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Wildlife Tourism in Scotland – the example of grouse shooting

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Introduction

Wildlife tourism in Scotland has seen a recent increase in profile, with two reports providing new figures on the economic value of the activity. The reports, by the Scottish Government and Scottish Natural Heritage (SNH), seem likely to generate policy responses to further develop the sector. For example, the Tourism Minister noted that wildlife tourism is a growing sector in Scotland, and the ministerial statement following the publication of the SNH study concluded that:

"Nature based tourism generates significant benefits for the economy, including thousands of jobs. It's vital that work on the conservation and enhancement of our natural environment continues to ensure we can deliver these benefits for generations to come."

Both reports estimated the economic contribution arising from tourism activities that rely on Scotland's countryside. The SNH study examined a wide range of activities, including field sports, adventure activities such as mountain biking, surfing and sailing and walking, climbing and mountaineering. Using a very wide definition of wildlife tourism, it argued that spending on nature activities accounted for nearly 40% of all tourism spending. However, the study did not include any assessment of the environmental impact of these activities.

The study by Bournemouth University¹ used a much tighter definition of wildlife tourism and provides a more direct assessment of its impact. The major difference from the SNH study is that it considered only the activity created by those for whom the prime purpose of their trip was to view or study wildlife and it assessed that wildlife tourism accounted for 5.2% of domestic and 3.1% of overseas tourist trips. However, while it is a carefully researched study of part of the overall sector, it specifically excluded a number of other important wildlife activities such as hunting or fishing².

Despite their superficial similarities these studies produced dissimilar estimates of contributions to Scotland's economy

from countryside based tourism activities. In addition, neither considered any inter-relationship between wildlife tourism and the wider management of the environment that they rely on. This paper reports on a study that adds to both aspects of wildlife tourism in Scotland by examining in detail one area of this, grouse shooting on Scottish moors.

Background

The Game Conservancy Scottish Research Trust (GCSRT) was created in 1984 when Government advised moorland owners to research the practical and economic challenges and public benefits of managing moorland for driven grouse so that rural policy could be improved. The Red Grouse (*Lagopus lagopus scoticus* L.) was already known an iconic sporting gamebird, but by the mid 1980's the Scottish population was in decline in response to loss of habitat, predation pressure and emerging disease threats. By 2007 this decline triggered the move of the red grouse to 'amber' conservation status.

This is of concern not only to those who shoot grouse but to the public at large because research was suggesting that red grouse may be an 'umbrella species'. A simplistic explanation of this is concept is that the management of habitats, predators and parasites with the principle aim of supporting sustainably harvestable surpluses of red grouse can be shown to deliver a wide range of ecosystem services. Research undertaken by the Game & Wildlife Conservation Trust and its predecessors now show that the biodiversity of moorland managed for red grouse, rather than that grazed primarily by sheep and deer, has enhanced wading bird, invertebrate and bryophyte populations. Research also shows that red grouse focussed management also helps retain heather moorland, an internationally important habitat and can drive reductions in zoonotic parasites such as sheep ticks. These biodiversity services however are only part of a suite of ecosystem services stimulated by grouse shooting.

As a part of the research programme the GCSRT has also supported a number of economic studies of Scotland's grouse moors. A recent study commissioned by the Game & Wildlife Conservation Trust from the Fraser of Allander Institute (FAI)³ is the fourth in this series examining the economics of grouse moors in Scotland, with previous reports published in 1991, 1996 and 2001⁴. This series of reports thus allows an examination of several aspects of long term change in the industry.

The key objective of the research was to assess the economic contribution made by upland estates to the Scottish economy, particularly the contribution made by grouse shooting. However, it also involved a wider assessment of the state of the industry, and examined issues such as the proportion of estates actively involved in shooting, the current extent of activity (for example, the number of days shooting on these estates), shooting fees and changes in how shooting was provided. The study also

