Pan Africa News

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

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

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Publication will be made twice a year in June and December. Deadline for manuscripts is one month before publication (i.e. the ends of May and November).

Contents

<NEWS>

Drs. Jane Goodall and Toshisada Nishida win 2008 Leakey Prize!

The Leakey Foundation will award 2008 L.S.B. Leakey Foundation Prize for Multidisciplinary Research on Ape and Human Evolution to two distinguished chimpanzee research pioneers, Dr. Jane Goodall and Dr. Toshisada Nishida ($25,000 each) during the events from October 30 to November 1, 2008 at the California Academy of Sciences in San Francisco USA, commemorating the 40th anniversary of the establishment of the world's most successful private funder of human origins science. On October 31, public lectures will be given by Drs. Goodall and Nishida.

On November 1, 2008, Scientific Symposium and Public Forum for Primatology will take place featuring a panel of six world renowned primatologists led by the two Leakey Prize laureates. The topic will be "What does it mean to be a primate: a human discussion." That evening, Leakey Prize Gala and Award Ceremony will be held honoring Drs. Goodall and Nishida.

This prize is awarded to prominent anthropologists for their contributions to multidisciplinary studies on human origins. The first winner was Dr. Philip Tobias in 1991 the second was Dr. Desmond Clarke in 1996, and the third was Dr. Frances Clarke-Howell in 1998.

Dr. Jane Goodall, guided by her mentor, the late Dr. Louis Leakey, initiated the longest field study of wild chimpanzees at Gombe on the shore of Lake Tanganyika, East Africa in 1960. In her first year at Gombe, she observed some epoch-making facts that surprised anthropologists of the time. She found that chimpanzees strip leaves off twigs to make tools for fishing termites from termite mounds. On hearing the news, Dr. Leakey left a well-known comment, "Now we must redefine tool, redefine man, or accept chimpanzees as humans." She also observed chimps hunting and eating medium-sized mammals for the first time, proving that humans are not the only meat-eating apes. Dr. Goodall has been the most famous, legendary zoologist and her comprehensive book "*The Chimpanzees of Gombe: Patterns of Behavior*" (1986) has been the chimpanzee researcher's bible for more than 20 years.

Dr. Toshisada Nishida

Dr. Toshisada Nishida, when he was a graduate student, joined the Kyoto University's Ape Expedition to Africa organized by Drs. Kinji Imanishi and Junichiro Itani. In 1965, he succeeded in establishing the second longest running wild chimpanzee research site at the Mahale Mountains on the shore of Lake Tanganyika, about 100km south of Gombe. Since then, in collaboration with many researchers such as the late Drs. Kenji Kawanaka and Shigeo Uehara, Dr. Nishida has persistently explored all aspects of our closest kin in their natural habitats. Initial important discoveries included the finding of definite social structure he called 'unit group' (or community) and female transfer system between chimpanzee unit groups, a sharp contrast to many female-bonded primate societies. He has also revealed the hostile intergroup relationships, male alliance strategies, and cultural behaviors of chimpanzees.

Dr. Toshisada Nishida wins 2008 IPS Lifetime Achievement Award!

Dr. Toshisada Nishida will also be honored with 2008 Lifetime Achievement Award of the International Primatological Society at the IPS XXII Congress Edinburgh, Scotland, 3rd to 8th August 2008.

This award was established in 2004 and goes every two years to a member of IPS with outstanding career contributions to primatology. Dr. Nishida is the third winner of the award, the first being Dr. Hilary Box and the second, Dr. Thomas Struhsaker. On August 7, Dr. Nishida will give plenary lecture, "Forty Years of Chimpanzee Research at Mahale: Traditions, Changes, and Future" at the request of the executive committee for IPS 2008.

In addition to his remarkable scientific accomplishments, IPS noted Dr. Nishida's contributions to the scientific community. He has trained a generation of students at University of Tokyo and later at Kyoto University. Currently he is Professor Emeritus of Kyoto University and the Executive Director of Japan Monkey Centre. He also served as President of IPS (1996-2000), President of Primate Society of Japan (2001-2004). He is Editor-in-Chief of the oldest journal of primatology, *Primates*, and has served on the Editorial Boards of the *International Journal of Primatology* and *African Primates*, and the Chief Editor of *Pan Africa News*.

Dr. Nishida is also known for his long-standing role in wildlife conservation. He and the late Dr. Itani embarked on a plan to establish Mahale area as a Tanzanian National Park and it was realized in 1985. In 1994, he set up a Tanzanian non-governmental organization, the Mahale Wildlife Conservation Society together with Professor Hosea Kayumbo, University of Dar es Salaam, in order to conserve the chimpanzees and other wildlife at Mahale. He has been a member of the IPS Conservation Committee (1988-1992) and the African Section of the IUCN/SSC Primate Specialist Group (1982-present). He has taken a leading role in great apes conservation as a Patron of the UNEP's Great Ape Survival Project (GRASP) and has established GRASP-Japan.

