Deer Consultancy Services

A Deer Management Plan for the

West Lochaber DMG

2016-2021

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Executive Summary

This plan aims to improve many aspects of deer management within the West Lochaber DMG. In particular, it seeks to involve more people and more interests in discussions about deer. Change will be driven by a new Constitution and by the consultation surrounding this plan. However, the two most important issues in a deer management plan are how many deer there are and how many deer there should be. The lack of a recent complete deer count means it is unknown how many deer there are in West Lochaber. Historical performance suggests deer numbers will lie between 4000-6000 and average density will lie between 8-13 deer per km^2. A collaborative count in 2016 is a priority.

A judgement on how many deer there should be is influenced by the condition of habitats, the deer economy and by the degree of conflict surrounding deer management. Currently there is a lack of widespread habitat data but designated sites are generally in Favourable Condition and trends in sheep numbers suggest there has been a significant decrease in grazing pressure over the last 20 years. There are few conflicts surrounding deer management in West Lochaber although deer vehicle collisions are a concern. This lack of conflict is partly due to a homogeneity of land management objectives across the DMG and partly due to secure strategic deer fences e.g. around FCS woodlands and around crofts at Muirshellach.

Given the lack of conflict and the current state of information, this plan proposes that current culls are maintained in 2015-16. Habitat monitoring systems should be put in place in 2016 which will allow habitat data to influence future cull targets. Count data, mortality and recruitment counts can be used in a simple population model to help set culls. Key areas of public interest to be addressed as a priority are deer vehicle collisions and the general condition of native woodlands as detailed in the Native Woodland Survey of Scotland.

Summary of Actions Arising from the West Lochaber Deer Management Plan

A list of the actions arising from the plan is presented below:

Action	Who by	Timescale
Review and update deer management plan targets and actions annually and carry out a full review of the plan after 5 years.	WLDMG	At each AGM
Carry out an annual review of Group performance against the Benchmark and Public Interest Actions after each AGM.	Chair and Secretary	After each AGM
Update Constitution in line with ADMG's Template for DMG Constitutions.	WLDMG	End June 2016
All members to adhere to the Code of Practice in Deer Management.	All members	On going
Keep up to date with Wild Deer Best Practice Guidance.	All members	On going
Consider the option of forming two sub groups and the pros and cons of such an approach.	WLDMG	End June 2016
Carry out actions arising from the Communications Policy including making relevant data and documents publically available through the WLDMG website.	Chair and Secretary	End June 2016
All stalkers to attain DSC1 and work towards DSC2. Identify training needs within the DMG and organise training courses where necessary. Consider inviting other rural workers to participate in training courses where possible. Carry out actions arising from Training Policy.	All members	End Dec 2017
Organise annual co-ordinated foot count of DMG, discuss results at June meeting and make results publically available through the WLDMG website.	Stalkers, all Members, Chair, Secretary	In winter/ spring annually
Use count, mortality and recruitment data to develop the simple population model within the deer management plan.	Secretary	Before June meeting annually
Consider whether methods to estimate deer populations within woodlands are necessary.	All members with significant areas of woodland	End Dec 2016
Carry out annual mortality searches and recruitment counts and use data to update the population model within the deer management plan.	Stalkers, Secretary	Before June meeting annually.
Work towards attaining SQWV standards and ensure a supply of venison is available for local sale.	All members who process deer.	On-going.
West Lochaber DMG will initiate a habitat monitoring scheme which will fall in line with SNH best practice guidance. Habitat Impact Assessments will be completed every 3 years.	All members	Start 2016. Repeated every 3 years.
The DMG will organise a group training event for habitat impact assessment if required.	WLDMG	2016
Members to provide count, mortality and recruitment data to the Secretary to enable the population model to be updated before each June meeting.	All members	On-going
Consider the provision of woodland shelter available for deer now and in the future.	All members	2016

Consider ways of minimising stag mortality from sources other than sport stalking.	WLDMG	On-going
Low deer densities will be maintained on Blar na Caillich Buidhe SSSI, Loch Dubh SSSI, Coille Puiteachan SAC and Loch Arkaig Pinewoods SAC.	Relevant members	On-going
Low deer densities will be maintained and deer culls will target the east end of Glen Beasdale.	Relevant members	On-going
Habitat monitoring will take place on Moidart and Ardgour SPA before management changes are put in place.	Relevant members	On-going
Discuss the initial target population, develop thinking about target populations (including incorporating habitat monitoring data showing trends in habitat condition) and agree a new target and the culls that are required to achieve it.	WLDMG	End June 2016.
Consider approaches to minimising stag mortality from sources other than sport stalking.	WLDMG	End June 2016.
With regards to native woodlands each estate to use NWSS results to prepare condition assessments of each wood within the High or Very High impact categories and produce management proposals to improve condition or justify current management. Each estate to carry-out a regular cycle of woodland condition monitoring in accordance with Wild Deer Best Practice Guidance.	All members with native woodlands assessed as having High or Very High herbivore impacts.	End Dec 2017.
The West Lochaber DMG will manage peatlands with the aim of maintaining both the current extent of peat deposits, and the health of peat forming habitats. The West Lochaber DMG will limit the loss of stored carbon and where necessary restore habitats to enhance carbon sequestration.	All members	End Dec 2017
Members will identify broad areas of Blanket bog and will monitor impacts on Blanket bog using habitat impact assessments.	All Members	End Dec 2016
Members to identify and map the location, extent and condition of degraded peat.	All members	End Dec 2017
The DMG will consider accessing the Peatland Restoration Fund to help fund mapping peatland and assessing peatland condition.	WLDMG	End Dec 2016
Avoid burning on areas of peatland as outlined in the Muirburn code.	All members	On-going

Ensure that grazing regimes and deer densities allow for maintenance of peat integrity.	All members	On- going
Where possible, only access peatland with vehicles which have low ground pressure.	All members	On-going
Ensure peat extraction and drainage of peatlands does not increase.	All members	On-going
Continue to resist colonisation by feral pigs and by sika through culling all observed individuals where possible. Numbers and locations of culled animals will be reported to the DMG. Small resident populations of sika at the west end of the DMG will continue to be culled as a resource but there will be no increase in numbers.	All members	On-going
Ensure DMG is open to communication with regard to concerns of damage to historic and cultural features. The DMG to contact the Highland Council archaeologist to see if they have any concerns.	WLDMG	On-going
Ensure a supply of venison is available for local sales.	All members	On-going
With regard to deer vehicle collisions, Fassfern to explore fencing options including public funding. Consider ways of increasing driver awareness of the risk of deer vehicle collisions. Argue for road verge vegetation management. Monitor numbers of deer killed on the road and rail by monthly surveys of each roadside estate and report numbers to Deer Collisions UK database.	WLDMG	End Dec 2017.
Deer Vehicle Collisions to be added as an agenda item at each AGM.	Secretary	June 2016
Ensure estate guests are aware of the risks and symptoms of Lyme disease. Ensure First Aid kits include appropriate tick removal equipment.	All members	On-going
Consider establishing commercial deer related activities other than deer stalking. These might include deer viewing, photography etc.	All members	On-going
Ensure crofting and Grazing Committee representatives are invited to DMG meetings and that any concerns they may have are fully discussed.	Chair and Secretary	End June 2016.
Carry out actions within the Communications Policy.	All members	On-going
Consider deer welfare issues at each DMG meeting and consider the implications for deer welfare when taking management decisions.	WLDMG and all members	On-going.
Consider the use of a signed Declaration form in relation to Chronic Wasting Disease for stalking guests from North America.	WLDMG and all members	End June 2016.

1.0 Introduction

This deer management plan was commissioned following the Scottish Parliament's Rural Affairs, Climate Change and Environment Committee's review of deer management in 2013. The Committee called for increased professionalism in deer management planning across Scotland and challenged all Deer Management Groups (DMGs) to produce forward looking deer management plans by 2016. To support DMGs in plan preparation, the Association of Deer Management Groups (ADMG) produced a Benchmark against which DMG performance could be assessed. SNH also produced a list of Public Interest Actions. Both of these elements are essential components of a competent deer management plan.

This deer management plan has been commissioned by the West Lochaber Deer Management Group (WLDMG). West Lochaber is a long established DMG which meets regularly and functions relatively smoothly. This plan builds on the previous work of the Group and incorporates new requirements from Government. In 2014, SNH carried out a review of the Group's performance against the Benchmark and the Public Interest Actions. This plan is broadly structured around the Benchmark and the Public Interest Actions and focuses on any weaknesses found during the review. The plan covers the 5-year period from 2016 to 2021. However, targets and actions outlined in the plan should be updated annually with a full review carried out in 2021. It is recommended that WLDMG carry out an annual review of performance against the Benchmark and the Public Interest actions after each AGM.

Action: *Review and update targets and actions annually and carry out a full review of the plan after 5 years. Carry out an annual review of Group performance against the Benchmark and Public Interest Actions after each AGM.*

1.2 Purpose of the Plan

The purpose of the plan is to improve the performance and function of the WLDMG in the following key areas:

- Communication: including both the internal communication strategy within the DMG and communication with wider interest groups.
- Collaborative deer management: encompassing deer counting, population monitoring and adaptive cull planning.
- Habitat management: implemented through habitat monitoring and the use of habitat data to influence cull targets. In addition to this, the use of habitat management in the protection of important habitats within designated sites.
- Delivery of the Code of Practice on Deer Management. The WLDMG endorses the Code and will use this plan to help deliver it.
- In balancing private and public interests. These interests include the local economy, public safety, the condition of native woodlands and a range of other issues.

1.3 Area and Boundaries

The boundary of the WLDMG is shown on Map 1 and is formed by the following:

- The A830 from Corpach west to Lochailort
- The coastline from Lochailort west to the River Morar
- The River Morar east to Loch Morar and the southern shoreline of Loch Morar to Oban.
- The southern march of Glen Dessary Estate east to the western end of Loch Arkaig.
- The southern shore of Loch Arkaig and the Mile Dorcha to Clunes
- The western shore of Loch Lochy from Clunes to Gairlochy
- The B8004 from Gairlochy to Corpach.

The main landholdings are South Achnacarry, Glen Loy, Fassfern, Glenfinnan, Glen Mamie, Ranachan, Arisaig, Meoble, Scamadale and Ardnish and the Forestry Commission Scotland forests of Glen Loy, South Loch Arkaig, Glen Mallie and Gairlochy. There are also tenant farms and crofted areas. The total area is just under 52000 hectares.

The boundaries of the DMG are well defined and include long lengths of coast and loch shore which limit deer movement. Members feel they manage a largely discrete population of deer. The West Lochaber DMG neighbours with the Knoydart DMG to the north, the Moidart DMG to the south west and the East Loch Shiel DMG to the south east. There is reasonable communication and collaboration between WLDMG and neighbouring DMGs but there is little deer movement and few shared issues.

1.4 Membership

DMGs are generally structured so that land holdings pay an annual subscription which may be based on the level of their cull. Other interests can usually attend without paying a subscription. Member estates who currently pay subscriptions to the DMG are South Achnacarry, Glen Loy, Fassfern, Glenfinnan, Glen Mamie, Ranachan, Arisaig, Ardnish, Meoble, Scamadale and FCS. A new constitution is developed for the WLDMG in section 2 of the DMP. This constitution details the interests who should be invited to attend meetings.

1.5 The Member Estates

Brief descriptions of member estates, their objectives and management practices are set out below. Ownership boundaries are shown on Map 1 (Appendix A).

1.5.1 South Achnacarry

South Achnacarry is a large estate of **14255 hectares** (all areas supplied by the SNH GIS team) which lies at the east end of West Lochaber. It is owned by Locheil Estates but, in an innovative arrangement, deer management is leased to Achnacarry Sporting and Country Pursuits, which is run by Alex Macdonald, former Achnacarry Estate stalker. Deer stalking is the mainstay of this business and **the objective is to maintain a cull of 45-50 sporting stags** and to sustain the deer population that supports this. The estate retains control of woodland management and still exercises limited sporting rights e.g. roe buck stalking in some small areas of ground.

Sheep are grazed on the hill from a farm tenancy at Moy Farm but there are no crofters and the estate has seen between 5000 -7000 sheep removed over the last 30 years. Deer are fed in Glen Mallie with the aim of improving stag quality and to hold them on the ground for stalking. Fed deer are also used as a resource for photographic tours and as a focus for a small amount of public engagement. The leaseholder is willing to increase levels of public engagement as long as this is compatible with the main business objective.

South Achnacarry is the only neighbour for Forest Enterprise landholdings in West Lochaber. Relations between the leaseholder, the estate and FCS are good and there are regular formal communications through annual meetings.

1.5.2 Glen Loy Sporting Tenancy (Locheil Estates)

Glen Loy farm is tenanted by Graham Nairn and his father George. They have cattle on in bye land, run sheep on the hill and have a sporting tenancy for red deer stalking over **3300 hectares. The objective is to maintain an adequate income from farming and deer management.** The ground is let by Locheil Estates who also own South Achnacarry. A stable population of around 250 hinds are hefted to Glen Loy but few stags remain on the ground out-with the rut. Around 15 stags are shot per year by guests, some of which are shared with South Achnacarry. The Glen Loy tenancy adjoins croft land at Muirshellach and the village of Corpach but deer fencing prevents deer moving into these areas.

