northern muriquis (*Brachyteles hypoxanthus*). *Neotrop. Primates* 15 (2): 40–45.

Nakai, É. S. 2007. Fissão-fusão em *Cebus nigritus*: Flexibilidade social como estratégia de ocupação de ambientes limitantes. MSc thesis. Instituto de Psicologia. Universidade de São Paulo, São Paulo.

O'Malley, R. C. and Fedigan, L. 2005. Variability in food-processing behavior among white-faced capuchins (*Cebus capucinus*) in Santa Rosa National Park, Costa Rica. *Am. J. Phys. Anthropol.* 128: 63–73.

Panger, M. A.; Perry, S.; Rose, L.; Gros-Louis, J.; Vogel, E.; Mackinnon, K. C. and Baker, M. 2002. Cross-site differences in foraging behavior of white- faced capuchins (*Cebus capucinus*). *Am. J. Phys. Anthropol.* 119:52–66.

Peres, C. A. 1994. Primates responses to phenological changes in an Amazonian Terra Firme Forest. *Biotropica* 26 (1): 98–112.

Peres, C. A. 1993. Notes on the ecology of buffy saki monkeys *(Pithecia albicans,* Gray 1860): A canopy seed-predator. *Am. J. Primatol.* 31:129–140.

Pizo, M. A. and Vieira, E. M. 2004. Palm harvesting affects seed predation of *Euterpe edulis*, a threatened palm of the Brazilian Atlantic Forest. *Braz. J. Biol.* 64(3B): 669–676.

Portela, R. C. Q. 2008. Ecologia populacional de três espécies de palmeiras em uma paisagem fragmentada no domínio Mata Atlântica, RJ. Doctoral thesis. Universidade Estadual de Campinas, Campinas.

Portela, R. C. Q., Bruna, E. M. and Santos, F. A. M. 2010. Demography of palm species in Brazil's Atlantic forest: a comparison of harvested and unharvested species using matrix models. *Biodivers. Conserv.* 19: 2389–2403.

Rocha, V. J. 2000. Macaco-prego, como controlar esta nova praga florestal? *Floresta* 30 (1/2): 95–99.

Rocha, V. J., Reis, N. R. and Sekiama, M. L. 1998. Uso de ferramentas por *Cebus apella* (Linnaeus) (Primates, Cebidae) para obtenção de larvas de Coleoptera que parasitam sementes de *Syagrus romanzoffianum* (Cham.) Glassm. (Arecaceae). *Rev. Bras. Zool.* 15 (4): 945–950.

Rose, L. M. 1997. Vertebrate predation and food-sharing in *Cebus* and *Pan*. *Int. J. Primatol.* 18 (5): 727–765.

Russo, S. E. and Augspurger, C. K. 2004. Aggregated seed dispersal by spider monkeys limits recruitment to clumped patterns in *Virola calophylla*. *Ecol. Lett.* 7: 1058–1067.

Santos, C. V., Morais Jr, M. M., Oliveira, M. M., Mikich, S. B., Ruiz-Miranda, C. R. and Moore, K. P. da L. 2007. Ecologia, comportamento e manejo de primatas invasores e populações-problema. In: *A Primatologia no Brasil.* Bicca-Marques, J. (Ed.), Vol. 10, Sociedade de Brasileira Primatologia, Porto Alegre. Pp. 101–108.

Souza, A. F. and Martins, F. R. 2006. Demography of the clonal palm *Geonoma brevispatha* in a Neotropical swamp. *Austral Ecol.*, 31: 869–881.

Silman, M. R., Terborgh, J. W. and Kiltie R. A. 2003. Population regulation of a dominant rain forest tree by a major seed predator. *Ecology* 84 (2): 431–438.

Susan, P. and Rose, L. 1994. Begging and transfer of coati meat by white-faced capuchin monkeys, *Cebus capucinus. Primates* 35(4): 409–415.

