

Title	First Record of a Twin Birth in Chimpanzees of the Mahale Mountains National Park, Tanzania
Author(s)	MATSUMOTO-ODA, Akiko
Citation	African Study Monographs (1995), 16(3): 159-164
Issue Date	1995-10
URL	http://dx.doi.org/10.14989/68135
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

FIRST RECORD OF A TWIN BIRTH IN CHIMPANZEES OF THE MAHALE MOUNTAINS NATIONAL PARK, TANZANIA

Akiko MATSUMOTO-ODA

Department of Zoology, Faculty of Science, Kyoto University

ABSTRACT Newborn chimpanzee (*Pan troglodytes schweinfurthii*) twins were observed in the Mahale Mountains National Park. This is the first observation at Mahale of a multiple birth from 135 births recorded during 29 years of research at this site. On 22 January 1994, a ca.16-year-old female was first seen with her female twins. Each infant was estimated to be only two-thirds the normal size, but their combined weight and the double amount of attention that had to be given to their care made the mother's burden very heavy. She had to pay close attention to the infants even when she rested. The mother often stopped to rest every 10–20 m while traveling, and often walked bipedally for 2–3 m at a time, gripping the twins by the nape of their necks. She was never seen to lift the infants to her nipples although they often showed oral rooting for nipple behavior and vocalized in distress. When the mother was next seen on 29 January, her twins were gone.

Key Words: Birth; Infant-rearing; Twins; Chimpanzee; Mahale.

INTRODUCTION

Female chimpanzees normally give birth to one infant at a time. According to ISIS census data, there were 22 sets of twins reported from 1,311 births (Seal et al., 1985). Only one case of chimpanzee twins out of 59 recorded pregnancies in the wild have previously been observed, at Gombe (Goodall, 1986, 1990). The birth of newborn female twins (*Pan troglodytes schweinfurthii*) was confirmed in the Mahale Mountains in January 1994. This is the first observation of a multiple birth from 135 births recorded there (Nishida et al., 1990, and unpublished data) since research at Mahale began in 1965.

Data presented here were collected on M group, which contained about 70 members, from March 1993 to February 1994. A female, who was one of the target individuals in the course of the study, bore twins. This report describes the mother's burden of rearing them and considers reasons why twins rarely survive.

OBSERVATIONS

Lynso (LY), who immigrated to M group in 1989, was about 16 years old at the birth of her female twins (Nishida, pers. comm.). LY gave birth to her first infant in M group in December 1992 but she lost it for unknown reasons in March 1993. On 22 November 1993, a second pregnancy was confirmed by "TESTPACK PLUS" (Abbot Corp., Tokyo, Japan), a test using urine for detecting pregnancy in

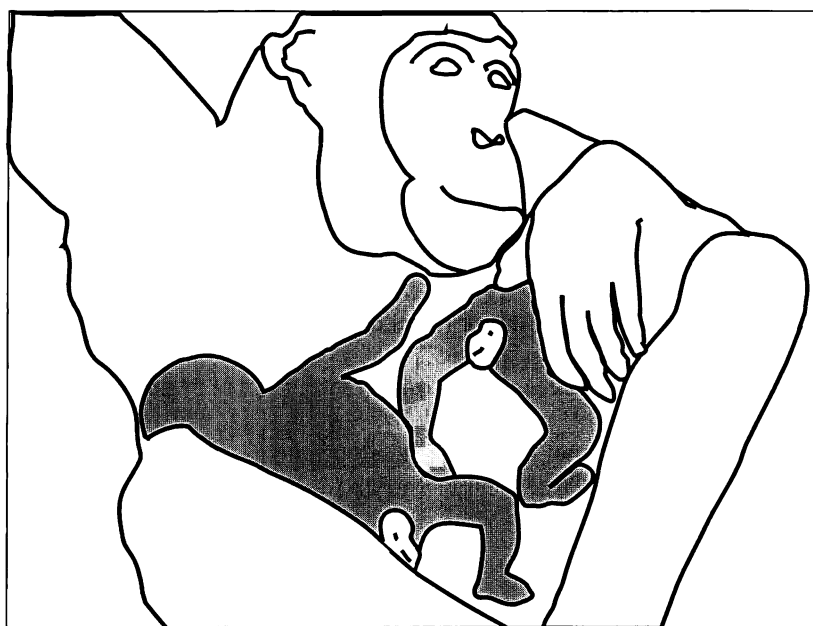


Fig. 1. Lynso (LY) holds her female twins. She grasps one infant with her left hand and supports the other with her right leg.

women. None of the other females were pregnant in November. LY rested more frequently in day beds during the later period of pregnancy between November and December 1993 than during the earlier period between May and October 1993 (Mann-Whitney U-test: $n_1 = 3$, $n_2 = 6$, $U = 0.5$, $p < 0.05$; for observation days of 5 or more hours), and did not travel much with the "core party," which was any group including the α -male (NT).

