Lowland Deer Panel

Report to Scottish Natural Heritage
February 2019

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Executive summary

The Lowland Deer Panel was convened in January 2018 with a remit to address the following five key questions:

- Do lowland deer managers need to collaborate to achieve sustainable deer management?
- If so, at what scale does this need to take place, and what is the most efficient and effective approach?
- What knowledge and information are needed to support this process and to determine whether the public interest is being met?
- What are the practical implications of public perceptions of deer and deer management in the lowlands?
- What further action could SNH take in the context of the existing legislative and policy framework?

Different deer species occur in various lowland areas, and although roe deer are the typical focus for management, red, sika or fallow deer may also be present in some places. The contrasting ecological characteristics of these species, including the distinction between territorial and herding behaviour, can have significant implications for deer management. The range of stakeholders with an interest in lowland deer is also very diverse and it was clearly necessary for the panel to fully consider this range of perspectives. The panel therefore circulated an open invitation to lowland deer stakeholders to contribute and answer a list of key questions.

The Panel noted widespread support among stakeholders for some sort of "collaboration" in the lowland context (and this is a key facet of Scotland's Wild Deer: A National Approach). However, it is clear that the upland Deer Management Group model is not applicable to large areas of the lowlands.

We would not recommend any approach that seeks to impose a rigid structure on what is a complex, heterogeneous environment, and we would wish SNH to continue to recognise the current multiplicity of approaches, while identifying ways to obtain data on population dynamics and impacts.

Where there are populations of the herding species - red, sika and fallow - we can see no reason not to adopt the 'upland model' regardless of the habitat or land use. Sustainable management of these species needs to be undertaken at a herd scale, and requires more extensive population and impact data. Where, as is widely the case, the primary species is roe, effective management can be achieved on a much more local scale to ensure that negative impacts are addressed.

Questions: Do lowland deer managers need to collaborate to achieve sustainable deer management, and; if so, at what scale does this need to take place, and what is the most efficient and effective approach?

Recommendations:

- The panel encourages the wider use of the current range of collaborative deer management approaches that are in place in the lowlands.

- The panel recognises that various approaches are appropriate depending on the habitat, species and landholding patterns, and recommends that the application of these approaches should be described in 'Best Practice' guidance.

- We would suggest that SNH support relevant stakeholder engagement fora, which include local authorities, NGOs and others, where specific issues are identified, to deliver local deer management planning, actions and solutions.

Question: What knowledge and information are needed to support this process, and to determine whether the public interest is being met?

Recommendation:

- The panel supports the findings of the recent report on *Lowland Deer Management: Assessing the Delivery of Public Interests* (McMorran *et al*, 2018)*,* and encourages SNH to work more closely with other agencies to harmonise existing spatial data, and where possible fill gaps on culls, as well as collect stalker effort, through collaboration with hunting bodies. Combined with local expert knowledge on both deer numbers and habitat impacts, these data can be incorporated into an updated Impact Indicator Matrix (Putman *et al*, 2011) of public interests and could, in future, form a basis for multi-criteria decision support models.

Question: What are the practical implications of public perceptions of deer and deer management in the lowlands?

Recommendation:

- The Panel recommends that SNH should work more extensively with LAs and other stakeholders to provide guidance on the need for deer management and to make them aware of their obligations under the' Deer Code', through education and direct help in deer management planning and implementation.

Question: What further action could SNH take in the context of the existing legislative and policy framework?

Recommendations:

- The panel recommends that SNH encourages the wide use of the Impact Indicator Matrix of public interests, and establishes a systematic approach to reviewing the evidence across the lowlands, in order to identify areas where a regulatory approach may be necessary (prioritising the herding species, but where appropriate also roe deer).

- SNH should support the provision of venison storage and processing facilities where lack of such facilities are a barrier to sustainable deer management and consider using such support as a lever for better reporting of cull returns by groups or individuals.

Other issues

Whilst not covered by the questions the Panel was asked to address, we identified a strongly held view by recreational deer stalkers (particularly in the Central Belt) that their expertise is not being used to provide sustainable deer management in their local area. They point to the large areas of Local Authority land where culling of deer does not take place and suggest that this is the source of many of the issues surrounding roe deer management in urban and peri-urban areas. The Panel recognised that this is an issue but noted that Scottish Natural Heritage were already addressing it through various initiatives.

Our consultation with stakeholders also suggests that there is a widely held belief amongst recreational deer stalkers that larger areas of the National Forest Estate could be opened up to them, thus reducing the cost of deer control to Government and providing locally sustainable deer management and venison production.

1. Background

1.1. Introduction

Deer are a key part of Scotland's lowland environment, providing wildlife encounters that enrich our daily lives, and venison: a nutritious, low fat food. Deer can also, however, damage natural habitats and economic interests, and can cause road traffic accidents. The management of deer aims to reconcile these benefits and impacts and ensure that public interests are met, in line with the vision in *Scotland's Wild Deer: a National Approach* (WDNA; Scottish Government, 2015). This is supported by the *Code of Practice on Deer Management* or "Deer Code", which provides corresponding guidance for land managers (SNH, 2012).

During 2018, Scottish Natural Heritage (SNH) established a Lowland Deer Panel to consider the management of deer throughout lowland Scotland and advise on any changes that SNH could facilitate to provide greater public benefits, within the existing legislative framework. This report presents the Panel's conclusions and recommendations.

1.2. Purpose of review

In 2013, the Scottish Parliament's Rural Affairs, Climate Change and Environment (RACCE) Committee held an inquiry into deer management in Scotland, and the Scottish Government asked SNH to review the effectiveness of deer management. This review was concluded in November 2016 (SNH, 2016) and the Parliament's successor Committee responded to this report in the following year (Environment, Climate Change & Land Reform Committee, 2017). Ministers have now established an independent Deer Working Group (DWG) to take this process forward and recommend any changes that may be required. The DWG will report to Ministers in April 2019.

The 2016 SNH review addressed the whole of Scotland and placed considerable emphasis on the collaborative management of red deer in the uplands through the established network of Deer Management Groups (DMGs). However, the review also identified a number of perceived issues linked to deer management in the lowlands. These included a possible need for greater involvement of, and collaboration between, lowland land managers, and for better information to support this process. Potential issues were also identified with regard to the supply chain for lowland venison and the availability of deer larder facilities.

In order to examine the issues surrounding the management of lowland deer in more detail, Ministers asked SNH to appoint a Lowland Deer Panel under section 4 of the Deer (Scotland) Act 1996 (as amended). The Panel was convened in January 2018 with a remit to address the following five key questions:

- Do lowland deer managers need to collaborate to achieve sustainable deer management?
- If so, at what scale does this need to take place, and what is the most efficient and effective approach?
- What knowledge and information are needed to support this process and to determine whether the public interest is being met?
- What are the practical implications of public perceptions of deer and deer management in the lowlands?
- What further action could SNH take in the context of the existing legislative and policy framework?

The Panel was required to liaise with the DWG as appropriate and to report to SNH in September 2018. This timescale was however extended, by agreement with SNH, to allow more time to consider the wide range of issues linked to lowland deer management, and the Panel's report was concluded in early February 2019. The Panel's terms of reference are attached at Annex 1 and the members of the Panel are listed in Annex 2.

1.3. The review process

Scope

There is no single agreed definition of the lowlands, but the key distinction for this purpose was taken to be between predominantly upland areas, which have large management units that are well suited to collaborative deer management, mainly of red deer, and surrounding areas of more fragmented land ownership and use. For the purposes of the Panel, the lowlands were broadly defined as the latter areas. These areas are, however, very diverse and the Panel recognised that different circumstances apply, for example, in low-lying parts of the Scottish Borders and the more urbanised Central Belt.

Different deer species also occur in different lowland areas, and although roe deer are the typical focus for management, red, sika or fallow deer may also be present in some places. The contrasting ecological characteristics of these species, including the distinction between territorial and herding behaviour, can have significant implications for deer management, and the Panel's remit therefore included all of these species to the extent that they occur in the lowlands.

Operation of the Panel

The Lowland Deer Panel met seven times between February and November 2018, and individual Panel members held some additional meetings with SNH staff as necessary to discuss particular topics. The Panel also liaised by e-mail between meetings. Minutes of the Panel's meetings and related papers are available on the SNH website at https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-deer/lowland-deer-panel.

The Panel and the DWG maintained contact through their Chairs and Secretariats, and the two groups shared information relating to common areas of their respective remits as needed.

The range of stakeholders with an interest in lowland deer is very diverse and it was clearly necessary for the Panel to fully consider this range of perspectives. The Panel therefore circulated an open invitation to contribute and a list of key questions to lowland deer stakeholders, primarily through the Lowland Deer Network Scotland (LDNS), Deer Management Round Table (DMRT) and the National Access Forum. This list was also circulated to local authority deer management contacts and made available on the SNH website as above. The list of questions is attached at Annex 3. This invitation resulted in a total of 23 written submissions.

In order to encourage the widest possible engagement, the Panel also developed an online survey based on the same list of key questions, which was promoted in conjunction with the invitation to contribute. The online survey questions are attached at Annex 4. This resulted in a total of 157 contributions, many of which were from individual deer stalkers and members of the public. The written and online submissions received are listed in Annex 5 and an analysis of the online contributions is attached at Annex 6. These reflect a wide range of

perspectives from different parts of lowland Scotland, although there will inevitably be variation in the levels of engagement between different sectors and geographical areas. There was some concern that the views of individual recreational deer stalkers in the Central Belt, and farmers more widely, were under-represented among the submissions received. Contributions were however provided by all of the relevant stakeholder organisations.

This process was followed by targeted discussion with groups of stakeholders at a Panel meeting in June 2018, which allowed the Panel to explore some of the issues emerging from these written and online submissions. Individual Panel members also followed this up by one to one discussion with specific stakeholders to help address any outstanding gaps or queries. The Panel would like to thank all those who freely shared their knowledge and expertise in various ways. This detailed and thoughtful input underpins the conclusions in this report.

It is important to note that this process highlighted a very wide range of views on lowland deer and their management, which were often fundamentally incompatible, and these tensions will not necessarily be easy to resolve. These challenges are compounded by the complexity of the associated issues and the variation around the lowlands, which often comprise fine-grained patchworks of very different land uses, habitats and built development. This position may not lend itself to simple or straightforward "solutions" that will meet the needs of all stakeholders, and the Panel considered the issues in a broad context to try and bring a balanced perspective to the five specific questions in its remit.

Other relevant information sources

A wide range of relevant work has already been carried out and the Panel therefore took the 2016 SNH report to SG on *Deer Management in Scotland* (see 1.2) as a starting point. The SNH review sought to support sustainable deer management that realises a range of social, economic and environmental benefits, including the ambitions set out in the Scottish Biodiversity Strategy. The review drew on a wealth of research and information collated from deer managers, agencies, NGOs and researchers, and while much of this reflects the debate surrounding upland red deer, there is significant content relating to the lowlands.

In parallel with the work of the Panel, SNH commissioned a report on *Lowland Deer Management: Assessing the Delivery of Public Interests* (McMorran *et al*., 2018). The study looked at the availability and utility of spatial data relating to public interests as influenced by deer and deer management. The pilot area used as the focus of this study was to the north of Glasgow and west of Stirling, encompassing a range of land uses and issues that is broadly typical of lowland Scotland. An early draft of the study report was made available to the Panel.

Other areas of current SNH activity relating to lowland deer are shown at Annex 7.

Terminology and structure of the Panel's report

In this report the term "deer manager" refers to the individual responsible for developing and monitoring a deer management plan, whether formal or informal. The plan may be carried out in a number of ways which may include culling. If culling is required, the deer manager may undertake this personally either in a professional or recreational capacity, or use professional contract or recreational deer stalkers. On some areas of ground a mix of such approaches may be used. The resulting venison may be supplied to an Approved Game Handling Establishment (AGHE), sold locally if a registered venison dealer, or consumed personally.

In this report we use “deer stalker” to describe the individual culling deer. We recognise that in the urban environment, such as in the Central Belt, use of the term “stalker” may not be appropriate and we would encourage those communicating with wider stakeholders to be sensitive to its use outside the deer sector.

We use “urban” to refer to the centres and suburbs of larger towns, cities and conurbations. “Peri-urban” areas are taken to be semi-rural, variously including suburban extension, out of town developments (commonly industrial or retail) and the associated infrastructure of the urban fringe, such as roads. We also take peri-urban areas to include rural towns or villages.

The Panel identified a wide range of issues which are relevant to lowland deer management and sought views on these through the key questions to stakeholders. Section 2 of this report reviews each of these issues, along with the feedback received from different interests. Section 3 of the report draws out conclusions and specific recommendations concerning the five questions set out in the Panel’s remit.

2. Issues considered by the Panel

2.1. The distribution of deer in the lowlands

Overview

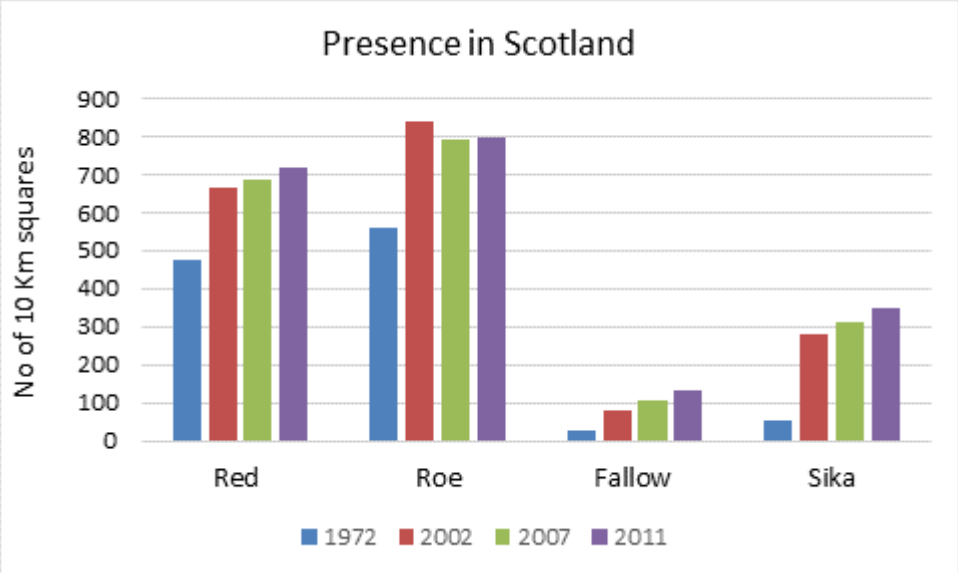
Roe deer are widespread and successive British Deer Society (BDS) surveys suggest progressive expansion of this species (Hailstone 2012/13), which is now found everywhere in the lowlands including agricultural land, commercial forestry, native woodlands and urban greenspace. There are indications that red and sika deer are spreading outwards from the uplands into some neighbouring lowland areas, although data are scarce. There are also a total of perhaps 2000 fallow deer in a few localities. The expansion of the deer range in Scotland is summarised in Table 1 and illustrated in Figure 1.

Table 1: Range expansion of deer species in Scotland from 1972-2011, including percentage change

Year	Red Presence	Red % Change	Roe Presence	Roe % Change	Fallow Presence	Fallow% Change	Sika Presence	Sika % Change
1972	476		560		29		55	
2002	667	1.13	839	1.36	80	3.44	282	5.60
2007	688	0.62	790	-1.20	105	5.59	314	2.17
2011	717	1.04	798	0.25	134	6.29	346	2.46

"Presence" indicates the number of 10km squares in which a species was observed during each phase of the BDS survey. "% Change" is the compound annual rate of change in the number of 10km squares in which presence was recorded since the previous survey. Data kindly provided by BDS. See note below Figure 1.

Fig. 1: Range expansion of deer species in Scotland from 1972-2011



Note: The above BDS surveys either included all 10km squares, or all 10km squares were assumed to have been surveyed. A more recent survey took place in 2016, but this recorded un-surveyed squares and was not therefore comparable with previous surveys, and is therefore omitted. Data kindly provided by BDS.

The most recent BDS distribution survey took place in 2016 using a slightly different methodology, and is not therefore comparable with earlier surveys as above. This does however provide a useful indication of the spatial distribution of different species in Scotland at that time: https://www.bds.org.uk/index.php/research/deer-distribution-survey.

It is extremely difficult to estimate roe deer population size. The most recent estimate of 200,000-350,000 animals was documented in the report to the RACCE Committee in 2013, and previous estimates have included that of Shedden (1993), who reported a population of 350,000–400,000 at that time.

The 2016 SNH review highlighted that national trends in woodland deer populations are uncertain due to difficulties in data collection, but noted that estimates for private woodlands suggest the deer population is stable or perhaps declining slightly in these areas. On the National Forest Estate, estimates point to a 24% decline, in all deer species combined, between June 2001 and June 2016 (Campbell *et al*., 2017). The reason for this decline is unclear and this does not appear to reflect national trends in the wider environment, as noted above.

Views expressed by stakeholders

Not surprisingly, the submissions received from stakeholders broadly reflected the known distribution of different deer species in lowland Scotland. Contributors included both locally-based individuals and organisations, and bodies with national remits encompassing all of the Scottish lowlands. Most contributors, including 96% of online respondents, stated that roe deer occurred within their areas. Smaller numbers of contributors reported the presence of red, sika or fallow deer (40%, 29% and 19% of online submissions respectively).

Key issues

The 2016 SNH review highlighted a need for up to date national population estimates for red and roe deer and noted that there is no systematic monitoring of roe deer numbers across their range. In defining a way ahead for lowland deer management, it will therefore be necessary to either address these information gaps or accept and work within these data limitations.

The trend towards expansion of deer ranges suggests that demand for deer management may become more widespread. The incursion of red deer into areas outside their traditional ranges may also require particular management approaches that are more akin to those used in upland areas.

2.2. Positive effects of lowland deer

Overview

A range of social, economic and environmental costs and benefits are associated with wild deer and their management in the lowlands, as highlighted by the 2016 review and the wide range of stakeholders we consulted. The 2016 review drew on previously published data, in particular SNH Commissioned Report 526, *Scoping the economic benefits and costs of wild deer and their management in Scotland* (Putman, 2012) and *The contribution of deer to the Scottish economy* (PACEC, 2016), which are respectively referred to here as the “Putman report” and the “PACEC report”. The 2016 review did not include any new analysis of this data and it is not always possible to differentiate the lowlands from the uplands. Many of the impacts and benefits are also difficult to assess, or do not lend themselves to monetary valuation. This will be examined further below.

Significant benefits are derived from the presence of deer in the lowlands at appropriate density. Deer are valued in themselves as part of the natural heritage, and may have some positive impacts on the wider natural environment. Relatively low densities of deer may, for example, help to maintain understorey plant diversity when compared to total exclusion of deer (Putman *et al*. 2011). It was clear from our discussions that deer are seen as a natural part of lowland ecosystems, with the caveat that there must be a balance, so that densities do not have a negative impact on the natural heritage.

Deer also provide economic benefits, most obviously through deer-stalking (whether for private enjoyment by landowners and their guests, or through leased hunting). PACEC (2006) estimated this as around £105m per year across Scotland, with the majority generated in the uplands, although only £70.4m of this remained in Scotland. In lowland areas this is largely based on roe deer stalking, primarily in commercial forestry. Traditionally the value of roe stalking, in common with other shooting activities, has been calculated on an area basis and this continues to be the case in the private sector, where ground is leased by agents for at least £3.50 per ha. The final price is influenced by factors such as accessibility and the presence of other deer species, such as red or sika, and can sometimes exceed £10 per hectare (Putman, 2012). The Forestry Commission, by contrast, gives guide prices for stalking leases based on the required/expected cull, with a current value of £100 per deer. This variation of methodology in setting lease prices and the variation in market response makes any accurate external assessment of the value of individual and aggregated leases extremely difficult. The PACEC totals may give the best indication of the current overall contribution of this growing area, although they do not differentiate between the uplands and the lowlands.

Stalking also provides significant benefits through the production of venison, including employment in the supply chain for wild game, and is valued by many for the recreational opportunity that it provides.

Views expressed by stakeholders

The Panel asked stakeholders for their views on the benefits of deer in the lowlands, and most contributors endorsed the positive effects noted above. A clear majority agreed that local people and visitors enjoy seeing deer (84% and 82% of online survey respondents, respectively) and that the presence of deer helps support local employment, including jobs associated with wildlife watching, sport shooting, game processing and venison sales (72% of online respondents). Against this general background there were some differences in emphasis between different groups, and agreement about the economic benefits of deer was higher among those who identified themselves as “stalkers” than among those who identified themselves as “members of the public”. In addition to these benefits, some contributors mentioned other positive impacts they associated with deer. These included a number of references to positive ecological effects (occurring when the right densities of deer are present) and a few references to wider societal benefits, for example linked to education and health, which were associated with deer and deer management.

The Panel also asked contributors to identify any trends in these benefits over the last five years. This did not result in a strong response or a clear majority view, perhaps in part because some of these impacts are difficult to quantify. Some respondents suggested that these benefits had increased, most often because of increased numbers of deer and/or deer management activity, while others felt that these positive effects had remained more or less constant during this period.

Key issues

We agree with the 2016 review that deer and deer management provide a number of benefits in the lowlands, including public enjoyment from seeing deer, contributing to rural tourism, providing sporting income and venison, and supporting employment. These benefits may not necessarily be evenly distributed, for example between the Central Belt and more rural lowlands, and there could be scope to enhance them through particular management approaches in different areas; this will be explored in section 3. However, the review also concluded that management of deer generally results in a net monetary loss for both the private and public sectors, and we have no reason to disagree with this finding.

The adverse impacts of lowland deer are considered in the following section.

2.3. Negative effects of lowland deer

Overview

Deer may cause negative impacts in a range of lowland land use contexts, which have been outlined in an SNH paper on the economic benefits and costs of deer and their management in Scotland (Putman, 2012). These impacts can include damage to agriculture, commercial forestry, amenity trees or farm woodlands and nature conservation interests. They can also include material damage and risk to public safety through deer-related road traffic accidents and potential health risks through disease transfer to humans or livestock.

Some of these impacts can be quantified in terms of the direct cost of damage (where there is significant and measurable economic loss) or the cost of management required to reduce or prevent these effects. Other impacts have, in the past, proved rather more difficult to measure. The most significant of these adverse effects are discussed below.

Commercial Forestry

There is ample evidence that deer may cause damage in commercial forestry by browsing on young trees, which can inhibit growth or even kill a proportion of planted trees; or reduce stem quality and value by inducing the development of multiple leaders in conifers such as sitka spruce (Welch *et al*., 1991, 1992). Deer may also browse lateral shoots of more established trees or damage stems through bark-stripping (e.g. Szczerbinski, 1959; Staines & Welch, 1984; Ratcliffe, 1989; Gill, 1992a,b; Büchsenmeister and Gugganig, 2004), fraying bark in territorial display or cleaning velvet from antlers (see reviews by e.g. Prior, 1983; Gill 1992; Gill *et al*., 2000; Putman, 1994, 2004; Pepper, 1998; Mayle, 1999). In continuous cover forestry systems, which depend on natural regeneration, deer may have a substantial impact on seed reserves and reduce rates of subsequent recruitment through browsing of regenerating stems (e.g. Reimoser, 2001, 2003). Such impacts may lead to significant economic costs, either associated directly with these losses or in attempting to reduce damage - either by protecting the crop with fencing or tree guards or by culling to reduce deer presence.

Agriculture

Deer damage has long been regarded as a concern in forestry, but there is very little data on the effects of deer on farmland, making it difficult to quantify actual rather than perceived levels of impact. Limited research has been done in Scotland on the effects of deer on agricultural crops, particularly in relation to red and sika deer, although studies from England provide an illustration of the potential impacts. Use of farm crops is seasonal in Scotland with fields of cereals, grasslands and oilseed rape important in spring, peas and beet in summer

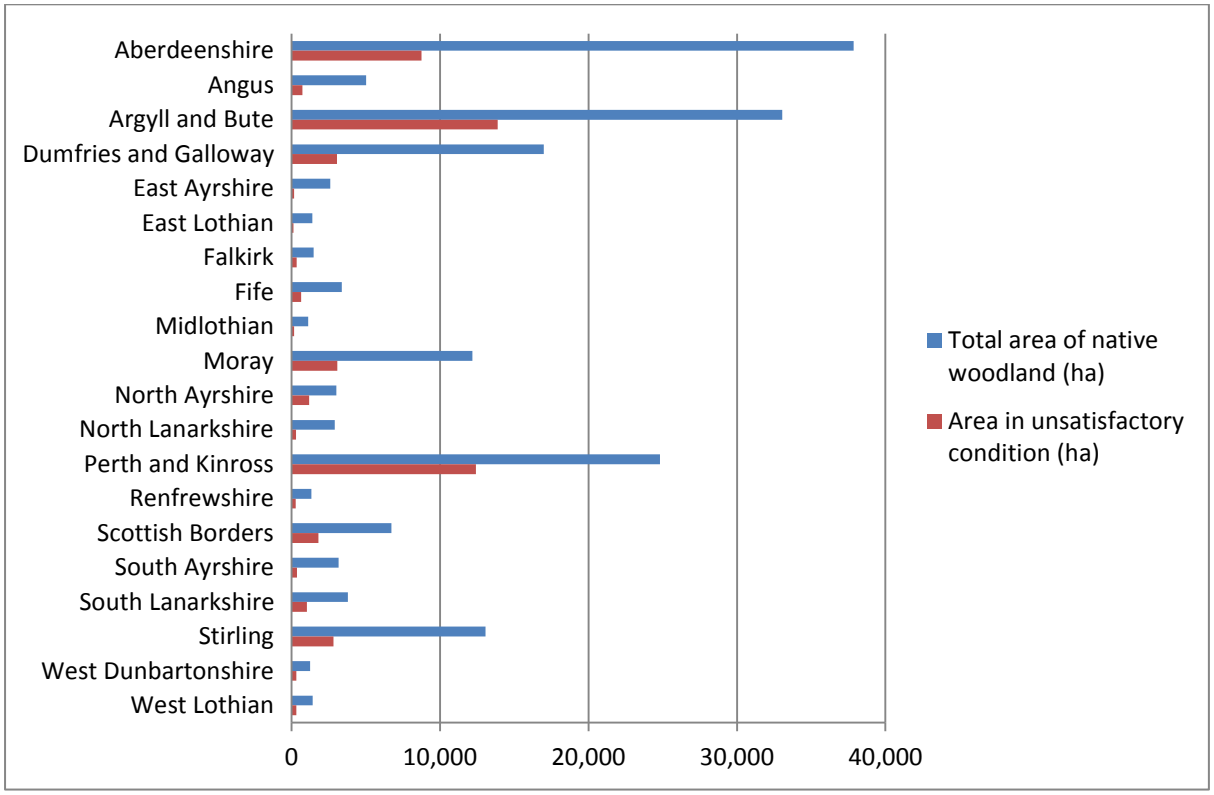
and root crops in autumn and winter. Stubble fields are used in autumn and winter, although this may depend on the type of crop recently harvested (Scott & Palmer, 2000). Impacts may also affect grass crops grown for hay or silage. Roe deer can damage orchards and soft fruit crops, which may be of high value at a farm level (Putman *et al,* 2011).

