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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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Higher education essential for community-based wildlife conservation

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First, I would like to thank everyone who has financially supported our activities either as a long-time member or a one-time contributor for the Mahale Wildlife Conservation Society. Editing and publishing Pan Africa News (PAN) is one of our routine activities (Anonymous 2013). However, as the name of the society suggests, MWCS has a core mission to conserve wildlife in and around Mahale Mountains National Park, Tanzania. Although it is only natural that scientific approach should be required of the environmental conservation activities by researchers, one should not forget that community-based approach is vital for the success of any wildlife conservation plan on a long-term basis. For the indigenous people are rich in traditional knowledge about flora and fauna of the targeted area, on which the field scientists depend in the course of their project design and implementation. However, what is more important is to be aware of the priority in the indigenous people over all kinds of commercial and non-commercial activities in and around the protected area, and to guarantee each child in the communities the opportunity to acquire a strong sense of pride in their land (Nakamura *et al*. 2017) and high academic skills necessary to pursue any career including conservation-related work.

Higher education is thus essential for the community-based wildlife conservation at Mahale. Poor educational infrastructure due to remoteness has long kept the Tongwe, indigenous people of Mahale, from enjoying the same education as in urban areas. However, things have changed little by little since the end of 1990s, as primary education prevailed even in rural areas owing to the various efforts of some researchers and tour operators (see Hosaka and Nakamura 2015 for the detail). In October 2013, Mr. Butati R. Nyundo, the first MWCS special scholarship student, was awarded a diploma in wildlife management at the College of African Wildlife Management, Mweka, Tanzania (Hosaka 2013). While he works for Greystoke Mahale as a tour guide, he has just received a grant to undertake a research study to enhance community-based conservation of primates in Ntakata Forest about 25 km north of the Mahale Mountains National Park (The Rufford Foundation 2019).

Following the success of Mr. Nyundo, MWCS decided to offer scholarships to two more young persons with aspirations to contribute to the local communities around Mahale. One is Mr. Shabani Rashidi Kitopeni (Figure 1). MWCS has sponsored him since October 2018 when he joined the one-year program for a certificate in law

Figure 1. Mr. Shabani R. Kitopeni (3rd person from the left) at a classroom of Kigoma Training College, Kigoma, Tanzania

at Kigoma Training College, Kigoma, Tanzania. When he was awarded the certificate, MWCS allowed him to enroll in a two-year programme for a diploma in law. He aspires to work for the people of Katumbi, his home village, taking advantage of his legal knowledge. The other is Mr. Jabri Hamisi Bunengwa. MWCS has sponsored him since October 2019 when he enrolled in an ordinary diploma programme in primary education at the Mpuguso Teachers Training College, Tukuyu, Tanzania, where he had received a basic technician certificate in early childhood education. He may someday join the teaching staff of Katumbi Primary School which was built through grant assistance for Grassroots Projects by the Japanese Government.

The endeavors of MWCS to assist the youth financially in higher education have just begun. I appreciate your understanding and continued support.

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Note *Pan Africa News*, 26(2): 16–18 (2019)

Behavioral responses toward a conspecific corpse of wild bonobos (*Pan paniscus*) at Wamba

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INTRODUCTION

Humans react to the dead in diverse ways and a wide range of behavioral responses can also be found in other non-human animals, including non-human primates which provide important insight for considering how various behavioral reactions toward the dead have evolved from our evolutionary ancestors (Anderson 2011, 2017). Here, we report the behavioral responses of wild bonobos around the corpse of an adult male group member at Wamba, Luo Scientific Reserve, Democratic Republic of the Congo. This is the first reported case recording behavioral observations of multiple individuals responding to a dead adult conspecific in wild bonobos.

