

Scottish
Environment
LINK

Saving Scotland's Rainforest: managing the impact of deer



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Summary

Scotland's rainforest is of international biodiversity importance. There are considerable opportunities to enhance and expand it to help to meet Scottish Government targets, however the impacts of deer are one of the main barriers to its restoration. Although deer are a natural part of the rainforest ecosystem, their mobility, coupled with increasing numbers, have suppressed tree regeneration and prevented woodland expansion. The challenge is to reduce their negative impacts on the rainforest, especially on the more palatable tree species, whilst retaining their role as key rainforest species.

Large area of dead and dying woodland



The culture of red stag sport stalking has been an important social and economic factor in the rainforest for over 175 years, often on holdings that also have farming and forestry interests. Less attention is paid to roe and sika deer, which can have high rainforest impacts. There is an increasing interest in alternative approaches to land management, both from established owners and from aspiring new entrants, and this has been driving up land prices.

The Scottish Government has paid considerable attention to the regulation and administration of deer matters, including commissioning an independent report from the Deer Working Group, and requiring NatureScot to produce regular reports on the effectiveness of the Deer Code. Deer numbers remain at historic highs and continue to hinder delivery of biodiversity and climate change targets. The regulatory regime is in place, but the will to deliver appears to be less developed.

The Scottish Government has also provided funding for deer management. Much of this has been devoted to deer fencing, an approach that is both expensive and often ineffective in the medium term. While some funding is available for the type of collaborative management that is required for effective rainforest deer management, uptake has been very low.

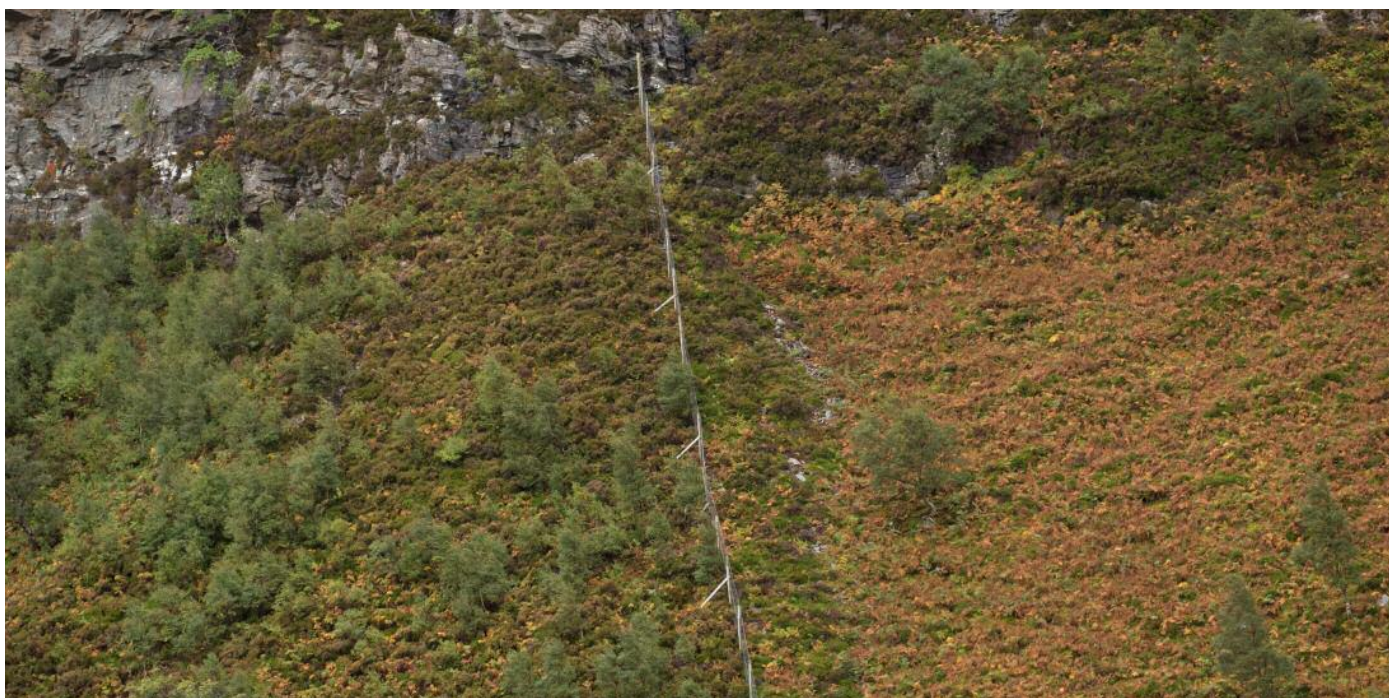
The report includes recommendations seeking:

- Urgent action on the implementation of recommendations of the Deer Working Group.
- Support for deer management to be carried out at landscape scale, over the long-term and coupled with eradication of *Rhododendron ponticum*.
- Development of a community based approach to stalking, especially for sika and roe deer, coupled with a new approach to marketing the experience of stalking deer in the rainforest.
- Support for new technologies such as drone and thermal surveys, and for enhanced training in rainforest deer control and monitoring.
- New funding streams, including a Scotland's Rainforest Restoration Fund, to be coupled to increased cross compliance on deer management as a condition of agricultural and forestry grants.
- Leadership from both Scottish Government agencies in ensuring that rainforest deer do not hinder the delivery of the ecosystem services that rainforest management and expansion can deliver, and from landowning environmental NGOs and others in demonstrating best practice in rainforest deer management to deliver these services, including reducing the impacts of climate change, restoring biodiversity, and ensuring a future for fragile human communities in the rainforest.



Glossary

ADMG	Association of Deer Management Groups
AECS	Agri-Environment Climate Scheme
DMG	Deer Management Group
DMP	Deer Management Plan
DWG	Deer Working Group
FGS	Forestry Grant Scheme
FLS	Forestry and Land Scotland
FTE	Full Time Equivalent
GAEC	Good Agricultural and Environmental Condition
NGO	Non-Governmental Organisation
PAWS	Plantation on Ancient Woodland Site
RPID	Rural Payment and Inspections Division
SAC	Special Areas of Conservation
SRDP	Scottish Rural Development Programme
SMR	Statutory Management Requirements
SMF	Sustainable Management of Forests
SSSI	Site of Special Scientific Interest
UKFS	United Kingdom Forestry Standard
WDNA	Wild Deer: A National Approach
WIG	Woodland Improvement Grant



What a difference a fence makes to natural regeneration in the west Highlands

1 Introduction

The report contains an overview of the current relationship between deer and the rainforest, reviewing the existing framework for deer management within the rainforest, including Scottish Government policy, legislation and grant assistance, and recommending changes intended to improve existing models of deer management.

Deer management is a large subject. The main body of the report contains the discussion of the current situation and recommendations for change. An **appendix**¹ contains further detail on a wide range of issues relating to deer management.



The report was commissioned by Scottish Environment LINK as a companion to the Woodland Trust's report *Rhododendron in the Rainforest: Approaches to a Growing Problem*.² Together these reports shine a light on the two key threats to Scotland's rainforest and represent part of the call for action to be taken to save Scotland's rainforest. To restore the rainforest deer management must be coupled with the eradication of *Rhododendron ponticum*.

The report has been informed by input from a LINK Steering Group and from interviews and discussions with over 30 stakeholders, including stalkers, community representatives, woodland managers, landowners, NGO staff, and Scottish Government agency staff. Our thanks to everyone who gave their time and their insights to the authors.

¹ <https://www.scotlink.org/publication/appendix-to-deer-rainforest-report/>

² <https://www.woodlandtrust.org.uk/publications/2021/10/rhododendron-in-the-rainforest/>



2 Extent and significance of Scotland's temperate rainforest

2.1 Temperate rainforest; a scarce habitat

Though temperate rainforest is found in several parts of the world (**Figure 1**),³ it is a globally scarce habitat, far rarer than tropical rainforest and relying on conditions of persistent high rainfall, clean air and an equitable climate.



Figure 1
World distribution of Coastal Temperate Rainforest

Scotland's temperate rainforest is found in a zone along the west coast of Scotland where the necessary climatic conditions are found. **Figure 2**⁴ shows this zone, "the area potentially very rich in oceanic and pollution-sensitive bryophytes and lichens, and, at higher altitudes, oceanic liverwort-rich heaths whose flora has a rainforest element".⁵

Woodland once covered large areas of the rainforest zone, but much of this has been lost over the last two millennia. While climatic variations have caused changes in the extent, type and distribution of woodland, most of the decline in woodland cover has been due to tree felling, muir burning, grazing by domestic stock and, more recently, over-browsing by deer.

Within the rainforest zone, 63% of the land area has the potential to support a mosaic of woodland habitats, with a further 28% being able to support scattered trees and scrub.⁶ Restoring and expanding the rainforest can help meet government nature recovery and woodland expansion targets. Despite this, native woodland covers just 4.8% of the rainforest zone and 17% of this native woodland is classed as Plantation on Ancient Woodland Sites (PAWS). Of this native woodland (excluding PAWS), only 41% (29,500ha) has been classed as 'mature' and so is most likely to be relatively intact ancient woodland. This represents less than 2% of the total area of the rainforest zone. As well as covering a very small total area compared to its potential, rainforest is very fragmented with a median size of just 25ha. Please see the report appendix for further details, including maps illustrating the fragmented nature of the rainforest.

