



Farmer perceptions of bird conservation and farming management at a catchment level

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ARTICLE INFO

Article history:

Received 22 September 2011

Received in revised form 29 August 2012

Accepted 2 September 2012

Keywords:

Farmer attitudes

Agri-environmental scheme

Attitudes to birdlife

Ecologically friendly farming

Catchment

Farmer behaviour

ABSTRACT

The future of the Common Agricultural Policy (CAP) in Europe suggests support for a “greening” of production related payments, however, the loss of set-aside and the increasing freedom to respond to market prices raises doubts on the actual consequences for farm-related ecology. Voluntary Agri-Environmental Schemes (AES) are believed to play a key role in the conservation of ecological attributes of farming landscapes. Nevertheless, the options proposed within these schemes are directed beyond a single objective and the level of participation remains low. This paper presents a fine-grained approach for examining the behavioural intentions of farmers within a catchment with regards to the moral consideration of specific ecological aspects of farming, such as the preservation of birdlife. The findings indicate that most farmers hold strong values towards birds living on their land and have incorporated this within their decision-making. Nevertheless, very few respondents intend to participate in these schemes in the future and this is due to some misinterpretations of the underlying ecological requirements for providing suitable habitats and bird population trends. In addition, the stated need by farmers for more measures focused on bird conservation implies a requirement for increasingly directed financial rewards and for proposing guidance that fits within current farm management.

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Introduction

Due to concerns for the consequences of intensive land use, agricultural policy has progressively shifted to wider social goals, principally towards the maintenance of environmental and ecological benefits. Agricultural intensification has led to wildlife habitat degradation and the loss of biodiversity, in birds (Fuller et al., 1995; Donald et al., 2001; Vickery et al., 2004; Newton, 2004); invertebrates (Benton et al., 2002); and plants (Sutcliffe and Kay, 2000). For instance, the UK's farmland bird indicator has shown a decrease of 48% of specialist species over the 1970–2007 period (RSPB, BTO, DEFRA, JNCC, 2009).

The most recent restructuring of the CAP, proposed for 2013, suggests support for a ‘greening’ of production related payments and increased funds for agri-environmental schemes (AES) (European Commission, 2009; Baldock, 2011), however, at present this is vaguely stated. Moreover, recent examples, such as the response to rising global cereal prices and the abolishment of

set-aside, may be evidence that food production persists to be the main priority of EU farmers and agricultural policy. This raises doubts on how much “greener” the agricultural landscapes will be since, for instance, the significant “accidental” ecological benefits brought by the establishment of set-aside (Watson and Rae, 1997; Gillings et al., 2010; Tschardt et al., 2011) have tended to diminish (Hart and Baldock, 2011). Increasing the level of participation within and the effectiveness of voluntary AES is certainly one answer.

Farmers operate under multiple policy goals and ambitions. They have to produce more food, adapt to climate change, whilst meanwhile protecting and improving the environment in which they farm (Tilman et al., 2002; Robertson and Swinton, 2005). The farmers can respond to these initiatives in a number of ways and it has become increasingly recognised that farmers, as individuals, attempt to balance a number of external and internal influences to make decisions about future farming practices (Shucksmith, 1993; Willock et al., 1999; Sutherland et al., 2011).

The environmental perceptions of farmers can play a significant part in the process of decision-making. However, the broad environmental perspective is conceptually complex since it is intrinsically linked to financial (e.g. soil erosion impacts on yield), ecological (e.g. wildlife habitats) and social aspects (e.g. aesthetic

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value of the landscape) (see Wilson and Hart, 2000). A number of studies have shown the importance of environmental attitudes in farmer decision-making (e.g. Wilson and Hart, 2000; Fairweather et al., 2009) and in AES participation (e.g. Morris and Potter, 1995; Wilson, 1996, 1997; Wilson and Hart, 2000; Morris et al., 2002), but few have been focused on the ecological perspective, or oriented towards a specific ecosystem service deliverable (such as the supply of cultural services from biodiversity).

Ecological perceptions call attention to the “moral considerations” or the appreciation of the environment (Sullivan et al., 1996; Kaiser et al., 1999) in contrast to the environmental viability for production or utilitarianism. The failure to distinguish these two aspects, moral and utilitarian, can have important effects on both the conclusions drawn from the analysis of social surveys and the recommendations made to policy-makers.

There are numerous ecological functions that operate within the farm boundary. However, these are specific to an individual farm and the farmer will respond to this range of ecological indicators in a range of ways. A key function, identified by the Millennium Ecosystem Assessment (MEA, 2003), is the cultural value emerging from the supply of biodiversity, a prominent indicator of which is the number of headline bird species (Chamberlain et al., 2009; Davey et al., 2010; Baker et al., 2012). Policy makers, as well as farm ecologists use bird species as a headline indicator and it is reasonable to expect that farmers respond to high-level messages regarding the ecological health of farming through these indicators. Farmland birds also act as a biological crop control mechanism and can be perceived as a cultural component of the landscape (Jacobson et al., 2003), though by some as a pest and constraint on yield and land use potential (Coleman and Spurr, 2001). Accordingly, farmland birds represent the cultural and landscape values that are important to farmers within a community, which play a role in the motivations for maintaining and improving their habitats contained in the landscape (McHenry, 1998; Fish et al., 2003).