Figure 1: Estate size distribution (acres) 2001 and 2009

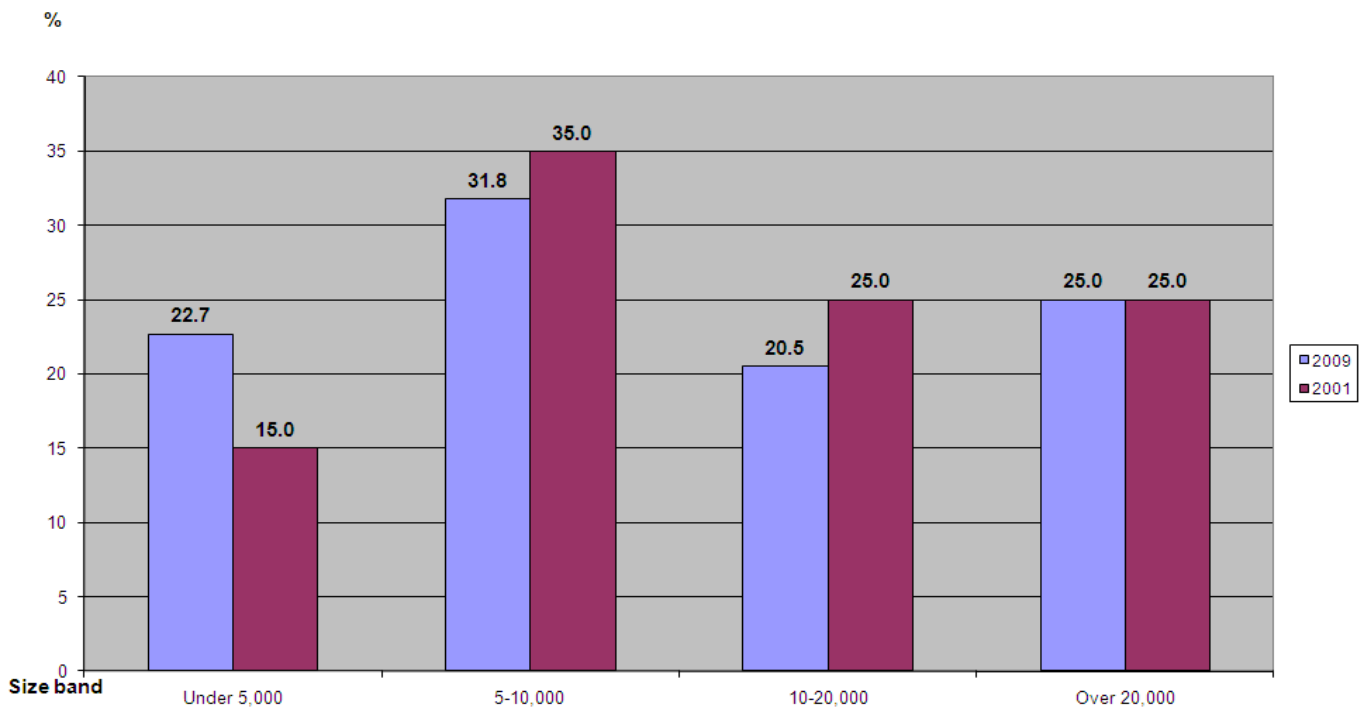


Figure 2: Location of estates

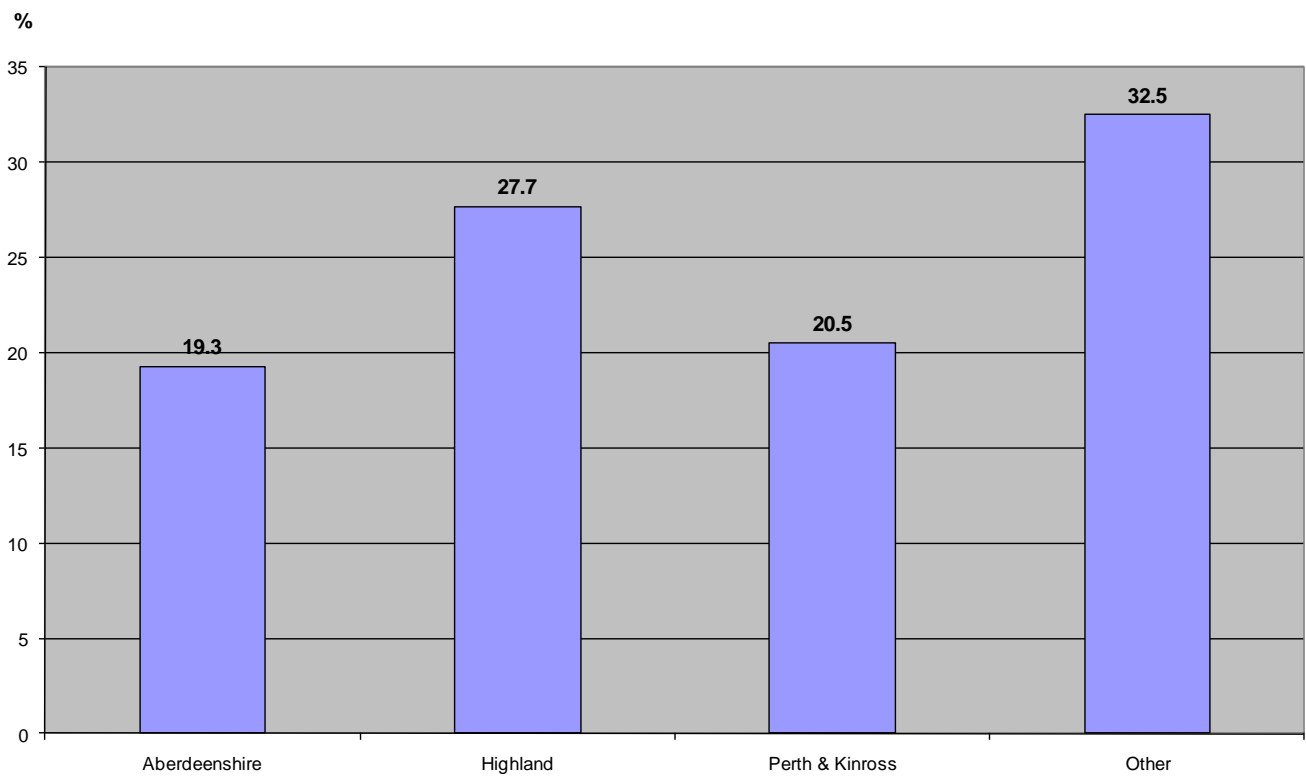


Figure 3: Shooting provision

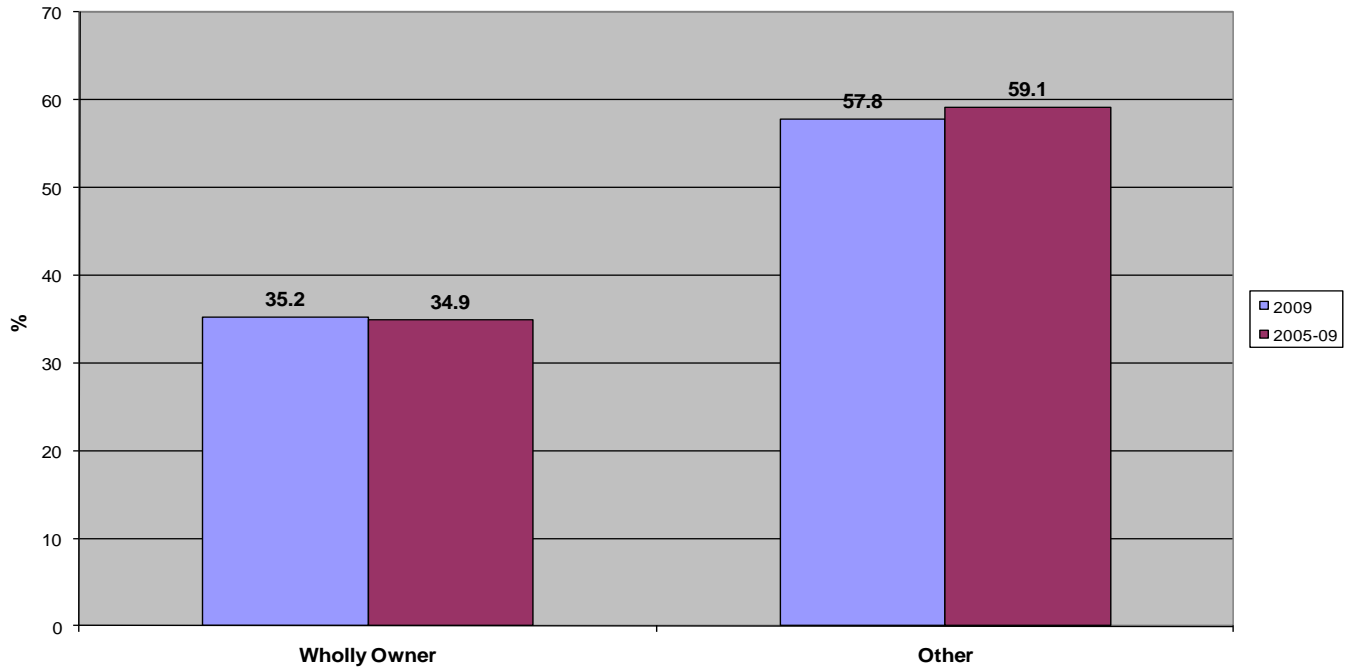
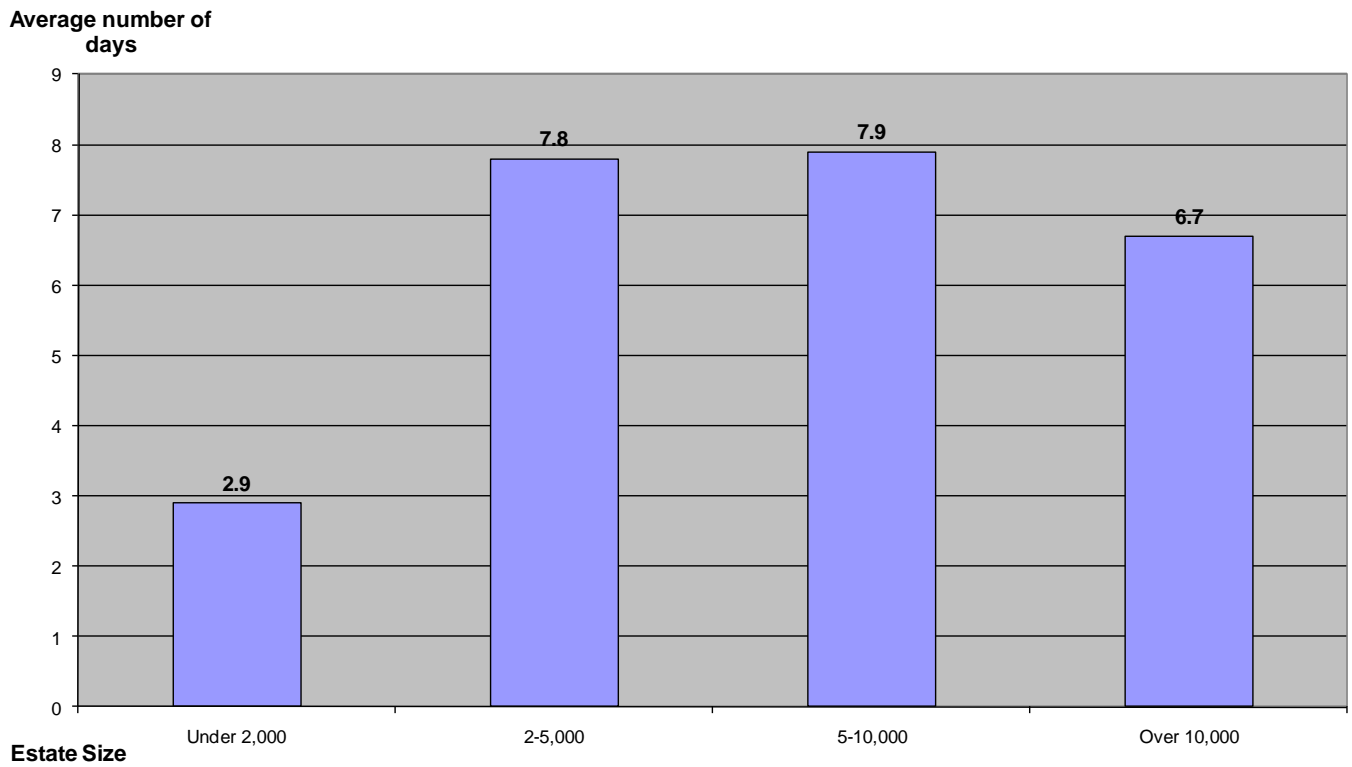


Figure 4: Days shooting by estate size, 2009



considered how investment by the estates contributes to the conservation and maintenance of the Scottish countryside.

In addition to key economic task of estimating the amount of activity generated by shooting, it also examined other economic measures, including employment, expenditure, the amount of expenditure made locally in Scotland and some analysis of the change in grouse profitability.

Methodology

Information was collected by a questionnaire survey to moor 267 estates (304 moors) owners, using a database collated by the Game & Wildlife Conservation Trust (GWCT) (Scotland). This database was compiled from a number of different sources using the primary guide that the moor was likely to have shot grouse in the previous five years.

The size of the sample frame in the 2010 study was considerably larger than that used in previous exercises – for example, the 2001 sample frame consisted of only 116 estates. The benefit of this much larger sample frame is that the current results almost certainly provide a more accurate estimate of the actual extent of grouse shooting in Scotland. This is also reflected in terms of the numbers returned, with the 2010 survey receiving 92 returns, significantly above the 64 received in 2001.

We firstly summarise the data provided by the 92 responding moors, and include an analysis of a range of issues, including moor size, days shooting, the number of birds harvested⁵, spending by the estates and estate employment. Figures are provided both for all estate activity and specifically for grouse. As 30.3% of estates responded to our questionnaire survey, however, the responses from these estates clearly account for only a sample of the total of activity. We therefore also provide an estimate of total activity across all estates.

The structure of shooting in Scotland

Estate background

- **Moor size**

The total moor area on the 92 estates equalled 551,064 hectares. We estimate that the sample 92 moors alone thus account for around 7% of Scotland's total land area⁶. This area is over one quarter greater (27.6%) than the land area represented by respondents to the 2001 study.

Figure 1 compares the size distribution of responding estates now and in 2001. There is a fair degree of parity between the two time periods, although smaller estates now account for a greater proportion of the sample - this may have been due to some fragmentation of estates in the past 10 years leading to fewer mid-size moors. The proportion of large estates remained largely

unchanged, and we note below that larger estates are not necessarily the ones where we see the majority of grouse activity (see Figure 4).

