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Conservation with a Gun: Understanding Landowner Attitudes to Deer Hunting in the Scottish Highlands

Douglas C. MacMillan · Kirsty Leitch

Published online: 25 June 2008
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Abstract Conservation conflicts are often difficult to resolve due to a combination of poorly defined property rights, inadequate funding, high transaction costs, and contrasting value systems among stakeholders. This paper explores these barriers to collaboration in the context of the emerging deer crisis in the Scottish Highlands, where deer numbers are now higher than at any time in recorded history. In particular we explore the potential role of recreational hunting in the government's strategy to contain rising deer numbers from the landowners' perspective. Using both qualitative and quantitative analysis we find that hunting traditions and personal preferences, reinforced by antipathy to conservationists and their perceptions of land stewardship, are the major barriers to shooting more deer for conservation objectives. We conclude that an expansion of commercial hunting opportunities is the best practical approach to resolving the current conflict over deer, but conservationists and landowners must work together to create a more positive context for hunter-conservation initiatives and activities.

Keywords Conservation · Sustainable use · Highland sporting estates · Deer stalking

Introduction

The contemporary role of hunting in conservation is contested. Hunting pressure is implicated in species ex-

tingtion from early to present times (Wroe *et al.* 2004, Johnson *et al.* 2006), but in other contexts it can play a more positive role. For example, trophy hunting can help raise money for conservation in many African countries and the indigenous knowledge of hunters is often critical to the success of biodiversity conservation schemes in developing countries (Lindsey *et al.* 2007). However, hunters and conservationists are often divided by social and cultural barriers and contrasting value systems (Milbourne 2003) that make collaboration on conservation issues difficult (Dunk 1994).

This paper explores the potential for 'conservation through hunting' in order to control escalating deer populations in a 'developed' country context. In parts of the USA and Europe deer numbers are thought to be higher than at any time in history (Johnson 2006; Gill 1990). Altered environmental and habitat conditions such as milder winters and forest expansion, are known to be important drivers of the expansion of deer in terms of numbers and distribution (Milner *et al.* 2006, Warren 1997), but decline in hunting effort is also important (Adams *et al.* 2004; Brown *et al.* 2000; Schulz *et al.* 2003). The dramatic increase in wild deer populations is of concern due to the escalating cost of deer damage to agriculture and forestry crops, increased incidence of road traffic accidents and browsing damage to sensitive nature conservation sites (White *et al.* 2004; Hunt 2003).

We examine the social, economic and cultural constraints operating on hunting activity as seen from the landowner's perspective and identify potential opportunities for encouraging hunting effort for conservation objectives. The context is the emerging 'deer crisis' in the Scottish Highlands, where red deer (*Cervus elaphus*) numbers have more than doubled since World War II (DCS 2002; Hunt 2003) and are causing serious damage to sensitive

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vegetation communities, especially native woodlands (Baines *et al.* 1994). Conservation organisations and government agencies would appear to agree that increased hunting activity is the best practical mechanism for reducing deer numbers, but landowners, who own the right to hunt, seen reluctant to intensify hunting effort on their land. The reasons for this recalcitrance are not well understood not least because landowners have been difficult to engage in social research, but also because the topic transcends disciplinary and knowledge regimes, requiring an understanding and appreciation of history, law, conservation biology, culture, politics and economics.

The analysis is based on a mixed method approach involving mail questionnaires and interview-based case study evidence gathered from the owners and managers of land that is used predominately for deer hunting. Using both qualitative and quantitative analysis we find that hunting tradition and antipathy to conservationists and their contrasting perception of sustainable deer management are the primary barriers to ‘conservation with a gun’. However, underlying concern about the impact of more shooting on the exclusive nature of the sport and the associated consequences for land values, also reinforce landowner intransigence. We conclude that new initiatives involving voluntary, market or regulatory measures, are unlikely to succeed unless conservationists can forge a more positive relationship with landowners through a better understanding of the economic, cultural and social dimensions of stalking.

The ‘Deer Problem’

In Britain, lands set aside for the hunting activities of a social elite date back to at least the eleventh century. Contemporary sporting estates and deer stalking have their origins in the early nineteenth century at a time when the ‘Sassenach¹’ view of the Highlands was undergoing a dramatic transformation in the eye of an increasingly urbanised society: shifting from a wild and impoverished place inhabited by dangerous brigands and rebels, to a landscape of mystery and romance, and home to legendary warrior heroes (Trevor-Roper 1983). As such, the Highlands, to a new elite, was an ideal canvas upon which to recreate the rituals and challenges of deer hunting.

The most enthusiastic converts to Highland deer hunting (referred to as stalking) were the *nouveau riche* of the industrial south, who saw land ownership for sport as an opportunity to acquire social status. In this respect, the

purchase of Balmoral Estate for ‘sport’ by Queen Victoria in 1852 was critically important as it provided enormously wealthy, but relatively low born, industrial magnates the opportunity to integrate, or at least socialise with, royalty. At a more prosaic level, but equally important to the rapid development of sporting estates in the 19th century, were the periodic declines in livestock prices that meant there were large tracts of relatively cheap land, largely bereft of people, available for purchase.

