The University of Reading

Centre for Agricultural Strategy

Living landscapes: hidden costs of managing the countryside

P J Jones, R B Tranter & M J Wooldridge

CAS Report 17 August 2006

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Originally established by the Nuffield Foundation in 1975, the Centre for Agricultural Strategy is a self-financing unit within the School of Agriculture, Policy and Development at The University of Reading.

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Preface and acknowledgements

This report is an amended version of the final report of a research project that investigated the time spent by farmers managing features of the countryside. That research project was financed jointly by the National Farmers' Union (NFU) and the Campaign to Protect Rural England (CPRE). Whilst the authors are most grateful for this support, the opinions here are their own and do not necessarily reflect those of the sponsors.

The original research was carried out by a team from the Centre for Agricultural Strategy (CAS) at the University of Reading. The survey was carried out on a broadly based sample of NFU members in 2005, using a questionnaire designed by the CPRE and NFU in conjunction with CAS. To maintain member confidentiality, the NFU administered the survey themselves and supplied responses, identified only by number, to CAS, together with additional anonymised data for each of the responses on farm system and structure. The research report produced by CAS formed, in part, the basis of the NFU and CPRE joint publication, 'Living landscapes: hidden costs of managing the countryside', released on 10 July 2006.

The growth in the number and importance of agri-environment schemes has led to a new focus on the role of farmers as managers of the landscape and there have been a number of audits of these schemes which have thrown into sharp relief the financial cost to the public of landscape and environment management of this kind. Among academic observers of the agriculture sector, the belief is firmly held that the landscape management contribution of agri-environment schemes is small compared to the beneficial landscape management contributed by farmers on a voluntary basis. Indeed, it has so long been accepted that farmers voluntarily contribute significantly to the beneficial management of the landscape, that very few people have ever seen the need to attempt to affirm and measure this contribution. The research reported here has gone some way to revealing what has long been suspected.

Since its inception some 30 years ago, CAS has maintained a strong interest in the role of agriculture both in its shaping of the appearance of the rural environment and how it supports and helps to maintain the robustness of the rural economy. As far as

research funding and time has permitted over the years, CAS has published a number of reports and papers that have contributed positively to the continuing popular debate on the health of the rural environment and the rural economy. CAS has in the past, reported on issues such as the current subject as well as wider issues such as sustainable agriculture, the public perception of the countryside, the impact of agricultural policy on the environment, the role that agriculture plays in supporting the rural economy and, most recently, organic farming and the demand for organically produced food.

I am therefore very pleased to see the general thrust of much of the Centre's past research continue with the publication of this timely report. I am confident this report will play its part in adding to and promoting the current debate about the place of agriculture in the national economy, not only of England, but also of the whole UK. Even more specifically, perhaps, I am confident that this report will add fuel to the debate regarding the role of agri-environment schemes in agriculture and how they can assist farmers to not only continue to produce much of the food we eat, but also to assist in producing a vibrant, aesthetically pleasing and biodiverse countryside.

Alan Swinbank
Director

Table of contents

List of tables

List of figures

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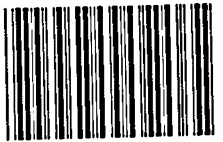


Abbreviations

BAP	Biodiversity Action Plan
CAS	Centre for Agricultural Strategy
CLA	Country Land and Business Association
CPRE	Campaign to Protect Rural England
CSS	Countryside Stewardship Scheme
Defra	Department for Environment, Food and Rural Affairs
EC	European Commission
ELI	Employers' Liability Insurance
ELS	Entry Level Scheme
ERDP	England Rural Development Programme
ESA	Environmentally Sensitive Area
ESS	Environmental Stewardship Scheme
FER	Farm Environment Record
FWAG	Farming and Wildlife Advisory Group
GAEC	Good agricultural and environmental condition
ha	Hectare
HLS	Higher Level Scheme
LFA	Less Favoured Areas
MAFF	Ministry of Agriculture, Fisheries and Food
NFU	National Farmers' Union
NIC	National Insurance Contribution
NUTS	Nomenclature of Units for Territorial Statistics
ODPM	Office of the Deputy Prime Minister
OELS	Organic Entry Level Scheme
RDS	Rural Development Service
RPA	Rural Payments Agency
SFP	Single Farm Payment
SSSI	Site of Special Scientific Interest
UK	United Kingdom

Executive summary

1. Introduction and objectives

Many believe that farmers and landowners perform few, if any, tasks that could be said to improve the visual aspect of the landscape within the farmed environment generally, without being paid to do so. Considerable numbers of farmers have entered the various agri-environment schemes made available under the England Rural Development Programme such as the Countryside Stewardship Scheme or the Environmentally Sensitive Areas Scheme. These schemes are being replaced by the Environmental Stewardship Scheme, which was launched on 3 March 2005. There are, presently, over 2.7m ha of land covered by more than 21,000 live Environmental Stewardship Scheme agreements, approximately 25% of the farmland in England. The target set by the Department for Environment, Food and Rural Affairs is for a 70% uptake of the Entry Level Scheme on farmland in the lowlands, with an even higher figure for the Less Favoured Areas to be entered into the Environmental Stewardship Scheme by the end of 2007 together with the Higher Level Scheme. This is intended to make an increasingly positive contribution toward the UK's objective of meeting its farmland birds, Site of Special Scientific Interest and Biodiversity Action Plan targets.

However, it is also equally believed that farmers and landowners often perform operations on their holdings that improve the visual aspect of the landscape and that these operations are conducted entirely without recompense under any environmental or landscape scheme. The main thrust of the research behind this report, was to establish empirically the extent to which such operations are performed and to establish, if possible, a quantum value for those operations which presently go uncompensated. The joint objectives of the research project were:

(i) to discover what type of landscape management operations were regularly carried out by farmers and how much time was committed by them to those operations; and

(ii) to quantify how much of the landscape management operations carried out were compensated by membership of environmental schemes and, by extension, how much work is carried out at the farmer's own expense.

The research was conducted during 2005-06 by a team from the Centre for Agricultural Strategy (CAS) at the University of Reading for the Campaign to Protect Rural England (CPRE) and the National Farmers' Union (NFU).

2. Research materials and method

The research was based on data collected from NFU members by way of a questionnaire sent to a randomly selected sample of 2084 NFU members throughout England, representing all farming sectors. To maintain member confidentiality, the NFU administered the survey themselves and supplied the anonymous responses to CAS. The questionnaires were sent out on 26 and 27 May 2005 by the NFU with a covering letter from the President of the NFU and the Chief Executive of the CPRE explaining the purpose of the research. The first response came on 3 June 2005.

Initially, it was intended to set a closure date for receipt of completed questionnaires of 10 June 2005 but, as the date of despatch had been delayed, the survey process was not finally closed until 26 September 2005. The final response rate was 16.8% (355 clean questionnaires). However, it should be realised that the research was conducted at a particularly difficult time for many farmers as it coincided with the implementation of the Single Farm Payment scheme.

Respondents returned their completed questionnaires to the NFU to ensure complete confidentiality concerning members' names and addresses. The NFU forwarded the completed questionnaires to CAS for analysis together with the addition and merger of basic demographic and farm structure data extracted from the NFU's own membership database.

3. Survey results

The headline results of our research indicate that over 90% of respondents carry out some measure of landscape management already whether within the terms of an agri-environment scheme, or not. In addition, our research revealed that more than 67% of respondents who were not presently in an agri-environment scheme, were intending to join the Environmental Stewardship Scheme.

Most respondents stated that they intended to join the whole farm 'broad and shallow' Entry Level Scheme options of the Environmental Stewardship Scheme with very few advising that they were considering applying to enter the Higher Level Scheme. However, since the research was conducted, Defra have loosened the stipulation that required those already in the Countryside Stewardship Scheme or the

Environmentally Sensitive Areas Scheme to complete the remaining term of their current agreements before applying for support under the Higher Level Scheme.

The research revealed that, in general, it is the larger (in area) farm businesses that are more likely to presently be in an agri-environment scheme rather than smaller sized units. Most respondents said that they had made a decision, at least in principle, of whether, or not, to apply to join the Environmental Stewardship Scheme at either the Entry Level Scheme, Higher Level Scheme or Organic Entry Level Scheme. A major surprise was that 64% of those who stated they had decided not to join ESS, had previously been in receipt of subsidy payments for supported crops before 1 January 2005.

Other important results are as follows:

(i) some 90% of farmers reported that they expend time on at least one landscape management operation of which between 71% (hedgelaying) and 100% (archaeological sites) is uncompensated;
(ii) the activities most frequently undertaken by respondents were hedgerow management, ditching, hay meadow/grassland operations and rights of way maintenance;
(iii) most landscape management operations were undertaken by family or direct farm labour;
(iv) there appeared to be no major undersupply of key landscape management skills within 10 miles or so of most farms with the likely exceptions of dry-stone wallers and specialist builders; and
(v) the average annual cost per farm business for uncompensated works was calculated to be in the region of £1250 to £2400.

4. Conclusions

Most farmers (90%) undertake some landscape management operations including a significant proportion which goes uncompensated as it is outside of existing agri-environmental schemes. Some of these operations were not among those specifically named in our research project's questionnaire.

Whilst there appears to be no major undersupply of skills available in the immediate proximity of farms for many respondents, there does appear to be something of a shortage of local craftsmen available for specialist tasks such as work on old farm buildings and dry stone walls even in those areas of England where these features are most often found.

This research project showed that the quantum of expenditure incurred annually by English farmers on landscape management that goes uncompensated appears to exceed £215m and may be as much as £411m, which is between 132% and 252% of the total agri-environment funding spent in 2004 of £163m.

1. Introduction

1.1 Background

By 2002 over 1 million ha of land had been entered into agri-environment schemes in England (Defra, 2004), representing around 11% of all agricultural land. These agri-environment schemes i.e. the Countryside Stewardship Scheme (CSS) and the Environmentally Sensitive Areas Scheme (ESA) are relatively prescriptive in terms of the eligibility of land for entry. As a consequence, large parts of England's agricultural landscape fall outside of the areas where these schemes operate and, even within such areas, entry of land into schemes is far from universal, due to both the voluntary nature of the schemes and the failure of land on applicant farms to meet scheme environmental and landscape requirements. The 22 ESA schemes operating in England are listed in Appendix 10, together with the rate of uptake of eligible area. CSS schemes operate nationally outside of ESAs, targeting particular landscape types (see Appendix 10)

Following the introduction of the Environmental Stewardship Scheme (ESS) on 3 March 2005, the amount of farmland now under agreement exceeds 2.7 million ha, some 25% of farmland in England, covered by more than 21,000 agreements (Defra, 2006).

The ESS is designed to continue the general thrust of CSS and ESA but to first widen their appeal to farmers by being, arguably, less prescriptive i.e. offering a wider range of activities that farmers can choose to undertake in order to obtain payments and, second, increase the extent of environmentally benign farming practices, by allowing the entry of land into schemes that had not been previously eligible. The new ESS offers three membership options: the Entry Level Scheme (ELS); the Organic Entry Level Scheme (OELS); and the Higher Level Scheme (HLS). A brief summary of ESS follows at Appendix 11. The HLS is considered to equate with the previous (CSS and ESA) agri-environment schemes, in limiting scheme eligibility to land that meets particular environmental or landscape conditions, together with the prescriptive nature of landscape management that must be undertaken. However, the Entry Level schemes are open to all applicants.

The Government wish this scheme to have the widest possible appeal and have set an aspirational target of 70% ELS membership on farmland in the lowlands. The target for uptake of the ELS in the Less Favoured Areas (LFA) is higher still than that for the lowlands, with both targets to be achieved by the end of 2007. Together with the HLS, the ELS is intended to make an increasingly positive contribution to the UK meeting its target of halving the decline in numbers of farmland birds, achieving improvement in the present poor condition of many Sites of Special Scientific Interest and the obligations assumed through the adoption of the national, and local, Biodiversity Action Plan (BAP) (RSPB, 2006).

Whether these targets are met will depend on a number of factors, such as the economics of agriculture, rates of payment, the disruption to farming activities consequent upon adopting prescribed landscape management operations, and the degree of farmer engagement with the goals and methods of the scheme. In turn, this last factor will be influenced by a number of drivers, most particularly the importance placed by farmers on landscape management (compared to other farming objectives), familiarity with environment and landscape management operations and possession of the skills and other resources required to carry them out.

The hope that the level of farmer engagement with the goals and practices of the ELS will be high is, in large part, based on anecdotal and limited empirical evidence that many farmers are already carrying out activities that might be described as landscape enhancing even in the absence of agri-environment scheme agreements (McInerney *et al.*, 2000). These actions are undertaken voluntarily and at farmers' own expense. Much of the aim of the present study, therefore, was to first ascertain the extent of the landscape management activities already undertaken by farmers of an altruistic nature, whether carried out directly, or via contractors and, second, to detail the nature and costs associated with these activities[1].

1.2 Objectives of the research

The research objectives were achieved by means of a postal survey of members of the National Farmers' Union (NFU), conducted by the Campaign to Protect Rural England (CPRE) and the NFU and analysed by the Centre for Agricultural Strategy of the University of Reading. The survey objectives were:

(i) to ascertain to what extent, if any, farmers currently spent time managing features of the countryside; and

(ii) to determine the extent to which the works so undertaken were compensated through membership of an agri-environment scheme e.g. CSS or ESA, or whether the farmer/landowner carried out the work for other reasons and at their own expense.

2. The survey methodology

2.1 The timing of the survey

Draft survey questionnaires were prepared in March and early April 2005, with the finally agreed form sent out to farmers on 26 and 27 May 2005. Initially, the closure date for return of questionnaires was to be 10 June 2005, but the reply period was subsequently extended to 26 September 2005 to increase the size of the terminal sample. A reminder letter was sent out roughly 4 weeks after first posting in order to increase the final response rate. The first questionnaire to be returned was received on 3 June 2005 and the final questionnaire was returned on 13 September 2005, 110 days after the initial mailing. By conducting the survey in the late spring of 2005, it was considered less likely that responses received from farmers would be adversely influenced by work they were currently undertaking (or were due to carry out), as a requirement of the cross-compliance conditions associated with receipt of the Single Farm Payment (SFP). The SFP, and associated requirements to keep agricultural land in good agricultural and environmental condition (GAEC), became effective in England, and throughout the UK, on 1 January 2005[2].

2.2 The survey sampling frame

The survey was sent to a randomly selected sample of 2084 NFU members throughout England, who represented all farming sectors. To maintain member confidentiality, the NFU administered the survey themselves and completed questionnaires, identified only with a survey number, were then forwarded to CAS at the University of Reading for electronic data entry and statistical analysis. Before forwarding to CAS, the completed questionnaires were supplemented by the addition of anonymised demographic and farm structure data taken from the NFU membership database. This data included NFU branch name, the total area of land farmed, tenure type, cropping areas and livestock numbers, but did not include any personal identifying material.

2.3 Questionnaire design

The questionnaire was designed jointly by the CPRE and NFU following piloting and in the light of advice and comments received from CAS. The questionnaire was A4

size and ran to four pages. The length of the questionnaire was considered to be important, as it was felt that too long and/or detailed a document would result in a low number of responses. However, too short a document would mean that an opportunity to collect useful data might be missed. A specimen questionnaire can be found at Appendix 1. The questionnaire was divided into four sections, as shown in Table 1.

