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BRIEF REPORTS

Breech Delivery and Birth-Related Behaviors in Wild Mantled Howling Monkeys

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The breech birth of an infant mantled howling monkey was observed on February 12, 1990. The mother assisted the successful delivery by pulling on the infant's tail and hindleg. No other members of the social group attended the mother or demonstrated any interest in the birth process.

Key words: *Alouatta palliata*, birth, infant

INTRODUCTION

Parturition in wild primates rarely has been observed since a majority of births occur at night [Jolly, 1972]. Humans also have a nocturnal peak in delivery time for normal births, but breech and abnormal births are evenly distributed during the day and night [Jolly, 1972]. Although daytime births may be rare in all primates, reports of patas (*Erythrocebus patas*) [Chism et al., 1978] and red howling monkeys (*Alouatta seniculus*) [Sekulic, 1982] giving birth during the day suggest that they do occur.

Here we describe the observed birth sequence of a mantled howling monkey infant (*A. palliata*) which occurred at 1040 on February 12, 1990. The delivery was a "Frank" breech (extended legs first).

METHODS

Behavioral observations are being carried out on four groups of mantled howlers inhabiting disturbed secondary forest on Centro Ecológico La Pacífica in Guanacaste Province, Costa Rica. These observations are part of a continuing study on the ecology, behavior, and demography of the La Pacífica population of mantled howling monkeys. The study site is located at 45 meters above sea level and lies within the lowland tropical dry-forest life zone of Holdridge [1967]. See Glander [1979, 1981] for a detailed description of the study site.

The behavior of one adult individual, designated as the focal animal [Altmann, 1974], is recorded each observation day. The mother (Purple) was the focal animal

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for February 12, 1990. In addition to the focal animal records, nearest-neighbor scans are made every 30 minutes during the observation day.

Group composition at the time of this birth was two adult males, six adult females, two juvenile males, two juvenile females, and one infant female.

RESULTS

The first indication of the impending birth was a small amount of fluid and blood coming from Purple's vulva at 0934. She touched her vulva and then smelled and licked her hands. This behavior and the fluid continued for 61 minutes. During this time, Purple was restless, moving around in five different trees before moving into Tree #1334 at 1004 where she sat on a branch (7.5 cm in circumference). She continued to be restless: walking, sitting, standing on all four legs, and occasionally raising her hindquarters. At 1035, the infant's hindquarters briefly emerged and then were withdrawn. At 1036, the infant's tail emerged and remained out. Purple was standing and walking around during this time. At 1037, the infant's right hindleg emerged. No other part of the infant appeared until Purple sat and grabbed the infant's tail and gently pulled on the tail. She did this four times, releasing the tail each time. At 1038, the second hindleg emerged with the help of Purple's pulling, but no other part of the infant emerged. The fetus appeared to be stuck with the hindquarters hanging out. Purple walked around for 2 minutes with the infant's hindquarters hanging out. At 1040, Purple twisted her hindquarters back and forth while standing and the infant slipped out and fell 6 meters to the ground. It hit a small branch and the tree trunk on the way down. It did not move after hitting the ground. Purple immediately came to the ground, sniffed the infant, and then climbed 3 meters into a nearby tree. In 30 seconds, she came to the ground again. The infant moved its hand, Purple licked the infant, picked it up, put it back on the ground, and returned to the tree. After another 30 seconds, Purple came to the ground again, picked up the infant, and held it to her chest. It clung to her, and she returned to the tree. She climbed up 4 meters, where at 1058 she began eating the placenta which was delivered with the infant and was still attached to it. She consumed the entire placenta and chewed on the umbilical cord. After eating the placenta, Purple did not feed for the rest of the day although she continued to move with the group.

The other members of the group paid no attention to Purple during and after the birth despite the fact that six of the 13 group members were within 3 meters of Purple at various times during the delivery process. The only group member to show any interest was Lilac, the alpha female who is not related to Purple. She approached Purple at 1615, looked at the infant for 90 seconds, and then left to feed.

This is Purple's tenth infant. Four of her infants have been males, five have been females, and the sex of her first infant is unknown. Her interbirth interval has averaged 16.3 months with a range of 7 to 30 months. Three of her infants died before 1 year of age, three disappeared shortly after 1 year of age and are presumed dead, and one juvenile male and two juvenile females have survived to emigrate.