Research to quantify the impacts of red deer on arable crops and pastures in lowland England has suggested that these are patchily distributed and insignificant by comparison with variations in yield due to differences in soil fertility (Langbein & Rutter, 2003; Rutter & Langbein, 2003). SNH Commissioned Report 526 on *Scoping the economic benefits and costs of wild deer and their management in Scotland* also concluded, in relation to agricultural damage, that: "*in general, it would appear that damage due to cervids is rarely of significance at a national level. This is not to suggest that these animals do not cause significant damage; rather that, such damage tends to be extremely patchy and localised – significant on a farm by farm – or even field by field basis rather than on a larger regional or national scale*".

Natural environment

The adverse impacts of deer on the natural heritage have been more extensively documented, with a growing world-wide literature on the negative impacts of deer browsing and grazing (Côté *et al*., 2004, Gordon *et al,* 2004), including the reduction in regeneration of trees and understorey plants in forests and woodlands (Mysterud & Ostbye, 2004; McGraw & Furedi, 2005; Sabo *et al,* 2017). The Native Woodland Survey of Scotland found that more than a third of all native woodlands were in unsatisfactory condition due to herbivore impacts, and roughly half of these were in the lowlands (Fig. 2). Deer were recorded as a significant presence in 73% of native woodland areas, and although their impacts cannot always be disentangled from those of other herbivores, this supports the view that deer are a major factor limiting the recovery of woodland condition. Across the 20 local authorities with more than 1000 ha of native woodland (excluding Highland) the proportion of unsatisfactory woodland increased significantly with the area, which may reflect the higher incidence of herding species in larger, more rural, authorities.

Fig 2: Extent of native woodland in Unsatisfactory Condition due to herbivore impacts, by local authority area (Native Woodland Survey of Scotland)



Local authority areas with less than 1000ha of native woodland are excluded. The Highland Council area is also omitted for clarity: this area contains 129,931ha of native woodland, with 50,345ha of this in unsatisfactory condition. These data do not distinguish between different types of herbivore or between upland and lowland areas.

Since 1999, SNH has monitored a variety of protected areas which are designated for specific habitats and species, including Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). Site "condition" is recorded on a seven-point scale, but the three key categories are: favourable, unfavourable but recovering due to management intervention, and unfavourable. Surveyors also attempted to classify the pressures affecting the site, including herbivores.

In the lowland deer range 58% of 'woodland' sites were in favourable condition, 29% were unfavourable and 13% were unfavourable but recovering due to management intervention. Those still in unfavourable condition were significantly more likely to have signs of herbivore impact than those in favourable condition (48% versus 32% respectively). Against this background there were marked differences between local authority areas. High levels of unfavourable condition were associated with herbivore impacts in South Ayrshire, Dumfries and Galloway and Scottish Borders, and weaker associations were apparent in Argyll & Bute, Aberdeenshire and Perth & Kinross. It is possible, in all of these cases, that the impact may be more due to red deer, and in the Borders sika too, rather than roe deer alone. Further details are given in Annex 8.

Deer-vehicle collisions

There is a large and widely distributed data set documenting deer-vehicle collisions (DVCs) in the lowlands, although most incidents are simply attributed to "deer" and are not species-specific. Samples of *reported* DVCs have been collated annually since 2008 on behalf of SNH, using a standardised approach based on the most reliable source organisations. Fuller

details including mapping, extending to over 15,000 incidents in total, are available for 2008 to 2015 in SNH Commissioned Report 950 (Langbein, 2017), with data for the past two years in a more recent interim update to SNH (Langbein 2018). The bulk of these records are based on:

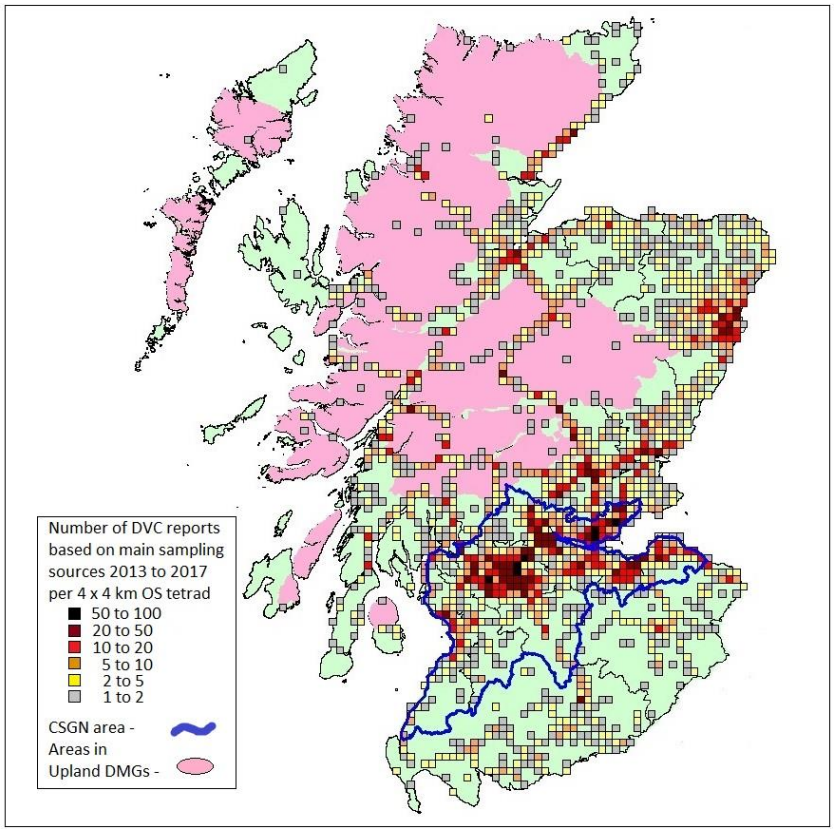
- requests to trunk road operating companies to uplift dead deer or attend to traffic collisions involving deer on trunk roads, and;
- requests to Scottish SPCA, and sometimes Forestry Commission rangers, to attend to live injured deer along roads of any type.

Table 2 below provides a breakdown of the number of DVC reports within the Scottish lowlands, as opposed to the area covered by upland Deer Management Groups, for the most recent five years and the previous five year period. This shows that over 90% of DVC records related to the lowlands, primarily because of far higher road densities and traffic volumes. Injured deer at the roadside are also more likely to be reported in more highly populated areas and on busy roads, and it is important to note that these records probably capture less than 20% of all DVCs, based on comparisons with localised studies involving more intensive recording of deer casualties (Langbein, 2017). The geographical distribution of DVC records is illustrated in Fig 3.

Table 2: Deer-vehicle collision reports by region in 2008-2012 and 2013-2017

	2008-2012	**%**		**2013-2017**	**%**
Total	**5566**			**7910**	
of which in upland DMG areas	**625**	**11%**		**721**	**9%**
in lowlands (all other)	**4941**	**89%**		**7189**	**91%**
of which					
in CSGN area	2261	46%		3661	51%
in other lowlands (non-CSGN)	2680	54%		3562	49%

Fig 3: Distribution of DVC records across Scotland



The annual toll of DVCs across Scotland is thought to lie in the region of 6000 to 9000, including more than 50 incidents that lead to human injuries. The combined economic impact of DVCs through injuries and the much greater number of damage-only collisions is estimated at over £7 million per year. The consequences of DVCs are not confined to those who are directly affected and extend to a number of organisations. These include the authorities that manage the trunk road network (Transport Scotland and their agents) and non-trunk roads (council roads departments), who need to arrange prompt removal of carcasses to minimise road safety risks and traffic delays. DVCs also have implications for animal rescue organisations (including SSPCA), forest rangers and private deer managers who attend to injured deer at the roadside. Such incidents do, in turn, constitute a significant animal welfare issue.

Lyme disease

The 2016 review mentions that there is some evidence of an increase in the prevalence of tick-borne Lyme disease in Scotland. Deer and other upland herbivores have been implicated in the spread of ticks, although deer cannot act as reservoirs for *Borrelia burgdorferi* and do not therefore have a more direct role in disease transmission. There is some evidence that the reduction of deer densities by fencing or culling is therefore likely to reduce tick abundance, which in turn reduces Lyme disease risk (Millins *et al*., 2017). The 2016 review cites the annual economic cost of Lyme disease as at least £0.5m, but the proportion that is attributable to deer cannot currently be isolated from other factors.

Poaching and antisocial behaviour

The presence of deer can result in poaching and various types of antisocial behaviour in lowland areas, although these are not adverse effects of deer *per se*. Police Scotland

recorded a total of 15 deer-related offences across Scotland in 2016/17, of which nine occurred outside the Highlands & Islands. Three of these offences, which occurred in the Central Belt and the Borders, involved deliberately hunting deer with dogs, while most of the remainder were likely to involve poaching. It is important to stress that these are only the offences that met Scottish Crime Recording Standards and were therefore recorded.

SSPCA also log calls about reported deer welfare incidents which are not linked to DVCs, and the Panel undertook a rough analysis of 6700 such incidents which occurred during 2015-17, and for which locations could be identified. The great majority of these incidents occurred in the lowlands (defined by the absence of upland-style DMGs), with 58% occurring in the Central Belt (taken as the Central Scotland Green Network area) and 39% in other lowland areas. During this period, a total of around 100 such incidents each year involved dogs, and around half of these included references suggesting some form of deliberate hunting. Some other types of deer welfare incident were also very frequent, including around 275 instances each year of deer trapped in fences or railings and around 45 annual cases involving “orphaned” fawns.

Impacts in urban areas

A number of specific concerns arise in urban and peri-urban areas, including damage to gardens and garden plants (see for example Chapman *et al*., 1994; Coles, 1997), and structural damage to fences. Some of the adverse impacts already noted are more acute in these areas, including increased risk of DVCs and concerns about the possible roles of deer in the transmission of disease (but see Watson *et al.* 2009). A slightly different range of land uses may also be affected, including damage to horticultural interests (market gardens or orchards), amenity plantings or community woodlands. In addition to deer welfare issues caused by antisocial behaviour, there may be particular welfare concerns linked to the physical condition of deer established in urban sites, which is often poor by comparison to deer in more natural habitats (Green, 2008).

Ethical considerations may arise in areas where human habitation and infrastructure encroach on established deer range, and management may be needed to achieve a proportionate reduction in deer numbers because human activity has reduced the area of available habitat.

Views expressed by stakeholders

The contributions we received from stakeholders broadly reaffirmed the range of adverse effects noted above. Damage to forestry was the most widely recognised of these (noted by 83% of all online respondents) and there was strong agreement among commercial forestry interests that this can arise through browsing and trampling, which were considered to involve all species of deer if densities were excessive. Bark stripping by red, fallow and sika deer was also highlighted as a serious issue, particularly in mature forestry crops.

Many respondents (including 57% of online contributors) associated the presence of deer with damage to agricultural land. The submissions received did not tend to elaborate on the types of damage encountered, though grazing of permanent pasture and young grasses was noted to occur throughout the year, along with grazing of fodder crops in the winter months. Overall however, the range of feedback from respondents, and discussion with key stakeholders, suggested that agricultural damage by deer is not currently perceived as economically serious at a national level across lowland Scotland. Instead this feedback reaffirmed the studies cited earlier in this report which suggest that such damage is patchy, localised and potentially significant on a farm by farm basis.

More than half of all respondents (including 66% of online submissions) associated the presence of deer with damage to natural habitats, citing similar impacts to those noted above. There was strong agreement about these impacts among environmental NGOs, with one such contributor highlighting, for example, links between the effects of deer on tree regeneration and woodland understoreys and impacts on scarce woodland birds such as willow tit. These issues were also noted, in general terms, in direct discussions between the Panel and other relevant stakeholders.

DVCs were the second most common negative issue associated with deer in the lowlands (mentioned by 73% of all online respondents), and tended to be cited as the primary negative impact in urban and peri-urban areas. The other issues noted above were also commonly mentioned, including suggested roles of deer in the spread of Lyme and other diseases. There were also frequent references to poaching and antisocial behaviour offences, in particular involving the use of "long dogs" to attack deer.

Overall, opinion was fairly mixed on whether or not the impacts associated with deer had become more or less significant over the last five years. This range of views probably reflects the wide range of sectoral perspectives and local circumstances, including deer densities and land use contexts, that were represented among the submissions. Comments suggesting no change were quite frequent and a few contributors suggested that impacts had generally decreased.

Many respondents felt, by contrast, that some impacts had increased in significance, with road traffic accidents and poaching mentioned most frequently. Direct consultation with both NGOs and local or national government bodies also indicated a common view that DVCs had increased over the past five years, though with uncertainty about the extent and cause. Increased road traffic and deer numbers, and movement of deer into urban areas, were cited as contributory factors. It was also suggested that the frequency of reporting may have risen because more people use smartphones and can readily find and contact relevant numbers when incidents are encountered. Conversely, it was suggested by some that continued under-reporting could mask underlying increases in DVCs.

Key issues

The negative impacts of deer are the main factor that drives deer management. It will therefore be important to establish the nature and extent of impacts that are not being adequately addressed at present, in order to determine where, in broad terms, outstanding issues exist. These are not evenly distributed, and there are hotspots where one or more of these impacts are particularly acute. This emphasises that mitigating negative deer impacts will often need local solutions.

Additional management will clearly have resource implications, and it will also be necessary to consider deer impacts in a broad context which reflects their relative importance alongside other social, economic and environmental factors that affect public interests.

2.4. Public perceptions of deer management

Overview

The Panel was asked to advise on the implications of public perceptions of deer management. A number of existing sources of evidence are relevant to this issue. Public perceptions of roe deer and their management were explored by Dandy *et al*. (2009) using focus groups drawn from communities in peri-urban Scotland. This study is complemented by the wider Scottish Nature Omnibus (SNO) opinion survey, which has been commissioned

by SNH on a regular basis since 2009, although this is set in a national context and does not differentiate between upland and lowland deer (SNH, 2017).

These studies highlight a number of key messages, including the considerable value that people place on deer and a corresponding concern for their welfare. The SNO survey indicates that while most of the public (65%) are aware that some Scottish wildlife populations are actively managed, relatively few (19% and 15% respectively) understand why or how this takes place. The Dandy *et al*. (2009) study suggests that peri-urban communities do not generally experience adverse impacts linked to deer and are not therefore favourably disposed towards control measures, at least in the first instance. However, both studies suggest that the public are more supportive of deer management when the underlying reasons are discussed. The SNO (SNH, 2017) suggests particular support for management to help safeguard the health and welfare of a species, or to "help conserve native species which are under threat" (86% and 85% of respondents, respectively), with lower levels of support for deer management to reduce road accidents (55% of respondents). The study by Dandy *et al*. (2009) suggests that lethal control is generally regarded as a last resort option, with significant emphasis on the use of humane techniques by trained and competent deer stalkers.

Views expressed by stakeholders

The submissions received by the Panel, and discussion with key stakeholders, strongly reaffirm the view that most interest groups perceive a limited public awareness of deer management in the lowlands. Only 8% of online respondents thought the general public was well-informed about why and how deer are managed in their area, and perhaps as a result, opinion was divided on the extent to which the public support current local approaches to deer management. While a minority perceived the public to be either actively supportive or unsupportive (18% and 24% of online respondents), others felt the public had no particular opinion or were largely unaware of deer management in the area (28% and 16% of online contributors respectively). This diversity of views was reflected in online comments from members of the public, some of which were strongly critical of deer culling.

Overall, public opinion was perceived to have a fairly limited influence on local deer management, and only 10% of all online contributors thought it influenced the approach "to a large extent". There were, however, quite frequent comments referring to challenges posed by the public's perceived lack of understanding of the issues involved in deer management, or referring to negative public perceptions of deer culling, and the need for deer stalkers to "maintain a low profile" to avoid negative reactions.

Some local authority staff highlighted similar concerns through various contributions to the Panel, noting that deer management can be contentious and that it can be correspondingly difficult to gain political support for such action. Discussion with this sector also indicated that local authorities consequently tended to use either in-house deer stalkers or FES stalkers, because this was considered less likely to provoke adverse public reaction than the use of recreational deer stalkers, however skilled.

These concerns were reflected by widespread aspirations, from various interests, for greater educational effort to increase understanding of deer management. The potential audience for such initiatives was not always clearly defined, and was sometimes expressed very broadly as, for example, "the public". Other contributors identified more specific target audiences, suggesting for example that it would be helpful to promote awareness of deer management, and local authority obligations under the WANE Act and Deer Code, to senior local authority staff. Some existing educational initiatives were highlighted as positive examples, including the *Deer on your Doorstep* project developed by LDNS and a Forestry Commission Scotland video, available on YouTube, on *Deer Management on the National*

Forest Estate. A number of respondents emphasised that such initiatives should be Government-led, which was seen as lending extra weight and authority to the relevant messages.

Key issues

It is important to recognise and respect the wide range of legitimate views about deer and their management in the lowlands. The policy framework for reconciling these is provided by WDNA, which aims to promote public interests linked to the enjoyment of deer along with public interests which depend on deer management.

The common desire to raise awareness of deer management is noted and raises a number of challenges, in particular in focusing attention on an issue which is marginal to most people's daily concerns. Generalised promotional campaigns for a poorly defined audience can also consume considerable resources for little clear benefit, and it will therefore be important to identify and target key audiences as precisely as possible.

There is a clear need to support local authorities to undertake deer management where necessary. Targeted efforts to raise awareness among key audiences, including senior level decision-makers and the public in and around management hotspots, may help to achieve this.

2.5. Current approaches to deer management in the lowlands

Overview

The 2016 review suggested that lowland deer management is not undertaken or co-ordinated in the same way as in upland Deer Management Groups, which work collaboratively on the basis of agreed Deer Management Plans. There are no equivalent collaborative structures across most of the lowlands, and although Lowland Deer Groups have evolved in some areas, they have (with some exceptions) focused on training, improving skills, and sharing experience rather than co-ordinating deer management on the ground. However, the Panel recognised that some less formal groups, and individuals, provide a valuable service to local landowners to reduce negative impacts and provide an economic return from deer stalking. The scale of this contribution to deer management is not visible to SNH and thus Government and is not therefore recognised in reporting active deer management across the lowlands. Unfortunately, there is very little systematic data on numbers of deer stalkers, size of culls and culling effort out-with the publically owned National Forest Estate (see below).

Lowland deer management can take various forms, including measures to influence deer distribution and movement, for example through fencing, tree protection or habitat management, as well as through population reduction by culling. Where lethal control is needed, this also takes place in various ways. At one extreme, this may simply involve *ad hoc* informal arrangements between owner/occupiers and recreational deer stalkers, which are often reactive in response to perceived adverse impacts. Other land managers, in particular within the forestry sector, use more structured approaches guided by monitoring of deer populations and impacts, with formal arrangements in which stalking is undertaken through in-house staff or independent contractors, or leased to recreational deer stalkers. Recreational stalkers are estimated (BASC: 1997, 2003) to make up over 85% of those individuals culling deer in the UK. They are responsible for 49% of the deer culled each year with the remainder being culled by professional or semi-professional deer managers. Nevertheless, they provide a potentially valuable volunteer resource which can contribute to sustainable deer management.

A number of key public sector bodies are important land managers in lowland Scotland and have varying degrees of involvement in deer management. Forest Enterprise Scotland (FES) manages approximately 280,000ha of land in the lowlands, and deer are managed within this area by an evidence-based approach guided by estimates of deer densities and impacts. Where culling is judged to be the most appropriate option, this is undertaken by contractors, FES wildlife rangers or recreational deer stalkers. Most Scottish local authorities also have some overlap with the lowland deer range and varying degrees of direct involvement in land management, and there is considerable variation in their engagement with deer management. SNH cooperates with local authorities (LAs) in relation to specific case work to help mitigate deer impacts and encourage best practice, compliance with the Deer Code and sustainable deer management.

The role of the Lowland Deer Network

The report published by the ECCLR Committee in 2017 (http://www.parliament.scot/S5_Environment/Inquiries/ReportDeerManagementScotlandSNHtoSG2016.pdf) commented that: "*the role and operation of (LDNS) requires review to determine whether it is sufficiently independent of agencies that fund its work and to determine what role it should play in promoting and supporting deer management in the lowlands*". The Committee also recommended that "*the Scottish Government explores further how the LDNS is working and encourages the LDNS to proactively seek the views of their deer group members on deer management issues affecting lowland Scotland*". The Panel engaged with LDNS and sought views on the utility of the organisation from stakeholders. These are reflected in our conclusions.

Views expressed by stakeholders

The Panel's survey asked lowland stakeholders whether deer management currently takes place in their areas, and if so, how. Most respondents (including 82% of online submissions) stated that deer management did occur in their areas, although the Panel's wider discussion with different interests suggested that the level of activity varies from place to place and in different land use contexts. Stakeholders attending the June Panel meeting noted that planned and systematic management took place in, for example, commercial forests in the Borders, but that there was often less awareness of deer impacts or proactive management on agricultural land. This activity was also driven to some extent by the species of deer involved, with some stakeholders suggesting that red and sika deer provided a stronger stimulus for management in the lowland areas where they occur.

There was some apparent variation in the level of awareness of lowland deer management between groups. 22% of online contributors who identified themselves as "members of the public", did not know whether any such activity was taking place in their area, as opposed to 3-4% of "stalkers", "land managers" and "other interests". This is consistent with the Panel's wider discussion with lowland deer interests, many of whom commented that lowland deer management has a low profile among the general public.

When asked about the methods of deer management used locally, contributors were most likely to cite culling and fencing (97% and 70% of online respondents respectively). 30% of online replies suggested that "habitat management" took place in their areas, and a limited range of other methods were noted, including the use of tree shelters and (more rarely) diversionary feeding and scaring. Culling was generally the predominant approach, with alternative methods being used in response to specific local land use considerations, including high levels of public access in some urban and peri-urban sites.

The Panel also asked who undertakes deer management in each area, and responses indicated that this is carried out by a variety of individuals, groups and bodies but that most is undertaken by "stalkers" and "land owners/managers" (cited by 83% and 77% of online respondents respectively). Around half of respondents mentioned Forestry Commission Scotland as having a role in local deer management (53%). Other responses included references to non-governmental organisations (NGOs), "deer management groups", private forestry contractors and shooting tenants.

Key issues

The Panel's discussion and engagement with stakeholders reaffirmed the range of current lowland deer management methods and the considerable local variation in the extent to which management takes place. This could reflect a range of local circumstances, including a lack of perceived need, or the presence of barriers which prevent management action.

The Panel's discussion noted that deer management is often considered in a relatively narrow sectoral context, with a focus on reactive and site-specific action, and that there may be benefit in more integrated approaches which are set in a wider strategic perspective. It was suggested that this may be particularly relevant to the development of green infrastructure in urban and peri-urban areas, for example through the Central Scotland Green Network and local authority development plans, and this is also considered later in this report.