³ <https://www.woodlandtrust.org.uk/publications/2019/05/state-of-scotlands-rainforest/>

⁴ <https://www.woodlandtrust.org.uk/publications/2019/05/state-of-scotlands-rainforest/>

⁵ <http://www.benandalisonaveris.co.uk/wp/wp-content/uploads/2023/02/A-Provisional-Definition-of-Temperate-Rainforest-in-Britain-and-Ireland-Ben-Averis-2023.pdf>

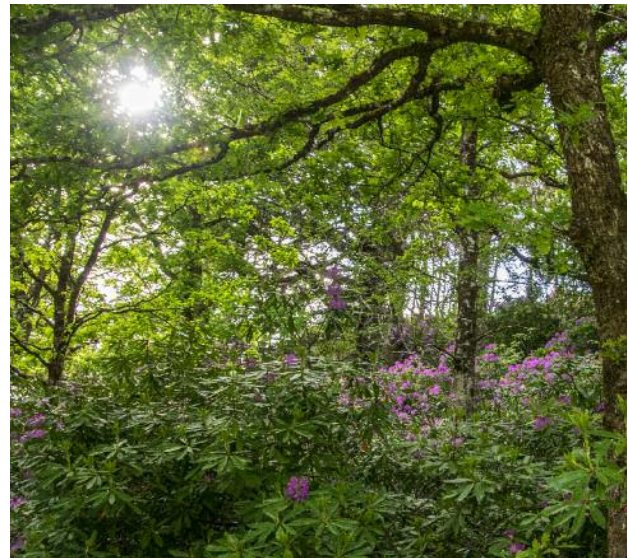
⁶ <https://digital.nls.uk/pubs/e-monographs/2020/216636128.23.pdf>

2.2 The biodiversity importance of Scotland's rainforest

The biodiversity values of the temperate rainforest zone of north-west Scotland are highly significant. Many species, especially lichens, mosses, liverworts and fungi, can only thrive in the particular set of conditions found in this rainforest; many of these species are internationally rare and some are found only in Scotland.⁷

2.3 Rainforest threats

Scotland's rainforest fragments face multiple threats, but the two main issues are deer and the impact and spread of invasive species, in particular *Rhododendron ponticum*. A separate paper covers the *Rhododendron* issue.⁸



Rhododendron ponticum infestation in a west coast oakwood.

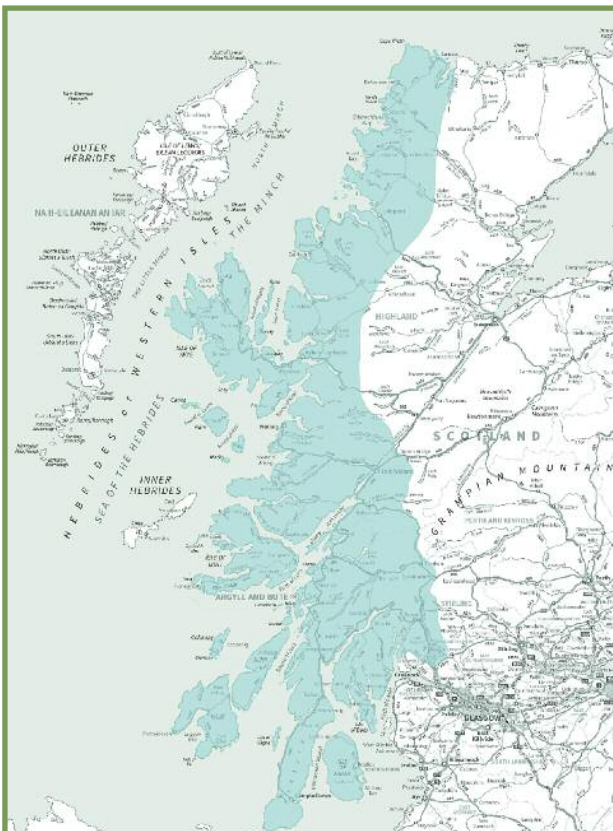


Figure 2 Scotland's rainforest zone

Sheep

This paper focuses on deer but other herbivores have an impact on some woodlands. It has been estimated that around 20% of herbivore impacts are not attributable to deer.⁹ Most of these impacts will be from sheep, despite changing economics leading to a decline in sheep numbers over the last two decades.

Other threats

Although rainforest is no longer felled or converted to conifer plantation, other threats have risen to prominence, notably plant diseases. Dutch elm disease is having a major impact on some parts of the rainforest, though its progress is now slow, probably because the characteristic rainforest climate does not suit the beetle that spreads the disease. More recently, ash dieback has created serious concern about the future of one of the rainforest's key species. The spread of all these diseases appears to have been caused by, or has been encouraged by, human activity.

The multiple threats to the rainforest place it under increasing stress. The uncertainty around the impacts of a changing climate on a delicately balanced ecosystem underlines the need to protect it now by reducing the stresses and increasing resilience.

7 <http://www.benandalisonaveris.co.uk/wp/wp-content/uploads/2023/02/A-Provisional-Definition-of-Temperate-Rainforest-in-Britain-and-Ireland-Ben-Averis-2023.pdf>

8 <https://www.woodlandtrust.org.uk/publications/2021/10/rhododendron-in-the-rainforest/>

9 G. Patterson, D. Nelson, P. Robertson and J. Tullis, "Scotland's native woodlands. Results from the native woodland survey of Scotland," Forestry Commission Scotland, Edinburgh, 2014.

3 Distribution and behaviour of deer in the rainforest





Fallow deer prefer to graze grasses but will eat trees and dwarf shrubs in autumn and winter.

3.1 Deer species, habitats and behaviour

Red and sika deer

Red deer are native species. They are herd animals, adapted to life on the open hill although they prefer woodland habitats, especially for winter shelter. Sika deer, a widespread introduced species, are relatively secret, and thus difficult to control. They are found mostly in and around native woodland or commercial conifer plantations and can hybridise with red deer. Both species are large animals that can easily jump stock fences, and they both graze ground-based vegetation as well as browse trees and other woody vegetation.

Roe and fallow deer

Native roe deer are much smaller than red deer, and restricted largely to woodland or to areas where there is a patchwork of woodland and fields. They are highly territorial and tend to keep to the same relatively small patch of ground in small family groups. They have a preference for feeding on woody shrubs and trees and can have high and often under-rated impacts on woodland vegetation. They are adept at getting through deer fences, and then multiplying rapidly by bearing twins.

Fallow deer are a large introduced species, absent from much of the rainforest zone but found in localised areas at high numbers, generally in woodland or in mixtures of woodland and agricultural land in lowland areas.

The impact of deer on rainforest restoration

A limited range of tree species will grow in the presence of moderate numbers of deer, and this can give the impression that restoration is occurring. It is possible that young trees better able to survive, most likely birch, alder or willow, are the pioneers of a new generation of species-rich woodland. Unfortunately the tree species that are most important to the rainforest are also the most palatable to deer, and these species are usually underrepresented in any young growth.

4 Land ownership, land use and deer management



4.1 Land ownership in the rainforest zone

Although wild deer legally belong to no-one, the right to shoot deer is vested with the owner of the land on which they are present. Effective deer management is therefore linked to landowners' management objectives, and this usually means that co-ordinating deer management across multiple land holdings is necessary.

In the rainforest around 80% of rural land is owned privately by individuals, trusts and corporate entities.

At the Scottish level around half of all private land is owned by 432 land owners;¹⁰ Scotland has the most concentrated pattern of land ownership in the world. 4.3% of the land area of the rainforest zone is owned or managed by environmental Non-Governmental Organisations (NGOs), and 16% is publicly owned land, mostly managed by Forestry and Land Scotland (FLS).

4.2 Land use

Burton (2020)¹¹ used land cover and land ownership information to predict the spatial distribution of different land uses in Scotland. Within the rainforest zone, extensive agriculture (largely hill-sheep farming) and traditional multi-functional estates were predicted to cover most land area, with productive conifer forestry covering a large area in Argyll. Burton designated very little land in the rainforest zone as 'sporting estate', most of the traditional multi-functional estates will be managed for a range of uses, typically including sport shooting of red deer, forestry and extensive agriculture. Some, especially those with designated sites, may be managing at least part of their land for nature conservation. One of the most significant factors in the decline of Scotland's rainforest is the lack of integration of different land uses. Some of this is mostly due to the underlying support of government schemes, which can result in compartmentalised land uses which damage nature.

Agriculture

Agriculture in the rainforest zone is focussed primarily on sheep though beef cattle are still raised on some farms. Grants to exclude stock and changes in agricultural subsidies resulted in a decline in the impact of sheep on the rainforest.¹² Where this has occurred, deer numbers are likely to have increased due to increased availability of forage for deer. Further, many woods remain overgrazed by livestock in addition to any impacts from deer.

Sport stalking

Sport stalking for red deer became a major land use in Scotland from around 1850. On many estates, stalking jobs have passed from one generation to the next. As a result, long-standing approaches to red deer management are often deeply culturally embedded, amongst both stalkers and local communities. On many estates, sport stalking is carried out purely as a leisure activity. Other estates take on paying clients to help cover some of their running costs.

Traditional sport stalking management aims to maximise the numbers of red deer stags to allow guests to be almost guaranteed to shoot a stag on a chosen day. This established approach to managing red deer for sport results in deer densities that are too high to allow rainforest regeneration in the absence of effective deer fencing. Stag numbers also partially underpin the capital value of sporting estates, and many owners place more emphasis on capital values than on any loss on the current account, which can often be offset.

There is a continuing belief that a large population of hinds is needed to produce a large population of stags, and many estates therefore maintain a hind : stag ratio of 2:1 or higher.¹³ However published evidence shows that a hind : stag ratio of 0.7:1 does not adversely affect the number of stags that can be shot annually.