Although demand for sporting estates has waned since the 19th century, there remain around 250 sporting estates covering approximately 2 million hectares. This is equivalent to 43% of all privately owned land in the Highlands (Higgins *et al.* 2002). Individual estates are generally large, ranging in size from 1,000 to over 10,000 hectares and property boundaries are traditionally unfenced allowing deer to roam over vast areas. The dominant management aim is to produce trophy stags for shooting by the owner, his friends and family, or by paying clients (Clutton-Brock *et al.* 2004). Management is highly traditional with many practices and codes of conduct and dress largely true to their Victorian origins (Wightman *et al.* 2002; Lorimer 2000). Highland stalking is also unusual in comparison to deer hunting in other developed countries as it is the dominant motivation for land ownership, rather than a secondary objective or by-product of land management and because of the strong emphasis placed on the sporting aspect of the activity as opposed to venison or trophy acquisition (MacMillan 2003). For example, the stalker is required to approach the deer by stealth on open ground rather than simply shooting from a hidden vantage point and the venison is retained by the landowner, not the stalker.

Although the right to hunt deer has long been vested with the landowner, deer are *res nullius* and hence free to roam across boundaries (Parkes and Thornley 2000). Fencing to constrain deer movement is frowned upon as it prevents the free movement of deer, is expensive, limits access to the hills for outdoor walkers, and is undesirable in conservation terms. Moderate deer grazing is required if woodland ecosystem processes are to be sustained MacMillan *et al.* (1998) and Moss *et al.* (2000) found that collisions with deer fences have caused high mortality rates among rare grouse species. Fencing may also be illegal, as according to medieval Scots law, deer are ‘thine as long as they have a desire to come to thee, and when they have no desire to come again they are not thine’ (quoted in Ritchie 1920, p207). Consequently deer tend to be managed as a common property resource although the degree of cooperation varies depending on ownership objectives and the effectiveness of local deer management groups (DMGs). One consequence of the dichotomy in legal terms between living and dead deer is that there is a lack of clarity

¹ Sassenach is a Scots Gaelic word originally describing Saxons from south of Hadrian’s Wall but in modern usage is widely understood to refer to people from south of the highlands, especially the English.

concerning responsibility for deer damage in terms of road traffic accidents, damage to neighbouring properties and, of particular relevance to this paper, to sensitive nature conservation sites, such as native woodland, which are highly valued by the public (MacMillan and Duff 1998).

As the external costs of deer grazing are not borne by the landowner and they perceive no direct benefit from reducing deer numbers the government is required to intervene. The Deer Commission for Scotland (DCS) is the government agency responsible for the conservation, control and sustainable management of all species of wild deer. The DCS has strong legal powers to enforce culling under the Deer (Scotland) Act 1996, but these powers have never been used for various legal and political reasons (MacMillan 2003) and the preferred approach is voluntary action by landowners aided by the provision of advice, training and technical guidance promulgated largely through local DMGs. However, this approach has had only limited success in tackling the problem of deer overabundance. Cull levels on hill ground are the same as they were 10 years ago (Fig. 1) and local cull targets agreed between the DCS and DMGs are rarely met. In season 2000–2001 for example, less than one-third of all DMGs achieved their agreed cull level and almost half failed to meet at least 70% of their agreed total (DCS 2002). It is not fully understood why private landowners have not responded more positively to the call for more shooting, and it is this issue we try to address in our research.

Methodology

To understand the constraints and opportunities facing landowners it was necessary to take a mixed method approach and our findings spring from two sources: a mail questionnaire survey of individual sporting estate owners and a series of interviews with selected owners. A total of 172 estates were randomly selected from over 300 sporting estates compiled from various sources that identify land-

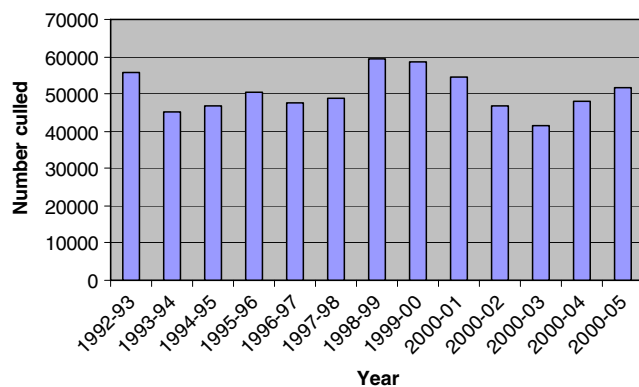


Fig. 1 Annual red deer cull on open ground

holdings as sporting estates including Whitehead (1960) and Malcolm (1883). Each estate in the sample was contacted initially by telephone and then sent a questionnaire².

The questionnaire was divided into a number of sections covering both factual and attitudinal questions about ownership, estate management, land use and specialist enterprises, employment and profitability, and wider public issues (access, environment and heritage). Owners were also given the chance to state what they perceived to be the major threats and opportunities for their estate in the future. Follow-up interviews were conducted with ten estate owners to provide local context and to enrich the understanding of information generated by the questionnaire. These took the form of semi-structured conversations that allowed the owner to talk more freely and deeply about the issues raised in the questionnaire and other topics of particular interest to themselves, especially local issues. A total of 85 estates completed the questionnaire, giving a response rate of approximately 50% of all estates in the sample. The total area managed by these estates amounts to 763,963 ha, equivalent to 48% of all land held by estates contacted by mail, and 17% of all privately owned land in Scotland.

Landowner Characteristics

A clear majority of owners are male (82%), with female owners accounting for only 6% of the total. The remainder are either owned by families (9%) or by charities and institutions (3%). Most have been owners of their estate for less than 20 years (although it may have been held by their family for longer) and the most common means of acquiring ownership is inheritance (49%). Purchase on the open market is also common (32%), private sale less so (18%). Only 27% of respondents are resident on their estate and 69% are absentees, here defined as spending less than six months on the estate in any given year. The most popular residential periods are the shooting seasons for stags and grouse (primarily August and September), and over the winter festive break. The most frequently cited reason for being absent from the estate were ‘work commitments’ (52%), family reasons (25%), and personal preference (15%). The vast majority of respondents are members of organisations which promote ownership of land for private sport, such as the Scottish Rural Property and Business Association (93%), the Game Conservancy Trust (78%) and the Countryside Alliance (74%).

