

Bushmeat, Wildlife, and Multiple Stakeholders:

Integrating Social, Historical, and Ecological Perspectives into Conservation



Dissertation Research Report

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**Comprehensive Report Prepared for the
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Summary

Conkouati National Park is the Republic of Congo's most diverse protected area which includes a variety of threatened and endangered mammal species. It is home to 5,000 rural peoples who depend on the resources of the Park for their livelihoods and survival. And it is also the target of international timber, mining, and oil companies who are currently exploiting (or hoping to) Conkouati's resource wealth. This research examined the crossroads of wildlife, human inhabitants, conservation, economics and politics of this Park. Hunted mammal studies, bushmeat consumption surveys, hunting surveys, historical analysis, as well as in-depth interviews with various stakeholder groups were conducted from August 2005-September 2007. This report provides an overview of these activities from the January- September 2007 funding period, which the Rufford Maurice Laing Foundation supported.

Part 1: Background and Objectives

Nature conservation in developing countries is challenging, in part because diverse groups of stakeholders often have conflicting uses of the environment. Although experts in biodiversity, conservationists sometimes poorly understand other stakeholders who compete for the land, creating conflicts around protected areas. In order to reduce these types of conflicts this research examines how different stakeholders 'see' the same environment.

The overall research questions include:

- 1) In what ways do various groups act upon and use the natural environment?
- 2) How do those activities relate to their perceptions of that environment?
- 3) What implications do these have for conservation initiatives?

The focus is Conkouati National Park in the Republic of Congo, (**Figures 1, 2**), where the extent of savannas, forests, lagoons, and marine habitats make it a critical area for biodiversity; yet 5000 villagers depend on its resources for their livelihoods. The work is concentrated on in three villages with different livelihood strategies, including a fishing, hunting, and mixed hunting/fishing village. These villages have very different access to resources; one being completely surrounded by forest and thus heavily reliant on wildlife; another next to the ocean and thus primarily concentrate on fishing; and the other situated in the savanna, where some practice fishing and others travel to the forest to hunt. These three very different villages were selected in order to capture the variety of livelihoods and experiences of the Park residents.

In this study, aside from a broad examination of multiple stakeholders, a particular interest is taken in terrestrial mammal populations. Bushmeat consumption is one of the major threats to wildlife

Conkouati National Park



Figure 1: Location of Conkouati (in yellow)

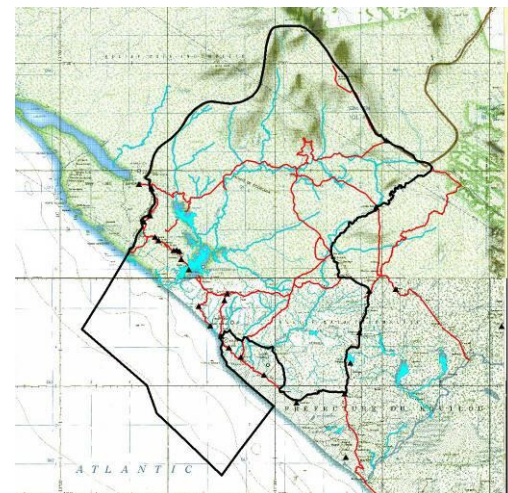


Figure 2: Geopolitical map of Conkouati (courtesy of H. Vanleeuwe, WCS)

populations in central Africa, and many studies attempt to understand the complex web of the bushmeat trade. The research involved multiple stakeholders for an in-depth look at the production end of the bushmeat trade in a national park. Results from this study will be used to help improve wildlife protection and provide villagers with insights to alternative opportunities.

The objectives of this dissertation research for 2007 were to:

- 1) Continue a baseline study for examining bushmeat consumption patterns in select villages;
- 2) Finalize a methodology for examining hunted mammal populations in equatorial forests;
- 3) Explore human influences on mammal distributions, such as proximity to villages and poaching, fishing and gold mining camps;
- 4) Present the Park management with a survey tool for examining the effectiveness of bushmeat trafficking law enforcement;
- 5) Implement a study to better understand various Park stakeholders, including industry and government;
- 6) Contribute to skills development of and opportunity for Congolese researchers.



Although focused on a remote park in Africa, the problems found here are fairly universal. The Park was chosen specifically because it represents a microcosm of broader areas of the globe. It has a diversity of stakeholders, within which is a diversity of

Figure 3: Conkouati's mix of savanna and forest habitats levels; spanning local, regional and national scales. Societies around the globe, though different in detail, all contain related patterns. In Conkouati, groups interact with the environment and each other at a scale feasible to study. Examining how these groups each view the environment through their own perceptual frameworks, how they each use the environment, and what this means for conservation is an important intellectual and practical endeavor. The following section discusses major activities from which these objectives are based.

