Pan Africa News

The Newsletter of the Committee for the Care and Conservation of Chimpanzees, and the Mahale Wildlife Conservation Society

ISSN 1884-751X (print), 1884-7528 (online) mahale.main.jp/PAN/

JUNE 2012 *VOL. 19, NO. 1*

Instructions for Authors:

Pan Africa News publishes articles, notes, reviews, forums, news, essays, book reviews, letters to editor, and classified ads (restricted to non-profit organizations) on any aspect of conservation and research regarding chimpanzees (*Pan troglodytes*) and bilias (*Pan paniscus*). Contributors are requested to write in English and the papers except forums, reviews and essays should usually be 1,500 words or less. Articles and notes will be peer-reviewed by at least one appropriate expert on request of the *PAN* editorial staff.

Manuscripts should be formatted as DOC or RTF files and submitted by e-mail to **pan.editor@gmail.com.** Photos and figures should be formatted as JPEG or GIF files and sent separately by e-mail attachments. Authors could include audiovisual data to enhance their papers, although they will be included in the online version only. Sound or video files should be sent only after communicating with the editor to obtain more detailed instructions.

PAN is published twice a year in June and December. Deadline for manuscripts is one month before publication (*i.e.* the ends of May and November).

Contents

<ARTICLE>

Playing with His Leg: A Case of Imaginary Social Play by an Adolescent Male Chimpanzee at Bossou?

Michio Nakamura

Kyoto University, Japan
(E-mail: nakamura@wrc.kyoto-u.ac.jp)

INTRODUCTION

Human children sometimes create imaginary playmates. Together with other forms of pretense, imaginary social play is considered to be an essential part of human cognitive development. For example, it is argued that imaginary playmate fantasy occurs frequently among human children and it facilitates social development by making possible the practice of play frame negotiation[1]. Some authors restrict imaginary social play to *Homo sapiens*, emphasizing that the complex interactions that characterize the play with an imaginary companion constitute a form of pretense that is beyond nonhuman animals[2]. Besides "playmates," imagination itself or pretense is an important aspect of the human mind. However, this concept is rarely the main topic of the studies on nonhuman primates (but see ref 3, 4). There are scattered reports of language-trained or encultured apes showing imaginary play or some form of pretense[3,5–10]. These observations were often accompanied with the use of ASL or lexigrams that could represent abstract concepts in the minds of the apes. In addition, when the imaginary play was "social" (i.e. oriented toward an imaginary companion), the direct targets of the behaviors were always human artifacts (such as dolls) whose shapes often resemble, at least to observers, something animate.

There are also some anecdotal reports of imaginary plays by the wild apes[11–16] such that a juvenile chimpanzee treated a log as if it were a baby. As some authors have pointed out, such examples have to be treated with caution. Great apes often handle objects for no particular purpose, and some of the cases are not necessarily evidence of imaginary play. However, two Mahale cases[15,16] are more convincing because the players exhibited play panting although they were engaging in solitary play. This vocalization is usually emitted when playing with a "social companion"[17] rather than during solitary play. In addition, some behavioral elements in these two cases (hitting, biting, mounting, aeroplane, etc.) are usually oriented to conspecifics. These two characteristics (play panting and socially oriented behaviors) may be more reliable indicators for imaginary social play. Thus far, such examples have been reported only from Mahale. In this paper, I report the first case of possible imaginary social play from Bossou, Republic of Guinea that included these two characteristics.

OBSERVATION

On February 18, 2003, Tua (an old male) and Poni (a male born in 1993) were found together with other chimpanzees at the Gban hill in the morning. At approximately 8:20 am, the two started to move separately away from others to Gein hill across the road. At 10:55 am, Poni walked backwards with his mouth open (showing play face) to Tua. It is possible that Poni was soliciting Tua to play; however, Tua did not respond, and Poni then galloped in front of Tua. After feeding and moving for a while, at 11:14 am, Tua began to sleep in the bush. Poni continued to feed nearby. At 11:41 am, Poni's play panting was audible from the bush where he had been feeding. I moved to a spot from where Poni was visible and started to videotape his actions. After biting the pith of the undergrowth vegetation a little, he moved a few meters away and resumed to play by himself by lying upward in the bush, holding his legs to his chest, and play panting repeatedly. At 11:45:46 am, he sat up, and with a play face, he pushed his own legs against the ground. Then after putting his face close to the legs, he began to bite his left leg (Figure 1a). He paused for a while and then resumed biting his left leg for approximately 1 min. During this, his body was vibrating due to hard play panting.

At 11:47:14 am, he paused playing and did not display a play face. After 10 s, he started observing his left leg,

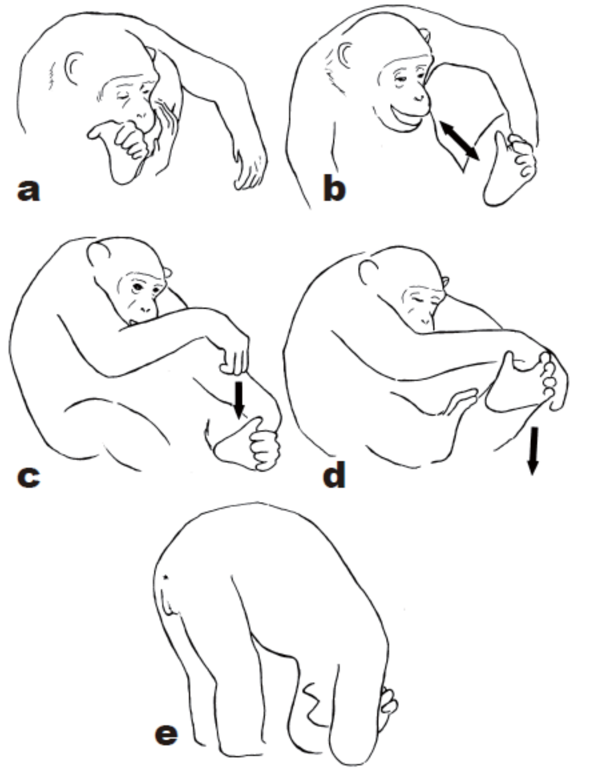


Figure 1. Examples of socially oriented behaviors by Poni during the play (all images drawn from the video footage).
a) Biting his left ankle while supporting it with the right hand.
b) Moving the left foot back and forth toward the face while holding it with the left hand. It could be interpreted that the leg was trying to escape while he was trying to catch and bite it.
c) Hitting his left leg with the right knuckle repeatedly (3–12 times).
d) Pressing down the left leg against the ground with both hands.
e) Raising the hips by pressing down the head in his arms. A similar posture is also observed during locomotor play; however, in this context, it could be interpreted that he was guarding himself from someone.

and after extending the left hand to hold the leg and pull it toward himself (Figure 1b), he again bit the leg for 15 s. He sat straight and began to hit the left leg with the right hand (Figure 1c) and then he pressed the leg down against the ground with both hands (Figure 1d). He then pirouetted and again pressed down the leg. He then hit the left leg with the right hand in three intermittent sequences. After stirring restlessly (presumably tickling himself) for a while, he got up and pressed his head down in his arms against the ground while raising his hips (Figure 1e). At 11:51:20 am, upon hearing the calls of other individuals some distance away, he screamed slightly and stopped playing. He approached Tua and started to groom him.