2.6. Collaboration

Overview

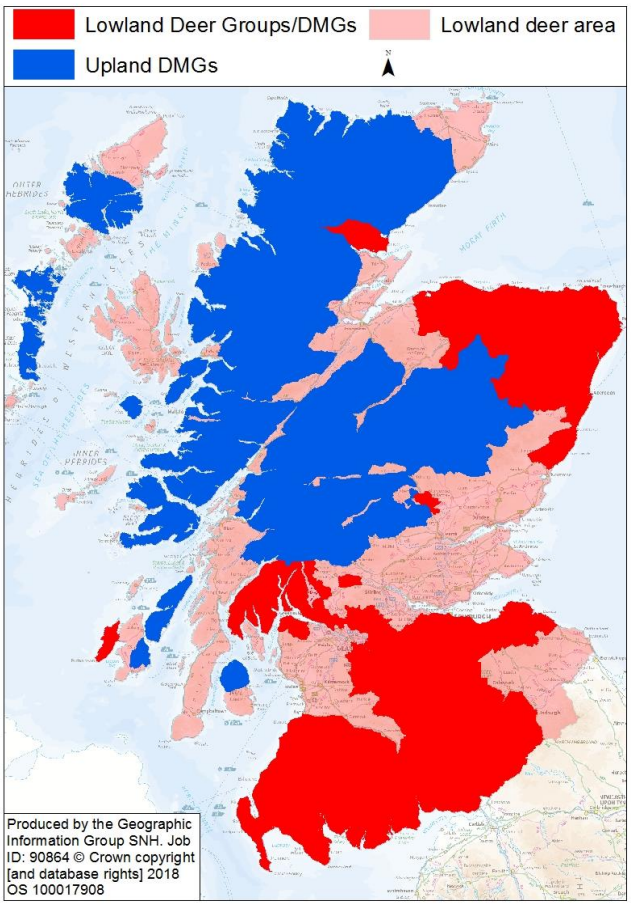
Collaboration in relation to lowland deer management takes place at various levels, ranging from informal liaison between neighbouring land managers to more formal processes operating at various scales. Collaboration could also vary in nature, ranging from information sharing to the co-ordination of deer management on the ground (by analogy with the operation of upland DMGs). The 2016 review notes that the motives, benefits and challenges of collaboration vary across the lowlands and reflect the scale of land holdings and the species of deer involved.

The preferences of many private-sector stakeholders responsible for deer management are at odds with those of private landowners currently experiencing economic and conservation damage from deer, and with the aims of government and non-government bodies seeking to reduce grazing and browsing damage through lower deer densities. Effective strategies to enhance collaborative management therefore require an understanding of the trade-offs that managers make between different management outcomes, and the socioeconomic and location-specific differences that drive these preferences (Austin *et al* 2010, Prager *et al*., 2018).

In Eastern England, an evaluation of the relative importance of different ecological and social drivers for management in determining the impacts of deer on woodland sites managed for conservation, found no evidence that deer management focused on individual sites achieved these objectives (Austin *et al.* 2013). In contrast, collaborative management with neighbouring land owners appeared to help to reduce conservation impacts, especially in relation to the larger deer species. The study highlights the importance of landscape-scale collaborative management to achieve conservation objectives.

Formal collaborative structures exist at a number of levels across the lowlands. The 2016 review noted the network of Lowland Deer Groups (LDGs) and related collaborative bodies, and their approximate coverage is summarised in Figure 4.

Fig 4: General extent of Deer Groups and related collaborative structures across lowland Scotland



These collaborative initiatives are constituted to varying degrees and fall into four general types depending on the main interests of their members:

- Groups led by commercial forestry interests, with members drawn from both public and private sectors (broadly Eskdale & Liddesdale, Borders Deer Groups, and Cowal Deer Working Group);

- Groups predominantly led by other land management interests, which have some similarities with upland DMGs (East Loch Lomond Land Management Forum and a developing group in South Sutherland);

- Groups with mixed membership, covering a range of landholdings with objectives of timber and/or agricultural production (Loch Lomond Islands, South Ayrshire & Wigtownshire and Galloway & Dumfriesshire Deer Groups, and Islay Rinns, Flanders, Dunkeld and Howe of Alford Forums), and;

- Groups led by deer stalkers who operate over defined areas, often with nominal local authority boundaries (Inverclyde & Dunbartonshire, North Lanarkshire, South

Lanarkshire, West Lothian, Edinburgh & East Lothian and Buchan & District Deer Groups).

The structures and ways of working of these LDGs generally differ from those of upland DMGs. Much of lowland Scotland is characterised by a mosaic of relatively small landholdings and South Lanarkshire DG, for example, has many hundreds of properties within its boundaries. Not all landholdings can be represented within these groups, and shared deer management plans and cull targets are not, therefore, appropriate. The need for co-ordinated management has also been relatively low in areas where roe deer predominate, because this species is typically territorial and non-herding, with relatively little movement across land holdings, although small mobile herds are increasingly witnessed in winter and may warrant closer co-operation. In general terms, LDGs therefore have limited roles in co-ordinating management action and focus more on the sharing of information, skills and good practice within their areas, with input from SNH if requested. These local structures can be accompanied by more *ad hoc* local collaboration to address specific management issues that have been identified.

The Lowland Deer Network Scotland (LDNS) currently provides a higher-level collaborative framework which brings together a wide range of lowland deer management interests, aiming to share expertise, promote liaison and provide co-ordinated input to national policy discussions. LDNS was proposed by SNH in partnership with the Association of Deer Management Groups, and was developed concurrently with the Wildlife & Natural Environment (WANE) Act 2011 and Deer Code. It was formally constituted in 2012 and is core funded by SNH, FCS and Transport Scotland, with an executive committee overseeing its affairs. The membership of LDNS includes the LDGs noted above.

A recent internal review of LDNS concluded that there has been some success in "recruiting" low ground deer groups and organisations interested in deer management, but perhaps with less effective engagement of landowners, farmers and some local authorities (Shedden, 2018; pers. comm.). There were mixed views over the recruitment of deer management practitioners, with some comments implying that this is the role of LDGs rather than LDNS, but also support for the establishment of more deer groups within the LDNS umbrella – which may also indirectly help to involve the other interests noted above. There were some uncertainties about the added value that LDNS provides, but also support for its ongoing role.

Views expressed by stakeholders

The Panel sought views from stakeholders on the extent of current collaboration between individuals, groups and bodies involved in deer management in their areas, and the geographical scale on which this occurs. The Panel also asked whether collaboration was considered necessary for the future and if not, what alternatives would be preferred.

More than half of respondents were aware of at least some collaboration taking place locally, although few contributors thought this was happening 'to a large extent'. Respondents reported that collaboration, where it exists, typically takes place through informal "deer management groups" or as a result of local landowners, land managers, friends and deer stalkers "talking to each other", and it was not always clear if these exchanges were taking place on a formal basis (ie. at an organised meeting) or more informally. There were very infrequent references to agreed plans underpinning deer management, with a few correspondents specifically noting that this approach would not be workable, and the emphasis was more commonly on more general information sharing. Discussion with stakeholders did however note more co-ordinated management in some parts of the lowlands with simpler land ownership patterns, including some areas with extensive commercial forestry in Southern Scotland. There were also some references to *de facto*

collaborative management in areas where a single deer stalker undertakes deer control informally across several adjacent land holdings.

Among respondents reporting little or no local collaboration in their area, three quarters agreed “strongly” or “slightly” that a more collaborative approach was needed in future. There were, however, different interpretations of “collaboration” and, perhaps linked to this, little consensus about the most appropriate geographical scale at which this should take place. A few contributors suggested that this should reflect the geographical range of the deer species within a given area, perhaps implying a focus on co-ordinated management. Others, however, suggested a wide range of scales from local to nationwide, which were suggested or implied to favour strategic co-ordination or effective information exchange.

A sizeable minority of respondents felt that a collaborative approach was unnecessary, often because current arrangements (involving “light touch” liaison between land managers or no collaboration at all) were felt to be adequate. Where alternatives were suggested, these included regulatory measures such as compulsory cull returns, more “de-regulated” approaches placing the onus on land managers and measures to promote access to land by recreational deer stalkers – in each case with the aim of promoting management at the level of individual land holdings.

Key issues

The Panel’s discussion and input from stakeholders have highlighted a number of key issues regarding the nature and extent of collaboration needed to ensure sustainable deer management in different parts of the lowlands.

- In principle, collaboration could simply involve the sharing of skills and information, or could move beyond this to include collaborative planning of deer management on the ground. It will therefore be important to clarify the need for each type of collaboration and the scale (or scales) on which it is required.

- There is widespread support for some sort of collaboration, but a range of views on what is required – and one size will not fit all.

- Collaborative *management* tends to be most needed in lowland areas where herding species, in particular red deer, occur.

- Collaborative *management* tends to be most difficult in lowland areas with complex and fragmented land ownership and use, particularly in and around the Central Belt.

Against this background, the Panel therefore aimed to identify which types of collaboration are fundamentally required in different circumstances and the structures or approaches that are needed to achieve this.

2.7. Barriers to sustainable deer management

Overview

The uneven distribution of deer impacts in the lowlands, particularly on agricultural land and where roe deer predominate, can result in relatively little clear need for deer management. In places where impacts do occur, however, discussion within the Panel suggested that a number of factors can prevent the necessary management action. These may include issues

linked to collaboration (as above), but could also include other barriers linked, for example, to the ways which stalking is managed and to the processing and marketing of venison.

Views expressed by stakeholders

The obstacle to sustainable deer management that was most frequently cited by online respondents, based on multiple choice prompts, was "*the cost of deer management relative to the income it generates"*. This was highlighted by 47% of these contributors and could reflect a range of interacting factors, some of which have already been noted. More than a quarter of respondents noted "*access to larder facilities"* and "*availability of venison markets"* as significant constraints (including 29% and 26% of online contributions respectively). Individual deer stalkers have a particularly close practical involvement with deer management on the ground, and there was a largely similar range and distribution of views within this group, although some stalkers conversely suggested that they were not aware of any barriers to sustainable deer management.

Issues related to venison processing were picked up in wider discussion with stalking interests, many of whom highlighted significant difficulties getting venison into local butchers and restaurants. This stemmed in part from a limited availability of game dealers and difficulties in transporting carcasses to dealers who were unwilling to collect. Conversely some deer stalkers felt that they currently had access to venison dealers and larders, but were concerned that these were not guaranteed in the long term. Other suggestions about how these problems might be addressed included the establishment of communal chillers, the commercial operation of such facilities (for example by local authorities), or collaborative arrangements between deer stalkers and game dealers. In contrast a major Approved Game Handling Establishment (AGHE) suggested that they were unaware of any demand for additional larders and that they would provide them if the demand existed.

The wider issue of markets for venison was also explored with stalking and game market interests. It was suggested that more effective deer management could be promoted by fostering a stronger domestic market for roe deer venison, and that local authorities had an important role in facilitating this through appropriate licencing of venison dealers.

Some deer stalkers commented that there are relatively limited opportunities for recreational stalking in some areas, including land within the National Forest Estate (NFE) or managed by local authorities. This concern was clearly strongly felt, with comments that recreational deer stalkers represent a highly skilled and under-utilised resource. There were also suggestions that this would offer a less costly alternative to the approaches that are currently used on public land.

The submission to the Panel from FES noted a decrease in the number of Recreational Deer Management Permissions on the National Forest Estate (NFE) from 80 in 2012-13 to 60 in 2017-18 (a reduction of 25%), which was linked to increases in the proportions of crops that are vulnerable to deer damage, along with increases in forest operations, culling activity and public access. FES also reported a corresponding increase in the numbers of staff and contractors undertaking deer management on the NFE during this time, from a total of 55 in 2012-13 to 77 in 2017-18 (an increase of 40%), noting the economic benefits that will have resulted from this. FES also noted a 30% increase in venison output from the NFE over the same period. The perspectives of local authority staff on this issue (with respect to land under local authority control) are noted in section 2.8.

Table 3: Deer management undertaken by contractors and recreational deer stalkers on the National Forest Estate

Forest District	Total number of wildlife rangers & wildlife ranger managers	Number of deer culling contracts	Total number of contractors and sub-contractors	Number of recreational deer management permissions, including leases	Total number of deer controllers including lease/permit holder and authorised deer stalkers
Moray & Aberdeenshire	6	8	11	4	15
Scottish Lowlands	3	5	9	7	16
Galloway	7	9	16	25	112*
Tay	4	5	14	4	15
Dumfries & Borders	5	9	10	14	71

*plus 100 BASC members on Arran, which falls within this Forest District.

Some deer stalkers commented that significant areas of land are managed through stalking syndicates, suggesting that this also served to restrict wider access for recreational stalking. Just over a quarter of land managers who provided online submissions did however cite "*the availability of stalking expertise*" as a potential barrier to sustainable deer management, suggesting that despite the above constraints, there may still be unmet demand for these skills within the wider private land management sector. Some stakeholders suggested that a central register of qualified deer stalkers could help to address this, although it was also recognised that this could present practical difficulties linked for example to data protection.

Various other barriers were suggested by different contributors. Some of these were economic or commercial in nature, including the cost of leases (which was suggested to price local deer stalkers out of the market) and the re-introduction of sporting rates, which was suggested to discourage the leasing of land for recreational stalking. Other perceived barriers were of a practical nature, including tensions between recreational stalking and woodland management (requiring different densities of deer), competition between stalking and pheasant shooting, and difficulties in undertaking culling in popular urban or peri-urban recreational areas. A number of submissions highlighted a perceived lack of engagement with deer management by local authorities and other land managers.

Key issues

A complex range of potential barriers may combine to reduce the effectiveness of lowland deer management and the most significant factors will vary from place to place. With this qualification, the most significant concerns identified by stakeholders probably relate to:

- In the Central Belt the need to encourage appropriate use of recreational deer managers where there is unmet need for stalking expertise, and;
- improving the availability of larders and markets for venison, which will be influenced by the current proposals in the Scottish Venison Strategy.

Other issues relating to collaboration have been noted in section 2.6; concerns relating to local authority engagement are considered in section 2.4.

In order to promote sustainable deer management, it will be important to assess how far the issues that have been identified are actually preventing management action on the ground, and to consider the resulting impacts across the full range of deer-related public interests.

2.8. Other action required to achieve sustainable deer management

Overview

As noted earlier, the questions circulated by the Panel explored various themes relating to the planning, organisation and co-ordination of lowland deer management, which resulted in the wide range of comments, concerns and suggestions discussed above. The Panel's list of questions and online survey also asked more generally about the "action required to ensure sustainable deer management". Not surprisingly, this resulted in a similar diversity of views, and most contributors focused on strategic considerations linked to policy, funding and wider support for lowland deer management.

Views expressed by stakeholders

Several broad themes could be identified among the submissions, including a strong dichotomy of views about the extent to which deer management should be co-ordinated or regulated by Government. On the one hand, there were frequent calls for stronger legal obligations to manage deer in the lowlands, sometimes including more formalised collaborative planning. This was sometimes accompanied by aspirations for SNH to "take a stronger lead", or to assume specific roles such as agreeing planned culls, requiring compulsory cull returns on a more widespread basis, or directly undertaking deer management on the ground. On the other hand, many submissions (commonly from within the land management sector) argued strongly against Government involvement or "interference", sometimes because of explicit concerns about the perceived bureaucracy and inefficiency of such approaches. A number of contributors suggested that Government should encourage deer management through a more "bottom up" approach, by placing obligations on public bodies to open up land to recreational deer stalkers.

There were various suggestions for new initiatives at national level to support or encourage deer management, such as a "national strategic plan" for lowland deer or an agreed target density for deer across all lowland areas. One environmental NGO proposed that deer management could be co-ordinated through the Regional Land Use Partnerships that have been proposed under the Scottish Government's Land Use Strategy, and another contributor advocated a new body to facilitate links between land managers and local deer stalkers. A number of submissions suggested key areas for public funding, including support for Deer Groups, LDNS or SNH, investment in the development of larders, or promoting deer management through the post-Brexit funding framework for rural development.

There were frequent references to promoting access to stalking, the effect of sporting rates, encouraging collaboration and raising public awareness, which are noted elsewhere in this report. Relatively small numbers of contributors suggested by contrast that no action was required, as deer management was already felt to be working effectively, or argued for entirely different approaches, based on the reintroduction of predators such as lynx. A few also queried the perceived problem, or sought clearer definitions of "sustainable management". A few contributors made more general points, such as noting a need for flexibility to take account of local circumstances, or urging action rather than "more talk".

Key issues

There is clearly a very wide range of views and no overall consensus about what action, if any, is needed to support sustainable deer management in the lowlands. It is also important to note that the Panel's remit is confined to action that can be taken forward within the current legislative and policy framework, and that SNH is well placed to lead. Wider action, perhaps including the introduction of new regulatory approaches, could be considered by the Scottish Government's independent Deer Working Group.

2.9. Information requirements

Overview

The Panel's remit included advice on the knowledge and information required to support sustainable deer management in the lowlands. A range of data are collected directly by SNH, including deer counts in specific areas where there is damage to the natural heritage, or to help local authorities address particular management needs. Impacts on protected areas are tracked through SNH Site Condition Monitoring as noted above. SNH also monitors management activity by requiring cull returns in particular circumstances, either where specific management issues have arisen or where an authorisation has been granted for night or out of season shooting. Data on deer numbers, impacts and management are also gathered by some land managers, including FES and private forestry interests, according to local needs.

Information requirements have been considered in a review by Holland *et al*. (2016), which identified a number of key research and knowledge transfer gaps related to lowland deer management in Scotland. These included:

- a need for greater understanding of roe deer population dynamics and improved modelling;
- improved deer count techniques and evidence on population densities, impacts, territoriality and recruitment, and;
- better information sharing to improve the effectiveness of existing approaches to management and collaboration, and support for the development of shared deer management plans.

The recent report by McMorran *et al*. (2018) recognised, as noted earlier, that current management tends to be *ad hoc* and case specific, and that the potential for more strategic approaches is limited in part by a lack of data. The project therefore aimed to collate the data that are currently available within a 'pilot' lowland area (extending from Glasgow to the Carse of Stirling) and determine how far these could be used to provide indicators of relevant public interests. The report noted that relatively high-quality data were available for some interests such as woodland condition and DVCs, and that cull returns, where available, could be used as a proxy for management effort over time and perhaps to estimate returns from venison sales.

The report also, however, noted a wide range of data gaps, including habitat impact assessments (HIA), particularly for non-wooded areas, and data on browsing impacts. Further data, including HIA and perhaps the presence or absence of deer, would therefore be needed to develop a coherent picture of these impacts across the lowlands over time.

Data gaps also exist in relation to deer populations, and the available count information was insufficient for reliable deer density estimates across the pilot area over time. Counts have

been carried out for different sites at different times, using different techniques such as dung counts and ground-based or aerial thermal counts. There can be differences of presentation within each of these methods, and it is unclear how well these techniques correlate with each other. These limitations mean that it will be challenging to directly link impacts or benefits with deer numbers in different areas.

An alternative or complementary approach might, in principle, be to monitor management activity, but this would also be subject to limitations within the available data. Culling records are provided in different formats, for example as generalised point data in the SNH Deerline system and as finer scale point of kill data from FES, and not all landowners across the pilot area provided this information. Only very limited data are currently available for other deer management activities, such as the location and extent of deer fences.

A summary of the available data and its applicability for potential indicators of different public interests is shown in Annex 1 to the pilot project report.

Views expressed by stakeholders

The Panel invited views from stakeholders about the availability of information to support sustainable deer management and highlighted a range of data which might, in principle, be useful. When prompted in this way, only a minority of online respondents (29%) agreed that sufficient information is available on the impacts of deer on agriculture, although there was slightly wider agreement that there is sufficient information about impacts on natural habitats (41%) and forestry (50%). Similarly, relatively few online contributors agreed that there is sufficient information about venison markets (29%), deer culls (32%), deer numbers (33%) and deer related road traffic accidents (36%). A strong perceived need for clear evidence of deer impacts also emerged from discussion with some local authority staff, who considered this necessary to support potentially contentious proposals for deer management on land under their control.

Some respondents suggested other types of information which they thought would be useful, in some cases emphasising their aspirations for population and/or cull data. Other contributors suggested that lists of land owners and/or deer stalkers could facilitate local arrangements for stalking, or made more general points, for example about provision of information to the public to increase awareness of deer management (see section 2.4). A few contributors directly or implicitly suggested that there was no specific need for further information.

The Panel's discussions with land management interests highlighted the types of information that are currently used, in practice, to inform deer management in different lowland areas. As noted earlier, this indicated that relatively structured management is common in the context of commercial forestry, and that this tends to be guided by site-specific deer counts (based on dung counting or thermal imaging) and/or targeted assessments of deer damage. In farmland, by contrast, deer management is more likely to be reactive and triggered by observation of deer damage. Taken together, these discussions did not indicate any strong perceived need for comprehensive deer population data. There was some support in principle for publically available cull information, although this was set against perceptions that there would not be universal willingness to share cull returns and that the resulting data could be very unreliable.

Key issues

There are clearly aspirations among stakeholders for various types of additional data to inform deer management in the lowlands. The amount and type of data that can realistically be obtained are, however, limited by a number of significant technical and practical

constraints, which will include the available resources. There is consequently a strong case for a focused, pragmatic and enabling approach, identifying what if any additional information is strictly needed to facilitate sustainable deer management in different circumstances.

The sustainable management of any resource needs information on quantity (population size), and use (harvest) over time. Monitoring numbers of deer in the lowlands is particularly challenging and relies on indirect methods that are expensive and time-consuming, and probably not cost-effective. However, spatially explicit cull records and the stalking effort to achieve a given cull can reflect population trends, and in principle, are easily collected. Monitoring of changes in deer impact can be more time consuming and is complicated by delayed responses in some aspects of vegetation structure and diversity following deer reductions (Boulanger *et al.* 2015). But monitoring at some level is necessary nonetheless to assess the outcomes of management action.

3. Conclusions and recommendations

The panel's recommendations are set out in response to the five key questions given in the Terms of Reference, along with the wider background to our conclusions.

3.1. Collaboration

Key questions

- Do lowland deer managers need to collaborate to achieve sustainable deer management?

- If so, at what scale does this need to take place, and what is the most efficient and effective approach?

Recommendations

- The panel encourages the wider use of the current range of collaborative deer management approaches that are in place in the lowlands.

- The panel recognises that various approaches are appropriate depending on the habitat, species and landholding patterns, and recommends that the application of these approaches should be described in 'Best Practice' guidance.

- We would suggest that SNH support relevant stakeholder engagement fora, which include local authorities, NGOs and others, where specific issues are identified, to deliver local deer management planning, actions and solutions.

Discussion

The Panel noted widespread support among stakeholders for some sort of "collaboration" in the lowland context (and this is a key facet of WDNA). It is clear that the upland DMG model is not applicable to large areas of the lowlands, but there was no consensus among stakeholders on what that collaboration should include, and this can vary from information sharing to active co-ordination of management objectives and action on the ground. There were also varying views on the most appropriate scale for collaboration. However, all agreed the model of collaboration could vary depending on local land ownership patterns, the deer species involved, and their perceived impacts.

Therefore, we would suggest that a number of models have some utility depending on landownership patterns, species, habitats and impacts. We envisage these models being part of a continuum from local informal collaboration through to more formal upland-style approaches. The current range of approaches as set out in Section 2.5 is a reflection of these models, which are not yet fully recognised or valued. Many are currently delivering landowners' objectives and in some cases are delivering sustainable deer management without Government intervention (or direct funding).

Nonetheless we would not recommend any approach that seeks to impose a rigid structure on what is a complex, heterogeneous environment, and we would wish SNH to continue to recognise the current multiplicity of approaches whilst identifying ways to obtain data on population dynamics and impacts.

Where there are populations of the herding species, we can see no reason not to adopt the 'upland model' regardless of the habitat or land use. Sustainable management of these species needs to be undertaken at a herd scale, and requires more extensive population and impact data.

Where, as is widely the case, the primary species is roe, then the seasonal territoriality of this species, coupled with a relatively small home range, means that impacts may well be contained within one or a few smaller landholdings and coordination of management over a wider area is not so important (except to respond to potential infill/immigration). Thus, effective management of roe can be achieved on a much more local scale to ensure that negative impacts are addressed.

Stalker-led approaches such as the Buchan & District Deer Group offer the opportunity for recreational deer stalkers to get involved in the sustainable management of wild deer at a local scale. Whilst the Buchan Deer Group has a relatively small geographical range, other examples such as the Lincolnshire Deer Group (https://www.lincolnshiredeergroup.co.uk/) operate over a wider scale encompassing both territorial and herding species, and are able to support those landowners that require assistance with deer management.

It is the Panel's view that Best Practice should incorporate examples from such models and that future funding for deer management should recognise the wide range of options available. It was agreed that the core of this process should be deer management planning (formally or informally), but we do not believe that the current upland deer management plan is suitable for many of these groups. A local informal Plan based on species and/or habitat plans at a suitable scale should deliver effective deer management with less need for Government intervention or oversight.

Where such coordination is required, once again, we do not necessarily see a tremendous issue where landholdings are small. While it may indeed not be practicable to gather together in agreed concerted action the multiple owners within any given catchment, in the majority of cases, these owners do not undertake the management themselves, but delegate it to a local shooter, or informal deer group. These recreational deer stalkers often go round farm and other properties offering their services to control deer impacts across a geographical cluster of adjacent small properties – in effect 'combining' these into much larger management entities. To deliver effective control one could therefore engage with these recreational deer stalkers bottom-up rather than try and create land owner-based Management Groups top-down.

We believe there is perhaps a more consistent need for collaborative management to address DVC hotspots than other adverse impacts associated with deer. This discussion led to the broad conclusion that collaboration is needed but that formal structures may not necessarily be required, and the key need may simply be for less formal information sharing as appropriate.

There was general agreement on the need to define when each of these approaches was more appropriate and the relationship with the scale over which management was required. It was noted that some stakeholders, such as some local authorities, may be reluctant to engage in full collaborative management but could still benefit from information sharing. It was also noted that deer management lies within a much wider spectrum of environmental management and public interest issues, including those falling within the planning system.

Management in urban areas is necessarily reactive to local problems but there are significant constraints on accepted forms of control in areas of high human concentration, where there may be significant problems associated with use of high-powered rifles, and where effectiveness of capture and translocation is unproven. In addition, there is often

strong pressure from the general public against any form of control and especially lethal methods of control (Chapman *et al*., 1994; Philip and Macmillan, 2003).