METHODS

Bonobos at the Wamba (0° 11′ N, 22° 38′ E), Luo Scientific Reserve, Democratic Republic of the Congo have been studied since 1973 (Kano 1980; Furuichi *et al.* 2012). Two groups (E1 and PE) have been studied continuously by researchers daily since 2003 for E1 and 2011 for PE. Two additional groups (BI and PW) have been surveyed several times a year for several weeks, as well as observed during encounters with bonobos of PE (Sakamaki *et al.* 2018). The bonobo that was found to be dead was a member of the BI group. Most of the individuals in BI group were not fully habituated and allowed human presence at a maximum distance of > 10 m, but it was challenging to follow them on the ground. Individual identification was ongoing at the time of the observations, although we had named most of the adult individuals (7 of 9 adult males and all 13 adult females). We were able to identify the corpse as an adult male tentatively named "AM2", one of the unnamed adult males, judging from the fact that AM2 disappeared on the date the corpse was found. AM2 was approximately 15 to 20 years old based on his physical features. The Research Center for Ecology and Forestry (CREF) is the local governing organization of the reserve and following their protocol, the corpse was buried by CREF and local assistants at the point where it was laying on the same day of discovery.

On the following day of discovering the corpse, we conducted stationary observations at the location where the corpse was found. Face masks and gloves were used and the observation point was set 15 m away from the buried corpse — in order to reduce the risk of zoonotic disease transmission.

OBSERVATIONS

On September 5th, 2018, SY left the base camp with two local assistants to start searching for bonobos of PE group at 05:00 h. We heard distant vocalizations of bonobos at 07:58 h. We followed their vocalizations and found the corpse of the adult male bonobo at 08:01 h. There were two adult females and one infant who belong to BI group around the corpse upon our first observation. One adult female (Ez, estimated to be 20 years old) was touching the arm of the corpse and her offspring (El, 2 years old) was peering toward the corpse. Another adult female (Ko, estimated to be > 50 years old) was whisking off the flies that were swarming around the corpse. The other members of BI group were gathering around the surrounding area, but we could not count the total number of individuals. As we approached the corpse at around 10 m, Ez, Ko and El moved away from the corpse and the whole group traveled away. After members of BI group left the surrounding area, we heard their vocalizations for more than 15 min (Video 1 available online at http://mahale.main.jp/PAN/2019/006.html).

We left the site of the corpse at 08:25 h and went back to the base camp in order to report and discuss how to manage the dead body with the staff of CREF. Following the decision, the corpse was buried at the point where it was laying at 12:00 h.

Prior to burying, we inspected the corpse. There were no noticeable injuries other than one single bite on his right leg, which appeared to be inflicted by ants. The corpse was emitting a strong decomposing odor and given that a number of flies and ants were flocking to the corpse, we estimated that a couple of days had passed since the individual's death.

On September 6th, 2018, the authors and two local assistants returned to the location where the corpse was found and began collecting stationary observations at 06:42 h. Nineteen individuals of BI group including three adult males (GR, OA and YJ) and seven adult females (Ac, Bo, Ko, Og, Vc, Yr and Ze) appeared together at our location at 07:24 h, emitting "alarm calls" (Kuroda 1979). They continued to emit calls for about 10 min from adjacent trees (Video 2 available online at http://mahale.main.jp/PAN/2019/006.html). An adult male (OA), four adult females (Ko, Og, Vc and Ze) and two sub-adult females (Fa and Ym) climbed up and down the trees repeatedly and gazed at the location of the buried corpse. In particular, two adult females (Og and Vc) and two sub-adult females

(Fa and Ym) often approached within 6 m of the location where the corpse was buried. Some individuals were looking down at the same location from the trees and others were resting or grooming on the trees from 08:00 h to 08:52 h (Bo and GR; GR and Ze; Yr and Yz, her offspring; OA and YJ). All bonobos left the area at 09:06 h (Video 2 available online at http://mahale.main.jp/PAN/2019/006.html).

After all bonobos left the area, we inspected the surrounding area. We found 7 beds within 30 m of the corpse, including one that was located approximately 20 m directly above the corpse. The beds seemed to be a few days old, suggesting the bonobos slept there before we found the corpse partially decomposed. We also found broken-off branches on the ground, which were likely used by bonobos before we found the corpse for performing "branch drag" displays to signal the start of traveling (Kuroda 1980; Ingmanson 1996).

