

A foraging association between the olivaceous woodcreeper *Sittasomus griseicapillus* and black lion tamarin *Leontopithecus chrysopygus* in southeastern Brazil

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The association reported here was observed during an ecological study of black lion tamarin carried out at Caetetus Ecological Station, SP, in southeastern Brazil. At the study site a bird, the olivaceous woodcreeper was frequently seen following a black lion tamarin group. This association was observed only when *L. chrysopygus* showed foraging behavior. During this activity the monkeys spread several insects, that were gathered in flight by the olivaceous woodcreeper. This association seems to be a case of commensalism. The olivaceous woodcreeper seems to present an opportunistic behavior benefitting from the black lion tamarin's foraging activity to obtain more food.

A associação aqui relatada foi observada durante um estudo ecológico do mico-leão preto realizado na Estação Ecológica dos Caetetus, SP, no sudeste do Brasil. No local de estudo uma ave, o arapaçu verde, foi frequentemente obser-

vada seguindo um grupo de micos-leões pretos. Esta associação foi observada somente quando o mico-leão preto realizava o comportamento de forragear. Durante esta atividade os macacos espantavam vários insetos, que eram agarrados

em voo pelo arapaçu verde. Esta associação parece ser um caso de comensalismo. O arapaçu verde apresenta um comportamento oportunista beneficiando-se da atividade de forragear do mico-leão preto para obter mais alimento.

Birds of the family Dendrocolaptidae (woodcreepers) typically forage probing tree trunks. Some members of this family often associate with army ants, preying on spread arthropods (1,2), a behavioral pattern also found in several other bird families. An association between marmosets and army ants was reported in Brazil (3) and considered an opportunistic behavior.

Another analogous phenomenon is the association between one or several bird species and monkey troops (4). Some

ant-followers are known to go into partnership with primate groups; this has been reported for the tawny-winged woodcreeper, *Dendrocincla anabatina*, and barred woodcreeper, *Dendrocolaptes certhia*, with the Central American squirrel monkey, *Saimiri oerstedii* (4), plain-brown woodcreeper, *Dendrocincla fuliginosa*, and rufous-vent ground-cuckoo, *Neomorphus geoffroyi*, with the common squirrel monkey, *Saimiri sciureus*, and capuchin monkeys, *Cebus* sp. (5) and red-billed ground-cuckoo, *Neomorphus pucheranii*, and pain-brow woodcreeper, *Dendrocincla fuliginosa* with a mixed species group of saddleback tamarins, *Saguinus fuscicollis* and mustached tamarin, *S. mystax* (6,7). Recent records of association of birds with

monkeys suggest that this behavior is more frequent than previously thought, appearing to be incorporated into the behavioral repertoire of several birds to aid in food acquisition. The present report describes another foraging association between birds and monkeys, involving olivaceous woodcreepers (*Sittasomus griseicapillus*) and black lion tamarins (*Leontopithecus chrysopygus*).

The association reported here was observed during an ecological study of black lion tamarins carried out at the Caetetus Ecological Station (8), located in Gália and Alvinlândia counties in the west of São Paulo State, southeastern Brazil (22°23'S; 49°41'W). The forest fragment area of 2178 ha consists of semideciduous mesophytic forest.

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The location and following of a group of black lion tamarins was possible by radiotelemetry. Observations of the group were made between January and June 1989 and between March 1990 and March 1991, with the help of 7x35 binoculars, from the moment at dawn when the group emerged from the shelter where it slept until return to this shelter in the evening. During the 1989 period (May), the association between olivaceous woodcreepers and black lion tamarins was measured by the amount of time (min) that the two species remained together. During 1990-1991, instantaneous scan sampling (9) was used in systematic observations at fifteen-minute intervals. Data on activity, number of visible black lion tamarins and presence of olivaceous woodcreepers were recorded.

At the study site olivaceous woodcreepers were frequently seen following black lion tamarin groups. This association was observed only when black lion tamarins were foraging. While foraging tamarins often inserted their hands into hollows and crevices in tree trunks and decomposed materials, and made use of their elongated toes and claws to pull off plates of dry bark. During such activities the monkeys flushed several insects, that were captured in flight by olivaceous woodcreepers, using "aerial hawking" (10). When following black lion tamarins, olivaceous woodcreepers always approached one monkey of the troop to a distance of 0.5-2 m. When a flying insect was flushed, the bird flew and caught it with its bill, returning to its initial position on the tree trunk. When the black lion tamarin moved to another tree and resumed its foraging behavior, olivaceous woodcreepers accompanied

it and repeated the same behavior. Although this was initially supposed to be an occasional event, the records accumulated rapidly. The association was studied quantitatively in May 1989, when seven records were made in two days of observation. The first five records totalled 57 minutes of association (a single record lasted 35 min), the association representing 9.3% of the activity period of the black lion tamarins. On the second day these species were observed twice together totaling 14 min of association. In the second study period (1990/1991), it was possible to show that this association amounted to 3.33% of the total activity period of the black lion tamarins in May 1990 (15.4 h of observation), 6.66% in July 1990 (7.2 h) and 7.14% in January 1991 (5.3 h).

