Cairngorms, Speyside Deer Management Group

Deer Management Plan

Ecological Land Use Consultancy

Cairngorms Speyside Deer Management Group:
Deer Management Plan

1 Introduction

This Deer Management Group Plan provides the policy framework and strategic guidance, presents the issues affecting deer management and integrates tactics for co-coordinated management.

The managers of the estates that make up the membership of the Cairngorms, Speyside Deer Management Group (Appendix 1) have come together to make this plan for the purposes of,

1. Enabling them to progress co-operation between members
2. Identifying the main issues about Red Deer management and agreeing a broad strategy that will address them and will be implemented by members
3. Communicating the strategy to the wider public as well as those who are new to the work of the group, such as new estate and agency staff.
4. Providing an operational plan that will determine future working, and act as a framework for the agenda and minute for meetings.
5. Providing a review process

They have adopted the aims of the Cairngorms National Park as their own aims in so far as they relate to deer management and these are:-

(a) to conserve and enhance the natural and cultural heritage of the area.

(b) to promote sustainable use of the natural resources of the area.

(c)) to promote understanding and enjoyment (including enjoyment in the form of recreation) of the special qualities of the area by the public, and

(d) to promote sustainable economic and social development of the area's communities.

This Deer Management Plan (DMP) aims to include the principles of managing all species of deer. However, red deer populations range more widely than roe deer, utilizing properties under different ownerships and management regimes. This aspect creates particularly challenging issues and therefore red deer are the main focus of this current plan. As coordinated red deer management becomes more established, and this plan is reviewed, more consideration should be given to roe deer. Red deer are important to our natural and cultural heritage as well as providing a basis of land use, management, and employment in the glens. They are a great asset to the Cairngorms.

Historic and recent concerns about the impact of red deer have been related to over grazing and the prevention of woodland regeneration. Much progress has been made and continues to be made in addressing these concerns. From the 1960's sheep reductions/removal took place and from the mid 1980's several of the larger estates in forest areas began to reduce red deer populations. Locally, rabbit populations have also been controlled and generally grazing impacts are considerably less than in past decades.

2 Objectives of this Deer Management Plan

Part 1 of this DMP sets out the general policy and broad objectives for deer management in the Cairngorms Speyside Deer Management Group (CSDMG) area based on land use objectives, and includes a consideration of deer management in adjacent areas where this is considered to impact on the activities of members of the CSDMG.

Part 2 describes the important issues currently facing deer managers across the various land use sectors and describes options and approaches being adopted to reconcile these.

Part 3 builds on the general policy and objectives and develops the issues into strategic objectives.

Part 4 presents the tactical and operational structure, including data requirements required to drive the day-to-day management of deer within the CSDMG area.

Part 1: Policy and broad objectives

3 General Policy and Objectives

A map showing the estate boundaries, Cairngorms National Park boundary and the main features of the CSDMG area is provided as Appendix 2. The policies and objectives of the CSDMG are,

To maintain native populations of deer at levels that will permit the sustainable delivery of all land-use objectives including nature conservation, traditional sporting deer-stalking, farming, forestry, and tourism as important environmental, social and economic activities within the Cairngorms National Park.

Use of the word, 'sustainable', implies the acceptance that red deer will be maintained at different densities in different areas and that these densities will contribute to the imposition of a biotic climax on the locally occurring vegetation that will, in some areas prevent succession to woodland and in some areas may convert heather moorland into herb-rich bent and fescue grasslands. Throughout the area, however, there will be an objective to enhance, maintain and restore biodiversity and range condition within the generally accepted habitat types.

4 The Biological Landscape

The central Cairngorms contain the extensive high-level plateaux that are bordered by vertical cliffs and deep corries. The summits and plateaux support important alpine and arctic habitats. These include the three-leaved rush and *Rhacomitrium* heaths, which are the most extensive in Britain and are fragile and sensitive to disturbance by people and grazing animals. The more sheltered snow bed communities include many rare and specialised mosses and liverworts. The mountain vegetation supports a wide range of specialised and rare invertebrate and vertebrate animals. Specialised birds include the dotterel, snow bunting and ptarmigan.

Dwarf-shrub heaths grade from the high elevation wind-clipped heaths to the lower slopes that are dominated by deep heather. Blanket bogs occupy suitable sites and extend to higher elevations in the Cairngorms than elsewhere in Britain. Cliffs and rock outcrops that are inaccessible to deer and sheep support habitats that are very sensitive to grazing impacts. These include tall herb communities, arctic-alpine plants and montane scrub. The lower elevations are dominated by moorlands with dry heather dominated heaths and wetter heaths and blanket bogs. Many of these habitats are maintained by heather burning and grazing, without which they would revert to woodlands.

On the lowest slopes woodlands are dominant. These include the largest native pine forests in Scotland and significant areas of non-native forests. The forests support capercaillie, crested tit, Scottish crossbill, black grouse, red squirrel, pine marten, juniper and a range of scarce vascular and non-vascular plants. In the absence of muirburn and with low levels of grazing, forests would expand onto higher elevations forming wind-blasted tree lines.

Freshwater and related habitats are important in the Cairngorms and there are concerns over the conservation of Atlantic salmon, freshwater pearl mussel, otter and water vole. Appropriate

levels of grazing can help to maintain riparian habitats, but heavy grazing on the banks of watercourses and lochs can have detrimental impacts on riparian plant communities and their associated fauna.

Farming is an important commercial activity, especially on the low in-bye ground and grazing by deer can cause additional impacts to agricultural land.

5 Land Use Policies, Legal Framework and Strategic Directions

This section introduces national policies and the legal background affecting land management in the area followed by the strategic directions currently being applied. Detailed information is provided on each of these in Appendix 3.

Individually, the Deer Commission for Scotland (DCS), Scottish Natural Heritage (SNH), Forestry Commission Scotland (FCS) and the Scottish Executive Environment & Rural Affairs Department (SEERAD) have different grant and regulatory powers which they use to promote and ensure sustainable management of grazing animals.

However, there are many circumstances where, used together, these powers can deliver more effective solutions. DCS, SNH, FCS and SEERAD are therefore combining efforts through Joint Working to better promote effective land management and protection of wider public interests. Joint Working between Agencies brings together the key mechanisms to enhance by use of targeted incentives, or if necessary, halt deterioration by regulatory action.

5.1 Cairngorms National Park

The CSDMG has adopted the aims of the National Park as they relate to the management of deer (Section 1). The National Park Authority seeks to ensure that the National Park aims are achieved in a co-ordinated way. In the context of these aims, natural heritage includes the flora and fauna of the NP, its geographical and physiographical features and its natural beauty and amenity.

5.2 EU legislation on protected areas and species.

The 'Habitats and Birds Directives' present European Union legislation aimed at promoting the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements.

5.3 UK Legislation on protected areas and species.

The following UK legislation provides an important basis for developing nature conservation policy.

- Conservation (Natural Habitats &c) Regulations 1994.
- Nature Conservation (Scotland) Act 2004.
- Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004.

5.4 Deer (Scotland) Act 1996

5.4.1 The Deer Commission for Scotland

The Deer (Scotland) Act 1996 established the Deer Commission for Scotland (DCS). The function of the DCS is to further the conservation, control and sustainable management of all species of wild deer in Scotland.

'Damage', as used throughout the Act, is interpreted as a 'change of state that is regarded as detrimental to legitimate objectives'. Consequently, the assessment of damage is dependent on the legitimacy of the objectives in question and the seriousness of that damage as related to local circumstances

5.4.2 DCS Sites for Assessment and Priority Sites

DCS implement policy through a three-part process to identify sites where unacceptable damage is occurring and where there is a high priority for improved deer management. This will usually then become the subject of a management agreement (under Section 7 of the Deer (Scotland) Act 1996), with DCS, aimed at resolving the problem.

5.4.3 Deer Control Agreements

Under Section 7 of the Act, voluntary agreements can be made between DCS and owners/occupiers aimed at achieving the control of deer populations to meet local land use objectives. Section 8 of the Act provides DCS with statutory powers to establish Control Schemes that in turn enable the compulsory control of deer populations if required.

5.5 The Cairngorms Local Biodiversity Action Plan

The current Cairngorms LBAP lists all species and habitats listed by the UK Biodiversity Action Plan Steering Group known to occur in the Cairngorms area. Distribution maps and information on the status, significance and population trends are provided. The CSDMG supports the objectives of the Cairngorms LBAP.

5.6 Scottish Forestry Strategy

In the Scottish Forestry Strategy**,** published by the Scottish Executive, conservation is covered under one of five major *Strategic Directions* titled, 'To make a positive contribution to the environment'.

5.7 Local Forestry Frameworks

The Cairngorms Forest and Woodland Framework provides a vehicle for delivering the National Park's woodland objectives.

5.8 Estate Plans

Some estates have developed written plans covering aspects of estate management including Forest Plans, Biodiversity plans and Deer Management Plans. Some estates will use this DMP as their estate DMP.

5.9 Natural Heritage Futures

Natural Heritage Futures (NHF) outline a contribution toward sustainable development published by Scottish Natural Heritage (SNH). The documents outlining NHF provide a vision for the sustainable management of Scotland's landscapes to 2025.

6 Statutory designations within the CSDMG area

A detailed account of the designated sites can be found in Appendix 4.

6.1 European/ International Designations

There are six Special Areas for Conservation (SACs), 4 Special Protection Areas (SPAs) and one provisional SPA (pSPA) within the CSDMG area. These sites are collectively known as Natura 2000 sites and originate in the 1992 EC Habitats and Species Directive 1979 EC Wild Birds Directive respectively. SPAs are designated for the protection of birds that are considered rare or vulnerable within the EU, along with their habitats, and SACs for the protection of rare, endangered or vulnerable natural habitats and species of wild plants and animals other than birds within the EU.

6.2 Sites of Special Scientific Interest

There are 16 Sites of Special Scientific Interest (SSSIs) in the CSDMG area. These are sites that are special for their plants, animals, habitats, geology or landforms, or a combination of these. Many underpin Natura 2000 sites. Some of these sites such as Cairngorms and Abernethy cover relatively large areas whereas some cover only a few hectares. SNH work in partnership with the owners of SSSIs and others to secure positive management for the features for which the sites have been designated.

6.3 National Scenic Areas

National Scenic Areas (NSAs) are those areas of land considered of national significance on the basis of their outstanding scenic interest or unsurpassed attractiveness that must be conserved as part of the country's natural heritage.

Part Two: The Issues

7 Summary of issues

A number of issues have been identified that require further discussion by the DMG in order to confirm their relevance and to determine priorities. All of the issues are recorded in Appendix 6. Those considered to require further explanation are detailed below.

7.1 Achieving deer densities that support cultural, social, economic and environmental objectives

The main issue arising in the area relates to the reconciliation of the unacceptable grazing impact on the natural heritage in some designated sites, and the requirement of sporting estates to provide accessible numbers of red deer stags to achieve their sporting objectives. Roe deer, sheep, hares and rabbits are also important but the wide-ranging behaviour of red deer especially requires a co-operative approach by neighbours over large areas (Tables 1 and 2). The approach taken here is to define the problem areas and to then consider whether red deer numbers can be reduced without jeopardising the sporting requirements of estates. The areas of concern have been defined by SNH through their Site Management Statements (7.1.1 below) and through the DCS 'Priority Sites' procedures (7.1.2 below and see 4.3 above).

7.1.1 Site Management Statements

SNH have now produced a site management statement for all SSSIs and established a national system of site condition monitoring (SCM) on a 6-yearly cycle. SCM enables the condition of the special features of the site to be assessed over the long term in order to highlight where a change in management may be required. This monitoring will be important in assessing the impacts of deer and other grazing animals and it is important that landowners are involved in the process. Tables 1 and 2 present summarised information extracted from SNH Management Statements for SSSIs to indicate the locations of specific issues with regard to deer in the two proposed sub areas (see Section 9.2). All SSSI site management statements are due to be reviewed over the next five years as a requirement under the Nature Conservation Act.

Table 1 Summary of condition and requirements on SSSIs in western sub-area

SSSI	Issue	Cause	Year of SCM assessment	Proposed solution
Drumochter Hills	Overgrazing, trampling and burning	Sheep, deer, hares	2003-05.	Monitoring – possible reduction in grazing. Baseline survey in 2006/07
Cairngorms	Overgrazing – impact on natural tree-line	Red deer	2002 2004	Input to DMP – reduced grazing impacts
Loch Etteridge (Phones)	None deer-related		N/A	
River Spey – Insh Marshes	Grazing management	Mainly domestic stock	2001-02	Monitoring. Grazing management
River Feshie	None specifically deer-related		2002-03	
Northern Corries	Woodland and montane scrub regeneration	Red deer and reindeer	2001 2002	Management of deer densities. Monitoring
North Rothiemurchus	Overgrazing in some areas	Red and roe deer	2002	Input to DMP Monitoring
Alvie	Overgrazing	Sheep, deer, rabbits, hares	2001	Grazing management

SCM data reflects conditions at the time of measurement and at least three years has elapsed since the most recent of these. Changes may have occurred during the period since assessment and these changes will be reflected in subsequent monitoring. The Site Management Statements for all three of the Cairngorms, Northern Corries and North Rothiemurchus Pinewoods all contain a common recommendation: "Work with DMGs, DCS and owners to encourage the regeneration of woodland and montane scrub by management of deer populations within an agreed DMP"

Northern Corries

For the Northern Corries SSSI, the SMS includes the following " Grazing is principally by red deer and at present is allowing natural regeneration of pine and other species. The CSDMG is currently producing an updated plan for deer management across this area and this should encourage continued woodland regeneration and the development of montane scrub ".

North Rothiemurchus

For the North Rothiemurchus Pinewoods SSSI, the SMS states "Grazing by red and roe deer is currently the most influential factor in the management of the native pinewoods and management of the deer population within the site and in the surrounding areas is a key issue influencing habitat condition. Existing grazing levels are allowing tree regeneration to occur in some areas".

Cairngorms

For the Cairngorms SSSI, the SMS states "Past and present levels of grazing, largely by red deer, have had a major impact on habitats in the site. Evidence of this can be seen in the lack of natural regeneration in many areas of the Caledonian pinewoods, the absence of a "natural " tree line, the lack of a shrub layer in the forest and the paucity of broad-leaved trees throughout the existing

woodlands. The removal of vegetation through over grazing and trampling has also affected heathland, wetland and plateau communities, where the soil has become exposed and erosion is occurring and the extent of some communities (eg montane scrub) has been reduced. Large concentrations of deer can result in trampling of dotterel eggs and chicks thus affecting their breeding success and, deer dung can cause enrichment of high altitude habitats. There is also a potential for erosion to occur where numbers of deer are high. However, concerted efforts are now being made to manage deer impacts in large parts of the site around Invereshie/ Inshriach, Upper Glenavon, Glenfeshie, Rothiemurchus and in the Mar Lodge woods where native woodland restoration by natural regeneration is a management priority. Deer Management Groups now play an active role in the co-ordination and integration of the management of deer across the site.

In summary, the condition of native pinewoods was assessed as not being in good condition at these three sites at the time of assessment. However, the real and potential impacts of red deer continue to be addressed and SNH currently see no reason to review management. Updated data on the condition of vegetation will be available from subsequent SCM assessments.

Table 2 Summary of condition and requirements on SSSIs in eastern sub-area

SSSI	Issue	Cause	Year of SCM assessment	Proposed solution
Ladder Hills	Overgrazing and burning Not serious	Mainly sheep, deer	1999 2004.	Monitoring
Inchrory	Overgrazing	Rabbits, red deer, mountain hare	2003	Control of rabbits and deer. Management of grazing impacts. Monitoring.
Eastern Cairngorms	Overgrazing on tree regeneration (Mar Lodge)	Red deer	2002	SNH Management agreement with Mar Lodge
Greag nan Gamhainn	Management of grazing (rabbits and cattle)	No problem	2002	Monitoring.
Abernethy	Overgrazing on montane habitats and broadleaved trees	Red and roe deer	2003	Deer management Input to DMP
Glenmore	None deer-related		2000	

Inchrory

Management of the Inchrory SSSI raises some difficult issues relating to the regulation of rabbit and red deer grazing to permit woodland regeneration while at the same time maintaining the open grazed habitats. The SMS includes the following; "Continue to encourage the control of rabbit populations, to allow the flowering and fruiting of characteristic herbs and to encourage tall herbs, scrub and woodland and juniper scrub to regenerate and develop naturally in appropriate areas" and, "Continue to encourage the control of deer populations, within targets set by the Cairngorms Speyside DMG for each estate, to allow the flowering and fruiting of characteristic herbs and to encourage tall herbs, scrub and woodland and juniper scrub to regenerate and develop naturally in appropriate areas". Glenavaon Estate has demonstrated a strong commitment to rabbit control

and this continues to be a significant on going management commitment. Red deer densities are also at a relatively low level.
The management challenge is highlighted in the following statement from the SMS (2003); "The site has been and continues to be subject to a high grazing pressure from a combination of rabbits, red deer and mountain hare, although the contribution to grazing impacts in different parts of the site from each species is unclear. Many of the habitat interests have apparently benefited from the recent reductions in rabbit grazing but heavy impacts in the form of scuffing and poaching are still evident in some areas, including sensitive habitats such as tufa springs, calcareous flushes and associated grassland. This has locally led to an abundance of meadow thistle, ragwort and other weeds. In the future if the levels of grazing in the open ground habitats continues to fall and the cover of dwarf shrubs, shrubs and tree species increases, the species composition of some of these habitats is likely to be affected significantly. If grazing falls to levels which will allow woodland regeneration and expansion, careful management of stocking levels may be necessary to maintain open ground habitats through preferential grazing…"

Ladder Hills
For the Ladder Hills SSSI, the SMS (2004) states that "Red and Roe deer are seen although there is no hefted red deer on the hill and their contribution to the grazing is limited", and "A survey in 1999 concluded that whilst grazing pressure from sheep (and deer) is sometimes high, in general it does not seem to be having a deleterious affect on sub-alpine, alpine and snowbed heaths. The effects on dry heath have yet to be systematically assessed."

