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[Farmer attitudes to cross-holding agri-environment schemes and their implications for Countryside Stewardship.](#)

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# **The design of cross-holding, collaborative environmental management schemes: a UK farmer perspective**

*This study examines farmers' attitudes to group applications into agri-environment schemes, an opportunity which has recently been introduced in the English Countryside Stewardship's Mid Tier. An on-line consultation was targeted at environmentally informed and engaged farmers across the UK to explore how the design of collaborative schemes might affect their participation decision. The majority of the 122 respondents (75%) were supportive of the principle of collaborative, cross-holding environmental management even though only 38% had previously considered this possibility. The main concerns raised were; anticipated difficulties enforcing farmer-farmer contracts, and a widespread belief that their neighbours would not make suitable or be willing collaborators. The findings suggest that participation in cross-holdings collaborative environmental management options would increase; if farmers were better informed of the potential environmental benefits of joint applications, if agri-environment schemes offered a combination of "passive" and "active" management options, and if farmers had access to fully-funded advice and support services. The study compares the findings with the actual design of Mid Tier to show that while it incorporates some of these concerns, others are not addressed, which may reduce the number of applications from farmer groups.*

(Key words: Countryside Stewardship, Mid Tier, landscape scale, agri-environment scheme, collaboration)

## **1 Introduction**

When the Exmoor Management Agreement Scheme was introduced in 1979 it became the first environmental scheme in England to financially compensate farmers for any loss of income associated with changes to their farming practices which benefited the natural environment. The scheme's design became the blueprint for compensation arrangements under the UK's Wildlife and Countryside Act (1981) and, by extension, European policy, through the development of Environmental Sensitive Areas under EEC Regulation 797/85 (Lobley et al. 2005), and under EEC Regulation 2078/92, which required all EU member states to introduce agri-environment schemes. Since then these schemes have evolved to reflect experiences gained, changing environmental concerns and new understandings of ecological systems and networks (Cooper et al. 2009, Latacz-Lohmann and Hodge 2003, Lawton et al. 2010, Whitby 2000). The growth of landscape scale conservation thinking (Adams 2015, Lefebvre et al. 2014) is a part of this evolution which has been incorporated into Countryside Stewardship, the replacement in England to Environmental

Stewardship Scheme (2005-2014), which opened for applications in September 2015 to allow all first round agreements to start on 1<sup>st</sup> January 2016.

Countryside Stewardship is structured around two tiers. The top tier focuses on area of high environmental value. The Mid Tier is an innovative, a cross-holding, collaborative, environmental management option, specifically designed to incentivise the submission of a single environmental management application covering land farmed by four or more farmers. It was introduced to address criticism of Environmental Stewardship Scheme's over-focus on the farm and field scale at the expense of the landscape scale. For example, the White Paper for the Environment "*The Natural Choice: Securing the value of nature*" (HM Government 2011) described the Environmental Stewardship Scheme as adopting a "piecemeal" approach, which took "place on too small a scale to achieve overall success", as a direct consequence of which it overlooked "crucial links, such as between wildlife sites and the wider countryside" (p 3) (HM Government 2011). The change also reflects the increasing body of scientific evidence which describes the additional environmental effectiveness of landscape scale agreements (Donald and Evans 2006, Dutton et al. 2008, Gabriel et al. 2010, McKenzie et al. 2013, Webb et al. 2010, Whittingham 2007).

It is widely acknowledged that Countryside Stewardship, like all voluntary agri-environment schemes, requires land managers to be positively engaged with the scheme (Radley 2013, Wilson and Hart 2001). The influential, government commissioned, independent Lawton Report (2010) described farmers as "the bedrock of an effective [ecological] network" (p 58), and the White Paper for the Environment acknowledges they play a "vital role" in "achieving society's ambitions for water, wildlife, healthy soil, food production and the management of landscapes"(p 23) (HM Government 2011). It is because of their important role that farmer participation in agri-environment schemes has been widely studied (Brotherton 1989, Lastra-Bravo et al. 2015, Mills et al. 2013b, Prager and Freese 2009, Reed 2008, Siebert et al. 2006, Wilson 1996, Wilson and Hart 2001). Nevertheless, relatively little is known about UK farmers' attitudes and motivations towards collaborative, cross-holding environmental management agreements. This compares unfavourably with our understanding of farmer participation in collaborative environmental activities elsewhere, for example in Australia (Wilson 2004); Germany (Prager and Nagel 2008, Prager and Vanclay 2010); The Netherland (Franks 2010, Franks and Mc Gloin 2007, Renting and van der Ploeg 2001); and in other selected OECD countries (OECD 2013).

The aim of this research is to address this deficiency. It reviews studies of UK cross-holding, collaborative, environmental management schemes, and reports findings from an on-line consultation designed to examine UK farmers' views on how scheme design influences their decision to participate

in such schemes. The on-line consultation was designed to deliberately target environmentally informed farmers because these respondents would be best able to provide the detailed and knowledgeable responses required (i) to inform decisions on whether changes, in this case to agri-environment schemes, are needed and to advise on how to make those changes; (ii) to alert policy makers to concerns and issues which they may not have picked up through existing evidence or research, and (iii) potentially, to improve timeliness, so insights can be captured at an earlier stage in policy development. Recent research has shown how this information can benefit and improve policy making (Phillipson et al. 2012). It is because of this deliberate targeting that the research is better described as a consultation rather than a survey. Surveys typically gather views from random or stratified random samples to allow findings to be raised to the population level to provide estimates of support for a proposal or initiative. However, findings from consultations cannot be used in this way. Because of this disadvantage, the study is best thought of as a scoping study, the findings of which will need further testing to establish how representative they are of the UK farming population.

The following section reviews the literature on UK cross-holding, landscape scale conservation to identify farmers' perceived and actual barriers to, and the benefits of, cross-holding, collaborative environmental management. This is followed by details of the on-line consultation. Section 4 reports the research findings, and Section 5 discusses which of the recommendations in the literature and of the consultation's findings have been incorporated into the design of Mid Tier, and identifies changes that, based on the consultation's findings, would increase applications from farmer groups. Section 6 concludes drawing policy makers attention to the potential implications of the research findings on the structure of collaborative schemes in general and of Mid Tier in particular.

## **2 Review of UK farmers' attitudes towards cross-holding environmental management**

There have been many studies into the attitudes and views of non-UK farmers and land managers towards cross-holding environmental management initiatives (Prager and Freese 2009, Prager and Nagel 2008, Prager and Vanclay 2010, Primdahl et al. 2003, Primdahl et al. 2010, Renting and van der Ploeg 2001, Slangen and Polman 2002, Wilson 2004, Wiskerke et al. 2003). Two recent studies have reviewed this literature (Prager 2015, Prager et al. 2012). However, a review of about 160 peer-reviewed publications about participation in agri-environment schemes, Siebert et al. (2006) concluded that the design of agri-environment schemes must be sensitive to local ecological, economic and social conditions, and to cultural preferences. These findings suggest that the attitudes and views of non-UK farmers may not be an especially helpful basis upon which to design innovative

cross-farm schemes/option for the UK. For this reason the literature review is restricted to studies of collective action located in the UK.

Table 1 summarises the key features of UK based studies into collective action.

