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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, notes and reviews will be peer-reviewed by at least one appropriate expert on request of the *PAN* editorial staff.

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See also http://mahale.main.jp/PAN/instruction.html.

Deadline of the next issue is April 2014!

Contents

<ARTICLE>
Chimpanzee (*Pan troglodytes schweinfurthii*) Population Density and Abundance in Kibira National Park, Burundi

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INTRODUCTION

The eastern chimpanzee, *Pan troglodytes schweinfurthii*, is an "endangered" chimpanzee subspecies of global conservation concern, living at low density (less than 1 individual/km²) in most of its range (Keele *et al.* 2006; Plumptre *et al.* 2011) in eastern Africa. As chimpanzees have a relatively low reproductive rate (Caldecott & Miles 2009), their ability to recover from population decline is limited. Documenting the extent and severity of such decline events, as well as targeting adequate conservation plans, requires reliable baseline data on density estimates of great apes (Oates 1996) in area of occurrence.

In Burundi, eastern chimpanzees are mostly reported to occur from the North-Western Kibira National Park (KNP), which is contiguous with Nyungwe National Park (NNP) in Rwanda, both forming one continuous landscape (Figure 1). Unfortunately, during the 1993–2007 conflict, KNP was permanently occupied by armed groups and its biodiversity has been extensively destroyed by armed gangs' progression, bush fires, poaching, illegal logging and clearing for agriculture. The purposes of our survey were to provide reliable information on chimpanzee abundance in the KNP and to identify sectors where conservation efforts should be prioritized.

METHODS
Study area

KNP is located in the North-West of Burundi on the Congo-Nile Divide, between 2°36'52" and 3°17'08" south latitude and between 29°13'31" and 29°39'09" east longitude. It covers 400 km² of montane forest, lying from 1,600 to 2,666 m of altitude (Arbonier 1996). Relief, more marked on the western side, is characterized by steep slopes on both sides of the Congo Nile Divide. The park is shaped into four sectors, from south to north: Teza, Musigati, Rwegura and Mabayi, covering respectively 57.94 km², 154.24 km², 124.23 km² and 63.59 km² (Figure 2).
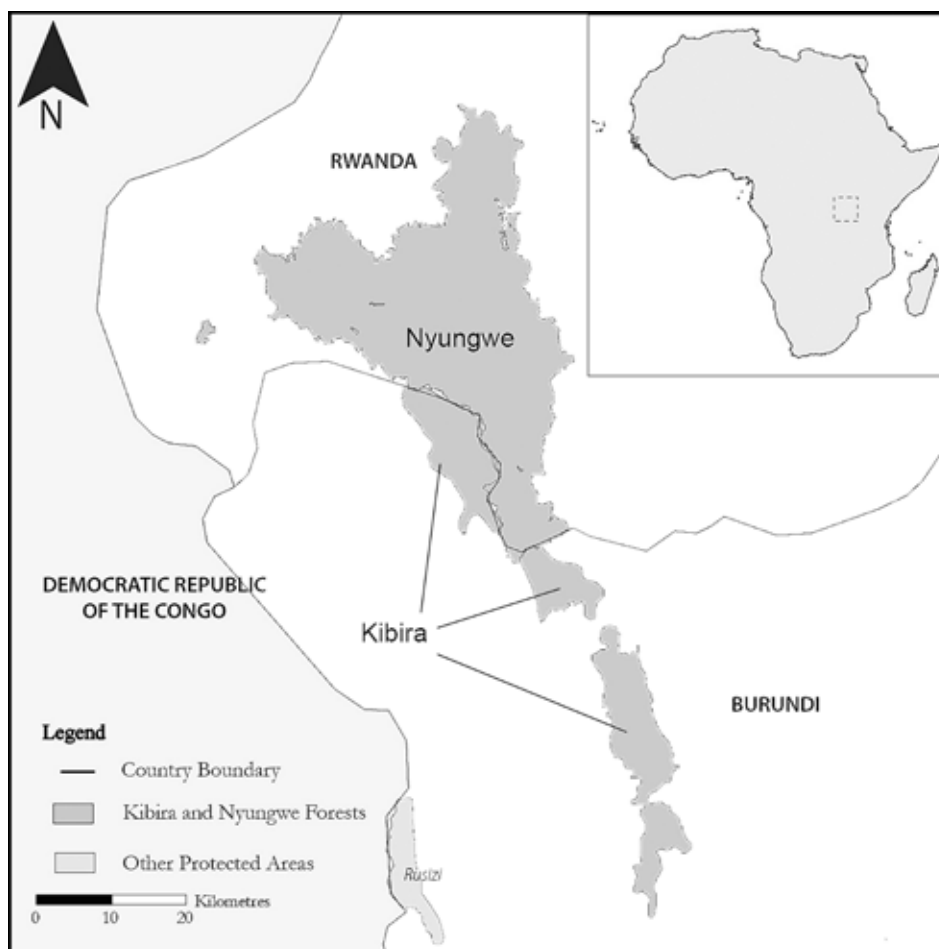

