



What constitutes a successful biodiversity corridor? A Q-study in the Cape Floristic Region, South Africa



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ABSTRACT

'Success' is a vigorously debated concept in conservation. There is a drive to develop quantitative, comparable metrics of success to improve conservation interventions. Yet the qualitative, normative choices inherent in decisions about what to measure – emerging from fundamental philosophical commitments about what conservation is and should be – have received scant attention. We address this gap by exploring perceptions of what constitutes a successful biodiversity corridor in the Cape Floristic Region, South Africa, an area of global biodiversity significance. Biodiversity corridors are particularly illustrative because, as interventions intended to extend conservation practices from protected areas across broader landscapes, they represent prisms in which ideas of conservation success are contested and transformed. We use Q method to elicit framings of success among 20 conservation scientists, practitioners and community representatives, and find three statistically significant framings of successful corridors: 'a last line of defence for biodiversity under threat,' 'a creative process to develop integrative, inclusive visions of biodiversity and human wellbeing,' and 'a stimulus for place-based cultural identity and economic development.' Our results demonstrate that distinct understandings of what a corridor is – a planning tool, a process of governing, a territorialized place – produce divergent framings of 'successful' corridors that embody diverse, inherently contestable visions of conservation. These framings emerge from global conservation discourses and distinctly local ecologies, politics, cultures and histories. We conclude that visions of conservation success will be inherently plural, and that in inevitably contested and diverse social contexts success on any terms rests upon recognition of and negotiation with alternative visions.

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1. Introduction

Success is a vigorously debated concept in conservation science and practice (Stern, 2001; Kapos et al., 2008; Howe and Milner-Gulland, 2012). Success is particularly pertinent because the rapid and continued disappearance of species and habitats undermines one of the most oft-cited rationales for conservation – the protection of biodiversity – and appears to suggest that many conservation interventions, particularly protected areas (PAs), are 'failing' (Kareiva et al., 2011). This perception of failure, and the need to spend the "limited resources available for conservation" wisely, has prompted widespread efforts to devise common frameworks and standard lexicons by which to assess conservation success (Kapos et al., 2008: 155; Sutherland, 2005; Salafsky et al., 2008). These initiatives rest on the premise that precise, objective, and quantitative measures of success – generally equated with biological and ecological indicators – will enable the design of more effective conservation interventions (Salafsky et al., 2002). But while quantitative measures are surely important, these attempts often fail to make explicit the normative, qualitative choices that lie

behind quantitative indicators, emerging from inherently contestable philosophical commitments about what conservation is and should be (Sandbrook, 2015). Indeed, failure to recognize the diverse ways in which participants in conservation interventions may judge success has led to conflict in both conservation research and practice (Stern, 2001; Axford et al., 2008; Tallis and Lubchenco, 2014). Murray (2005: 903) notes that neglect of the multifaceted ways in which conservation success is judged may be "more likely to compromise the conservation of biodiversity than promote it by ignoring – or intentionally deemphasizing – critical aspects of social process and social context." Therefore, an equally important yet less widely acknowledged endeavour is to clarify plural notions of success among diverse conservation actors. This paper contributes to the literature on conservation success by exploring stakeholder perceptions of what constitutes a successful biodiversity corridor in the Cape Floristic Region (CFR), South Africa. The CFR is especially important because of its global significance for biodiversity conservation, and biodiversity corridors are particularly illustrative because, as interventions intended to extend conservation practices from PAs to broader landscapes, they represent prisms where ideas of conservation success are contested and transformed.

Many potential criteria for conservation success have been proposed. Karp et al. (2015) identify seven broad conservation objectives,

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including extinction risk, extirpation risk, evolution, naturalness, and provisioning, regulating and cultural services, each with a number of possible indicators of success. Murray (2005: 889) and Brechin et al. (2010) identify a range of economic, political and social conservation goals, including poverty alleviation, empowerment of marginalized communities, and participatory and inclusive processes. The criteria for success selected in any particular conservation intervention represent, on the one hand, valued outcomes by particular people in particular contexts, and on the other hand, normative assumptions about desirable or actual relationships between people and nature. For instance, Mace (2014) shows how four framings of conservation, 'nature for itself,' 'nature despite people,' 'nature for people,' and 'people and nature,' produce very different metrics for measuring success. Mace notes that these framings exist alongside each other (often in the same organization, government department, or citizen group), complicating conservation interventions. A particularly visible expression of the conflict that may occur between competing framings is the contemporary debate between 'people-centred' and 'traditional' conservationists. Kareiva et al. (2011) advocate a "new," people-centred conservation that protects biodiversity as a means to ameliorate human poverty and generate economic growth, while Soulé (1985, 2013) argues for conservation motivated by the intrinsic value of biodiversity and based on the "mainstream" metrics of, e.g., endangered species listings. Despite the clear link between qualitative framings of conservation and quantitative criteria for success, the two debates have rarely been empirically linked.

