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An economic study of Scottish grouse moors: An update (2010)

University of
Strathclyde
Glasgow

An Economic Study of Grouse Moors

A report by the Fraser of Allander Institute

to the Game & Wildlife Conservation Trust Scotland
(incorporating the Game Conservancy Scottish Research Trust)

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Executive summary

1. This study analyses the economic contribution made by estates to the economy in Scotland, focusing in particular on the contribution of grouse shooting.
2. It also assesses a number of aspects of how estates contribute to the conservation and maintenance of the Scottish countryside.
3. The analysis in the report includes data from 2005-2009, and is drawn from a survey questionnaire sent to a sample of 304 upland estates in late 2009 and early 2010.
4. Figures are reported for the number of days shooting, grouse bag and a range of economic data for 92 upland estates.

Main findings

1. The total moor area on the responding estates was 550,831 hectares, and total heather cover was 384,392 hectares, 69.8% of the total moor area.
2. Two-thirds of responding estates were in Aberdeenshire, Highland and Perth & Kinross.
3. In 2009, grouse shooting took place on 81.5% of surveyed estates but the number of grouse shot has declined by nearly 11% in the past 5 years, and by nearly 50% compared to 2001.
4. Figures for average fee per brace increased between 2005 and 2009. The fee per brace also increased by over 30% in real terms since the time of our previous report in 2001.
5. Fees per brace for driven grouse were nearly twice as high as for walked and four times higher than for over pointer shooting.
6. Grouse revenues also increased markedly in 2009 compared with the average over the previous five years, possibly reflecting the increasing move towards let shooting rather than use by the owner alone.
7. The study found a substantial decrease in the proportion of revenues obtained from outside the UK and an increase in domestic consumption of grouse shooting.
8. Grouse moors between 5 and 10,000ha in size saw the greatest levels of investment and returns as bag size and income.
9. Moors between 2,000 and 5,000 ha had a greater proportion of walked up or over pointer grouse shooting than moors between 5,000 and 10,000 ha. These smaller moors had similar amounts of shooting to moors over 10,000 ha in size. However moors less than 2,000 ha shot less than half as many days as the largest moors.
10. Grouse shooting is estimated to account for 46% of the permanent employment across the estates surveyed.
11. Only 43% of reporting estates made a profit on their grouse activities. This is an increase over previous reports.
12. We estimate that the estates spent almost £11 million, on both wages, operating and maintenance expenditures.
13. Much of the "everyday" expenditures made by the estates are on routine countryside management, including predator control, pest control and heather and bracken management.
14. 88.3% of grouse operating/maintenance spending and 93.6% of all grouse shooting spending is made in Scotland.
15. Economic impact estimates show that:
    a) In total, the responding estates support in Scotland 705 jobs, £9.7 million of wages and contribute £15.6 million to GDP.

b) Grouse shooting on these estates supports a total of 324 jobs, £4.4 million worth of wages and contributes £7.0 million to Scottish GDP.

c) Grouse shooting on 140 "core" grouse estates in Scotland is likely to support a total of 493 jobs, £6.7 million worth of wages and contributes £10.7 million to GDP.

d) The Game & Wildlife Conservation Trust Scotland (GWCT) identified a total of 304 estates in Scotland who were invited to participate in this study. If grouse shooting on responding estates reflects grouse activity on these 304 estates, then grouse shooting would support in Scotland a total of 1,072 jobs, £14.5 million worth of wages and contribute £23.3 million to GDP.

e) We also report multipliers for grouse activity, and estimate that every one direct job in grouse shooting supports a further 1.2 jobs elsewhere in Scotland. Every £1 paid in wages in grouse shooting supports a further £0.86 of wage payments elsewhere in Scotland.

f) The multipliers reported in this study exceed those reported in our 2001 study of grouse shooting in Scotland.

Chapter One - Introduction

This is the fourth in a series of studies undertaken by the Fraser of Allander Institute (FAI) reviewing the economics of grouse moors in Scotland. Previous reports were published in 1991 and 1996. The most recent was published in 2001[1].

The key objective of the study was to assess the economic contribution made by upland estates to the Scottish economy, particularly the contribution made by grouse shooting. Our estimates of these are given in Chapter 4. However, this review is an opportunity to assess the health and practice of this industry more widely. To this end we have looked at a wide range of other issues relating to both the estates as a whole and to grouse shooting. This includes basic background measures of estate size and location across Scotland, and measures of the current extent and nature of grouse shooting activity (including number of days shooting, grouse bags, fee levels, visitor numbers and how shooting was provided).

In addition to the key economic impact measures associated with grouse shooting, we also look at other measures of economic activity, including employment (both permanent and seasonal), total expenditure, the amount of expenditure made locally in Scotland and capital expenditure. The report includes analysis of the financial position of the estates, particularly profitability, and we have considered how this investment contributes to the conservation and maintenance of the Scottish countryside. For most of the above measures, analysis is given both for the estates as a whole and specifically for grouse shooting. The report also examines differences by size of estate.

It is also an aim of this study to update information on the contribution of grouse shooting to the Scottish economy and to compare this with the findings of our earlier reports, particularly the 2001 study. Given the period since our last report, the questionnaire used to collect data also looked at the change in a number of key measures over 2005-09, which also allows us to examine trends in grouse activity over this more recent period.

[1] "An Economic Study of Grouse Moors", published by the Game Conservancy Scottish Research Trust, 2001. We refer to this throughout as the 2001 study.

Chapter 2 - Methodology

The methodology adopted follows that in all previous reports, in that a lack of official data meant that information was collected by a questionnaire survey of moor owners. The database of moor owners names and addresses was collated by the Game & Wildlife Conservation Trust Scotland (GWCT), and consisted of a list of 267 estates (304 moors) which had heather moorland where grouse were known or were likely to have been shot in the past five years. There was no limit to the spatial size or likely bag size of the moors surveyed and there was no regional preference in the moors surveyed. Nevertheless this list is likely to be an under representation of all grouse shooting in Scotland. We note that the size of the sample frame in this study is considerably larger than that used in 2001. For that exercise, the study sponsors, the Game Conservancy Scottish Research Trust (GCSRT), now incorporated into GWCT, identified a total of 116 estates. The benefit of this much larger sample frame is that the current exercise almost certainly provides a more accurate estimate of the extent of grouse shooting in Scotland.

The principal aim of the survey questionnaire was to collect the economic information needed to assess the contribution that the estates make to the Scottish economy. It therefore aimed firstly to collect data on the extent of activity on the estates, such as the number of days shooting, grouse bag and the amount spent on shooting. It also collected figures on a range of other measures concerning estate management, such as the numbers employed, the amount spent on operating and maintaining estates and the level of capital investment. As in our previous study, we also tried to identify the extent to which estate owners spend on environmental areas, including biodiversity and carbon management.

Given that this is the fourth study of this area, we also wished to compare the analysis of the present study with the results of our previous research, and the questionnaire was specifically designed to be compatible with previous results. In addition, however, the gap between the data period used in the last study (questionnaires for which were sent out in August 2000) we also sought information on more recent developments in grouse shooting (between 2005-09) allowing us to analyse more up-to-date trends in, for example, the number of days shooting.

The questionnaire was designed jointly by FAI and GWCT. One substantial benefit of GWCT's involvement is that the design of the questionnaire could reflect its detailed knowledge of the industry. This essentially allowed us to frame questions in a way that made sense to moor owners, which we believe will have had a positive impact on the number of moors who

responded to our request for data. The joint approach also meant that it could employ FAI's economic expertise in the area of economic impact analysis and, in particular, could collect the information necessary to estimate the overall economic impact of grouse shooting in Scotland.

Survey forms were initially sent in late 2009, with reminders sent in March 2010. We received a total of 92 returns, a response rate of 30.3%. We note here that the number of returns included in this latest study (92) is significantly above the level in our last study, where only 64 moors responded. As noted above, we believe that this has allowed us to produce a more precise estimate of the economic contribution of grouse.

The first part of this study analyses the data provided by the 92 moors who responded, and includes an analysis of a range of issues, including days shooting, grouse bag, spending by the estates and estate employment. Figures are provided both for all estate activity and specifically for grouse. However, given that only 30.3% of estates sent questionnaires responded, the responses from the 92 estates clearly account for only a sample of all economic activity on all estates in Scotland. It is therefore appropriate to estimate total activity across all estates by grossing up the figures from these 92 estates to provide an estimate of the total activity supported in Scotland. The procedure used to derive this estimate is explained.

