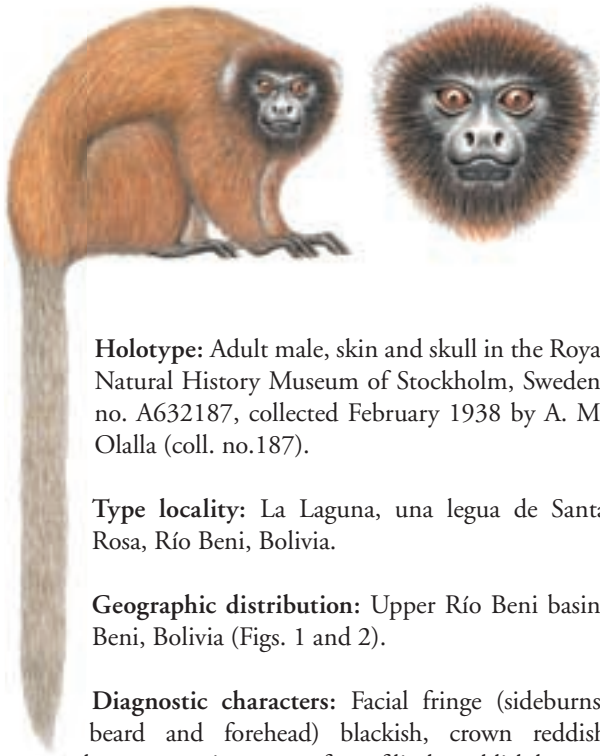


outer parts of body light brownish or reddish agouti instead of buffy to orange agouti, and dominantly blackish agouti tail and cheiridia instead of buffy mixed with blackish.

***Callicebus olallae* Lönnberg, 1939**

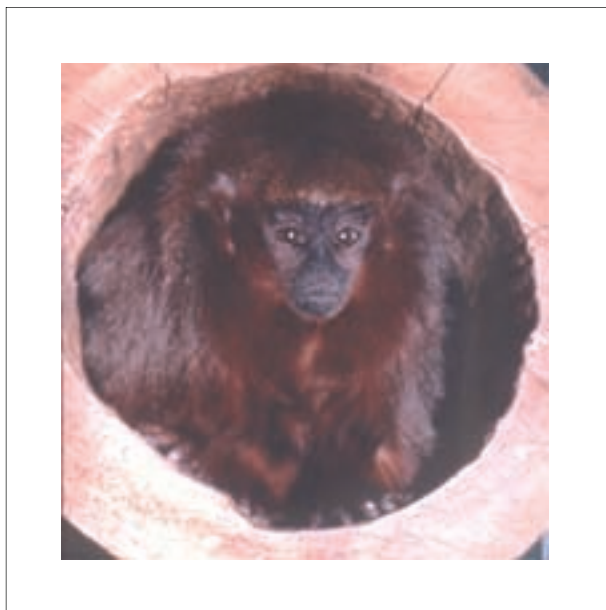


Holotype: Adult male, skin and skull in the Royal Natural History Museum of Stockholm, Sweden, no. A632187, collected February 1938 by A. M. Olalla (coll. no.187).

Type locality: La Laguna, una legua de Santa Rosa, Río Beni, Bolivia.

Geographic distribution: Upper Río Beni basin, Beni, Bolivia (Figs. 1 and 2).

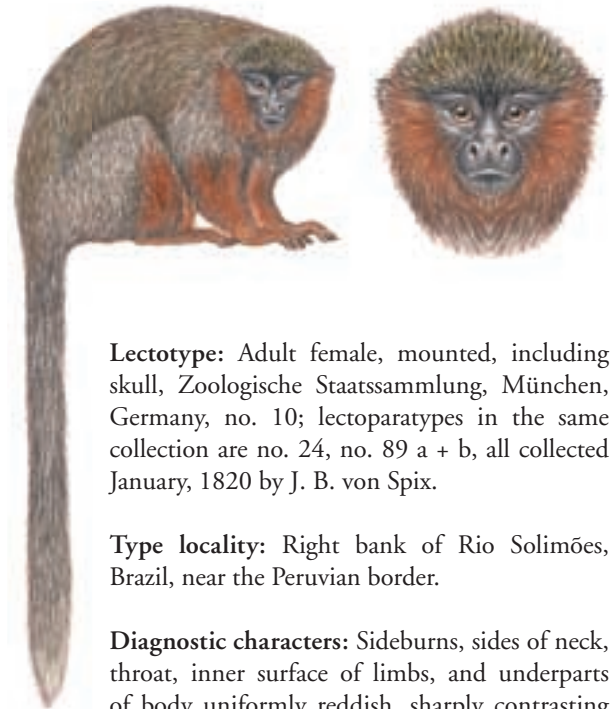
Diagnostic characters: Facial fringe (sideburns, beard and forehead) blackish, crown reddish brown agouti; outer surface of limbs reddish brown; cheiridia dominantly blackish; blackish suborbital vibrissae conspicuous; back and limbs uniformly orange (hairs with extremely broad orange median band); tail entirely dark agouti sharply contrasting with orange back; whitish ear tufts weakly developed.