- ***Estates by location***

Figure 2 details the location of estates. Estates are concentrated in the North of Scotland, with the three major areas (Aberdeenshire, Highland and Perth & Kinross) accounting for two-thirds of estates.

Survey responses indicated that grouse shooting was a common activity on the majority of estates - in 2009, grouse shooting took place on 75 moors or 81.5% of all survey respondents. This is comparable to the position between 2005-09, when shooting took place on 82.6% of estates. Shooting appears to have taken place regularly across the majority of estates and thus appears to make an ongoing contribution to economic activity in the remoter rural areas where estates are located.

However, we also note that there also appears to have been a reduction in the proportion of estates offering shooting since the time of our last study. Our previous (2001) report indicated that shooting took place on 93.8% of the estates. This may reflect a reduced availability of grouse since 2000, a point we examine further below when we examine figures on grouse bags. However, despite a fall in the number of shooting estates, survey results (see below) actually show an increased level of activity on those estates that continue to offer shooting.

- ***Shooting provision***

Figure 3 details how grouse shooting was provided, both in 2009 and between 2005-09, and focuses on whether any shooting that occurred was for the private use of estate owners or whether the estate provided commercial shooting.

Figure 3 shows little change in the type of provision over the time period shown. However, an increasing trend towards the commercial letting of grouse shooting (rather than the retention solely for the owner's use) is evident if we compare the figures in Figure 3 with the 2001 findings. The 2001 study reported that 61.2% of shooting was provided directly for sole use by the owner (equivalent to the "Wholly Owner" category in Figure 3) compared to only 35.2% in 2009. We note below that real fees have increased since 2001 and a consequent increase in commercial profitability (see Figure 6) appears to have persuaded more estate owners to provide commercial shooting.

Figure 5: Average fee per brace

Average fee

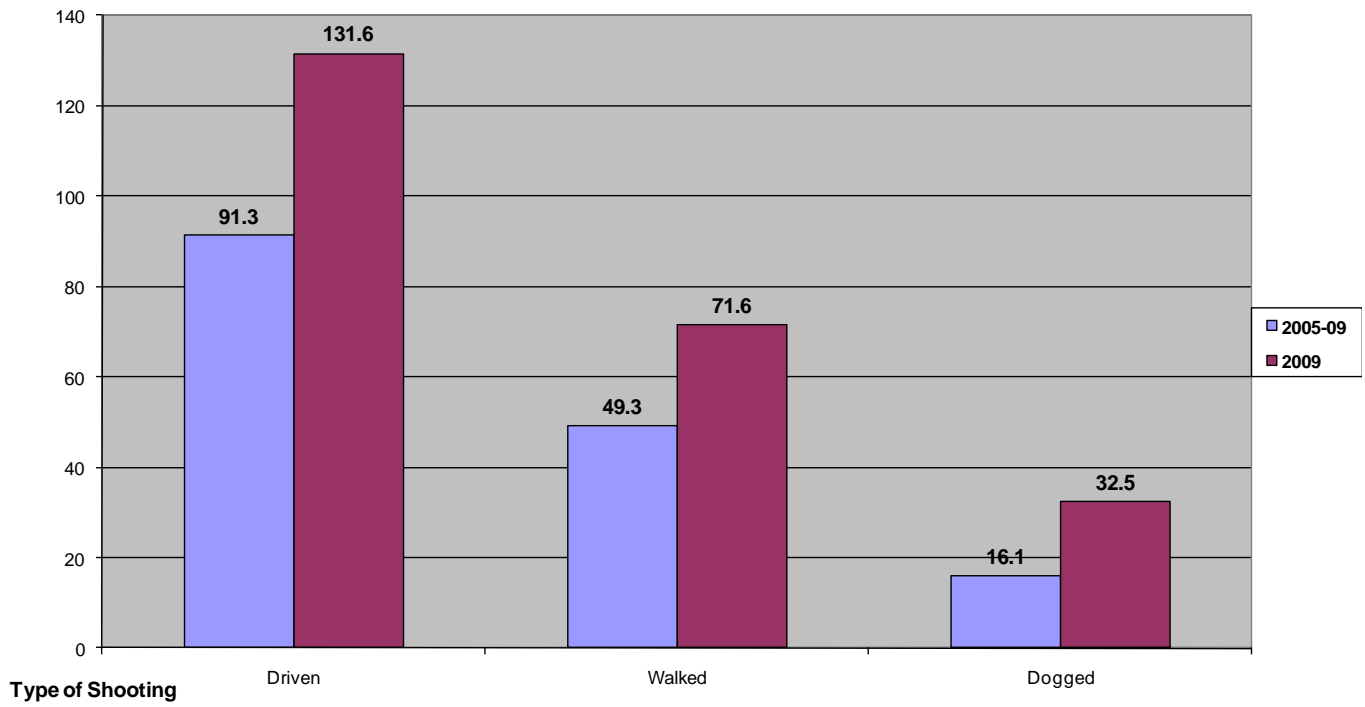
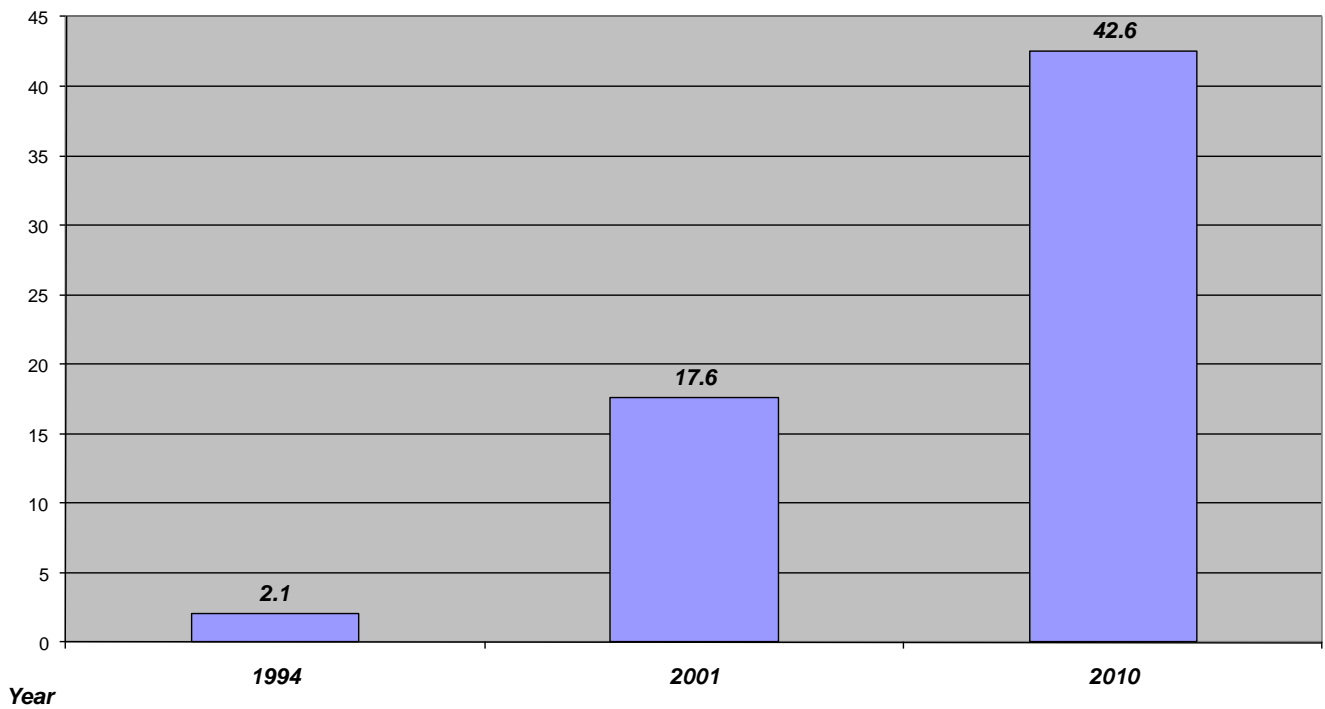