The tenant also makes an effort to maintain low deer densities adjoining crofts and houses. The tenant estimates roughly about 10-20% of his time is spent on deer management with the rest of his time spent on farming.

1.5.3 Forestry Commission Scotland

FCS own **2127 hectares** of land split between Glen Loy, Gairlochy, Glen Mallie and South Loch Arkaig. Glen Mallie and South Loch Arkaig are currently for sale. All these woodlands are securely deer fenced and there is little deer movement between FCS land and neighbours. **The management objective for Gairlochy, Glen Mallie and South Loch Arkaig is to enhance the existing native pinewood element** by the removal of exotics. This work is on-going. **Glen Loy also has a native pinewood element but is mainly managed for timber production.** Achnacarry Estate has retained sporting rights within these woodlands but exercises them rarely and normally only for roe buck stalking. The management cull is taken by a contractor who manages deer for FCS over a much wider area.

1.5.4 Fassfern

Fassfern is a large estate of **7009 hectares** which lies to the east end of West Lochaber. It is owned by West Highland Woodlands Ltd. **The main objective on Fassfern is timber production** from a large area of conifer plantation. Sport stalking on the open hill surrounding the forest is a secondary objective. Two full time stalkers are employed to cull deer all year round within the forest and to take the sporting cull. Currently around 150 red deer are culled annually in the forest with the aim of minimising browsing on newly planted conifers. The estate wishes to cull 40 sporting stags on the hill. Some are shot by the owners and some are let.

Sheep are grazed by a tenant farmer who also leases parts of South Achnacarry. Parts of the estate are also common grazing but the crofters no longer exercise their rights and no sheep are grazed.

1.5.5 Glenfinnan

Glenfinnan Estate lies close to the centre of the West Lochaber DMG and covers an area of **4069 hectares**. It is a famous location in Scotland both for its historical connection to the Jacobite Rising of 1745 and for its railway viaduct. The Glenfinnan Monument and viaduct are popular tourist attractions with over 200000 visitors annually. **Estate management is focussed on sport stalking and woodland management.** The owner wishes to maintain a sporting cull of 25 stags per annum and support a deer population commensurate with that aim. The estate has 800 hectares of woodland of which 580 hectares are managed for commercial timber and 220 hectares are described as amenity woodland consisting largely of native species. There are plans to fell and re-stock parts of this woodland but no plans for further expansion. There are no sheep on the estate and there are no crofts or any grazing rights held by others. Some 3000 sheep were grazed on Glenfinnan in the 1970s and the removal of all these animals should have considerably reduced grazing pressure. There are two full time employees, two part-time employees and the estate uses numerous contractors.

Glenfinnan is very popular with walkers and the estate has a welcoming and engaging attitude to public access.

1.5.6 Ranachan

Ranachan is a small estate of some **1320 hectares** which lies on the west side of Glenfinnan. **The main objective is sport stalking with the owners wishing to take a cull of 5-10 mature stags per annum**. Stalking is carried out by the owners and their friends. No sheep have been grazed on Ranachan since the 1960s and there are no crofts. There are some small areas of scrub woodland but no designated sites. The estate also generates hydro-electric power.

1.5.7 Glen Mamie

Glen Mamie **(1686 hectares)** is purely a stalking estate where the **objective is a sustainable cull of 15-18 stags per annum** and to maintain a deer population commensurate with that cull. Sheep were removed in the 1980s and there are no other livestock or any crofting. Stags are shot by paying guests who mostly come from USA. There are no full-time employees on Glen Mamie but staff from the owner's wider business spend about 60 man days per year

on deer management. There are areas of native woodland some of which are fenced and some open. There is some scope for protecting areas of oak woodland which are currently open to deer.

1.5.8 Ardnish

Ardnish Estate **(1433 hectares)** is a peninsula which lies south of the A830 and south west of Lochailort. It is part of the West Lochaber DMG but has always been a peripheral member due to its relative isolation from the other estates and because it holds a relatively discrete population of deer. Some deer are shared with the core estates of the WLDMG and there is a strong case for Ardnish playing a bigger role in the DMG. Ardnish is part of a group of estates where deer are managed by West Highland Hunting. This is a business based on commercial deer stalking centred on Ardnamurchan. West Highland Hunting employs a number of experienced deer stalkers which could be a resource available to WLDMG for deer counting.

Deer stalking on Ardnish is commercial with guests shooting all deer which are culled. In 2015 nine different guests shot the total cull of 10 stags. These guests stalk deer over a wider area than Ardnish and typically stay for a week based in a range of accommodation available in Ardnamurchan. West Highland Hunting plan to create a "wilderness hunting" package in future years where guests will stay in an old croft house on Ardnish which is being re-furbished to a comfortable but basic standard. There are no livestock on Ardnish and no crofts. There are plans to protect and regenerate oak woodland at Polnish.

1.5.9 Arisaig Estates

Arisaig Estate **(3461 hectares)** lies at the west end of the DMG. The estate is largely bisected by the A830 with the higher hill ground to the north of the road and the lower lying Rhue peninsula to the south of the road. **The objectives are deer management and farming.** The owners wish to maintain a sporting cull of 20 stags per annum while maintaining a deer population commensurate with that cull. Enjoyment of deer stalking provides an incentive for the owners to invest in the property. The farming enterprise consists of 40 Luing cows and 300 breeding ewes. There are no crofts and no other livestock. There is some 800 hectares of native and commercial woodland scattered over many small blocks. These include the Glen Beasdale SAC. Some of these woodlands are fenced against deer and some are open to provide shelter for animals.

1.5.10 Scamadale

Scamadale lies in the north west of the West Lochaber DMG and covers an area of **496 hectares**. **The objectives are wide ranging with nature conservation, landscape, timber production and recreation** all deemed important by the owners. A deer fence encloses 160 hectares of commercial forestry and native woodland with the rest of the property being open hill. Red, roe and sika deer are present. It is likely that sika found on Scamadale have spread east from the north side of Loch Morar. Scamadale is one of the few estates in West Lochaber where there is a breeding population of sika. Stalking is leased to a local stalker on an annual basis. All deer seen within the woodlands are culled but a higher population density is maintained on the open hill where the objective is to maintain a healthy deer population. There are no crofts or common grazing with only a very small number of sheep straying onto Scamadale from a neighbouring property.

1.5.11 Meoble

Meoble Estate runs along the southern edge of Loch Morar for most of the loch's length. It marches with Scamadale at its western end and with Arisaig, Glen Mamie, Rananchan and Glenfinnan on its southern and eastern marches. This large property of **8597 hectares** holds a significant proportion of the deer herd at the west end of the West Lochaber DMG and is therefore a key player in their management. Deer are viewed as an important resource for the estate with **the main objective being to manage a deer herd in balance with habitats so that this resource can be passed on to future generations**. The owners take a long term view to the management of Meoble and have invested steadily in infra-structure over many years. A water turbine is a recent development. There is one full time member of staff working on the estate and two stalkers are employed for the stag cull. These stalkers have worked

on Meoble for many years but also work elsewhere. One stalker takes the hind cull annually. Stags are known to move on to Meoble from Glenfinnan during the winter and during this time mineral blocks are provided along the valley floor. The owners report low mortality and good calving rates. Meoble has no road access and culled deer are transported by boat to Morar. Meoble does not have a breeding population of roe or sika. There are no crofts and red deer are the only significant herbivore.

1.6 Summary of the Objectives of Member Estates

There are similar deer management objectives across WLDMG with nearly all estates wanting to produce a sporting cull of mature stags. Woodland management and farming objectives are also important. FCS has a significant land holding where sport stalking is not an objective, but FCS land is currently separated from the rest of the DMG by secure deer fencing. Strategic deer fencing also reduces conflict with crofts and settlements. The similarity of land owner objectives means there is little deer management conflict between estates in the WLDMG.

2.0 Deer Management Group: Organisation, Functions & Policies

2.1 Updating the Constitution

The WLDMG should update its current constitution to reflect developments in deer management using the ADMG Template for DMG Constitutions (see Appendix B).

Action: *Update the Constitution as above.*

2.2 Code of Practice on Deer Management

The Code of Practice on Deer Management has been endorsed by all members of the West Lochaber DMG. The code is endorsed within this deer management plan and within the DMG constitution.

Action: *All members to adhere to the Code of Practice on Deer Management.*

2.3 ADMG Principles of Collaboration

The ADMG Principles of Collaboration are endorsed within this deer management plan and the DMG Constitution. In particular members will:

- Respect each other's range of management objectives.
- Communicate openly with each other and all relevant parties.
- Negotiate and, where necessary compromise, in order to accommodate reasonable land management objectives of neighbours.
- Work together to resolve conflict.

2.4 Wild Deer Best Practice Guidance

Members agree that all deer management activities will be carried out in accordance with Wild Deer Best Practice guidance. Best Practice guidance will evolve over time and members will make reasonable efforts to keep up to date with developing Best Practice.

Action: *Keep up to date with Wild Deer Best Practice guidance as it evolves.*

2.5 Long Term Vision

Members of the WLDMG support the long term vision for deer in Scotland as detailed in "Scotland's Wild Deer- A National Approach." Members agree to work together and manage deer in accordance with the Code of Practice on Deer Management and will work to ensure all management activities are carried out in accordance with Wild Deer Best Practice guidance.

2.6 Strategic Objectives

The strategic deer management objectives agreed by the WLDMG are listed below. These are not in priority order and are all of equal importance.

- To safeguard deer welfare.
- To manage deer populations so they are in balance with their habitats.
- To minimise damage to other land uses.
- Where possible to minimise risks to public safety arising from deer and their management.
- Within the constraints of points above to achieve a sporting cull of 220 stags.
- To bring all designated sites affected by deer impacts into favourable condition and to maintain them in favourable condition.
- To openly communicate information relating to deer management between members and between the WLDMG, local communities and other communities of interest.

2.7 Considering whether sub groups are appropriate

The WLDMG has an elongated, narrow shape with the long length running from west to east. This shape means deer managers in the far west of the Group have relatively little contact and share few deer management issues with those in the east. The deep narrow glen of Glenfinnan runs north to south and effectively forms the dividing line between two halves of the West Lochaber DMG. There is some argument that the WLDMG could form a west sub group and an east sub group with Glen Finnan Estate forming the boundary between the two sub groups.

There are potential advantages and disadvantages to the creation of sub-groups. In other parts of Scotland, dividing relatively large DMGs into smaller sub groups has resulted in better estate engagement and provided a more local focus for deer management decisions. Crofting interests might be more willing to attend meetings if they were more local and involved less travel. Local deer management issues could be addressed at length in a locally based forum where all are involved in the issue.

Disadvantages include an increased number of meetings particularly for Glenfinnan which would have to attend both sub groups. Currently much of the impetus and resources for DMG activities comes from the eastern end of the Group. The loss of these resources could affect the performance of any west sub group.

Action: *The WLDMG to consider the option of forming two sub groups and to develop the timetable of meetings that would be required annually if sub groups were to work.*

2.8 Communications Policy

Good communication is a cornerstone of collaborative deer management. The WLDMG is required to communicate internally between member estates and with local interest groups such as Community Councils and Grazing Committees. In addition, there may be wider communities of interest such as outdoor access groups and Environment LINK. In the future, member estates will agree to communicate openly with other members and be pro-active in communicating about their plans and activities. There shall be a culture of "no surprises" amongst members in that future deer management changes will be fully discussed in advance of the change taking place. The DMG will function in a transparent manner and to this end will make the following information available:

- The West Lochaber Deer Management Plan including annual updates.
- The DMG constitution.
- Minutes of DMG meetings.
- Count data.
- Future meeting dates.

ADMG are developing a web portal which will provide a central location for accessing information about local deer management throughout Scotland. This should be useful to a range of people who have an interest in deer. Once complete, anyone will be able to access a map showing the boundaries of all DMGs in Scotland and then click on the DMG of interest to them. Over time, the information listed above should then be available for each DMG. The WLDMG will develop its own website accessed through the ADMG web portal. The consultation on the first draft of the deer management plan was hosted on this website. Other information about the Group will be added in 2016.

All enquiries to the DMG should be made to the chairman or secretary by email. Contact details are given below:

Chairman: Alistair Gibson

glengibby@aol.com

Secretary: Bruce Taylor

bruce.taylor@scottishwoodlands.co.uk

Short term enquiries will be dealt with as soon as practical while more strategic issues may be discussed at DMG meetings. These will be scheduled to take place in June and December. The AGM in December will be open to all and representatives of Community Councils and Grazing Committees will be invited to attend and take a full part in the meeting.