Distinguished from *Callicebus donacophilus* by blackish facial fringe, lack of malar stripe, weakly developed whitish ear tufts, dominantly brownish or blackish cheiridia and lack of a sharp contrast between coloration of under-parts and sides of body; from *Callicebus modestus* by blackish facial fringe, individual hairs of back showing a broad orange median band, and lack of well-developed whitish ear tufts (Fig. 6).

II. *C. CUPREUS* GROUP

***Callicebus cupreus* (Spix, 1823)**



Lectotype: Adult female, mounted, including skull, Zoologische Staatssammlung, München, Germany, no. 10; lectoparatypes in the same collection are no. 24, no. 89 a + b, all collected January, 1820 by J. B. von Spix.

Type locality: Right bank of Rio Solimões, Brazil, near the Peruvian border.

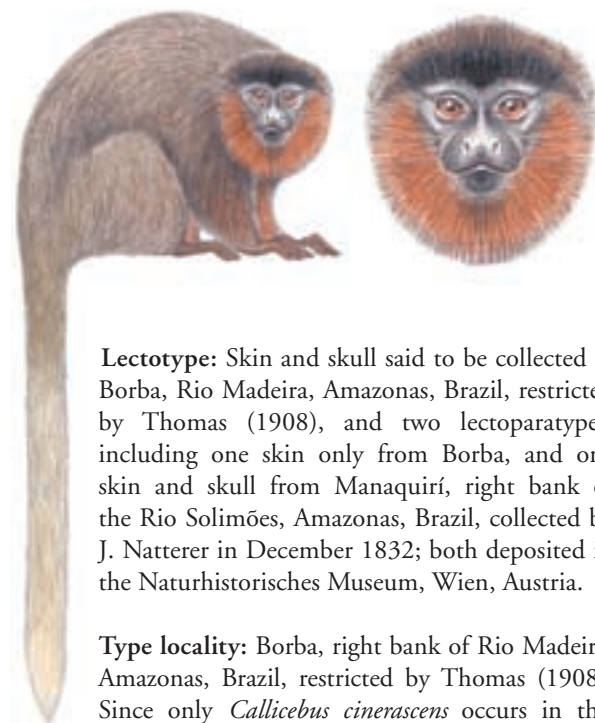
Diagnostic characters: Sideburns, sides of neck, throat, inner surface of limbs, and underparts of body uniformly reddish, sharply contrasting with buff-brown agouti of dorsum and outer sides of trunk, basal part of tail, and crown; forehead as crown, reddish-brown agouti, often fringed with blackish superciliary vibrissae and marginal hair bases.

Distinguished from other members of the *cupreus* Group, except for *C. caligatus* and *C. stephennashi*, by absence of distinct pale transverse frontal blaze, and from all members of the *cupreus* Group by an overall dark tail with pencil only white; from *Callicebus caligatus* by lacking a broad black frontal transverse blaze; from *Callicebus stephennashi* by lacking a black frontal transverse blaze that contrasts sharply against a silvery crown, and having an overall dark tail instead of a three-quarters to entirely buffy to white tail; from *Callicebus brunneus* by its red sideburns, forearms, lower legs, cheiridia and under-parts of the body (Fig. 7).

Figure 6. Olalla Brothers' titi monkey, *Callicebus olallae* Lönnberg, 1939.



Callicebus caligatus (Wagner, 1842)



Lectotype: Skin and skull said to be collected at Borba, Rio Madeira, Amazonas, Brazil, restricted by Thomas (1908), and two lectoparatypes, including one skin only from Borba, and one skin and skull from Manaquirí, right bank of the Rio Solimões, Amazonas, Brazil, collected by J. Natterer in December 1832; both deposited in the Naturhistorisches Museum, Wien, Austria.

Type locality: Borba, right bank of Rio Madeira, Amazonas, Brazil, restricted by Thomas (1908). Since only *Callicebus cinerascens* occurs in this region along the right bank of the Rio Madeira, Hershkovitz (1990) assumed that Natterer should have collected and mislabelled these specimens elsewhere. Since M.G.M. van Roosmalen found the species to occur in the lower Rios Purús/Solimões/Madeira interfluvium south as far as the Rio Ipixuna, the specimens collected at Borba, right bank of the Rio Madeira, must have originated from the left bank of the Rio Madeira in the vicinity of Borba. The other type locality, Manaquirí, right bank of the Rio Solimões, falls within the supposed distribution.