Table 1. The structure of the final survey questionnaire used

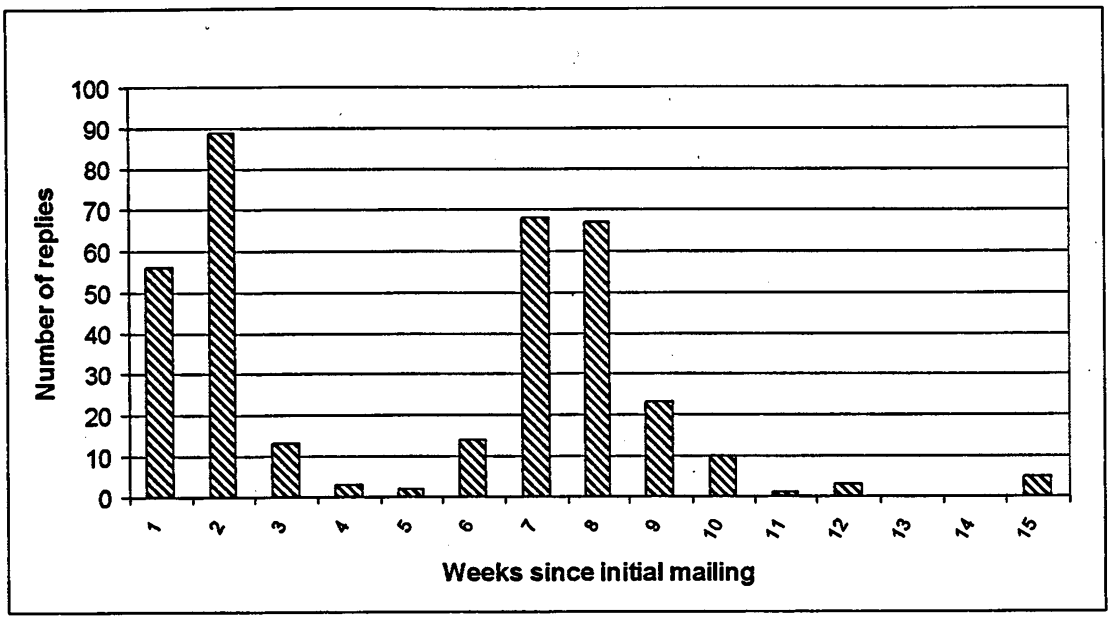
A. Personal details	Age, membership of farming and environmental organisations, current status and future intentions of ESS applications
B. Countryside features managed	Features presently managed and by whom, estimated time spent on managing features, management conducted under agri-environment schemes
C. Management skills	Closest distance to farm of a range of skilled craftsmen
D. Comments	An opportunity for respondents to offer additional information

The questionnaires were sent out with a covering letter jointly signed by the President of the NFU and the Chief Executive of the CPRE. The letter explained the purpose of the survey and that the results would be used in presentations to both European and national policy makers, as well as to the press and other stakeholder bodies, but that data provided by individual farmers would not be divulged. In addition, it was further explained that, prior to publication, it was hoped that the survey responses would be further analysed and promulgated through a series of regional discussion forums. Questionnaire respondents were given the opportunity to attend one of these forums, and an attendance request form was supplied with the questionnaire.

2.4 Response rate to the survey

No questionnaires were returned 'Spoilt' (this would normally include all responses that were, for example, defaced, returned containing no useable information, and also those advising that the respondent had retired or was deceased) as all contained at least some useable information. Responses were received over a 102 day period between the first and last return. Figure 1 shows a fairly characteristic response pattern, with the greatest numbers of responses being received in the first few weeks after initial mail-out and a secondary increase in the response rate following posting of the reminder letter at the end of week 4. The final response rate was 16.8%, or 355 clean questionnaires.

Figure 1. The timing of responses to the postal survey



2.5 Testing for non-response bias

The purpose of any survey is to draw responses from a relatively small sample of individuals and generalise from these results to a much larger population. The reasonableness of such generalisations can be damaged if, for some reason, the sample of respondents is believed be unrepresentative of the population from which they are drawn. Assuming that the sample to which questionnaires have been sent was carefully stratified to include representative numbers from all salient sub-groups within the target population, problems can still arise from the fact that a proportion of those surveyed do not respond. This problem is known as non-response bias and, as its name suggests, it means that those who choose not to respond to a survey may behave in meaningfully different ways to those who did respond.

As no survey obtains 100% response rates, all surveys are potentially subject to this potential source of bias. It is important, therefore, to test for non-response bias. It is obvious that direct comparison between survey responders and non-responders is not possible where the characteristics of non-responders are unknown. To overcome this problem, it is assumed that late responders to the survey are closer in nature to non-responders than those who responded to the survey early. Therefore, if meaningful differences are observed between early and late responders it is assumed that meaningful differences also exist between responders and non-responders. A number of such tests were carried out in this study looking for possible differences between these two groups (the first 33% of responses versus the last 33%) in terms of farm and farmer characteristics and, importantly, in terms of patterns of response to those issues most directly relevant to the central research question.

Table 2. Non-response bias test results

Comparison	Mean first tertile	Mean last tertile	Group difference (late - early)	T value	P > t
Total area farmed (ha)	178.6	124.2	-54.4	1.82	0.0703
Number of full-time workers	4.8	2.4	-2.4	0.93	0.3598
Hours spent laying hedges	38.7	44.7	6.0	-0.31	0.7542
Hours spent maintaining stone walls	28.5	34.2	5.8	-0.30	0.7638
Hours spent maintaining field margins	13.4	22.3	8.8	-0.54	0.5891
				Chi Square	P > F
Planned membership of ESS				3.77	0.5824
Farmer age groups				6.17	0.1865
Farm type category				6.10	0.5279

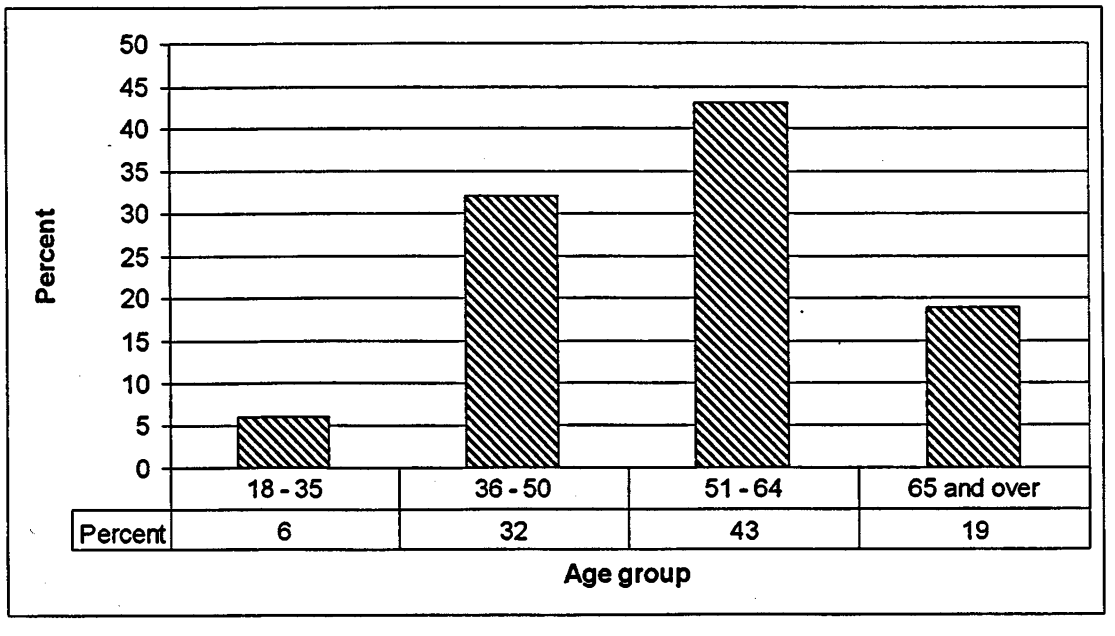
Table 2 shows a sample of the comparisons that were made and reveals that, while some group differences in characteristics and patterns of response were observed, none of the tested differences were found to be statistically significant. While all of the questions relating to current conservation activities were tested for non-response bias, only an illustrative selection of those outcomes are presented in Table 2, for sake of brevity. The remainder of the non-response bias tests carried out are shown in Appendix 14. On the basis of the above analysis, it can be concluded with some confidence that there is little danger of significant non-response bias being attached to the use of this sample of respondents.

3. Sample characteristics

3.1 Age of the land manager/farmer

It is an often quoted statistic in the popular media, and in the agricultural literature, that the average age of active farmers is increasing and that presently this age is typically in the mid- to late-50s. The EC Farm Structure Survey for 2005, for example, revealed a median age of farm decision makers as 58 for England (Defra, 2005a[3]). The present survey reveals strong support for this trend with 43% of respondents in the 51 to 64 age group (see Figure 2). Of the remaining respondents, 32% were in the 36 to 50 age bracket with a further 19% in the over 65 group. It is also commonly reported that fewer young people are entering agriculture. The present survey lends support to this view, showing, as it does, that only 6% of respondents were in the 18 to 35 group, although this may also be reflecting the tendency for younger people on farms to remain in the shadow of an older decision maker until the older person reaches retirement age (see, for example, Gasson *et al.*, 1998).

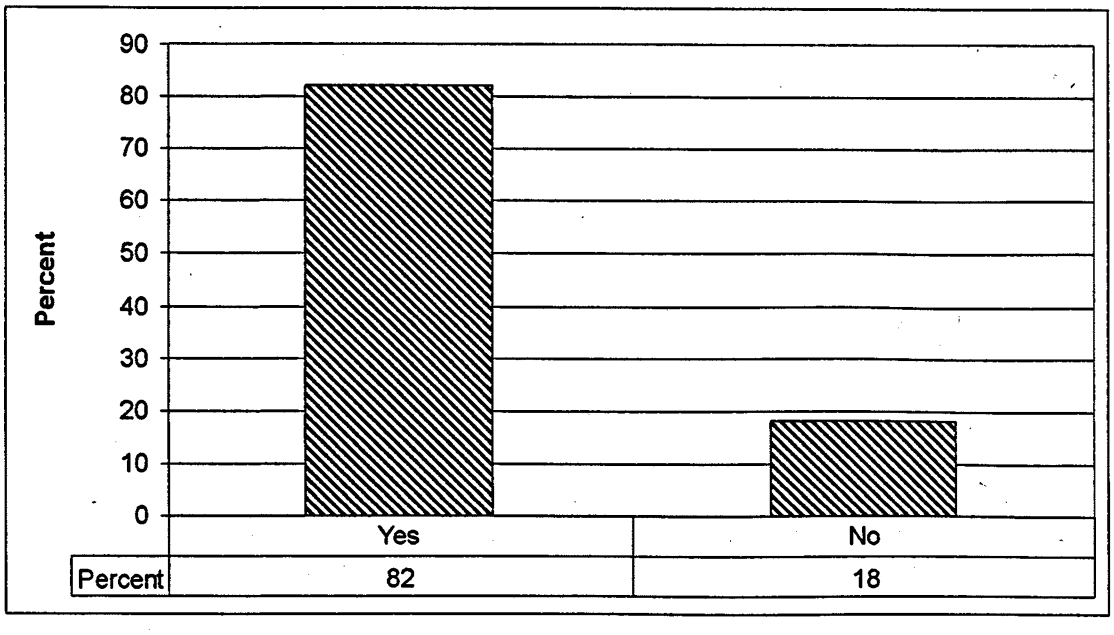
Figure 2. Age of person making the majority of farm management decisions



3.2 *Pillar I payments received*

The survey asked farmers whether they were in receipt of farming subsidy payments before 1 January 2005, that is, before commencement of operation of the SFP in England. The vast majority of respondents (82%) advised that they were, with the balance of respondents engaging in agricultural or animal husbandry activities in unsupported sectors of one type or another (see Figure 3).

Figure 3. The proportion of respondents in receipt of farming subsidy payments before 1 January 2005



3.3 *The representativeness of the survey sample*

Although the terminal sample of the survey can be taken to be fairly representative of the population from which it is drawn (in this case the NFU membership), this population overall may be more or less representative of the universe of farmers in England. Although it is not anticipated that the NFU membership will be wholly representative of the universe of farmers in England (no sampling frame is ever wholly representative), it is important to know in what ways it may under- or over-represent certain groups, so that account can be taken of this when generalizing from the survey findings to the whole population.

Investigation revealed that, as expected, there is considerable under-representation in the number of farms in the smallest size category and some over-representation in the number in the largest size category. Medium sized farms are relatively well represented. Under-representation of smaller farms is a common problem with farm surveys, as smaller farms are much more likely than larger ones to slip through the sampler's net for a number of reasons, including: that there is often no record of the existence of these farms in telephone and business directories; these businesses are

often managed on a part-time basis by new entrants to farming and are therefore less embedded in rural support infrastructure, such as trade associations, consultancy and advice services etc; and that there is greater pressure on labour resources on these very small farms and so surveys and other 'non-essentials' are often just ignored. Whatever the reason for the under-representation observed here, account will have to be taken of this fact when generalising from the data contained in this survey to the whole population.

A examination was also carried out of the representativeness of the sample in terms of sectoral coverage. To facilitate comparison with the Defra statistics, a classification of farms in the survey sample was created on the basis of predominant enterprise, to approximate to the Defra Robust Farm Type Methodology. The predominant enterprise was identified on the basis of the Standard Gross Margin contribution of each enterprise to the farm total. Standard Gross Margin estimates for each farm enterprise were derived from the *Farm Management Pocketbook* of Nix (2005). The survey sample was found to be under-represented in terms of the 'Other' farm type category and over-represented in terms of 'Cereals' farms. This effect is linked with the farm size issue discussed above, as the under-representation of farms classified as 'Other' is largely due to the absence of smaller farms which would tend to fall into this category by virtue of their irregular farm management approaches and enterprises, especially where horses and/or livery are the dominant enterprise. Conversely, cereal farms tend to be larger on average than other farm types.

These biases may potentially cause some problems when trying to raise survey results to the national level, such as is the case in Section 4.7 below, where estimates of labour costs expended on landscape management are raised to the national level. However, as will be seen in that section, steps have been taken to deal with the size bias through the use of appropriate raising factors for each farm size category. Because of the interlinking of the size and farm type dimensions, the steps taken to overcome the size bias have, to a great extent, simultaneously dealt with the bias in the distribution of farm types.

4. Results

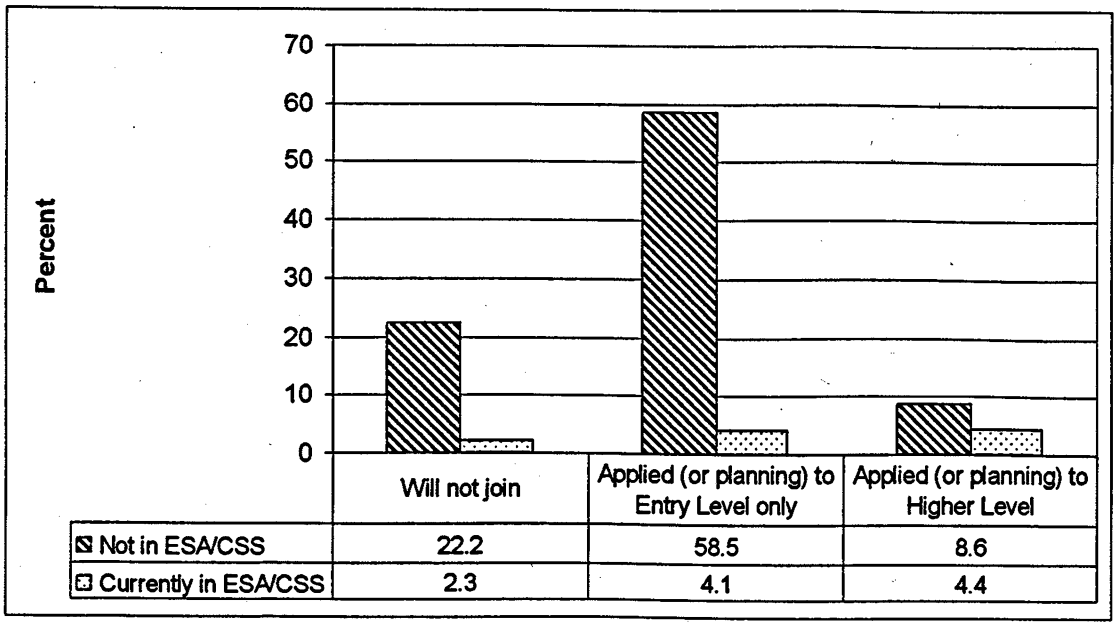
4.1 Current and future membership of agri-environment schemes

Figure 4 shows the stated intentions of sample farmers on the matter of their future membership of the Environmental Stewardship Scheme, on which subject very few farmers had yet to make a decision. As the figure shows, farmers fall naturally into two groups, those already in CSS or ESA and those who are not. Current agri-environment scheme membership significantly affects the pattern of response to the question of ESS membership. Before detailing the pattern of responses, some thought needs to be given to the interpretation that should be placed on the intentions expressed by respondents, who are already in either the CSS or ESA schemes, when faced with the question: 'Have you, or are you planning to, apply to the Entry Level and/or Higher Level Environmental Stewardship Scheme?'. Farmers already in CSS/ESA are 'locked in' for a minimum fixed period and would only be free to join the ESS upon expiry of their current agreements, unless they have land outside the CSS/ESA agreement that they can enter into the new scheme. For CSS/ESA farmers who state that they will *not* join ESS, their actual intention is not obvious. Do they mean that they have no land outside CSS/ESA agreements, or that they do have such land but do not wish to enter Environmental Stewardship at this time? Or are they looking ahead to the expiration of their CSS/ESA agreements and saying that they will not join even then? Ambiguity also exists in the case of farmers in CSS/ESA agreements who state that they *are* planning to join Environmental Stewardship. Again, it is uncertain whether this reflects a desire to enter land outside of current agreements at the present time, or a view on what they would do upon expiry of their current agreements. For the above reasons, it would be sensible not to place too much emphasis on the evidence for this category of farmers and to focus instead on the very much more numerous group who are not currently in either the CSS or ESA.

