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Sex differences in fitness following a group take-over among Toque macaques: testing models of social evolution

Wolfgang P.J. Dittus*

National Zoological Park, Smithsonian Institution, Washington, DC 20008, USA, and Institute of Fundamental Studies,
Sri Lanka

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Summary. A group of toque macaques took-over the home range of one of its subordinate neighboring groups and fused with it to form a larger cohesive group. In the 7 years before the take-over, the dominant group had consistently won all contests at common feeding sites, yet the fitnesses of the females of these two groups did not differ significantly (Fig. 2A). After the take-over the females of the subjugated group occupied the lowest ranks in the combined dominance hierarchy of the merged groups (Fig. 1) and thereby lost the advantages of an own home range, such as priority of access to food. Consequently, in the merged group, survivorship and reproductive success among the subjugated females were significantly less than among the females of the dominant subgroup (Table 2, 4). The dominant matriline grew numerically and replaced all of the subjugated females, and all but one of their offspring, within 8 years after the take-over (Fig. 2B). These data support the hypothesis that cooperation among female kin in defending resources against strange females is important in the evolution of female-bonded groups. Before the merger all 5 natal males of the subordinate group had transferred to the dominant group, where they occupied high and mid-level dominance ranks (Fig. 1). These males survived at a significantly greater rate than their subordinate female kin. Thus, the cost of group transfer seems to be greater for females than for males, and this may be one reason that females generally do not emigrate or that groups do not fuse. The data suggest several hypotheses. First, since body size and the adaptations for fighting, giving males an advantage in male competition for mates, the cost of advantage in resource competition with

males and females, such male characters may also be favored by non-sexual selection, especially where male reproductive strategy involves group transfer. Second, female bonded groups evolved as female defensive coalitions against not only female but also male resource competitors, there having been a mutual influence in the coevolution of large-sized males and female gregariousness. Third, female defensive coalitions against large-sized aggressive males are also advantageous outside the context of food competition, or, independent of foraging strategy.

*Address: 4/A, Galpoda Road, Kandy, Sri Lanka

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