The relevant Scottish Natural Heritage contact for the West Lochaber DMG is Graeme Taylor, SNH, Great Glen House, Leachkin Road, Inverness IV3 8NW. Email: Graeme.taylor@snh.gov.uk

General deer enquiries to SNH should be addressed to wildlifeops@snh.gov.uk

It is recognised that individual estates will have established contacts with local communities and crofters etc. These existing networks should be retained and encouraged and in many circumstances it may be more appropriate for local issues to be discussed with individual estates rather than with the whole DMG. This plan does not seek to

replace these existing local communications with a more formal communications route through the DMG. However, the DMG should be open to communication from outside interests where required.

2.9 Authorisations

From time to time members may require to apply for authorisations to take or kill deer under the various provisions of the Deer (Scotland) Act 1996. These may include authorisation to shoot deer at night to prevent damage or to shoot deer out of season. In the past, lack of communication about authorisations has been a frequent source of conflict within many DMGs. Members agree to communicate about their likely application for authorisations and the numbers of deer killed under authorisations to the WLDMG Chair or Secretary and to report the numbers of deer killed under authorisations at each DMG meeting. Where appropriate, the Group may discuss alternatives to the use of authorisations e.g. in season culls which target deer causing damage out of season.

Action: *Carry out actions arising from Communications Policy including making relevant data and documents publically available through the WLDMG website.*

2.10 Training Policy

Within the West Lochaber DMG all stalkers should be adequately trained and deemed competent to cull deer. This includes both lone stalkers (e.g. unsupervised) and those who supervise guests. The accepted definition of Competence within the Scottish deer sector is the attainment of Deer Stalking Certificate 1. In August 2015, 15 out of 17 lone stalkers held DSC 1. In addition, 12 out of 17 held DSC 2. The DMG will encourage all stalkers to attain DSC 1 and 2 by December 2017.

Stalkers who are required to shoot deer under legal authorisations must be on the SNH “Fit and Competent” register. To be registered stalkers must hold DSC2 or DSC1 qualification in combination with references from two relevant sources.

West Lochaber stalkers often work in remote locations where self-reliance is imperative. A range of skills are required to work safely and efficiently in this environment. These skills include boat handling, first aid, chainsaw work, mechanical work and use of ATVs. As employers, individual estates have the legal responsibility of identifying and assessing potential risks to their employees and where necessary providing training to minimise or eliminate those risks. These responsibilities will continue to lie with employers, however the DMG has a role in co-ordinating the efficient provision of training. Training courses are often more cost effective with increased participation and the DMG may be able to identify and organise courses in areas where multiple estates require training. The DMG could highlight the value of its role as a training co-ordinator and increase community benefit by inviting crofters and rural workers from relevant professions to training courses. There could be important public relations benefits to this approach.

Action: *All stalkers to attain DSC 1 and work towards DSC 2 by December 2017. Identify training needs within the DMG and organise training courses where necessary. Consider inviting other rural workers to participate in training courses where possible.*

2.11 Deer Counting Policy

Deer counts are also a cornerstone of collaborative deer management. Currently the DMG organises a co-ordinated ground count of the entire DMG area once every two years if weather permits. A team of around 10 counters move across the area in a systematic way. The counting team is recruited from within the Group and from the

neighbouring Moidart DMG and includes estate stalkers, FCS staff and contractors. Effort from Moidart stalkers is reciprocated by West Lochaber stalkers in a count of the Moidart DMG. In addition, a few contract deer counters may be recruited to ensure an adequate number of team members on each day. Although the West Lochaber count provides a good example of collaborative deer management, there is not always an equitable share of effort amongst DMG members. Often the same individuals form the backbone of the count team and those individuals also provide reciprocal effort in Moidart. It is recognised that member estates have differing levels of resources and differing time constraints. Counts often clash with lambing or other farming activities which makes it difficult for some stalkers to participate. However, deer counting is a core activity within deer management and all member estates should attempt to resource the DMG count effectively. Past performance suggests the count takes around 50 man days to complete and this effort should be shared equally by all estates. There is agreement that the current method of counting works well when a full counting team is available, but there is scope for improvement in pre-count planning to ensure all estates are willing and able to count at the agreed time.

There is scope for counting West Lochaber in two stages with Glenfinnan providing a split in the count. This approach might allow the DMG to take advantage of shorter weather windows. Using this approach, stage one would encompass the eastern end of the current DMG including South Achnacarry, Glen Loy and Fassfern and Glenfinnan. All the land west of Glenfinnan including Meoble, Rannachan and Arisaig could be counted in stage two. Glenfinnan would be counted twice under this arrangement to provide an overlap between the two sections of the West Lochaber count. Glenfinnan is believed to have a fairly stable deer population so the average of the two estate counts could be used for Glenfinnan management purposes.

On average, the West Lochaber deer count takes around 50 man days to complete. This compares very closely to the ground counts carried out by the Red Deer Commission and Deer Commission for Scotland in 1986, 1996 and 2003 and suggests a consistency of method.

In the future the DMG will attempt to count annually using the existing method. In addition, SNH may carry out periodic helicopter counts.

Count data will be made public through DMG meeting Minutes, which in turn will be made available on the WLDMG website which can be accessed through the WLDMG website. The DMG will discuss the count and its implications in the June meeting following the count. Count results will be fed into a simple population model which is detailed later in this plan (page 25). This model can be used to help predict future populations and the cull targets which are required to achieve estate objectives.

Action: *Organise annual ground counts, discuss results at June meetings and make results public through ADMG website.*

Action: *Use count data in a population model which aids the setting of cull targets.*

2.12 Counting in Woodland

Direct counts of deer numbers are impossible in large areas of dense woodland. FCS have developed robust counting methods which provide useful estimates of deer population size in woodland and which are sufficiently accurate to enable cull targets to be set. These methods are most commonly based on estimating the amount of dung deposited by deer within the forest. Although dung counts have often been viewed with scepticism by the estate sector, they are currently the most effective means of estimating populations in dense woodland and dung counting has enabled FCS to achieve management objectives. Those estates with large, dense woodlands may find dung counting beneficial. Alternatively, the grazing impact of deer can be measured e.g. the proportion of planted seedlings which are browsed annually. Cull targets can be set so as to maintain deer impacts within acceptable limits.

Action: *Estates to consider whether methods to estimate deer populations within woodlands are necessary.*

2.13 Mortality Searches

Count data is vital for making deer management decisions but we also need to know how many animals die each year if we are to accurately predict future populations. The number of animals which are shot annually is relatively easy to determine but west coast populations are prone to regular episodes of weather driven natural mortality which are often unrelated to deer density. To determine numbers of deer dying from weather effects each winter we need to carry out mortality searches. These are already carried out by many estates. For the most part, these are carried out in conjunction with other routine tasks e.g. fence checks around plantations or spring rounds of fox dens. This is an efficient use of manpower as mortality searches are time consuming and expensive. Deer can die at a range of altitudes particularly in a mild winter, and it is impossible to find evidence of all the deer that die naturally. Data from mortality searches are an index of winter mortality rather than an accurate estimate. The key requirements of a mortality search are that there is a standard amount of search effort used each year, and that areas where deer gather and spend a lot of time during the winter are thoroughly searched. In order to standardise this approach, the same areas should be searched annually unless there is significant change in deer behaviour.

Data which are gathered can then be used in a population model to predict future population size and the culls required to achieve DMG objectives.

Action: *Estates to carry out annual mortality searches and to use these data to update the population model within the deer management plan.*

2.14 Recruitment Counts

As well as collecting data on how many animals die each year we need to know how many calves enter the adult population as yearlings annually. If we know how many adults are recruited annually then culls can be set to let the population grow or reduce as required. Recruitment counts can also be incorporated into other tasks e.g. they can be carried out during spring rounds of fox dens. Once annual culls have been completed and the peak of natural mortality has passed e.g. by early May, then most calves observed will survive the winter and will become yearlings in the following June. A minimum of 50 hinds should be counted and classified on each estate so as to determine how many hinds have a calf at foot. If 50 hinds are observed as having 17 calves at foot then the calving percentage is 34%. The average calving percentage can then be used in population models to estimate the number of animals entering the adult population each year (pages 24 and 52).

Action: *Estates to carry out annual recruitment counts and use these data to update the population model within the deer management plan.*

2.15 Venison Marketing

All the estates in the West Lochaber DMG are committed to the production of quality venison. Some are members of Scottish Quality Wild Venison which is a quality assurance scheme for the whole venison industry. All estates will be encouraged to attain SQWV standards. At present, most venison is sold to game dealers but estates will undertake to sell some West Lochaber venison direct to local buyers. Some estates may wish to explore the use of shared larders and collective marketing. This may be particularly beneficial to those estates who share access routes.

Action: *Work to attain SQWV standards and to make some venison available for local sale.*

2.16 Strategic Fencing

Different deer management objectives often require different deer densities and the need for different deer densities on adjacent properties is often the main source of conflict within DMGs. Strategic deer fencing plays a key role in reducing and preventing conflict within the WLDMG by maintaining differential deer densities where these are required. Strategic deer fences are defined as long lengths of fencing which effectively separate one deer management objective from another. Low deer densities are required on FCS land but higher deer densities are required to sustain sporting culls on South Achnacarry and Glen Loy which are immediately adjacent. Conflict would occur if there were no fences to separate deer densities. Strategic deer fencing also prevents deer incursions onto croft land at Muirshellach where deer would compete with grazing for crofters' sheep, leading perhaps to conflict and the need for out of season shooting. A new strategic deer fence may be one measure which could reduce deer vehicle collisions on the A830.

The maintenance of deer fences is almost always the responsibility of individual estates. March fences may have shared maintenance responsibilities. Some estates within WLDMG put considerable effort and resource into maintaining deer fences e.g. FCS and Fassfern, where contractors are paid to regularly inspect and repair fences. Strategic deer fences will remain the responsibility of individual estates but the DMG recognises that all members gain some benefit from the maintenance of strategic deer fences.

3.0 Native deer populations and their habitats

In recent decades the key herbivores in West Lochaber have been red deer and sheep. This section of the plan examines deer count and density data, trends in sheep numbers and the implications of those trends for grazing levels. Habitat monitoring systems for key habitats are then developed and we discuss how habitat data should influence future culls. Finally, we discuss an initial target population and look at how the use of population modelling can aid management.

3.1 Red deer counts

RDC/DCS counts of red deer on open range carried out in WLDMG between 1986 and 2002 are shown in Table 1.

Year	Stags	Hinds	Calves	% Calving	Total
1986	1276	2141	860	40 %	4277
1996	1786	3529	1339	38 %	6654
2002	1576	2955	792	27 %	5293
Arithmetic mean	1546	2875	997	36 %	5408

Table 1. *RDC/DCS Red deer count data from 1986, 1996 & 2002 and the calculated arithmetic mean (average).*

The results presented in Table 1 suggest that the stag population fluctuated between count years, with counts ranging from 1276 to 1786 stags and averaging at 1546 stags across years. Hind numbers have been much more variable with numbers ranging from 2141 to 3529 and averaging at 2875 hinds across years. Recorded calving percentages are variable but often relatively high for Scottish hill populations with the percentage ranging from 27-42% (arithmetic mean 36%). Total deer numbers have ranged from 4277 to 6654 with a mean population of 5395 deer and the density has ranged from 8.2 to 12.8 deer per km^2.

The most recent DCS count of 2002 is too far distant in time for use in population modelling.

Recent DMG counts are shown in Table 2:

Year	Stags	Hinds	Calves	Total
2005	1446	2684	1123	5253
2009	1055	2078	802	3935
2015 (incomplete)	1366	2405	974	4745

Table 2. *RDC/DCS Red Deer counts, 2005–2015.*

Complete counts by DMG stalkers were carried out in 2005 and 2009. The 2005 count of 1446 stags, 2684 hinds and 1123 calves is well within the range produced by DCS counts. However, the 2009 count produced a much smaller population estimate with only 1055 stags, 2078 hinds and 803 calves counted. This may reflect a big reduction in the deer population following hard winters, or perhaps some areas were not counted as thoroughly as in previous years. These counts are also too far distant in time to be incorporated into a population model. The most recent DMG deer count in 2015 was not completed as South Achnacarry cancelled their count due to concerns over deer welfare. In order to count South Achnacarry, deer have to be driven out of woodland and counted on hills above. By the late winter of 2015 deer were in poor condition and some mortality had occurred. It was felt it would be unfair to drive the deer out of woodland when they were already low on energy reserves. The count is therefore incomplete and is an amalgamation of 2015 data and data from previous years. This count is a poor basis for population modelling but a model is presented later to show how this approach should work when full count data is available.

3.2 Deer Densities

Deer densities, across the whole DMG area of some 52000 hectares, range from 8-13 deer per km^2 over the series of counts available for analysis. Deer density will vary between estates and locally within estates. Deer densities for each estate (open ground only) from the most recent count are shown in Table 3. Most of these estate counts came from the incomplete DMG count made in 2015 with the South Achnacarry and Glen Loy figures coming from a count in 2012. Densities were calculated on the basis of the estate's own estimate of the area of ground available to deer.