A Smith

Chapter 3 –The structure of grouse shooting in Scotland

The analysis in this chapter is drawn from data provided by the 92 moors which completed our survey questionnaire. Where appropriate, we provide analysis both for the estates as a whole and specifically for grouse shooting.

Estate background

Moor size

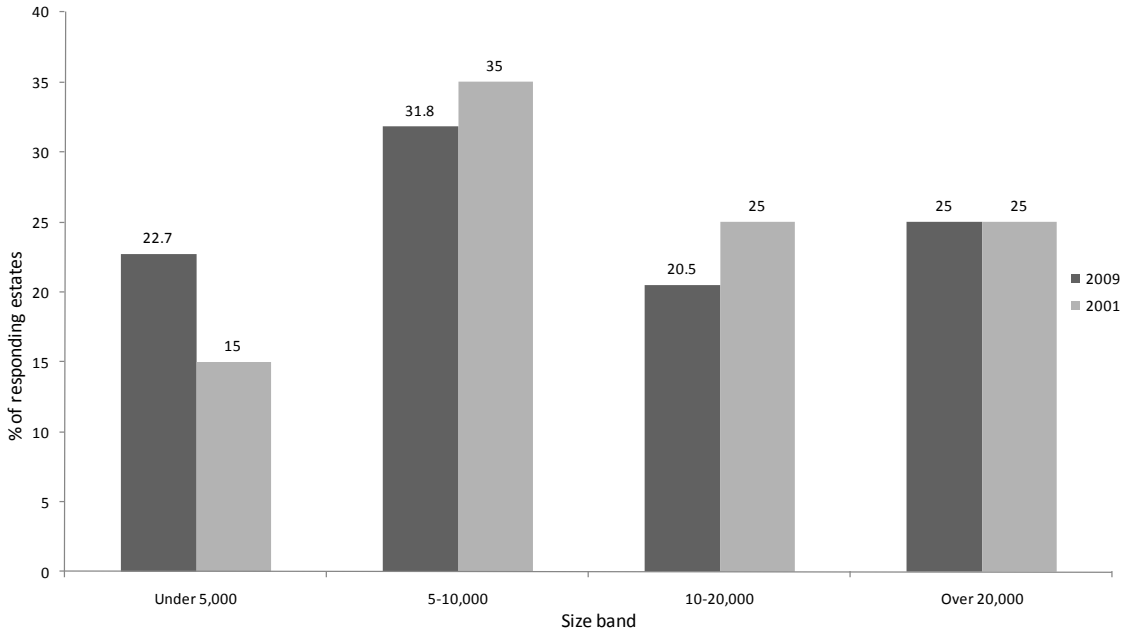
A total of 85 of the 92 estates provided data on the proportion of heather cover on each moor and the extent to which heather cover was used for driven or other shooting. The total moor area on the 92 estates equalled 550,831 hectares and total heather cover was 384,392 hectares, 69.8% of the total moor area. A total of 79.8% of heather cover was used for driven shooting and 41% was used for walked/other shooting, clearly indicating that some part of moors were used for both types of shooting.

These 550,831 hectares are equivalent to 1,361,127 acres, and this second figure compares with the 1,066,362 acres of total moor area represented by respondents to our previous study (see 2001 report, table 4, page 5)[2]. This is probably due largely to the greater number of respondents compared to our earlier study (92 compared to 64), which again means that the present report is able to provide a fuller analysis of the extent of the industry.

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

[2] Note also that the 2001 study reported moor size in acres. Figure 1 aside, the present reports in terms of hectares.

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



Estates by location

Table 1 below details the location of the 83 estates which provided data. Estates are concentrated in the North of Scotland, with the three main areas (Aberdeenshire, Highland and Perth & Kinross) accounting for two-thirds of estates.

Table 1 Location of estates 2009	Number	% of total
Aberdeenshire	16	19.3
Angus	2	2.4
Argyll	3	3.6
Borders	8	9.6
Highland	23	27.7
Islands	3	3.6
Lanarkshire	5	6.0
Lothians	6	7.2
Perth & Kinross	17	20.5
All	83	100.0

The extent of activity

Number of active moors

The responses show that some grouse shooting took place on the majority of estates. In 2009, grouse shooting took place on 75 moors or 81.5% of all survey respondents. This is a slight decrease from the position between 2005-09 when on average 76 moors (82.6%) had shooting.

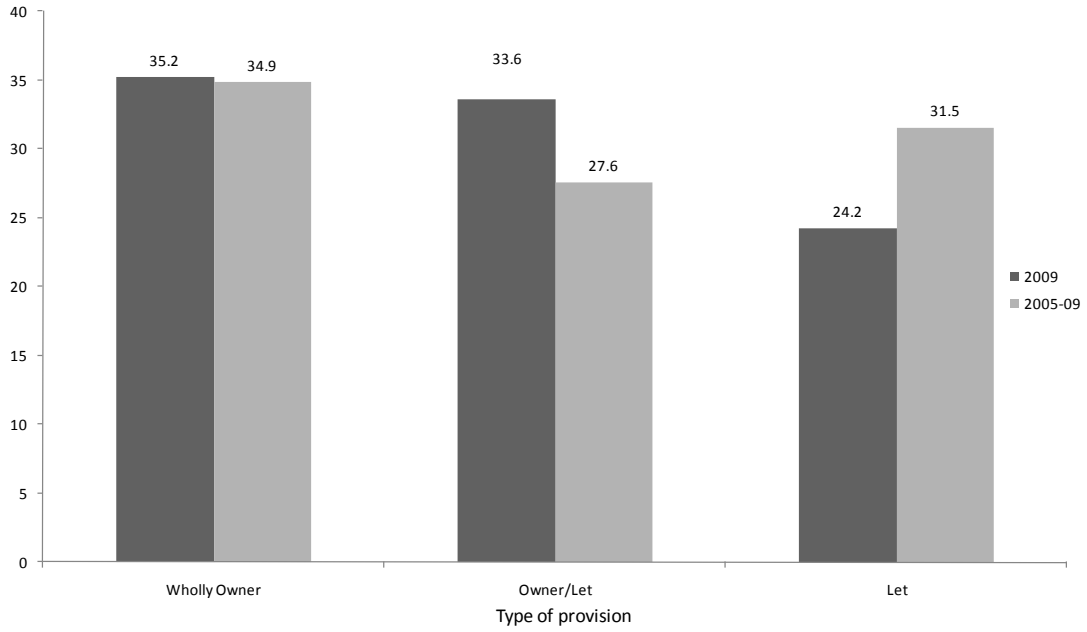
However, we also note that there appears to have been a reduction in the proportion of estates offering shooting since the time of our last study. Our previous (2001) report indicated that shooting took place on 93.8% of the estates. This may reflect a reduced availability of grouse since 2000, a point we examine further below when we examine figures on grouse bag in both periods.

Shooting provision

Figure 2 details how grouse shooting was provided, both in 2009 and over 2005-09. The only notable change in the three types of provision in the two periods shown is the increased role of owners (that is, the move from "Let" to "Owner/Let" in 2009).

However, a more substantial difference is evident if we compare the figures in Figure 2 below with the findings of our 2001 study. There appears to be increasing trend towards the letting of grouse shooting rather than the retention solely for the owner's use. 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 2) whereas the figure for 2005-9 was 34.9%. However the reduction in the direct use of all shooting by the moor owner from the time of our previous report in 2001 appears to have stabilised in recent years as the figure for 2009 was 35.2%.

Figure 2- Shooting provision (%)



Days shooting

Table 2 below shows the number of days when shooting occurred in 2009 on the 92 estates, and the type of shooting that took place. The figures in Table 2 covers the four estate size-bands used throughout this study[3].

Table 2 Grouse days 2009	Number of days				
	Driven	Walked	Over pointer	Other	Total
Size (hectares)					
Under 2,000	19	21	8	3.5	51.5
2-5,000	94	88	33	73	288
5-10,000	97	43	2	0	142
Over 10,000	29	45	25	1	100
Total Days	**238**	**197**	**68**	**77**	**581**
% by Type	*41*	*33.9*	*11.7*	*13.3*	*100*

The table shows that shooting occurred on a total of 581 days across all estates in 2009. The most frequent type of shooting was driven, which accounted for 41% of all days shooting, followed by walked, which accounted for just over 34% of all days. Days shooting over dogs accounted for only 12% of days. Most 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. The largest size-band (Over 10,000 hectares) accounts for only 17.2% of all days.

Figure 3, which shows average days by estate size, confirms that estates in the two mid-sized bands did indeed shoot more days on average in 2009.

K Candy

[3] Under 2,000, 2-5,000, 5-10,000 and Over 10,000 (hectares).