PAN Editors

<ARTICLE>

Hunting with tools by Mahale chimpanzees

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Tool-assisted hunting of a mammalian prey by a chimpanzee was first reported from Mahale[1]. This is one of the most frequently cited anecdotes but was often improperly cited in literature, sometimes leading to generalization of this single observation that chimpanzees commonly hunt with tools[2]. Recently, chimpanzees in Fongoli, Senegal, were reported to hunt bushbabies by using sticks as "spears" frequently (22 hunting attempts by 10 individuals with one successful case)[3]. There have been no reports of hunting with tools from other long-term chimpanzee study sites. Then can it be concluded that hunting with tools is habitually performed by chimpanzees only from Fongoli, with only one exceptional case from Mahale?

Here, we discuss the possibility that chimpanzees from Mahale also habitually hunt with tools, although with less frequency than those from Fongoli, by showing 2 additional cases of hunting attempts (one successful case) with tools.

Observations

Squirrel Hunting

On October 4, 1995, at approximately 9:50 AM, an 8-year-old female MG was found poking a stick (approximately 50 cm in length and 3 cm in diameter) into a tree hollow. There were no leaves attached to the stick. She also sometimes inserted her hand into the hollow. At 9:51:27, she took out an immobilized (either dying or already dead) squirrel from the tree hollow. It was assumed that the use of the stick had injured or killed the squirrel. MG put the squirrel in her groin pocket and again inserted her hand into the hollow, but no more squirrels were obtained. The prey seemed like a red-legged sun squirrel (*Heliosciurus rufobrachium*) from the size and color of the body, and a field assistant observed that MG later ate the squirrel.

Interestingly, MG was an adopted daughter of TL who used a tool to hunt a squirrel as reported in a previous study[1]. TL in her adolescence had carried the orphaned MG on her back, allowed MG to sleep in her bed, and took all the possible care of MG[4]; thus, MG had spent most of the time with TL until TL finally emigrated from the M group. Huffman & Kalunde[1] noted that MG begged TL for squirrel meat and obtained some. It could be possible that MG somehow learned tool-assisted hunting from TL.

Hyrax Hunting

On October 5, 2004, at 10:05:08 AM, DW (a 16-year-old male) and CD (a 13-year-old male) were looking into the bottom of a large rock (approximately 4 m in width and 1 m in height). There was an approximately 30-cm-diameter cave at the entrance, but the inner part of the cave seemed to be narrow, and its depth could not be judged from outside.

DW and CD alternately inserted their heads or even upper half of their bodies into the cave (Fig. 1) with intermittent vocalizations "*fu fu fu*," which seemed like half excitement and half anxiety. As DW and CD moved a little away from the cave, a *Cissus* vine (tool 1 in Table

Fig. 1. CD (right) inserts his upper body into the stone cave. DW sits nearby and watches.

Fig. 2. DW holds a stick (tool 5 in Table 1) in his right hand.

Fig. 3. DW inserts the stick into the stone cave.

1) and a stick (tool 2) were observed at the entrance of the cave. At 10:07:03, MC (an 8-year-old male) came to the place; he was interested in the cave but was looking from behind of the other males.

At 10:07:23, CD came back with a *Psychotria* stem (tool 3 in Table 1) in his mouth. The stem still had leaves attached to it. He then inserted the proximal end of the stem into the cave. After about 1 minute, DW broke off another stem of *Psychotria* (tool 4) and inserted his upper body into the cave while holding the stem. He did not insert the stem, but instead he wielded tool 1 like a whip.

As BB (a 23-year-old beta male) came to the place at 10:09:52 and looked into the cave, DW, CD, and MC came close and showed interest again. BB left and DW and CD again looked into the cave. When AL (a 22-year-old alpha male) appeared, DW gave a pant grunt and CD ran away. As AL looked into the cave from a distance of 0.5 m, CD and MC returned and resumed their interest in the cave. After some time, AL also left.

At 10:12:48, DW picked up a stick (tool 5) from the nearby ground (Fig. 2) and then inserted it into the cave (Fig. 3). DW shook the stick in the cave, poked it into the cave, and sniffed its distal end. When he was poking the stick into the cave, it seemed that something inside the cave moved; as a result, DW and MC winced and moved backward.

After some time with nobody in the front of the cave, DW came back at 10:15:43. He lay on the ground and looked at the cave. After MC and BB visited the cave again and left, OR (a 13-year-old male) came, stared at the cave, and then wielded tool 1. At 10:23:32, DW who remained at the place to the last finally left the place.

