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## CALLICEBUS SIGHTINGS IN BOLIVIA, PERU AND ECUADOR

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The recent publication of the taxonomic revision of the genus *Callicebus* (Van Roosmalen *et al.*, 2002) encouraged us to look for three species—*C. dubius*, *C. oenanthe* and *C. medemi*—for which photographs were previously unavailable. Using available maps, drawings and descriptions (Van Roosmalen *et al.*, 2002), a survey was undertaken in October 2002. Three areas were surveyed: the Department of Pando in northern Bolivia, the Río Mayo valley in the province of San Martín in Peru, and the Cuyabeno National Park in the northeastern part of Ecuador.

Titi monkeys are cryptic, diurnal primates known to live in small family groups (Kinzey, 1981; Eisenberg, 1999). Although titis prefer to rest in the dense understory, their presence in the forest can be located by the loud territorial calls made by both the male and female. These duets are

usually given in the morning (Emmons, 1997) between 06:00 and 10:00 in the morning. They often feed and call from higher, more exposed trees (Kinzey, 1981, p. 245) where they can be seen and photographed.

### Methods

At all three locations we walked existing trails at a pace of 1.0 to 1.5 kilometers per hour from 6 to 10 AM unless otherwise noted. A CD player with an amplified external speaker was used to play a recording of *Callicebus* calls from *Sounds of Neotropical Rainforest Mammals* (Emmons *et al.*, 1998). In some cases the playback of titi calls elicited calls from wild *Callicebus* which helped us to locate them. In one instance, the CD allowed us to get a better look at the titi monkey who approached us in order to know from where the call was coming. No density data were taken. Coat color was also noted.

### Bolivia

The Bolivian survey began with a meeting with Rob Wallace from the Wildlife Conservation Society. His surveys and information about Central Bolivia led us to concentrate our survey in the northern Bolivian Department of Pando, and neighboring northern sections of Department of Beni which border Brazil. The specific identity of *Callicebus* in this region is disputed. According to Van Roosmalen *et al.* (2002) this area should be inhabited by *Callicebus dubius*, with the Río Madre de Dios as the boundary between *C. dubius* and *C. modestus*, and with *C. donacophilus* along the south side of the Río Madre de Dios and east of the Río Beni. However, according to Anderson (1997) and Hershkovitz (1990), *C. brunneus* is found in Pando and the endemic Bolivian species *C. modestus* is found further south and east of the Río Beni, in the Department of Beni. Both authors report the range of *C. donacophilus* as starting further south than indicated in Van Roosmalen *et al.* (2002).

Our survey started on October 5 near the city of Cobija, in the lowland rainforest of the Callimico Biological Station run by Leila Porter (11° 25.142' S, 069° 00.144' W, elev. 237 m). Two groups of titis were heard, seen and photographed on two out of the three days. The *Callicebus* at this field site appear to be *Callicebus brunneus*. They had dark foreheads with no white visible, and their limbs, throat and belly were reddish with a grayish-brown back. The tail, however, did not appear to have nearly as much white as depicted in the illustration of *C. brunneus* by Stephen Nash in Van Roosmalen *et al.* (2002). On the individuals we observed, the tail was reddish-brownish with a white tip.

The survey proceeded to search for titis in a forest about 15 kilometers north of the Río Madre de Dios (11° 14.599' S, 067° 11.084' W, elev. 139 m). *Callicebus* were heard by one of our party but not seen. Local informants positively identified it as *C. brunneus*, except that only the tip of the tail was white.