Estate	Area estimated as being available to deer (ha)	Total number of deer in most recent count	Deer density (deer per km^2)
Fassfern	6100	759	12.4
South Achnacarry and Glen Loy	16160	1404	8.7
Glenfinnan	4046	305	7.5
Glen Mamie	1686	168	10.0
Meoble	13355	816	6.1
Ranachan	1420	192	13.5
Arisaig	3460	665	19.2
Ardnish	1433	164	11.4

Table 3. *Deer densities on individual estates.*

Larger estates like South Achnacarry and Meoble will encompass a range of habitats and altitudes and are likely to include significant areas of summer and winter range. This makes it more likely that deer will stay on the estate all year round and means that overall estate deer density will vary less over the year than on small estates. On smaller estates, deer may regularly cross boundaries making density more variable and perhaps deer will only utilise the estate at certain times of year e.g. for winter shelter. Locally, deer densities may be much higher than these figures e.g. in a sheltered glen on a stormy night.

These densities have implications for habitats. The habitats present today in West Lochaber are a product of many decades, even centuries, of climate interacting with grazing and burning. Trends in sheep discussed below will suggest grazing levels may have been much higher in the past. Habitat monitoring on heath and blanket bog is now required to determine the current state and the trends in condition of these habitats. Habitat monitoring systems to monitor heath and blanket bog are described on page 24. These systems should be implemented and monitoring data should then influence cull planning. Populations may require to be reduced in future if there are deleterious trends in habitat condition, but populations may be kept stable where habitat condition is stable or where habitats are being enhanced. The condition of native woodlands also requires to be monitored. Native woodland monitoring is discussed on page 34. Deer densities of 8-12 deer per km^2 mean native woodland remnants will usually have to be protected if they are to regenerate. However, there are local exceptions to this in West Lochaber e.g. native woodland at the south west end of Loch Arkaig which are currently regenerating. Habitat monitoring systems to monitor heath and blanket bog are described on pages 24 and 34. These systems should be implemented and data gathered should influence cull planning in future years.

3.3 Trends in sheep numbers

Data on sheep numbers is publically available at the agricultural parish level. The West Lochaber DMG area is covered by two agricultural parishes: Arisaig and Moidart parish and Kilmallie. Both those parishes overlap into the neighbouring DMGs of Moidart, East Loch Shiel and the Monadhliaths so data does not apply to West Lochaber alone. Trends in sheep numbers across this area are shown in figures 1 and 2.

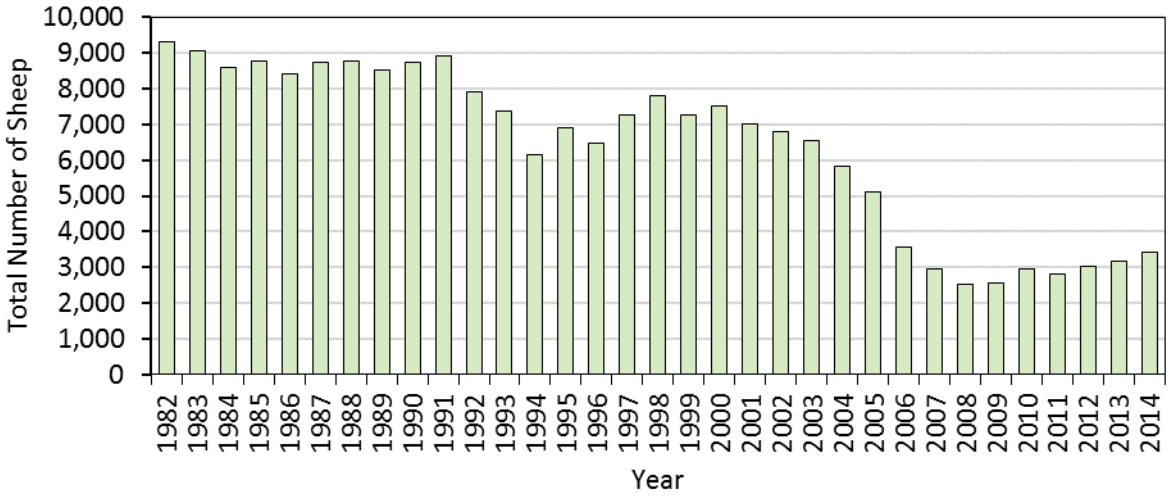

Figure 1. *Total sheep and lamb numbers in Arisaig and Moidart parish.*

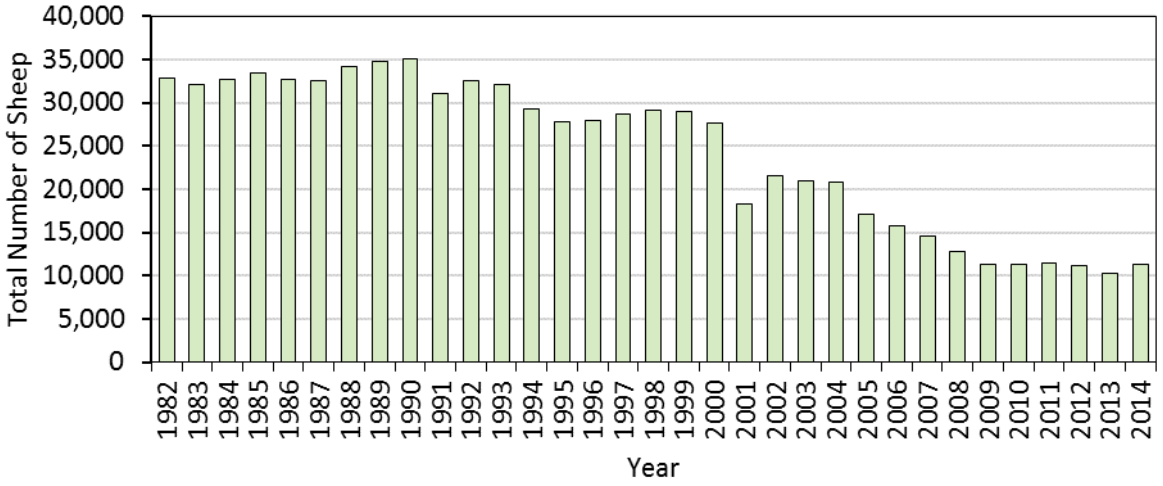

Figure 2. *Sheep numbers in Kilmallie parish.*

In Arisaig and Moidart, between 1982 and 2011, sheep numbers declined from 9300 to 2800. This decline took place virtually year on year during that time frame and represents a decline of 70% in 30 years. In Kilmallie parish, between 1982 and 1990, sheep numbers increased from 32150 to 35100 before declining year on year to 10200 in 2013. This represents a decline of 71% over 24 years. These declines have taken place over a bigger area than West Lochaber and there is no publically available data which charts the trends in sheep numbers in West Lochaber alone. However, given the scale of the reductions across both parishes, it seems highly likely that West Lochaber sheep populations have declined significantly. These reductions have largely been driven by changes in grant regimes and

also partly because the crofting population has generally been ageing. These data record total sheep numbers on hill and in bye land and reductions will have taken place across both types of land. Data is not available to show the scale of reductions on hill ground alone. Anecdotally, there is evidence that sheep numbers on the hill land of West Lochaber have declined significantly. Sheep numbers on Glenfinnan Estate have declined from 3000 breeding ewes to zero. Sheep numbers on South Achnacarry have been reduced by 5000-7000 animals since the 1980s although a tenant still grazes some sheep on this estate.

Between 2011 and 2014 sheep numbers increased in Arisaig and Moidart by some 600 animals (21%) and in Kilmallie sheep numbers increased between 2013 and 2014 by 1000 animals (11%). This demonstrates that sheep reductions are not inevitable or irreversible.

Over the period between 1996 and 2002, deer numbers declined between DCS counts in West Lochaber. More recent counts suggest the deer population remained broadly stable or declined further. Given the scale of sheep reductions and reductions in deer numbers it seems highly likely that there has been a significant decrease in overall grazing pressure between the 1990s and the current decade. Certainly most estates believe that to be the case.

3.4 Red Deer Culls

Average annual red deer culls between 2005-2014 are shown in Table 4.

Stags				
In season	**Out of season**	**Hinds**	**Calves**	**Total**
221	67	280	109	677

Table 4. *Average annual red deer culls between 2005-2014.*

Between 2005-2014 in season stag culls vary from 164 to 318 with a mean of 221. Out of season stag culls range from 10-110 with an average (arithmetic mean) of 67. The average total stag cull is therefore around 290 stags per annum but there is large annual variation with the highest cull being almost double the lowest over the 10 years.

Hind culls have varied over the last 10 years from 135 to 340 mean 275. The largest hind cull is therefore 2.5 times the lowest over the 10-year period. These big variations in annual cull presumably reflect perceived changes in deer populations following years of high natural mortality. As seen on page 19, stag numbers have ranged from 1276-1786 with a mean of 1503 over 3 counts. The average cull is therefore 19% of the average count. This is likely to be a sufficient rate of cull to control the stag population unless there are significant numbers of uncounted stags concealed in woodland. Numbers of hinds culled out of season are insignificant (0 to 13 mean 5). With hind numbers varying from 2100-3500 with a mean of 2700 over three counts, the percentage of hinds being culled annually is around 10%. This is too low to control the population by culling alone, particularly as recorded calving percentages are high with a mean of 36%. If 36% of 2700 hinds have a calf at the end of the winter, then 486 female calves enter the adult population as yearlings. If 486 adult females enter the population but only 275 adult females are culled, then the population should grow quite fast. The difference between the 1986 count and the 1996 count show the population can indeed grow rapidly when conditions allow.

3.5 Habitat monitoring

The aim of a habitat impact assessment is to allow deer managers to monitor habitat condition both spatially and temporally, to inform management decision making. Initial habitat surveys should aim to collect data which will help categorise areas in terms of grazing pressure, particularly areas of moderate to severe overgrazing. More importantly, the surveys should establish a baseline from which changes in grazing and trampling pressure can be monitored. Subsequent monitoring can then be used to identify areas where the grazing pressure has changed, allowing overall habitat management and cull targets to be adjusted accordingly. Monitoring these impacts can allow managers to assess and understand the impacts of deer in their area under different deer densities. This can then be used to inform future management decisions for example increasing cull targets where high impacts are found. West Lochaber DMG do not currently have a plan for habitat monitoring and as such will use the SNH recommended methodology. Full details of the best practice guidelines a can be found at http://www.bestpracticeguides.org.uk/impacts/principles. These guidelines are summarised below.

The standardised approach to habitat assessment within the deer industry and at a landscape scale is to select "permanent" sample plots on two discrete habitat types on each estate. A minimum of 30 plots will be allocated to both dwarf shrub heath and blanket bog habitats as selected by SNH. Where there is a large enough expanse of suitable habitat of either type a minimum of 30 plots must be completed. To aid deer managers in comleting habitat monitoring, SNH has selected 60 plots at random in each of the habitats. The locations of the plots suggested by SNH are available on request.

Plots should be laid out in 2 × 2m squares, and then further subdivided into 0.5 × 0.5m squares, giving a total of 16 sub-plots per square. Each plot should be orientated to align North-South and marked by a wooden post (approximately 5 x 5 x 20cm) located at the south-east corner of each plot. The plot location will be recorded using a GPS, a fixed point photograph will be taken facing north, as well as additional photographs showing any distinguishing landscape features, in order to relocate the plot in subsequent years.

Dwarf shrub heath assessment concentrates on identifying the extent of grazing and trampling across the habitat. Grazing is analysed by looking at 3 or 4 handfuls of Common Heather *Calluna vulgaris,* and assessing the amount of browsing on last year's shoots. If *Calluna vulgaris* is not present, then Blaeberry, *Vaccinium myrtillus,* may be used. If other less palatable species such as Cross Leaved Heath *Erica tetralix* also show signs of browsing, this is indicative of significant grazing pressure which over a period of years is likely to lead to habitat degradation. Trampling is assessed by looking at heather stem breakage which is categorised as light/moderate (inconspicuous) or heavy (conspicuous). Again, the presence of heavy trampling may result in habitat degradation in the future.

As with dwarf shrub heath, the assessment of blanket bog focuses on recording the grazing and trampling impact in the defined survey plots. Trampling is measured by recording the presence or absence of deer hoof prints on bare peat (if present) in each of the 16 sub-plots. Grazing is again analysed by looking at heather shoot browsing and the presence or absence of bog moss is recorded in each of the 16 sub-plots.

Surveying of dwarf shrub heath plots will be carried out during the period between March and August, while blanket bog plot will be carried out in the period between May and September. The survey time will be constant between years so that comparisons to the baseline data are easier to draw. The habitat analysis will be carried out every 3 years.

It is recognised that the DMG members may not currently have the skills to complete habitat surveys. Where this is the case, the DMG will aim to organise a group training event for members (in line with the training policy).

Alternatively, members have the option of recruiting an appropriately qualified surveyor to complete the surveys on their behalf. Funding for habitat monitoring may be available through SRDP.

Action: *West Lochaber DMG will initiate a habitat monitoring scheme which will fall in line with SNH best practice guidance.*

Action: *The DMG will organise a group training event for habitat impact assessment if required*

Action: *Each member will carry out habitat impact assessments every three years*

In ordered to fully utilise the results of the habitat impact assessments, the group will review the impacts after the first round of assessments and will set targets to reduce grazing pressure where it is found to be high.

