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Incentivising the collaborative management of mobile ecological resources

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ABSTRACT

The collaborative management of mobile ecological resources across landscapes can provide many benefits at the societal level, but can also face considerable stakeholder opposition. Wild deer are one example of a range of ecological resources, whether individual species, habitats or ecosystem services, for which management at a landscape scale is likely to be far more effective than the single-site approaches favoured (and incentivised) to date. Determining the most appropriate mechanism to encourage collaboration depends on an understanding of the ecological, geographical, socio-economic and cultural contexts within which management decisions are made. In this paper, we employ a mixed-methods approach to quantify and explain UK deer managers' preferences for different collaborative mechanisms and financial incentives, accounting for socio-economic and regional differences. We show that deer managers would regard a mandatory collaboration scheme as undesirable in the majority of regions covered in our study but that managers' responses to proposed financial incentives for participation in mandatory collaboration were more positive in those regions where stakeholders had prior experience of existing payment schemes for modifying land use and wildlife management. Future collaboration in deer management in the UK is likely to be promoted most effectively if incorporated as part of existing environmental management schemes and in a sufficiently flexible manner to accommodate geographical and cultural contexts. Our study illustrates how mixed-methods approaches can be used to identify the opportunities and constraints associated with the wider uptake of collaboration in the management of mobile ecological resources.

Introduction

The collaborative management of ecological resources can be defined as the process by which stakeholders come together across management and ownership boundaries to collectively determine management goals, develop management plans, implement those plans, and monitor and adjust them as necessary (Munoz-Erickson et al., 2007). The management of ecological resources facilitated through such collaborations has been implemented in a wide range of terrestrial (Gerlak and Heikkila, 2006; Keough and Blahna, 2006; Raik et al., 2006; Margerum, 2007; Fleeger and Becker, 2008) and marine (Jones and Burgess, 2005; da Silva and Kitts, 2006) ecosystems in recent years. Collaborative management systems can lead to more efficient and sustainable management of a given resource as a result of stakeholders coordinating usage, agreeing on common practices, engaging in conflict resolution and sharing information to build a common knowledge base (Bodin and Crona, 2009). This form of management is therefore particularly suited to ecological resources that range across jurisdictional boundaries, for which a broad range of stakeholders must necessarily engage in common management.

Despite its apparent advantages at a societal level, collaborative management is not always favoured by all stakeholders, especially if management objectives vary considerably and the costs and benefits derived from this management are distributed unevenly. In these circumstances, one option would be to introduce appropriate mechanisms to encourage the adoption of collaborative management. Such mechanisms can range from legislative approaches through to voluntary agreements and may also involve incentive schemes to encourage stakeholder uptake such as Payments for Environmental Services (PES) (Engel et al., 2008; Wunder et al., 2008). Stakeholder participation in the development of such schemes can improve their likelihood of implementation and

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effectiveness (Prager and Freese, 2009) and result in decisions that are better adapted to local socio-cultural and environmental conditions (Reed, 2008).

As is typical of many wildlife resources, most wild deer species are mobile across the landscape and hence range across areas of different land ownerships. In Britain, wild deer cannot be owned by any individual, and since the right to shoot deer within the appropriate legal restrictions rests with the owner of the land they are occupying, wild deer satisfy many of the conditions associated with common pool resources (Fiorini et al., 2011). As with many other common pool resources, deer are subject to disparate and conflicting management objectives. Revenue from deer is produced through hunting, venison production and tourism-related activities (Gordon et al., 2004; Macmillan and Phillip, 2008), whereas costs can arise from deer-related road traffic accidents (RTAs) (Putman, 1997; Malo et al., 2004). In addition, high levels of grazing or browsing by deer have adverse impacts on sites managed for agriculture and forestry, and threaten the delivery of conservation objectives in many areas (Putman and Moore, 1998). An increased emphasis on collaborative management of wild deer could therefore deliver significant economic and ecological benefits. A number of formal and informal collaborative deer management groups already operate in Britain, based solely on voluntary agreements, but such schemes do not exist in all places. Even where collaborative management schemes are in place, participation by stakeholders can be fragmentary, effectiveness may be limited, and management conflicts may still persist (Austin et al., 2010).