DISCUSSION

It is notoriously difficult to define animal play[18] because anything peculiar or anything different from the normal behavioral categories could be described as play. The above case is considered play due to the presence of the play face and play panting, which are only seen in the context of play. In addition, socially oriented behavioral elements such as biting, hitting, and pressing down against the ground occurred frequently. Thus, this case appears highly similar to what has been described as "imaginary social play" in Mahale chimpanzees[14]. However, since imagination cannot be directly observed, any proposed example of imaginary play can be criticized. For example, Call and Tomasello[19] were not convinced the case of imaginary ant-dipping at Gombe[11], because many other interpretations are also possible. Similarly, what may look like pretense can always be interpreted as something other than pretense[20]. Thus, alternative explanations may be possible for Poni's behavior. One possibility is that Poni's behavior was abnormal. However, Poni had never shown any evidence of mental or physical illness. Another possibility is that Poni's play was just an extension of the usual solitary play (i.e. locomotor or object play). But then we need to explain why he delivered physical stimulation to his own leg when there were many external objects that could be played with. It is unlikely that he did this only to play pant. Another difficulty with this interpretation is that play panting does not occur reflexively in response to physical stimuli. Self-tickling usually does not cause humans to laugh spontaneously even when the stimulation is similar to that arising by being tickled by others. A final possible interpretation is that this was truly a case of imaginary social play, in which Poni treated his left leg as if it were a social playmate, and directed socially oriented behaviors toward it. Since we can never obtain direct knowledge about others' mental states, the imagination of others (whether apes or humans) cannot be proved. We cannot completely rule out alternative interpretations, but nor can imagination be ruled out completely. This case may be a rare case of imaginary play in wild great apes, and the first one to be accompanied by play panting and socially oriented behaviors in West African chimpanzees. The unique aspect of this example is that the direct target was the individual's own body (the left leg, in particular) instead of any external object. This indicates that Poni played two different roles simultaneously—one was to bite and the other was to be bitten.

For Taylor and Carlson[2], imaginary companions (IC) are unique to humans because IC of human children are often sustained for several months and usually have their own personality. Thus far, we have no evidence that the imaginary playmates of chimpanzees are sustained or have personalities; it may well be impossible to prove the personality of an imaginary playmate through observation. Thus, according to their criteria, chimpanzees would not have IC even if they were capable of imagination. However, Poni's behavior can plausibly be interpreted as imaginary social play, in that behavioral elements that are usually directed to live social playmates were repeatedly directed to objects (including his own body and empty space). It appears premature to exclude nonhuman animals from the realm of imaginary social play.

ACKNOWLEDGEMENTS

I thank DNRST of Guinea for permission to conduct the field research at Bossou; G. Ohashi, G. Yamakoshi, and the staff of IREB for their cooperation at the field; Y. Sugiyama and T. Matsuzawa for giving me the opportunity to visit Bossou; and T. Nishida for continuous support and guidance. The study was financially supported by grants from Japanese MEXT (#12375003, #16255007 to T. Nishida, and #16770186 to M. Nakamura) and by a grant for the biodiversity research of the 21st century COE (A14).

REFERENCES

1. Partington JT, Grant C 1984. Imaginary playmates and other useful fantasies. In: *Play in Animals and Humans*. Smith PK (ed), Basil Blackwell, Oxford, pp. 217–240.
2. Taylor M, Carlson SM 2002. Imaginary companions and elaborate fantasy in childhood: Discontinuity with nonhuman animals. In: ref 4, pp. 167–180.
3. Jensvold MLA, Fouts RS 1993. Imaginary play in chimpanzees (*Pan troglodytes*). *Hum Evol* **8**:217–227.
4. Mitchell RW (ed) 2002. Pretending and Imagination in Animals and Children. Cambridge University Press, Cambridge.
5. Hayes C 1951. *The Ape in Our House*. Harper, New York.
6. Fouts R, Mills ST 1997. *Next of Kin*. William Morrow, New York.
7. Patterson F, Linden E 1981. *The Education of Koko*. Holt, Rinehart & Winston, New York.
8. Savage-Rumbaugh S, Lewin R 1994. *Kanzi: The Ape at the Brink of the Human Mind*. Wile, New York.
9. Matsuzawa T, Ueno A, Matsuno H, Hayashi M 2003. Little chimpanzees (16): 'Mimicry' and 'pretense.' *Kagaku* **73**:482–483 (in Japanese).
10. Miles HLW 1990. The cognitive foundations for reference in a signing orangutan. In: *"Language" and Intelligence in Monkeys and Apes*. Parker ST, Gibson KR (eds), Cambridge University Press, Cambridge, pp. 511–539.
11. Goodall J 1986. *Chimpanzees of Gombe: Patterns of Behavior*. Harvard University Press, Cambridge, Mass., and London.
12. Wrangham R, Peterson D 1996. *Demonic Males*. Houghton Mifflin, Boston.
13. Matsuzawa T 1997. The death of an infant chimpanzee at Bossou, Guinea. *Pan Afr News* **4**:4–6.
14. Hayaki H 1985. Social play of juvenile and adolescent chimpanzees in the Mahale Mountains National Park, Tanzania. *Primates* **26**:343–360.
15. Byrne R 1995. *The Thinking Ape*. Oxford University Press, Oxford.
16. Nishida T, Kano T, Goodall J, McGrew WC, Nakamura M 1999. Ethogram and ethnography of Mahale chimpanzees. *Anthropol Sci* **107**:141–188.
17. van Lawick-Goodall J 1968. A preliminary report on expressive movements and communication in the Gombe Stream chimpanzees. In: *Primates*. Jay PC (ed), Holt, Rinehart & Winston, New York, pp. 313–374.
18. Bekoff M, Allen C 1998. Intentional communication and social play: How and why animals negotiate and agree to play. In: *Animal Play*. Bekoff M, Byers JA (eds), Cambridge University Press, Cambridge, pp. 97–114.
19. Call J, Tomasello M 1996. The effect of humans on the cognitive development of apes. In: *Reaching into Thought*. Russon AE, Bard KA, Parker ST (eds), Cambridge University Press, Cambridge, pp. 371–403.
20. Gomez JM, Martin-Andrade B 2002. Possible precursors of pretend play in nonpretend actions of captive gorillas (*Gorilla gorilla*). In: ref 4, pp. 255–268.

<NOTE>

A Wild Chimpanzee Birth at Mahale

Koichiro Zamma[1,3], Tetsuya Sakamaki[2,3] & Rashidi Shabani

Kitopeni[3]

1. Great Ape Research Institute, Hayashibara, Japan
2. Primate Research Institute, Japan
3. Mahale Mounatins Chimpanzee Research Project
(E-mail: zamma@gari.jp)

INTRODUCTION

Wild chimpanzee births are difficult to observe because females tend to hide during the birthing process to avoid others[1, 2]. On 26 May 2000, Juno, a female chimpanzee at Mahale Mountains National Park, Tanzania, gave birth. Although we did not see the exact moment of birth, we report our observations of her behavior immediately before and after the birth.

OBSERVATIONS

Before birth

At 08:14 on 26 May 2000, we began to observe the chimpanzees of M group in Mahale. At 08:21, one researcher (KZ) started to follow an adult male called Kalunde. Around 08:30, Juno appeared uttering pant-grunts to Kalunde. She then climbed a tree and lay on a day bed made of one branch. The chimpanzees moved north and ate the fruit of *Psydrax parviflora* or *Uvaria angolensis*.

At 11:46, Juno reappeared. She crouched on the ground in front of Kalunde, and he began to groom her. After a few seconds, Alofu, an adult male, approached and peered at Juno's genitals. Kalunde also tried to peer at them, but she turned around once to prevent this. Her genital skin was not swollen, seemed dry, and showed no sign that her water had broken. She had not given birth at that time. When Juno lay on her left side, Alofu and Kalunde examined her genitals for 13 seconds. Subsequently, she lay on her back, and the males started grooming her. She did not reciprocate the grooming. At 11:47, Juno rolled over and lay on her left side, and then again lay on her back at 11:48. Alofu changed his position to follow her genitals. At 11:49, Juno lay on her left side again, and at 11:51 she turned around and crouched. Alofu changed his position again, following her genitals, and he and Kalunde continued to groom her. At 11:57, Kalunde stopped grooming and lay in the same location, but Alofu continued to groom Juno. At 12:01, Kalunde groomed Alofu for a short time and then left. When KZ left, following Kalunde, Juno was still being groomed by Alofu.

After birth

When a researcher (RK) observed Juno in the tree at 14:44, she was already nestling her newborn in her arms. RK had followed his focal animal, Masudi (an adult male), to the location and he also found Alofu on the ground. Juno climbed down from the tree, uttered pant-grunts to Alofu, and climbed another tree. Then, Fanana (the alpha male) came to the tree, displayed, and charged Juno. She screamed and climbed higher. After Fanana left, Juno made a bed and started to rest.

