PRELIMINARY OBSERVATIONS ON THE SONGO SONGO (DUSKY TITI MONKEY, *CALLICEBUS MOLOCH*) OF NORTHEASTERN ECUADOR

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A recent article on the distribution, and the taxonomic and conservation status of New World primates (Rylands *et al.*, 1995) presented a table listing the primate fauna of Ecuador. According to these authors, only one species of titi monkey is present in Ecuadorian Amazonia: *Callicebus cupreus discolor*. However, Albuja's (1991) inventory of the mammals of Ecuador reported the presence of two *Callicebus* species. *C. moloch*, the dusky titi monkey or songo songo and *C. torquatus*, the yellow-handed titi monkey or cotoncillo. According to Ulloa (1988) and de la Torre *et al.* (1995) the latter species is found in the Cuyabeno Faunal Production Reserve, situated in the northeastern part of Ecuador, north of Río Aguarico, near the Colombian border. *C. moloch*, on the other hand, inhabits the area south of Río Napo, and is found in the Yasuní National Park, in northeastern Ecuador, near the Peruvian border. In this report, we present some preliminary data on *C. moloch* in the Yasuní National Park , Ecuador.

Dusky titis at Yasuní are found in both flooded gallery forest, as well as lowland *terra firma* forests. The preliminary observations we present here come from a site (00°42'01" S, 76°28'05" W) situated at km 47 of the Pompeya Sur-Iro road of Maxus Ecuador Inc., within the park. It is a 350 ha site of undisturbed *terra firma* lowland hilly forest, a research site found and established by Drs. A. DiFiore and P.S. Rodman of the University of California at Davis. All observations are based on first sightings: habitat, behavior, height where the animal was seen, and group size and sex-age class identification when possible. The animals were followed for as long as possible in order to obtain positional (20-second intervals) and feeding data. The total number of encounters was 24 from December 1995 until September 1996.

Dusky titis were found primarily in liana forest, high forest, and treefall edges (33.3%, 20.8%, 20.8%, respectively). In 62.5% of the encounters, the animals were found below 10m. In Peru, *C. torquatus* used preferably the *varillal alto seco* more or less corresponding to Yasuní's high forest, where it used forest layers between 15m and 25m (Kinzey, 1977). The majority of encounters (90%) involved only two groups of three and four individuals respectively. The first group was composed of an adult male, adult female and a juvenile of unidentified sex. The second group included an adult male, an adult female, a subadult male, and a juvenile of unidentified sex. This is in agreement with previous findings where *Callicebus* live in monogamous, highly territorial groups along with their offspring (Mason, 1968).

Locomotion when traveling was dominated by quadrupedal walking and bounding (54%, n= 325 instants). Clambering across multiple supports and leaping between small supports in the tree crown peripheries were equally represented (18%). Leaping from and to single vertical supports was rare. Kinzey (1977) also found that quadrupedalism and leaping between terminal branches were the two most frequently used locomotor modes for *C. torquatus*.

Dusky titis appear to be predominantly herbivorous, feeding equally on ripe fruit and young leaves (43% and 39% respectively, n = 23 feeding bouts). Foraging for fruit occurred mostly on the terminal branches of trees varying in height between 10m and 23m. Frequent postures for the acquisition and processing of those fruits were sitting and quadrupedal standing. The young leaves consumed belonged to understorey lianas, acquired by vertical clinging, and seated postures. Terborgh (1983) suggested for titis that, since liana leaves show a continuous growth in contrast with tree leaves, these animals would prefer them as temporary ubiquitous protein sources to supplement their diet.

The dusky titis were found to forage for insects in 13% (of 23 feeding bouts recorded). Kinzey and Gentry (1979) and Terborgh (1983) who studied the same species in different sites in Peru reported similar diets but with very low percentages of insectivory. We believe that the high percentage of insectivory in Yasuní is primarily due to the small feeding bout sample. However, more investigation is required, since *C. torquatus*, which seems to prefer poor soil habitats, supplements its frugivorous diet with arthropods rather than leaves. Apparently arthropods seem to be abundant and to retain stable populations in such habitats, and therefore comprise a year-round protein source for titis (Kinzey and Gentry, 1979). The Yasuní National Park is reported to have soils which are even poorer than the normally nutrient limited tropical soils (Foster, undated). They are grayish brown rather than the common lateritic type of most tropical lowlands, and have a low pH, and a high concentration of aluminium (J. Torres, pers. comm.). This might be related to the relatively high percentage of insectivory in *C. moloch* in our observations, than in habitats with much richer soils of brown clayey latosol (Kinzey and Gentry, 1979).

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References

Albuja V., L. 1991. Mamíferos. *Politécnica* 16(3): 163-203.

Foster, R. B. Undated. Vegetation of the proposed Yasuní National Park, Ecuador. Unpublished report. Smithsonian Tropical Research Institute, Bilbao.

Kinzey, W. G. 1977. Positional behavior and ecology in *Callicebus torquatus*. *Ybk. Phys. Anthropol.* 20: 468-480.