² In a few cases where the owner was unable to participate, the manager was responsible for completing the survey.

Ownership Motives

In the survey owners were asked to indicate why they owned their estates. Personal, rather than business, reasons were much more important for most, with ‘sport’, and ‘family and friends’ ranked higher than ‘livelihood’, ‘capital investment’ or ‘business entertainment’. Overall, sport was the most popular reason, cited by over 90% of all owners (Fig. 2). This is consistent with the findings of other studies such as MacGregor and Stockdale (1994). The interviews emphasised the strong personal attachment owners had with their estate, and the need for personal enjoyment and privacy came through strongly. Owners often described their feelings for their estate in terms of a love affair, using words like ‘passion’, ‘love’ and ‘emotion’ throughout the interview. Summing up, one owner simply describes it as ‘an affair of the heart’

Rest and recuperation and the opportunity for family to gather and enjoy time together in a great environment were as important as time spent ‘on the hill’ shooting and fishing. In other words ownership is more than simply acquiring an opportunity to shoot deer. According to one leading land agent, if it was just the stalking they wanted they could rent much more cheaply (Wightman *et al.* 2002).

Sporting Management

Although their management objectives vary all the owners questioned are primarily dedicated to sporting activities (usually, but not necessarily, restricted to red deer ‘stalking’, grouse shooting and salmon fishing), and many owners are only resident during the appropriate open seasons. The main objective of sporting management is to maximise shooting quality in terms of the number of trophy stags available (Fig. 3). Stags are valued for their venison, but their main value resides as ‘sport’ to the owners and as a source of income from rented stalking. Hinds are less

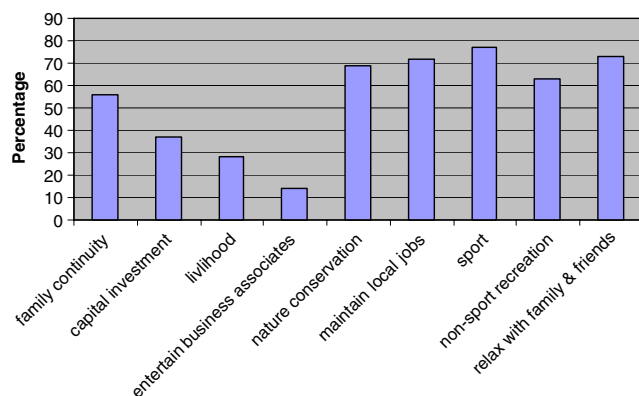


Fig. 2 Important motives for ownership

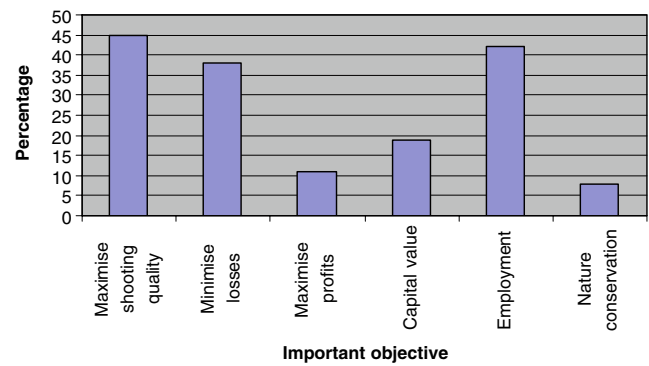


Fig. 3 Important management objectives

valuable in terms of sport and the annual cull of hinds is typically carried out by the estate stalker primarily to remove old or weak deer. Figure 4 shows the percentage of stags and hinds taken by the owner, the stalker and paying clients. Owners are responsible for 34% of all stags shot but only 8% of hinds. The estate stalker takes most hinds (74%) and paying clients most stags (54%).

Profit maximisation is not an important objective for over 90% of landowners. Maintaining employment on the estate and keeping a tight control on expenditures are more important. Protecting the capital value of the estate is also considered important and the number and quality of ‘trophy stags’ shot annually is an important determinant of value in this context. For example, it has been estimated that on average, in 1999–2000, each stag shot added approximately £22,000 to the sale value of an estate. Hinds on the other hand, added only £2,200 (DCS 2005).

There is considerable uniformity across sporting estates in terms of management objectives and practices for deer. All owners appreciate the need to cull for stock management reasons but most prefer to maintain relatively high deer densities through light harvesting of breeding females and by supplemental feeding in winter (Baines *et al.* 1994). Management intensity can vary, often depending on

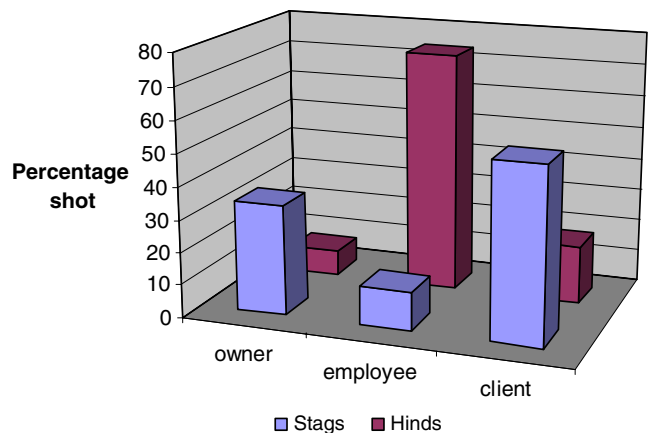


Fig. 4 Breakdown showing percentage of stags and hinds shot by owners, employees and clients

whether the estate employs a dedicated stalker, but uniformity across property boundaries is sought as radically different culling regimes are problematic for free roaming populations of deer. For example, heavy culling of deer on one estate for conservation reasons reduces the number of stags available for commercial stalking on neighbouring estates, which can cause friction.