**Table 1.** Summary of literature of cross-holding collective action in the UK.

Name of author(s) and date published	Location	Typical environment and farm type	Number of farms involved	Neighbouring farmers	Organisation of landscape scale benefits	Details of inter-farm scheme	Principal research findings
MacFarlane (1998)	Lake District, England	Upland Cattle and sheep	35 of 46 in target area sympathetic to the proposed scheme	Contiguous, within a ring block (ESA area)	Collaborative, third party	[Hypothetical] Farmers invited to join a hypothetical third tier of Environmental Sensitive Area (ESA) payment to agree to manage features which crossed farm boundaries” (p 583-585).	Support for cooperation underpinned by additional financial gain not by potential conservation benefit realised by cooperative action. Farmers with good relationships with neighbours more likely to respond positively
Dolman <i>et al.</i> (2001)	Oxfordshire, England	Lowland, river plain, arable	Initially supported by 15 out of 31 farmers approached, but all 17 subsequently interviewed supported scheme	Contiguous area of 110 square km	Collaborative, third party	[Hypothetical] Farmers invited to support a hypothetical, intra-farm, wider landscape management	Support for the scheme increased as farmers understood the likely ecological benefits. Visualisation of proposed scheme increased farmer support.
Parrott and Burningham (2008)	Blackwater Estuary, Essex	Low-lying arable and grassland	14 stakeholder interviews. No support for the option by farmers interviewed.	All farmed land in the Blackwater area suitable for intertidal habitat creation option	Collaborative, third party	[Hypothetical] Farmer were interviewed to obtain their views of ESS’s HLS “intertidal habitat creation” option.	Little support for the option due to: irreversibility of land use change; concern over the size and duration of compensation payments; upfront costs not repaid until farmer accepted into the scheme; scheme too complex; farmers did not understand the need to create saltmarsh for conservation purposes; lack of confidence in design of scheme option as no direct evidence of benefits available.
Dutton <i>et al.</i> (2008)	Chichester Coastal Plains, West Sussex	Arable farming, producing vegetable and salad crops.	Targeted 42 farmers, all with contiguous land-holdings in the project area	All within the 10,000 ha target area	Cooperative, (farm specific conservation plans), organised by third party	[Funded scheme] Countryside Stewardship Scheme financed bespoke farm conservation plans provided by third party in consultation with farmers.	Farm-specific advice and bespoke conservation plans resulted in reduced farmer transaction costs; all farmers carried out some conservation work; 11 implementing relevant conservation work, and 31 joining the proposed scheme. Scheme allowed habitat corridors to be built between farms. Involved higher initial costs setting up the scheme
Southern <i>et al.</i> (2011)	River Glaven catchment, north Norfolk	Arable farming on mostly Grade 3 land	27 farmers and 12 non farming landowners among 71 contacted stakeholders	All farmers live and work in the project area	Collaborative with third party	[Hypothetical] Adaptive framework to allow farmers to developed landscape scale scenarios.	Principal problems relate to lack of trust and clarity over environmental policy in general, short-term nature of environmental policy, and practical implementation of landscape scale conservation, including governance arrangements. Initiation of landscape scale scheme would need help from external agent (e.g. a Project Officer), with partnership built on existing functioning partnerships, e.g. River Glaven Conservation Group.

Mills <i>et al.</i> (2011) <sup>1</sup>	Case studies of exiting collective actions in Wales	Wide range of farming types involved	13 case studies	All actively involved in existing collective actions	Collaboration, direct governance. Third party at start-up only	[Existing collective actions] Landscape scale, voluntary participation, groups. Built from existing network of farmers with shared traditional values and similar farming systems	Able to develop scheme adapted to local features and farming systems, members with common aims, strong local leadership, limited group size allows all to contribute to problem solving; payments distributed among the group by agreed contract. Third party only used to facilitate start-up and supply training needs as required.
Emery and Franks (2012)	Three case study areas in England	Arable, mixed farming, livestock farming	33 farmers in total, (12, 10 and 11 in each case study area)	All farmed in one of the three case study areas	Majority of farmers preferred collaborative, organised by a third party	[Hypothetical] Farmers were not given any guidance on the possible design of a landscape scale scheme	Overwhelming support for the principle of landscape scale schemes. Principal barriers included; farmers preference to work independently showed strong cultural barriers to working together; majority supported third party overview; perceived unwillingness of neighbouring farmers to participate; contractual issues; need for demonstrable benefits; and scheme flexibility, with respect to range of options available to select from.
Franks and Emery (2013)	Across England, but mostly upland areas	Livestock farming	18 farmers, all participants in option HR8 in the EES's HLS	Spread across England	Majority of agreements facilitated by third parties	[Funded scheme]. Neighbouring farmers with boundary spanning environmental features can include Option HR8 in their AES agreement.	Flexibility of HR8 option is important. Generally attractive payments. Many agreements are agreed between farmer members of existing groups. Principal problems included; Need for a third party to initiate initial discussions; competitive nature of HLS; need to finance up-front costs; agreeing primary use of land; contractual arrangements.

<sup>1</sup> This paper draws upon the findings of two research projects undertaken between 2004 and 2008 (Mills *et al.* (2006) and Mills *et al.* (2008)).

MacFarlane (1998) reported thirty-five neighbouring farmers (76% of the sample) to be sympathetic towards a proposed, hypothetical collaborative agri-environment scheme that had been specifically designed to improve the management of cross-holding environmental features. By mapping Sites of Special Scientific Interest in the study area onto the land farmed by supportive farmers he created a “considerably enlarged ‘conservation estate’ which had high levels of connectivity between isolated conservation tiers” (p 591).<sup>1</sup> Despite this enhancement and development of a local ecological network, he concluded that additional financial gain rather than conservation benefits was a more persuasive driver of increased farmer participation.

Davies *et al.*'s (2004) study of existing cooperative organisations in Scotland supported MacFarlane's view that farmers were predominantly focused on business profitability. Other barriers to environmental collaboration the study identified were: a preference for farmers to work independently rather than in groups; farmers being unlikely to be able to identify environmental benefits of cooperative action (as they did “not see it as their role nor their area of expertise” (p 7)); their finding it difficult to represent their own interests in developing agri-environment schemes; and their tendency to develop innovative organisations by building on existing informal social and information networks rather than creating new ones from scratch. Davies *et al.* (2004) concluded that current incentives for collective environmental action were too weak to overcome these barriers, and suggested that farmers would need assistance to coordinate their activities, which in the authors' view would best be supplied by external organisations, which they termed “collective action coordinators”. These organisations would be charged with helping farmers identify local opportunities and respond to local circumstances; strengthening existing farmer-farmer networks; developing additional funding streams; and encouraging farmers to become involve in local initiatives and programmes.

Mills *et al.* (2006) and Mills *et al.* (2008) examined existing landscape scale cooperative organisations. These studies identified the key factors which underpin successful agri-environment cooperatives as, needing to involve individuals with key skills and determination; use of effective facilitators; strong social cohesion within groups; the ability of groups to develop their own solutions; flexibility in membership arrangements; a group administered payment system; and self-regulation and monitoring, to ensure a high standard of work and low administrative costs.

Parrot and Burningham (2008) reported the views of farmers of intertidal land in the Blackwater Estuary, Essex, in the South East of England. They reported farmers needed external assistance and that the advisory visits had raised participation rates. They recommended introducing an additional

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<sup>1</sup> The tiers referred to here are the tiers that formed the structure of the Environmentally Sensitive Area agri-environment scheme.

financial incentive, which they termed a “joint application payment” (p 365), but were not optimistic that this alone would be successful, concluding that more radical strategies, such as land leasing or outright purchase, might be necessary.

In the same year Dutton *et al.* (2008), again analysing responses from a case study, reported high levels of interest in cross-holding environmental management options among farmers affected by a scheme to restore habitats and environmental connectivity on farmland on the Chichester floodplain. All of the 42 farmers visited were recruited into the project “to a greater or lesser extent” (p 210). Once more, important contributions to the success of the scheme included assistance from an external advisor, working on a one-to-one basis to assist with drafting applications and developing environmental plans tailored to each farm’s ecological potential and business circumstances.

A study into how to incentivise cross-holding environmental management to assist catchment management by Southern *et al.* (2011) noted the absence of a strategic governance framework for the delivery of an integrated approach to landscape scale environmental management. They also concluded that external organisations were needed to advise and help cultivate improved forms of cooperation and leadership among farmers, and, like Parrot and Burningham (2008), identified a need for new instruments and approaches which transcended property and institutional boundaries.

The UK’s Environmental Stewardship Scheme Higher Level Stewardship (2005-2015) option HR8 provided up to £10/ha to cover the transaction costs incurred in arranging cross-holding agreements designed to jointly manage specified landscape features and/or resources that stretch across farm boundaries. Findings from a telephone survey of participants, reported by Franks and Emery (2013), showed that the majority of agreements had been facilitated by an outside agency, such as Natural England, LEAF (Linking Environment and Farming), The National Parks and specialist Land Management and Grazing Conservation Trusts. The principal barriers farmers faced arranging these agreements included: inadequate up-front finance; the wide diversity of stakeholder’s interests, particularly with regard to the primary use of moorland; and a lack of vitality in some local moorland management association. As only 123 of the 12,240 Higher Level Stewardship agreements included this option in 2012, it had clearly not proved popular. Higher Level Stewardship was discretionary, and maybe the competitive nature of funding reduced farmers’ incentives to discuss their plans with neighbours. But the terms and conditions of its use were also tightly drawn, being restricted to agreements which covered “areas under more than one ownership that are to be managed for resource protection, inter-tidal flood management and/or wetland management, it may also be used to facilitate applications in landscapes with extensive archaeological or historic features” (DEFRA 2010).

