American Journal of Primatology 33:51–55 (1994)

BRIEF REPORTS

Yellow Baboon Labor and Parturition at the Tana River National Primate Reserve, Kenya

VICKI K. CONDIT[1,3], AND E.O. SMITH[1,2,3]
[1]*Department of Anthropology, Emory University, Atlanta, Georgia;* [2]*Yerkes Regional Primate Center, Emory University, Atlanta, Georgia;* [3]*Institute of Primate Research, National Museums of Kenya, Nairobi, Kenya*

An observation of the birth of a feral yellow baboon (*Papio cynocephalus cynocephalus*) is reported. Over an approximate 45-min period, the late stages of labor, parturition, cleaning of the infant, and consumption of the placenta were observed. The labor and parturition occurred in the late afternoon/early evening hours, and within 5 m of the observer. A review of the literature on feral births suggests that selection may have favored both the timing and the location of births.

Key words: parturition, labor, *Papio cynocephalus*

INTRODUCTION

Labor and parturition is a life history phenomenon of obvious importance in nonhuman primates, yet primatologists have observed relatively few parturitions. This is not surprising, given the tendency for diurnal primates to give birth at night [Jolly, 1972; 1973]. In spite of the difficulties, accounts of observed births in feral primates span the past 25 years [e.g., Kummer, 1968], while literature on captive primate births dates back even further [e.g., Hartman, 1928]. Reports of feral and captive parturitions can be found for several species (i.e., *Macaca mulatta* [Brandt & Mitchell, 1973; Rawlins, 1979], *M. sinica* [Ratnayeke & Dittus, 1989], *M. arctoides* [Gouzoules, 1974]; *Callithrix jacchus* [Stevenson, 1976]; *Lemur catta* [Sauther, 1991]; *Cercocebus galeritus* [Kinnaird, 1990]; *Alouatta palliata* [Moreno, et al., 1991]; *A. seniculus* [Sekulic, 1982]; *Presbytis entellus* [Oppenheimer, 1976]; *Pongo pygmaeus* [Galdikas, 1982]; *Pan troglodytes* [Goodall & Athumani, 1980]; and *Gorilla gorilla* [Stewart, 1977; 1984]). This report focuses on those observed among baboons.

Following Takeshita [1961–1962], Bowden, et al. [1967], and Stevenson [1976], a slightly modified five-stage system of birth description is used in this report. These stages are: 0—restlessness prior to first contraction; 1—onset of contractions to fetus' appearance; 2—fetus' appearance to complete emergence; 3—fetus' complete emergence to placenta's complete emergence; and 4—placenta's emergence to end of efforts to consume. This perspective allows existing data to be summarized, presented in a table format, and categorized for comparison.

Received June 24, 1993; revision accepted October 14, 1993.

Address reprint requests to Vicki K. Condit, Department of Anthropology, Emory University, Atlanta, Georgia 30322.

Table I. Summary of Observed Feral Baboon Births

Species	No. of births	Stages and duration (hour and minute) 0	1	2	3	4	Comments	Source
Olive (captive)	1	0830 (day 170)–1030 (day 171)	1030–1137	1137–1139	?–1143	1143–1208		Love, 1978
Olive	1	?	?	?–0726	?	?–0900	Dead	Nash, 1974
	1	?–1837	1837–?	?–1919	?	?		Nowell, 1978
	1	?	?	? 2329	?	?		Nowell, 1978
Hamadryas	1	?	?	? 1800	?	?		Kummer, 1968
	1	?	? 1820	1820 1840	1840 1845	?		Abegglen & Abegglen, 1976
Gelada	1	?	?	?–0703	?	? 0711		Dunbar & Dunbar, 1974
Yellow	1	?	?	?	?	?		Altmann, 1980
	1	?	?–1815	1815–1816	1816–1821	1822–1827		This manuscript

Parturition in baboons has been described as behaviorally stereotyped. Indeed, it appears that squatting, grasping, arm raising, and vulva touching are common to both captive and feral baboon births [Bowden et al., 1967; also see Table I]. One of the most thorough accounts of a baboon birth [Love, 1978], based on observations of a captive olive female, provides a baseline of stage durations which may be applicable to both captive and feral baboons. These data along with feral parturitions for olive (*Papio anubis*), hamadryas (*P. hamadryas*), gelada (*Theropithecus gelada*), and yellow (*P. cynocephalus*) baboons are summarized in Table I. See Trevathan [1987] for more detailed summaries of many of these births.

METHODS

The Tana River National Primate Reserve (TRNPR) is located in Eastern Kenya. A thorough description of the Reserve can be found in Marsh [1976], and a brief description of the study area and a map are presented elsewhere [Condit & Smith, 1994].

RESULTS

On February 17, 1992, the birth of a yellow baboon was observed. In general, it appeared similar to those described by others for the genus *Papio*. Contractions lasting 18.03 min (Fig. 1) were observed and timed. Contractions occurring at the beginning of the focal sample (17:50) were not timed, as the observer did not realize what was transpiring.

