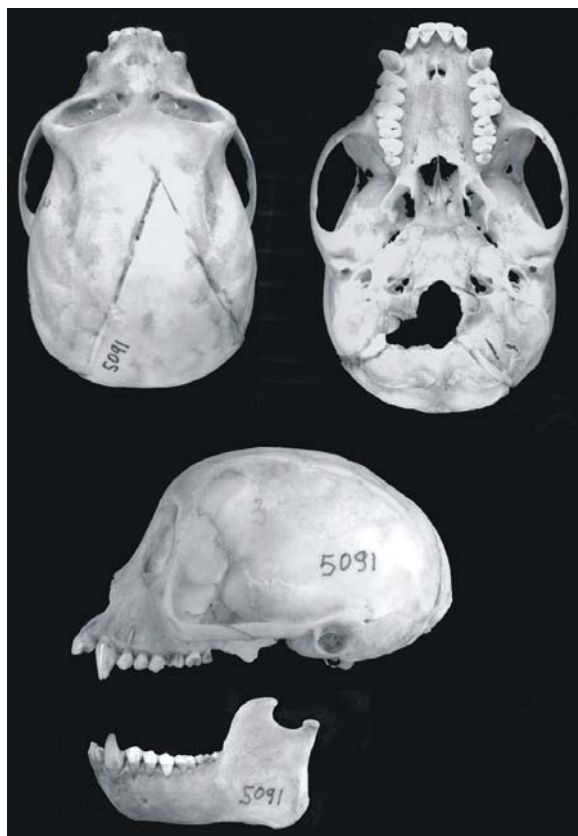


Fig.4- Skull and mandible of the neotype of *Simia flavia*, UFPB 5091.

The following measurements were taken with digital calipers to 0.1mm (Fig.5): BB - breadth of braincase measured across the smooth lateral surface of the braincase posterodorsal to the squamosal zygomatic processes = 53.9; BPB - breadth of palatal bridge at buccal side of alveoli of molars = 28.4; CH - cranial height, measured from the dorsal surface of frontal to the ventral surface of the palatal bones, behind the third molar = 41.6; CIL - condylo-incisive length = 64.9; DO - dorso-ventral diameter of orbit at the border of orbital cavity = 20.6; GWM - greatest width of mandible at condyles = 49.6; HM - height of mandible, measured from upper side of condyloid process to lower side of angular process = 27.4; HR - height of rostrum between prosthion and upper border of the orbit = 37.6; LB - length of brain case between inion and nasion 71.2; LIB - least interorbital breadth

= 39.7; LM - length of mandible from extreme posterior point of condyle to anteriormost point of incisive alveoli = 54.5; UMR - alveolar length of upper tooth row = 25.2; WNO - greatest width of nasal opening = 8.8; WR - width of rostrum at outer border of canine alveoli = 24.1; ZB - zygomatic breadth = 58.3.

New combination – The neotype of *Simia flavia* belongs to the present genus *Cebus*. Therefore, the name must be changed to *Cebus flavius* to maintain concordance in the new combination.

Cebus flavius in the northeastern Atlantic Forest of Brazil – Capuchin monkeys are well known to the inhabitants of the northeastern Atlantic Forest region of Brazil because they are large and active, appreciated as pets because of their intelligence, and persecuted as crop-raiders (maize, sugar cane, and others). Their taxonomy is, however, not so well known. TORRES (1988) carried out a major revision of the genus, but no specimens were available from this part of the Atlantic Forest.

COIMBRA FILHO (1990), GROVES (2001), and RYLANDS *et al.* (2005) made no mention of capuchin monkeys from the northeastern Atlantic Forest, except to indicate the occurrence there of *C. libidinosus*. Only one specimen from the area had been catalogued in a museum prior to the present study. This specimen, collected in the State of Alagoas in 1987 by Dante Teixeira and kept in the Mammal Collection of the Museu Nacional, Rio de Janeiro, was not available at the time of another (and the most recent) major revision of the genus by SILVA JÚNIOR (2001), as yet unpublished. This distinct form remained, therefore, unidentified until now, a good example of the importance of preserving and cataloguing voucher specimens in scientific collections. As also considered by VIVO (1996) and SILVA JÚNIOR (1998), a full understanding of Brazil's mammalian biodiversity demands the deposition and appropriate preservation of specimens in museums to allow for taxonomic and systematic revisions.