The last day of observation when LY was pregnant was 12 January 1994. On 22 and 23 January 1994, 33 to 39 members of M group traveled with NT. LY usually traveled behind the other members during this period. On 22 January the core party was observed from 11:47 hrs onwards. LY and her twins were first seen at 15:45 and followed until 19:19. The body size of these infants appeared to be about two-thirds that of normal. They were also observed the following day from 8:20 to 10:43. LY and her twins could not be found between 24 and 28 January. On 29 January when she was observed again her twins were gone (Hosaka, pers. comm.).

1. Interactions Between LY and Other Group Members

During observations on 22 January LY met only four adult males including NT, an adolescent male, two adult females, an adolescent female and two juveniles. On 23 January an adult male, two adolescent males, an adolescent female and a juvenile were present. Males followed and often displayed at a young adult female in estrus on both days. Those adult males were indifferent to LY and her twins. On 22 January only one interaction between LY and an adult male was seen. LY pant-grunted, presented and copulated (with intromission) with NT when he approached. LY also copulated with two adolescent males after pant-grunting on both days. An adult female, an adolescent female, two juvenile females and two adolescent males groomed with LY.

2. Interactions Between LY and the Twins

On neither 22 nor 23 January did LY help her infants to suckle, although the twins showed oral rooting for the nipple without tactile stimulation from her and vocalized in distress. Instead she cradled them whenever they vocalized. The twins were thought to be distressed judging from the high frequency of their vocalizations which was 5.8 per minute (range: 1–8) on 22 January and 2.1 per minute (range: 1–4) on 23 January. Usually newborn babies at Mahale seldom vocalize in distress except when mothers move off without notice or when babies are off their mothers' nipples.

When LY traveled on the ground, she hugged the twins to her belly most of the time and often sat to rest after moving 10 to 20 m. She occasionally walked bipedally for 2–3 meters while holding the twins to her breast and gripping them by the napes. Transportation of the twins in trees was also troublesome. For example, when LY moved hastily to avoid three males approaching in display, she jumped toward a neighboring tree using only her legs because both arms were needed to support the twins. While LY rested on a branch she had to pay attention

to both infants, especially one, because it was more vigorous and shifted more often from LY's support than did the other. LY occasionally groomed one of the twins, but the twins could not be distinguished so the groomee was thus not clear. LY sat on a branch with her knees drawn up and put one twin on each leg. The twins hit or clung to each other by mistake when they exhibited the Moro reflex with their legs and arms. One of the twins protruded over LY's leg and she had to retrieve it. Soon after this, LY had to pull up the other infant because it would then slip. These behavior patterns were observed twice.

DISCUSSION

The twinning rate of chimpanzees, calculated from ISIS census data was 1.7%, approximate to that for humans (Seal et al., 1985; Geissmann, 1990). Multiple births in American women occurs 1.8% of the time (calculated from MacGillivray, 1986). The occurrence of multiple births in wild chimpanzees of Gombe and Mahale were similar. The above frequency of twin births in wild chimpanzees shows that multiple births of chimpanzee occur about as often as they do in humans. In callitrichid primates, in which multiple births are the norm, so generally is polyandry, paternal care, and allo-mothering (e.g., Goldizen, 1987). This constellation is considered to be a behavioral adaptation that enables the survival of multiple birth infants. Multiple births in chimpanzees are rare and both infants rarely, if ever, survive in the wild. Also, neither paternal care nor allo-mothering is observed in chimpanzees with regard to newborns; this places all the burden of early care on mothers.

In this study, the mother's burden for rearing twins could be divided into two categories. The first was transport. Although newborn infants are normally transported with arms embracing the mother's belly immediately after birth, mothers also have to give almost constant support. The neonate must be held close because its grip is weak. An infant chimpanzee's weight is between 1.5 and 2 kg (Keeling & Roberts, 1972). The body sizes of twins are smaller than that of single-born infants in the wild (this study; Goodall, 1990) and in captivity (Oji Zoo: Kamei, 1969; Tama Zoo: Yoshihara, 1981). However, the total weight of twins is presumed to be heavier than that of one single-birth infant. This is thought to considerably increase the mother's burden. The twins' mother walked only 10–20 m at a time, a much shorter distance than is usually observed. The same restriction of activity was reported in one case of twins at Gombe (Goodall, 1990). At Mahale, the mother had joined other core party members for a time, but after that the others' calls were usually heard coming from ahead of her. She might not have been able to keep up with other core party members by reason of the extra burden of carrying twins. LY had to pay attention to both infants even while resting, because both sometimes fell from her lap, uttering loud cries of distress. She then had to cradle them. In the case of twins at Gombe, one twin died when he was ten months old, but the other gained weight, increased activity and survived. This study and the case at Gombe show that chimpanzee mothers in the wild can not easily care for two infants at a time.