The study of farmer decision-making has become a powerful tool for policy development, in particular for the conservation of agro-biodiversity. There are several theories to describe this process, for instance that of the decision system (see Farmar-Bowers and Lane, 2009), Bourdieu's notion of social capital (see Burton et al., 2008; Burton and Paragahawewa, 2011) and the theory of reasoned action (Fishbein and Ajzen, 1975), or later the theory of planned behaviour (Ajzen, 1985). This latter theory, in particular, assumes that behavioural intentions are related to the attitudes explicit of that behaviour (i.e. positive ecological attitudes related to ecological actions), and not by general attitudes (i.e. environmental attitudes).

Consequently, the aim of this paper is to examine the attitudes and values of farmer decision-making, with respect to the ecological aspects of farming, in particular the creation and maintenance of bird habitats. This expands current knowledge on the behaviour of farmers and offer possible opportunities for future development of ecological-based policies. The study is applied to a small, intensively managed lowland catchment of arable farmers within Scotland, which presents a mixture of farmer objectives and a landscape developed under both market and policy signals. The catchment level approach permits the understanding of the differences in perceptions with a more subtle degree of resolution. Nevertheless, we emphasise the implications for the wider farming community and policy makers in the discussion section. As such the paper is structured as follows, firstly an outline of agricultural policies and of the catchment itself, and then discussion of the instruments used to elicit understanding of decision-making. A results section details the findings of this study. Finally discussion and conclusion sections examine the implications of this study for the design of ecologically related policies.

The environmental aspect in agricultural policies

The Fischler reforms of the Common Agricultural Policy (CAP), in 2004, have led to a softening of output related targets by supporting decoupling of payments from production. In addition, voluntary agri-environmental schemes (AES), offered under axis 2 support schemes of the CAP, are designed for actions that aim at protecting environmental resources. Although AES have been found to benefit biodiversity in most cases (Hanley et al., 1999; Peach et al., 2001; O'Brien et al., 2006; Perkins et al., 2008, 2011), their initial objectives were unclear and the uptake rate in the UK and particularly in Scotland has remained low (RSPB, 2007; Scottish Environment Link, 2009).

The Scottish Rural Development Program (SRDP) for the period 2007–2013 has been developed to include the three main principles of sustainability (economic, environmental and social) and to be output-focused (DTZ, 2007). It is composed of competitive and non-competitive elements. Cook (2009) has argued that the land management options under the rural development contract, which are non-competitive, are insufficiently narrowed to achieve the desired outputs. The options proposed within these schemes are directed beyond a single objective. However, biodiversity targets and the protection of some charismatic species can only be achieved through the implementation of specific measures (Tscharrntke et al., 2005; Perkins et al., 2011). Conversely, a competitive scheme, the ‘Rural Priorities’ programme, is designed to answer regional needs but requires more challenging plans and higher levels of financial support. In addition, the voluntary nature of such schemes infers the reliance on farmer decisions to achieve targets. It is therefore essential to understand how farmers make these decisions and what factors underlie their judgement in order to maximise the uptake and effectiveness of the measures.

Within the AES, ecological enhancement is one tranche of the schemes offered, though the majority have focused on management for water and soil quality, with ecological benefits sometimes a secondary, non-specified, benefit (Agra CEAS Consulting, 2005). Within the SRDP, a small number of schemes, which are directed at specific species, e.g. corncrakes, or practices, e.g. provision of winter cover, could be classified as a ecologically related AES (ER-AES), and are seen, within this paper, as a sub-set of the suite of AES offered within the SRDP. Consequently, balancing the ecosystem services that could be supported on farmland and those promoted by policy-makers also further complicates farmer decision-making. An understanding of farmers' ecological perceptions and reactions to external pressures is therefore essential for anticipating changes in management and uptake of future AES that impact ecological functions.

Materials and methods

Study site

The Lunan catchment, a mostly intensively cropped catchment in Angus, on the east coast of Scotland is one of the few places in Scotland that is conducive to supporting intensive cropping, due to a relatively flat and fertile soil. Around 115 farmers manage the 132 km² catchment. The main farming systems are general cropping (40%), mixed farming (29%) and cereals (10%) (Scottish Government, 2007). Principally this is a cropping catchment, with only 4% of the total area designated as permanent grass and rough grazing.

Since 2003, the catchment has been designated as a Nitrate Vulnerable Zone (NVZ), which imposes structures on farmer management and production behaviour in relation to organic and non-organic nitrogen use and storage. In addition, it formed

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