In this paper, we use a mixed-methods approach to examine private-sector deer managers' preferences for different collaborative management arrangements and to explore the potential which financial incentives offer for encouraging their participation in such schemes. We use choice experiment (CE) methodology to quantify deer managers' relative preferences for different management outcomes, collaborative mechanisms and financial incentives for participation in collaboration. CE analysis is also used to quantify whether these relative preferences differ regionally and/or with socio-economic factors, since spatial targeting of PES schemes has been shown to affect their uptake and efficiency (Wunscher et al., 2008). CEs are used routinely to quantify social willingness to pay (WTP) for changes in the provision of market and non-market goods and services (Goett et al., 2000; Hanley et al., 2010). CEs are thus a well-established mechanism for quantifying relative preferences for future changes in the provision of independent attributes which result from changes in environmental management practices. Here we extend this theme by complementing the CE analysis of deer managers' preferences with qualitative analysis of semi-structured focus group discussions amongst participants during the CE, to provide further insights into the main barriers to collaboration, attitudes towards potential financial incentive schemes and possible alternative mechanisms for enhancing collaboration in deer management.

Materials and methods

Study areas and survey approach

We conducted the combined CE and focus group discussions in ten study regions across Britain between November 2007 and January 2009 (see also Austin et al., 2010). These regions were chosen in order to cover a wide range of habitats and areas with different combinations of resident deer species, both managed and unmanaged. The CEs were held in central locations (in parentheses) in each of the following regions: Perthshire (Balquhidder), Suffolk (Long Melford), Rossshire (Ullapool), Dorset (Wareham), Monmouthshire (Monmouth), Cumbria (Kendal), Devon (Okehampton), Hertfordshire (Hemel Hempstead), Shropshire (Ludlow), Inverness-shire (Kingussie). We invited to the CEs those private sector landowners and land managers responsible for deer management within each region, identified on the basis of personal contacts within local interest groups established during related fieldwork in each area. The number of attendees at each event varied from 7 to 19 (mean number 13), with a total of 128 participants nationwide. The deer management community is small and close-knit. In Scotland, for example, where collaborative deer management groups are relatively common, many groups contain no more than 20–30 active members. Therefore, our total of 128 participants is likely to amount to a sizeable proportion of the private-sector deer managers in the localities concerned.

Choice experiment design

In order to identify relevant attributes for inclusion in the CE, we held two stakeholder consultation meetings, one in Scotland and one in England, with representatives from the deer management community, nature conservation groups and environmental statutory organisations. During these meetings, representatives were asked to rank different possible outcomes of deer management in order of importance, both within their local area and nationally. Three attributes were identified which could be used to depict high-priority outcomes of deer management in all ten study areas and were therefore used in our CE design: the deer population size, the level of woodland regeneration and the incidence of deer-related road traffic accidents (RTAs) (Table 1). Two further attributes were also introduced into the CE including a 'collaboration' attribute representing different collaboration mechanisms between stakeholders and an 'incentive' attribute to depict different levels of financial incentive offered in recompense for the proposed introduction of mandatory (enforced) collaboration (Table 1). These additional attributes were introduced into the second and third rounds of the CE (see below) respectively, to quantify deer managers' relative preferences for different collaboration mechanisms and to quantify the likely acceptability of financial payments as an incentive for collaborative management. The results from the second and third stages of the CE are the focus of this paper. Findings from the first stage have been published previously (Austin et al., 2010). Further details on the methodology, including CE design, attribute levels and choice cards, can be found in the online supporting information.

Data collection

At each event, participants were first shown a brief presentation which described the aims of the project and the choice experiment methodology. Following an initial opportunity to ask questions, participants were requested to complete the first eight-choice-card booklet individually, selecting one preferred option from three available on each card. After the completed cards had been collected, a semi-structured group discussion was mediated to focus on reflections on the choices presented and the motivations underlying the choices made. The second stage of the CE was then introduced and a new 12-choice-card booklet completed individually; this was again followed by a semi-structured group discussion reflecting on this second round of choices. This procedure was repeated for the third and final stage. Group discussions were carried out after the collection of the choice cards to avoid any possible influence of the discussion on the CE responses in each round. Discussions were also constrained to topics relevant to the previous choice round only, to avoid undue influence on the choices made by individuals in future rounds. All discussions were recorded with permission of the participants and subsequently transcribed