
**The Contribution of Deer
Management to the Scottish
Economy**

Final report

A report prepared by

PACEC

on behalf of

The Association of Deer Management Groups

PACEC

Public and Corporate
Economic Consultants
www.pacec.co.uk

49-53 Regent Street
Cambridge CB2 1AB
Tel: 01223 311649
Fax: 01223 362913

e-mail: admin@pacec.co.uk

February 2016

Ref: H:\1311\03ADMG\Rep\Final\Final 25FEB.docx

Contents

1	Study Context.....	1
1.1	Introduction.....	1
1.2	Aims and Objectives.....	1
1.3	Methodology.....	1
2	Key Findings.....	4
2.1	Introduction.....	4
2.2	Survey Results.....	5
3	Economic impacts of deer management in Scotland.....	10
3.1	Introduction.....	10
3.2	Summary of economic impacts.....	16
3.3	Comparisons between the 2006 and 2016 studies.....	17

1 Study Context

1.1 Introduction

1.1.1 This study was commissioned by the Association of Deer Management Groups (ADMG) with support from the Lowland Deer Network Scotland (LDNS) and the Scottish Gamekeepers Association (SGA) in order to assess the current contribution of deer management to the Scottish economy.

1.1.2 Deer management in Scotland is undertaken for population control, for environmental reasons, and for the sport of stalking. Deer are unusual in the sense that they are viewed as both asset and pest, and management for control and for sport largely go hand in hand.

1.1.3 This study builds on the work which was produced by PACEC for the ADMG in 2006, based on studies of deer management, commissioned by ADMG, and sporting shooting, commissioned by the British Association for Shooting and Conservation (BASC), The Countryside Alliance and the Country Land and Business Association (CLA), and in consultation with the Game Conservancy Trust (GCT). The current report focuses on the impact of all deer management (for both sporting and other purposes) on the Scottish economy. It has been designed to take greater account of lowland deer management activities than the 2006 work, with the aid of the new Lowland Deer Network.

1.1.4 This report sets out findings from the survey research and includes estimates of economic impacts such as income, expenditure, and jobs (total, and full-time equivalent).

1.2 Aims and Objectives

1.2.1 The study combines qualitative and quantitative research to provide a comprehensive and comprehensible analysis of the contribution of deer management to the Scottish economy.

1.3 Methodology

1.3.1 The study makes use of bespoke questionnaires designed in consultation with the ADMG and LDNS. This study incorporates the following research activities:

a Desk research

- Review of previous reports and any available statistics relevant to deer management and its economic, environmental and social impact on the Scottish economy
- Review of survey questionnaires from the 2006 project
- Drafting and piloting of a specific deer management survey questionnaire
- Discussion with client to agree additions to the questionnaire

- b Data collection and survey research covering
 - Organisations engaged in deer management
 - Database assembly and checking
 - Data presentation
 - Estimation of economic impacts of deer management
- c Reporting
 - Draft report
 - Final report.

Desk study

- 1.3.2 Some additional desk research has been undertaken, looking specifically at previous studies relating to deer management in Scotland. The study has been designed to take advantage of improved information available through the Lowland Deer Network, which required further research into the lowland activities and how they differ from the highland deer stalking covered in the 2006 work.

Questionnaire design and piloting

- 1.3.3 The questionnaire for this study was designed for self-completion on the Internet. The Association of Deer Management Groups and Lowland Deer Network Scotland alerted its members to the questionnaire and encouraged their co-operation. The questionnaire was piloted in order to ensure that it was 'bug-free', reasonably easy to complete and generally fit-for-purpose. The questionnaire was sent to all parties involved in deer management, whether the deer management was carried out primarily for sport or for other reasons. Responses were monitored, and telephone prompting and postal questionnaires were used to reduce the non-response rate.
- 1.3.4 A Microsoft Word version of the questionnaire can be downloaded at <http://www.pacec.co.uk/wp-content/uploads/2016/02/DMquestionnaire.doc>.
- 1.3.5 The principal aims of the questionnaire sent to ADMG members were to:
- a obtain income and expenditure data from providers/organisers/managers relating to deer management for sporting and for other purposes, showing in reasonable detail the amount and type of income/expenditure they derive/incur by designated geographical areas (local economy, region)
 - b identify respondents' employment patterns and levels; e.g., number of staff, by job category and status (ft/pt, seasonal/year-round, hours worked)
 - c identify the nature and scale of the main land management and conservation activities
 - d assess the social and environmental implications
- 1.3.6 In total, 186 survey responses were received. 148 respondents declared that they were members of ADMG, and 20 that they were members of LDNS (with some overlap between the two). 28 stated that they were members of neither. Between them, the survey respondents are responsible for the management of over 1.8m hectares of land in Scotland. This level of response gives us confidence in the representativeness and

coverage of the survey, although the coverage of the lowlands is less extensive and the disaggregations of lowland results should be treated with some caution.

