

A lone chimpanzee mother–infant pair was indifferent to frequent leopard calls

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ABSTRACT

Leopards are potential predators of wild chimpanzees where the two species are sympatric. However, the relationship between these two species in Mahale, Tanzania, is not so simple: chimpanzees can be eaten by leopards, but they also sometimes attack the leopard cubs and even deprive a leopard of prey. This report describes a case in which a mother–infant pair of chimpanzees in Mahale showed no significant response to repeated leopard rasping calls that were heard for over 200 minutes, with the closest call coming from a distance of about 120 m.

Keywords: *Pan troglodytes schweinfurthii*, Mahale Mountains National Park, *Panthera pardus*, rasping call

INTRODUCTION

When considering the evolution of primates, the presence of predators, particularly large cats, cannot be ignored. Among the extant big cats, leopards (*Panthera pardus*) are widely distributed from Africa to Asia (see Jacobson *et al.* 2016 for a recent review) and are known to be predators of a wide variety of primates (e.g., Zuberbühler & Jenny 2002; Klailova *et al.* 2013; Nakazawa 2020), as they often inhabit forests where primates are abundant. Great apes are no exception, and indeed, several cases of chimpanzees (*Pan troglodytes*) being eaten by leopards have been reported (e.g., Boesch 1991; Nakazawa *et al.* 2013). It is therefore important to understand how chimpanzees behave towards leopards.

In recent years, leopards have become locally extinct in many parts of Africa, including where many chimpanzee study sites are located (there has been no evidence of leopards for a decade or more in Gombe, Tanzania, and Kalinzu, Kibale, and Budongo, Uganda [Nakazawa *et al.* 2013]), so there are not many study sites where leopards can be seen sympatrically with chimpanzees. The Mahale Mountains in Tanzania is one of the few chimpanzee study sites where evidence of leopard presence (such as scat, footprints, vocalizations, or direct sightings) can be observed on an almost daily basis. Despite long-term studies, there are only a handful of reported cases of chimpanzee–leopard encounters, either directly observed or inferred (e.g., Hiraiwa-Hasegawa *et al.* 1986; Hosaka & Ihobe 2015; Nishie 2018; Nakamura *et al.* 2019). Since leopards are common there, there should be many more cases of chimpanzees noticing the presence of leopards than directly encountering them. However, such cases have not been fully documented.

This report describes a case in which repeated leopard rasping calls were heard from a relatively close range

during the focal follow of a lone mother–infant chimpanzee pair. The chimpanzees showed no significant responses. However, I believe it is important to accumulate data on even such indifferent attitudes in order to fully understand the complex relationships between the two sympatric species.

OBSERVATION

The case was observed on March 18, 2020, in the Mahale Mountains National Park in Tanzania. At this time of year, Mahale M-group chimpanzees often travel in small parties due to declining fruit availability. Since chimpanzees often visited a particular *Cordia milenii* tree (about 20 m high) on a trail called Br. Kati (see Figure 1) not far from our research camp, I had been waiting under the tree since the morning.

At 0842 h, an adult female Omo came to the *Cordia* tree with her 3-year-old son Oz on her back. Soon they began eating the fruits. I heard the first leopard vocalization, a rasping call (or sawing), at 0941 h from the south, not very far from the tree (Figure 1, location 1). Omo and Oz showed no apparent reaction. After four minutes, I heard the second leopard call that seemed to be coming from closer (Figure 1, location 2). Omo and Oz remained in the tree until 1036 h, when they descended to the ground to go to another tree (less than 10 m high) to eat some leaves.

At 1048 h I heard another rasping call from the west (Figure 1, location 3). Now I assumed that the leopards were moving along the trail, R-1. Although the call seemed to be getting closer, the chimpanzees showed no obvious signs of fear or anxiety. At 1057 h, Omo and Oz moved from tree to tree, and Omo soon began fishing for arboreal ants (at less than 10 m above the ground). At 1103 h, red colobus monkeys near R-1 made noisy alarm calls, which I interpreted as a sign that they had spotted

the leopard. Another rasping call came from slightly west of R-1 at 1107 h (Figure 1, location 4), and there was a moment of silence.

About 50 minutes later, at 1156 h, the next leopard call came again, from a closer location (Figure 1, location 5) than the previous one. Subsequently, repeated rasping calls were heard from the same area at 1159, 1204, 1210, 1214, 1218, and 1220 h. Omo, who continued to fish for ants, once looked in the direction of the calls at 1228 h, but soon resumed fishing.

At 1232 h, a call came from further north (Figure 1, location 12). It was difficult to judge if it was from a different leopard or the same one moving north. Two more calls were heard at 1258 h and at 1301 h (Figure 1, locations 13 and 14, respectively), apparently the leopard was moving north. This was the last vocalization of the leopard heard that day.

At 1325 h, Omo finished fishing and moved around to feed on some fruits and leaves. At 1559 h, she met Koopy, an adult female and was together with her until the end of my follow at 1730 h. During the 8 h 48 min focal follow of Omo, she was on the ground for a total of only 11 min.