Traditional sport management rituals and practices are keenly respected and adhered to by most owners. Indeed, many owners exhibit a genuine affection, bordering on nostalgia, for ‘the old ways’, and the social hierarchy that governs interaction between owner, factor and stalker, and the nature of stalking traditions and attire are strongly reminiscent of Victorian and Edwardian times. Dress codes are based on Harris tweed, plus fours, and ‘tackity’ boots, despite the availability of more comfortable and weather-proof alternatives, and on some estates ponies continue to be used to retrieve carcasses from the hill, rather than more efficient mechanised alternatives.

Nature Conservation Management

The majority of owners felt that they had a role and responsibility as caretakers of the land they owned. One owner and his wife, who were permanently resident on their estate, were particularly animated and enthusiastic in their description of the natural environment and the part they play in maintaining and enhancing it: “We’ve done everything to protect this place, on sound ecological grounds.” Another owner stated ‘we aim to keep a very natural and healthy balance here’. Some owners believed that high deer numbers were actually a positive indication of effective conservation in the sense that deer were thriving due to their protection and management.

Active ‘conservation’ management is primarily targeted at game species and their habitat and attitudes toward wildlife tend to depend on the species in question. Game species are universally protected, but species that prey on game species were generally classed as vermin. A threatened raptor species, the hen-harrier, which preys on grouse, aroused strong feelings of antipathy and were mentioned by the majority of owners as this species has brought them into direct conflict with conservation organisations (Thirgood *et al.* 2000).

More generally, owners felt that they are particularly well-qualified to manage the environment due to their expertise and intimate knowledge of the land in their care. The countryside conservation organisations, RSPB, SNH, DCS and National Trust for Scotland (NTS), were all accused of having ‘tunnel vision’, and of failing to appreciate the complexity of the rural economy and countryside. One owner suggested that they viewed ‘deer as a problem rather than a resource’. Many of their staff

were accused of being ‘townies’, who did not have sufficient knowledge or practical experience of countryside matters and owners resented their interference. Some owners were prepared to listen to the conservation message, but felt that they should not be told what to do as they themselves were the most able custodians. Many felt that the DCS in particular had altered dramatically in recent times from an owner-friendly organisation to one which is influenced by a conservation agenda. This change in approach coincided with a change in staff and landowners felt that there were fewer familiar faces among the higher echelons of the organisation.

Profitability of Stalking

Overall financial performance of sporting estates varies from year to year, but most were unprofitable on a regular basis. Stag stalking was the most consistently profitable sporting activity undertaken and, on the few estates that it is offered, hind stalking was the least profitable. On some estates the level of profitability is constrained by location and land quality, but in many cases it is a question of owner preference. Profit maximisation is an important objective for only 10% of estate owners as most earn their living elsewhere and can afford to forgo profit to secure privacy and personal hunting. Some interviewees mentioned that profitability could be much improved if that were the aim—for example, by renting out more stag stalking, but they chose not to as the estate was not a business venture to them.

The overall economic objective for the majority of owners can best be summarised as the maximisation of personal sporting opportunities subject to some expenditure control. The follow-up interviews with estate owners provided several anecdotal examples of this prevailing management philosophy. On one estate a pony trekking business was established, but only as a means of covering the cost of maintaining ponies required to retrieve deer from rough hill ground during the season. In another case, a sheep enterprise was established, primarily as a means of covering the cost of maintaining a full-time estate stalker.

The Estate Stalker

Although the mail questionnaire did not ask any direct questions about the role of the estate stalker, he emerged as a key figure during the interviews. The employment of a fulltime stalker is regarded as best management practice. He is typically responsible for the day-to-day management of deer and the landowner will often defer to him on deer issues. For example, the decision to rent the hind stalking on

one estate was made because a new young stalker had just been appointed and was keen on the idea. The stalker is normally solely responsible for the hind cull and he usually accompanies the owner or paying client while stalking. In this situation his role is to find and select suitable quarry and he is awarded considerable authority on the stalk. In the words of one landowner: ‘nobody fires a shot on the hill without my stalker saying so. He carries the rifle and he doesn’t let anyone fire a shot at anything that he hasn’t selected to be killed’.

The stalker has always been a central character in the life of sporting estates and one who enjoyed special status. Writing in 1907, Porter describes the estate stalker thus: “The gamekeeper's position has always been an honourable one. He has at no time been subjected to any of those degrading vicissitudes of servitude which have at one time or another been the lot of other hired servants. He has the power to contribute largely to, or greatly lessen, the enjoyment of those field sports which, from time immemorial, have formed a pleasant pastime to the landowners and wealthy classes of this country.”

Recent Changes in the Estate Deer Cull

For the five previous years, the annual stag cull increased on 47% of estates, stayed the same on 47%, and fell on 6%. The hind cull increased on 55% of estates, stayed the same on 35%, and fell on 10%. The average increases in deer shot were quite modest, averaging at about 2% per

annum for stags and 4% per annum for hind over the period. More detailed analysis showed that all hunting groups increased their cull, but the largest increases were achieved by estate employees in the case of hinds and by paying clients in the case of stags (Fig. 5). The hind cull is especially important in relation to population control and several questions subsequently focused on this aspect of sporting management.