Figure 6 - Grouse profitability, various years

%



Measures of estate activity

- *Days shooting*

Table 1 shows the number of days when shooting occurred in 2009 on the 92 estates, and the type of shooting that took place.

The table shows that shooting occurred on a total of 580 days across all estates. The most frequent type of shooting was driven, which accounted for 41% of all days shooting, followed by walked, which accounted for just under 34% of days.

Table 1: Grouse days, 2009

	Number of days	%
Driven	238	41.0
Walked	197	33.9
Dogged	68	11.7
Other	77	13.3
Total	580	100

As noted, the larger estates do not necessarily provide most shooting. In fact, more activity occurred in the two mid-size bands (2-5,000 and 5-10,000 hectares), which together accounted for almost three-quarters (73.9%) of all days shooting. The largest size-band (Over 10,000 hectares) accounts for only 17.2% of all days. Figure 4, which shows average days by estate size, confirms that estates in the two mid-sized bands were more commercially active in 2009.

Table 2 shows the average number of days between 2005-09 and a comparison with Table 1 shows that the level of activity increased over this period. The total number of days shooting in 2009 (581) compares with the average of 470 days between 2005-09.

Table 2: Grouse days (average 2005-09)

	Number of days	%
Driven	165.15	35.2
Walked	205.4	43.7
Dogged	45.8	9.8
Other	53.3	11.3
Total	469.65	100.0

Smaller moors also saw the largest increase in activity over the period. Indeed, all of the increase in activity (measured by number of days) occurred in the three smaller size bands, while the number

of days shooting actually fell by 4% in the largest size-band.

- *Grouse bag*

However, while the above analysis indicates an increased level of activity in 2009 compared with recent years (in terms of the number of days shooting), an examination of the figures for grouse bag actually indicates a fall in the overall number of birds harvested, compared to the previous five years.

Table 3 shows the total bag in 2009. Of the total of 23,713, the majority (84.9%) of this was driven.

Table 3: Grouse bag 2009

Driven	Other	Total
20,135	3,578	23,713

However, Table 4, which shows the average annual grouse bag between 2005-09, shows the annual average over this period as 26,613, 12% above the 2009 level.

Table 4: Grouse bag 2005-09

Driven	Other	Total
18,931	7,682	26,613

We also note that the figures for both time periods indicate a fall in grouse bag when compared to the results of our previous exercise. The total bag reported in the 2001 study was 45,641, which included data for only 56 estates. Despite a recent increase in the number of days, the present results therefore appear to indicate a fall in grouse bag over this longer period. These data appear to reflect the declining trend in grouse bag per unit area reported in other reviews of grouse moor management in Scotland⁷. Given the economic contribution of grouse shooting, discussed in more detail below, this long-term decrease in availability is a clear source of concern over the industry's continuing viability.

- *Shooting fees*

Figure 5 indicates the average fee per brace, both by year and type of shooting. The figures show a marked increase over time for all types of shooting, with the average fee for both dogged and walked both increasing by over 40%.

