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On the Identification of *Callicebus cupreus* and *Callicebus brunneus*

Jan Vermeer

Introduction

For many years, the preliminary taxonomic review of the genus *Callicebus* by Hershkovitz (1990) was the leading guide for most people involved in research on titi monkeys. The more extensive review of Van Roosmalen *et al.* (2002), illustrated with many pictures and colorful drawings by Stephen Nash, seems to have replaced the earlier work of Hershkovitz. However, closer examination of the publication shows some inaccuracies, which may cause difficulties in the identification of certain individuals. The confusion that the publication caused for the identification of the titi monkeys kept in European zoos encouraged me to study this subject in more detail.

The identification of *Callicebus cupreus*

The diagnostic characters of *Callicebus cupreus* are described by Van Roosmalen *et al.* (2002), and depicted in a drawing by Stephen Nash. The description and the drawing were compared to the lectotypes and the lectoparatypes of *Callicebus cupreus* at the Zoologische Staatssammlung in München (Nos. 10, 24, 89a and 89b). The most important difference between the drawing in the publication and the lectotype is the color of the tail (the color of the tail is not described by Van Roosmalen *et al.*, 2002). While the tail of the animal in the drawing is the same buff-brown agouti color as its hindlimbs, the tail of lectotype No. 10 is much lighter, comparable to that on the drawing of *Callicebus moloch* in the publication of Van Roosmalen *et al.* (2002). The tail of lectoparatype No. 24 is identical to that of the lectotype, while the tails of the paralectotypes 89a and 89b are somewhat darker. Most other specimens of *Callicebus cupreus* that I have examined in the collections of the American Museum of Natural History in New York and the Naturalis Museum in Leiden have lighter and more greyish colored tails than the ones depicted by Van Roosmalen and colleagues (2002).

Observations in the wild by Eckhard Heymann, at Estación Biológica Quebrada Blanco (4° 21' S, 37° 09' W), well within the known distribution of *Callicebus cupreus*, confirm that the tail of adult *Callicebus cupreus* is greyish-white (Eckhard Heymann, pers. comm.). The tail of young *Callicebus cupreus* is brownish, but has the greyish color of the adults by approximately 2 years of age (pers. obs. at La Vallée des Singes, Romagne, France). The captive population in European zoos is partly based on individuals that were captured near the Rio Maniti in Peru by the California National Primate Research Center of Davis. Rio Maniti is also within the distribution of *Callicebus cupreus*. All these animals have greyish tails, strikingly different than the color of their back and legs.

The identification of *Callicebus brunneus*

This species is described by Van Roosmalen *et al.* (2002) as having the forehead, forearms, legs, cheiridia and base of tail blackish to dark-reddish-brown, the rest of the tail contrasted pale or dominantly buffy mixed with blackish. The upperparts are brownish or reddish. The drawing of Stephen Nash is in agreement with this description. The description and the drawing were compared to the lectotype and lectoparatypes of *Callicebus brunneus* at the Naturhistorisch Museum in Vienna, Austria (No. B-3453, B-3454, ST122). The coloration of these specimens differs considerably from the description in Van Roosmalen *et al.* (2002). The upperparts of all specimens are dark brown, the arms and legs only slightly darker than the back, but brownish. The forehead is black, while the rest of the head is strikingly light-brown in all specimens. The tail is dark-brown, in one specimen somewhat lighter than its upperparts. The tip of

