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

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Instructions to Authors:

Pan Africa News publishes articles, notes, reviews, forums, news, essays, book reviews, letters to editor, and classified ads on any aspect of conservation and research regarding chimpanzees (*Pan troglodytes*) and bilias (*P. paniscus*). Contributors are requested to write in English and the papers except forums, reviews and essays should usually be 1,000 words or less. Manuscripts should be submitted by e-mail to:

pan_ed@jinrui.zool.kyoto-u.ac.jp

Photos and figures, however, should be sent by air mail to: T. Nishida, Japan Monkey Centre, 26 Kanrin, Inuyama, Japan.

Publication of the next issue will be **December 2005**. Deadline for manuscripts is the **end of October**.

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OBITUARY

Professor Shigeo Uehara: Member of the Mahale Wildlife Conservation Society

Toshisada Nishida
Japan Monkey Centre

Professor Shigeo Uehara (Uehara-san) sadly passed away on the morning of August 24, 2004, at only 58 years old. Uehara-san was my closest colleague in the Mahale Mountains Chimpanzee Research Project and simultaneously one of my most reliable friends.

Uehara-san's important contributions to the study of chimpanzees include the followings: He found that K-group chimpanzees exploit termites belonging to the genus *Pseudocanthotermes* by different techniques in accordance with the termite life cycle -- fishing for soldiers at the beginning of the rainy season, catching winged termites with their hands at the end of the rainy season, and taking termite soils all year round.

He was most interested in the origins of division of labor by sex, and sought to examine sex and age differences in chimpanzee subsistence behavior. He found that male chimpanzees are engaged more in predatory behavior and females more in eating ants. Furthermore, he clarified that adult males ingest piths of grasses significantly faster than adolescent males. Moreover, by comparison with the data from Gombe and Tai, he clarified the characteristics of predatory behavior displayed by chimpanzees at Mahale.

Photo 2. Wantangwa, a K-group female, puts her bark probe into the nest of Pseudacnthotermes spiniger (photo by S. Uehara).

Photo 1. Uehara-san in 2002

He took the body weight of chimpanzees and derived an interesting conclusion that the chimpanzees of Gombe are significantly smaller than those of Mahale although they belonged to the same subspecies. He explained this local difference by the less nutritional diet at Gombe, which is ultimately a result of differences in vegetation. Ecologically important is his finding that body weights reach their minimum in the middle of the rainy season, which is congruent with the recent finding from phenological research that fruit production is lowest at Mahale during this season.

Uehara-san also made an important contribution to the understanding of chimpanzee social organization. He concluded that the chimpanzee social unit is a bisexual group, rejecting the male-only unit hypothesis. This conclusion was drawn after a detailed analysis of long-term data on female transfer and association patterns of males and females. He examined examples of defeated alpha males who were ostracized by other adult males and concluded that only the ex-alpha males that can maintain the social nexus with some other adult males when living a lonely life can return to the unit group. He also reported a heart-warming episode in which an unrelated female adopted a male infant when his mother was suffering from illness. After a week she returned the charge to the recovered mother.

Uehara-san's contribution to the Mahale study includes the most basic part of research such as compilation of both a Tongwe-Latin dictionary of plants and the list of chimpanzee food plants,

Photo 3(right). Chausiku and her son Katabi hold the termite hill of P. spiniger. Chausiku has a bark probe in her mouth (photo by S. Uehara).

which was based on his excellent knowledge of botany and systematics. It should not be forgotten that Uehara-san played a crucial role in the initial study of M group, particularly in the individual identification and christening of many adult females and immature chimpanzees in 1973. With considerable dedication by Mariko Hiraiwa-Hasegawa, Toshikazu Hasegawa and Kenji Kawanaka to this venture, his effort formed the basis of the long-term research that is continuing through many researchers and students.