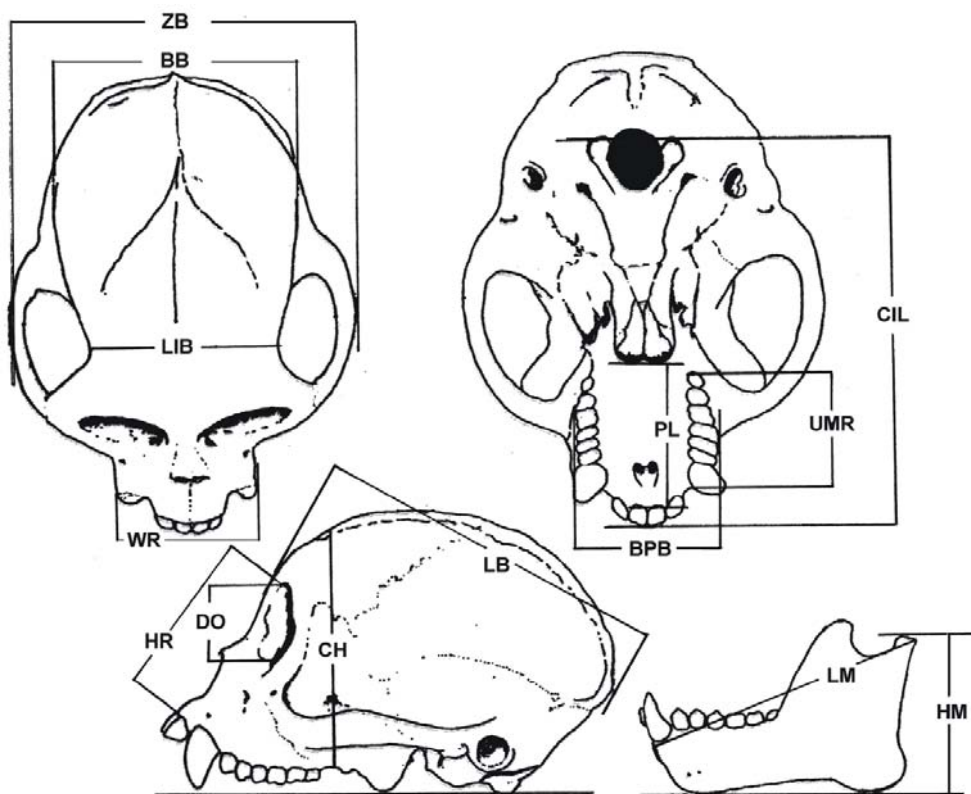


Fig.5- Explanation of skull measurements.

Comparisons – The frontal profile and the pelage of the head are similar to *C. xanthosternos*. The crown of the latter is, however, a little darker. The nape of *C. xanthosternos* is darker than in *C. flavius* and *C. libidinosus*. *Cebus libidinosus* has erect hairs on the crown which are longer and darker, giving a square (cushion-like) frontal profile that shows no tendency to form lateral tufts or crests, but sometimes have a slight depression in the mid-line of the crown (Fig.6). In *C. libidinosus* and *C. xanthosternos*, the color of the limbs contrasts sharply with that of the body, with the contrast being most accentuated in *C. xanthosternos*. *Cebus xanthosternos* has a darker throat collar, which is absent in the other two species.



Fig.6- Frontal view of the head: A) *Cebus xanthosternos*; B) *Cebus flavius*; C) *Cebus libidinosus*.

Variation – As in other species of *Cebus*, *C. flavius* shows a certain individual morphological variation. Here we compare the neotype with another three specimens from the states of Paraíba (UFPB 5100 and UFPB 5104) and Alagoas (MN 26625). The pelage patterns of the forehead and crown in the specimens from Paraíba and Alagoas are the same as in the neotype. A whitish brown coronal spot that continues over the nape is present in UFPB 5100, MN 26625, and UFPB 5104. In the last specimen, the coronal spot is brown. These three specimens have a dorsal line that continues posteriorly beyond the darker nape. The borders of the line are indistinct (diffuse) and the line is interrupted at the rump, anterior to the base of the tail. It is brown in UFPB 5104, and lighter in UFPB 5100 and MN 26625. The color of the pre-auricular stripe in the Paraíba and Alagoas specimens is the same as in the neotype, except in UFPB 5104 where the pre-auricular stripe is yellow-buff. The beard in the three Paraíba and Alagoas specimens is reddish yellow-buff instead of simply yellow-buff as in the neotype. The underparts are of the same color in all four specimens. The dorsum, flanks, and the lateral and anterior parts of the