Red stags are very much the focus of deer sport shooting, with much focus on the rutting season. Hind control is often seen as a necessary task rather than a sport, while sika and roe deer are not usually given much attention, despite their impacts. Roe and sika numbers are likely to be underestimated. For example, in one isolated rainforest remnant where domestic grazing was stopped 25 years ago and a rigorous cull of wild herbivores undertaken, a drone count recently recorded a roe deer population of 37 per km².

¹⁰ <https://www.parliament.uk/globalassets/documents/commons-committees/scottish-affairs/432-Land-Reform-Paper.pdf>

¹¹ <https://era.ed.ac.uk/handle/1842/37301>

¹² https://pure.sruc.ac.uk/ws/portalfiles/portal/42774916/RSiF_2016_full_report_1_1.pdf

¹³ https://www.researchgate.net/publication/229190747_Estimating_the_Minimum_Population_Size_That_Allows_a_Given_Annual_Number_of_Mature_Red_Deer_Stags_to_be_Culled_Sustainably



Commercial forestry

Young tree crops are vulnerable to deer damage. However, in much of the rainforest zone the industry relies on the stalwart Sitka spruce, which is very unpalatable to deer. As a result, deer levels in commercial forestry plantations are often incompatible with rainforest restoration. The difficulty of controlling deer where neighbouring properties have different land management objectives increases commercial forestry's tendency to rely on deer fencing, especially for new planting where a fencing grant is available.

Shooting rights for mid-rotation commercial forests are offered for sale by the managing company, and this is often the only form of income available from such plantations, as thinning is a very rare practice. The aim of deer management in this case is to maximise the stalking opportunities, often including roe and sika, for the rights holder and their clients. There is often no incentive to bring deer densities down to a level that might safeguard any native woodland fragments associated with the plantation.

Nature restoration

Where nature restoration is the prime objective of a landowner, management generally involves attempting to bring deer densities down to levels that are compatible with successful rainforest regeneration. Achieving this reduction in deer numbers can be problematic due to the practical difficulties of stalking on challenging ground and sustaining the necessary effort over the years, whilst also taking account of the interests of neighbouring land managers.

Although 16% of land in the rainforest zone is managed by bodies that are likely to have tree protection as a main objective (see appendix), these ownerships are dispersed throughout the zone with few being contiguous.

Case Study 1: Beinn Eighe

Deer management on a nature restoration site

The 5,000ha Beinn Eighe & Loch Mare Islands National Nature Reserve rises from the south shore of Loch Maree to an altitude of over 1,000m, including a substantial remnant of ancient Caledonian forest. Since 1951, NatureScot has expanded and enhanced the woodland by reducing the browsing impact of deer through the use of both deer fencing and culling. Most of the deer fences have now been removed so, for the last ten years, deer impacts have been managed largely through culling.

Although deer densities in the local Deer Management Group area are low (around 3 per km²) deer browsing can still significantly inhibit natural regeneration of woodland, especially in winter when deer make more use of the food and shelter provided by the woodland. Woodland regeneration at Beinn Eighe is slow due to the wet climate and nutrient poor, often thin, soils. This means that young trees remain within browsing height of deer for much longer than in other parts of Scotland. Since browsing impacts, and deer densities, can vary between seasons and years, depending on deer movements, weather conditions and culling, the approach taken to deer management is to use regular habitat impact monitoring to inform culling requirements rather than to set a deer density target.

Around 155 deer of all species are culled each year. Culling is concentrated in two main high priority zones which include the recently planted areas and the ancient woodland areas. In woodland areas, deer management is undertaken using Deer Authorisations which permit night shooting as well as culling of females in an extended season and of males all year. Stags are not shot on the open hill during the rut but are culled during this time when encountered within the high priority zones. The natural tree regeneration that this approach to deer management has allowed has led to about 25 – 30ha of additional woodland becoming established. Most of this has occurred in the last ten years since deer culling has become more targeted.



Photo: @ Lorne Gill/NatureScot



Recovery of woodland inside effective deer fence

Corporate land ownership

Changes are happening to land ownership and management in Scotland. The rise in conservation-oriented private estates has been accompanied by an increase in land sales to investment companies and other corporate interests that are seeking a substantial financial return from their investment (see **Figure 3**).

This can have far-reaching social and economic impacts on local communities, including job losses and the loss of social cohesion, as well as pricing local communities out of the benefits of land ownership. Impacts of a change in land ownership on deer management will vary depending on the land use objectives. An estate turned over to forestry is most likely to control deer just enough to safeguard the investment during the establishment period.

The attitude to deer control is likely to vary from one corporate entity to another. The buyer may be unfamiliar with land-based issues, and will therefore rely on advice from professionals. They may also be keen to establish good relations with the local community and they may have resources to help this along. They are likely to be interested in the potential for increasing the natural capital of their land, and they will certainly want to take advantage of Scottish Government grants and other financial incentives. So, the picture is likely to be mixed and there may be opportunities to steer these new landowners in the direction of sustainable land use and sustainable deer control.

4.3 Carbon credits

An emerging driver of land management across Scotland is the production of carbon credits (see **Figure 3**) through peatland restoration or the creation of new woodlands. It is understood that biodiversity credits for actions that benefit biodiversity recovery are in the pipeline.

Although there are few examples in the rainforest zone of estates where the production of carbon credits is the dominant driving force, Tayvallich estate was recently bought by Highlands Rewilding with the express purpose of funding rewilding, including rainforest expansion, through the production of carbon credits.¹⁴

This approach to land management is likely to become increasingly common and could become a powerful driver for rainforest restoration, particularly if woodland carbon from the rainforest can become associated in the minds of carbon buyers with a need to demonstrate compliance with the upcoming Scotland's Rainforest Management Standards (in development). However, at current high deer densities, incompatible with the aim to restore and expand the rainforest, some land managers may resort to deer fencing over deer culling to avoid the risk of carbon credits not being delivered through a woodland expansion scheme.

¹⁴ <https://www.bbc.co.uk/news/uk-scotland-glasgow-west-64810291>

Figure 3

Carbon credits



Carbon credits and the carbon market

In essence, the principle behind carbon credits is straightforward – a land manager who removes carbon from the atmosphere by planting trees or by reducing the release of carbon by restoring peatland, can receive a financial reward from a business that produces carbon but wants to ‘offset’ the effect of their emissions by helping to finance the carbon-reducing activity. Carbon credits are the mechanism that has emerged to enable this transfer.

But creating a market for trading carbon is not straightforward. There needs to be:

- An assurance that the carbon-reducing activity conforms to recognised standards and will work.
- A way of estimating how much carbon is likely to be removed, or not released.
- A pricing mechanism for sequestered carbon.
- A guarantee that what is essentially a medium- or long-term project will have sufficient continuity.

Carbon trading is still a young and emerging market. Article 6 of the Paris Agreement¹⁵ of 2015 created an international standard for creating, accounting for and verifying carbon credits. In the UK, voluntary codes have been established to regulate the markets in both peatland restoration and woodland creation. For woodlands in Scotland, the UK Woodland Carbon Code is administered by Scottish Forestry with the remit to ensure that the market works and that it works in line with the Scottish Government’s Interim Principles for Responsible Investment in Natural Capital,¹⁶ a factsheet that defines the Scottish Government’s “ambitions and expectations for a values-led, high-integrity market for responsible private investment in natural capital to communities, investors, land owners, public bodies and other market stakeholder”.

Doubts about carbon credits

Criticisms of the effects of woodland carbon credits have been significant and can be summarised as:

- Pushing up the price of land, making it harder for communities and non-corporate entities to buy land.
- For a period they also encouraged the creation of plantations dominated by conifers, especially Sitka spruce. This effect was turbocharged by a favourable grant system.
- Failing to integrate new woodland planting with other biodiversity priorities and land uses. The Scottish Government has a target of creating 18,000ha of new woodland a year by 2024. If achieved, this will have a significant impact on current land use.
- Creating greenwashing opportunities.¹⁷ Carbon credits are bought primarily by corporations who want to improve their ‘green’ credentials. Some of these corporations may have a questionable environmental record.
- Reducing the role of public funding and the involvement of Government in the delivery of public ecosystem services. These issues should not be left to be addressed by private markets alone.

¹⁵ <https://www.worldbank.org/en/news/feature/2022/05/17/what-you-need-to-know-about-article-6-of-the-paris-agreement>

¹⁶ <https://www.gov.scot/publications/interim-principles-for-responsible-investment-in-natural-capital/>

¹⁷ <https://theferret.scot/major-firms-snapping-up-scotlands-carbon-credits/>

5 Scottish Government visions and strategies

The Scottish Government has a number of strategies and policies which make reference to Scotland's rainforest, and also to deer management. This section highlights some of those. The Scottish Government commitment to restoring and expanding the rainforest is being demonstrated through commitments and also some of the actions resulting from these policies such as prioritising the rainforest zone as an exemplar deer management area and appointing a rainforest action coordinator within Scottish Forestry.

Photo: James Rainey/Trees for Life



5.1 Scotland's biodiversity strategy

In late 2022, the Scottish Government published its draft Biodiversity Strategy to 2045,¹⁸ which acknowledged that *“There is now an indisputable body of evidence that biodiversity... is in real trouble.”* Amongst the envisaged outcomes for 2045, two were of particular relevance to deer impacts in Scotland's rainforest:

- Management of deer ranges and upland agriculture will be contributing to the regeneration of biodiversity in upland areas.
- Woodland management will have led to sustainable natural regeneration; a greater diversity of woodland species; increased woodland cover with a healthy understorey, enhanced woodland connectivity; and improved integration of trees into other land uses.