Figure 1. Location of Kibira and Nyungwe National parks.
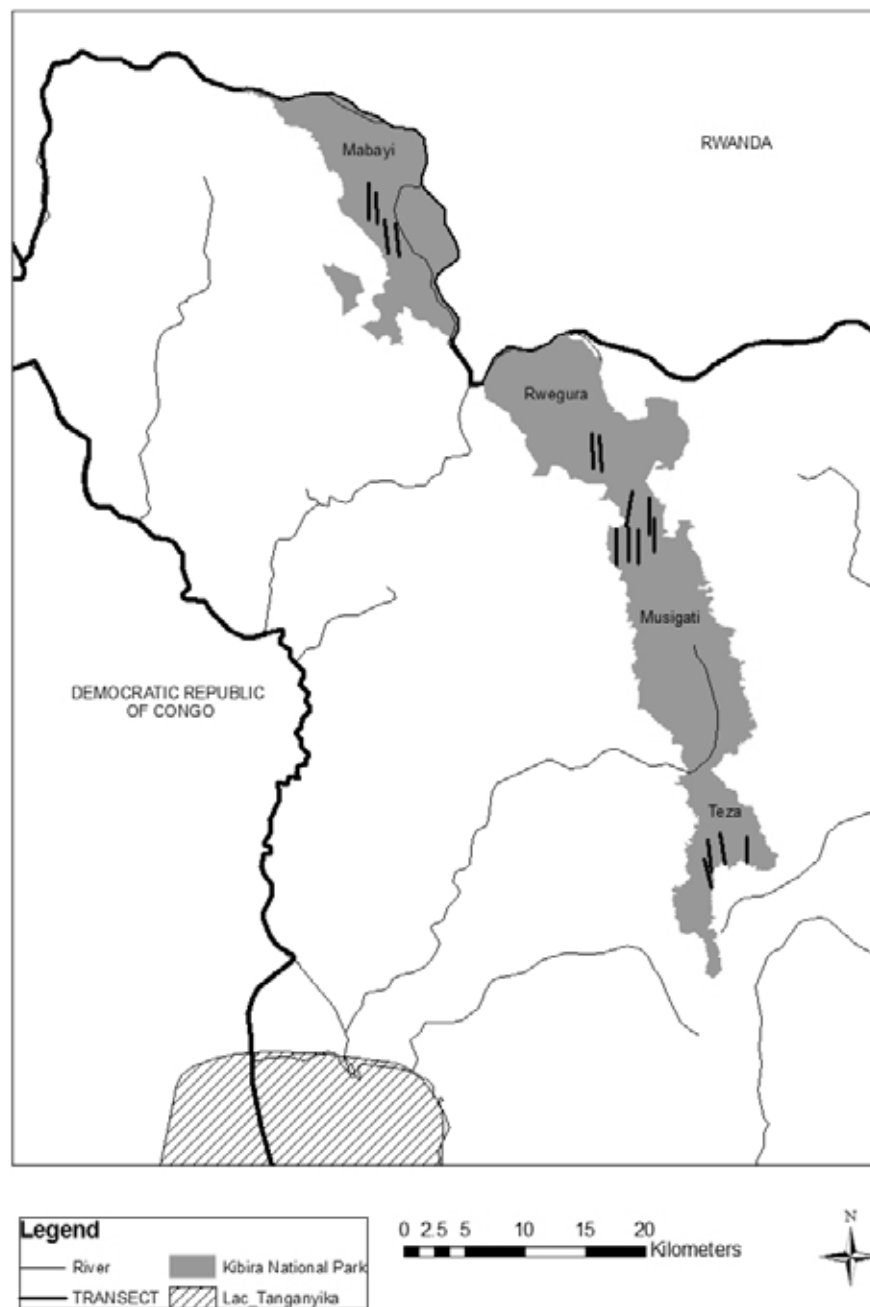**(Reproduced from *Africa: Atlas of Our Changing Environment* by UNEP (2008).)**

Figure 2. The four sectors of the KNP with location of the research transects.

Data collection

Between September 2011 and February 2013, we repeatedly surveyed sixteen linear transects of 3 km each, to census chimpanzee populations density and abundance using the marked nest count method (Kouakou *et al.* 2009). The inter-visit interval was of three weeks, and each transect was censused eighteen times over the entire study period.