arms and forearms are same color as in the neotype, except for UFPB 5104. In UFPB 5104 these parts are yellowish brown. In UFPB 5100, the inner side of arms is yellowish-buff and the inner side of the forearms is yellowish-buff washed with red. In the neotype the entire inner surface of the forelimbs is yellowish-buff washed with red. This area is different in UFPB 5104, being yellowish brown. The hands are the same color of the forearms in all the specimens, as are the inner side of the thighs which are yellow-buff washed with red. The outer side of the thighs are the same color as the dorsum of all the specimens, except for UFPB 5104 that has feet and legs which are brownish buff. In the neotype and MN 26625, the upper side of the entire tail has the same color as the dorsum and rump. In UFPB 5100, the tail is darker, whitish brown in the distal two-thirds, and in UFPB 5104 only the distal third is darker. Two animals in the Centro de Triagem de Animais Silvestres (CETAS) of IBAMA, in Cabedelo, Paraíba, and Salvador, Bahia, had a color pattern similar to the neotype, but the overall color was washed with orange-yellow and with reddish yellow in the darker parts. The general appearance of these two capuchins resembled that of a golden lion tamarin. The male UFPB 5104 had a prominent dewlap.

Geographic distribution – The species occurs along the northeastern Atlantic Forest region between the southern State of Rio Grande do Norte and south to the State of Alagoas (Fig.7).

Habitat – *Cebus flavius* has been collected and observed in fragments of Atlantic Forest surrounded by sugar cane plantations. These fragments are mostly secondary vegetation, “semi-deciduous seasonal forest” with the canopy about 20m high and emergent trees up to 25m. The understorey is structured, with bushes and vines typical of disturbed forests.

SPECIMENS EXAMINED

Cebus flavius – BRAZIL: PERNAMBUCO: Municipality of Goiana, Usina Maravilha, Córrego do Inferno (7°28'35.95"S, 34°59'4.85"W), UFPB 5091. PARAÍBA: Mamanguape, Mata da ASPLAN, Fazenda Camaratuba (6°31'12.7"S, 35°8'29.32"W), UFPB 5100, 5104. ALAGOAS: Passo de Camaragibe (9°14'S, 35°30'W), Fazenda Santa Justina, 100 feet, MN 26625.

Cebus libidinosus – BRAZIL: PERNAMBUCO: Serrita, Cariri-Mirim (7°39'S, 39°33'W), MN 23312; Serrita (7°39'S 39°19'W), MN 23321; Serrita, Sítio Boi, Morro Redondo (7°39'S, 39°19'W), MN 23309, 23311, 23313, 23314, 23315, 23316, 23319, 23320; Serrita, Sítio Ferreira Vicente, Água do Pingo (7°39'S, 39°19'W), MN 23317, 23318; Faz. Catareno, NE de Exu (7°21'4.37"S, 39°43'11.74"W), MN 31648. ALAGOAS: Palmeira dos Índios (9°24'S, 36°38'W), MZUSP 9999.

