



Livelihood roles of cattle and prospects for alternative land uses at the wildlife/livestock interface in South Africa



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ABSTRACT

The emergence of wildlife ranching as an alternative land use option to agriculture, in Transfrontier Conservation Areas (TFCAs), has cast renewed interest on the role of cattle farming in rural livelihoods in areas close to wildlife parks. This study analysed the contribution of cattle to livelihoods and relationships between cattle and potential wildlife land uses in rural areas near Kruger National Park. Data were collected through household surveys, key informant interviews and community workshops. About 11% of households studied owned cattle, and cattle income constituted 29% of total household income. Benefits from cattle were also derived by households without cattle. About 71% of households had at least three sources of income, reflecting diversity of livelihoods. Wildlife related land uses were perceived by some households as threatening cattle production, whilst others viewed them as opportunities for alternative livelihoods. We conclude that cattle production has important livelihood roles, but is not sufficient as a driver of economic development in these areas. Incentives to encourage diversification of livelihoods at the wildlife/livestock interface, with possibilities for rural communities to explore wildlife based land uses should be put in place. In addition, land use policy and planning in such areas should focus on creating institutional mechanisms through which programmes integrating conservation and rural development goals can benefit rural communities.

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Introduction

Transfrontier Conservation Areas (TFCAs) in Southern Africa represent the latest approach to conservation, casting renewed interest on the land use in rural communities adjacent to national parks. TFCAs have potential to integrate rural development and wildlife conservation goals, by promoting land use diversification in rural communities at the periphery of protected areas (Munthali, 2007). The main vehicle for achieving conservation goals in rural communities is through possible shifts in land use, from marginal agricultural production towards wildlife tourism land uses (Joint Management Plan Working Group, 2001; Cumming et al., 2007). Wildlife tourism is considered to have potential to improve livelihoods and alleviate poverty for rural communities residing along the borders of national parks, who face problems of high unemployment, poverty and dependence on subsistence agriculture (Munthali, 2007; Chaminuka et al., 2012).

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In South Africa, the shift in land use from livestock farming to wildlife ranching has also been observed in large scale private farms (ABSA, 2003). Although it has been argued elsewhere that under uncertain environmental conditions, wildlife ranching can complement or replace agriculture (Barnes, 1998), some challenges exist within the context of rural South Africa. Conflicts over land in former homeland rural areas are already common between different social, economic and political groups, partly as a result of poorly defined rights over land under communal tenure systems (Cousins, 2007; Bennett et al., 2010). Relations between conservation authorities and rural communities are historically poor due to problems of wildlife damage and a history of displacement in the establishment of national parks (Munthali, 2007; Chaminuka et al., 2012). Furthermore, wildlife related land uses could make rural households more vulnerable to poverty due to increased human-wildlife conflict and competition for land with livestock production (Boyd et al., 1999; Munthali, 2007; Metcalfe and Kepe, 2008), which has important livelihood roles in rural communities.

We consider the case of rural communities on the north western side of the Kruger National Park (KNP) in South Africa, which lie within the Great Limpopo Transfrontier Conservation Area (GLTFCA). The GLTFCA straddles Zimbabwe, Mozambique and South Africa and includes protected areas, surrounding rural areas and, private game farms. There are plans to develop wildlife tourism

based projects such as tourist accommodation facilities and wildlife ranches on communally owned land in rural areas (Mhinga, Undated; Thulamela Local Municipality, 2009). Such developments, which entail making space for wildlife land uses are also envisaged to take place to different extents in Zimbabwe and Mozambique in rural communities falling within the GLTFCA (Cumming et al., 2007). Before such plans progress, it is important however, to consider the role of existing land use options (mainly cattle grazing), and the relationship between different livelihood options at the wildlife/livestock/human interface (hereafter referred to as the interface) (Cumming et al., 2007; Munthali, 2007). In addition, the likely impacts of wildlife based land uses on existing livelihood activities should also be considered. This would not only enable reconciliation of the goals of agricultural development, poverty alleviation and wildlife conservation goals, but also inform land use decisions that might be taken at different levels.

The study makes a contribution to several topical issues in development that are being debated internationally. These include biodiversity conservation, poverty alleviation, livelihood diversification and the future of livestock production given concerns about sustainable land use practices. The importance of biodiversity conservation and its relationship with rural development is a widely debated issue (Sanderson and Redford, 2003; Roe and Elliot, 2006), particularly within the context of diversification of rural development and poverty alleviation strategies. According to Vetter (2013) and Bahigwa et al., (2006), agriculture on its own, is not sufficient as a driver of rural development, and cannot achieve expected gains in employment creation. There is need for a multi-sectoral development approach which focusses on livelihoods diversification in rural areas. Wildlife land uses provide an alternative pathway for increasing rural incomes and creating employment, and has been practised on what was previously cattle rangeland since the 1960s in Southern Africa (Carruthers, 2010). In Botswana, Namibia and Zimbabwe rural communities are increasingly exploring options for utilisation of wildlife resources to enhance rural livelihoods (Weaver and Skyer, 2005; Murphree, 2009; Sebele, 2010). In South Africa several land restitution claims awarded on protected areas in Limpopo, the Eastern Cape and Kwa-Zulu Natal provinces give rise to opportunities for rural communities to explore wildlife land use options (Chaminuka, 2013). Lastly concerns about livestock's effects on the environment such as deforestation, soil erosion, the carbon footprint and loss of vegetation cover being debated internationally (Steinfeld et al., 2006), requires rigorous studies to establish the benefits and costs of different livestock farming systems to guide policy formulation.