Eastern Cairngorms
For the Eastern Cairngorms SSSI, the SMS (2002) states, "High deer numbers have until recently prevented tree regeneration and necessitated the erection of deer fences. The management agreement with the National Trust for Scotland is aimed at reducing the red deer population to a level that encourages regeneration without fences".

7.1.2 Priority Sites: the Feshie Catchment Section 7 Agreement

Within the CSDMG area, the Feshie Catchment is the only current DCS Priority Site and an associated Agreement under section 7 of the Deer (Scotland) Act 1996 is in place. This Agreement covers Glenfeshie, Inshriach, Invereshie, Killiehuntly and part of Mar Lodge. The Agreement was established in 2000 and is due to expire in 2010.

Glenfeshie estate was encouraged by Forestry Commission Scotland (FCS) and DCS to enter into this agreement in order to prevent damage to the natural heritage at Glenfeshie. The Agreement underpins the Glenfeshie Estate Deer Management Plan (May 2000) and the Glenfeshie Woodland Grant Scheme (WGS). A key aim of the Estate Deer Management Plan and the Glenfeshie WGS is to regenerate and expand the Caledonian pinewood present at Glenfeshie.

In the initial 3 years of the Agreement (2000 – 2003), success was measured against the achievement of target deer culls and target deer populations. It is intended that success over the remaining period of the Agreement should be determined by habitat response. DCS is using the performance of existing tree seedlings as a proxy indicator of the overall condition of the Natura woodland interests present at the site. DCS carried out Tree Seedling Surveys in 2003, 2004 and 2005. SNH and Glenfeshie estate are also monitoring the performance of tree seedlings.

The habitat target agreed within the section 7 is " the positive average growth of sufficient seedlings and trees currently below browse height". There was no overall positive change in the height of seedlings surveyed by DCS in 2004 and 2005.

Glenfeshie estate is pursuing multiple objectives that demand economic, ecological and social sustainability. The presentation of sporting stags to paying clients provides a significant part of the financial income to support the employment of staff. However, the main wintering area for red deer, the main glen, is the key area for the regeneration of the native woodland and is the focus of a Natura 2000 designation and a Forestry Commission Woodland Grant Scheme. Although habitat targets have been introduced, deer numbers remain to be considered a threat by DCS and deer numbers continue to be reduced. As a consequence the initial sporting requirement for Glenfeshie estate was reduced from 80-120 to 60-80, and is now fixed at 60. Further reductions of red deer on Glenfeshie and on other estates within the Agreement may affect the numbers of red deer on adjacent range and this is taken account of in this DMP (Section 11).

Estimates of red deer occupancy in the main glen (by Glenfeshie Estate) indicate a reduction from 34 deer km^{-2} in 2000, 19 deer km^{-2} in 2002, 12 deer km^{-2} in 2003 and 8.6 deer km^{-2} 2004. However, in 2005, in spite of a continuing reduction in many parts of the main glen, the average occupancy had risen to 11.6 deer km^{-2}. Occupancy/density generally remains too high to guarantee tree regeneration although some seedlings are beginning to emerge from the surrounding vegetation in some places.

7.2 Defining overgrazing relative to land use objectives

Appropriate densities of deer depend on local land use objectives. For example, native woodland regeneration may require average densities (occupancy) of 4-8 deer km^{-2}, while heather moorland will be sustained at about 6-15 deer km^{-2} and fertile grasslands at in excess of 15 deer km^{-2}. Each of these densities is appropriate to the specific land uses described. Overgrazing is defined here as a level of grazing impact that inhibits or prevents the achievement of objectives.

Because high tree densities, growth rates and tree form are relatively less important in naturally regenerated native woodlands than in areas of planted seedlings with commercial objectives, native woodlands can withstand higher levels of grazing/browsing. The pursuit of commercial forestry objectives, which require the virtual elimination of deer, should be avoided in all but exceptional circumstances.

7.3 Achieving habitat changes

If changes in land use objectives that require changes in deer numbers or densities are planned, methods for adjusting deer densities and appropriate timescales for these require discussion and agreement between members of the DMG. The availability of public support and lead public agencies should be clarified.

7.4 Avoidance of adverse impacts on neighbours interests

Where the maintenance of deer densities to achieve local objectives impacts on neighbour's interests, discussion at a local and CSDMG level is required. Opportunities for co-operative culling operations should be discussed and might include seeking agreement on the following;

- local numbers and density targets
- public access routes and recommendations
- the need and location for fences
- areas for tree planting
- areas for habitat restoration
- areas for access and culling by neighbours
- use of diversionary tactics eg scaring deer from sensitive areas
- provision of sanctuary areas to retain deer and to provide viewing
- selective culling objectives and tactics

In the western sub-area there is a clear need for collaboration between estates in order to achieve agreed cull targets (see Part 4 of this DMP).

7.5 Deer population monitoring

The use of direct counts by helicopter and ground based teams and by dung counts in appropriate habitats are important tools for ascertaining deer density/occupancy data. These will continue to be a requirement for the basis of population models.

7.6 Stag: hind ratios

Potential conflicts between acceptable densities of red deer to meet sporting and ecological requirements can sometimes be reconciled by modifying sex ratios. For example, it may be possible to achieve a sufficiently robust stag population with relatively fewer hinds.

7.7 Lack of mature stags

A lack of sufficient stags greater than six years of age may jeopardise the cultural/socio-economic objectives (ie presenting trophy quality stags). Reasons for a lack of mature stags need to be investigated.

7.8 Public understanding of deer

There is a perceived lack of public knowledge and understanding about the role of deer in land management and conservation and their contribution to local economies. An educational policy and information programme would help to raise awareness.

7.9 Ability of people to view wild deer

There is a perception that tourist wish to see wild animals, including deer. Careful culling and the establishment of sanctuary areas, where deer can remain unmolested at all times of the year, will help.

7.10 The contribution of deer to local economies

This topic is poorly understood and there is a lack of quantitative information. The CSDMG Currently monitors total and sporting culls. Statistics on direct employment in deer management are available (but not consistently documented and reviewed by the CSDMG); however, the total contribution of deer and deer related activities to local economies (eg Hotel accommodation, restaurants, hill walking, purchasing from local shops) is unknown. It is very important that such information is available and a commissioned study would be valuable. The CSDMG will approach the CNPA with regard to obtaining funding for such a study.

Part 3: Developing a Strategy

8 Deer and Land Management

8.1 The deer species and their ecological importance

The native red and roe deer occur within the area and sika deer are beginning to colonise in some places. Deer generate a range of economic, social and environmental benefits within the area. Native deer species are important components of woodland ecosystems and are keystone species, given their important role in creating a diverse structure that favours many other woodland species. It is ecologically desirable to maintain deer populations in most habitats, given the beneficial effects of particular levels of grazing density. Red and roe deer are an important part of the natural heritage of the area, and will be properly managed and conserved for the future.

On open range and above the natural tree line, deer have had a continuing variety of effects on their habitats. Although at appropriate densities they will maintain habitats, at high densities they can reduce botanical diversity, for example driving a change from heather moorland to grassland and at low densities can allow vigorous coarse vegetation to expand, thus reducing species diversity. There remains a need to develop a common understanding of what is meant by overgrazing in different habitats and there is a need to reduce pressure in the areas of remaining overgrazing.

8.2 Socio-economic and cultural importance

Many estates make a significant amount, and some all, of their income from sporting, with associated benefits for the local economy. The social and economic contribution of sporting management to the estates and the local economy must be taken into account in the development of deer management policies. The maintenance of appropriate densities of deer to sustain the economic, social and environmental objectives and the sensitive management of land for game can have valuable positive impacts for nature conservation and landscape quality. For example, the sound management of moorland for grouse and deer will support a wide range of other wildlife including insects and small birds associated with moorlands, birds of prey such as peregrine falcon, merlin, Hen harrier and golden eagle and mammals including water vole, field vole, mountain hare, deer, fox, stoat, weasel and otter.

Additionally, deer stalking is of cultural significance, being a historic and traditional use of the land. This is especially important where traditional techniques, such as the use of ponies for carcase extraction are still used. Although the hunting of deer is widespread throughout the world, the traditional practice of stalking on the open hills of Scotland is probably unique.

Deer management and sporting activities provide employment, which helps to sustain local communities. They are also an important tourism asset, providing enjoyment to many visitors. These important socio-economic benefits have not been adequately quantified and this issue is currently being addressed by the CNPA. It is important that the CSDMG remain engaged with the CNPA as this develops.

There may be more public involvement in deer management in future years due to opportunities to provide FC funding for deer management measures under the new Scottish Forestry Grant Scheme.

8.3 Impacts

At inappropriate densities deer can cause serious damage to the natural heritage, farmland, moorland and woodland and can contribute to road traffic accidents. Very high densities can seriously compromise their own welfare. DCS estimates of the densities of red deer on the open range (Tables 3 and 4) indicate wide variations within the area due to variations in land quality, management objectives, and the presence of other herbivores.

Woodland deer densities are estimated from dung counts as part of the Forestry Commission Scotland Deer Management Plans. Earlier estimates in Glenmore and Inshriach forests indicated higher densities than are compatible with woodland regeneration or the enhancement of biodiversity. However, these densities have now been reduced to the target densities of 5-10 deer km^{-2} in both Inshriach and Glenmore forests.

Deer numbers at Glenfeshie are currently being reduced to facilitate the regeneration of the native pinewoods. Deer population sizes have been reduced in some areas, such as Abernethy, Glenmore, Invereshie and Rothiemurchus, as a result of increased culling to reduce grazing impacts, resulting in considerable localised improvements in woodland regeneration.

8.4 Deer fences

The 'Joint Agency Statement and Guidance on Deer Fencing', adopted by DCS, FCS, SNH and SEERAD in June 2004 (Appendix 7) presents the following policy statement;

"Deer fencing, when properly planned for, constructed and maintained, can be an effective way of controlling deer to allow different land-uses to co-exist in close proximity and to protect public safety.
Consideration must be given to the full range of options for achieving appropriate deer densities before deciding on whether or not to approve or financially support the use of deer fences. Decisions on whether to cull or fence should take account of objectives, costs and the pros and cons of each method. Where deer fencing is considered an appropriate approach, the process for identifying, assessing and mitigating any adverse effects, as set out in the following guidance, is to be followed. In circumstances, where it is not possible to satisfactorily mitigate adverse effects, approval or financial support should not be given. Otherwise, the final decision must be based on cost-effective long- term solutions, including the cost of fence removal. Deer dependent on the fenced off area should be culled."

Deer fencing by CSDMG members will take account of this policy and recommendations. Deer fencing can be a valuable management tool. Fencing can effectively protect vulnerable habitats including woodlands, wetlands and riparian areas from overgrazing, especially where there are relatively high densities on adjacent range. Strategic fences can limit the need and reduce the total length of fences by enclosing several vulnerable patches. However, in some circumstances fences can present problems and in others they may be unacceptable. Fences can impact visually

on the landscape and act as a barrier to access. Ecologically, fences can adversely affect woodland ecosystems due to the undesirability of a total exclusion of grazing, though this can be modified by reducing the time of exclosure. Fencing can also cause mortality in vulnerable bird populations, especially woodland grouse, due to birds flying into inappropriately sited fences. The use of appropriate specifications of fences, including the use of electrified wires and marking fences, can mitigate adverse impacts.

9 A Strategy

Information presented so far indicates that deer, mainly red deer, are responsible for adverse and unacceptable impacts on the natural heritage *in some areas.* Legal obligations largely through Natura 2000 requirements, the Deer (Scotland) Act 1996 (Priority Sites) and a number of management agreements including FCS WGSs indicate a need to reduce the adverse impacts of deer. While a reduction of impact and the achievement of acceptable habitat conditions are a primary aim, this is invariably related to a requirement to reduce deer densities *in some areas.* The CSDMG has agreed to address this issue.

The views of a number of member estates have indicated specific requirements in the number of mature stags required each year for sporting purposes and some have indicated a readiness to expand the red grouse shooting at the expense of red deer stalking (Appendix 8). Invariably, as red deer numbers are reduced, the significance of roe deer becomes more noticeable and their impact on woodland regeneration can equal or exceed that of red deer in some situations.

This strategy is developed on the basis of trying to provide for the sporting requirements of member estates while reducing red deer impacts to a level at which they are compatible with all land use objectives, especially where damage is known to be occurring. In some cases the reduction of deer populations is intended and expected to improve moorland management for red grouse.

9.1 Strategic Principles

The following strategic principles are proposed;

1 The CSDMG will promote the management of wild deer in pursuit of the following objectives;

- sustainable range management including the conservation of the natural heritage
- sustaining the cultural heritage of sporting estates
- the achievement of all forestry objectives
- sustaining the socio-economic basis of deer stalking
- sustaining access opportunities
- sustaining landscapes

In this context the CSDMG will seek to maintain close working relationships with the public sector agencies including CNPA, DCS, FCS, SNH.

2 The CSDMG will support and promote the adoption of good practice in land management, such as the Forestry Commission's Guidelines and the Deer Commission for Scotland's Best Practice Guides.

3 The CSDMG will provide a forum to resolve issues and reconcile differences pertaining to deer management and related land use objectives.

4 In relation to 3 above, the CSDMG will consider the development of projects aimed at resolving deer management issues and seeking funding for such projects where necessary.

9.2 Management Sub-areas

Given the movements of red deer in some areas and the relative absence of movements in others, a division of the CSDMG area is proposed *for the purpose of tactical and operational management only,* as follows.

- Western focusing on those estates west and south west of Rothiemurchus and including Rothiemurchus. This would include Glentromie (Lynaberack), Gaick, Glenfeshie, Killiehuntly, Invereshie, Inshriach, Rothiemurchus, Ralia, South Drumochter and the northern edge of Atholl.
- Eastern Glen Avon, and surrounding estates including Delnabo, Craigowrie, Dorback, Allargue, Delnadamph, Abernethy, Glenmore, Pityoulish and HIE Cairngorm.

9.3 Culling

The CSDMG supports the culling of wild deer, in accordance with DCS standards and Best Practice Guidance, as the primary means of regulating population size and local densities. However, in the context of 9.1(4) above, it is possible that a project (eg research on alternatives to culling such as live capture and immuno-contraception) may arise which focuses on other approaches.

9.4 Fencing

The CSDMG supports recently published guidance from the Scottish Executive on the use of fencing (Section 8.4 and Appendix 7). Deer fencing can provide a valuable management tool that requires a carefully planned and responsible approach to evaluating the need for deer fencing (8.4 above) and the provision of mitigating measures in relation to bird strikes, landscape issues and public access. A cautious approach to the use of deer fences is especially important in capercaillie areas. A deer fence-free environment to protect capercaillie in and adjacent to woodlands requires the maintenance of much low numbers of deer than could be accommodated with fencing. All proposals for the erection of deer fences enclosing >50 ha or within 500metres of an estate boundary will be discussed with the CSDMG and a fencing plan drawn up before implementation.

9.5 Planting proposals

There are many areas within the DMG area where natural tree seedling regeneration is proceeding in the absence of any fences. However, planted trees may attract a higher degree of impact, and damage is likely to be relatively more significant, than for naturally regenerated trees. This increased significance may trigger increased culling requirements, which in turn impact on the socio-economics of neighbouring estates. Under such circumstances, the fencing of such plantations may be desirable. Therefore, the deer management requirements relating to any proposals to plant trees without fencing should be discussed with the DMG before proceeding.

9.6 Supplementary/ diversionary feeding

The CSDMG does not support the provision of supplementary food when it is aimed solely at supporting higher numbers of deer than the habitat would otherwise support. However, diversionary feeding (defined as providing small quantities of food aimed at modifying the dispersion and impacts of deer) is acceptable in certain circumstances. For example, where overall densities are acceptable, but local concentrations are causing unacceptable impacts, groups of deer can be encouraged to move to less vulnerable areas.

Part 4: Tactical and operational objectives, cull targets and data requirements.

10 Tactical Objectives

Sustainable range management is the primary aim.

- The requirement to reduce densities *in some areas* to levels that are compatible with delivering the strategic objectives (Section 9) is the key tactical objective of this DMP.
- Sporting objectives are an important, but secondary objective.

Because habitat impact and deer densities are closely linked, population models are proposed here as a basis for management, aimed at achieving deer densities that are compatible with habitat impacts. However, the results from habitat impact monitoring will increasingly become the main driver for management decision-making, being used to influence cull levels.

Given the internal movements of deer within each of the sub-areas and the movements of deer to and from the sub-areas, deer cull models have focused on overall culls for each sub-area and for sub-areas plus neighbouring estates where appropriate. Secondarily, individual estate culls have been apportioned to aid local management, but regular communication on culling achievements between adjacent estates will be necessary in order to remain focused on overall sub-area cull targets.

The primary objective is to reduce the impact of deer at the important sites described earlier and to maintain deer impact throughout the area at levels that are consistent with local land use aspirations including achieving red deer sporting objectives. The identified areas of concern (See 7.1.1) are;

West sub area	**East Sub area**
Drumochter Hills	Inchrory *(See 7.1.1; red deer densities are currently low and rabbits subject to continuing reductions – any concerns are unlikely to be due to deer and are currently being addressed)*
Cairngorm (tree-line)	
North Corries	
North Rothiemurchus *(See 7.1.1. Concern relates to SMS in 2002. Continuing management is dealing with the issue.*	
Alvie	
Glenfeshie	

11 Population Models and Cull Targets

11.1 Requirements for mature stags (defined as stags of 6 years and older)

Trophy quality mature stags for sporting are usually over 6 years old. Clearly any specific requirement to provide these will require a higher population than if all ages of stags are acceptable in the cull. The following calculation is aimed at assessing the population required to provide the stag culls required by estates. These stag culls are based largely on previous culls, which were considered necessary to fulfil socio-economic objectives. This calculation illustrates any shortfall between requirements and availability, given the aims of reducing populations to

achieve the primary objective. An aspiration by an estate to provide a particular number of mature or trophy quality stags does not influence the population models.