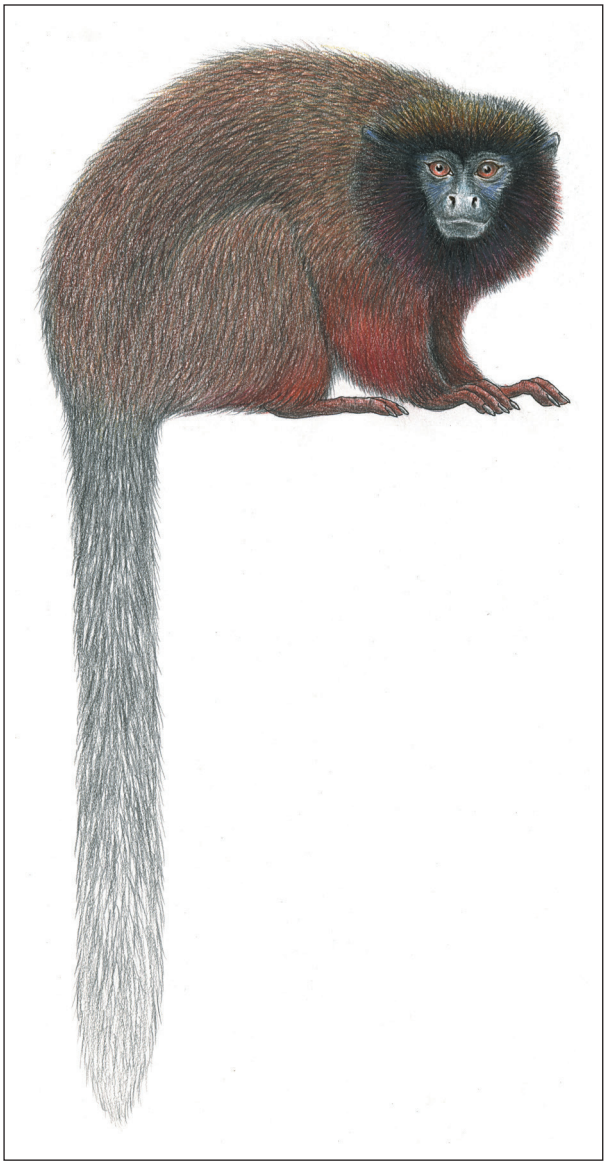

Figure 1. The red titi monkey, *Callicebus cupreus*. Illustration by Stephen D. Nash.

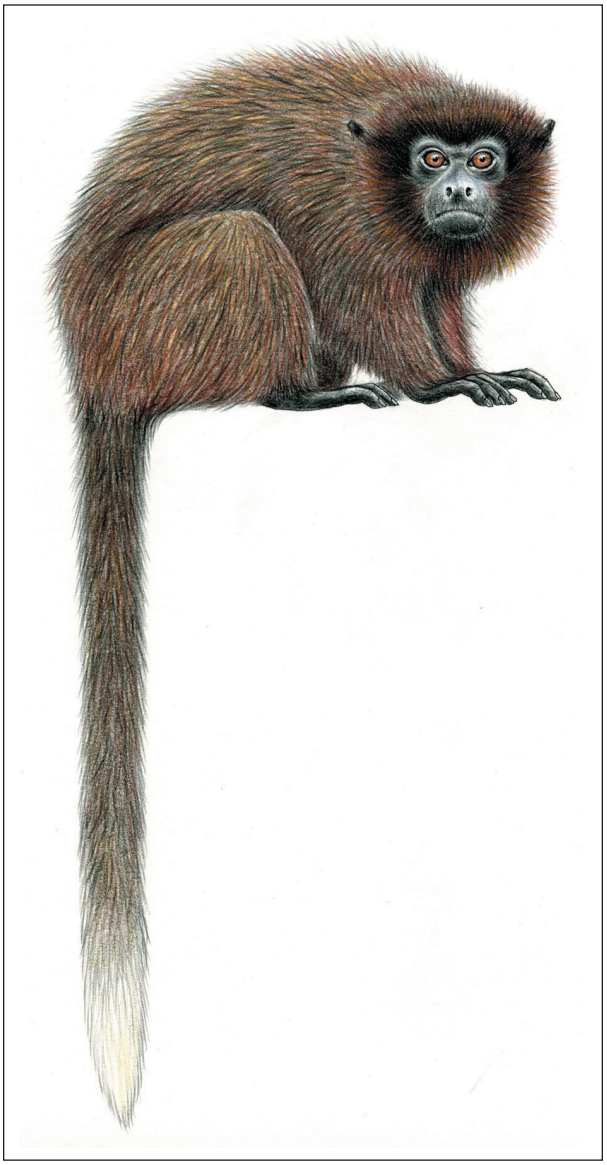

Figure 2. The brown titi monkey, *Callicebus brunneus*. Illustration by Stephen D. Nash.

the tail is buffy. The hands and feet of the lectotype are black, those of the lectoparatypes light-brown.

The coloration of the specimens in the Vienna museum match the picture of *Callicebus brunneus* published on page 85 in Rowe (1996). The animals depicted in Van Roosmalen *et al.* (2002), page 21, at the National Zoo in Washington, must be *Callicebus cupreus* and certainly are not *Callicebus brunneus.* The animals living at the Los Amigos Research Station near the Madre de Dios, Peru (12° 34' S, 70° 06'W) and at Tambopata are usually identified as being *Callicebus brunneus*, and they indeed resemble the drawing of this species in the publication of van Roosmalen *et al.* (2002). However, when comparing them to the type specimens of this species they are considerably different, and the titi monkeys in this area are most probably *Callicebus aureipalatii* (Wallace *et al.* 2006). Individuals of *Callicebus aureipalatii* were also observed by the author in the eastern part of Manu National Park, Peru (Pantiacolla Lodge, 12° 39'S, 71° 13' W). However, the situation in this area is quite confusing, as other animals were much darker, resembling a transitional coloration between *Callicebus aureipalatii* and *Callicebus brunneus*. Very dark animals in the collection of the Natural History Museum in Lima resemble *Callicebus brunneus* very closely, and were collected at Quebrada Aguas Calientes in Manu National Park. More research is urgently needed on the identification of the titi monkeys in and around Manu National Park.