In peri-urban areas, in general, we believe traditional methods may be employed - either by controlling impacts *per se* (for example by fencing or the use of tree guards) or by control of deer populations themselves. It appears to us that the main problem of management in this peri-urban context is that it tends to be reactive rather than pro-active. Conflicts are therefore often more difficult to resolve without significant expense and multiagency involvement.

We recognise that effective control methods in lowland Scotland face a number of key obstacles (which are amplified in the urban and peri-urban environment). These include:

- Landownership patterns can make co-ordinated management problematic;
- Public attitudes to culling may constrain any lethal control;
- The typically ad-hoc nature of responses reflects a lack of recognition of the scale of the problem and a consequent lack of a standardised protocols and training, and;
- Deer legislation does not specifically recognize the issues involved in urban deer control.

We would suggest further work is required in the following areas:

- Coordination and standardisation of approaches including identification of relevant skills in organisations and individuals to address the growing deer issues in the urban environment;
- Developing live capture techniques for individual and groups of animals and adapting current legislation and Best Practice to enable the use of these techniques;
- Examining developments in firearms and ammunition to establish suitable criteria to improve ‘sharpshooting’ capability and adapting current legislation and Best Practice to enable the use of these techniques, and;
- Ensuring local community involvement in the decision-making process, even if not in the actual control to be carried out.

The Panel explored the specific need for collaboration at a national scale to support sustainable lowland deer management. It was suggested by stakeholders that some national oversight might be required to ensure that relevant public interests are met, but was perhaps less necessary or appropriate to co-ordinate deer management on the ground. The role of the Deer Management Round Table was explored but the Panel felt there was a requirement for at least one body that had a focus on lowland deer.

The Panel agreed that there was significant merit in setting deer management in a wider land management/land use context, perhaps through a wider grouping of relevant public bodies and/or other interests with a remit extending beyond deer. There was also, however, suggested to be a role for some sort of national co-ordinating body focused on deer to share information within the sector.

The Panel was aware of the current role of the LDNS and was privy to an internal review that had recently taken place. The Panel explored how stakeholder suggestions mapped onto the existing Lowland Deer Network Scotland and Deer Management Round Table. The Panel

agreed that the key need was to identify the functions that are required and the precise remit which any new body would need to fulfil this purpose. It was noted that SNH has a funding relationship with LDNS and might be well placed to provide assistance and support if this body needs to evolve to fulfil a slightly different role.

3.2 Information requirements

Key question

What knowledge and information are needed to support this process, and to determine whether the public interest is being met?

Recommendation

The panel supports the findings of the recent report *Lowland Deer Management: Assessing the Delivery of Public Interests* (McMorran *et al*, 2018) and encourages SNH to work more closely with other agencies to harmonise existing spatial data, and where possible fill gaps on culls, as well as collect stalker effort, through collaboration with hunting bodies. Combined with local expert knowledge on both deer numbers and habitat impacts, these data can be incorporated into an updated Impact Indicator Matrix of public interests (Putman et al 2011; Annex 9) and could, in future, form a basis for multi-criteria decision support models.

Discussion

The Panel recognised that for upland DMGs there is a requirement for a wide range of information including deer populations, fecundity, impacts, culls, active deer managers, venison processing facilities and economic parameters. All are variously cited as necessary for sustainable deer management. In the lowland context, it was noted that the most complete current data sources relate to Deer Vehicle Collisions (DVCs) and impacts on protected areas (from SNH Site Condition Monitoring (SCM)). There is very little additional data readily available, creating an obvious knowledge gap which needs to be bridged if we wish to establish sustainable lowland deer management.

The Panel recognised the practical challenges in obtaining cull returns, noting that this would be most effective if the process provided tangible benefit to stalkers. There were however no suggestions as to possible incentives. The Panel considered the utility of implementing Section 30 of the WANE Act. It had been suggested that compulsory registration of deer stalkers could provide SNH with a database of those actively culling deer and thus allow the collection of cull/activity data to facilitate sustainable deer management. Although it was clear that those organisations representing stalkers were strongly opposed to such a change, the Panel recognised that the issue of obtaining comprehensive cull data required a culture change within the stalking community. Therefore the Panel encouraged SNH to engage in a dialogue with the relevant deer stalking organisations to develop a voluntary approach to data collection. However, if this approach continued to be problematic then the option of compulsory returns under the WANE Act could be revisited.

In the meantime, it was the Panel's view that adaptive deer management could be undertaken on a very simple basis, for example by culling until impacts are maintained at an acceptable level, and there was general agreement that the key need was to determine exactly what information is required for this purpose. It was the view of the Panel that a combined analysis of multiple impacts and/or public interests could identify more general hotspots for management. It might also be possible (though not straightforward) to identify threshold levels of impact at which action is required, and it was suggested that this could

encourage a wider range of management methods with less focus on culling. The Panel agreed that a simple matrix of negative impacts could be used to trigger changes in management action, and a suitable framework is suggested in Annex 9. This was especially relevant to Local Authorities that have a particular interest in DVCs and deer welfare. The Panel's view was that there is a need to enable local authorities and we believe that a performance indicator, based for example on habitat impact assessment, could encourage action within this sector. We would suggest that the police and SSPCA data could be used to provide a baseline for action at each level.

3.3 Public perceptions

Key question

What are the practical implications of public perceptions of deer and deer management in the lowlands?

Recommendation

The Panel recommends that SNH should work more extensively with LAs and other stakeholders to provide guidance on the need for deer management and to make them aware of their obligations under the' Deer Code', through education and direct help in deer management planning and implementation.

Discussion

Contributions from stakeholders and discussion within the Panel identified the diversity of public opinion with regard to deer management, and that concerns were sometimes based on "perceptions of perceptions". The importance of openness was noted by the Panel, accepting that land managers might always be subject to criticism from one interest or another. It was recognised that vocal minority views can disproportionately influence deer management decisions, and it was suggested that such views may sometimes need to be disregarded. We recognise the financial and political constraints that LAs operate under and we also recognise that there may be too much focus on culling as a method of control of both deer numbers and deer impacts. Much can be achieved in terms of reducing impacts by changing the distribution and movement patterns of the deer themselves through appropriate behavioural interventions or habitat manipulations (e.g. removing cover from the immediate vicinity of roadsides). Such approaches often have a much longer-term efficacy than short-term reduction of numbers in a local area, which may simply increase movement and enhance immigration, and/or lead to increased reproduction, so that the problem recurs (Putman, 2004). More holistic approaches to deer management, which include greater public awareness, additional road-traffic speed restrictions and appropriate fencing, or perhaps include deer-population reduction as only one of a suite of mechanisms for delivering multiple benefits from the land, are likely to gain more support. It was also suggested that public attitudes to public sector deer management were influenced by established expectations of the bodies involved, and this activity was more readily accepted when undertaken by Forest Enterprise Scotland as opposed to Local Authorities.

Stakeholders have clearly noted the key role that local authorities have in urban and peri-urban deer management and their susceptibility to perceived public opinion. The overwhelming view of stakeholders is that education would be the key to success in gaining engagement by local authorities. It was clear to the Panel that there was a need to raise awareness of deer-related issues among local authorities, NGOs and the public across the Central Belt. Whilst the Code gives guidance, many stakeholders, the LAs in particular, do not have the resources to interpret the requirements to provide action on the ground.

The Panel noted that there are frequent aspirations for wider "educational" effort directed at the public, but the associated practical difficulties were also recognised – and any action of this type would therefore need to be targeted in order to be useful. It was noted that similar effort 'south of the border' is often focused on local authorities and other decision makers. SNH is currently supporting the development of position statements by some local authorities to help promote wider understanding of deer management needs.

3.4 Further SNH action

Key question

What further action could SNH take in the context of the existing legislative and policy framework?

Recommendations

- The panel recommends that SNH encourages the wide use of the Impact Indicator Matrix of public interests, and establishes a systematic approach to reviewing the evidence across the lowlands, in order to identify areas where a regulatory approach may be necessary (prioritising the herding species, but where appropriate also roe deer).

- SNH should support the provision of venison storage and processing facilities where lack of such facilities are a barrier to sustainable deer management and should consider using such support as a lever for better reporting of cull returns by groups or individuals.

Discussion

The Panel recognised the current level of engagement of SNH staff with the wide range of stakeholders involved in lowland deer management, and also noted that further collaboration will require additional resources. Approximately 40 SNH staff are currently involved in deer-related work in the south of Scotland, although their respective roles and contributions vary greatly and many work across both upland and lowland settings. While the overall balance of effort leans towards the uplands, SNH has noted that more staff resource has been focused on the lowlands over the last 18 months in conjunction with the various actions noted in Annex 7.

The Panel noted that SNH has not so far used the statutory mechanisms provided by existing deer legislation in the lowlands. It was generally agreed that such powers were of more utility when applied to localised hotspots, and particularly those involving the herding species. Where a species is territorial and ubiquitous but stalking is operating over a large number of small holdings, the Panel's view was that the powers would be less effective, but inevitably excessive negative impacts should be addressed on a case by case basis. While the current powers provide opportunities for improving deer management, there are constraints linked to these approaches, which may ultimately lead to legal challenge, and whatever the species involved, the triggers for such action must therefore be clear, robust and defensible.

The current initiatives to identify data sources for improving sustainable management are extremely useful. We would wholeheartedly support both the SNH Lowland Deer Management Project (McMorran *et al*, 2018) and the current support for LAs to produce deer strategies and plans.

There was a strong belief amongst deer managers and recreational deer stalkers that there is a disconnect in the venison processing chain that is acting as a barrier to sustainable deer management, and this may be another potential area for SNH engagement. There are a number of challenges:

- the lack of licensed venison dealers in the Central Belt is a disincentive to those culling roe deer, as there is no commercial market for the carcasses they produce, and;
- where venison processing is carried out by recreational deer stalkers, they are often reluctant to cooperate for a variety of reasons. Consequently, there is little opportunity for cooperative venison processing and sales. This means that some individual stalkers are limited in the number of deer they cull, since they do not have a legitimate market for the resulting venison. This is particularly relevant in the Central Belt.

The Scottish Venison Strategy (https://news.gov.scot/resources/venison-strategy-final), which was published concurrently with the panel's work, includes a number of actions to develop the wild venison sector. These will include working with deer groups in the lowlands to establish co-operatively owned and operated chillers/larders to meet the needs of this market, based on geography and to support initiatives to increase supply from trained hunters direct to local butchers and consumers. The Strategy also includes a consumer-driven communications campaign, including engagement with schools, to encourage wider awareness and uptake of venison.

The Panel discussed the potential role of SNH in supporting the Scottish Venison Strategy, although it was suggested that this was largely focused on farmed rather than wild venison. It was noted that funding was available to support the development of processing facilities in the lowlands, which would be influenced by ongoing discussion about wider food safety and economic considerations, as well as deer management needs. It was noted that the Scottish Parliament's Environment, Climate Change & Land Reform Committee had identified the availability of larders as a potential barrier. The Panel agrees with this assessment and would recommend that SNH supports Deer Groups in any appropriate application for processing facilities. We would suggest that support should be given to Groups that have an established legal entity and agree to provide cull data for all those using the facility, where this would help SNH to support sustainable deer management.

Other issues

There is a strongly held view by recreational deer stalkers, particularly in the Central Belt, that their expertise is not being used to provide sustainable deer management in their local areas. They point to the large areas of Local Authority land where culling of deer does not take place and suggest that this is the source of many of the issues surrounding roe deer management in urban and peri-urban areas.

Our consultation with stakeholders also suggests that there is a widely held belief amongst recreational deer stalkers that larger areas of the NFE could be opened up to them, thus reducing the cost of deer control to Government and providing locally sustainable deer management and venison production. The Panel recognises these concerns, which were also noted by the Deer Panel that undertook a review of Authorisations in 2016.

In view of the shared resource that deer represent on publically owned land, and the interest, desire and opportunities that exist for more communities to get actively involved, the Panel suggest that relevant public sector land managing bodies should:

- listen to the needs of local deer management fora and look at the skills, knowledge, energy and ideas they can bring to the table;
- continue to identify more opportunities for competent controllers to become involved in managing deer on their land holdings in a cost-effective way.

The Community Empowerment (Scotland) Act 2015 aims to promote greater community involvement in the work of specific public bodies, and allows eligible community bodies to submit Participation Requests for this purpose, although this comparatively new formal process has not so far been used in the context of deer management. There is consequently an opportunity for public bodies to discuss this with relevant stalking interests.

The panel did not reach complete agreement on the scope of its recommendations in this area. One member felt strongly that the panel should make recommendations regarding training and access to the NFE for recreational deer stalkers, in order to promote inclusive access to stalking. The general view within the panel was, however, that these topics were not sufficiently linked to its remit; these issues are therefore noted as above and have been highlighted to the Scottish Government's Deer Working Group.

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Annex 1: Lowland Deer Panel Terms of Reference

Background

The Scottish Natural Heritage (SNH) Review of Sustainable Deer Management and the subsequent report by the Environment, Climate Change & Land Reform (ECCLR) Committee identified concerns about the harmful impacts of deer in the lowlands, the amount of information available on lowland deer, and the effectiveness of current deer management. Particular issues raised included:

- the perception that 'there is a significant problem with deer in the lowlands';
- the need for collaboration when dealing with a territorial species ranging over a fragmented pattern of land ownership;
- the lack of engagement of particular sectors, including agricultural interests, local authorities and other public agencies;
- the lack of available data on deer numbers, impacts, cull returns and numbers of people controlling deer;
- the need for new structures to conduct, support and monitor effective lowland deer management, and;
- the ineffective supply chain for lowland venison and the limited availability of deer larder facilities.

SNH is seeking to appoint a Deer Panel under section 4 of the Deer (Scotland) Act 1996 (as amended) to consider deer management in lowland Scotland, particularly in relation to the Scottish Government's Deer Strategy WDNA, the Deer Code and public interest.

Geographical scope

There is no single agreed definition of the lowlands. For this purpose, however, the key distinction is between predominantly upland areas, which have large management units that are well suited to collaborative deer management, and surrounding areas of more fragmented land ownership – and the Panel should focus on the latter.

These areas are characterised by a mosaic of mixed land-use including large urban settlements, scattered housing, transport infrastructure, industry, agriculture, forestry and more 'natural' areas. Roe deer are the typical focus for management, but sika or fallow deer may also be present in some areas, such as parts of Dumfries and Galloway, Perthshire, Aberdeenshire and Caithness.

Remit

The Deer Panel will review and make practical recommendations addressing the following key questions:

- Do lowland deer managers need to collaborate to achieve sustainable deer management?
- If so, at what scale does this need to take place, and what is the most efficient and effective approach?
- What knowledge and information are needed to support this process and to determine whether the public interest is being met?
- What are the practical implications of public perceptions of deer and deer management in the lowlands?

- What further action could SNH take in the context of the existing legislative and policy framework?

Outputs

The required output of the Panel will be a report to SNH addressing the above issues. The process will be as follows:

- The Panel will produce a draft report with technical and secretariat support from SNH.
- Panel members will comment on the draft, suggesting any revisions.
- The Panel chair will have final sign-off.
- The report will be submitted to SNH by the end of September 2018. SNH will review the report and decide on the next steps.
- The report will be shared publically on SNH's website.

Governance

- The Cabinet Secretary for Environment, Climate Change & Land Reform will approve the appointment of the Panel.
- SNH will appoint the chair and Panel members.
- Meetings of the Panel will be convened by the chair, with secretariat support from SNH.
- SNH will provide additional technical support for the Panel as required.
- The Panel will liaise with the Deer Working Group as appropriate.
- SNH will provide agreed payment to Panel members.
- The Panel will be formally established for nine months and will conclude when its report has been submitted to SNH.

SNH
January 2018

Annex 2: Members of the Lowland Deer Panel

Membership of the Panel was approved by the Cabinet Secretary for Environment, Climate Change & Land Reform and was as follows:

- Peter Watson (Chair; independent wildlife consultant and former Director of The Deer Initiative).
- Professor Steve Albon (James Hutton Institute).
- Eirwen Hopwood (West Lothian Council)
- Jochen Langbein (independent wildlife consultant)
- David Quarrell (urban/Central Belt deer manager)
- Karen Ramoo (Scottish Land & Estates)
- Jane Rosegrant (Borders Forest Trust)

The panel did not reach complete agreement on the scope of its recommendations. David Quarrell felt strongly that the panel should make recommendations regarding training and access to the National Forest Estate for recreational deer stalkers, in order to promote inclusive access to stalking. The general view within the panel was, however, that these topics were not sufficiently linked to its remit; these issues are therefore clearly noted in the text and have been highlighted to the Scottish Government's Deer Working Group.

Donald Fraser, Jamie Hammond and Alastair MacGugan of SNH provided technical support for the Panel as required. Mark Wrightham of SNH provided secretariat support.

Annex 3: Key questions circulated to stakeholders

Introduction

The Scottish Natural Heritage (SNH) Review of Sustainable Deer Management and the subsequent report by the Environment, Climate Change & Land Reform (ECCLR) Committee identified concerns about the impacts of deer in the lowlands, the effectiveness of current deer management and the amount of information available to support this process.

SNH has appointed an expert Panel to consider deer management in lowland Scotland, particularly in relation to the Scottish Government's Deer Strategy (*Wild Deer: a National Approach*), the Deer Code and public interest. Further information about the Panel can be found at https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-deer/lowland-deer-panel.

Scope of project

The Scottish uplands are characterised by large land management units that are well suited to collaborative deer management. In contrast, **the 'lowlands' are taken to be the surrounding areas characterised by more fragmented land ownership, which are not usually covered by Deer Management Groups**. These areas have various patterns of mixed land use including farmland, forestry and more 'natural' areas, but also large settlements, scattered housing and industrial or transport infrastructure, which can present a range of different issues and opportunities for deer management.

Roe deer are the typical focus for management in the lowlands, but red, sika or fallow deer also occur in some lowland areas such as parts of Dumfries and Galloway, Perthshire, Aberdeenshire and Caithness. Management might take various forms and could for example include fencing, habitat management and culling.

Key questions

The Panel would like to hear your views about issues and opportunities for lowland deer management in the context of the existing legislative and policy framework.

Please let us know who you are, where you are based and the nature of your interest in deer (eg. member of the public, stalker, land manager, local authority, public agency, non-governmental organisation).

If you are a stalker or land manager, please let us know how large an area you cover. **If you represent an organisation which covers a large area, please confine your answers to the lowland parts of your area**.

It would be helpful if you could consider the following questions:

1. Which species of deer (roe, red, sika or fallow) occur in your area?
2. What are the key positive impacts of deer in your area? These might for example include public enjoyment from seeing deer, tourism and local employment. How significant are these? Please explain why.
3. Have these positive impacts changed over the last five years, and if so, how?

4. What are the key negative impacts of deer in your area? These might for example include effects on agriculture, forestry or natural habitats, road traffic accidents or other impacts. How significant are these? Please explain why.
5. Have these negative impacts changed over the last five years, and if so, how?
6. Does any deer management happen in your area? If so, how is this carried out (eg. fencing, habitat management, culling or other methods)? Who does this (eg. stalkers, land managers, local communities, local authorities, public bodies, third sector bodies or others)?
7. Do land owners and managers, or others, collaborate to do this? If so, how, and at what geographical scale?
8. Do land owners and managers, or others, need to collaborate to do this in the future? If so, how, and at what geographical scale?
9. If a collaborative approach is not needed, what if any alternative would you like to see?
10. Are there any barriers to sustainable deer management in your area (eg. relative income versus costs of deer management, availability of stalking expertise, availability of venison markets, access to larder facilities or other barriers)?
11. Is enough information available to support sustainable deer management in the lowlands (eg. relating to deer numbers, deer culls, venison markets, effects on agriculture, forestry and natural habitats, road traffic accidents or other information)? If not, what additional information is needed?
12. Do the public's views influence the approach taken to lowland deer management in your area?
13. What further action is needed in the context of the existing legislative and policy framework, and by whom?

How to contribute

Your comments and feedback on these key issues will help to guide and inform the work of the Panel. There are two alternative ways to let us have your views:

- please send any written contributions to the Panel Secretary (mark.wrightham@snh.gov.uk);
- alternatively, you could respond using our online survey monkey at https://www.surveymonkey.co.uk/r/BLPS73Y**.**

Whichever approach you prefer, **please let us have your views by Friday 4 May**.

Publication of contributions

The Panel would like to publish any written contributions on its web page, but we need your permission to do this. Please indicate your preference from the following three options:

- Publish response with name
- Publish response only (without name)
- Do not publish response

Note for organisations

The option *'Publish response only (without name)'* refers only to your name, not your organisation's name. If this option is selected, the organisation name will still be published.
If you choose not to have your submission published, your organisation may still be listed as a contributor in the Panel's report to SNH.

Annex 4: Key questions for stakeholders – online version

DEER MANAGEMENT IN THE SCOTTISH LOWLANDS - STAKEHOLDER SURVEY

The Lowland Deer Panel (LDP) would like to hear your views on the issues and opportunities associated with managing deer in the Scottish Lowlands. Please take a few minutes to complete our survey by ticking the appropriate box or by writing your answer in the space provided. **If you represent an organisation which covers a large area, please remember to confine your answers to the lowland parts of your area**.

If you have any questions about the survey, please contact Mark.Wrightham@snh.gov.uk.

The presence of deer in your area

Q1 Which of the following species of deer occur in your area?

Please tick all that apply

☐1 Roe
☐2 Red
☐3 Sika
☐4 Fallow
☐5 Don't know

Q2 Listed below are the positive impacts sometimes associated with the presence of deer. Please tick the appropriate box to indicate the extent to which you agree or disagree that the presence of deer in your area has each of these positive impacts.

	Agree strongly	Agree slightly	Neither/ nor	Disagree slightly	Disagree strongly	Don't know
Local people get enjoyment from seeing deer in the area	☐1	☐2	☐3	☐4	☐5	☐6
The presence of deer adds to the enjoyment of tourists and day visitors to the area	☐1	☐2	☐3	☐4	☐5	☐6
The presence of deer helps support local employment (e.g. jobs associated with wildlife watching, sport shooting, game processing, venison sales)	☐1	☐2	☐3	☐4	☐5	☐6

Q3 Are there any other positive impacts you associate with the presence of deer in your area?

Q4 Thinking back over the last five years, have any of the positive impacts you have identified become more or less significant? If yes, please provide details below.

Q5 Listed below are the negative impacts sometimes associated with the presence of deer. Please tick the appropriate box to indicate the extent to which you agree or disagree that the presence of deer in your area has each of these negative impacts.

	Agree strongly	Agree slightly	Neither/ nor	Disagree slightly	Disagree strongly	Don't know
Damage to agricultural land caused by grazing, browsing and trampling	□1	□2	□3	□4	□5	□6
Damage to forestry caused by grazing, browsing and trampling	□1	□2	□3	□4	□5	□6
Damage to natural habitats caused by grazing, browsing and trampling	□1	□2	□3	□4	□5	□6
Deer-related road traffic accidents	□1	□2	□3	□4	□5	□6

Q6 Are there any other negative impacts you associate with the presence of deer in your area?

Q7 Thinking back over the last five years, have any of the negative impacts you have identified become more or less significant? If yes, please provide details below.

Deer management in your area

Q8 Does any deer management currently take place in your area?

□1 Yes
□2 No GO TO Q17
□3 Don't know GO TO Q17

Q9 Which of the following deer management methods are used in your area?

Please tick all that apply
□1 Culling
□2 Fencing
□3 Habitat management
□4 Don't know
□5 Other (Please provide details) ……..

Q10 Who carries out deer management in your area?

Please tick all that apply

□1 Land owners/managers
□2 Stalkers
□3 Local community groups
□4 Local Authorities
□5 Forestry Commission Scotland
□6 Scottish Natural Heritage
□7 National Trust for Scotland
□8 Scottish Wildlife Trust
□9 Other third sector body
□10 Don't know GO TO Q17
□11 Other (Please provide details) ……

Q11 To what extent do the individuals, groups or bodies involved in deer management in your area collaborate with each other?

□1 To a large extent
□2 To some extent
□3 Not at all GO TO Q13
□4 Don't know GO TO Q17
□5 Not applicable, only one individual/group/body involved

Q12 If deer management in your area involves collaboration between individuals, groups or bodies, please explain how this happens and at what geographical scale.

Q13 If deer management in your area involves little or no collaboration between individuals, groups or bodies, to what extent do you agree or disagree that a collaborative approach is needed in future?

□1 Agree strongly
□2 Agree slightly
□3 Neither agree nor disagree GO TO Q16
□4 Disagree slightly GO TO Q15
□5 Disagree strongly GO TO Q15
□6 Don't know GO TO Q16

Q14 If you think a collaborative approach to deer management is needed in future, at what geographical scale do you think this should take place?

Q15 If you do not think a collaborative approach is needed in future, is there an alternative approach you would like to see put in place?

Q16 What, if any, are the barriers to sustainable deer management in your area?

Please tick all that apply

□1 The relative income compared to the costs of deer management
□2 Availability of stalking expertise
□3 Availability of venison markets
□4 Access to larder facilities
□5 Not aware of any barriers
□6 Don't know
□7 Other (Please provide details) ……..

Q17 To what extent do you agree or disagree that sufficient information is available on each of the following topics to support sustainable deer management in your area.