Emery and Franks (2012) reported findings from face-to-face interviews to reveal the views of 33 farmers towards collaborative, cross-holding options and schemes. Although the majority of respondents (81%) supported cross-holding collaborative environmental agreements in principle, the study concluded that converting this support into active participation would involve, better communication and improved understanding between farmers; addressing farmers' cultural preference for independence of action (created, in part, by the economic importance of timeliness on farm profitability); and addressing farmers' differing levels of risk aversion related to contractual issues. Most of the interviewees (26, 80%) believed farmers would require assistance from an external individual or organisation to coordinate their joint application.

### *Summary: barriers and facilitating factors*

The literature on UK farmers' attitudes towards cross-holding environmental management may not be extensive, but it covers different scenarios (hypothetical and formally financed schemes) and landscapes (inter-tidal land, upland moorland, and lowland flood plains). The studies suggest that the majority of farmers would consider participating with neighbours in cross-holding environmental schemes, but identified several barriers to the delivery of collaborative environmental management:

- the preference among many farmers to work independently,
- the significant role pre-existing networks or organisation can play in helping formulate and submit joint applications,
- concerns about the legal enforceability of joint contracts,
- the need for adequate financial compensation,
- a need for external advice and support, in relation to joint submissions; this refers to arranging farmer-farmer meetings, and coordinating group development and the submission of paperwork,
- uncertainty about farmers' knowledge of environmental benefits from agri-environment schemes in general, and of collaborative, landscape scale conservation activities in particular, and
- structural barriers imposed by the terms and conditions attached to environmental management options.

Several of these barriers also apply to participation in conventional, farm-by-farm agri-environment schemes, but perhaps three are specific to joint-applications: the preference of many farmers to work independently, a lack of effective pre-existing advisory and support network, and worries about the legal status of farmer-farmer contracts. The preference of independent working is a cultural as well as an economic issue, and it is not surprising that cultural attitudes can provide a significant

stumbling-block to the introduction of innovative practices (Emery 2014, Siebert et al. 2006). Several studies demonstrated the positive impacts that external advisors - Davies et al.'s (2004) "collective action coordinators" - can make. Their work would include creating a forum where farmers can meet and exchange views about the joint application scheme. By bringing farmers together to discuss their options, collective action coordinators can identify and help construct viable farmer groups, and in so doing increase the number of farmer group applications.

The evidence suggests that joint applications involve considerable up-front, preparatory costs. Therefore, funding must be adequate to cover these costs, and paid whether the application is successful or not, which was the case with Higher Level Stewardship applications under Environmental Stewardship Scheme. Several authors believe voluntary schemes would need the support of additional instruments that transcend property and institutional boundaries, suggesting, for example, targeted leasing or public purchase of land with high environmental value. However, if "collective action coordinators" are able to raise participation rates in joint schemes, these additional mechanisms may not be necessary.

Structural barriers to participation can also be imposed by the terms and conditions of the agri-environmental scheme and its options. The only formal UK agri-environment related experience of joint submission available to provide guidance on the design the Mid Tier was Environmental Stewardship Scheme's Higher Level Stewardship option HR8. This had two significant scheme-related barriers: awards were discretionary, creating a competitive environment for Higher Level Stewardship applications, which undermined trust between neighbouring farmers, and the limited circumstances under which it could be used.

The principal aim of this study is to explore barriers to participation in cross-holding options from the farmer's perspective. It presents the views of environmentally-informed farmers and, based on these views, suggests changes to the design of Countryside Stewardship's Mid Tier which farmers indicated would positively influence their participation decision and therefore enhance the scheme's success.

### **3 On-line consultation: expertise of consultation respondents**

An on-line consultation was designed to develop insights into UK farmers' views and attitudes towards cross holding environmental management schemes and options. To increase the number of responses from environmentally well informed and knowledgeable farmers the consultation was

supported and publicised on the webpages of three national environmental NGOs; Linking Environment and Farming (LEAF); Game and Wildlife Conservation Trust (GWCT); and Farming Wildlife Advisory Group (FWAG). To access the wider farming population, the consultation was also advertised by the Royal Institute of Dairy Farmers and the Institute of Farm Management. The consultation therefore adds to the available evidence by, for the first time, reporting the views of a large number of non-neighbouring farmers, who, because of their geographical spread, are likely to be exposed to a wider range of farming, environmental and business circumstances than those reported in the case-study based literature reviewed in Section 2.

The on-line consultation was based on the semi-structured questionnaire used for face-to-face interviews with farmers by Emery and Franks (2012). It consisted of 28 questions. Ten solicited characteristics of the farmer, the farmer's family and farm. Fourteen were related to different aspect of collaborative scheme design, and four Likert-type questions assessed the degree of independence farmers had over their participation decision. Some questions were preceded by clearly stated background information. The consultation did not specify how a collaborative scheme might be designed, because at the time of the consultation there was no indication collaborative options would be included in a revised agri-environment scheme. Clearly, therefore, details of the Mid Tier joint application were not available. This approach requires respondents to formulate their own "model" of how a joint scheme might be designed, and to present their views and opinions of the practical issues their "model" might give rise to. This provided respondents the freedom to reflect on a wider range of possibilities as they were not constrained by pre-formulated rules, thus providing a richer source of ideas and suggestions about the ways in which practical issues related to the design of a joint application scheme would affect their participation decision.

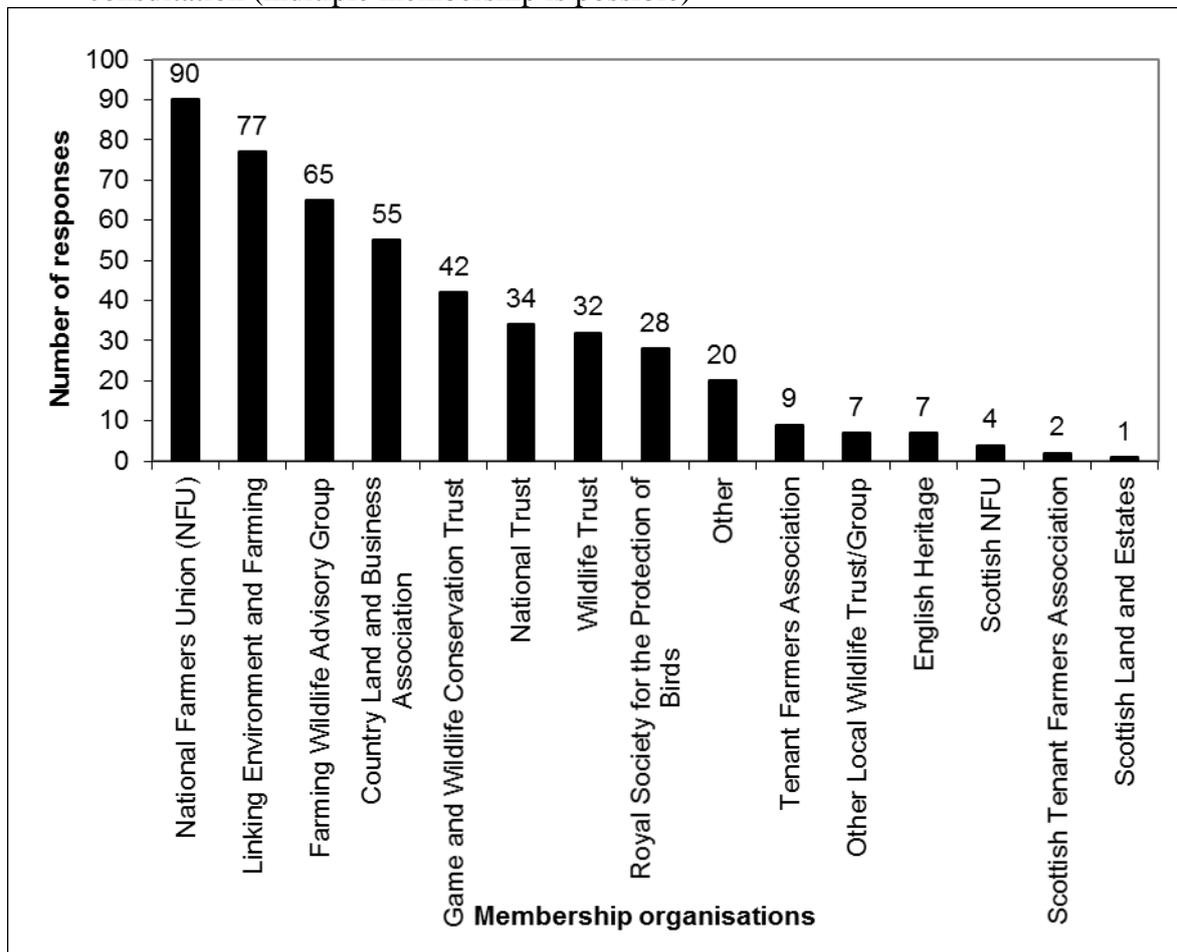
The consultation document was posted on-line on the 23<sup>rd</sup> July 2011 and withdrawn on the 28<sup>th</sup> October 2011. A total of 122 responses were received, 77 from members of LEAF, 65 from members of Farming and Wildlife Advisory Group (FWAG), and 44 from members of Game and Wildlife Conservation Trust (GWCT): 31 (25%) were members of all three organisations (Figure 1). Respondents were currently involved in a total of 223 agri-environment schemes and conservation activities (Figure 2). The underlying proportion of UK farmers who are members of these organisations is considerably lower than these percentages, and it is likely the average UK farmer is involved in fewer environmental schemes.<sup>2</sup> Fourteen respondents were not currently in any formal