The parturition occurred on the open plains at the edge of the forest within five m of the observer. Throughout the process, the adult female (ML) assumed several positions ranging from a hunched position with her hands on the ground, to sitting and leaning on one side of her haunches, to lying on her side. ML was not observed to grasp any objects during her contractions, but she was seen to repeatedly pull at and touch her vaginal area and then lick her fingers. Following the birth, ML thoroughly cleaned both herself and her infant.

Approximately 2½ min before the fetus began to emerge, ML moved about 10 m from her nearest neighbors. Although troop members showed curiosity and watched the birth process, none approached until 18:26:53, when a mother/infant pair moved to within 3 m. This is consistent with other observations which have

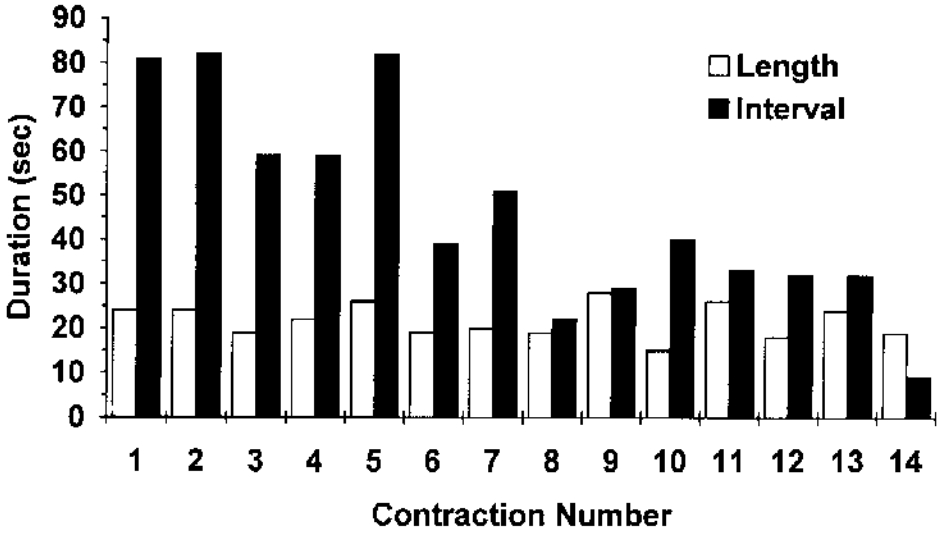

Fig. 1. Female ML Contractions: February 17, 1992, 17:58:55–18:15:07.

shown infants and females most likely to first approach mothers with newborns—reviewed in Caine and Mitchell [1979] and Mitchell [1979]. At 18:28:00, ML distanced herself from other troop members and showed signs of nervousness. As troop members moved in her direction (18:29:25), she fear-geckered (a common baboon fear vocalization) [Hall & DeVore, 1965], and looked repeatedly over her shoulders when entering the forest at 18:35:00. As with previous reports, it appears that troop members do not interfere with a female during the birth; however, it is soon thereafter that others approach the mother–infant pair and attempt to make contact with one or both.

DISCUSSION

Jolly [1972] points out that nocturnal parturition may be beneficial to females among diurnal species. (Also see data on nocturnal primates and diurnal parturition [Jolly, 1973].) Late afternoon to early evening (i.e., 18:00–19:00) appears to be the ideal time to give birth if the troop is already at a resting site as this would: 1) give the female maximum recuperation time before beginning the next day's journey, 2) give her ready access to sleeping trees/cliffs that afford predator protection, and 3) afford her the chance to somewhat isolate herself from the attentions of the rest of the troop. The parturition reported in this manuscript occurred within three meters of the sleeping grove used by the troop that evening. All of the late afternoon births reported in Table I as well as several reported for other feral primate species also occurred at resting sites (e.g., orangutan, [Galdikas, 1982], langurs [Oppenheimer, 1976], howlers [Sekulic, 1982]). It would appear then, that there are definite selective advantages to having the late stages of labor and parturition occur not only late in the day, but also at or near a sleeping/resting site.

CONCLUSIONS

1. A yellow baboon parturition was witnessed beginning in Stage 1 through completion.
2. This birth, like others, occurred late in the day and near the resting site.

3. Birthing at the sleeping site requires little further physical exertion on the part of the female and makes those benefits discussed by Jolly [1972], feasible.

ACKNOWLEDGMENTS

We thank the Office of the President, Kenya, for permission to conduct this research (#OP.13/001/20C 240/13), the National Museums of Kenya, and the Institute of Primate Research for technical support and assistance. Thanks also to H. Jillo for his assistance in the field. We are grateful to P. Whitten and anonymous reviewers for critical comments on the manuscript. This project was supported by grants from the L.S.B. Leakey Foundation (VKC), the Mellon Foundation (VKC), Sigma Xi (VKC), the NSF (BNS-8921106) (EOS), and the Emory University Research Committee (EOS).

REFERENCES

Abegglen, H.; Abegglen, J.J. Field observation of a birth in hamadryas baboons. FOLIA PRIMATOLOGICA 26:54–56, 1976.

Altmann, J. BABOON MOTHERS AND INFANTS. Cambridge, Harvard University Press, 1980.