Uehara-san's research career was not limited to Mahale. He studied the ecology of bilias (bonobos) in the swamp of Yalosidi, and found that swamp was used by two antagonistic unit groups of bilias to feed for 8 species of aquatic plants. He was one of the first scientists to observe that bilias mated in the ventro-ventral position while the female was literally wet in the shallow water. His masters thesis focused on the temperate components of food composition of Japanese macaques. From detailed analyses he hypothesized that Japanese macaques had migrated to Japan via the western (Korean) route

Photo 4. Kasonta, one of the alpha males that could return to the alpha position after having been ostracized (photo by S. Uehara).

from the Asian continent and moved northward.

Uehara-san was so warm, kind and mild in his character that he was loved and respected by all those who knew him. One of the most interesting aspects of his character was that he was fastidious about fieldwork preparation. Before setting out into the bush in the morning, he would thoroughly check all his belongings, ranging from his binoculars and field notes to his compass and colored pencils.

For more than five years Uehara-san had expressed his desire to visit Mahale with his wife, son and daughter. I am deeply sad that he could not realize his dream.

Uehara-san will be greatly missed by all who knew him and worked with him.

<NOTE>

Possible Intergroup Killing in Chimpanzees in the Kalinzu Forest, Uganda

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INTRODUCTION

Several studies have reported intergroup killing of adult male chimpanzees (*Pan troglodytes schweinfurthii*)[1,2,3]. Although there has been criticism that the intergroup killing occurred as a result of artificial provisioning or playback experiments, a recent study has confirmed that it occurred in a wild group in the Kibale National Park, Ngogo group, a group that had not been under any artificial influences[3]. We have also observed a wild group of chimpanzees, in the Kalinzu Forest Reserve, Uganda, a group with no experience of artificial provisioning or experiments. Here, we report an indirect observation that suggests the occurrence of the intergroup killing of an adult male.

METHODS

We have been studying wild chimpanzees in the Kalinzu Forest Reserve since 1992[4]. We started to habituate one group, M group, in June 1997. Most of the adult male members were well habituated by 2001[4]. The observations for this report were conducted from August 2003 to October 2003. During this period, we followed the M Group and recorded feeding behaviors and

Fig. 1. The carcass of an adult male chimpanzee. The grass was trampled around the carcass.

social interactions using the focal animal and *ad lib* sampling methods.

RESULTS

While we stayed in camp, on September 13, 2003, we heard loud vocalizations coming from numerous chimpanzees in the forest. We estimated that the vocalizations had come from a distance of about 500 m. The vocalizations included pant-hoots and screams. This was unusual because it continued for more than ten minutes, without interruption.

Two weeks later, we found the carcass of a male chimpanzee in the area where we had heard the vocalization. Judging from the condition of the carcass, the chimpanzee had died two to three weeks previously (Fig. 1). We also found signs of fighting within 10 m of the carcass: a wisp of chimpanzee hair on the ground, broken branches, and trampled grass.

The carcass was identified as a prime adult male chimpanzee from a photo-identification of the teeth (Mouri and Nakai personal communication). Since that time, a prime adult male, named Nui, who was estimated to be 30-35 years old, has never been observed. As all the other adult male members have been confirmed to be alive, we postulate that the carcass was that of Nui.

In 2003, the M group home range was narrower than in the previous year, and we frequently observed a neighboring group in the area from which the M group had retreated. The carcass was found on the boundary of the M group home range in this area (Fig. 2). We also observed three agonistic encounters with a neighboring group near the boundary. One case occurred on the same day that we observed the carcass, 100 m away from it. We also observed patrolling by the M group males more often than we had in previous study periods. Based on these circumstances, we postulated that Nui had been killed in an agonistic interaction between the groups.

DISCUSSION

Intergroup killing in chimpanzees has been reported at several study sites[1, 2, 3]. Although we did not make a direct observation, the possible killing occurred when a neighboring group invaded the home range of M Group. Since 2001, a part of the home range of the neighboring group has been logged. The neighboring group appears to have shifted its home range eastward, following deforestation in their home range. Previous studies have suggested that intergroup killing increases survivorship for the attackers by increasing territory size[3]. Our study also suggests that a territory shift or expansion caused an inter-group killing in chimpanzees.