The strategy also committed to *“Develop a policy and investment framework for restoring Scotland's Atlantic Rainforest”* as a priority action of the Strategy.

5.2 Deer

At the time of writing, NatureScot and Forestry and Land Scotland are in the process of setting priority deer control areas as demonstration sites for reducing deer numbers. Staff are actively being recruited and this is part of a commitment to use the rainforest zone as an exemplar area for deer management action.

Scotland's Wild Deer: A National Approach (WDNA)

Scotland's Wild Deer: A National Approach (WDNA) was revised in 2014,¹⁹ including priority actions for 2015–2020. In the Foreword, Dr Aileen McLeod, Minister for Environment, Climate Change and Land Reform commented:

“Wild deer do have a negative impact on the natural environment... Inappropriate wild deer numbers are also preventing the recovery of a number of protected... sites. I acknowledge the improvements that have been delivered so far, but deer managers must look to reduce these negative impacts further and enhance the provision of wider public benefits... Deer Management Groups and deer management planning have come a long way but the pace of change needs to quicken.”

There has been no update to the 2015–2020 priorities.

The Deer Working Group

The Deer Working Group (DWG) was an independent group appointed by Scottish Ministers to examine issues surrounding deer management in Scotland and recommend changes to help resolve these issues. In 2021 the Scottish Government responded to the DWG report, and accepted all but eight of the DWG's 99 recommendations. Many NGOs welcomed this response and urged the Scottish Government to take steps to implement the recommendations as quickly as possible.

One outcome of the DWG recommendations has been that the Government has set up the Deer Management Strategic Board, comprising representatives of various Government agencies, with the remit of agreeing *“priorities to improve the sustainability of Scotland's deer management systems, with actions split across four work streams: legislation; regulation; incentives; and operational delivery”*.²⁰

The progress with implementation of the DWG recommendations has lacked the urgency needed.

5.3 Land use and planning

Scottish Government Land Use Strategy 2021–26

Scottish Government laid its 3rd Land Use Strategy²¹ before the Scottish Parliament in 2021. It states:

“Actions such as overgrazing... place pressures on the environment... The importance of effective deer management in tackling the challenges of biodiversity loss and climate change is well understood and recognised.”

The Land Use Strategy is supposed to be delivered through Regional Land Use Partnerships and Frameworks, however at the current pilot stage of these, the rainforest zone is not covered by these initiatives.

¹⁸ <https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/>

¹⁹ <https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-deer/scotlands-wild-deer-national-approach>

²⁰ <https://www.gov.scot/groups/strategic-deer-management-board/>

²¹ <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2021/03/scotlands-third-land-use-strategy-2021-2026-getting-best-land/>

The National Planning Framework 4

The 2023 National Planning Framework 4 (NPF4)²² is far-reaching and long-term policy that “sets out where development and infrastructure is needed, in a way that safeguards nature and gives all of Scotland’s people access to the wellbeing it provides”. The rainforest zone is partially included within the “North” section, where priorities include “continuing conservation at a landscape-scale, to develop resilient nature networks, deer and moorland management”. The “North and West Coast and Islands” section covers the rest of the rainforest zone, and includes “there are opportunities to protect and expand Scotland’s temperate rainforest, including some of the best remaining rainforest sites in Europe.” These measures will provide clear backing from the Scottish Government, and a legislative framework, for the enhancement and expansion of Scotland’s rainforests.

5.4 Agriculture

Agriculture Support Package Beyond 2025

The Scottish Government’s Agriculture Support Package is in development. Farmer-led groups started the process, and a consultation on “Agricultural transition – first steps towards our national policy”²³ was held in 2022. The document noted: “*the negative impact of high deer numbers on different key and fragile habitats, adding that addressing this will require a collaborative approach given the competing land use impacts and associated economic implications.*”

A new Agriculture Bill is expected in 2023, and the Scottish Government has already proposed that future Tier 1 Base Payments will be conditional on “*essential standards to ensure climate, biodiversity and business efficiency outcomes.*”²⁴

The National Development Plan for Crofting

This Scottish Government plan²⁵ was published in 2021, and based on work undertaken by the Crofting Stakeholder Forum. The plan emphasises the cultural and economic importance of crofting and the importance of different interest groups working together for the benefit of wildlife. The plan includes: “*Robust deer management systems play an essential part in reducing damage caused by deer, such as overgrazing, trampling vulnerable habitats, preventing young trees from growing, and damaging crops.*”

22 <https://www.gov.scot/publications/national-planning-framework-4/documents/>

23 <https://www.gov.scot/publications/agricultural-transition-scotland-first-steps-towards-national-policy-consultation-paper/>

24 <https://www.gov.scot/publications/delivering-vision-scottish-agriculture-proposals-new-agriculture-bill/>

25 <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2021/03/national-development-plan-crofting/documents/national-development-plan-crofting/national-development-plan-crofting/govscot%3Adocument/national-development-plan-crofting.pdf>

26 <https://www.gov.scot/publications/environment-strategy-scotland-vision-outcomes/>

27 <https://www.gov.scot/publications/scottish-government-and-scottish-green-party-shared-policy-programme/pages/our-natural-environment/>

28 <https://forestry.gov.scot/forestry-strategy>

29 <https://forestry.gov.scot/publications/1413-scotland-s-forestry-strategy-implementation-plan-2022-2025>

30 <https://forestryandland.gov.scot/what-we-do/who-we-are/corporate-information/deer-management-strategy>

5.5 Environment

The 2020 Environment Strategy for Scotland²⁶ set out the Government’s vision for “restoring nature and ending Scotland’s contribution to climate change”. The Scottish Government is committed to a Natural Environment Bill²⁷ which will contain provisions to put in place statutory targets for nature restoration that cover land and sea and a framework for setting, monitoring, enforcing and reporting on those targets. The targets will be based on an overarching goal of preventing any further extinctions and halting wildlife declines by 2030, and the legislation will cover key actions including protecting 30% of Scotland’s land by 2030.

5.6 Forestry

Scotland’s Forestry Strategy 2019 – 2029

The Strategy commits to supporting the implementation of the WDNA, and to maintaining and enhancing biodiversity “*in particular by using the recruitment of natural regeneration and improving mitigation of the risks posed by... deer.*”²⁸

The Strategy is supported by Implementation Plans, and the 2022 – 25 Plan allocates a leading role to Scottish Forestry to:

*“Develop and implement the forestry-related recommendations of the Deer Working Group, including collaboration to deliver deer management at a landscape-scale, and through delivering improvements to woodland deer management planning in forest plans.”*²⁹

Forestry and Land Scotland Deer Management Strategy

FLS are due to produce a revised Deer Management Strategy. Text on the website suggests that they may be initiating a more robust approach to deer management:

*“We estimate there are now over 1 million deer in Scotland. This is double the number there were in 1990. It is widely accepted there should only be 2–7 deer per square kilometre. However, there are currently 4 – 64 per square kilometre on the land we manage.”*³⁰

Case Study 2: Glenfalloch Estate

Changing approaches to deer management on a mixed estate

Glenfalloch lies within the Loch Lomond and Trossachs National Park, between the north end of Loch Lomond and Crianlarich. It runs to the top of Ben Lui (the highest of the seven munros on the estate), and is bisected by the A82. The land to the west of the A82 is in the Inveraray and Tyndrum Deer Management Group (ITDMG) and the part to the east is in the Balquidder Deer Management Group. Glenfalloch is a very active member of both DMGs. Falcon Frost, the head stalker, is the current chair of the ITDMG and David Lowes, Glenfalloch managing partner (one of five partners), is the deputy chair. Over the years, the partners have moved the management increasingly towards achieving environmental aims. This has been brought into sharper focus in recent years by the climate and biodiversity emergencies.

Currently around 6% of Glenfalloch is wooded with most woodland located in the bottom of the glens. All the woodland is native and non commercial, with both pine and deciduous woodland present. The aspiration is to considerably expand the area of native woodland using both planting and natural regeneration. Sheep numbers have been progressively reduced from a maximum number of 7,000 historically to 1,200 currently. There are red, roe and a small number of sika deer on the estate, as well as wild goats on Loch Lomond side. The current density of deer, of all species, is 7.2 per km². The long term aspiration is to bring deer numbers down to the point where the full suite of native tree species will be able to regenerate, only using fencing where necessary.

Currently, around 300 red, 35 – 40 roe and 3 – 4 sika deer are culled annually. There is no let stalking. Almost all the deer carcasses are sold to Highland Game but a few, poor quality carcasses are left on the hill for eagles. To avoid potential lead toxicity, only copper bullets are used. Habitat Impact Assessments (HIA) are carried out in upland areas every year and the intention is to start carrying out HIAs in woodland areas as well. Although culling is carried out over the whole deer range, HIA results, and knowledge of deer movements, are used to direct the most culling effort towards areas with the highest impacts, especially those in woodland. Glenfalloch makes use of out of season and night shooting licences to reduce impacts on the woodland as well as on SSSIs. Red deer range widely across the DMG areas so a wider, DMG-level approach to deer management will likely be needed to achieve low deer impacts across the whole open hill area. Glenfalloch will continue to use deer fencing in areas where there is a specific need to protect native woodland but where it will take some time to bring deer numbers down.

United Kingdom Forestry Standard Guidelines on Forests and Biodiversity

The UK Forestry Standard (UKFS)³¹ is the national reference standard that defines the agreed approach to sustainable forest management. All grant-aided forestry in Scotland is managed in accordance with UKFS. It is currently under review and a new edition is due to be published in 2023.