Figure 7: Scottish expenditures

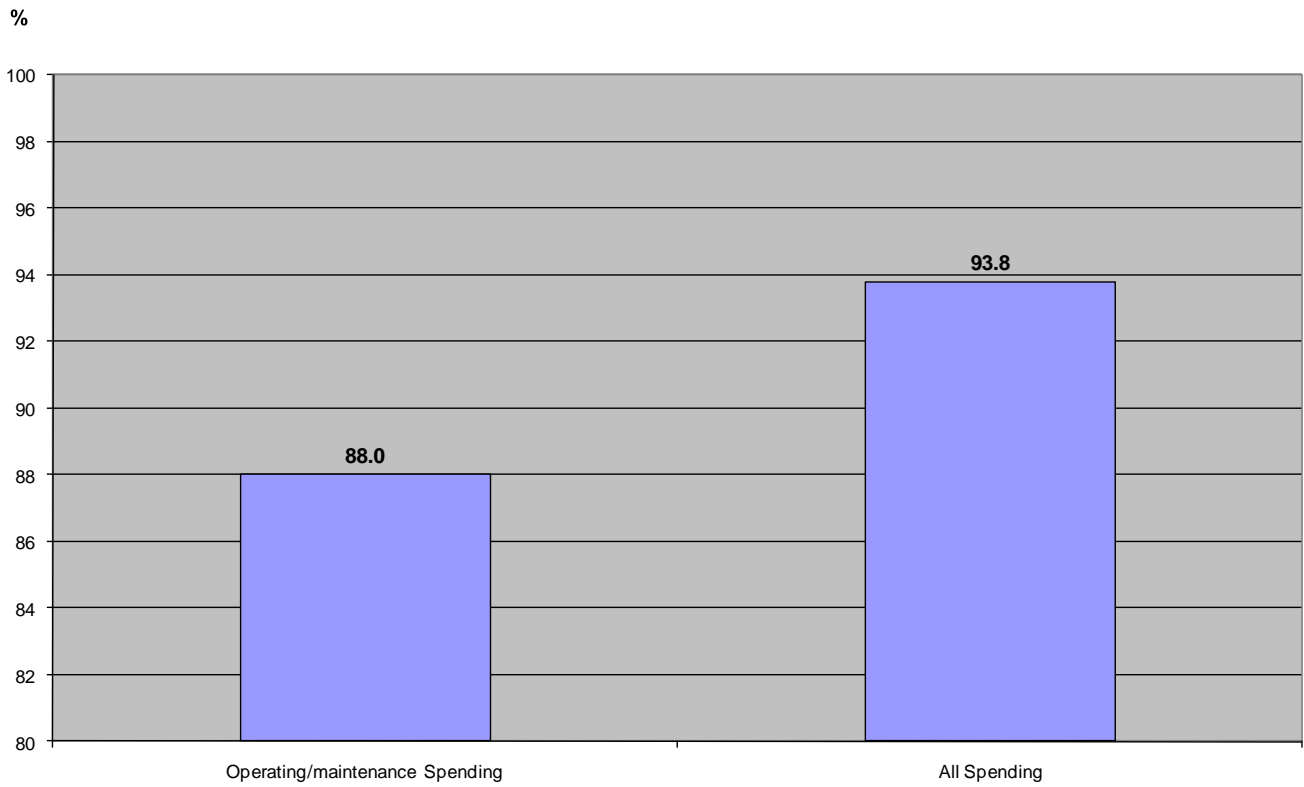
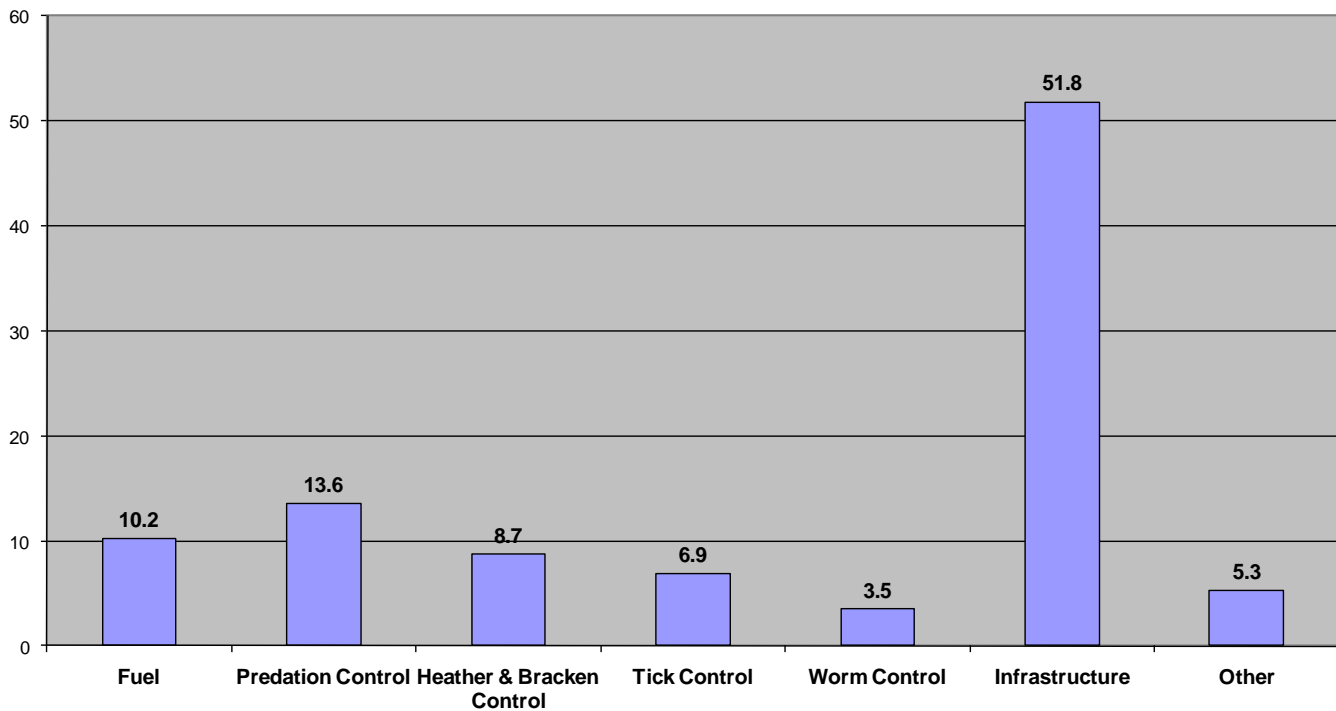


Figure 8: Operating/maintenance expenditure distribution, 2009



The fee per brace in 2009 is also substantially above that seen in our previous report. In 2001 we found that the average driven fee equalled £98 and £54 for walked and dogged shooting respectively.

Fees for both driven and walked also show an increase in real terms since 2001 – the driven fee increased by 34.3% between 2001 and 2009, while the walked fee increase by 32.6%. Both increases exceed the 26.1% increase in the Retail Price Index (RIP) over the same period⁸.

- **Profitability**

Figure 6 shows the proportion of respondents whose grouse activities made a profit. Our 2001 study noted that only 17.6% of respondents made a profit on their grouse activity. This was itself a very considerable improvement from the position in 1994, where the study revealed that revenue from grouse exceeded expenditure in only 2.1% of the reporting estates. Data from the present study indicates a very substantial increase in 2009, where 42.6% of estates reported that they made a profit from their grouse activities.

The real increase in fees noted above is almost certainly the major reason behind this increased profitability. This appears to have made a substantial contribution to an improvement in industry's overall financial health and, as noted in Figure 3, seems to have persuaded a number of owners to increase the number of moors offering commercial shooting. This very significant increase in the number of moors returning a profit would appear to suggest that increased activity is likely to continue.