Figure 3 - Days shooting by estate size: average number of days 2009

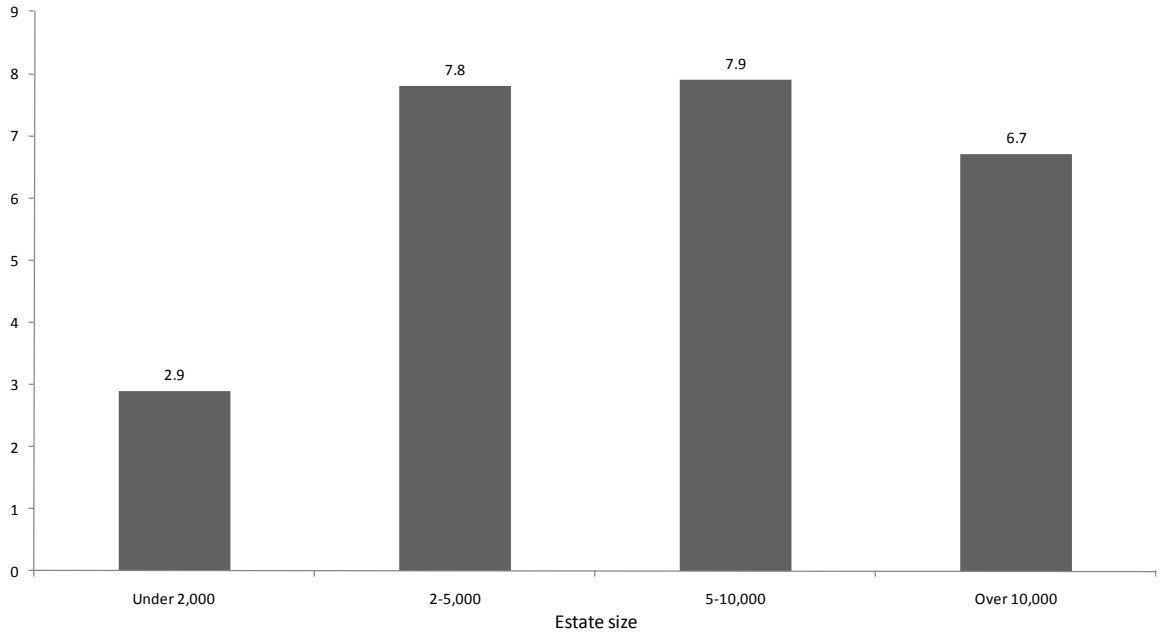


Table 3 below shows the total number of days over the period 2005-2009, when shooting took place on a total of 2,348 days. One notable difference from Table 2 is the increase in driven days (41% of the total in 2009 compared to 35.2% over 2005-09), and the decline in walked days which accounted for only 33.9% in 2009 compared to 43.7% over 2005-09.

Table 3 Grouse days 2005-09	Number of days				
	Driven	Walked	Over pointer	Other	Total
Size (hectares)					
Under 2,000	92	77	37	4	210
2-5,000	301	466	112	240	1,119
5-10,000	286	209	2	0	497
Over 10,000	147	275	78	23	523
Total Days	**826**	**1,027**	**229**	**267**	**2,348**
% by Type	*35.2*	*43.7*	*9.8*	*11.3*	*100.0*

The figures in Table 3, which shows the total number of days over 2005-09, cover a longer time period and are clearly not directly comparable with the 2009 figures. Table 4, which looks at average total number of days between 2005-09, allows a direct comparison between 2009 and the previous period.

Table 4 indicates an increase in activity in 2009 compared with the average over 2005-09. The average total number of days (for shooting of all types) in 2009 was 581, which compares with an average number of days of 470 over 2005-09.

Table 4 Grouse days (average) 2005-09	Number of days				
	Driven	Walked	Over pointer	Other	Total
Size (hectares)					
Under 2,000	18	15	7	1	42
2-5,000	60	93	22	48	224
5-10,000	57	42	0	0	99
Over 10,000	29	55	16	5	105
Total Days	**165**	**205**	**46**	**53**	**470**
% by Type	*35.2*	*43.7*	*9.8*	*11.3*	*100.0*

There is also a substantial difference when we examine the change over time by size of moor. Indeed, all of the increase in activity (measured by number of days) occurred in the three smaller size bands, where the number of days increased by 23% (under 2,000 hectares), 28% (2-5,000 hectares) and 43% (5-10,000 hectares) respectively. In contrast, activity measured by number of days actually fell by 4% in the largest size-band (Over 10,000 hectares). This also appears to suggest that smaller moors are increasingly accounting for a larger share of total grouse days.

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 show a slight fall in the overall grouse bag compared to the previous five year average. An important contribution to this was that 16 respondents did not shoot in 2009, a slight increase compared to the annual average of 14 estates which reported a zero bag over 2005-09.

The figures on grouse bag itself provide a more substantial indication. Table 5 shows the total bag in 2009. Of the total of 23,713, the majority (84.9%) of this was driven. The two mid-size bands again accounted for the majority of grouse shot, and accounted for 74.9% of the total, with 53.2% of the total from 5-10,000 hectares estates.

It is of interest that the figures in Tables 4 and 5 show that estates in the two middle size bands both shot more frequently and had higher grouse bags. It is not therefore necessarily the case that activity increases with estate size - for example, several estates in the 5-10,000 size band reported a grouse bag greater than any estate in the Over 10,000 category. Table 6, which shows the average bag by moor size, also confirms the importance of moors in the 5-10,000 size band.

Table 5 Grouse bag 2009	Grouse bag		
	Driven	Other	Total
Under 2,000	1,660	431	2,091
2-5,000	4,118	1,039	5,157
5-10,000	11,992	617	12,609
Over 10,000	2,365	1,491	3,856
Total	20,135	3,578	23,713
% by Type	*84.9*	*15.1*	*100*

Table 6 Grouse bag average by size 2009	Grouse bag		
	Driven	Other	Total
Under 2,000	128	33	161
2-5,000	129	32	161
5-10,000	799	41	841
Over 10,000	197	124	321
Total	280	50	329

However, Table 7 below, which shows the average annual grouse bag over 2005-09, shows the annual average over this period as 26,613, 10.9% above the figure for 2009 alone. The lower total bag in 2009 was as a result of fewer birds being taken by other means such as walked up shooting than on average. Some of this reduction is likely to have been taken up by driven shooting as the bag of driven grouse was greater in 2009 by 1,204 than the preceding annual average.

Table 7 Grouse bag annual average 2005-09			
	Driven	Other	Total
Under 2,000	2,765	2,999	5,764
2-5,000	2,605	1,057	3,662
5-10,000	8,323	1,385	9,708
Over 10,000	5,238	2,241	7,479
Total	18,931	7,682	26,613
% by Type	*71.1*	*28.9*	*100*

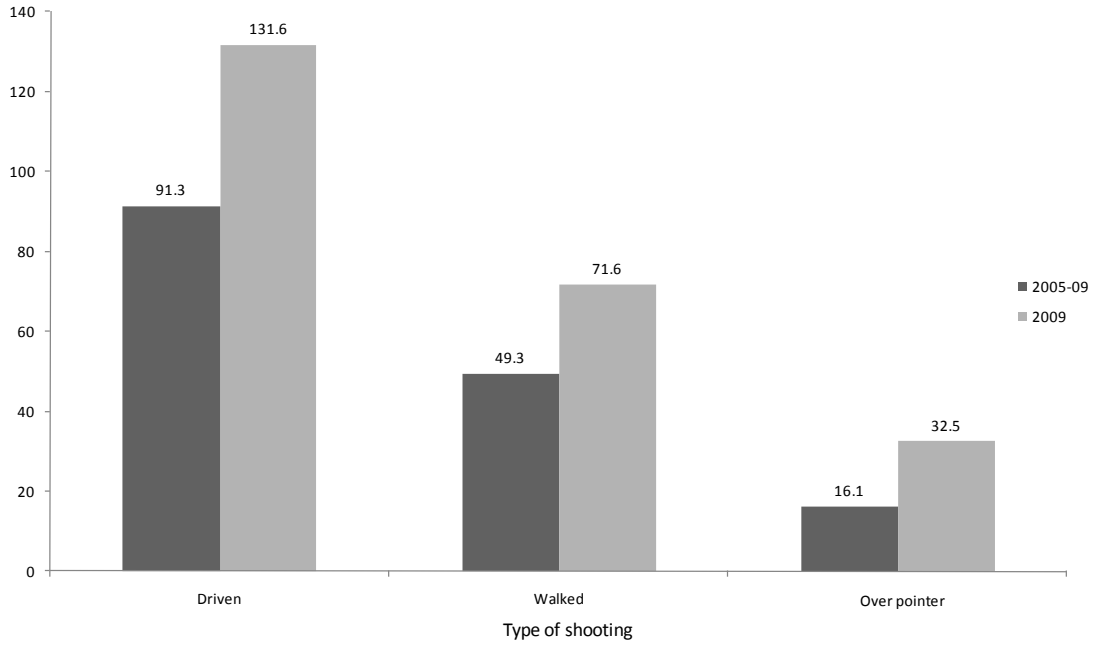
We also note that the figures for both time periods indicate a fall in grouse bags when compared to the results of our previous exercise. The total bag reported in the 2001 study was 45,641, which included data for only 56 estates. Despite a recent increase in the number of days, the present results therefore appear to indicate a fall in grouse bags 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[4] and given the net economic contribution of grouse shooting to Scotland could represent a worrying trend.

