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Conserving the eastern afromontane biodiversity hotspot

effects of joint forest management on bushmeat hunting in Tanzania

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Conserving the Eastern Afromontane Biodiversity Hotspot

– Effects of joint forest management on bushmeat hunting in Tanzania

Introduction

Participatory forest management (PFM) has been widely implemented in the developing world in pursuit of three overall policy objectives: forest conservation; improved local livelihoods; and promotion of good governance. However, there is limited evidence on the impact of PFM and studies that document the effect through temporal comparison with a non-treated control site are particularly scarce. This policy brief reports on the effects of one form of PFM, Joint Forest Management (JFM), as implemented in forests of the Eastern Afromontane biodiversity hotspot in Tanzania. The study includes a temporal comparison between a JFM and a control forest spanning seven years (2001-2008) and uses bushmeat hunting as an indicator of both conservation outcome and to evaluate livelihoods implications.

Study area

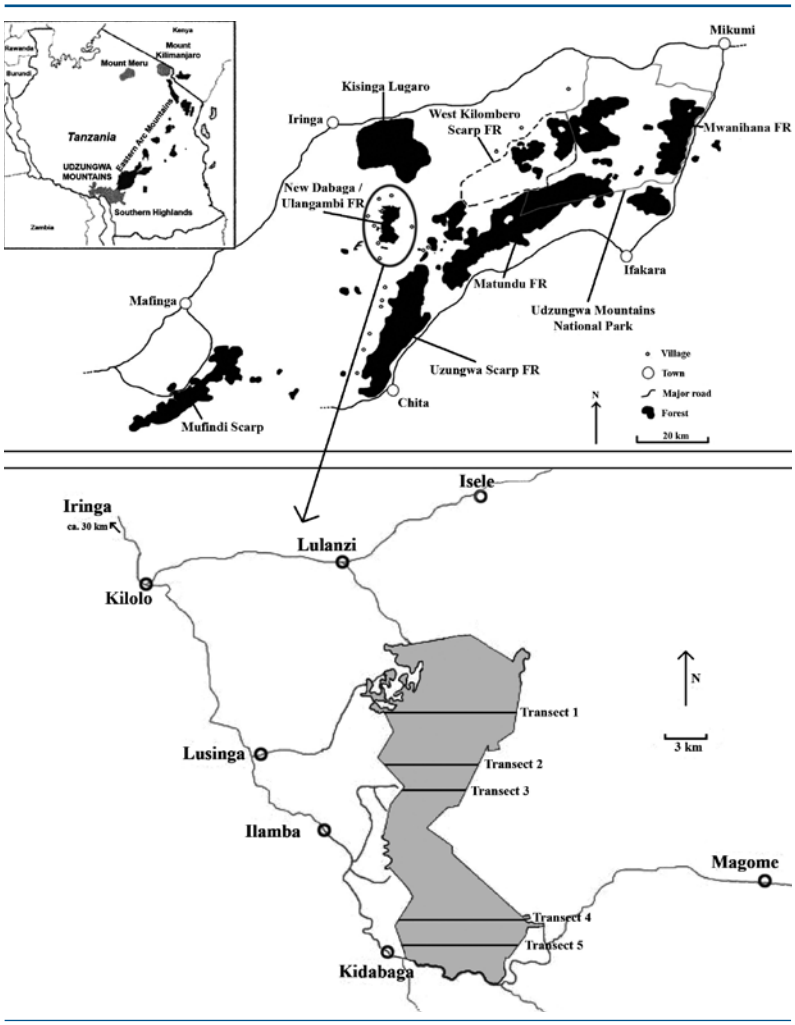
The evaluation focuses on New Dabaga Ulongambi Forest Reserve where bushmeat hunting is the main conservation concern. The forest is 37 km^2 (montane to upper montane forest) and surrounded by six communities. JFM agreements were officially enacted in February 2002. The agreement provides access to a few non-timber and low-value forest products with only very limited benefits to the villagers, which is typical of JFM in Tanzania. Management is vested in elected Village Natural Resource Councils

Policy Conclusions

- Increase VNRC income through PES or REDD schemes in order to finance patrolling and delivery of tangible community benefits linked to forest and wildlife protection.
- Ensure fair and democratic election mechanisms and active involvement of vulnerable groups in rule-making.
- Make all transactions subject to public auditing such that VNRCs and VCs are made accountable to each other as well as to their common constituency.
- Transparency of VNRC transactions could be promoted by making top-down fund transfers (c.f. above) contingent on quarterly VNRC presentations of accounts at general village assemblies and by involving the village general assembly in decisions on use of VNRC funds.

(VNRCs) that are answerable to the elected village councils. Each VNRC has four patrol guards and the power to arrest and fine offenders and collect fees for permitted forest uses. Communities are not allowed to use or collect revenue from wildlife but are required to protect their forest against hunting. The VNRCs deposit revenue in a joint bank account from where a zonal committee annually distributes funds for management expenditures including salaries. Surplus funds must be used for local development.