At 15:03, researchers KZ and TS arrived at the tree while following their focal animals. TS had been following an adult male chimpanzee named Bonobo since that morning. Juno appeared from the bed with her newborn and touched her genitals five times while sat on a branch 20 m above the ground. KZ took video on it using SONY DCR-PC7. Four adult females (Caliope, Totzy, Nkombo, and Zola), an adult male (Carter), and four immature chimpanzees (Primus, Ivana, Jidda, and Christmas) watched Juno in the tree. Caliope was a multiparous female with a 2-year-old offspring, and Totzy, Nkombo, and Zola were nonparous females with swollen genitals. Jidda was the 5-year-old offspring of Juno. At 15:05, Juno put the end of the umbilical cord in her mouth and pulled on it as if she was trying to the suck fluid inside it (Figure 1, Video 1: available online at mahale.main.jp/PAN/19_1/19(1)_02.html). The umbilical cord was about 40 cm long and the other end was connected to her newborn. The placenta was not observed. Then, Juno moved on woody vines while holding the umbilical cord in her mouth (Figure 2). The newborn was clinging to her abdomen, held there with Juno's thigh and hand. Primus stared at Juno from a distance of 3 m. At 15:07, Juno defecated and urinated, then lay on her back on a woody vine. When Caliope approached Juno while fleeing from Primus, Juno uttered soft barks and moved on the tree while holding the umbilical cord in her mouth. At 15:09, Primus and Carter started to display in the tree, but they hastily climbed down and uttered pant-grunts to Fanana, who had ap-

Figure 1. Juno (left) and her newborn. Totzy (right) watched them.

Figure 2. Juno and the umbilical cord.

peared beneath the tree. Carter also uttered pant-screams to Fanana, and then Juno and another chimpanzee uttered pant-hoots. At 15:12, Fanana left the location and some of the other chimpanzees also started to leave the tree. At 15:21, Caliope also left. Juno uttered "hu, hu" and the newborn uttered "fa, ha-ha." The newborn was female.

Terrestrial movement

At 15:23, Juno descended the tree and walked on the ground with her newborn, which she held with her right hand. A researcher (TS) followed her. At 15:25, Juno shifted to holding her newborn with her left hand and walked tripedally while trailing the umbilical cord. She passed in front of Masudi uttering pant-grunts, and sat on the ground. Masudi approached Juno from behind. She showed a grin face while uttering soft pant-grunts. She looked frightened. Masudi stood quadrupedally and peered at her from a distance of 10 cm. At this time, Pimu (an adolescent male) approached and sat in front of Juno. When Juno left, Pimu attacked her back. Juno ran away uttering screams and barks. Pimu left, while displaying. Caliope came to Juno's side, like a guard, uttering vocalizations. Juno and Caliope walked together in a different direction from the others.

At 15:30, Caliope had left and Juno walked alone. She ate *U. angolensis* fruit. She pulled the umbilical cord with her right hand. At 15:42, she lay on her back. The newborn sucked Juno's left nipple. When the newborn almost slid off, Juno held her up. The newborn uttered "hu, hu." At 15:44, Juno sat up. TS heard the vocalizations of other chimpanzees some distance away. At 15:52, Juno picked up the umbilical cord and the newborn uttered "hu, hu." At 15:53, Juno put the umbilical cord in her mouth and chewed on it. At 15:57, Juno started to walk with the newborn, trailing the end of the umbilical cord. At 15:58, she entered a thick bush and TS stopped following her.

We observed 50/51 individuals in M group that day.

Examination of the bed

At 15:56, researcher KZ climbed up to observed the empty bed. It was 80 cm in diameter and the placenta was not found on it.

DISCUSSION

Juno gave birth between 12:01 and 14:44 on 26 May 2000 while moving with almost all members of her unit group. Wild chimpanzee births are observed extremely rarely[1–3]. Juno immigrated in 1987 and had given birth to four offspring (MMCRP unpublished data). She had spent a long time in M group and had given birth many times, so she might have had the confidence to give birth the fifth time in broad daylight.

The umbilical cord was observed, but the placenta was not found. Previous reports of chimpanzee births have described the delivery of the placenta 13–18 minutes after birth, and the mother's consumption of it beginning 0–4 minutes later[1,3]. Juno must have eaten the placenta shortly after she delivered.

Based on a 229-day gestation period[4], Alofu was the likely father of Juno's offspring because only Juno and Alofu were not observed from 26 September to 11 October 2000 and were thought to have formed a consortship. However, Juno was observed to copulate at least 27 times with 10 males subsequently (Table 1. TS unpublished data), so the paternity was confused among these males. Because the males had the idea that they were the father of her newborn, they may not have delivered terrible attack on Juno and her newborn though some of them displayed near Juno and charged her.

It is interesting that Alofu, the probable father, spent time peering at Juno's genitals before the birth, although they were not swollen and lacked any visible sign of parturition. The urinary estrone conjugate (E1C) of female chimpanzees peaks during genital swelling and just before birth, whereas urinary pregnandiol glucuronide (PdG) remains at low levels during swelling and increases just before parturition[5]. Alofu may have smelled an odor indicating swollen genitals or imminent parturition.

Table 1. The partners and number of copulations with Juno observed from November to December 2000 (TS unpublished data).

Alofu	1
Bonobo	4
Carter	2
Dogura	1
Fanana	4
Hambi	5
Kalunde	2
Masudi	2
Pimu	3
Primus	3

ACKNOWLEDGEMENTS

We thank TAWIRI, TANAPA and COSTECH for permission of our fieldworks, Rashidi H, Mtunda M, Hamisi B, and other member of MMCRP for their help in the field, and Fujita S, Nakamura M, Hosaka K and Itoh N for their valuable comments. This study was financially supported by grants from the COE program of Monbusho (#10CE2005 to O. Takenaka) and the Leakey Foundation (to T. Nishida).

REFERENCES

1. Goodall J, Athumani J 1980. An observed birthe in a free-living chimpanzee (*Pan troglodytes schweinfurthii*) in Gombe National Park, Tanzania. *Primates* **21**: 545–549.
2. Reynolds V 2005. *The Chimpanzees of the Budongo Forest: Ecology, Behaviour, and Conservation*. Oxford, New York.
3. Kiwede ZT 2000. A live birth by a primiparous female chimpanzee at the Budongo forest. *Pan Africa News* **7**:23–25.
4. Martin DE, Graham CE, Gould KG 1978. Successful artificial insemination in the chimpanzee. *Symp Zool Soc Lond* **43**:249–260.
5. Shimizu K, Douke C, Fujita S, Matsuzawa T, Tomonaga M, Tanaka M, Matsubayashi K, Hayashi M 2003. Urinary steroids, FSH and CG measurements for monitoring the ovarian cycle and pregnancy in the chimpanzee. *J Med Primatol* **32**:15–22.

<NOTE>

Ecological Aspects of Chimpanzee Insectivory in the Budongo Forest, Uganda

Sophie Hedges & William C. McGrew

Department of Archaeology & Anthropology, University of Cambridge, UK
(E-mail: wcm21@cam.ac.uk)

INTRODUCTION

All long-term studies of chimpanzees (*Pan troglodytes*) show that they habitually eat insects, most often social insects obtained by extractive foraging with simple tools[1]. This generalisation holds across Africa from Senegal to Tanzania, but Ugandan populations are exceptional: Except for Kalinzu with ant dipping for *Dorylus*[2], no other Ugandan long-term study site (Budongo, Kanyawara, Ngogo, Semliki) shows regular insectivory, technically-aided or otherwise[3]. At Budongo, only occasional cases of eating *Cubitermes* have been recorded[4]. This dearth is puzzling, especially when these sites are compared with those (Gombe, Mahale) of neighbouring Tanzania, which have well-documented and varied elementary technology[5,6].