1.3.7 Lowland deer activities are potentially more diverse and more dispersed than the highland equivalents – lowland deer stalking can be pursued by small groups or individuals, as a hobby or as part-time employment, in contrast to the larger-scale activities of the larger Highland estates which are principally organised as fee-bearing sporting activities and are easier to track. We have worked with the Lowland Deer Network to ensure that the survey is circulated as widely as possible.

1.3.8 The remainder of this report is divided into two sections:

- **Key findings** from the survey
- **National economic impact**, estimated by extrapolating from the survey respondents to Scotland as a whole.

2 Key Findings

2.1 Introduction

2.1.1 This section sets out the findings of the survey of landholders who carry out deer management. Most of the statistics are expressed as *percentages* of the number of respondents. The section on economic impacts (Chapter 3 below) presents estimated *totals* by using results from all respondents to the survey to provide estimates for Scotland as a whole (e.g. total expenditure, total employment).

2.1.2 The following table summarises the key results from the survey in addition to the economic impacts.

Panel 2.1	Key Findings from the ADMG deer management questionnaire
	<ul style="list-style-type: none"> ● In most cases, deer management on landholdings is carried out by the landowner (57% of holdings) or an employed professional stalker (36%). ● The total coverage of the survey is 1,830,000 ha. The total area of Scotland is approx 7.75m ha so the sample area represents just under 25%. The average size of landholding is 6,800 ha, with the median 4,600 ha. ● The main reasons for deer management are to control the population so it does not exceed the carrying capacity of the land, to protect woodland, and to provide shooting sports opportunities. ● Just over half of landholdings said at the time of the survey¹ that they have a formal written deer management plan, and two thirds were members of deer management groups with formal written management plans. ● A clear majority of landholdings (83%) said the deer range or deer management group that their landholding was part of undertook some monitoring and assessment of their deer habitat. ● 86% of the landholdings count their deer. ● The balance of opinion was that Highland red deer populations were thought to be falling and other Highland deer populations staying roughly the same. Lowland roe and red deer populations were reported as stable or rising. ● Deer management practices include shooting, fencing, and supplementary feeding. ● 99% of landholdings use shooting as a deer management practice. ● Reasons given for shooting include sport, conservation, agricultural protection of crops/woodland, and public safety. ● Landholdings reported that herbivore impact by animals other than deer had decreased over the last decade. ● 66% of landholdings were involved in commercial deer stalking, and 72% undertook some uncharged private deer stalking. ● The main economic and environmental effects that would take place if deer management were to cease were thought to be job losses and damage to woodland and commercial forestry plantations.

¹ Most of the survey fieldwork was carried out between July 2014 and March 2015; it is understood that the number of Deer Management Plans has increased since that time.

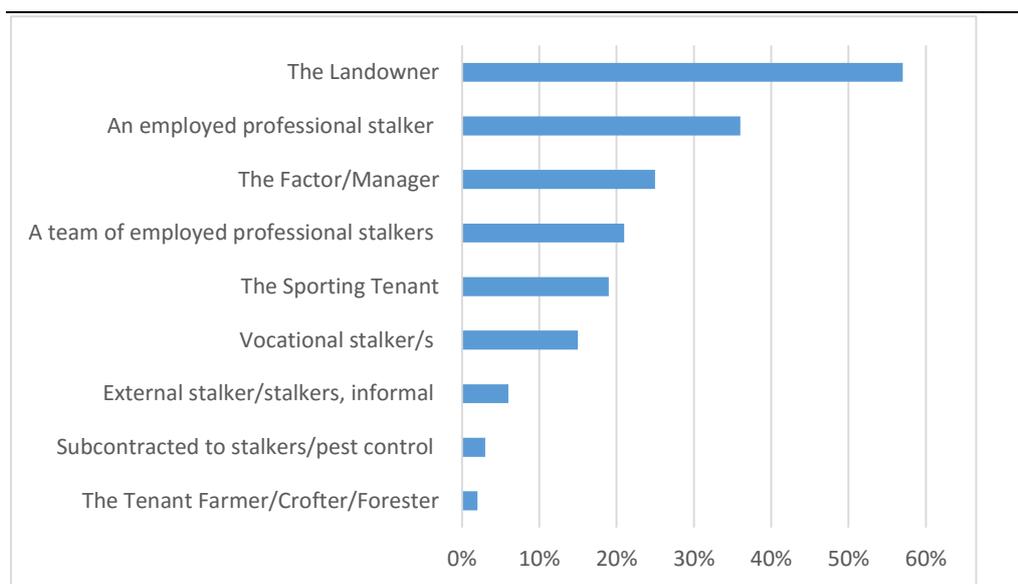
Source: PACEC Deer Management Survey 2015

2.2 Survey Results

2.2.1 80% of the respondents were members of the ADMG.