ACKNOWLEDGEMETNS

We thank the Uganda National Council for Science and Technology, the Uganda National Forestry Authority, the Uganda Wildlife Authority. We also thank Dr. Mouri for the identification of the carcass. This study was supported by a grant from the Monbusho International Scientific Research Program (#12375003 to T. Nishida).

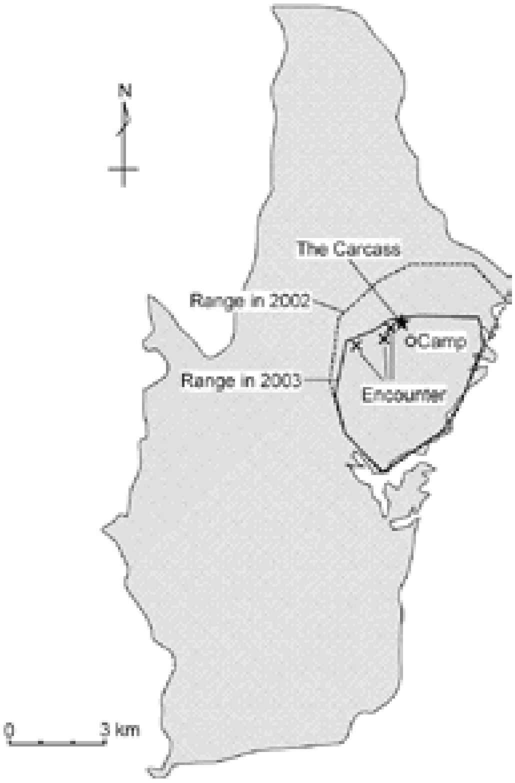

Fig. 2. The M group home range in the current study period (2003), and in the previous year (2002). The locations of the camp, carcass, and the occurrence of agonistic encounters are also indicated.

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<NOTE>

Survey of the Southern Part of the Mahale Mountains

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INTRODUCTION

The Mahale Mountains National Park contains the majority of chimpanzees (*Pan troglodytes schweinfurthii*) in Tanzania[1]. However, after initial research stages, studies have mainly focused on habituated chimpanzee groups (see 2 for details) that inhabit the northern part of the park. Consequently, recent information on unhabituated chimpanzee groups is mostly from adjacent groups of the main study group, M group (e.g, 3, 4, 5, and 6). Although there have been recent surveys further to the north[7] and further to the east[8], no systematic survey further south has been recently conducted.

The objective of this survey is to obtain general information of the southern part of the park: the occurrences of chimpanzees and other large mammals, the vegetation types, and the degree of human disturbance that can be useful for area conservation.

METHODS

We made our survey from September 6-11 2004 at the end of dry season. We first went to an estuary of the River Lubugwe by boat and then climbed a ridge to Mt. Kakunjila. After heading east for a while, we crossed the Katimba Valley and headed southeast for Kalya. From Katimba to Kalya, we tried to walk as straight as possible. The survey route was traced by a global positioning system.

We counted chimpanzee beds found from the survey route and estimated the distance from the route by eye. We roughly estimated the age of the beds and identified the species of their host trees. Chimpanzee vocalization, food remains, or feces were also recorded whenever encountered. We also recorded direct and indirect evidence of other large mammals and made rough sketches of vegetation types and human disturbance (e.g., remains of cultivation, fire, etc.).

RESULTS

Figure 1 shows the survey route. From the Katimba to the Msilambula Valleys, we walked almost straight southeast. However, because we could not find running water in Msilambula where we had planned to spend the night, we headed east for another 10 km or so to find water. Between River Lumbye and Kalya, a wide range of area was burned and the vegetation was damaged. We sometimes saw large fallen trees that were still burning.