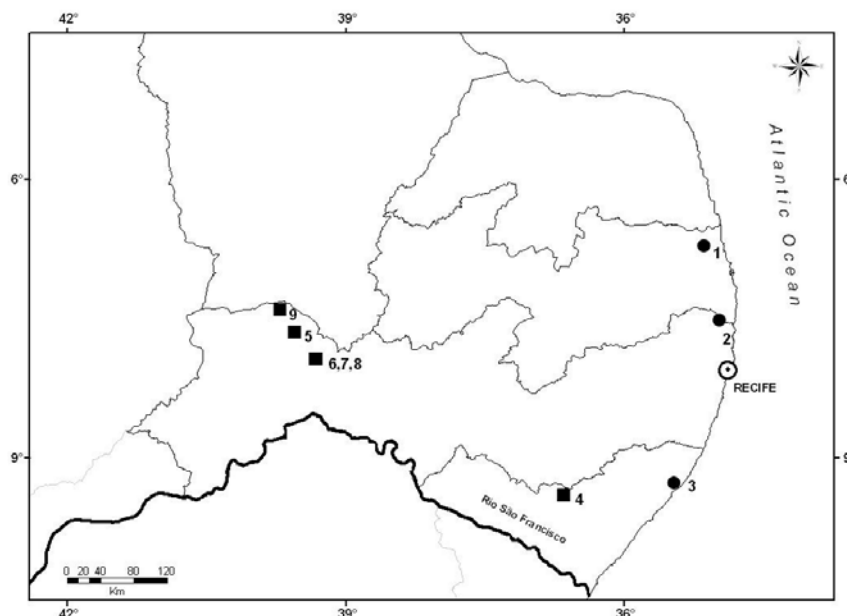


Fig.7- Collecting localities of *Cebus flavius* (●) and *Cebus libidinosus* (■). 1 = Mata da ASPLAN, Fazenda Camaratuba, Mamanguape, PB. 2 = Mata Córrego do Inferno, Usina Maravilha, Goiana, PE. 3 = Fazenda Santa Justina, 100 feet, Passo de Camaragibe, AL. 4 = Palmeira dos Índios, AL. 5 = Cariri-Mirim, PE. 6 = Serrita, PE. 7 = Sítio Boi, Morro Redondo, Serrita, PE. 8 = Sítio Ferreira Vicente, Serrita, PE. 9 = Fazenda Catareno, NE de Exu, PE.

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NOTE ADDED IN PROOF

After this manuscript was submitted to the Museu Nacional, Rio de Janeiro, for publication, the online journal "Zootaxa" (<http://www.mapress.com/zootaxa/taxa/Mammalia.html>) published an article by Pontes, Malta, and Asfora (PONTES *et al.*, 2006) which provided a description of a supposed undescribed species, named *Cebus queirozi*, with the Usina Salgado, Ipojuca, State of Pernambuco, Brazil, as the type locality. The new species was based on two animals captured alive, photographed, measured, and subsequently released back into the forest from where they were taken. Description and figures of these live animals agree with *Cebus flavius* (Schreber, 1774). The new name *C. queirozi* may not be considered a junior synonym of *C. flavius* (Schreber, 1774) because the former is not available in Zoological Nomenclature since it is not based on actual museum specimens and do not comply with provisions of Articles 16.4, 72.10, and Recommendations 16C, 16D, 73A, 73C, 72D, and 72E of the International Code of Zoological Nomenclature (the Code; ICZN, 1999). Article

16.4. states that “Every new specific and subspecific name published after 1999 ... must be accompanied in the original publication ... by the explicit fixation of a holotype for the nominal taxon. ...where the holotype or syntypes are extant specimens, by a statement of intent that they will be (or are) deposited in a collection ... indicating the name and location of that collection.” An holotype is defined in the Code as “The single specimen ... designated or otherwise fixed as the name-bearing type of a nominal species or subspecies when the nominal taxon is established. The article. 72.10 further states “Holotypes, syntypes, lectotypes and neotypes are the bearers of the scientific names of all nominal species-group taxa ... They are the international standards of reference that provide objectivity in zoological nomenclature and must be cared for as such. They are to be held in trust for science by the persons responsible for their safe keeping.

The article 73.1.4 of the Code mentioned by PONTES *et al.* (2006) to justify their action do not “allow the description of new taxa without the need for dead type specimens” (PONTES *et al.*, 2006). This is a misunderstanding of the article since it refers only to names published before 2000, see Art. 16.4, and just defines what is an holotype, stating that an illustration is not an holotype, and that the holotype is the specimen illustrated. The conclusion on the unavailability of names proposed under these conditions is shared by TIMM *et al.* (2005) and by LANDRY (2005).

PONTES *et al.* (2006) reported a group of approximately 18 animals observed in the Usina Salgado. They stated that the species is Critically Endangered, based on the single occurrence in Usina Salgado but, as we show, the species is considerably more widespread. The assessment of the conservation status is premature - further surveys are required before the true extent of its range and the size and status of its populations can be ascertained. Capuchins of eastern Brazil are very adaptable, remarkably omnivorous, and often crop-raiders (corn and sugar cane, for example), and as such, when not hunted, able to survive in relatively small forest fragments. When persecuted, they become very shy and are not easily observed. A careful survey over its entire potential range is needed.

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