Stag requirements based on data provided by estates (Appendix 8) are presented below. For those estates not specifying a requirement for mature stags approximately one third of the total stag requirement has been assumed to allow calculation of the minimum population size;

Western sub-area

	Stag cull required	
Estate	**Total stags**	**Mature stags**
Lynaberack	50	17
Ralia	30	30
S Drumochter	30	30
Gaick	110	37
Rothiemurchus	25	9
Glenfeshie	60	40
Killiehuntly	20	7
Phones	-	-
Total	**325**	**170**

Eastern sub-area

	Stag cull required	
Estate	**Total stags**	**Mature stags**
Delnabo	10	3
Dorback	25	9
Glenavon	60	20
Pityoulish	4	1
Total	**95**	**33**

The population required to support the required stag cull has been estimated as follows;

Western sub-area

170 x 7.6 = 1292 stags
1292 x 1.3 = 1680 hinds
1680 x 0.37 = 622 calves
Total population required = 3594

Eastern sub-area

33 x 7.6 = 251 stags
326 x 1.3 = 424 hinds
424 x 0.37 = 157 calves
Total population required = 832

***NB** This is based on life tables of red deer (Ratcliffe, 1987), which suggest that approximately 0.33 of the population will be aged 5 years and over. If we then assume that 0.4 of this part of the population will be*

*actually available to client stalkers (ie it will be possible to contact these deer), 0.33 x 0.4 = 0.132 of the population are available trophy stags. Thus 0.132/1.0=**7.6***

***NB** Blank stalking days will be recorded by stalkers to monitor the actual availability of stags*

Hinds are based on an assumed adult sex ration of 1.3 hinds: 1 stag, given the degree of under-culling and the higher survival rates of hinds.

Recruitment of calves of 0.37 is based on previous values for high performance red deer populations.

11.2 Current population size

Tables 3 and 4 are derived from initial information provided by estates (Appendix 8), from subsequent discussions and from DCS February 2005 count data and dung counts for Forest Enterprise at Inshriach. The DCS count for Rothiemurchus covered approximately half the wintering ground and significant numbers of deer were probably not counted. Table 3 includes estimates aimed at reasonably correcting this as far as possible. Where no figure is available, low ground area has been estimated at 0.66 of total area.

Table 3 CSDMG western sub area plus Dalnacardoch, Athol and Mar Lodge – Summary of deer data

Estate	Area (total) (ha)	Area (low) (ha)	Stag count	Unclassified counted	Total	stags (counted plus 0.05 of u/c)	hinds (u/c – u/c stags / 1.35)	calves (hinds x .35)	Density (total) (Nkm^{-2})	Density (low) (Nkm^{-2})
Glentromie (Lynaberack)	4237	2796	183	980	1163	232	690	241	27.4	41.6
Killiehuntly	1787	1179	5	184	189	14	130	45	10.6	16.0
Ralia & S Drumochter	7086	4677	316	153	469	324	107	38	6.6	10.0
Atholl *** (Bruar/ Dalnamein/ Forest Lodge)	22200	14652	120	4656	4776	353	3276	1147	21.5	32.6
Dalnacardoch***	7412	4892	652	552	1204	680	388	136	16.2	24.6
Mar Lodge***	29370	19384	745	1056	1801	798	743	260	6.1	9.3
Gaick	7648	4914	20	688	708	54	484	170	9.3	14.4
Glenfeshie	17212	11360	571	511	1082	597	359	126	6.3	9.5
Invereshie	3078	2031	3	0	3	3	0	0	0.1	0.2
FE * Inshriach	3636	3636			150*	65*	65*	20*	4.1	4.1
Rothiemurchus (south)**	9895	6531	90	310	400	106	218	76	4.0	6.1
Etteridge, Phones, Cuaich	7588	5008	102	1083	1185	156	762	267	15.6	23.7
FE Glenmore	2679	2679	1	12	13	2	8	3	0.5	0.5
Total CSDMG	**64846**	**44811**	**1291**	**3921**	**5362**	**1487**	**2759**	**966**	**8.3**	**12.0**
Total inc Athol, Dalnacardoch and Mar Lodge	**123828**	**83739**	**2808**	**10185**	**13143**	**3318**	**7167**	**2508**	**10.6**	**15.7**

Unclassified deer are divided on the basis that x 0.05 are juvenile stags (these are added to the counted stags) and the remainder are hinds and calves. Calves are assumed to be x 0.35 hinds. This follows DCS protocol for allocating unclassified deer from count data (I Hope, pers. comm.).

The DCS count for Rothiemurchus covered approximately half the wintering ground and significant numbers of deer were probably not counted. Table 3 includes estimates aimed at reasonably correcting this as far as possible.

* derived from dung count data

** Rothiemurchus estate figures included

*** Estates outwith the CSDMG

Thus the starting figures for the western sub-area (Table 5A) are 1487 stags and 2759 hinds and the totals including neighbouring estates (Table 5B) are 3318 stags and 7167 hinds.

Table 4 CSDMG eastern sub area plus Invercauld home beat - Summary of deer data

Estate	Area (total) (ha)	Area (low) (ha)	Stag count	Unclassified counted	Total	stags (counted plus 0.05 of u/c)	hinds (u/c – u/c stags / 1.35)	calves (hinds x .35)	Density (total) (Nkm^{-2})	Density (low) (Nkm^{-2})
Abernethy	13713	12673	91	29	120	92	21	7	0.9	0.9
HIE Cairngorm	1418	0	0	0	0					
Craigowrie	649	649								
Dorback	5789	5789	3	202	205	13	142	50	3.5	3.5
Glenavon**	17420	12997	468	949	739	311	307	121	4.2	5.7
Pityoulish	889	889	2	52	54	5	36	13	6.1	6.1
Invercauld (home) ***	22450	14817	294	1172	1466	353	824	289	6.5	9.9
Totals CSDMG	**39878**	**32997**	**564**	**1232**	**1118**	**422**	**506**	**190**	**2.8**	**3.4**
Totals inc Invercauld	**62328**	**47814**	**858**	**2404**	**2584**	**772**	**1331**	**479**	**4.1**	**5.4**

Unclassified deer are divided on the basis that x 0.05 are juvenile stags (these are added to the counted stags) and the remainder are hinds and calves. Calves are assumed to be x 0.35 hinds. This follows DCS protocol for allocating unclassified deer from count data (I Hope, pers. comm.).

** Glenavon estate 2006 count figures inserted
*** Estates outwith the CSDMG

Thus the starting figures for the eastern sub-area (Table 7A) are 422 stags and 506 hinds. With the addition of the Invercauld home beat (Table 7B), the starting figures are 772 stags and 1331 hinds.

11.3 Cull targets and population models

11.3.1 Western sub-area

The stag requirements of estates in the western sub-area of 170 mature stags require a spring population of 3,594 red deer (equivalent density of 5.5 deer km^{-2}). The DCS count in spring 2005, plus estimates from dung counts in Inshriach woodlands, etc., estimated 5362 deer (Table 3) (equivalent spring density of 8.3 km^{-2}). This suggests that the current population can easily provide for the mature stags required by estates. Planned population reductions will close the gap between the actual population and that required to provide the mature stag culls but the reduced numbers indicated in 2010 (Table 5A) of 1487 stags, 1909 hinds and 706 calves still exceed those required to provide the sporting stag culls of estates.

However, it seems clear that deer move in and out of the area in the south and south-east and that an influx of stags, particularly to the Gaick and Glenfeshie hind populations, is helping to sustain stag requirements in the sub-area. In order to meet the CSDMG objectives (Section 10), it is proposed that the spring population should be around 9 deer km^{-2}. This will allow all objectives to be met.

Three models are provided. Table 5A includes only those estates that are part of the CSDMG area and indicates a reduction in the spring density from 11.8 deer km^{-2} to 9.2 deer km^{-2}. The starting population values in Tables 5 A-C, are the values of stags and hinds from Table 3 and a revised value for calves based on a recruitment rate of hinds of x 0.37 (this is the reason for the small discrepancy between the total population value in Figures 5 A-C and 7 A-B).

The concentrations occurring in the lower glens in periods of adverse weather may continue to cause unacceptable impacts on woodland regeneration and other vulnerable habitats and culling should aim to achieve localised differences in density relevant to local objectives. An important consideration is the increase in population size due to incursions from estates outside the CSDMG, notably from parts of Athol, Dalnacardoch and Mar Lodge estates. Because of the current imbalance in favour of hinds and in order to maintain stag numbers, stag culls are equivalent to recruitment, while hinds are culled more heavily. This results in an increase in the ratio of stags:hinds from 0.54 to 0.78. However, with the influx of stags from the south, summer sex ratios will be closer to parity.

Table 5A Red deer culling model for the CSDMG western sub-area

Year	Population parameter	Stag	Hind	Calf	Total	Density (km^{-2})*	Density (km^{-2})**
2005	Spring count	1487	2759	1021	*5267		11.8
	Recruitment (Yearlings)	511	510				
	Summer (after calving)	1998	3269	1308	6575	10.1	
	Cull (S=recruitment; (H=recruitment+150)	511	660	264	1435		
2006	Spring estimate	1487	2609	965	5061		11.3
	Recruitment (Yearlings)	483	482				
	Summer (after calving)	1970	3091	1236	6297	9.7	
	Cull (S=r; H=r+200)	483	682	273	1438		
2007	Spring estimate	1487	2409	891	4787		10.7
	Recruitment (Yearlings)	445	446				
	Summer (after calving)	1932	2855	1142	5929	9.1	
	Cull (S=r;H=r+200)	445	646	258	1349		
2008	Spring estimate	1487	2209	817	4513		10.1
	Recruitment (Yearlings)	408	409				
	Summer (after calving)	1895	2618	1047	5560	8.6	
	Cull (S=r;H=r+200)	408	609	244	1261		
2009	Spring estimate	1487	2009	743	4239		9.5
	Recruitment (Yearlings)	371	372				
	Summer (after calving)	1858	2381	952	5191	8.0	
	Cull (S=r;H=100)	371	472	189	1032		
2010	Spring estimate	1487	1909	706	4102		9.2
	Ongoing maintenance cull = recruitment	371	472	189	1032		

* Summer densities based on the entire available range of 64,846 ha.
** Spring densities are computed based on a winter range of 44,811 ha.

Assumes 0.4 of hinds in summer calving; 0.37 of calves recruited into adult population in spring..
Figures for the numbers of calves in the cull and in summer are crude estimates (hinds x.4) based on numbers of hinds. Calves should be culled in relation to milk hinds in the cull.
* The starting population values in Tables 5 A-C, are the values of stags and hinds from Table 3 and a revised value for calves based on a recruitment rate of hinds of x 0.37 (this is the reason for the small discrepancy between the total population value in Figures 5 and 7 A-C.

Table 5B presents a model including the neighbouring estates and aims to reduce the density from 15.7 deer km^{-2} to around 13 deer km^{-2}. This final density assumes that increased culling (ie additional hind culls above recruitment; see Table 5B) will be focussed mainly in the CSDMG area and that estates outside the CSDMG area will be less prepared to reduce numbers to the same degree. Culls on estates within the CSDMG should approximately follow those proposed in Table 5A.

This is considered to be the more realistic model. However, its application will require acceptance and co-operation from the neighbouring estates. Although the CSDMG western sub area is subject to immigration from the neighbouring estates and this increases their availability of stags, any reductions outside the sub-area will result in an overall reduction in the availability

of stags within it. The aim here (Table 5B) has been to maintain stag numbers, focussing culling pressure on hinds.

Table 5B Red deer culling model for the CSDMG western sub-area including Atholl, Dalnacardoch and Mar Lodge

Year	Population parameter	Stag	Hind	Calf	Total	Density (km^{-2})*	Density (km^{-2})**
2005	Spring count	3318	7167	2652	13137 *		15.7
	Recruitment (Yearlings)	1326	1326				
	Summer (after calving)	4644	8493	3397	16534	13.4	
	Cull (S=recruitment (H=recruitment+200)	1326	1526	610	3462		
2006	Spring estimate	3318	6967	2578	12863		15.4
	Recruitment (Yearlings)	1289	1289				
	Summer (after calving)	4607	8256	3302	16165	13.1	
	Cull (S=r;H=r+200)	1289	1489	596	3374		
2007	Spring estimate	3318	6767	2504	12589		15.0
	Recruitment (Yearlings)	1252	1252				
	Summer (after calving)	4570	8019	3208	15797	12.8	
	Cull (S=r;H=r+200)	1252	1452	581	3285		
2008	Spring estimate	3318	6567	2430	12315		14.7
	Recruitment (Yearlings)	1215	1215				
	Summer (after calving)	4533	7782	3113	15428	12.5	
	Cull (S=r;H=r+200)	1215	1415	566	3196		
2009	Spring estimate	3318	6367	2356	12041		14.4
	Recruitment (Yearlings)	1178	1178				
	Summer (after calving)	4496	7545	3018	15059	12.2	
	Cull (S=r;H=r+200)	1178	1378	551	3107		
2010	Spring estimate	3318	6167	2282	11767		14.1
	Recruitment (Yearlings)	1141	1141				
	Summer (after calving)	4459	7308	2923	14690	11.9	
	Cull (S=r;H=r+200)	1141	1341	536	3018		
2011	Spring estimate	3318	5967	2208	11493		13.7
	Ongoing maintenance cull = recruitment	1104	1104	442	2650		

* Summer densities based on the entire available range of 123,828 ha.
** Spring densities are computed based on a winter range of 83,739 ha.
Assumes 0.4 of hinds in summer calving; 0.37 of calves recruited into adult population in spring.
Figures for the numbers of calves in the cull and in summer are crude estimates (hinds x 0.4) based on numbers of hinds. Calves should be culled in relation to milk hinds in the cull.

* The starting population values in Tables 5 A-C, are the values of stags and hinds from Table 3 and a revised value for calves based on a recruitment rate of hinds of x 0.37 (this is the reason for the small discrepancy between the total population value in Figures 5 and 7 A-C.

Table 5C presents a model for the wider area (as in Table 5B) but reduces the density to a similar level as presented for the CSDMG area alone (Table 5A). Again, culls on estates within the

CSDMG should approximately follow those proposed in Table 5A. This model (Table 5C) will almost certainly fulfil CSDMG objectives but may not be acceptable to the neighbouring estates.

Table 5C Red deer culling model for the CSDMG western sub-area including Atholl, Dalnacardoch and Mar Lodge aimed at reducing numbers to achieve a density similar to the CSDMG western sub area only (8.9 km^{-2}; Table 5A) and restoring stag:hind ratio

Year	Population parameter	Stag	Hind	Calf	Total	Density (km^{-2})*	Density (km^{-2})**
2005	Spring count	3318	7167	2652	13137 *		15.7
	Recruitment (Yearlings)	1326	1326				
	Summer (after calving)	4644	8493	3397	16534	13.4	
	Cull (S=recruitment-50 (H=recruitment+400)	1276	1726	690	3692		
2006	Spring estimate	3368	6767	2504	12639		15.1
	Recruitment (Yearlings)	1252	1252				
	Summer (after calving)	4620	8019	3208	15847	12.8	
	Cull (S=r-50; H=r+400)	1202	1652	661	3515		
2007	Spring estimate	3418	6367	2356	12141		14.5
	Recruitment (Yearlings)	1178	1178				
	Summer (after calving)	4596	7545	3018	15159	12.2	
	Cull (S=r; H=r+500)	1178	1678	671	3527		
2008	Spring estimate	3418	5867	2171	11456		13.7
	Recruitment (Yearlings)	1085	1086				
	Summer (after calving)	4504	6953	2781	14238	11.5	
	Cull (S=r; H=r+600)	1085	1686	674	3445		
2009	Spring estimate	3419	5267	1949	10635		12.7
	Recruitment (Yearlings)	974	975				
	Summer (after calving)	4394	6242	2497	13133	10.6	
	Cull (S=r;H=r+700)	974	1675	670	3319		
2010	Spring estimate	3420	4567	1690	9677		11.6
	Recruitment (Yearlings)	845	845				
	Summer (after calving)	4265	5412	2165	11842	9.6	
	Cull (S=r;H=r+700)	845	1545	618	3008		
2011	Spring estimate	3420	3867	1431	8718		10.4
	Recruitment (Yearlings)	715	716				
	Summer (after calving)	4135	4583	1833	10551	8.5	
	Cull (S=r;H=r+700)	715	1416	566	2697		
2012	Spring estimate	3420	3167	1172	7759		9.3

* Summer densities based on the entire available range of 123,828 ha.
** Spring densities are computed based on a winter range of 83,739 ha.

Assumes 0.4 of hinds in summer calving; 0.37 of calves recruited into adult population in spring.
Figures for the numbers of calves in the cull and in summer are crude estimates (hinds x 0.4) based on numbers of hinds. Calves should be culled in relation to milk hinds in the cull.

* The starting population values in Tables 5 A-C, are the values of stags and hinds from Table 3 and a revised value for calves based on a recruitment rate of hinds of x 0.37 (this is the reason for the small discrepancy between the total population value in Figures 5 and 7 A-C.

The model that includes the estates to the south of the western sub-group area but achieves an overall density of 13.7 deer km^{-2} (Model 5B) is considered to provide a more realistic vision of the red deer population. However, within the CSDMG area the culls proposed in Table 5A need to be achieved. It will be easier (but not impossible) to achieve the overall densities with agreement and co-operation from neighbouring estates and the CSDMG area will continue to import stags from the south and west. **The estates in the south and west of the CSDMG area (notably, South Drumochter, Gaick and Glenfeshie) are dependent upon stags moving in from the south during the summer and reductions in deer numbers in Atholl, Dalnacardoch and Mar Lodge will reduce stag availability in the CSDMG area.**

Tables 5A, 5B and 5C indicate a reduction in the total density in the western sub area aimed at maintaining stag numbers and reducing current impacts. Deer control should be concentrated on the sensitive areas (See 10 above) aimed at achieving local differences in density to deliver habitat-based targets in woodland regeneration areas and higher densities in largely sporting areas, whilst still permitting the recovery of important extensive habitats such as montane heath and tree-line scrub.

