



Research article

Exploring local people's views on the livelihood impacts of privately versus community managed conservation strategies in the Ruvuma landscape of North Mozambique-South Tanzania

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ABSTRACT

It is broadly acknowledged that natural resources conservation strategies affect the livelihoods of local communities. Moreover, evidence suggests that these livelihood impacts, in turn, can influence conservation achievements. Yet, what constitutes a conservation strategy that communities perceive as acceptable and thus they would be willing to commit to over time remains poorly understood. This study explores the perceptions of communities regarding the effects of two different conservation strategies in the Ruvuma landscape: governmental land concessions and licenses to private tourist operators in North Mozambique, versus community-managed protected areas supported by NGOs in South Tanzania. The study engages communities in a series of semi-structured discussions about natural resource use, impact of the conservation strategies on their livelihoods, pressures on natural resources, and ways to address such pressures and reach an acceptable conservation strategy, from a community perspective. Our findings suggest that communities perceive as non-affordable current opportunity and damage costs in subsistence agriculture. A strategy integrating improved agricultural production, common use of the forest managed by communities, and joint ventures between communities and private companies for getting more benefits from trophy hunting are identified as acceptable.

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1. Introduction

Overall, rural communities in developing countries depend essentially on agriculture, forest and wildlife resources for their subsistence and income generation activities (Persha et al., 2011). Conservation actions usually require changes in the access and use of natural resources by communities in the target areas. Such changes can negatively impact local livelihoods by imposing significant costs –such as the opportunity cost of preserving a forest from agricultural production, or crop damage by wildlife. Many studies have analyzed how do conservation strategies – especially protected areas, and their subsequent restrictions in the use of natural resources, negatively impact communities' livelihoods (for

a review see Coad et al., 2008; de Lange et al., 2016), well-being (Pullin et al., 2013; Milner-Gulland et al., 2014; Franks and Small, 2016), and poverty (Ferraro et al., 2011; Brockington and Wilkie, 2015). Moreover, imposed costs on the livelihoods of communities can in turn contribute to increase human pressures and decrease outcomes in biodiversity or ecosystem services protection (Miller et al., 2012; Oldekop et al., 2015).

On the other hand, conservation actions can also provide benefits to communities, including, for instance, revenue from wildlife trophy hunting or recreational tourism, and the maintenance of ecosystem services such as watershed or biodiversity protection (Cardinale et al., 2012). Although the net livelihood impacts of conservation are not easy to discern, one of the biggest challenges of conservation is to identify strategies that preserve ecological function and biodiversity, while minimizing limitations on natural resources use and negative impacts on local livelihoods.

An important tool to minimize negative impacts of conservation on local livelihoods is the participation of the target communities in the design and implementation of conservation strategies (Bennett, 2016). Approaches engaging local people are able to integrate

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scientific information with communities' perspectives on natural resource use, and thus can be used to design potential successful conservation strategies that minimize negative livelihoods impacts (McShane et al., 2011; de Lange et al., 2016). Besides, there is a growing acknowledgment that it is necessary to understand people's relations with nature, and incorporate this knowledge, experiences and attitudes into conservation decision-making, planning and implementation processes to increase conservation outcomes (Chan et al., 2015). Most of the methodologies employed to date to assess socio-economic impacts of conservation actions on the livelihoods of communities engage with local people in processes to identify indicators through group discussions and semi-structured interviews (Schreckenberg et al., 2010).

However, studies engaging with communities in approaches to assess both the socio-economic impacts of conservation actions on local livelihoods, and further to ascertain what constitutes a conservation strategy that communities perceive as acceptable, are scarce (Andrade and Rhodes, 2012). This study contributes to the literature by exploring the socio-economic impacts of existing conservation strategies on the livelihoods of local people and what they perceive as an acceptable conservation strategy, in selected communities in the Ruvuma landscape, in northern Mozambique and southern Tanzania. The study generates insights to overcome a particularly important gap in conservation science and practice, because it is unlikely that communities commit to imposed conservation strategies that they perceive as negatively impacting their livelihoods and conflicting with their views of management and governance systems of decision making (Bennett and Dearden, 2014).