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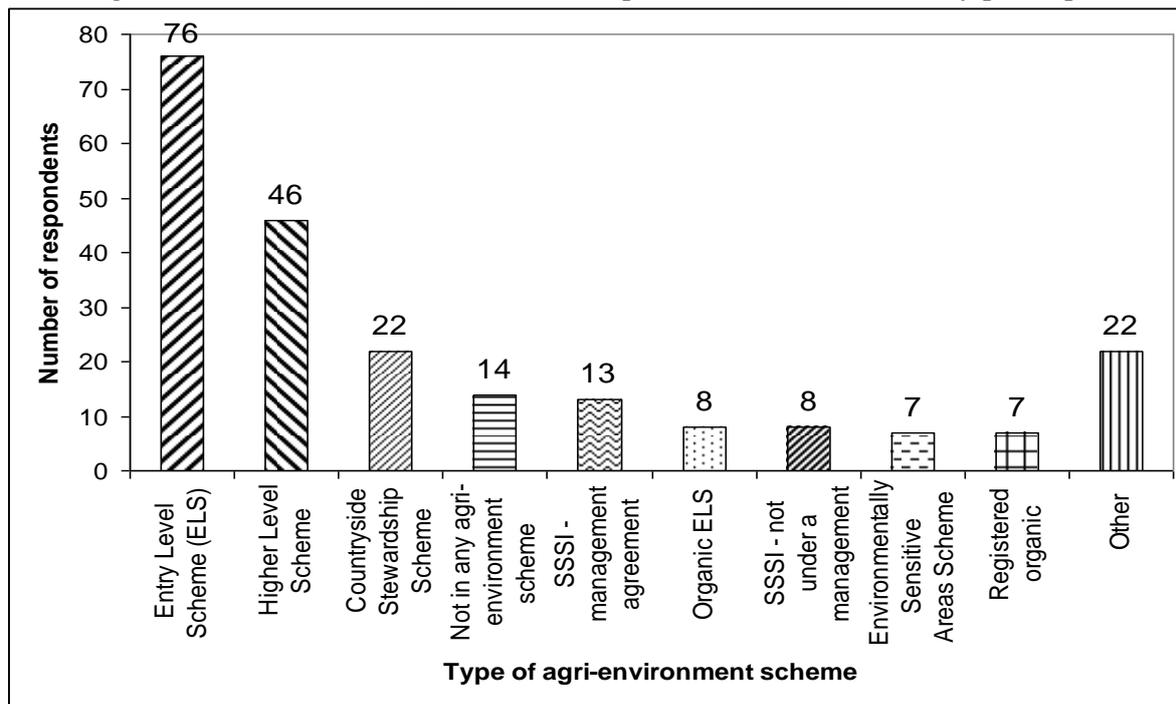
<sup>2</sup> At the time of the survey, GWCT has a membership of about 22,000, FWAG of 8,000, and LEAF 2,500. The average number of environmental agreements the average UK farmer is involved in is not known.

agri-environment scheme, though three of the fourteen had previously participated in Entry Level Stewardship

**Figure 1:** Membership of environmental and other organisations by 122 respondents to on-line consultation (multiple membership is possible)



**Figure 2:** Agri-environment scheme(s) in which respondents (n=122) currently participate



These responses suggest that the strategy to target respondents with more knowledge about environmental policy and the practical details of environmental schemes than the typical farmer was successful. In comparison to the underlying population of UK farmers, respondent's views and opinions are therefore more likely to,

- place different importance on the trade-off between commercial farming and conservation activities;
- be better disposed towards innovative agri-environment schemes and options;
- have a better understanding of the potential positive environmental spill-over benefits from collaborative, joined up environmental management,
- be more prepared to accept higher levels and new types of risks that may be involved in collaboration; and
- have better access to advisory networks than non-members of national conservation NGOs.

For these reasons, it is likely that the respondents will be more favourably disposed towards cross-farm agri-environment scheme than the underlying population of farmers. Nevertheless, the targeting is justified when the intention is to garner views on practical designs, possible unintended consequences and details of the implementation of innovative policy initiatives (Cabinet Office 2012). This approach also lends itself to on-line data collection because there is no need for the responders to be a random or a stratified random sample. But as a consequence the views expressed cannot be expected to summarise the full range of views of farmers towards collaborative cross-farm environmental management.

#### 4 Findings from the on-line consultation exercise

Before answering the question, “would you cooperate with one or more of your neighbouring farmers in a joint agri-environment scheme? (Assume you are compensated for loss profits and other costs incurred)” respondents were asked to read the following statement,

“A principal reason for this survey is to ask for your views towards cooperating with neighbours to manage environmental features at a landscape scale. The area covered by the “landscape scale” and the type of coordination required remain unclear, but it might be expected to vary with the existing environmental characteristics of the landscape - so this [i.e. the first question] can only be a general question related to the principle of collaborative environmental management.”

Ninety-one (75%) responded they would, in principle, participate in a joint agri-environment schemes, 12 (10%) would not, and 19 (16%) were “uncertain” (Table 1). Despite the wealth of experience and practical knowledge of environmental conservation among the respondents, the majority (62%) had never previously considered the issues raised by and cross-holding agri-environment management schemes.

**Table 1:** Initial response to whether respondent would participate in principle in a collaborative agri-environment scheme\*

<b>Intention to cooperate with one or more neighbour</b>	<b>Responses (%)</b>
I think I would cooperate	91 (74%)
Unsure – maybe	19 (16%)
I don't think I would cooperate	12 (10%)
<b>Total responses</b>	<b>122</b>

\*In considering their response, respondents were asked to assume the financial payment would cover their “costs and lost profits”.

*This was a closed question, the responses indicate the options presented to respondents.*

Table 2 shows respondents’ justification to their answer. Forty-three (35%) of responses to the open question “what was your first reaction to the previous question?” were coded as ‘collaboration is a sensible approach to environmental management’, eighteen (14%) were coded as ‘generally unsure’, many of these referred to the importance of scheme detail, without detailing what particular aspects of the scheme would be critical to their participation decision. However, twenty-nine (22%) perceived collaboration would run into problems with their neighbours. Sixteen respondents cited problems other than those coded above, the commonest of which was related to additional

bureaucracy (3). Fifteen (12%) stated they were currently involved in some form of collaborative agri-environment activity.

**Table 2:** Reasons given by respondents to explain their initial response reported in Table 1 (n=121)

	Responses (%)
Appears to be a sensible idea	43 (33)
Generally unsure ( <i>to many in this category "specific scheme details" - i.e. what is required of my farm was an important consideration</i> )	18 (14)
Some problem with their neighbour(s) mean cooperation unlikely	29 (22)
Expressed concerns other than those related to the attitudes of neighbour(s)†	17 (12)
Currently considered I do this already	14 (12)
Instant reaction not possible (I have thought about this for a long time already)	7 (5)
No response	1 (1)
<b>Total reasons given</b>	129*

\*Eight respondents gave two reasons.

† Most of the respondents expressing concerns, but not all, would not participate in collaborative schemes.

*This was an open question, with no limit to the length of the response; responses were coded by the senior author.*

Details of the schemes the fifteen respondents who were currently involved in some form of joint environmental management are given in Table 3. The collaborative actions ranged from ‘cooperation for public access’ (joining footpaths across different farmer’s farmland for example) to participation in Higher Level Stewardship of Environmental Stewardship Scheme agreements (which can be justified as having a collaborative element because Higher Level Stewardship agreements are concentrated in specified target areas and the need for applications to prioritise the same environmental targets means many submissions have to include the same environmental management options). One respondent was involved in either the Higher Level Stewardship’s HR8 option or the Upland Entry Level Stewardship’s UX1 option, the response did not make clear which. Other farmers were working with the Forestry Commission, the Cheshire Wildlife Trust, or in the Ant Valley water catchment area, Norfolk, England. One respondent was involved in an application for Nature Improvement Area status which was initiated by a group of farmers.

