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LETTER FROM THE CONSERVATION FRONT LINE

Overcoming barriers to understanding the biodiversity contribution of private ranchlands

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Private individuals can own wildlife in South Africa (Game Theft Act 105 of 1991; Snijders, 2012). This has led to the flourishing trade of wildlife at game auctions, to huge commercial value of trophy hunting and ecotourism, to the broadscale homogenization of mammal communities, and also potentially the saving of many species from extinction. The proliferating ranching estate (hereafter, ranchland) is suspected to have facilitated the conservation of large tracts of indigenous vegetation, protected watersheds and enabled the recovery of degraded land. However, this is by no means certain, and anecdotal reports suggest the increasingly productive nature of ranchlands may be causing the same level or greater habitat degradation than livestock ranching. Determining whether ranchlands in South Africa have a net positive or negative effect on biodiversity, or for specific species, is hindered by the lack of trust between government and the private sector, the gap between scientists and practitioners, and the tension between commercial gain and conservation. Rhino conservation is a good example.

In 2013, 1004 rhinos were poached in South Africa to fuel the rampant demand for their horns in end-user markets, primarily in the East (DEA, 2014). South Africa houses >90% of the world's white rhinos, nearly a quarter of which occur on private ranchland (Emslie, 2012). Rhinos demonstrate the significant contribution of ranchland towards biodiversity conservation across large swathes of southern Africa. Rhinos also exemplify the challenge of understanding the biodiversity value of ranchland in southern Africa. A recent survey of private rhino owners to collate and integrate up-to-date rhino population statistics and dynamics was thwarted by the unwillingness of respondents to provide information to a centralized database, primarily due to the perceived sensitivity of rhino-related data. Owners are understandably reticent to supply information that may jeopardize the security of their rhino populations: this is in spite of the critical importance of comprehensive information to develop effective strategies to stop the poaching scourge. This mistrust is symptomatic of a broader syndrome that estranges scientists and scientific evidence from management decisions and eschews governmental and conservation planning in favour of strict autonomy. Even basic data from ranchlands are hard to come by, relying more often on personal relationships than top-down imperatives.

The first problem is that information is often non-existent: monitoring species presence/absence and population trends is time consuming, can be technically demanding and is often not incentive driven. Studies on private lands are thus often time and capacity intensive and restricted to small areas or low-sample sizes. Second, even when data do exist, the challenges associated with turning them into meaningful triggers for systematic conservation action can be substantial. On the one hand is the absence of functional platforms to support the collation, systematization and dissemination of useful information. Causes include lack of technical capacity for data management and institutional fragmentation. Conversely, even when systems are in place they have limited success due to apathy, mistrust and sometimes even deliberate non-participation on the part of ranch owners borne from an unwillingness to be regulated, and the perceived sensitivity of data (as in the rhino example above).

Knowing the biodiversity value of ranchland is vital. In the wake of a growing recognition that species and habitat conservation targets are unlikely to ever be achieved through the current system of statutory conservation areas, conservation agencies are increasingly turning to the supplementary opportunities that ranchland presents, including the creation of a mosaic of suitable habitat to facilitate natural animal movement. Ranchlands can contain unique and irreplaceable sites and are of significant conservation importance: the inclusion of private-protected areas in conservation assessments led to a nearly threefold increase in the achievement of conservation targets in the Little Karoo, South Africa (Gallo *et al*., 2009). Consequently, conservation stewardship schemes, which seek to obtain long-term security for biodiversity assets on private land, are increasingly formalized as part of national conservation strategies (e.g. South Africa's Biodiversity Stewardship Programme). Understanding biodiversity on ranchland enables us to more completely track progress towards species and ecosystem targets (particularly Red Lists); identify the realized and potential contribution of ranchlands to the protected area estate; develop insight into shifting species distributions in

the light of global change and the resilience of systems; meet a growing need to understand and account for the value of ecological infrastructure and the functioning of ecosystem goods and services; unravel issues of scale and how these influence ecosystems; and, perhaps most importantly, tease out the effectiveness of management approaches and develop policies that support biodiversity and which underpin truly sustainable development.

To resolve biodiversity data gaps on ranchland, conservation scientists will need to identify and strengthen the link between primary ranchland data and policy needs: in a world of limited resources we should focus our attention on mobilizing ranchland biodiversity datasets most critical for guiding policy. This 'informational triage' will focus our sights on decision-making priorities and ensure relevance to both conservation agencies and private landowners. Pertinent southern African examples include population genetic studies to understand the impact of extralimital introductions of ungulate species to guide the issuing of permits, and studies to understand the management thresholds for subpopulations that can be considered wild and free roaming and thus included in Red Listing. Interdisciplinary efforts to understand the socio-economic conditions under which the conservation contribution of ranchland is greatest will further hone our ability to transform data into useful policy. Research to develop simple, efficient and robust rapid assessment indicators and cost-cutting monitoring techniques – for example, engaging the power of smart phones and citizen scientists and linking remote-sensing data to site-level management actions – will help in overcoming the challenges arising from the sheer scale of the wildlife ranching estate and the complexity of the systems under observation. Finally, social science is imperative to understand and remove the many obstacles to institutional support and ranch owner participation in biodiversity data initiatives. It is only when we recognize, engage and cooperate with private landowners that their ranchlands will contribute to effective conservation. For species like the white rhinoceros, time is running out for us to get this right.

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