At 12:05 h on the same day, the same members returned to the location of the buried corpse by moving on the ground quietly. One adult male (YJ), three adult females (Ac, Ko and Yr) and two sub-adult females (Fa and Ym) sat independently on the exact location of the buried body for a few minutes, and they remained within 5 m for 26 min. Other members were resting around the buried location on the trees or on the ground. OA performed a "branch drag" display at 12:38 h and several individuals emitted vocalizations to start traveling at 12:50 h. All individuals left the location at 12:51 h. We continued to implement stationary observations until 15:00 h, but they did not return.

On September 7th, 2018, we conducted stationary observations again at the same location from 07:09 h to 15:00 h. We did not observe any bonobos at the site.

DISCUSSION

Among non-human primates, various behaviors toward conspecific corpses have been reported such as guarding the dead body, vigils and direct interactions (Gonçalves & Carvalho 2019). It is rare to find the corpse of adults in wild conditions, but reports are growing. In this reported case, we could not confirm the individual's cause of death, though he may have died of illness, or perhaps by falling down from the bed located above as was reported in one chimpanzee (*Pan troglodytes*) case (Teleki 1973).

Similar to our findings, chimpanzees have also been reported to show a wide range of reactions toward adult conspecific corpses. For example, resting near the corpse, but also tending to avoid contact with the corpse (Hosaka *et al.* 2000) and investigations (*e.g.,* gaze, sniff and touch) of corpses, likely to confirm if predation was the cause of death (Boesch 1991). In addition, a previous study suggested that male chimpanzees tend to be more curious than females and infants may be prevented from approaching the corpse (Anderson 2016). Female and infant bonobos may be able to access conspecific corpses easier than males because female bonobos aggregate more than males in order to maintain close social associations and female's social rank tend to be higher or equal to males (Furuichi 2011).

We should carefully consider the differences in how bonobos react to the corpses of conspecifics and other animals. Bonobos have been observed to approach, peer, sniff and carry the corpse of other animals, as well as returning repeatedly to the same location (Hayashi *et al.* 2012; Toda *et al.* 2017; Tokuyama, personal communication). Wild chimpanzees have also been reported to interact with the corpses of other animals (van Lawick-Goodall 1968; Boesch & Boesch-Achermann 2000). To the date, we have little evidence that suggests *Pan* species treating conspecific corpses differently from the way they treat corpses of other animals.

Bonobos have been observed to return to the location of an injured group member (Tokuyama *et al.* 2012; Tokuyama 2019), suggesting that they may care for other injured members. In the current case also, bonobos returned repeatedly to the same location where the group member was dead, even after the corpse was buried, suggesting they care considerably for their dead and disappeared group members.

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Book Review *Pan Africa News*, 26(2): 19–20 (2019)

Bili-Uéré: A chimpanzee behavioural realm in northern Democratic Republic Congo

By Thurston C. Hicks, Hjalmar S. Küehl, Christophe Boesch, Paula Dieguez, Ayuk Emmanuel Ayimisin, Rumen Martin Fernandez, Donatienne Barubiyo Zungawa, Mbangi Kambere, Jeroen Swinkels, Steph B. J. Menken, John Hart, Roger Mundry and Peter Roessingh

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Research monographs have had a notable impact in the development of studies of wild chimpanzees, from the onset of scientific investigations in the field. (Here, research monograph is defined as a lengthy, inclusive, stand-alone account published in scientific journal format.) Arguably the first proper study of *Pan troglodytes* in nature was by Henry Nissen in western Guinea, almost 90 years ago (Nissen 1931). Later, what could be called the seminal study of modern chimpology, at least in the West, was that of Jane Goodall at Gombe in Tanzania (van Lawick-Goodall 1968). Later still came Kano's (1972) heroic survey of chimpanzees in the greater Ugalla area of western Tanzania. Now comes another ground-breaking monograph, by Cleve Hicks and his team, done in northern Democratic Republic of Congo.