Local (estate-based) culls aimed at achieving the CSDMG western sub-area density of 9.2 deer km^{-2} and based on the initial years (2005-06) cull recommendation (line 8, Table 5A) are proposed in Table 6A. The division of the total cull requirement between estates has been based on the proportion of low ground (Table 3) as representing the approximate carrying capacity of the habitat. **These proposed culls are indicative only and estates should share information on culling progress during culling seasons aimed at achieving the sub-area total.**

Table 6A Indicative proposed red deer reduction culls for estates in the western sub-area

Estate	% low ground	Stag	Hind	Calf	Total (%)	Spring population (from Table 3)
Lynaberack	6	29	41	16	86 (7)	1163
Ralia	5	24	34	14	72 (31)	469
S Drumochter	5	24	34	14	72 (31)	
Gaick	11	53	75	30	158 (22)	708
Rothiemurchus	15	73	102	41	216 (54*)	400
Glenfeshie	25	120	170	68	358 (33)	1082
Killiehuntly	3	15	21	8	44 (23)	189
Phones	11	53	75	30	158 (13)	1185
Invereshie	5	24	34	14	72 (*)	3
Inshriach (FE)	8	39	55	22	116 (77*)	150
Glenmore (FE)	6	29	41	16	86 (*)	13
Total **	**100**	**483**	**682**	**273**	**1438 (27)**	**5362**

*Estimated culls based on the proportion of low ground clearly do not reflect the dispersion of deer at particular times of year. Those marked with an * clearly do not currently carry sufficient deer in spring to justify the stated cull. However, the figures do indicate approximate cull requirements overall.

** Total cull figures are taken from line 8 of Table 5A (2006 culls)

Table 6B provides estimates of proposed sustainable culls following the reductions achieved (Table 6A) based on the earlier model (Table 5A).

Table 6B Proposed sustainable red deer culls for estates in the western sub-area following reduction to 4102 red deer (Table 5A)

Estate	% low ground	Stag	Hind	Calf	Total
Lynaberack	6	22	28	11	61
Ralia	5	19	24	10	53
S Drumochter	5	19	24	10	53
Gaick	11	41	52	21	114
Rothiemurchus	15	55	71	28	154
Glenfeshie	25	92	117	46	255
Killiehuntly	3	11	14	6	31
Phones	11	41	52	21	114
Invereshie	5	19	24	10	53
Inshriach (FE)	8	30	38	15	83
Glenmore (FE)	6	22	28	11	61
Total	**100**	**371**	**472**	**189**	**1032**

In practice cull figures should be shared between DMG members on a weekly basis during the cull season in order to achieve the overall sub-area targets.

11.3.2 Eastern sub-area

The stag requirements of estates in the eastern sub-area of 33 mature stags require a spring population of 832 red deer (equivalent spring density of 2.5 deer km^{-2}). Starting values in Table 7A and 7B are derived from 2005 spring counts and recent reductions in Glenavaon. It appears that immigration from Invercauld is increasing stag availability during the stalking season. Given the low density in this area, the following models (Tables 7A and 7B) aim to maintain the total density in the eastern sub area as a means of maintaining sporting requirements. Deer control should be concentrated on the sensitive areas (See 10 above).

Table 7A Red deer culling model for the CSDMG eastern sub-area

Year	Population parameter	Stag	Hind	Calf	Total	Density (km^{-2})*	Density (km^{-2})**
2005	Spring count	422	506	187	1115		3.4
	Recruitment (Yearlings)	93	94				
	Summer (after calving)	515	600	240	1355	3.4	
	Cull (=recruitment)	93	94	38	225		
2006	Spring estimate	422	506	187	1115		3.4
	Ongoing maintenance cull = recruitment	93	94	38	225		

* Summer densities based on the entire available range of 39,878 ha.
** Spring densities are computed based on a winter range of 32,997 ha.
Assumes 0.4 of hinds in summer calving; 0.37 of calves recruited into adult population in spring..
Figures for the numbers of calves in the cull and in summer are crude estimates based on numbers of hinds (x 0.4).
Calves should be culled in relation to milk hinds in the cull.

Selective culling will be aimed at improving herd quality. The objective is to maintain current densities overall, whilst localising control in the sensitive sites, for example in the Inchrory SSSI. Movements of deer from the south, especially Invercauld, may continue to increase availability of stags in the sub-area. Planned reduction in deer numbers at Allargue may reduce availability and this will require monitoring.

Table 7B Red deer culling model for the CSDMG eastern sub-area plus Invercauld (part)

Year	Population parameter	Stag	Hind	Calf	Total	Density (km^{-2})*	Density (km^{-2})**
2005	Spring count	772	1331	493	2596		5.4
	Recruitment (Yearlings)	246	247				
	Summer (after calving)	1018	1578	631	3227	5.2	
	Cull (=recruitment)	246	247	98	591		
2006	Spring estimate	772	1331	493	2596		5.4
	Ongoing maintenance cull = recruitment	246	247	98			

* Summer densities based on the entire available range of 62,328 ha.
** Spring densities are computed based on a winter range of 47,814 ha.

Assumes 0.4 of hinds in summer calving; 0.37 of calves recruited into adult population in spring..
Figures for the numbers of calves in the cull and in summer are crude estimates based on numbers of hinds. Calves should be culled in relation to milk hinds in the cull.

Notes for the application of these models:

Although this model can be modified annually following future spring counts, a strong commitment should be given to achieving the proposed reduction.

Consideration might be given to further modifying the stag to hind ratio in favour of stags, so as to provide more mature stags while maintaining a low total population size. A bias in favour of stags will assist the achievement of sporting targets while maintaining a population density consistent with other estate objectives.

It is extremely unlikely that red deer numbers will be reduced to levels below which they can make a speedy recovery, with a reduction in culling effort, should this be considered necessary at any stage.

Local (estate-based) culls aimed at maintaining the CSDMG eastern sub-area density of 3.4 deer km^{-2} (Table 7A), are proposed in Table 8. The division of the total cull requirement between estates has been based on the proportion of low ground as representing the approximate carrying capacity of the habitat. **These proposed culls are indicative only and estates should share information on culling progress during culling seasons aimed at achieving the sub-area total.**

Table 8 Indicative proposed red deer culls for estates in the eastern sub-area

Estate	% low ground	Stag	Hind	Calf	Total
Abernethy	38	10*	10*	4*	24*
HIE Cairngorm	0	0	0	0	0
Craigowrie	2	2	2	1	5
Delnabo	1	1	1	0	2
Dorback	17	16	17	7	40
Glenavon	39	61	60	24	145
Pityoulish	3	3	4	2	9
Total **	**100**	**93**	**94**	**38**	**225**

* Abernethy culls dependent on incoming deer and not based on low ground%. Other estates adjusted accordingly
** Total cull figures are taken from Table 7A (Maintenance cull)

12 Monitoring and data requirements

Monitoring is essential in order to inform managers of progress toward objectives. Given the particular management objectives in the CSDMG area, monitoring needs to include habitat and deer based parameters. Data should be collected and collated separately for each of the two proposed sub-areas (see above).
An annual monitoring meeting is proposed in May/June of each year to assess past years performance and clarify and adjust plans for the next year. This should be preceded by an information gathering process, collation of records and distribution of summary information by the DMG secretariat following the end of the female open seasons.

12.1 Habitat parameters

12.1.1 Open range condition

Range condition, especially in those areas identified as suffering damaging impacts, requires to be monitored. Site Condition Monitoring by SNH and previous MLURI assessments provide background information. It is recommended that assessments are made using the SNH Field Guide to surveying land management impacts (this methodology is straightforward and readily done by stalkers following brief initial training if required (c. 2 days)). [See Appendix 10 A]. Open range monitoring should be focused on the sensitive SSSIs.

12.1.2 Seedling densities and performance

In woodland regeneration areas methods are available for the assessment of tree seedling densities and performance (*cf* those in use in Glenfeshie).. [Results in Appendix 10 B]. Tree seedling monitoring should be focused on sensitive woodland SSSIs.

12.2 Deer parameters

12.2.1 Reproductive performance

Reproductive performance ranges from the high performance woodland populations where over 50% of yearling red deer are pregnant and adults rarely miss a year of breeding to those open range areas where yearling pregnancies are few and many adult hinds experience a yeld year. CSDMG members will be encouraged to collect data on pregnancy and lactation. [See Appendix 10 C]

12.2.2 Mortality

See 12.2.3 below for calf mortality. Any occurrences of carcases should be recorded. [See Appendix 10 D]

12.2.3 Recruitment

Recruitment reflects the converse of calf mortality providing the number or proportion of animals approaching one year of age in the spring, having survived the winter and being recruited into the adult population. It has been suggested that this has risen in recent years to about 0.37/ hind. This figure has been applied in the models presented earlier. CSDMG members will be encouraged to collect data on hind:calf ratios in early summer to obtain information on recruitment (ie after winter/spring mortality). [See Appendix 10 E]

12.2.4 Immigration / emigration and short duration movements

Deer will move locally on a daily basis in response to weather conditions, especially wind direction as well as from disturbance by people involved in outdoor recreation, shepherding, etc. Seasonal movements between DMG areas are also of importance. Information gathered so far is presented in Appendix 8 and forms the basis of the establishment of sub-areas. This information is based on local knowledge but seldom have marked animals been available. It is important that further consideration is given to an objective appraisal of movements, perhaps by initiating a study using radio-telemetry. CSDMG members will be encouraged to continue to record information on the numbers and rate of seasonal movements of deer into and out of the individual ownerships and between the main sub-populations. [See Appendix 10 F]

12.2.5 Numbers and Densities related to targets

Regular counts (at least bi-annually) of open range should be made (See Appendix 9 for 2005 count). Dung counting should be used as the basis for estimating densities and population size in woodlands. [See Appendix 10 G]

12.2.6 Cull Records related to targets

Cull targets and summaries should be collated and recorded. [See Appendix 10 H].

13 Review and modify

Annual elements of the DMP will be reviewed and adjusted at the annual monitoring meetings proposed for May/June of each year. A wider review of the strategic and longer-term elements of the plan should be arranged in order to assure the continuing effectiveness of the plan

14 Communications

This plan will be discussed with neighbouring estates to the Cairngorm Speyside DMG with a view to explaining the land-use and deer management objectives and exploring ways in which the DMG can work in harmony with its neighbours. The Cairngorms National Park Authority (CNPA) and representatives from Highland and Moray Councils will be invited to comment. The DMP will be posted on the CNPA web site and circulated to locally interested parties, including representatives of the local Community Councils, for comment.

15 Training

Training requirements will be assessed by the DMG on the basis of meeting the requirements of this DMP.

Philip R Ratcliffe
20 January 2007

List of Appendices

Appendix 1 Membership of the CSDMG (separately attached)
Appendix 2 Map of CSDMG area with estate boundaries (separately attached)
Appendix 3 Land Use Policies, Legal Framework and Strategic Directions
Appendix 4 Statutory designations within the CSDMG area
Appendix 5 Natural Heritage Futures (SNH)
Appendix 6 Deer Management: Summary of issues, strategic aims and proposed actions
Appendix 7 Scottish Executive paper on deer fences
Appendix 8 Information provided by estates
Appendix 9 DCS 2005 Deer count report
Appendices 10. A-H Monitoring Results (re- Paragraph 12) (separately attached)

Appendix 3

Land Use Policies, Legal Framework and Strategic Directions

This appendix introduces national policies and the legal background affecting land management in the area followed by the strategic directions currently being applied. It provides more detailed

information than is provided in Section 5 of the DMP. The same numbering has been used as in the main DMP to aid cross-referencing.

5.1 Cairngorms National Park

The CSDMG has adopted the aims of the National Park as they relate to the management of deer (Section 1). The National Park Authority seeks to ensure that the National Park aims are achieved in a co-ordinated way. In the context of these aims, natural heritage includes the flora and fauna of the NP, its geographical and physiographical features and its natural beauty and amenity.

5.2 EU legislation on protected areas and species.

The 'Habitats and Birds Directives' present European Union legislation aimed at promoting the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements.

5.3 UK Legislation on protected areas and species.

The following UK legislation provides an important basis for developing nature conservation policy.

- Conservation (Natural Habitats &c) Regulations 1994.
- Nature Conservation (Scotland) Act 2004.
- Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004.

5.4 Deer (Scotland) Act 1996

5.4.1 The Deer Commission for Scotland

The Deer (Scotland) Act 1996 established the Deer Commission for Scotland (DCS). The function of the DCS is to further the conservation, control and sustainable management of all species of wild deer in Scotland. The 1996 Act gives the DCS a wide range of duties and powers. These duties include the implementation of specific measures defined by the Act to reduce deer numbers in any particular area where the DCS is satisfied that this is required either to prevent serious damage by deer to agriculture, forestry and natural heritage, or to prevent deer being a danger or a potential danger to public safety. Equally, owner/occupiers have a right to reduce deer numbers in order to protect their interests.

'Damage', as used throughout the Act, is interpreted as a 'change of state that is regarded as detrimental to legitimate objectives'. Consequently, the assessment of damage is dependent on the legitimacy of the objectives in question and the seriousness of tat damage as related to local circumstances

5.4.2 DCS Sites for Assessment and Priority Sites

DCS implement policy through a three-part process to identify sites where unacceptable damage is occurring and where there is a high priority for improved deer management. This process is initiated by an expression of concern, which must be supported by evidence and can be made by

any person or organisation, to the DCS. If DCS are satisfied that there is an issue to be investigated the area is objectively assessed and if unacceptable damage is occurring, the site is registered as a Priority Site. This will usually then become the subject of a management agreement (under Section 7 of the Deer (Scotland) Act 1996), with DCS, aimed at resolving the problem.

5.4.3 Deer Control Agreements

Under Section 7 of the Act, voluntary agreements can be made between DCS and owners/occupiers aimed at achieving the control of deer populations to meet local land use objectives. Section 8 of the Act provides DCS with statutory powers to establish Control Schemes that in turn enable the compulsory control of deer populations if required.

5.5 The Cairngorms Local Biodiversity Action Plan

The current Cairngorms LBAP lists all species and habitats listed by the UK Biodiversity Action Plan Steering Group known to occur in the Cairngorms area. Distribution maps and information on the status, significance and population trends are provided. The CSDMG supports the objectives of the Cairngorms LBAP.

5.6 Scottish Forestry Strategy

In the Scottish Forestry Strategy**,** published by the Scottish Executive, conservation is covered under one of five major *Strategic Directions* titled, 'To make a positive contribution to the environment'. There are 6 "Priorities for Action" as follows:

- Improve management of semi-natural woodland
- Extend and enhance native woodlands by creating Forest Habitat Networks
- Increase diversity in the farmed landscape
- Aid recovery of acidified rivers and lochs and improve riparian habitat
- Encourage alternatives to clear felling
- Contribute to a radical improvement in the quality and setting of the urban environment

5.7 Local Forestry Frameworks

The Cairngorms Forest and Woodland Framework provides a vehicle for delivering the National Park's woodland objectives. The main objectives are:

- conservation of the natural and cultural heritage;
- guiding the Forest Design Plan (FDP) process;
- providing feedback on implementation of the Scottish Forestry Strategy.

5.8 Estate Plans

Some estates have developed written plans covering aspects of estate management including Forest Plans, Biodiversity plans and Deer Management Plans. Some estates will use this DMP as their estate DMP. The Forestry Commission Scotland (FCS) provides grant aid for some forestry

and related activities including deer management. The RSPB own much of Abernethy Forest and the National Trust for Scotland owns land within the area that is managed primarily for its natural heritage interest.

5.9 Natural Heritage Futures

Natural Heritage Futures (NHF) outline a contribution toward sustainable development published by Scottish Natural Heritage (SNH). The documents outlining NHF provide a vision for the sustainable management of Scotland's landscapes to 2025. They reflect the views of a wide range of stakeholders and provide a useful summary of the key issues in relation to the natural heritage. Vision statements, objectives and actions are included in the regional NHF booklets and those relating to the CSDMG area (especially, North East Glens and Cairngorms Massif) are drawn upon here. Appendix 5 presents the relevance of the Natural Heritage Futures Programme as it relates to deer management.

Appendix 4

Statutory designations within the CSDMG area

Reference is made in Section 6 of the main DMP to statutary designated sites. This appendix provides more detailed accounts. The same paragraph numbering has been used to aid cross-referencing.

6.1 European/ International Designations

There are six Special Areas for Conservation (SACs), 4 Special Protection Areas (SPAs) and one provisional SPA (pSPA) within the CSDMG area (Table 1). These sites are collectively known as Natura 2000 sites and originate in the 1992 EC Habitats and Species Directive 1979 EC Wild Birds Directive respectively. SPAs are designated for the protection of birds that are considered rare or vulnerable within the EU, along with their habitats, and SACs for the protection of rare, endangered or vulnerable natural habitats and species of wild plants and animals other than birds within the EU.

The National Park Authority and other competent authorities have a duty to assess plans and projects that might have adverse effects on Natura 2000 sites. Those that might have an adverse effect on Natura 2000 sites are only allowed to go ahead in exceptional circumstances. The European Union has made resources available for the positive management of Natura sites in Europe through its LIFE fund.

Table 1. European/ International Designations within deer range in the CSDMG area

Location	Designation	Qualifying Features
Drumochter Hills	SPA/SAC	Montane heath/mires, sub-arctic scrub and grasslands. Dotterel, merlin
River Spey-Insh Marshes	SPA/SAC	Alluvial forests, very wet mires often identified by an unstable 'quaking' surface, clear water lakes or lochs, otter. Osprey, spotted crake, wood sandpiper, hen harrier, whooper swan, widgeon
Cairngorms	SPA/SAC	High altitude plant communities, blanket bog, bog woodland, Caledonian forest, species rich Nardus grassland, dry heath, wet heath, alpine and sub alpine heath, montane acid grassland, plants in crevices, tall herb communities, montane willow scrub, otter. Capercaillie, Scottish crossbill, Golden eagle, merlin, osprey, peregrine falcon, dotterel.
Abernethy Forest	SPA	Capercaillie, Scottish crossbill, osprey.
River Spey	SAC	Atlantic salmon, otter, freshwater pearl-mussel, Sea lamprey.
Ladder Hills	SAC/pSPA	Alpine and sub alpine heaths, blanket bog, dry heaths
Creag Nan Gamhainn	SAC	Hard water springs depositing lime

6.2 Sites of Special Scientific Interest

There are 16 Sites of Special Scientific Interest (SSSIs) in the CSDMG area (Table 2). These are sites that are special for their plants, animals, habitats, geology or landforms, or a combination of these. Many underpin Natura 2000 sites. Some of these sites such as Cairngorms and Abernethy cover relatively large areas whereas some cover only a few hectares. SNH work in partnership

with the owners of SSSIs and others to secure positive management for the features for which the sites have been designated.