Associations between birds and monkeys is a more widespread phenomenon than indicated by the available records (11). The association between olivaceous woodcreepers and the black lion tamarins is analogous to that seen in other Dendrocolaptidae and Formicariidae species that follow army ants in search of spread arthropods. The black lion tamarins act in a similar way to that of ants, spreading insects that the woodcreeper catches. Parallel observations have been reported for the golden lion tamarin, *Leontopithecus rosalia*, and golden-headed lion tamarin, *Leontopithecus chrysomelas*, with other woodcreepers (Dietz J, personal communication).

The association between black lion tamarins and olivaceous woodcreepers seems to be a case of commensalism from which only *S. griseicapillus* benefits. Most associations between birds and monkeys can be considered as

commensalisms (4,6) and interpreted as opportunistic feeding behavior (12,13). In any case the olivaceous woodcreeper seems to present an opportunistic behavior, benefitting from the black lion tamarin's foraging activity to obtain more food, occupying an alternative ecological niche. ■

References and notes

1. Oniki Y, EO Willis 1972 Studies of ant-following birds of Eastern Amazon. *Acta Amazon* 2: 127-151
2. Willis EO, Y Oniki 1978 Birds and army ants. *Annu Rev Ecol Systemat* 9: 243-263
3. Rylands AB, MAOM da Cruz, SF Ferrari 1989 An association between marmosets and army ants in Brazil. *J Trop Ecol* 5: 113-116
4. Boinsky S, PE Scott 1988 Association of birds with monkeys in Costa Rica. *Biotropica* 20: 136-143
5. Terborgh J 1983 *Five new world primates: A study in comparative ecology*. Princeton University Press, Princeton
6. Siegel CE, JM Hamilton, NR Castro 1989 Observations of the red-billed ground-cuckoo (*Neomorphus pucheranii*) in association with tamarins (*Saguinus*) in northeastern Amazonian Peru. *Condor* 91: 720-722
7. Peres CA 1992 Prey-capture benefits in a mixed-species group of Amazonian tamarins, *Saguinus fuscicollis* and *S. mystax*. *Behav Ecol Sociobiol* 31: 339-347
8. Passos FC 1992 *Hábito alimentar do mico-leão-pretto, Leontopithecus chrysopygus (Mikan, 1823) (Callitrichidae, Primates) na Estação Ecológica dos Cactetus, município de Gália, SP*. Thesis, Universidade Estadual de Campinas, Campinas, SP
9. Altmann J 1974 Observational study of behavior: sampling methods. *Behaviour* 49: 227-267
10. Fitzpatrick JW 1980 Foraging behavior of neotropical tyrant flycatchers. *Condor* 82: 43-57
11. Ferrari SF 1990 Foraging association between two kite species (*Ictinia plumbea* and *Leptodon cayanensis*) and bully-headed marmosets *Callithrix flaviceps* in southeastern Brazil. *Condor* 92: 781-783
12. Fountaine R 1980 Observations on the foraging association of the double-toothed kites and with white-faced capuchin monkeys. *Auk* 97: 94-98
13. Egler SG 1991 Double-toothed kites following tamarins. *Wilson Bull* 103: 510-512
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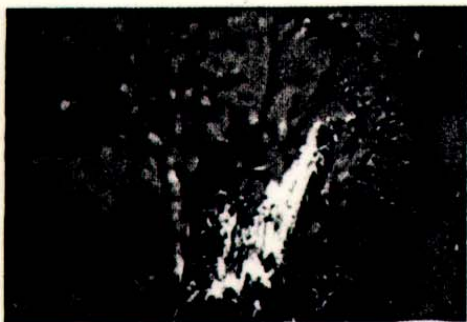


Figure 1. The black lion tamarin after foraging in tree crevices (Foto by FC Passos).



Figure 2. The black lion tamarin in Caetetus Ecological Station (Foto by FC Passos).