2.2.2 57% of landholdings said the landowner was responsible for deer management. 36% said a professional stalker was responsible. Other common replies were the Factor/Manager (25%), a team of professional stalkers (21%), and a sporting tenant (19%).

Figure 2.1 Responsibility for Deer Management

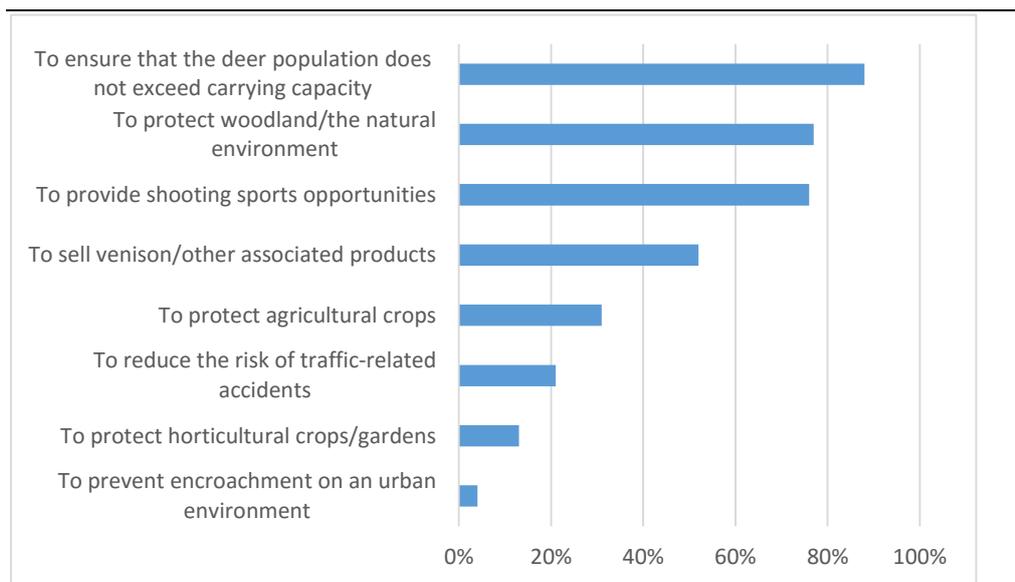


Source: ADMG Survey; PACEC

2.2.3 The landholdings ranged from just 100 hectares in size to 59,000 hectares², with a median of 4,600 hectares and a mean of 6,800 hectares. The total area covered by the survey is 1,830,000 hectares. The total area of Scotland is approx 7.75m hectares so the sample area represents just under 25% of the total.

2.2.4 Most of the landholdings said they managed the deer population so that it would not exceed the carrying capacity of the land (88%) and to provide shooting sports opportunities (76%). Woodland protection (77%) was also a key reason. Just over half (52%) said they managed their deer in order to sell venison and other products. About a third (31%) said they were protecting agricultural crops, and 13% said they were protecting horticultural crops or gardens. Just over a fifth (21%) said they were reducing the risk of traffic-related accidents.

² Excluding a single return submitted by Forestry Commission Scotland for the National Forest Estate, which covered a total of 650,000ha spread across many locations.