	Agree strongly	Agree slightly	Neither/ nor	Disagree slightly	Disagree strongly	Don't know
Deer numbers	□1	□2	□3	□4	□5	□6
Deer culls	□1	□2	□3	□4	□5	□6
Venison markets	□1	□2	□3	□4	□5	□6
Impacts of deer on agriculture	□1	□2	□3	□4	□5	□6
Impacts of deer on forestry	□1	□2	□3	□4	□5	□6
Impacts of deer on natural habitats	□1	□2	□3	□4	□5	□6
Deer-related road traffic accidents	□1	□2	□3	□4	□5	□6

Q18 What other information, if any, do you think is needed to support sustainable deer management in your area?

The general public's views on deer management in your area

Q19 How well informed do you think local people are about why and how deer are managed in your area?

□1 Very well informed
□2 Quite well informed
□3 Neither informed nor uninformed
□4 Not very well informed
□5 Not at all well informed
□6 Don't know
□7 Not applicable – no deer management takes place in my area

Q20 How supportive do you think local people are of the current approach to deer management in your area?

□1 Very supportive
□2 Quite supportive
□3 Neither supportive nor unsupportive
□4 Not very supportive
□5 Not at all supportive
□6 Don't know
□7 Not applicable – no deer management takes place in my area
□8 Not applicable – local people largely unaware of deer management in my area

Q21 To what extent do the views of local people currently influence the approach taken to deer management in your area?

□1 To a large extent
□2 To some extent
□3 Not at all GO TO Q22
□4 Don't know GO TO Q22

Q22 If you feel the views of local people currently influence the approach taken to deer management in your area, please provide details.

Further action

Q23 Without a change to the legal or policy context, please tell us what further action, if any, you think is required to achieve effective deer management in the Scottish Lowlands? And who do you think should take this action?

About you

Finally, to help us analyse the responses to the survey, please tell us a little about yourself.

Q24 Which one of the following best describes your interest in this survey?

Please tick one

□1 I'm a member of the public living in the Scottish Lowlands GO TO Q25
□2 I'm a land manager/owner in the Scottish Lowlands GO TO Q24
□3 I'm a stalker in the Scottish Lowlands GO TO Q24
□4 I represent a local community group in the Scottish Lowlands GO TO Q25
□5 I represent a Local Authority GO TO Q26
□6 I represent a public body (e.g. FCS, Forest Enterprise, SNH) GO TO Q26
□7 I represent a third sector body (e.g. NTS, SWT, other) GO TO Q26
□8 I have some other interest (Please provide details) ……

Q25 If you are a land manager or stalker, how large is the lowland area you cover?

□1 Up to 1,000 ha
□2 1,000 – 10,000 ha
□3 More than 10,000 ha

Q26 If you live in the Scottish Lowlands, please tell us where.

Q27 If you represent a Local Authority, public body or third sector body, please tell us which lowland area(s) you cover in your work.

Q28 if you have any other comments about deer management in the Scottish Lowlands, please provide details below.

Q29 The Lowland Deer Panel (LDP) would like to publish the results of the survey, including any written responses, on its web page, but we need your permission to do so. Please indicate your preference below.

□1 Publish my response with my name

□2 Publish my response without my name
(NB If you represent an organisation, the organisation's name will still be published)

□3 Do not publish my response
(NB If you represent an organisation, the organisation's name may still be listed as a contributor in the LDP's report to Scottish Natural Heritage)

Your name: ……

The organisation you represent (if applicable): ……..

Your telephone number: ……

Your e-mail address: ……..

THANK YOU VERY MUCH FOR TAKING PART IN THE SURVEY

Annex 5: List of submissions received

Written contributions

Alex Hogg
Argyll & Bute Council
BASC Scotland
British Deer Society
Dick Playfair
Dundee City Council
Forest Enterprise Scotland
Game & Wildlife Conservation Trust
Glen Heggs
Jim Paxton
Mountaineering Scotland
North Lanarkshire Council
Raymond Simpson
Richard Cooke
Scottish Wildlife Trust

Eight anonymous contributions were also received. If no organisational affiliation is quoted, contributions were provided in a personal capacity.

Online submissions

Aberdeenshire Local Outdoor Access Forum
Anastasia Delap
Andrew Baillie
Andrew Stronach
Athole McKillop
Beryl Leatherland
Bill Muircroft
Blairgowrie and District Next Steps
Borders Forest Trust
British Deer Society
Buchan and District Deer Management Group
Calum Campbell
Cameron Wyllie
CKSC Ltd
Clydesdale Deer Management Syndicate
Doune Woodlands
Ednie Farms
Edward Baxter
Eskdale & Liddesdale and Bowhill Estates
Ewan Sandison
Forestry Commission Scotland
Friends of Langlands Moss NNR (two contributions)
Galloway and Dumfries Deer Group
Game and Wildlife Conservation Trust Scotland
Hopetoun Estates
Hugh Chalmers
James Johnston
John Campbell-Smith

Lowland RFCA
Martin Twiss
Matt Cross
Michael Hardy
Microtec Services
Midlothian Council
Richard Kay
Robert Brown Smith
Robert Sharp
Robert Quirk
Rory Sandison
RSPB Scotland
Russ Kaye
Ryan Ward
Scottish Association for Country Sports
Scottish Borders Council
Seggiebank and Little Craigow Farms
Sinclair Coghill
Stalking syndicate
Tom Edwards
Tom Ritchie
Transport Scotland
West Lothian Council
Woodmill Shootings Ltd

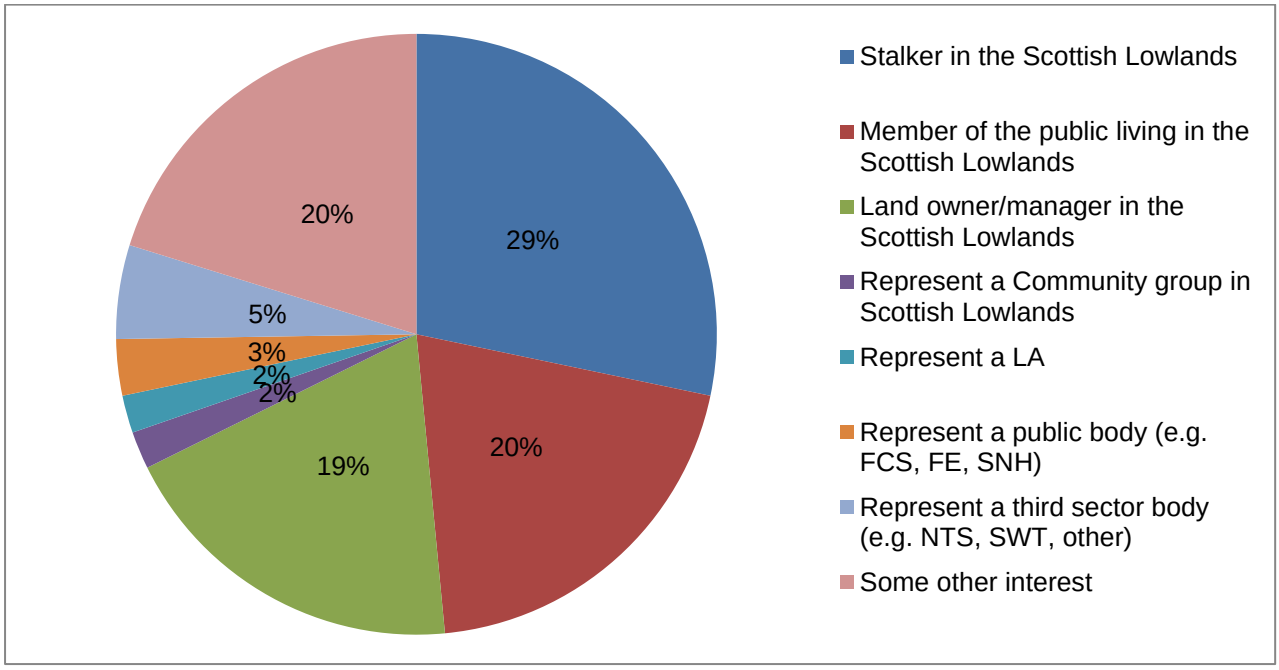
49 anonymous online submissions were also received.

Annex 6: Analysis of online submissions

Range of online survey contributors

A total of 157 online submissions was received. As shown in Figure 1, the largest proportions of these came from stalkers (28% of responses), members of the public (20%) and land owners/managers (19%).

Figure 1: Breakdown of survey responses (Question 24)



Base: 133 respondents

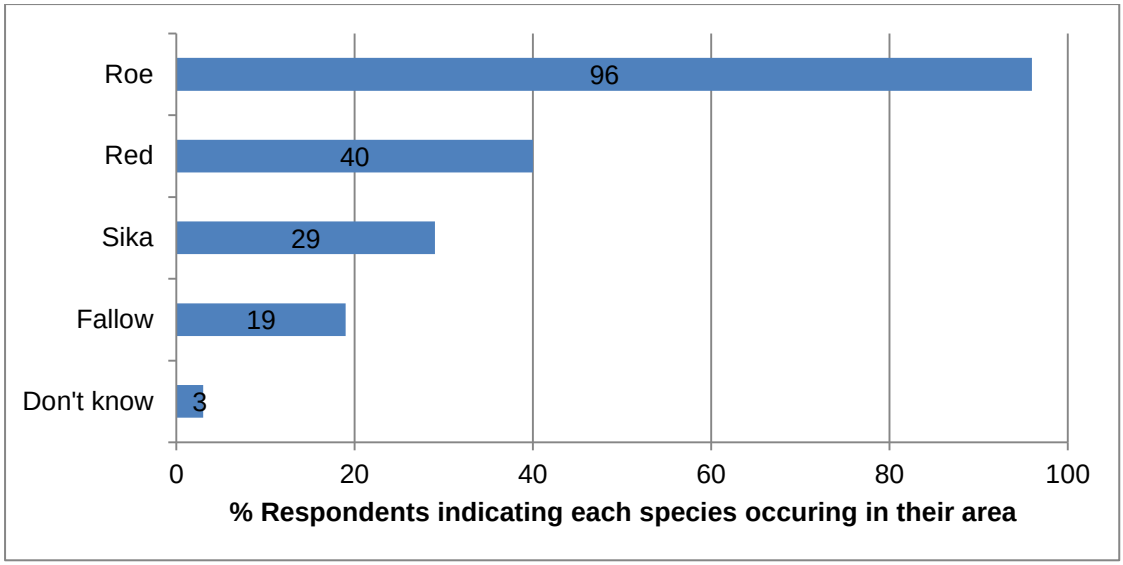
Among the landowners and managers responding to the survey, around half covered an area of less than 1,000 ha (49%) and a similar proportion covered an area of between 1,000 and 10,000 ha (47%); the remaining 4% covered an area of more than 10,000 ha.

Responses to the online survey were received from respondents living and working in twenty different local authority areas in Scotland.

Views expressed in online survey

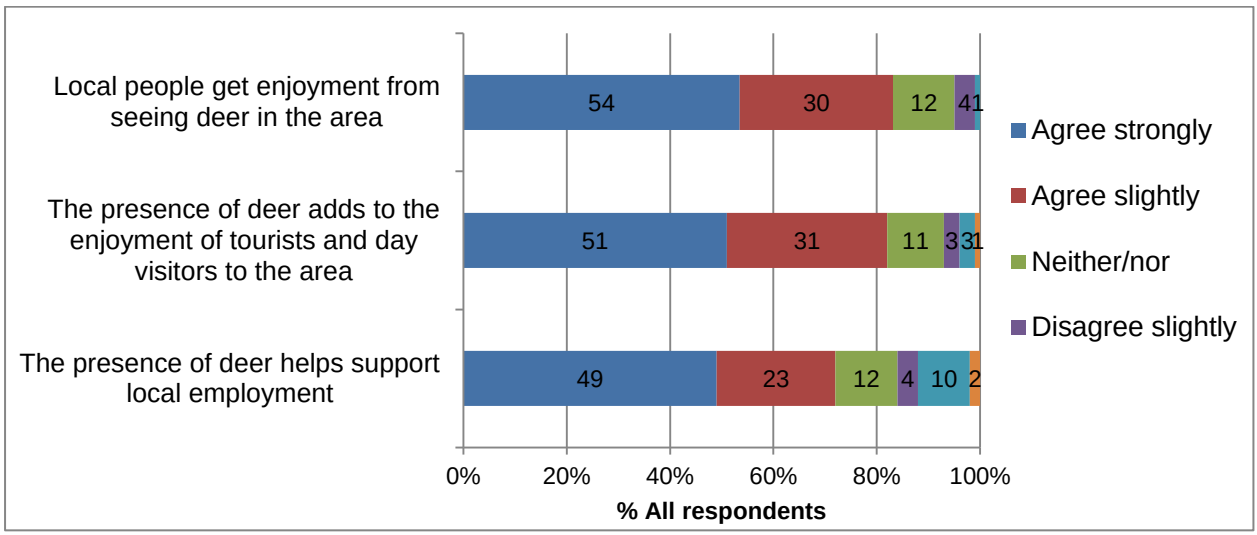
Responses to the multiple choice online survey questions are summarised below. Responses to free text questions are also listed. Unless otherwise stated, each comment is a verbatim quote from a single respondent.

Figure 2: Deer species occurring in the Scottish lowlands (Question 1)



Base: 156 respondents

Figure 3: Positive impacts associated with the presence of deer in the Scottish lowlands – prompted (Question 2)



Base: 149 respondents (minimum)

Other positive impacts cited (Question 3)

Ecological impacts

- Healthy ecosystem, native species
- Limited grazing in unfarmed areas improves biodiversity
- Vegetational diversity through grazing, allowing species diversity. Fulfil a role in the ecosystem and are part of the food chain upon death with regards to badgers, foxes, insect life etc.
- Wider ecological processes
- Helping to keep the trees in check!
- Deer play an important role in natural diversity
- The roe deer improve the local environment
- It would be a poor countryside without deer living in it

- Good for ecosystem
- Deer are a keystone species and at the appropriate density improve the diversity of habitat
- They also demonstrate there is a healthy biodiversity in place to support the animals.
- Better ecological diversity is always positive
- There are certain scenarios where deer are vital for browsing vegetation, but not in the numbers that they are currently at.
- An indicator of suitable environments
- Indicates a healthy balance in the natural environment
- Understory management of selective vegetation if in suitable carrying capacity for the area
- They are an integral part of the ecosystem, culture and economy of this part of Scotland
- Balanced ecological system
- Urban edge condition they signal a spirit of wild and free nature
- Herbivores have a role to play in a fully functioning ecology
- At the right densities (not too high) they are ecologically beneficial
- Maintaining a natural biodiversity in an established woodland

Economic impacts

- Encourages investment in woodland management, associated infrastructure and owner appreciation of rural assets
- Offset of Deer Managers' costs
- They bring in stalkers who put a lot into the local economy, at times of the year when they most need them
- The presence of deer in this locality brings in considerable sums of money from foreign clients. They also spend considerable amounts of money hiring cars, staying in hotels etc.
- Stalking opportunities
- International tourism, many foreign visitors come to Scotland to hunt deer. They often bring family members who in turn boost local economy.
- There is a sporting interest in Roe which attracts hunters from this country and abroad to hunt them, brings employment and turnover for rural businesses, income for farmers / land owner and employment for stalker / manager

Food source

- They provide recreational stalking for some interested residents who distribute venison harvested in the area to friends and acquaintances encouraging others to enjoy healthy wild venison
- Eating venison.
- Local source for local restaurants
- Venison from cull by gamekeepers etc.
- Local food source
- Nice to see and also nice to harvest and eat
- Health benefits to those eating a wild, healthy game meat.
- Deer are an under-utilised resource which could allow communities to be involved in harvesting a natural sustainable resource with reduced costs to the taxpayer
- Venison free range
- Source of local food.
- Road kill is fee and delicious and feels like a good use of the carcasses
- Venison source
- Local health food

Educational benefits

- Re-attaches young people with the countryside and where food, i.e. venison and game birds, come from.
- Education, young people to the real countryside
- People watching deer also engage better in the wider rural environment and all fauna and flora about at quieter times of the day.
- People need to learn that man needs to control animal numbers.

Health benefits

- A few people get health benefits from deer stalking
- Being active managing deer outdoor activity
- Those engaged in deer management stay in better health by outdoors activity.

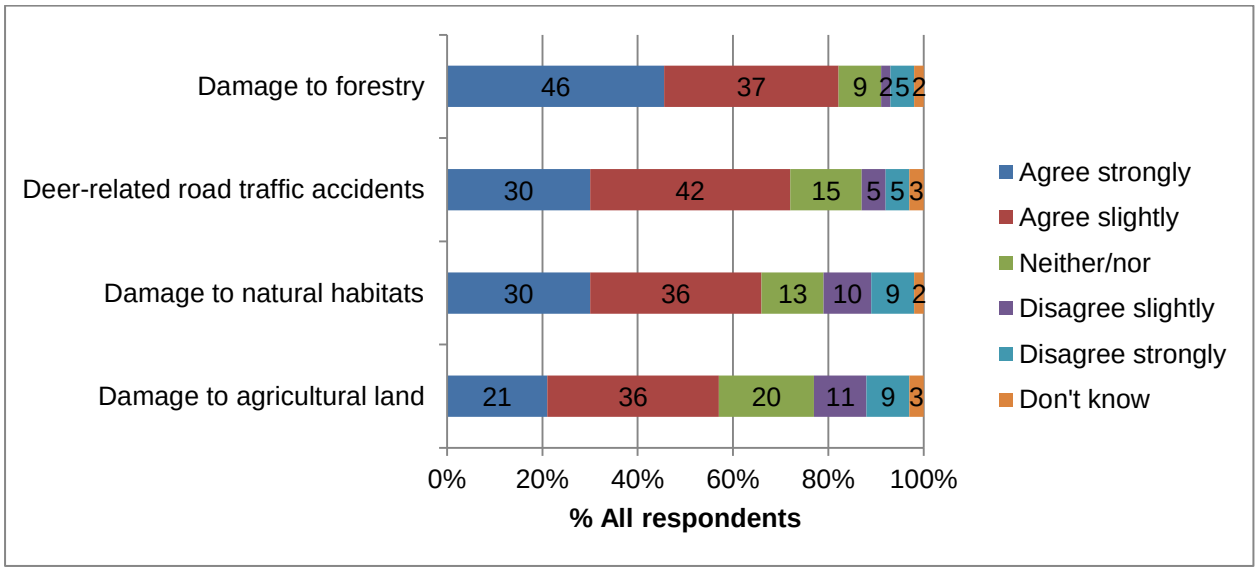
Sporting opportunities

- Enjoyment from a sporting aspect
- High quality stalking
- Quality of sporting beasts adds kudos to the local area
- Tracks produced by deer are useful when walking in rough vegetation.
- They can create narrow trail networks that are useful when running or cycling cross country.

Enjoyment

- Only as wildlife enjoyment for a few such as us
- They bring people together who enjoy engaging with deer
- Encourages people into the woodlands

Figure 4: Negative impacts associated with the presence of deer in the Scottish lowlands – prompted (Question 5)



Base: 151 respondents (minimum)

Other negative impacts cited (Question 6)

Poaching/illegal activities

- Illegal activities, dogs, guns, crossbows (not a major issue but from time to time)
- If the deer are not controlled and kept away from roadsides then deer poaching is increased
- Poaching of deer with dogs other anti-social activities which go hand and hand with poaching
- Increase in poaching by third parties
- Poaching and taking of deer with dogs
- Deer poaching!
- Poaching (*six respondents*)
- Encourages poachers
- They attract poachers
- Attraction of coursing and poaching
- Limited poaching with associated unauthorised use of vehicles and firearms
- Bringing poachers into areas with limited police coverage
- Persons hunting deer with dogs
- Poaching and long dog lamping
- Presence of deer also brings poachers and dog men intent on making money from a natural resource, these people are usually criminals who may also be opportunistic thieves in rural areas
- Where visible from roads they encourage poaching and illegal coursing of deer by dogs
- Unfortunately, there have been more cases of members of the public out walking in the countryside allowing their uncontrolled dogs chasing deer, plus there has been an increase in deer poaching incidents
- Increase on wildlife crime and black market for deer
- Hunters discharge weapons in unsafe ways. Need more education of gun owners
- Encouraging lurchers and their handlers
- Idiots who think it's amusing to try and cause them harm
- Encourages trophy hunting

Ticks / Lyme disease / spread of disease

- Increased presence of ticks
- Increase in ticks
- Helps support tick populations and fluke
- Spread of ticks
- Potential vector for ticks / Lyme disease?
- Vector for tick and tick-borne disease.
- Tick population growth
- Increase in ticks
- Tick numbers are high
- Carrying and spreading of ticks.
- I have no evidence but we have a lot of ticks here and I worry about Lyme disease, and wonder whether high tick numbers are associated with deer presence
- They are victors for the spread of ticks and so the spread of Lyme’s disease, not only affecting humans, but also pets and livestock
- Potential biosecurity and disease
- Spread of liver fluke, spread of ticks
- Increase tick burden
- Lyme's disease
- Lyme disease
- Potential disease risk to farm livestock e.g. TB

Lack of public awareness

- Member of the public ignorance

Damage to gardens/public places

- Damage to gardens
- In the local cemetery they eat the flowers
- Damage to recreational/private ground i.e. gardens

Natural woodland

- Yes. They are having an impact on natural woodland regeneration. Rabbits and hares exude pressure also in our particular area

Deer management vs recreational access

- Only people being an issue when we are trying to control the deer
- Deer management used as an excuse by some land managers to generally block outdoor access not done in a way that is compliant with outdoor access legislation

Negative economic impacts

- Negative impact on and rising costs of woodland restoration
- Limited presence of Sika in the Eskdalemuir area at present but if/when numbers increase the level of associate forestry/habitat damage will rise significantly, this is impacting on (forestry) investor confidence and may lead to less associated rural investment in existing and new property
- Increase in lease costs through higher demand for leases from commuter stalkers

Impacts on other species

- Out-compete other herbivores for food source

Perceived trends in positive or negative impacts over last five years (Questions 4 and 7)

General comments about impacts becoming more significant

- More because of increased nos.
- There have been more and more deer seen on the fields in the last 5 years and this has impacted us because they are not getting culled and are just multiplying and we're losing a large percentage of crop
- Fallow deer more prevalent in this area, especially in small towns.
- More, mainly due to rising populations.
- Increase in numbers
- Slight increase in localised area numbers
- With deer numbers on the increase, there is a definite increase in the negatives associated with them
- Lack of landowner/managers, local authorities to deal with increasing numbers
- Yes, lack of interest in deer management by local authorities
- Expanse of urban deer
- As deer populations continue to increase, so problems increase
- Increased management time is needed to manage deer impact in terms of browsing monitoring, cull returns, cull targets etc.

- Numbers are increasing, so all of the above impacts are increasing
- All impacts more significant as population has increased
- More significant in all instances
- More significant for sure
- More significant (*two respondents*)
- More significant with more areas looking like they are being over-grazed
- More (*two respondents*)
- Over the past five years the negative impacts have become much more significant and results in high costs for landowner
- Slightly more noticed than before
- More significant in that there aren't that many deer anymore, less than what people assume due to the over culling
- Yes
- Variable and area dependent
- More of all negative impacts

General comments about impacts becoming less significant

- Less
- No
- No. The roe deer population here is small and stable I think
- I believe less, I can demonstrate areas where Roe have been exterminated basically
- Less significant due to better management and fences

General comments suggesting little or no change

- Not noticeably
- Probably not much change
- About the same
- Relatively unchanged except for felling / replanting or changes to cropping regimes
- Remained stable
- No, but the perception that they are a menace has been exaggerated & promulgated by foresters
- No - impact has remained stable
- About the same
- Same (*two respondents*)
- No (*12 respondents*)

Specific comments about road traffic accidents

- No, we are not aware of any negative impacts that have changed significantly - particularly road accidents where there seems to be a dearth of reliable information
- More road casualties
- Fear of RTA
- Road accidents still occur
- Potentially traffic incidents
- Slightly more RTAs. More traffic on the roads and too many trees close to the road-side
- More deer related accidents on the road
- More deer = more collisions.
- RTAs involving fallow deer have become less frequent now that a heavier management plan - cull - is undertaken.
- Road traffic accidents
- More significant (almost to epidemic proportions) until the local wildlife manager started work - less
- RTCs

- More traffic accidents.
- With regard to RTCs there is the driving behaviour change as well to be considered, I believe the speed of driving has increased on average
- People are becoming poorer drivers and expect to drive on my side of the road, so they certainly will not think a deer has the right to be on a road, if they think I should drive in the gutter they will expect deer to stay in a wood
- There appears to be an increase in the number of wild deer and this has a potential knock-on effect in terms of interaction between roads and deer. The stats do not necessarily suggest the number of DVCs is increasing but it is widely accepted that there is a degree of under-reporting which may mask the real picture.

Specific comments about poaching/illegal activities

- Yes poaching is increasing
- Wildlife crime generally increasing
- Poaching with dogs has increased
- Poaching has increased and rural crime as a result
- Hunting with dogs more significant
- More dog men, lurcher type
- Yes, the impact of dogs chasing deer has increased and cases of poaching have increased
- Poaching has become more significant with the increase in deer numbers caused by poor management. The local estate owner seems to now be indirectly using poachers as a management tool to control deer numbers without actually sanctioning it.
- Poaching has increased
- Poaching on private land
- Poachers with dogs
- Illegal deer coursing
- Yes definitely an increase in recreational stalkers, many of whom have questionable intentions
- Deer being shot badly and carcass wasted as far as food production goes

Specific comments re Lyme disease / other disease

- Liver fluke and ticks now in/on dairy cows with no sheep present.
- Far more tick bites on humans and pets
- Yes, ticks are more common
- Ticks generally increasing
- Lyme’s disease is becoming more prevalent, with more cases in my locality being diagnosed.