A total of 6 males showed interest in the cave, and 3 males used tools. More individuals might have visited the place earlier because some vocalizations were heard prior to the observation. Judging from the excitement and responses of the chimpanzees, it seemed that there was some animal in the cave. A Tongwe assistant stated that the cave was a nest of yellow-spotted rock hyrax (*Heterohyrax brucei*) although we could not confirm their existence. Hyrax is listed as a prey species of Mahale chimpanzees[5], but there has been no detailed report of hunting of this animal.

Characteristics of tools

Pruetz & Bertolani[3] argued that chimpanzees in Fongoli used tools as “spears” and not as probes or rousing tools. The Mahale case reported earlier[1] was

Table 1. Characteristics of tools used in the attempted hyrax hunting.

Tool #	Material	Length (cm)	Diameter (cm)	User	Source	Usage
1	*Cissus oliveri* (ligagaja) vine	80	0.5	CD, DW, OR	Not observed	Wielded like a whip in the cave.
2	stick (species not identified)	50	0.8	none	Not observed	Not observed
3	*Psychotria peduncularis* (lulyolwakape) stem	60	1.0	CD	Freshly broken stem was held in the mouth and transported to the site	Inserted into the cave.
4	*Psychotria peduncularis* (lulyolwakape) stem	50	1.0	DW	A nearby stem was broken off	Brought to the entrance of the cave (but not used).
5	fallen stick (species not identified)	60	3.0	DW	A nearby stick was picked up.	Shaken and poked in the cave, and the distal end was sniffed.

*Length and diameter of the tools are estimated from the video image in comparison with the body size of chimpanzees.

characterized as the use of a tool as a rousing tool. Some tools described in our report can also be classified as rousing tools; for example, tool 1 in the hyrax hunting was obviously a rousing tool because the vine was too weak to kill a prey. However, the tool used by MG eventually killed or at least severely injured the squirrel, although it was unknown whether MG intended to use the tool as a "weapon." Tool 5 used by DW also had potential to kill the prey because of the thickness of the tool and his powerful poking movement, although the attempt was not successful. The sizes of tools used in these hunting episodes are mostly within the range of those of Fongoli hunting tools[3], but the tool used by MG and tool 5 used by DW were thicker than Fongoli hunting tools. The intentional sharpening of tools by Mahale chimpanzees as in the case of Fongoli chimpanzees was not observed.

If there is some desirable thing in a hollow or in a cave, it is likely that any chimpanzee would insert some object like a stick. If the prey happens to come out, the stick becomes a rousing tool, and if it is killed, the same stick can be said to have worked as a "weapon."

Is tool-assisted hunting rare?

Tool-assisted hunting attempts are rarely observed at Mahale with only 3 cases reported to date (including our 2 cases). However, it should be noted that at Mahale, we seldom see the very moment of capturing of squirrels or hyraxes. Unlike noisy colobus hunting, squirrel hunting is often confirmed only by seeing the carcass afterwards. Therefore, we cannot exclude the possibility that Mahale chimpanzees sometimes used tools in such occasions. Nishida[6] observed that a female in the K group violently inserted and withdrew a stick with a "power grip" in and out of a tree hole (15cm in radius). At that time, mammalian prey did not come to his mind; thus, he assumed that this "expelling tool" was used to expel some kind of insects. He later observed similar behaviors by different females (Nishida, personal communication). It can now be considered that such expelling tools were used to hunt small mammals such as squirrels or galagos. In the case of hyrax hunting, since at least 6 individuals quickly showed interest in the rock cave, it seems unlikely that it was their first attempt to hunt hyrax in this manner.

There are 2 possible reasons why tool-assisted hunting has not been observed regularly at other study sites, except at Fongoli. One reason is that there are more attractive preys at other sites. In other words, hollow- or cave-dwelling small mammals may be regarded as less preferred prey or may not be regarded as prey at all. MG liked to eat small animals such as squirrels and francolins, but there may be individual differences in such preference. Other individuals may not be so eager to catch such small animals. The other possible reason is observability. Unlike the savanna vegetation of Fongoli, dense forest vegetation of most chimpanzee habitats is also likely to prevent observation of tool-assisted hunting. We cannot sometimes see what other individual chimpanzees are doing when they are high up in the adjacent tree. Furthermore, in a majority of study sites, females and immature individuals have been less observed than males, especially when they are away from males; thus, there is a possibility that solitary and silent hunting attempts by such individuals may have been missed at other study sites.

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<NOTE>

Snare removal by a chimpanzee of the Sonso community, Budongo Forest (Uganda)

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Hunting is one of the biggest threats to the survival of our closest living relative, the chimpanzee. While chimpanzees in West ad Central Africa commonly get directly shot by hunters and subsequently end up on the bushmeat market (see: www.wildchimps.org), the effects of hunting on chimpanzees in East Africa are more indirect. Hunters put up wire snares in the forests of East Africa in order to catch duikers and bush pigs. However, often snares catch other animals, such as chimpanzees. Their hands or feet get caught in the snares, causing subsequent loss of limbs or mutilation of hands and feet[1,2,3].