We walked along the census transects with two field assistants at an average speed of 0.7 km per hour to ensure detection of all chimpanzee nests. During the first walk, we marked all existing nests with a piece of flagging tape attached to nesting trees (Plumptre & Reynolds 1996). During the following visits, only new nests built since the last passage were recorded and marked. For each nest

we systematically recorded the perpendicular distance to transect line, GPS position and altitude.

Data analysis

To estimate chimpanzee density for the whole park, we combined nest counts from all transects. We used the DISTANCE software (version 6.0) (Thomas *et al.* 2009) to obtain chimpanzee density estimates. According to Buckland *et al.* (2001), 5% of observations occurring at the furthest distance from transect were truncated. Four mathematical key (Uniform, Half-normal, Hazard rate and Negative exponential) modeling nest detection function were tested, in combination with 3 adjustments terms (Cosine, Simple polynomial and Hermite polynomial). We calculated Akaike's Information Criterion (AIC) for

each model and the best model had a lowest AIC value (Buckland *et al.* 2001). Nest-building chimpanzee density was estimated by following Plumptre & Reynolds (1996).

RESULTS

A total of 864 km of line transects were surveyed and we recorded 471 new nests of chimpanzees, at an altitude ranging between 1,956 – 2,552 m.

Half-normal key with simple polynomial adjustment was the model fitting the best our distribution of perpendicular distances. Chimpanzee density estimate in the entire park was 0.509 individual/km² (95% CL: 0.305 – 0.847, CV: 24.37%), which corresponds to a total population size of 204 weaned individuals (95% CL: 122 – 339). Chimpanzee densities for each sector of the park are given in Table 1.

Mabayi has an important chimpanzee density compared with other sectors. Its chimpanzee density is four times greater than Rwegura, six times greater than Musigati and three times greater than Teza.

DISCUSSION

Chimpanzee density and abundance in the Kibira National Park

Our results are markedly lower than previous estimates by Barakabuye *et al.* (2007) who reported a density estimate of 0.984 individual/km² (95% CL: 0.601 – 1.612), and a total population of 394 chimpanzees (95% CL: 240 – 645). This discrepancy is likely due to different sampling efforts. First, our estimated chimpanzee density is based on 18 months of survey while Barakabuye *et al.* (2007) survey only covered a three-month period. Short-time survey provides less reliable information, especially for *P. troglodytes* known to use large home ranges (Johns & Skorupa 1987). In order to take into account seasonal variations in behavior, Baldwin *et al.* (1982) suggested a minimum of one year for such survey. Second, we applied an equal sampling effort throughout the four sectors of the KNP while Barakabuye *et al.* (2007) placed half of their transect lines in the sole Mabayi sector, which is most likely the one harboring the largest chimpanzee population. Extrapolation of their estimates to the entire park logically leads to an overestimation (Buckland *et al.* 2010). The longer time we devoted to data collection and the use of the marked nest count method leads us to say that our estimate would be more representative of the KNP.

The lower estimate of the chimpanzee population size in our study is in logical agreement with the region recent history. Biodiversity of the KNP suffered from several years of armed conflict. Armed groups practiced poaching and subsistence hunting. As chimpanzee is the largest animal of the park, it is evident that it was a war victim.

Comparison within sectors

Determining the variation of distribution of chimpanzees between given areas is very important for researchers and conservationists (Morgan *et al.* 2006). Our results show that chimpanzees are more abundant in the Mabayi sector, directly contiguous with the NNP in Rwanda. This might be because this area was less affected by armed conflicts compared to Teza and Musigati which were permanently occupied by rebels. Another reason might be that some tree species primordial as food sources and nest supports for chimpanzees, are only or more represented in this part of the park (Hakizimana, unpublished data).

Comparison within Kibira and Nyungwe National Parks

Kibira and Nyungwe are two contiguous national parks, but Nyungwe (1,080 km²) is twice larger than Kibira (400 km²). Barakabuye *et al.* (2007) found a chimpanzee density much higher in the Kibira compared to Nyungwe (0.984 individuals/km², 394 individuals in Kibira; 0.353 individuals/km², 382 individuals in Nyungwe). This is a puzzling difference, as Nyungwe is known to have been better protected (Barakabuye *et al.* 2007). If confirmed, the highest chimpanzee density they found in Kibira might result from the high density of tree species on which chimpanzees rely heavily (Balcomb *et al.* 2000; Tweheyo *et al.* 2004). To ensure a robust comparison and solve ambiguities, a rigorous study should be led by the same team in both parks focusing on census and resource availability.

