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### PREDATION ATTEMPT ON A ROAD-KILLED BROWN-EARED WOOLLY OPOSSUM (*CALUROMYS LANATUS*) BY A BLACK-HORNED CAPUCHIN (*SAPAJUS NIGRITUS*)

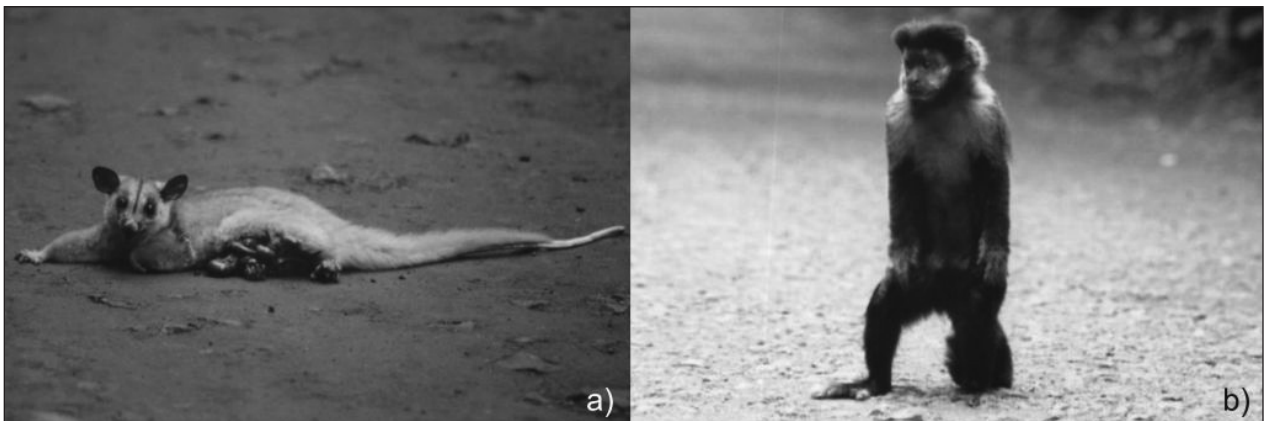
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Hunting and scavenging of vertebrates by nonhuman primates has been recorded widely across the world (Butynski, 1982). Researchers have observed predation of small amphibians, reptiles, birds and mammals by several different primate species (Boinski and Timm, 1985; Wrangham and Riss, 1990; Heymann et al., 2000; Poulsen and Clark, 2001; Begotti and Landesmann 2008; Silva et al., 2008). However, capuchins, chimpanzees and baboons are the only non-human primates known to prey systematically upon relatively large vertebrates (Rose, 1997). Capuchin monkeys have consumed a variety of vertebrate prey such as frogs (Izawa, 1978); lizards, birds, bats (Fedigan, 1990; Rose, 1997; Rose et al., 2003); opossums (*Didelphis* sp.), rats (*Rattus rattus*) (Resende et al., 2003); mice (*Rhipidomys* sp.) (Milano and Monteiro-Filho, 2009); squirrels (*Sciurus aestuans*, *S. variegatoides*) (Galletti, 1990; Cunha et al., 2006); coati pups (*Nasua narica*) (Newcomer and Fancy, 1985; Fedigan, 1990; Perry and Rose, 1994; Rose et al., 2003); anteater juveniles (*Tamandua mexicana*) (Rose et al., 2003); and even other primates, such as titi monkeys, *Callicebus moloch* (Sampaio and Ferrari, 2005), and owl

monkeys, *Aotus brumbacki* (Carretero-Pinzon et al., 2008). Here we describe an opportunistic attack attempt on a road-killed brown-eared woolly opossum (*Caluromys lanatus*) by a black-horned capuchin monkey (*Sapajus nigritus*) during a fortuitous encounter in a disturbed fragment in the Brazilian Atlantic Forest.

On November, 30<sup>th</sup>, 2003, at around 1000 h, we collected *ad libitum* data on a black-horned capuchin attacking a brown-eared woolly opossum that had been hit by a car, in the Ecological Station of Ribeirão Preto, Mata Santa Tereza (21°12'57" S; 47°50'52" W), a semi-urban area of 154.16 ha in Ribeirão Preto, in the northeast of São Paulo state, Brazil. Mata Santa Tereza is an isolated forest fragment and has a large population of these capuchin monkeys (Amaral et al., 2005). Although the group has been well studied (Siemers, 2000; Amaral et al., 2005; Machado et al., 2012), this is the first report of this particular behavior. The brown-eared woolly opossum was still alive on the ground, with its organs exposed (Fig. 1a), when an adult male black-horned capuchin monkey, that was standing on the ground (Fig. 1b), approached the fatally injured woolly opossum and started to attack the animal viscera while the rest of the capuchin group watched at the edge of the road. There was high traffic volume on the road that day, and the predation attempt was interrupted by the approach of a car, which caused the capuchin to run away towards the forest adjacent to the road.

Perhaps, Mata Santa Tereza does not have enough feeding resources to support this large monkey population and food shortage is a common situation faced by the group. It may also be important that, especially on weekends and holidays, local people feed these capuchins a variety of foods such as bananas, eggs, peanuts, bread and other snacks. In most cases, individuals descend to the ground to get the food from the visitors' hands. So, these monkeys may have learned to patrol the road for people's food and also are aware of other opportunities such as road-killed animals, which could serve as alternative food source available in this area. Siemers (2000) observed that the capuchins of



**Figure 1.** (a) Road-killed Brown-eared woolly opossum (*Caluromys lanatus*) and (b) Black-horned capuchin (*Sapajus nigritus*) in the Ecological Station of Ribeirão Preto, northeastern of São Paulo state, Brazil (Photos: Camila Camara Pianca).