Conclusion

The descriptions and drawings of *Callicebus cupreus*, and especially of *Callicebus brunneus*, published in the taxonomic review of Van Roosmalen *et al.* (2002) may lead to confusion. A study of the lectotypes and lectoparatypes and other evidence shows that the coloration of certain species

is different on several points. With this publication, illustrated with new drawings by Stephen Nash that match the colors of the lectotypes and of animals in the wild, we hope to lessen some of the confusion involved in titi monkey identification (Figs. 1 and 2).

Acknowledgements

I first want to thank Stephen D. Nash, who has kindly produced new drawings of both species. His work is indispensable for the publication and interpretation of taxonomic knowledge. I also thank Dr. Barbara Herzig (Natural History Museum in Vienna), Dr. Richard Kraft and Michael Hiermeier (Zoologische Staatssammlung in Munich), Eileen Westwig MS (American Museum of Natural History in New York), Dr. Victor Pacheco and Fanny Cornejo (Natural History Museum in Lima) and Dr. Dekker and Ing. Hein van Grouw (Naturalis Museum in Leiden) for allowing me to study their collection. Finally thanks to Eckhard Heymann (German Primate Center, Göttingen) and Darren Webster (Blackpool Zoo) for sharing their observations with me.

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Confirmation of *Callicebus dubius* (Pitheciidae) Distribution and Evidence of Invasion Into the Geographic Range of *Callicebus stephennashi*

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José S. e Silva-Jr.

Introduction

Titi monkeys, *Callicebus* Thomas 1903 (Pitheciidae), one of the most speciose platyrrhine genera, are distributed in the tropical forests of the Amazon and Orinoco basins, in the Atlantic forest of northeastern and southeastern Brazil, in the Chaco and in dry forests of Paraguay and Bolivia. The southern limits are the Pilcomayo and Paraguay rivers. The distribution of *Callicebus* is generally limited by river barriers (van Roosmalen *et al*. 2002). *Callicebus dubius* was described as a hybrid form by Hershkovitz (1988) and rearranged by van Roosmalen *et al.* (2002) as a valid species of the *C. cupreus* species group. The range of *C. dubius* is still uncertain. Hershkovitz (1990) assumed the type locality to be the right (east) bank of the Rio Purus, opposite to Lake Ayapuá. Two other species, *Callicebus caligatus* and *Callicebus cupreus*, occur in this area (van Roosmalen *et al*. 2002). Some specimens of *C. dubius*, deposited in the British Museum, were obtained in nearby Humaitá, a town on the left bank of the Rio Madeira. The holotype is an adult female (skin and skull), deposited in the Field Museum of Natural History, Chicago, number 38886, collected by Carl Lako in June 1931 (van Roosmalen *et al*. 2002).

According to van Roosmalen and colleagues (2002) the distribution of *C. dubius* corresponds to the "south of the Rio Ituxí, or maybe even the Rio Mucuím, both right bank tributaries of the Rio Purus, eastern limit the Rio Madeira south of the town of Humaitá, and west to the Rio Purus, southern limit unknown". This description is partially inconsistent with or at least not logically represented by the map in van Roosmalen *et al*. (2002) that shows the Rio de las Piedras (Bolivia) as the southern limit, with the Madre de Dios and Madeira defining the eastern limit of the species distribution. Rowe and Martinez (2003), however, have registered *Callicebus brunneus* in that region. Rowe and Martinez (2003) surveyed titi monkeys and found that their distribution in northern Bolivia is not consistent with the possible southern limit suggested by van Roosmalen *et al*. (2002) for *C. dubius*, but the distribution of *C. brunneus* coincides with reports by Anderson (1997) and Hershkovitz (1990). In addition, Robert Wallace (pers. comm.) has recorded a different species, which is not *C. dubius,* in the Department of Pando, Bolivia.

The map in van Roosmalen *et al.* (2002) indicates the Rio Mucuim as eastern limit for *C. dubius*, although there is a sampling gap between this river and the Rio Ituxí. In this paper we provide additional data on the geographic