Table 2. Sites of Special Scientific Interest

Location	General Description	Area (Ha)	Area in CSDMG	% within CSDMG
Drumochter Hills	Breeding bird assemblage. Montane assemblage, vascular plant assemblage	9688.13	2375	25%
Loch Etteridge	Quaternary of Scotland Quaternary geology and geomorphology	114.93	114.93	100%
River Spey-Insh Marshes	Flood plain fen.	1176.4ha	1.249	0.111%
Abernethy Forest	Caledonian forest, bog woodland, dry heath.	5796ha	5796	100%
Ladder Hills	Alpine heath, blanket bog, hen harrier, (*Cirus cyaneus*), lichen assemblage, snowbed, sub alpine dry heath, upland assemblage	4240.4ha	0	0
Inchrory	Mineralogy of Scotland, Quaternary of Scotland, snail (*Vertigo alpestris*), vascular plant assemblage	1090	1090	100%
Eastern Cairngorms	Alpine moss heath and associated vegetation, breeding bird assemblage, char (*Salvelinus alpinus*), dystrophic and oligotrophic types present, flies, fluvial geomorphology of Scotland, invertebrate assemblage, native pinewood, Quaternary of Scotland	16503	6975	42%
Cairngorms	Caledonian forest through moorland to montane plateau.	29,161.9ha	22251	76%
River Feshie	River geomorphology.	619ha	619ha	100%
Alvie	Caddis flies, Goldeneye (*Bucephala clangula*), Inveretebrate assemblage, Upland oak wood	339.01	9.49ha	3%
North Rothiemurchus pinewood	Caledonian pinewood and bog woodland.	1564.35ha	1564.35	100%
Glenmore Forest	Caledonian pinewood and bog woodland.	1441ha	1441ha	100%
Allt Mor	River geomorphology.	45ha	45	100%
Northern Corries	Forest through moorland to montane.	2034ha	2034	100%

Creag Nan Gamhainn	Fen meadow, flies, lichen assemblage, lowland calcareous grassland, upland birch woodland, vascular plant assemblage	15.9ha	15.9	100%
River Spey	Atlantic salmon (*Salmo salar*), Freshwater pearl mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*), Sea Lamprey (*Petromyzon marinus*)	1958.79	0.3427	0.02%

Source: SNH, 2005

6.3 National Scenic Areas

National Scenic Areas (NSAs) are those areas of land considered of national significance on the basis of their outstanding scenic interest or unsurpassed attractiveness that must be conserved as part of the country's natural heritage. They were identified by the former Countryside Commission for Scotland (CCS) (since incorporated into SNH) in the report, "Scotland's Scenic Heritage" and introduced by the Government in 1980 under Town and Country Planning legislation. They have been selected for their characteristic features of scenery comprising a mixture of richly diverse landscapes including prominent landforms, coastline, sea and freshwater lochs, rivers, woodlands and moorlands.

Appendix 5

The Natural Heritage Futures programme and its relevance to deer management

Key Influences of Sporting Management on the Natural Heritage

Native deer are important components of woodland and woodland-edge ecosystems and should be regarded as key species with regard to their important effects on vegetation structure and the habitats of many plants and animals. Deer are also an important part of the natural heritage and are also valuable to tourism and recreation. Red deer stalking is one of the most important land uses in the upland parts of the CSDMG area. Roe deer, although currently exploited as a sporting asset on some estates, could become more important in the future and increase employment requirements and opportunities.

The regulation of red deer densities to a level that is compatible with low environmental impacts relative to the main local land use, is considered to be an important objective and the potential conflict of achieving this, particularly in and adjacent to woodland regeneration areas, and maintaining the important socio-economic activity of deer stalking is perhaps the single most important issue.

Coupled to reductions in sheep and the removal of woodland fences, red deer numbers have increased in some areas in recent decades causing increasing impacts on native plant communities and their dependent animals. The local regulation of deer numbers to permit woodland regeneration has often relied upon deer fences to exclude deer. While this is usually very effective there are a number of disadvantages related to fencing, which include, unnatural edges of fields and woodland blocks, obstruction to recreational access and deaths and injury to birds. Given that deer are keystone species, the complete lack of any grazing or browsing impact is usually undesirable. Fencing is not seen as a solution to reducing grazing impacts in montane heaths and tall herb communities.

In some areas hares, rabbits and sheep are a considerably greater problem than deer. Roe deer are more closely associated with woodlands and also appear to be increasing in numbers. They also pose a threat to the regeneration of woodlands. Deer, at appropriate densities, have a positive impact on their habitats including maintaining woodland shrub layers and glades, heather moorlands and grasslands.

SNH's vision (NHF) is for deer population densities that are within the carrying capacity of their habitats. Forest and hill culling targets will maintain thses densities and sporting will focus on a high quality stalking experience, including remote, expedition-style' stalking based on relatively low densities rather than a need to have a large number of stags available.

Conversely, there is a current need to reconcile this with enabling the provision of sufficient sporting stags to maintain the socio-economic objectives of private estates.

Objectives and Actions of Natural Heritage Futures

The following objectives and actions are abstracted from the Cairngorms Massif Natural Heritage Futures booklet and reflect the general nature conservation principles for the area. Additional comments are provided where potential conflicts might occur with the general objectives of sporting management and where clarification is considered necessary.

Objective 1 To enhance existing upland habitat and expand other key habitats

This objective requires that estates should achieve more sustainable management by a reduction in populations of red deer hinds, resulting in improved quality of stags.

Whilst it is clear that quality improves as quantity declines, it is likely that red deer populations on some estates are currently compatible with the sustainable management of their habitat. This objective will need to be applied locally.

Objective 2 To secure widespread recovery of native woodland by natural regeneration, including tree line scrub in balance with open moorland and grassland.

This objective requires the adoption of the Forest Habitat Network concept into Local Forestry Frameworks and Indicative Forestry Strategies. These initiatives should expand and enhance native pinewoods, alpine scrub and riparian plant communities and rely upon the reduction on red deer impacts.

The application of this objective will undoubtedly impact on the densities of deer accepted in adjacent areas. For example, where management objectives aim to maintain grasslands or moorlands deer densities can be higher than in woodland restoration areas, but it may be difficult or impossible to restrict the impacts of those deer to the non-woodland areas.

Objective 3 To maximise the ecological, landscape and economic value of existing native pine, birch and riparian woodland, and commercial forests, with a continuing emphasis on native species and natural regeneration.

This objective is linked to the management of deer and domestic stock See also comments under Objective 2 above.

Objective 4 To maintain the full potential range of characteristic alpine and pinewood birds, mammals and invertebrates.

This objective is linked to concerns over the genetic integrity of red deer due to colonisation by, and hybridisation with sika deer. It also requires deer to be managed at densities that will not cause the extinction of other species.

Objective 5 To maintain natural land from processes along watercourses and improve the status of freshwater habitats and species, including Atlantic salmon.

This objective requires the restoration of riparian woodland as noted above in some areas.

Objective 6 To maintain the wild open landscapes of the montane zone and remote glens, and their contribution to local identity, tourism and informal recreation.

This objective is linked to the planning, maintenance and removal and restoration of hill tracks.

Objective 7 To maintain the characteristic landscapes of lower ground and the local character of towns and villages, and their contribution to local identity and tourism.

This objective is concerned with the sustainable use of the natural heritage.

Objective 8 To encourage responsible access to the uplands and forests of the area while safeguarding sensitive aspects of the natural heritage.

This objective focuses on the potential conflicts with recreational access and deer stalking.

Actions Proposed by SNH

This section provides the actions that SNH wish to see invoked in order to satisfy the objectives above. Additional comments are provided where potential conflicts might occur with the general objectives of sporting management and where clarification is considered necessary.

- Modify deer management in conjunction with estates, Deer Management Groups (DMGs) and the Deer Commission for Scotland (DCS) by developing DMPs that identify damage to the natural heritage and population levels that will achieve habitat restoration.

  This DMP aims to do this.

- Reduce the reliance upon deer fences for woodland regeneration and remove fences where woodlands are well established.

  Most land managers will be sympathetic to this aim on grounds of environmental impacts and cost. However, there may be local conflicts over the perceived need to fence woodland restoration areas against deer.

- Develop a more appropriate capital valuation of estates that is based on a wide range of natural heritage attributes (environmental capital) rather than focusing on stag numbers.

  Perhaps a wider view is required to consider how new policies and practices can be developed by private and public interests to achieve conservation of environmental capital?

- Prevent further incursion of sika deer in line with the joint control policy agreed between agencies.

  Currently the DCS do not favour supporting authorisations to kill sika deer out of season, except on the grounds that they are causing damage. In areas where red deer also occur it

will not normally be possible to identify sika as the culprit and so authorisation will not be possible.

- The restoration of riparian woodland through deer control and forestry or agri-environmental schemes as appropriate.

- Promote a Code of Practice for the use of ATV's and undertake remedial work to restore hill tracks and ATV scars

- Develop a management strategy to ensure sustainable use of the natural heritage.

- Promote the adoption of the Hillphones service to Deer Management Groups and Estates over the entire Cairngorms area as appropriate.

Appendix 6

Deer Management: Summary of issues, strategic aims and proposed actions

Issues	Strategic Aims (What are we trying to achieve?)	Policies and Actions (How are we going to achieve it?)
Conserving and enhancing the natural and cultural heritage		
Achieving deer numbers that support cultural, social and environmental objectives in the required locations. (DMP 7.1)	Maintaining sporting objectives and restoring habitats where required	Implementation of this DMP Develop a strategic approach to deer management across the area and appropriate local approaches on estates
Defining 'overgrazing' (DMP 7.2)	Optimum levels of grazing to support local land use objectives	Implementation of this DMP. Consideration of appropriate local culling regimes, fencing proposals and time scales for change.
Achieving habitat change (DMP 7.3)	Selecting appropriate methods and attracting public support	Implementation of this DMP. Local regulation of deer numbers
Requirement for habitat condition monitoring and impact assessment on open range, especially heather moorland, and woodland	Monitoring data will be used to modify management practices and maintain habitats in good condition	SNH monitor designated sites (SSSIs and Natura sites) every 6 years - includes browsing impacts. There is a need for greater monitoring outside designated sites.
Colonisation by sika deer in the area	Prevent further colonisation by sika deer – is a threat to the genetic integrity of native red deer.	DCS are opposed to providing authorisations to shoot sika except for reasons of unacceptable damage. Need to question this.
Promoting the sustainable use of Natural Resources		
Avoiding adverse impact on neighbours objectives (DMP 7.4)	Maintaining deer populations at appropriate local densities while minimising adverse impacts.	Implementation of this DMP. Discussion of land use changes with CSDMG. Co-operative culling
Deer population monitoring (DMP 7.5)	Records of population data on which to base population models.	Implementation of this DMP. Application of direct counts and dung counts in appropriate habitats
Need to standardise record keeping.	Consistency	Implementation of this DMP
There is a need to agree stag/hind ratio's that balance sporting and forestry needs (DMP 7.6).	Acceptable densities for all land use objectives	Implementation of this DMP
Concern about the non-selective culling of stags, especially out of season	Stags for clients and continuing year-round employment.	Implementation of this DMP
Concern over the reduced availability of mature hill stags – few over six years old (DMP 7.7)	There is a need to maintain an appropriate age structure.	Need to identify the reasons for the gap in age structure. Improved record keeping may help reveal the source of the problem.

Issues	Strategic Aims (What are we trying to achieve?)	Policies and Actions (How are we going to achieve it?)
Reduced deer fencing could result in conflicts with sporting interests and increased applications for out of season shooting, if it results in increased need for culling.	Fencing should be used wisely - not where it is unnecessary or causes unacceptable impacts, but not discarded as a management tool where it is acceptable.	Needs a local approach.
There is a need to ensure that personnel controlling deer are suitably qualified to do so	Ensure personnel controlling deer are experienced / qualified and that all persons killing deer adhere to best practice. Sustainability of human resources.	CSDMG endorse DCS best practice on training requirements. Encourage stalkers to become qualified.
Need high standards of larder facilities and carcase presentation to support marketing.	Maximise quality standards and returns from venison sales / benefit to local economy	There are legal requirements. Recent initiatives to establish the Scottish Quality Wild Venison Scheme have progressed this.
Mortality of deer (road accidents and natural mortality) requires assessment.	Reduction in numbers of deer dying as a result of RTAs and starvation.	Record mortality. Review data and consider solutions if data suggests unacceptable numbers.
Promoting understanding and enjoyment of the special qualities of the National Park		
There is a lack of public knowledge and understanding of the role of deer in land management and conservation and their contribution to the economy (DMP 7.8).	Greater understanding of deer management, its role in land management and its contribution to the socio- economy.	CSDMG should develop an educational policy and strategy and an information programme to raise awareness of deer management. Liaison with CNPA
Tourists like to see deer but opportunities are less than optimum (DMP 7.9)	Provision of greater public opportunities to see wild deer	Implementation of this DMP. Establishment of sanctuaries, avoiding deer relating human presence to shooting.
Changes in patterns of public access due to Land Reform legislation etc. could increase disturbance of deer causing welfare problems (ie moving deer out of shelter), stalking, problems in achieving cull targets, disturbance at calving sites and wintering areas, and increased road traffic accidents.	Reduction of conflicts with other land uses	Awareness raising is required. Hill phones, signs at NPA information points and SNH Outdoor Access Codes will help. Management is required in order to accommodate access with deer management, e.g. ➢ Hill phones ➢ Signage ➢ Involve stakeholders
Promoting the sustainable economic and social development of communities		
The contribution of deer stalking to local economies is poorly understood (DMP 7.10).	Assess the importance of sporting deer stalking and venison production to local economies.	CSDMG consider commissioning a study

Appendix 7

Joint Agencies Paper on Deer Fencing

CONTENTS

1 Summary

This document seeks to promote best practice and assist both private individuals and public sector agencies in deciding whether to fund and/or permit deer fencing.

Deer fencing can serve a useful purpose for controlling deer, helping to achieve environmental objectives and preventing deer causing a public hazard.

- ♦ The full range of options for controlling deer should be considered taking into account effectiveness for purpose and possible impacts on public safety, deer welfare, biodiversity, landscape, cultural heritage and recreation.
- ♦ Where fencing is considered appropriate, fences should be designed to minimise their impact on these interests.
- ♦ Fencing should be seen as part of a wider programme of deer management and fences should not be left erected for longer than necessary.
- ♦ Anyone erecting a deer fence should consider the possible impacts on the wider deer range and particularly adjacent properties and local communities.
- ♦ Deer dependent on the fenced off area should be culled.
- ♦ Agency decisions on deer fencing will be guided by these principles.
- ♦ Approval or financial support for fencing will be dependent on adverse impacts being mitigated.

2 Introduction

In Scotland there is a history of using deer fencing as a tool to manage deer densities and movements. Deer fencing has been particularly successful in protecting public safety and in enabling significant habitat changes to be achieved within a relatively short time, enabling different land management objectives to co-exist in close proximity, whether within or between landholdings.

The purpose of a deer fence is to produce some form of benefit whether in terms of managing grazing or reducing the threat to public safety, benefits which might also be delivered through culling. The construction of a deer fence can, however, have unintentional impacts on other interests including deer welfare, public safety, biodiversity, landscape, cultural heritage and access.

This document seeks to promote best practice and assist both private individuals and public sector agencies in deciding whether to fund and/or permit deer fencing. It presents a policy statement on deer fencing and sets a process for identifying, assessing and mitigating the possible impacts on public interests that can be adversely affected by deer fences. This statement has been endorsed by SE Ministers and will be subject to review as appropriate.

Technical guidance is being prepared which will advise on the implementation of this policy.

3

3 Policy Statement

Deer fencing, when properly planned for, constructed and maintained, can be an effective way of controlling deer to allow different land-uses to co-exist in close proximity and to protect public safety.

Consideration must be given to the full range of options for achieving appropriate deer densities before deciding on whether or not to approve or financially support the use of deer fences. Decisions on whether to cull or fence should take account of objectives, costs and the pros and cons of each method. Where deer fencing is considered an appropriate approach, the process for identifying, assessing and mitigating any adverse effects, as set out in the following guidance, is to be followed. In circumstances, where it is not possible to satisfactorily mitigate adverse effects, approval or financial support should not be given. Otherwise, the final decision must be based on cost-effective long-term solutions, including the cost of fence removal. Deer dependent on the fenced off area should be culled.

In areas where fences will affect deer movements between land ownerships, the parties involved will need to reach agreement on the use of fencing or alternative methods. The basis of the collaboration should be that those who derive the benefit pay the costs.

Decision by all parties in regard to fencing proposals should be objective, rational and transparent and follow Best Practice Guidance.

4 Using the guidance

This guidance aims to assist with decisions over whether to approve and/or financially support the erection of deer fences in situations where fencing is considered more appropriate than culling for achieving required deer densities.
It sets out a process for identifying, assessing and mitigating the negative impacts deer fences can have on the following 5 areas of public interest.

- Public Safety (Section 5)
- Deer Welfare (Section 6)
- Biodiversity (Section 7)
- Landscape and cultural heritage (Section 8)
- Access (Section 9)

For each subject area 'high' negative impacts are identified and mitigation measures are suggested on how best to remove or reduce the high impact. Reference should be made to more detailed guidance (which, as at March 2004, the Agencies are working jointly to develop) on each of these areas to determine best practice. The principle to be followed is that deer fences should not be constructed in areas where, despite mitigation measures, they are likely to have 'high negative impacts' on public interests.
The assessment of the relative social, environmental and financial costs and benefits of appropriately designed fencing is necessary especially when public funds are involved. This guidance identifies the key variables that need to be taken into account.

