Bird in the Hand: Bossou Chimpanzees (*Pan troglodytes*) Capture West African Wood-owls (*Ciccaba woodfordi*) but Not to Eat

Susana Carvalho¹, Yumi Yamanashi², Gen Yamakoshi³ & Tetsuro Matsuzawa²

1. Leverhulme Centre for Human Evolutionary Studies, University of Cambridge, UK / Centre of Research in Anthropology and Health, University of Coimbra, Portugal (E-mail: scr50@cam.ac.uk)
2. Primate Research Institute, Kyoto University, Japan
3. Centre for Asian and African Area Studies, Kyoto University, Japan

Fig. 1. Adolescent male PL after capture of the owl, carrying it in right hand.
INTRODUCTION
Chimpanzees rarely capture an animal without eating it, but this puzzling pattern occurs in both nature and captivity, mostly by youngsters. At Bossou in Guinea, chimpanzees rarely hunt for meat; their home range presents few suitable prey. From 1976 to 2008, only one bird (West African wood-owl, Ciccaba woodfordi) capture was recorded, and it was consumed. In 2009, we saw two captures of this species, which were not followed by consumption. Instead, both raptors were used as toys, as previously observed at Bossou with tree hyrax, Dendrohyrax dorsalis. Here we describe the captures and discuss the implications of this behavior from an evolutionary perspective.

METHODS
Site and Subjects
Bossou is a long-term chimpanzee (Pan troglodytes verus) study-site in Africa. Its chimpanzees range over 15 km, dominated by primary and secondary forest and surrounded by cultivated fields, abandoned fields and shrub forest. The chimpanzees are fully habituated to human observers. The bird captures occurred between November 2008 and November 2009, during (mostly) nest-to-nest follows totaling 690 hours. These combined focal and scan sampling, and we videotaped and photographed events to supplement direct observations. Rare or unusual events were recorded ad libitum. Both episodes were at nearly the same location, on the eastern slope of Guein Hill (N 7.38.698; W 8.30.102).

RESULTS
Case 1: On 21 February 2009, S.C., G.Y., and two field assistants (J.D., G.Z.) followed a party of seven individuals (JR, JY, PL, JJ, TA, FF, YL), eating fruits. At 0941 hr, we heard the alarm call of a bird nearby, about 20 m away. Upon approaching the site, we saw an adult owl swooping over the head of an 11-year-old adolescent male chimpanzee (PL), apparently trying to “mob” him. PL descended a short distance, carrying in his mouth a motionless owl, apparently dead, and then placed the chick in a groin pocket. He had feathers in his mouth. From 0945 hr to 1021 hr, PL made a tree nest, then moved to another tree nearby and made two large tree nests, lay down in each, and rested supinely with the bird on his belly. At 1027 hr, PL tapped his feet on the nest and feathers fell to the ground. Two minutes later, he left the third nest, but then returned to enlarge it and began to play with the carcass, balancing it on his feet while lying supine. At 1034 hr, he again left the nest, carrying the owl in by hand (Fig. 1). From 1037 hr to 1102 hr, PL moved to another tree and carrying the owl in his groin pocket, while eating fruits. He built a fourth nest at 1044 hr, where he again played with the owl, balancing the carcass on his arm (Fig. 2) and grooming it. He left the nest and descended carrying the bird (now featherless) (Fig. 3). From 1102 hr to 1229 hr, on the ground PL carried the carcass dorsally, on his shoulder, while eating leaves. He inspected the dead bird, touched it with index finger and put the finger into his mouth, then moved away to eat fruits. He then rested on.

Fig. 2. Playing in large day nest, balancing dead bird with one hand, while lying supine.
the ground, with the owl lying on his belly; in this position, he touched alternately his genitals and the owl with his hand. Next, PL made a ground nest and balanced the carcass with both hands while lying supine. From 1229hr to 1346hr, PL pulled off the bird’s wings. He enlarged his ground nest and rested, whisking away flies circling the carcass (Fig. 4). At 1346hr PL emerged from his ground nest, leaving the carcass behind. No other chimpanzees showed interest in PL’s activities throughout the events.

Case 2: On 22 October 2009, Y.Y. and a field assistant (J.D.) followed PL in the Guein area. At 0855hr, they suspended observations for about an hour, then at 1003hr, resumed focal sampling on him. He sat on the ground next to the alpha male, holding a dead owl in his hand. From 1008hr to 1011hr, PL travelled and fed carrying the bird in his hand. An infant male (FL) approached him and peered closely, as PL groomed the carcass. After the infant departed, PL continued examining the bird for...
about 10 seconds, then abandoned it. The researcher immediately collected the carcass and verified that feathers had been plucked and part of the viscera had been extracted.

DISCUSSION

These are the first observed bird captures at Bossou not followed by prey consumption. Nishida et al. noted at Mahale, Tanzania, that parts of the carcass sometimes were abandoned without consumption. As at Bossou, these events involved young solitary individuals who opportunistically encountered prey by chance. Bonobos (Pan paniscus) showed similar exploration and grooming after capturing infant monkeys, which were handled like dolls.

Our observations echo previous reports from Bossou: Prey was found by chance, without active pursuit, and adults showed little or no interest in the prey. Bossou’s chimpanzees eat few vertebrate prey, including only one species of bird, this one. Owls may be relatively easy to catch, as they roost during the day in the canopy. A recent report from Mahale, on some of the very few bird predations by chimpanzees, differs somewhat from the Bossou events, for example, birds at Mahale are captured and consumed. However, several behavioral similarities emerge: catching of birds is solitary and opportunistic, does not require group hunting, the targeted birds are nestlings, and idiosyncrasies may explain why some chimpanzees tend to repeat this behavior.

Availability (or lack) of resources and distribution and abundance of prey may explain the lack of emergence of pursuit-hunting at Bossou. Or, some of the behavioral patterns seen rarely at Bossou, or seen only in the early years of research, may not have spread or persisted, due to the migration or disappearance of key members of this small group, or to too few potential extra innovators arriving through immigration. If prey-capture is sporadic and unpredictable, opportunities to watch a hunter are rare, and so observational learning and cultural transmission is hindered. Further research is needed to assess systematically the abundance and availability of prey and of learning opportunities.

ACKNOWLEDGEMENTS

DNRST and IREB (Guinea); MEXT-16002001, JSPS-ITP-HOPE, JSPS-gCOE-Biodiversity, and F-06-61 of the Ministry of Environment, Japan; Mitsu & Co., Ltd. Environment Fund; FCT-Portugal; The Wenner-Gren Foundation; Luis Da Silva for exceptional illustrations; Field assistants; S. Assis, D. Bro, T. Humle, W. McGrew, for comments on the manuscript.

REFERENCES