Fee per brace

Figure 4 below indicates the average fee per brace, both by year and type of shooting[5]. The figures show a marked increase over time for all types of shooting, with the average fee for both over pointer and walked both increasing by over 40%.

Figure 4 - Average fee per brace



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 over pointer 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 period.

We note, however, that Figure 4 includes responses from only 37 moors. There may be two reasons why so few respondents provided these figures. Firstly, there was simply no activity on

[4] Such as Smith A. (2009) The Game Conservancy Scottish Research Trust 25th Anniversary Report, GWCT.

[5] Only one estate provided a figure for "Other" shooting, and we have not included a figure for this.

several estates and so no fee applied. Secondly, 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 – a total of 42 respondents indicated a positive grouse bag but did not provide fee data. There may be two reasons for this second situation. The first is that some estate owners may undertake grouse shooting as a purely private activity and no charge is applicable in these situations. Secondly some estates simply may not want to provide fee data for reasons of commercial confidentiality.

Profitability

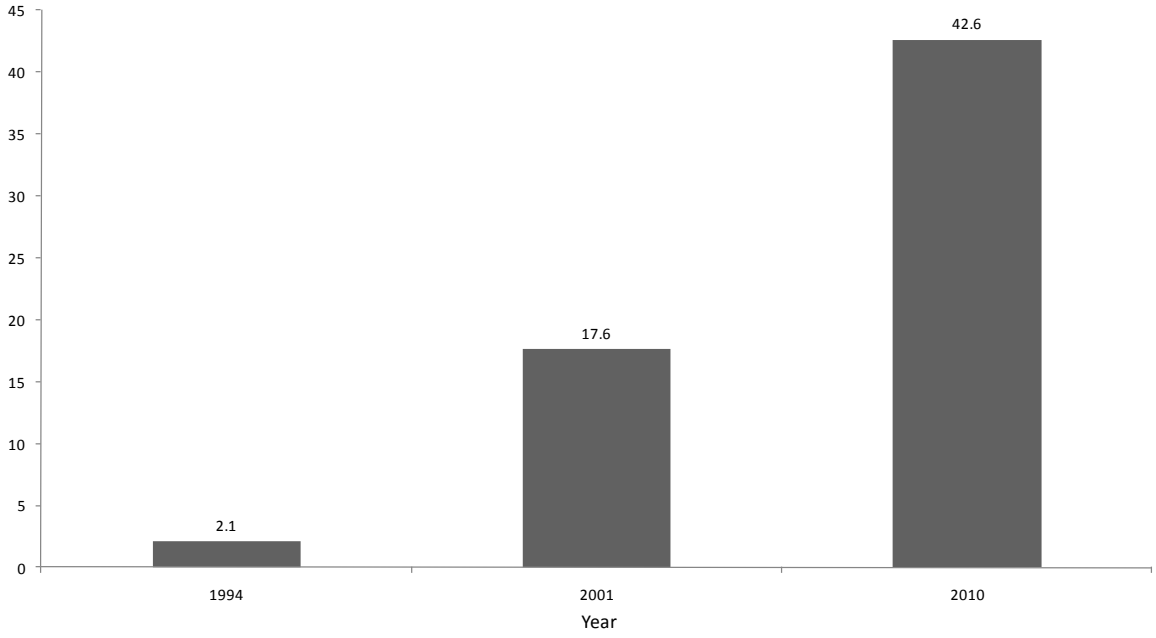
Figure 5 shows the proportion of respondents whose grouse activities made a profit. Our 2001 study noted that only 17.6% of respondents made a profit on their grouse activity[6]. This was itself a very considerable improvement from the position in 1994, where the study revealed that revenue from grouse exceeded expenditure in only 2.1% of the estates who reported then. 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 result, and this appears to have made a substantial contribution to an improvement in industry's overall financial health. The study could not examine any of the underlying reasons that caused fees to increase in real terms, such as possible increases in demand for shooting. However, the very significant increase in the number of moors who made a profit as a result of this does indicate that future increases in activity are likely if real fees continue to increase in the future.

A Smith

[6] Table 11, page 12.

Figure 5 - Grouse profitability: various years (%)



Grouse revenues

Table 8 below shows total revenues from shooting, both in 2009 and between 2005-09[7].

Table 8 Grouse revenue (£s)	Driven	Walked	Over pointer	Total
2005-09	1,526,464	45,359	16,875	1,588,698
2009	2,591,330	78,179	24,516	2,694,025

A comparison between 2009 and 2005-09 also shows a substantial increase over time – revenues increased from £1.58 million to £2.59 million, a percentage increase of 69.6%. Total revenues thus increased in 2009 and, given the reduction in grouse bag, the increase was clearly due largely to the substantial increase in fees noted in Figure 4.

Not surprisingly given the proportion of the grouse bag obtained from driven shooting (see Table 5) and its higher fee per brace (see Figure 4) this type of shooting also accounted for the vast majority of all revenue – the £2.59 million obtained from driven shooting accounted for 96.2% of all revenue from shooting.

There is a slight difference in the number of estates who reported figures for both 2009 and 2005-09, and the revenue comparison shown in Table 8 may be affected by this. We believe that this may be due in some part to the onerous data requirements of our questionnaire, since

[7] The figures for 2005-09 are estimated annual averages.

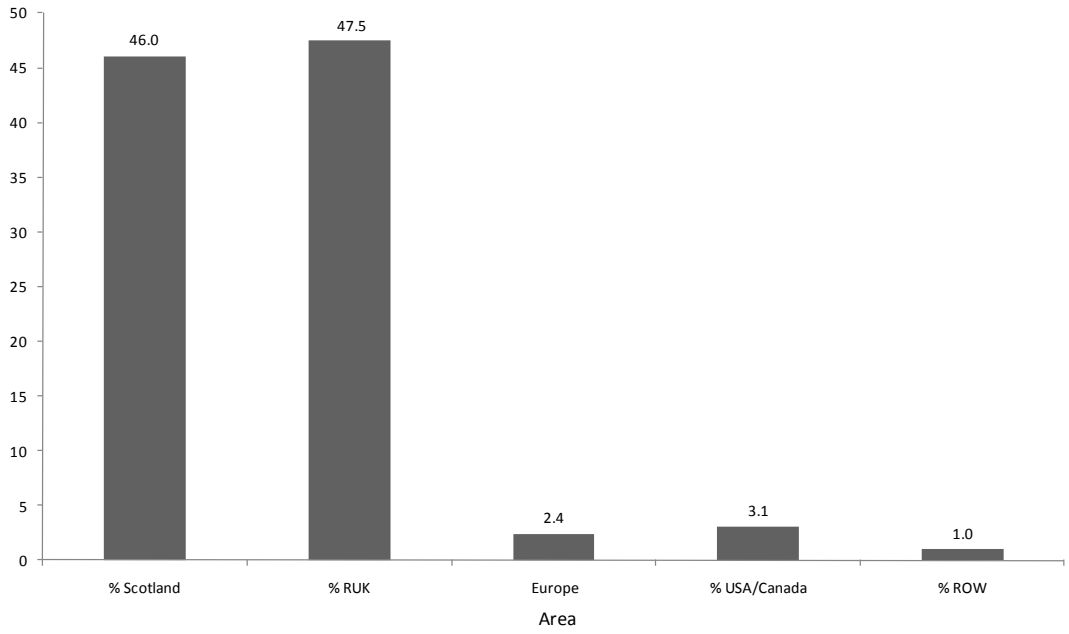
some respondents who were prepared to provide figures on 2009 revenues were not able to do so for the earlier period. Table 9 therefore reports the average revenue for both time periods across all estates which reported in both periods, and this shows a smaller, but still substantial, increase in average revenue of 55%.