Action: *The DMG will review results from the first round of habitat impact assessments and will set targets to reduce impact where they are found to be high.*

Woodland monitoring will also be carried out following Best Practice guidelines (http://www.bestpracticeguides.org.uk/impacts/woodland). The monitoring methodology is fully outlined in the management of native woodland section (p29).

3.6 Developing a population model for West Lochaber

Lack of up to date count data makes the development of a useful population model very difficult. Another problem is the lack of data on natural mortality. The West Lochaber deer population is prone to occasional episodes of high mortality following poor winters. Continuous high rainfall and strong winds combine to increase deer energy requirements beyond the capacity of their winter diet and the reserves they have built up over the summer. This can lead to high winter mortality. Research on Rum has shown this to be largely density independent. These episodes of high winter mortality are usually infrequent and separated by a few years. Their effect is to make population models less accurate as winter mortality levels are not stable from year to year and are difficult to predict in future years.

While it is difficult to present a population model without up to date count and mortality data, it is possible to calculate an initial target population. There are a number of factors to consider when setting an initial target population for West Lochaber. These include:

- Red deer are part of the natural fauna of Lochaber and are ecologically and culturally important.
- Deer stalking is economically important to most members of the DMG.
- It is likely there has been a significant decrease in grazing pressure on the hills of West Lochaber over the last 20-30 years.
- Habitat monitoring should shortly be in place to provide data which should influence cull targets.
- Designated sites are generally in favourable condition.
- Some undesignated native woodlands are failing to regenerate.
- A number of members have agricultural or forestry objectives which could be damaged by deer.
- Crofting is economically and culturally important to Lochaber and crofting interests can be damaged by deer.

- There are public safety issues relating to deer on roads.

Red deer stalking is an important objective for most estates in West Lochaber so a starting point in setting an initial target population for West Lochaber is to calculate the size of population required to sustain sporting requirements.

West Lochaber DMG red deer culls for the last 10 years are shown in Table 4.

The number of stags culled in season is a reasonable measure of the sporting requirement for West Lochaber. Not all stags culled in season will be shot for sport but it is reasonable to assume most will be. Between 2005-2014 in season culls vary from 164 to 318, averaging at 221. Out of season stag culls range from 10-110, averaging at 67. Much of the reported out of season culling occurs behind forestry fences and it is uncertain what proportion of these stags come from the hill population. However, despite a genuine effort to maintain fences, there is undoubtedly some movement of deer through fences from hill to forest. This means out of season culling cannot be ignored in any population model. The total mean (arithmetic average) stag cull can be used to calculate a target population based on the number of stags required to sustain this cull. Estimating the size of deer population required to sustain an annual cull is not an exact science. High winter mortality is often density independent and unpredictable in timing. Legal culls on croft land and levels of illegal culling are also variable between years and imprecisely known. To counter these unknowns, it is reasonable to build in safety margins to any model, but if these safety margins are excessive then conservation objectives could be compromised.

Two options for calculating a target population are presented below.

Option 1: We assume the average age of stags shot for sporting requirements is 6 years old and the average age of stags shot out of season as marauders on crofts or in forestry is 3 years old. These assumptions are based on the following. Stags are generally fully grown in terms of body weight at around five years old. Clients on sporting estates generally want to shoot fully grown animals. It would be difficult to achieve a stag cull where all animals are fully grown, with an average age of less than six years old. Stags shot to prevent damage to trees or crops are less likely to be selected on the basis of age. Average ages of animals under heavy culling pressure are young as most do not live long enough to become old. Controllers will shoot opportunistically and it is often the youngest animals which are less wary and which are vulnerable to control. However, it is important to remember these models are based on assumptions and not on actual data.

The stag population required to sustain this cull is (6 x 220) + (3 x 70) = 1530 stags.

A sex ratio of 1 stag : 1.3 hinds would give a hind population of 2000 hinds which would on average produce 660 calves at the end of each winter.

A population of 660 calves would result in approximately 330 male calves to enter the adult population as yearlings each June. This compares with 290 adult males leaving the population through culling. This means the population would produce an excess of 40 adult males annually over the culling requirement to act as a safety measure from non-culling related mortality e.g. through severe weather, poaching etc.

However, some deer managers may consider an average age of 6 to be too young for a sporting stag cull and also that an excess of only 40 adult males in an average year does not leave a sufficient safety margin. In this instance, the following option would be more appropriate.

Option 2: The average age of stags shot for sporting requirements is 8 years old and the average age of stags shot out of season as marauders on crofts or in forestry is 3 years old.

The stag population required to sustain this cull is (8 x 220) + (3 x 70) = 1950 stags.

A sex ratio of 1 stag : 1.3 hinds would give a hind population of 2500 hinds which would on average produce 830 calves at the end of each winter.

This population would produce 415 male calves to enter the adult population as yearlings each June. This means the population would produce an excess of 125 adult males annually over the culling requirement to act as a very large safety measure from non-culling related mortality e.g. through severe weather, poaching etc.

The target populations for the above options are shown in Table 5.

Target populations	Stags	Hinds	Calves	Total	Density deer per km^2
Option 1	1530	2000	660	4190	8
Option 2	1950	2500	830	5280	10.1

Table 5. *Target red deer populations under the conditions outlined by option 1 and option 2.*

At present designated sites in West Lochaber are generally in favourable condition and there is little conflict between deer management and other land management objectives although many native woodlands are in poor condition. There is little need to reduce the deer population particularly as sheep numbers have declined over the last 20-30 years and overall grazing pressure has reduced. Currently estates are likely to favour option 2 as, within constraints, they wish to maximise the number of mature stags they can stalk. However, there is a need to maintain designated sites in favourable condition, improve the condition of native woods and prevent new conflicts from developing in future. There is therefore little case for increasing the deer population.

Data from counts, culls, mortality searches and recruitment counts can be used to make simple estimates of future population size. Once future population size has been estimated it can be compared with a target population. The target population should be influenced by habitat monitoring data once a robust data set has been collected and trends in habitat condition become apparent. Negative trends in habitat condition should trigger increased culls and a reduced population target. Positive trends in habitat condition may enable a higher population target to be considered. Culls targets can then be based on the difference between the estimated population and the target population. An example (which is purely for illustrative purposes) is given in Table 6.

Data	Stags	Hinds	Calves
Count in March 2016 (fictitious data)	1407	2405	910
Mortality searches in	24	10	40

May 2016			
Population post natural mortality	1383	2395	870
Population adjusted for calving percentage recorded in recruitment counts in May 2016 showing 35% calving	1383	2395	838 (35% of 2395)
Adult population in July 2016 once all 2015 calves have become yearlings	1803 (1383 stags + 838/2 male calves which become yearlings in June)	2814 (2395 hinds + 838/2 female calves which become yearlings in June)	
Target population (fictitious example)	1500	2500	1000
Cull for 2016-17	303 stags	314 hinds	Calves as appropriate

Table 6. *An example population model.*

Population models are rarely precise as there are many unknowns and inaccuracies in the data collected. However, they do provide a basis for discussion and decision making. Over time the model should become more accurate and meaningful as the quality of data improves. Improved mortality and recruitment data will be added to increased knowledge of out of season culling as a result of increased engagement with wider interests e.g. crofters. SNH can also help improve the quality of cull data available by sending cull returns to as many of the people who cull deer in West Lochaber as possible. Finally, better information can be collected on numbers of deer killed on roads and the railway.

Action: *Members to provide count, mortality and recruitment data to the Secretary to enable the population model to be updated before each June meeting.*

A population model with formulas built in to an Excel spreadsheet is presented in Appendix D.

3.7 The importance of minimising deer mortality from sources other than culling.

The key economic benefit of deer arises from the value of stags culled by paying guests. Those guests spend money on accommodation, food and other services but the ability to provide stags for sport drives much of that spend. It is

possible to calculate the approximate size of the deer population required to sustain a particular stag cull. In very simple terms, experience around Scotland has shown that the larger the deer population present in an area, the greater the potential for deer related conflict. If a DMG has to produce stags for paying guests to shoot but also has to sustain significant stag mortality from other sources, then the DMG will have to carry a larger deer population than would be necessary to produce a cull of sporting stags alone. The higher the level of mortality the stag population has to sustain, the bigger the total deer population that is required and the greater the potential for conflict. It therefore makes sense for estates which benefit from sport stalking of stags to try and minimise mortality from sources other than culling for sport.

Within West Lochaber winter mortality, out of season culling and deer vehicle collisions on road and railways are all significant contributors to overall stag mortality. Poaching occurs but is probably only locally significant. There are obviously deer welfare, damage prevention and public safety reasons for minimising the mortality resulting from these causes but there is also a sound deer management reason. The less stags that die from causes other than sport culling then the less deer the DMG has to carry and the less conflict there will be.

Deer in West Lochaber are subject to occasional episodes of high natural mortality following wet winters. Research has shown these episodes are not density dependent. However, it is likely they can be influenced by habitat. Red deer in Scotland thrive on open hill environments but undoubtedly benefit from access to woodland for shelter in wet and windy weather. Some deer do die in woodland but it is likely that access to woodland shelter will greatly increase an individual's chances of survival during a hard winter. There are numerous areas of woodland scattered across West Lochaber. Some are large but there are many small pockets. Impacts on these may be high as discussed on page 30. It is in the interests of deer stalking estates and of the deer themselves to safeguard these smaller woodlands and expand them to provide shelter for current and future deer populations.

Action: *Consider the provision of woodland shelter available for deer now and in the future. This is linked to the "native woodland" action on page 33 and the "welfare" action on page 45.*

Deer are regularly killed on the A830 and the Fort William to Mallaig railway. Deer fencing on some sections of the road may reduce the number of accidents and the number of deer being killed. Other solutions may also be possible. Estates should consider all practical ways of reducing deer mortality on roads and railways.

This section is not in any way critical of those who cull deer out of season. Deer are culled out of season to reduce damage to agricultural and forestry. Out of season culling is entirely legitimate and currently necessary for many objectives to be achieved. However, it makes sense for estates who benefit from sport stalking to try and reduce the need for this cull as much as practically possible while respecting the rights of others to protect crops etc. Maintenance and repair of strategic fences which separate deer management objectives is vital in reducing out of season culling, but there may be some scope for estates to target stags in the sporting cull which are most likely to damage crops out of season. Larger estates could for example consider a zoning policy when taking their sporting cull, targeting stags from areas where deer movement to agricultural or forestry land is likely.

Action: *Consider ways of minimising stag mortality from sources other than sport stalking.*

3.8 Roe deer management

Roe deer occur at low density in West Lochaber. Density may be limited by the wet climate as high rainfall can cause high mortality amongst roe kids. They are present in many woodland areas but rarely occur on open ground. Roe culls are shown in Table 7.

Roe bucks	Roe does	Roe kids	Total
5.1	7.8	0.8	13.7

Table 7. *Average roe culls in West Lochaber between 2005 and 2014.*

Culls are very low and roe do not represent a significant economic resource in West Lochaber. In 2009-10 a cull of 36 roe does was taken which is equal to the total culls for the other 9 years between 2005 and 2014. This suggests that there may be some capacity to cull more roe but that capacity is probably limited. It is possible roe may cause significant local impacts to some small areas of native woodland but there is no firm evidence for this. Grazing by red deer and sheep is likely to cause more significant impacts than roe.

DMG members do not think there are any issues concerning roe deer management within West Lochaber.

4.0 Public Interest Actions

4.1 Development of mechanisms to manage deer

These actions are developed throughout the plan. A complete list of Actions is presented on pages 6 - 8.

4.2 Delivery of designated features into Favourable Condition.

There are a number of designated sites in West Lochaber and the WLDMG is committed to ensuring all designated sites attain favourable condition status and are maintained in favourable condition through the life time of the plan. Designated sites are discussed individually below.

4.2.1 Blar na Caillich Buidhe SAC

Blar na Caillich Buidhe SAC is designated for its blanket bog, upland, lichen assemblage and upland oakwood.

Feature	Feature Category	Latest assessed condition	Summary condition	Last visit date
Blanket bog	Upland habitat	Favourable maintained	Favourable	Nov 2006
Lichen assemblage	Non-vascular plants	Unfavourable recovering	Favourable	Mar 2010
Upland oakwood	Woodland	Favourable maintained	Favourable	Dec 2007

The Site Management Statement says "Blar na Caillich Buidhe SSSI is of national importance as one of the northern most examples of a rare patterned pool and hummock type of blanket bog, known as eccentric mire. Adjacent to the north west part of the bog, alder and birch woodland grades into upland oak woodland on the rising, rocky ground.

The Site Management Statement in 2010 states "Evidence of deer trampling can be seen throughout the bog but grazing/ browsing impact does not seem to be high. This may indicate that deer mainly use the site for moving between areas of woodland, rather than spending a large part of their time browsing blanket bog vegetation. Trampling is particularly obvious within some of the wetter areas of the bog where deer jump the open water channels. The site is subject to grazing by cattle, sheep, red deer and roe deer. Although it is unlikely that the bog suffers from overgrazing, due to the low numbers of animals normally present and the relatively unfavourable grazing conditions, the current grazing levels are inhibiting regeneration in the woodland."