Specific comments about damage to gardens

- Damage to gardens a lot more common
- Only time I'm affected by deer personally, is eating certain types of flowers at the cemetery
- I've heard more concerns over damage to private gardens and agricultural land recently

Specific comments about agriculture

- Larger area of vegetable are now grown especially carrots
- Impact on agriculture
- A lot of farmers have lost of grazing for sheep

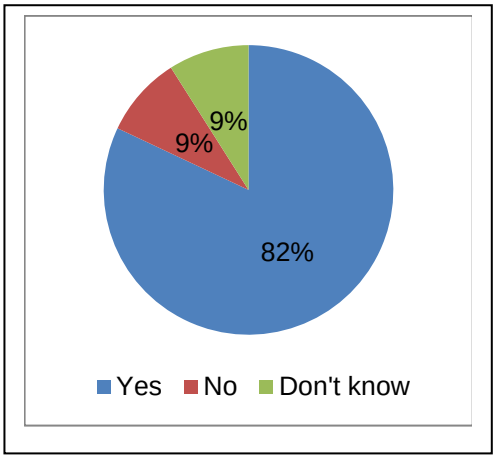
Specific comments about forestry/woodland

- Damage to forestry enterprise
- Damage to ancient woodlands has increased, but this is also a result of upland sheep farming.
- Don't know but broadleaf woodland creation now a major objective.
- The damage to commercial conifer crops by a high deer population has led to more rigorous culling being implemented to protect investment as well as manage the deer population
- Recently planted native tree browsing
- I am guessing the areas struggling for trees
- Decrease in deer numbers in the more commercial forestry regions

Specific comments about habitats

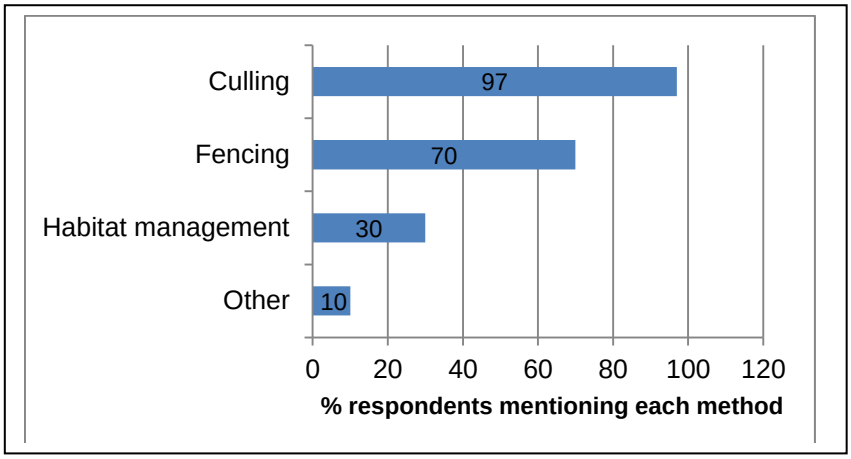
- Overgrazing of habitats
- Lee as our natural environment was deliberately set on fire

Figure 5: Does any deer management take place in your area (Question 8)?



Base: 153 respondents

Figure 6: Which of the following methods are used in your area (Question 9)?

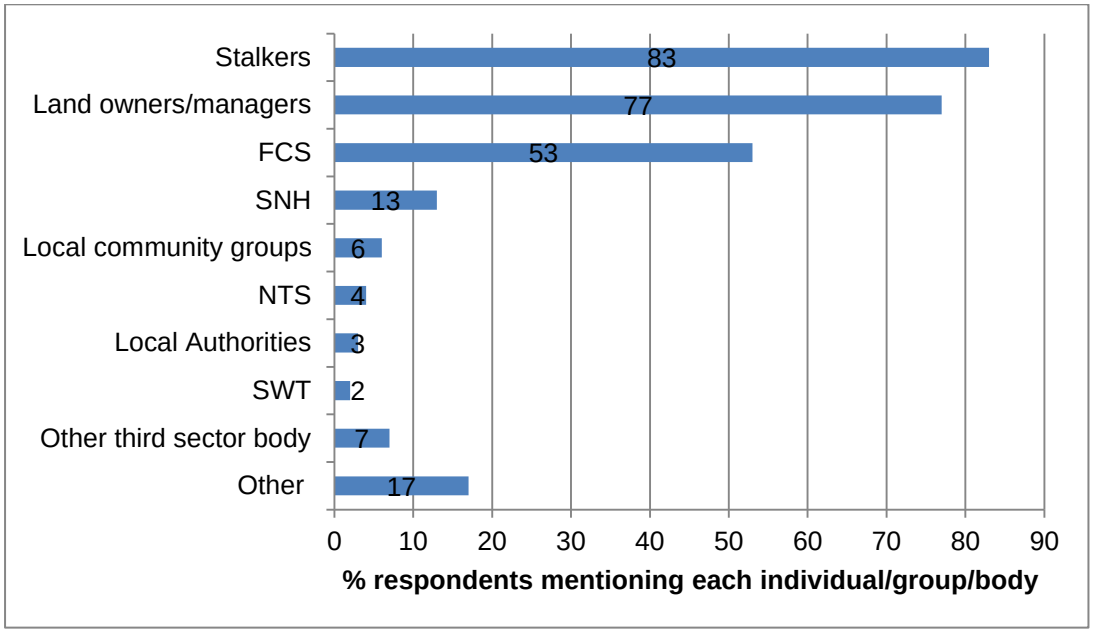


Base: 124 respondents

Other deer management methods cited (Question 9)

- Scaring
- Resistance to new tree planting due to the cost of deer fencing
- Tall tree tubes for broadleaves essential in most forests
- Planting trees in guards - less effective as tops of trees still browsed
- The majority of management in local authority ground is done at night via contractors
- Individual tree shelters for broadleaves and trials will mammal repellents
- Diversionary feeding
- Selective culling in season through sensitive pressure
- The local farmer lets people shoot deer on his land
- Things like mineral salt lick on fence posts which the deer love clearly makes it easier for so called hunters to shoot them
- Vegetation control - particularly close to roads
- Individual protection of broadleaved trees when planting

Figure 7: Who carries out deer management in your area? (Question 10)

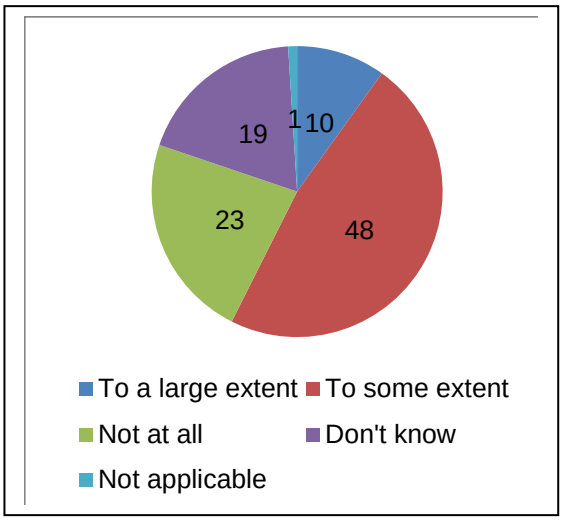


Base: 124 respondents

Other individuals, groups or bodies respondents were aware of being involved in local deer management (Question 10)

- Buchan and District Deer Management Group
- Borders Forest Trust
- Borders Forest Trust
- Galloway and Dumfries Deer Group.
- Local deer management group
- Local Deer Management Group
- Qualified experienced volunteers
- Me
- Myself
- Self
- Sporting tenants.
- Game keepers.
- Contractors
- Tilhill
- Private Forestry incl Tilhill
- Police Scotland
- People given permission by land owners to shoot on their land
- Recreational stalkers
- Syndicates and shooting tenants
- Illegal activity through poaching

Figure 8: To what extent do deer managers in your area collaborate? (Question 11)



Base: 122 respondents

Respondents' understanding of how collaboration happens and at what geographical scale (Question 12)

Local deer management groups / meetings

- We have a deer management group active in our area
- Local deer management meetings
- Borders Deer Management Group facilitates collaboration, particularly related to Sika, in the Upper Tweed Valley but there appears to be very little collaboration/co-ordination elsewhere
- Old Group being re-energised, substantial scale, A 74 to A714, northern boundary South Ayrshire.
- The Inveraray and Tyndrum deer management group
- Deer related groups
- Area Deer Management Groups. Largely confined to information sharing
- Regular deer management meeting and not sure on what geographical scale but a relatively large one
- Deer management groups
- Via West Lothian Deer Management Group and adjacent estate
- Sika management in Tweeddale.
- DMG so often can't agree on local plans so any culling benefits are reduced by opposing objectives.
- SLDG
- Deer management group meetings
- DMG groups, mostly with larger landowners
- Deer management groups currently have limited local involvement
- Different Local deer management group meetings
- Deer management groups have meetings to discuss the deer issues within the areas.
- In the North part of my area through a deer management forum. In the South part it is not coordinated and stalking is controlled by landowner generally farmer who is getting crop damage
- Annual meetings I'd imagine
- There is a local deer group in the embryonic stages of development. It aims to be a conduit of information for land managers and stalkers. Due to the fragmented nature of land ownership in the area, deer management plans are deemed unworkable.
- Estates form deer management groups at regional scale.

- There is a deer management group recently set up consisting of the 3 largest landowners in the area. This will produce a deer management plan for over 4000ha of lowland forest with the help of a FCS grant
- Deer management group
- DMG

'Talking to each other' or similar collaboration

- Local stalkers talk to each other, apart from this no other communication takes place
- Local stalkers speak to each other
- Collaboration between stalkers sharing information about deer sightings and culls to improve efficiency and effectiveness of effort. Collaboration also occurs between us and neighbouring landowners and their deer management. Very localised collaboration. We are members of local deer management group but this group does no collaborative management in the area.
- Some stalkers are involved in LDNS others are passed information by these members
- We manage 7500Ha of ground and on the boundaries collaborate with neighbours where deer are known to move across marches
- By being transparent with the other deer managers in the area collaborating information and working towards a satisfactory outcome working within best practice to achieve this
- Estate-wide. Liaison through estate and directly with each other
- Past working of the Eskdalemuir Deer Management Group but inactive for the past ten years. Past management of deer by a wildlife manager(s) who covered a wider range of neighbouring property so some element of collaboration between neighbours, but within a more limited locality focused on Eskadalemuir Village. Ongoing contact with neighbouring properties through forest management activity which overlaps with deer management to a greater or lesser degree depending on owners' objectives. Stalker grapevine/local chat. Currently working with neighbours in the Eskdalemuir area, Forestry Enterprise Scotland and Tilhill to re-establish a deer group covering the Esdaile and Liddesdale Valleys. Early days but good support fort this from FE and SNG.
- Local friends
- Via East Nuuk Estates - 6,000 ha
- Landowners and wildlife managers speak to each other!
- Neighbouring estates will collaborate to ensure densities on deer forests are sustained purely to economical reasons. There are often disagreements regarding fencing which may impact upon on another land owners ability to keep deer numbers artificially high.
- Local liaison between land managers, and wider scale collaboration via local DMG's
- Locally predominantly between landowners and stalkers, I think more could be done
- Seasonal talks between estate deer managers
- Local group meetings email and telephone correspondence
- Primarily it involves discussions with neighbours over the march. There is also a DMG, but it has limited use at present.

Ad hoc collaboration

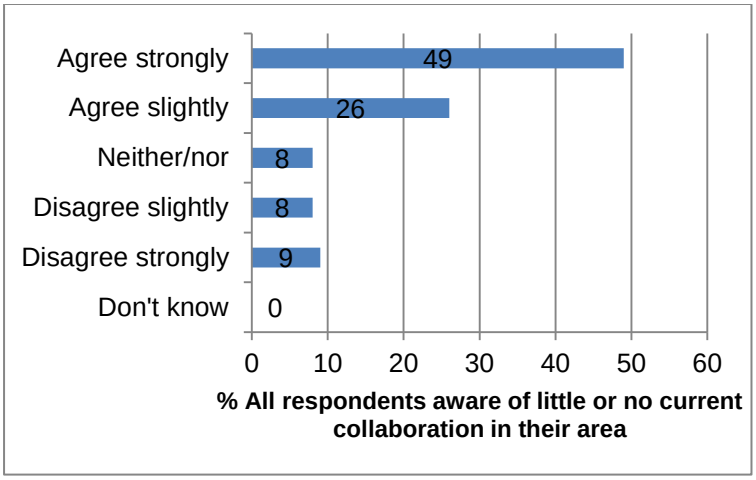
- On a very ad hoc basis
- On an ad hoc basis, but minimal

Other comments

- People have their own areas
- Cull returns for specific areas sent to SNH. However, many recreational stalkers do not send them in!!

- All of the Trunk Road Operating Companies (contractors) are required to liaise with adjacent land owners/managers and other agencies in relation to deer management. This happens across the trunk road network but to varying intensities.
- Affiliation to LDS Consultation with SNH, FC, private forestry companies
- Social media
- Some group activities at recreational levels, e.g. bds local groups covering Dumfries and Galloway

Figure 9: To what extent do you agree or disagree that collaboration is needed in future? (Question 13)



Base: 89 respondents

Respondents' opinions on the geographical scale at which any future collaboration should take place (Question 14)

National/large-scale

- National
- Across the whole of Scotland!!!
- I think nationally with a focus in the Scottish Highlands and national parks
- Nationalise the wildlife of Scotland. Then management should follow independent scientific advice. Culling should be done ethically and for subsistence by local people. See Montana state USA
- On a large scale it is required to keep deer at an appropriate level.
- Central Belt needs some control

Lowlands

- Throughout the lowland area
- Scottish Lowlands

Local authority areas

- Local authority or water catchment - i.e. sufficiently large to cover deer ranges
- Large-scale e.g. whole council area. There is no point in small scale collaboration due to the movement of the species.

- To utilise a body to steer and direct current methods aiming towards best practice in each area of endeavour, perhaps at Regional landscape scale for Scottish Borders i.e. 6 areas approx.

Regional / county

- Regional or at least old county areas
- Regionally - neighbouring estates and forests
- Regional
- Per County and adjoining Counties
- Local geographical clusters within a county size umbrella
- County scale

Local

- Neighbourhood-scale so that there is enough awareness and knowledge of issue and area involved.
- Roe, Sika and Fallow are usually very localised
- Vice-county
- As an example, about 6 to 10 groups in Scottish Borders Council region?
- Shire wide
- Locally
- 5 miles
- It is helpful so sharing of information on deer management is useful particularly on a more localised level for our organisation.
- At a scale that can involve a working group of individuals/estates/land managers but not overly sized so to lose sight of the finer details of local management
- Sub-regional
- Local level. Deer have differing impact on their surroundings from one area to another.
- A small area so that it remains local then with an overall body for districts
- Local areas
- At a more local level amongst all sectors involved in deer welfare and culling
- Difficult to determine this as I cover several fragmented areas of woodland with arable farmland and peat moss between them. However a parish or community council area would probably be a sufficiently suitable area to start with and broaden out from there.

Landscape scale

- Landscape scale, e.g. watershed, or say 5km distance from woodland regeneration or ecological restoration projects
- Landscape unit, based on geophysical boundaries

By deer management group

- As it is with our local deer management group
- DMG i.e. groups of estates sharing the deer herd range

At various levels

- Local and national throughout Scotland
- Tiered approach ...a local county / regional scale that feeds up to a national level
- At any and every scale, FES….. stated that they FES "do not need to collaborate with anyone" in relation to shooting at night.
- All areas
- Widespread but it should not exclude the individual recreational stalker

- Collaboration is required both at the national level (commitment from senior management) and at the regional and local level where the specifics of the landscape (in its widest sense) are better understood.
- scaled up right through from local to regional to national monitoring

Variable depending on circumstances

- Depends on species present, nature of the landscape and presence of natural boundaries/barriers and the presence and enthusiasm of associated owners, managers and wildlife managers/stalkers. The Eskdale and Liddersdale Valleys example is a workable geographic area given owner/manager presence, natural boundaries.
- Depends entirely on species of deer and area
- It depends on the landscape involved. Big areas of SW Scotland are akin to highland areas - few landowners covering a large area, lowland areas are more fragmented. Landowners in lowland areas need to see the benefit in collaborative deer management before they will willingly engage. For most farmers, they are simply not deemed as being an issue so no one bothers.

Other

- For SNH not to be involved in lowland deer management and it left up to land owners.
- Min 1000 ha
- Catchment or habitat range.
- Look for natural boundaries if possible, i.e. large rivers, main road arteries. I don't think size of group should be an issue so long as a sensible block of land is being collaboratively managed

If respondents don't think a collaborative approach is needed in future, what alternative approach would they like to see put in place? (Question 15)

Comments supporting collaboration

- A collaborative approach is needed for all forms of land management
- Collaborative approach is needed
- Yes, but only if it is transparent and all the landowners are willing to work towards a satisfactory management plan. This includes local authorities which currently preclude themselves by stating they have no need for deer management
- There is no alternative
- We firmly believe in a collaborative approach. It is time for significant Government incentivisation in local wild deer management and resource utilisation

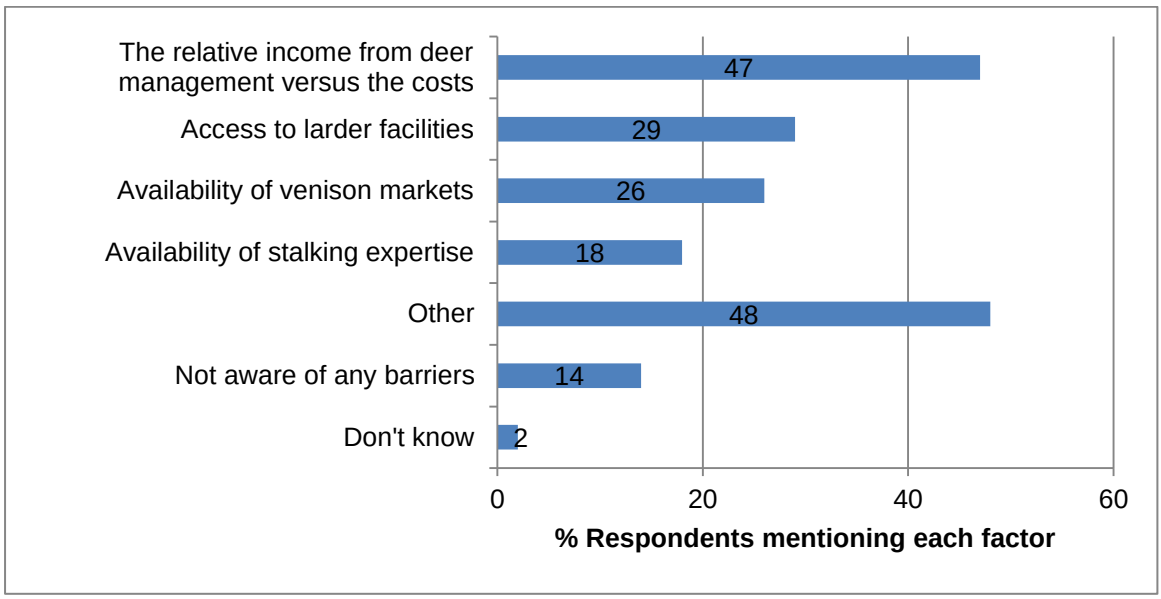
Comments opposing collaboration or suggesting alternatives

- Caps on the cost of deer management leases. Concentrate on putting boots on the ground rather than pounds in the pocket. Also, don't presume someone local will be able to control deer better than someone living outwith the immediate area
- Deer issues are fairly localised, so can be resolved by specific individuals, so appears little imperative for a collaborative approach
- Local management by local managers through DMGs
- Information given and gathered through existing national groups i.e. BDS BASC SACS National Gamekeepers ASS etc.
- Area based payments should be measured against HIAs and land management
- Roe management is far more subjective than red deer and the land holdings far too small with too many recreational stalkers. Each landowner has a different view on deer

management depending on several issues, some shoot any deer on sight others do not allow any culling, some stalkers manage for trophy stalking some for the pot and many have no interest in management, just pulling the trigger

- No, looking at the difficulty that Deer Management Groups working with red deer have, there is no way any lowland deer management group will work. What one estate desires for their deer and how to manage them may not be suitable for the neighbouring estate
- A detailed return audited on all deer sold
- A return required by land owner when returning his shooting tax. This should demonstrate in simple format, land type, and cull per square km. This can then be monitored on actual figures and some controls put in place to achieve minimum numbers
- Just good communication between landowners and stalkers
- None, it's working fine the way it is on our area
- No, by and large the current arrangements work
- Government steps up and holds all landowners responsible
- Collaboration has clearly failed. Deer numbers are way out of control. State intervention is required to drastically reduce deer numbers and top predators need to be reintroduced to keep their numbers in check
- Much more untouched land needs to be opened up for management. Farmers and large landowners must be made to manage deer. We cull deer and just make a vacuum which is filled from such areas surrounding us
- Nationalise wildlife. Management should be done under advice of neutral scientists. Culling must be done ethically and for subsistence of local people
- Consultation between deer managers and SNH
- Perhaps a less rigorous approach, less led by government and more led by landowners will prevail. People, particularly landowners, don't like being told what to do by government and the Scottish government seems intent on doing so. This leads to friction, mistrust and bad feeling on both sides
- As well as SNH, the return of local deer culls figures to the local forestry commission for them to evaluate the deer numbers within the local area
- No. Especially not imposed culls

Figure 10: Perceived barriers to sustainable deer management – prompted (Question 16)



Base: 92 respondents

Other perceived barriers to sustainable deer management (Question 16)

Economic barriers

- There is no income to be made from effective deer management, it is a cost
- Local deer managers being priced out of managing deer in their locality due to the pressure of increasing deer lease costs, in turn due to demand from south of the border and the Continent. If there is competent and confirmed local interest in wild deer resource management then local people, even at least on the basis of physical availability, should get first refusal. Lease costs should be commensurate with reasonable and sustainable cull levels and balanced against the potential for local employment or income derivation. SACS and its senior management team have advocated this approach for over two decades
- The introduction of sporting rates may exacerbate this
- Sporting rates have created a barrier. Cumbersome red tape lease agreements (FC) high cost of leases. Local deer stalkers not being utilised including fit and competent registered stalkers
- Sporting rates, food hygiene legislation which prevents home processing if material to be then sold (effectively would require to be licenced game meat handling establishment, with cost and administration requirements. This would then be spread over a small turnover of animals
- Poor return value of carcases from venison dealers Cost of ground rent is out with local populations' financial ability
- Shooting rates, lack of support from local authorities

Conflicting objectives

- Recreational stalkers wanting plenty of deer to shoot. Some forest owners wanting sporting income AND effective deer management

- Vested interests wishing to keep deer numbers high for their own selfish desires. Lack of governmental dictates and action to control deer numbers
- There are conflicts to successful deer management e.g. maintaining numbers for sport
- Too much of the land is stalked by people who shoot what they see rather than learn what they should be shooting
- Interest in neighbouring commercial stalking compared to our need for low numbers to grow trees
- Uninterested lease owners, forestry companies favouring revenue over footfall
- People's fear of allowing professional management to take place

Low awareness

- Awareness of issue, driven by relatively small size of many land-holdings and therefore sense of ownership of problem
- Numbers of people, knowledge of deer numbers, landowners being unaware of responsibilities or not wanting to manage deer etc., public perception, pressure from public not to manage can be an issue
- Landowners' ignorance
- General lack of awareness of deer numbers, monitoring and resources for coordinating deer management
- Lack of interest by landowners
- There is a perceived knowledge gap in some areas where the importance of good deer management is not fully understood or embraced
- Lack of management expertise and training

Issues regarding venison markets

- Huge barriers getting venison into local butchers and restaurants
- Limited availability of game dealers and transport of carcasses to game dealers with a lack of willingness to collect
- We currently have venison dealers and larders but these are not guaranteed in the long term
- Lack of game dealers and low price
- Removing venison dealers licensing allowing local butchers to utilise locally sourced venison
- Lack of market opportunities

Access to land for deer management

- Availability of access to private and council controlled areas
- Lack of access to the public land where the deer require to be managed
- Permission to cull on many local farms

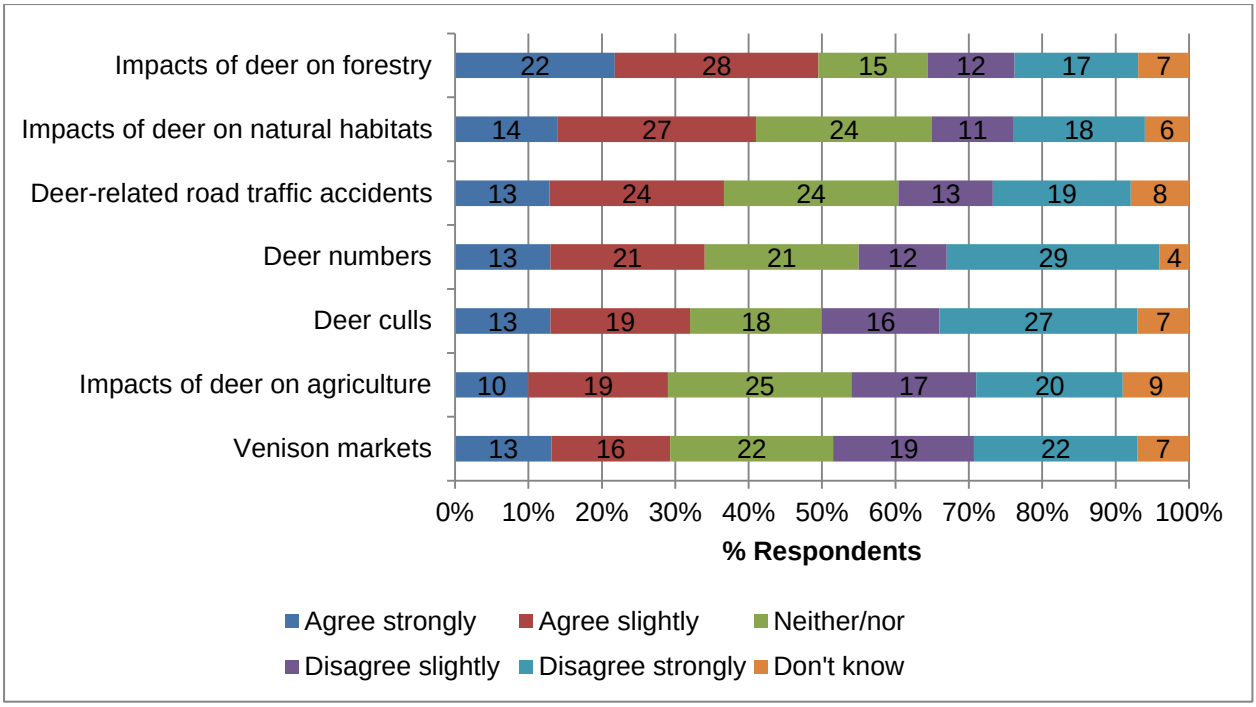
Public access to land

- More and more people exercising access rights making culling high risk. So many members of the public use the local estate that the amount of time to cull is reducing. New housing development means more people in the area and less opportunity to cull
- Stalking rights / access
- Conflict with access takers
- Dog walkers interfering with deer management and other rural affairs
- Locally high human populations

Other barriers

- Lack of landowner involvement. 2. Majority of stalking controlled by a small number of individuals or syndicates acting as cartels. 3. Fragmented landownership. 4. Difficulty of accurately counting roe deer 5. Overlap of pheasant season with roe doe season, meaning many landowners restrict stalking during shooting season
- Local recreational stalkers not being utilised. Complicated tendering processes for FC leases which could be given to local stalkers
- Willingness to be open by all landowners on deer management, no secrecy or reference to an art. It is a basic skill that can be taught / learned
- Culling is too fragmented
- Due to public roads require 12 slugs legalised for roe
- Size of one's stalking area, cropping, stalking pressure from neighbours
- Some landowners will remain resistant to culling of deer on their land
- Deer managers need to use all legal control methods. (Out is season and night shooting)
- Availability of land
- Private ownership of relatively small land parcels typically below 1000 acres. The amount of individuals concerned
- Would make it difficult to manage
- Barrier between conservationists and landowners/stalkers/game keepers
- The wildlife should be nationalised. Culling done by locals for food under guidance of scientific experts
- Lack of good management codes of best practise being followed
- Lack of awareness from landowners on the scale of deer populations and impact they can have. Poor public perception of deer impact. Cohesion between neighbouring landowners on deer management over grouped areas rather than just their own individual place
- Lack of communication between estates and FC and other bodies
- Governmental attitudes to recreational deer managers' abilities and qualifications
- Multiple leases under individual professionals; lack of ground available for training local people to higher standards.

