Folia Primatologica
Editor-in-Chief: R.D. Martin, Zürich

Separatum
Publisher: S. Karger AG, Basel
Printed in Switzerland

Brief Report

Folia Primatol 1993;60:225–229

Field Observations on Meat Sharing among Bonobos *(Pan paniscus)*

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Key Words
Bonobo
Pan paniscus
Meat eating
Food sharing
Predation by primates
Field study

Sharing of food has been reported for a number of different primate species [1, 2]. Various explanations for the evolution of food sharing have been proposed, including kin selection, reciprocal altruism and selfish behavior [3–5]. Food sharing between mature individuals seems to involve predominantly either provisioned plant food [6, 7] or animal prey [1]. Most comprehensive data on hunting and meat sharing have been derived from studies on various populations of chimpanzees, *Pan troglodytes* [8–12]. By contrast, very little is known in this respect about the other *Pan* species, the bonobo *(Pan paniscus)*. At the study site at Wamba, an adult male bonobo was observed consuming a flying squirrel (*Uromastyx* sp.) on two occasions. In one case, females approached the male owner with begging gestures, but the male did not share his prey [13]. The only other source of information is provided by three reports from Lomako. The following cases were observed between January and December 1981 by Badrian and Badrian [14] and by Badrian and Malenky [15]: All 3 instances involved infant duikers *(Cephalophus nigrifrons, C. dorsalis)* as prey. Twice the prey was carried by adult males, while no information on ownership was given for the third case. In the first case, 2 individuals snatched part of the prey carried by the male owner and ran off. In the second case, the duiker was abandoned while still alive, indicating that the bonobos had not yet started with meat consumption and division. In the third case, several individuals surrounding the male in possession of the prey were later seen to eat meat, and '... it was presumed that the male had given it (meat) to

Received:
December 11, 1992
Accepted:
July 16, 1993

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0015–5713/93/
0604–0225$2.75/0

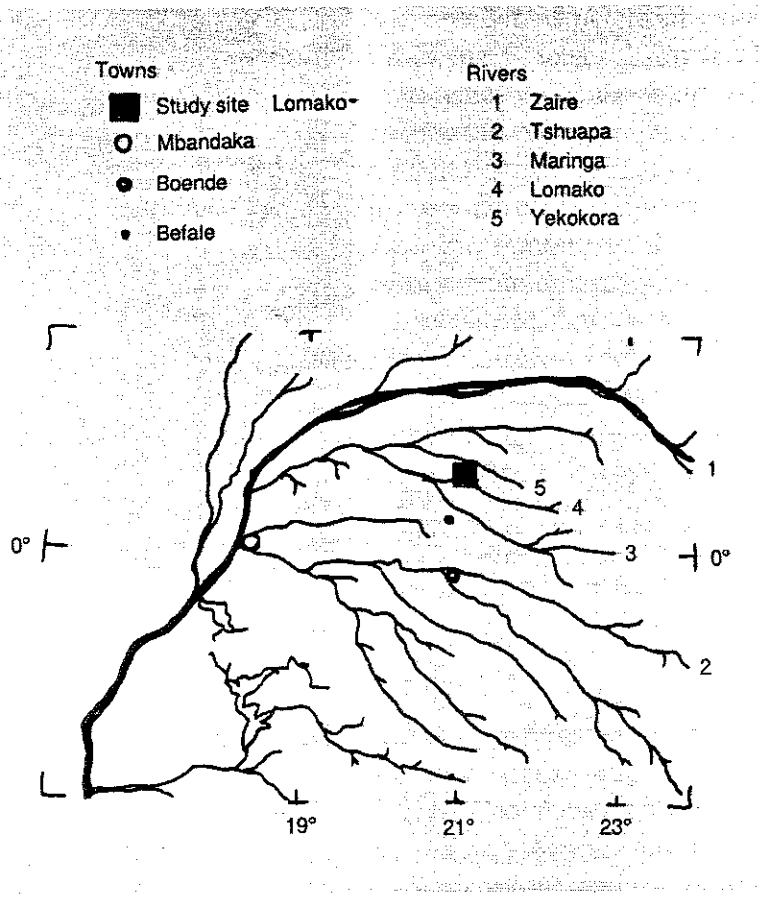

Fig. 1. Map of Equateur, Republic of Zaire. After Badrian and Malenky [15, p. 276].

them (females) or permitted them to take it' [14, p. 336]. These observations were made during an early stage of research at Lomako when habituation of the subjects was still incomplete and observations were accordingly difficult [14, 15].

The present report concerns 2 cases of meat sharing among bonobos observed recently during an 18-month field study at Lomako. This study site is located in the Upper-Tshuapa district of Equateur in Central Zaire (fig. 1) and is well known from a number of previous studies [16, 17]. Subjects involved in this study were thought to belong to the Eyengo community – synonymous with the term 'rangers' used by White [16] – residing in the eastern part of the study site [14].

Observations reported here were made in November 1990 and June 1992. In neither case was hunting or killing of the prey observed. However, noise thought to accompany the capture, along with the condition of the carcass at the time when the party was located, indicated that the delay between capture of prey and onset of observation was very brief (<5 min).