Mata Santa Tereza remained on the forest floor and did not flee to higher strata when humans passed. They often foraged for food voluntarily or accidentally dropped by humans on the ground. Also, the monkeys predominantly traveled in low forest strata and spent more time close to the ground than in the canopy.

In general, predation of mammals or other vertebrates by monkeys is usually performed during a period of food shortage or through intraspecific social learning (Resende et al., 2004). Apparently, seasonality is not an important factor in the occurrence of vertebrate predation by capuchins. Different surveys on predation by capuchins have been recorded during the dry season which is also the birthing season of most prey species (Fedigan, 1990), but also in the wet season (Rose, 1997) or even with the same frequency in dry and wet seasons (Ferreira et al., 2002). Apparently, there is a sex difference in frequency of predation by capuchins, since adult males tend to catch more prey than females (Fedigan, 1990; Rose, 1997; Ferreira et al., 2002). In addition, capuchins tend to select prey items by size and age; for example, they preferentially search for infants or juveniles of large mammals, such as for coatis, anteaters and other primates (Rose, 1997; Rose et al., 2003; Sampaio and Ferrari, 2005). However, injured or killed animals could be consumed opportunistically by capuchins regardless of their age or size (Carretero-Pinzón et al., 2008). Therefore, further detailed surveys are needed to determine the conditions under which predation of large mammals by capuchin monkeys can occur.

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## PARASITOS GASTROINTESTINALES EN EL MONO CHORO COLA AMARILLA (*OREONAX FLAVICAUDA*) Y EL MONO NOCTURNO ANDINO (*AOTUS MICONAX*) EN AMAZONAS, PERU

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### Introducción

El parasitismo es un fenómeno ecológico de asociación simbiótica donde solo uno de los organismos de dicha asociación se beneficia y el otro la tolera (Campillo, 1999). Existe así una estrecha relación entre el parásito y el huésped la cual actúa como una fuerza para la selección natural, afectando por ende los patrones de densidad y la distribución de las especies (Stoner et al, 2005; Gillespie et al, 2005). Dentro de los factores que influyen en el parasitismo de los primates están la densidad poblacional, factores climáticos, comportamientos, factores reproductivos y, lo más importante, su dieta y la fragmentación del hábitat (Scott, 1988; Serrano, 1998; Stoner et al, 2005).

En el bosque de El Toro se puede observar la presencia humana y de animales domésticos por algunas zonas ya

que se ha iniciado la fragmentación del bosque, y esto influye en el aumento de la carga parasitaria. El mono choro cola amarilla (*Oreonax flavicauda*) es endémico del Perú (Macedo Ruiz y Mittermeier, 1979; Leo Luna, 1987), habita los bosques nublados de la vertiente nororiental de los Andes a una altitud de 1,500 – 2,700 msnm, encontrándolos en los departamentos de Amazonas y San Martín (Leo Luna, 1980; Shanee, 2011) así como en pequeñas áreas de las regiones de Huánuco y La Libertad (Shanee, 2011; Graves y O'Neil, 1976). El mono nocturno Andino (*Aotus miconax*) también es endémico del Perú y comparte mucha de su distribución con el mono choro cola amarilla (Shanee, 2011). Su extensión es un tanto más amplia latitudinalmente, hasta los 3,000 msnm., y llega más al sur en el departamento de Huánuco. Su distribución actual no es del todo conocida y falta muchos datos para evaluar su estado de conservación.

El hábitat de ambas especies se caracteriza por ser zonas de empinados desfiladeros y barrancos. La extensión original del hábitat de *Oreonax flavicauda* se estima en alrededor de 11,000 km<sup>2</sup> (Leo Luna, 1982). Estudios actuales reportan que el hábitat de esta especie ha decrecido quedando entre 6,000 y 7,000 km<sup>2</sup> (Buckingham y Shanee, 2009). *Oreonax flavicauda* se encuentra reportado por la UICN como especie en peligro crítico de extinción (lista Roja A4c). *Aotus miconax* se encuentra en UICN como especie vulnerable a la extinción (Lista Roja A2c). En La Esperanza ambos especies están presentes en varios tipos de hábitat y niveles de disturbio antropogénico. Las densidades poblacionales de las especies son medio altas y se encuentran fácilmente (Shanee y Shanee, 2011; en prensa). El objetivo de la presente investigación fue determinar la presencia de parásitos en estas especies endémicas de primates, ya que éste puede ser uno de los factores que pone en riesgo el bienestar de sus poblaciones.

### Materiales y métodos

#### Area de estudio

El presente estudio se realizó en La Esperanza, un pueblo situado en la comunidad campesina Yambrasbamba, Provincia de Bongará, Región Amazonas, Perú. Las muestras se tomaron en un bosque primario localmente llamado El Toro. La temperatura media en el área es de entre 15 y 25 °C, con precipitación fuerte durante todo el año con una pequeña sequía entre Mayo y Setiembre. El bosque primario está a una altitud de 1,920 msnm Esta área se forma al extremo sur de un bosque continuo hasta el Río Marañón en el Norte (~115 km).

#### Recolección de muestras y procesamiento

Durante los meses de Marzo y Mayo del 2011 se recolectó un total de 33 muestras de heces procedentes de *Oreonax flavicauda* y *Aotus miconax*. Las muestras se tomaron mediante una técnica no invasiva que consistió en la recolección manual de estas inmediatamente después de la defecación, la cual se realizó con mayor frecuencia después de los