Figure 2.2 Reasons for Deer Management

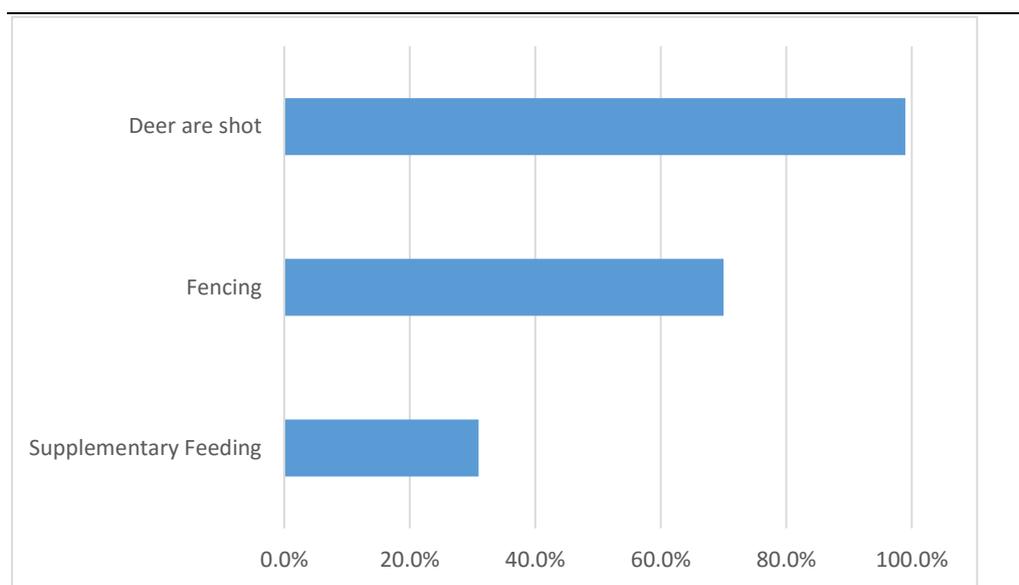
Source: ADMG Survey; PACEC

- 2.2.5 Where respondents gave multiple reasons for engaging in deer management, they tended to say (51%) that the most important reason was maintaining the deer population at or below the carrying capacity of the landholding.
- 2.2.6 Members of Lowland Deer Network Scotland were considerably more likely than other respondents to state that protecting agricultural crops (74%) and reducing the risk of traffic-related accidents (47%) were purposes of deer management. However the primary purpose of deer management, just as with other respondents, was to ensure that the deer population did not exceed carrying capacity.
- 2.2.7 Two thirds of the respondents said at the time of the survey that there was a formal written deer management plan in place for the deer range that their landholding was part of (68%).
- 2.2.8 A clear majority of landholdings (83%) said the deer range or deer management group that their landholding was part of undertook monitoring and assessment of their deer habitat. Of these, almost three quarters (72%) said these habitat assessments conformed to Wild Deer Best Practice (WDBP) guidelines.
- 2.2.9 Half of the respondents (53%) said they monitored or assessed their own deer habitats in a way which reflected WDBP, and a further 29% undertook some monitoring or assessment but not necessarily using WDBP methodology. Only 18% undertook no monitoring or assessment.
- 2.2.10 84% of landholdings said that the deer in their deer management group or deer range were counted or otherwise subjected to annual population assessments, and 86% said they counted or made annual population assessments of their own deer.
- 2.2.11 The survey next asked how deer numbers/densities had changed over the last ten years. The responses varied by location. 57% of ADMG members (on Highland

landholdings) suggested that red deer numbers had fallen over the past ten years, with 25% reporting that they had stayed the same and the remaining 18% reporting an increase. The populations of roe, sika, and fallow deer were typically reported as having stayed the same. The majority of respondents who were LDNS members reported stable populations across all species; however 33% reported increasing roe deer and red deer densities.

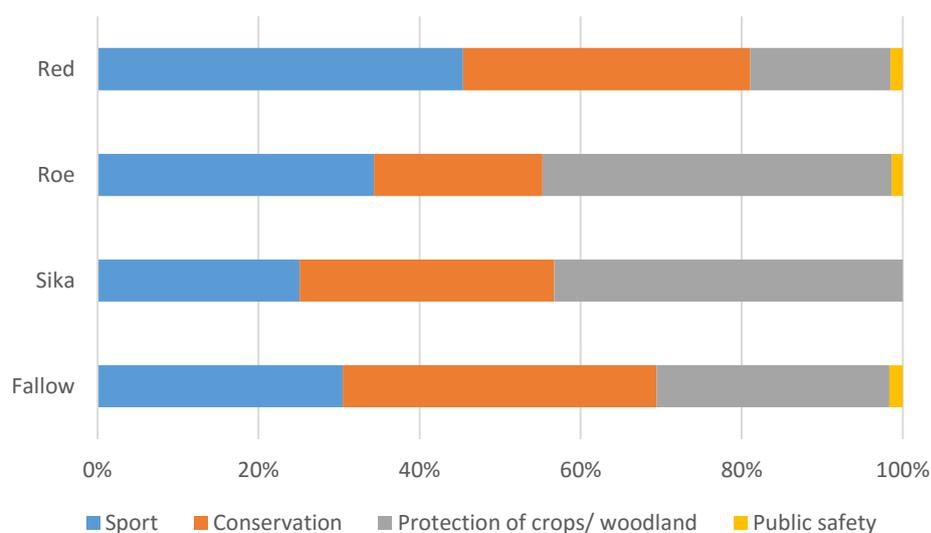
- 2.2.12 Virtually all landholdings (99%) said they used shooting as a form of deer management. 70% also used fencing, and 31% used supplementary feeding, although the latter was almost exclusive to ADMG members (i.e. Highland deer management)