What Figure 4 shows is that 67.1% of respondents who are not already members of CSS or ESA plan to join Environmental Stewardship at some level and that they outnumber those who have stated they will not join by three to one. This figure comes very close to the Government's own stated target of an ultimate membership of 70% for the ELS. What must be of concern to policy makers is, at the time of our survey, the relatively small numbers looking to enter the HLS, with the numbers amounting to

no more than 13% of farmers even when those already in CSS/ESA are included in the calculation. However, Defra have more recently loosened the application restrictions and 'switching' from CSS and ESA to HLS before the end of the present agreement is now permissible. Of those who stated that they will not join Environmental Stewardship at any level, 36% were not in receipt of farming subsidy payments before 1 January 2005. For the remaining 64% i.e. those who were in receipt of subsidy payments, refusal to join at least the Entry Level Scheme would seem something of an irrational decision, in view of the likely increased modulation of Pillar 1 payments in the future. One can only suppose that these farmers are intending to offset the effects of modulation and degressivity by some other means, for example, sale or lease of their holding, diversification into non-agricultural uses, or intensification of existing agricultural production.

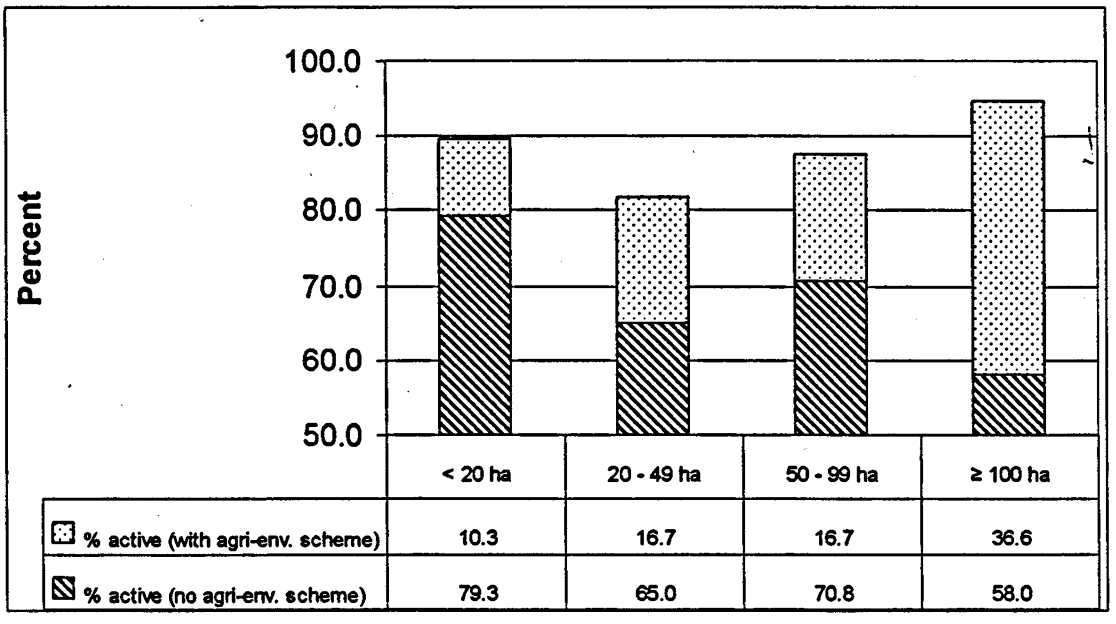
Figure 4. Applications to the Environmental Stewardship Scheme by survey respondents



4.2 The numbers engaging in landscape management

Over the whole sample, some 90% of respondents reported carrying out some landscape management operations, either within or outside agri-environment schemes. While respondents were presented with a limited list against which to report their landscape management operations, they were given an opportunity to list any landscape management activities not included in that list. As the list contained what might be considered the most common activities, it is probable that the 90% activity level is a reasonably accurate one as far as capturing trends within this sample is concerned. As Figure 5 shows, there is only modest variation in this activity rate between farm size groups, with no obvious size-related trend, although the larger the farm the greater the frequency of occurrence of agri-environment agreements.

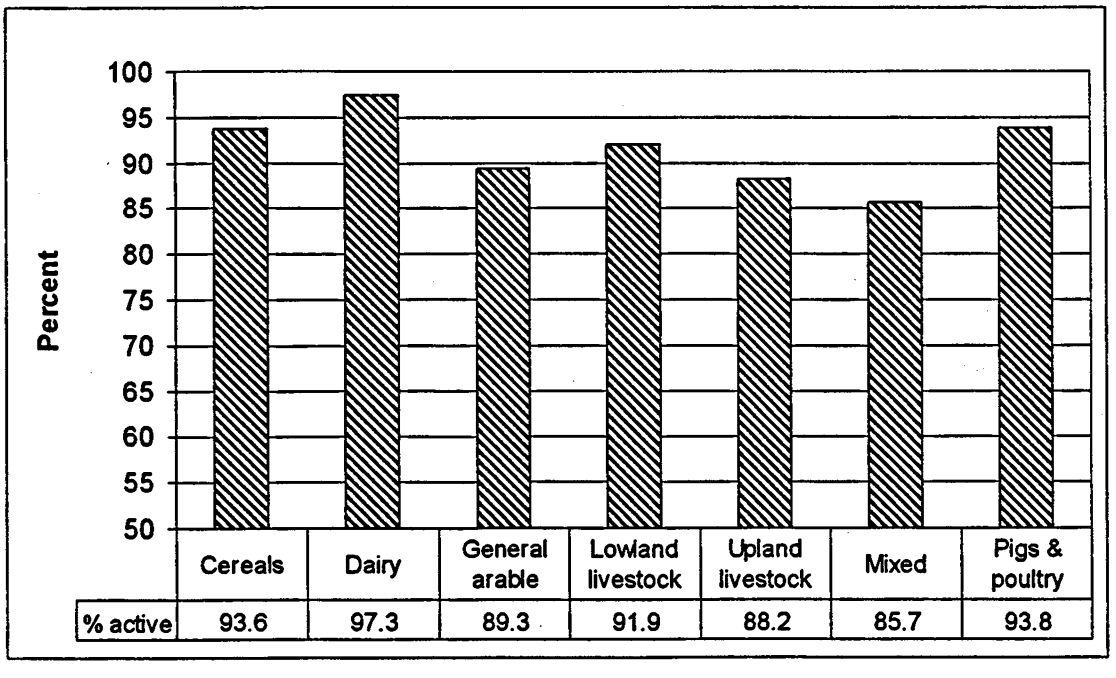
Figure 5. Proportion of survey farmers reporting some landscape management activity by farm size group



	< 20 ha	20 - 49 ha	50 - 99 ha	≥ 100 ha
% active (with agri-env. scheme)	10.3	16.7	16.7	36.6
% active (no agri-env. scheme)	79.3	65.0	70.8	58.0

Similarly, there is only minor variation in these activity levels over farm types, with the highest recorded rate observed for dairy farms and the lowest for mixed farms (see Figure 6). This figure reveals an interesting trend, in that it tends to imply that farmers operating more intensive and specialist farms value landscape management activity as highly, compared to other farming goals, as their non-specialist counterparts. Traditionally, operators of non-specialist and mixed farms have been perceived by some to be less production oriented and, by implication, more environmentally aware than specialist and intensive farmers.

Figure 6. Proportion of survey farmers reporting some landscape management activity by farm type



	Cereals	Dairy	General arable	Lowland livestock	Upland livestock	Mixed	Pigs & poultry
% active	93.6	97.3	89.3	91.9	88.2	85.7	93.8

The fact that there would appear to be only minor variation in the levels of landscape management activity over farm size groups and farm types means that it is safe to draw the conclusion that landscape management activity levels are high across the whole farming population. The sample bias, in terms of the representation of farm types and size groups seen in this sample, is not an issue in this case, because there is demonstrably no effect of either of these farm structure dimensions on the incidence of this particular behaviour.

4.3 What kind of landscape management is being undertaken?

Respondents were asked to indicate the type of landscape management work they regularly undertook, the amount of labour such work typically required per annum, and the persons undertaking the work.

Figure 7. Proportion of respondents who manage countryside features (%)

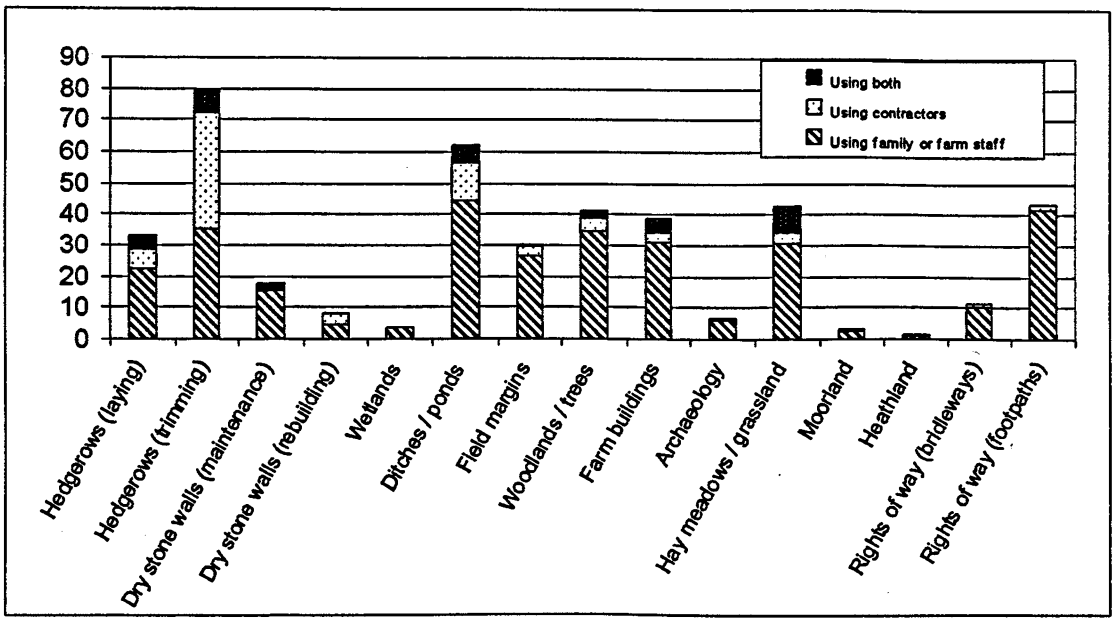


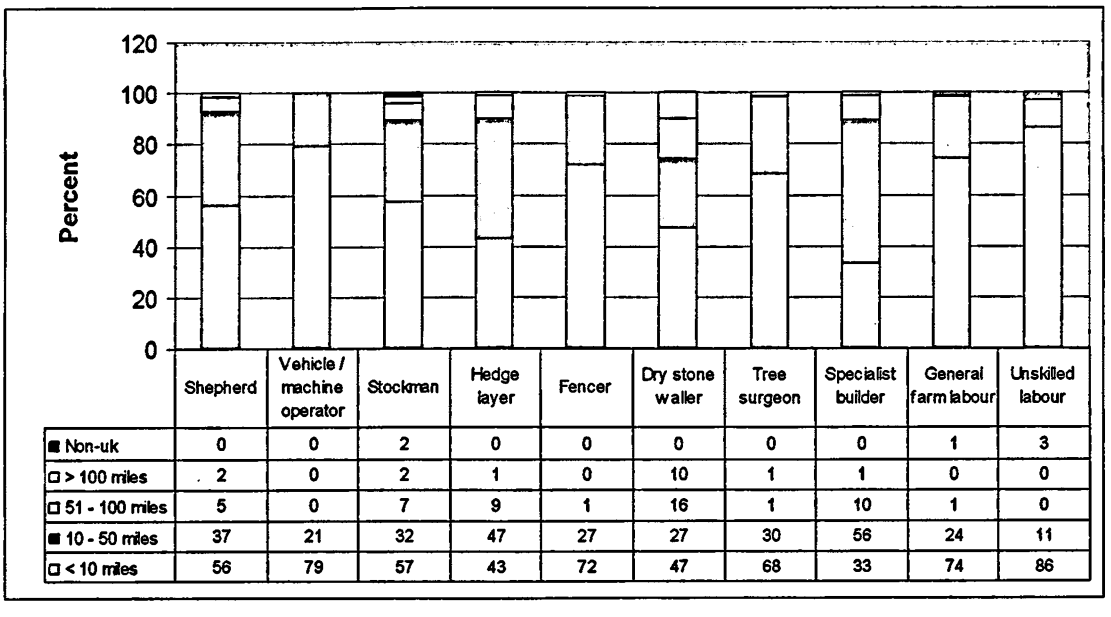
Figure 7 reveals that the four most widely undertaken operations connected with management of countryside features were hedgerow trimming, followed by maintenance of ditches and ponds, tending hay meadows/grassland and footpath maintenance. The scale of the first, and last, of these four management activities would be increased yet further if hedgerow laying was to be added to hedgerow maintenance and bridleway maintenance to footpath maintenance (see Appendix 7). Other management activities such as dry-stone walling and maintenance of lowland heath or upland moor, while important, are of more local, regional provenance and thus do not feature so prominently in the national analysis. (For a regional analysis of this data, see Appendix 2.) These frequencies constitute both uncompensated activities and those undertaken as a consequence of meeting environmental scheme directives. The purely uncompensated management activity will be quantified in the sections that follow. The figure also shows the frequency of use of various types of

labour, but comment on this matter is more appropriately placed in Section 4.5, which quantifies labour deployment. Respondents were also given an opportunity to list other landscape management activities that they undertook, which were not already included in the list provided. Responses to this question are given in Appendix 6. The pattern of reported activity seen in the national data given at Figure 9 is also largely mirrored for each of the individual farm types, with some minor variation. Data for a selection of key farm types can be seen in figures at Appendix 8.

4.4 Availability of landscape management skills on survey farms

Having reported on the types of countryside management being undertaken on their farms, respondents were then asked to indicate how close to their farm they would be able to find workers with various skills, should those particular skills not be available on their farm[4]. In most instances, skills could be sourced within 10 miles of the farm and, in almost all instances, within 50 miles (see Figure 8); for a regional presentation of this data please see Appendix 3. It might be supposed that skills could be found so readily to hand in many instances because of the proliferation of local contractors drawn in part from former full-time farm workers. Another source of such skills is other farmers, who contract themselves out, sometimes together with equipment.

Figure 8. Proportion of skilled workers to the survey farms by distance (%)



	Shepherd	Vehicle / machine operator	Stockman	Hedge layer	Fencer	Dry stone waller	Tree surgeon	Specialist builder	General farm labour	Unskilled labour
Non-uk	0	0	2	0	0	0	0	0	1	3
> 100 miles	2	0	2	1	0	10	1	1	0	0
51 - 100 miles	5	0	7	9	1	16	1	10	1	0
10 - 50 miles	37	21	32	47	27	27	30	56	24	11
< 10 miles	56	79	57	43	72	47	68	33	74	86

While skills are seen to be available locally for the majority of activities, this is not the case in a few instances. Figure 8 indicates that, in a high proportion of cases, very large distances would have to be travelled to find contractors with dry-stone walling and specialist building skills. As far as dry stone walling is concerned, account needs to be taken of the fact that these features are traditional only in a few areas of England and that farmers in other areas may also have responded to this question. However, there is some evidence that there is a continuing decline in the

availability of craftsmen with expertise in dry-stone walling and specialist building in rural areas, as a consequence of a general decline in skilled craftsmen associated with the historic built environment (English Heritage, 2005). This study has shown that, to find both of these skills, the majority of farmers would have to look further than 10 miles to find craftsmen.

4.5 The amount of labour being used on landscape management

In addition to identifying the countryside management operations that farmers are carrying out, the survey also sought to establish the amount of effort (i.e. labour hours) expended on each of these operations. The results of the survey reveal that hedge trimming and laying are again the major consumers of labour resources (see Figure 9). The management of footpaths and bridleways, which have a high frequency of occurrence, is less important in terms of labour use than operations directed at management and/or maintenance of farm buildings, or woodland and tree management. Maintenance of the two types of public rights of way also requires relatively light use of contract labour. Another labour intensive operation would appear to be the management of hay meadows. However, this result needs to be treated with a degree of caution as it is not entirely clear from the responses whether many of the respondents are actually responsible for traditional, low-fertility, species-rich, hay meadows. It is possible that the term 'hay meadow' has been interpreted by some respondents to mean any grassland from which a grass crop of any type is taken. In order to better reflect the true meaning of respondents' replies therefore, while the terms 'hay meadows' and 'hay meadow management' will continue to be used, these terms should be understood as simply 'grassland' and 'grassland management'. (For a regional presentation of this data, see Appendix 4.)