Table 9 Average revenue (£s)	Total
2005-09	49,647
2009	76,972

Revenue by origin

Figure 6 below does show one very substantial difference in 2009 from the position in 2001, an increased use of grouse by the UK domestic market.

Figure 6 - Grouse revenue by origin 2009 (%)



Our previous study sought information on the number and origin of participants from four broad areas[8]. The findings of the 2001 study[9] indicated that, in 2001, the foreign market had begun to recover since 1994, and that over a quarter (25.8%) of participants in 2001 were from outwith the UK.

The present study sought information in a slightly different way, by asking respondents to detail the proportion of revenues obtained by the areas shown in Figure 6. This indicates that almost

[8] Scotland, the Rest of the UK, North America and the Rest of the World.

[9] See Table 9, (p10) of the 2001 study

all revenue (93.5%) was obtained from within the UK, almost half of this from within Scotland itself. Figure 6 therefore indicates a very sharp reduction in the extent to which grouse shooting was consumed by foreign visitors. Most of the reduction in foreign spending arises from a sharp fall in visitors from the Rest of the World - these accounted for 22% of all participants in 2001, but contributed only 1% of total revenues in 2009.

Employment and expenditure

Permanent employment – all estates

Table 10 Permanent employment 2009	Total employment	Average employment
Under 2,000	24	1.4
2-5,000	92	2.5
5-10,000	76	4.2
Over 10,000	68	4.5
Total	**260**	**2.9**

Table 10 above provides details on the level of all permanent employment for all activities where there was some input into grouse production on the 92 estates[10]. 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 twice as many as the smallest estates.

Table 11 below reports details on the type of employment on the estates. The largest category of employment is gamekeeping, which accounted for almost two-thirds (65.4%) of all estate jobs.

Table 11 Employment type 2009	Gamekeepers	Stalkers	Shepherds	Other	Total
Under 2,000	15	2	8	0	25
2-5,000	55	12	14	13	92
5-10,000	55	7	8	6	76
Over 10,000	46	10	11	2	68
Total	**170**	**30**	**40**	**21**	**260**

[10] Figures for grouse-related employment are shown in Table 11.

Permanent employment – grouse employment only

As noted, Tables 10 and 11 showed figures for all estate employment, only part of which is wholly attributable to grouse shooting. Table 12 below shows permanent estate employment supported by grouse shooting alone, a total of 119 permanent employees. Grouse employment is thus estimated to account for 46% of permanent employment across all estates, which does appear to confirm that many of the estates in the sample have a long-term interest in grouse shooting.

Table 12 Permanent employment 2009 grouse only	Total employment
Under 2,000	5.3
2-5,000	41.2
5-10,000	45.9
Over 10,000	27.1
Total	119.4

Seasonal employment

In addition to collecting figures on permanent employment, the survey questionnaire also sought details on the amount of seasonal employment provided by estates. Details were obtained on the number of seasonal employees and number of days of employment, and Table 13 below, which converts the figures obtained into person years, shows that the estates surveyed as a whole generated a further 61 full-time equivalent annual jobs in 2009.

We estimate that 28.1 of seasonal jobs were related to the estates' grouse shooting activities. Total employment across all estate activities in 2009 was therefore equal to 320 full time jobs. Total grouse employment, including seasonal jobs, is estimated at 148 full-time equivalent jobs.

Table 13 Seasonal employment 2009	Total employment	Grouse employment
	61.2	28.1

Wage and operational expenditure[11]

All estate expenditure

Table 14 Total estate expenditure (£s) 2009	Wages	Operating/maintenance	Total
Under 2,000	522,389	356,867	879,256
2-5,000	1,635,401	1,388,720	3,024,121
5-10,000	1,408,922	2,682,165	4,091,087
Over 10,000	1,620,836	1,169,013	2,789,849
Total	**5,187,548**	**5,596,765**	**10,784,313**

Table 14 above shows the total expenditure, both wages and operating and maintenance expenditure, for all aspects of the estates' activities. In total, the estates spent close to £11 million (£10.78 million) on wages and operating/maintenance spending. Table 15 shows average spending by size-band and for all estates.

Table 15 Average expenditure (£s) 2009	Wages	Operating/maintenance	Total
Under 2,000	29,022	19,826	48,848
2-5,000	44,200	37,533	81,733
5-10,000	78,273	149,009	227,283
Over 10,000	108,056	77,934	185,990
Total	**58,949**	**63,600**	**122,549**

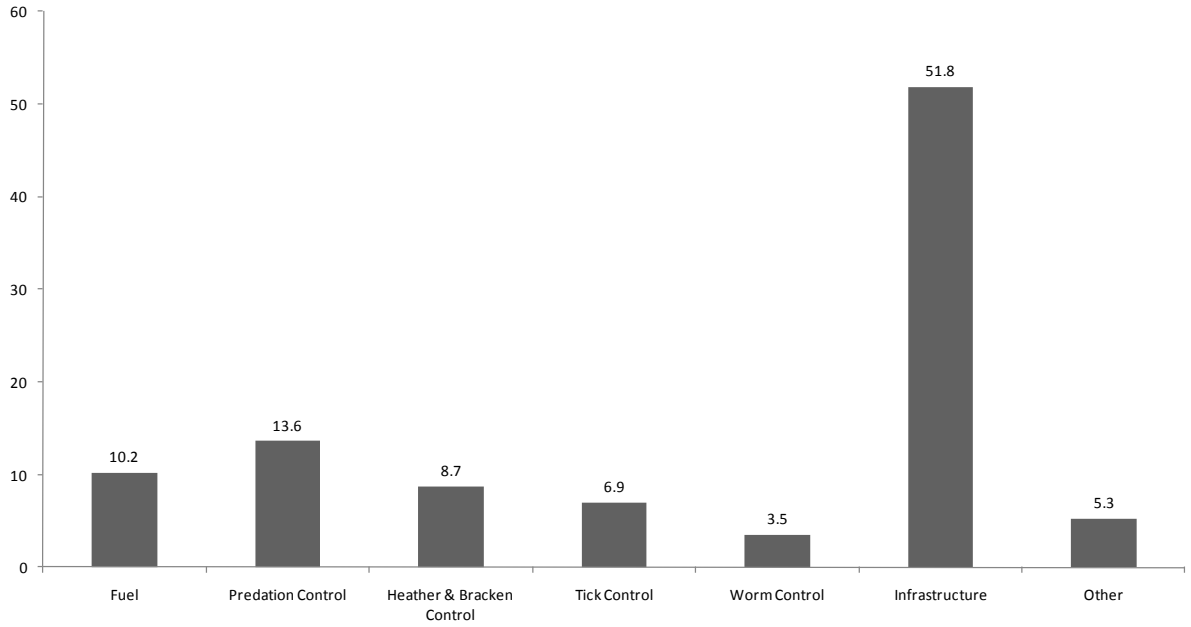
Table 1 detailed the location of estates across Scotland, and Tables 11-13 examined employment and estate spending. Table 17, which looks at the amount of operating/maintenance spending placed locally across all estate activity, shows that the majority of operating/maintenance spending is placed locally with suppliers in Scotland, which will further increase the number of local jobs created by the estates. Taking these findings together, it appears clear that the estates must provide a substantial boost to the local economies in which they operate. In addition, much of the employment provided by the estates will be in remoter rural areas of Scotland, generally seen as places where there are relatively few alternative employment opportunities.

[11] One of the original intentions of this exercise was to estimate the extent to which estate spending was made privately by owners, or was obtained through various forms of public subsidy. Questionnaire respondents were thus asked to detail the proportion of revenues obtained from a number of public sources. Two grouse shooting estates did so and the data we received was not sufficient to allow us to undertake a meaningful analysis.

Expenditure distribution

Figure 7 below shows how 2009 total operating and maintenance expenditure was distributed by a more detailed categorisation of expenditure. We discuss below (see "Non-Shoot Spending on the Moorland Environment") some figures from part of the questionnaire where respondents were asked to detail a number of environmental expenditures made by the estates. However, Figure 7 also shows that much ongoing expenditure is also on areas which can be considered as routine countryside management. This spending will produce landscape change which enhances Scotland's iconic visible landscape. For example, almost one-third of annual operating and maintenance spend goes on predator and pest control and heather and bracken management.

Figure 7 - Operating/maintenance expenditure distribution 2009 (%)



Total expenditure - grouse only

Tables 14 and 15 detailed wage and operating and maintenance expenditure for all estate activities. Table 16 details the 2009 wage and goods and services expenditures specifically related to grouse shooting.