Owners were asked why the number of hinds shot had increased. The most common reasons were to improve deer habitat (56%), improve the herd (54%), pressure from DCS (52%) or neighbours/DMG (42%). Financial motives connected to profitability of the estate or revenue from renting and venison were not mentioned, although several cited improved land values as secondary motives. Owners were also asked what impacts increased shooting had on estate resources (Fig. 6). Greater demands on estate labour and management time were considered most significant. Although increased expenditure was incurred this was largely offset by increased revenues and overall profitability was unchanged on 68% of estates, fell on 12% and rose on 20%.

Constraints on Stalking Hinds

Estate owners were questioned about the main constraints affecting hind shooting by the owner and his friends, paying clients, and the estate stalker (Fig. 7). Culling requirements for good stock management was perceived as

Fig. 5 Average percentage change in stag and hind culls over last 5 years for paying clients, owner and friends, and estate employees

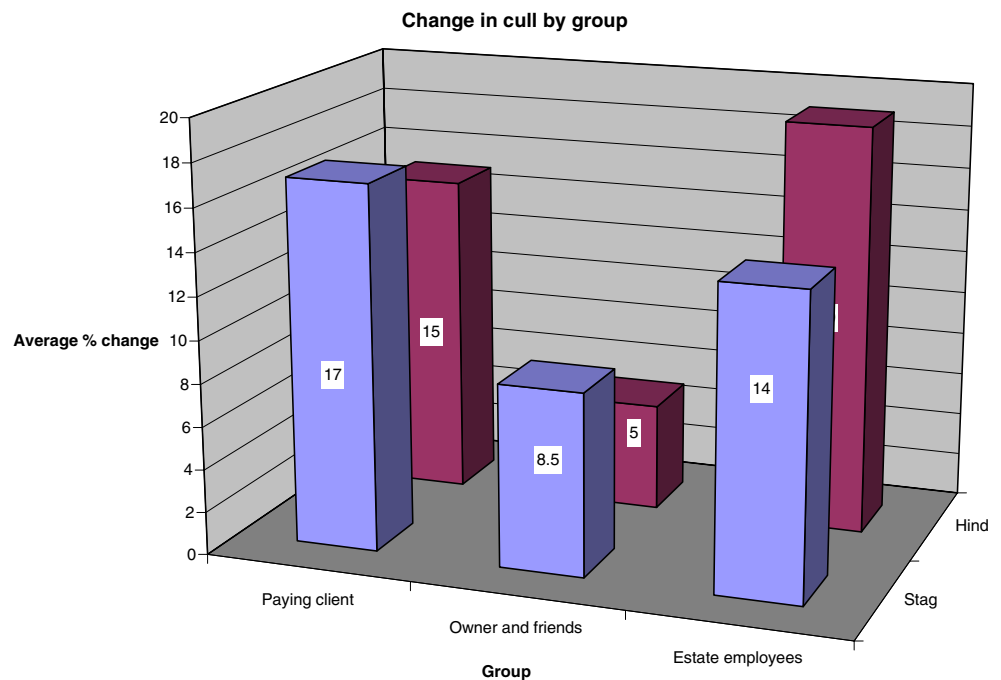
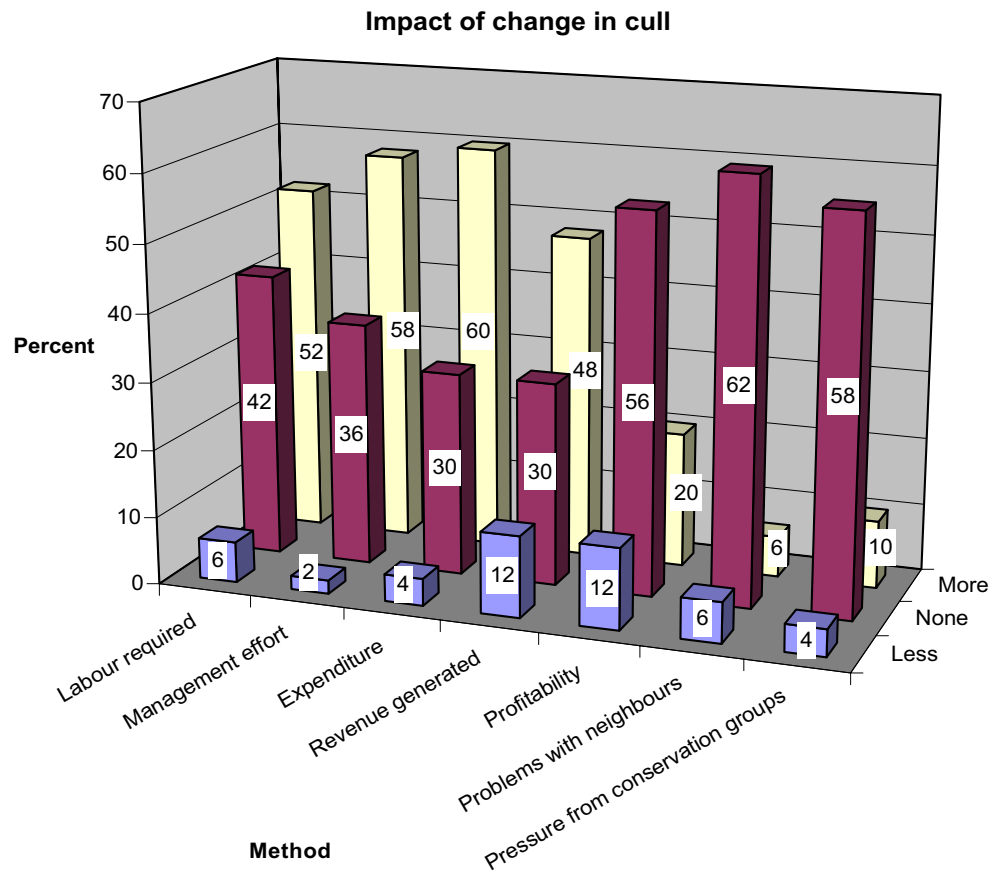


