Animal Conservation

Animal Conservation. Print ISSN 1367-9430

COMMENTARY

Achieving ecological conservation impact is not enough: setting priorities based on multiple criteria

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doi:10.1111/acv.12193

Protected areas provide safe spots where species can persist while threats are present or imminent in other areas of their range, being a key conservation tool to improve species survival as well as being increasingly expected to achieve a number of social and economic objectives (Watson *et al*., 2014). Given the need to complement strict protection with approaches where people are incentivized to coexist with wildlife, community-based natural resource management (CBNRM) has often been applied in areas where local communities are heavily dependent on natural resources for their livelihoods (Roe, Nelson & Sandbrook, 2009). Aiming to achieve wildlife conservation while promoting social justice and meeting livelihood goals (Shahabuddin & Rao, 2010), CBNRM may take many different forms (e.g. managing wildlife for local tourism, trophy hunting or subsistence resource use) and has been implemented in a number of countries, with mixed reviews about its success worldwide (Measham & Lumbasi, 2013).

A major obstacle to the evaluation and improvement of CBNRM initiatives is the paucity of data on their social, economic and ecological impacts (Roe *et al*., 2009). For example, communal conservancies in Namibia have been considered as a potential role model for CBNRM programmes (Roe *et al*., 2009), with several studies reporting their ecological conservation benefits, but other types of impact have been given less attention. In the current issue of *Animal Conservation*, Humavindu & Stage (2015) provide insights about the financial aspects of managing community-based wildlife areas in Namibia. Their study demonstrates that, despite the social benefits of individual conservancies in Namibia, many of them currently lack financial viability, which may lead to their failure. Overall financial viability in the study area, however, is relatively guaranteed when analysing all conservancies together.

Conservation has originally focused mostly on protecting wildlife, but increasingly more emphasis is being placed on social-ecological features and dynamics (Mace, 2014), meaning that conservation impact indicators are shifting as well. While Humavindu & Stage (2015) only focused on financial and social aspects, their case study provides a useful illustration of the need to reshape conservation evaluation by applying multi-criteria analyses in which biodiversity indicators are measured alongside social and financial costs and benefits. The impact of conservation interventions cannot be measured only by examining ecological variables, being social, cultural and economic factors essential not only to achieving desired changes in biodiversity, but also as indicators of a social-ecological system being managed adequately. If, as reported by Humavindu & Stage (2015), financial viability of some conservancies is not guaranteed and interventions subsequently fail, the reported social benefits will eventually be eliminated and local communities affected negatively. Social-ecological dynamics and feedbacks under changing conditions are, thus, important and should be considered from an early stage during conservation planning; not doing so is reprehensible for potentially putting livelihoods in jeopardy and causing negative repercussions on wildlife.

Social-ecological feedbacks are particularly relevant when taking into account the temporal and spatial scales at which decisions are made and action is required. As illustrated by Humavindu & Stage (2015), the short time horizons of funders may conflict with longer-term ecological and social changes, and different incentives are needed for affecting behaviour at the individual, group or national levels. The problem of scale mismatch is frequent in the management of natural resources and is generated by a wide range of social-ecological processes (Cumming, Cumming & Redman, 2006). Considering multiple scales during conservation planning is thus essential for effective conservation. This should allow decision-makers identifying potential mismatches between who may benefit (or pay the cost) from which types of economic and non-economic values. For example, if conservation benefits are at a larger scale than individual conservancies, then a regional or national network of conservancies could be considered in order to maximize benefits and potentially reduce costs, requiring coordinated decision-making and investments.

Ultimately, while a greater focus on self-sustainability, improved accountability and mentoring by older

conservancies has been suggested by Boudreaux & Nelson (2011), a pragmatic approach is needed in which priorities are set to increase collective benefits, combining ecological, social and financial information. A useful expansion of the study by Humavindu & Stage (2015) would be analysing conservation, social and financial benefits and costs for the all conservancies as a partially or fully unified network, identifying key conservancies that should be maintained as such, and potentially identifying conservancies where complementary or alternative approaches should be used. Identifying priority areas where community-based wildlife management is most likely to succeed (in terms of wildlife, society and finances) could save resources that could then be allocated for alternative approaches, prioritizing actions while considering the social-economic, political and cultural context of conservation decisions.

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