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The threat of abandonment in socio-ecological landscapes: Farmers' motivations and perspectives on high nature value grassland conservation

J. McGinlay[a,*], D.J.G Gowing[a], J. Budds[b]

[a] Department of Environment, Earth & Ecosystem Sciences, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK
[b] School of International Development, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, UK

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ABSTRACT

Future sustainability of the conservation management of socio-ecological landscapes is typically reliant on on-going agricultural management. Such management may be threatened by changes in the drivers of management and the fragility of the stakeholder networks that deliver management. This study examined evidence for the risk of abandonment in a series of case study high nature value (HNV) grassland sites. The work found that the motivation of farmers to participate in the conservation management was typically limited and often marginal. Landowners and conservation stakeholders who relied on partner farmers to manage such sites often struggled to recruit and retain their participation, leading to increased turnover among managing farmers and to some sites being under-managed. Primary reasons for difficulty of recruitment and farmer turnover included a lack of candidate farmers in the local landscape, and the marginal and fluctuating economics of grassland management. A trend towards greater financial incentivisation of farmers was evident, which policy-makers responsible for agri-environment schemes should note, and elsewhere some conservation organisations were seen to be bringing grassland management in-house. Farmers' motivations to participate in conservation management of such systems may continue to weaken and abandonment may therefore become a significant risk to the successful conservation of such systems. Conservation stakeholders need to foster good relations with their farmer-manager partners and not further depress their limited motivations to participate, as well as consider carefully whether farmer stakeholders are being adequately compensated for their efforts.

1. Introduction

Socio-ecological landscapes[1] consisting of high nature value (HNV) grasslands valued for biodiversity require the continuation of the traditional land-management practices that created them in order to be conserved into the future (Losvik, 2003; Fischer et al., 2012). Yet worldwide, changes in agricultural practices are leading to the abandonment of grasslands as a result of social, economic, cultural and historical factors (Scanga and Leopold, 2012; Babai and Molnar, 2014; Beilin et al., 2014; Joyce, 2014; Sharma et al., 2014; Lieskovsky et al., 2015). For European landscapes, a large proportion of which comprise grasslands that are highly valued for biodiversity (Habel et al., 2013), researchers have emphasised the importance of the continuation of traditional management (Bignal and McCracken, 1996; Isselstein et al., 2005; Schmitt and Rakosy, 2007; Bezak and Halada, 2010; Krause and Culmsee, 2013; Birge and Herzon, 2014; Molnar, 2014). Across Europe, changes in agriculture are leading to varying degrees of farmland abandonment (Young et al., 2005; Keenleyside and Tucker, 2010; Rewilding Europe, 2012; Habel et al., 2013; Wild10, 2013), which may result in the loss of associated traditional ecological knowledge (Hopkins and Holz, 2006; Prince et al., 2012; Babai and Molnar, 2014). Whilst Keenleyside and Tucker (2010) note that the trend is strongest in parts of Southern and Eastern Europe, and generally less prevalent in Northern and Western European countries such as the UK, they also note that semi-natural and extensive grassland landscapes are particularly at risk of abandonment. This would lead to a rapid loss of the biodiversity for which they are valued, grasslands commonly being an early successional stage in the native vegetation of Northern and Western Europe (Joyce, 2014). Following this loss of

* Corresponding author.
E-mail address: jimmcginlay@hotmail.com (J. McGinlay).

[1] Co-produced by the interaction of biophysical and social processes.

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value, intensification could potentially follow, where restoration work cannot be funded or sustained over time, as such restoration work can be a lengthy process (McDonald, 2001). Drivers of the loss of HNV grasslands have varied spatially and temporally, but Rodwell et al. (2007) note that for some, abandonment may prove to be the most significant threat.

Literature regarding the impact of abandonment of traditionally managed agricultural land on biodiversity is extensive. However, less common are studies of the drivers of such abandonment, with much of the existing work focussing on Eastern Europe and upland areas of Central and Alpine Europe, and less covering the risk of the abandonment of HNV grasslands in lowland Northern and Western Europe, where much loss has often been the result of agricultural intensification (Woods, 2011).

Abandonment of traditionally managed agricultural lands in Europe is driven by a broad range of biophysical and socio-economic factors. These include changes in rural demography, society and culture (ADAS, 1993; Crofts and Jefferson, 1999; Lieskovsky et al., 2015), competition from intensification, as well as a lack of financial incentives that may compensate for low productivity in order to sustain traditional farming (Jitea and Arion, 2015; Graf et al., 2014). Other practical and biophysical factors include topography, soil quality and remoteness of land from human settlements (Lieskovsky et al., 2014, 2015; Jitea and Arion, 2015), as well as factors that serve to make management more difficult, inconvenient, unattractive or uneconomic to farmers, thereby affecting the sustainability of grassland management and threatening the ability to maintain sites in good condition.

