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Glades for Deer Control in Upland Forests

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GLADES FOR DEER CONTROL IN UPLAND FORESTS

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Introduction

Large areas of coniferous forests have been established in upland Britain with neither knowledge nor experience of the potential problems arising from the creation of more suitable habitats for deer. Damage to commercial tree crops and the build-up of high densities of deer in woodlands have focused attention on the need to improve control tactics. The absence of open spaces within forests has exacerbated the problem.

This leaflet suggests ways of creating deer glades in order to increase the opportunities for killing deer. This approach contrasts with that commonly adopted in continental European forests where the major purpose of glade management is to increase the capacity of the habitat to support deer (Ueckermann and Scholz, 1981).

The provision of glades does not conflict with the general principles of forest landscape design and indeed may provide benefits to conservation and recreation. The creation and maintenance of open areas along water courses have the additional benefit of reducing acidity and generally improving water quality for fish (Mills, 1980).

Site selection

In choosing where to site glades, priority should be given to areas where damage is expected or is already occurring. Young plantations which are adjacent to thickets offering cover to deer may suffer from extensive browsing damage by red deer (*Cervus elaphus*), sika deer (*Cervus nippon*)

and roe deer (*Capreolus capreolus*), while older crops may experience bark stripping damage by red and sika deer. The severity of browsing on different species of trees is influenced by their palatability in relation to what other food is available and their ability to recover from injury.

Many tree species suffer damage to some extent but little quantitative information is available except for the following commercially important conifers. Lodgepole pine (*Pinus contorta*) is extremely vulnerable to bark stripping damage by red and sika deer during the pre-thicket and thicket stages, while Norway spruce (*Picea abies*) may be vulnerable for the entire rotation, first from browsing and later from bark stripping. Sitka spruce (*Picea sitchensis*) may suffer from extensive browsing, though it is usually able to recover, while bark stripping damage is seldom severe but can be locally important. Quantitative estimates of wildlife damage in forests can be obtained using methods described by Melville *et al.* (1983).

Considerable time and expense can be saved if glades are sited and approach paths, carcass extraction routes, and safe shooting or high seat positions (Rowe, 1979), are selected prior to ground preparation and planting. Sites naturally favoured by deer (Plates 1 and 2) should be the first choice and the frequent observation of deer in particular places may simplify selection. Attractive plant communities including ribwort (*Plantago lanceolata*), Wood sorrel (*Oxalis acetosella*), trefoils and clovers (*Trifolium* species), Birdsfoot trefoil (*Lotus corniculatus*), buttercups (*Ranunculus* species), bent and fescue grasses (*Agrostis* and *Festuca* species), Wavy hair-grass (*Deschampsia flexuosa*), and Sweet vernal grass (*Anthoxanthum odoratum*), are often found on stream sides, well drained



PLATE 1. Stream-side glade. (A 10712)

knolls and rich flushes. South-facing slopes with heather (*Calluna vulgaris*) are also often well used by deer. The degree of usage by deer may be indicated by the presence of dung in the vicinity. More than ten red deer dung groups in an area of approximately 50 square metres indicates high usage. Roe and sika deer pellets also show concentrations on highly preferred sites.

Potentially useful natural sites on rides, in checked areas (Plate 3) or adjacent to afforested sites (Plate 4), can often be easily improved, but exposed unplanted areas with unmodified swards of heather and blaeberry (*Vaccinium myrtillus*) should be avoided.

In areas where deer control is difficult and no natural sites occur, for example in large areas of thickets intersected by narrow rides of Purple moor grass (*Molinia caerulea*) and heather, it is possible to create glades by re-seeding. It is

convenient and less costly to create re-seeded glades after clear felling and prior to planting.

Distribution and size

The optimum size is 0.2–1.0 hectare, though larger areas may be justified, for example in strips along water courses (Plate 1). Re-seeded patches within the glades need seldom exceed 0.2 ha. Two to five glades in every 100 ha of forest will offer a high probability of deer finding and using them. They should be distributed evenly throughout the area, but the location of natural sites and accessibility of improved ones will dictate the precise distribution.

The most effective use can be made of glades if they are linked by a combination of forest roads, rides, or stalking paths, enabling the stalker or

ranger to visit a number of glades in turn. Natural glades within thickets with poor access help to maintain deer numbers but do not aid control.

Preparation and maintenance

General

The stalker or ranger responsible for deer control should be involved in the planning, preparation and maintenance of glades. Where sufficient natural sites are present only a small amount of work is usually necessary to improve access and visibility for shooting. Woodland deer are often reluctant to leave the seclusion of cover and may only feed on open areas at night. A fringe of 'open woodland' created by thinning

and high pruning or brashing a band of trees approximately 30m wide around the area or, on very open sites, planting groups of trees, will combine cover and security for the deer with sufficient open space for shooting. Trees such as Sitka spruce which will not be killed or severely damaged by deer are ideal for this purpose. Willow (*Salix* species), rowan (*Sorbus aucuparia*) or Norway spruce will provide fraying-stocks for roe deer and browse for all species and may improve usage by deer, but unless such plants are given partial protection by tree guards, they may eventually be killed by over-browsing. Grasses are well adapted to heavy grazing pressure but forbs (broadleaved herbs) may be selectively eliminated. It is rarely possible to attract deer to supplementary feed or mineral blocks unless the site is already attractive.



PLATE 2. Red deer on grassy glade under mature larch.



PLATE 3. Checked Norway spruce glade.