In terms of the pattern of landscape management activity over farm types (see Appendix 9), there is some variation in the activities which make the biggest demands on labour. As far as the lowland farm types are concerned, the most significant landscape management activities are hedge laying and trimming, ditch and pond maintenance and hay meadow management. For upland livestock farms the picture is rather different, with the maintenance and re-building of stone walls the most important activities, followed by hay meadow/grassland management and work on farm buildings. Stone wall maintenance is also fairly prominent on lowland livestock and dairy farms. Woodland maintenance only features significantly on arable and cereals farms. These patterns are fairly consistent with the differences in farming system and landscape features that are known to exist between these farm types and the regions of the country where they predominate.

Figure 9. National average hours on the survey farms spent each year managing countryside features (compensated and uncompensated)

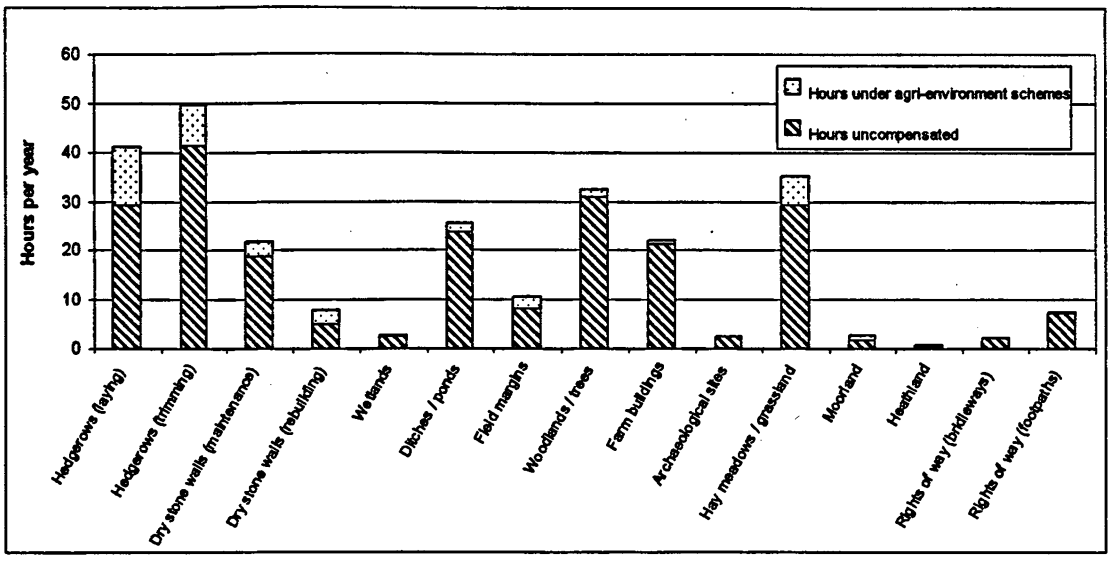


Table 3. Proportion of hours spent on landscape management that is both uncompensated and compensated under environment schemes, plus comparison with data from McInerney *et al.* (2000)[5]

	Uncompensated	Environment schemes (survey)	Environment schemes from: McInerney *et al.* (2000)[5]
Hedgerows (laying)	71	29	
Hedgerows (trimming)	84	16	11
Dry stone walls (maintenance)	86	14	17
Dry stone walls (rebuilding)	63	37	
Wetlands	88	12	
Ditches / ponds	94	6	8[6]
Field margins	76	24	
Woodlands / trees	95	5	4[7]
Farm buildings	96	4	4
Archaeological sites	100	0	
Hay meadows / grassland	83	17	
Moorland	63	37	
Heathland	43	57	
Rights of way (bridleways)	95	5	
Rights of way (footpaths)	96	4	10[8]

Table 3 shows the percentage of total labour hours that is uncompensated i.e. not committed under an agri-environment scheme agreement. This proportion varies considerably between activities, to some extent reflecting the possibilities for support for each under the CSS and ESA schemes (ESA management options vary between the 22 schemes). Appendix 12 maps the list of landscape management options seen in Table 3 against the provisions of the CSS, ESA and ESS schemes. The highest

proportions of work undertaken under agri-environment schemes is seen for activities such as dry stone wall rebuilding, heathland and moorland management, and to a lesser extent hedgerow laying. The least compensated works are for such activities as maintenance of ditches and ponds, protection of archaeological features and maintenance of woodlands, farm buildings and rights of way. It is instructive to observe that management operations with low potential for compensation from the public purse are by no means the least widely carried out and, indeed some (e.g. hedgerow trimming and ditch and pond management), are among the heaviest users of labour. The table also shows similar estimates taken from McInerney *et al.* (2000) where appropriate comparison can be made. The McInerney *et al.* (2000) data are fairly consistent with the current findings, lending support to the view that the results obtained by our survey are robust.

A point that perhaps should also be stressed, is that the data findings shown in Figure 9 and Table 3, represent averages over the whole sample of farms. While this generally gives a good guide to aggregate activity levels, especially where activities are commonly undertaken, the data may not clearly reflect the true situation where particular types of landscape management occur on relatively few farms, but on a large scale when they do occur. The case in point here is compensated landscape management activity. Closer inspection of the results reveals that relatively few farms in each region were entered into agri-environment schemes at the time of survey (see Table 4) and that, when calculating average time spent on compensated landscape management activity using these farms alone, farm averages are considerably higher than they appear in Figure 9.

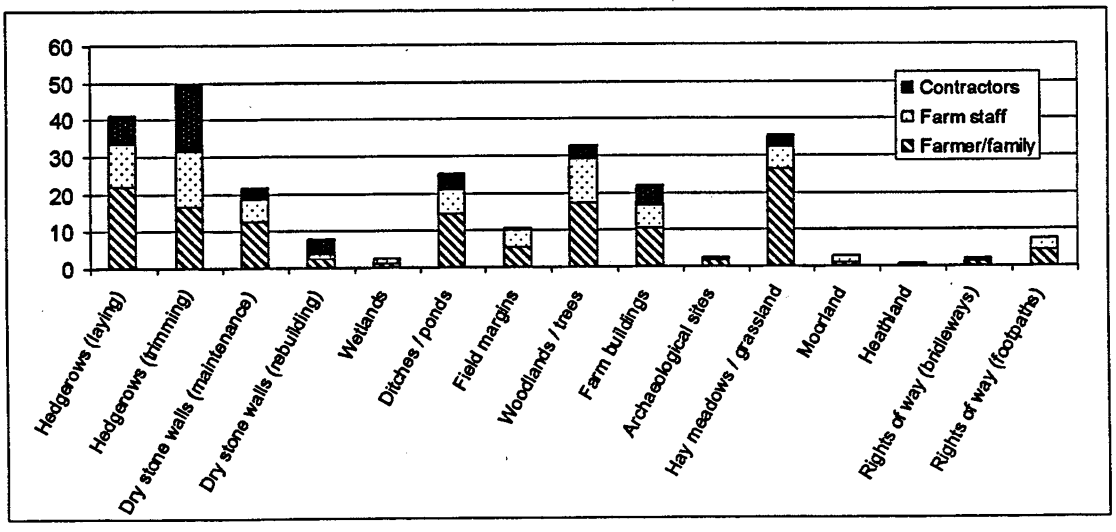
Table 4. The incidence of agri-environment scheme membership among sample farms at the time of the survey and their use of labour for these purposes.

Region	Percent of farms in agri-environment schemes	Average hours spent managing landscape under schemes (hours/ farm/annum)
East Midlands	19.1	258.3
Eastern England	20.3	317.8
North East	12.5	120.0
North West	25.0	222.2
South East	29.3	146.1
South West	33.0	162.3
West Midlands	12.1	53.8
Yorkshire & Humberside	17.1	249.8

As Figure 10 shows, the majority of the landscape management work on farms, in terms of hours spent, is carried out by the farmer and farm family or regular hired labour. Only a minority of the labour hours used comes from contractors, although this proportion can be quite significant for some activities, for example, hedgerow trimming and, particularly, dry stone wall rebuilding. Activities such as these attract

heavier use of contractors because they require specialist skills or equipment. (For a regional breakdown of this data, see Appendix 13.)

Figure 10. Average labour hours spent per annum managing countryside features by labour type



4.6 The use of contractors

Contract farming arrangements have become increasingly common over the last 20 years, as farmers, both as contractors and contractees, seek to minimise their own financial exposure to expensive equipment, that might otherwise lie idle for a significant part of each year (MAFF, 1999; ODPM, 2001). As Figure 10 indicates, many farmers in the survey are using contractors for landscape management operations. Figure 11 shows why they are using them. The majority of farmers who report using contractors, state that this is for convenience sake. This particular reason is likely to cover a multitude of issues, including lack of appropriate skills, equipment or manpower.

Few farmers report using contractors for financial reasons (i.e. in order to make a cost saving) and this must be because, assuming the farmer possesses the necessary skills and equipment to undertake particular landscape management tasks, it is likely to be more expensive to employ a contractor than to undertake the operation using on-farm labour[9].

Figure 12 shows the average cost per hour of hiring contractors for each of the 15 landscape management tasks. Costs per hour vary considerably over the tasks, possibly as a reflection of the degree of specialisation and the type of equipment required, but in all cases the average costs are greater than average hourly rates for on-farm labour, even after accounting for full employer expenses (i.e. by adding in a notional value to cover employer's National Insurance Contribution (NIC) and Employer's Liability Insurance (ELI)). Published farm management standards data confirms this position. For example, Nix (2005) calculates the average cost of

carrying out a range of farm management operations using contractors and compares these with the cost of carrying out the same activities using on-farm labour (see Table 5). In almost all cases, contractor costs are greater than use of on-farm labour. However, contractor costs and on-farm labour costs vary widely (contractor costs are lower, for example, where other farmers perform contract work on an informal basis[10]) and so on some farms (though not on average), even though contractor rates per hour may be higher, this would not necessarily translate into greater costs to complete the whole task, as contractors, by virtue of their superior experience and equipment, may be more productive than general farm labour.

Figure 11. Reason for using a contractor given by respondents (%)

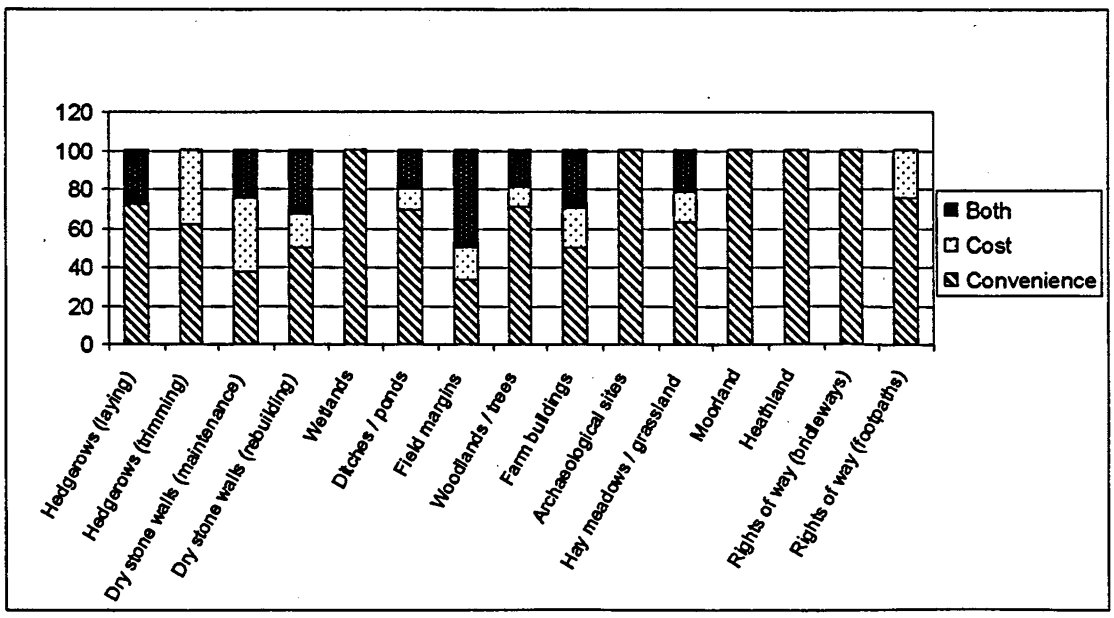
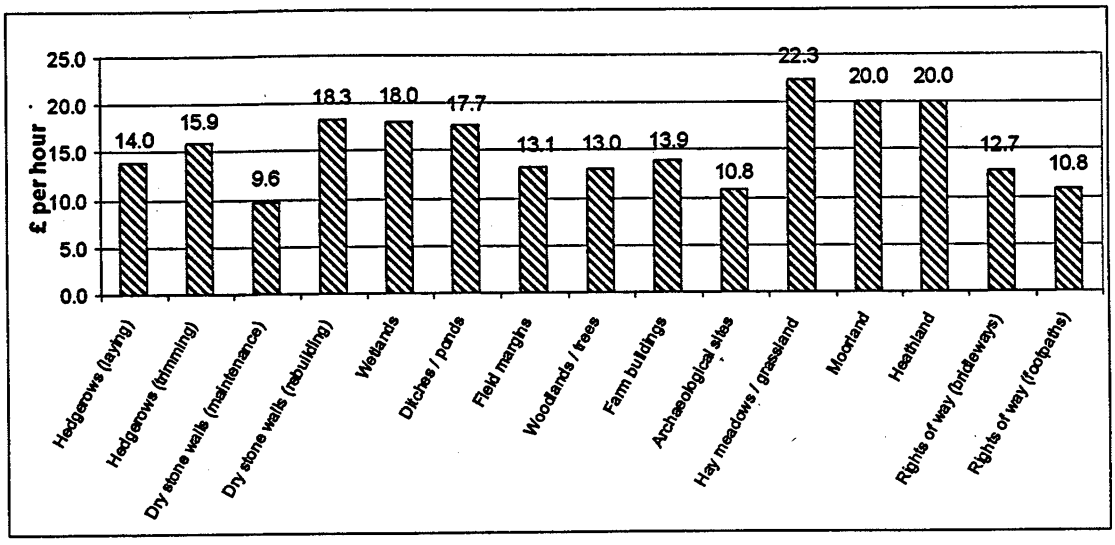


Table 5. Comparing the cost of selected farm operations using farm labour and contractors

Farm management operation	Farm labour cost as a percentage of contractor costs
Ploughing (light soils)	90
Heavy disc cultivating	77
Power harrowing	57
Big baling	80
Grass mowing	82
Tractor and trailer driving	73
Woodland and tree management	84
Ditch maintenance	67

Source: Nix (2005).

Figure 12. Cost[1] of hiring contractors using data from the survey farms



[1] No data were available for contractor rates for archaeology and only a single extreme value was available for moorland. In this figure, and later calculations involving contractor costs, moorland has been given, as a proxy, the contractor rate recorded in the survey for heathland, and archaeology has been attributed the rate observed for rights of way maintenance, on the basis that the management operations involved would be similar (e.g. litter clearance, stock control, fencing/gate maintenance, signage, grass cutting and maintenance of walking surfaces).

In terms of particular landscape management tasks, the use of contractors for convenience sake is most dominant for management of wetlands, heathland, moorland and archaeological features. Contractor rates are not notably higher for these activities than for others, so it is probable that other factors, such as lack of appropriate skills, are the main reasons for the decision to use contractors in these cases. In the case of moorland, which is generally associated with upland livestock farms, it is possible that shortage of on-farm labour is also a determining factor. In the case of management of archaeological features, none in the sample answered this question and so no contractor rates are available[11].

4.7 The financial cost of landscape management

Calculating an average whole-farm cost to the farm for labour devoted to landscape management operations is not straightforward. Some of the landscape management operations reported in this survey are carried out under agri-environment schemes and are, therefore, compensated to some extent. Deducting the hours devoted to landscape management operations under agri-environment schemes leaves an uncompensated component. The amount of time spent on landscape management which is attributable to agri-environment schemes varies from operation to operation as can be seen from Table 6.

No labour costs are available from the survey data, as cost data were only elicited for contractors. Deducting contractor hours from the total uncompensated hours leaves the body of uncompensated work carried out by the farm family and farm

staff[12]. By applying an appropriate wage rate to this sum, a whole farm labour cost can be calculated. Key questions are, therefore, what constitutes an appropriate wage rate and what components of employer costs should it reflect? A variety of wage rate data are available, produced by different institutions for different purposes and accounting for a variety of labour types and categories of labour costs. Two different figures have been chosen for the purpose of this study, reflecting two different approaches to the estimation of these costs. The first reflects the incurred cost of labour effort to the farm business, assuming that this has been fully charged[13]. For these purposes an appropriate wage rate was derived from the Defra Earnings and Hours Survey (Defra, 2005b). The second approach answers criticism that the 'cost incurred' approach to valuing uncompensated landscape management activities does not truly reflect the value of that labour time to the farm businesses i.e. additional income could have been generated had this labour been deployed on a commercial activity and this income had been forgone. The second approach, therefore, reflects an imputed market value of that labour effort. The market value is taken to reflect the commercial use of that labour on the same landscape activities as are currently uncompensated, i.e. as recorded in the survey itself. From this point on, the focus, in terms of both explanation of methodology and results, is on the cost incurred approach, with equivalent data for the 'imputed' cost approach provided for comparison purposes.