Part 2: Activity Report

Activity 1: Bushmeat consumption study

A large amount of research has been conducted on the bushmeat trade in Central Africa over the past decade, bringing attention to the dependency on, and preference for, wild meat by many Africans. Studies on bushmeat are generally organized around 1) ecological impacts of bushmeat trade; 2) the relationship with emerging diseases; 3) bushmeat hunting studies; 4) the relationship with the logging



Figure 4: Pangolin is a favorite dinner food

industry; and 5) a variety of socio-economic surveys. These surveys are used to understand underlying mechanisms, such as poverty, ethnicity, preference, and household income; and this type of information gathering is the focus of this study.

Understanding consumption patterns in the study villages is important for understanding the availability of food resources, the seasonality of such resources, how they are distributed in and across villages (differences between hunting and fishing villages), and the role of different foods in daily lives. Twelve months of consumption data were collected in the study villages from October 2006-September 2007. There were over 100 participating families who each worked with us for three months. Currently the data are being entered into an Access program; once completed, analyses will be conducted and published.

Activity 2: Hunted mammal surveys

Measuring relative abundances and densities of a group of wildlife populations provide conservationists the opportunity to examine changes in abundance, areas of importance, and those of concern. Multiple-species surveys that include more common, yet economically valuable large rodents are not conducted in Congo, and are relatively rare across Central Africa. Modifying approaches used on large species such as elephants and buffalo, this study incorporates all sign, including dung, prints, and paths of terrestrial mammals as well as indications of human activity. Incorporating these sign increase detection rates of heavily hunted smaller mammals that are economically valuable to local communities, and thus vital for Park management to monitor.

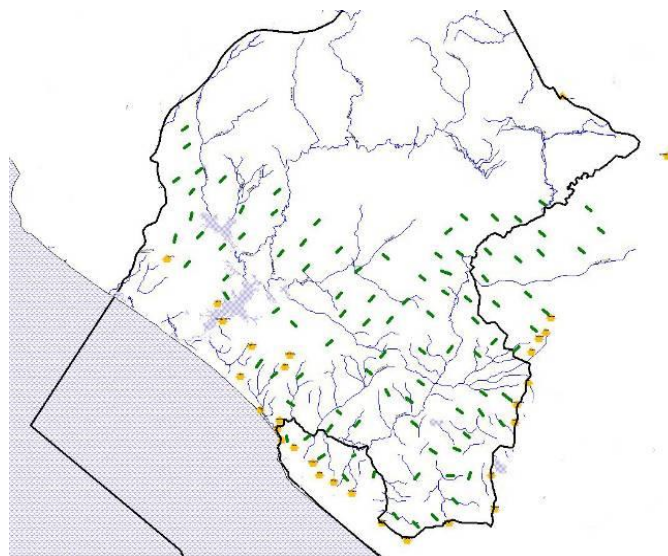


Figure 5: 2007 Transect layout inside Conkouati

A total of 97 transects were conducted by five teams over a six week period from July-August 2007 (see **Figure 5**). Given the exploration activity of an oil company (see Activity 4 below) inside the Park, the hope was to conduct before and after surveys to examine impacts on wildlife populations. Due to delays in exploration, it was impossible to conduct ‘after’ transects before the beginning of the rainy season. However, this study is now part of the wildlife monitoring program at Conkouati, and the 2006 and 2007 surveys will be used as a baseline to compare with future years. Data from these two seasons will be analyzed in the coming months to examine the effects of human disturbance, vegetation structure, management intensity and zoning on wildlife relative abundances.

Activity 3: Hunter surveys

From 2004-2005, Conkouati management started a new management phase to reduce hunting and illegal trafficking of bushmeat. They increased the number of patrols and created two new bushmeat control posts. These management practices were believed to be working, but through the stakeholder interviews it was noticed that they were also having both direct and indirect impacts on village livelihoods which were not well understood. To better understand these

important impacts and interactions between villagers and conservationists at Conkouati, it was necessary to expand the research. To quantify these impacts, including financial impacts, access to social services, and hunting behavioral changes, the research team interviewed 39 of the 57 hunters in the study villages. Qualitative survey data (see Activity 4), in addition to wildlife seizure data from the Park management, was examined for this study.

