Comparison of Affiliative Behaviors Between Old and Recently Established Pairs of Golden Lion Tamarin, *Leontopithecus rosalia*

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**ABSTRACT.** To evaluate the changes in the relationship between male and female *Leontopithecus rosalia* over time, I compared the interactions in four well established pairs at the National Zoological Park, Washington, D.C., to those in four newly established pairs at the Conservation and Research Center of the National Zoological Park, Front Royal, Virginia, U.S.A. I recorded the frequency of approaches, withdrawals, food offerings, food takings, and resisting food transfers. Male and female adults were the focal animals and the observations totaled 206.5 hr. Males of newly established pairs interacted more with females than males of old established pairs. While males generally began and maintained the interactions significantly more than females, females of recently formed pairs were initiators of affiliative behaviors significantly more than females of old pairs.

These results demonstrate a qualitative difference in the relationship between males and females when old and new pairs are compared.

**Key Words:** Social behavior; *Leontopithecus rosalia*; Affiliative behaviors; Callitrichidae; Pair bond.

**INTRODUCTION**

The Callitrichidae were originally described as having a monogamous mating strategy, but recent field data suggest that at least some species may be polyandrous (Garber et al., 1984; Sussman & Kinsey, 1984; Terborgh & Wilson Goldizen, 1984; Sussman & Garber, 1987; Wilson Goldizen, 1987). However, not enough data exist to make a generalization about the family as a whole. It is known that some species breed successfully in captivity only when housed in monogamous groupings (e.g. *Callithrix jacchus*, Eppler, 1975) and strong bond occurs between the heterosexual mates (e.g. *Leontopithecus rosalia*, Kleiman, 1977b). Some characteristics of the reproduction of Callitrichidae fit on the monogamous model such as production of twins and considerable male parental investment (Eisenberg, 1977; Ingram, 1977a, b; Kleiman, 1977a, b, c) and like other mammals known to be monogamous, they do not manifest conspicuous sexual dimorphism in either body size or sexual behavior (Kleiman, 1977b; Kleiman & Mack, 1980).

The golden lion tamarin, *Leontopithecus rosalia* (an endangered Brazilian callitrichid) has been the object of study and breeding efforts for several years at the National Zoological Park in Washington, D.C. where they are housed in family groups. Several studies indicate a somewhat equivalent involvement by the members of the reproductive pair in territorial marking, in intra- and interspecific agonistic behaviors, and in rearing and socialization process of offspring (Brown & Mack, 1978; Hoage, 1977, 1982; Kleiman, 1977b; Kleiman & Mack, 1980; McLanahan & Green, 1977; Mack & Kleiman, 1978; Rathbun, 1979; Snyder, 1972).

However, affiliative behaviors within the pair bond have been described as being initiated...
and maintained by the males for the golden lion tamarin, and for some other marmosets and tamarins (Box & Morris, 1980; Evans & Poole, 1983; Kleiman, 1977a; Poole, 1978; Roth, 1971) and as differing in quality and quantity when compared with non-monogamous primate species (Kleiman, 1977a, b). Also, affiliative and sexual behaviors are reported to be more frequent in recently paired lion tamarins than in older established pairs (Evans & Poole, 1983; Kleiman, 1977a, b).

The goal of this study was the analysis of some affiliative behaviors that are asymmetrical within the reproductive pair in captivity and a determination of their function in the development and maintenance of a pair bond.

MATERIALS

Eight groups of Leontopithecus rosalia, composed of a reproductive pair and zero, one or two generations of offspring, were observed at the National Zoological Park (NZP) and at the Conservation and Research Center, Front Royal, Virginia, U.S.A. (CRC). Four groups were studied in each location.

The animals were housed in off-exhibit cages. Facilities, management, and feeding are described in Kleiman (1977a) and McLanahan and Green (1977).

The adult tamarins at the NZP (the “old pairs”) had been paired for a minimum of 13 months when the observations were initiated, and each had produced at least one set of offspring. The pairs at CRC (the “new pairs”) were formed between 1 and 12 weeks before the beginning of the observations. The individuals' histories are described in Table 1.

METHODS

Observations were initiated in December 1980 and concluded in June 1981. A total of 206.5 hr of observations were conducted (129.0 hr at NZP and 77.5 hr at CRC). The observer was in visual contact with the animals and the frequency of selected behaviors were recorded on a check sheet.

The schedule for each group was a 30-min observation period, three to six times per week, in the morning or early afternoon. The adult male and female were the focal animals, both being observed simultaneously (Altmann, 1974).

The following behaviors were recorded (modified from the ethograms of the Department of Zoological Research, NZP): Approach: one animal moves toward the other and they are in proximity (≤ 30 cm) or in contact for at least 3 sec; Withdrawal: one animal leaves after an approach of at least 3 sec; Food taking: an animal obtains food from the other without the offering of resistance of the possessor; Resisting food transfer: the possessor resists (unsuccessfully or not) a food theft attempt. (This resistance can also follow a food offering.); Food offering: it is defined by Brown and Mack (1978) as “a class of food transfer in which the donor initiated the exchange (by giving some signal shown to be statistically significant predictor of successful transfer) and did not resist having its food taken”; Food demanding: it is “food taking” and “resist food transfer” occurring jointly; and Food transfer: it is the result of successful “food offering” and “food taking.”

For further descriptions and analysis of food sharing in Leontopithecus rosalia, see Brown and Mack (1978) and Hoage (1978, 1981).