Lack of insectivory could reflect basic environmental constraints: Absence or scarcity of prey species, or absence or scarcity of raw materials for tools[7]. Less likely alternative explanations are differences between Ugandan and non-Ugandan populations in terms of genome, diet, manual dexterity, intelligence, or appetite. The presence of ant dipping at Kalinzu casts doubt on all these alternatives. Finally, such inter-population differences could result from differences in cultural knowledge, as has been found elsewhere[8]. That is, some populations of chimpanzees may not have discovered that some insects are edible or can be got with technical assistance.

Our study sought to explore the role of environmental constraints in the absence of regular insectivory in the Budongo Forest Reserve, Uganda.

METHODS

The study was done in the Sonso region Budongo from 14 July–8 September, 2011. Subjects were 80+ well-habituated chimpanzees (*Pan troglodytes schweinfurthii*) of the Sonso community[9]. SH did 12 line-transects of 6 m width, each of 500 m length, along the existing grid system of trails; six ran north-south and six ran east-west. Sites of transects were balanced for the two main forest types, mixed (4,260 m) and swamp (1,740 m). Distances were measured by hip-chain, while another person scanned for evidence of social insects. Total area surveyed was 3.6 ha.

The following taxa (all known to be eaten by chimpanzees elsewhere in East Africa) were sought: *Cubitermes*, *Macrotermes*, and *Pseudacanthotermes* termites; *Dorylus* (army) and *Oecophylla* (weaver) ants; and *Apis* (honey) bees. SH checked termite mounds for activity and measured their height and circumference; this allowed calculation of their volume, either as a cylinder or cone. Encounters with *Dorylus* ants on trails were noted by GPS data on time and place. Mounds and nests of all species were monitored weekly, after initial data-collection and surface clearing of debris. On each visit, SH checked for insect activity and signs of chimpanzee or other predator presence or exploitation. Specimens of prey species were preserved and identified later by specialists.

SH surveyed raw materials suitable for extractive foraging probes, that is, woody and non-woody vegetation with straight, elongate dimensions. Data-collection entailed marking a circle of 5 m radius around the resource and counting all plants presenting potential raw materials, in three categories: woody tree or shrub, vine, or monocotyledon (e.g. grass, sedge)[10].

To measure the chimpanzees' consumption of insects, both direct and indirect data were collected. SH logged 80 hr of direct observation of opportunistically encountered parties of chimpanzees, using continuous recording of feeding or interacting with insects[11]. For indirect data, SH collected all fresh faecal samples (n = 26) from chimpanzees encountered; these were sealed in ziplock bags and later sluiced in running water to detect undigested food fragments[12].

To estimate productivity, that is, amount of termites available to harvest, SH randomly sampled 10 *Cubitermes* and two *Pseudacanthotermes* mounds, removing about 150 cm^3 from their tops. Once sealed in a ziplock bag, the soil was broken into chunks of less than 1 cm^3; all termites, by caste, were counted in the contents[7]. Also, SH made and used flexible probes modelled on chimpanzee fishing probes, to fish termites from these mounds. To measure the payoff from termite fishing, efficiency, success rate, and error rate were calculated[12].

Because sample sizes were small and data non-normally distributed, all statistical tests were non-parametric. Alpha was set at 0.05, and all tests were two-tailed.

For specific details of methods, see Hedges[13].

RESULTS

Cubitermes ugandensis mounds were found at a mean density of 34.4 mounds/ha (SEM = 8.17). Neither *Macrotermes bellicosus* nor *Pseudacanthotermes spiniger* mounds were found on transects, but two mounds of each genus were found and monitored elsewhere. Two chimpanzees were seen to eat soil from mounds, one of *Pseudacanthotermes* and one of *Cubitermes*. Two mounds (one of each genus) showed damage from chimpanzee predation, but the two *Macrotermes* mounds showed no signs of chimpanzee use.

Volume of termite mounds varied greatly but did not differ across forest types. Mean volume of *Macrotermes* mounds was almost 300 times that of the average *Cubitermes* mound, and mean volume of *Pseudacanthotermes* mounds was almost seven times as big.

Encounter rate over 6 days of *Dorylus* (*wilverthi* or *kohli*) columns on trails was 0.20 columns per km and 0.42 columns per hr. Neither *Apis mellifera* nor *Dorylus* nests were found on transects, but one of each was found and monitored elsewhere.

Raw materials for fishing probes were superabundant. *Cubitermes* mounds afforded a mean of 580 tool sources per mound, while the numbers of sources for other insect prey species were: *Macrotermes* (155), *Pseudacanthotermes* (460), *Dorylus* (440), and *Apis* (684). Availability of raw materials did not differ across prey species, but overall, woody plants predominated over monocots or vines in abundance.

None of the 26 faecal specimens yielded insect remains.

The 12 mounds assessed for termite availability yielded an average of 104.8 termites per sample, but the range of values was huge (0–361).

SH's fishing from *Cubitermes* mounds was minimally productive, as the passageways were narrow and the soldiers passive. Fishing was a far less useful harvesting technique than detaching portions of the mound, with mean yields of 2.4 versus 123.5 termites. *Pseudacanthotermes* showed the reverse: Fishing was far more productive than detaching soil, with mean yields of 139 *versus* 11.5 termites. Fishing the two *Macrotermes* mound yielded almost nothing (mean of 2.5 termites).

DISCUSSION

Availability of prey or of raw materials seems not to be an obstacle to Budongo chimpanzees using tools to obtain insects. The low abundance of mounds of *Macrotermes* and *Pseudacanthotermes* is within the range of densities at other sites where these genera are fished: Bilenge (0.35/ha, *Macrotermes*; 1.03, *Pseudacanthotermes*); Campo (0.68/--); Gombe (0.40/2.04), etc. Similarly, the density of *Cubitermes* mounds at Budongo, at 34.4 mounds/ha, where the termites are eaten without tools, is intermediate in a wide range of values: 0.8/ha at Gombe at one extreme, to 233.8/ha at Lui Kotale at the other.

Similarly, encounter rates for *Dorylus* at Budongo, measured by either distance or time, are comparable to those from other sites. For distance, Budongo's encounter rate of 0.2/km is close to Gashaka's dry season rate of 0.21, where the highest rate of consumption of *Dorylus* by chimpanzees has been recorded. For time, Budongo's rate of 0.42/hr also resembles Gashaka's at 0.43[14].

Too few data are available to compare abundance of *Apis* nests between Budongo and other sites. Similarly, too few data have been published or were obtained here to allow confident comparison of termite mound volumes.

Consumption of termite soil (and termites) by chimpanzees varies hugely. Budongo's rate of 0.79/100 hr of such geophagy is higher than that at Kibale (0.52) but much lower than that at Kasoje (4.07)[15]. This report of Sonso chimpanzees eating the soil of *Pseudacanthotermes* appears to be a first for this genus in Uganda.

Raw materials of all types for extractive probes are readily available. To take the most pertinent case, Budongo's *Macrotermes* mounds afforded 155 raw material sources on average, compared with a range from 37 at Assirik to 228 at Semliki.

Absence of termites in chimpanzee faecal samples replicates the results of an earlier study[4], confirming that insectivory is rare.

Technical (i.e. fishing) versus non-technical (i.e. detachment) acquisition of termites seems not to have been compared systematically before this study. The closest result to ours seems to be that tools and techniques used to obtain *Dorylus* differ according to species of ant[8]. But until the chimpanzees of Budongo learn to eat *Pseudacanthotermes* and *Macrotermes*, these differences remain hypothetical.

In conclusion, the most likely explanation for the lack of extractive foraging for insects by Budongo chimpanzees is lack of cultural knowledge.

ACKNOWLEDGEMENTS

We thank: Uganda Wildlife Authority (UWA) and Uganda National Council for Science and Technology (UNCST) for permission to do research; K. Zuberbuehler and G. Muhanguzi for permission to work at BCFS; Corpus Christi College; Department of Biological Anthropology; and the Mosley, Frere, and Worts Funds of University of Cambridge for funding; R. Ogen, G. Muhumuza, C. Hobaiter, and B. Fallon for field assistance; C. Schöning and P. Nyeko for insect identifications.