Taira, J. T. 2007. Consumo de palmito-juçara (*Euterpe edulis* Mart.) por macacos-pregos (*Cebus nigritus*): Estratégia de forrageamento ótimo ou requinte de um goumert? MSc Thesis. Instituto de Psicologia. Universidade de São Paulo, São Paulo.

Vilanova, R., Silva Júnior, J. S., Grelle, C. E. V., Marroig, G. and Cerqueira, R. 2005. Limites climáticos e vegetacionais das distribuições de C*ebus nigritus* e *Cebus robustus* (Cebinae, Platyrrhini). *Neotrop. Primates* 13 (1): 14–19.

Wyatt, J. L. and Silman, M. R. 2004. Distance-dependence in two Amazonian palms: effects of spatial and temporal variation in seed predator communities. *Oecologia* 140: 26–35.

NOTEWORTHY RECORD OF A BLACK HOWLER MONKEY (*ALOUATTA CARAYA*) FROM THE CENTRAL DRY CHACO OF PARAGUAY

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Howler monkeys (*Alouatta*) comprise a diverse genus of neotropical primates that range from southern Mexico (*A. palliata*, *A. pigra*) to northern Argentina and southeastern Brazil (*A. guariba*, *A. caraya*) (Cortés-Ortiz *et al.*, 2003). Howler monkeys are the most folivorous of the Neotropical primates (Terborgh, 1983), and thus must forage for long periods to meet their high energetic demands. The southernmost distributed of the howler species, the South American black howler (*A. caraya*) has been reported to occur at the highest densities (Zunino and Rumiz, 1986; Bicca-Marques, 1990; Rumiz, 1990; Crockett, 1998). Considered principally an inhabitant of tropical lowland deciduous and semideciduous forests, black howlers are also known to frequent the gallery forests of the Rio Paraguay and Rio Paraná, as well as the seasonally inundated Pantanal in Brazil (Redford and Eisenberg, 1992; Crockett, 1998).

In Paraguay, black howlers are mostly associated with inland Atlantic forest fragments in the east and gallery forests of high rainfall in the Chaco (Stallings, 1985; Crockett, 1998). However, they have not been reported from the more xeric regions of the Chaco Boreal far from a major drainage system. Stallings and Mittermeier (1983: 161) found that *A. caraya* was "recorded from the higher forest [of the Chaco Boreal] but seemed to be rare in the region." However, they made no specific reference to geographic location, as howlers were not the primary subject of their discussion. Furthermore, they did not reference the time of year their primate observations were made. In conducting primate transects at Chaco Defensores National Park, Stallings *et al.* (1989) failed to record an observation of

A. caraya during the austral winter. Neither of these claims is surprising given that xeric regions of deciduous and semideciduous scrub forest likely act as barriers to the seasonal movements of a species that depends entirely on a low-quality, leafy forage. This is particularly true during the austral winter, when most such deciduous trees are devoid of leaves.

Here we describe an encounter with a solitary adult male black howler monkey of unknown age in the north-central Chaco of Paraguay. The encounter took place on a cool, overcast morning between 10:00 and 11:00 hours on 7 August, 2007. The solitary male was observed on private property approximately 130 km south of Chaco Defensores National Park (21° 41.176 South, 060° 09.234 West). The property is approximately 45,000 ha in expanse, >80% of which contains natural vegetation. In contrast, the majority of the surrounding properties have converted most of the natural vegetation into rangeland for livestock, and there is little opportunity for far-reaching habitat connectivity.