Geographic distribution: Central Amazonia, Amazonas state, Brazil, south of the Rio Solimões in the interfluvium delineated by the lower Rios Purús, Solimões and Madeira, south as far as the Rio Ipixuna (or Paranapixuna). Hershkovitz (1990) considered the species sympatric with *Callicebus dubius*, *C. brunneus*, and *C. cupreus*, based on, in his view, mislabelled specimens collected by the Olalla brothers at Boca Río Inuya, Iquitos, the Río Orosa, Río Tapiche, and Sarayacu, Rio Ucayali, in the department of Loreto, Peru. Voss and Emmons (1996) note that Hershkovitz' report on the sympatry of two members of the *moloch/cupreus* Group (*C. cupreus* and *C. caligatus*) was an error caused by "inadvertently listing both original and revised identifications of the same series from Orosa among the specimens examined." The correct identification for the monkeys is *Callicebus (cupreus) cupreus*. Specimens collected by Peres (1993) along both banks of the Rio Juruá and deposited in the Museu Goeldi, Belém, all were identified as *Callicebus (cupreus) cupreus*.

The distribution of *C. caligatus* contradicts that given by Hershkovitz (1990), who fills in its actual distribution with *C. dubius*. Four specimens of real *C. caligatus* were caught in July 2001 by locals along the north bank of

Figure 7. The red or coppery titi, *Callicebus cupreus* (Spix, 1823). Top photograph by Chris Zagazzo. Middle and Bottom photographs by R. A. Mittermeier.



Figure 8. The chestnut-bellied titi, *Callicebus caligatus* (Wagner, 1842), an adult male and female caught from the wild by local people on the west bank of the Lago Jarí, Rio Purus, on July 27th, 2001. Upper right shows close up of the hands, and lower right, the tail. Photographs by M. G. M. van Roosmalen.

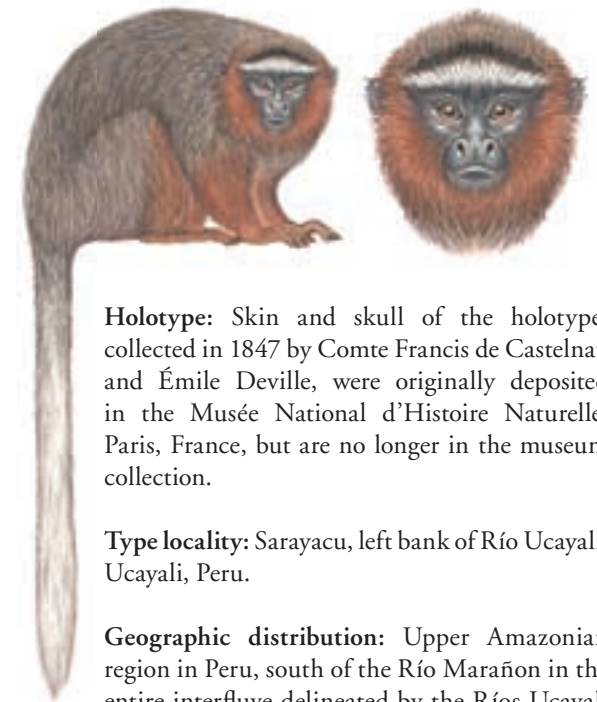
Lago Jarí at the mouth of Igarapé Bacaba and released at the same place after being measured and photographed, and a complete skeleton with some hair found on the forest floor was collected (private collection no. MGMR55) on the north bank of Rio Ipixuna near its mouth, a few kilometers south of the town of Tapauá (Van Roosmalen and Van Roosmalen, in prep.). (Figs. 1 and 2).

Diagnostic characters: Forehead and anterior part of crown black, rest of crown dark red-brown as neck, back and sides of body, each hair red-brown with a black tip; sideburns, under-parts and inner sides of limbs reddish to red-brown; back reddish-brown agouti; forearms and lower legs dark red-brown; cheiridia, including wrists and ankles black as blaze and basal part of tail; proximal 10 cm of tail dark black, next 25 cm blackish mixed with buffy (hairs blackish with 0.7 cm long white tip), distal 15 cm forming a buffy pencil.