The Ruvuma landscape, extending over South Tanzania and North Mozambique is well known for its top-down conservation strategies providing few benefits for local people (Jones, 2005; Bluwstein and Lund, 2016). The Landscape faces serious conservation challenges, especially regarding agricultural intensification and expansion, commercial timber overexploitation and elephant poaching (Reyes, 2003; Mackenzie, 2006; Wasser et al., 2008, 2015; WWF, 2014). Prior to our study, Landry and Chirwa (2011) and Bleyer et al. (2016) analyzed the perception of communities on the impacts of forest plantations in their livelihoods in northern Mozambique. According to these studies, forest plantations provide positive impacts in terms of employment and trading opportunities; however other studies contrastingly reported conflicts over available land caused mainly due to the weak implementation of devolution of land use rights and lack of adequate training for local people (Siteo and Guedes, 2015). Jorge et al. (2012) provides a cost-benefit analysis of leopard hunting, concluding that sport-hunting revenues do not compensate for the economic losses of livestock at the household level in communities in Niassa Reserve, in northern Mozambique. Studies analyzing the impacts of southern Tanzanian Wildlife Management Areas on livelihoods of communities have found mainly little positive impacts of WMAs in terms of empowerment or poverty alleviation of communities (Kangalawe and Noe 2012; Noe and Kangalawe, 2015).

To the best of our knowledge, an approach that moves from socio-economic impact assessment to include the point of view of communities about conservation strategies -particularly with respect to designing actions attuned to the local realities that communities can commit to- has not been developed in the Ruvuma landscape.

Multi-criteria evaluation can be an effective tool for integrating livelihoods impacts and pressures on natural resources, in discussions exploring acceptable natural resource use and management (Christie et al., 2012; Vaidya and Mayer, 2014). Although not exempt from challenges, multi-criteria evaluations contribute to seek compromised solutions in complex scenarios, where

conservation goals and local development aspirations often clash (Munda, 2004). This paper presents a multi-criteria socio-economic assessment of impacts of conservation strategies on communities in two wildlife corridors in the Ruvuma landscape. In our study we examine communities' perceptions of the overall impacts of the current conservation strategies on their livelihoods. We further explore what could constitute an acceptable conservation strategy for this area from their perspective. The aim of this study is to identify a strategy that achieves sufficient levels of nature protection while being perceived as acceptable by the communities in terms of livelihoods costs and benefits, and thus a strategy that communities would be willing to commit to.

2. Methods

2.1. Study area

The Ruvuma landscape expands over an area of approximately 280,000 km² in the frontier between Southern Tanzania (Ruvuma, Mtwara, Lindi and Morogoro regions) and North Mozambique (Niassa and Cabo Delgado provinces) (Fig. 1). There are three protected areas within the Ruvuma landscape, namely the Selous Game Reserve (SGR), the Niassa Reserve (NR) and the Quirimbas National Park (QNP). There are two wildlife corridors connecting these protected areas. The Selous Niassa Wildlife Protection Corridor (SNWPC) extends for 6000 km² connecting the Niassa Reserve and the Selous Game Reserve, in Tanzania. A second corridor, the Quirimbas Niassa Corridor (QNC) expands 7246 km² and it connects the Quirimbas National Park and the Niassa Reserve in Mozambique.

Two different conservation strategies are currently in place in these two wildlife corridors. In the QNC, natural resources are mainly managed by communities for subsistence purposes under customary regulations (forest and wildlife are considered common property), together with governmental land concessions and licenses (DUATs) to international and national private operators for commercial purposes (logging or trophy hunting companies). If the areas granted to the investors, which allows them to occupy and use a certain area for 50 years (Bleyer et al., 2016), overlays community land, the companies are required to hold consultations to negotiate with communities on areas to be allocated to the private investment and on compensation. Legally, 20% of the revenues from logging forest and trophy hunting concession fees must accrue to communities (DNFFB, 1999). According to the conservation related legal framework in the country (Lei da Conservação 16/2014), private investors should engage in partnerships with communities to develop profitable and sustainable economic activities in conservation areas (German et al., 2016). In the SNWPC the use of natural resources is regulated at village level for subsistence activities (Village Land Act 5/1999), while the national government regulates commercial purposes. In both cases the land is not officially involved in any transaction and the use of natural resources is regulated by licenses to communities' members or national and international private companies. Tanzania has a long history in Community-Based Natural Resource Management (CBNRM), and the SNWPC is created on the base of five Wildlife Management Areas (WMAs): Mbaragandu, Kimbanda, Kisungule, Nalikka and Chingoli (for a detailed review of the historical, legal and institutional framework that led to the establishment of the current conservation strategies implemented in the Ruvuma landscape see Noe 2015).

There are 35 communities in both corridors; 29 in SNWPC (102,675 inhabitants) and 6 in QNC (9,656 inhabitants) (INE, 2007; NBS, 2012). Communities can be defined in multiple ways emphasizing the different concepts that create the idea of a

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