- **Permanent employment – all estate activities**

Table 5 provides details on the level of all permanent employment for all activities on the 92 estates which responded to our survey. Total permanent employment was 260, an average of just under three employees per estate. As would be expected, average employment also increases with estate size, with the largest estates employing on average over three times as many as the smallest estates.

- **Permanent employment – grouse shooting**

Grouse shooting alone accounted for 119 permanent employees, just under half (46%) of

permanent employment, confirming the importance of grouse to the total of economic activity on the estates.

Seasonal employment also generated a further 61 full-time equivalent annual jobs in 2009. Total employment across all estate activities in 2009 was therefore equal to 320 full time jobs, and total grouse employment, including seasonal jobs, was estimated at 148 full-time equivalent jobs, just under half (46%) of all employment on the estates.

Table 5: Permanent employment 2009

	Total employment	Average employment
Under 2,000 acres	24	1.4
2-5,000 acres	92	2.5
5-10,000 acres	76	4.2
Over 10,000 acres	68	4.5
Total	260	2.9

- **Wage and operational spending**

Table 6 shows the total expenditure, both wages and operating and maintenance expenditure, for all estates activities and for grouse shooting alone. In total, the estates spent close to £11 million (£10.78 million) on wages and operating/maintenance spending, around half (48%) of which was on spending supporting grouse shooting.

Table 6: Estate expenditure (£M) 2009

	Wage	Operating/ maintenance	Total
All Estate expenditure	5.2	5.6	10.8
Grouse expenditure	2.4	2.8	5.1
Grouse %	45.3	50.0	47.7

We assume that all wage spending takes place in Scotland, which we believe is a reasonable given the location of the estates. However, estates are clearly able to purchase goods and services either inside or outside Scotland, and there are two

reasons why it is of interest to examine the amount of local spending on suppliers. Firstly, this indicates the extent to which estates are embedded locally – if most estate expenditures are local, this clearly indicates the extent to which they support local companies and are thus linked closely into the local economy.

Secondly, we assess below the total economic impact of grouse shooting on the Scottish economy. This total impact consists of the amount of activity that estates create directly and the amount of activity created by spin-off impacts (the additional activity created both by wage spending and by spending at local suppliers). Clearly, the greater the extent to which operating/maintenance spending are made with suppliers in Scotland, the greater will be the impact on the Scottish economy. Figure 7 does indeed show that the majority of operating/maintenance expenditures are placed locally with Scottish suppliers – 88% of all operating and maintenance spending is placed on Scottish suppliers. In total, 93.8% of all estate spending is in Scotland.

Figure 2 detailed the location of estates across Scotland, and Figure 7 showed that the majority of operating/maintenance spending is placed locally with Scottish suppliers. Taking these findings together, it appears probable that much of the economic activity provided must fall largely on the neighbouring areas where estates are located. Much of the employment provided by the estates will thus be in more remote rural areas of Scotland, generally seen as places where there are relatively few alternative employment opportunities.

- ***Expenditure distribution***

Figure 8 shows how 2009 total operating and maintenance expenditure was distributed by a more detailed categorisation of expenditure. This shows that much ongoing expenditure is on areas which can be considered as routine countryside management. For example, almost one-third of annual operating and maintenance spending goes on heather management and the control of predators, diseases and bracken.

In addition, the questionnaire also sought information on any expenditure, additional to annual operating and maintenance spending, that was made by estates specifically in order to realize environmental benefits. Respondents were also

asked to provide information on other expenditures which were specifically intended to benefit the moorland environment, such as increasing non-sporting biodiversity and soil and water management, as well as public access benefits such as improved signage and improved access to footpaths⁹. Total expenditure on the 92 sample estates was estimated to be £478,949.

- ***Economic impact estimates***

The 2010 study also assessed the overall impact of grouse shooting on the Scottish economy. Estimates were developed for employment, wages and Gross Value Added (GVA).

Table 7 shows, for the 92 sample estates only, that all estate activity directly supports 321 full-time jobs and generates £5.2 million worth of wages. Direct activity on the estates is estimated to create £8.1 million worth of GVA in Scotland. In addition, the estates are estimated to create a further £4.5 million worth of wages and a further 384 jobs in Scotland. In total, therefore, all estate activity supports 705 Scottish jobs and £9.7 million worth of wages in Scotland. Total GVA supported is estimated to be £15.6 million.

Table 7: Economic impact (sample estates)

All estate activities	Wages (£M)	Employment (FTE)	Gross value added (£M)
Direct	5.2	321	8.1
Additional	4.5	384	7.5
Total	9.7	705	15.6

Table 8 details the estimated impact of grouse shooting alone. Grouse shooting on sample estates directly supported a total of 148 full-time equivalent jobs in 2009, and paid £2.4 million worth of wages to local employees. In addition, grouse alone is estimated to support a further £2.0 million worth of wages and a further 177 jobs in Scotland.

Table 8: Economic impact (sample estates)

Grouse shooting activities	Wages (£M)	Employment (FTE)	Gross value added (£M)
Direct	2.4	148	3.7
Additional	2.0	177	3.4
Total	4.4	324	7.0

In total, therefore, the research estimated that the grouse activity on the 92 sample estates supported 324 Scottish jobs and £4.4 million worth of wages in Scotland. Total GVA supported in Scotland is estimated at £7.0 million.

The estimated employment multiplier is 2.20, which implies that every one job in grouse shooting supports a further 1.20 jobs elsewhere in Scotland. Every £1 in direct wages in grouse shooting is estimated to support a further £0.86 worth of wage income elsewhere in Scotland.

Note that the additional jobs reported in Table 9 are created both by the wages paid by the estates, and by their spending at suppliers. Although the procedure used to estimate the number of additional jobs and wage income only produces estimates for Scotland as a whole, it is likely, given that employees will live locally and that much spending is also likely to be local, that many of the additional jobs, and the resultant wage income, will be created in the local area around the estates.