The monograph's title reveals little about its content: On the one hand, the content of the text is focussed and specific, being a detailed ethnographic report of the extractive foraging technology of unhabituated wild chimpanzees. To be even more precise, the two foci are insect-getting tools and percussive food processing. On the other hand, it is unprecedentally broad, as it compares many groups in an immense range of more than 50,000 km², in northern Democratic Republic of Congo. That country remains little known by chimpologists, although it may be home to more chimpanzees than all the other habitat countries combined! Hicks and Co. report findings gathered over 12 years from 20 surveyed groups, making it perhaps the most wide-ranging such project in chimpological history, dwarfing even the peregrinations of Kano in Tanzania and Zaire (Kano 1984).

Readers may be puzzled by the use of an innovative term, 'realm', in the title. In the *Oxford English Dictionary*, the usual meaning is of a kingdom with a powerful ruler. But used here, it combines two other meanings of the word: A domain of some quality, state, or other abstract conception, plus a primary zoogeographical division of the earth's surface. The former focusses on the concept of culture (and in earlier work, Hicks [2010] characterised it as a 'mega-culture'.) The latter is apt, with a single, key river (the Uele) dividing the cultural realm into moist tropical forest to the south from mosaic savanna woodland to the north. These two areas are further divided into regions.

Methodologically, the monograph is essentially primate archaeology (although that emerging discipline's over-arching framework, presented by Haslam *et al*. 2009, 2017, is never mentioned). Direct behavioural data are few, but instead they come from artefacts, dung, and camera traps. These indicators are collected and analysed precisely, with such standard archaeological techniques such as surface surveying, refitting, sourcing, distance from source to use, etc. Criteria are tight for such perennial challenges as distinguishing artefacts from naturefacts. Problems emerge that are informative, however frustrating, such that tool kits based on artefacts do not neatly correspond to tool kits based on dietary contents of faecal samples. Neither method on its own is enough, so both should be pursued.

Findings on tool-assisted insectivory are both familiar and surprising. Some termite taxa (*e.g., Cubitermes*) are commonly eaten, while others, including the widespread favourite of the apes, *Macrotermes*, are not, except when mating swarms of winged alates are available. So, there is no termite fishing, but percussion is used to process mounds, by pounding chunks on substrates, such as tree trunks or roots. Terrestrial and arboreal honey-producing stingless bees are accessed very differently. Subterranean honey is got by digging stick, while arboreal honey is got by probe. The most commonly eaten ant taxon is none of the usual chimpanzee prey types, but Ponerinae, the predatory, pack-hunting termite-eaters who sting as well as bite. *Dorylus* (army or driver ants) are eaten too, but epigaeic *versus* non-epigaeic taxa call for different tools. All these practices can be classified as habitual, or maybe even customary.

Other types of extractive foraging are tantalisingly tentative: One case of a bark tool used as a trowel to dig up ants. One case of a weaver ant nest being disassembled, leaf by leaf. One case of hard-shelled fruit being used as a hammer to break up termite soil. Two cases of tortoises being pounded open. A 'large number' of terrestrial snails being broken open (but these could be confused with similar processing done by marsh mongooses, as Hicks *et al*. are clear to point out). All these early finds require more evidence, which hopefully will be forthcoming.

More problematic is whether or not any of these results conclusively indicate cultural phenomena. Stark

differences exist between the north *versus* the south side of the Uele, but not all of these could be explained as ecological differences constrained by the very different ecotypes. To get the same prey species, epigaeic *Dorylus*, chimpanzees in the north used extremely long probes, but not so in the south. Without close-up observational data, it cannot be said yet that the variation found results from social learning (in its broadest sense, including not just behaviour, but the products of behaviour, such as artefacts). Thus, when Hicks *et al*. propose a 'cultural realm', based on a unique combination of five types of elementary technology, it is still a hypothesis, rather than a solid conclusion. The authors are careful to distinguish between speculation and evidence.

The quality of the illustrations is uncommonly high. There are 54 excellent colour plates, two of which are imaginatively presented arrays of tools collected. (Unfortunately, only six of these photos include scale objects, a simple omission that easily could be remedied.) These photographs depict all the types of elementary technology described in the text.