SNH now report that the biggest threat to date has been the spread of rhododendrons but these have now been largely cleared. Deer densities are currently low and regeneration is occurring.

Action: *Low deer densities will be maintained on Blar na Caillich Buidhe SSSI.*

4.2.2 Loch Dubh SSSI

Loch Dubh SSSI is designated for club sedge.

Feature	Feature Category	Latest assessed condition	Summary condition	Last visit date
Club sedge	Vascular plants	Favourable maintained	Favourable	July 2014

This site is sympathetically grazed by cattle and is in **favourable condition.** The club sedge is able to flower. Deer densities are low and currently there is no need for a change in deer management.

Action: *Low deer densities will be maintained on Loch Dubh SSSI.*

4.2.3 Coille Puiteachan SAC

Coille Puiteachan SAC is designated for its native pinewood and for its beetles.

Feature	Feature Category	Latest assessed condition	Summary condition	Last visit date
Beetles	Invertebrates	Favourable maintained	Favourable	June 2010
Native pinewood	Woodlands	Favourable maintained	Favourable	Jan 2008

Coille Puiteachain SAC is managed by FCS. Deer densities are sufficiently low to allow pine regeneration to take place and these low densities will be maintained. The site is in **favourable condition** with the biggest threat coming from exotic conifer regeneration. Currently there is no need for a change in deer management.

Action: *Low deer densities will be maintained on Coille Puiteachan SAC.*

4.2.4 Glen Beasdale SAC

Glen Beasdale SAC is designated for its upland oakwood.

Feature	Feature Category	Latest assessed condition	Summary condition	Last visit date
Upland oak woodland	Woodland	Unfavourable recovering	Favourable	Feb 2010

Glen Beasdale is of international importance for its oakwoods with associated mosses and liverworts, and its freshwater pearl mussel and otter populations.

It is currently assessed as being in **unfavourable recovering** condition with SNH reporting failure is due to the presence of rhododendron. Work is ongoing to remove rhododendron and SNH hope the site will soon move into favourable condition. Recent surveys suggest that birch and holly regeneration is occurring throughout but that oak saplings are scarce and localised. Deer densities are low and there are few if any sheep present. There appears to be little browsing of young trees at the west end of the site and the lack of oak regeneration may be due to canopy conditions i.e. oak rarely regenerates under its own canopy. Informal surveys suggest there may be an increase in browsing at the east end of the site but there is no formal evidence for this. Site Condition Monitoring is due in the Glen Beasdale SAC in 2016 so it may well be wise for deer managers to target any hinds in this area during the 2015/16 hind cull and then be prepared to discuss the issue with SNH if Site Condition Monitoring reveals browsing damage.

Action: *Low deer densities will be maintained and deer culls will target the east end of Glen Beasdale.*

4.2.5 Loch Arkaig Pinewoods SAC

Loch Arkaig Pinewoods SAC are designated for the native pinewood and its bryophyte assemblage.

Feature	Feature Category	Latest assessed condition	Summary condition	Last visit date
Native pinewood	Woodland	Unfavourable recovering	Favourable	Oct 2009
Bryophyte assemblage	Non vascular plants	Favourable maintained	Favourable	May 2005

Loch Arkaig Pinewood Site of Special Scientific Interest (SSSI) is situated towards the western end of the south shore of Loch Arkaig. The site contains the largest area of Caledonian pinewood in North Lochaber. The presence of nationally important assemblages of pinewood insects and bryophytes further increases the conservation value of the site. Over grazing is described as the main threat in the Site Management Statement of 2008. SNH now report that both oak and pine regeneration is occurring without protective fencing. Achnacarry Sporting and Country Pursuits carry out deer management on the SAC. Deer move on to the site from the Knoydart DMG but Achnacarry Sporting has been proactive in culling them. Overall deer densities are low although there are periodic movements of deer onto the site. Every effort should be made to maintain low densities on the site.

Action: *Effort will be made in order to maintain low deer densities on Loch Arkaig SSSI.*

4.2.6 Moidart and Ardgour SPA

Moidart and Ardgour SPA is designated for its breeding population of golden eagles. The SPA covers some 41000 hectares and includes most of the East Loch Shiel and Moidart DMGs as well as part of the WLDMG centred largely on Glen Mamie Estate. Currently the site is assessed as being in **favourable condition** but over grazing is identified as a threat. Golden eagles have good rates of adult survival within the SPA but productivity is low. Low productivity is thought to be linked to a shortage of live prey which in turn has been linked to over grazing. Given the reduction in grazing pressure which is likely to have taken place over recent decades and the introduction of habitat monitoring systems on heath and blanket bog, it seems reasonable to collect habitat data before changing management in relation to the SPA.

Action: *Habitat monitoring will take place on Moidart and Ardgour SPA before management changes are put in place.*

4.3 Management of deer for retention of native woodland

The Native Woodland Survey of Scotland (NWSS) was carried out over the whole of Scotland to establish the baseline condition of Scotland's native woods. All native woodlands of over 0.5 hectares were surveyed. Within West Lochaber some 4231 hectares of native woodland were surveyed and the impacts caused by deer and sheep were assessed. Results are summarised in Table 8 and shown on Map 2 (Appendix A).

Herbivore Pressure Category	Area of native woodland within category (ha)	Proportion of West Lochaber native woodland within category
Low	203	4%
Medium	1253	30%
High	1073	25%
Very High	1702	40%

Table 8. *The proportion of native woodland within each Herbivore Pressure Category from the NWSS.*

High and Very High herbivore impacts include trampling, canopy fragmentation, heavy browsing and bark stripping. Woodlands are unlikely to regenerate under High or Very High impacts. The native woodland resource in West Lochaber is of high importance for biodiversity as well as shelter, carbon storage, recreation and tourism. These results are therefore concerning.

Some areas of High and Very High impacts are likely to be recovering and the results may record historically High impacts. For example, Very High impacts were recorded in FCS woodlands of Glen Mallie and South Loch Arkaig. These woodlands are securely fenced with sheep excluded and deer managed at low densities. Other areas may show Very High impacts from historical sheep grazing with sheep numbers now being much reduced e.g. woodlands around Arisaig. Some results conflict with other data sets e.g. Site Condition Monitoring. The Glen Beasdale woodland complex is designated as an SAC in Unfavourable Recovering Condition but failure is due to the presence of rhododendron. Browsing levels are thought to be low by SNH with birch and holly seedlings occurring throughout the site. However, the NWSS results show Very High impacts.

However, there are clearly issues to be addressed in some woodlands. Currently only 34% of West Lochaber native woodlands are in the Low/ Medium impact class. The national target is for 60% of native woodlands to be in the Low/Medium impact class so some improvement is required. As the NWSS states, the Herbivore Impact Category is valuable as a general indication of impacts, but each woodland site needs to be assessed on its individual merits. It is beyond the scope of this deer management plan to assess each woodland at this stage. However, each estate should use NWSS results as illustrated on Map 2 (Appendix A) to prepare a brief condition assessment for each woodland within the High or Very High impact categories and produce management proposals to improve condition or to justify current management. These management proposals need to be supported by regular monitoring of woodland condition which should be carried out in accordance with Wild Deer Best Practice Guidance (page 34). Estates should explore Scottish Rural Development Programme (SRDP) funding for management of native woodlands in West Lochaber.

Action: *Each estate to use NWSS results to prepare condition assessments for each woodland within the High or Very High impact categories and produce management proposals to improve condition or justify current management. Each estate to carry out a regular cycle of woodland condition monitoring in accordance with Wild Deer Best Practice Guidelines.*

In addition to this, habitat monitoring in woodland would allow an assessment of deer impacts to be made. The following methodology can be used for assessing impacts in woodland:

<u>Plot based survey method</u>.

This methodology establishes circular plots with an area of 0.01 – 0.05 hectares marked by a central post whose coordinates are recorded using GPS. The circular plots are marked out by using string of length 5 – 12m from the central post. The number, size and location of plots is based on the area and the distribution of mature trees using

the Nearest Neighbour Method for Quantifying Wildlife Damage to Trees in Woodland (Forestry Commission Practice Note).

In each plot record the following data are recorded:

- Number and species of seedlings/saplings that are less than 1.3m tall and/or less than 7cm in diameter at breast height)
- Number and species of all trees greater than 1.3m tall and/or greater than 7cm diameter at breast height
- Number of seedlings/saplings exhibiting deer damage
- Number of trees exhibiting deer damage
- Number of standing dead, fallen dead and tree stumps
- "Age Class" of all mature trees – i.e. young, mature, over mature, veteran. NB this is dependent on species, for example a 30-year-old silver birch would be mature, but a 30-year-old sessile oak would be classed as young.
- Number of seedlings/saplings frayed by deer
- Number of trees with bark stripped by deer

For each compartment:

- Calculate the frequency of leaders browsed for each species of seedling/sapling
- Calculate the frequency of other shoots browsed for each species of seedling/sapling
- Average the number of seedlings/saplings frayed per species per compartment
- Average the number of seedlings/saplings bark stripped by deer

Full guidance can be found at www.bestpracticeguides.org.uk/impacts/woodland.

Action: *The West Lochaber DMG will monitor woodland condition following Best Practice guidelines and will adaptively manage woodland dependant on the outcome of these surveys.*

4.4 WLDMG's commitment to Woodland Expansion

The Scottish Government has set a target to expand Scotland's woodland coverage from its current 17% to 25%. Currently 17% of the WLDMG is covered in woodland so percentage woodland cover in West Lochaber is typical of Scotland as a whole. Most of the woodland cover is found in the eastern half of West Lochaber where Fassfern, Achnacarry and FCS have significant areas of woodland. Much of this is commercial timber but there are also important native pine woodlands and areas of native broad leaved woodland. Glenfinnan in the centre of West Lochaber has 800 hectares of woodland which is largely commercial timber with smaller areas of native woodland. Most of these woodlands are securely deer fenced and there is rigorous deer control within these fenced areas with the objective of managing deer at densities that allow natural regeneration to take place. Some of the steep sided glens found in the east and south sides of the WLDMG are arguably already planted to the tree line and there is little scope for forest expansion. Examples of estates with limited room for forest expansion include Glenfinnan and Fassfern.

Proportionally there is much less woodland cover in the western half of the Group. However, the Glen Beasdale oak woodlands are of international importance, there are extensive areas of birch scrub around Arisaig and there are other smaller areas of native woodland often located on loch and sea shores. There is also a significant area of commercial timber at Scamadale.

The extent of woodland created with public funding since 1991 within the WLDMG is shown in Table 9 and on Map 3 (Appendix A).

Time period	Woodland Creation Scheme	Area of woodland established (ha)
1991-92	WGS 1	1.3
1993-94	WGS 2	2692
1995-2004	WGS 3	946
2007-13	SRDP	134.4
Total 1991-2013	**All schemes**	**3773.7**

Table 9. *Woodland created with public funding since 1991.*

Between 1991-2013 some 3773 hectares of new woodland have been created in West Lochaber and WLDMG members have shown significant historic commitment to woodland expansion. Current woodland management includes removal of exotics to enhance native woodlands and encouraging native pines and broad leaves to extend their cover within fenced areas. Meoble Estate are developing plans to create a new woodland block of around 20 hectares near the River Meoble. There are plans to fell and re-stock significant areas of commercial timber within West Lochaber over the next decade but currently no other estates have plans to significantly expand new woodlands. There are several reasons for this. There is a general feeling that the new grant regime does not provide sufficient incentive to expand native woodlands. Grants are thought to be favourable for planting productive, commercial species. However, some estates feel they have sufficient commercial timber already planted and that further expansion would compromise other land uses. Planting plans for commercial timber on those estates are currently limited to re-stocks. Other estates feel their ground is too steep or rough for planting commercial timber or that extraction of a harvested crop would be too difficult to make commercial sense. Some estates which are made up of steep sided glens e.g. Fassfern and Glenfinnan feel they have already planted to the tree line and have no scope for further commercial timber expansion.

Locally based ecologists feel there should be greater emphasis from estates in conserving and expanding native woodland, particularly Atlantic oakwood remnants which are of international importance. Some of these woodlands are designated sites e.g. Glen Beasdale, but there are other native woodlands of known botanical richness near Arisaig, Meoble, Loch Beoraid, Glenfinnan and Corpach. There are opportunities for expanding all these woods and creating new ones throughout the DMG. Estates should consider these opportunities when planning future forestry schemes.

4.5 Monitoring & Management of Deer Impacts in the Wider Countryside

It is important that the West Lochaber DMG monitor the impact of deer out-with designated sites to ensure deer are not having a detrimental effect on land used for public recreation or land which may provide a wider public benefit. The DMG's policy for monitoring deer populations is outlined on page 19. In line with the WLDMG's commitment to managing designated sites, each member will also ensure that Habitat Impact Assessments are conducted in the wider countryside following Best Practice guidelines (page 24). The combination of monitoring both the deer population and the habitat will ensure that WLDMG can adaptively manage the area and will ensure that deer do not have an adverse effect on the landscape at present or for future generations.