Table 6. Amount of landscape management time attributable to agri-environment schemes by activity

Activity	Percent under agri-environment schemes
Rights of way (bridleways)	57
Ditches / ponds	37
Moorland	34
Hay meadows / grassland	29
Dry stone walls (maintenance)	24
Archaeology	17
Hedgerows (trimming)	16
Hedgerows (laying)	14
Farm buildings	11
Woodlands / trees	6
Field margins	5
Dry stone walls (rebuilding)	4
Wetlands	4
Heathland	4
Rights of way (footpaths)	0

According to the Defra Earnings and Hours Survey (Defra, 2005b), the average hourly rate of pay over all grades of permanent (sometimes described as 'regular') agricultural worker, both male and female, for the 12 months to January 2005, is £6.72[14]. Using this average labour cost, it is possible to build up a picture of labour

and contractor costs for each landscape management operation for the average farm in the sample. Figure 13 presents this picture graphically, distinguishing not only contractor costs from those of farm labour, but also separating out costs attributable to farm family and hired labour. Figure 14 presents, for comparison, the same cost categories under the imputed cost approach, i.e. all labour priced at contractor rates.

Figure 13. Relative costs of a range of uncompensated landscape management operations (farm and family labour priced at Defra average wage rates)

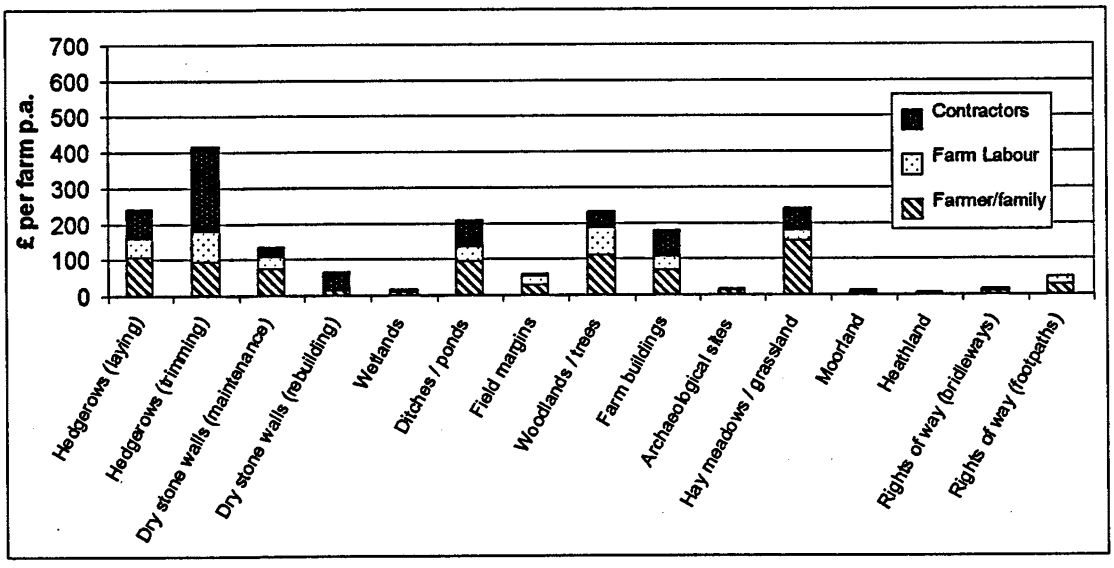
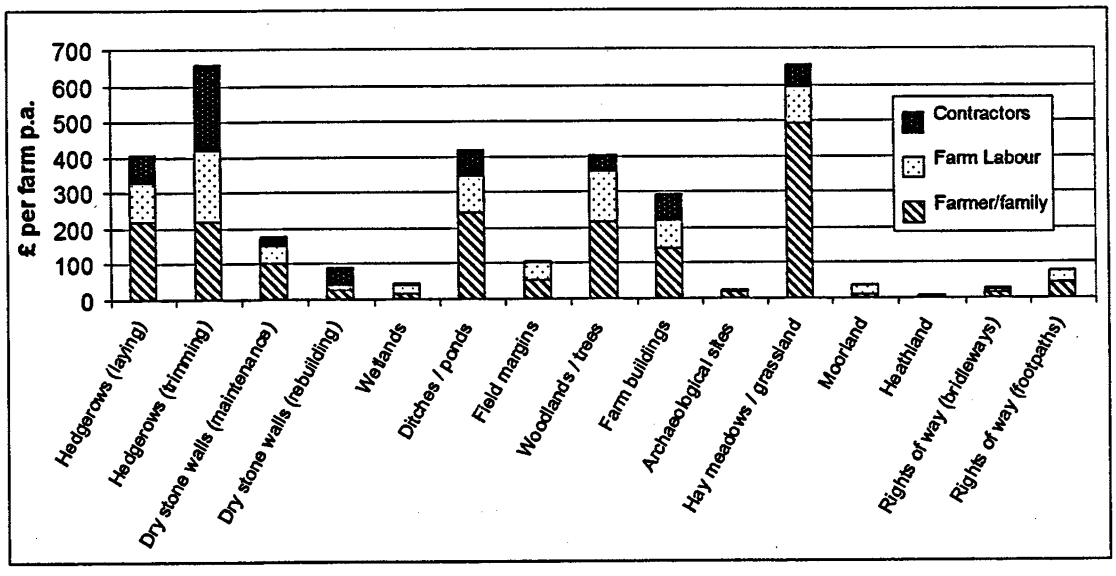


Figure 14. Relative costs of a range of uncompensated landscape management operations (all labour priced at contractor rates)



As contractor rates are higher than average farm labour costs, the financial effect of these outlays is proportionately larger than the time input that they represent (see Figure 13). For example, while contractor hours constitute only around a fifth of all time spent on hedgerow trimming, the cost of this work is greater than the gross salary costs of farm labour. It is interesting to note that contractor costs form a considerable share of all the major cost categories. This observation rather flies in the face of expectation, which supposes that uncompensated landscape management would be very largely confined to farm and family labour i.e. fixed costs, thereby making resource allocations for this kind of 'unproductive' operation less visible in the farm accounts.

The most significant labour expenditures would appear to be on hedge laying and maintenance operations (combined), followed by hay meadow operations, woodlands and trees and ditch and pond maintenance. Most of these activities, with the possible exception of hay meadows/grassland operations, would require specialist equipment which many farmers would not possess and this may explain the significant use of contractors in these cases. Summing over all categories of work and all categories of labour (including contractors), the cost of voluntary and uncompensated landscape management to the average farm in the survey is £1,878 per annum under the cost incurred approach. This figure includes an estimated value for contributions from the farmer and from other family labour. However, as noted above, it does not include National Insurance contributions. The reliability of this estimate is evaluated below.

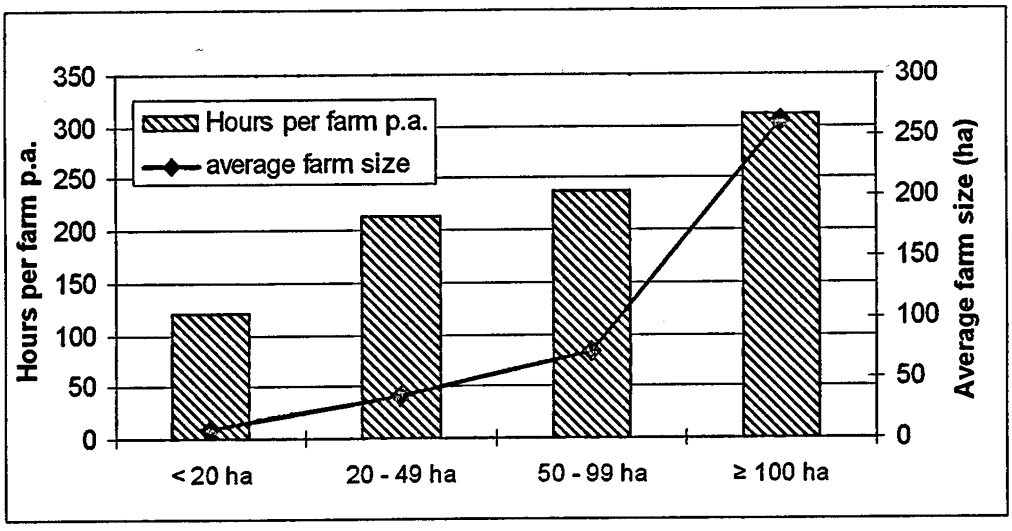
Under the imputed cost approach, costs are considerably higher, reflecting the higher notional rates attached to farm and family labour. This leads to particularly high proportionate increases over the incurred cost approach for those activities that have low levels of contractor use (see Figure 14), such as woodlands and trees and hay meadows/grassland management. Averaged over all farms in the survey, whole farm costs increase to £3,434 pa under this cost approach, an increase of 82.9%.

Armed with these per farm costs, it is possible to generate two different estimates of the total cost to the whole industry of this type of voluntary and uncompensated activity. However, for these to be valid calculations, we need some assurance that the survey sample is representative of the population as a whole i.e. the universe of farms in England. But in what way must the sample be representative? Because the intention is to sum whole-farm costs, an important consideration is farm size, as whole-farm expenditures on landscape management activities are likely to be very farm-size dependent. As mentioned earlier, the survey under-represents the number of farms in the smaller size categories and has over-representation in the largest size group. This is likely to make a simple extrapolation to a national total unreliable and misleading.

Figure 15 compares average whole-farm hours devoted to both compensated and uncompensated landscape management in each of the four farm size groups in our survey. It shows that whole-farm labour time expenditures increase with farm size, but it also shows that this relationship is not a simple linear one. Whole-farm time expenditure on landscape management in the smallest size group is a little under a

third of the average of the largest class. Yet in area terms the largest class is 30 times the size of the smallest, the average size of farms in the large farm class being 261.7 ha. This average size for the largest class is skewed to some extent by a small number of very large farms in the sample and, for this reason, the median farm size is probably a better reflection of central tendency. However, the median value is still very large, at 182.1 ha, this being 21 times the average size of farms in the smallest class (8.5 ha).

Figure 15. Comparison of time expenditure on landscape management with average farm size in each of the farm size groups



The obvious conclusion to draw from this is that per ha rates of labour time expenditure on landscape management are inversely related to farm size. Table 7 confirms the finding of McInerney *et al.* (2000) that the per ha rate of resource commitment to landscape management activities decreases as farms get larger. There is no obvious reason for this phenomenon, but a number of possible explanations present themselves. First, this trend may be rooted in attitudinal differences between farm operators in the two groups. There is much more likelihood of operators of smaller farms being part-time farmers and incomers to the farming industry and thereby more likely to operate less intensive enterprises for lifestyle reasons than their larger counterparts. It is also probable that, with less intensive farming methods and with smaller field sizes (i.e. with a greater length of hedgerow per cultivated area), there are more landscape features per ha on smaller farms that need managing. It is also possible that smaller farmers are less efficient at carrying out landscape management tasks than their larger counterparts, due to the economies of scale that the latter enjoy. Such a supposition is supported by McInerney *et al.* (2000) who found that machinery was substituted for labour when carrying out landscape management tasks as farms got larger and they also revealed a greater use of contractors on larger farms.

In view of the representativeness issues of the sample in terms of its farm size distribution, it will be necessary to adjust the sample estimates of average whole-farm

labour cost on the basis of the true size distribution, before the figures can be raised to the national level (England). This is done by calculating the average whole-farm cost of uncompensated labour for the farms in each size group separately, then weighting each of the whole-farm values by the number of holdings in each size class, as revealed in the June 2003 Census data for England (Defra, 2005c). This calculation is carried out for the two different approaches in Tables 8 and 9 below.

Table 7. Total labour hours per ha committed to landscape management by farm size group based on mean farm size

Farm size	< 20 ha	20–49 ha	50–99 ha	≥ 100 ha
Hours per ha	14.1	6.2	3.3	1.2

Table 8. Calculation of a weighted national average cost of uncompensated labour per farm, based on Defra labour rates

Farm size group	**(A)** Cost of uncompensated labour - all sources (£/farm)	**(B)** Number of holdings in 2003 June Census ('000)	**(A * B)**
< 20 ha	836.2	114.7	95916.32
20 – 49 ha	1681.1	25.8	43371.71
50 – 99 ha	1596.0	21.2	33835.25
≥ 100 ha	2426.3	26.2	63569.40
Total		187.9 **(C)**	236692.68 **(D)**
True labour cost per farm **(D / C)**			£ 1259.67

Table 9. Calculation of a weighted national average cost of uncompensated labour per farm, based on contractor rates

Farm size group	**(A)** Cost of uncompensated labour - all sources (£/farm)	**(B)** Number of holdings in 2003 June Census ('000)	**(A * B)**
< 20 ha	1727.8	114.7	198180.40
20 – 49 ha	3168.3	25.8	81742.84
50 – 99 ha	2884.6	21.2	61154.18
≥ 100 ha	4262.0	26.2	111664.50
Total		187.9 **(C)**	452741.92 **(D)**
True labour cost per farm **(D / C)**			£ 2409.50

After adjusting for unrepresentativeness in the sample farm size distribution, the average cost of uncompensated labour and contractors is revealed as £1,259.67 per

farm per annum for the cost incurred approach and £2,409.50 for the imputed cost approach. Raising these values to the national level is simply a matter of multiplying the values by 187,900 i.e. the recorded number of holdings of all sizes in England in 2003. This calculation yields figures of £236.68M and £452.75M respectively. However, before accepting these figures, one further adjustment needs to be made, to account for the fact that the weight used to raise the average farm value to the national level represents the number of holdings, rather than the number of farms, the problem being that some farms in England are made up of multiple holdings.

No recent official published data exist on the number of holdings on farm businesses, but the authors' own analysis of data from the Farm Business Survey for 2003 suggests that the average farm is made up of around 1.1 holdings[15]. A notional adjustment can, therefore, be made to the national aggregate figure above to yield new headline figures of £215.16M and £411.59M. These represent the farming industry's voluntary, uncompensated contribution to the environment each year in England, before other inputs, such as machinery, are considered.

Table 10 shows how these national sums are distributed over the various landscape management tasks. As can be seen, whatever costing approach is used, more than a fifth of this total is dedicated to hay meadow management, ahead of hedgerow trimming, which is ranked second. Hay meadow management does not, in fact, incur the largest average labour time expenditures per farm (see Figure 10); that honour goes to hedgerow trimming but, when aggregating to the national level, the importance of hay meadow management increases, due to the predominance of this category of work on very small farms (i.e. farms of less than 20 ha) and the numerical preponderance of this class.

Table 10. Estimated cost of uncompensated labour and contractor time spent on each landscape management task for England for the incurred cost and imputed cost approaches (£M)

	Incurred costs	Imputed costs
Hay meadows/grassland	45.3	108.3
Hedgerows (trimming)	42.3	69.9
Hedgerows (laying)	20.7	38.0
Ditches / ponds	24.8	54.5
Farm buildings	24.4	43.8
Woodlands / trees	22.6	41.9
Dry stone walls (maintenance)	11.4	15.4
Field margins	7.3	13.8
Dry stone walls (rebuilding)	5.6	8.0
Rights of way (footpaths)	5.9	7.9
Archaeological sites	1.6	2.5
Moorland	1.0	2.7
Rights of way (bridleways)	1.2	2.1
Wetlands	0.9	2.3
Heathland	0.2	0.5
Total[1]	215.2	411.6

1. Columns may not sum to totals due to rounding error

5. Summary and conclusions

The great majority of farmers in the sample (90%) reported expending time on at least one of the broad range of landscape management operations examined through the survey. This figure might increase further if the focus of the survey had been expanded to include, perhaps, such activities as management of traditional orchards, over-wintered stubbles, control of scrub etc. There would seem to be little variation in the trend for high rates of such activity on the basis of farm type or farm size. The proportion of this effort carried out under agri-environment schemes is surprisingly low, with perhaps a little over 20% only of this effort compensated by this source of funds. The remaining 80% of landscape management operations carried out by farmers are, therefore, uncompensated.

In terms of their incidence of occurrence, the most frequently reported landscape management activities relate to hedgerow management, maintenance of ditches and ponds and work associated with hay meadows/grassland. These most frequently cited activities generally also incur the largest average expenditures of labour time per farm. Opportunities for compensation under agri-environment schemes do not seem to determine which landscape management operations are most commonly carried out, or the amount of time devoted to them, as the most commonly reported activities have high rates of voluntary participation by farmers. This fact strongly suggests that public funding is not driving the pattern of landscape management carried out on farms, at least not at present. This pattern may, of course, change to some extent with the introduction of the new Environmental Stewardship Scheme.