Figure 1. Map of study area and its location in Tanzania.



Methods

Changes in number of active hunters, densities of traps and relative wildlife densities in the forest were used as proxies for conservation outcomes and were assessed one year before and six years after implementation of JFM through interviews and transect surveys (18 km on five transects) (see Fig. 1). To calibrate for trends not associated with JFM, the changes in trap densities were adjusted for changes in a control site – the nearby Uzungwa Scarp Forest Reserve – where JFM has not been implemented. The extent to which new income sources introduced by JFM compensates hunters for lost income from hunting (i.e. in terms of the replacement value) was assessed as a proxy for livelihoods impacts. To this end weekly interviews were conducted with 97 active hunters in 2001 and again with 75 of these individuals in 2008, recording catch and price obtained from bushmeat over six months. Additionally, income from JFM related sources and costs in terms of fees paid for permits and fines were recorded in 2008. Finally, the aspirations to good governance was evaluated through an audit of VNRC accounts supported by interviews with households about their knowledge on, experiences with, opinions about and actual practices in relation to JFM associated rules on hunting, VNRC handling of common funds and ways of making leaders downwardly accountable.

Conservation Outcomes

Transect surveys revealed a considerable although spatially skewed conservation improvement. Both blue and Harvey's duiker (i.e. forest anthelope species) (Fig. 2 and 3) increased significantly in the southern part of the JFM forest (transects 4 and 5) where a population of the IUCN red-listed Abbott's duiker had also become established in 2008. The density of traps had declined significantly and traps were almost absent in the southern part in 2008 (Fig. 4). Meanwhile, the density of traps had increased by 15-19% in the non-JFM forest. Accordingly, the corrected effect of JFM is a 97-101% reduction in the density of traps. The number of individuals

actively hunting in the JFM forest also declined from 180 in 2001, to 29 in 2008 (Table 1). Assuming that domestic meat supply and demand remained stable, the average effect of JFM is thus a 79% reduction in the number of active hunters between villages. In combination with negative correlations between relative wildlife densities and densities of traps on individual transects and comparison with the non-JFM forest that remained heavily hunted, this strongly suggest that the increase in wildlife density in the JFM forest is indeed a result of reduced hunting and an effect of JFM.

Livelihoods Impacts

JFM income sources included salaries from VNRC activities and net cash or subsistence benefits from bee keeping and fish farming introduced under JFM. "Retired" hunters' income from these activities in 2008 was significantly lower than their income from bushmeat hunting in 2001. This indicates that JFM did not compensate those who stopped hunting for lost income. However, for hunters who remained active, there was no significant difference between the profit from hunting in 2001 and 2008 although they put in less effort. This was due to significant increase in catch per unit effort (biomass caught per trap night) and higher bushmeat price, while the risk of getting caught and fined appeared to remain low. In 2008, hunters that continued therefore obtained significantly higher total benefits from the forest (JFM profit plus value of bushmeat minus fines) than hunters who had stopped.

Promotion of good governance

The audit showed that only 45% of VNRC income was accounted for in receipts, vouchers, cash or bank account balance, implying that more than half of the officially registered income had disappeared. In the period 2004-2008 VNRCs claimed to have handed over on average US$ 150 per year for local development projects to the village chairmen. Yet, only 9–21% of this amount could be confirmed through vouchers and several of the projects could not be physically identified. Hunters indicated that they perceived to obtain few or no tangible benefits from JFM and that they suspected embezzlement of JFM income because the VNRCs provided poor or no information about their financial transactions. While only 5% of non-hunters severely distrusted the VNRCs' financial management, 72% and 94% of "retired" and active hunters respectively did so and the active hunters stated that this distrust and suspicion was an important reason why they continued hunting illegally. The active hunters were furthermore concentrated in particular villages where confirmed

Fig. 2. Density of blue duiker dung piles per km² on transect 1-5 in the JFM forest.

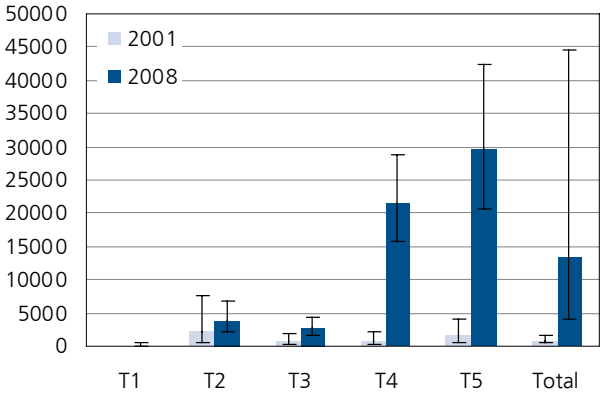


Fig. 3. Density of Harvey's duiker dung piles per km² on transect 1-5 in the JFM forest.