31 <https://forestry.gov.scot/sustainable-forestry/ukfs-scotland>



6 The regulatory framework for deer management



Photo: Laura Corbe / WTMIL

6.1 The efficacy of past deer legislation and policy

Despite high deer numbers having been seen as a problem in Scotland for over seventy years, policy and legislative changes during that time have failed to prevent a steady increase in deer numbers. This failure was well laid out by Simon Pepper in 2016:³²

“Following the growth of 1.5 million ha of ‘deer forests’ in the 19th Century, seven government-appointed inquiries sought to address the damage caused to agriculture by marauding red deer. After World War 2, when the population was about 100,000 the last of these inquiries led to the creation of the Red Deer Commission in 1959, with powers to intervene to protect agriculture and forestry. The advice of its official adviser, Dr Frank Fraser Darling, was that this population was too large and an optimum number might be 60,000.” [31].

A 2020 review of deer count and cull figures for all deer species in Scotland concluded that the total deer population could be approaching one million.³³

6.2 Regulations for the management of deer

Deer (Scotland) Act 1996

The main legislative framework for deer management is within the Deer (Scotland) Act 1996. This provides the statutory authority, NatureScot, with the power to control deer numbers, to set open and close seasons and to regulate matters relating to venison. It also stipulates the means by which deer can, and cannot, be controlled.

The Act provides NatureScot with the means to address specific cases where high deer numbers are thought to be causing a problem. The main issues arising from the Act have been about the way in which the powers are used, rather than the powers themselves.

Wildlife and Natural Environment (Scotland) Act 2011

This legislation made changes to the 1996 Deer Act, including to the regulation covering the taking of deer in the closed season. An obligation was also placed on NatureScot to introduce and monitor a Code of Practice on Deer Management. The resulting Code of Practice³⁴ defined sustainable deer management as being:

“About managing deer to achieve the best combination of benefits for the economy, environment, people and communities for now and for future generations.”

32 <http://www.forestpolicygroup.org/blog/a-brief-history-of-the-deer-problem-in-scotland/>.

33 S. Pepper, A. Barbout and J. Glass, “The management of wild deer in Scotland. Report of the Deer Working Group,” 2020.

34 <https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-deer/code-practice-deer-management>

7 Financial incentives for managing deer



Photo: Richard Enfield/WTTW

7.1 Overview

The system of Scottish Government grants for land management, including deer control, is in a state of flux. The relevant grants are funded and administered by the Scottish Government primarily through the Scottish Rural Development Programme (SRDP), administered by Scottish Forestry for woodland areas and the Rural Payments and Inspections Division (RPID) and NatureScot for unwooded areas.

The current grant system is scheduled to continue in its present form until around 2026. The future policy framework can be determined by the Scottish Government, though it must also act within laws, frameworks and funding put in place by the UK Government.

7.2 The Forestry Grant Scheme

The main vehicle for grant-aiding deer control is the Forestry Grant Scheme.

The grants outlined below are competitive and available to landholders registered with RPID. In addition, there are area based grant supplements, such as that available for planting native woodlands in the Highland Native Woodland target area (over half of the rainforest zone from approximately Ballachulish).³⁵

Woodland creation

Deer fencing is an eligible capital cost within all new woodland creation models. Grants range from £7.60 to £9.90 per metre. The fencing grant is intended to cover maintenance for at least five years, and all contracts require that trees are sufficiently free of deer to become established as young woodland, under threat of grant reclaim.

Management of existing woodland

There are two grant options relevant to deer management for improving the condition of native woodlands or restoring PAWS.

Deer fencing is grant aided under the 'Habitats and Species' Woodland Improvement Grant (WIG) at £9.50 per metre. One hundred percent of actual costs may be paid if fencing will help to bring woodland Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs) into favourable condition. A separate payment of £25 per hectare for five years may be available for deer control and monitoring under the Sustainable Management of Forests (SMF) Native Woodland option.

Forestry grants for landscape-scale deer management

A landscape-scale woodland deer population survey, baseline damage assessment and production of a deer management plan may be grant-aided under the WIG Deer Management Plan option. Grant rates are £12 per hectare for the first 500 hectares and £1 per hectare after that. There is a grant range of £5,000 to £15,000.

Once a deer management plan has been approved, a SMF Reducing Deer Impact is available at a rate of £6 per hectare per year for five years. The aim is to help to reduce or maintain deer numbers to allow natural regeneration of species vulnerable to deer browsing, or average densities of less than in the range of five to ten deer per square kilometre.³⁶

A Forestry Co-operation grant applicable to deer management stands apart from these grants and "aims to encourage landscape-scale collaborative projects between two or more landowners by providing support for project facilitation and coordination".³⁷

Up to £10,000 is available to support the cost of a project coordinator to deliver feasibility work and a project plan.

7.3 Other Government funding and support for deer management

Open-range deer management grant

The above grants can be combined with grant aid of 80p to £2 per hectare for deer management over large areas with more than 20% non-wooded habitat under the Agri-Environment Climate Scheme (AECS) Open-range Deer Management grant, with the aim of "reducing grazing and/or trampling pressure from deer through additional culling over and above maintenance culls".³⁸ Target culls are determined through an approved deer management plan.

Additional NatureScot financial support for deer management

Other funding may come through site-specific NatureScot Management Agreements for deer management in woodland SSSIs or SACs, although normally the necessary costs of deer control will be met, at least in part, through FGS grants.

Nature Restoration Fund

The Scottish Government's £65m Nature Restoration Fund (NRF) is a competitive fund launched in July 2021, which specifically encourages applicants with projects that restore wildlife and habitats while addressing the twin crises of biodiversity loss and climate change. Currently three year projects can be funded, and this has been used within the rainforest zone to repair deer fences, reduce deer numbers to allow woodland expansion, and to fund a community deer larder (see Case Study on page 36).

³⁵ <https://forestry.gov.scot/publications/557-funding-support-for-woodland-creation-in-the-highland-native-woodland-target-area/viewdocument/557>

³⁶ <https://www.ruralpayments.org/topics/all-schemes/forestry-grant-scheme/sustainable-management-of-forests/reducing-deer-impact/>

³⁷ <https://www.ruralpayments.org/topics/all-schemes/forestry-grant-scheme/forestry-co-operation/>

³⁸ <https://www.ruralpayments.org/topics/all-schemes/agri-environment-climate-scheme/management-options-and-capital-items/open-range-deer-management/>

A scenic photograph of a forest stream flowing over rocks, with sunlight filtering through the trees. The stream is the central focus, winding through a dense forest. The water is clear and reflects the sunlight, creating a shimmering effect. The rocks are large and smooth, scattered throughout the stream bed. The trees are tall and thin, with their branches reaching over the stream. The overall atmosphere is peaceful and natural.

8 Advice and advocacy



New plantation inside fence, ancient woodland dying outside fence area

8.1 The Association of Deer Management Groups

The Association of Deer Management Groups (ADMG) was established in 1992 to represent the interests of local Deer Management Groups (DMGs). Thirty DMGs are at least partially in the rainforest zone, however 29% of the rainforest zone is not covered by a DMG.

Tom Turnbull, chair of the ADMG, recently highlighted the achievements of the ADMG and DMGs, whilst also pointing out the challenges facing deer managers who are increasingly asked to sustain deer populations at levels that promote both carbon sequestration and biodiversity. These require deer numbers to be low enough to allow woodlands to naturally regenerate and peatlands to be protected from deer-induced soil erosion. He noted that there are:

“challenges that will be encountered in deer management in the highlands as deer managers are encouraged to achieve ambitious Scottish Government targets for the climate and biodiversity through deer reductions.”³⁹

Between 2014 and 2018, ADMG and the DMGs were supported by NatureScot, through £240,000⁴⁰ grant aid, to produce Deer Management Plans (DMPs). The ADMG also set up a website that allowed the public access to both the DMPs and other DMG documents. This was a significant achievement in helping to open up the workings of DMGs to other interested parties. Unfortunately, this momentum has been affected by uncertainty about how government will enact change following the publication of the Deer Working Group report in early 2020.

A brief analysis of 29 DMGs, or DMG sub-groups that are within the rainforest zone and whose five-year DMPs are

accessible via the ADMG website⁴¹ suggests that many may be waiting for an understanding about the future direction of deer management policy before updating their DMPs.

8.2 Agencies and NGOs

Farm Advisory Service

Scotland’s Farm Advisory Service (FAS) is a Government-funded advisory service for farmers and crofters. Advice covers the management of farm woodlands and helps in applying for Government grants and drawing up farm-wide Integrated Land Management Plans.

Agencies

NatureScot publishes advice on deer management, including a series of Best Practice guides, as well as collating and publishing information on deer populations and culling. The two National Park Authorities offer advice and services such as training events. They encourage land manager collaboration. In the case of the Cairngorms, through the Cairngorms Deer Advisory Group and Cairngorms Connect, *“a partnership of neighbouring land managers, committed to a bold and ambitious 200-year vision to enhance habitats, species and ecological processes across a vast area within the Cairngorms National Park.”⁴²*

NGOs and private consultants

Organisations such as the Woodland Trust Scotland and specialist stalking, deer and forestry management businesses offer advice on deer management, the latter often as commercial packages involving surveys, management plans, stalking services and venison marketing.