The evidence for large mammals is summarized in Table 1. Direct observations of mammals were

Table 1. Evidence of Large Mammals Found during the Survey

Animal Species		Evidence[c]
Common Names[a]	Scientific Names[b]	
Chimpanzee	*Pan troglodytes*	F, R, V, B, P
Red colobus monkey	*Procolobus badius*	D
Roan antelope	*Hippotragus equinus*	F
Bush duiker	*Sylvicapra grimmia*	D
Bush pig	*Potamochoerus porcus*	F, S
Warthog	*Phacochoerus aethiopicus*	F, D, S
African buffalo	*Syncerus caffer*	F, V, T, P
African elephant	*Loxodonta africana*	T
Crested porcupine	*Hystrix cristata*	F
Bushy-tailed mongoose?	*Bdeogale crassicauda*	D
Mongoose?	?	F
Leopard	*Panthera pardus*	F
Spotted hyena	*Crocuta crocuta*	F

a There are other possibilities for species with "?".

b Based on Ref. 9.

c F=Feces, R=food Remains, V=Vocalizations, B=Beds, P=foot Prints, D=Direct observations, S=Skeletons, T=Trails

rare, perhaps because of the destroyed vegetation. Animals may have detected us before we noticed them. Although much of the chimpanzee evidence we found (plotted in Figure 1) was old beds, we heard calls twice and saw some fresh feces. Table 2 shows the species of the host trees of the chimpanzee beds.

DISCUSSION

Judging from the distribution of chimpanzee evidence, the ranging patterns of known groups, the vegetation, and the geographical characteristics, we estimated that our survey area covered the ranges of five unit groups, each mainly utilizing the riverine forests of Lubugwe, Msuma, Katimba, Lumbye, and Msilambula, respectively. We need additional surveys to confirm our assumptions.

To estimate the number of chimpanzees inhabiting this area, we need information of the speed of bed decay. Since most bed trees we found were *Brachystegia*, which are common in Miombo woodlands, bed decay data for these tree species have to be collected in dry Miombo woodlands.

We tried to walk straight to gather less biased data of chimpanzee beds. However, this was difficult due to two reasons. One is the landscape. Although we managed to cross the Katimba Valley without any special equipment, we had to cautiously select the safest route, and so we could not merely walk straight. Secondly, we quit walking straight because of a lack of water. Unlike a census in moist rain forests, it is hard to find water in a savanna woodland during the dry season. This is a serious obstacle when considering a wider census in Mahale.

Just as the eastern area of the Mahale National Park[8], the area south of Lumbye was badly burned. Even here we found old chimpanzee beds (especially around Msilambula), but we did not find recent evidence in such dry and burned areas. This suggests that chimpanzees utilize this area only in rainy season and migrate to other areas (perhaps near the lakeshore[1]) in dry season. If so, it means that the chimpanzees are forced to range wider because of human disturbance even within the protected area. An effective fire management plan is promptly required to cover the entire area of the park.

