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A POSSIBLE EXAMPLE OF COERCIVE MATING IN MANTLED HOWLING MONKEYS (*ALOUATTA PALLIATA*) RELATED TO SPERM COMPETITION

Clara B. Jones

Introduction

If females with internal fertilization mate more than once during a reproductive cycle, the potential exists for sperm from more than one male to compete for access to eggs inside her reproductive tract. This phenomenon, termed “sperm competition,” has received increasing attention in the mammalian, including primate, literature in recent years (e.g., Harcourt, 1997; Gomendio *et al.*, 1998; Dixson, 1998). Several studies have demonstrated that coercive mating (“coercive copulations,” “forced copulations,” “rape”) may be associated with multiple mating by female insects (Moller, 1998), and Smith (1984; also see Thornhill and Palmer, 2000) suggested that human rape might have evolved as an adaptation to sperm competition, although there is no necessary or sufficient relationship between rape and sperm competition. The present short communication describes an apparent case of coercive mating in the context of sperm competition for mantled howling monkeys (*Alouatta palliata*), a species in which coercive mating has not been reported. Attempts to force copulations by male mantled howlers are generally rebuffed successfully by females with a bared-teeth, open-mouth display, sometimes accompanied by vocalizations (Jones, 1985). Such behavior may implicate coercive mating in the evolutionary history of this species. A reanalysis of the raw data for the 1985 report revealed one case of apparently coercive mating in association with multiple mating by a female.

Methods

The study was conducted in 1976 and 1977 at Hacienda La Pacifica, Cañas, Guanacaste, Costa Rica (10°28'N, 85°07'W). Details on the research, including group composition (Group 5), methods (focal), habitat (riparian), social organization (multimale-multifemale), sexual behavior, and life history can be found elsewhere (Jones, 2000 and references therein).

Results

On 5 March 1977 (late dry season), the focal animal was male R, the third and lowest-ranking male in the study group. He was observed to lie and rest in a tree along the Rio Corobici with female PY who demonstrated evidence of estrus –2 (a few days subsequent to “peak” estrus [see Jones, 1985]). A sub-adult/young adult male who had not yet joined the male hierarchy rested approximately 50 feet downriver, and several adult females and young were nearby. No other adult males were sighted. Male R vocalized continuously with high intensity guttural barks to female PY, the young male, and/or (an)other individual(s). While the functions of vocalizations in mantled howlers have not been investigated, these barks have been interpreted to communicate motivation (Jones, 2000).

At 1:04 pm, male R initiated the stereotyped lingual gesture (tongue moving rapidly in and out of mouth, a sexual signal characteristic of the genus *Alouatta* [Carpenter, 1934]) with female PY, who responded in kind. Reciprocal lingual gesturing continued for 3 min. Male R subsequently lay rear-present to female PY, a posture that has been interpreted as submissive (Jones, 2000). At 1:20 pm, male R sat up and mounted female PY, thrusting 40 times in 37 sec with an ejaculatory pause. Subsequent to copulation, the pair rested. During the resting period, male R occasionally emitted high guttural barks.

At 2:21 pm, female PY initiated lingual gesturing with male R. The male, lying on a branch with the female, failed to reciprocate the female’s lingual gestures and shifted posture in apparent vigilance. At 2:30 p.m., male R initiated lingual gestures with female PY and subsequently sat up, looking downriver in the direction of the young male. At 2:33 pm, female PY moved 30 ft upriver past male R, sitting rear-present to the male. Male R moved towards the female and sat 10 ft behind her. Female PY continued to move upriver. Male R continuously vocalized at low intensity.

At 2:37 pm., male G, the second-ranked male of Group 5, moved rapidly upriver past male R, mounted female PY without preliminaries to copulation, and thrustured approximately 37 times with an ejaculatory pause. The female did not resist intromission, did not exhibit the open-mouth bared-teeth display, or emit vocalizations. Male R moved downriver (away from male G and female PY), continuously emitting low intensity vocalizations, began feeding at 2:42 pm (“sham feeding”? [Carpenter, 1934]), and continued to feed, sit, and mingle with other group members (including sexual inspection of several adult females) until 4:50 pm when this day’s record ended.

Discussion

Multiple mating by mantled howler females has been previously documented (Carpenter, 1934; Jones and Cortés-Ortiz, 1998). The case reported here, however, provides evidence that sperm competition may occur

in mantled howlers, combined with apparently coercive mating by the second male to copulate, and may exemplify cases of coercive mating in primate species in which females mate multiply (e.g., *Pongo*: Rodman and Mitani, 1987; Dixson, 1998). The above copulation by male G was judged to be coercive because there were no preliminaries, because this male appeared to intercept female PY from the male guarding her (male R), and because male G's mount appeared to be executed hastily and with some degree of force since intromission occurred in association with rapid movement. In this situation, it might be expected that there would be potential for an escalated conflict situation between the two males, possibly explaining female PY's failure to resist male G's advances, as well as explaining male R's vocalizations. The present report, however, cannot completely exclude the possibility that some visual or auditory signal was exchanged between female PY and male G which might have communicated receptivity by this female to the male. Nonetheless, it may provide direct evidence for Smith's (1984; also see Thornhill and Palmer, 2000) idea that coercive mating may operate in relation to sperm competition in primates. Future studies of primate reproductive behavior should consider the likelihood that coercive mating is beneficial to males, and possibly to females (Moller, 1998, p. 72), in some ecological and social conditions.

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NEWS

PRIMATE OBSERVATIONS IN SURINAME

Brownsberg Nature Park

I visited Brownsberg Nature Park (4°57'06.8"N, 55°10'45.5"W) from 2–7 February, 2002 to assist in expanding a camera-trapping monitoring program. Located in the state of Broko-Pondo, north-central Suriname, the park is a 2½ hour drive from the capital city of Paramaribo and hence is Suriname's most heavily visited protected area. It is a long and narrow, flat-topped plateau (504 m elevation) with heavily forested, steep slopes and gullies on all sides. The forest is strongly dominated by *Hevea guianensis*, *Terminalia dichotoma*, *Cecropia* spp. and several guava species (Family Myrtaceae).

I observed primates on a number of occasions while setting up camera traps to record large mammals and terrestrial birds. All observations were within 6 km of the visitor's center and were made from or near established park trails. I observed red howler monkeys (*Alouatta seniculus*) each day and heard their loud and long (30 seconds or more) pre-dawn chorus beginning at 5:45 am. Black spider monkeys (*Ateles paniscus*) were heard daily, their calls emanating from the forest below the plateau. A single, male white-faced saki (*Pithecia pithecia*) was observed for several minutes near the visitor center on the plateau. Golden-handed tamarins (*Saguinus midas*) were seen from a trail at 12:20 pm. Bearded saki monkeys (*Chiropotes satanas*) were observed at 2:20 pm in a tree nearby feeding red howler monkeys. Common squirrel monkeys (*Saimiri sciureus*), wedge-capped capuchins (*Cebus olivaceus*), and brown capuchins (*C. apella*) were not observed but are listed in the management plan as being present in the park.

Central Suriname Nature Reserve

I also visited the Central Suriname Nature Reserve from 8–16 February, 2002, to establish a camera trapping