³⁹ <https://www.deer-management.co.uk/assynt/>

⁴⁰ <https://www.parlmaid-alba.scot/chamber-and-committees/questions-and-answers/question?ref=S5W-25089>

⁴¹ <https://www.deer-management.co.uk/dmgs/deer-management-groups/deer-management-group-map/>

⁴² <https://cairngormsconnect.org.uk/>

8.3 Research needs

Interviewees identified three broad areas where improved knowledge was needed:

Improve the ability to predict deer movements and the effect of deer culling on browsing impact levels

To allow deer managers to move away from reactive deer management to a more proactive approach, we need to build spatial models to allow managers to predict the effect of a given culling regime on deer movements and impacts on woodlands.

Improve the understanding of the economic and social impacts of reducing deer densities

To understand the economic and social impact of changing from the current sport stalking model to a different model of deer stalking, we need to better understand current employment patterns and how these would change with a move towards the maintenance of lower deer densities across landscapes.

Improve the ability to predict amounts, type and rate of natural tree regeneration

Trees can regenerate in a wide range of conditions however, rates of regeneration of different tree species and their growth rates vary enormously depending on site and environmental conditions. Being able to predict how much natural regeneration of which tree species is likely to occur at any site, and how fast the trees are likely to grow, would help land managers to adopt the most effective approach to deer management at a site.



9 Deer management issues

9.1 Existing deer management and Scottish Government priorities

The Scottish Government's vision for combatting the climate emergency and halting the decline in biodiversity includes expanding woodlands, restoring peatland, delivering nature networks, and halting nature loss by 2030.

These principles have been re-stated in broad terms in *Equality, opportunity, community*, the 2023 statement of intent by the new Scottish Government leadership, which under the heading of "A fair, green and growing economy", states:

*"we will use all the powers we do have to support economic growth for a purpose, to help business and trade to thrive and maximise the opportunity of the green economy, with fairness at its heart."*⁴³

In addition, the publication sets out that by 2026 the Scottish Government will have 'Taken steps to further protect and restore our iconic Atlantic rainforests [...]'

The Government recognises that sustainable deer management is an essential ingredient in their vision and it has taken important steps towards achieving the vision, such as acceptance of nearly all the recommendations of the DWG. However deer numbers continue to rise, and there is a hesitant approach to enforcing existing regulations when deer management works against its stated principles.

9.2 Deer management

The challenge of deer ranging across multiple landholdings

DMGs were set up to address the issues caused by deer mobility (mostly for red deer), however many DMGs contain estates with different deer management objectives. Landowners with a nature restoration objective often find that reducing deer numbers on their land alone is difficult, impractical or causes issues with neighbours.

The result of the varying approaches to deer management in the rainforest zone can be seen in the wide variation in the density of red deer on the open hill (from less than 5 to more than 30 per km²).

An effective deer code

NatureScot has a statutory duty under the Deer (Scotland) Act 1996 (as amended) to review the extent of compliance with the Deer Code and its effectiveness every three years. This was apparently last completed four years ago in 2019.⁴⁴

The main findings included an 88% compliance level, with 79% claiming to have a deer plan (of which 15% were forestry deer plans). Sixty-seven percent of those managing designated sites had identified and agreed "actions to manage herbivore impacts affecting the favourable condition of designated features". It should be noted that "identifying and agreeing" does not actually require any implementation.

Respondents were asked what types of management action adjustments were undertaken when the welfare of the local population of deer is being compromised: 69% took reasonable action (e.g. provision of and access to food/shelter) and 36% of respondents provided or supplemented food.

While this survey demonstrates that owners are taking action, and no doubt allows NatureScot to consider that the Code is effective, it is not evident that the action that is being taken is sufficient or appropriate in a nature and climate emergency.

Assessing Progress in Deer Management

The NatureScot report, *Assessing Progress in Deer Management (2019)*⁴⁵ concludes that:

"three of the five Scottish Biodiversity Strategy 2020 Route Map targets in which effective deer management can contribute are unlikely to be delivered, but nonetheless progress is being made."

The report found that the percentage of woodland features in unfavourable condition had increased from 31.8% to 34.1% in three years, with herbivores responsible for 28 of 30 of the declining woodland features.

Although the 1996 Deer (Scotland) Act provides NatureScot with strong powers to control deer, they have been applied to only a very small number of sites and even then the culling has been of short duration so is likely to have had minimal long-term effect on deer numbers.

The report also lists a total of £7.1m across Scotland devoted to deer management through the SRDP Programme (2014–19), and an additional £5m+ for AECS deer related contracts (from 2015–18).

⁴³ <https://www.gov.scot/publications/equality-opportunity-community-new-leadership-fresh-start/>

⁴⁴ <https://www.nature.scot/sites/default/files/2019-07/Publication%202019%20-%20SNH%20Research%20Report%201095%20-%20Review%20of%20compliance%20with%20the%20Code%20of%20Practice%20on%20Deer%20Management.pdf>

⁴⁵ <https://www.nature.scot/sites/default/files/2019-11/Publication%202019%20-%20SNH%20Assessing%20Progress%20in%20Deer%20Management.pdf>

9.3 Compliance with existing regulations

UK Forestry Standard

Implementation of the UK Forestry Standard (UKFS), described in **section 5.6**, is the responsibility of Scottish Forestry. There are drawbacks to implementation.

- 1 Scottish Forestry staff have been under considerable pressure to deal with the increased workload required to meet the increased new planting targets, with considerable less focus on ensuring that UKFS is being followed.
- 2 Scottish Forestry undertook to produce a Compliance Register in Oct 2018, with an “aim to publish the Compliance Register on our webpage post April 2019”.⁴⁶ Four years later this Register is not yet available. Scottish Forestry staff however regard “lettering”, or a minor rebuke, as the most effective response to breaches.
- 3 Most rainforests, where management is not supported by the FGS, are not covered by UKFS regulations.

Cross compliance

Cross compliance⁴⁷ is a set of rules that must be adhered to in order to receive RPID payments. They are made up of ‘Statutory Management Requirements’ (SMRs) and ‘Good Agricultural and Environmental Conditions’ (GAECs), none of which are directly relevant to deer management. However, SMR 3 (Conservation of flora and fauna) is applicable to woodland SACs where a formal management notice has not been adhered to. Failure to do so would result in reductions in the payment to the rural business of potentially all farm support schemes and grants.

In the last five years three cases of breach of SMR 3 were reported for the whole of Scotland, with a penalty of 5% of one year’s subsidy, or £4,300 in total, for two of these cases.

9.4 Current incentives to reduce the impacts of deer

Issues around applying for grants and getting applications approved

Issues raised by woodland managers include the complexity of applying for grants, the length of time that it takes, the cost that this involves, and the uncertainty that an application will be approved rather than rejected at an unrecoverable cost to the applicant.

Grant priorities and grant rates

Ninety percent of the budget is allocated to woodland creation and the restructuring of existing forests. The Forestry Co-operation grant is allocated 0.6%. All other grants relevant to a range of woodland plans and woodland management, including many that are not relevant to deer control, are aggregated and amount to 1.9% of the total.

NatureScot estimated that over a multi-year period that the average hectare of new planting also attracted grant aid for some 70m of deer fencing.⁴⁸ This may be at the upper end of current activity, however on that trajectory, the 18,000ha per year planting target will require **1,260km of deer fencing each year**, with associated carbon emissions of **16,200 – 28,800 tonnes of carbon dioxide equivalent**. This will of course add to our existing stock of ageing and ineffective deer fences.

Unless a substantial area is involved, the FGS and AECS grant for deer control are generally considered inadequate to sufficiently reduce deer numbers in the rainforest, and keep them down.

Rainforest sites tend to be relatively inaccessible, often on terrain difficult both for stalking and for the extraction of deer carcasses and, if the woodland cover is fairly intact, challenging habitat for sighting deer. The result is an increasingly expensive operation whose only income is from the grant and the sale of venison.

⁴⁶ <https://forestry.gov.scot/publications/655-uk-forestry-standard-compliance-procedures/viewdocument/655>

⁴⁷ <https://www.ruralpayments.org/topics/inspections/all-inspections/cross-compliance/detailed-guidance/introduction-cross-compliance/>

⁴⁸ D Stone, pers. com.

Short duration of FGS grants

Woodland regeneration is by nature a slow process. Five years of deer control may be enough to allow some germination of tree species; it is not enough for those trees to get to the size at which growth cannot be prevented by deer browsing. Funding over a longer time-frame is not easily accommodated within the current FGS model.

Take-up of grants aimed at collaborative working

Feedback suggests that take-up of the collaborative grants that might help collaborative deer control has been disappointing. Twenty-seven applications for all collaborative grants (not just for deer control) were approved between 2015 and May 2022, at a cost of £235,335.⁴⁹

Grants which encourage occupiers to treat different land uses as separate silos

Deer management and rainforest restoration require that land managers take a holistic approach to land management at landscape scale and over the long-term. The present grant systems militate against this approach.

9.5 Deer fencing and population-scale deer control

Fencing as a well-established way of protecting trees

The topic of fencing features in many discussions about deer control, with strongly-held views often in evidence. The core of the discourse concerns the extent to which population level deer control can replace deer fencing as a practical way of protecting rainforest ecosystems from the negative impacts of browsing.

The Scottish Government Response to the Report from the DWG includes:

“The Scottish Government considers that deer fencing remains a useful tool in managing wild deer. However we do also understand that there is a high cost associated with deer fencing, it is rarely appropriate as a long-term fix and that there are a range of views on its use.”⁵⁰

Fenced enclosures and potential biodiversity loss

One concern about the total exclusion of herbivores from existing rainforest sites is that too much vegetation can damage the rainforest’s characteristic epiphytic lower plants and invertebrates that require an open, lightly grazed, field layer. In the rainforest a survey is required before fencing, and regular monitoring is also a requirement. One possible intervention, where monitoring detects an issue, is controlled woodland grazing aimed at creating a sweet spot between too little and too much herbivore activity. If the problem is highly localised, mechanical vegetation control might be appropriate.