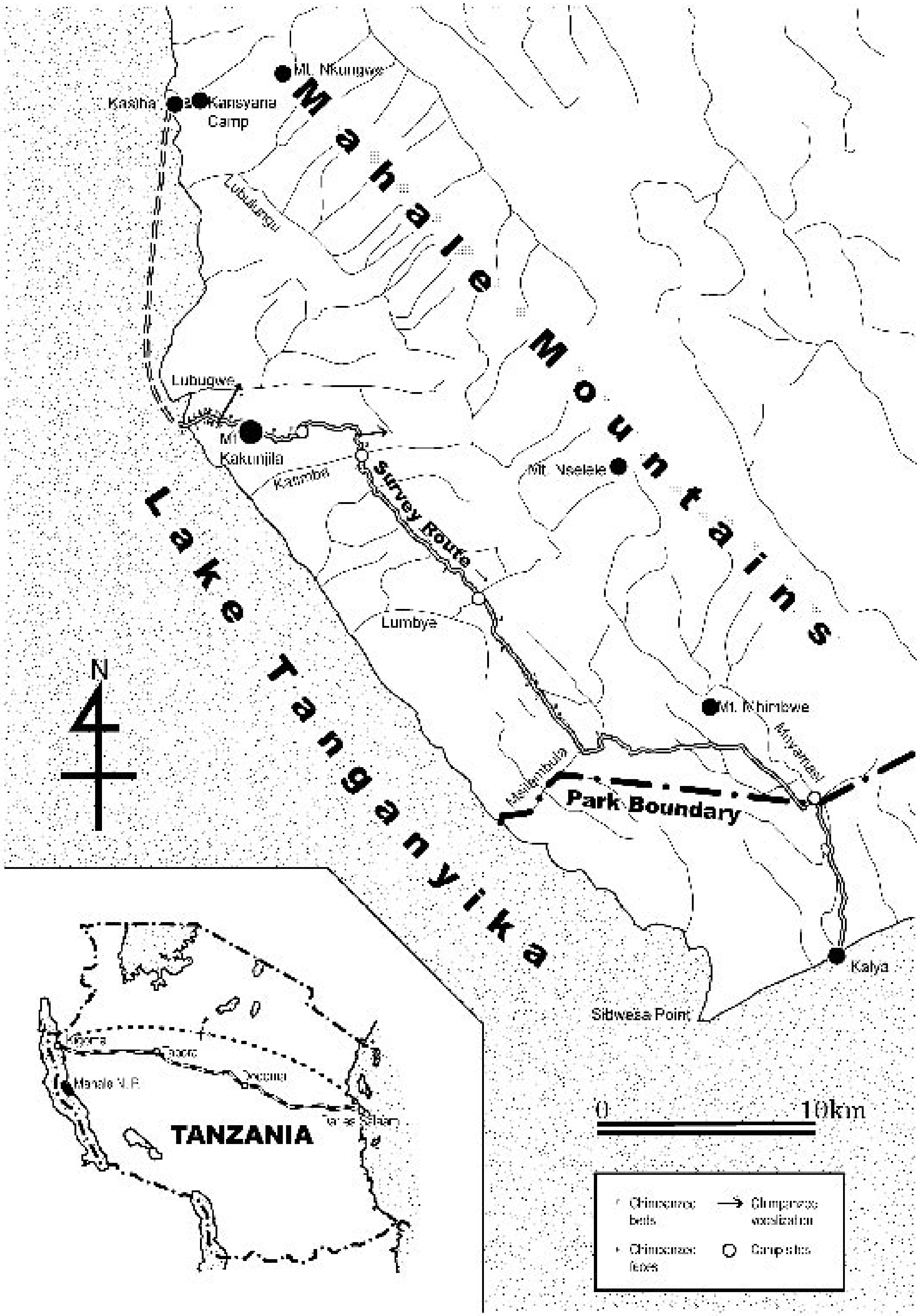

Fig 1. Southern part of the Mahale Mountains National Park and the survey route.

Table 2. Composition of the Host Tree Species of Chimpanzee Beds Found during the Survey.

Host trees		Number of beds	Number of sites
Kitongwe Names	Scientific Names		
Mkoma	*Brachystegia bussei*	63	8
Mtulu	*Brachystegia spiciformis*	35	16
Mlama	*Combretum molle*	9	4
Kankundu	*Strychnos innocua*	5	2
Msongatti	*Diplorhynchus condylocarpon*	4	3
Mfula	*Isoberlinia angolensis*	4	2
Mkokoti	*Monotes elegans*	3	3
Mkola	*Afzelia* spp.	3	1
Mwenje	*Pterocarpus tinctorius*	2	1
Mubanga	*Pericopsis angolensis*	2	1
Kabumbu	*Lannea schimperi*	2	1
Mubula	*Parinari curatellifolia*	1	1
Ikusu	*Uapaca kirkiana*	1	1
Kapala	*Hymenocardia acida*	1	1
Total		136	30

ACKNOWLEDGMENTS

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<NOTE>

Rejecting a Bit of Meat to Get More

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INTRODUCTION

"A variety of interactions involving interindividual transfer of possession of food items occurs along a spectrum approximating degrees of volition[1]," food sharing is one interesting behavior among chimpanzees. I will present a case study in which a wild infant chimpanzee rejected a small piece of meat offered by her mother. Infants learn about many kind of foods they cannot process by themselves[2]. However, shared foods are not always good. In captivity chimpanzee mothers have been observed to offer only unpalatable parts to their infants when they initiate the sharing[3]. Can infants obtain desirable foods when offered undesirable ones? Here I will show a possible case of flexible negotiation between a possessor and a non-possessor.

