



Conference Abstract

Using meta-barcoding tools to monitor primate meat consumption at dedicated establishments in Guinea-Bissau, West Africa

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Abstract

Guinea-Bissau (GB) is a regional stronghold for primate conservation. Ten primates occur in the country, including the Western chimpanzee (*Pan troglodytes verus*) and two colobus monkeys (*Colobus polykomos* and *Piliocolobus badius temminckii*). Primate meat is consumed at households and bushmeat-dedicated establishments, locally named "Abafatório". Such establishments are mentioned to be common in urban areas since the 1980s and to be specialized in serving primate meat while drinking alcoholic beverages. The meat is typically cooked in a stew and eaten with bread. However, as the trade and consumption of primate meat are illegal activities, the location of Abafatório establishments and details of the trade, namely species being consumed, are usually hidden from outsiders. Here, we characterize illicit bushmeat commerce and consumption at six Abafatórios of a small town. Our team visited the establishments every week for 15 months (2015-2017) and collected data on the type and prices of meals and gathered tissue samples taken from carcasses by establishment owners. A meta-barcoding approach (cytb and 12S mitochondrial DNA regions and Illumina MiSeq next-generation sequencing

technology) was used to identify tissue samples to the species level. Two types of establishments can be distinguished – “restaurants” and “snack-bars”. Restaurants are similar to the ones found by previous works in the capital city where primate meat is sold as a dish containing few pieces of stewed meat. Snack-bars are smaller and the meat is sold inexpensively and by the piece. In the present study, 249 tissue samples were identified to be from four primates (*Cercopithecus campbelli*, *Chlorocebus sabaeus*, *Papio papio*, and *Erythrocebus patas*) and four Artiodactyla (*Philantomba maxwellii*, *Tragelaphus scriptus*, *Potamochoerus porcus* and *Phacochoerus africanus*). Primates represented approximately 92% of all species consumed across establishments, and *C. campbelli* was the most traded species. Our work suggests that primate meat is monetarily accessible for locals in rural areas and that the trade at Abafatórios may have extensive negative consequences to primate conservation, in particular, the reduction of primates' populations in the southern part of GB. Our work quantifies and identifies the species consumed in Abafatório establishments for the first time and highlights the need to improve regulation and law enforcement in Guinea-Bissau.

Keywords

Cercopithecus campbelli, *Chlorocebus sabaeus*, *Papio papio*, bushmeat, wildlife illegal trade

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Ethics and security

This research involved volunteer participants who were informed of the procedures and possible risks involved. Informed consent to participate was obtained before beginning research. The bushmeat restaurants clientele were aware that restaurants served primate meat and our team did not interacted with them. Our team was neutral when collected the participants' data on ethnic and religious background, and the details of their involvement in illegal activities. Confidentiality of the information provided/observed and anonymity of identity to other people not involved in the study was given to participants. The location of establishments is not revealed.

Invasive samples of endangered non-human primates were always obtained free of charge at bushmeat restaurants. No animal was killed to carry out this research. The researcher did not handle or harmed animals. Tissue samples were collected from already diseased animals. IBAP and DGFF (CITES focal point) authorized the study, samples collection and exportation. ICNF provided CITES import permits to Portugal, where molecular ID of samples took place. DGAV provided health and veterinary permits to import NHP tissue samples to Portugal. Guinea-Bissau authorities approved the use of tissue samples for research, the timeline and the research plan and were acknowledged in research dissemination activities. The research was made entirely available to national organizations and outputs were transferred to law enforcement personnel during hands-on-workshops. The identity of participants will not be made available to law enforcers.

The research will comply with health and safety protocols in place at the laboratory facilities to reduce harm to the environment and to research staff.

Tissue samples were transported in compliance with DOT and IATA triple packaging requirements.