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Co-defining program success: Identifying objectives and indicators for a livestock damage compensation scheme at Kruger National Park, South Africa

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ABSTRACT

Wildlife damage compensation schemes have been used worldwide as a mechanism to mitigate human–wildlife conflicts. These have had mixed success due to a number of factors, including a lack of shared understanding of the problem and how to monitor and evaluate effectiveness. The long history of damage-causing animals (DCAs) which exit the Kruger National Park (KNP), South Africa, inflicting damage on persons and property, increasing risk of disease transfer between wildlife and livestock, and seriously undermining the livelihoods of local communities, remains a contentious issue. As a partial response and within a strategic adaptive management framework, the park and its larger governing body, SANParks, have negotiated a wildlife damage compensation scheme with local communities, which entails financial retribution given to farmers who have previously lost livestock to DCAs originating from the park. A corollary scheme will see compensation paid to valid claims commencing from 2014. Here we present findings of a novel study undertaken with KNP staff, livestock farmers, and others to co-identify potential indicators of an objective-based participatory monitoring and evaluation program for the scheme. Based on a multi-method approach, a wide array of goals and objectives were articulated for the scheme. In addition, 88 program indicators were generated as potential measures to monitor change. This suite of indicators is both qualitative and quantitative in nature and, if adopted in whole or in part, would enlist the involvement of a broad range of stakeholders. The first step at consolidating these indicators are presented, and are based on information sources, methodological tools, and institutions responsible for monitoring.

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1. Introduction

1.1. Strategic adaptive management (SAM)

La vutisaka ndlela, a nga lahleki/'The one who asks his way will not get lost'

As this local Tsonga proverb highlights, managing should be an iterative process by which regular feedback loops increase learning, allowing for more proactive (rather than reactionary) thinking and decision-making (Biggs & Rogers, 2003). Holling (1978) described adaptive management as an integrated, multidisciplinary and systematic approach to improving management and accommodating change by learning from the outcomes of management policies and practices. Rooted in domains of experimental science and systems theory, but applied as a resource-management paradigm, adaptive management addresses the complexity of socio-ecological systems through conceptually mapping the knowledge gaps and spots of uncertainty within the system through structured decision-making. Strategic adaptive management (SAM) has become a core part of the planning and decision-making within SANParks, the South African National Parks agency. It was conceived by recognizing the social-ecological system complexity and the existence of multiple and diverse stakeholders within which its parks are embedded (Freitag, Biggs, & Breen, 2014; Roux & Foxcroft, 2011; Venter, Naiman, Biggs, & Pienaar, 2008). One of the main purposes of SAM is to purposefully learn and strategically adapt over time. This learning, however, needs to take place throughout both the planning and implementation stages of a management cycle, involving multiple stakeholders and involve regular formal and informal feedback loops. Learning is backed by the continuous monitoring and evaluation of system responses to management actions (Linkov et al., 2006). Evaluation and reporting of the results at multiple scales contributes to the reassessment of the problem,

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compares the actual outcomes to forecasts and interpreting the reasons underlying any differences, and revisits the policy before adapting it to the new cycle (Clark, Curlee, & Reading, 1996; Maris & Béchet, 2010).

Within SANParks, application and experimentation with SAM have featured more heavily with the biophysical realm of social-ecological systems, i.e., on biodiversity monitoring and the development of *thresholds of potential concern* (TPCs), essentially minimum and maximum limits along a gradient of change in selected environmental variables (Biggs, Ferreira, Freitag-Ronaldson, & Grant-Biggs, 2011). Where SAM has been attempted on more recognizable *social*-ecological systems, e.g., sustainable resource use by local communities, ecological indicators and TPCs have predominated, with emphasis on developing appropriate indicators of socio-economic factors from which to assess management actions still nascent; a recognized deficiency within SANParks (Gaylard & Ferreira, 2011; Scheepers, Swemmer, & Vermeulen, 2011; Swemmer, Grant, Annecke, & Freitag-Ronaldson, 2015; Swemmer & Taljaard, 2011). Not surprisingly, social and economic monitoring and evaluation within these frameworks can be laborious, as it often entails qualitative data and social science research methodologies and frameworks, both of which are relatively new and unexplored domains within the conservation sector. Furthermore, evaluation of these schemes historically have not considered the tradeoffs between costs and benefits, and the added value in collectively assessing impact within and between stakeholders, and between stakeholders and the natural environment (Swemmer et al., 2015). Noteworthy, it has been recognized that effective monitoring and evaluation of such frameworks, and the projects which they constitute, can be both pragmatic and empowering in addressing multi-stakeholder needs (Rist, Campbell, & Frost, 2013; Stringer et al., 2006).