Distinguished from *Callicebus stephennashi* by dark red-brown agouti instead of bright reddish forearms, forelegs, sideburns, and under-parts, black-brown to black instead of buffy to white cheiridia, and forehead and anterior part of crown not sharply contrasting with rest of crown, nape, and sides of body; from *C. cupreus*, with which it is parapatric along the lower Rio Purús in the west, by entirely black forehead and anterior part of crown, dark black-brown cheiridia, and the dominantly buffy tail mixed with blackish, and the white pencil; from *C. dubius*, by black forehead and anterior part of crown lacking a contrasted pale or whitish frontal tuft or transverse blaze; from *C. cinerascens*, with which it is parapatric along the lower Rio Madeira in the east, by

reddish to dark red-brown sideburns, under-parts and inner sides of limbs, and the dominantly buffy tail and white pencil (Fig. 8).

Callicebus discolor (I. Geoffroy & Deville, 1848)



Holotype: Skin and skull of the holotype, collected in 1847 by Comte Francis de Castelnau and Émile Deville, were originally deposited in the Musée National d'Histoire Naturelle, Paris, France, but are no longer in the museum collection.

Type locality: Sarayacu, left bank of Río Ucayali, Ucayali, Peru.

Geographic distribution: Upper Amazonian region in Peru, south of the Río Marañón in the entire interfluvium delineated by the Ríos Ucayali and Huallaga, and north of the Río Marañón between the Ríos Napo and Santiago; in Ecuador from the Andean foothills east to the Río Napo/Aguarico basin, and north to the Río Putumayo, and in Colombia to the right bank

of the Río Guamués (Hernández-Camacho and Cooper, 1976). Brooks and Pando-Vasquez (1997) recorded this species just to the north of the Río Napo on the left bank of its northern tributary, the Río Sucusari, in Peru. Hernández-Camacho and Cooper (1976) recorded its range in the Colombian trapezium, between the Ríos Putumayo and Amazonas. In Figure 1, *C. discolor* is given as occurring throughout the interfluvium between the Ríos Putumayo-Içá and Amazonas-Solimões extending into Brazil, although this has yet to be confirmed. In the eastern part of its range the species is parapatric with *Callicebus cupreus* along the Río Ucayali (Figs. 1 and 2).

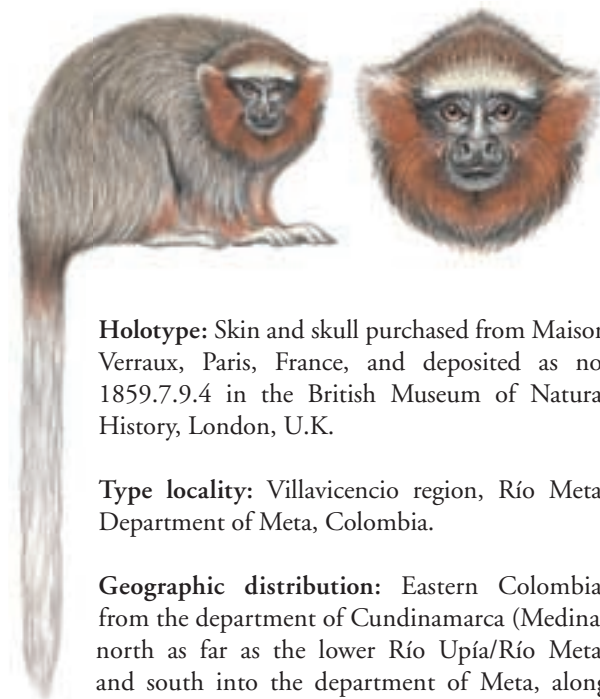
Moynihan (1976, p.75) mentions the presence of titi monkeys of the *moloch* Group in the close vicinity of the town of Valparaiso, between the Ríos Caquetá and Orteguzza in Colombia. These “lacked the white stripe above the eyes that is typical of both *ornatus* to the north and *discolor* to the south,” and Moynihan indicated that they could be an unnamed subspecies (Fig. 1).

Diagnostic characters: Forehead with white or buffy tuft, contrasting with dark-brown transverse band, or blaze, this sharply contrasting with reddish crown and sideburns; often small white patches present alongside the lower jaw sharply contrasted with the reddish sideburns; sideburns, crown, side of neck, forearms, lower legs, cheiridia, chest

and belly reddish, sharply contrasted with agouti back, sides of body, and tail; tail mixed brownish and buff-agouti, distal one-third to three-quarters predominantly buffy or white.

Distinguished from *Callicebus oenanthe* and *C. ornatus* by entirely reddish forearms and cheiridia, from *C. cupreus* by one-third to three-quarters of tail buffy, white or buffy frontal tuft, and dark-brown blaze or transverse band (Fig. 9).