Table 16 Total expenditure (£s) 2009 grouse only	Wages	Operating/maintenance	Total
Under 2,000	112,862	77,101	189,964
2-5,000	730,436	620,259	1,350,695
5-10,000	856,550	1,630,614	2,487,164
Over 10,000	650,256	468,991	1,119,246
Total	**2,350,104**	**2,796,965**	**5,147,069**

Spending in Scotland – all estate spending

Table 17 below details the total Scottish spending made by the estates. We have assumed that all wage spending is paid to Scottish residents, which seems probable given the location of the estates.

Table 17 Total expenditure (Scotland) 2009	Wages	Operating/maintenance	Total
Under 2,000	522,389	318,530	840,919
2-5,000	1,635,401	1,240,928	2,876,328
5-10,000	1,408,922	2,397,541	3,806,463
Over 10,000	1,620,836	969,742	2,590,578
Total	**5,187,548**	**4,926,741**	**10,114,288**

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 extent to which operating/maintenance spending takes place locally. Firstly, this indicates the extent to which estates are, in an economic sense, embedded locally – if we find that most estate expenditures are local, this clearly indicates the extent to which they support local suppliers and are thus linked into the local economy.

Secondly, a later chapter of this report assesses 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, which consist of the additional employment, wages, etc created by wage spending and operating/maintenance 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 of grouse shooting on the Scottish economy.

A comparison of Tables 14 and 17 does indeed show that the majority of operating/maintenance expenditures are placed locally with Scottish suppliers – 88% of all operating and maintenance spending is made in Scotland. In total (i.e. wage and operating/maintenance spending) 93.8% of all estate spending is made in Scotland.

Scottish expenditure- grouse only

Table 18 shows only those Scottish expenditures that are specifically related to the estate's grouse shooting activities. As with expenditure for all estates, the proportion of Scottish expenditure on grouse shooting is also substantial, equivalent to 88.3% for operating/maintenance spending and 93.6% for all spending.

Table 18 Total expenditure (£s) Scotland grouse only 2009	Wages	Operating/maintenance	Total
Under 2,000	112,862	68,819	181,681
2-5,000	730,436	554,249	1,284,685
5-10,000	856,550	1,457,578	2,314,128
Over 10,000	650,256	389,046	1,039,302
Total	**2,350,104**	**2,469,691**	**4,819,795**

Capital investment

We show two tables indicating the level of capital expenditure on estates in 2009. The first, Table 19(a), shows the average capital expenditure made by respondents in that year. The first shows average expenditure by size band for all estates that provide these data (61 respondents). Total recorded capital expenditure in 2009 on these estates was £5.02 million, an estimated 91.2% of which (£4.6 million) was spent in Scotland. Average expenditure was £82,330 per estate in total the sample each estate spent an average of £71,122 in Scotland.

Table 19 (a) Average capital expenditure, Scottish expenditure and % spent in Scotland 2009 (£s)	Total expenditure	Scottish expenditure	Scottish %
Under 2,000	21,350	16,350	76.6
2-5,000	28,492	25,821	90.6
5-10,000	213,957	195,122	91.2
Over 10,000	121,467	113,450	93.4
All Estates	82,330	75,122	**91.2**

However, the figures in Table 19(a) are clearly biased by the very large expenditures recorded by one estate in 5-10,000 size-band, whose total capital expenditure exceeded that of all other estates put together. While we do not doubt that these expenditures represent the actual expenditures made by this estate, they do seriously affect the figures quoted in Table 19(a). Table 19(b) therefore shows the average figures excluding this one respondent, as this gives a better indication of typical estate spending, both in total and in Scotland.

Table 19 (b) Average capital expenditure, Scottish expenditure and % spent in Scotland 2009 (£s)	Total expenditure	Scottish expenditure	Scottish %
Under 2,000	21,350	16,350	76.6
2-5,000	28,492	25,821	90.6
5-10,000	106,134	98,315	92.6
Over 10,000	121,467	113,450	93.4
All Estates	60,369	55,374	91.7

Table 19(b) indicates that estates between 5-10,000 hectares show the highest level of spending by estate with a substantial increase in expenditure and this contribution to the economy over smaller estates. All size bands also continue show that, as for operating and maintenance expenditure, the majority of capital spending is made with suppliers based in Scotland.

Non-shoot spending on the moorland environment

We have noted above that the everyday expenditures spent on operating and maintaining estates make an ongoing contribution to moorland management, in terms of items such as predation and pest control, heather and bracken management and maintenance of estate infrastructure. 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. Specifically, 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 footpaths[12]. Total estimated expenditure was £478,949,[13] an average of £11,138 per estate. Table 20 below shows average expenditure for the 43 estates who responded.

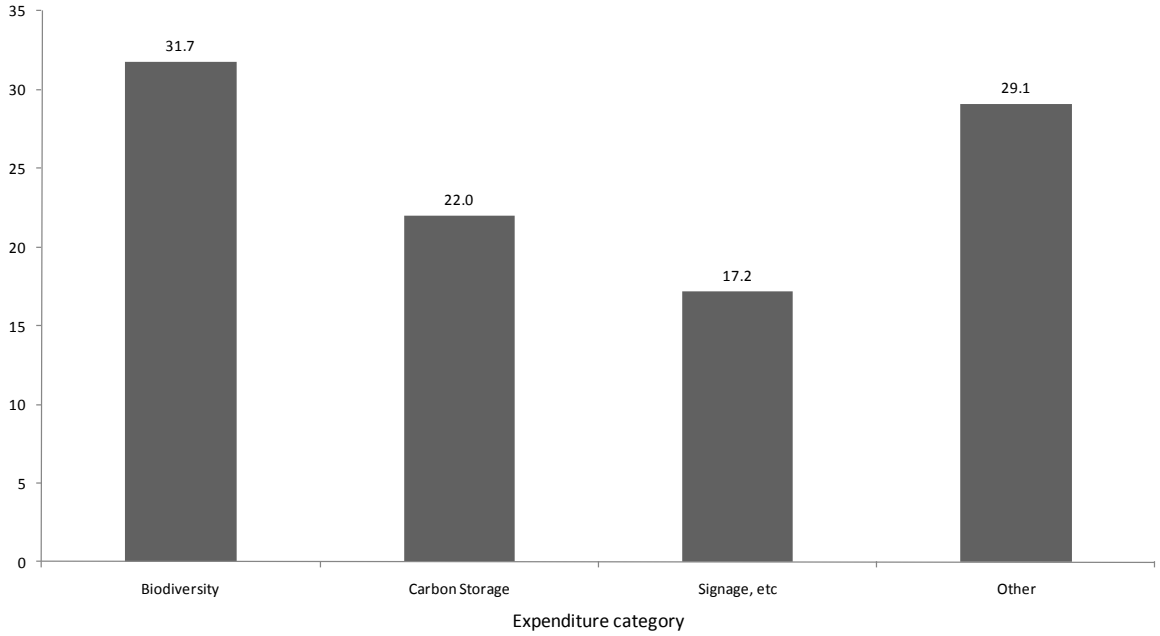
[12] The specific categories were 1 = Biodiversity (e.g. black grouse habitat), 2 = Carbon storage and Water Management (e.g. drain blocking), 3 = Signage, Interpretation, hides, footpath access and 4 = "Other".

[13] These figures are again heavily influenced by the return for one company, which has been excluded from the analysis in Table 20. If this company was included, the amount spent would increase to over £1.5 million. We would again argue that Table 20 shows a much more typical figure on the non-shoot environmental expenditures made by the estates.

Table 20 Non-shoot expenditure on the moorland environment (£ average) 2009	Total
Under 2,000	7,167
2-5,000	6,115
5-10,000	15,200
Over 10,000	22,643
All Estates	11,138

The Table shows that larger estates typically spend more on these forms of environmental spending – for example, expenditure is significantly greater in the two larger size bands, and average spending by the largest estates is more than 3 times that in the 2-5,000 size band. Figure 8 shows the percentage expenditure for all estates by category of spending.

Figure 8 - Non shoot expenditure by type 2009 (%)



R. McPhail

Chapter 4 – Economic Impacts

We now turn to examine the overall impact of grouse shooting on the Scottish economy.

Total economic impacts – direct, indirect and induced impacts

As noted above, this study aims to estimate the total economic impact of grouse on Scotland, and it is appropriate to explain the meaning of this.

The total activity created by any economic activity can be measured at two levels. Any industry will create economic activity in Scotland, simply as a result of its everyday business operations. This is termed the initial, or direct, effect of that industry, and comprises the employment, wage income and Gross Value Added (GVA, see below) that its ongoing activities create in both the Scottish and local economies. For example, any estate will create employment, and the number of jobs created is termed the initial (or direct) employment impact of that estate.