Paths should be laid out to allow an approach from different directions depending upon the wind, and safe shooting positions or high seat sites chosen. Ploughing and draining should take into account the problems of carcase extraction so that cross-country vehicle routes can be provided.

Natural glades

Improvements to natural glades usually only involve access, especially if they are already well used by deer. However, the removal of coarse or dead vegetation by hand or machine will promote new growth and the chemical control of bracken (*Pteridium aquilinum*) may be beneficial (Plate 4). Whether the cost of fertilisers can be justified is not clear but a compound fertiliser (NPK at 350–400 kg/ha)

will almost certainly improve the sward and make it more attractive, while lime chips (7–8 tonnes/ha) may provide longer lasting benefits. Drainage must be good if fertilisers are to be effective.

Sometimes natural glades will only be identified at a later stage in the rotation and may require heavy thinning, brashing or high pruning. Heavily browsed trees should be left to provide browse and cover (Plate 5).

Re-seeding

Highly attractive mixtures of grasses can be established directly on to the soil or peat surface (Plate 6), but difficult access by machinery coupled with the high acidity and low nutrient status of soils on many upland sites usually prevents the growing of crops such as brassicas

which are, even on lowland sites, costly to maintain.

Within the open or cleared glade one or several small patches of 0.05–0.5 ha should be selected for seeding, on areas which are not prone to waterlogging. Mineral soils are preferable but good results can be obtained on peat. If a field layer of vegetation is present, this should be removed by one or a combination of the following methods:

1. Chemical weed control (Rogers, 1975; MacKenzie *et al.*, 1976).
2. Swiping.
3. Burning, combined with the use of a tractor mounted foam unit for fire control (Ingoldby and Smith, 1982).

4. Surface skimming using a bulldozer blade, or track slewing.
5. Application of ground limestone (7–12 tonnes/ha) one year prior to treatment on pure heather sites to increase the alkalinity and kill the heather.

Depending upon the method of clearance it may be necessary to screef or scarify the soil surface to remove needles and dead vegetation and to create conditions suitable for germination.

Owing to the high acidity and infertility of most upland sites, pre-sowing treatment is necessary using ground limestone at 12 tonnes/ha, ground mineral phosphate at 1250 kg/ha and PK fertiliser at 370 kg/ha.



PLATE 4. Grassy site dominated by bracken. Bracken control necessary.



PLATE 5. . Heavily browsed Norway spruce on edge of glade.

A suitable mixture of grasses and clover which will withstand heavy grazing and low nutrient conditions is:

	Sowing density (kg/ha)
Early perennial rye grass (<i>Lolium perenne</i>) variety Premo	5
Pasture perennial rye grass (<i>Lolium perenne</i>) variety Perma or Wendy	9
Rough meadow grass (<i>Poa trivialis</i>)	3
Smooth meadow grass (<i>Poa pratensis</i>)	2
Creeping red fescue (<i>Festuca rubra</i>)	10
New Zealand white clover (<i>Trifolium repens</i>)	2.5
Kent wild white clover (<i>Trifolium repens</i>)	0.5

Light hand cultivation following sowing may be useful in dry eastern areas, but this is probably not necessary in the west. Sowing should be carried out in April/May or September, though in wet summers sowing is possible throughout the period May–September.

Grazing and browsing by deer may not be sufficient to maintain a close cropped attractive sward and periodic swiping, burning or cutting may be necessary in order to remove an accumulation of dead vegetation. Additional applications of PK may be necessary if the grass sward becomes pale in colour.

Use and shooting

A linked series of glades can be quickly visited or viewed from vantage points making the location of deer more efficient than random stalking. Stalking of deer can then be pursued along the



PLATE 6. Re-seeded glade on site previously dominated by heather.

prepared routes quickly and effectively. Deer may become reluctant to use glades after intensive shooting operations but experience suggests that they will soon revert to normal usage after a quiet spell. Perhaps the most effective use can be made by regular viewing from a distance and approaching the area only when deer are seen. This is unlikely to deter deer from using the area.

Monitoring use

Although there is no doubt that deer are attracted to glades, success in achieving more efficient deer control has not been adequately

measured and it is important therefore to monitor the value of glades. Stalkers or rangers should record all visits to glades and the number of animals seen and/or shot; it is particularly important to record unsuccessful visits. Monitoring should involve periodic assessment of glade use by deer by means of dung counts both in and around the glade and by evidence of browsing, grazing and trampling. The changing structure of the forest influences glade usage and evidence from adequate monitoring may suggest modifications and perhaps the temporary or permanent abandonment of a particular glade.

ACKNOWLEDGEMENTS

Tony Hinde, Forestry Commission and Henry Stirling, North Eastern Farmers Ltd., Aberdeen, provided much of the information on re-seeding and I am most grateful to them. Finlay MacRae and Bill Grant of the Forestry Commission and Dick Youngson of the Red Deer Commission have been practically involved in this subject for many years and have been a constant source of help and encouragement. Many Forestry Commission rangers including Robin Heaney, Donald McPhail, Ian Murray, Roddy MacKenzie, Duncan Cameron and Alistair Clarke have given freely of their ideas and expertise. I am grateful to Barry Auld, Bill Binns, Duncan Campbell, Steve Petty, Barry Teasdale and particularly to Judith Rowe for comments on the text.

All photographs have been provided by the author.

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Enquiries relating to this publication should be addressed to the Publications Officer, Forestry Commission Research Station, Alice Holt Lodge, Wrecclesham, Farnham, Surrey, GU10 4LH.

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ISBN 0 11 710046 3