Callicebus ornatus (Gray, 1866)



Holotype: Skin and skull purchased from Maison Verraux, Paris, France, and deposited as no. 1859.7.9.4 in the British Museum of Natural History, London, U.K.

Type locality: Villavicencio region, Río Meta, Department of Meta, Colombia.

Geographic distribution: Eastern Colombia, from the department of Cundinamarca (Medina) north as far as the lower Río Upía/Río Meta, and south into the department of Meta, along the base of the Cordillera Oriental and the Sierra de la Macarena to the Río Guayabero/upper Río Guaviare. This species is the only member of the *cupreus* and *moloch* Group occurring north of the Ríos Amazonas/Solimões/Napo axis, in the upper Río Orinoco basin and is separated from its nearest other member of the *cupreus* Group (*Callicebus discolor*) in the south by at least 350 km (Figs. 1 and 2).

Diagnostic characters: Ears and frontal tuft, transverse band or blaze whitish, sharply contrasted with reddish brown crown, the hair bases buffy; sideburns, under-parts, and inner side of limbs reddish; outer surface of thighs, upper arms, upper legs and sides of body buff-agouti; outer side of lower legs and lower part of forearms reddish, sharply contrasted with pale to whitish feet or toes only, and hands or digits only, respectively; proximal one-quarter of tail dark red-brown, distal three-quarters white.

Distinguished from *Callicebus cupreus* and *C. discolor* by white ears, and pale or whitish digits and toes sharply contrasted with reddish wrists and ankles (Figs. 10, 11, and 12).



Figure 9. *Callicebus discolor* (I. Geoffroy & Deville, 1848), an adult female from unknown locality donated to M.G.M. van Roosmalen in 1988. Photographs by M. G. M. van Roosmalen.



Figure 10. The ornate titi monkey, *Callicebus ornatus* (Gray, 1866). Photograph by R. A. Mittermeier in 1992.

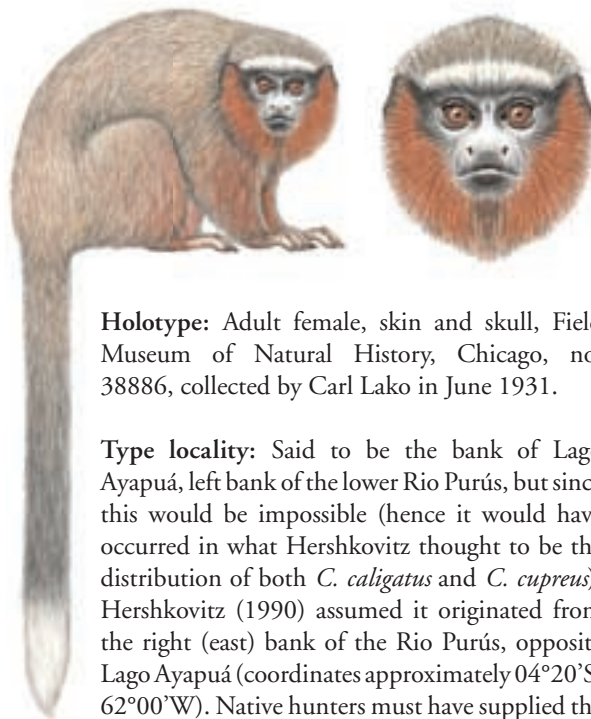


Figure 11. The ornate titi monkey, *Callicebus ornatus* (Gray, 1866). An adult male from north of La Macarena, Colombia. Photographs by T. Deffler at the Caparú Biological Station, Rio Apaporis, in 1992.



Figure 12. The ornate titi, *Callicebus ornatus* (Gray, 1866).

Callicebus dubius Hershkovitz, 1988



Holotype: Adult female, skin and skull, Field Museum of Natural History, Chicago, no. 38886, collected by Carl Lako in June 1931.

Type locality: Said to be the bank of Lago Ayapuá, left bank of the lower Rio Purús, but since this would be impossible (hence it would have occurred in what Hershkovitz thought to be the distribution of both *C. caligatus* and *C. cupreus*), Hershkovitz (1990) assumed it originated from the right (east) bank of the Rio Purús, opposite Lago Ayapuá (coordinates approximately 04°20'S, 62°00'W). Native hunters must have supplied the animal collector Carl Lako with specimens from either side of the Rio Purús and from far upstream, since M. G. M. and T. van Roosmalen recently located the species along the Rio Seruín on the right bank of the Rio Purús, south of the Rio Ituxí. Some specimens in the British Museum originated from the vicinity (probably southwest) of the town of Humaitá on the left bank of the Rio Madeira, the source of the Rio Ituxí.