Figure 11: Is sufficient information available on the subjects listed to support sustainable deer management? (Question 17)



Base: 135 respondents (minimum)

Other information required to support sustainable deer management (Question 18)

Better clarity

- What is sustainable deer management? What are the criteria for "sustainability" and who decides?
- Full disclosure by FC and other bodies of exactly what their overall intentions are regarding acceptable deer numbers
- Responsibilities of land owners; how public policy and funding can support efforts

Land owner/lease holder information

- The sharing of names of stalkers and lease holders in the area
- A list of land owners requiring management carried out
- Database of land owners and stalkers that can be shared through local deer group

Educating the public

- Public need to be better educated about the need to manage deer and this needs to come from the politicians as these are often the people the public go to, they need to be able to justify the requirement to manage deer numbers
- Public engagement to explain the issues
- Better education to the general public
- Community groups and local authorities need to be given more information about the reasons that deer need managing
- Explaining why deer management is necessary
- More linking land owners and then to the public why it's needed
- Better understanding of the benefits of deer management as part of the wider rural environment as opposed to simply being seen as a damage limitation operations
- Public awareness and communication. A visible process in collaboration and management needs to happen

- Public access to information, in terms of actual impact on natural regeneration

Count information

- More precise population assessment - thermal imaging
- An accurate count of deer numbers and impacts
- There needs to be accurate data on population size and an estimate of the carrying capacity of the area. Having said that, I don't think the population here is large or excessive or even increasing - but have no direct evidence
- I don't think there's enough knowledge about their movements and behaviour in this area as it stands
- Grant Aided population assessment
- Deer numbers and cull targets

Cull information

- For the most part good deer management relies on competent country people being properly aware of how many deer they have in their area - and which ones should (for their own good) be culled
- Confirmation of deer shot as a lot of ground has deer culled that is not recorded
- Cull details
- Phone numbers of those culling
- You will waste inordinate amounts of cash counting deer, which will end up as an estimate any way. Concentrate on cull per sq km and monitoring of habitat /crop , it's actually measurable
- Publication of area cull records collected by SNH
- Cull figures for the local area
- Details of deer culls
- Detailed figures of deer number and culls sent by email correspondence from SNH and the local forestry commission to all local farmers and registered deer controllers within the area
- More about venison market and culling
- Details of stalking activity on other areas surrounding those which I manage would be useful. annual cull figures for each area would combine to give accurate cull figures for whole districts. recording of RTAs involving deer would also add to the annual figure for deer killed
- Knowing neighbours' cull returns. Knowing who neighbours are and their management objectives
- No. shooting rates
- Knowledge of who is shooting where
- Availability of good, committed stalkers

Management plan information

- Management plans for lowland deer like up land deer
- Information on any plan to manage deer in the area, a network to put people interested in deer management in touch with people who need deer managed, training and mentoring programme

Property ownership information

- Who owns/manages/rents a piece of property?
- List of land registration, who owns what

Road accident information

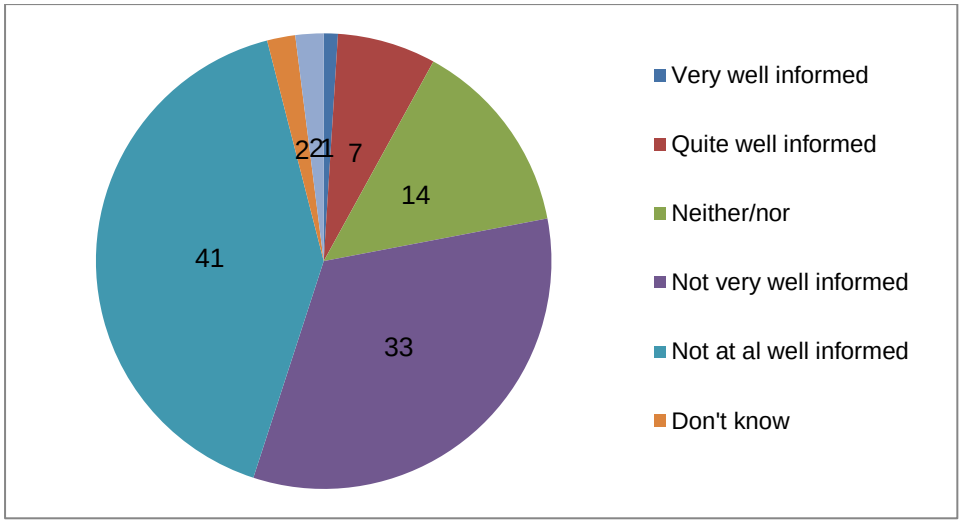
- Number of RTAs
- Police Scotland sharing DVC data
- More accurate recording of DVCs

Other comments

- I think there should be a register with who controls deer on what area and also access to training for deer managers through SNH or FC
- More robust qualifications and no-one to be allowed to stalk without a trained deer dog available
- All deer stalkers must have passed the deer stalking certificate level 2
- Nothing required, but benefit from increasing training/certification through e.g. BASC/BDS training for DSC1 and 2
- Why do local authorities use contractors and not the highly qualified local free resource, DMGs?
- Lower human populations
- Ensure shooting is carried out in a way that reduces the impact for walkers, cyclists horse riders etc. exercising their rights of responsible Outdoor Access
- More fencing maintenance to protect trees
- Better fencing
- Easier dealing and selling to game dealers/ restaurants
- As local authorities hold vast amounts of green and brown field sites in and around towns supported by a green network of cycle tracks golf courses etc., the local authorities must be brought up to speed on the requirement for a collaborative management process by trained individuals
- Good case studies of where collaboration over lowland deer management has proved valuable (UK or EU)
- Support, not dictation from SNH
- A collective appreciation that deer are a strategic asset
- How to combat vested interests influence in keeping deer numbers high
- Bring back the wolves to control deer numbers....oh no...that would take away the pleasure some idiots get from killing!
- None as deer management is carried out effectively without need of information
- Availability of areas where most damage occurs to natural habitat and manmade. As well as public land which falls within this category as well as that of charity bodies and organisations receiving government environmental grants
- Look at system run by Montana state in USA. Proper wildlife management, not kissing up to the toffs with their need for blood
- Not sure. Possibly people who have the right to shoot them on their land should have to justify the negative impact they are having on the rather than just shooting them because they can
- An unemotional (and unbiased) discussion on the effects of deer, unencumbered by vested interests
- We have extremely low numbers so no major impact in our area
- I'm sure information can be looked up on Internet, or contact one of these acting bodies
- On public land in urban and peri-urban (and even rural) areas there needs to be a clear justification for culling. This has not been our experience whereby we have been approached by, what is in effect, a local shooting group advising the local authority that they need to shoot on our ground in order that the council can meet its legal obligations. This seems an approach that will not be justifiable to either the local community and/or elected members
- In depth studies of deer ecology, and their abundances
- None from a Governmental body that is for sure

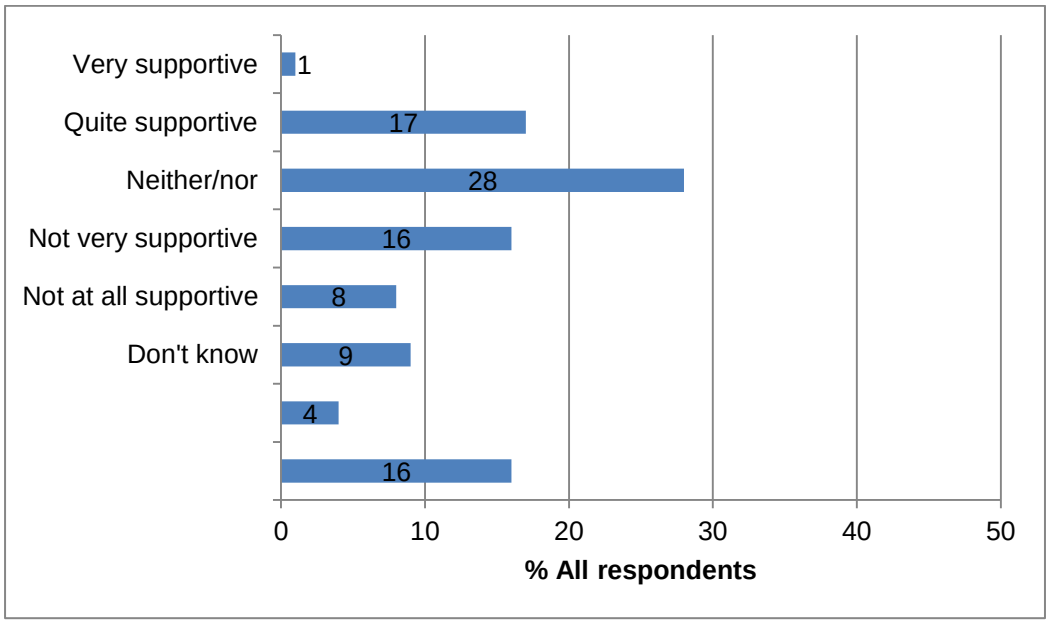
- Forestry Commission won't let out any stalking in my area. They keep it to themselves. It should be opened up as in Scotland
- People have their own land to shoot on
- None. Less interference from large bodies the better. They are into total wipe out rather than reducing numbers
- Numbers of the deer, species of the deer, estate factors should be getting groups and shooting these deer because they are currently not being managed enough
- Independent monitoring of objective achievements
- Proper consideration for deer welfare and food chain info
- Let me loose on council land, problem sorted
- Land managers experience should be taken into account
- Develop domestic venison markets
- More positives, less negatives
- A survey of the views of people that enjoy seeing deer and eating venison. They need to have a voice too but are rarely heard or asked
- More up to date reliable information and detailed action points
- Damage to protected areas. Focus needs to be on these places where SNH monitoring establishes deer impacts on notified features
- Deer carrying capacities in differing habitats. More joined up forestry planning/design
- SACS believes that there should be greater focus on incentivising and delivering locally managed and sustainable wild deer harvesting, rather than continually searching for more 'information'. It is time to do rather than continue to talk and examine. The solution to wild deer management challenges can often be found within local communities of geography and extended communities of interest
- Co-operation between affected parties
- Do not need extra paperwork. Shooting rates are not well thought out and could ripple local industry
- Local authorities need to have someone allocated to deer management agenda and the promotion of good deer management
- Improved promotion of local deer management groups and support of them through government bodies.

Figure 12: How well informed are local people about deer management? (Question 19)



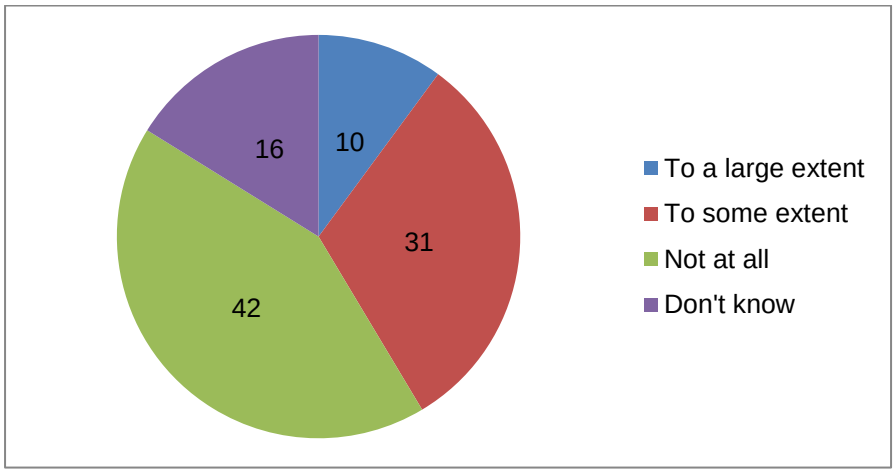
Base: 135 respondents

Figure 13: How supportive are local people about the current approach to deer management? (Question 20)



Base: 136 respondents

Figure 14: To what extent do the views of local people influence the local approach to deer management? (Question 21)



Base: 137 respondents

Respondents' views on the ways in which public opinion influences the approach taken to local deer management (Question 22)

Comments re lack of public awareness/understanding

- No one knows what's happening
- Awareness likely to be local and limited
- So long as it's managed efficiently they are happy
- Long standing locals are very knowledgeable. The newer incomers are less well informed
- A lot still do not see that deer need to be controlled
- No influence, local people haven't a clue as to how the countryside is managed, so their views are not important

- Local people do not see deer management as being necessary. They do not see there being a problem as it does not affect them directly. Not enough information for them
- Most of them don't know about it
- We tend to keep it low key, have had permission but haven't advertised widely and deal with enquiries on an individual basis when received
- A lot of people don't like the idea of deer being shot. They don't understand the need for it or why it is done. They read and hear on TV etc. about other wildlife being culled and take the same stance with deer
- It has to be done discretely, avoiding members of the public and even neighbouring landowners, who are against what you are doing
- Stalkers are discreet at present in order not to offend other folk in the country. However by hiding, they lose the opportunity to tell folk what they are doing and why. Stalkers need to be more visible
- Stalkers are sensitive to public perception and maintain a low profile
- Deer are shot under night licenses due to the perception that it is safer to do so. It is more likely that the local council do not want the public to be aware of the deer management activities
- Complaints often received of shots being fired at night even though work is carried out with the relevant
- Night Licence
- Try to avoid contact with public when culling, some are anti shooting nutters
- Local people who have little knowledge or expertise cause problems by demanding their "anti-views" are taken into account thereby hindering good management
- Gralloch is carefully disposed of in areas of higher public use
- Most deer related incidents can be related to deer on local authority owned land. This is not managed due mainly to public influence
- Rural households often occupied by ex-town folk who have seen the country side as their back garden and don't understand why deer are managed and often complain to police and landowners when deer managers are trying to do their job as they do not like the thought of poor Bambi being culled to sustain a healthy population for a certain area or habitat and often make it harder for deer manager to go about their business
- Deer management in some area of high footfall is virtually impossible for a number of reasons - safety, the perception that stalkers are needlessly "murdering Bambi" and the perception that all firearms are bad - someone with a "sniper rifle" must be a bad person!
- Non-countryside Locals in our area complain about too many deer on the road, but then complain about culling. They also don't understand the responsibilities adopted by land managers and are too quick to blame third parties without understanding the need for sustainable management of population numbers
- People are unaware of issues/benefits, which means those undertaking management can safely ignoring controlling deer to the benefit of the wider community
- A number of locals are against deer management and think stalkers are untrained with high powered weapons. Some land owners seem to be happy seeing deer killed on the road but will not allow deer to be shot on their land
- Negative view is given to anyone involved in culling of deer

Comments about public access

- Stalking times require to integrate with other members of the public
- Access to land in certain key culling times is hampered with general public using land for recreational purposes
- Only for the sake of safety, we chose to stalk when least likely to see or be seen by locals
- Irresponsible dog walkers!!!!!!!!!!!!!!!!! That's the right to roam for you, it's caused a lot of problems. I put signs up to cover myself but they ignore them

- Concerns were raised by member of public after seeing a stalker on site at the weekend. We have now stopped weekend stalking on this site which is popular with walkers particularly at the weekend.

Comments about road traffic accidents

- Those who are concerned about RTAs and close shaves between deer and vehicles can be quite vocal and realise that there is a need to control deer numbers where they interact with people and vehicles
- The only time deer come under scrutiny is when there's a deer vehicle collision

Other comments

- The opinions of local people are taken into account within scoping and consultation processes involved with woodland establishment
- I suppose that it is the current deer managers who influence the local deer management, and they are largely happy with the status quo, in fact happy that there are more deer to take clients out to shoot
- Deer management driven by stalkers
- It should be down the land owner to make choice depending on their management objectives
- Local landlords find support from our neighbours and there are no complaints
- I'm not sure if they do or not, the area I live in is very agricultural
- Several comments received that deer are no longer seen in the area following heavy culls. Probably mostly due to increase of tree cover as there is plenty of evidence of deer presence but that is not the public perception
- Local landowners often let stalking rights. Deer management objectives are often not specific
- They have access to the largest population of deer yet do the least
- Perceived welfare issues deter local authorities from managing deer
- The views are usually driven by perceived deer impacts, such as damage to trees
- There is still an element of history impacting on this with the legacy of [names] living and actively working in the area. This is fading quickly with changing generations and new people in the area. Local knowledge and flow of information to and from is diminishing. The presence and understanding of a local DMG could provide a catalyst for better local information flow
- Too many understand the need for control and it becomes too emotive
- Introduce wolves with a taste for the blood of "hunters"...now that would be sport!
- Information from local sources is an important way of understanding the picture of deer movement around the Trunk road network, providing the opportunity for targeted mitigation action
- Landowners and their employees have massive and extremely detrimental effect on deer management, in general
- Recreational forests so less (no?) shooting and more fences
- They like to see deer
- Only the views of local farmers influence the approach taken to deer management because there farm lands are being damaged
- Local people have no say in deer management

Respondents' opinions on what further action is required to achieve effective deer management in the Scottish Lowlands and who should take this action (Question 23)

- Effective collaborative deer control where net cost can be demonstrated should receive aid via the SFGS (in an accessible format), as effective collaborative control over a

sufficient area delivers large scale public benefits in terms of forest establishment and wider habitat enhancement/protection

- I think the majority of people that currently try to manage them and aren't doing it correctly should be removed/excluded for a time period allowing someone who can do the job a chance to do it
- Access to deer returns in local area
- Access to deer management by people with ability and time, rather than people with bulging pockets. The forestry companies need to take action
- An effective management plan laid out at government level given to landowners requiring them to do returns and if not achieved allow professional management instantly to take place
- May need a change in legal context to require management of populations as is in place in other similar countries, with cull and population data supplied to SNH to inform culls, quotas and sustainable management
- A better understanding of deer populations/dynamics and how different habitat types are impacted (or not).
- Scottish Government should stop wasting public resources on land buy-outs and start investing in local economic, social and environmental outcomes by empowering local people to have access to local wild resources, such as wild deer. What matters is far less who owns land, but how that land is managed and who benefits. The Scottish Land Commission has a part to play in this as well. Forest Enterprise should be duty-bound to, where there is confirmed local interest, allow local communities to manage wild deer local to them. SACS has taken effective direction with Forest Enterprise in this regard with a new focus on local availability when considering deer lease tenders or contracts. Private forestry companies should also have an obligation to allow local people to manage wild deer local to them, again where there is genuine local interest. These local community deer groups can be part of landscape-scale deer management groups fulfilling statutory obligations, but directly benefiting local communities. Scottish Government should be investing in local expertise and larders. The way forward to SACS is clear.
- Incentivise bottom-up farmer-led collaborative management
- A national-scale plan for lowland deer, taking into account urban and peri-urban factors. The impact of the reintroduction of sporting rates, and whether this has an impact on landowners' willingness to engage with the issue, also needs to be considered
- There should be more of a media campaign with the likes of Landward, Countryfile, the Outdoor Programme picking up on the positive angles of deer management such as venison burgers, forest growth, healthy wild deer populations (not starving) as well as the politicians as I mentioned before
- SNH must lead in cohesive control
- Scottish Government and Councils need to assist DGMs with access to current areas denying access
- Actively involving landowners, and requiring that DMGs contain and minimum proportion of members who are landowners. 2. Reducing the extent to which stalking is monopolised by small numbers of people/syndicates
- Landowners should be forced to keep deer population low.
- Public engagement to show how we could manage deer in the lowlands, based on a Scandinavian model, with more acceptance of local culling by local people to dispel the current 'elite' status of deer management
- Support for local DMGs/ SNH. Insufficient staff to perform well.
- The sporting tax on landowners is a cost which does nothing to help the management of deer populations
- Easier affordable access to land for stalkers including forest land. Sporting rates should not be included where deer management is the only shooting taking place it is not sport it is needed and a requirement from Scottish Gov. Local Authorities need to be held

responsible by Government. The Government need to take more action with public bodies SNH have a role to play.

- More coordinated culling
- Meaningful threshold below which 'processed' carcass can be sold locally (i.e. needs relaxation of food hygiene legislation), removal of deer for 'pest' control in agriculture and forestry from 'sporting rates'
- Government need to do more to make local authorities manage deer on their lands. Government ministers need to be informed and get on-board with deer management. There are recreational stalkers who are not being utilised this needs to come from SNH
- For people to be educated in the deer management information. I think kids in the schools should be taught if we don't manage the deer there are lots of consequences for farmers, forestry etc.
- More information on deer populations both to the public and land owners/managers.
- Create a campaign to encourage people to get on board or behind deer management particularly the culling of deer
- Engagement with the public such as representation on the local group through community council or similar
- Further collaborative work to help improve the relationships between deer/land managers and policy makers/conservation agencies etc. It is both up to government. conservation organisations & the local deer groups (and individuals themselves) to work together for a common goal towards achieving sustainable deer management
- Large-scale slaughter should be stopped, proper use of end product. Game dealer should reject beasts at larder not fit for food chain
- Better action of shooters letting land owners have help
- If everyone else in high population areas culled as hard as I do, vacuum culling all doe season, there wouldn't be a problem. Excess deer would get sucked out of overpopulated areas and get culled.
- Is the deer management not effective already? Who suggests it isn't? Government/SNH?
- More freedom to cull sustainably. Better education of non-rural backgrounds to cull management strategies. Better infrastructure for venison meat and an encouragement to bring venison to market. Shooting rates are barely addressed in this survey. The introduction of shooting rates has devastated the confidence and growth of deer stalking economies.
- Mandatory cull records to be submitted. Game Dealers monitored. Access to pandering and chill facilities
- Too many dog walkers don't help. Bullets are getting expensive and game dealers are not taking deer at times. Poor price!
- A more cohesive approach by land managers
- To build an action group to identify problem areas and further help organise local stalkers to collaborate with landowners etc. the current LDNS do not do this at all ! As this has been spoken about at length in the past a revamped LDNS is required to further this to help provide an effective deer management process in the lowland areas
- SNH to coordinate deer management groups throughout Scotland
- More cooperation with Forestry Commission or its successor
- SLDG has offered a free service for seven years without uptake from any government body. Central government should change policy to at the very least ensure collaboration with local DMG's rather than waste public money on no better qualified contractors
- There used to be a Red Deer Commission and I think this was merged with SNH so this would be the appropriate regulatory authority able to foster relationships for joint working with key partners such as forestry companies and the FCS
- It could be argued that there is good sustainable deer management taking place in the lowland, particularly where forest crop protection is important - but it could be more effective. Better collaboration over certain aspects will help. Focusing of some limited funding to support the work of deer groups would reap dividends. Restructuring of rural

support with the demise of CAP should allow sensible redistribution of resources. The public and environment benefits of sustainable deer management are relatively well understood and justifiable so that should help lever some limited funding to free up the enthusiasm and willingness there is, I believe, out there amongst owners and managers and stalkers to work effectively. The importance of deer management to government has a very low public profile, the work of the Lowland Deer Panel is almost unknown, even in rural property circles, it does raise the question of whether there is a real commitment from government to see improvement or whether justifying the status quo is the main objective. Effective and sustainable deer management is essential to ensure the ongoing success of the forestry sector in the lowlands. The increasing threat of Sika with widening territories and northward movement of Muntjac are real threats which I do feel justify increased efforts to improve effectiveness, collaboration and results. A clear steer from government with a higher profile for deer management as an important responsibility of SNH is key. There seems to be no real lead on this.