The high cost and ineffectiveness of deer fencing

Deer fencing costs have increased in recent years due to high labour and material costs. Prices of over £17 per metre have been seen, well in excess of grant rates. Deer fencing also needs to be maintained if it is to continue to exclude large herbivores. Roe deer in particular are very efficient at breaking in, and then breeding rapidly. Fences become increasingly ‘porous’ after as little as five years, especially following the ban of Copper Chromium Arsenic preservative from fencing materials in 2006. Many deer fences are over 20 years old,⁵¹ effectively redundant, and might now be better regarded as a hazardous waste issue,⁵² rather than a barrier.

While some managers have effectively maintained secure fencing, in too many cases relying on a fence has proved ineffective, a waste of time and money.

In a recent survey of native pinewoods,⁵³ it was shown that:

“Overbrowsing [i.e. browsing at levels that reduces biodiversity] was recorded in 63% of Caledonian Pinewood inside deer fences”, and the report also noted that “decades of Caledonian Pinewood recovery are now at risk because most deer fences have been breached. This is a particular issue in the west.”

⁴⁹ <https://forestry.gov.scot/publications/1418-forestry-grant-scheme-statistics-may-2022>

⁵⁰ <https://www.gov.scot/publications/deer-working-group-recommendations-scottish-government-response/>

⁵¹ Duncan Stone, pers. comm

⁵² <https://woodrecyclers.org/wp-content/uploads/WRA-Waste-Wood-Assessment-Guidance-V2-November-2021.pdf>

⁵³ <https://treesforlife.org.uk/wp-content/uploads/2023/02/Caledonian-Pinewood-Recovery-Final-Report-Feb-2023.pdf>

Is there still a role for deer fencing in the rainforest?

Rainforest remnants are very important for biodiversity, so there will be a need to hold onto what we have with well-maintained fencing during the time it will take for rainforest restoration to become the norm across the ecosystem.

For biodiversity reasons, this is most likely to be the case around small remnants or ghost woods, in places where an occupier does not have control of neighbouring deer

(eg crofters and small woodland owners), and in high quality rainforest where regeneration of palatable species is required, but specialist advice is not to exclude herbivores from the whole of the woodland.

There may also remain a case for strategic deer fencing in the short term, at the point where collaborative management aimed at rainforest restoration meets neighbours who have still to change their management approach.

Figure 4

The Forestry and Land Scotland approach to fencing and deer management



FLS sum up their view as follows:⁵⁴

“Once deer management objectives have been set... the main decision on management approach is the balance between culling and fencing. When making that decision we broadly consider the costs and benefits of each, both financial and in relation to wider benefits and potential issues. United Kingdom Woodland Assurance Standard (UKWAS) requires that “appropriate wildlife management and control shall be used in preference to fencing”, and generally, management of deer populations by culling offers the most holistic basis for delivering our range of objectives... so this will tend to be our favoured approach where it is viable.”

However, deer fencing is not dismissed by FLS. It is still needed when march fences divide the forest estate from landholdings with a different policy on deer management and in local “high risk situations, for example where we are establishing concentrations of particularly palatable tree species”.

This leaves open the management of fragments of existing rainforest embedded within their forests where there is a need to regenerate “particularly palatable species”. FLS are currently engaged in an ambitious programme to reduce their deer numbers to an average of 2 – 3 deer per km² within a range of 0 – 5 deer per km².⁵⁵ This may be sufficient to safeguard these embedded fragments, but associated monitoring will tell whether additional localised deer control is required. This may well be a good template for approaching the issue of when to consider deer fencing elsewhere.

⁵⁴ <https://forestryandland.gov.scot/images/corporate/pdf/deer-management-on-scotlands-national-forest-estate.pdf>

⁵⁵ Bruce Sewell, pers.comm

The population-scale or landscape-scale approach

An alternative is a population-scale approach, aiming to reduce deer numbers to a level where woodland regeneration of browse sensitive species can occur. Typically this approach will impact on all of the habitats within the landscape. Assuming these habitats are over-grazed, this will be positive for biodiversity but also for the ability of restored habitat, peatland in particular, to lock up carbon.

There are now good examples in Scotland where a landscape-scale approach has been very successful, and a more natural mosaic of mixed-age woodland and open ground is developing, notably in the Cairngorms area. There are few examples within the rainforest zone, though there are a few individual estates where estate-wide control has been achieved or is being attempted (see case studies in this report).

Different approaches to deer management

Considerable emphasis is placed on the role of sporting estates in deer management. However across much of the rainforest zone different types of land occupancy prevails. Many land managers have limited interest in deer matters, and deer are not regarded as an economic driver. Deer culling is seen as a specialist occupation with high barriers to entry. Many will let others stalk over their ground, sometimes for an agreed sum, but often simply for a share of the carcass or an assurance that venison will be forthcoming as required.

Collaborative working and new income streams

Discussions with land managers for this review, and evidence of low uptake of collaboration grants, demonstrate the difficulties of establishing collaborative working between neighbours. Sport stalking is seen as a way of life by many estates and by some communities, and feelings can be very strongly held. Challenging this requires a sensitive, patient approach and good communication skills from those within the community who want change, as well as the refinement of incentives and support mechanisms.

“Finding the Common Ground” is a joint initiative between ADMG and Scottish Environment LINK that is seeking to develop better relations across the deer sector to support the implementation of the Scottish Government’s response to the DWG’s recommendations.

Alan McDonnell from ScotLINK’s Deer Working Group commented:

“The deer debate in Scotland has been stuck in conflict for too long, and we can no longer afford to allow mistrust to undermine our response to the nature and climate crises.”⁵⁶

This joint initiative may be seen as another example of imminent change, a recognition that the economics are changing. The relationship between sporting stags shot and the capital value of a sporting estate is weakening. Landholdings in the rainforest rarely depend solely on stalking income and now new sources of income are appearing, such as carbon credits (see **Figure 3**).

56 <https://www.deer-management.co.uk/finding-the-common-ground-on-sustainable-deer-management/>

Case Study 3: Loch Arkaig Pine Forest

Community engagement with deer management in collaboration with a private estate and eNGO

The Loch Arkaig Pine Forest (LAPF) consists of two blocks of woodland that were transferred from the Forestry Commission (now Forestry and Land Scotland) to the joint ownership of Woodland Trust Scotland (WTS) and Arkaig Community Forest (ACF) in December 2016. Both organisations work closely in partnership to manage the 1,027ha of woodland under a Memorandum of Understanding overseen by an independent Advisory Board. WTS has two full-time permanent employees dedicated to the site and a diverse project team that supports the restoration activities. ACF, a Scottish Charitable Incorporated Organisation (SCIO) set up in 2014, owns approximately 53ha in two blocks (about 5% of the whole 1,027ha LAPF), has a diverse Board of Trustees and currently has four part-time employees. Both partners are aiming for a deer impact level of “low” to allow a full range of native species to regenerate.

Both LAPF blocks are deer fenced on three sides, with the lochside forming the final side. After acquisition, the fence required over £100,000 of upgrades, paid for by WTS. Prior to this being done, Achnacarry Sporting, sporting lease-holders on the neighbouring Achnacarry Estate, was worried that they might ‘lose’ stags if culling increased in the LAPF. While this is still a concern, regular dialogue and employing Achnacarry Sporting to undertake LAPF culling has ensured perceived issues are resolved collaboratively. Wild boar and erosion of peat by deer tracks adjacent to the fence have been issues to deal with. WTS, ACF and Achnacarry Estate are now working towards a shared vision of reduced deer densities in the wider landscape.

In 2022 a community-owned deer larder and venison processing unit was installed, primarily funded by NatureScot (NS) with additional funding from ACF. Several local people have been trained to Deer Stalking Certificate level 1 and are gaining further experience prior to the proposed implementation of a community stalking model in the LAPF. A NS Nature Restoration Fund partnership project now supports a part-time community larder manager. Deer culled in the LAPF will go through the larder and a proportion will be processed to create a profitable venison social enterprise, and support local jobs. There is local demand outwith LAPF to use the larder once the LAPF cull no longer generates sufficient carcasses for the business model.

Photo: Arkaig Community Forest



9.6 The challenge of getting the size of deer populations right

Counting deer

Ultimately it is the impact of all herbivores on the rainforest that is most significant, rather than deer numbers. However it has been common practice to try to establish the number of deer present to set cull levels. There are acknowledged difficulties in accurately establishing deer numbers, and then setting culls that are appropriate to the habitat condition.

New technology, using drones with mounted cameras, is being introduced, and this is giving better results in the rainforest, being more likely to accurately estimate sika and roe deer numbers. For example, in a 2,000ha area, including 250ha of fragmented rainforest to the north of Assynt, NatureScot counted 100 – 150 red deer on the open hill, while a drone survey revealed there were an additional 60 sika in the woodland.

The challenges of achieving and sustaining increased stalking effort

Reducing deer numbers and then maintaining low numbers requires much stalking effort. While technology such as hand held thermal imaging is dramatically changing the balance, necessary techniques to achieve this, such as extended the cull envelopes and using night sights, can be used to generate controversy by those in the deer sector who are still suspicious about change.⁵⁷ However attitudes are shifting among both deer managers and the Scottish population at large.⁵⁸

Even for stalkers fully in tune with the objectives of reducing deer numbers the task is not easy. This may be especially so on challenging, remote terrain and where there are areas of dense conifer plantation supporting deer. Paying the stalker by the number of deer culled or by venison sales becomes increasingly untenable as deer numbers decline.