Geographic distribution: South of the Rio Ituxí, or maybe even the Rio Mucuí, both right bank tributaries of the Rio Purús, east as far as the Rio Madeira south of the town of Humaitá, and west to the Rio Purús, southern limit unknown. The species might be parapatric with *Callicebus stephennashi* along the Rio Ituxí or maybe the Rio Mucuí in the northern part of its range, with *Callicebus brunneus* along the upper Rio Madeira in the southern or

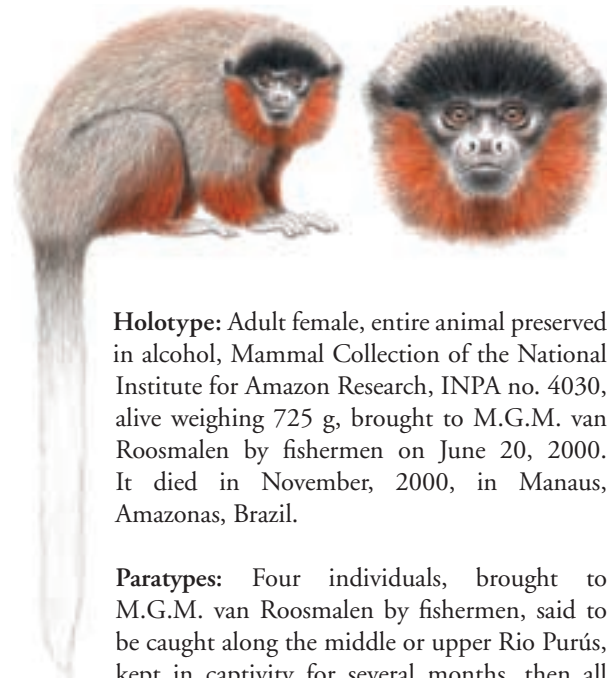
southeastern part of its range, and with *Callicebus cupreus* along the Rio Purús in the west (Figs. 1 and 2).

Diagnostic characters: Buffy or whitish frontal tuft, blaze, or transverse stripe, bordered below by blackish superciliary vibrissae forming narrow black line connecting the blackish ears, the crown brownish agouti; hairs of crown, nape, back, and rump with 4–5 narrow pheomelanin bands, each alternating with a eumelanin band; outer sides of thighs and upper arms brownish agouti like back; sideburns, sides of head, and beard deep reddish, outer surface of forearms and lower legs reddish; hairs of throat, chest, belly, and inner side of limbs not banded reddish to reddish brown; cheiridia blackish agouti, the fingers and toes contrasted pale or white; proximal one-third of tail red-brown agouti, as dorsum, rest of tail blackish, with a contrasted white pencil.

Distinguished from *C. caligatus* by its white or buffy frontal tuft or blaze, and lack of the black forehead and anterior

part of crown; from *C. cupreus*, with which it is parapatric along the Rio Purús in the west by its white frontal tuft or blaze, and its white digits; from *C. brunneus* by its white or buffy frontal tuft or blaze and the contrasted white or buffy tail pencil; from *C. stephennashi* by its white or buffy frontal tuft or blaze and white digits only instead of entirely white cheiridia (as far as the wrists and ankles) (Fig. 13).

Callicebus stephennashi new species



Holotype: Adult female, entire animal preserved in alcohol, Mammal Collection of the National Institute for Amazon Research, INPA no. 4030, alive weighing 725 g, brought to M.G.M. van Roosmalen by fishermen on June 20, 2000. It died in November, 2000, in Manaus, Amazonas, Brazil.

Paratypes: Four individuals, brought to M.G.M. van Roosmalen by fishermen, said to be caught along the middle or upper Rio Purús, kept in captivity for several months, then all died from dengue fever in November 2000.

Adult male weighing 780 g, INPA no. 4031, three females weighing 740, 480, and 725 g, private collection numbers MGMR 51, 52 and 53, respectively, Manaus-Amazonas, Brazil (Table 2).

Type locality: Unknown. Holotype said to be caught somewhere along the middle to upper Rio Purús together with the paratypes.