This study aims to establish the contribution of cattle to livelihoods in rural areas close to protected wildlife areas and to explore the relationship between cattle farming and other income generating activities through a combination of monetary valuation techniques and livelihoods analysis. The likely impact of emerging wildlife land uses on cattle farming is also investigated. Combining monetary valuation techniques with livelihoods analysis enables better understanding of multiple roles of cattle (Dovie et al., 2006), and relationships between different livelihood activities, whilst also providing quantified measures, which are useful for decision making (Alary et al., 2011). Results from this study can contribute towards a broader debate on appropriate pathways for rural development in transfrontier conservation areas, and other places with potential for development of wildlife land uses.

Theoretical framework

Several approaches and perspectives on livelihoods analysis and poverty reduction have been developed since the 1990s (Chambers, 1995; DFID, 1999). Livelihoods approaches argue that survival of people depend not only on their financial resources but also

on the assets that they have at their disposal (Chambers, 1995). These assets are broadly classified into five categories namely: human, social, physical, natural and financial assets. The assets include social networks, local knowledge, communal land and cattle. Depending on the specific institutional environment, the assets are key to the livelihood activities that household members can do to gain a means to live. In this paper we consider livelihoods as the activities and sources from which people gain a living 'including livelihood capabilities, tangible assets and intangible assets' as defined by Chambers (1995).

Livelihoods approaches provide a useful framework for understanding local realities, learning together with the farmers, and are particularly useful for analyzing complex, multidisciplinary problems (DFID, 1999; Scoones, 2009). Diversity of rural households and interaction of socio-political, economic and environmental processes at various levels can also be analysed (Scoones, 2009). Trade-offs and relationships between different livelihood strategies and outcomes can also be analysed. Criticisms of livelihoods approaches are that they are too complex, fail to meet real world challenges at different scales, and are unable to grasp political structures and processes (Scoones, 2009). Despite these criticisms, livelihoods approaches are particularly useful because they put the household at the centre thereby enabling one to understand the value of alternatives for development from the household perspective.

In this study we use a livelihoods analysis framework, combined with monetary valuation approaches to determine the livelihoods contribution of marketed and non-marketed physical cattle products, and the value of intangible roles of cattle. Existing approaches to estimate benefits of livestock in monetary value vary with regard to the range of benefits considered, the context, the objective of the analysis and the unit of analysis. Randela (2003) and Scoones (1992) determined the livestock benefits per animal, whilst other studies determined the value per hectare (Scoones, 1992; Shackleton et al., 2005) or per household herd (Moll, 2005; Dovie et al., 2006). The approach we follow was used by Moll (2005) in Zambia to quantify marketed and non-marketed livestock products, and also value intangible roles of livestock such as financing, status display and insurance functions. These have been identified as being important in communal grazing systems in South Africa (Dovie et al., 2006; Stroebel et al., 2008) but have not previously been quantified.

In quantifying the role of cattle, we estimate the net value of cattle for the i th household (V_i) as;

$$V_i = \sum_{k=1}^n p_k Q_{ik} + mL_i + hF_i + hC_i + hS_i - X_i \quad (1)$$

where p_k is the unit selling or estimated market price of the k th recurrent livestock benefit such as milk, dung and draft power and Q_{ik} is the total amount of product (i.e. consumed by household, sold and given away in kind) of the k th recurrent output produced by the i th household per year. L_i is the number of live cattle sales from the i th household, and m is the unit price per animal sold. X_i are the cattle production costs incurred by the household. Following the approach of Bosman et al. (1997) and Moll (2005), we can also estimate the benefits derived by the household from functions of cattle as a financing mechanism (F_i) i.e. substitute for banking facilities, as insurance (S_i) against unforeseen problems such as sickness and death and for use as a status symbol in some cultures (C_i) for herd size h as outlined below.

The value of cattle as a financing mechanism lies in the ability of the household to sell cattle to meet immediate cash needs without having to store cash, or borrow from banks and other sources of credit that require interest repayment (Moll, 2005). This function is evident where cattle are considered as a form of investment and excess income is used to purchase cattle, and where immediate

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