Conservation implications

Intensive effort must be devoted to the chimpanzee's long-term conservation throughout their range. Research on the species is still young in Burundi compared to neighboring countries. Therefore, it is very important to implement a monitoring program of chimpanzee populations to constitute a database allowing detecting population trends. Given the low rate reproduction of chimpanzees, Kühl *et al.* (2009) suggested that an inventory should be repeated every one to five years in order to

Table 1. Population density and abundance, with confidence limits (CL) of nest-building chimpanzees in the four sectors composing the Kibira National Park.

Location	Area (km²)	Estimated density	95% CL	Number of individuals	95% CL
Teza	57.94	0.352	0.159 – 0.778	20	9 – 45
Musigati	154.24	0.190	0.093 – 0.390	29	14 – 60
Rwegura	124.23	0.293	0.106 – 0.812	36	13 – 101
Mabayi	63.59	1.172	0.744 – 1.847	75	47 – 117
Entire park	400	0.509	0.305 – 0.847	204	122 – 339

quickly detect population changes. Also, further studies must emphasize more detailed data on tree phenology that chimpanzees rely on. As Nyungwe and Kibira National Parks are contiguous, an effective transboundary strategic plan to conserve both parks as one landscape is necessary to maintain viable population of chimpanzees.

ACKNOWLEDGMENTS

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\<NOTE\>

Fission-Fusion in Chimpanzees: Feeding as a Proximal Mechanism at Gombe

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INTRODUCTION

Fission-fusion is the species-typical and universal social organisation of *Pan troglodytes*, as recognised 45 years ago by the pioneering field research of such researchers as Goodall (1968), Nishida (1968) and Sugiyama (1968). In fission-fusion, the group (or community), subdivides into temporary parties, which may further fragment or reunite, such that over the course of a day, an individual may be solitary or sociable to varying degrees (Aureli *et al.* 2008). The standard variable for measuring fission-fusion is party size, that is, the number of individuals in spatial association in any one period or point in time. Explanations for variation in party size are many, but the most prevalent one is feeding competition, so that the larger the party, the greater the competition. Thus, individuals seeking to reduce or avoid competition will fission, either to forage alone or with fewer companions. Following this line of argument, we hypothesise that party sizes will be lower during bouts of feeding than before or after feeding.

BACKGROUND

Wrangham (1977) was the first to posit a positive correlation between group size and feeding competition in

chimpanzees. (In the broad sense, 'group' indicates any aggregation, in any species, primate or otherwise.) The logic is simple: If resources are finite at any point in space and time, then the more organisms seeking to harvest those resources at the same time and place, the greater will be the competition, all other things being equal. For chimpanzees, the group size problem is 'subcontracted' to ephemeral parties, yielding maximum flexibility in day-to-day social relations. At one extreme is solitary foraging, when resources are sparse, *versus* maximally social foraging, in which party size is 100% of group size, when resources are abundant. Many other variables also influence group size, such as predation, reproduction, aggression, rank, seasonality, demography, *etc.* (see Aureli *et al.* 2008, for the most comprehensive and ambitious attempt to model fission-fusion).

For chimpanzees, many studies have found correlations between party size and proxy measures of feeding competition (*e.g.* Matsumoto-Oda *et al.* 1998; Newton-Fisher *et al.* 2000; Itoh & Nishida 2007). The usual study design is to relate party size (however defined) to one or more measures of food supply, such as fruit availability, in terms of abundance or distribution of resources. These measures of food supply are then related to various other measures, such as number of oestrous females, wet *versus* dry season, etc. Most (but not all, see Hashimoto *et al.* 2003) studies have found the expected relationship: When resources are scarce, chimpanzees range in smaller parties than when resources are abundant.

However, gaps exist in these studies. Party size (however defined) is a static ('snapshot') measure, sampled at various points in time over the course of a day. We have found no studies based on focal sampling that describe the *dynamics* of the process, for example, tell us how many fission-fusion transitions a chimpanzee makes in a day. Or what factors (activity, age, sex, rank, *etc.*) prompt a chimpanzee to leave or join a party. Furthermore, although the hypothesised causal variable is feeding competition, we can find no published data that directly address this, either by contest or scramble. Most studies do not measure feeding but instead rely on food, usually in terms of availability (*versus*, *e.g.*, quality). Many studies of food supply do not relate it to actual chimpanzee foraging, much less to competition (*e.g.* Isabirye-Basuta, 1988). Thus, descriptive studies at this macro-level are indirect and correlative only (see Kummer 2008, Yamagiwa 2008, for similar comments on the lack of ethological data).

We sought to tackle some of these issues at the sequential, dynamic, micro-analytical level, by comparing party sizes when feeding *versus* non-feeding, in *real-time sequences*, focussing on individual behaviour. Other studies have shown static differences in group size in relation to activity (*e.g.* Newton-Fisher, 1999), but none seems to have made this basic comparison.) We chose to test the hypothesis in the most sociable age-sex class of chimpanzees, independently-ranging males, because it is the most challenging one.