In the Budongo Forest, in western Uganda, snaring is the traditional way to provide animal protein for one's family. The snare removal team of the Budongo Conservation Forest Station removes snares from the forest since January 2000 (further details see 4). During the three years, from 2005 to 2007, BCFS staff removed on average about 220 snares per month from Budongo Forest. Nonetheless snaring injuries are frequent in our habituated chimpanzee community at Sonso. During the last year we had three new incidences of snared individuals. As a result about 30% of the adults from the Sonso community show permanent mutilation related to snares (see Fig. 1).

When a chimpanzee gets caught with its hand or foot in a snare, it usually pulls as long as the snare is still attached to a branch or sapling. During this process the wire of the snare cuts deep into the flesh and the snare

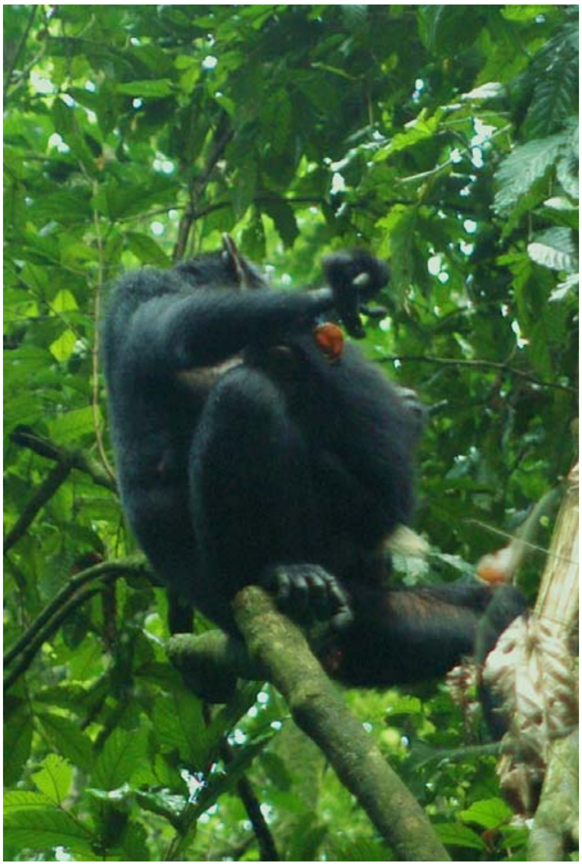

Fig. 1. Female Kewaya with her daughter Kox. Kewaya's right hand got caught presumably in a snare before 1992 (when continuous observation in Sonso started) and degenerated to an immobile hook at the end of her right arm (photo by Roman Wittig).

starts to stop the blood circulating in the limb. If the snare is not removed within days it will cause permanent damage to or loss of the limb. In the long run disadvantages during feeding[2] or lethal infections[5] are common due to the snares. Removing the snare, however, is not easy. It involves anesthetizing the chimpanzee without others being around, and may be dangerous for the chimpanzee itself[6]. Only 1 attempt of 3 was successful in anesthetizing a chimpanzee by darting in Budongo.

Here we report an observation in which a chimpanzee helped to remove the snare from another individual:

'On January 18, 2008, at 16:45h a party of 27 chimpanzees was traveling through the Budongo Forest. They had been feeding during the afternoon and were on their way to their nesting area. At 16:53h female Kwera (adult female, estimated age of 27 years) started to scream without an obvious reason. Her family and other party members started also scream and alarm calling. A closer look revealed that Kwera's right hand was caught in a nylon snare attached to a little tree sapling. A couple of minutes later the alpha male Nick (adult male, estimated age 26 years) arrived and displayed at Kwera, who was immobilized. After hitting Kwera a couple of times, Nick stopped and sat next to her. Nick broke off the small sapling so that Kwera was able to move again. However, the snare was still around her hand, which was still attached to a stick of about 30 cm.

The party continued traveling towards the South. At 17:18h the party started to move through an area of thick undergrowth, quite common in Budongo Forest. The stick attached to Kwera's snare got stuck between the little trees. Again she started to scream while pulling on the snare. Nick came back and displayed again towards her. He pulled on the stick, which made Kwera scream more. Kwera presented to him and Nick started grooming her. While being groomed, Kwera manipulated the snare with her teeth trying to bite through the nylon string. After a five minutes Nick took Kwera's right arm, held it up and investigated the snare. He started to manipulate the nylon with his teeth while holding Kwera's arm and the stick firmly in position. After a few minutes the snare fell off and the party continued moving towards block BA close to BCFS.'

A closer look at the snare showed bite marks on the nylon and a cut through. The piece of nylon string and the remaining stick was brought to camp. We concluded that Nick had bitten through the nylon and freed Kwera from the snare.

