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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 at the point where it was laying at 12:00 h.

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...

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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