The full results of this study will be submitted for publication in the coming months, but the following is a summary of the results. The data suggest that the increased ecoguard patrols and bushmeat control posts have both positive and negative impacts. Hunters revealed:

- Killing ~70% less animals (**Figure 6**)
- They remain closer to villages to hunt
- A reduction in the amount of captured meat trafficked to urban centers; from 80% down to 20%
- Wildlife management is a strong deterrent from hunting (86%)

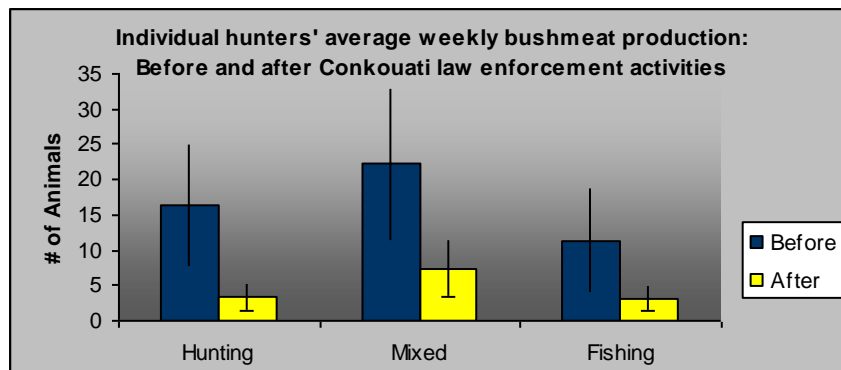


Figure 6: Changes in hunting due to new law enforcement activities in three study villages with different livelihood strategies

These responses suggest that Park management is having a positive impact on wildlife populations (42% of hunters report seeing more wildlife than in the past).

Despite these positive impacts, there are negative consequences for rural families who depend on these resources for their livelihoods:

- 86% of hunters noted a loss in income
- 94% stated a reduced ability to pay for health care
- 42% had other household members increase their labor to compensate for loss
- 58% noted a poorer diet

The results from this study illuminate how conservation efforts can be directed to improve the effectiveness of law enforcement while reducing the negative consequences on local communities. Most importantly, conservation managers should investigate the ‘invisible’ impacts of law enforcement activities on communities by making it a component of their research plans. They need to continue education and awareness efforts with adults, as many hunters claimed they were unaware of Congolese law. Lastly, conservationists should consider ways to compensate for the loss of hunting income to reduce negative backlash against the Park.

Activity 4: Stakeholder interviews and archival work

This component is one of the most important in the study, which ties together all aspects of this research. Understanding how civil servants, industry officials, conservationists, and rural villagers each perceive and value the natural environment gives a social context to the ecological environment. Thus the team conducted:

- Mapping exercises on past and present resource use (20+)
- Village interviews and oral histories on environmental activities, practices, and perceptions (18+)
- Conversations with oil and timber industry officials about current activities and management practices (15)
- Observing oil exploration activities (3)
- Interviews with government officials (17)
- Archival work at the Ministries of Forest Economy and Mines, Institute of Research and Development, and the National Archives, to learn about Conkouati's past



Figure 7: Observing oil seismic exploration at Conkouati

In contrast to the ecological and bushmeat studies, these activities have helped illuminate the economic and political sides of resource use at Conkouati. One example of this comes from interviews with policy makers and civil servants, who see Conkouati as valuable, not from a biodiversity perspective, but more importantly the Park is seen as a means for development of the local area, and its resources are important revenue sources for the country. These data will be examined in detail in the coming months, and submitted for publication next year.

Part 3: Supplementary Results of Activities

Outcome 1: Capacity building

One of the objectives during the field studies was to enhance the research skills of local people.

With more villagers included in research, it can not only help them develop skills for future work, it also exposes them to a different way of understanding the environment, especially from a conservation perspective. Using assistants in the village also benefited the social research as it made it easier for the village participants to accept the questionnaires, and gave the research team new perspectives in their approaches and thinking.

In total this research supported:

- Six people (3 men, 3 women) trained in bushmeat data collection
- Twenty-one men trained in wildlife data collection; one newly trained as a team leader. Afterwards 2 were employed by the Wildlife Conservation Society (WCS) and are now ecoguards.
- Two men trained in transcription



Figure 8: Learning to measure perpendicular distance for dung

- Guy Noel Tchitiamouna, the full-time assistant, who over the past two years has learned how to use a computer and programs including word, excel, access, power point, and ArcView. He has developed his social research skills, helping develop the hunting survey questions, conducting some interviews alone, and using a GPS for mapping exercises. In December he will finish working on this research project and start for WCS as a research assistant.