Fig. 6 Main impacts of increasing the hind cull on estate resources, activities and management (percentages of estate owners who stated each impact)

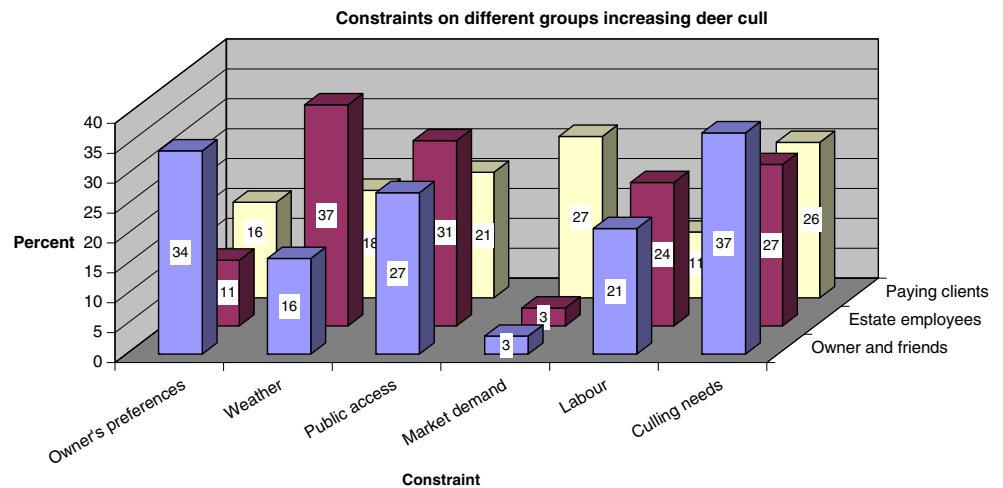


a dominant constraint on shooting more hinds across all three groups. Disturbance from public access was also important especially for stags as this is done in the summer months and is the favoured activity for the owner and paying clients. One owner actually felt that his livelihood was at risk as a result of deer being disturbed and claimed that if the situation deteriorated he would sell his estate. Owners report that walkers frequently disrupt stalking

activities by startling deer while a stalk is underway or by moving them from their anticipated location before stalking begins. Owners also reported that frequent disturbance forces the deer into larger groups making it more difficult to approach them undetected.

Weather was an especially important constrain for estate employees, which is not surprising as the hind cull (which is their primary responsibility), is normally carried out in

Fig. 7 Constraints on increasing hind cull for owner and friends, paying clients and estate employees (percentages of estate owners who stated each constraint)



the winter months. In commercial terms hind stalking is a marginal activity, and lack of demand by paying clients was considered to be a major constraint by some 27% of owners. The short days of a Highland winter also appear to act as a deterrent to the owners themselves, with 34% personally unwilling to shoot hinds at this time of year.

In the survey, assistance with venison marketing was perceived to be the most helpful measure that could be taken by the DCS to encourage more shooting. Help with shooting costs, or direct grants to encourage more shooting were also considered helpful (Fig. 8), but the reintroduction of sporting rates, (a tax formerly levied on estates), was strongly rejected by almost all owners.

In order to understand the factors affecting hind shooting effort the data were analysed using multiple linear regression. Change in the average annual hind cull over the previous 5 years was used as the dependent variable and the independent variables used are listed in Table 1. The best model in terms of statistical significance (F value=3.183, df 48; p =.001; R^2 =0.441; adj R^2 =0.348) identified a significant and positive association between the change in the number of hinds shot and the area of estate, lower dependence on sport as a source of income, membership of countryside groups, membership of a local DMG, and with landowners who purchased their estate (Table 2). The hind cull also increased in areas of high deer density although this variable was not significant at the 5% level. The number of FTEs employed in stalking on the estate is negatively associated with the change in hind cull: in other words, the more full time employees involved in deer

management, the lower the increase in the number of hind shot. This is counterintuitive but perhaps, suggests that larger estates were fully stretched culling deer efficiently, or that the hind cull, which is done in difficult winter conditions, is more dependant on motivation than labour availability.

In overview, the quantitative and qualitative data would suggest that landowners who have increased their annual cull tend to have a stronger sense of interest in and responsibility for the deer ‘problem’. Those owners that did not cull more would appear to fall into two groups. The first group, comprising some of the larger estates that depend on revenue from deer culling as business income, are constrained by the marginal profitability of hind culling. The second group did not respond because higher culling would either conflict with personal management goals, or because they did not accept there was a ‘deer problem’. This group were largely antagonistic towards conservation arguments and tended not to be members of their local DMG or other countryside groups. According to one case study interviewee, referring to attendance at their local DMG: “You’ve got a certain core of people that are interested and try and get involved and want to work as a group, and then you’ve got a peripheral lot who just don’t want to know”.