Figure 2.3 Deer Management Methods



Source: ADMG Survey; PACEC

- 2.2.13 The respondents were asked to rank the reasons for deer shooting on their landholdings, for each species of deer. The primary purpose of shooting red deer was seen to be sport, closely followed by conservation. Agricultural protection of crops and woodland was also seen to be an important reason. Public safety was not a major consideration. For roe deer, the primary purpose was protection of crops and woodland. The responses differed markedly between the highland and lowland deer ranges: for LDNS members, agricultural protection was the primary purpose for shooting all species.
- 2.2.14 For roe deer, the most important consideration was agricultural protection of crops and woodland, although sport and conservation both also scored highly. For sika deer, conservation and agricultural protection were the most important considerations, followed by sport, with no sika deer shot for reasons of public safety. Fallow deer were primarily shot for conservation.

Figure 2.4 Reasons for Shooting Deer

Source: ADMG Survey; PACEC

- 2.2.15 Half of the respondents thought that the impact of other herbivores (e.g., sheep, hare, rabbit) had stayed the same over the last decade. 37% felt that these impacts had decreased, and 13% that they had increased.
- 2.2.16 Two thirds of landholdings (66%) let deer stalking opportunities on a commercial basis, and slightly more (72%) also undertook private stalking, for example, for family and friends.
- 2.2.17 At least 90% of primary suppliers to deer managers were located in Scotland in all categories apart from licences, membership, and subscriptions, and other services (e.g., insurance, accountancy, legal, banking, HP and leasing).
- 2.2.18 The majority of landholdings sourced ammunition manufactured abroad (60%). Other supplies tended to be manufactured in Scotland: vehicle running costs (70%), clothing (49%), and other goods (73%).
- 2.2.19 Most primary suppliers of capital equipment were located in Scotland, although 19% of venison storage equipment, 21% of computers, and 19% of dogs were sourced in the rest of the UK.
- 2.2.20 Much of the capital equipment supplied was not manufactured in Scotland. In particular, rifles and optics tended to be manufactured outside the UK (78%), as did vehicles (56%), communication equipment (48%), and computers (61%). Venison processing equipment tended to be manufactured in the rest of the UK (55%).

The purpose of deer management; effects which would occur if deer management ceased

- 2.2.21 Respondents were asked about the economic and environmental effects if deer management were to cease. Overwhelmingly, they cited damage to woodland and commercial forestry, and job losses, as the main effects.
- 2.2.22 Environmental damage, particularly from overgrazing but also from trampling, was expected to moorland and hill grazing, as well as woodland and agricultural crops. SSSIs and SACs were vulnerable to damage. Cattle and sheep grazing would be affected, as would grouse shooting.
- 2.2.23 Economic losses would include many job losses, much higher fencing costs, loss of estate viability and decreased land values, loss of tourism income, and lower spending in the local economy both by the estates and by tourists.
- 2.2.24 Deer welfare would be compromised by over-population. There was concern about winter starvation if supplementary feeding was discontinued, and about increased disease, including ticks and Lyme disease, which might be spread to domestic livestock. Deer would be displaced from their habitats and impinge on villages and gardens, and road collisions would increase. There would be media and popular concern about increased numbers of dead or dying deer.

3 Economic impacts of deer management in Scotland

3.1 Introduction

3.1.1 **This section presents the total economic impacts of deer management in Scotland in the financial year 2013/14, as measured by the numerical questions in the survey and extrapolated to provide estimates for Scotland as a whole. These covered expenditure (capital and operational), income, and employment.**

3.1.2 Not all respondents answered all questions in the questionnaire. In some cases, we have been able to estimate missing responses using average values from the other respondents. To show the coverage of the responses to each question, we have calculated the amount of land represented by those who did answer the question, and expressed this as a percentage of the total responses (e.g. the answers to the question on operational expenditure are representative of 1.74m hectares of land under management, which is 95% of the total land covered by the survey).

3.1.3 We have used information provided by ADMG and LDNS to extrapolate from the survey responses to an impact for the whole of Scotland. ADMG and LDNS have reviewed the profile of respondents to the survey and are confident that they are representative of activity in Scotland as a whole, although the relatively small lowland sample supports a lower level of confidence than that for the Highlands.