Kinzey, W. G. and Gentry, A. H. 1979. Habitat utilization in two species of *Callicebus*. In: *Primate Ecology: Problem-Oriented Field Studies*, R. W. Sussman (ed.), pp. 89-100. John Wiley and Sons, New York.

Mason, W. A. 1968. Use of space by *Callicebus* groups. In: *Primates: Studies in Adaptation and Variability*, P. C. Jay (ed.), pp.200-216. Holt, Rinehart and Winston, New York.

Rylands, A. B., Mittermeier, R. A. and Rodríguez-Luna, E. 1995. A species list for the New World primates (Platyrrhini): Distribution by country, endemism, and conservation status according to the Mace-Lande system. *Neotropical Primates*, 3(suppl.): 113-160.

De la Torre, S., Campos, F., and de Vries, T. 1995. Home range and birth seasonality of *Saguinus nigricollis graellsi* in Ecuadorean Amazonia. *Am. J. Primatol.* 37: 39-56.

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

Ulloa, R. 1988. Estudio Sinecológico de Primates en la Reserva de Producción Faunistica Cuyabeno, Amazonia Ecuatoriana. Tesis de Licenciatura, Pontificia Universidad Católica del Ecuador, Quito.

Predatory Behaviour by a Red Howler Monkey (*Alouatta seniculus*) on Green Iguanas (*Iguana iguana*)

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We report here on our observations of the predatory behavior of a red howler, free-ranging on a 56-ha forested island (4°53'N, 52°10'W), the Ilet-La-Mère, offshore from Cayenne, French Guiana. The island vegetation can be characterized as an old secondary forest with dominance of *Spondias mombin* (Anacardiaceae), *Astrocaryum vulgare* and *Desmoncus orthacanthos* (Arecaceae), *Cecropia obtusa* (Cecropiaceae), *Gustavia augusta* (Lecythidaceae), *Guarea guidonia* (Meliaceae), *Inga nuda* (Mimosaceae), *Virola sebifera* (Myristicaceae), *Alibertia edulis* (Rubiaceae) and *Pouteria guianensis* (Sapotaceae) (M. Nugent, unpubl. data). The Pasteur Institute of French Guiana was established there 15 years ago as a squirrel monkey (*Saimiri sciureus*) breeding colony for use in malaria research programs (de Thoisy and Contamin, 1998). One hundred and twenty squirrel monkeys are held in captivity and approximately 180 are free-ranging, released as from end of the 1970's. A single male red howler monkey is also present on the island (no howlers occur there otherwise). Unfortunately, there is little information about the history of this howler. Its mother was killed by hunters and it was hand-reared and was released on the island in the early 1980's when presumed already adult (C. Roussilhon, pers. comm.). It is today free-ranging, completely independent and apparently healthy.

Predatory behaviour on green iguanas by this male howler has been recorded opportunistically on 12 occasions between 1991 and 1997. Ten of these events occurred at the end of the dry season (October to December). The howler would hunt the iguanas along large branches of old mango trees present in a small part of the island where the howler is often found. On two occasions the prey was pursued on the ground. As a rule the howler would spot the iguana motionless in the sunlight, move slowly forward, and then suddenly rush upon its prey. In nine of the 12 attacks, the howler failed. Twice, however, it succeeded in catching young individuals (body length approx. 25 cm), and then proceeded to eat the hind legs and the base of the tail, without killing them first. On another occasion, the howler caught an adult (body length approx. 40 cm) by the tail that then broke; the iguana escaped and the howler ate the part of the tail remaining in its hands.

Insectivory is not rare among cebids, and predation of vertebrates has been recorded in *Cebus* spp. and *Saimiri* spp. (for example, Newcomer and de Farcy, 1985; Boinski and Timm, 1986; Clarke, 1987; Fedigan, 1990; Galetti, 1990; Souza *et al.*, 1997; pers. obs.). Howlers on the other hand, are considered to be strictly folivorous-frugivorous by all authors (Crockett and Eisenberg, 1987; Neville *et al.*, 1988; Julliot and Sabatier, 1993). None of the numerous long-term studies on *Alouatta* species have described predatory behaviours, except nestling predation by a juvenile *Alouatta palliata* observed by Sue Boinski (pers. comm.). Insect fragments can be regularly found in feces (pers. obs), but may be an accidental consumption when eating fruits, leaves or flowers (Dunn, 1970).

Hypotheses to account for this exceptional hunting of lizards are speculative indeed. The capture of vertebrates appears to be largely opportunistic in most of the Cebidae (Clarke, 1987). This hunting activity could be a play behaviour, and may be initiated by the proximity of the free-ranging squirrel monkeys that regularly pursue small-sized lizards (pers. obs.). A penchant for the taste of meat, possibly acquired during its time in captivity, may have induced these repeated acts. Finally, the hunting and consumption of the iguanas could be adaptive behaviour arising from the need for