This is the first time that we observed a chimpanzee removing a snare from another individual. In this light the sudden disappearance of snares within days after the individuals got trapped may indicate active snare removal. Three cases have been reported within the Sonso community:

1. On January 31, 2008, Monica, an infant of Melissa, was caught in a snare at her left hand. Four days later, on February 4, she was seen without the snare.
2. On June 13, 2006, Kasigwa, an infant of Kutu, was seen with a blue nylon snare on her right foot. The snare had disappeared two weeks later.
3. In February 2003 Kana, at this time an infant of Kutu, was seen with a snare injury mark at her right ankle. The injury was still bleeding. The snare, however, had disappeared already.

Although there was no direct observation, active snare removal might have happened in those cases. Usually snares, once they have been pulled off the sapling where they are attached to, have cut deeply into the flesh and will fall off only when the material has disintegrated. Often individuals carry their snares for months before the wire has corroded enough to break, while nylon is known not to disintegrate at all.

Another striking point was the close investigation and careful removal of the snare by Nick. It did not only remove the snare but he kept Kwera's arm in position so that she couldn't hurt herself. It remains unclear whether Nick's behavior was triggered by an ad-hoc stimulus enhancement (or any other low-level social learning process), following Kwera's example, or he understood the reason for the problem. In a community where many chimpanzees have self-experience with snares it seems possible that individuals may make the connection between the snare and the screaming involved. Experience may allow them to remove a snare.

However, this was a one-off chance observation and whether similar events have happened beforehand (as suggested above) is purely speculative. We need more direct observations from the Sonso and other communities. Therefore we would like to ask other researches from other study sites to contact us when they have made similar observations (as for example reported from Taï, Côte d'Ivoire: page 34 in 5).

Acknowledgments: We thank the Office of the President of Uganda and the Ugandan Authorities (National Forest Authority and Uganda Wildlife Authority) for their permission to conduct research on the chimpanzees of the Budongo Forest. We are grateful to Lucy Bates, Monday Gideon and James Kakura for their helpful observations, to Vernon Reynolds and Klaus Zuberbuehler for their comments on the manuscript and to the Royal Zoological Society of Scotland for their financial support of the Budongo Conservation Forest Station.

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<NOTE>

Use of wet hair to capture swarming termites by a chimpanzee in Mahale, Tanzania

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INTRODUCTION

Chimpanzees of all well-studied groups are known to eat termites to some extent. Each group differs in how and which species they prey upon. For example, chimpanzees of some groups eat the termite of the genus *Macrotermes* using fishing tools[1,2,3,4], whereas chimpanzees of other groups eat other termite species without using tools[5]. In the Mahale Mountains National Park, members of the B group use tools, but those of the K and M groups very rarely do so[6,7,8,9]. Two methods of direct termite capturing behaviors have been observed among the chimpanzees of the K and M groups[9]. One is destroying the tower of a termite mound and picking up the termites that come out. This behavior is observed frequently in the late rainy season when reproductively active termites (alates) gather in towers made on the ground. The second is feeding on alates that swarm in the air. This behavior is observed at the end of the rainy season on days when winged termites fly from their nests, forming a vast swarm and swirling around the tops of trees. Among the termite species living in this area[9], only *Pseudacanthotermes* exhibits this unique behavior. Uehara[9] pointed out that this characteristic behavior of the genus *Pseudacanthotermes* clearly influenced the chimpanzee's feeding techniques, but he did not give a detailed analysis.

The previously unobserved behavior of a female chimpanzee capturing termite alates from a vast swarm by sticking them to wet hair on her body is described.

METHODS

I studied M group chimpanzees, which have been subjects of long-term research since 1965[10], from July to August in 2006 and from October of 2006 to May of 2007. The M group consisted of about 60 individuals during the study period. The following observation was made during the study and was videotaped.

In the video analysis, I counted the number of termites eaten and categorized the chimpanzee's feeding methods into the following three.

Wet hair-use: picking up alates that stick to the wet hair of the arm or the body.

Grabbing: extending an arm or arms into the air and catching alates with the palm(s)

Gathering from leaves: picking up alates attached to leaves.

I also counted the number of times she swung her arms per minute.

OBSERVATIONS

On April 13, 2007, it was raining all day long. The rainfall that day was 33.1 mm. At 12:30, I began to follow a party consisting of six females including FT (c. 40 years old) and her two daughters FV (8 years old) and FM (4 years old). They walked through the bush for a while and encountered termites flying here and there at 17:17. They found a spot on the ground where the termites were concentrated, and picked termites off the ground and ate them. They stopped eating termites and then they arrived at a *Parinari curatellifolia* tree at 17:57, climbed up it and started eating its fruits. At 18:01, FT climbed down the tree and moved away. Since only FT began showing an unusual behavior, I decided to focus my attention on her.