4.6 Actions to Improve Scotland's Ability to Store Carbon

Climate change is one of the biggest global threats to biodiversity. The Scottish Government has set targets to reduce the amount of carbon released into the atmosphere, and also to find measures to increase carbon sequestration. On a national scale there are many measures which can be taken in relation to carbon storage, however the most pertinent to West Lochaber DMG, is the ability of peatlands to store carbon.

Peat deposition occurs in cool, wet climates where plant growth is faster than the rate of decomposition. The difference in the rate of growth and decomposition results in peat being deposited, and the carbon from organic matter being sequestered within the peat. Since the end of the last Ice Age, approximately 10,000 - 12,000 years ago, peat bogs in the UK have sequestered in the region of 5.5 billion tonnes of atmospheric carbon (Joint Nature Conservation Committee webpage). This figure is equivalent to the amount of industrial emissions released over a 20-year period (*National Trust*).

In terms of carbon richness, much of West Lochaber's soil is classified as peat with organo minerals (*Bruneau & Johnson, 2014*). This is a high carbon storage peat soil, which is likely to reach an upper storage limit marginally below the 1200 tonnes of carbon per hectare of deep peat, but substantially above that of other soils (*ECOSSE report, Scottish Executive 2007*).

West Lochaber has 1048 hectares of blanket bog. These are distributed in small pockets on Kinloid, Kinloid Farm, Glenfinnan, Fassfern, Laragain, Moy Crofts, Achnacarry south and FCS Achnacarry.

The carbon storage capacity of peat is affected by peat erosion and degradation from inappropriate burning, grazing, peat extraction and drainage practices. These not only release the carbon already stored, but also reduce the soils ability to sequester atmospheric carbon. The inability of peat to perform its function has huge implications for climate change, due to its capacity to store large amounts of carbon worldwide.

Within a carbon storage context, West Lochaber DMG will aim to maintain the overall integrity of the peatlands by limiting degradation and erosion, and by maintaining vegetation cover. Where peat degradation has already occurred, the DMG will aim to reinstate peatland function and biodiversity.

Action:	*The West Lochaber DMG will manage peatlands with the aim of maintaining both the current extent of peat deposits, and the health of peat forming habitats.*
Action:	*The West Lochaber DMG will limit the loss of stored carbon and where necessary restore habitats to enhance carbon sequestration.*

In order to meet these aims, the current coverage of blanket bog must be known. Blanket bog is defined by peat depth, with true peat being classified as having a depth of 0.5m or more (Scottish Government guidance on developments on Peatlands*).* Habitat maps and soil maps can be used as a baseline for assessing peat coverage. Blanket bog coverage within the West Lochaber DMG is available from SNH, and soil maps are available from the James Hutton Institute.

Action: *Members will identify broad areas of Blanket bog and will monitor impacts on Blanket bog using habitat impact assessments (page 24).*

It is then necessary to determine the extent of peatland degradation, and to map this at an appropriate scale, which will allow management decisions to be made at a landscape level. Where available, aerial photos may allow areas of severe degradation to be identified.

In order to standardise peat condition assessment, and taking into consideration the likely inexperience of employees who are currently in place, a simple and easily repeatable method of assessing peat should be used. In simple terms, peat degradation can be classified into the following 5 broad categories: active, degraded, bare, archaic and wasted/lost (as defined by Lindsay & Immirzi, 1996). Full category descriptions are available from SNH commissioned report 701 (http://www.snh.org.uk/pdfs/publications/commissioned_reports/701.pdf). Due to the large areas requiring assessment, the DMG will use a rapid assessment methodology, consisting of a walk over survey. This will grade the peat into the above categories and will record and map the outer boundaries of each area using a GPS. Funding for mapping and assessing Peatland can be sought from the Peatland Restoration Fund.

Action: *Members to identify and map the location, extent and condition of degraded peat*

Action: *The DMG will consider accessing the Peatland Restoration Fund to help fund mapping peatland and assessing peatland condition*

Where areas of active peat (solid peat with a full coverage of vegetation) is identified, the DMG will ensure that future damage is limited by; reducing grazing levels where poaching or overgrazing is identified and avoiding burning on areas on blanket bog. Where necessary, the DMG will also use low impact vehicles to access the site, and ensure peat extraction and drainage of peatlands does not increase.

Action: *Avoid burning on areas of peatland as outlined in the Muirburn code.*

Action: *Ensure that grazing regimes and deer densities allow for maintenance of peat integrity*

Action: *Where possible, only access peatland with vehicles which have low ground pressure*

Action: *Ensure peat extraction and drainage of peatlands does not increase*

In areas of degraded or bare peat, and where restoration is a viable option, clear aims and realistic timescales for work must be outlined. If possible these should link areas of bog together. Where overgrazing has been identified but there is little damage to the underlying peat, a reduction in livestock would serve to protect the peat. However, where restoration is required, the removal of livestock alone is likely to take many years and may not be successful and other techniques will likely need to be used (Littlewood *et. al*., 2010). In broad terms these techniques are:

- Gully blocking
- Re-profiling
- Re-vegetation of bare peat

It is worth noting that although peatland restoration best practice is currently being updated, technical guidance on peat restoration can be sought from the Yorkshire Peatland Partnership (Pilot UK Peatland Code) and Moors for the Future. The James Hutton Institute is also currently developing a tool which will enable the identification of the most appropriate areas for restorative action, and those which would benefit most from peat restoration (Scotland's National Peat Plan).

4.7 Management of non-native invasive species.

This plan will not encompass all non-native species in West Lochaber but will cover feral pigs and non-native deer.

4.7.1 Feral pigs

Feral pigs were released from Glen Dessary Estate within the Knoydart DMG about 10 years ago. These animals are often described as being wild boar which implies they have been re-introduced as a former native species. However, any such re-introduction would involve a widespread public consultation and a programme approved by Scottish Government. Although individuals may superficially look like wild boar, the genetics of the Glen Dessary pigs are unclear. Until their genetics are determined, these animals are best described as feral pigs.

The effect of feral pig introductions throughout the world is almost universally negative. Feral pigs can damage native species e.g. ground nesting birds, farm crops and gardens. They can be a road traffic hazard and can damage fences. However, they are rarely seen as detrimental to forestry and may benefit woodland regeneration by scarifying small areas and creating seed beds.

Scottish Government policy on feral pigs has been vague to date and individual landowners have largely been left to determine their own policies. Scottish Government policy may become clearer in the short term and actions in this plan may have to be reviewed in the light of developing policy. Within West Lochaber, feral pigs have occurred in parts of Glenfinnan Estate, the woodlands at Fassfern and on South Achnacarry. However, the number of feral pigs in West Lochaber appears to be low. While some estates think feral pigs could be a sporting resource, the majority think they cause too much damage to third parties to realistically be an asset. There have been local examples of damage to farmland, gardens and caravan sites and most estates view feral pigs as causing “too much hassle”. Those who think feral pigs could be an asset will consider their impacts when they colonise before making a decision to eradicate them or not. One negative impact which estates plan to monitor is the potential damage to deer fences. Feral pigs can be extremely strong and have the ability to bulldoze holes in fences which will then let deer through into areas where they could cause damage.

Feral pigs are often nocturnal and elusive. Their cryptic behaviour, combined with a potentially high rate of reproduction, can make population control difficult. Sightings suggest sows are breeding seasonally and producing litters of around five piglets. Much bigger litters have been seen but these appear to be uncommon. The survival rate of piglets is unknown. While there appears to be a much lower reproductive rate than the maximum recorded for feral pig populations, it is still a sufficiently high rate to enable rapid population growth.

The effective control of feral pigs in Scotland is likely to be analogous to wild boar population control on the Continent. Throughout much of Europe the hunting of wild boar is underpinned by baiting. Baiting with attractive food can be used to encourage pigs into traps or into areas where they can be shot. The selection of bait sites may be best done by observing which areas pigs are utilising. However, a sufficient number of bait sites must be established in order to attract the whole pig population. As a rough guide, in the Czech Republic 5 - 7 bait sites are established every 1000 hectares in areas of continuous forestry. Baiting works best in winter when natural food stocks are low.

Fassfern Estate has adopted a policy of putting out baits whenever field signs of pigs are seen. Bait sites are monitored with trail cameras and stalkers stake out bait sites as soon as pigs start to use them.

Shooting at bait sites. Throughout the Continent wild boar are traditionally shot in full moonlight. There is some doubt whether shooting by moonlight is legal in Scotland. The use of night vision equipment to shoot feral pigs in Scotland is thought to be legal and this is likely to become the most effective control method as night vision gear improves and becomes more available. Shooting feral pigs at night can be done with a spotlight but the animals produce little reflective eye shine and can be difficult to detect in long grass. Whichever effort is used, to minimise risks to animal welfare and public safety it is recommended that practitioners follow the safety aspects within the Night Shooting: Code of Practice (for deer) in published Best Practice guidance.

Population control can only be effective when culling outstrips reproductive success. In reality, pigs will be shot opportunistically and there may be little chance for selective culling of animals. Where possible, females should be targeted over males. Within family groups, large sows will dominate breeding. They will produce the largest litters and will suppress breeding attempts by smaller females. It is thought the most effective way to reduce the reproductive success of feral pigs is to selectively shoot large females. This will prevent the production of large litters but have a negative effective of dispersing small females and enabling them to breed. As yet there is no data on the success of different culling strategies on feral pigs living in Scottish conditions. However, on balance and based on Continental experience, the selective shooting of large females is thought to be the most effective means of reducing population reproductive success. The converse is also true in that those seeking to maintain populations to be used as a resource should target as many small females as possible while letting large females breed.

Trapping at bait sites. Trapping at bait sites is a method used to cull wild boar across Europe. Traps can be designed to catch individual pigs or entire family groups. They can be triggered remotely or manually. Manually activated traps are recommended when attempting to catch entire family groups as the operator can trigger the trap when all the pigs are observed to have entered. Pre-baiting before catching is also required as initially only a few individuals from a family group may enter a trap. Pre-baiting will increase the confidence of warier pigs so eventually the whole family group enters the trap. Pigs quickly become trap shy if released from traps or if they observe other pigs being caught. Releasing pigs from traps will result in traps becoming ineffective very quickly. However, some stalkers have concerns about the welfare implications of shooting feral pigs in traps as the animals can panic when the first individuals are shot. Traps can be designed to minimise welfare problems but such traps require a high level of design and resource.

Traps require to be built of very robust materials as a trapped family can exert considerable force to escape. Large traps should include some cover within as this may calm trapped animals and reduce escape attempts. Deer Consultancy Services can draw on experts from the Czech Republic and Sweden to advise on trap design and location if desired.

Trichinella is a disease of many mammalian species including humans. It involves infection by nematode worms and can be present in feral pigs. Stalkers who are handling pig carcases should maintain a high standard of hygiene with regular hand washing. It is advised that meat from feral pigs should always be well cooked and never eaten rare.

Actions: *Estates to continue to resist colonisation by feral pigs by culling all observed individuals where possible. Estates will report to the DMG on numbers and locations of culled feral pigs.*

4.7.2 Sika

Sika were introduced to Scotland in the 1890s as a decorative species. One of the original introduction sites were the woodlands at the west end of Loch Morar immediately neighbouring the WLDMG. A small population still exists in this area but, unlike other sika populations, has not shown dramatic range expansion. Sika from Morar have moved into Scamadale and Arisaig and formed small breeding populations. These are culled at a rate which appears to prevent population growth. They are rarely seen on open ground and their eastern range expansion has been very limited. Meoble stalkers report only seeing 2 sika stags on the hill in the last 10 years. This slow eastern spread mirrors national trends where sika have expanded their range much more dramatically to the west than to the east of introduction sites. Sika currently do colonise West Lochaber from the east where the Loch Ness population has expanded its range steadily westward for many decades. The rate of colonisation of West Lochaber appears to be low. Glenfinnan Estate report 4-5 young males being shot over a 40-year period and no other animals being seen. FCS, South Achnacarry and Glen Loy have culled an occasional sika stag on their land holdings at the east end of West Lochaber but there is not thought to be a breeding population in any of the woodlands east of Glenfinnan.

Average annual sika culls are shown in Table 10.

Sika stags	Sika hinds	Sika calves	Total
4.1	1.1	0.8	6

Table 10. *Average annual sika culls in WLDMG between 2005 and 2014.*

Culls are very low but seem large enough to prevent population growth suggesting the West Lochaber sika population is very small and should be easy to control.

Actions: *The West Lochaber DMG will resist the spread of sika onto all the land east of Arisaig Estate by culling all animals seen whenever it is possible to do so. Existing small populations on Arisaig and Scamadale will continue to be culled as a minor resource but there will be no significant increase in numbers.*

4.8 Protection of historic and cultural features

West Lochaber has been settled by man for many thousands of years. There are likely to be numerous features and sites which have historic and cultural significance. Light grazing can help conserve archaeological features as it may keep them visible and prevent them being lost amidst growing vegetation. Estates are not currently aware of any historic or cultural features being damaged by deer or sheep grazing. If concerns about damage to features are raised, the DMG will undertake to consider those concerns and address issues if possible. The DMG will contact the Highland Council Archaeologist to see if Highland Council has any concerns.