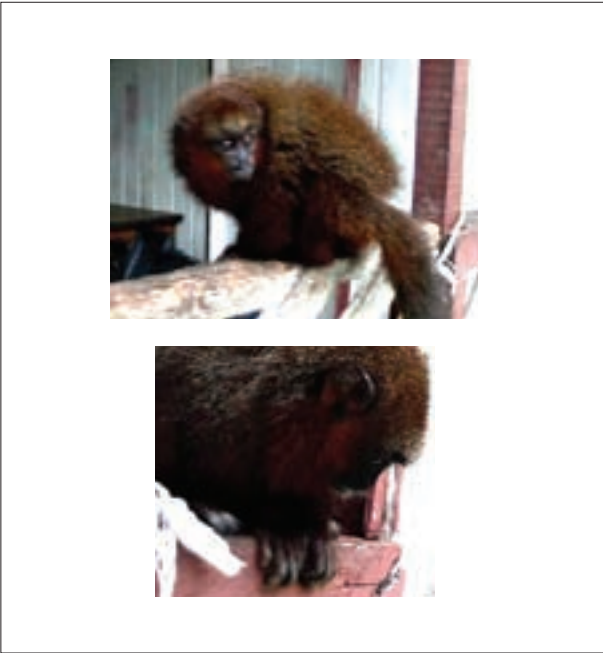


Figure 13. *Callicebus dubius* Hershkovitz, 1988, pet monkey from the Rio Seruini, right bank of the Rio Purús, photographed in Pauini, July 2001. Photographs by T. van Roosmalen.

Table 2. Measurements of specimens of *Callicebus* spp. collected by M.G.M. van Roosmalen.

<i>Callicebus</i>	Head & body (mm)	Tail	Hind foot	Ear	Weight (g)	Reference
<i>caligatus</i>	290	510	90	31	1000	MGMR 58
<i>stephennashi</i>	270	420	85	35	780	INPA 4031
<i>stephennashi</i>	280	420	90	30	725	INPA 4030
<i>stephennashi</i>	?	?	?	?	740	MGMR 51
<i>stephennashi</i>	?	?	?	?	480	MGMR 52
<i>stephennashi</i>	?	?	?	?	725	MGMR 53
<i>bernhardi</i>	360	550	100	35	1200	INPA 4033
<i>bernhardi</i>	370	?	90	30	700	INPA 4029
<i>cinerascens</i>	415	?	95	30	740	INPA 4085



Figure 14. Stephen Nash's titi monkey, *Callicebus stephennashi* new species. The adult female holotype, INPA 4030, and adult females MGMR 51 and MGMR 53. Photographs by M. G. M. van Roosmalen.

Geographic distribution: Since the new species seems to be phenotypically most closely related to both *C. caligatus* and *C. dubius*, we assume *Callicebus stephennashi* should occur along the right bank of the Rio Purús in between the distributions of *C. caligatus* and *C. dubius*. As a possible distribution, we suggest the interfluvium delineated by the Rios Purús/Ipixuna/Madeira/Mucuí (Figs. 1 and 2).

Diagnostic characters: Forehead, superciliary vibrissae, and anterior portion of crown black, sharply contrasting with posterior portion of crown, nape, dorsum and rump which are silvery or buffy mixed with brownish agouti or brownish-black; ears blackish; lower arms and legs bright red, sometimes dark red as in *C. caligatus* and *C. baptista*, like sideburns, under parts, and inner sides of limbs, contrasting with silvery or buffy mixed with brownish agouti upper and outer parts; upper surface of cheiridia silvery buffy to white, the proximal third of foot red like lower legs, the hands entirely silvery

or white; proximal portion of tail silvery mixed with brownish agouti to blackish brown, then black mixed with white or buffy, and distal half to two-third entirely white or buffy.

Distinguished from *C. caligatus* by black superciliary vibrissae, forehead and anterior portion of crown sharply contrasting with silvery agouti remainder of crown, nape and upper parts of body, by bright red instead of dark red-brown lower arms and legs, by white or buffy instead of blackish cheiridia, and almost entirely white or buffy tail; from *C. dubius* by black forehead and anterior portion of crown, lacking a white blaze, by white or buffy cheiridia instead of white digits only, and almost entirely white or buffy tail; from *C. cupreus* by black frontal blaze contrasting sharply against a silvery crown and nape, almost entirely white or buffy tail instead of an overall dark tail with white pencil, and by white or buffy instead of brown agouti cheiridia; from *C. brunneus* by its bright red sideburns, lower arms and legs, and under parts, white or



Figure 15. Stephen Nash's titi monkey, *Callicebus stephennashi* new species. Some details of the adult female holotype, INPA 4030. a. left hand, b. legs, feet and basal part of tail, c. feet aside of tail, d. middle part of tail against background of sides of body, e. detail of pelage on side of body, f. detail of pelage of underparts and lower legs. Photographs by M. G. M. van Roosmalen.

buffy cheiridia, and silvery agouti to silvery brown upper parts and sides of body (Figs. 14, 15, and 16).

Measurements: See Table 2.