In some countries, traditional and low-intensity conservation-orientated farming is subsidised by agri-environment schemes, for example in Europe funded under the European Union (EU) Common Agricultural Policy and by some EU Member States (European Commission, 2012, 2015). Such schemes are intended to incentivise the management of sites such as HNV grasslands, by providing compensation where a financial disadvantage is incurred by the low-intensity management and corresponding low productivity. Given the lack of emphasis in current literature on the drivers of grassland abandonment, especially in Northern and Western Europe, the threat of abandonment of HNV grassland represents a gap in knowledge.

A significant proportion of European high nature value socio-ecological sites are grasslands, and of these, lowland species-rich floodplain meadows are considered to be of European importance. They now constitute a rare landscape in Europe, highly valued for their species-rich sward, for the rarity of their grassland assemblages[2] (Ellenberg, 1988; Rodwell et al., 1992), and in some cases for the presence of uncommon or threatened plant species such as the snakeshead fritillary *Fritillaria meleagris* (Jefferson, 1997; Horton and Jefferson, 2006; Rodwell et al., 2007; JNCC, 2007). Good examples are now deemed of international importance for nature conservation at the European level, and five of the largest sites in the UK have been designated as Special Areas for Conservation (SACs) (European Commission, 1992, 2007), with most of the remaining known sites notified as Special Sites of Scientific Interest (SSSIs) (Nature Conservancy Council, 1989; JNCC, 2007).

The key drivers that influence the floristic composition of floodplain meadows are well known, and include the hydrological regime, the mesotrophic soil nutrient conditions and nutrient flows associated with river silt delivered by flooding patterns, and the meadow management regime (Mountford et al., 1993, 1996; McDonald, 2001; Gowing et al., 2002, 2005; Critchley et al., 2007). The broad styles of traditional meadow management regimes and the impact of particular management operations on the grassland sward and species composition are also well-researched (Benstead et al., 1997; Crofts and Jefferson, 1999; McDonald, 2001; Gowing et al., 2002). Management regimes typically consist of a hay cut in early summer, followed by aftermath grazing in the autumn, usually with cattle.

The aim of this paper is therefore to assess the risks posed to the conservation of HNV grasslands by abandonment and its associated drivers. A case study approach is taken to examine a series of high nature value (HNV) grassland sites in England, in order to answer the following three questions: (1) What are the views of farmers involved in traditional grassland management regarding meadow value and management, and how do their perspectives influence their motivations to undertake grassland management? (2) What factors enhance or undermine such motivation? (3) What are the resultant risks of abandonment of meadow management? In answering these questions, this paper aims to evaluate the risk of abandonment of HNV grasslands and contribute to debates on how to mitigate them.

2. Methodology

In order to address the above questions, the perspectives of farmers actively involved in the management of high nature value floodplain meadows in Lowland Central and Southern England were explored in detail (Table 1 and Fig. 1), using a case-study strategy (Yin, 2014) and semi-structured interviews (Longhurst, 2010). Most work on semi-natural grasslands, and floodplain meadows in particular, has focused on the biophysical processes that produce them, with much less work on the social processes that influence their production through site management. Such processes are influenced by social, economic and cultural factors that have been little explored and that often require, at least initially, a more qualitative approach to identify and explore key issues affecting meadow management.

This work was focused on the association between the perspectives, attitudes and motivations of farmers and other stakeholders towards traditional meadow management, and the risk of grassland management abandonment. It sought to shed light on the meaning and value that floodplain meadows represent for farmers and other stakeholders in the meadow management network, on their understandings of the place of meadows in the landscape, as well as on the purpose that conservation of such sites serves for society. The work was also therefore exploratory in its desire to examine and identify a wide range of factors and influences, and needed to be open-minded in its approach.

The research strategy was designed to provide in-depth knowledge of specific case studies as a broad survey would yield a large volume of superficial data that would not be sufficiently detailed to address the research questions. Three meadows were studied in detail (Case Studies 1–3, Table 1: North Meadow, Brook Meadow and Long Mead) to obtain rich data on specific sites, with which to generate detailed understandings about the issues involved. A further six meadows were studied in less depth to provide data against which to test the results from the main case studies in order to improve the generalisability of findings. This approach was therefore designed to provide a balance between the depth and breadth required to allow any conclusions to reflect the broader context.

The case studies were selected to represent a geographical spread across the region in which most meadows are located, as well as a range of conservation designation status, from high-

[2] *Alopecurus pratesis-Sanguisorba officinalis* grassland, community MG4, as defined in the UK National Vegetation Classification (NVC; Rodwell et al., 1992) and Habitat type 6510 in Annex II of the EU Habitats Directive (European Commission, 1992).