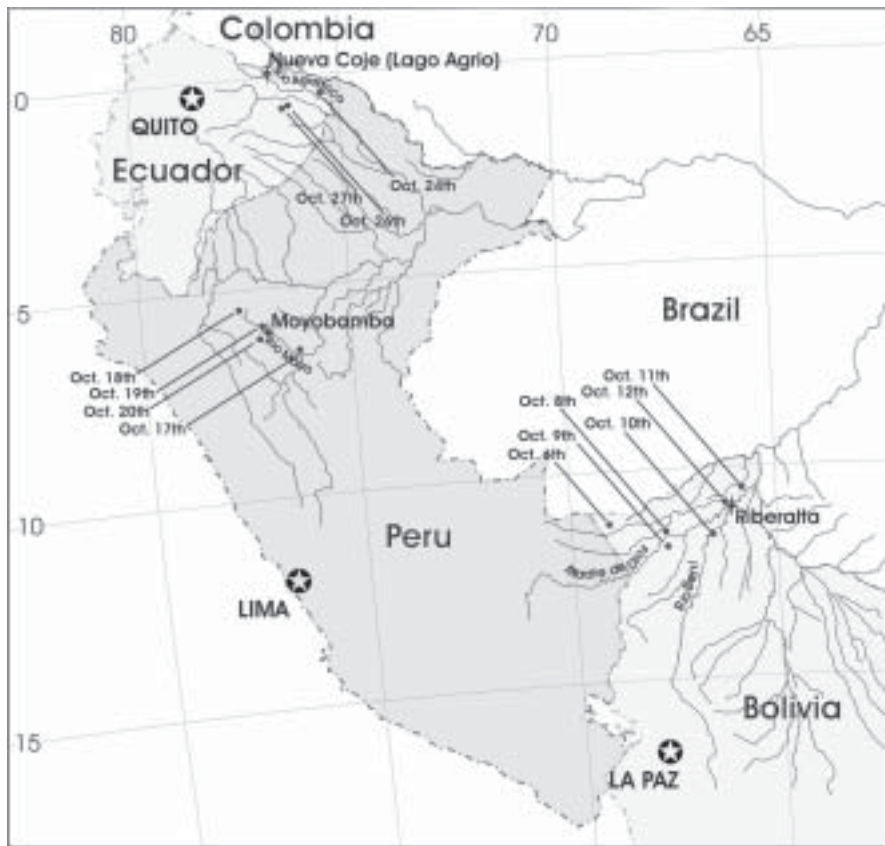


Figure 1. Sites visited in Bolivia, Peru and Ecuador.

Near a village called Suciri ( $11^{\circ} 34.862' S$ ,  $067^{\circ} 08.456' W$ , elev. 145 m), located between the Río Madre de Dios and the Río Beni—where the Van Roosmalen *et al.* (2002) map indicated *C. modestus* should be—we heard, saw, and photographed two titi monkeys which we identified as the same species we had seen at the Callimico Biological Station. Our local guides reported killing and eating a titi two weeks before and identified the titi as *C. brunneus*. Their method of preparing the meat is to burn off the hair over an open fire and boil the monkey whole. After the meat is consumed the bones are given to the dog. Our survey of a forest near the village of Porvenir ( $11^{\circ} 32.542' S$ ,  $066^{\circ} 29.266' W$ , elev. 157 m) on the east side of the Río Beni, in the northern part of the Department of Beni, did not produce any monkey sightings. The local informants did, however, identify the titi they hunt as *C. brunneus*.

From the city of Riberalta we surveyed a forest about 30 kilometers to the east ( $10^{\circ} 46.725' S$ ,  $065^{\circ} 44.338' W$ , elev. 164 m) but found no primates. We then proceeded up the Río Madre de Dios by boat to survey the north side of the river, where there is reported to be less hunting. A group of titis was heard by us and seen and identified as *C. brunneus* by our local guide ( $10^{\circ} 56.783' S$ ,  $066^{\circ} 20.293' W$ , 120 m). Our final survey in Bolivia was in a 100-hectare second-growth forest in the village of Tumichucua ( $11^{\circ} 08.406' S$ ,  $066^{\circ} 09.542' W$ , elev. 113 m), located south of Riberalta on the east side of the Río Beni. This was an afternoon survey and no primates were detected, but our local informant identified the titis there as *C. brunneus*.

Our brief survey results suggest that the Río Madre de Dios is not a boundary for *Callicebus*. *C. brunneus* appears to be distributed north of the Río Madre de Dios, between the Río Madre de Dios and the Río Beni and east of the Río Beni. More surveys will have to be conducted to find the exact distribution of *C. brunneus*, as well as whether *C. dubius* is actually present in Bolivia. Our observations are consistent with what is reported for the distribution of *C. brunneus* by Anderson (1997) and Hershkovitz (1990).