However, as part of its ongoing business operations, each estate will pay wages to Scottish residents, some proportion of which will be spent on goods and services either produced or distributed by other companies located in Scotland. It will also purchase goods and services from suppliers, and some proportion of this spending will also be on goods and services either produced or distributed by other Scottish companies. Two further additional economic effects then result from these wage and supplier expenditures, in both cases because the recipients of the expenditure initially made will subsequently re-spend some of the monies received in Scotland. The first, known as the induced impact, occurs because employees will spend their wages and salaries on other Scottish goods and services. The second effect, known as the indirect impact, results because suppliers to estates will themselves make expenditures on staff and other goods and services produced or distributed within Scotland.

This re-expenditure of the initial payments therefore means that the total amount of economic activity created by any estate is greater than the initial amount created by its ongoing operations. Because these ongoing business activities will generate further demands for other Scottish goods and services, the total economic impact on Scotland is measured by the sum of the direct, induced and indirect impacts[14].

[14] Note that the impact estimates detailed below do not take account of any capital spending. This approach is typically adopted in economic impact analysis, because the "lumpy" nature of capital spending may create large effects in one year which are not then subsequently repeated.

Multipliers

The total effect of an industry can usefully be summarised by developing a multiplier. For example, a (hypothetical) Scottish employment multiplier of 1.50 can be interpreted as meaning that every one job provided by grouse shooting supports an additional 0.5 of a job elsewhere in Scotland, once the re-expenditure effects outlined above have been taken into account. Employment multipliers therefore indicate the extent to which other jobs in Scotland rely on employment provided directly by grouse shooting.

Employment, Wages, and Gross Value Added

Estimates are reported for employment – the number of Full Time Equivalent (FTE) jobs provided – and for, wages and Gross Value Added (GVA). Gross Value Added is, as the term suggests, a measure of the value added to the economy by any economic activity. It is defined as the value produced by the activity itself, less the value of goods and services purchased from other producers[15]. It thus measures the value that the activity adds to the inputs it buys from others (hence the term value-added) and is equivalent to the activity's contribution to Gross Domestic Product (GDP).

Appendix One provides a short technical analysis of the procedure used to develop the impact estimates.

Economic impact estimates

The first part of this section reports economic impact estimates for all activity on the responding estates (Table 21) and for grouse-shooting activity only on the estates (Table 22 and Figure 8).

Table 21 Economic impact (sample estates) all estate activities 2009	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 21 shows that all estate activity directly (see above) supports 321 full-time equivalent jobs[16] and generates £5.2 million worth of wages. We also estimate that all estate activity directly creates £8.1 million worth of GVA in Scotland.

[15] These are termed intermediate products.

[16] The employment figure includes seasonal employment.

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 at £15.6 million.

Table 22 Economic impact (sample estates) all estate activities 2009	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**

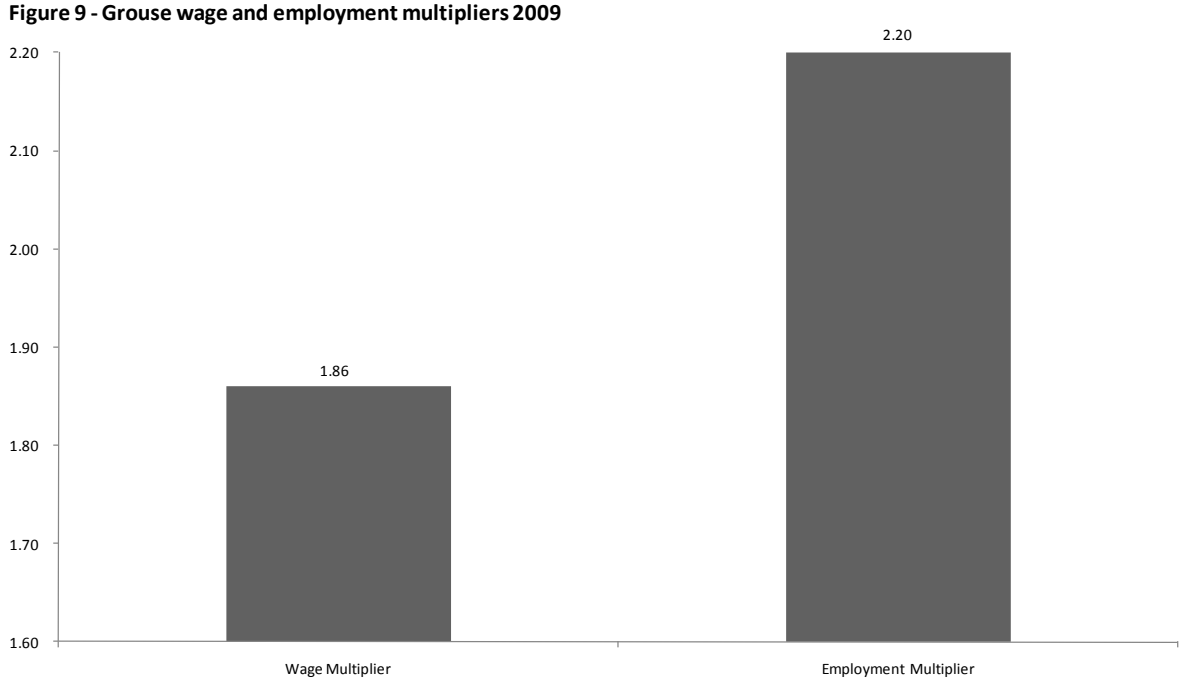
Table 22 above details our estimate of the impact of grouse shooting alone.[17] We estimate that the grouse shooting activities on sample estates directly supported a total of 148 full-time equivalent jobs in 2009, and paid £2.4 million worth of wages to local employees. In addition, grouse shooting alone is estimated to support a further £2.0 million worth of wages and a further 177 jobs in Scotland. In total, therefore, we estimate that the grouse activity on the sample estates supports 324 Scottish jobs and £4.4 million worth of wages in Scotland. Total GVA supported in Scotland is estimated at £7.0 million.

Figure 9 shows Wage, Employment and GVA multipliers for grouse. 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 wages by 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 22 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.

[17] The employment figure in Table 22 also includes seasonal employment.

Figure 9 - Grouse wage and employment multipliers 2009



Grossed-up estimates for all grouse activity

1. "Core estates" estimate

As noted above, only 30.3% of estates responded to the survey questionnaire, and it is therefore highly likely that the figures shown in Table 22 account for only some fraction of the total economic activity supported by grouse shooting 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 1992.[18] This 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 number of estates that actively 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 23 below details our estimate of all grouse shooting based on GWCT's figure of 140 "core" active grouse moors. Using this assumption, the total amount of direct activity increases to £2.9 million worth of wages and 180 jobs, with direct GVA estimated to increase by £0.8 million. Total impacts (including

[18] "Grouse in Space and Time: the population biology of a managed gamebird", Game Conservancy Trust, (1992).

indirect and induced effects see above) increase to 493 jobs, £6.7 million worth of wage income and £10.7 million worth of GVA[19].

Table 23 Economic impact (140 estates) grouse shooting activities 2009	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

2. 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 GWCT's database, and that it is therefore permissible to simply gross the sample estimates up to the total number of estates (304). Table 24 below 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 GWCT's database.

If we employ the assumption that sample estates do reflect all Scottish grouse activity in the 304 estates, Table 24 shows that grouse shooting in Scotland supported 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 24 Economic impact (304 estates) grouse shooting activities 2009	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

Table 1 detailed the location of estates within Scotland. Table 25 details how the total wage and employment impacts shown would be distributed by area in Table 23 (for 304 estates) on the basis of the location figures shown in Table 1.

[19] Multiplier estimates are unchanged from those reported in Figure 8 above.

Table 25 Impact distribution by area 2009	Wages	Employment
Aberdeenshire	3.2	238.9
Angus	0.3	19.2
Argyll	0.2	16.8
Borders	1.2	86.5
Highland	4.5	333.9
Islands	0.5	33.6
Lanarkshire	0.5	38.4
Lothians	1.2	85.3
Perth & Kinross	3	218.9
All	14.5	1,072

Potential economic uplift

As noted, the estates who responded include both those where shooting is largely a private pastime undertaken by owners and others, and those where it is operated on a more strictly commercial basis[20]. GWCT has asked us to estimate how the impacts shown above would be affected if all moors were run on a commercial basis.