Action: *Be open to communication with regards to concerns of damage to historic and cultural features. Contact the Highland Council archaeologist to see if Highland Council has any concerns.*

4.9 Delivering high standards of competence in deer management

Of 17 individuals who shoot deer unsupervised within WLDMG, 15 have DSC 1 and 12 have DSC 2. There is already a high level of Competence as defined by the deer sector. All stalkers will achieve DSC 1 and work towards DSC2 by end 2017.

Deer managers in WLDMG have many skills and qualifications and there is a strong commitment to Best Practice within the Group. A full training policy is provided on page 16.

Actions: *All stalkers to attain DSC 1 and work towards DSC 2. Identify training needs within the DMG and organise training courses where necessary. Consider inviting other rural workers to participate in training courses where possible.*

4.10 Contributing to public health and well-being

Deer contribute to public health and well-being in ways which are both positive and negative although often their contribution is relatively small. Deer are regularly voted as one of Scotland's favourite wild animals by the public. As such they contribute to public well-being by being a relatively accessible, visible and often exciting part of the natural world which many people can readily enjoy. Deer stalking is a healthy outdoor activity which can involve

variable levels of exercise. In common with many outdoor recreational activities it contributes to public health to some degree. Access to the hills for outdoor activities is an important contributor to public health and well-being. The West Lochaber DMG area is very popular with hill walkers and other outdoor enthusiasts as it's on the door step of Fort William which is a centre for outdoor recreation. West Lochaber has a number of popular Munros and Corbetts. On average over 50 people per week visit the Glenfinnan Munros and 40 people per week use the glen as an access point for the Knoydart peninsula. Increasingly people pass through West Lochaber on the Cape Wrath Trail.

Despite the popularity of the area there is little conflict between access and deer management. The steep topography in large parts of the DMG helps create some separation between walkers and deer stalkers. Most walkers stick to glens and ridges and largely stay out of the corries where most deer stalking takes place. However, even in the areas with more rounded hills, little conflict is reported by estates.

West Lochaber estates recognise the importance of outdoor recreation to Lochaber as a whole and have a welcoming attitude to walkers. Many estates have a pro-active approach to potential conflict and speak to walkers at access points to find out their intended routes, discuss alternatives if relevant, or seek to avoid the routes they know are going to be disturbed. Estates may wish to use the Heading for the Scottish Hills website http://www.outdooraccess-scotland.com/Practical-guide/public/Heading-for-the-Scottish-Hills as another means of providing information to walkers. Currently informal systems work well and conflict between deer managers and recreationalists is minimal.

Venison is a lean and healthy source of protein which can contribute towards a healthy, balanced diet. Venison is increasingly popular and accessible as a regular part of the UK diet. As such, the supply of venison to the local community can be seen to contribute to improving public health. Members of WLDMG will ensure there is supply of venison available for local purchase.

Action: *Ensure a supply of venison is available for local sales.*

4.10.1 Deer Vehicle Collisions

Deer collisions with vehicles are an obvious risk to public health. There are serious risks of collisions along much of the A830 and these are likely to increase as road improvements continue and driver speeds increase. Deer do regularly move across roads in a few localities e.g. regular movements across the A830 between hill and shoreline at Fassfern. Between 20 - 40 stags have been found annually on the stretch of road between two forest blocks and centred on Kinlocheil. Further west, between the east side of Glenfinnan and Arisaig, it is estimated another 20 deer are found dead at the roadside annually following vehicle collisions. Not all deer involved in collisions will be killed and it is likely there will be an additional number of collisions which are non-fatal to deer.

Estates have taken action to reduce the risk of deer vehicle collisions e.g. feeding deer away from roads on Fassfern and Glenfinnan. Deer vehicle collisions at Fassfern could be reduced by a roadside fence between forestry blocks. It is thought this could be sited to minimise impact on roadside views. Further west there are natural deer movements across the A830 between Glen Mamie and Ardnish and between the north of Arisaig and the Rhue peninsula. Here fencing solutions are inappropriate and the best way to reduce collisions is through increasing driver awareness and reducing driver speeds. Improved signage may play a role in this. For the entire length of the road between Corpach and Arisaig, effort should be made to increase the visibility of roadside deer by cutting back roadside vegetation.

Estates bordering the A830 should carry out monitoring of dead deer at the roadside on a monthly basis. DVCs should be reported to the Deer Collision UK database. Local communities will be encouraged to report deer vehicle collisions to the DMG and the DMG should address any concerns raised where it is reasonable to do so. The DMG

should consider the risk of deer vehicle collisions when making management decisions e.g. when siting new deer fences.

Action: *Fassfern to explore fencing options including public funding.*

Action: *Consider ways of raising driver awareness of the risk of deer vehicle collisions.*

Action: *Persuade Highland Council to cut road verge vegetation.*

Action: *Monitor number of deer killed on the roadside using bi-monthly surveys on each roadside estate.*

Action: *Report collisions to Deer Collisions UK database.*

Action: *Deer collisions to be added as an agenda meeting at the WLDMG AGM.*

4.10.2 Lyme disease

Lyme disease is a bacterial infection passed to humans from infected ticks. Deer play a peripheral role in Lyme disease transmission as they act as a host for ticks and can spread ticks across big areas. However, there is no evidence that deer control reduces Lyme disease. All countryside users should be made aware of ticks and the risks of Lyme disease. The public should be aware of early symptoms of Lyme disease so they can seek medical attention at an early stage of infection. DMGs have a very small role in raising public awareness about Lyme disease. However, deer stalkers and their guests are very prone to tick bites as they may work in tick infested areas and spend time crawling through vegetation while they attempt to approach deer. Stalking guests who may be new to the area or to the UK should be made aware of the risks and symptoms. Estate First Aid kits should include tick removers.

Action: *Ensure estate guests are aware of the risks and symptoms of Lyme disease.*

Action: *Ensure First Aid kits include tick removers.*

4.11 Maximising the economic benefits of deer management

Deer stalking in Scotland is currently very popular. Demand is high for deer stalking at all cost levels e.g. from a week's stag stalking for a large group with accommodation which may cost a five figure sum, or for a morning stalking roe does which might cost £50. Demand is both international and domestic. This popularity means deer stalking can play an important role in generating economic activity particularly in the remoter parts of Scotland such as West Lochaber.

The relative economic importance of deer management forms a spectrum across the different estates in West Lochaber. Deer stalking is the backbone of the business model adopted by South Achnacarry. Here the stalking is leased to a former employee who now works as a self-employed deer stalker and employs two seasonal staff as well as drawing on other tourist services in the area. Other estates take a commercial approach and offer let stalking to paying guests. Some others adopt a relatively low key approach with sport stalking conducted by the friends and families of owners with few fees being charged. Assuming the average cost of a day's stag stalking in Scotland is £500 then the total value of stag stalking in the WLDMG is £110000 and the enjoyment gained from stalking is largely the incentive to support 11 full time jobs. Assuming average weights of stags, hinds and calves and a venison price of £2 per kg the value of venison harvested annually is £62000. Employees' wages and associated spending contribute to the local economy. Within West Lochaber no one is employed solely to manage deer but some employees spend up to 50% of their time managing deer, with the remaining 50% spent on estate management and

maintenance. Deer management is vital in sustaining jobs. Few estates in West Lochaber will produce a profit but paying guests will contribute to estate income and will reduce operational losses. Paying guests will also spend money locally on accommodation and services. This also applies to the friends and families of owners who may not pay fees for stalking. There is a clear argument that deer stalking attracts visitors and contributes to overall tourist spend.

Deer are consistently voted as one of Scotland's most popular animals and are seen as an icon of Highland Scotland. As such the general ease of visibility of deer is one element that attracts tourists to remoter parts of Scotland like West Lochaber. Although it is hard to quantify the sums involved, deer will contribute to the range of features which attract tourists to stay in guest houses and hotels and spend money in local shops.

There is probably scope for increased wildlife tourism activities based around deer watching. In particular, there is capacity for more activity during the rut or during calving time. However, operators are likely to be limited by the general accessibility and visibility of deer. People will pay for interpretation e.g. of deer management and deer based photography does have a commercial value, but experience suggests the market is probably limited and much smaller than the deer stalking market.

Action: *Consider establishing commercial deer related activities other than deer stalking. These might include deer viewing, photography etc.*

4.12 Minimising the economic costs of deer

It is often argued that the costs and benefits of deer management are distributed in a way that is inequitable. Those that incur costs sometimes do not share benefits. Those members of WLDMG who do benefit from deer undertake to minimise the costs caused by deer to others, where it is reasonable to do so.

There are a number of properties in West Lochaber who may view deer management as a cost. Fassfern has large areas of woodland which have resident deer populations. Two stalkers are employed on the estate and these spend a significant proportion of their time culling deer in woodland. However, this cost is balanced to some extent by the owner's enjoyment of sport stalking on the open hills above the woodland. The West Lochaber owners respect that deer are a natural feature of Lochaber and that they have to be managed. Management costs are accepted and not thought to be excessive.

FCS manage deer at a cost. Nationally, FCS has reduced their deer management costs over recent years through the use of stalking leases and contractors rather than full time staff. Deer management within the WLDMG helps support a team of contract deer managers who cover a much wider area than West Lochaber. However, FCS deer management costs remain high and the cost of fencing is a very significant part of this total cost. It is believed that some of the deer fences around FCS properties in the WLDMG are jointly managed by FCS and neighbours i.e. those that seek to benefit from deer pay a share of the cost for protecting the crops of others.

Another group of people who may incur costs associated with deer are the crofting community. Deer may damage crops or restrict the crops that can be grown. Most importantly deer compete for grazing with livestock. Crofters have the right to protect their crops and grazing and some exercise this right, which may give some compensation for damage. The WLDMG will invite crofting and Grazing Committee representatives to DMG meetings and will try to find solutions to concerns that are raised.

Action: *Ensure crofting and Grazing Committee representatives are invited to DMG meetings and that any concerns they may have are fully discussed.*

4.13 Effective communication on deer management issues

The Constitution of WLDMG will ensure meetings involve a wide range of interests (see Appendix B). A communications policy for the WLDMG is shown on page 15. WLDMG will develop an open and inclusive communications culture both within the DMG and between the DMG and outside interests. The Group will make various documents e.g. DMG Minutes available to the public through the ADMG website.

The first draft of this deer management plan was circulated for public consultation. Direct consultees included Community Councils, Highland Councillors and HC staff, Highland MSPs, Members of the Rural Affairs and Climate Change Committee (Scottish Parliament), the local MP, SNH, Transport Scotland, Environment LINK, outdoor access organisations and a range of Lochaber contacts. The link was also sent to the West Highland Free Press and the Oban Times. The covering email encouraged all to send the link to the draft plan on to anyone who may have an interest. The objective was to reach as wide an audience as possible and to carry out a genuine consultation. Detailed comments on the first draft were received from SNH and Environment LINK including responses from ecologists with local knowledge of Lochaber. We were grateful for those comments and have incorporated most of them in the final plan.

Actions: *Carry out actions within the Communications Policy.*

4.14 Safeguarding Deer Welfare

Safeguarding deer welfare is one of the strategic objectives of the DMG. In simple terms this means that deer should not be made to suffer as a result of management activities. It does not mean that there should be no natural mortality as some is inevitable and indeed natural, in hard winters. Deer welfare can be safeguarded in a practical sense by maintaining deer numbers in balance with their habitats and by providing adequate shelter for the deer population in times of severe weather. The importance of deer having access to woodland cannot be overstated in this regard. Deer welfare can also be safeguarded by ensuring they are humanely culled by competent people and that deer vehicle collisions and levels of poaching are minimised.

Members of WLDMG undertake to consider deer welfare when planning management activities. For example, if there are plans for any new deer fencing then the implications of fence lines for deer welfare will be considered. Levels of training and competence within the DMG are considered to be compatible with maintaining a high standard of deer welfare. Members currently have few concerns about deer welfare and think welfare is being safeguarded. Members agree to continue to keep deer welfare under review.

Action: *Consider deer welfare issues at each meeting.*

4.14.1 Chronic Wasting Disease

Chronic Wasting Disease is a highly infectious disease of deer, present in North America, which has so far proved 100% fatal to deer. It is not thought to affect humans. It is not known to be present in Europe but the potential consequences of its arrival could be devastating to deer. It is thought that the most likely transmission route is via hunters from infected areas bringing the disease into Europe on clothing or equipment. This situation is analogous to the potential risk of *Gyrodactylus* spreading to salmon rivers in Scotland from Scandinavia. Some Fishery Boards have introduced a Declaration form which all visitors must sign before they can fish in the river. This process raises awareness of the issue amongst visitors and seeks to modify behaviour so as to improve bio-security.

Action: *Estates within the DMG should consider asking visiting stalkers from North America to sign the draft declaration in Appendix C.*