Table 1. Number of companions of independently-ranging male chimpanzees at Gombe, before, during and after bouts of feeding. See text for explanation of four stages.

Subject	Number of companions							
	30 min before		Start feeding		Stop feeding		30 min after	
	n	median	*n*	median	*n*	median	*n*	median
EV	9	3	84	2	84	2	7	6
FB	15	7	68	4.5	68	5.5	17	7
FG	4	2	48	2.5	48	3	3	2
GB	5	2	62	2	62	2	6	2.5
HG	5	2	44	2	44	3	4	7
HM	7	4	53	2	53	2	7	3
JJ	7	4	57	2	57	2	5	7
MK	8	7	46	1	46	1.5	7	4
SH	4	6.5	46	0	46	0	7	7
ST	5	2	50	1	50	1	6	1.5
Total	69	-	558	-	558	-	69	-
Median	6	-	51.5	-	51.5	-	6.5	-
Median of medians		3.5		2		2		5

METHODS

We used archival data from Travel & Group charts (T&Gs) recorded throughout the year 1973 at the Gombe Stream Research Centre, mostly by Caroline Tutin (COPS study) and McGrew (KIDS and TERM studies). T&Gs were records of focal-subject samples of independently moving chimpanzee subjects, followed by a researcher and field assistant for variable periods, up to a whole active day (*i.e.* nest-to-nest). For details and results from this data instrument, see Goodall 1986.

For this analysis, we focussed on the T&G column labelled FOOD, in which duration of bouts of feeding (to the nearest 5-min) and species fed-upon by the focal subject were the only data available. Feeding was defined as items being inserted into the mouth but not expelled, *i.e.* were ingested. A feeding bout was defined as a continuous session of feeding on one prey item by the subject, from start to finish.

We also used data from 10 of the 19 T&G columns labelled by the two-letter initials of adult and subadult males (EV, FB, FG, GB, HG, HM, JJ, MK, SH, ST), all members of the Kasekela community see Table 1). The other 9 males, mostly from the less-studied Kahama community, had too few records. A focal subject could have up to 41 companions in a party; younger individuals, typically offspring, were not included, as they did not move independently. These data yielded number of companions with the focal subject in 5-min, one-zero frequency units. Number of companions was preferred as the dependent variable based on semantics (*i.e.* party is a plural term, so a party-size of one is nonsensical) and computation (*i.e.* allows for a party size of zero to be a lone individual).

Finally, we noted the column labelled IN CA, which distinguished In Camp *versus* Out of Camp records. (Camp denoted the feeding area, where provisioning with bananas was done.) The 50 In Camp records found were excluded from further analyses, as being unnatural.

The following data were extracted: Number of companions at the beginning and end of each Out of Camp feeding bout ($n = 558$), plus party size 30 min before and 30 min after the feeding bout ($n = 69$). Thirty min was arbitrarily chosen, based on comparing behaviour 'before-during-after' feeding, in earlier studies of chimpanzee behaviour (*e.g.* de Waal 1987). Thus data were collected at four sequential points in time. However, we excluded all cases in which the 'before' or 'after' data were compromised by another feeding bout during the intervening 30-min interval, which greatly reduced the number of four-point sequences.

Data were entered into a Microsoft Access 2013 database (spreadsheet). Statistical testing was non-parametric, as the conditions for parametric testing could not be met (Siegel & Castellan 1988). Accordingly, we used medians rather than means, and alpha was set at 0.05, one-tailed.

RESULTS

Number of companions varied across the four conditions (stages): Friedman two-way analysis of variance, $n = 10$, $k = 4$, $\chi^2 = 70.8$, $p < 0.001$ (see Table 1, Figure 1). Pair-wise comparisons between conditions also varied in three of four cases: Number of companions decreased in
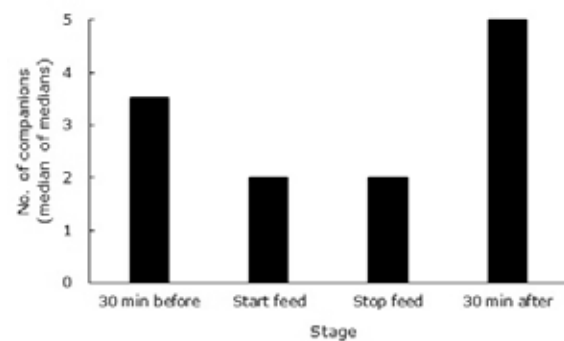
Figure 1. Number of companions (median of medians) for 10 independently-ranging male chimpanzees at Gombe, before, during and after bouts of feeding.

number from 30 min before the start of the next feeding bout (Binomial test, $n = 8$, excluding ties, $p = 0.035$) and increased in number 30 min after the end of the last feeding ($n = 5$, $p = 0.01$). Despite having equal medians, number of companions increased from the start to the end of feeding bouts ($n = 10$, $p = 0.03$). There was no difference in number of companions between 30 min before *versus* 30 min after feeding bouts ($n = 8$, $p > 0.05$).