3.1.4 This survey updates PACEC's 2006 study on the contribution of deer management and commercial stalking to the Scottish economy (which itself drew upon PACEC's 2006 study on the UK economic impact of shooting sports) to improve the estimate of activity specific to deer management with a much more comprehensive programme of survey research. Separately, we have reviewed the 2006 study against work carried out in 2013/14 for BASC which suggests that the total level of stalking activity in Scotland is comparable with the 2006 estimate and that expenditure is likely to have risen in line with inflation since that point.

Expenditure

3.1.5 **The survey revealed a total of over £35m operational expenditure on deer management in Scotland as a whole.** Staff expenditure accounted for just over £15m, or 43% of the total. The other major contributors to total operational expenditure were property costs such as rent, rates, and maintenance (£4.7m, or 13% of the total), professional services such as insurance and accountancy (£2.3m, or 6%) and vehicular running costs (£2.1m, or 6%).

Table 3.1 Total Estimated National Annual Operational Expenditure on Deer Management

	Annual expenditure	Percentage of total operational expenditure
Staff costs (including Nat Ins and pension)	£15,187k	43%
Casual wages e.g. gillies employed for the stalking season	£1,454k	4%
Pest control subcontractors	£1,220k	3%
Ammunition	£433k	1.2%
Vehicular running costs (fuel, oil)	£2,141k	6%
Vehicle servicing/repairs	£1,424k	4%
Maintenance of roads and tracks	£1,817k	5%
Equipment repairs (e.g. to rifles, radios, binoculars)	£446k	1.3%
Stalking Pony Costs (e.g. saddlery, horseshoes)	£252k	0.7%
Clothing	£469k	1.3%
Licences, Membership subscriptions	£387k	1.1%
Property costs (rent, rates, maintenance)	£4,669k	13%
Utilities & communications (e.g. gas, electricity, water, phone)	£1,772k	5%
Other Goods purchased (e.g. manufactured goods, consumables)	£745k	2%
Other Services purchased (e.g. insurance, accountancy, legal, banking, HP and leasing)	£2,286k	6%
Others	£703k	2%
Total	£35,406k	100%

Note: Total *unweighted* expenditure recorded in the survey was £13,047k
Source: PACEC

3.1.6 The survey respondents were also asked to consider the amount of capital expenditure that was required to manage the deer on their holdings. As capital expenditure can be intermittent and variable, the respondents were asked to consider the last 5-10 years as a guide and specify the cost of equipment and its lifetime before replacement. **The total annual expenditure was £7.7m in Scotland as a whole**, with the largest single categories being vehicles (£3.0m per year, or 38% of total capital expenditure) and fencing (£1.6m per year, or 21% of total capital expenditure). The average lifetimes of the items in question varied from just 4 years (for computers) through to 19 years (for buildings).

Table 3.2 Total Estimated National Annual Capital Expenditure on Deer Management

	Annual expenditure	Percentage of total operational expenditure	Average lifetime of item
Deer management equipment (sacks, high seats, weighing scales, knives, etc)	£334k	4%	6
Fencing (posts, wire)	£1,613k	21%	12
Rifles, optics	£299k	4%	10
Buildings: accommodation, stores, stables, kennels	£551k	7%	19
Roads, tracks	£803k	10%	12
Vehicles: lorry, van, pick up, tractor, trailer	£2,957k	38%	7
Stalking Ponies	£47k	0.6%	8
Dogs kept for the purposes of deer management	£106k	1.4%	7
Venison storage (chillers, larders)	£463k	6%	14
Any Venison processing equipment	£54k	0.7%	7
Communication equipment (eg walkie talkie)	£111k	1.4%	6
Computers	£68k	0.9%	4
All others	£302k	4%	-
Total	£7,708k	100%	-

Note: Total *unweighted* expenditure recorded in the survey was £3,042k
Source: PACEC

3.1.7 The total annual expenditure on deer management in Scotland is therefore £43.1m (£7.7m capital, £35.4m operational).

Employment

3.1.8 The survey questionnaire asked respondents to set out the total employment necessary to carry out deer management on the land, by occupation, and by whether the work was paid or unpaid. The respondents were also asked to set out the number of hours in the week and weeks in the year that were worked for each occupation.

3.1.9 **The total employment across the whole of Scotland, as extrapolated from the survey sample, was 2,532.** The most common occupation was vocational/recreational stalking, followed by (paid) stalkers/keepers. In total, there was a roughly 60:40 split between paid (1,373) and unpaid (966) jobs; however, there was a clear split between occupations that were typically paid (factors/managers, stalkers/keepers, forest rangers, and contractors) and those that were typically unpaid (landowners/farmers, vocational or recreational stalkers).