**Table 3:** Nature of the current collaborative conservation of 14 respondents

- I am already involved through the Cheshire Wildlife Trust's Gowy Connect project.
- I already cooperate with 2 other neighbours with Higher Level Stewardship public access
- I am happy to cooperate and we are already doing so in this part of the Cotswolds as we are part of the Higher Level Stewardship farmland bird initiative.
- In the Ant catchment valley (North Walsham, Norfolk, England) we've been doing it for 4 years. Natural England Multiple Objectives project (NEMO) was the reason for going into Higher Level Stewardship
- We have already agreed to create some permanent pasture for a neighbour to graze and support our HLS options with his cattle
- Scheme already in place for co-operation on common land
- I already cooperate with our local District Council and The Forestry Commission (as neighbours) in the recreation of lowland heath
- Informally I already do - we are about to make scrapes for wading birds to complement existing scrapes on a neighbour's farm
- We already do, so happy to continue
- I have been cooperating for 12 years
- I already do co-operate with 3 neighbours
- Novel idea but not daft! Especially as my nearest neighbour is my landlord. Am already doing schemes to mirror his but to collaborate to far might alter the landlord /tenant relationship.
- I am already involved and leading an Nature Improvement Area\* application with 30+ farmers

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*\*. Nature Improvement Areas were introduced in England in 2012 as a key Natural White Paper commitment. Their primary aim is to develop ecological networks within defined areas. The NIA referred to here is the only one that was primarily led by farmers. These responses were to an open question welcoming respondents to comment on the "idea of working jointly with your neighbour to manage your farm's natural resources at the landscape level".*

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### ***Perceived problems and benefits of collaborative conservation***

All respondents were asked what particular problems, if any, they would envisage from working together with their neighbours to jointly manage their farms' natural environment. Responses to this open question were coded and are presented in Table 4. Fourteen respondents (13%) believed that any problems that did emerge could be addressed satisfactorily. Only two of these respondents provided detail to support their point of view. They stated that, all their neighbouring farms were managed in a similar way to each other, and that neighbours already cooperate in a range of ways. The problems raised by the remaining respondents are discussed under two thematic headings: a concern with the views of their neighbouring farmers and the detailed regulations of any proposed collaborative agri-environment scheme.

#### ***Problems with neighbouring farmers***

Forty percent of responses referred to expected problems working jointly with their neighbour(s). There were four types of problems. Those related to the diversity of farm systems (17%), a belief that other farmers would not support collaborative schemes (14%), the need for farmers to be like-minded (5%), and general difficulty getting sufficient agreement even with like-minded farmers (4%). The problems with neighbours are summarised by the following comments;

“I wouldn't have my neighbour on my farm at any price”.

“The not interested neighbour still wants every acre to grow crops and has removed all his hedges.”

“Most of my neighbours do not like collaboration or being told what to do with their land.”

When based on known views of their neighbours, statements such as these present significant barriers to the uptake of collaborative environmental management schemes and options. However, views based on neighbours' attitudes assume knowledge about responses to what is an innovative environmental management option, and, as this consultation indicates, it is an innovation the majority of farmers have most likely never considered themselves.

**Table 4:** Responses to question asking participants to identify ‘particular problems they would envisage in working together with their neighbour to jointly manage their farm’s natural environment’ (n=110)

<b>Particular problems arising from collaborative environmental management.</b>	<b>Responses (%)</b>
<i>Problems related to neighbouring farmers</i>	
Neighbouring farms all managed differently or have different systems	19 (18%)
Other farmers wouldn't be keen on the idea	15 (14%)
Requires all farmers involved to be like-minded	5 (5%)
Getting everyone to agree in the first place	4 (4%)
<i>Problems related to the details of any collaborative agri-environment scheme.</i>	
Legal issues (incl. monitor contributions)	18 (17%)
Economic issues (reduce farm productivity)	12 (11%)
Need to wait and see details of any proposals	8 (7%)
Scheme administration and bureaucracy or paperwork	4 (4%)
Would need to involve landlords on tenanted farms	3 (3%)
<i>Respondents who could foresee no problems.</i>	
No problems whatsoever	14 (13%)
All other responses (including: timing and coordination issues, strong dislike of neighbour, and have sufficiently large farm that can management land on a landscape scale without the need to involve neighbours)	5 (5%)
<b>Total number of problems raised.</b>	<b>107</b>

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Respondents could identify more than one problem. Twelve respondents did not answer this question.

*This was an open question. There was no limit to the length of the response; responses were coded by the senior author.*

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### *Detail of the proposed collaborative agri-environment scheme*

Forty-one percent of respondents thought the principal problem with working together to jointly manage farms' natural environment would depend on the details of any proposed scheme. Eighteen respondents (16%) were particularly concerned about the legal issues, including monitoring individual farmers' contribution to jointly submitted applications. Some of these respondents were concerned they might be penalised for the inactions of others, or that collaborators would renege on their agreement. For example;

“I can only see this working as a voluntary scheme. I can't think of many farmers willing to rely on neighbours under an incentivised scheme such as ELS [Entry Level Scheme] for fear of being penalised for their neighbours' non-compliance.”

“[Cooperating farmers] could pull out on a whim, thus increasing the risks for those remaining”.

The issue of an appropriate level of payment was also raised by 12 respondents (11%) even though the question clearly stated payments would cover all costs associated with joining a joint scheme. The financial compensation offered must comply with the World Trade Organisation's “green box” rules (Rodgers 2004). Therefore, compensatory payments are restricted to income foregone plus transaction costs plus any direct costs incurred. Although current payments already allow reimbursement of transaction costs related to organising collaborative agreements, such as legal and advisory fees, the recent Common Agricultural Policy reforms increased the transaction cost related element of the payments for applications received from farmer groups by 10%; from 20% to 30% of the value of the agri-environment scheme payment (European Union 2013 Article 28, Clause 6, Page L347/512). However, the reforms did not alter any of the other rules for calculating the value of agri-environment payments, which, consequently, remain unable to take into account any positive contribution collaborative schemes make to the effectiveness of agri-environment schemes due to by landscape scale, coordinated actions (Wynne-Jones 2013).

### *Main benefits from working together to manage the natural environment*

Respondents were asked what they believed were the main benefits of working together to jointly manage the farms' natural environment. Sixty-seven (63%) of respondents believed collaborative options would benefit wildlife and biodiversity (Table 5). A typical response was;

“Environmental outcomes would surely be far better. Greater opportunity for a properly designed environmental scheme rather than little bits and pieces of habitat creation which aren't necessarily co-ordinated to benefit any relevant species other than the greater-spotted bureaucratic box-ticker which previous schemes have been designed to suit.”

**Table 5:** The principal benefits to respondents from working with their neighbours in the joint management of their farms' natural environment” (n=106)

<b>Principle benefits of joint management.</b>	<b>Responses (%)</b>
Benefits to wildlife and biodiversity	67 (63)
No benefits	13 (12)
Financial benefits	11 (10)
Do not know what benefits there may be	2 (2)
Other	13 (12)
Total responses to this question.	106

*This was an open question, with no limit to the length of the answer; responses were coded by the senior author.*

Eleven respondents (10%) believed there would be financial benefits from working together. One commented,

“We were able to get significant grant aid for a large project that individually would not have been possible” [no additional details were given].

However, thirteen respondents (12%) believed working together would not deliver any environmental benefits. Some respondents took this view because they believed there were already sufficient environmental features in their area, others believed high participation rates in agri-environmental schemes already effectively deliver a collaborative approach. One respondent believed collaborative options would add no further benefit because;

“I have already put in place most of the potential collective options listed [i.e. those collective options specifically discussed in the consultation]”.

***Support for types of collaborative agri-environment options***

Respondents were asked to indicate which of a list of environmental management options they would agree to implement on their farm, given they would receive acceptable financial compensation for doing so. Not all respondents answered each option, possibly because some were not applicable to their circumstances. All of the options suggested, which are presented in Table 6, would be more effective if they were operated on a scale larger than the typical farm. For example, a larger area of land could be subject to a raised water table if more than a single farm agreed to participate in such an option.