RESULTS

Phase 1: reluctant acceptance. I conducted research on grooming among chimpanzee infants in the M Group at Mahale Mountains National Park, Tanzania, from May to July, 2004. On June 30, at 11:28, Kalunde, an old male, caught a red colobus. At 13:17, Fatuma, an old female, held and ate a chunk of this colobus meat transferred by Kalunde. Fatuma had two female infants, Flavia (5 yrs) and FT03 (1 yr). Flavia was eating a piece of meat at a distance of 1 meter from Fatuma. At 13:18, Flavia whimpered and extended her left hand to Fatuma. Fatuma stopped eating and held the rest of the chunk of meat in her left hand, and then started to approach Flavia. Flavia put her hand on the meat, but Fatuma twisted her left wrist free of Flavia's hand. Fatuma continued to approach, showing Flavia a bit of meat, roughly 1 cm^3, between her lips and fed it to Flavia mouth to mouth. Flavia chewed it. Fatuma put the chunk into her mouth. Flavia whimpered again and reached for Fatuma's mouth. When Flavia gave a noisy whimpering scream, Fatuma embraced Flavia. However, Flavia continued to whimper and touch her mother's mouth. After Fatuma started to groom the head of Flavia, as if trying to divert Flavia's eyes from the chunk, Flavia stopped whimpering and chewed the bit of meat again.

Phase 2: rejecting a bit of meat. A quarter hour after phase 1, Flavia again solicited a chunk of meat held by Fatuma. At 13:34, Fatuma showed a bit of meat between her lips and offered it to Flavia. However, Flavia rejected it. Fatuma groomed Flavia. At 13:35, Flavia ate a chunk of meat held by Fatuma. Fatuma also ate the opposite end of it without paying attention to Flavia.

Phase 3: object gained, meat lost. Fatuma continued to hold the chunk of meat. Flavia solicited the chunk of meat, as in phases 1 and 2 until 14:23. At 14:24, Flavia solicited and took the chunk, which resembled a piece of fur. Flavia put the fur into her mouth and chewed it until 14:39, after which I lost track of them.

DISCUSSION

Rejecting offered food among wild chimpanzees has not been reported, as far as I know, and I have observed it only once in my research. Why did Flavia reject a bit of meat, even though she solicited it? Flavia was five years old, which is mature enough to know that meat is good food, and she had already been eating some bits of meat before rejecting it. However, the rate of meat intake was low. So, Flavia wanted more meat in a short time and asked for the chunk of meat held by Fatuma. In phase 1, Flavia was compelled to accept the offer, a bit of meat, from her mother. In phase 2, Flavia rejected the bit of meat, continued her solicitation, and succeeded in eating the chunk of meat. Though a scrap of meat is still meat, it may mean little for a growing infant.

Why did Fatuma offer a bit of meat? She seemed skillful in calming her whimpering daughter. It is not that she refused absolutely Flavia's solicitation. Fatuma agreed to the request for meat but only a little bit. If Flavia compromised on just a little quantity of meat, Fatuma could eat more meat. Grooming also helped to divert Flavia's attention from the chunk of meat (phase 1).

Food is not always distributed equally even if a possessor divides, offers, and shares it. A possessor occasionally offers not only an unpalatable part of food[3] but also a small amount of food. If a non-possessor solicits and steals meat, the non-possessor can eat as much as possible. However, when a possessor divides meat, the possessor can control it for selfish ends. Fatuma divided the meat into two unequal pieces and used two food sharing tactics: not to tolerate the solicitation for a chunk and to offer a smaller piece. Flavia used two other tactics: refusing to accept the offer and continuing solicitation for a larger piece (phase 2). In the end, Flavia ate the chunk of meat. However, the meat might decrease in value for the possessor, Fatuma, after she had eaten more of it[4]. It is difficult to decide whether the negotiation really lowered the threshold of resistance of Fatuma.