External characters of holotype: Black of forehead and superciliary vibrissae continuing over anterior portion of crown as in *C. caligatus*, but sharply contrasting with posterior portion of crown, nape, back and rump which are buffy to silvery mixed with brownish agouti, the lax hairs cresting against shorter black hairs in front and longer raised nuchal hairs behind; ears blackish; hairs of dorsum and sides of body silvery mixed with brownish agouti, the individual hairs 4 cm long, six-banded as follows: proximal 1.5 cm brownish agouti to black-brown, then 3 white or silvery bands each alternating with a brown or blackish band, the tip of each hair silvery; lower arms and legs uniformly bright red like sideburns, sides of head, beard, under parts, and inner sides of limbs, contrasting with upper arms and thighs which are buffy to silvery mixed with brownish agouti; upper surface of cheiridia silvery white to buffy, the proximal (ankle) part of foot (3 cm) red like lower legs, the remaining 6 cm silvery white to buffy, upper surface of entire hands including wrists silvery or white; basal (proximal) one-sixth (ca. 8 cm) of tail same color as lower back and rump, next one-sixth (ca. 8 cm) black mixed with white or buffy (black hairs with 1 cm long white tip), remainder two-third entirely white or buffy; hairs of sideburns, throat, chest, belly, and inner side of limbs not banded red; blackish face naked except for fine buffy hairs surrounding lips and between nostrils.

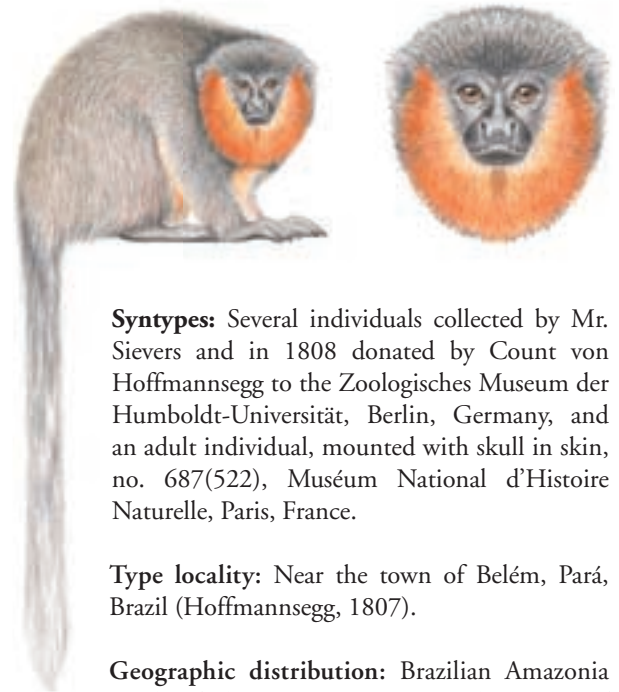
Origin of the name: This titi monkey is named in honor of our close friend and colleague, artist Stephen D. Nash, Technical Illustrator for Conservation International's President's office and its Center for Applied Biodiversity Science (CABS). He is based at the State University of

New York at Stony Brook. For the past 20 years, Stephen has made major contributions to primate conservation and the science of primatology through his wonderful scientific illustrations and his educational materials, which have been widely distributed around the world.

Vernacular name: Titi monkeys are referred to as *zog-zogs* or *zogue-zogues* by the local people in Amazonia. For an English name, we suggest Stephen Nash's titi monkey.

III. *C. MOLOCH* GROUP

Callicebus moloch (Hoffmannsegg, 1807)



Syntypes: Several individuals collected by Mr. Sievers and in 1808 donated by Count von Hoffmannsegg to the Zoologisches Museum der Humboldt-Universität, Berlin, Germany, and an adult individual, mounted with skull in skin, no. 687(522), Muséum National d'Histoire Naturelle, Paris, France.

Type locality: Near the town of Belém, Pará, Brazil (Hoffmannsegg, 1807).

Geographic distribution: Brazilian Amazonia south of the Rio Amazonas in the States of Pará and Mato Grosso. In Pará, from the west bank of Rio Tocantins/Araguaia west as far as the east bank of Rio Tapajós, south as far as Ilha do Bananal, north of the confluence of Rio das Mortes with the Rio Araguaia; in Mato Grosso, as far west as the Rio Juruena, including the headwaters of the Rio Xingú (M. G. M. van Roosmalen collected a specimen shot by a Waurá Indian hunter along Rio Von den Steinen) (Fig. 18). In the northwestern part of its range, the species



Figure 16. Stephen Nash's titi monkey, *Callicebus stephennashi* new species. The adult female holotype, INPA 4030, and adult females MGMR 51 and MGMR 53. Photographs by M. G. M. van Roosmalen.



Figure 17. Captive adult red-bellied titi, *Callicebus moloch* (Hoffmannsegg, 1807). Photograph by R. A. Mittermeier.