The options are classified as either “active” or “passive” environmental management. “Active” environmental management options require some degree of direct interaction between farmers, whereas “passive” options do not (though passive options would usually also be more effective if adopted following discussions between neighbours). For example, farmers who wished to participate in the active option “co-ordinate the timing of hay cutting with neighbours” must know their neighbours’ intentions. Whereas an individual farmer can effectively deliver the option “create a continuous network of hedges/ditches” passively, that is, without discussing their intention to do so with their neighbours, for example, by planning a hedge adjacent to a neighbours’ hedge, (though alignment of hedgerows could also occur by active collaboration between neighbours).

Table 6 shows respondents were more supportive of the less demanding passive options. “Coordinate the location of hedges/ditches so they joined up with neighbours hedges/ditches” was supported by 91% of respondents, a willingness to “extend environmental management into areas close to existing high nature value sites, such as Sites of Special Scientific Interest by 83%, and the creation of “a network of water features, e.g. ponds” on their land by 71%. The strongest support for an “active” option was “co-ordinate the timing of hay cutting with neighbours”, by 72% of farmers. Rather unexpectedly, given the literature on participation in agri-environment schemes suggests farmers prefer flexibility in selecting, managing and siting options (Siebert et al. 2006), seventy-four respondents (61%) said they would be prepared to “locate trees in designated sites that best suit the landscape, (i.e. perhaps not always where you [the farmer] would prefer them)”. Among those options to receive the least support was “Create areas of wetland – allowing water table to rise” (39%) and “Allow land to revert to semi-natural habitat” (49%). Both options have longer term implications for land use, which would tend to make them less popular. However, this also applies to the option “increasing the area of woodland”, which was supported by 67% of respondents.

The willingness of a majority of respondents to plant trees and create ponds, hedges and ditches, where they would be most effective given the configuration of environmental elements across the landscape is an important and encouraging finding because the placement of environmental

management options (whether actively coordinated by an external agency or passively on the initiative of an individual farmer) is essential to develop an integrated and enhanced ecological network. However, landscape scale improvements, such as these, might best be integrated into the ecological network through part- rather than whole-farm schemes, especially when farmers are reluctant to enter large areas of land into an agri-environment scheme.

**Table 6:** Respondent’s views towards “active” and “passive” landscape scale environmental options, each of which would benefit from some degree of landscape scale coordination

	Responses		
	Yes	No	(%)*
<b>“Passive” landscape scale options</b>			
Create continuous networks of hedges/ditches (joined up with your neighbour's hedges/ditches)	107	10	91%
Extend environmental management into areas close to existing high nature value sites (such Site of Special Scientific Interests)	73	15	83%
Create a network of water features e.g. ponds	79	33	71%
Locate trees in designated sites that best suit the landscape (i.e. perhaps not always where you would prefer them)	74	36	67%
Expand woodland you may have on your land	58	36	62%
Allow land to revert to semi-natural habitat	54	56	49%
<b>“Active” landscape scale options</b>			
Co-ordinate the timing of hay cutting with neighbours	63	24	72%
Create areas of wetland - allowing the water table to rise	40	62	39%
*% of yes to total responses received. Not all respondents answered each question.			

### ***Pest and invasive species control***

A key environmental benefit from creating a connected landscape is the improved mobility of species across the landscape (Natural England 2015a). However, this increase in landscape permeability is also likely to benefit some species which might have an undesirable impact on the environment, such as non-native invasive species, and those which might damage farm businesses, such as crop and livestock pests and diseases, and vermin.

Before responding with either “yes” or “no” to the question, “would you be willing to work with your neighbour in joint agri-environment scheme agreements if in doing so some of the target species/pest species you supported/enhanced included” [followed by a listed of six selected species: foxes, badgers, rabbits, bat, deer and Turtle Doves], consultees were asked to read the statement,

“In addition to helping many rare target species, it may be that landscape scale management also helps species that many farmers might consider to be pests”.

Seventy-three percent indicated they would not support collaborative environmental management if it benefited fox populations; 74% would be unsupportive if the changes benefited badger populations, 89% unsupportive if the changes benefited rabbit populations; 58% unsupportive if deer populations were supported. However, 79% would support collaboration if it helped Turtle Dove populations and 88% if bat populations were supported.

The immediately following question asked respondents a yes/no question, “would an option for pest management within a collaborative scheme satisfy any fears you may have over its impact on pest populations?” Seventy-four percent said it would, giving clear support to including pest management options within a collaborative scheme. Whilst pest control may be a controversial issue, the majority of respondents would not support collaborative schemes if they had adverse, albeit unintended, consequence of supporting pest species. However, the inclusion of a pest management option largely addressed this issue, and it may deliver additional benefits, given that uncoordinated attempts to control the movement of undesirable species can be ineffective, and even counterproductive (Coulson et al. 2004).

## **5 Discussion**

The discussion outlines the design of cross-holding environmental management provided under Countryside Stewardship’s Mid Tier. It then compares its key features to the recommendations in the literature, and to the responses received in the consultation, to identify the degree to which farmers’ perceived barriers have been addressed. Drawing on the research findings it then suggests design changes which would be expected to reduce barriers to joint applications. Respondents to the consultation are a self-selected sample of 122 geographically spread UK farmers, with extensive experience of agri-environment schemes. While this should provide considerable insights into scheme design, it means the findings need to be interpreted with care; their views are unlikely to be representative of the underlying UK farming population for the reasons identified in Section 3.

### ***The design of Mid Tier***

The *Countryside Stewardship Manual* (Natural England 2015b), which was published on 22<sup>nd</sup> June 2015, built upon and extended the previous documentation; *Introducing Countryside Stewardship* (Defra 2014) and *Evidence for New Environmental Land Management Scheme (NELMS) Design* (Natural England 2013). It confirmed Countryside Stewardship would remain entirely voluntary and structured around three main elements: Higher Tier (similar to Higher Level Stewardship in

Environmental Stewardship Scheme); Mid Tier (the replacement for Entry Level Stewardship); and Capital Grants, which offers a maximum of £5,000 per holding for improvements to “hedgerows and boundaries” and up to £10,000 for “water quality grants”.<sup>3</sup> Although the agri-environment budget for England between 2015 and 2020 is in excess of £2 billion, funding for existing agreements under the Environmental Stewardship Scheme will continue until the end of their agreed contracts. Consequently, the programme budget for Countryside Stewardship from 2015 to 2020 is £925m, of which £380m is earmarked for the Higher Tier, £410m for Mid Tier and £85m for Capital Grants (Dixon 2015).

In Mid Tier, as in the Environmental Stewardship Scheme, farmers are presented with a menu of environmental management options, each scored by points. And like Entry Level Scheme Mid Tier is a whole farm scheme, which means the points scored will be divided by the entire farm size. Applications to Mid Tier and High Tier will be expected to dedicate a minimum of 3% and 5% of the farm area to relevant management options respectively. However, it has three innovations. Unlike Entry Level Stewardship, Mid Tier is discretionary. There will no longer be automatic funding of applications which average above 30 points/ha. Submissions will be “scored” against each other, and to be considered a Mid Tier application must total more than a “threshold” number of points/ha averaged across the farm. A second innovation allows Mid Tier applications from groups of farmers. These farmer group, or joint, applications must include at least 4 “adjoining (or mainly adjoining) holdings” and cover more than 2,000 ha, unless it “fits a smaller, obvious environmental boundary”.<sup>4</sup> Thirdly, a dedicated Facilitation Fund has been made available to finance a service to advise and support farmer group applications. Individuals and organisations who can “help farmers, foresters and others to work together to deliver Countryside Stewardship priorities on a large scale across landscapes” (Defra 2014) can apply to this £1.2m fund. When scoring applications to Mid Tier, priority will be given to those that include options designed to support local “environmental priorities”, and those received from farmer groups (Defra 2014).

Countryside Stewardship also has Capital Grants funds available to improve “hedgerows and boundaries”, to improve water quality, and to develop “implementation plans, feasibility studies, woodland creation (establishment), woodland improvement and tree health” (Natural England 2015b: p 3). As with Mid Tier, all applications for capital grants are scored and ranked according to their score. Capital Grants can be awarded through either Higher Tier or Mid Tier agreements, but also as standalone, part-farm agreements. However, only eleven of Countryside Stewardship’s 114

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<sup>3</sup> The scheme also provides non-competitive support for organic conversion and management, for which all eligible applications will be funded.

<sup>4</sup> This is the size of the holdings, not the size of the area(s) of management activity.