The flow of action that FT carried out from 18:02 to 18:22

FT was gathering termites from leaves on the tree in which the other individuals were (Phase 1). She started climbing a higher tree that was standing next to the first one (Phase 2). She ate the termites sticking to the wet hair of her own body as soon as she reached the treetop. She stood up and began to extend her arm and grab termites in the air at an open spot in the treetop. She extended her arm behind her body, vigorously swung it over and over again in wide arcs with the elbow straightened, and finally brought the palm to her mouth. The motion was similar to swinging a table tennis racket. She alternated arms repeatedly (Phase 3). The behavior of swinging her arm and eating the termites attached to it was repeated (Phase 4). She sat in a fork of this tree. Sometimes she gathered termites from leaves. Many termites were still swarming in the air (Phase 5). She moved to another open spot and started to reach out her arm. She reached and swung with both hands at the same time in this phase only (Phase 6). She moved back to the spot she had used

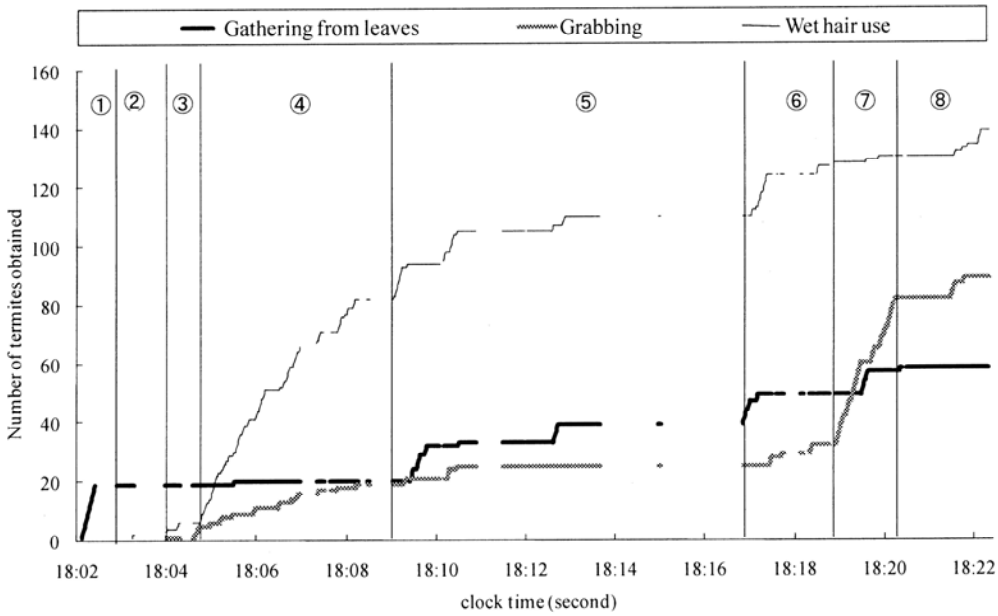

Fig. 1. The accumulated number of termites obtained by FT. The different lines show different methods of obtaining termites. The blank portions mean that FT's behavior could not be observed well due to the cover of leaves and/or a branch. The circled number corresponds with the phase number mentioned in the text.

in Phases 3 and 4. She was eating termites grabbed by her palm although the arm-swinging movement continued as before (Phase 7). She did not swing her arm again until after she climbed down. The number of termites swarming in the air was fewer than at the beginning (Phase 8).

The number of termites obtained

Figure 1 shows the accumulated number of termites FT obtained during this sequence. In phase 4, the number of termites caught with *wet hair use* increased rapidly. The number of termites caught by *grabbing* increased rapidly in phase 7, but the number of times she swung her arms did not differ significantly between phases 4 and 7 (Fig. 2). The number of termites caught by *gathering from leaves* increased gradually compared to the other two methods. In total, FT obtained the largest number of termites by *wet hair use*.

Behaviors of other individuals

FT's infant FM who was traveling independently reached out her arm at the same place as FT at 18:15. FM extended her hand but did not catch or eat any termites. Except for this, the other individuals in the vicinity of FT were only *gathering from leaves* at several places on the tree and did not employ *wet hair use* as did FT.

DISCUSSION

What factors influence FT's catching behavior? FT obviously ate more termites by *wet hair use* than by *grabbing*. In order to use wet hair, some environmental conditions might have been important. One is that her body was wet from the beginning until the end of this behavior. Second is that *Pseudacanthotermes* has relatively long wings (personal observation). The wing size is as long as that of the genus *Macrotermes*, which has the largest wing size in Africa[11]. In addition, termite reproductive activity may have influenced her behavior. The flight of the termites for copulation lasted about twenty minutes in this case. Both the number of times she swung her arms and the number of termites caught by grabbing also increased toward the end of the feeding behavior. On the other hand, the number caught with *wet*