The greater part of the work time allocated to landscape management is derived from family and farm labour, but there is significant use of contractors for particular management operations, particularly those requiring specialist skills or equipment, for example, modern hedgerow trimmers and excavators. The extensive use of contractors, at considerable cost, implies that these landscape management operations are not simply an afterthought, or a way of putting slack farm labour to work during quiet periods but, rather, they represent effort that farmers see as making an important contribution to their farming goals with these, in turn, derived from pro-environmental attitudes, values and emotional feelings of duty and care.

There would appear to be no especial landscape management skills deficit in rural areas at the moment. For the majority of skills, appropriate workers can usually be found within 10 miles of the farm. If particular skills are not available on-farm, these are available either in the form of specialist contractors, or through the services of other farmers and their families. The possible exceptions to this are the lower rates of availability of specialist builders and dry stone wallers, perhaps as a consequence of farms' physical isolation and a general decline in the availability of craftsmen with skills in the historic/traditional building area. However, the loss of skills in the historic built environment should not be taken to imply a shortage of skills in the management of the natural environment.

The annual cost of uncompensated landscape management operations to farmers (i.e. what it costs the agricultural industry, in terms of use of labour and contractors, to maintain the existing condition of the countryside, over and above the efforts funded under agri-environment schemes), is estimated, using information gathered by this survey, at £1,259.67 per farm using the incurred cost approach and £2,409.50 on an imputed cost basis. Raised to the national level these yield industry-wide labour and contractor costs for England of £215.2M and £411.5M per annum respectively. To put these values into perspective, the lower figure equates to roughly 132% of the total agri-environment spend in England in 2004 which was £163M; for further details see Appendix 5. Looking at the types of landscape management operations being reported in this survey, it is impossible to presume that these are to any great extent being driven by financial incentives, or by regulatory action. This leads to the obvious conclusion that farmers are voluntarily contributing to the public good as a consequence of their own goals and motivations and that the value of this to society, in monetary terms in 2004, was more than the totality of public expenditure on environmental improvements under the Rural Development Regulation during that same year. Adding back the landscape management operations undertaken under agri-environment schemes, produces notional values for the cost of labour and contractors deployed on all landscape management in England, both compensated and uncompensated; these are £253.4M of incurred costs and £484.5M of imputed costs.

Before accepting these figures at face value, it is necessary to ask if any of this uncompensated labour resource commitment would have been allocated to these tasks as part of mainstream agricultural activities. It is not going to be possible to quantify the extent of this on the basis of our survey data, but it would be sensible to at least assess the need to qualify the monetary values given above on this basis. The likelihood that some of this reported labour/contractor allocation is actually part of normal agricultural activity will depend on the extent to which the farmers responding to the survey were able to distinguish between activities that contributed directly to agricultural output and those that did not. This will vary according to an individual farmer's level of understanding of the issue and his willingness to report it (this is something that it is impossible to quantify), but it will also vary from activity to activity.

Some landscape features obviously have little relation to agricultural production, for example, public rights of way and archaeological features, while for others the distinction is not so obvious, as is the case with hedgerows and dry-stone walls, which may serve a useful agricultural function. Hedgerow maintenance is one of the largest consumers of labour and contractor time among this category of activities so, if even 20% of this needs be treated as agriculture-related activity, then as much as £8.5M (incurred costs) would be wiped off the landscape management total. McInerney *et al.* (2000) reported that as many as 63% of their survey respondents who had livestock considered their hedgerows to have an important role in stock control. On the other side of the argument, there are cheaper alternatives to hedgerows for stock control e.g. fencing, and many farmers with no livestock at all still establish and maintain hedgerows. The most significant problem of this kind probably relates to the interpretation of the data on hay meadows/grassland management. As noted above, it is almost certain that a significant part of the activities identified with this feature e.g. mowing, tedding and baling, are agriculture, rather than environment, related. While a case could be argued for a largely conservation-oriented interpretation of activity for most of the other management activities studied here, in this instance, the case for an almost wholly agriculture-related interpretation is strong although permanent grassland arguably contributes significantly to defining the character of landscapes. Discounting for this would remove, say, £40M from the uncompensated (incurred costs approach) labour costs figure.

Perhaps the last point that needs to be emphasised, is that the provision of labour and contractors would not be the only expenditures incurred by farmers as a consequence of their voluntary landscape management activities. There would, in addition, be use of tractors and other farm equipment as well as fuels and materials of many kinds. For maintenance activities alone (not capital expenditures), McInerney *et al.* (2000) estimate labour and contract expenditures at some 69% of total costs, meaning that the labour and contractor cost totals reported here would need to be increased by 45% to reflect total costs. It should also be pointed out that in addition to these expenditures, which contribute little or nothing to agricultural returns, additional economic losses are also incurred by farmers as a consequence of these landscape management activities, in the form of the opportunity costs associated with the re-deployment of labour, capital and land away from income-generating farming activities. The calculations and analysis undertaken here suggests that, on an opportunity cost basis, losses to agriculture as a consequence of landscape management activities may be as much as double the incurred costs reported here.

6. End notes

[1] It could be argued that such actions need not be entirely altruistic i.e. they could add to the farm's income, for example, where they negate pests or weeds, provide shelter belts, or where they assist in avoiding fines such as through the eradication of injurious weeds like Common Ragwort (*Senecio jacobaea*) or Spear Thistle (*Cirsium vulgare*). However, not all such actions yield an economic return and this study was designed to identify the nature of these altruistic landscape management activities and to quantify their extent. This issue is considered further in the Conclusions section of the report.

[2] The standards associated with GAEC requirements are deemed to be lower than those associated with the new ESS at any level (i.e. Entry Level, Higher Level or Organic Entry Level). It should be noted that farmers are not compelled to join the ESS or, even, to apply for support under the SFP.

[3] The EC survey measured the age of 'holders', who are either the farm owners or managers. These are assumed to be the primary farm decision makers.

[4] As this question was posed in a hypothetical sense, these results should not be taken to reflect the proportion of farms that have skills deficits of various kinds.

[5] The results taken from McInerney *et al.* (2000) represent the percentage of the incidence of landscape management activities which are associated with agri-environment schemes and with maintenance activities, but not capital expenditures.

[6] Ponds only.

[7] Casual tree planting.

[8] Footpaths and bridleways.

[9] Contractor rates of pay include a premium reflecting their specialist skills and the cost of depreciation of specialist equipment, together with professional indemnity

insurance premiums and, potentially, a profit margin, which would also have to cover the cost of labour during slack times.

[10] A useful guide to the proportion of contractor work carried out by local farmers on landscape management is contained in a University of Reading publication which showed that, for normal farming operations, something over 30% of all contractor services were carried out by neighbouring farmers (Tiffin, 2002).

[11] While none in the sample specified a rate of charges for use of contractors for archaeological management, some did indicate a reason for using them (i.e. for convenience), thus implying that they may have used them for this purpose.

[12] For the sake of simplicity, it is assumed that the ratio of the various types of labour deployed does not vary between compensated and uncompensated activity within the same landscape management operation.

[13] Some of these labour costs will not have been charged against the farm business i.e. unpaid farmer and family labour.

[14] This figure represents gross pay, including overtime and holiday pay, but does not include Employer's National Insurance Contribution (NIC) or Employer's Liability Insurance (ELI). Nix (2005) assumes NIC and ELI to amount to an additional 14% on top of basic salary payments.

[15] This implies that a maximum of one in ten of farms in the Farm Business Survey are multiple holdings, although the actual rate will be slightly less than this as some of these 'multiples' will be made up of more than two holdings. This estimate equates closely with an estimate provided by MAFF and quoted by McInerney *et al.* (2000) that one in eight farm businesses recorded in the June Agricultural Census were made up of multiple holdings.

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Campaign to Protect
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NFU
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Please complete and return by Friday 10 June

CPRE/NFU Survey

Time spent by farmers managing features of the countryside

All responses will be treated in the strictest confidence and will be unattributable to you. For further details please see data protection statement at the end of this survey.

Please fill in the post code of the farm's postal address _____

Please give the age of the person who undertakes the majority of the land management activities on the farm within the following ranges

☐ 18 – 35 ☐ 36 – 50 ☐ 51 – 64 ☐ 65 +

Are you a member of CPRE? ***(please tick)*** ☐ yes ☐ no

Were you in receipt of a farming subsidy paid by the Rural Payments Agency before 1 January 2005? ***(please tick)*** ☐ yes ☐ no

Have you applied or are you planning to apply to the Entry Level and/or Higher Level Environmental Stewardship Scheme? ***(please tick one)***

☐ no

☐ applied to Entry Level ☐ planning to apply to Entry Level

☐ applied to both ☐ planning to apply to both

Are you a member of any other farming or conservation organisation? ***(please tick)***

☐ yes ☐ no

If yes, please specify _____

Office use only			
Survey code	Date returned	Data sheets combined	

Please estimate approximately but as accurately as possible, your contribution, (in hours and/or cost), to the **'active management'** of the following landscape features, across the whole of your farm in an **'average year'**.

'Active management' means deliberate work on the landscape feature by you, your family members, your farm staff or a contractor employed by you or other employees. **It should include** work on your farm that contributes to the **maintenance and enhancement of landscape features** (e.g. grazing management/hedge trimming etc.) and

COUNTRYSIDE FEATURE Please only give the time spent on 'active management' (see above) of the feature using the types of management listed.	Hours/year spent managing feature by ...			If a contractor is used to ma please specify	
	you or your family	farm staff	a contractor	Cost £/hour of employing a contractor to work on this feature	Reason for contractor Convenien
Hedgerows – re-laying and double fencing					☐
Hedgerows – trimming					☐
Dry stone walls and stone faced hedgebanks – routine maintenance					☐
Dry stone walls and stone faced hedgebanks – major rebuilding					☐
Wetlands – drain and sluice management and control of water levels using sluices					☐
Ditches and ponds – cleaning/clearing					☐
Field margins managed for wildlife and wildflowers – cutting					☐
Woodland/trees – grazing management, pruning, thinning and felling					☐
Traditional (pre-1939) farm buildings in use or redundant – maintenance of internal structure and/or fabric of building					☐
Archaeological sites – scrub clearance and control of grazing					☐
Hay meadows – mowing, baling and tedding					☐
Moorland – grazing management and bracken control					☐
Heathland – grazing management and scrub and bracken control					☐
Rights of way – resurfacing bridleways and byways open to off road vehicles					☐
Rights of way – reinstating cross-field footpaths /clearing obstacles					☐

include extra time incurred in day to day farm management activities that take longer because you have retained these landscape features on your farm or holding.

'Average year' – please note that for those landscape feature management activities that need a management cycle of more than one year, take the total time/cost and divide by the number of years for that management cycle. For example for management that adds up to 180 hours over three years divide 180 by 3 to give an average of 60 hours per year.

ıage this feature employing a *'please tick)*		Are any parts of this landscape feature on the land you farm managed through any of the following agri-environment schemes? *(please tick).* If so, out of the total number of hours you spend managing this feature across your entire holding how many hours do you spend managing this feature under the schemes listed below? For example, if you have said you spend 50 hours trimming hedges across your whole holding but you spend 10 hours trimming hedges that are covered by an agri-environment scheme please write 10 in the relevant column.					
ːe	Cost	Countryside Stewardship	Hours/year managing this feature under this scheme	Environmentally Sensitive Area	Hours/year managing this feature under this scheme	English Nature Wildlife Enhancement Scheme	Hours/year managing this feature under this scheme
	☐	☐		☐		☐	
	☐	☐		☐		☐	
	☐	☐		☐		☐	
	☐	☐		☐		☐	
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	☐	☐		☐		☐	
	☐	☐		☐		☐	
	☐	☐		☐		☐	

If you were unable to undertake the work yourself and *needed* to employ someone to work on the land you farm that required using any of the skills listed below, how close to your farm would you be able to find someone with that skill? *(Please tick all that are relevant.)*

	The closest distance I could find a person to employ with this skill would be ...				
Land management skill	**less than 10 miles away**	**between 10-50 miles**	**between 51-100 miles**	**more than 100 miles**	**outside the UK**
Shepherd	☐	☐	☐	☐	☐
Vehicle/machine operator	☐	☐	☐	☐	☐
Stockman (beef and/or dairy)	☐	☐	☐	☐	☐
Hedge layer	☐	☐	☐	☐	☐
Fencer	☐	☐	☐	☐	☐
Dry stone waller	☐	☐	☐	☐	☐
Tree surgeon	☐	☐	☐	☐	☐
Thatcher/stone mason or other specialist builder/ craftsman	☐	☐	☐	☐	☐
General farm labourer	☐	☐	☐	☐	☐
Unskilled labourer requiring supervision	☐	☐	☐	☐	☐

Are there any other land management activities you undertake that are not included in this questionnaire? If so please give details below.

Any other comments?

Thank you for taking the time to complete this questionnaire. Please return the questionnaire in the free post envelope provided to:
Countryside Survey, Policy Service Department, NFU, 164 Shaftesbury Avenue, London, WC2H 8HL

Data protection: All responses will be treated in the strictest confidence. The individual information collected will not be disclosed to any third parties and will only be used for the purposes of compiling statistical information. Respondents will not be identified in any reports or other information produced as a result of this survey. Any personal data we collect and use is treated in accordance with the Data Protection Act 1998.

Appendix 2. Proportion of farms that manage countryside features - NUTS 1 regional data

East Midlands	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	22	4.4	0
Hedgerows (trimming)	31.1	28.9	6.7
Dry stone walls (maintenance)	17.8	0	4.4
Dry stone walls (rebuilding)	6.7	4.4	0
Wetlands	0	2.2	0
Ditches / ponds	44.4	6.7	2.2
Field margins	15.6	2.2	0
Woodlands / trees	22.2	0	4.4
Farm buildings	31.1	4.4	4.4
Archaeological sites	6.7	0	0
Hay meadows /grassland	31.1	4.4	6.7
Moorland	2.1	0	0
Heathland	0	0	0
Rights of way (bridleways)	4.4	0	0
Rights of way (footpaths)	31.1	2.2	0

Eastern England	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	10	6.8	0
Hedgerows (trimming)	55	21.7	10
Dry stone walls (maintenance)	0	0	0
Dry stone walls (rebuilding)	0	0	0
Wetlands	6.8	0	0
Ditches / ponds	48.3	15	8.3
Field margins	36.7	10	0
Woodlands / trees	48.3	3.3	5
Farm buildings	23.3	0	6.7
Archaeological sites	5	0	0
Hay meadows /grassland	25	5	8.3
Moorland	0	0	0
Heathland	0	0	0
Rights of way (bridleways)	13.3	0	0
Rights of way (footpaths)	60	3.3	0

North East	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	25	0	12.5
Hedgerows (trimming)	37.5	25	12.5
Dry stone walls (maintenance)	12.5	0	0
Dry stone walls (rebuilding)	0	12.5	0
Wetlands	0	0	0
Ditches / ponds	62.5	0	0
Field margins	25	12.5	0
Woodlands / trees	25	0	0
Farm buildings	37.5	0	0
Archaeological sites	12.5	0	0
Hay meadows /grassland	37.5	0	12.5
Moorland	12.5	0	0
Heathland	0	0	0
Rights of way (bridleways)	12.5	0	0
Rights of way (footpaths)	37.5	0	0

Appendix 2. Proportion of farms that manage countryside features - NUTS 1 regional data (continued)

North West	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	35	5	0
Hedgerows (trimming)	25	45	5
Dry stone walls (maintenance)	35	0	2.5
Dry stone walls (rebuilding)	15	5	2.5
Wetlands	2.5	0	0
Ditches / ponds	37.5	12.5	2.5
Field margins	12.5	0	0
Woodlands / trees	15	2.5	0
Farm buildings	35	0	2.5
Archaeological sites	5	0	0
Hay meadows /grassland	45	10	0
Moorland	5	2.5	0
Heathland	2.5	0	0
Rights of way (bridleways)	12.5	0	0
Rights of way (footpaths)	25	0	0

South East	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	23.8	4.8	0
Hedgerows (trimming)	45.2	35.7	2.4
Dry stone walls (maintenance)	2.4	0	0
Dry stone walls (rebuilding)	0	0	0
Wetlands	4.8	0	0
Ditches / ponds	52.4	7.1	2.4
Field margins	40.5	0	0
Woodlands / trees	38.1	4.8	2.4
Farm buildings	33.3	4.8	2.4
Archaeological sites	0	2.4	0
Hay meadows /grassland	35.7	2.4	5.8
Moorland	0	0	0
Heathland	2.4	0	0
Rights of way (bridleways)	4.8	0	0
Rights of way (footpaths)	59.5	0	0

