Costs and Benefits of Alternative Mating Strategies in Samango Monkey Males

MAIRI C. MACLEOD, CAROLINE ROSS, and MICHAEL J. LAWES

Introduction

In primates, as in all other mammals, a male’s lifetime reproductive success is limited by the number of females he can fertilize at any given time (mating rate) and the length of time for which he can sustain this rate (his reproductive lifespan). Males are therefore expected to act in a way that maximizes their access to fertile females, but how they do this will depend on how females group themselves (Emlen and Oring, 1977; van Schaik and van Hooff, 1983; Dunbar, 1988; Newton, 1988; Glutton-Brock, 1989; Altmann, 1990). Most guenon species have a unimale troop social system. The troop male achieves this status by ousting the incumbent male, and then defending the females against other males. However, although troop males have priority of access to receptive females in their troop, this is not the only way to achieve copulations. Like some other social mammals such as red deer (Clutton-Brock et al., 1982), samango monkey males manage extratroop
copulations (Henzi and Lawes, 1987). Given that extratroop males can thus achieve fitness benefits, the question is why become a troop male? We examine the fitness costs and benefits of the alternative mating strategies of sneaking extratroop copulations and being a resident troop male (i.e., sneaker and residents).

Alternative male mating strategies occur in several primate species including some of the guenons and their relatives. In blue monkeys (Tsingalia and Rowell, 1984; Cords et al., 1986; Henzi and Lawes, 1987; Cords, 2000), red-tailed monkeys (Cords, 1984; Jones and Bush, 1988; Struhsaker, 1988) and patas monkeys (Chism and Rowell, 1986; Harding and Olson, 1986; Ohsawa et al., 1993; Chism and Rodgers, 1997), non-resident or extratroop males enter troops during the mating season and mate with females. Multimale as well as unimale groups have been observed in mona monkeys (Howard, 1977; Glenn et al., 2002), and multimale influxes in Grenada mona monkeys have been reported (based on calls heard; Glenn, 1996). During multimale influxes, intruding males sometimes appear to achieve greater mating success than the resident troop males (Tsingalia and Rowell, 1984; Cords et al., 1986; Henzi and Lawes, 1987). Given that the costs of takeover and defense of a group of females are likely to be high (Henzi and Lawes, 1987), it may pay some males to opt for the extratroop male lifestyle.

Cords et al. (1986) and Henzi and Lawes (1987) suggested that the mating behavior of male *Cercopithecus mitis* may represent competing reproductive strategies that, over the long term, could produce equivalent reproductive success. Various lifetime strategies for male *Cercopithecus mitis* may be to (a) become a resident troop male, (b) be a dedicated extratroop male, or (c) adopt both of these strategies sequentially during its reproductive lifespan. Troop males and extratroop male mating strategies coexist in the same populations (Cords, 2000). If the strategies equilibrate in terms of lifetime reproductive success, then the mating strategies may be a mixed evolutionarily stable strategy.

The question we investigate here is: do male *Cercopithecus mitis* have the choice of alternative lifetime reproductive strategies which, on average, yield equivalent lifetime reproductive output, or is the mixture of male strategies simply a consequence of mixed strategy sets in individuals that are at different stages of their reproductive lives?

We first describe the behavior of resident and extratroop male *Cercopithecus mitis* and the strategies that they employ to gain access to females. Second, we use our data to examine the hypothesis that male *Cercopithecus mitis* are following two lifetime strategies of equivalent merit. We predict that if there are two lifetime strategies, then extratroop males should achieve a significant proportion of successful matings compared with troop males. We further predict that any disparity in the instantaneous reproductive success between troop and extratroop males is offset by differences in costs of each strategy, such that the lower-cost, lower-gain strategy can be maintained for a longer period of life.