Thus, males fed with fewer companions than they had a half hour before the next bout of feeding, and a half hour after finishing feeding they had more companions. Moreover, in a typical feeding bout, a male had more companions at the end of it than he had at the beginning. Number of companions (effectively party size, as above) before and after feeding did not differ in number.

DISCUSSION

The hypothesis was upheld. Gombe's adult male chimpanzees somehow manage their fission-fusioning, so that they were in smaller parties when feeding *versus* when not feeding. Thus, sequential, individual data at the more specific, proximate level agree with correlational data at the more general, ultimate level. The apes may achieve this by avoiding others before starting to feed, only then to seek others after feeding. However, this dataset yields no details on how the increases and decreases in number of companions are managed. Explanation awaits further detailed ethological study.

We made no prediction about whether party size would increase or decrease during an individual's feeding bout, as either alternative is a reasonable expectation. A male might recruit others (*e.g.* Clark & Wrangham 1993) and so increase party size, or party sizes might shrink as the patch's food is depleted. Or, party size might remain constant over a feeding bout, as on average, differing tendencies counter-balance. In any case, Gombe's males had slightly more companions at the end of a feeding bout than at its outset. This could indicate recruitment or just random but cumulative discovery of the food source by others. Again, to explain this finding requires more focussed, specific data than are available here.

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<NOTE>
A Juvenile Chimpanzee Played with a Live Moth

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INTRODUCTION

Although it is not common for chimpanzees (*Pan troglodytes*) to capture and toy with small mammals or birds without eating them, several reports have indicated that this does sometimes occur (*e.g.*, Hirata *et al.* 2001; Zamma 2002; Carvalho *et al.* 2010). These reports compared such incidents with chimpanzees' hunting behaviors because it seems puzzling that the chimpanzees did not eat the meat. However, it is possible that a chimpanzee may show an interest in a living organism for its animacy *per se*, with no intention of eating it.

This paper reports the case of a juvenile female chimpanzee at Mahale that captured and played with a live moth (Lepidoptera). Although chimpanzees frequently prey on several insect species (mostly social insects) (*e.g.*, McGrew 1992; Fuse 2013), Mahale chimpanzees eat moths only rarely (Nishida & Uehara 1983).

OBSERVATION

The observation focused on chimpanzees in the M group at the Mahale Mountains National Park (see Nishida 2012 for details of the study site). At 09:19 a.m. on 12 October 2004, two adult female chimpanzees and their offspring had been taking a rest under a dense bush since 08:54 a.m. when Ichiro (IH: a 1-year-old male) emitted a slight *huu* call and was observed to be watching something on the ground. When IH touched the object with his finger, it moved, and I could then see that it was a large moth, about 5 – 6 cm in size and beige in color. Its body was thick, and its forewings were much longer than its hindwings. IH's mother, Ikocha (IK), immediately approached him, put him on her belly, moved away, and sat about 1 m away from the moth. Soon, IH's older sister, Imani (IM: a 6-year-old female), went to where the moth lay and started to investigate it. Because my initial view was largely obstructed by dense bush, I moved to the side to gain a better view and started to take a video.

IM captured the moth without killing it and started to play with it, sometimes vigorously, sometimes calmly. Given her occasional play face and play pant, IM's series of behaviors was regarded as playful. I summarize the behavioral patterns observed during IM's play in Table 1 (see Video 1: available online at mahale.main.jp/ PAN/20_2/20(2)_03 .html). The moth sometimes fluttered its wings while being pinched between IM's fingers or lips. Although IM frequently put the moth in her lips or touched it with her lip, she did not try to eat it.

While IM was playing with the moth, IH approached her twice, and she responded playfully to him. At 09:25, IM put the moth in her groin pocket and slowly walked away into the bush; at 09:26, I lost sight of her because I could go no further into the bush. When she was observed

again 4 min later, she no longer had the moth

DISCUSSION

Unfortunately, I could not collect the moth or identify the species. However, from its appearance and size, I suspect that it was probably a hawk moth (family Sphingidae). Although Nishida & Uehara (1983) listed unidentified moths (larvae and imagoes) in the food list of Mahale chimpanzees, with no description as to how they ate them, IM's behaviors described here did not look like a feeding attempt.