Implications for Conservation Policy

If cull targets for conservation are to be met it is clear that a more substantial and sustained increase in culling effort is

Fig. 8 Attitude to alternative measures for encouraging culling (percentages of estate owners who stated each measure)

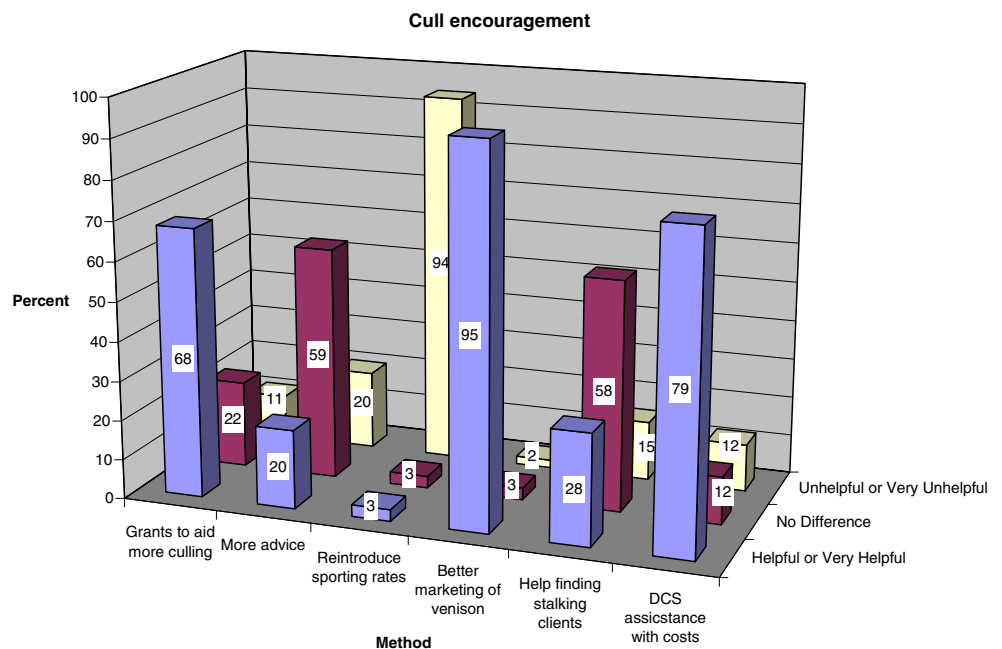


Table 1 Variables used in the regression analysis

Variable name	Description	Range of values	Mean
Source of livelihood	Importance of sporting activities as source of livelihood on estate	Very important 1 Quite important 2 Minor importance 3 No importance 4	2.14
Member of countryside groups	Total number of memberships of countryside groups held by owner	1–5	3.24
Member DMG	Estate owner a member of local Deer Management Group?	Yes 1 No 0	0.89
Estate area	Total area of estate (acres)	0–110,000	21 359
Deer density	Estimated number of deer per km ² on estate	5–10/km ² 1 10–15/km ² 2 15–20/km ² 3 20–25/km ² 4	2.21
Estate purchase	Estate purchased on open market	Yes 1 No 0	
FTEs	Number of FTEs in deer related management on the estate	2.727 (0–6.5)	0.010

required. Some consideration regarding possible strategies, informed by insights from the survey and the case study interviews is given here.

Estate owners were enthusiastic about better ‘venison marketing’ and, by implication, improved venison revenues, as a mechanism to encourage increased culling. However, there is some evidence from this investigation, and from other studies, that such a scenario is unlikely for several reasons. First, marketing is difficult due to the fragmented nature of the supply chain, and a new quality assurance scheme, the SQWV (Scottish Quality Wild Venison), has experienced limited uptake (SAOS 2005). Second, wild venison in the UK does not attract a premium over farmed meats and the price of venison is largely determined by the price of substitute meats. Third, venison revenues typically cover less than 50% of the cost of culling, hence a very dramatic increase in venison price would be required to make hind culling profitable on many

estates. Finally, higher venison prices will not affect demand for hind stalking from paying clients as venison remains the property of the estate. This final point is a peculiar feature of highland stalking and emphasises the distinction in Britain between ‘sport’ and hunting ‘for the pot’. As Adams (2006) points out, British ‘sport hunters’ have traditionally frowned upon those who would hunt purely for venison, considering them as ‘unsporting, greedy in their attitude, and lacking in judgement over sustainability’.

Attracting more paying clients would seem a better economic strategy, as increased revenue would be obtained from additional client fees and from venison. Despite a perception among some owners that there was little demand for hind stalking (see Fig. 6), there is evidence from a recent survey of members of the British Association for Shooting and Conservation (BASC), that there is strong latent demand for hind stalking (MacMillan 2003). With a membership in excess of 120,000 hunters, BASC is the largest representative hunting organisation in the UK and the survey found that 65% of their membership would like to stalk but were limited principally by a lack of information, relevant experience and/or contacts/friends in the sport. However, landowners would appear to have little enthusiasm for attracting new clients, with most relying on their existing social network of friends and business associates. As one owner remarked when questioned about marketing policy for stalking: ‘I’ve never advertised,...it’s all word of mouth really’.