- Socio economics (Section 10)

There may be circumstances where no public funds are involved but approvals are required in relation to Environmental Impact Assessment, planning permission or Appropriate Assessments (on *Natura* sites).
If fencing is planned in relation to forestry then the manager should approach FC Scotland at an early stage to ensure that the proposals are compatible with Grant Aid requirements, Forestry regulation and the possible need for EIAs.

4.1 Decision making

Using the guidance identify whether there are any 'high' impact implications associated with the proposed fence.
If there are 'high' negative impacts then explore methods of mitigation to reduce these following best practice, including specifications for different types of fencing (further guidance on fence design is under development as at March 2004), as appropriate.
Based on the design of a fence that has been 'mitigated' consider whether deer control or deer fencing is the most cost effective option. As fences must not remain erected for longer than necessary, this should include the costs of dismantling and removal.

Where the scale or nature of a fence is likely to affect local communities or interested parties, those communities or individuals should be consulted.
Account should be taken of social, environmental and financial implications, in particular where public funds are being used. If a fence is funded privately, provided all legal requirements have been met, then the owner may wish to adopt a solution which best suits his or her own needs, following best practice where appropriate.

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5 Public Safety

5.1 Understanding the impact of a deer fence

Road traffic accidents (RTAs) involving deer directly or indirectly are a Public Safety issue as is the presence of deer on airfields. Collisions with the larger species, red deer in particular, can cause injury to the driver and motorcyclists are especially vulnerable to impact by any species. Drivers taking avoiding action, irrespective of the size of the deer, can endanger their own safety and that of other road users.

Fences can confuse deer that are accustomed to crossing a road, trapping them against the road and increasing the likelihood of a deer-vehicle encounter. Fences can also force many deer to cross a road in localised areas again increasing the likelihood of a deer-vehicle encounter.

While time of day, time of year and driver experience are factors in RTAs involving deer, risks to public/road safety and the severity of accidents increase in line with traffic volume and speed. As a consequence, the assessment of any road safety risk associated with a new fence will need to take into account both the characteristics of the road being assessed and seasonal patterns of deer cross movement.

5.2 Establishing a baseline

On roads with a high or medium risk, an assessment of the current position is essential to allow the increased risk to public safety associated with fencing to be measured. Base-line information may need to be collected from the areas where a new fence is proposed. This could include:

- Time of year and day most deer cross road
- Location and number of deer deaths from vehicles
- Location and number of deer-related accidents
- Location and number of deer within 200m of the road at different times of year and day
- Road type, average speed, traffic volume and driver awareness
- Locations where herding species of deer (red, fallow and sika) cross at certain times of year to gain access to food and shelter.
- home ranges of deer that might straddle the road and where and when they cross

5.3 High negative impact issues

- Fences that channel/funnel deer to cross a road at locations of poor visibility, i.e.. at low radius bends, blind summits or adjacent to tall ground cover or other restrictions to visibility
- Parallel fences close to both sides of a road that create a corridor from which the deer have difficulty escaping.

• A fence on one side of the road running closely parallel to the road.
• Fences that are poorly maintained.

5.4 Mitigation required to reduce negative impacts

• Parallel fences close to both sides of a road must form part of a closed circuit system i.e. using a physical barrier such as a cattle grid on the road. In this scenario a commitment to regular inspection and maintenance of the fence will be required as any deer entry to the system will result in continuous deer-vehicle encounters until such time as an accident occurs or the deer is caught / culled.
• Fencing on one side of the road where deer are used to crossing may require those deer to be culled.
• Fencing must ensure that deer are not channelled/funnelled to cross roads where visibility is restricted by bends, crests, tall ground cover on and behind verges etc.
• Fences must be planned and constructed in such a way so as not to interfere with existing sight lines. Junction visibility splays and widened verges on horizontal curves are examples of engineering measures that provide adequate stopping sight distance in accordance with the speed of traffic using the route. Intrusion into these must be avoided. Further information on minimum available sight distance to the end of a new fence may be sought from DCS or the road authority. Any new fencing, which runs parallel to a road, will require a specific maintenance regime to be put in place to control the height of vegetation between the fence and the road edge to ensure adequate visibility on either side of road. The road authority should be consulted during planning.
• The approaches to all existing, new and planned future deer crossing points of roads must be equipped with warning signs complying with The Traffic Signs Regulations and General Directions

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6 Deer Welfare

6.1 Understanding the negative impacts of a deer fence

Fences that prevent access to or enclose areas of ground that deer rely on for forage or shelter may increase the risk of winter mortality through starvation and exposure.

6.2 Establishing a baseline

Information on the numbers and movement of deer that rely on the area, from which they are to be excluded, is desirable. This knowledge includes both seasonal movement and response to different weather conditions to ensure that there is an understanding of when the area is of most importance to deer. Direct counts during critical periods combined with dung counts can be used to provide an estimate of the number of deer utilising the area. When fences are constructed, preventing deer from gaining access to areas that they rely on for forage and shelter, these assessments should be prepared by a party approved by DCS. Where the area being excluded is less than 50 ha, DCS involvement may not be required. DCS advice should be sought to clarify this.

Key information for establishing the baseline includes:

- Defining worst case scenarios
- Estimate of the number of deer using the area, to be fenced out of the deer range, taking account of seasonal usage.
- Comparison of the latest count information with historical data.

6.3 High impact issues

- Removing land from deer or restricting deer access without culling the deer that rely on the area during some part of the year for food and shelter.
- Culling 'additional' deer from the population without targeting those that rely on the area being fenced off.

6.4 Mitigation required to reduce impact

- Culling should follow Best Practice and target deer that rely on the area that is being removed.
- Providing access to alternative grazing and shelter, may reduce the level of compensatory cull required without compromising deer welfare. This approach will require detailed knowledge of deer movement and availability of alternative shelter.
- All mitigation should be accompanied by monitoring and responsive management action

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7 Biodiversity

7.1 Understanding the negative impacts of a deer fence

Deer fencing can change grazing and trampling pressure (either increasing or decreasing) on areas either side of the fence. This is of particular concern when the biodiversity interests affected have been formally recognised at the international and national through:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)
- Sites of Special Scientific Interest (SSSIs)
- Biodiversity Action Plans (BAPs) and Ramsar sites

The value of many sites is linked to an appropriate level of grazing and browsing. Increased grazing and trampling can cause loss of habitats and erosion while reduced grazing pressure can result in a build up of dead and decaying vegetation and increase tree regeneration to the detriment of other habitats. Deer fencing can be a cause of bird deaths due to collision.

7.2 Establishing a baseline

Deer population data and information relating to grazing and trampling pressure are essential in establishing a baseline of current impacts. These impacts should be assessed through determining both numbers and the movements of deer within the area, which if excluded, could increase deer densities out-with the proposed fence line.

Baseline data will need to be prepared by a party approved by DCS on both habitats within designated sites and species including woodland grouse likely to be affected as a result of the deer fence being erected.

7.3 High negative impact issues

- Fencing close to known woodland grouse lek sites
- Fencing in areas identified as core woodland grouse zones by Forestry Commission Scotland.
- Fencing that causes or is likely to cause damage to designated sites or other important habitats for example SAC, SPA, SSSIs and Biodiversity Action Plans (BAP) habitats through increased or decreased grazing or trampling pressure.

7.4 Mitigation required to reduce negative impacts

- Only in exceptional circumstances erect deer fencing within 1km of a lek site (eg overriding public interest – in these cases, fencing should be marked to prevent collisions)
- Deer fencing within core woodland grouse zones may be possible subject to careful sighting and appropriate specification. Such a proposal will need to draw on local information and expertise, including advice from the Capercaillie Project Officer, Forestry Commission Guidance Note 11 - Deer and Fencing, SNH, FC technical booklet on Specifications for Alternatives to Conventional Deer Fencing, RSPB and the Game Conservancy Trust.

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• Deer displaced by fencing onto designated sites where they are likely to cause damage will need to be culled.
• A Deer Management Plan based on habitat targets for the designated site should be prepared in collaboration with neighbours as required.
• A licence may be required if fencing is likely to disturb other protected species such as otter, wildcat and badger.

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8 Landscape and cultural heritage

8.1 Understanding the negative impact of a deer fence

Scotland's landscape wildland features and cultural heritage can be adversely affected by linear features and unnatural vegetation patches within fenced enclosures. The presence of particularly important landscapes will be indicated by designations such as:

- National Park,
- National Scenic Area (NSA)
- Scheduled Ancient Monuments (SAMs)
- Historic landscapes listed in the (non-statutory) Inventory of Historic Gardens and Designed Landscapes
- Area of Great Landscape Value (AGLV) and other regional and local landscape designations incorporated in statutory development plans

Deer fencing can detract from the visual quality of the countryside, especially when fences run parallel to roadsides and recreational routes or visually impact on skylines.

Deer fencing can detract for the sense of wildness that can be experienced in Scotland especially in remote locations with few human artefacts.

Deer fencing can impact on the historic environment by cutting across existing boundaries, and archaeological sites as well as affecting relict archaeological landscapes, designed landscapes and the landscape setting of individual features.

8.2 Establishing a baseline

SNH **Landscape Character Assessments** highlight the sensitivity of particular landscapes to the introduction of new features such as deer fences and the associated vegetation change. These effects will be of most significance where these landscape qualities are strongly developed, and in locations that are highly visible from major roads, popular hills or other viewpoints.

The **National Monuments Record of Scotland** (NMRS) and the relevant local authority Sites and Monuments Record (SMR), identifies cultural heritage features known to be present in the area to be fenced and define the limits of any likely archaeological sensitivity. HS can provide information on **scheduled (protected) sites**.

The **Historic Land-use Assessment (HLA)** identifies historic land-use patterns and field boundaries, and major relict historic landscapes which may be affected by the erection of deer fences and associated grazing patterns. **The Inventory of Historic Gardens and Designed Landscapes** identifies important landscapes and key landscape features which may also be affected.

8.3 High impact issues

- Areas of high scenic value with high visitor appeal.

• Fencing that detracts from the landscape that brings visitors to the area for example frequently visited hills, popular low-level walks, viewpoints and wild land.
• Fencing that detracts from the integrity or setting of cultural heritage, scheduled ancient monuments, other archaeological sites or historic landscape features.

8.4 Mitigation required to reduce impact

• Use fencing materials and select fence lines which take account of landscape impacts. SNH area staff should be contacted to discuss mitigation options.
• Fences should be located so as to have minimal landscape or cultural heritage impacts by relating closely to landforms and existing landscape features and avoiding archaeological sites and linear features.
• Where fencing might affect the site or setting of a Scheduled Ancient Monument, HS must be consulted in advance. HS and SNH should be consulted on potential impacts within Inventory Landscapes.

The *Forestry Commission's Forest Landscape Design Guidelines* (FC 1994) and *Lowland Landscape Design Guidelines* (1991) and SNH's Landscape Character Assessments offer further guidance to reduce the visual effects of different adjacent grazing regimes in the landscape.

9 Access

9.1 Understanding the impact of a deer fence

Deer fencing, because of its height compared with stock fencing, can be a significant barrier to access. The public have general right of responsible access and, in erecting fences, land managers must make adequate provision for public access.

9.2 Establishing a baseline

In planning a fence, it is important to establish current levels of access for that particular site.

Indications of levels of use through the area can be obtained from owners, occupiers, the Local Authority, SNH staff , DMGs and NGOs such as Mountaineering Council of Scotland and the Ramblers Association.

9.3 High impact issues

Fencing that significantly restricts access.

9.4 Mitigation to reduce impact

An appropriate means of getting through or across fences should be provided taking into account the type and number of users. The location of access points should be clearly marked and where appropriate interpretation provided to explain why deer fences are necessary, and to indicate when they might be removed.

Further information available from the Scottish Outdoor Access Code and the **Countryside Access Designs guidance.**

10 Socio Economics

10.1 Understanding the impact of a deer fence

Deer fencing and deer control are expensive. The social and economic consequences of different options, both in the long- and short-term, need to be considered.

Changes in deer numbers can affect the revenue of estates and have a knock-on consequence for employment. The material and labour costs associated with erecting a fence and the commitment to maintain and remove it are considerable.

Changes in habitat and deer management on one landholding can have significant effects on neighbours and local communities. In this regard a collaborative approach to deer management that recognises the legitimate rights and objectives of all landowners and affected communities is to be encouraged. The basis of the collaborative approach should be that those who derive the benefit pay the costs and that all relevant interests have been given a realistic opportunity to make their views known.

Deer fencing can allow different land use objectives to be maintained in close proximity. In constructing a fence there should be a careful cost-benefit analysis to establish the most cost-effective way of delivering the land use objectives, especially if public funds are used. If a fence is funded privately, provided all legal requirements have been met, then the owner may wish to adopt a solution which best suits his or her own needs, following best practice where appropriate.

10.2 Establishing a baseline

If the proposal affects deer that range over more than one landholding, a collaborative approach that recognises that those who derive the benefit pay the costs, should be encouraged strongly.

Key socio-economic variables to be considered are detailed in the table below. The data required to inform the analysis should be collected by a party approved by DCS, directly from records and accounts of owners and independent quotations from contractors. When cost-benefit analyses for different approaches are similar, consideration should be given to which approaches contributes most in the long term to local social and economic stability. Solutions that result in money circulating in the local economy should be given preference.

Table of key socio-economic variables

Current position	Fencing	Deer control
Economics		
Cost of fence materials		
Cost of construction		
Cost of fence removal		
Running costs (total and per deer culled)	Running costs (total and per deer culled)	Running costs (total and per deer culled)
Income (venison sales and sporting income)	Income (venison sales and sporting income)	Income (venison sales and sporting income)
Employment		
Man days related to deer control	Man days to construct fence. Man days to maintain and remove fence. Man days to control deer inside fence	Man days to control deer at lower density

11 References and Further reading

In addition to the references listed below, further information may be obtained from local DCS, SNH and RSPB field staff and from the Forest Research Agency (Alice Holt) on fencing, and from HS, the National Monuments Record of Scotland (NMRS) and the relevant local authority Sites and Monuments Record on cultural heritage features.

Andrew, M, and Baines, D (1997). The impact of deer fences on woodland grouse and other forest birds. Report to SNH, Millennium Forest for Scotland Trust and RSPB. Game Conservancy Trust, Newtonmore.

Moss, R. and Picozzi, N. (1994) Management of Forests for Capercaillie in Scotland Forestry Commission Bulletin 113. HMSO, London.

Petty, S.J. (1995) Assessment of Fence Collisions by Grouse Species in Scotland. Research Information Note 264. Forestry Commission, Edinburgh.

Forestry Commission (1992) Lowland Landscape Design Guidelines

Forestry Commission (1994) Forest Landscape Design Guidelines

Forestry Commission (Scotland) Deer and Fencing. Guidance Note 11

FC/RSPB (interim best guidance note) Alternative Deer Fences in Core Capercaillie and Black grouse habitats

Historic Land-Use Assessment, Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS), Edinburgh.

The Inventory of Historic Gardens and Designed Landscapes, Scottish Natural Heritage/Historic Scotland, Battleby/Edinburgh.

Landscape Character Assessments, Scottish Natural Heritage, Battleby.

Natural Heritage Management – Countryside Access Design Guide 2002, Scottish Natural Heritage, Battleby

Scottish Outdoor Access Code

Appendix 8
Information provided by estates

CSDMG DMP – Estate information summary

Glentromie (Lynaberack)
Requirement to improve grouse. Willing to reduce deer numbers to achieve this. Grouse are tick-infested on lower areas, but none on higher beats.
Red deer requirement of 40-50 stags and 40-50 hinds. Suspect that recruitment rates are higher than normally accepted.
Supplementary feeding used for last 8 years to divert stags.
Sheep removed in 1974.

Killiehuntly
Main interest is farming.

Ralia
No grouse shooting recently
Ticks being spread by deer and impacting on grouse
Require c. 30 stags for clients - trophy heads required

S Drumochter
SSSI Dotterel
3-800 brace grouse/year – declining.
Deer numbers increased since sheep taken off 5 years ago.
Require c. 30 stags for clients - trophy heads required
Ticks being spread by deer and impacting on grouse

Atholl
Winters c. 900 stags east of the A9. On Bruar and Dalnacardoch, objectives are 50:50 deer and grouse. Dalnamein and Bruar deer stalking is primary objective. Glenfeshie stags may rut with Forest Lodge (Glen Tilt) hinds. Thee is a common summering area for stags and hinds along the Gaick-Glenfeshie-Atholl march. Improved communication is required re- culling targets. Atholl are monitoring heather growth to determine impacts from deer. Recruitment is high c. 40% in spring.

Gaick
Objectives entirely sporting (grouse and deer). Require 100-110 stags. Deer and grouse sporting areas separate. Hind forest with stags coming in for the rut from Glenfeshie (c.30) and Dalnacardoch (c.70)

Inshriach
Require c. 5 deer km^{-2} to maintain biodiversity in the woodlands. Possibly up to 40 km^{-2} on the woodland edge, although culling is enabling woodland regeneration over most of the estate.
Experience suggests that sporting objectives can compromise nature conservation objectives and so no sporting objectives are pursued.

Rothiemurchus
Require 25-30 mature stags, preferably from a resident population – wish to improve summer stag grazing. Require to maintain quality. Reduced accessibility of stags (more difficult to encounter).
Concerns include; the maintenance of sporting interest against the challenges of neighbours to the south and west who are shooting large numbers causing reducing availability of mature stags on Rothiemurchus; neighbours planting nursery grown trees, that are especially attractive to deer, without protective fencing, and then culling them. These activities are resulting in considerably lower populations than are optimum for meeting DMG aims.
With reducing deer populations there will be an opportunity to for heather management (little burned since 1960) for grouse and other ground nesting birds.