### Peru

Recognized as a full species by Hershkovitz (1990), the Andean titi monkey, *C. oenanthe*, is reported to inhabit the Río Mayo valley in a restricted altitudinal range, between 750 to 950 meters. Our survey started north of the town of Tarapoto in the province of San Martín. At the University of San Martín Biodiversity Center ( $06^{\circ} 27.757' S$ ,  $076^{\circ} 17.389' W$ , elev. 973 m) we were informed that no titis were present in their forest, and it was suggested we go south to a dry forest near the confluence of the Río Mayo and the Río Huallaga. At an elevation of 511 meters ( $06^{\circ} 38.109' S$ ,  $076^{\circ} 22.574' W$ ), we heard titis but did not see them. The local hunters who were our guides contradicted each other about which species was present, so no species was assigned. Hunting pressure was intense at this time of year; within two minutes of our playing the recorded titi call, four dogs and two hunters found us, surprised not to find titis.

We proceeded northwest through a wide cultivated valley to the town of Moyobamba, and met with the staff of the Bosque de Protección de Alto Mayo. Established in 1987, this protected area extends from the town of Rioja north along the border of the provinces of San Martín and Amazonas. Two mornings were spent walking trails (05° 41.608' S, 077° 39.437' W, elev. 1302 m) listening for primates. None were detected. Local farmers who illegally live in the protected area complained about *Cebus albifrons* raiding their crops, but did not report hearing titi monkeys near their farms. This survey began at an altitude of 1080 meters, and so may be above the range of *Callicebus oenanthe*.

We also did not detect any primates at the Reserva del Morro de Calzada (06° 01.272' S, 077° 02.533' W, elev. 1074 m) when we did a short afternoon survey. The guard, however, assured us that titis were present in the small forests which encircle this bare peak.

We then met with Ruben Ruiz Vappes of the faculty of the Moyobamba branch of the University of San Martín. We were invited to stay at the University's 200-hectare field site south of Moyobamba (06° 03.555' S, 076° 56.933' W, elev. 897 m). A student at the University, Magna Consuelo Lopez del Castillo, showed us the field site and participated in a short nocturnal survey. We were unable to find evidence of *Aotus miconax*, the endemic night monkey found in this region, but a local informant said this species is found at higher elevations, along with the yellow-tailed woolly monkey (*Oreonax flavicauda*) (Groves, 2001, p. 195).

We did hear the calls of at least four different groups of *Callicebus*, which we presumed to be *C. oenanthe*, on our last day in the Río Mayo Valley. They were found in small remnant forests at an altitude of 925 meters, in valleys surrounded by cattle pastures. We were able to photograph a captive family of *C. oenanthe*, which were trapped near Rioja and offered for sale for the equivalent of less than \$10.00 US.

### Conservation of Peruvian Titis

Further surveys and conservation actions need to be undertaken soon for the three endemic primates found in

this region of Peru. Slash-and-burn agriculture threatens the forest even on the steep slopes of the Alto Mayo protected area. A new hard-topped, all-weather road linking Tarapoto to Lima is just being completed, and colonists from the highlands are steadily moving into the region. Most of the forest in the Río Mayo valley between 750 and 950 meters, the only known range of *C. oenanthe*, has been cleared for rice cultivation in the last 20 to 30 years.

### Ecuador

The map included in Van Roosmalen *et al.* (2002, p. 31) indicates the range of *C. medemi* to be between the Río Caquetá in Colombia and the Río Aguarico in Ecuador. We made arrangements to visit the village of Sabalo, which is a one-hour car ride and subsequent five-hour boat trip down the river from Nueva Loja (Lago Agria). The village is inhabited by the indigenous Cofán people and is part of the Cuyabeno National Park. Local informants were positive that the titi on the south side of the Río Aguarico was *C. discolor*. Later in the trip we visited Yasuní National Park (00° 41.670' S, 076° 27.736' W, elev. 248 m) south of the Río Aguarico, and heard, saw, and photographed *C. discolor*. The titi on the north bank was said not to have the black front feet of *C. medemi*. We heard, saw and photographed one pair of titis in three days of surveying (00° 21.087' S, 075° 40.110' W, 202 m). These titis were first thought to be *C. lugens* (dark all over with a white collar and white hands), but the photographs later proved that they were reddish-brown in color and had the yellow/gold hands of *C. lucifer*. The range of *C. lucifer* must thus extend further west than described by Van Roosmalen *et al.* (2002), and the corresponding range of *C. medemi* is perhaps limited by the Río Putamayo, which forms the border of Colombia and Ecuador. This range would be consistent with Hershkovitz (1990, Fig. 44) and Groves (2001, p. 177).