The total observation time during which IH and IM showed interest in and interacted with the moth was only about 7 min, but there were some similarities between their behaviors and chimpanzees' play with small vertebrates. For example, as Zamma (2002) reported in a case of a chimpanzee playing with a live squirrel, it seemed that IM too was enjoying the response of the moth, which sometimes fluttered. When the moth was motionless, she sometimes put her lower lip on it as if she were trying to activate the moth's movement again. She was careful enough in her handling of the moth not to flatten it, but because she finally tore off a part of a wing, it is difficult to say that she had no intention of killing the moth.

Unfortunately, I did not observe what finally happened to the moth, but since the moth had already become weak, I suspect that it soon became inactive, and thus IM might have lost interest and abandoned it. This differs from former observations of mammalian and avian play toys, in which the interest of the chimpanzees was main-

Figure 1. IM putting a forewing of the moth between her lips while lying prone (image taken from video footage).

tained for much longer, and they sometimes groomed or treated the animals like dolls even after the animals were dead (Hirata *et al.* 2001; Zamma 2002; Carvalho *et al.* 2010). Such differences may be due to differences in the sizes and shapes of the target animals.

Interestingly, although it was the infant, IH, who first showed interest in the moth, his mother immediately took him away from the insect. Some insects are poisonous or spiny, so the mother may have been protecting her young son from such potential dangers.

Table 1. IM's behaviors toward the moth in relation to her body postures.

Behavior towards the moth	Body posture
Puts the moth on the ground and hits it with her hands	Sitting
Throws the moth with one hand	Standing on all fours
Puts a fore wing of the moth between her lips (Figure 1), sometimes shaking her head	Sitting, lying supine, lying prone, rolling sideways, turning head over heels
Grabs the moth together with fallen leaves and lays her body on a pile of leaves	Sitting, lying prone
Pinches the moth with her hand or foot and holds it up in the air	Lying supine
Pinches the moth with her hand and brings it close to her nose or mouth	Sitting, lying supine
Kicks the moth backwards with her foot	Standing on all fours
Puts the moth in her groin pocket	Lying supine
Walks with the moth in her groin pocket	Standing on all fours
Pinches the moth's forewings with both hands and pulls slowly, tearing one wing (Figure 2)	Lying supine
Puts the moth between her arm and the side of her body	Lying on her side
Touches the moth with her foot	Standing on all fours

Figure 2. IM pinching both wings of the moth with both hands and slowly pulling it apart on the soles of her feet while lying supine (image taken from video footage).

It is common for human children to capture, play with, and sometimes kill still-living insects with no apparent purpose. It is possible that both humans and chimpanzees, especially youngsters, share a common inclination to become interested in, and sometimes enjoy playing with, an animate object.

ACKNOWLEDGEMENTS

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<NEWS>

The 1ˢᵗ MWCS Scholarship Student Awarded Diploma

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I am pleased to announce that Mr. Butati R. Nyundo, a grantee of the MWCS Special Scholarship, successfully completed a two-year course programme for ordinary diploma in wildlife management at the College of African Wildlife Management, Mweka (CAWM), Tanzania and attended the graduation ceremony taking place on the 25th of October, 2013 in order to get his diploma (Photo 1). This was MWCS's first attempt to offer an opportunity for high education to a prospective young person eager for wildlife conservation at Mahale. We will examine how it will work and what we can do to contribute to the community-based conservation in this area, while keeping in touch with Mr. Nyundo and giving him support, if necessary. We hope conservational efforts will thrive at Mahale in the hands of the Tongwe, the indigenous people there. Mr. Nyundo himself aspires to work for the Mahale Mountains National Park and to contribute to protection of the natural environments from any kind of harmful factors.

The following is his report on his three-month activities as a volunteer teacher at Buhingu Secondary School and Katumbi Primary School. Such activities had been assigned him by MWCS as an extended programme of the scholarship. Acknowledgements are due to all those who have supported our aims and activities as members and/or donors.

Photo 1. Mr. Butati R. Nyundo after graduation ceremony.

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My teaching experience at my hometown

Butati R. Nyundo

Mahale Mountains National Park

As soon as I completed my studies at CAWM, I went

back to my hometown Kigoma for volunteer activities. It was a welcoming idea to me as I had desired to have such a chance as to contribute something to my community consisting mainly of the Tongwe people. Teaching secondary school students and primary school kids turned out an incredible experience.

I started to teach as a volunteer at Buhingu Secondary School in the middle of January 2013. I considered it particularly valuable to work for the secondary school, because it enrolled students from as many as six villages, which meant that I could be involved in the biggest part of the community. On the first day, I was introduced to the school administration and the students with a warm welcome from everyone.