Capital Items are available for selection in standalone “hedgerow and boundaries” Capital Grants. Water quality improvement grants are restricted to farms in Catchment Sensitive Farming priority catchments, and none of the woodland creation grants are eligible for standalone agreements. They are all reserved for Higher Tier agreements (Natural England 2015b: p 4-6). As a part-farm scheme, standalone agreements are attractive to farmers who wish to enter less than 3% of their farmland into an environmental scheme, but the lack of options available under standalone agreements will reduce their uptake.

### ***Lessons from the literature review and consultation about the design of Mid Tier***

Many studies reported that a majority of farmers would be willing to engage with hypothetical collaborative schemes than were willing to engage in actual schemes. The consultation also found that the majority of respondents would consider collaborative, cross farm-boundary environmental management activities. However, to convert intentions into actions the design of Mid Tier needs to take farmers’ views into account. The consultation also confirms findings from the literature that farmers want and need better support, advice and help, for example, to draft joint applications. Mid Tier makes financial support available through its Facilitation Fund. This supports farmer group applications by paying for pre-agreement meeting costs, and for access to environmental knowledge and expertise to help select appropriate environmental management options and to complete paperwork.

The Fund therefore directly addresses two of the three barriers identified in the literature, namely, farmers’ preference to work independently and the handicap faced in areas which lack support networks. A facilitator can receive up to £12,000/annum for an agreement covering four farmers, with payments increasing as the number of holdings increase. Importantly, the payment covers on-going management costs. However, awards will be subject to a competitive process, so environmentally valuable applications may be rejected. It is also assumed sufficient suitably qualified advisors will be available to satisfy the demand for this service.

Mid Tier has also addressed the third barrier to collaborative environmental management identified in the literature, namely farmers’ concerns about the legal status of their farmer-farmer contract, by requiring each farmer in a farmer group to sign an individual contract with Natural England. It is not yet known whether farmers will also have to agree a written Internal Agreement, as is currently required for Higher Level Stewardship applications which contain option HR8 (Short and Waldon 2013). The literature review also suggests that joint applications may be constrained by the discretionary element of Higher Level Stewardship. Mid Tier is also a competitive scheme, and this

may therefore also undermine trust between farmers considering whether to submit an individual or a joint application.

The consultation revealed that 11% of farmers' were concerned about the value of financial compensation offered for joint applications, despite being asked to assume they were fully compensated for lost profit and for other direct costs incurred. Current payment rules constrain what financial payments can be offered through agri-environment schemes, and currently compensation payments are not allowed to reflect a farmer's individual or their collective contribution to the delivery of environmental goods (Rollett et al. 2008). Mid Tier incentivises joint action by prioritising group application when scoring application. But if joint applications are shown to improve scheme effectiveness there would be a strong argument for developing additional incentives. For example, participants in collaborative schemes could be allowed to reduce the area of farmland entered into the farm's ecological focus zone (a requirement that is linked to the farmer's entitlement to the full Basic Payment Scheme under Pillar 1's "greening" requirement).<sup>5</sup> Such a derogation is already available to certified organic farms, on the basis that they already provide more environmental benefits than "conventional" farms. Incentives such as these might prove particularly popular given farmers' general unwillingness to enter their most productive land into agri-environment schemes (Siebert et al. 2006). The financial compensation rules applied to agri-environment schemes do not apply to payments made by the beneficiaries of the environmental management, which is the principle underpinning Payments for Ecosystem Services (PES) (Reed et al. 2014). Because there are no financial restrictions, PES beneficiaries are able to offer higher payments, for example, they may offer a "joint application payment", such as that recommended by Parrot and Burningham (2008), or an "amalgamation bonus" as discussed by Parkhurst and Shogren (2007). Many of the existing PES involve water related issues, which to be successful will typically require the coordinated action across several farms (GEF 2010).

Farmers in existing Environmental Stewardship Scheme agreements are not able to apply to Countryside Stewardship Mid Tier until their existing contract expires, although farmers are able to apply for an "early transfer" into the Higher Tier (Natural England 2015b: p 22). Upland farmers were allowed to switch from their existing Entry Level Stewardship to the newly introduced Upland Entry Level Stewardship as soon as it opened (in 2010). Because farmers could apply to Environmental Stewardship Scheme at any time between 2005 and 2014, it is unlikely that the existing contracts of at least 4 neighbouring farmers, of suitably size, will expire at the same time. Therefore, the precedence set by the Upland Entry Stewardship should be extended to permit farmer

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<sup>5</sup> Thirty percent of the Basic Payment Scheme payment to farmers in England is conditional on farmers complying with the "greening" measures.

groups to simultaneously terminate their current Environmental Stewardship Scheme as soon as their joint application to Mid Tier is accepted.

### *Findings from the consultation: further considerations*

The design of Mid Tier has therefore included some of the key recommendations presented in the UK literature. However, this literature is small and limited to the views of neighbouring farmers, who are therefore likely to face similar environmental and farming problems. The findings from the consultation expands the evidence by reporting the views of a large number of environmentally informed, farmers, whose geographical separation means they are subjected to a wider range of diverse environmental and farming circumstances. The issues raised by the consultation findings are used to discuss how changes to the design of Mid Tier could increase farmer group applications.

### *Framing cross-holding collaborative issues*

The consultation findings suggest that respondent's prior awareness of the potential improvement in environmental effectiveness delivered by cross-holding collaborative management options was an important determinant of their initial but also their sustained support for collaborative approaches – fewer of these respondents weakened their support over the course of completing the consultation. Recent research has confirmed that perceptions of outcomes of environmental management are important in guiding behaviour (Mills et al. 2013a, Mills et al. 2013b). However, despite the high proportion of respondents with environmental expertise and experience, the majority (62%) had not previously considered issue related to collaborative environmental management. It is unlikely less environmentally aware and committed farmers would be any better informed. Clearly many important policy reviews, such as Lawton *et al.* (2010), and academic studies which report benefits from collaborative action at the landscape scale (Dutton et al. 2008, Ewald et al. 2010, Gabriel et al. 2010, MacFarlane 1998, Merckx et al. 2009, Parrott and Burningham 2008, Southern et al. 2011) have not filtered through to working farmers. Social science research has confirmed that the way stakeholders frame issues and conflicts can help explain the success or failure of collaborative actions (Gray 2004). This suggests an effective information campaign explaining the scientific evidence of the benefits of cross-holding collaborative management would increase the number of applications from farmer groups.

### *Respondents' preference for "passive" rather than "active" options*

Table 6 classified environmental management options as “active” or “passive”. Table 7 develops this classification. It shows that both active and passive environmental options can be coordinated by farmers or by a mutually acceptable third party (Uetake 2014). There is evidence that Natural England Project Officers coordinated some Higher Level applications but none to suggest they also did this for Entry Level Stewardship applications (Mountford et al. 2013). Natural England Project Officers were able to do this because they had to assess all Higher Level Stewardship applications, so they developed a detailed knowledge of the environmental features in the landscape in these targeted areas. Franks and Emery (2013) have shown how the coordinating role can also be delivered by specialist Conservation Grazing Trusts. The Facilitation Fund offers annual payments, so financial support is available to finance on-going management of the joint agreement by a conservation specialist “third party”. Under current Mid Tier rules, each farmer is responsible to Natural England for their agri-environment agreement. This may restrict the involvement of specialist third parties, and therefore reduce the environmental benefit that can accrue from specialist management of environmental options (Franks and Emery 2013).

**Table 7:** Classification of types of cross-farm collaboration with types of environmental options

	<b>Type of selection and management of environmental options</b>	
<b>Contractual arrangement</b>	<b>‘Active’ collaboration</b>	<b>‘Passive’ collaboration</b>
Contracts between Individual farmers	Legally binding farmer-farmer agreements involving selection and coordination of the placement of agreed environmental management options. <b>For example:</b> co-ordination of farming activities, e.g. planning crop rotation or coordinated crop harvesting (as occurs under some management options available to farmers in Dutch Environmental Co-operatives).	Legally binding farmer-farmer agreements in which individual farmers select the environmental management options suitable for their land <u>independently</u> of neighbour’s choices. <b>For example:</b> Option HR8, in Higher Level Stewardship of the Environmental Stewardship Scheme on upland moorland allowed farmers to submit a single, joint agreements if it is supported by an “internal agreement” which specifies each farmer’s individual responsibilities and liabilities, and payments.
Contracts between individual farmers and third parties (e.g. specialist environmental management organisations)	Landscape scale coordination arranged and managed by specialist organisations who become legally responsible for the management of all options rather than work directly with other farmers, for example, a specialist Land/Grazing Trust. The Trusts coordinate environmental management of locally-fragmented sites as required. <b>For example:</b> Specialist Trusts manage lowland areas owned by different farmers in a single Higher Level Stewardship (HLS) HR8 option.	Contracts agreed between individual farmers in specific target areas which share (i) identical target statements, (ii) the same limited choice of environmental management options and (iii) where all applications are vetted by the same Natural England Project Officer. This will result in farmers selecting similar environmental management options, and allows the Project Officer to require the selected option to be placed where it can deliver landscape scale impacts. This is therefore, achieved “by default” rather than by “farmers design”.