Abernethy

Requirement to maintain the existing woodland population of red and roe deer. Problem – too many red deer at the upper tree line regeneration areas and too few in the woods. Following reductions good pine regeneration, but still inadequate broadleaved regeneration.
Exclosures indicate rowan and birch regeneration. Roe deer considered to play a role in this impact and now shooting more roe than red deer.

HIE Cairngorm

Area used for recreation and conservation. Grazing Agreement with Cairngorm Reindeer Co. c. 80 reindeer.
No sporting objectives. No resident deer, but c.50, mainly stags, culled to reduce damage to re-seeded areas.

Dorback

Deer not important – principle interest is grouse. Deer marauding problem in Glen Brown – in-bye improved grassland. 20-25 stags required for stalking. Fenced area of 242 ha WGS May 1996.

Glenavon

Grouse are primary interest. Aim to maximise grouse potential. Require 60 stags from a population of c. 600stags and 600 hinds.
This requires a reduction from current c.1400 to 1200. Wish to co-operate with Dorback and Delnabo and Invercauld to cull from the mobile group of hinds of c.200 that cross the march in response to culling. Around 400 hinds move between Glenavon and Invercauld to the south-east. Some fenced woodland regeneration areas.

Table 1 Western sub-area: Summary tables of deer data

Estate	Area (ha)	Area Low ground	Hind cull 03	Stag cull 03	Stag numbers	Hind numbers	Density (Nkm^{-2})	Density Low ground	Stag movements	Hind movements	Pregnant	Supplementary feeding
Glentromie (Lynaberack)	876 (part) 5200?	5200	100	100	40 (part) ?	407 (part) ?	51	 ?	Dalnacardoch - Atholl			Yes for past 8 years. 80 tonnes neeps/year diversionary
Killiehuntly	1787	1787	26	30	25	63	5	5				
Ralia	2428	2428	0	25	2-400	?	12	12		None cross A9		
S Drumochter	2023	1000	40	25	168(2004)	63	11	23		20 to Phones		
Atholl (part)									Summer into Glenfeshie and Gaick	4 sub groups some to Glenfeshie and Gaick but little movement to CSDMG		
Gaick	7446	2500	250	110	0 resident	750?	10	30	From Glenfeshie, Bruar and mainly Dalnacardoch in rut	From Bruar in hind season		
										None from west		
Glenfeshie	17212	9812	320	136	536 561 (05)	635 427 (05)	7 6	12 10		Stags and hinds from Bruar and Mar Lodge		
Invereshie	3084	1784	29	15	0	0	0	0	Winter income from plateau			
Inshriach	3500	3500			210	210	12	12				
Rothiemurchus	8000	5500	57	112	118	226	4	6	Mainly summer away – big stags move away after rut			Silage, turnips Jan-spring
Pityoulish			9	4	16	44						
Totals	**50680**	**33511**			**1413**	**2398**	**7.5**	**11.4**				

Table 2 Eastern sub-area: Summary tables of deer data

Estate	Area (ha)	Area Low ground	Hind cull 03	Stag cull 03	Stag numbers	Hind numbers	Density (Nkm^{-2})	Density Low ground	Stag move-ments	Hind move-ments	pregnant	Supplementary feeding
Abernethy	13713	12013	55	100	145	28	1	1	Some come in from Mar Lodge and possibly from Glenavon and Dorback. Come in post-rut			
HIE Cairngorm	1418	0			0	0	0	0				
Craigowrie	649		11	0								
Dorback	6078	6078	22	22	19	182	3	3		169 to and from Glenavon		
Glenavon	16997	12997	231	289	708	726	8	11		North wind moves deer off; around 400 hinds to and from Invercauld c.200 hinds to and from Dorback in response to disturbance		
Totals	**38855**	**31088**			**872**	**936**	**4.7**	**5.8**				

Appendix 9
DCS 2005 Deer Count Report

Deer Commission for Scotland

Deer Count Report

Area: East and West Grampian

Dates: 22nd - 25th February 2005

Report compiled by: Donald Fraser

Contents

Following DCS guidelines as outlined in the document "Deer Count Reporting Guidance"

PURPOSE

Through the priority site process DCS was committed to counting areas within the East and West Grampian area in 2005. Recognising that there was scope for facilitating a wider collaborative count of the area DCS approached the Tayside, Speyside and East Grampian DMGs in order to gauge the level of interest in a wider count. Feedback proved positive and it was agreed that the collaborative count would take place in the Speyside, Tayside and East Grampian sub areas 1,2,3, and 5 with DMGs paying a contribution towards the cost of the count.

East Grampian sub area 4 (Angus Glens) decided not to take part in the collaborative helicopter count but did carry out a ground count of their sub group area during the period of the wider collaborative count.

Scottish Natural Heritage, Forestry Commission Scotland and the Cairngorm National Park Authority supported the idea of undertaking a wider collaborative count of the DMG areas.

- DCS secured funding from SEERAD to undertake a collaborative count of the three wider DMG areas, provided there was support for the count and a financial contribution from DMGs towards the estimated cost.

- An element of SEERAD / DCS funding and staff input into the count was provided on the basis of training the nominated DMG co-ordinators in Best Practice for counting. Each DMG and sub-group was asked to nominate co-ordinators who would receive this training throughout the count process.

- The remainder of the count costs was sought from the Deer Management Groups.

- DCS recognise that there is no perfect approach in determining the apportionment of costs however we endeavoured to be fair in apportioning reasonable costs to DMGs, based on the public interest in counting within each DMG, a contribution towards training for Best Practice in deer counting, and a weighting based on complexity of ownership, deer density and movement.

PRE COUNT PLANNING

DMGs were asked to nominate co-ordinators who would liaise with DCS staff and local stalkers to facilitate the count. On securing confirmation from DMGs of their participation DCS staff met with the nominated DMG count co-ordinators on 22nd - 23rd December 2004 and the 17th - 18th January 2005.

These meetings and subsequent work allowed sufficient information to be gathered to inform count resource needs in terms of unenclosed woodland areas within the deer range which could be driven and counted, woodland too large to be driven and deer fenced areas within the deer range / count area. Appropriate count day areas were also identified to prevent / limit movement between day count areas. Co-ordinators were supplied with 1:25,000 scale maps to help with collection of fenceline and woodland information.

During the pre-count meetings it was agreed that the Allargue, Delnadamph and Crown Estate properties between East Grampian sub area 5 – Mar and the Speyside group should be included in the count area as there was recognised movement between these areas, although they did not form part of the DMG structure. Including this area in the count formed a more logical and secure boundary in terms of deer movement / management.

It was recognised that weather conditions would be critical to achieving the count and it was anticipated that up to six days of clear weather with snow cover would be needed to limit deer movement and reduce the area where deer were likely to be encountered.

It was estimated that up to 20 helicopter days would be required to undertake the count, with the intention of sub-dividing the area into sectors with 3-4 helicopters used to count an area at one time.

It was agreed that woodland areas that were not fully excluded from open range red deer would where feasible, be driven to push deer onto the open range to be counted. Woodland areas where population assessment has been carried out through dung counting, or where the woodland area is too large to move deer effectively, would not be driven.

In line with DCS counting policy on collaborative counts it was recognised that it would be important that DMG members and stalkers were involved in planning, counting, and report preparation along with DCS staff so that estate staff will be in a position to undertake similar counts in future.

SUB GROUP	DMG CO-ORDINATOR
Tayside	Sandy Reid (Ronnie Hepburn) / Gordon Macgregor
	Gordon MacGregor
Speyside	Desmond Dugan
	Michael Hone
East Grampian 1	Jason Williamson
	Kevin Peters
East Grampian 2	Eion Smith
	Ben Fernie / Philip Fernie
East Grampian 3	Victor Clements
East Grampian 5	John Cruickshank / John Fraser
	Iain Campbell
	Stuart Cummings

East Grampian 4	Richard Cooke

METHODS

1. Type of count: Helicopter, digital camera and visual
2. Classification: Antlered Stags and unclassified total

DMGs were aware that the count could take place at relatively short notice since December 2004, if and when suitable weather conditions arose. DCS and DMG co–ordinators were in contact leading up to the count taking place.

Four different helicopter companies were used during the count, Heli-charter, PDG and Forth and Clyde helicopters. Helicopters were based at Mar Lodge for the duration of the count as this was a central point for the count area. Fuel for these helicopters was provided by bowser when helicopters were working on the periphery of the count areas (Atholl and Glen Tanar). Three Heli-charter helicopters (2 x Bell Jet Ranger 1 x Bell Long Ranger) were available for the duration of the count with PDG and Specialist (Squirrell, Gazelle and Eurocopter) helicopters brought in as necessary.

On each morning briefings were done at the Mar Lodge base, involving all count crews and individuals involved in liaising with ground teams. Briefings involved weather brief, outlining the day's count area, helicopter crews and logistics.

The use of the cameras for counting deer saved helicopter time particularly on large groups of deer as an assessment of numbers could be carried out at a later date. Deer movement was kept to a minimum, estimated to average less than 500 meters.

On larger, spread out groups of deer, a little time (approximately 1 – 2 minutes) was taken to allow deer to group together, this allowed images to be taken of discreet groups of deer. The location of deer groups observed, helicopter flight paths and woods from which deer were moved have all been mapped. Copies of these maps are enclosed with this count report.

Day One

Lynaberack, Gaick, Glenfeshie, Ralia, Phones, Drumochter and Ralia, Killiehuntly

Due to weather conditions in the south of the country the Heli – charter helicopters did not arrive at Mar Lodge until 11.30 hrs on day one. Snow showers and low cloud meant that counting in the Lynaberack and Glenfeshie areas took longer than expected as helicopters had to land while showers passed through. It was recognised that the original day count area was not going to be completed so all resources were focussed on achieving a suitable break area to prevent any movement / double counting and the three helicopters were used to count from the Highland – Tayside county boundary on the A9 East to Glenfeshie which was

used as the count break boundary for day one. The slow progress made on day one meant that not all of the intended count area was covered by the helicopter count teams and therefore ground teams which were waiting to count woodlands in Abernethy and Rothiemurchus were not used on day one.

Day Two

Glenfeshie, Rothiemurchus, Abernethy, FCS Glenmore, HIE Cairngorm, Delnadamph, Allargue, Crown Estate, Glen Avon, Invercauld (Home beat), Delnabo, Dorback, Invereshie, Pityoulish, Seafield Estate

Weather conditions were calmer on the second day with good snow cover and bright sunshine which was ideal for counting. Three Heli – charter helicopters were used in conjunction with ground teams in Rothiemurchus, Abernethy and Glen Avon to count from the previous day break area at Glenfeshie, eastward. Helicopter teams were in contact with woodland clearing teams to ensure that driving / counting was co-ordinated. Due to excellent count conditions count teams were finished in Glen Avon and Abernethy by 15.30 hrs. To make best use of helicopter time John Cruickshank at Invercauld was contacted and arrangements were made to clear woodlands and count the home beat of Invercauld. This flexibility and willingness allowed a bigger area to be counted than had been planned at the outset of the day and meant that an effective day break boundary was made between Invercauld and Mar Lodge Estate.

Day 3

Delnadamph, Glen Tilt, Invercauld (Baddoch), Mar Estate, Mar Lodge Estate, Part Glen Fernate, Atholl, Dalmunzie, Dalnacardoch, Finegand, Glen Kilrie, Invercauld (Rhiedorrach)

Weather conditions on day three were similar to that of day two although there was significantly less snow cover on south facing slopes of the Tayside DMG. Three Heli – charter helicopters and two Forth and Clyde helicopters were used. One helicopter started at the day one break area on the Highland – Tayside county boundary on the A9 and worked east into Glen Bruar. Due to difficult counting conditions in the high ground of Glen Fernate and Fealar, this area was not completed on day three. The third heli-charter helicopter counted Invercauld (Baddoch), Mar Estate and then continued into Mar Lodge Estate. The two Forth and Clyde helicopters arrived at 14.00 hrs with one counting Glen Tilt west to Gleann Diridh and the other assisting in counting Mar Lodge Estate working west from the Invercauld / Mar Lodge Estate march. Unfortunately lack of helicopter flying time meant that there was an area between Gleann Diridh and Glen Bruar which was not counted on day three.

Day 4

Abergeldie, Balmoral, Glen Muick, Glen Tanar, Invercauld (Glen Callater)
Atholl (Forest Lodge)(West hand), Balnakeily, Fealar, Glenfernate, Lude, Straloch, Tarvie, Urrard, Airlie, Alrick, Auchavan, Balintore, F.E. Drumshade, Glen Isla, Glen Cally, Glenprosen, Invercauld (Shee) Lednathie, Tulchan, Waterboard Ground.

Five helicopters were used on day four in order to complete the count area. One helicopter was used to count the area between Gleann Diridh and Glen Bruar which was not completed the previous day. It then continued counting east of Glen Tilt in through Lude towards Glen Fernate. One helicopter worked North and West from the sub area 4 boundary through Glen Dye and into Glen Tanar /Glen Muick where it met with the helicopter working East from Balmoral. Significant areas of woodland were driven in Balmoral, Glen Muick, Glen Tanar and in sub Area 5 with ground teams liaising closely with helicopter co-ordinators. Glen Callater was counted working South and East from the Invercauld (Callater) march with Balmoral down to the Spittal of Glenshee where it met with the helicopter counting in Glen Isla. The helicopter which counted Glen Callater then counted Glen Doll / Bachnagairn before moving into Glen Prosen. The helicopter that counted Glen Isla then moved into Glen Fernate to link in with the helicopter working eastward from Lude.

WEATHER

	Day 1	Day 2	Day 3	Day 4
Date(s)	22/2/2005	23/2/2005	24/2/2005	25/2/2005
General conditions	Bright spells with snow showers.	Bright and clear	Bright and clear	Bright and clear
Wind direction	NW	NW	NW	NW
Wind speed	4 - 6 knots	4 knot	4 – 8 knots	4 knot
Snow cover	Complete	Complete	Complete	Complete
Cloud cover	7/8	4/8	1/8	0/8
Cloud level	3000ft - Areas of low cloud /mist and snow showers reduced visibility at times.	n/a	n/a	n/a
Temperature	1°C	1°C	2°C	3°C

COUNT DATA

The property (ha) and Density (sq Km) relate to the area and deer density derived from DCS GIS information of property boundaries shown in red on the count maps. An additional column for deer range and density has been added to the tables to allow owners / managers to calculate and enter different deer range and density figures for their own properties.

Speyside DMG

Property	Stags	Unclassified	Total	Digital Count	Visual Count	Property (ha)	Density (sq km)	Deer Range
Abernethy Forest	91	29	120	48	72	12673	0.95	
Allargue	0	0	0	0	0		0	
Crown	0	187	187	185	2	515	36.31	
Delnabo	8	29	37	37	0	107	34.58	
Delnadamph	0	324	324	324	0	6728	4.82	
Dorback Estate	3	202	205	187	18	5789	3.54	
Drumochter & Ralia	316	153	469	430	39	7086	6.62	
Etteridge & Phones & Cuaich	102	1083	1185	1123	62	7588	15.62	
F.E. Glenmore	1	12	13	0	13	2679	0.49	
Gaick	20	688	708	607	101	7648	9.26	
Glen Avon	468	949	1417	1384	33	17420	8.13	
Glenfeshie	571	511	1082	925	157	17212	6.29	
Invereshie	3	0	3	0	3	3078	0.1	
Killiehuntly	5	184	189	183	6	1787	10.58	
Lynaberack Estate	183	980	1163	1076	87	4237	27.45	
Pityoulish	2	52	54	36	18	889	6.07	
Rothiemurchus (South)	13	156	169	97	72	9895	1.71	
Seafield Estate	2	31	33	30	3	855	3.85	
Total	**1788**	**5570**	**7358**	**6672**	**686**	**103818**	**7.26**	

Tayside DMG

Property	Stags	Unclassified	Total	Digital Count	Visual Count	Property (ha)	Density (sq km)	Deer Range
Ashintully	384	0	384	382	2	1034	37.14	
Atholl (Bruar)	0	45	45	45	0	4847	28.85	
Atholl (Clunes)	1032	884	1916	1881	35	4773	40.14	
Atholl (Dalnamein)	20	1942	1962	1929	33	4924	1.26	
Atholl (Forest Lodge)	100	2669	2769	2522	247	12429	1.77	
Atholl (West Hand)	1076	514	1590	1453	137	6936	1.02	
Baledmund	76	3	79	70	9	2112	3.74	
Balnakeilly	4	30	34	28	6	2021	1.68	
Balvarran	125	0	125	125	0	1363	9.17	
Dalmunzie	5	297	302	292	10	2627	11.5	
Dalnacardoch	652	552	1204	1125	79	7412	16.24	
Dirnanean	333	91	424	350	74	1056	40.15	
Fealar	40	1021	1061	959	102	4882	21.73	
Finegand	85	0	85	82	3	1731	4.91	
Glenfernate	190	2342	2532	2428	104	5724	44.23	
Glenkilrie	88	0	88	88	0	635	13.86	
Invercauld (Rhiedorrach)	229	672	901	882	19	4030	22.36	
Lude	71	1334	1405	1368	37	6053	23.21	

Straloch	51	306	357	339	18	2655	13.45	
Tarvie	141	0	141	119	22	820	17.2	
Urrard	306	150	456	453	3	2112	21.59	
Total	**5008**	**12852**	**17860**	**16920**	**940**	**80176**	**22.27**	

East Grampian : Sub Area 1

Property	Stags	Unclassified	Total	Digital Count	Visual Count	Property (ha)	Density (sq km)	Deer Range	D (
Airlie	0	287	287	287	0	8571	3.35		
Alrick	269	235	504	496	8	1528	32.98		
Auchavan	5	668	673	640	33	952	70.69		
Balintore	130	70	200	190	10	1684	11.88		
Glen Isla	347	684	1031	1016	15	1216	84.79		
Glencally, Fergus & Glenmarkie	0	1543	1543	1526	17	2031	75.97		
Glenprosen	258	663	921	917	4	5429	16.96		
Invercauld (Glenshee)	321	1600	1921	1911	10	3997	48.06		
Lednathie	212	53	265	260	5	1315	20.15		
Tulchan	0	500	500	491	9	5366	9.32		
Waterboard Ground	72	761	833	719	114	2745	25.76		
Total	**1614**	**7064**	**8678**	**8453**	**225**	**37185**	**23.34**		