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<ARTICLE>

Life Span of Chimpanzee Beds at the Mahale Mountains National Park, Tanzania

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INTRODUCTION

Population estimates of wild chimpanzees have been conducted by a variety of methods. Many researchers have adopted nest- or bed-count methods to estimate chimpanzee populations due to the difficulty of making direct observations of unhabituated chimpanzees[1, 2, 3, 4, 5].

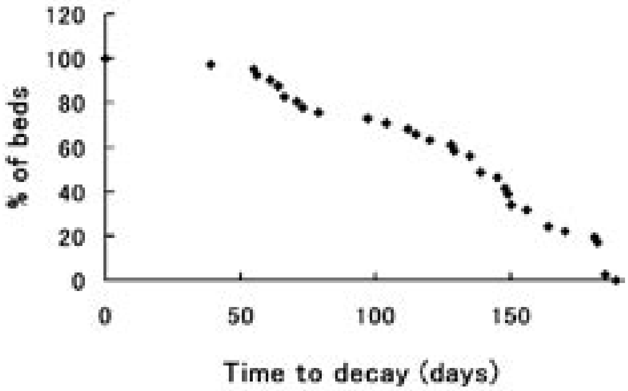
Ghiglieri[1] developed a chimpanzee population estimation method in which some parameters, such as average life span of beds, are assumed to be different at each study site and thus not obtained simply by bed censuses. Tutin and Fernandez[2] modified Ghiglieri's formula to take into account the non-random distribution of beds. However, this method also requires the average life span of beds. Hashimoto[3] as well as Plumptre and Reynolds[4] developed a method based on newly built beds. This method does not require average life span of beds but does require repeated censuses. Also, all three methods require presumptions such as the proportion of bed-building chimpanzees, rate of reuse of beds, and day-bed production to precisely estimate chimpanzee populations.

This paper presents the preliminary results of a study on the life span of beds at the Mahale Mountains National Park, which was made to examine the variations among the study sites.

Table 1. Definitions of age-classes of beds.

Age-class	Definition
Fresh	Vegetation green
Recent	Vegetation dry and changing color
Old	Vegetation dead but beds still intact
Rotting	Bed beginning to disintegrate

Fig. 1 Decay curve for beds monitored during the study period



METHODS

The Mahale Mountains National Park is located on the eastern shore of Lake Tanganyika. The chimpanzees in the Park have been studied since 1965[6]. The vegetation type in the study area was semi-deciduous or semi-evergreen gallery forest and *Brachystegia* woodland. The rainy season is from October to May, and the dry season is from June to September.

The field work was conducted from August to December 1995. Forty-three beds constructed on known dates by habituated M group chimpanzees were monitored about once a week to determine the life span of beds. Tree species, estimated height, and the presence of shade for each bed were recorded. All of the beds monitored were constructed in August.

Age-class of beds was defined according to Tutin and Fernandez[2], as shown in Table 1. I considered the life span of each bed to be the period from the date of construction to the date midway between the last weekly inspection when it was recognizable and the first when it was not.

RESULTS and DISCUSSION

Out of 43 beds, two beds (4.7%) were assumed to be reused by the chimpanzees. These beds were excluded from the calculation of life span. Mean and SD of life span of 41 beds were 130.7 days and 45.7 days, respectively. The life span of beds ranged from 30 to 189 days.

Figure 1 shows a decay curve for beds monitored during the study period. Plumptre and Reynolds[4] reported that the decay of beds in their study approximated an exponential decay curve, but this phenomenon was not found in this study. Plumptre and Reynolds[4] suggested that the decay rate should be calculated while assuming exponential decay, since this is not likely to be greatly affected by a small number of beds that

Table 2. Tree species of censused chimpanzee beds.