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.; Mitchell, G. Labor and delivery behavior in rhesus monkeys (*Macaca mulatta*). AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY 38:519–522, 1973.

Caine, N.; Mitchell, G. Behavior of primates present during parturition. Pp. 112–124 in CAPTIVITY AND BEHAVIOR: PRIMATES IN BREEDING COLONIES LABORATORIES, AND ZOOS. J. Erwin; T. Maple; G. Mitchell, eds. New York, Van Nostrand Reinhold Co., 1979.

Condit, V.; Smith, E.O. Predation on a yellow baboon (*Papio cynocephalus cynocephalus*) by a lioness in the Tana River National Primate Reserve, Kenya. AMERICAN JOURNAL OF PRIMATOLOGY 33: 57–64, 1994.

Dunbar, R.I.M.; Dunbar, P. Behaviour related to birth in wild gelada baboons (*Theropithecus gelada*). BEHAVIOUR 50: 185–191, 1974.

Galdikas, B. Wild orangutan birth at Tanjung Puting Reserve. PRIMATES 23:500–510, 1982.

Goodall, J.; Ahtumani, J. An observed birth in a free-living chimpanzee (*Pan troglodytes schweinfurthii*) in Gombe National Park, Tanzania. PRIMATES 21:545–549, 1980.

Gouzoules, H. Group responses to parturition in *Macaca arctoides*. PRIMATES 15: 287–292, 1974.

Hall, K.R.L.; DeVore, I. Baboon social behavior. Pp. 53–110 in PRIMATE BEHAVIOR: FIELD STUDIES OF MONKEYS AND APES. I. DeVore, ed. New York, Holt, Rinehart, & Winston, 1965.

Hartman, C.G. Description of parturition in the monkey *Pithecus (macacus) rhesus*, together with data on the gestation period and other phenomena incident to pregnancy and labor. JOHNS HOPKINS HOSPITAL BULLETIN 43:33–51, 1928.

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

Jolly, A. Primate birth hour. INTERNATIONAL ZOO YEARBOOK 13:391–397, 1973.

Kinnaird, M.F. Pregnancy, gestation and parturition in free-ranging Tana River crested mangabeys (*Cercocebus galeritus galeritus*). AMERICAN JOURNAL OF PRIMATOLOGY 22:285–289, 1990.

Kummer, H. SOCIAL ORGANIZATION OF HAMADRYAS BABOONS: A FIELD STUDY. Chicago, University of Chicago Press, 1968.

Love, J. A note on the birth of a baboon (*Papio anubis*). FOLIA PRIMATOLOGICA 29: 303–306, 1978.

Marsh, C. A MANAGEMENT PLAN FOR THE TANA RIVER GAME RESERVE. Nairobi, Report to the Kenya Department of Wildlife Conservation and Management, 1976.

Mitchell, G. Male and female responses to birth. Pp. 165–178 in BEHAVIORAL SEX DIFFERENCES IN NONHUMAN PRIMATES. G. Mitchell, ed. New York, Van Nostrand Reinhold Co., 1979.

Moreno, L.; Salas, I.; Glander, K. Breech delivery and birth-related behaviors in wild mantled howling monkeys. AMERICAN JOURNAL OF PRIMATOLOGY 23:197–199, 1991.

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

Nowell, L.; Heidrich, A.; Appolynaire, S. Labour and parturition in feral olive baboons *Papio anubis*. Pp. 522–524 in RECENT

ADVANCES IN PRIMATOLOGY, VOL. I, BEHAVIOUR. D. Chivers; J. Herbert, eds. London, Academic Press, 1978.

Oppenheimer, J. *Presbytis entellus:* Birth in a free-ranging primate troop. PRIMATES 17:541–542, 1976.

Ratnayeke, A.; Dittus, W. Observation of a birth among wild toque macaques (*Macaca sinica*). INTERNATIONAL JOURNAL OF PRIMATOLOGY 10:235–242, 1989.

Rawlins, R. Parturient and postpartum behavior of a free-ranging rhesus monkey (*Macaca mulatta*). JOURNAL OF MAMMALOGY 60:432–433, 1979.

Sauther, M. Reproductive behavior of free-ranging *Lemur catta* at Beza Mahafaly Special Reserve, Madagascar. AMERICAN JOURNAL OF PRIMATOLOGY 84:463–477, 1991.

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

Stevenson, M. Birth and perinatal behaviour in family groups of the common marmoset (*Callithrix jacchus jacchus*), compared to other primates. JOURNAL OF HUMAN EVOLUTION 5:365–381, 1976.

Stewart, K. The birth of a wild mountain gorilla (*Gorilla gorilla beringei*). PRIMATES 18:965 976, 1977.

Stewart, K. Parturition in wild gorillas: Behaviour of mothers, neonates, and others. FOLIA PRIMATOLOGICA 42:62–69, 1984.

Takeshita, H. On the delivery behaviour of squirrel monkeys (*Saimiri sciureus*) and a mona monkey (*Cercopithecus mona*). PRIMATES 3:59–72, 1961–1962.

Trevathan, W. HUMAN BIRTH: AN EVOLUTIONARY PERSPECTIVE. New York, Aldine DeGruyter, 1987.