Table 9: Economic impact (140 estates)

Grouse shooting activities	Wages (£M)	Employment (FTE)	Gross value added (£M)
Direct	3.6	225	5.6
Additional	3.1	269	5.1
Total	6.7	493	10.7

- *Grossed-up estimates for all grouse activity*

i) “Core estates” estimate

As noted above, only 30.3% of estates responded to the survey questionnaire, and it is therefore highly unlikely that the figures above measure the total economic activity supported in Scotland. Our previous report developed an estimate for all activity by grossing up the returns we received then using the results of a study published in 1992¹⁰, which suggested that 459 estates in Scotland had grouse populations. However, the source data used in our previous study is now clearly out of date.

Given this lack of data on the actual number of estates that shot grouse, we derive two estimates of the total amount of activity (wages, employment and GVA) that grouse shooting supports in Scotland.

The first uses a GWCT estimate of “core” estates that GWCT believed have a long term involvement in grouse shooting, a total of 140 estates. Table 9 details our estimate of the impact of grouse shooting based on the assumption of 140 “core” active moors. On this assumption, the total amount of direct activity is estimated to increase to 225 jobs. Total impacts increase to 493 jobs, £6.7 million worth of wage income and £10.7 million worth of GVA (Table 9).

ii) All estates estimate

An alternative, but clearly more heroic, method is simply to assume that the responses to our survey questionnaire are a random sample of the 304 estates on the original GWCTS database. If this is correct, it is legitimate to gross the sample estimates up to the total number of estates. Table 10 derives an estimate on the basis of this assumption. We stress that we are of course unable to gauge exactly to what extent this assumption reflects the actual pattern of grouse shooting activity across the 304 estates on the full GWCTS database.

If we employ the assumption that the sample estates do reflect all Scottish grouse activity across all 304 estates, Table 10 shows that grouse shooting in Scotland would support a total of 1,072 full time jobs and £14.5 million worth of wages in 2009. Its total contribution to Scottish GVA is estimated at £23.3 million.

Table 10: Economic impact (304 estates)

Grouse shooting activities	Wages (£M)	Employment (FTE)	Gross value added (£M)
Direct	7.8	488	12.2
Additional	6.7	584	11.1
Total	14.5	1,072	23.3

- **Change over time**

Drawing a direct comparison with the findings of the 2001 study involves one key difficulty, which is identifying the number of estates that are actively involved in grouse shooting. For example, the grossed up estimate for employment reported in the 2001 study was that grouse shooting supported 940 jobs in total, which compares with the above estimates of 1,072 jobs total jobs. We also note that grouse's GDP contribution has increased, from £17 million in 2001 to £23.3 million in 2009.

However, there is a large difference in the assumed number of estates underlying both estimates (459 in the 2001 study compared to the 304 shown above). It is also important to note that both figures are subject to a considerable degree of uncertainty. While the figure of 459 used in the previous study was the only estimate available in 2001, it was based on a source that was almost a decade old at the time, and we simply do not know if this actually did reflect the number of estates active in grouse shooting in 2001. Similarly, the figure of 304 estates used here reflects the number of estates who may have provided grouse shooting in 2009. Given this, there are clear difficulties in making a direct comparison between the two studies.

Conclusion

There are a number of interesting conclusions to emerge from this research. The key finding is clearly the sizeable contribution to economic activity – grouse shooting may sustain up to 1,072 jobs and contribute £23.3 million to Scottish GDP. Furthermore, the majority of employment is likely to be created in remoter rural areas of Scotland where there are comparatively few alternative employment opportunities. The research also noted the level of investment in Scotland's landscape, habitats and iconic species which underpins many of the wildlife tourism

activities we noted at the start of the report. This investment in management affects a minimum of 7% of Scotland's area and helps retain and enhance heather cover and healthy deer, eagle and grouse populations across a wider area than just the nature reserves of Scotland.

Also of interest is that the real increase in fees over recent years appears to have significantly strengthened the financial position of moors. Indeed, the improvement in the profitability of shooting appears to go back as far as 1994. A long-term increase in profitability, especially one as sizeable as that recorded in Figure 6, could indicate that investment in moors is likely to increase in future, helping to sustain existing jobs and possibly creating more. However, further substantial fee increases are unlikely to be sustainable and the stress grouse moors are under is reflected in the decline in the size of the number of birds harvested compared to previous studies. Continuing investment may only be achieved if suitable policies are put in place that would encourage investment in the current moors to remain and encourage more Scottish moorland owners to adopt proper grouse moor management activities. Estates spend the majority of their wage and supplier spending locally in Scotland and increased activity on the moors would create further benefits for the surrounding local economies.

The Scottish Environment Secretary recently argued that "Tourism is vital to Scotland's economic recovery. As one of Europe's leading year-round wildlife destinations with a world famous reputation for natural heritage, Scotland has a great deal to offer"¹¹. Grouse has a role to play in the future development of Scottish tourism. As an activity that supports economic activity in remote areas, and as an increasingly profitable one, Scottish policymakers should consider engaging with the industry to work to increase its contribution, both to the local economies in which they operate and to the management of the Scottish countryside.

Endnotes

¹"The Economic Impact of Wildlife Tourism in Scotland', International Centre for Tourism and Hospitality Research, Bournemouth University, June 2010. The study was sponsored by the Scottish Government.

²The study refers to these as "consumptive" wildlife tourism.

³"An economic study of Scottish Grouse Moors - an update (2010)", Fraser of Allander Institute for the Game and Wildlife Conservation Trust Scotland, August 2010.

⁴ “An Economic Study of Grouse Moors”, published by the Game Conservancy Scottish Research Trust, 2001. We refer to this throughout as the 2001 study.

⁵ Termed the grouse bag.

⁶ Estimated at around 7.8 million hectares. See “Agricultural land use in Scotland”, available at <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/agritopics/LandUseAll>.

⁷ Such as Smith A. (2009), Game Conservancy Scottish Research Trust 25th Anniversary Report. Game and Wildlife Conservation Trust.

⁸ Note, however, that Figure 4 includes responses from only 37 moors. A number of estates reported a figure for grouse bag, indicating that grouse shooting took place on the estate, but did not report a fee. It is likely that most of these estates did not want to provide fee data for reasons of commercial confidentiality.

⁹ The specific categories were biodiversity, carbon storage and water management, signage, interpretation, and footpath access.

¹⁰ “Grouse in Space and Time: the population biology of a managed gamebird”, Game Conservancy Trust, (1992).

¹¹ “True value of wildlife tourism”, Scottish Government news release, Scottish Government website, 16th June, 2010.