Local name	Scientific name	Family name	Number of beds
Lulumasha*	*Pycnanthus angolensis*	Myristicaceae	21
Kahwibiki	*Xylopia parviflora*	Annonaceae	7
Mbula*	*Parinari curatellifolia*	Rosaceae	3
Mulale	?	?	3
Bulonje	*Dracaena reflexa*	Agavaceae	1
Ihambwa*	*Ficus vallis-choudae*	Moraceae	1
Ihoko	*Lobelia stricklandae*	Lobeliaceae	1
Ikolyoko*	*Voacanga lutescens*	Apocynaceae	1
Ikubila*	*Ficus capensis*	Moraceae	1
Kakubabolo*	*Sterculia tragacantha*	Sterculiaceae	1
Mulyansekesi*	*Afrosersalisia cerasifera*	Sapotaceae	1
Mkamba*	*Chlorophora excelsa*	Moraceae	1
Mtelele*	*Stereospermum kunthianum*	Bignoniaceae	1
Total			43

*: Their products (fruits, leaves or piths) were eaten by chimpanzees.

Table 3. Comparison of life span of chimpanzee beds between two tree species.

Local name	Scientific name	Number of beds	Mean (Days)	Range (days)
Lulumasha	*Pycnanthus angolensis*	21	136	56-189
Kahwibili	*Xylopia parviflora*	7	126	61-170

Difference between species was not significant (Mann-Whitney's U-Test, $n_1=21$, $n_2=7$, $z=0.58$, $p=0.56$, 2-tailed).

last a very long time; however, the present study did not support this assumption.

Monitored beds were usually constructed in trees, the products (fruits, leaves or piths) of which the chimpanzees fed on (Table 2). Almost half of the monitored beds were constructed in *Pycnanthus angolensis* trees. The M group chimpanzees frequently fed on the fruits of this tree during the study period.

The difference in mean life span of beds between two tree species (*Pycnanthus angolensis* and *Xylopia parviflora*) was not significant (Table 3). The difference in mean life span of beds among different levels of shade at the beds was also insignificant for all beds and for beds constructed in *Pycnanthus angolensis* trees (Table 4).

Table 5 summarizes the mean life span of chimpanzee beds at several study sites. Mean life span of beds in this study is slightly longer than that in the work of Ghiglieri[1] or Tutin and Fernandez[2] but slightly shorter than that of Skorupa cited in Plumptre and Reynolds[4]. Plumptre and Reynolds[4] used a different definition of the decay of beds: if the bed had lost all of its leaves (even though dead twigs might be present), it was not counted as a bed. Using this definition, the mean life span of beds in the present study is slightly longer than that in their work. Plumptre and Reynolds[4] reported that Budongo forest is drier than Kibale forest or the forests in Gabon, and thus it is likely that the leaves that formed the beds dried up and fell off more quickly. They also found that mean dry season survival time of beds was significantly shorter than mean wet season survival of beds. On the other hand, Wrogemann[7] found that bed decay was significantly slower in dry seasons than in wet seasons in Gabon. McGrew, Baldwin and Tutin[8] placed the Kasoje area in the next-drier position to Budongo forest on a wet-dry spectrum. Mean life span of beds in the present study is slightly longer than that in the Budongo forest. Consequently, bed decay is not affected simply by season or rainfall.

Table 4. Comparison of life span of chimpanzee beds according to the presence of shade.

Presence of shades	Number of beds	Mean (Days)	Range (days)
(a) all beds*			
Present	24	133	55-189
Absent	17	127	39-185
(b) Beds in *Pycnanthus angolensis***			
Present	16	139	56-189
Absent	5	126	64-182

*: Difference according to presence of cover was not significant (Mann-Whitney's U-Test, n_1=24, n_2=17, z=-0.93, p=0.35, 2-tailed). **: Difference according to presence of cover was not significant (Mann-Whitney's U-Test, n_1=16, n_2=5, U=37.5, p>0.05, 2-tailed).

Table 5. Comparison of life span of chimpanzee beds among several study sites.

Study site	Number of beds	Mean (days)	Range (Days)	Mean* (Days)	Range* (days)	Source
Mahale	41	131	30-189	49	18-110	This study
Budongo	96			45	10-161	Plumptre & Reynolds (1996)
Kibale	28	111	15-202			Ghiglieri (1984)
Kibale		144				Skorupa (1988) cited in Plumptre & Reynolds (1996)
Gabon	49	118	35-151			Tutin & Fernandez (1984)

*: These values were defined by Plumptre & Reynolds (1996).

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