South West	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	26.4	9.9	11
Hedgerows (trimming)	20.8	50.55	7.7
Dry stone walls (maintenance)	19.8	1.1	2.2
Dry stone walls (rebuilding)	2.2	4.4	0
Wetlands	2.2	0	0
Ditches / ponds	36.3	16.5	4.4
Field margins	26.4	2.2	0
Woodlands / trees	37.4	6.6	1.1
Farm buildings	25.3	4.4	1.1
Archaeological sites	11	0	0
Hay meadows /grassland	26.4	6.6	9.9
Moorland	3.3	1.1	0
Heathland	0	0	1.1
Rights of way (bridleways)	9.9	1.1	0
Rights of way (footpaths)	30.8	0	0

Appendix 2. Proportion of farms that manage countryside features - NUTS 1 regional data (continued)

West Midlands	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	14.3	2.9	8.6
Hedgerows (trimming)	25.7	42.9	11.4
Dry stone walls (maintenance)	2.9	0	0
Dry stone walls (rebuilding)	0	0	0
Wetlands	0	0	0
Ditches / ponds	42.9	14.3	8.6
Field margins	14.3	0	0
Woodlands / trees	34.4	2.9	2.9
Farm buildings	34.3	5.7	2.9
Archaeological sites	5.7	0	0
Hay meadows /grassland	37.1	8.6	0
Moorland	0	0	0
Heathland	2.9	0	0
Rights of way (bridleways)	5.7	5.7	0
Rights of way (footpaths)	45.7	5.7	0

Yorkshire & Humberside	Using family or farm staff %	Using contractors %	Using both %
Hedgerows (laying)	18.2	3	0
Hedgerows (trimming)	21.2	33.3	6.1
Dry stone walls (maintenance)	30.3	9.1	0
Dry stone walls (rebuilding)	18.2	3	0
Wetlands	3	0	0
Ditches / ponds	36.4	9.1	9.1
Field margins	18.2	0	0
Woodlands / trees	30.3	0	0
Farm buildings	36.4	3	9.1
Archaeological sites	3	0	0
Hay meadows /grassland	18.2	12.1	0
Moorland	6.1	0	0
Heathland	3	0	0
Rights of way (bridleways)	18.2	0	0
Rights of way (footpaths)	33.3	0	0

Appendix 3. Proximity of skilled workers - NUTS 1 regional data

East Midlands	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	55	45	0	0	0
Vehicle / machine operator	78.4	21.6	0	0	0
Stockman	58.3	33.3	4.2	4.2	0
Hedge layer	45.8	50	4.2	0	0
Fencer	77.8	22.2	0	0	0
Dry stone waller	58.8	17.6	23.6	0	0
Tree surgeon	75.9	24.1	0	0	0
Specialist builder	18.8	56.2	25	0	0
General farm labour	80	17.1	2.9	0	0
Unskilled labour	87.5	12.5	0	0	0

Eastern England	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	30	45	20	5	0
Vehicle / machine operator	81	19	0	0	0
Stockman	26.1	43.5	21.7	8.7	0
Hedge layer	22.2	59.3	18.5	0	0
Fencer	67.7	29	3.3	0	0
Dry stone waller	0	0	36.4	63.6	0
Tree surgeon	67.5	30	0	2.5	0
Specialist builder	29.6	70.4	0	0	0
General farm labour	75.6	20	2.2	2.2	0
Unskilled labour	79.5	17.9	0	0	2.6

North East	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	50	50	0	0	0
Vehicle / machine operator	100	0	0	0	0
Stockman	40	40	20	0	0
Hedge layer	20	60	20	0	0
Fencer	71.4	28.6	0	0	0
Dry stone waller	25	50	25	0	0
Tree surgeon	60	40	0	0	0
Specialist builder	50	25	25	0	0
General farm labour	33.3	66.7	0	0	0
Unskilled labour	66.7	33.3	0	0	0

Appendix 3. Proximity of skilled workers - NUTS 1 regional data (continued)

North West	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	47.6	47.6	4.8	0	0
Vehicle / machine operator	75.9	24.1	0	0	0
Stockman	60	32	4	0	4
Hedge layer	40	56	4	0	0
Fencer	65.4	34.6	0	0	0
Dry stone waller	77.3	13.6	9.1	0	0
Tree surgeon	54.2	41.7	4.1	0	0
Specialist builder	36.8	36.9	26.3	0	0
General farm labour	66.7	29.6	3.7	0	0
Unskilled labour	81.5	11.1	3.7	0	3.7

South East	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	52.9	41.2	5.9	0	0
Vehicle / machine operator	77.4	22.6	0	0	0
Stockman	45	45	10	0	0
Hedge layer	22.7	63.6	9.1	4.6	0
Fencer	66.7	33.3	0	0	0
Dry stone waller	0	37.5	50	12.5	0
Tree surgeon	77.4	22.6	0	0	0
Specialist builder	35.3	52.9	11.8	0	0
General farm labour	66.7	33.3	0	0	0
Unskilled labour	95.5	0	0	0	4.5

South West	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	69.2	23.1	3.8	3.9	0
Vehicle / machine operator	80.3	19.7	0	0	0
Stockman	70.8	21.5	6.2	1.5	0
Hedge layer	63.8	30.4	5.8	0	0
Fencer	77	23	0	0	0
Dry stone waller	48.8	31.7	14.6	4.9	0
Tree surgeon	75.8	22.6	1.6	0	0
Specialist builder	41.1	55.4	3.5	0	0
General farm labour	80.8	17.8	1.4	0	0
Unskilled labour	87.1	8.1	4.8	0	0

Appendix 3. Proximity of skilled workers - NUTS 1 regional data (continued)

West Midlands					
	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	61.1	33.3	5.6	0	0
Vehicle / machine operator	77.8	18.5	3.7	0	0
Stockman	66.6	29.2	4.2	0	0
Hedge layer	48	40	12	0	0
Fencer	63	33.3	3.7	0	0
Dry stone waller	18.2	54.5	9.1	18.2	0
Tree surgeon	45.5	54.5	0	0	0
Specialist builder	5.3	73.7	15.8	5.2	0
General farm labour	66.7	29.6	3.7	0	0
Unskilled labour	96	4	0	0	0

Yorkshire & Humberside					
	< 10 miles	10 - 50 miles	51 - 100 miles	> 100 miles	Non-UK
	%	%	%	%	%
Shepherd	58.8	41.2	0	0	0
Vehicle / machine operator	73.1	26.9	0	0	0
Stockman	50	44.4	5.6	0	0
Hedge layer	22.2	61.1	16.7	0	0
Fencer	80	20	0	0	0
Dry stone waller	66.7	27.8	5.5	0	0
Tree surgeon	59.1	36.4	4.5	0	0
Specialist builder	44.4	44.4	5.6	5.6	0
General farm labour	72	24	0	0	4
Unskilled labour	81.8	13.6	0	0	4.6

Appendix 4. Average number of hours spent managing countryside features each year by NUTS 1 region

	East Midlands	Eastern England	North East	North West	South East	South West	West Midlands	Yorks & Humber.
Hedgerows (laying)	29.1	14.3	11.5	37.3	69.3	71.8	28.9	16.3
Hedgerows (trimming)	42.4	76.4	11.3	49.4	65.4	49.7	39.6	28
Dry stone walls (maintenance)	33.4	0	2.5	57.9	0.7	16.1	2.3	71.9
Dry stone walls (rebuilding)	13.6	0	10	20.3	0	6.8	0	20.6
Wetlands	0.8	10.3	0	3.8	0.6	1	0	1.2
Ditches / ponds	36.9	43.8	5.5	26.7	24	15.2	19.8	18.9
Field margins	14.2	19.4	5.8	3.3	13.9	10.2	4.7	5.3
Woodlands / trees	16.6	70	3.5	14	30.2	32.6	36.9	15.9
Farm buildings	28.8	22.9	6.8	20.9	20.3	13.9	19	47.3
Archaeological sites	8.4	1.3	3	3.7	0.2	1.7	1	1.2
Hay meadows / grassland	40.4	36.2	24.5	55.6	34.5	27	45.8	25.3
Moorland	2.2	0	56.3	1.6	0	3.6	0	3
Heathland	0	0	0	0.1	1	1.5	1	0.9
Rights of way (bridleways)	0.5	3.9	1.25	2.3	0.3	2.1	2.4	5.2
Rights of way (footpaths)	8.2	16.2	3	5	6.6	4.4	9	5.2

Appendix 5. Agri-environment payments[1] in England, 2004

Scheme[2]	£m
Countryside Stewardship and Arable Stewardship	77
Organic Farming Schemes	7
Environmentally Sensitive Areas Scheme	66
Sites of Special Scientific Interest (SSSI)	10
Other schemes (including moorland and habitat schemes)	3
TOTAL	163

1. Payment levels are net of deductions for modulation.
2. The above does not include support to LFA schemes which in England amounts to a further £34M.

Source: Defra (2005c)

Appendix 6. Other landscape management activities undertaken by survey farmers

Activity	%
Controlling weeds and pests	36
Removal of litter / fly tipping	18
Repairing field drains and water courses	16
Repairing public damage to fences/gates	11
Providing wildlife food and nesting sites	11
Providing game cover	7
TOTAL	100

Appendix 7. Proportion of survey farmers who manage countryside features, England (%)

	Using family or farm staff	Using contractors	Using both
Hedgerows	33.8	26.2	20.6
Dry stone walls (maintenance)	15.2	0.3	2.3
Dry stone walls (rebuilding)	4.8	3.1	0.3
Wetlands	3.4	0.3	0
Ditches / ponds	44.2	12.4	5.6
Field margins	26.5	3.1	0.3
Woodlands / trees	34.7	3.9	2.8
Farm buildings	31	3.1	4.5
Archaeological sites	6.2	0.3	0
Hay meadows /grassland	30.42	3.4	8.7
Moorland	2.5	0.3	0.3
Heathland	1.1	0.3	0
Rights of way	43.1	1.4	0.6

Appendix 8. Proportion of survey farmers who manage countryside features, England, by farm type (%)

Cereals farms	Using family or farm staff	Using contractors	Using both
Hedgerows (laying)	22	5.5	2.8
Hedgerows (trimming)	47.4	31.2	7.3
Dry stone walls (maintenance)	5.5	1	1
Dry stone walls (rebuilding)	0	1.8	0
Wetlands	1	0	0
Ditches / ponds	44	15	6
Field margins	34	4	0
Woodlands / trees	41	3	6
Farm buildings	32	4	5
Archaeological sites	8	1	0
Hay meadows/grassland	28	16	0
Moorland	2	0	0
Heathland	1	0	0
Rights of way (bridleways)	12	2	0
Rights of way (footpaths)	53	3	0

Dairy farms	Using family or farm staff	Using contractors	Using both
Hedgerows (laying)	32	5	5
Hedgerows (trimming)	16	54	3
Dry stone walls (maintenance)	41	0	3
Dry stone walls (rebuilding)	22	3	0
Wetlands	3	0	0
Ditches / ponds	51	3	3
Field margins	5	0	0
Woodlands / trees	24	3	0
Farm buildings	43	0	0
Archaeological sites	14	0	0
Hay meadows/grassland	38	8	0
Moorland	5	0	0
Heathland	0	0	0
Rights of way (bridleways)	14	0	0
Rights of way (footpaths)	35	0	0

Appendix 8. Proportion of survey farmers who manage countryside features, England, by farm type (%) (continued)

Lowland livestock	Using family or farm staff	Using contractors	Using both
Hedgerows (laying)	24	5	14
Hedgerows (trimming)	32	41	5
Dry stone walls (maintenance)	24	0	8
Dry stone walls (rebuilding)	3	5	3
Wetlands	0	0	0
Ditches / ponds	38	14	5
Field margins	8	5	0
Woodlands / trees	32	3	0
Farm buildings	16	5	0
Archaeological sites	5	0	0
Hay meadows/grassland	43	14	0
Moorland	3	3	0
Heathland	5	3	0
Rights of way (bridleways)	5	0	0
Rights of way (footpaths)	32	0	0

Mixed farms	Using family or farm staff	Using contractors	Using both
Hedgerows (laying)	22	5.5	2.8
Hedgerows (trimming)	47.4	31.2	7.3
Dry stone walls (maintenance)	5.5	1	1
Dry stone walls (rebuilding)	0	1.8	0
Wetlands	1	0	0
Ditches / ponds	44	15	6
Field margins	34	4	0
Woodlands / trees	41	3	6
Farm buildings	32	4	5
Archaeological sites	8	1	0
Hay meadows/grassland	28	16	0
Moorland	2	0	0
Heathland	1	0	0
Rights of way (bridleways)	12	2	0
Rights of way (footpaths)	53	3	0

Appendix 9. Hours spent on landscape management on survey farms and proportion (%) of hours uncompensated by farm type

	Cereals		Dairy		General arable		Lowland livestock		Mixed		Upland livestock	
	Hours	% unpaid	**Hours**	% unpaid	**Hours**	% unpaid	**Hours**	% unpaid	**Hours**	% unpaid	**Hours**	% unpaid
Hedgerows (laying)	**36**	64	**67**	77	**8**	25	**101**	61	**30**	80	**37**	60
Hedgerows (trimming)	**73**	87	**38**	87	**47**	95	**30**	82	**36**	92	**10**	89
Dry stone walls (maintenance)	**8**	88	**53**	86	**12**	67	**67**	71	**22**	86	**63**	100
Dry stone walls (rebuilding)	**3**	100	**13**	79	**14**	50	**11**	58	**2**	0	**116**	33
Wetlands	**0**	0	**1**	100	**0**	na	**1**	0	**1**	0	**1**	100
Ditches/ponds	**32**	92	**17**	92	**31**	95	**26**	82	**22**	89	**8**	100
Field margins	**16**	69	**2**	50	**29**	88	**4**	100	**8**	53	**3**	100
Woodland/trees	**56**	90	**7**	81	**32**	100	**20**	79	**19**	73	**16**	80
Farm buildings	**19**	93	**15**	95	**42**	92	**14**	89	**17**	100	**55**	100
Archaeological sites	**5**	100	**3**	100	**0**	0	**4**	100	**0**	100	**0**	na
Hay meadows/grassland	**33**	88	**24**	86	**26**	75	**49**	77	**35**	88	**104**	86
Moorland	**1**	100	**6**	50	**4**	0	**4**	30	**0**	0	**33**	65
Heathland	**0**	50	**0**	na	**0**	na	**5**	33	**0**	na	**0**	na
Rights of way (bridleways)	**4**	93	**3**	80	**1**	67	**1**	67	**1**	100	**0**	100
Rights of way (footpaths)	**9**	97	**4**	92	**15**	87	**6**	77	**5**	91	**4**	100

Appendix 10. The Countryside Stewardship and Environmentally Sensitive Areas Schemes - some key facts

The Countryside Stewardship Scheme

General

Launched in 1991 by the then Countryside Commission (now Countryside Agency) then transferred to MAFF in 1996 (now Defra), the CSS is a grant scheme paying farmers and landowners for environmental works undertaken. It operates on land outside of ESA as a national scheme in England under the England Rural Development Programme. CSS agreements run for 10 years, with an option to renew beyond that period. Agreements are made at the farm level, with 'management prescriptions' to be observed, agreed in advance.

Annual payments are made for prescribed works, on the basis of 'income forgone'. Supplementary payments are available for additional work 'over and above' the basic agreement and for permitted access. Contributions toward capital expenditure necessary for securing environmental benefits, for example for hedging and walling, are also available.

Environmental objectives

The overall objective of the CSS is to make environmentally friendly management practices part of 'normal' farming and land management, with specific objectives to:

- sustain the beauty and diversity of the landscape;
- improve and extend wildlife habitats;
- create new habitats and landscapes where appropriate;
- restore neglected land or features;
- conserve archaeological sites and historic features; and
- improve opportunities for countryside enjoyment.

Geographical/landscape focus

The CSS targets specific landscape types nationally and specific areas within counties

- Chalk and limestone grassland
- Lowland heath
- Waterside land
- Coastal land
- Upland
- Historic features - parkland, traditional buildings
- Historic features - old orchards
- Field boundaries
- Arable field margins
- Countryside around towns
- Old meadows and pastures

Appendix 10. The Countryside Stewardship and Environmentally Sensitive Areas Schemes - some key facts (continued)

The Environmentally Sensitive Areas Scheme

General

The first ESA was introduced in 1987 following the Agriculture Act, 1986. ESAs are voluntary incentive schemes to 'encourage farmers to adopt agricultural practices, which would safeguard and enhance [countryside] of... high landscape, wildlife or historic value'. ESA schemes now operate under the ERDP. Annual payments are made for prescribed works for each hectare entered into the scheme. Each scheme has a range of entry options, or 'tiers' of management practice, with payment varying on degree of management required. ESA schemes (as does the CSS) provide grants for the restoration of traditional farm buildings. ESA agreements run for 10 years with a break clause at 5 years, which can be exercised by either party.