REFERENCES

1. McGrew WC 1992. *Chimpanzee Material Culture: Implications for Human Evolution*. Cambridge University Press, Cambridge.
2. Hashimoto C, Furuichi T, Tashiro Y 2000. Ant dipping and meat eating by wild chimpanzees in the Kalinzu Forest, Uganda. *Primates* **41**:103–108.
3. Watts DP 2007. Tool use by chimpanzees at Ngogo, Kibale National Park, Uganda. *Int J Primatol* **29**:83–94.
4. Newton-Fisher NE 1999. The diet of chimpanzees in the Budongo Forest Reserve, Uganda. *Afr J Ecol* **37**:344–354.
5. Goodall J 1986. *The Chimpanzees of Gombe: Patterns of Behavior*. Harvard University Press, Cambridge, Mass., and London.
6. Nishida T 2012. *Chimpanzees of the Lakeshore: Natural History and Culture at Mahale*. Cambridge University Press, Cambridge.
7. McGrew WC, Marchant LF , Beuerlein MM, Vrancken D, Fruth B, Hohmann G 2007. Prospects for bonobo insectivory: Lui Kotal, Democratic Republic of Congo. *Int J Primatol* **28**:1237–1252.
8. Schöning C, Humle T, Möbius Y, McGrew WC 2008. The nature of culture: Technological variation in chimpanzee predation on army ants revisited. *J Hum Evol* **55**:48–59.
9. Reynolds V 2005. *The Chimpanzees of Budongo Forest: Ecology, Behaviour and Conservation*. Oxford University Press, Oxford.
10. Martin P, Bateson P 2007. *Measuring Behaviour: An Introductory Guide*. 3rd edition. Cambridge University Press, Cambridge.
11. McGrew WC, Marchant LF, Phillips CA 2009. Standardised protocol for primate faecal analysis. *Primates* **50**:363–366.
12. McGrew WC, Marchant LF 1999. Laterality of hand use pays off in foraging success for wild chimpanzees. *Primates* **40**:509–513.
13. Hedges S 2012. *Ecological aspects of chimpanzee insectivory in the Budongo Forest, Uganda*. Final-year dissertation, University of Cambridge.
14. Fowler A, Sommer V 2007. Subsistence technology of Nigerian chimpanzees. *Int J Primatol* **28**:997–1023.
15. Mahaney WC, Milner MW, Sanmugadas K, Hancock RGV, Aufreiter S, Wrangham R, Pier HW 1997. Analysis of geophagy soils in Kibale Forest, Uganda. *Primates* **38**:159–176.

<NOTE>

Update on the Assirik Chimpanzee (*Pan troglodytes verus*) Population in Niokolo Koba National Park, Senegal

Jill D. Pruetz[1,2], Racine Ballahira[3], Waly Camara[2], Stacy Lindshield[1,4], Joshua L. Marshack[5], Anna Olson[1], Michel Sahdiako[2] & Ulises Villalobos-Flores[2]

1 Department Anthropology, Iowa State University, Ames, USA
2 Fongoli Savanna Chimpanzee Project, Kedougou, Senegal
3 Departmentof Research and Management, Niokolo Koba National Park, Tambacounda, Senegal
4 Ecology and Evolutionary Biology Program, Iowa State University, Ames, USA
5 Department of Anthropology, Washington University, St. Louis, USA
(E-mail: pruetz@iastate.edu)

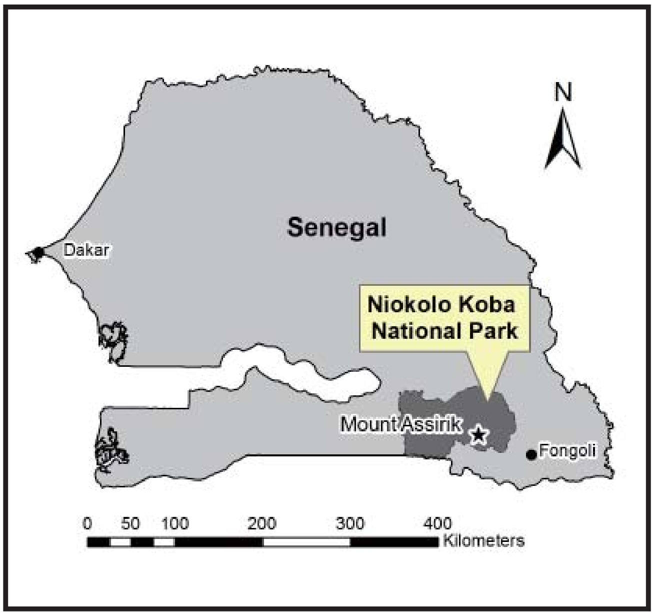


Figure 1. Location of Niokolo-Koba National Park in Senegal.

INTRODUCTION

The Assirik, Senegal chimpanzee population was studied extensively by McGrew and colleagues in the Stirling African Primate Project (SAPP) in the late 1970s[1] and surveyed by the Miami Assirik Pan Project (MAPP) in 2000[2]. These chimpanzees (thought to represent a single community[3]), within the Niokolo Koba National Park (or Parc National du Niokolo Koba, PNNK), remain the only protected population in the country, with most of Senegal's chimpanzees living in unprotected areas[4]. In 2012, the Iowa State Assirik Primate Project (ISAPP) surveyed Assirik and outlying areas in the PNNK to assess chimpanzee density and to explore the possibility of establishing a research program there in collaboration with the National Parks Department of Senegal and University of Cheikh Anta Diop in Dakar. One objective in this study was to re-survey the Assirik area in order to compare our results to data collected in 2000.

METHODS

Niokolo Koba National Park is in southeastern Senegal (12°53' N, 12°44' W) (Figure 1). The habitat is Sudano-Guinean mixed woodland and savanna, characterized by an extensive 7-month dry season and less than 1,000 mm of rainfall per year. The park has four diurnal non-human primate species (see Table 2) and two nocturnal species (*Galago senegalensis*, *Potto perodicticus*). Several potential mammalian predators on chimpanzees exist in the PNNK, including lion (*Panthera leo*), leopard (*Panthera pardus*), spotted hyena (*Crocuta crocuta*) and wild dog (*Lycaon pictus*)[5].

We combined systematic line transect and reconnaissance sampling of chimpanzee nests in an effort to replicate methods from the MAPP study[2]. However, with less than half of the time available to conduct the survey, we did only two rather than four 2-km transects that radiated from the summit of Assirik and did not repeatedly sample areas. On 12 different days, from January 26–February 2, 2012, we surveyed 115.7 km (78.7 km on foot, 37 km by vehicle) during daylight hours for chimpanzee nests. We sampled the Mt. Assirik area as well as areas to the south and north of this summit (Table 1, Figure 2). This included two 2-km transects at the Assirik summit and 6.7 km in two forested valleys (Stella's and Lion Valleys), in addition to searching wooded areas. In order to provide a measure of potential chimpanzee predators, prey and competitors, we calculated encounter rates (number of sightings or individuals per km) with mammals (excluding rodents and bats), on foot (102.4 km) and from the vehicle (448.6 km) between the Ranger Post to the southeastern section of PNNK. Vehicle surveys could cover the same area more than once and included encounters with animals seen on the Tambacounda-Kedougou highway running through the PNNK.

We made several assumptions in our analyses of nest densities. We assumed all nests were less than 120 days old and that each weaned chimpanzee built a new nest each night. We used a formula revised from Marchesi and co-workers[6]: Density = (# nests/area surveyed) (1/mean nest duration [120 days]) to calculate the density of nest-building chimpanzees. We weighted our values according to habitat type since the Assirik summit transects bisected only woodland and grassland habitats, and most nests were found in gallery forests. Therefore, we calculated nest density in woodland (including bamboo woodland = 42% of area) and gallery forest (3% of area) separately in order to produce a more accurate measure of chimpanzee density in this savanna mosaic. Percentage habitat values are from Baldwin and co-workers[7]. No nests were found in grassland habitats during the transect surveys, which accounts for 55% of the area used by Assirik chimpanzees[7]. We used data from the 2.77 km transect through Lion Valley to represent chimpanzee nest density in gallery forests and used the two 2-km transects from the summit of Assirik to represent woodland habitats, multiplying these values by 3% and 42%, respectively. This procedure replicates MAPP methods[2].