The next day, from 0859 to 1206 h, I heard leopard

calls five times in roughly the same area.

SUMMARY AND DISCUSSION

In total, I heard leopard rasping calls 14 times during the day I followed Omo. It was impossible to know if these 14 calls belonged to only one leopard or to two. However, from the chimpanzee perspective, leopard calls were heard 1.59 times per focal hour. Notably, the rasping calls were concentrated around noon; ten of 14 calls were within the two-hour window between 1100 and 1300 h. It is not common to hear leopard calls so frequently around noon; Bailey (1993), who studied leopards in Kruger National Park, South Africa, noted that leopard vocalizations can be heard during the day, but his vocalization data did not include any calls between 1000 and 1500 h. Similarly, Otani (2016) recorded 208 rasping calls of leopards in Mahale with automatic recording devices, but the peaks were in the morning and evening, and none were recorded between 1000 and 1400 h.

A leopard rasping call is composed of several strokes, and for the 8th, 9th, and 11th–14th calls, I could count the number of strokes ranging from 9 to 14 (mean = 12.8, $n = 6$, $SD = 1.8$). Although Bailey (1993) mentioned that he could identify individual leopards by the number of strokes per call, this may not be easy for Mahale leopards, as calls from the (likely) same individual could contain 8 to 17 strokes (Otani 2016).

The locations of the leopard's vocalizations shown in Figure 1 are only estimates. However, I believe they are not bad estimates for some reasons. First, the calls were heard quite clearly. A leopard's rasping call can be heard from 1 to 3 km (Bailey 1993), and I was at a slightly higher elevation than the locations of the calls, which allowed me to make better estimates. Second, I am used to locating chimpanzees by listening to their vocalizations at about this distance. Since the area is very close to our research camp, I am also quite familiar with the topography of the area. Based on the map, the closest distance to the leopard was about 120 m. Even with the margin of error, it could not have been more than 200 m away.

As shown in this report, in one of the most vulnerable situations, where the chimpanzee mother and infant were alone, they did not show any explicit response when the leopard repeatedly called at a distance of about 120 m. What does this lack of response to a potential predator indicate? It is unlikely that the calls were not heard by the chimpanzees, since they were clearly audible to the human observers who were close to the chimpanzees. Since a leopard rasping call is not a hunting call, but is considered to be an advertising call directed to other leopards (Bailey 1993), chimpanzees may not need to be afraid of them, even if the calls are relatively close. Even if the chimpanzees were frightened by the calls, it would have been counterproductive for them to respond loudly: they would have increased their risk of being attacked if they had vocalized. As long as the chimpanzees remained quiet, the leopard would not detect them from a distance of about 120 m.

The Mahale chimpanzees live in an environment where they may occasionally encounter or notice the

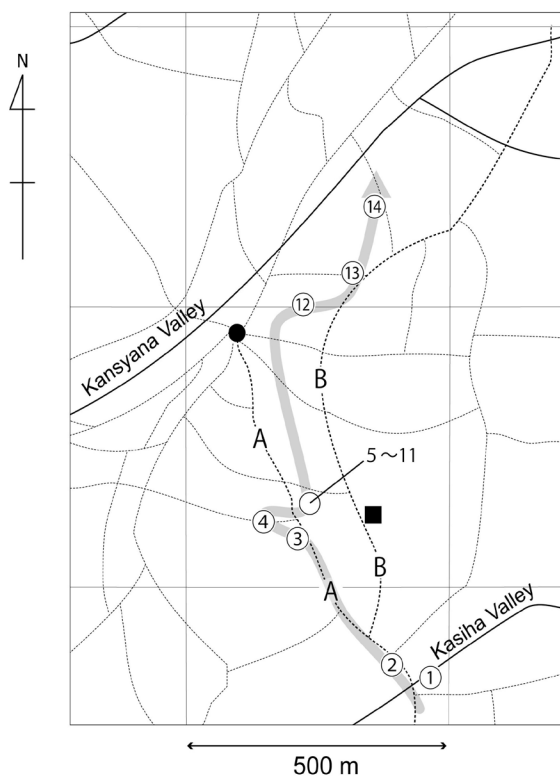


Figure 1. A map showing the locations of Omo and leopard calls
Dashed lines indicate observation trails. A: R-1, B: Br. Kati. A black square indicates the approximate location of Omo. White circles show the estimated locations of leopard calls. The numbers indicate the sequential number of calls. A gray thick line indicates the estimated movement of the leopard, assuming that these calls belong to a single leopard. A black circle indicates the Kansyana research camp.

presence of leopards (a camera trap survey within the M group's home range captured leopards 252 times in 4468 camera days in 2014–2015 [Nakazawa 2023]). Depending on the situation, chimpanzees may perceive a leopard as dangerous and emit alarm calls, aggressively chase it away, or ignore it and remain silent. We still have much to learn about the complex relationships between sympatric chimpanzees and leopards.

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