DISCUSSION

Breech presentation is often fatal [Trevathan, 1987], i.e., breech deliveries in *Papio anubis* [Nash, 1974], *Saimiri sciureus* [Bowden et al., 1967], *Macaca fascicularis* [Kemps & Timmermans, 1982], and *Macaca mulatta* [Brandt & Mitchell, 1971] all were dead at delivery. It is likely that the survival of Purple's infant son (named Moses) despite his breech delivery and 6 meter fall may be due to his

mother's experience: Purple is 19 years old, and Moses is her tenth infant. Purple's pulling on the infant's tail probably culminated in a live delivery.

The breech presentation described here probably accounted for the relatively long delivery time of 5 minutes from time of the hindquarters first appearance to delivery. Delivery time for the observed head-first births of red howler infants was given as less than 1 and 2 minutes, respectively [Sekulic, 1982].

The lack of interest in Purple by other group members, both during and after her delivery, is in contrast to the two births in red howlers observed by Sekulic where other troop members approached the mother immediately after the birth [Sekulic, 1982]. One of the red howler infants was killed by one of the two males who were competing for access to the females during the time of the birth [Sekulic, 1982].

Our presence may have affected Purple's behavior in retrieving her fallen infant. She appeared wary in coming to the ground and may have stayed on the ground without returning to the trees if we had not been present. Her retrieval of Moses, even though he did not move or call, is in contrast to mothers not retrieving wounded infants that have fallen [Sekulic, 1982; Glander, personal observation]. Moses is a healthy five month old infant at this time.

CONCLUSIONS

1. Experienced mothers may be relatively more successful in dealing with potential life-threatening occurrences such as breech presentation by providing assistance to their infants.

2. In this case, other group members showed no interest or provided no assistance during parturition despite a difficult and relatively long delivery.

3. Breech presentation likely affected the time of day this infant was delivered.

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REFERENCES

Altmann, J. Observation study of behavior: Sampling methods. BEHAVIOR 49:227–267, 1974.

Bowden, D.; Winter, P.; Ploog, D. Pregnancy and delivery behavior in the squirrel monkey, *Saimiri sciureus* and other primates. FOLIA PRIMATOLOGICA 5:1–42, 1967.

Brandt, E.M.; Mitchell, G. Parturition in primates: Behavior related to birth. Pp. 177–223 in PRIMATE BEHAVIOR: DEVELOPMENTS IN LABORATORY RESEARCH. L.A. Rosenblum, ed. New York, Academic Press, 1971.

Chism, J.; Rowell, T.E.; Richards, S.M. Daytime births in captive patas monkeys. PRIMATES 19:765–767, 1978.

Glander, K.E. Howling monkey feeding behavior and plant secondary compounds: A study of strategies. Pp. 561–574 in THE ECOLOGY OF ARBOREAL FOLIVORES. G.G. Montgomery, ed. Washington, DC, Smithsonian Institution Press, 1979.

Glander, K.E. Feeding patterns in mantled howling monkeys. Pp. 231–257 in FORAGING BEHAVIOR: ECOLOGICAL, ETHOLOGICAL, AND PSYCHOLOGICAL APPROACHES. A.C. Kamil; T.D. Sargent, eds. New York, Garland Press, 1981.

Holdridge, L.F. LIFE ZONE ECOLOGY. San Jose, Costa Rica, Tropical Science Center, 1967.

Jolly, A. Hour of birth in primates and man. FOLIA PRIMATOLOGICA 18:108–121, 1972.

Kemps, A.; Timmermans, P. Parturition behavior in pluriparous Java macaques, Macaca fascicularis. PRIMATES 23:75–88, 1982.

Nash, L.T. Parturition in a feral baboon *Papio anubis*. PRIMATES 15:279–285, 1974.

Sekulic, R. Birth in free-ranging howler monkeys (*Alouatta seniculus*). PRIMATES 23:580–582, 1982.

Trevathan, W.R. HUMAN BIRTH: AN EVOLUTIONARY PERSPECTIVE. New York, Aldine DE Gruyter, 1987.