1.2. Human wildlife conflict (HWC) and damage causing animals (DCAs)

HWC are products of socio-economic and political landscapes and the institutional architecture in place to manage these conflicts, and are controversial because the resources concerned have economic value and the wildlife involved are often high profile and legally protected (McGregor, 2005; Treves & Karanth, 2003). Globally, the frequency of conflicts involving DCAs has grown in recent decades, chiefly because of (i) increases in human populations and consequential expansion of human activities (Woodroffe, 2000; Woodroffe, Thirgood, & Rabinowitz, 2005), (ii) growth of some wildlife distributions (Enserink & Vogel, 2006), as well as (iii) a recurrent inability of institutions to manage such conflicts effectively (Anthony, Scott, & Antypas, 2010).

Managing HWC effectively is important for both biodiversity conservation as well as human well-being. Attitudes towards protected areas (PAs) and their policies are often influenced by perceived or real damage caused by wildlife (Anthony & Moldovan, 2008; de Boer & Baquete, 1998; Hill, 2004). Wildlife damage represents tangible threats to livelihoods in terms of personal injury, crop and livestock losses, and property damage (Graham, Beckerman, & Thirgood, 2005; Happold, 1995). Retaliatory killing of wildlife due to livestock damage has been identified as an important factor in observed carnivore declines (Hazzah, Borgerhoff Mulder, & Frank, 2009; Kahler, Roloff, & Gore, 2012; St John et al., 2012). And finally, human–wildlife conflicts can be socially corrosive, creating and reflecting larger conflicts of value and class and other interests (Anthony et al., 2010; McGregor 2005). Especially in developing countries, such conflicts have the potential to weaken human security and undermine the effectiveness and legitimacy of state institutions. Understanding these conflicts contextually through the lens of various actors can help develop more nuanced strategies to alleviate conflicts, bringing about more positive outcomes for protected areas, wildlife, and people.

The Kruger National Park (KNP), situated in the northeastern section of the Republic of South Africa, was established in 1926, and covers nearly two million hectares (Carruthers, 1995). It is unrivalled among South Africa's 19 national parks, being home to an unparalleled diversity of wildlife and is maintained by one of the world's most sophisticated management systems (Braack, 2000). KNP has a long history of DCA management and impact, including negatively impacting on peoples' well-being through damage to people, livestock and property (Chaminuka, McCrindle, & Udo, 2012), increased risk of disease transfer between wildlife and livestock (Brahmbhatt et al., 2012), as well as negative impacts on conservation through losing support for biodiversity as well as retaliatory killing of wildlife. Damage by wildlife has contributed to many communities feeling dissatisfied with park authorities in the past (Anthony, 2007; Cock & Fig, 2000). Recent work in the KNP region has shown that (i) most DCAs originate from the park, significantly affecting its long-term legitimacy among local communities; (ii) between 2002 and 2004, over 12% of households within 15 km of the park in their study area experienced DCA damage, with incidents positively correlated with proximity to KNP and higher numbers of mammalian livestock; (iii) DCA incidents are affecting opinions concerning KNP, as those who experienced damage were less likely to believe that the park would ever help their household economically; and (iv) DCA procedures are highly flawed due to ambiguity concerning species and movement of DCAs, poor reporting, inadequate response times, overlapping responsibilities, and corruption (exacerbated by weak and, in some cases, competing institutions) (Anthony et al., 2010). human–wildlife conflicts that are not satisfactorily resolved contribute to the maintenance of a strained relationship between the park and its neighbors, which has undesirable social consequences and, because of its perception as environmental injustice, poses risks for the park and its resources in the longer-term (see Cheldelin, Druckman, & Fast, 2003). Developing an adequate response to the problem of DCAs is a high priority for park authorities and other governmental bodies (Madden, 2004).

2. Response to DCA problem

Mhaka a yi bori/a case does not rot

As exemplified by this local Tsonga proverb, the acute problem of DCAs, their control, and the need for compensation demands a solution in order to improve relationships between communities and management institutions, and to arrive at better outcomes for communities and conservation alike. Fostering communication and trust, demonstrating effort and a willingness to address the issue, and following through can lead to improved governance (Lockwood, 2010) and have a positive effect on the attitudes and actions of people in conflict with wildlife (Anthony & Wasambo, 2009; Madden, 2004), particularly if inherent trade-offs in decision-making are articulated well in advance (Anthony & Szabo, 2011). However, with such a complex issue, one cannot rely on any one solution alone but is more likely to succeed by employing a battery of flexible instruments and policies. To this end, the responses to the DCA problem at KNP have been multi-faceted including increased efforts in maintaining and upgrading the border fence (Ferguson & Hanks, 2010), and reducing damage caused by an increasing elephant population (Scholes & Mennell, 2008).

As a further response, the park and its larger governing body, SANParks, have negotiated a wildlife damage compensation scheme with local communities, which entails financial retribution given to affected farmers who have previously lost livestock to DCAs originating from the park. A corollary scheme will see compensation paid to valid claims commencing from 2014. Although

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