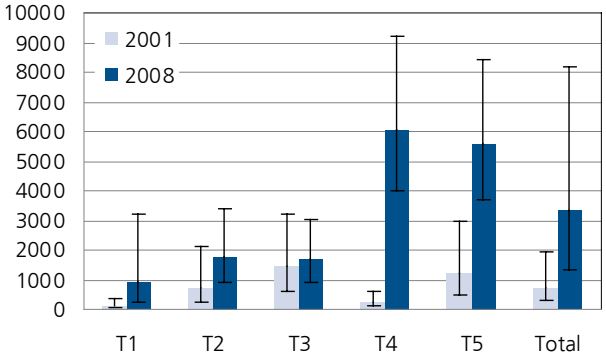


Fig. 4. Densities of total traps (old and active) per km² on transect 1-5 in the JFM forest.

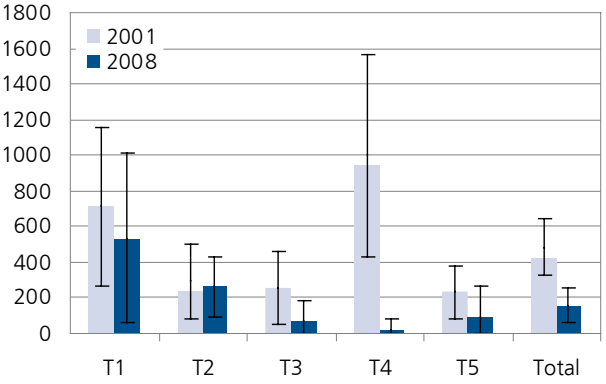


Table 1. Number of people hunting in 2001, continuing in 2008 or having stopped for "natural" reasons (i.e. death and moving away).

		Isele	Lulanzi	Lusinga	Illamba	Kidabaga	Magome
2001	Active hunters	24	24	21	31	48	32
2008	Active hunters	2	3	8	6	1	9
	Dead	1	3	6	1	4	4
	Moved away	2	2	3	7	9	4

Sykes monkey on the menu

cases of embezzlement by village council or VNRC members had occurred or were developing. This in turn explains the variation in wildlife recovery between the northern and southern end of the JFM forest (c.f. above).

In terms of electoral accountability, community members claimed that initial elections for VNRC membership were based on screened applications and pre-selection by the village councils and district forest officers. In most cases this had left village general assemblies with no actual choice between candidates. Furthermore, elections were not conducted through secret balloting and had often been postponed or even entirely skipped. On a couple of occasions district forest officers had intervened in elections to ensure that particular individuals maintained their VNRC membership with the alleged reason of limiting district costs for training newly elected VNRC members. VNRC members and village chairmen also actively evaded downward accountability between elections by not following agreed procedures on presentation of VNRC accounts and performance. However, there was also evidence of emerging downward accountability being established. On one occasion, individuals had organized in local agitation groups and succeeded in toppling an entire VNRC at the election due to their poor performance. In two other instances, groups formed to contact political party members and district authorities requesting their intervention upon suspected embezzlement.

Conclusions

This study shows that JFM can effectively reduce illegal hunting and facilitate recovery of wildlife populations – although in this case it appears driven by enforcement of hunting bans rather than economic incentives and rights per se. Nevertheless, JFM can accomplish conservation objectives in sensitive areas where nature protection cannot realistically be pursued by establishing new national parks. New opportunities in JFM did not compensate hunters for lost income and ironically, hunters who remained active obtained significantly higher benefits than those who had stopped. Several aspects of JFM implementation and practises of VNRCs deviated considerably from good governance and relations between VNRCs/village councils and their constituencies were characterized by distinct differences between rules-on-paper and rules-in-use. Interference by the district forest office and village councils in electing VNRC members also compromised the establishment of accountability relations through frequent, fair and democratic elections. Accordingly, the rule of "law" (rules-on-paper) to ensure downwards accountability of local leaders was replaced by rules-in-use serving the exact opposite objective and elite capture has been a distinct governance outcome of JFM in several villages. In short, attempted new 'law' was largely defeated by pre-existing social order. In combination, the results suggest that to ensure that JFM provides efficient, effective and equitable nature conservation, higher levels of government must support rather than undermine the establishment of democratic, representative and accountable local authorities and local authorities must be financially rewarded for conserving habitats and species.

To learn more about this study refer to:

Nielsen and Treue (2011). Hunting for the benefits of Joint Forest Management in the Eastern Afromontane Biodiversity Hotspot: Effects on bushmeat hunters and wildlife in the Udzungwa Mountains. World Development 40(6).

Authors:
Martin Reinhardt Nielsen and Thorsten Treue

See also:

Nielsen, M. R. (2011). Improving the conservation status of the Udzungwa Mountains, Tanzania? Joint Forest Management and Bushmeat hunting in the Kilombero Nature Reserve. Conservation and Society, 9(2), 106–118.

Nielsen, M. R. & Lund, J. F. (2012). Seeing white elephants? Investigating the production and communication of information in a locally-based monitoring system in Tanzania. Conservation and Society 10(1): 1-14.

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