- Legal required
- Further engagement and use of LOCAL deer managers. Recognise that you have skills and suitably qualified people who can carry out deer management and recognise that resource is sometimes a better option that displaced individuals paying large sums of money.
- Recognition and use of local stalkers/groups
- In a lowland setting, managing deer for sporting cannot be the same for farming when vegetable cropping takes place or small woodlands are planted without fencing. you can gather information on numbers but population modelling impossible
- A recognition of the costs of doe culling
- The Scottish Lowlands are so mixed in ownership with diverse views to deer. Bringing about a single approach to deer management is very difficult. SNH need to be more positive.
- proper land management with competent country people monitoring and where appropriate culling deer on their land - no external bodies/persons required
- Will not happen as too many stalkers have self-interest at heart and no collaboration
- Recreational stalking is now at an all-time high and I feel the local authorities could spend less on controlling deer populations if area were allocated for the purpose of deer control with set targets set by the authorities to qualified deer managers doing so for their own sport and enjoyment and with local council and government cuts it could cost the tax payer less if local authorities ran training to provide individuals with qualifications to carry out the culls at a fraction of the cost to what government agencies are costing
- Some-one should facilitate organization if it is required
- Public education - probably needs to be delivered via DMG's (where they exist).
- Landowners do not allow anyone without proper qualifications stalk their land
- People should have to do the DSC level 1 and 2 course before they are allowed to shoot deer.
- If required it should be the remit of local landowners and stalkers without government or SNH interference.
- A managed reduction in deer numbers
- Deer are managed in patches round my area, mostly forestry, or farmland with forestry. As we have many recreational stalkers, I suggest the deer are reasonably well controlled locally.
- I can only speak from my personal experience in this area, but, looking at the way SNP who treat countryside matters, there is certainly nobody suitable to try and interfere. SNH usually make a debacle of red deer management issues, so not them either, so I see no reason why Government need to interfere, let local stalkers, estates etc. deal with the deer population
- More forestry contracts
- Professional deer managements need to bring numbers down.

- More deer culls to increase natural regeneration of trees and it should be by the landowner or an organisation which had the capacity to do the work like SNH
- Better access for recreational stalkers to forestry commission owned land. Introduce a permit system that allows stalkers to pay to go out and stalk deer, this would reduce the burden on professional stalkers and would do away with expensive syndicates being formed who then control the numbers being shot.
- Free up more access to more recreational stalkers
- No one should take control!!!! Less the government or other large bodies interfere the better. They tend to make a mess of things.
- Landowners should be made to put a deer management plan into place. Part of their single farm payment should be accredited to this. Anyone who owns a piece of land with deer present should be made to send an annual cull return to SNH. Anyone with deer listed on their firearms certificate should be sent an annual questionnaire and cull return.
- Local deer management groups should have the say on the topic surrounding the deer management
- A much more scientific approach. Particularly on public land where deer are perceived to be part of the wildlife picture. Without proper evidence then it becomes very difficult for us to make any argument whatsoever for culling in urban and peri-urban environments at sites with a strong public interest.
- Research
- Make a change, otherwise this survey is worthless
- Population size, density and distribution data to be gathered as well as health profile of population and age distribution. Who should do this? Has SNH the resources? SNH at least would do the job well
- I really need to read the policy. I am going on hearsay that the police have been told to reduce the number of cars hitting deer by encouraging more shooting.
- Not sure it is such a big problem.
- Refer to my previous answer!
- From my perspective it seems to be working efficiently
- Coherent strategy put in place with local deer management group
- Deer management groups need to be more all-inclusive in membership not as cliques. They should be more pro-active in promoting deer management and undergo CPD for all members. Have at their core values the best sustainable management for deer.
- Involve landowners in survey and population monitoring and educate them on deer impact
- Stalkers, both professional and recreational could create more deer management groups within their local areas. they could be supported by F.C. and local authorities in obtaining proper larder facilities. Education of the public as to the need for deer management will also help.
- What is effective deer management? I've never seen this defined by either politicians or civil servant in charge of authorising it. The wild deer population in SW Scotland is by in large very healthy and thriving. So can this be construed as effective deer management? As far as the deer are concerned things aren't looking too bad.
- Campaign extolling the benefits of deer if they are properly managed; not a negative campaign highlighting them as mere problems.
- Better communication across the lowland area would be helpful in understanding the full impact of lowland deer species. Connected with this would be the identification of appropriate landowners and managers who can engage on deer-related issues - this is particularly important with regard to local authorities.
- Without legal change, that would be tricky. Education would be the normal route, however, those in need of, landowners and their employees, have a consistent record of rejecting environmentally friendly ideas.
- FCS should insist that a named controller who is on the Fit and Competent register is responsible for deer management on all areas where a woodland grant is paid

- The balance between regulation and the ability to shoot is finely balanced, I am wary of changes that will upset this balance in favour of the deer and reduce the ability of landowners to carry out deer control in a human, efficient manner. Bearing in mind lowland areas of Scotland in the Borders and Central Belt are very different to lowland areas in the north of Scotland. I do not think it one case will fit all scenarios.
- The landowners and forestry mangers should be made to attend. Local DMGs if not they lose their grants and the deer manager must be involved in the forestry estate work, again this should be included in any application for grant money
- Greater collaboration between landowners, especially those with woodland. Managing deer in the urban fringe needs particular attention. Where I live roe deer are abundant and are totally unmanaged.
- A voluntary code for all landowners to keep deer numbers across the region below a set threshold (e.g. 5 per km2). This would improve both the health of the deer population and the wider landscape.
- Like all over Scotland we need clarity on how many deer, what a reasonable herd should be. etc. etc. etc.
- Clarity that there is a problem rather than suggestions that they may have an impact on natural regeneration.
- grants should be withheld if good deer management practice is not followed
- Build up larger large carnivore populations. Reduce human population.
- Farmers and foresters
- First off we need a decent survey to assess numbers and distribution, you can't begin to deal with them until you have conclusions from that data.
- Better public awareness of the need for deer culling, education,
- Local landowners on a case by case operation, certainly not SNH as you cannot extrapolated deer management in the highlands with that of the low ground
- For a piece of land there needs to be clarity on who owns it, who manages it, who manages the deer there, who rents it, who else uses it. Land registration and visibility of this all sits with the Scottish Government. IACS data needs to be overlaid on this too and Sporting Rates data.
- Promoting venison as a healthy source of protein. Hopefully this will bring deer numbers down. Otherwise very little can be done if landowners can do what they want on their land
- Not convinced that current deer management is ineffective
- Deer management groups seem mostly ineffective due to low membership numbers or restricted membership. Some assistance is required to improve the ability to attract local members to deer management groups. Probably a greater involvement with government bodies and local charities.

Other comments (Question 28)

- As I have stated previously I am unsure of the definitions being applied to 'Scottish Lowlands' or the extent of the Panel's proposed remit and I have read the definitions put forward. The majority of deer populations residing below the highland boundary reside and are culled within commercial forestry plantations both public and private. Deer residing within 'lowland' peri-urban habitats present different problems than those I am familiar with
- Even in areas where culling is strong the public can see deer with little field craft required. It is more common to hear members of the public asking about wolf and lynx reintroduction to control deer
- Please stop talking about how to do it. Let's actually put the findings to work
- The expertise and ability for competent and sustainable wild deer management already exists in Scottish Lowlands. What is lacking is greater availability for local communities

of geography and extended communities of interest. What is also lacking is investment in larders and venison processing. That must change.

- At present, lowland deer management is fragmented. There needs to be a strategy to encourage collaboration, particularly in the farming sector. Through the development of work on farmer clusters in England, we think there is scope for the same in Scotland, backed by a facilitation fund (for instance through AE Climate Scheme), intended to provide co-ordination and expert resource to help the cluster members. With regard to deer management, we think the benefit of such an approach would help to: • Compile better records of lowland deer estimates, cull information • Consolidate lowland stalking activity and oversight through the clusters • Improve standards through cluster requirement for DSC qualifications • Monitor and respond to agricultural and woodland impacts • Develop a more integrated land use approach (e.g. farmers responsible for output from forestry grant scheme planting)
- There is a risk the approach attempts to duplicate the approach in areas where there are large, single ownership holdings, with greater economic use of deer. For the lowlands, this could mean a focus on large landowners like FCS/FE, but miss smaller owners, including those not engaged in farming, forestry or stalking, but who are a necessary part of the picture.
- Joined-up thinking in control measures is vital
- Some present practices by the Forestry Commission conflict with recognised Deer Management practices
- Lowland DMGs need to be very closely scrutinised
- We probably need a culture change if we are to bring about deer management which will result in acceptable impacts on new native woodlands, in the meantime, more fences will be required, and more RTAs will occur
- Speak with me please.
- Due to the number of landowners in the lowlands deer management proves difficult. A number of landowners in our area do not allow deer management even when deer are being killed on a regular basis along their boundaries. The use of recreational stalkers is not being utilised in a manner which helps deal with the deer in the lowlands.
- Filling in forms for shooting rates has taken me so much time in the last four months I have lost at least 15 stalking outings
- Most issues in the lowlands are related to localised areas. As such, the imperative for having a wide ranging collaborative effort on deer planning is probably not a high priority requirement, the priority is correctly to deal with the issue on the land which is affected
- There are deer being shot throughout the lowlands with no record to enable statistics to be gathered. The general public do not see a need for deer management and think it is not necessary.
- Public in general are anti culling, I've shot 36 roe off of 250 acers since January and there are still lots about. Farmer didn't think he had more than 8!!!
- Is this survey just another SNH "inspired" activity? What's wrong with the deer management system currently? I can imagine that the answer is "too many deer!"
- I repeat: this survey does not even raise shooting rates. The impact of the introduction of shooting rates has meant it is no longer viable to rent the stalking. This means that deer management is all cost and no return. It is not financially sustainable to control deer. Yet the public complain there are too many deer and the roads are dangerous - and it's our fault! Remove shooting rates and we can look at solutions to resolve the dilemma for land managers.
- Little factual knowledge is available. No sharing of numbers of animals, cull records or DVCs
- Roe populations exploded after the foot and mouth outbreak. no stalking then dealers paid low price after.
- A linked database for sharing information would help.

- To many to list the collaboration is very poor the lowland stalker is not asked on their take of the current processes brought forward by SNH, LDNS or FC showing little collaboration on their part
- Local authority responsibility is largely limited to its own land holding and areas, such as 'Common Good', that it manages.
- More culling and accurate information on population size is required
- Deer around towns are a problem - solution = use a local qualified free resource to manage the deer. Utilise the venison locally with local larder facilities, rather than using out of town contractors who charge per animal and the venison is sold to a dealer in Perth, Inveraray or Dumfries.
- With such fragmented private ownership and diverse land use as a result there cannot be a blanket management approach similar to the highlands. localised plans could be made where land use will not change but to work sustainably must have a minimum of 3,000 acres
- As stated 12 bore calibre legal but very unlikely
- It's time there was a recognition that deer management is completely separate to recreational stalking and as such needs different approaches
- Sika deer - these will prove to be the most difficult to manage and control - because their natural behaviour and diet conflict directly with public and private land management policies
- It seems to be a secret service and not enough info is available to the working man to access cull figures, population densities etc. I believe the red deer is Scotland most iconic species but is ill-treated by the government agencies as there not working closely enough with estates and landowners as they often have a better understanding of what there areas. Can hold population wise not some lad in an office in Edinburgh looking at maps and figures. Speak to landowners this year has been hard on all wildlife in the uplands, will the same cull targets be applied to an area that may have had severe winter mortality ?
- There could be a great way forward in deer management in Scotland, standards of culling, carcasses and higher training development needs to happen. With a more robust venison industry that is regulated more stringently by food standards Scotland
- Yes, keep Government well away from any interfering in such matters. We have multiple interests in lowland deer management. A farmer sees a pest, a forester sees vermin, an estate owner sees a thing of beauty, a contract stalker sees ££££'s, a member of the public sees Bambi, a stalker sees a thing to respect, SNH sees a number, SNP sees a way to get at the estate owner
- Look into management in the state of Montana, USA. They have pulled multiple species back from extinction, have two national parks, but still have regular deer culls.
- If population monitoring is started as a result of this initiative then it should be continued but with purpose and aims defined and on an ongoing basis so that trends can be identified and hopefully explained
- Send the "hunters" to Syria if they want to shoot.....that would be a fait "sport"
- I would prefer that the deer culled in the Central Belt could be processed and sold locally.
- FC policy of payment by carcase to contractors should be abolished to instead manage by % damage and higher female population cull statistics done
- Local authorities have large areas of land often close to trunk roads and urban areas which have large numbers of roe deer in them but there is no management of deer carried out. Local Authorities should wake up to their responsibilities and utilise some of the free expertise and experience of stalkers living in their areas.
- The work of the Lowland Deer Network Scotland has enabled many more disparate groups to connect and share experiences/information which is beneficial to the aim of better, more sustainable deer management.
- Deer management absolutely requires a fundamental change. It is clear from the ever increasing populations that current deer management practices have been failing in

spectacular fashion for decades. A major nationwide cull combined with the reintroduction of top predators (wolves) is necessary. This clearly links to necessary land reform and reforestation of our country.

- Each council should have a Deer Management Plan integrating their broad remit from managing deer on their own property to requiring DMPs for development land and road safety
- I am an aspiring stalker but I don't know how I can access any stalking locally
- Introduce locally appropriate large carnivores.
- A joined up management plan for lowland dee is required
- There is a case for deer management where it is needed, in established broadleaf cover, their presence is commensali
- Some form of natural habitat has to be provided for our local red deer population cutting down and clear felling forestry plantations and displacing the deer without a forestry plantations replacement plan will only lead to the erosion of the local deer population
- Current policy does not allow for efficient use of resources or finance with such programmes that are financially based incentives to control deer numbers.

Annex 7: Other current SNH activity relating to lowland deer

Project	Purpose	Action
Lowland deer "pilot project"	Better understanding and assessing the extent to which public interests are achieved by deer management in the lowlands.	• Phase 1 looked at the availability and utility of spatial data of relevance to public interests. The study identified further work including recommendations for future data gathering and greater stakeholder engagement. • Phase 2 aims to use intensive stakeholder engagement to better understand and test the extent to which different deer management models achieve the range of public interests in lowland Scotland • Phase 3 would consider whether different models could serve the public interest more effectively and efficiently.
Deer management planning	Encouraging the development and use of deer management planning at different scales, recognising the different pressures on the lowlands compared to the uplands	• SNH funded Advisory Contracts to develop 6 DMPs (up to this date) that are particularly focused on designated sites and features that are impacted by deer but are outside traditional deer management group (DMG) areas. These plans identify management options that will bring sites and features into favourable condition, specifically looking to achieve improved condition of woodland. Prescribed deer control is being undertaken by a Deer Group in one area. • The information gathered will feed into wider review of mechanisms of deer management in lowland Scotland and directly contribute to the restoration of native woodland action in the Scottish Biodiversity Strategy. • A further 2 DMPs have been or are close to be produced for Flanders Deer Forum and Eskdale & Liddesdale DG. • This includes work with Forestry Commission Scotland (FCS) to integrate deer management planning into Long Term Forest Plans and other grant-based schemes.

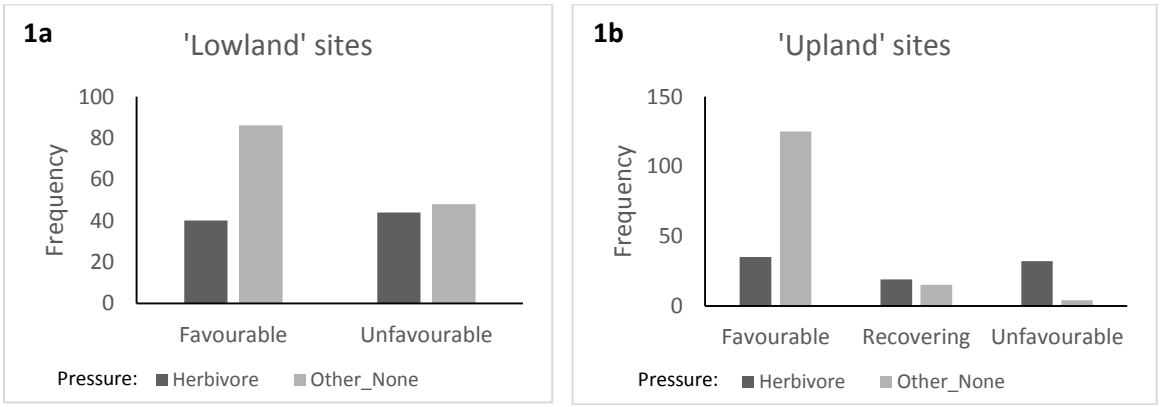
Lowland Deer Network Scotland	Providing a forum that networks those across the lowlands with an interest in deer management.	• SNH £10k annual contribution, matched by Transport Scotland, with £5k from FCS.
		• Two ongoing actions:
		  ○ Comms-focused events built around supporting local initiatives such as Deer on your Doorstep and DVC awareness-raising.
		  ○ training events primarily to support delivery of DSC 1 courses provided by lowland deer groups and to improving CPD.
		• Quarterly meetings to provide local briefings to the ~24 member Executive Committee.
		• Lowland Deer Group support (currently provided to 13 groups)

Local authorities	Supporting local authorities (LAs) to meet their obligations under the 'Deer Code', encourage greater understanding of the need for deer management and better realise the value of deer.	• Sought to raise awareness of the need to consider the 'Deer Code' via letter to LA CEO's from Chair of SNH in 2016. • Around 60 public agency staff from across Scotland including representatives of 13 local authorities, attended a Sharing Good Practice event hosted by SNH. • SNH funded bespoke Deer Position Statements to gain support from Council elected members developed or in progress for five councils. • Production of site specific DMP within South Lanarkshire Council. • Support to six local authorities who currently undertake deer management to varying degrees.
Casework	On going servicing of general deer management issues	• Led by SNH Operations staff supported by Wildlife Management team staff – specific problem solving around herbivore impacts on designated sites – most typically woodland SSSI sites in unfavourable conditions as a result of herbivore, often roe deer, browsing. • Engagement with FCS staff to address woodland impact issues and ensure VFM for grant support for woodland management / creation where deer browsing may have a negative impact. • Support in addressing impacts to the wider countryside through road safety concerns from Deer Vehicle Collisions (DVCs). • Damage to green space / private property or negative impacts to deer welfare. • Thermal imagery count programme in key areas predominately to facilitate deer management planning. • Issuing authorisations for out of season and night shooting • Regulatory functions (underpinning sustainable management at Flanders Moss)

Annex 8: Summary of analysis of SNH Site Condition Monitoring data

Since 1999, SNH has monitored a variety of protected areas, including Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). These sites are designated for specific habitats, species or geological features, which are monitored on a six-year rolling programme which records 'condition' on a seven-point scale. For the purpose here, the seven-point scale has been collapsed to three categories: favourable, unfavourable but recovering due to management intervention, and unfavourable, though in some cases due to small sample sizes we have combined the two unfavourable categories. Surveyors also attempted to classify the pressures that were impacting on the site, including herbivores.

In the lowland deer range 58% of 'woodland' sites were in favourable condition, 29% were unfavourable and 13% were unfavourable but recovering due to management intervention. Those still in unfavourable condition were significantly more likely to have signs of herbivore impact than those in favourable condition (48% versus 32%, respectively: χ^2= 5.81, P =0.016: (Fig 1a). In relative 'upland' sites 70% of features were in favourable condition, with 15% unfavourable but recovering and 15% unfavourable. Again, there was a significant difference in the percentage where negative herbivore impacts were recorded (χ^2= 62.2, df =2, P < 0.0001), with just 22% of favourable sites impacted, and 56% and 89%, in unfavourable recovering and unfavourable, respectively (Fig 1b).



Across all terrestrial sites (excluding those designated specifically for birds, reptiles and amphibians, and mammals) there were marked differences between local authorities in the proportion in favourable condition. For example, North, East and South Ayrshire, West Lothian and Midlothian all had ≤50% in favourable condition. Sample sizes were generally too small to make specific comparisons of the impact of herbivores. In Midlothian, agents other than herbivores were associated with the high level of unfavourable condition. However, in South Ayrshire herbivore impacts were associated with the high percentage of sites in unfavourable condition compared to sites in favourable condition (78% versus 18%, respectively: Fisher's Exact Probability Test P =0.0006). In the much larger contiguous local authority area of Dumfries and Galloway there was again evidence of herbivore impacts associated with unfavourable condition (60% versus 23%: P < 0.0002). Similarly, in the Scottish Borders, herbivore impacts were significantly higher in sites in unfavourable versus favourable condition (46% and 13%, respectively: P < 0.002). In these southern local authorities, it is possible that the impact may be more due to red deer, and in the Borders sika, too, rather than roe deer alone.

Red deer may also be the main herbivore associated with unfavourable condition in Argyll & Bute, Aberdeenshire and Perth & Kinross, though the overall evidence of herbivore impacts on site condition is weaker (P=0.03, P=0.04, P=0.08, respectively). In contrast, there were

no differences in herbivore impacts at unfavourable condition sites compared to favourable condition sites in Highland, Moray, Angus, Fife and Stirling (all $P > 0.95$).

Annex 9: Deer impact indicator matrix (from Putman, Watson & Langbein, 2011)

	Agriculture	Forestry & Woodlands	Conservation sites	DVCs	Disease
High impact	Agricultural damage has been reported in the management area and independently assessed as being of economic significance (>15% of crop area damaged beyond recovery, or applications for night shooting authorisations have been approved)	i) *Commercial Forestry* Deer impacts in the establishment phase years 1-10 resulting in loss of commercial crop or resulting in need for total replanting. Alternately significant bark stripping > 50% of final crop trees. ii) *Conservation and Amenity Woodlands* Leader damage recorded on >30% of stems Alternatively bark-stripping of >30% mature trees	i) *Woodland flora* **High impact recorded by Cooke/Tabor method** ii) *Moorland and open ground* Heavy impacts of grazing or trampling recorded using indicators given in DCS Best Practice Guides *iii) Designated Sites* Areas including Sites classified as Unfavourable (no change or declining) by NE or CCW as a result of deer impacts	Areas identified by DI DVC project as in the "high" or "very high" relative index of recorded DVC incidence over the immediately preceding 3 year period, or alternatively where a sudden increase in DVCs is reported.	i) *Notifiable diseases* Deer populations are observed to have significant levels of notifiable diseases (according to reports collated by Defra (AH) The only disease currently notifiable that would not be subject to statutory intervention is bovine TB; thus for bovine TB >10% of the deer populations in the management area. ii*) Zoonoses* There are currently no zoonoses that should influence management action.
Moderate impact	Areas where agricultural damage has been reported either to DI or NE but not necessarily assessed as being of economic significance	i) *Commercial Forestry* Partial browsing damage resulting in reduced value of between 25 and 50% of final crop trees. ii) *Conservation and Amenity Woodlands* Leader damage recorded on <30% of stems Evidence of advanced regeneration	i) *Woodland flora* **Moderate impact recorded by Cooke/Tabor method** ii) *Moorland and open ground* Moderate impacts of grazing or trampling recorded using indicators given in DCS Best Practice Guides *iii) Designated Sites* Areas including Sites classified as Unfavourable recovering by NE or CCW as a result of deer impacts	Areas identified by DI DVC project as of "medium" in relative index of DVC incidence recorded during the preceding 3 year period	Areas with recorded incidence of bovine TB in wild deer of 5-10%.

Low impact	Areas where there are no corroborated reports of agricultural impacts	i) *Commercial Forestry* Little or no recent damage to trees during establishment phase. Alternatively bark-stripping <25% of final crop trees ii) *Conservation and Amenity Woodlands* Little or no damage to growing stems; clear evidence of establishment of natural regeneration	i) *Woodland flora* **Low impact recorded by Cooke/Tabor method** ii) *Moorland and open ground* Light impacts of grazing or trampling recorded using indicators given in DCS Best Practice Guides *iii) Designated Sites* Areas including no sites classified as Unfavourable by NE or CCW as a result of deer impacts	Areas identified by DI DVC project as being within the "low" or "very low" category of DVC incidence d recorded over the preceding 3 year period.	Areas with a level of bovine TB in wild deer <5%

Note: The Impacts Matrix was developed as a tool for land managers in England to identify when and where changes in management are required to reduce negative impacts of deer. It does not yet include criteria for deer welfare, as there is no statutory requirement to consider deer welfare in England. The matrix would require updating and an additional welfare criterion if it is to be used in Scotland in the current form or as a performance indicator tool to support the Code.