Outcome 2: Knowledge outreach

Expanding the reach of the information gained through this research is an important overall objective. The team is currently working on a peer-reviewed article on the hunting study, which was presented at the Society for Conservation Biology's (SCB) 2007 international meeting in Port Elizabeth, South Africa. During the next 8 months, the hope is to write and publish articles on the bushmeat study, mammal surveys, and stakeholder differences. The completed dissertation will be distributed in both English and French to interested stakeholders, including villages, the Congolese government, and conservation organizations in the Park. Copies of publications will be sent to the Rufford Maurice Laing Foundation as they are published.

Outcome 3: Chicken Project

In 2007 the research team wanted to thank participants in the bushmeat study, as each family (over 100 in total) participated significantly for 3 months. In lieu of a simple gift, communities and the team decided to initiate a sustainable project that would benefit both local communities and the conservation of wildlife in the Park. They looked to preliminary data from the bushmeat study and found a lack of protein in daily diets. After asking villagers what type of activity they would like, everyone agreed upon a chicken rearing project. With financing and logistics from the Wildlife Conservation Society, and indirect support from the Pittsburgh Zoo and the Rufford Foundation, an alternative protein project was started with 100 families. The project was handed over to WCS in September, and they continue to supervise and support local communities. A supplemental report has been attached for further reading on the project. The hope is that this will be one of many future projects to reduce dependency on Park wildlife and improve people-Park relationships.



Figure 9: Bushmeat collector discussing data collection with Research Assistant Guy Noel



Figure 10: Community attending workshop on improving chicken farming techniques (Photo: GN Tchitiamouna)

Part 4: Financial Report

Projected Expenses for 2007 Fieldwork

Item	Cost	Unit	#	Budget	Actual	Justification
Logistics						
Airfare-international	£1,540	-	1			
Airfare-domestic	£42	-	4		£160	Domestic airfare for interviews with top Forestry officials
Transportation	£5	Month	7	£35		transport costs covered by a different grant
TOTAL TRAVEL				£35	£160	
Accommodation						
Village stay	£5	Month	7		£20	Village rent for 4 months
Hotels	£32	Day	3		£7	Reduced price hostel costs in Brazzaville
Food	£133	Month	7	£931	£1,000	Food while in the city and in the field
TOTAL ACCOMMODATION				£931	£1,027	
Communications						
Phone	£8	month	7			
TOTAL COMMUNICATIONS				£0	£0	
Research Assistant Salaries						
Mammal Survey Teams*						
Team leader	£64	month	8	£512		* Only one round (6 weeks) of surveys was completed due to oil exploration Team leader prices included below; WCS contributed 2 team leaders to study Day wages for 21 men at £2 per day over 6 weeks
Team member	£106	person	16	£1,696	£1,241	
Social Research Team						
Research Assistant	£106	month	9		£419	Assistant (£2.50 per day for 6 months) to transcribe interviews from local language
Transcriber	£2	interview	100			
Kitchen survey collector	£21	month	24	£504	£540	Salary for 3 assistants to collect data for 9 months (not 8 as budgeted)
TOTAL STAFF				£2,712	£2,200	
Research Expenses						
Mammal surveys						
Food	£48	month	8	£384	£604	Food prices much higher than anticipated;
Equipment	£53	-	2	£106	£161	Equipment purchased included cookware, tarps, boots, and leader uniforms
Logistics/misc	£8	month	8	£64	£16	Ferry crossing expenditures
Misc ecological expenses	£19	-	8	£152	£60	Unplanned expenses for teams while in the field
Bushmeat Surveys						
Bushmeat survey expenses	£53	month	8	£424	£86	Measuring equipment for participants in study
Logistics	£5	-	8	£40	£148	Local transport between study sites, per diems for Guy Noel collecting data forms
Other Research Expenses						
Village Gear	£53	-	1			
Informants	£2	-	120			
Equipment	£53	-	1		£386	Stationery supplies for all studies, minor computer repairs
Misc village expenses	£27	-	8			
Health Insurance	£127	month	8			
TOTAL RESEARCH				£1,170	£1,461	
TOTAL EXPENSES				£4,848	£4,848	

I would like to also thank the following organizations for their participation in funding and/or dissemination of this research:

