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Discussion

Voluntary non-monetary approaches for implementing conservation

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ABSTRACT

The voluntary non-monetary approach to conservation refers to actions that citizens or organizations could voluntarily implement in their area of influence without the incentive of monetary compensations. To be effectively implemented by untrained actors, actions should be clearly defined, straightforward to implement and not require specific scientific knowledge. The costs of actions should also be sufficiently affordable to be widely applied without monetary incentives. A voluntary non-monetary approach has so far not been clearly described as a distinct group of tools for nature conservation. Here we review the scarce scientific literature on the topic. To illustrate the applicability of a voluntary non-monetary approach to conservation, we then investigate its potential for farmland conservation. We considered a list of 119 actions available from "conservation-evidence", a source of systematically collected evidence on effectiveness of conservation actions. Among 119 actions, 95 could be scored for feasibility of implementation, costs, and existence of evidence in UK, Spain and Finland. Sixteen to seventeen actions were potentially suitable for implementation by a voluntary non-monetary approach. This implies that the voluntary non-monetary approach could be widely applicable across many countries and environments. It is our hope that this study will represent a clarion call for conservation scientists to clearly recognize the voluntary non-monetary approach, its characteristics, and its potential for addressing conservation issues on private land. Adoption of such voluntary measures may be more dependent on encouragement ('nudging') than on the usual coercive or financial emphasis ('shoving').

1. Introduction

While protected areas remain the most recognized tool used for biodiversity conservation, their extent (currently around 13% of global terrestrial land) does not guarantee the future persistence of global biodiversity (Pressey, 1994; Watson et al., 2014). There is an urgency to find effective ways of safeguarding nature for remaining biodiversity outside protected areas. There, expanding human presence poses a growing threat to biodiversity through increasing demand for food, fibre, fuel and other commodities (Millennium Ecosystem Assessment, 2005; Vitousek et al., 1997). Urban sprawl, driven by a steadily increasing urban population (projected to increase from 50% in 2010 to 70% in 2050 globally; www.who.int), is expected to further boost habitat fragmentation and pose additional pressures on ecosystems and wildlife (Terando et al., 2014). Consequently, making human-dominated landscapes more hospitable for biodiversity has been recognized as a fundamental strategy to help preserve global biodiversity (Ehrlich and Pringle, 2008).

Although Walton Hall, UK, which is widely considered as the first modern nature reserve, was established in the 1820s by a private individual (Charles Waterton), the role of private conservationists is poorly acknowledged despite the roles they can play outside protected areas established by governments and conservation organizations (de Snoo et al., 2013; Knight, 1999; Secretariat of the Convention on Biological Diversity, 2014). This is particularly so in the developed world, where private land covers large areas. For example, about half of the US federally listed species have at least part of their range within private land (Schwartz, 2008). In Europe, most of the land in the Natura2000 network (a European Union (EU)—wide network of nature protection areas, the centrepiece of EU's nature and biodiversity policy; http://ec.europa.eu/environment/nature/natura2000/index_en.htm) is privately owned. Therefore, conservation efforts implemented on private land play a key role in biodiversity protection (Brook et al., 2003; Calhoun et al., 2014; Downsborough et al., 2011); an exceptional example is

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the privately funded protection of two million acres in Patagonia through Kris and Douglas Tompkins (www.conservacionpatagonica.org/buildingthepark_land.htm).

Biodiversity conservation on private land presents opportunities, but also involves challenges brought about by the social dimension that ultimately contributes to determine costs and availability of land for implementation of conservation (de Snoo et al., 2013; James, 2002; Knight et al., 2010). The realization that nature conservation on private land is largely a social challenge has triggered a paradigm shift, from top–down to bottom–up approaches (Calhoun et al., 2014; Knight et al., 2010; Langpap, 2006; Miller et al., 2011; Steinmetz et al., 2014). Among the latter, voluntary programmes represent a widely accepted policy tool for biodiversity conservation on private land. But, despite being voluntary, these are frequently market-based (Hanley et al., 2012; Kauneckis and York, 2009; Sorice et al., 2013; Vatn, 2010).

The voluntary market-based approach for conservation on private land was developed with the rationale of an equitable and fair sharing of costs borne by the individual landowner and public benefits resulting from biodiversity conservation (Hanley et al., 2012; Jack et al., 2008). In this approach, land owners are given monetary compensations for the costs or lost benefits of implementing conservation actions. Thus, the approach entails high, and progressively increasing, costs to conservation budgets because biodiversity conservation on private land is often expensive (Lennox and Armsworth, 2013; Lennox et al., 2013; Naidoo et al., 2006). Where such considerable costs have been met (e.g. the conservation-targeted agri-environment schemes of the EU), the results, in terms of ecological benefits, have been mixed (Batáry et al., 2015), partly due to the heterogeneity of landowners implementing them. A growing body of evidence suggests that market-based approaches to conservation, albeit effective and relevant in many cases, are not always sustainable in the long term (de Snoo et al., 2013; Lennox et al., 2013). On the other hand, means to induce individuals to change their behaviour based on intrinsic values and societal moral rather than coercive means or monetary incentives exist (Williamson, 2000), but are less consistently considered in conservation (de Snoo et al., 2013; Knight, 1999; Santangeli and Laaksonen, 2015). Consideration of such a voluntary but non-monetary approach is particularly relevant for conservation in modern widely modified world, and it is in line with the strategic goal of the Convention on Biological Diversity to "enhance implementation through participatory planning, knowledge management and capacity building" (Secretariat of the Convention on Biological Diversity, 2014).

In this work, we review the scientific literature for studies where a voluntary non-monetary approach to biodiversity conservation has been applied on private land. We first compare the occurrence of this approach to two more traditional ones: coercive (i.e. fence and fines) and voluntary market-based approaches (see Table 1). This comparison aims to reveal the level of scientific interest given to these alternative approaches. We then analyse the literature to summarize key properties of voluntary non-monetary means for conservation on private land. Here, emphasis is given to constraints on implementation, potential benefits and emergent outcomes, and ways of enhancing participation. Finally, we illustrate how the voluntary non-monetary approach could be implemented in the case of farmland conservation actions.

2. Low occurrence of voluntary non-monetary approaches in the scientific literature highlights a missed opportunity

Our search protocol (Appendix S1) shows that at least in the international scientific literature of ecology and conservation, the voluntary non-monetary approach is seldom a subject of research compared to coercive and market-based approaches (Fig. 1). Out of the searched 66,183 papers published in ecology and conservation biology during recent decades, only 101 hits (representing 0.2% of all full text documents) were for voluntary non-monetary approaches, compared to a total of 2544 (3.8%) for coercive and 1071 (1.6%) for voluntary market-based. Out of the 101 hits on voluntary non-monetary approaches, only 16 actually discussed the approach, and just eight explicitly studied it (i.e. tested its effectiveness; see Appendix S2 for these 16 references). We caution that our search for papers on voluntary non-monetary actions, based on our predefined keywords (see Appendix S1), might have missed some of the literature on conservation actions that do not have an economic driver. However, we consider that the voluntary non-monetary approach occurs so much less frequently in scientific literature than the two other abovementioned approaches that it must be genuinely scarcely discussed.

Even if rarely the subject of scientific interest, as the above search results suggest (Fig. 1), it is nevertheless plausible that the voluntary non-monetary approach is often considered by practitioners, NGOs and other organizations. Indeed, many of the studies that explicitly consider a voluntary non-monetary conservation approach indicate a willingness from people to do conservation in absence of any monetary incentives at all (Downsborough et al., 2011; Gerhardt and Nemarundwe, 2006; Hartup, 1994; Raymond and Brown, 2011; Santangeli et al., 2015; Santangeli and Laaksonen, 2015; Santangeli et al., 2012; Vanderlaan and Taggart, 2009).

3. Characterizing the voluntary non-monetary approach and identifying actions suitable for implementation

Voluntary approaches for nature conservation on private land have typically been treated as a single group, including both market-based and non-monetary means. Approaches within this heterogeneous group locate along a continuum between two extremes, one where financial incentives exceed costs involved and fully drive landowner motivation towards conservation, and the other, where no monetary

Table 1
A comparison of the main reasons for carrying out conservation.

	Coercive	Voluntary monetary	Voluntary non-monetary
Principle	Authorities determine actions	Individuals or companies are funded to carry out actions. May be motivated by profit or environmental concerns	Individuals decide to carry out actions at cost to themselves, i.e. based on self-motivation and self-induced values
Approaches	Imposed national parks	Payment for conservation actions.	Landowners establishing private nature reserves.
	Restrictive legislation	Payment for ecosystem services	Voluntary actions to improve biodiversity on private land
Examples	National Parks	Agri-environment schemes	The Conservation Land Trust
	Brazilian logging	Debt for Nature	Bird feeding and nest boxes
	Hunting limits		Wildlife gardening
Temporal scale	Long-term	Temporary, short-term	Temporary, short- to long-term
Economic costs for conservation budgets	High	High	Null