We note that the prime driver of all of the impact estimates shown here are the expenditures made in order to run grouse operations, whether private or commercial. Both private and commercial grouse activities will require wage and operating/maintenance expenditures, and we have derived our estimate (see Table 26) based on the difference between the expenditure required to operate a private and a commercial grouse moor - not surprisingly, more is spent on commercial as opposed to private activities and so expenditure would increase if private moors began to offer shooting on a commercial basis.

On this assumption, Table 26 shows that the impact of 304 estates would create a further 126 jobs, increasing the total number of jobs created to 1,197. The amount of GVA created would increase to £26 million.

Table 26 Economic impact (304 estates) grouse shooting activities - potential uplift 2009	Wages (£M)	Employment (FTE)	Gross value added (£M)
Direct	8.7	545	13.6
Additional	7.5	653	12.4
Total	16.2	1,197	26.0

[20] Private shooting may also of course occur on commercial estates.

Comparison with the 2001 study

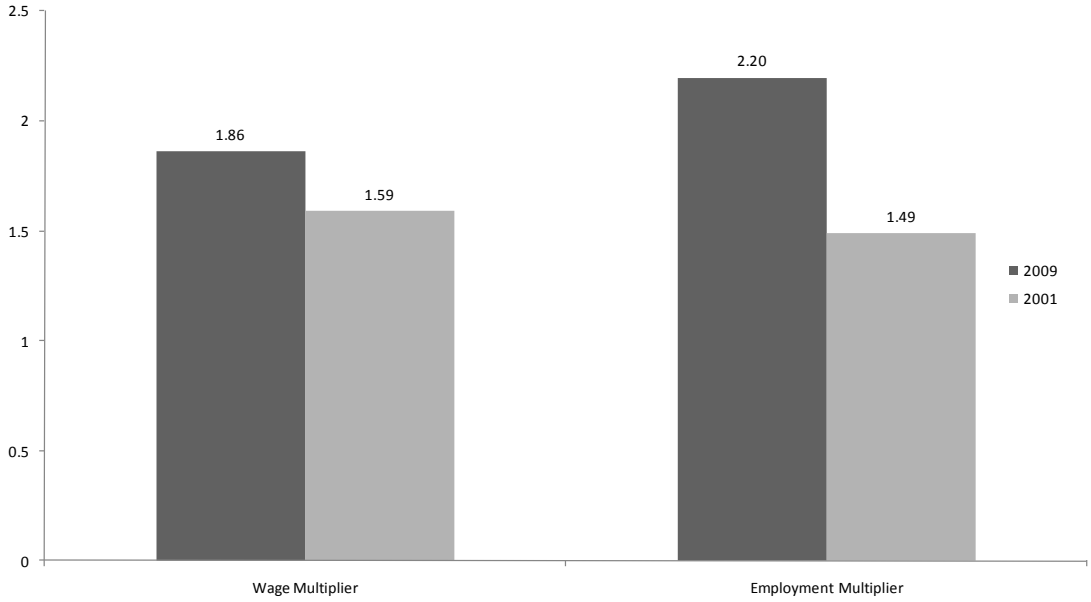
Drawing a direct comparison with the findings of the 2001 study involves one key difficulty, which is identifying the number of estates that are actively involved in grouse shooting. For example, the grossed up estimate for employment reported in the 2001 study was that grouse shooting supported 940 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 at the time, it was based on a source that was almost a decade old at the time, and we simply do not know if this did actually 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.

What is evident from the two studies, however, is that the spin-off, or additional, impacts of grouse were considerably larger in 2009 compared to those measured in the earlier study. Figure 10 compares the 2009 wage and employment multipliers with those developed in 2001.

N. Bunnefeld

Figure 10 - Grouse multipliers 2001 and 2009



Both the wage and employment multipliers show a considerable increase over time. We have no access to the data underlying the 2001 figures and are therefore unable to provide any detailed analysis of the reasons which underlie these differences. However, we have noted above that a very high proportion of estate expenditures are made with Scottish suppliers. One possibility is that the proportion of spending made locally increased between 2001 and 2009 and, if so, the additional wages and employment created by grouse shooting would both increase.

Effect on tourism

We note one other way in which grouse shooting impacts on the Scottish economy. Figure 5 showed the proportion of revenues obtained by source, and we noted that the majority of 2009 revenues were obtained from within the UK.

We had hoped to provide an estimate of the additional spending generated in Scotland that grouse shooting generated in Scotland *outside* shoots, and the questionnaire sought to examine this issue in two ways. Firstly by collecting data on the number of guests, both shooting and non-shooting, who visited Scotland during shoots. Secondly, we also sought data on the type of accommodation used, and whether this was provided by the estate or whether guests stayed in local hotels, bed and breakfast accommodation, etc.

Unfortunately, only very few respondents were able to provide information on this issue, and the quality of returns has prevented us from developing a sufficiently robust estimate. The issue is further complicated when we consider that there is no source of data on the actual, amount or type of expenditures made in Scotland by grouse tourists, which it was simply not feasible to collect through our questionnaire. We are therefore able to provide only a very rough estimate of the possible effect of grouse shooting on other (i.e. non-grouse) tourist expenditure in Scotland.

The responses we did obtain showed that grouse shooting involved 3,016 guests, both shooting and non-shooting. However, as noted in Figure 5, almost half of all revenue was obtained from within Scotland. Using the data on the source of revenue in the questionnaire returns, we estimate that grouse shooting drew a total 1,531 guests from within the UK but outside Scotland[21]. Scottish Enterprise[22] figures indicate that English tourists in Scotland spent an average of £73 per person per night. Assuming an average stay of 3 days per guest, this would create £335,334 worth of additional non-Scottish tourist spending in Scotland.

[21] As noted above, the amount of revenue drawn for overseas is very small, and we have not included an estimate for this.

[22] See Scottish Enterprise website, "The tourism industry in Scotland".

Summary and conclusion

We finally note 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 - Table 25, for example, shows that around three-quarters of all jobs are created in Aberdeenshire, Highland and Perth & Kinross.

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 5, would tend to indicate that investment in moors is likely to increase in future, helping to sustain existing jobs and possibly creating more. Estates spend the majority of their wage and supplier spending locally in Scotland and increased activity on the moors would mean further benefits to the surrounding local economies.

We have also noted the role of the estates in the ongoing management of the Scottish countryside. Much everyday spending is on "routine" countryside management. Estates also make other expenditures that benefit the moorland environment, on areas such as biodiversity, soil and water management and spend to create public access benefits, such as improved signage and improved access to footpaths.

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"[23]. Grouse shooting 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 secure, and potentially increase, its contribution to the Scottish economy.

[23] Scottish Government website, 16 June, 2010.

Appendix One – Impact analysis method

The total impact estimates reported here were derived by applying the wage and goods and services expenditures made as a result of grouse shooting to computer simulation derived from the Scottish Government's Input-Output Tables. While the initial Scottish economic activity is created by the grouse activity that occurs on the estates, the Input-Output method allows us to estimate the total activity created (i.e. direct plus indirect plus induced) by tracing how the wage and goods and services spending made in order to operate grouse moors affects other industries in Scotland.

Input-Output assumes that all industries[24] operate with fixed coefficients technology – for example, if an industry expands by 10%, then all inputs will also expand by 10%, so that increased activity on grouse moors will cause a proportionate increase in the total impact across all industries - the larger is grouse spending, the greater the estimated total impact of grouse spending.

The multiplier results reported here were derived as the solution of a Leontief Inverse problem, with both total estate and grouse shooting expenditures used as the initial injection. A coefficients matrix (to include employee's commodity purchases by industry) was firstly derived from the 2004 Scottish Input-Output Tables, and a Leontief Inverse derived from this.

As noted, estate and grouse expenditures in Scotland (wage and intermediate commodity expenditures) were used as the initial injection. This produced an estimated output multiplier for total estate and grouse shooting, defined as the additional output created over direct output.

Employment multipliers were subsequently derived through Employment/Output ratios, and a similar procedure was used to develop multipliers for Gross Value Added.

[24] Including the activity on grouse moors.

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Scotland

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We promote our work to conservationists, including farmers and landowners, so that
Britain's countryside and its wildlife are enhanced for the public benefit.
We influence government policy with sound science that creates progressive and effective policies.
We support best practice for field sports that contribute to improving
the biodiversity of the countryside.

What do we believe?

Scientific research should underpin sustainable conservation practice.
Game and wildlife management is the foundation of good conservation.
Field sports (in particular shooting and fishing) can contribute substantially to the
conservation of landscape, habitat and wildlife.
Humane and targeted predator control is an essential part of effective
game and wildlife conservation.
Good conservation goes hand-in-hand with economic land use.

. . . . . .

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To enable and encourage all staff to develop their full potential and contribute
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