Table 3.3 Estimated Total National Employment Necessary to Carry Out Deer Management

	Total employment	Paid	Unpaid	Unspecified
Landowner/Farmer	251	15	222	15
Factor/Manager	211	167	11	33
Stalker/Keeper	835	773	15	47
Forest Ranger	101	86	0	15
Vocational/recreational Stalker	712	36	661	15
Contractor	176	162	4	11
All others	247	134	55	47
Total	2,532	1,373	966	193

Note: Total *unweighted* employment recorded in the survey was 1,076
Source: PACEC

- 3.1.10 The survey responses on weeks worked per year, and hours worked per week, by occupation, were used to estimate the total amount of paid and unpaid *effort* that is required to carry out deer management in Scotland. The measure used is Full-Time Equivalent (FTE) employment, which for this study is defined as the number of people working 35 hours a week, 52 weeks a year, which would be required to carry out the work³.
- 3.1.11 Table 3.4 below shows the full-time equivalent impact of each job, and each *paid* job, by occupation. It shows that stalkers, keepers, and forest rangers typically worked for a greater proportion of the year (hours per week, weeks per year) than the other occupations. On average, a paid stalker/keeper works for 71% of the year, or is the equivalent of 0.71 full-time employees (many work full-time, year-round, but some are part time or partly seasonal). A paid forest ranger represents, on average, 0.64 FTEs. The average paid job, taking into account the many contractors and other occupations that do not work all year round, represents 0.53 FTE employees.

³ For example, one person working a 17.5 hour week all year counts as half an FTE employee; two people working 35 hour weeks three-quarters of the year count as 1.5 FTE employees in total; and so on.

Table 3.4 Total Estimated National Full-Time Equivalent Effort Necessary to Carry Out Deer Management by Occupation

	FTE per job	Paid FTE per paid job
Landowner/Farmer	0.07	0.23
Factor/Manager	0.10	0.12
Stalker/Keeper	0.68	0.71
Forest Ranger	0.55	0.64
Vocational/recreational Stalker	0.12	0.23
Contractor	0.29	0.30
All others	0.21	0.03
Total	0.33	0.53

Source: PACEC

3.1.12 **The total employment required to carry out deer management in Scotland is the equivalent of 845 full-time jobs as described above.** Of these, 722 FTEs are paid, and 124 are unpaid, reflecting the fact that the paid occupations are much more likely to work full-time, or work for more weeks in the year, than the unpaid occupations.

Table 3.5 Total Estimated National Effort Necessary to Carry Out Deer Management (Full-Time Equivalent Employment)

	Total FTE employment	Paid FTEs	Unpaid FTEs
Landowner/Farmer	17	3	13
Factor/Manager	21	20	2
Stalker/Keeper	566	548	18
Forest Ranger	55	55	0
Vocational/recreational Stalker	83	8	75
Contractor	51	49	1
All others	52	37	14
Total	845	722	124

Note: Total *unweighted* effort recorded in the survey was 322 FRE (255 paid)

Source: PACEC

Income

3.1.13 There are several ways in which deer management activities can provide a direct source of income. We have extrapolated from the survey responses to estimate the value of this income for Scotland as a whole. The most significant sources in 2013/14 were income received from sporting clients (£6.9m) and the sale of deer carcasses for processing elsewhere (£6.6m). The other major source of income were income received from stalking rents (£2.3m). **The total direct income received was £12.4m.**

Table 3.6 Total Estimated National Income from Deer Management, 2013/14

	Income from deer management	Percentage of total income
Sale of deer carcasses for processing elsewhere	£6,590k	53%
Sale of processed venison direct to wholesaler/retailer/catering industry	£664k	5%
Sale of other deer products (e.g. horn)	£66k	1%
Income received from sporting clients	£6,943k	56%
Income received from stalking rents	£2,281k	18%
Other	£649k	5%
Total	£12,449k	100%