RESULTS

We recorded 840 nests built by chimpanzees in the PNNK (Table 1, Figure 2). Additionally, we heard at least one chimpanzee pant-hooting during a transect survey on the eastern slope of Assirik. Chimpanzee nest density in the PNNK was estimated at 1.28 individuals per km^2.

We recorded 16 mammal species during 106 sightings (0.19 per km) with 476 individuals (0.86 per km) (Table 2). We also found recent traces of poachers (e.g. shotgun shells, footprints, sounds of gunfire). During one foot survey, we encountered a group of poachers and then immediately left the area for safety reasons.

DISCUSSION

Although our results from this brief survey indicate that the chimpanzee population in the PNNK increased since the MAPP survey, from 0.13 nest-building chimpanzees per km^2 calculated in 2000[2] to 1.28 in this study, such an interpretation should be made with caution. The results reported here accounted for less than 7 km of line transects, compared to the 13.7 km surveyed in the 2000 study[2]. Plumptre[8] recommend surveying at least 200 km for forest-dwelling primates. However, effective sampling distances in a savanna environment are likely to be shorter because detection distances (i.e. strip width) are larger. In the MAPP survey[2], a detection distance of 36 m was calculated based on nest sighting distances, suggesting a strip width of

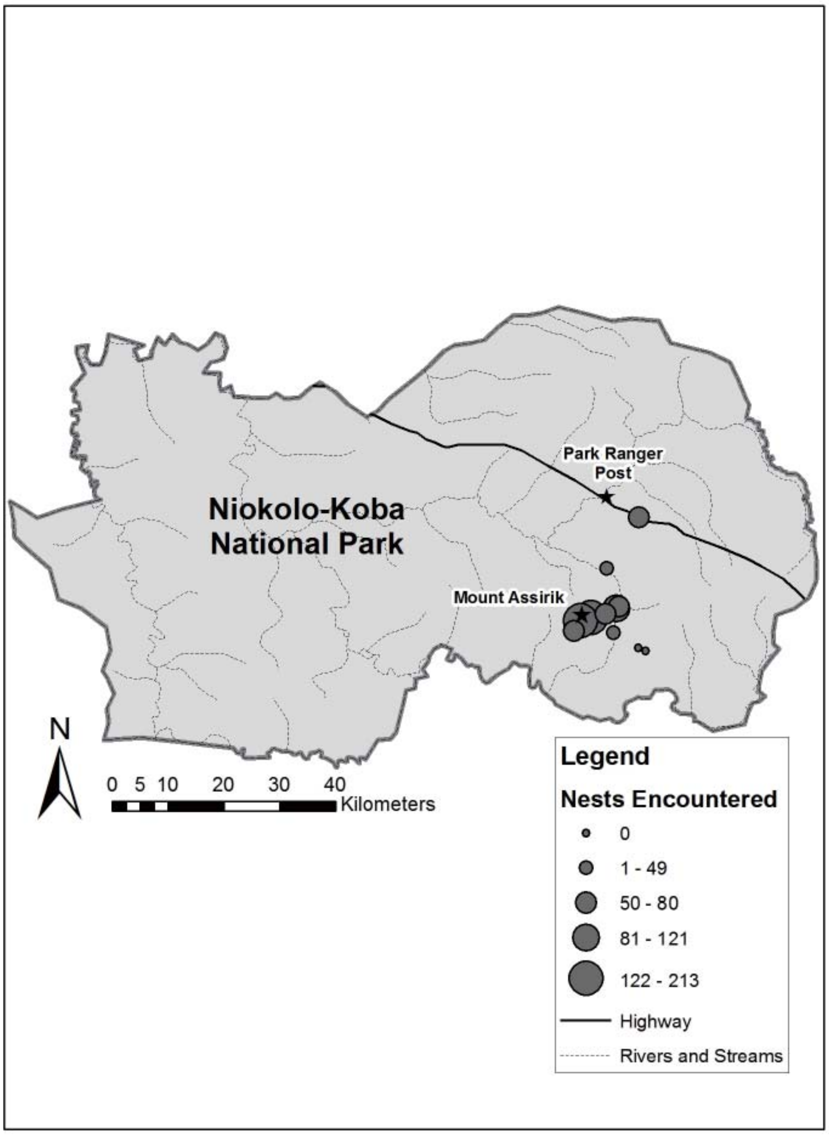


Figure 2. Locations of nest survey areas and number of nests encountered within Niokolo-Koba National Park.

Table 1. Surveys of chimpanzee nests and mammals in Niokolo Koba National Park. Nest survey distances are in parentheses.

Date	Km surveyed by vehicle	Km surveyed on foot	Nest count	Area surveyed	GPS point
16 Jan	79(26)	4(4)	0	Southeast of Assirik	12°49.373 N, 12°39.782 W
17 Jan	0(0)	23(23)	49	Southeast of Assirik	12°51.171 N, 12°42.945 W
18 Jan	35(0)	10(5.3)	0	Southeast of Assirik	12°49.400 N, 12°39.818 W
19 Jan	44(0)	0(0)	0	Highway	13°04.511 N, 12°43.384 W
23 Jan	69(5)	3.8(3.8)	78	Assirik woodlands	12°53.738 N, 12°42.360 W
24 Jan	0(0)	9.5(9.5)	75	Assirik area, Stella's Valley	12°53.012 N, 12°43.670 W
25 Jan	0(0)	11.4(11.4)	213	Mount Assirik area	12°52.682 N, 12°45.130 W
26 Jan	69(0)	1.7(1.7)	121	Assirik gallery forest and woodland	12°53.532 N, 12°42.589 W
30 Jan	69(0)	8.3(4.2)	30	Assirik gallery forest and woodland	12°57.469 N, 12°43.562 W
31 Jan	6(6)	12.4(7.6)	126	Mount Assirik area	12°52.401 N, 12°46.156 W
1 Feb	8.6(0)	14(5.7)	68	Assirik area, Lion Valley	12°51.395 N, 12°46.864 W
2 Feb	69(0)	4.3(2.5)	80	Tower highway gallery forest and woodland	13°02.407 N, 12°40.278 W
Total	**448.6(37)**	**102.4(78.7)**	**840**		

72 m provided a reliable estimate of chimpanzee nest density in this environment. Nonetheless, given the brief nature of our study, our comparative analysis should be used primarily as a relative measure of the presence and location of chimpanzees in the PNNK over the years. However, we found a large number of chimpanzee nests during a relatively brief survey, which is encouraging.

We recorded more nests in 2012 relative to the 2000 survey, although nest encounter rates (nests per km) were higher in 2000. A total of 29 km (on foot) and 54 km (via vehicle) were surveyed during the MAPP study[2] compared to the current effort of 78.7 km and 37 km surveyed by foot and vehicle, respectively. We recorded 840 nests along 115.7 km (7.3 nests per km surveyed), while MAPP recorded 736 nests along 83 total km (8.9 nests per km surveyed). We attribute the lower encounter rate in 2012 to reconnaissance sampling more than 10 km southeast of the Assirik summit, where no nests were observed (Figure 2).

Table 2. Mammal species recorded in Niokolo Koba National Park*.