The second burden is nursing. The main reason that twins did not survive is presumed to be that the mother did not suckle them and so they starved. The mother had experienced one birth and successfully nursed her first infant for about three months. Nevertheless, in spite of the nipple-rooting behavior of these twins the mother was not seen to suckle them. Why she did not help her infants to reach the nipples was unclear. Multiple pregnancies often result in premature birth, miscarriage and stillbirth (Keeling & Roberts, 1972). Moreover, multiple births in humans often are accompanied with bleeding at delivery and anemia (Hara et al., 1994). It is widely known that the mother's hypogalactia after delivery is caused by bleeding at delivery, anemia, uneasiness, stress and weak suction by the premature infant. The causes of hypogalactia are congruent with the complications of multiple birth. Detailed information about LY's health was lacking, but the reason why LY did not suckle the twins may have been insufficiency or absence of milk flow caused by hypogalactia.

ACKNOWLEDGMENT This research was financed by a grant under the Monbusho International Scientific Research Program (No. 03041046, to Prof. T. Nishida). Data analyses were also supported by the Monbusho Scientific Research (Fellowships of the Japan Society for the Promotion of Science for Japanese Junior Scientists No. 2443 to A. Matsumoto). I am grateful to the Commission for Science and Technology, Tanzanian National Parks, Serengeti Wildlife Research Institute, and the Mahale Mountains Wildlife Research Centre for permission to conduct my research. I thank T. Nishida, M. A. Huffman, H. Ihobe, W. C. McGrew, K. Shimizu, M. Ichikawa and N. Koyama for their guidance and comments, M. Nakamura for helping illustration. I also thank R. Hawazi and K. Hosaka for their cooperation during my research at Mahale.

REFERENCES

- Geissmann, T. 1990. Twinning frequency in catarrhine primates. *Human Evolution*, 5: 387-396.
- Goldizen, A. W. 1987. Tamarins and marmosets: communal care of offspring. In (B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham & T. T. Struhsaker, eds.) *Primate Societies*, pp. 34-43, University of Chicago Press, Chicago.
- Goodall, J. 1986. *The Chimpanzees of Gombe: Patterns of Behavior*. Belknap Press of Harvard University Press, Cambridge.
- . 1990. *Through a Window*. Houghton Mifflin Company, Boston.
- Hara, K., M. Akiyama, H. Tanaka, K. Hayashi, T. Yanagihara & T. Jinbo 1994. The control of twin birth. *Sann to Fu*, 8: 1101-1108.
- Kamei, I. 1969. Artificial rearing of chimpanzees (3): on the twin chimpanzee (in Japanese). *Journal of Japan Association Zoological Gardens and Aquarium*, 6: 82-87.
- Keeling, M. E., & J. R. Roberts 1972. Breeding and reproduction of chimpanzees. In (G. Bourne, ed.) *The Chimpanzees*, Volume 5: 127-152, Basel, Karger.
- MacGillivray, I. 1986. Epidemiology of twin pregnancy. *Seminars in Perinatology*, 10: 4-8.
- Martin, D. E. 1981. Breeding great apes in captivity. In (C. E. Graham, ed.) *Reproductive Biology of the Great Apes*, pp. 343-375, Academic Press, New York.
- Nishida, T., H. Takasaki & Y. Takahata 1990. Demography and reproductive profiles. In

- (T. Nishida, ed.) *The Chimpanzees of the Mahale Mountains*, pp. 63–98, University of Tokyo Press, Tokyo.
- Seal, U. S., N. Flesness & T. Foose 1985. Neonatal and infant mortality in captive-born great apes. In (C. E. Graham & J. A. Bowen, eds.) *Clinical Management of Infant Great Apes*, pp. 193–203, Alan R. Liss, Inc., New York.
- Yoshihara, K. 1989. *Chimpanzee Monogatari* (in Japanese). Shinnihon Press, Tokyo.

——— Accepted June 5, 1995

Author's Name and Address: Akiko MATSUMOTO-ODA, *Department of Zoology, Faculty of Science, Kyoto University, Sakyo-ku, Kyoto 606-01, Japan.*