The challenge of monitoring deer management

Once work towards a deer population target level has started it needs to be adaptable, and this requires monitoring and if necessary a cull adjustment. Evidence in the deer management plans for rainforest area DMGs suggests that monitoring and assessment methodology is variable. Often monitoring is undertaken by local stalkers, which is desirable because it involves the stalker in the management process. However, monitoring has often focussed on more resilient open ground habitats, and this can lead to a misleading assessment of deer impacts on rainforest fragments.

Given an accurate picture of deer activity and the management needs of the habitats, there is then scope for micro-managing deer impacts through long-term differential culls, focussing on the habitats that need the lowest deer numbers and allowing a slightly higher cull target elsewhere, as demonstrated at Beinn Eighe (**Case Study 1**).

57 <https://www.heraldscotland.com/news/homenews/20861135.deer-cull-scotland-young-deer-starve-mothers-shot-gamekeepers-warn/>

58 https://www.scotlink.org/wp-content/uploads/2021/05/Public-perceptions-of-deer-management-and-welfare-in-Scotland_report.pdf



9.7 The employment potential from a new approach to deer management

There is a real and understandable concern amongst some in the sporting community that sustainable deer management that involves a reduction in deer numbers means a loss of livelihood, a view that sees change as a zero-sum game conflict between economic and environmental sustainability. This need not be so.

There are no available employment statistics for rainforest deer but the most reliable and most recent Scottish-wide figures are those based on a survey of 186 estates, completed in 2016 and commissioned by the ADMG.⁵⁹ The survey found that there were 773 full-time equivalent (FTE) paid stalkers/keepers and an additional 600 FTE paid for “other employment necessary to carry out deer management”, such as rangers and contractors. Though the number of FTE stalking jobs is modest, their importance in communities with stalking estates will be high and any loss of jobs would be keenly felt in fragile rural communities. But there is no evidence that a wider adoption of sustainable deer management practices would lead to a loss of jobs.

Many deer managers still believe that a large population of hinds is necessary, despite evidence that shows that a reduction in hind numbers will reduce impacts without an adverse effect on revenues or on the labour required to support the sporting season.⁶⁰

Future employment figures during and after rainforest restoration are necessarily speculative but it is likely that this approach would lead to a net increase in employment. Achieving and maintaining lower deer numbers will lead to an increased demand for stalkers. Where this is part of implementing natural capital projects, the need for stalkers to deliver maintenance culls will be long-term and written into natural capital sales agreements. Additional employment will arise from enhanced habitat monitoring, developing local venison markets, and there will be diverse opportunities to work in conservation, tourism and woodland management. Making the most of these opportunities will require a programme of awareness raising and training. Some of these impacts are highlighted in a recent report by Rewilding Britain.⁶¹

Two of the leading examples of estates which have changed from being sporting enterprises to a conservation based approach both now employ more people than had been employed by the sporting enterprises.

59 <http://www.deer-management.co.uk/wp-content/uploads/2016/02/Final-25FEB.pdf>

60 https://www.researchgate.net/publication/229190747_Estimating_the_Minimum_Population_Size_That_Allows_a_Given_Annual_Number_of_Mature_Red_Deer_Stags_to_be_Culled_Sustainably

61 <https://s3.eu-west-2.amazonaws.com/assets.rewildingbritain.org.uk/documents/nature-based-economies-rewilding-britain.pdf>

10. Saving Scotland's Rainforest: recommendations for deer management

This report establishes the importance of deer management to Scotland's response to the nature and climate crisis and shows that deer management is bound up in socio-economic change. The drivers behind deer management in Scotland today are complex and interrelated and our current tools for delivery are not effective. The recommendations below will contribute to making progress on reducing deer impacts and numbers in the rainforest zone. The recommendations are structured into sections according to the broad topic they relate to.



10.1 Deer Working Group Recommendations

- The 2023–24 Programme for Government should contain a clear commitment to introducing the legislative recommendations proposed by the DWG and accepted by the Scottish Government. There should be no further delays in implementing these recommendations.
- ADMG, Environmental NGOs and others engaged in the deer sector to commit to building upon the ‘Finding the Common Ground’ process, continuing to develop understanding and trust so that they are better able to work together to make progress on deer management on the ground.

10.2 Develop and implement new ways to manage rainforest deer for community benefit

- NatureScot and Scottish Government should support more communities to learn from and emulate those communities where a community larder has been established, and community members trained to participate in both deer culling and venison handling. Most recently this has been supported by the Nature Restoration Fund (**Case Study 3**).
- DMGs (and equivalents) to be supported by NatureScot to develop a new approach to rainforest stalking. In the first instance this will draw properly trained community members into the management of roe and sika deer in the rainforest.
- NatureScot to support and roll out local initiatives which have promoted venison, whether to educate school children about rainforest employment opportunities, a means of promoting healthy local meat, or an opportunity to promote rainforest venison to restaurants to raise awareness of the rainforest among visitors.
- NatureScot to support community controlled deer management groups and mechanisms to coordinate deer management in the 30% of the rainforest which is not covered by DMGs.

10.3 Bring forward adoption of and training in new technology and approaches

- NatureScot to promote the use of night vision spotting and night sights by deer controllers, important tools in increasing stalker efficiency.
- NatureScot and Scottish Forestry to promote, fund and develop the use of drones to monitor deer numbers in the rainforest.
- NatureScot to work with education providers such as SRUC and UHI to develop appropriate training for rainforest management and deer control and habitat monitoring. New entrants, crofters, farmers, foresters, managers and stalkers can all benefit from enhanced skills of rainforest management.

10.4 Just Transition and working with deer managers

- Government agencies and environmental NGOs to present clear messages that rainforest deer management will build on existing sectoral skills, rather than threatening livelihoods.
- NatureScot to encourage and train deer controllers to see rainforest restoration as the key aim, rather than numbers of deer alone.
- NatureScot to ensure that all DMGs become aware of the urgency of the climate and biodiversity crises, and ensure that DMGs operate at the level of their most effective peers.

10.5 Agency leadership

- NatureScot to clearly articulate its role as the deer authority. In doing so it should set out the problems associated with too many herbivores in the rainforest zone, collaborate with stakeholders to develop a vision on how things might be different and articulate the benefits that this will bring. All Scottish Government staff engaged with land management in the rainforest to be brought into this approach.

10.6 Balancing sticks and carrots

- Scottish Government to bring agricultural and forestry grants into line with its commitment to expand and restore the rainforest. This will require moving away from segmentation of the countryside by ownership and then over reliance on fencing to separate land uses within individual ownerships.
- The scope to provide longer term support for deer control in the rainforest should also be investigated by NatureScot and Scottish Forestry. This may be as part of a blended green finance/grant scheme, where longer term gains through carbon credits or similar are used to support ongoing management.
- Scottish Government to ensure that GAEC requires that the grant recipient knows about deer and acts to keep them in balance, and that they report culls.
- Scottish Government to require as a condition of grant that every rainforest land manager either has a nominated deer controller, or the proven skills to act as their own deer controller.
- NatureScot to make sufficient use of the powers to drive deer reduction where it is necessary for rainforest restoration.

10.7 A Rainforest Restoration Fund

- Scottish Government to work with the Alliance for Scotland's Rainforest to implement the proposal for a dedicated Rainforest Restoration Fund as part of the Scottish Biodiversity Strategy priority action to "develop a policy and investment framework for restoring Scotland's Rainforest". This fund will back restoration for social, ecological and economic reasons, ensuring that the community benefits are explicit and for the long-term.
- The Scottish Government and its agencies need to support deer management to be carried out at landscape scale, over the long-term and coupled with eradication of *Rhododendron ponticum*.
- Scottish Government to finalise the interim principles for investment in natural capital in a way that they can be used to allow a Just Transition in the rainforest.

10.8 Work to appropriate rainforest management standards

- The Alliance for Scotland's Rainforest is preparing Management Standards for appropriate rainforest management. These will cover not only appropriate management in the rainforest, but will also include community engagement standards, designed to maximise the local impact of rainforest restoration (including the employment benefits that can flow from enhanced deer management). The Scottish Government and its agencies should explore how these Management Standards can be embedded into grant and management requirements in the rainforest zone.

10.9 Improved data

- NatureScot to develop an app to allow a standardised rainforest wide approach to reporting cull, count and monitoring data. The FLS dashboard could serve as a starting point. A transparent set of data that reflects the actual deer population and movement will be a valuable tool for those seeking to oversee and manage the rainforest.
- Scottish Government to deliver the commitment to create an ancient woodland register and work with land managers to better manage ancient woodland, including rainforest. This dataset will be important for Scotland's rainforest zone ancient woodland mapping, but also for other ancient woodland in Scotland.
- NatureScot guidance to highlight that all Deer Management Plans need to include measures to ensure that objective Herbivore Impacts Assessments are undertaken, as these represent a key source of data to guide deer management over time.

10.10 Leading by example

NGO and conservation minded owners and managers to:

- Set the pace in getting herbivore numbers right, bringing forward new approaches to deer management, and enhancing community benefits.
- Support the change that FLS are seeking to make, both in the rainforest, in the meeting room, and to the wider world.
- Promote decoupling the stalker's income from the number of deer culled, paying according to time spent and combining stalking with monitoring deer impacts, and other tasks.



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