Environmental objectives

Objectives same as CSS (see above)

Geographical/landscape focus

There are 22 ESA schemes covering 10% of agricultural land in England:

	Uptake of eligible area (%)		Uptake of eligible area (%)
1987 Stage I		**1993 Stage III**	
Broads	60.7	Avon Valley	63.4
Pennine Dales	77.7	Exmoor	78.4
Somerset Levels & Moors	67.2	Lake District	76.5
South Downs	35.8	North Kent Marshes	47.5
West Penwith	92.5	South Wessex Downs	59.1
1988 Stage II		South West Peak	83.8
Breckland	15.5	**1994 Stage IV**	
Clun	88.5	Blackdown Hills	42.2
North Peak	88.6	Cotswold Hills	77.8
Suffolk River Valleys	31.0	Dartmoor	63.7
Test Valley	41.8	Essex Coast	24.0
		Shropshire Hills	71.4
		Upper Thames Tributaries	38.2

Source: Defra (2004) and Little, *et al.* (1998).

Appendix 11. The Environmental Stewardship Scheme - some key facts

General

The ESS is a grant scheme paying farmers and landowners for conservation works undertaken. Introduced on 3 March 2005, the ESS is a national scheme in England (other 'home' countries have similar schemes) managed within the ERDP. The overall objective of the scheme is to 'build on the recognised success of the Environmentally Sensitive Areas Scheme and the Countryside Stewardship Scheme', both of which it replaces. The scheme has three components: the Entry Level Scheme, the Organic Entry Level Scheme and the Higher Level Scheme.

Environmental objectives

Primary objectives:

- Conserve wildlife (biodiversity)
- Maintain and enhance landscape quality and character
- Protect the historic environment and natural resources
- Promote public access and understanding of the countryside
- Natural resource protection

Secondary objectives:

- Genetic conservation
- Flood management

Entry Level Scheme

The scheme was launched by Defra in March 2005. All farms, of any size, throughout England may apply to join. Agreements are for 5 years with no break clause. There are no minimum farm size restrictions. All land to be entered must be under management control of applicant, i.e. they must be the freeholder, tenant or licensed holder. The whole farm must be entered into the scheme (with possible exception of woodland where this constitutes significant proportion of land holding). Small areas of woodland or scrub are to be included in any application.

Applicants are required to first complete a Farm Environment Record (FER), which details the 'features' on the farm, e.g., hedgerows, woodland, archaeological sites etc. Defra/RPA, on the basis of the area of eligible land, set a points target for the farm at a rate of 30 points per hectare (or 8 points per hectare for holdings within an LFA). Applicants indicate, on map supplied by RPA, the landscape management options to be adopted in order to meeting the points target. If the points target can be met, acceptance is guaranteed.

The payment rate is £30/ha for non-LFA farms and £8/ha (for parcels of land of 15ha or more) within the LFA. No additional payments can be obtained by exceeding the 30 points/ha target. Payment deductions are made where the management objectives/prescriptions are not achieved, or where the applicant withdraws from the scheme early.

Appendix 11. The Environmental Stewardship Scheme - some key facts (continued)

Higher Level Scheme

The first application deadline for the HLS was 31 July 2005 for an agreement due to commence on 1 November 2005. Subsequently, applications could be made quarterly with a processing period of up to four months. Normally, the applicant must already be in ELS (or OELS). In all cases, acceptance of applications is at Defra's discretion. The applicant must have control of the land for the whole period under agreement (usually 10 years, although 20 years agreements are considered in some cases). There is no minimum farm size restriction. HLS is effectively an overarching scheme adding additional management requirements to those of ELS/OELS. HLS is not a whole farm scheme. Only land considered to be of 'significant environmental interest' is acceptable.

A Farm Environmental Plan is required, in addition to the FER produced for the ELS/OELS application. The Plan identifies the landscape management options selected for the farm. The options are selected from a set of priority targets drawn up for each of 150 'Joint Character Areas' in England.

Payment rates are agreed at the outset and then fixed for first five years of the agreement. Should further beneficial environmental works have been carried out in first five years, payment rates may increase. Decreases in rates of payment are possible if agreed works are ineffectively carried out or not carried out at all. Applicants may also be penalised for withdrawing without giving requisite notice - usually one month's written notice at the fifth anniversary of the agreement.

Source: Defra (2005d and 2005e).

Appendix 12. Comparison of the availability of key landscape management options under the CSS, ESA and ESS schemes

Prescription	ELS	HLS	CSS	ESA (examples)
Hedgerows - relaying and double fencing	EB1; EB2; EB3	HB12	Yes	Yes (Suffolk River Valleys)
Hedgerows - trimming	EB1; EB2; EB3	HB12	No	Yes (Upper Thames Tributaries)
Dry stone walls and stone faced hedge banks – routine maintenance	EB4; EB5; EB11	WR	Yes	Yes (Cotswolds)
Dry stone walls and stone faced hedge banks - rebuilding	EB11(?)	WR	Yes	Yes (Dartmoor)
Wetlands - drain and sluice management and control of water levels using sluices	No	HD8; HD10; HD11; HQ3; HQ4	Yes	Yes (Broads)
Ditches and ponds - cleaning/clearing	EB6; EB7; EB8; EB9; EB10	HQ1; HQ2	Yes	Yes (Somerset Levels)
Field margins managed for wildlife and wildflowers - cutting	EE1; EE2; EE3	HE10	Yes	Yes (Blackdown Hills)
Woodland/trees - grazing management, pruning, thinning and felling	EC3; EC4(?)	HC5 – HC14	No	Yes (Test Valley)
Traditional (pre-1939) farm buildings in use or redundant - maintenance of internal structure and/or fabric of building	No	HTB	Yes	Yes (Clun)
Archaeological sites - scrub clearance and control of grazing	ED4; ED5	HD8	Yes	Yes (South Downs)
Hay meadows - mowing, baling and tedding	EK3	HK6; HK7; HK8; HK18	Yes	Yes (Pennine Dales)
Moorland - grazing management and scrub and bracken control	EL6	HL9; HL10; HR5	Yes	Yes (North Peak)
Heathland - grazing management and scrub and bracken control	No (EL6?)	HO1; HR5	Yes	Yes (Breckland)
Rights of way - resurfacing bridleways and byways open to off road vehicles	No	May come under HN1 - HN9	No	No
Rights of way - reinstating cross-field footpaths/clearing obstacles	No	Ditto	No	No

Note: The above list may not be exhaustive. Other ELS and HLS options may be available.

Appendix 12. Comparison of the availability of key landscape management options under the CSS, ESA and ESS schemes (continued)

Key:

EB1	Hedgerow management - both sides
EB2	Hedgerow management - one side only
EB3	Enhanced hedgerow management - control of both sides
EB4	Stone-faced hedge bank management on both sides
EB5	Stone-faced hedge bank management on one side
EB6	Ditch management
EB7	Half ditch management
EB8	Combined hedge and ditch management (incorporating EB1 hedge management)
EB9	Combined hedge and ditch management (incorporating EB2 hedge management)
EB10	Combined hedge and ditch management (incorporating EB3 hedge management)
EB11	Stone wall protection and maintenance
EC1	Protection of in-field trees - arable land
EC2	Protection of in-field trees - grassland
EC3	Maintenance of woodland fences
EC4	Management of woodland edges
ED2	Take archaeological features currently on cultivated land out of cultivation
ED3	Reduce cultivation depth on land where there are archaeological features
ED4	Management of scrub on archaeological sites
ED5	Archaeological features on grassland
EE1	2 m buffer strips on cultivated land
EE2	4 m buffer strips on cultivated land
EE3	6 m buffer strips on cultivated land
EE4	2 m buffer strips on intensive grassland
EE5	4 m buffer strips on intensive grassland
EE6	6 m buffer strips on intensive grassland
EE7	Buffering in-field ponds in permanent improved grassland:
EE8	Buffering in-field ponds in arable land
EK3	Permanent grassland with very low inputs
EL6	Moorland and rough grazing
HB12	Maintenance of hedgerows of very high environmental value
HD8	Maintaining high water levels to protect archaeology
HD10	Maintenance of traditional water meadows
HD11	Restoration of traditional water meadows
HK6	Maintenance of species-rich, semi-natural grassland
HK7	Restoration of species-rich, semi-natural grassland
HK8	Creation of species-rich, semi-natural grassland
HK18	Haymaking supplement
HL9	Maintenance of moorland
HL10	Restoration of moorland
HN1-HN9	A range of land management options – permissive access
HO1	Maintenance of lowland heathland
HQ1	Maintenance of ponds of high wildlife value <100 sq m
HQ2	Maintenance of ponds of high wildlife value >100 sq m
HQ3	Maintenance of reed beds
HQ4	Restoration of reed beds
HR5	Bracken control supplement
HTB	Restoration of historic buildings

Appendix 13. The average hours per survey farm spent managing countryside features, England, by type of labour and region

East Midlands			
	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	16.8	5.7	6.2
Hedgerows (trimming)	19.8	11.6	10.5
Dry stone walls (maintenance)	24.8	4.3	3.0
Dry stone walls (rebuilding)	5.7	2.1	5.1
Wetlands	0.0	0.0	0.7
Ditches / ponds	17.7	12.0	3.5
Field margins	7.3	6.4	0.1
Woodlands / trees	13.1	1.2	1.3
Farm buildings	14.2	0.4	13.0
Archaeological sites	8.1	0.0	0.0
Hay meadows / grassland	32.0	4.7	2.0
Moorland	2.1	2.7	0.0
Heathland	0.0	0.0	0.0
Rights of way (bridleways)	0.5	0.0	0.0
Rights of way (footpaths)	5.3	0.0	0.1

Eastern England			
	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	2.2	10.2	1.9
Hedgerows (trimming)	21.7	41.4	13.7
Dry stone walls (maintenance)	0.0	0.0	0.0
Dry stone walls (rebuilding)	0.0	0.0	0.0
Wetlands	4.0	6.5	0.0
Ditches / ponds	18.7	15.0	10.3
Field margins	7.6	9.4	2.5
Woodlands / trees	26.8	37.9	6.4
Farm buildings	5.8	13.5	3.5
Archaeological sites	0.3	0.9	0.0
Hay meadows / grassland	28.5	3.4	4.0
Moorland	0.0	0.0	0.0
Heathland	0.0	0.0	0.0
Rights of way (bridleways)	2.7	1.3	0.0
Rights of way (footpaths)	5.6	10.5	0.2

North East			
	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	4.0	3.8	3.8
Hedgerows (trimming)	1.4	5.4	4.5
Dry stone walls (maintenance)	1.3	1.3	0.0
Dry stone walls (rebuilding)	0.0	0.0	10.0
Wetlands	0.0	0.0	0.0
Ditches / ponds	1.5	4.0	0.0
Field margins	0.0	3.3	2.5
Woodlands / trees	1.0	2.5	0.0
Farm buildings	1.0	5.8	0.0
Archaeological sites	0.0	3.0	0.0
Hay meadows / grassland	7.5	10.8	6.3
Moorland	6.3	50.0	0.0
Heathland	0.0	0.0	0.0
Rights of way (bridleways)	0.0	1.3	0.0
Rights of way (footpaths)	2.3	0.8	0.0

Appendix 13. The average hours per survey farm spent managing countryside features, England, by type of labour and region (continued)

North West	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	22.8	5.4	9.0
Hedgerows (trimming)	10.8	3.5	33.1
Dry stone walls (maintenance)	39.1	8.9	10.0
Dry stone walls (rebuilding)	8.6	1.4	10.3
Wetlands	1.3	2.5	0.0
Ditches / ponds	19.4	2.5	5.1
Field margins	2.6	0.7	0.0
Woodlands / trees	8.0	5.3	0.3
Farm buildings	20.1	1.0	0.3
Archaeological sites	3.4	0.3	0.0
Hay meadows / grassland	47.7	9.1	1.3
Moorland	1.0	0.5	0.1
Heathland	0.1	0.0	0.0
Rights of way (bridleways)	2.0	0.3	0.0
Rights of way (footpaths)	4.5	0.8	0.0

South East	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	63.8	3.7	2.4
Hedgerows (trimming)	29.3	16.3	17.3
Dry stone walls (maintenance)	0.0	0.7	0.0
Dry stone walls (rebuilding)	0.0	0.0	0.0
Wetlands	0.6	0.0	0.0
Ditches / ponds	16.6	2.5	3.9
Field margins	7.5	6.2	0.0
Woodlands / trees	15.1	9.1	5.5
Farm buildings	7.7	8.6	3.8
Archaeological sites	0.0	0.0	0.2
Hay meadows / grassland	21.6	6.0	3.1
Moorland	0.0	0.0	0.0
Heathland	1.0	0.0	0.0
Rights of way (bridleways)	0.3	0.0	0.0
Rights of way (footpaths)	4.1	2.4	0.0

South West	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	33.2	18.8	19.8
Hedgerows (trimming)	17.5	8.6	22.6
Dry stone walls (maintenance)	6.5	3.8	5.8
Dry stone walls (rebuilding)	0.5	1.1	5.1
Wetlands	0.5	0.4	0.0
Ditches / ponds	9.0	3.2	2.9
Field margins	5.4	4.4	0.1
Woodlands / trees	23.8	3.1	5.3
Farm buildings	9.1	3.4	1.4
Archaeological sites	0.7	1.0	0.0
Hay meadows / grassland	18.5	3.1	5.2
Moorland	1.0	2.2	0.3
Heathland	1.3	0.0	0.2
Rights of way (bridleways)	1.4	0.4	0.2
Rights of way (footpaths)	3.0	1.3	0.0

Appendix 13. The average hours per survey farm spent managing countryside features, England, by type of labour and region (continued)

West Midlands			
	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	7.9	17.0	3.1
Hedgerows (trimming)	9.2	10.9	17.5
Dry stone walls (maintenance)	2.4	0.0	0.0
Dry stone walls (rebuilding)	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Ditches / ponds	12.6	3.8	3.7
Field margins	2.8	1.7	0.0
Woodlands / trees	11.6	25.5	2.1
Farm buildings	12.9	4.5	1.9
Archaeological sites	1.1	0.0	0.0
Hay meadows / grassland	34.9	12.0	1.3
Moorland	0.0	0.0	0.0
Heathland	1.1	0.0	0.0
Rights of way (bridleways)	1.5	0.0	1.1
Rights of way (footpaths)	6.0	2.4	0.8

Yorkshire & Humberside			
	Farmer/family	Farm staff	Contractor
Hedgerows (laying)	3.4	10.9	0.6
Hedgerows (trimming)	4.6	9.1	12.6
Dry stone walls (maintenance)	31.0	32.5	4.0
Dry stone walls (rebuilding)	6.3	4.0	8.8
Wetlands	1.1	0.0	0.0
Ditches / ponds	12.9	2.5	2.4
Field margins	3.8	1.5	0.0
Woodlands / trees	12.4	2.7	0.0
Farm buildings	10.6	11.4	22.6
Archaeological sites	1.1	0.0	0.0
Hay meadows / grassland	16.1	5.9	2.3
Moorland	2.3	0.6	0.0
Heathland	0.0	0.9	0.0
Rights of way (bridleways)	1.7	3.3	0.0
Rights of way (footpaths)	3.4	1.6	0.0

Appendix 14. Non-response bias tests of the first responding tertile against the last tertile - number of hours spent on conservation activities

Comparison	Mean first tertile	Mean last tertile	Group difference (late – early)	T value	P > t
Hedgerows (laying)	38.7	44.7	6.0	-0.31	0.7542
Hedgerows (trimming)	45.1	58.1	13.0	-1.00	0.3165
Dry stone walls (maintenance)	28.5	34.2	5.8	-0.30	0.7638
Dry stone walls (rebuilding)	6.3	5.6	-0.7	1.08	0.6850
Wetlands	0.7	5.8	5.1	-1.16	0.2466
Ditches / ponds	22.6	58.0	35.4	-1.50	0.1354
Field margins	13.4	22.3	8.8	-0.54	0.5891
Woodlands / trees	39.9	27.5	-12.4	0.75	0.4539
Farm buildings	22.4	43.3	20.9	0.58	0.5625
Archaeological sites	2.1	1.3	-0.8	0.58	0.5625
Hay meadows/ grassland	38.6	67.9	29.3	-1.20	0.2303
Moorland	1.2	4.2	3.0	-0.79	0.4297
Heathland	0.04	0.8	0.8	-1.65	0.1005
Rights of way (bridleways)	2.5	18.7	16.2	-1.01	0.3135
Rights of way (footpaths)	5.8	8.5	2.7	-0.82	0.4110

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