The first episode involved an unidentified mammal the size of a large squirrel. The entire period of meat sharing took place in a small tree. An adult female (owner) was holding the prey with one hand, while 3 other females (2 adults, 1 juvenile) were sitting in close proximity to the owner. Only 2 of the females were seen begging for and receiving

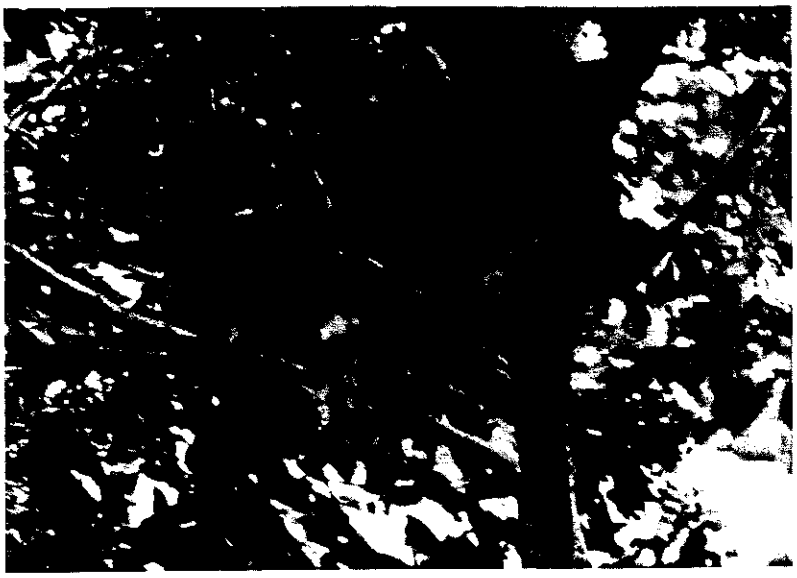

Fig. 2. Three bonobos have gathered around the adult female carrying the duiker (center).

part of the prey, although the third female also remained close to the owner. After 29 min the carcass had been completely consumed and the group moved some 20 m across the ground before climbing into a food tree. Here, an adult male joined the females. Although he had not been seen at the place where meat sharing took place, he may have been present as well. The only remains found at the site of meat sharing were drops of a soft, cream-colored, strong-smelling secretion.

The second case involved a medium sized duiker (*Cephalophus* sp.) with an estimated weight of 8–10 kg (fig. 2). Observation in this case started at 5.50 h. While we were following animals moving away from their night nests, screams and squeals from bonobos (and perhaps from the prey) led us to a group consisting of at least 5 individuals. When we approached more closely 1 female (with dependent offspring) carrying the duiker climbed into a tree and was immediately followed by 1 adult male and 2 other females with infants. At the same time, an adolescent female appeared in a neighbouring tree but moved away a few minutes later. At first, the female carrying the prey frequently shifted from one place to another, always closely followed by the other 3 adults. Meat sharing started at 6.04 h and during the following 97 min the female owner, the male and another female removed comparatively small pieces of meat and bone from the prey. While the female always took meat directly from the carcass, the male was also seen begging for meat by putting his hand towards the mouth of the female owner. The third female received meat only once and disappeared 65 min after the onset of sharing. Despite the fact that by 7.41 h the prey had been partly dissected and the participants received larger pieces of meat, sharing still continued. At 8.27 h, the party left the tree and moved some 200 m before settling on the ground and continuing with the division and consumption of meat. Here, the third female and her infant again joined the party. At about 8.50 h the remaining part of the prey changed ownership, and the second owner was one of the adult females. She was seen to share with the

3 infants but not with the other adults. Opening of the cranium and consumption of the brain was conducted by the second owner and took place approximately 185 min after the onset of food division. At that time, the male and the 2 other females had started dividing and eating a large *Treculia africana* fruit.

Sharing of the duiker lasted for more than 3.5 h and accounted for the longest food-sharing episode observed during this study. During the entire episode, the 3 infants had free access to the prey and removed small pieces from the mouth/hand of their mothers or directly from the prey. The remains that were eventually left consisted of a large piece of skin and bone fragments from the limbs and cranium. During the course of food sharing, agonistic interactions were entirely absent (first case) or mild (second case) and restricted to displacements by the owner (4 times) or by other participants (6 times). Sexual interactions were seen 3 times during the second episode, when the females performed genitogenital rubbing. In the same case, the members of the food-sharing party responded 5 times with distance calls to corresponding vocalizations given by members of another party. The estimated distance between the animals under observation and the other party was 400–500 m.

The 2 cases of meat sharing described above do not permit any general conclusion. However, they do demonstrate that it is not necessarily the males that are in possession and control of highly preferred food. In contrast, ongoing analyses of a larger sample of data on the division of natural plant food among bonobos demonstrate that females share food more frequently than males [authors' unpubl. data]. Summing up all data currently available [13–15, this study], the rate of hunting, meat eating and/or meat sharing among bonobos seems to be very low in comparison with chimpanzees. This is puzzling because there is a number of potential prey animals available in the Lomako forest (e.g. guenons, black-and-white colobus, squirrels, duikers), and encounters between bonobos and these animals can be seen regularly every day. Nevertheless, even with this low predation rate the data from bonobos still match those obtained from certain chimpanzee populations [12]. It is expected that continuous long-term studies at Lomako and at other undisturbed study sites should eventually reveal more data on hunting, meat eating and food sharing among bonobos. These data will certainly enhance our knowledge of species-specific behaviour. However, it may also bring us to re-examine existing theories on the evolution of food sharing.

Acknowledgments

The authors would like to thank: I. Eibl-Eibesfeldt, G. Neuweiler, D. Ploog, H. Dettmann, E. Ott, C. Kühn, P. Laschan, B. Unger, Ch. Roberts, N. Thompson-Handler, Richard Malenky, J.P. Bontamba-Lokuli, P. Bozenza, F. and L. Christiaans and M. Ikala-Lokuli. We are also grateful to the Département de l'Enseignement Supérieur et Universitaire et de la Recherche Scientifique (Kinshasa) and the CRSN (Lwiro), which kindly provided permission to conduct field work. Financial support was provided by the Max Planck Society, the University of Munich, the German Science Foundation and the German Academic Exchange Service.

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