Note: Total *unweighted* income recorded in the survey was £6,008k

Source: PACEC

Wider economic impact – results from other PACEC work

- 3.1.14 This study has focused on expenditure on deer management as reported by deer managers, and the employment which is required to carry out deer management activity. However, this expenditure is only a fraction of the total amount of money spent in the pursuit of deer stalking opportunities. Many sites where deer management takes place offer extensive stalking and other shooting sports opportunities and provide accommodation and hospitality facilities to participants. These shooting participants will spend additional money on their sport (e.g. on firearms, ammunition, and clothing) away from the shooting site, and many will have travelled to Scotland specifically to shoot deer (red deer in particular) and will also spend money on other attractions while in Scotland. **As a result, the full economic impacts of deer management are considerably greater than the expenditure and employment recorded in this study.**
- 3.1.15 PACEC's **2006 study** of deer management and stalking suggested that a total of 2,520 FTE paid jobs in Scotland and £105.1m of expenditure (in 2004 prices) depended upon deer management and associated stalking activities once the full supply chain was taken into account – considerably more than the *direct* expenditure on deer management. £55.2m of this money was spent by stalking participants away from the deer management site (on firearms, ammunition, external hospitality, transport etc).
- 3.1.16 The 2,520 FTE paid jobs in Scotland supported by deer management and stalking in 2006 included 966 direct paid FTE jobs, 727 paid FTE jobs in Scottish suppliers that sold goods and services directly to the deer management and stalking organisations, and 748 paid FTE jobs further down the supply chain in Scotland; the sector also supported 80 *upstream* jobs, as it is a supplier to the game processing and crafts industries.
- 3.1.17 Further evidence of the indirect economic impacts of deer management can be found in other projects which PACEC have recently conducted on the economic and social

benefits of shooting in the UK⁴, and the volume and value of country sports tourism to Scotland⁵. In conjunction with the direct economic impact findings of this study, these additional findings support the conclusions of PACEC's 2006 shooting sports and deer management study and provide a consistent picture of the importance of deer management to the wider economy.

- 3.1.18 This **2016 study** did not directly address the contribution of deer management to the Scottish economy, including shooting sports and associated hospitality, via the supply chain. We have reviewed the 2006 study against work carried out in 2013/14 for BASC which suggests that the total level of stalking activity in Scotland is comparable with the 2006 estimate and that expenditure is likely to have risen in line with inflation since that point. We estimate that current total expenditure is £140.8m⁶. This expenditure supports around 2,500 FTE paid jobs in Scotland, also a very similar figure to 2006. As set out in the economic impact section above, £43.1m of this expenditure is made directly by deer management businesses/organisations; the remainder of the expenditure is made by stalking participants away from the deer management sites (on firearms, ammunition, external hospitality, transport etc).

3.2 Summary of economic impacts

- 3.2.1 **The total direct expenditure on deer management in Scotland in 2013/14, according to the survey respondents, was £43.1m: £7.7m capital expenditure, £15.2m on staff, and £20.2m other operational expenditure (rounded to nearest £100k). This was partially offset by £12.5m in income from deer management.**
- 3.2.2 **There were a total of 2,532 direct jobs in deer management in Scotland, of which 1,373 were known to be paid and 966 unpaid (with the remainder not specified by the survey respondents). As many of these jobs are part-time and/or seasonal, the full-time equivalent of this employment is 845 FTEs (722 paid, 124 unpaid).**
- 3.2.3 **PACEC's other research on shooting sports and Scottish country sports tourism suggests that the total impact of deer management on the Scottish economy, including stalking and associated hospitality, and the supply chain within Scotland, is £140.8m of total expenditure, supporting around 2,500 FTE paid jobs in Scotland.**

⁴ "The Value of Shooting", 2014 – see <http://shootingfacts.co.uk>

⁵ "The Benefits, Volume and Value of Country Sports Tourism in Scotland" (2014) – see <http://www.countrysportscotland.com/>

⁶ £105.1m in 2004 prices, uprated to 2013 prices using the Office for National Statistics' composite price index.

3.3 Comparisons between the 2006 and 2016 studies

3.3.1 For ease of comparison, the results from the 2006 and current studies are shown side-by-side below. The earlier study (which asked about activity in 2004) relied on a postal survey with a lower response rate, and the methodology was different⁷; however, the breakdowns of expenditure are broadly comparable allowing for inflation.

Table 3.7 Total Impacts of Deer Management in Scotland, 2006 vs 2016

	2006	2016
Total expenditure reliant on deer management	£105.1m	£140.8m
- of which: direct staff costs	£13.6m	£15.2m
- other costs (operating, capital)	£33.5m	£44.9m
- other expenditure by stalking participants	£58.0m	£77.7m
Total FTE jobs	2,520	c2,500
- of which: direct paid FTE jobs -	966	845

Note: Monetary figures are given in the prices current at the time covered by each piece of survey research (the calendar year 2004 for the study published in 2006, the financial year 2013/14 for the 2016 study).
Source: PACEC

⁷ Selected respondents to the UK-wide BASC survey on all live quarry shooting sports were sent a follow-up survey on their additional, non-sporting deer management activity – as a result, only expenditure or employment not already declared in the shooting sports study was classified as “not for sport”, and therefore some shooting sports hospitality activities were not distinguishable from direct expenditure on deer management. This has the effect of increasing the estimate of “other costs (operating, capital)” and “direct paid FTE jobs” for the 2006 study, and decreasing the “other expenditure by stalking participants”, relative to the 2016 study.