I was assigned to teach biology to all classes of Form 1–4 and geography to one class of Form 3. Teachers and students were very friendly to me, and it did not take me so long to get used to the environment.

Students looked inspired by my presence as they came to know that a person like me from their own community could attain higher education. And I in turn was motivated and encouraged to work harder by their eagerness to learn new ideas especially concerning with wildlife and environmental conservation. They made efforts to improve their environment by planting trees around the school compound and did their best to stop bush fires. I gave several talks about environmental conservation to different classes and the Roots and Shoots Tanzania club.

The school management acknowledged my efforts and influence on the students and appointed me as assistant of sports and counseling master. I took the school football team to three different games where we got two wins and a draw. I also made several advices to students how they should study to be more successful. How wonderful it was for me to see boys and girls work harder as a result of my advices!

However, due to remoteness, the school was facing many problems concerning its facilities and equipment. I interviewed with the staff and made a list of the prioritized needs at Buhingu Secondary School, which was then attached to this report submitted to MWCS.

In early March, Nomad Tanzania, a safari company managing a camp at Kangwena Beach of the Mahale Mountains National Park, offered us a day trip to the park by its boat. The trip comprised of eighteen students, one teacher and me. We took students of thirteen years or more, in accordance with the code of conduct for chimpanzee viewing. My role was to accompany them as their guide, wildlife expert and a native of that area. I did my best to offer the students the explanation of the park; the history of Mahale, conservation activities, resources, chimpanzees, Lake Tanganyika and cichlids unique to this lake (Photo 2). We had a chance to meet Mr. Shunkichi Hanamura of Kyoto University, who stayed at the research station as a member of the Mahale Mountains Chimpanzee Research Project that had persisted since 1965. The students enjoyed the trip very much and seemed to comprehend the significance of conservation activities undertaken in the area.

I spent the final month of my volunteer work in teaching at Katumbi Primary School, which was very special

to me because Katumbi is my home village. Children start to attend school at the age of 5 or 6 years. Training such young kids requires more effort than at secondary education, but unfortunately, the school had a severe shortage of teachers. I was assigned to teach science and geography to Class 7, 6, 5 and 4. Besides a shortage of teachers, the school was struggling with the poor conditions concerning desks, sports equipment and some facilities in need of repair. Nevertheless, some students performed very well above average in their studies.

Now that three month volunteer activities have been over, I was very happy and proud to have such an opportunity as to work at Buhingu Secondary and Katumbi Primary Schools. Once again, I would like to thank MWCS for their full support of my two years diploma course at the CAWM and the three months livelihood support during my volunteer activities.

Photo 2. Mr. Nyundo answering questions from secondary school students in the forest during a day trip to Mahale Mts. National Park. Photo by Mr. Shunkichi Hanamura.

<BOOK INFO>
Primates and Cetaceans: Field Research and Conservation of Complex Mammalian Societies
Edited by Juichi Yamagiwa and Leszek Karczmarski

In this book, the editors present a view of the socioecology of primates and cetaceans in a comparative perspective to elucidate the social evolution of highly intellectual mammals in terrestrial and aquatic environments. Despite obvious differences in morphology and eco-physiology, there are many cases of comparable, sometimes strikingly similar patterns of sociobehavioral complexity. A number of long-term field studies have accumulated a substantial amount of data on the life history of various taxa, foraging ecology, social and sexual relationships, demography, and various patterns of behavior: from dynamic fission–

fusion to long-term stable societies; from male-bonded to bisexually-bonded to matrilineal groups.

Primatologists and cetologists have come together to provide four evolutionary themes: (1) social complexity and behavioral plasticity, (2) life history strategies and social evolution, (3) the interface between behavior, demography, and conservation, and (4) selected topics in comparative behavior. These comparisons of taxa that are evolutionarily distant but live in comparable complex sociocognitive environments boost our appreciation of their sophisticated mammalian societies and can advance our understanding of the ecological factors that have shaped their social evolution. This knowledge also facilitates a better understanding of the day-to-day challenges these animals face in the human-dominated world and may improve the capacity and effectiveness of our conservation efforts.
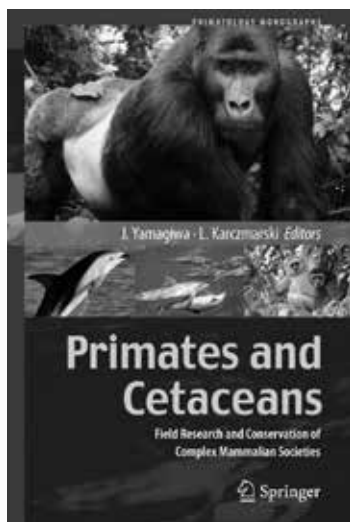
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Contents