Of course, there are points of contention: Inexplicably, Japanese contributions to chimpanzee elementary technology are virtually ignored. Of the 91 references listed, only four are to Japanese first-authors, in contrast to six to Boesch alone. There is no place for Uehara or Sugiyama. Equally puzzling is the complete absence of citation of any work by Tutin and Fernandez's group at Lopé, although done in Central Africa (Gabon), especially on extractive foraging technology (*e.g.,* Tutin *et al.* 1995).

So, what is the verdict overall? A magnificent piece of work, standard-setting in many ways, done in one of Africa's most challenging countries. One can only hope that Hicks will continue to be financially supported, in order to carry on for decades to come!

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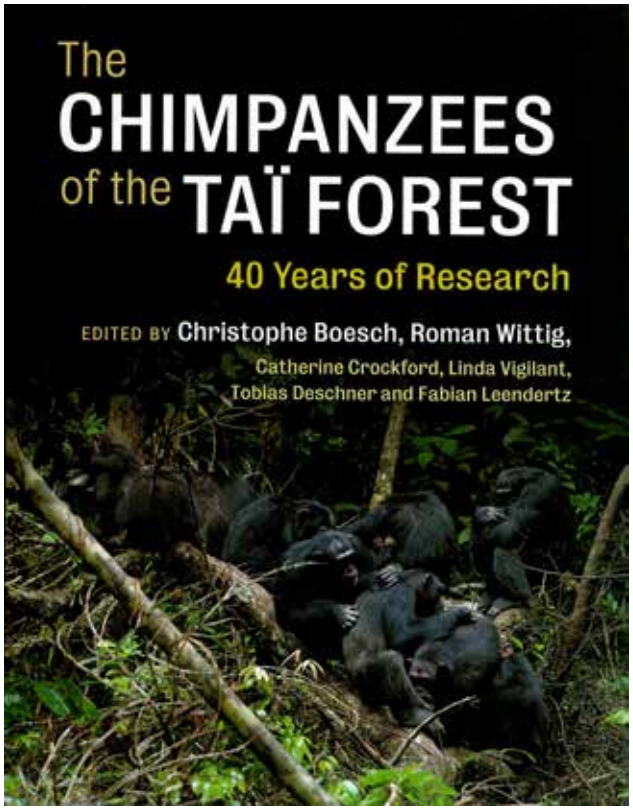
The Chimpanzees of the Taï Forest: 40 Years of Research

Edited by Christophe Boesch, Roman Wittig, Catherine Crockford, Linda Vigilant, Tobias Deschner and Fabian Leendertz



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This recently published volume was prepared in commemoration of the 40th anniversary of the chimpanzee research project at Taï Forest, Côte d'Ivore. As already introduced by Wittig (2018), the Taï Chimpanzee Project began in 1979 by Christophe and Hedwige Boesch. The project has been continued since then and is now one of the world's most eminent primate research projects.

From this volume, we can learn how long-term logistic efforts have been essential to run a large research project as well as to continue conservation actions for the target species. It is also interesting to see that some chapters are allocated for observation protocols and data sharing methods. Such common protocols are essential for long-term monitoring by various researchers and contributed to elucidation of very basic, yet very important findings about demography, life history, culture, diet, behavioral diversity, etc. of this long-living species.

Although the direct behavioral observation is a basic research protocol employed at chimpanzee field sites, there are growing importance of contributions from lab works in recent decades, such as genetic analyses, endocrinological analyses, identifying microorganism ecology and cause of infectious diseases. Such field–lab collaborative works have been conducted since relatively early days at Taï, and several chapters in this volume are allocated for reviews of such types of studies there.

More specific research topics found in this volume are very wide: adoption, spatial integration of females, tool use, social play, female rank changes, association networks, sharing meat, vocalizations, gesture, spatial and temporal cognitive abilities, and so on.

Altogether 42 authors have contributed to 28 chapters in this volume.

We sincerely congratulate the 40-year achievement of the Taï Chimpanzee Project and acknowledge their very important contributions to the primatological literature.

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