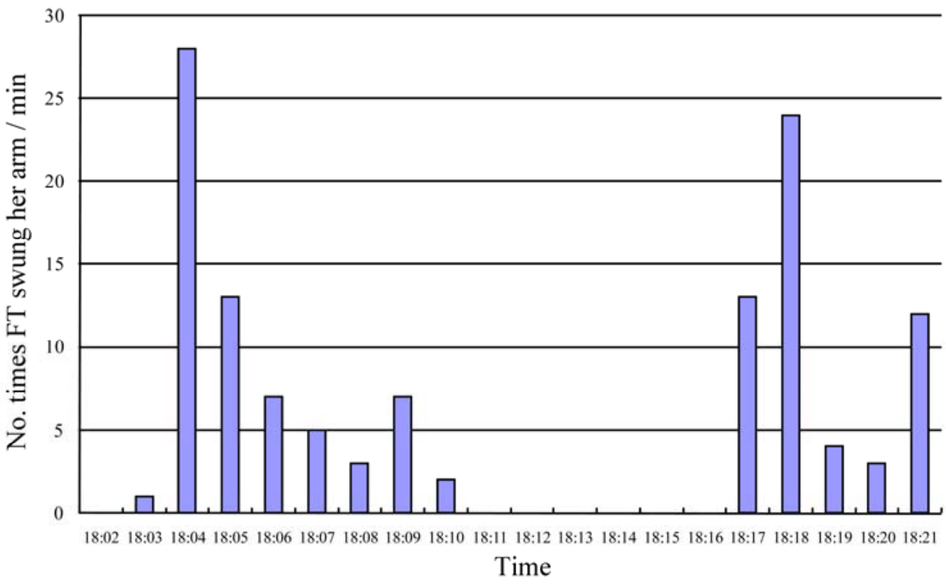

Fig. 2. The number of times FT swung her arm per minute.

hair use decreased. It is likely that the number of alates in the air decreased as the copulation finished gradually toward the end. One possibility is that the decrease in *wet hair use* may have been due to the decrease in the number of termites flying in the air. Another possibility is that the increase in *grabbing* may have been caused by her improved skill at the end. To examine both hypotheses requires more observation of similar behavior in the future.

The behavior of capturing swarming termites occurred not only in the K group but also in the M group. FT emigrated from an unknown group to the K group and then immigrated again to the M group in 1973[12]. It is unknown whether the wet-hair-use technique was common in the K group or whether FT learned it by trial and error. The vast swarming of *Pseudacanthotermes* is an annual event. Even though the period is consistent and seasonal, its frequency is low and the durations of the termites' copulation flights are short. Therefore, it is likely that this time-limited capturing technique could be observed employed by some other individuals besides FT at the same season of another year. Finally, researchers should be cautious not to simply conclude that the feeding technique reported here is cultural, considering the seasonal rarity of observation chances whether at Mahale or at other sites.

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<FORUM>

Why were guava trees cut down in Mahale Park? The question of exterminating all introduced plants

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I heard that in October 2007 all of the guava trees (*Psidium guajava*) in Mahale Park, from Kasiha to the Kansyana research camp, were cut down by workers of the Frankfurt Zoological Society in collaboration with Tanzania National Park (TANAPA) (Fig. 1). In response to protests by three researchers who were staying there at the time, they stopped cutting of the remaining trees. The reason given for cutting the trees was adherence to the policy of exterminating all alien trees planted by humans, which, according to TANAPA employees, is stipulated in the General Management Plan[1]. Nevertheless, under this plan researchers were also supposed to have been consulted. As a matter of fact, I was consulted only partially and was never given enough opportunity to express my opinion fully. Furthermore, some of my most important opinions regarding ecotourism, such as a single integrated booking system, were not taken up. However, this time, I limit my discussion to the human-introduced trees.

Fig. 1. Guava trees were cut down along the JS road from Kasiha to Kansyana Research Camp in October, 2007. (Photo: By courtesy of Michio Nakamura).

Until the late 1970s, there were seven hamlets at Kasoje along Lake Tanganyika in the current national park area, from the south of Lubulungu to the north of Kasiha. When I arrived at Kasoje in 1965, I saw oil palms, hedgerow such as *Jatropha curcas*, and fruit trees such as mango, lemon, orange, papaya, coffee, and banana. On the other hand, guava trees and *Senna* (ornamental/shade tree) were introduced to Kasoje in the late 1960s after I arrived. After the establishment of the national park in 1985, trees such as banana, coffee and papaya disappeared rather quickly. Other trees such as mango and oil palm thrived but never extended their distribution from the old hamlet sites. Only *Senna* reproduced themselves robustly at the cost of indigenous vegetation, thus becoming notorious alien, invasive plants[2,3]. What happened with the guava and lemon trees? Casual observers seemed to think that these trees were also invasive trees. But this was never the case. Let me report an interesting story.