		<p><b>For example:</b> Environmental Stewardship Scheme's Higher Level Stewardship specifies the same targets within restricted high nature value areas, and all applications are vetted by the same Natural England Project Officer. The Officer can and does recommend changes to a submitted plan, and some of these recommended changes have been to better link the farm's plan to environmental features in the wider landscape (Mountford <i>et al.</i> 2013).</p>
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Some respondents pointed out that a collaborative agreement may not suit all geographical locations, for example, an area may already have a coherent and resilient ecological network (Sutherland et al. 2012). Therefore, targeting is as important for group as it is for individual farm-by-farm schemes, with priority needed to be given to areas where collaborative action would be expected to make the most impact (see, for example, Donald and Evans 2006, McKenzie et al. 2013). However, because it is a whole-farm tier, Mid Tier is not the most efficient instrument for integrating small, high environmentally valuable sites into an ecological network, or for creating environmental feature in strategically important locations. As a part-farm scheme, standalone Capital Grant agreements have the potential to address these shortcomings. However, these agreements are restricted to a choice of just eleven of the Countryside Stewardship's 114 Capital Items: Capital Grants cannot be used in standalone agreements, for example, to create earth banks (option number BN3), or to create ditches, dykes or rhines (WN4), or for planting new hedges (BN11). Nor can they be used to extend a buffer zone around a Site of Special Scientific Interest. The use of the water and woodland Capital Grants is also highly constrained - to catchment sensitive farming priority catchments and Higher Tier agreements. If these constraints were relaxed, the part-farm Capital Grant schemes could make a more valuable contribution to the integration of environmentally valuable habitats with existing features at the landscape scale. However, to capture such benefits, advisors would need detailed maps showing the location of the environmental features across the landscape.

#### *Achieving "critical mass"*

Removing the constraints on the use of Capital Grants would also help to increase participation rates and thus to deliver the "critical mass" necessary to overcome the "threshold effect". The threshold effect refers to the minimum number of participants needed to supply a sufficient share of the area of interest to trigger perceptible improvements to the state of the natural environment (Dupraz et al. 2009). The number of co-operators which comprise this "sufficient" number will depend on the characteristics of each site, as it is likely to vary with farm and field size and their spatial distributions; the proportion and spatial distribution of high nature value features on collaborators' and non-collaborators' land; the location and condition of existing environmental features; and the number and type of collaborative options taken-up.

It is also likely that the critical mass needed to deliver environmental benefits will be larger for agreements with more "active" than "passive" collaborative options. For example, the creation of a flood plain requires the agreement of all farmers in the flood plain. The need for full participation

challenges the voluntary basis of agri-environment schemes. The recently introduced UX1 option in the voluntary Upland Entry Stewardship is a mandatory option for participating farmers who farm moorland with one or more farmers. A precedence has therefore been set for the use of mandatory options within voluntary participatory agri-environment schemes, indicating that the use of compulsory options in agri-environment schemes under specific circumstances could be extended.

### ***Contribution of cross-holding collaboration to Sustainable Intensification***

Sustainable Intensification is a concept which refers to the increase in agricultural production whilst at the same time safeguarding or enhancing non-fibre and food ecosystem services (Elliott et al. 2013, Foresight 2010, Franks 2014). If it is shown that collaborative, cross-holding environmental management does increase the effectiveness of agri-environment schemes, then joint applications provide a practical approach to delivering Sustainable Intensification: it could allow either a smaller area of land to deliver the same environmental ecosystem services, thus freeing land for agricultural production, or allow the same area of land to deliver more environmental ecosystem services, or deliver a balanced increase in both agricultural production and environmental ecosystem services.

But improved scheme effectiveness has to be demonstrated (Natural England 2015c), and the monitoring of scheme effectiveness continues to be criticised (European Court of Auditors 2011). A review of the biological effectiveness of agri-environment schemes used in five EU countries by Kleijn and Sutherland (2003) found that the research design used “was inadequate to assess reliably the effectiveness of the schemes” (p 947), and concluded that “the lack of robust evaluation studies does not allow a general judgement of the effectiveness of European agri-environment schemes”. They recommended that ecological evaluation becomes an integral part of the scheme. But analysis of biological effectiveness is complicated by difficulty identifying the counterfactual position (Hanley et al. 1999, Hodge 2000), the lack of specific measurable objectives (Mountford et al. 2013), and the need for dedicated environmental monitoring of the impacts (Finn et al. 2009). Because of these problems, the monitoring of scheme effectiveness tends to be expensive; it is a cost that would presumably need to be borne by the £925m budget. Environmental Stewardship Scheme Higher Tier Stewardship agreements did formally link farmers’ payments to the delivery of environmental improvement measured by Indicators of Success, and although the system worked imperfectly, improvements have been suggested (Mountford et al. 2013). It is not currently known what arrangements have been made for monitoring the effectiveness of Countryside Stewardship.

## **6 Conclusions**

The recently introduced Countryside Stewardship's Mid Tier incentivises farmers to submit joint applications. This study has reviewed the ways in which the design of Mid Tier addressed the barriers to joint cross-holding environmental management discussed in the UK literature. The Facilitation Fund directly addresses farmers' preference to work independently and helps to create the local networks which will allow farmers to exchange ideas and views. Mid Tier also requires farmers in joint applications to sign individual contracts with Natural England, thus addressing concerns about the legal status of farmer-farmer agreements. However, some of the concerns raised in the literature have not been addressed. Applications to Mid Tier, like those to Higher Level Stewardship, are competitively funded. Though some additional incentives have been given to joint applications in the scoring process, it is not clear if these will be sufficient to overcome the uncertainty created by the competitive process. And whilst the value of the compensatory payments was partially addressed in the 2015 reforms to the Common Agricultural Policy, by increasing the allowance for transaction costs, there remains considerable scope to increase the resource-based incentives given to farmer group applications.

However, the design of Mid Tier presents several barriers to participation. It requires neighbouring farmers' Environmental Stewardship Scheme agreements to expire at about the same time, it requires at least four farmers to submit a joint application, and it is a whole-farm agreement. Relaxing any of these constraints would increase farmer group applications and thereby, according to the available evidence, the effectiveness of Countryside Stewardship. There appears to be no reason why farmers were allowed to terminate Environmental Stewardship Scheme contracts to move into Higher Tier but are not allowed to terminate ESS contracts to enter a farmer group under Mid Tier. The part-farm Capital Grants scheme could play an important role integrating high value environmental features into existing ecological networks. If additional options were allowed under standalone agreements, these grants would be able to make a greater contribution to integrating environmental management at the landscape scale.

Support for collaborative environmental management was strongest among farmers who were aware of the potential environmental benefits of landscape scale action. Although the opportunity to inform farmers of this before the first round of Countryside Stewardship was launched was missed, such a programme, even now, might positively influence applications, as farmers are likely to more carefully assess their Countryside Stewardship options after their current Environmental Stewardship Scheme contract ends. The consultation suggests farmers have a preference for "passive" rather than "active" cross farm management options, perhaps because these activities can be delivered independently of their neighbours' activities, though farmers who are reluctant to interact collaboratively may prefer

to employ a specialist third party to do so on their behalf. This would help secure specialist management of environmentally valuable areas. The consultation also suggests farmers were concerned if landscape scale activities supported unwanted species, but these concerns could largely be offset by offering pest management and control options within agri-environment schemes.

The majority of respondents to the consultation would be prepared to relinquish some control over the selection and location of collaborative options where they believed this would benefit the landscape. This should encourage UK policy makers because releasing control of the selection and location of environmental management options is an essential requirement for creating and enhancing ecological networks. If joint applications do improve the effectiveness of agri-environment schemes, and this would need to be confirmed through monitoring and evaluation, then joint applications would be a practical mechanism for delivering Sustainable Intensification. This, in turn, would provide the justification to further increase the financial and resource-based incentives offered to farmers to increase farmer group applications, creating a positive feedback which would further enhance agri-environment scheme effectiveness.

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