Species	# times encountered	# individuals encountered
Baboon (*Papio hamadryas papio*)	27	248
Vervet monkey (*Chlorocebus aethiops*)	26	108
Patas monkey (*Erythrocebus patas*)	7	26
Warthog (*Phacochoerus africanus*)	7	26
Oribi (*Oribi oribi*)	16	23
Derby Eland (*Taurotragus derbianus*)	2	17
Duiker species (*Cephalophus* spp.)	9	12
Banded mongoose (*Mungos mungo*)	1	4
Bushbuck (*Tragelaphus scriptus*)	3	3
Hartebeest (*Alcelaphus buselaphus*)	1	2
Grimm's duiker (*Sylvicapra grimmia*)	1	1
Roan antelope (*Hippotragus equinus*)	1	1
Slender mongoose (*Galerella sanguinea*)	1	1
Egyptian mongoose (*Herpestes ichneumon*)	1	1
Mongoose (sp. indet.)	1	1
Civet? (*Viverra civetta*?)	1	1
Golden cat? (*Caracal aurata*?)	1	1
Totals	**106**	**476**

*Species heard but not seen were leopard (*Panthera pardus*), spotted hyena (*Crocuta crocuta*) and chimpanzee (*Pan troglodytes verus*)

Based on our 2012 records of nests in new areas surveyed relative to the 2000 study, we suggest that at least two chimpanzee communities use the PNNK, in contrast to the findings of Tutin and co-workers[3]. We recorded nests more than 20 km north of Mount Assirik (Figure 2). At the Fongoli site, less than 60 km from Assirik (Figure 1), the chimpanzees' home range is over 86km^2, and the furthest distance between points used by this community is around 10 km (Pruetz & Wessling, in prep.). We hypothesize that PNNK chimpanzees exhibit similar ranging patterns, and may in fact have smaller home ranges than chimpanzees outside of the PNNK since they do not experience anthropogenic disturbance, which accounts for 5% of the Fongoli range[9]. Although both the 2000 and the 2012 surveys occurred during the dry season (February–March and January, respectively), data on Fongoli chimpanzees indicate that savanna chimpanzees in Senegal use their home ranges seasonally and cyclically. Fongoli chimpanzees range most widely during the early dry season, when baobab is fruiting. It is possible that Assirik chimpanzees do so as well, ranging more widely from the summit during the early dry season (November–January) compared to the late dry season (February–April) due to the widespread dispersion of baobab trees, a key food source for Fongoli chimpanzees[10]. In any case, the harsh savanna environment coupled with confirmed poaching activity within the park's borders underscores the need for increasing conservation and management efforts for Assirik chimpanzees. Given the increasing human population in Senegal, it is possible that the human community surrounding PNNK will exert increasing competitive and predation pressures on chimpanzees in the years to come.

The increasing human population of Senegal is attributed to rising birth rates and immigration from surrounding countries. Large-scale mining is increasing here, and smaller-scale artisanal mining attracts people from other countries who may not have the same cultural values that have resulted in the protection of Senegal's chimpanzees via taboos against eating them[4]. The large mammal population in the PNNK is thought to be under increased pressure from poachers, and their presence could also affect the behavior of chimpanzees in this area, although they are not yet thought to be the target. We found more evidence of poachers in our 12 days in the PNNK than JDP observed in over 2 months during the 2000 study. As mining continues to develop in Senegal, the market for bushmeat is likely to increase even more, indicating the need to better protect this important area of wildlife diversity.

ACKNOWLEDGMENTS

We thank the Republic of Senegal, Direction des Parcs Nationaux, especially Docteur Djibril Diouck, Commandant Mamadou Sidibe, and the rangers at Niokolo Koba Post for assistance. We thank Gray Tappan for information on the location of chimpanzees in the PNNK, Erik Otarola-Castillo for technical advice, and WCM McGrew for helpful comments on this manuscript.

REFERENCES

1. McGrew WC, Baldwin PJ, Tutin CEG 1981. Chimpanzees in a hot, dry, and open habitat: Mt. Assirik, Senegal, West Africa. *J Hum Evol* **10**:227–244.
2. Pruetz JD, Marchant LF, Arno J, McGrew WC 2002. Survey of savanna chimpanzees (*Pan troglodytes verus*) in Southeastern Senegal. *Am J Primatol* **58**:35–43.
3. Tutin CEG, McGrew WC, Baldwin PJ 1983. Social organization of savanna-dwelling chimpanzees, *Pan troglodytes verus*, at Mt. Assirik, Senegal. *Primates* **24**:154–173.
4. Carter J, Ndiaye S, Pruetz J, McGrew W 2003. Senegal. In: *West African Chimpanzees: Status Survey and Conservation Action Plan*. Kormos R, Boesch C, Bakarr

MI, Butynski TM (eds), IUCN, pp. 31–39.
5. Di Silvestre I, Novelli O, Bogliani G 2001. Feeding habits of the spotted hyaena in the Niokolo Koba National Park, Senegal. *Afr J Ecol* **38**:102–107.
6. Marchesi P, Marchesi N, Fruth B, Boesch C 2005. Census and distribution of chimpanzees in Cote d'Ivoire. *Primates* **36**:591–607.
7. Baldwin PJ, McGrew WC, Tutin CEG 1982. Wide-ranging chimpanzees at Mt. Assirik, Senegal. *Int J Primatol* **3**:367–385.
8. Plumptre AJ 2000. Monitoring mammal populations with line transect techniques in African forests. *J Appl Ecol* **37**:356–368.
9. Bogart SL, Pruetz JD 2011. Insectivory of savanna chimpanzees (*Pan troglodytes verus*) at Fongoli, Senegal. *Am J Phys Anthropol* **145**:11–20.
10. Pruetz JD 2006. Feeding ecology of savanna chimpanzees (*Pan troglodytes verus*) at Fongoli, Senegal. In: *Feeding Ecology in Apes and Other Primates.* Boesch C, Hohmann G, Robbins MM (eds), Cambridge University Press, Cambridge, pp. 161–182.

<NEWS>
Dr. Julius Keyyu Visits WRC

Gen'ichi Idani

Kyoto University, Japan
(E-mail: gidani@wrc.kyoto-u.ac.jp)

Dr. Julius Keyyu, Director of Research at the Tanzania Wildlife Research Institute (TAWIRI), visited Japan in May 2012. He was invited by the Wildlife Research Center (WRC), Kyoto University to attend an international symposium "Wildlife Studies in Tanzania" and a workshop "Prospect and Cooperation for Wildlife Research in Tanzania".

The study of great apes by Japanese researchers in Tanzania was pioneered by the late Dr. Kinji Imanishi and the late Dr. Junichiro Itani in 1961. In 1965, the late Dr. Toshisada Nishida was successful in provisioning wild chimpanzees in the Mahale area, and Mahale Mountains National Park was established in 1985 as the 11th National Park in Tanzania.

Research in Mahale Mountains N. P. under the leadership of Dr. Nishida produced a lot of important results. Key findings included the existence of the unit group (community), exchange of females among unit groups and the patrilineal structure of chimpanzee society, fission and fusion of individuals within a unit group, male alliances and dominant-subordinate relations, conflict between unit groups, various sexual behaviors, infanticide and cannibalism, sharing behavior, cultural behaviors, including tool-using behaviors. It can safely be said that these findings played an important role in developing our scientific understanding of a few differences between chimpanzees and human beings.

At the same time as work was beginning at Mahale, field research of wild chimpanzees was also carried out in the Ugalla area, which is located 100 km north-east of Mahale. Dr. Takayoshi Kano (now an honorary professor of Kyoto University) stayed alone in Ugalla during 1965-1967 and conducted a distribution survey of chimpanzees in Western Tanzania. In this survey, he established that the eastern limit for the distribution of chimpanzees in Tanzania was at long. 31°1' E on the left bank of the Ugalla River, and the southern limit was at lat. 6°38' S of the Wansisi Hill. The left bank of the Ugalla River is also the eastern limit of the distribution of the chimpanzee in Africa. Unfortunately, research in Ugalla was not continued after that because efforts were concentrated on work at Mahale.

In 1994, however, Dr. Hideshi Ogawa (Chukyo University) and I resumed the survey in Ugalla and studies there continue to the present day. Dr. Ogawa revised the southern limit of the distribution of chimpanzees in Tanzania to lat. 8°12' S. We have also revealed unique ecological characteristics of the miombo arid woodland of Ugalla, and interesting studies of various mammals and raptors have been initiated there.