East Grampian : Sub Area 2

Property	Stags	Unclassified	Total	Digital Count	Visual Count	Property (ha)	Density (sq km)	Deer Range
Abergeldie	534	713	1247	1127	120	3540	35.23	
Balmoral	579	686	1265	1194	71	14150	8.94	
Balmoral (Bachnagairn)	153	846	999	995	4	3419	29.22	
Glen Muick	410	999	1409	1289	120	11823	11.92	
Glentanar	295	432	727	537	190	5143	14.14	
Invercauld (Glen Callater)	401	1036	1437	1400	37	6840	21.01	
Total	**2372**	**4712**	**7084**	**6542**	**542**	**44915**	**15.77**	

East Grampian : Sub Area 3

Property	Stags	Unclassified	Total	Digital Count	Visual Count	Property (ha)	Density (sq km)	Deer Range	De (s
Ballogie	0	18	18	0	18	3573	0.5		
Birse	0	2	2	0	2	3115	0.06		
Fasque	0	362	362	362	0	1010	35.84		
Fettercairn	11	90	101	101	0	690	14.64		
Finzean	0	186	186	155	31	2141	8.69		
Glendye	11	409	420	371	49	8902	4.72		
Total	**22**	**1067**	**1089**	**989**	**100**	**19431**	**5.6**		

East Grampian : Sub Area 5

Property	Stags	Unclassifie	Total	Digital	Visual	Property	Density	Deer	D

		d		Count	Count	(ha)	(sq km)	Rang e	(
Invercauld (Home)	294	1172	1466	1216	250	22450	6.53		
Invercauld (Baddoch)	239	682	921	886	35	4360	21.12		
Mar Estate	619	328	947	771	176	5940	15.94		
Mar Lodge Estate	745	1056	1801	1291	510	29370	6.13		
Total	**1897**	**3238**	**5135**	**4164**	**971**	**62120**	**8.27**		

East Grampian : Sub Area 4

Property	Stags	Unclassified	Total	Digital Count	Visual Count	Property (ha)	Density (sq km)	Deer Range	D (s
Airlie (East)	461	351	812			6351	12.8		
Clova	10	411	421			1784	23.6		
Careston	9	139	148			1791	8.3		
Gannochy (Colmeallie)	25	405	430			853	50.4		
Gannochy (Auchmull)	88	48	136			3370	4.0		
Gannochy (Punchbowl)	386	70	456						
Glen Ogil	0	0	0						
Hunthill	46	675	721			6942	10.4		
Millden	255	315	570			8134	7.0		
Invermark	262	1875	2137			17329	12.3		
Total	**1542**	**4289**	**5831**						

Count data from the ground count undertaken by Sub area 4 members. DCS does not at this time have information to produce a map of Sub area 4 however this may be possible if the information is available.

COUNT AUDIT

Component	Effect on quality of count	What could be done better?	Was population estimate adversely affected?
Pre count planning	Well planned Contact with DMG co-ordinators leading up to count and during count maintained and briefings done daily with count teams.	Communication with co-ordinators was ongoing through out the count and the fluid nature of the operational planning meant that plans changed quickly but every effort was made to keep all informed of how the count progressed.	No
Area counted	Entire area counted		No
Count method	Number of counters - Adequate counters		No
	Driven woodlands - Woodland driven where necessary / practicable	Every effort made to have enough resources to carry out effective clearing of woodland. Generally very successful.	Some groups of deer which did not come out of the woodland were recorded by ground teams in Abernethy, Rothiemurchus, Glen Tanar and Glendye. These deer have been included on the count map.
	Communications - Good communications	Communications between ground teams and helicopter always difficult but every effort made through out the count to keep in touch with ground teams and to keep them informed of count progression. Combination of weather and late arrival of helicopter led to some frustration with ground teams having to wait around particularly on day 1.	No
	Routes - Routes Appropriate for conditions	Overlaps were counted in Glen Bruar / Glen Feshie / Fealar and Glen Fernate to identify whether any overnight movement of deer had taken place.	Every effort was made not to double count with photographs used to distinguish groups of deer. Local DMG stalkers were involved in the count to ensure no double counting occurred.
Deer classification	Antlered Stags and unclassified Targets met		No
Number and quality of deer group photographs	Quality of photographs was good with software used to improve image quality.	A high percentage of the overall total 92% of deer were counted by photograph.	No
Visibility and data quality	Good visibility	Snow showers and low cloud on day one slowed count progress but did not affect accuracy of the count. Picking up deer on broken ground was difficult at times particularly on south facing slopes where snow cover was patchy	Every effort was made to count all areas. Time was taken over poorer snow cover areas to ensure that the count was as accurate as possible.
	Data quality high Data was collected as per DCS staff guidance on deer census.		No
Wind affects	Wind Strength Some wind	Performance of helicopters in terms of undertaking the tasks asked by navigators was generally good. Heli – charter pilots were not as experienced in counting / mountain flying as other companies but performed well and got used to the flying required as the count progressed	No
	Affect of wind on Deer No affect on deer		No
Ground conditions	Ground conditions variable - excellent snow cover in northern areas with broken ground in southern facing slopes making counting slower.	Given recent weather conditions over the last numbers of years it is unlikely to get four days of perfect conditions throughout a count area of this size.	No
Deer behaviour and movement affected?		Deer movement was taken into account in the planning process and every effort was made to ensure that count day boundaries were secure.	No If there was any doubt as to whether deer movement would take place then an overlap area was counted and photographs of groups compared to ensure no double counting of deer took place.

COSTS

Organisation	Planning days	Count days	Report days	Cost (£)
DCS	15	32	25	
FCS (Heli crews)	0	11	0	
DCS Contractor	2	60	2	**9589.00**
Helicopter (114.7 hours)				**94271.91**
DMG	14	83		
Total	31	157	27	**103860.91**

Note: All contractor costs calculated at £150 per day. Helicopter hours include travel to and from count area and refuelling trips.

COST ANALYSIS

Area counted (ha)	Cost per 100ha (£/sq. km)	Cost per deer (£/deer)
367435	28.27	£2.20

CONCLUSIONS

Due to the scale and resources involved it was most important that there was an element of flexibility in the planning process throughout the count. This allowed count co-ordinators to make judgements as to when and where to deploy resources to make the most of count time available without compromising the accuracy of the count.

This flexibility was only possible due to the understanding of those involved that the progression of the count was going to depend on a range of different factors many of which were out with the control of the count co-ordinators. Throughout the count DCS endeavoured to keep DMG count co-ordinators informed as to how the count was progressing so that they in turn could make sure that other DMG members were aware of how the count was progressing.

Unfortunately it was not possible to accommodate all requests from DMG members wishing to take part as helicopter crew. Restrictions were necessary due to limited space in each aircraft and constraints on the budget available for flying time.

The contribution and co-operation from DMG members involved, helped ensure that the count was well planned and implemented. DCS recognises the willing input from DMG members and in particular the invaluable help and assistance from the DMG Co-ordinators throughout the count operation.

Density maps, helicopter route maps and a CD containing all the count data and photographs will be sent to the DMG chairman / secretary and any estates wishing to view these should contact the DMG secretary / chairman.

- In four days 887 groups totalling 47,204 deer were counted, by direct observation and photography, in the East and West Grampian count area. In addition, the ground count undertaken by the East Grampian sub Area 4 members counted 1,454 stags 4,241 unclassified deer.

- 43,740 deer (72% of groups) were counted using photographs with 3,464 deer counted by visual counting.

- 834 photographs were used for counting which are available to DMG members and some of these photographs could be used to classify hinds and calves.

While stags classified from photographs are entered in the stag totals, an unknown proportion of males (mostly knobbers) will appear in the unclassified total.

APPENDIX 1 : **COUNT TEAMS**

See count route map for helicopter day areas

ROLE	DAY 1	DAY 2	DAY 3	DAY 4
	HELI 1	**HELI 1**	**HELI 1**	**HELI 1**
Navigator	Donald Fraser	Donald Fraser*	Donald Fraser	Donald Fraser
Camera	David Balharry	David Balharry*	David Balharry	David Balharry
Recorder	Rae Grant	Rae Grant*	Rae Grant	Rae Grant
Observer/	Michael Hone	* Swapped crews at 12.30 hrs	Kevin Simpson	Peter Fraser / Bruce
	HELI 2		**HELI 2**	**HELI 2**
Navigator	Iain Hope		Iain Hope	Iain Hope
Camera	Nick Reiter		Miles Davis	James Macleod
Recorder	Derrick Mackaskill		James Macleod	Derrick Mackaskill
Observer/	Thomas MacDonnell		Graeme Cumming	
	HELI 3	**HELI 3**	**HELI 3**	**HELI 3**
Navigator	Alistair Macgugan	Alistair Macgugan	Alistair Macgugan	Alistair Macgugan
Camera	Miles Davis	Donald Hendry	Donald Hendry	Donald Hendry
Recorder	Donald Hendry	Dave Sutherland	Dave Sutherland	Dave Sutherland
Observer/		Desmond Dugan	R Cumming / G Flynn	Philip Fernie
		HELI 4	**HELI 4**	**HELI 4**
Navigator		Harry MacNeill*	Harry MacNeill	Harry MacNeill
Camera		Miles Davis*	John MacPherson	John MacPherson
Recorder		Iain Hope*	Russel Cooper	Russel Cooper
Observer/		* Swapped crews at 12.30	Peter Fraser / Ian	Eoin Smith /
		HELI 5	**HELI 5**	**HELI 5**
Navigator		Alan Corrigan	Alan Corrigan	Alan Corrigan
Camera		Nick Reiter	Nick Reiter	Nick Reiter
Recorder		Dave Bain	Dave Bain	Graeme Taylor
Observer/		Colin Gibson / Neil Brown		Gordon Macgregor
	GROUND TEAM	**GROUND TEAM**	**GROUND TEAM**	**GROUND TEAM**
	John Craig	John Craig	John Craig	John Craig
	John Macpherson	John Macpherson	John Macpherson	Miles Davis – Ops room
	Iain MacDonald	Iain MacDonald	Graeme Taylor	John Macpherson
	Uni Maclean	Uni Maclean	D Elston	Graeme Taylor
	Graeme Taylor	Graeme Taylor	I Halliday	James Duncan
	Kirsty Willmitt	Kirsty Willmitt	M.C. Halliday	Balmoral Team x 10
	D Elston	D Elston	Kenny Willmitt	Glentanar Team x 5
	I Halliday	I Halliday	Scott Barrie	Glendye Team x 6
	M.C. Halliday	M.C. Halliday	R.G Brand	Game International x 2
	Kenny Willmitt	Kenny Willmitt	David Lambie	
	Scott Barrie	Scott Barrie	James Duncan	
	R.G Brand	R.G Brand	Atholl x 6	
	David Lambie	David Lambie	Mar Lodge Team x 6	
	James Duncan	James Duncan	Glen fernate Team x 5	
	Peter Ferguson	Peter Ferguson	Game International x 3	
	Rothiemurchus Team x	Rothiemurchus Team x 2		
	Abernethy Team x 6	Abernethy Team x 6		
	SNH x 6	Game International x 3		
	Game International x 3			
	FCS x 2			
	Glenfeshie x 3			

Appendix 10
Monitoring

Introduction
This appendix provides guidance and references to monitoring and provides suitable methods for recording, summarising and analysing data in order to ensure feedback and application in future management.
Monitoring is essential in order to inform managers of progress toward objectives. Given the particular management objectives in the CSDMG area, monitoring needs to include habitat and deer based parameters. Data should be collected and collated separately for the West and East sub-areas. Monitoring topics are arranged as follows;

Habitat impact
A Open range
B Woodland

Deer parameters
C Reproductive performance (Pregnancy and lactation) and age
D Mortality
E Recruitment
F Movements
G Dung counts
H Cull targets and achievements

Annual monitoring summaries and consequent actions
Estate summaries of monitoring information using each of the headings A-H above should be sent to the DMG secretary following the end of the female shooting seasons, who will arrange circulation of summaries plus any relevant deer count information from Appendix 9 prior to the annual meeting.

Monitoring and review of this plan
It has been agreed that, having undergone considerable consultation and discussion, this DMP should be applied for three years at which time a review should be undertaken in order to accept or reject any topics currently considered to be 'under consideration'.

Monitoring approaches
A Open Range
Reference; A Guide to Upland Habitats. Surveying Land Management Impacts. Volume 1 Background Information and Guidance for Surveyors, and Volume 2, The Field Guide. SNH.
The method provided (Appendix 10A 1) here is straightforward, though qualitative. It is considered to be ideal for assessing qualitative impacts on open range vegetation. It does not require a high degree of botanical knowledge.
Only areas considered to be sensitive should be assessed. Such areas should be demarcated on maps and assessments made. Results can be expressed as High, Medium or Low impact areas on maps. Appendix 10A 2 provides an example of the suggested Field recording form.

B Woodland
Reference; Appendix 10B 1.
The method provided is straightforward and requires little botanical knowledge. Given that the greatest cost in this method is getting to the assessment sites, dung counts can easily be incorporated, if required, using the same plots. This method has been usefully applied at Glenfeshie over the past five years.

Only areas considered to be sensitive should be assessed. Such areas should be demarcated on maps and assessments made. Appendix 10B 2 provides an example of a suggested Field Recording sheet.

C Reproductive Performance (Pregnancy and lactation) and age

An important part of the Deer Management Plan (DMP) and an aid to establishing cull targets is the development of population models. The starting populations for models have been based on an estimation of deer numbers. The subsequent changes in population size are based on inputs (recruitment) and outputs (mortality). A valuable basis for predicting recruitment is to estimate pregnancy and lactation from culled females. It is important to relate this to the age of the animal and this can be estimated from the jawbones that have been removed from shot animals. (Appendix 10C 1).

The reproductive input to a population is estimated by assessing the pregnancy status of all females. The presence of milk in the mammary gland provides evidence of lactation and the rearing of a calf from the previous year.

The reproductive tract of all female deer should be examined during gralloching and the uterus cut open to reveal its contents. In most females shot during the hind season pregnancy can easily be determined by the presence of an embryo, but in the early stages of pregnancy before an embryo is readily visible (before mid November), it is possible to detect pregnancy more easily from the presence of a *corpus luteum* in an ovary. A *corpus luteum* is yellowish gland that develops rapidly in the ovary following fertilisation and persists for the duration of the pregnancy. It is easy to see if the ovary is sliced in half. The presence of milk in the udder should be assessed at this time also.

Information on the pregnancy and lactation status of the hind should be recorded in the stalkers notebook with the animal number. This can be entered on the larder record sheet later where it is related to the larder records and jawbone. An example of a Larder Record Sheet is provided in Appendix 10C 2.

The proportion of yearlings and adults pregnant and lactating should be calculated at the end of the season and a summary provided to the DMG secretary for recording in the summary sheet (Appendix 10C 3).

D Mortality

Natural mortality mainly affects calves during their first winter and spring. This loss is accounted for in the estimation of recruitment (ie the proportion of animals being recruited into the adult population as yearlings c.9 months old). See Section E below.

In a heavily shot population most adult mortality is of culled animals and these are accounted for in the cull records. Of course, some other adult deer die and the proportion of these can be difficult to estimate, though they can usually be considered to represent a small proportion of the population. Records should be maintained of any evidence found of adult natural mortality and provided annually to the DMG secretary (see Record Sheet 10D 1).

E Recruitment

As discussed at C and D above, a consideration of reproductive performance provides a basis for estimating recruitment. However, recruitment is best estimated from the ratio of adult females to calves observed in the population. These estimates can be obtained from deer counts (ie Appendix 9) and from sightings of hind-calf groups observed during the springtime. Each estate should provide its estimated recruitment figure expressed as number of calves/ hind (current estimate for the area is 0.37) to the DMG secretary who will maintain the summary for the CSDMG area (Form 10E 1).

F Movements

Movements of red deer across estate boundaries is perhaps the most difficult parameter to estimate. This is because it is dependent upon a range of variables that are unpredictable (eg weather and disturbance). The organisation and planning of the DMG sub-group boundaries is aimed to minimise the effects of movements as far as is possible by choosing natural boundaries that surround discrete populations. However, the DMG is aware of particular places where movements in and out of the DMG area occur and the DMP attempts to address solutions. It is important to document any additional knowledge of deer movements across estate boundaries, where possible confirming the observation with the adjacent estate. These should be recorded on form 10F 1 by each estate and passed to the DMG secretary for summarising on form10F 2.

G Dung Counts

Dung counts are probably the most useful method of estimating deer populations occupying concealing habitats such as dense woodlands. Various methods are available. For one of these see Appendix 10G 1. The field survey can easily be incorporated with the assessment of woodland impact assessment (10B 1).

Estates conducting dung counts should make the results known to the CSDMG secretary for inclusion in the summary of estimates of deer density (form 10G 2).

H Cull Targets and Achievements

Cull targets should be derived from the appropriate models in Section 11. For example, for the western sub-area Table 6 presents the proposed culls.

Table 6B Proposed sustainable red deer culls for estates in the western sub-area following reduction to 4102 red deer (Table 5A)

Estate	% low ground	Stag	Hind	Calf	Total
Lynaberack	6	22	28	11	61
Ralia	5	19	24	10	53
S Drumochter	5	19	24	10	53
Gaick	11	41	52	21	114
Rothiemurchus	15	55	71	28	154
Glenfeshie	25	92	117	46	255
Killiehuntly	3	11	14	6	31
Phones	11	41	52	21	114
Invereshie	5	19	24	10	53
Inshriach (FE)	8	30	38	15	83
Glenmore (FE)	6	22	28	11	61
Total	**100**	**371**	**472**	**189**	**1032**

Actual cull achievement should be notified to the DMG secretary at the close of each shooting season. These data can be recorded on form 10H 1.