Although it would be relatively easy to encourage newcomers to stalking, through for example, providing shooting packages that provide training, accommodation and the necessary firearm, the issue goes somewhat deeper than a failure of marketing and innovation. Most land-

Table 2 Model describing relationship between variables affecting increase in hind cull

Model	Beta coefficient (standardised)	T value	Sig. level
Constant		−3.970	0.000
Source of income	0.567	4.146	0.000
Member of countryside groups	0.379	2.954	0.005
Member DMG	0.306	2.388	0.021
Estate area	0.509	2.533	0.015
Deer density	0.210	1.637	0.109
Estate purchase	0.479	3.630	0.001
FTEs	−0.619	−3.198	0.003

owners, many of them successful entrepreneurs in their own right, are not particularly motivated by profits from deer, seeking rest and relaxation when visiting their estates and keen to maintain stalking as an elitist activity. Wightman *et al.* (2002) argue that the “whole social structure surrounding sporting estates (the big house, stalkers, ghillies, and the social rituals of hunting) has intentionally created a culturally alienated pastime, reminiscent of the ‘halcyon’ days of Empire and privilege.” Recent research by TNS (2004) would tend to support this view: for example, their survey found that only 3,500 people participated in stalking in Scotland, equivalent to less than 0.001% of the population. Paying between £500–£1,000 per day, these people were typically white, over 50 years of age, and in the AB social class. Furthermore, most had been introduced to the sport through a friend or as an invited guest of the owner. This situation contrasts strongly with Norway, one of Scotland’s closest neighbours in geographical terms, where hunters are typically young men from a working class background (Skogen 2003).

There is also a more prosaic economic dimension to the exclusivity of stalking. Estates are an important investment and capital appreciation is a major motivation for owning an estate. According to a survey by property consultants, CKD Galbraith, buyers of hunting, shooting and fishing properties in Scotland have seen a better return on their investment than that achieved by the FTSE 100 between 1982 and 2006. The survey, which looked at about 200 sporting estates over 20 years, found returns ranged from 300–1,000% (Roos 2006). Land values are less influenced by income than one might expect, but rather are a reflection of many attributes not least privacy and exclusivity. There may therefore be a fear among landowners that a drastic expansion of the client base would risk undermining the exclusive nature of the sport and precipitate a sharp fall in land values. Various models developed by conservation scientists that have shown how lower female (hind) deer densities can yield more stags and hence income in the long run (Buckland *et al.* 1996; Clutton-Brock and Lonergan 1994; Clutton-Brock *et al.* 2002), have ignored or not fully appreciated landowner concerns about more intensive culling regimes in this context.

MacMillan (2003) discusses various options to overcome these social and economic barriers, such as financial incentives and direct culling by the DCS. However, apart from the aversion estate owners have of encroaching bureaucracy, many of these options face practical and/or policy difficulties. Direct culling by the DCS, for example, would place severe strain on their limited resources³, and

almost all landowners in the survey were united in their opposition to direct intervention by the DCS. Financial incentives are an option and are frequently used in other land use sectors as a means of attaining public policy objectives including conservation. However, unlike other government agencies, the DCS does not have funding to award financial support, and existing legislation would have to be amended. In any case the potential of financial inducements to persuade wealthy landowners to fundamentally change the way they manage their estates is questionable.

A more innovative solution that would not require government intervention and which would overcome landowner apathy toward the commercial development of stalking as a business would be to give the estate stalker greater personal incentive to cull more hind by allowing him to keep a share of the income. As previously discussed the stalker is a key figure in deer management and is largely responsible for shooting hind in the winter. This work is done under difficult conditions and motivation may sometimes be lacking as tips are small and revenue from traditional perks such as the sale of the pizzle and horn have also declined in recent years. At the moment all revenue from the sale of venison and client fees goes directly to the owner, but if the stalker could take a share he would have a greater incentive to take clients out on the hinds. As hind and stag open seasons do not coincide there should be no conflict with clients paying premium rates for trophy animals. One obvious new market for hind stalking is the local community—offering inexpensive stalking and venison to local people would provide additional revenue to the estate, create goodwill, and almost certainly reduce poaching.

At a more general level it is clear that the deer problem is multifaceted and involves a range of stakeholders beyond landowners, stalkers and the DCS. Hardin’s (1968) eloquent description of the ‘Tragedy of the Commons’ largely fails to accommodate the complexity of contemporary deer management issues. Critically the Hardin model fails to accommodate the differing perceptions among stakeholders concerning what is sustainable deer management and hence what might ‘bring ruin to all’. Conservationists argue that there are too many deer, whereas landowners argue that fewer deer will undermine traditional stalking. There are also many other groups, such as the tourism industry, road safety campaigners and animal welfare lobbyists, which have their own view on what might constitute a sustainable deer population. The contemporary tragedy in the case of wild deer is that the main protagonists in the debate are unable to appreciate alternative perspectives on the issue.

In order to create a modern and legitimate conservation function for hunting activity we believe that conservationists and conservation scientists have to engage in a more positive dialogue with landowners. Conservationists argue

³ The DCS has an annual budget of only £1.5 million (2.2 million Euros) and a full-time staff of 20.

that the problem is a scientific one and effective management solutions have ‘to be science-based’ (Gordon *et al.* 2004). We would contest this assertion and argue that the deer problem has a strong human dimension and that previous scientific research (e.g. Buckland *et al.* 1996; Clutton-Brock *et al.* 1994) has not been interdisciplinary.

Red deer management is at a crossroads in the Scottish Highlands. Stalking, once the preserve of a privileged elite, is at the centre of a multifaceted debate which requires conservationists and hunters to work with other stakeholders to forge new and more inclusive approaches to deer management. Lessons could be learned from other parts of the world where active steps are being taken to introduce new social groups to hunting including ‘townies’, women and children (Adams and Steen 1997; Bye 2003) and previous research which has shown the pedagogic benefits of practical collaborative working (Wondolleck and Yaffee 2000). Perhaps conservationists should step therefore out from their desks and actively participate in stalking in order to develop rapport with and understanding of, the estate stalker? If both sides fail to collaborate and to moderate their respective views and values, they risk irreversible damage to the natural heritage and the end of a sporting tradition under threat from a society increasingly unconcerned about the need for practical wildlife management and vulnerable to vociferous lobbying by animal welfare groups that oppose sustainable use in all its forms.

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