Perhaps more than 10 years after the guava and lemon trees around Kansyana grew large and began to bear fruit, some chimpanzees began to eat these alien fruits, and this food habit spread rather quickly[4,5]. Chimpanzees are seed dispersers. When M group chimpanzees travel, they usually use vegetation-free paths, unless they need to enter the bush to eat, take a rest or avoid tourists. Consequently, there are plenty of opportunities for them to disperse the seeds of cultigens along the paths. When it begins to rain in October, it is nearly the season when our assistants begin to eliminate shrubs, herbs, and grasses growing on the paths. The seeds of cultigens also germinate, and thus these saplings would also be destined for elimination. However, the keen eyes of our Tongwe assistants could easily discriminate the guava and lemon seedlings from those of other plants. They almost "instinctively" avoided removing the seedlings of cultigens because they were, after all, born farmers. Their usual work had been removing weeds and rescuing cultigens. They were also trained to avoid cutting the food plants of chimpanzees.

After several years, I noticed a row of guava trees along the J-Road and Route One, from Kasiha to the Kasiha River, through the Kansyana Research Camp. Immediately, I realized that this was collaborative work by chimpanzees and humans! I left this matter as it was and did not tell our assistants to cut down the guava trees. I made this decision because guava fruit seemed to have become a substantial component of the diet supporting chimp life at that time (Fig. 2). June is a lean season of fruits in many years, and guavas were thus a lucky gift to chimpanzees. Guavas seemed to compensate for the loss of food supply resulting from the invasion of *Senna spectabilis*. Lemon trees were apparently less strong than guava trees in competition with natural vegetation, but similarly they survived along the observation path, thanks to the unconscious human intervention. Lemon trees in the Research Camp were visited by chimpanzees many times, particularly in September 1999, and they appeared to provide one of the most important foods for M group chimpanzees.

We should have no illusion that "the natural land" exists without the presence of humans. On the contrary, human beings and their ancestors have lived with other creatures since the emergence of such life forms on earth.

Fig. 2. Guava fruits are now constituting an important dietary component of M group chimpanzees in the early dry season. (Photo: By courtesy of Michio Nakamura).

For example, if you climb Mt. Nkungwe you can enjoy a beautiful landscape[6] of wood fern (*Cyathea* sp) and giant trees such as *Parinari*, *Anthonotha* and *Croton*, which appear to be perfectly ancient and pristine. However, if you look carefully enough, you will find pieces of clay pots buried near the highest end of many steep valleys. As a matter of fact, Tongwe people have lived there at least 130 years[6]. Resident people evacuated their traditional land, which they had inherited from their ancestors as their most important treasure, and ceded it to the government. Mango trees and oil palms are evidence of their existence, together with natural monuments such as huge rocks that they believed harbored the guardian spirits. They are the cultural heritage of the Tongwe people.

The Mahale national park should use this cultural heritage as one of the teaching materials and attractions for tourists, as well as the expression of respect and gratitude to the original resident people. Tourists would be thankful to those who had surrendered their land to many other people as a national treasure at the cost of their village, subsistence base, and memory of ancestral spirits. Moreover, every human having common sense knows that mango trees and oil palms provide good shade, which tourists need in the sunny dry season. The row of guava trees alongside Route One would be an interesting resource for teaching about seed-dispersing activities based on both chimpanzee and human intervention. These trees are alien (although oil palm is of West African origin) but never invasive. It has been discussed that oil palms likely brought yellow baboons to inland park areas and thus robbed chimpanzees of some inland food patches[7]. Accordingly, some of the oil palms, from Kasiha workers' camp to the west of Kansyana, could be cut down, but the other oil palm groves should be kept intact. I also would like to emphasize that the width of observation paths should be less than 1 meter. I was surprised to see that TANAPA temporary workers have sometimes widened the path up to 3 meters, cutting down shrubs and woody vines constituting important dietary components, such as *Psychotria peduncularis* and *Ficus urceolaris*, because they were ignorant of vegetation. Tourist companies welcome wide paths for their convenience, but this comes at the cost of the chimpanzees' subsistence.

Accordingly, my proposal is:

1) Mango trees and oil palms should be kept left alone as cultural heritage and shade trees, except for some oil palms heavily used by yellow baboons.
2) Lemon and guava trees should also be kept because they are not invasive but instead provide important food to chimpanzees. They should be used as instructive and attractive materials to teach tourists the role of chimpanzees in the maintenance of the Mahale ecosystem.
3) *Senna* trees should be cut down. Chain saws should be used not for guava trees but for *Senna*!
4) The width of observation paths should be kept to 1 meter at the widest. Workers should be taught which plants growing along the paths are eaten by chimpanzees.
5) Researchers should be consulted before important changes in the environment are planned. Information accumulated over 43 years of long-term research should be respected. It was the Research that created the Mahale Mountains National Park[8]. It is regrettable that the drafters of the General Management Plan did not know about (or neglected?) the one book in English dedicated to the chimpanzees of Mahale[6].

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