The howler was at the top of a short canopy tree (< 12–15 m) completely devoid of foliage. The tree was at the edge of a new clearing that had been opened up to create a cattle pasture and was isolated from other neighboring trees (i.e., the only access into the tree would have been from the base). We were able to observe it unobstructed, aided by binoculars, for approximately 20 minutes, while standing <2–3 meters from the trunk. During this time, the animal appeared completely undisturbed, and made no attempt to flee. On the contrary, it appeared indifferent to our presence and more concerned with that morning's cold temperature as it huddled over its extremities and moved very little. This observation occurred before the onset of a prolonged drought in the Paraguayan Chaco, and at the time when few trees were bearing leaves. Furthermore, the property owner, who observed the animal as well and had owned and managed the property for more than 20 years at the time of the observation, had never before seen the species on his property or anywhere else in the north-central Chaco. It was unclear where the animal had come from and what was sustaining it. We left to pursue other unrelated activities and returned less than 1 hour later to find the monkey gone, with no evidence as to where it had gone to. A subsequent, albeit anecdotal, inquiry among landowners found few to be familiar with this species. It would not be unreasonable to conclude that this male did not exist in isolation amidst such a sizeable region in the dry Chaco. Horwich (1998) remarked on the general adaptability of all *Alouatta* species, and we agree that *A. caraya* must be particularly adaptable to persist in such an ecosystem during a time of year when its limiting resources must be considered very scarce at best.

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References

Bicca-Marques, J. C. 1990. A new southern limit for the distribution of *Alouatta caraya* in Rio Grande do Sul State, Brazil. *Primates* 31: 449–451.

Cortés-Ortiz, L., Bermingham, E., Rico, C. , Rodriguez, L. E., Sampaio, I. and Ruiz-Garcia, M. 2003. Molecular systematic and biogeography of the neotropical monkey genus, *Alouatta*. *Molec. Phylogenet. Evol*. 26: 64–81.

Crockett, C. M. 1998. Conservation biology of the genus *Alouatta*. *Int. J. Primatol*. 19: 549–578.

Horwich, R. F. 1998. Effective solutions to howler conservation. *Int. J. Primatol*. 19: 579–598.

Redford, K. H. and Eisenberg, J. F. 1992. *Mammals of the Neotropics, Volume 2: The Southern Cone*. University of Chicago Press, Chicago.

Rumiz, D. I. 1990. *Alouatta caraya*: Population density and demography in northern Argentina. *Am. J. Primatol*. 21: 279–294.

Stallings, J. R. 1985. Distribution and status of primates in Paraguay. *Primate Conserv.* (6): 51–58.

Stallings, J. R. 1989. Primates and their relation to habitat in the Paraguayan Chaco. In: *Advances in Neotropical Mammalogy*, K. H. Redford and J. F. Eisenberg (eds.), pp.425–442. The Sandhill Crane Press, Gainesville, FL.

Stallings, J. R. and Mittermeier, R. A. 1983. The black-tailed marmoset (*Callithrix argentata melanura*) recorded from Paraguay. *Am. J. Primatol*. 4: 159–163.

Terborgh, J. 1983. *Five New World Primates: A Study in Comparative Ecology*. Princeton University Press, Princeton, NJ.

Thorington, R. W., Jr., Ruiz, J. C. and Eisenberg, J. F. 1984. A study of a black howling monkey (*Alouatta caraya*) population in northern Argentina. *Am. J. Primatol*. 6: 357–368.

Zunino, G. E., and Rumiz, D. I. 1986. Observaciones sobre el comportamiento territorial del mono aullador negro (*A. caraya*). *Bol. Primatol. Argentino* 4: 36–52.

PRELIMINARY OBSERVATIONS OF NAPO TAMARINS (*SAGUINUS GRAELLSI*) AND NOTES ON PRIMATES OF WILDSUMACO WILDLIFE SANCTUARY

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Wildsumaco Wildlife Sanctuary is a new reserve located on the eastern slopes of the Andes in Ecuador (400 hectares; 1400 m elevation; S 00° 40.28' W 77° 35.91'). The reserve consists of primary and secondary forest in a matrix of agricultural land. A top priority for the sanctuary and the affiliated Rio Pucuno Foundation is to conserve the remaining forest and biodiversity of the area. Research to date has focused on birds and mammals, especially carnivores. Primate surveys were conducted for 20 days and 3 nights from July 9–31, 2010. The Napo Tamarin (*Saguinus graellsi*) was