The program of the symposium held on 16th May, 2012 is shown below. It began with a keynote presentation by Dr. Keyyu, who introduced activities and research in TAWIRI, and then the latest studies were described in three presentations for each of Mahale and Ugalla. These presentations dealt not only with chimpanzees, but also referred to various other fauna, including raptors, and to the vegetation and climate. The symposium stimulated active discussion among many researchers and students. We would like to express our sincere thanks to all of the participants in this symposium.

On the following day (the 17th May), a closed workshop was held among Dr. Keyyu and researchers of Mahale and Ugalla. We discussed future collaboration between TAWIRI and WRC in scientific research, conservation and education. Studies in most of the 16 national parks and 10 reserves for wild animals in Tanzania have been carried out by European and American researchers. Japanese researchers have mainly promoted studies in Mahale and Ugalla in western Tanzania. Although there is the Katavi National Park in the south of Mahale, foreign researchers seldom work there. So we also discussed a plan for Japanese researchers to develop studies in the whole of western Tanzania, from Katavi N.P. to Mahale and Ugalla. This workshop was a valuable event. One excellent outcome was an agreement to form a MOU between TAWIRI and WRC in the near future.

Dr. Keyyu had friendly discussions with researchers and students at WRC, and he also visited Kyoto City Zoo and Kyoto Aquarium. He was deeply touched to see a

newborn gorilla in the zoo and wondered at the exhibits of great salamanders and dolphins in the aquarium. Though his stay in Kyoto was only 4 days, it was a fruitful time, and he left for home on 19th May. We hope that TAWIRI and WRC will develop more on each research and activity in Tanzania.

<Symposium For Wildlife Studies In Tanzania>

Venue: Wildlife Research Center, Kyoto University
Schedule:
09:50– Greeting, Prof. Gen'ichi Idani (WRC)
10:00– Keynote address, Dr. Julius Keyyu (TAWIRI), “Activities of TAWIRI and Research Topics”
11:15– Dr. Michio Nakamura (WRC), “Long-Term Research and Conservation of Chimpanzees at Mahale”
12:15– Lunch time
13:20– Dr. Noriko Itoh (WRC), “Long-Term Research in Mahale: Climate, Vegetation, and Plant Phenology”
14:10– Dr. Koichiro Zamma (Great Ape Research Institute, Hayashibara), “Populations of Mammals and Chimpanzees in Mahale”
15:00– Coffee break
15:10– Ms. Midori Yoshikawa (WRC & Tokyo University of Agriculture and Technology), “The Present States of Chimpanzees in Ugalla and Other Non-Protected Areas, Tanzania”
15:50– Ms. Eriko Iida (WRC), “Wild Mammals in Ugalla Area”
16:30– Dr. Hiroshi Kaneda (WRC), “Ugalla, from Eagle's View”
17:10– Discussion
18:00– Close
19:00– Social gathering

<Workshop for Prospect and Cooperation for Wildlife Research in Tanzania (Closed)>

We discussed for future collaboration between TAWIRI and WRC in scientific research, wildlife conservation and education.

<NEWS>
Book Launch

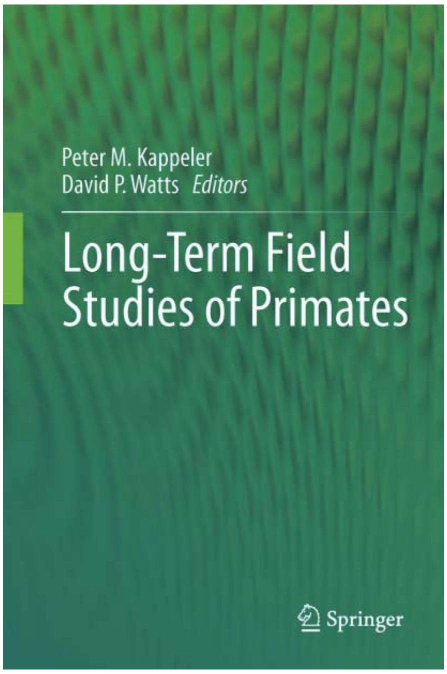
Prof. Toshisada Nishida’s last book, *Chimpanzees of the Lakeshore: Natural History and Culture at Mahale* (Cambridge University Press, 320 pp., 2012) got a launch party at the annual meeting of the American Association of Physical Anthropologists. The AAPA met in Portland, Oregon, USA, from 11–14 April, 2012. The event was arranged by Martin Griffiths, commissioning editor for the book, at Cambridge University Press. Conviviality was guaranteed by CUP’s provisioning with a keg of crafted ale from the hometown Rogue Brewery. Prof. William McGrew proposed the toast to Prof. Nishida at the outset, but later so many more persons arrived that another keg had to be tapped and another toast was made. At least 200 persons, including many prominent primatologists, attended, and the proceedings ended only with the drinking of the last drop of beer. It is hoped that Toshi (as he is affectionately known by his Western friends and colleagues) would have appreciated this celebration of his life and achievements.

<BOOK INFO>
Long-Term Field Studies of Primates

Edited by Peter M. Kappeler and David P. Watts

Some primate field studies have been on-going for decades, covering significant portions of individual life cycles or even multiple generations. In this volume, leading field workers report on the history and infrastructure of their projects in Madagascar, Africa, Asia and South America. More importantly, they provide summaries of their long-term research efforts on primate behaviour, ecology and life history, highlighting insights that were only possible because of the long-term nature of the study. The chapters of this volume collectively outline the many scientific reasons for studying primate behaviour, ecology and demography over multiple generations. This kind of research is typically necessitated by the relatively slow life histories of primates. Moreover, a complete understanding of social organization and behaviour, factors often influenced by rare but important events, requires long-term data collection. Finally, long-term field projects are also becoming increasingly important foci of local conservation activities.

Contents

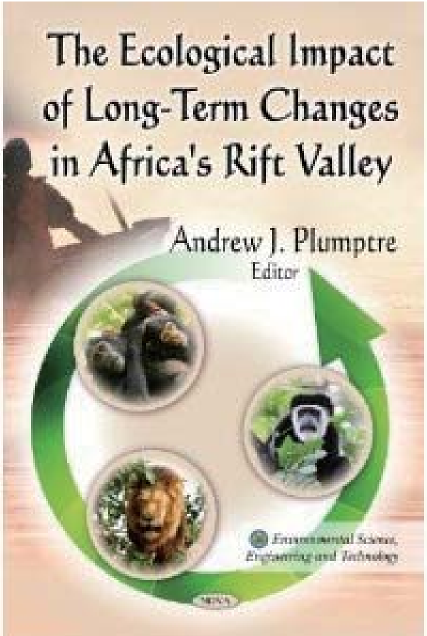


460 pages
Springer
Published January 2012
ISBN 978-3-642-22513-0
(Hard Cover) 149,95 €
ISBN 978-3-642-22514-7
(eBook) 139,99 €

<BOOK INFO>
The Ecological Impact of Long-Term Changes in Africa's Rift Valley (Environmental Science, Engineering and Technology)

Edited by Andrew J. Plumptre

Despite Africa's rich biodiversity and the importance of its ecosystem services, it has relatively few collaborative, network-based studies that examine the ecological impacts of climate change. This book marks the beginning of such a collaboration. It covers ecological information that spans across five countries in the Albertine Rift region, reflects over 50 years of research, and includes contributions from 65 researchers who represent 44 organizations at work in 11 sites. It provides invaluable information about past and current trends in the status of species, ecosystems and associated threats, as well as recommendations for interventions.



308 pages
Nova Science Pub Inc
Published March 30, 2012
ISBN-10: 1611227801
ISBN-13: 978-1611227802
Hardcover: $145.00

Contents

Pan Africa News, Vol. 19, No.1
Published in June, 2012
Address: c/o Human Evolution Studies,
Dept. of Zoology, Faculty of Science,
Kyoto Univ., Kyoto, 606-8502, JAPAN
TEL: (+81)75-753-4093
FAX: (+81)75-753-4115
E-mail: pan.editor@gmail.com
URL: http://mahale.main.jp/PAN/
ISSN: 1884-751X (Print), 1884-7528 (Online)