In this paper we link these debates by exploring framings of successful biodiversity corridors. Biodiversity corridors have been identified as "cornerstones of modern conservation," widely employed by conservation practitioners, communities, policy-makers and land-managers (Chetkiewicz et al., 2006: 318). As initially formulated in the 1960s and 70s, biodiversity corridors constituted linear strips of habitat that would supposedly enable direct dispersal of species – largely fauna – between PAs, thus improving the "conservation status of otherwise isolated populations" (Bennett, 2003: 7). Successful corridors were framed as linking habitat islands in 'inhospitable seas' of human activity (e.g. Gilpin and Diamond, 1980). However, the core assumptions underlying this approach – that 'natural' habitats are spatially homogenous and temporally constant compared to an apparently heterogeneous, fragmented matrix hostile to biodiversity – have been widely challenged (e.g. Haila, 2002; Bennett, 2003; Chetkiewicz et al., 2006). Contemporary fragmentation research suggests that all habitats, whether considered 'natural' or 'human-influenced,' are fragmented in particular ways, and that each particular kind of fragmentation has uneven consequences for biodiversity (Fahrig, 2003; Fischer and Lindenmayer, 2007). Corridors have been subsequently incorporated into a wider discourse around 'connectivity conservation,' where success is framed in terms of the effectiveness of various habitat patterns to ensure particular types of ecological connectivity for particular species, communities and processes (Crooks and Sanjayan, 2006). This framing has removed the sharp distinction between 'natural' and 'human-influenced' habitat, and, by recognizing connectivity in the landscape as a relation between human practices and ecological patterns, corridors have subsequently become vectors for imagining manifold forms of "economic, institutional, and cultural" as well as ecological connectivity (Bennett, 2003: x).

These expanding interpretive possibilities reflect the corridor's intuitive conceptual and metaphorical appeal. This ambiguity can be seen in positive or negative lights. For some the corridor concept has become vague, related more to the human attraction to 'pathways' through the landscape than to the ecological requirements of species or habitats, while for others it is precisely this heuristic attractiveness that enables the corridor to perform the role of a 'boundary-object' – facilitating the coordination of disparate groups acting in the landscape (Star and Griesemer, 1989; Evans, 2007). In this paper, we contribute to the debate on conservation success not by producing a consensus framework or metric, but by clarifying the diverse ways in which successful

corridors are framed in the CFR. In contrast to dominant approaches in conservation science, but common to those in the social sciences, we do not treat the term biodiversity corridor (or indeed conservation) as a pre-existing object about which an objective definition can be derived; rather, we treat corridors as discursive phenomena employed by different actors, in different contexts, to undertake particular kinds of work (e.g. Cairns and Stirling, 2014). We use Q method to explore framings of success in CFR biodiversity corridors among 20 conservation scientists, practitioners, and community representatives. This interpretive approach is novel – to our knowledge Q method has not previously been used to examine framings of biodiversity corridors – and contributes to growing efforts to expand social science, and particularly interpretive, contributions to conservation science (Newing, 2010; Sandbrook et al., 2013; Moon and Blackman, 2014).

1.1. Framing 'successful' biodiversity corridors in the Cape Floristic Region

The high stakes of contrasting perspectives on conservation success are starkly outlined in efforts to conserve biodiversity in the Cape Floristic Region (CFR), at South Africa's southwestern tip. The CFR is one of 35 global 'biodiversity hotspots' identified by Myers et al. (2000) and subsequently Conservation International (<http://www.conservation.org/How/Pages/Hotspots.aspx>) in an attempt to prioritize areas for biodiversity preservation. Biodiversity hotspots are representative of a perspective that associates conservation success with the protection of high levels of species and habitats (Fisher and Christopher, 2007). The CFR has exceptionally rich biodiversity – for instance, 70% of the CFR's 9000 plant species are endemic (Goldblatt and Manning, 2002). Yet the CFR, particularly the Cape Town metropolitan area, is also presented as a potential biodiversity 'mega-disaster' area, with 1406 plant species in the Red Data Book of endangered species (Cowling et al., 2003). Holmes et al. (2012a) identify habitat loss and fragmentation as the major threats to CFR biodiversity, driven by, among others, rapid urbanization, agriculture, invasive alien species and inappropriate fire regimes. Conservation biologists and planners have identified biodiversity corridors as a means to successfully prevent a "mega-disaster" by preserving ecological connectivity in the CFR (Cowling et al., 2003; Holmes et al., 2012a). However, the apparent 'threats' of urbanization and agriculture to conservation success reflect the diversity of imperatives in the CFR. Land-use and extant biodiversity patterns in the CFR reflect the fractured histories of apartheid, including exclusionary public policy and planning, high poverty and inequality (Graham and Ernstson, 2012). Consequently, increasingly diverse goals and criteria have entered into the discourse around biodiversity corridors.

Corridors are a key component of both the regional Cape Action for People and the Environment (CAPE) strategy and the City of Cape Town's strategy to integrate the preservation of ecologically functioning networks of remnant indigenous vegetation with urbanization and development imperatives (Young and Fowkes, 2003; Holmes et al., 2012a, 2012b). The South African National Parks authority (SANParks) envisages biodiversity corridors as a means of demonstrating how biodiversity conservation can be "an instrument for rural and regional [economic] development" in the CFR, including job creation, improved rural living standards, and broad-based economic participation, inclusion and empowerment (Harrison, 2013). Meanwhile, the World Wildlife Fund (WWF) views corridors as essential to enable CFR biodiversity to adapt to climate change (Pence, 2009), while various private landowner and conservancy initiatives, such as the Biodiversity and Wine Initiative, the Agulhas and Langeberg biodiversity initiatives, and the organization Conservation at Work, view corridors as a way to integrate biodiversity conservation and agricultural production. These diverse criteria make Cape conservation frequently fractious, with different stakeholder groups establishing (not always explicitly) inherently normative orderings of the 'means' and 'ends' of conservation. While these controversies are on the one hand decidedly local, emerging from the specific social-

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