### Conservation

In all the forests we surveyed, hunting for food and pets was a major threat to primates. Though no systematic data were collected, the general impression we received from interviews was that hunting was mainly for subsistence for meat, and not for the commercial market. We did,



Figure 2. *Callicebus lucifer*, found on the north side of the Río Aguarico in Ecuador.



Figure 3. *Callicebus oenanthe*, found on the west side of the Río Mayo near Moyobamba, Peru.

however, find a commercial trade in pets in Bolivia and Peru. We observed many young primates in captivity in all three countries. The following is a list of the species kept in captivity by individuals: saddle-back tamarin (*Saguinus fuscicollis*), red-bellied tamarin (*S. labiatus*), Spix's black-mantled tamarin (*S. nigricollis*), Andean titi monkey (*Callicebus oenanthe*), squirrel monkey (*Saimiri* sp.), white-fronted capuchin (*Cebus albifrons*), brown capuchin (*Cebus apella*), red howler (*Alouatta sara*), woolly monkey (*Lagothrix lagothricha*), Peruvian spider monkey (*Ateles chamek*) and white-bellied spider monkey (*Ateles belzebuth*). Most were kept in appallingly small cages or tied at the waist on a short leash. Young tapirs were also kept as pets, as were many species of birds, especially parrots and macaws.

The hunting pressure for meat and pets appears to be high in all three countries. No primates bigger than titis were seen in our surveys except at field sites where primatologists were studying and protecting them. More conservation education is needed in all three countries. In Peru, people only had one name for "monkey" and did not discriminate between species, nor realize that some were endemic to their region.

In the lowlands of Bolivia there is still extensive forest, except along the roads. But Brazil nut extractors have cut trails throughout the forest and many hunters are now using this trail system. This may be preferable, however, to colonists who slash and burn the forest to grow crops and cattle.

The lowland region of Ecuador has a great deal of protected forest on the map. However, the indigenous inhabitants are allowed to hunt all they want in these forests, and many have newly acquired shotguns. Some of these forests also have oil reserves under them, and there is a great deal of pressure to extract this oil whether it lies in a protected area or not. The oil companies build roads which will later be used by colonists, and the forest will inevitably disappear as a result.

## Conclusion

This survey for titi monkeys found that the distributions in northern Bolivia and northern Ecuador are not consistent with the distributions described by Van Roosmalen *et al.* (2002). Rather, our observations are consistent with what is reported for the distribution of *C. brunneus* by Anderson (1997) and Hershkovitz (1990) in Bolivia. In Ecuador we found *C. lucifer*, not *C. medemi*, which is consistent with Hershkovitz (1990, Fig. 44) and Groves (2001, p. 177). More surveys are needed in these regions to determine the exact distributions of *Callicebus*. The distribution of *C. oenanthe* in Peru was consistent with Van Roosmalen *et al.* (2002).

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## SOCIAL SPACING IN A BACHELOR GROUP OF CAPTIVE WOOLLY MONKEYS (*LAGOTHRIX LAGOTRICHIA*)

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### Introduction

In the wild, woolly monkeys (*Lagothrix lagothricha*) form social groups with several adult males and females. Recent evidence (Nishimura, 1999) has indicated that males stay in the natal group and females emigrate. This suggests that in the formation of natural groups adult males are tolerant of each other, having a common developmental experience, long periods of familiarity, and the possibility of shared kinship. Nishimura (1994, 1997) reported that even though these males have had much in common and many years together, it is extremely rare for them to form feeding aggregates that are exclusively male.

Stevenson (1998) also found that close association among adult males is rare. He studied spacing in a different group of woolly monkeys in Tinigua National Park in Colombia, in the same region as Nishimura. In Stevenson's study, adult males were never observed within 2 m of each other. Of all age/sex categories, adult males and subadult females were most often at distances greater than 5 m from the other animals. The subadult females were likely to move between groups, and this distance may be a precursor to emigration, but the adult males appeared to be stable members of the group. Stevenson reported that adult males were the most