

Scottish Natural Heritage

Farmland and Lowland Ecosystems Group

# Biodiversity and sporting enterprises



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BIODIVERSITY  
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## Introduction

Scotland is world renowned for its game shooting, fishing and stalking. The conservation of game involves managing specific wildlife populations to produce sustainable harvestable surpluses with a financial value. With sound stewardship most activities undertaken in game management should deliver positive biodiversity benefits. Those who manage sporting enterprises invest heavily in ensuring an appropriate quantity and quality of habitat and with a little additional sensitive management, the biodiversity gains for other species can be even greater. The word biodiversity is short for 'biological diversity' and can be summarized as 'the total variety of all living things'.

This leaflet sets out a range of actions and land management procedures which when incorporated into the normal management of sporting enterprises can help deliver biodiversity benefits. We urge those managing and working on sporting enterprises to consider these suggestions and see if any could be incorporated into established management. Many of the measures are likely to have a positive effect on the sporting enterprise.

## Introduction (continued)

These leaflets contain suggestions specific to deer stalking, sport fisheries, upland game, lowland game, predation control and stocking.

### Predation Control

Research in both the lowlands and uplands has demonstrated the benefits of legal predator control to both game and some other wildlife. Lethal and non-lethal methods may be required according to objectives. The aim is to try and achieve reductions of key game predators during the critical spring and summer breeding periods.

### Stocking

Today there are many sporting enterprises where the land is not capable of satisfying the increasing demand for fishing and shooting without some stocking. While releasing may pose risks to some biodiversity, with careful management and scientific advice, re-stocking can also bring biodiversity opportunities. Net biodiversity benefit should always be the objective.



## Deer stalking

Deer depend on their environment for food and shelter and ultimately their numbers would only be limited by climate and available food. In the absence of natural predators, it is essential that deer populations are controlled to ensure their health and welfare, as well as the sustainability and biodiversity of the environment over which they roam. The deer themselves are an essential part of that biodiversity as well as being a potent symbol of Scotland.

### Deer Management

Since wild deer usually wander freely over several landholdings, it is essential that land managers collaborate to keep numbers in balance with natural resources. This may be achieved through establishing Deer Management Groups (DMGs). While the implementation of practical deer management remains in the hands of each landholding, DMGs have an important function in enabling discussion about the number of deer that their area can sustain without damage to the habitat, deer welfare and other management objectives. Collaborative activities could include regular deer counts and the allocation of the annual cull required to maintain the agreed population that best meets the aspirations of landholdings within the group area.

### Open Hill Deer

Many of Scotland's most spectacular open mountain landscapes are primarily maintained for deer. Deer stalking contributes to the maintenance of those landscapes and provides recreation, food and rural employment, with limited public grant or subsidy. Those involved in stalking may wish to consider the following suggestions to enhance sporting interests and biodiversity.

- Use stalking as a means to keep deer in balance with the environment.
- Plant or encourage strips of native woodland in gullies to provide winter shelter for deer and create valuable wildlife corridors between straths and glens.
- Carry out appropriate muirburn. Muirburn can improve conditions for deer whilst also benefiting other species such as grouse, livestock and golden plover.
- Leave deer grallochs on the hill. This can provide food for a range of species.



## Deer stalking

### Woodland/Lowland Deer

Deer are successful and widespread throughout Scotland's lowland habitats, particularly woodland. Roe deer are the main species, but fallow and sika deer may also be present. If deer are part of a lowland sporting enterprise, the following could be considered:

- Make wide rides and open areas to provide deer grazing and stalking zones. This also creates additional woodland edge benefiting a range of bird, plant and insect species.
- Cut vegetation in rides and clearings every other year. This provides fresh growth and also allows biannual and perennial plants to flower and multiply.

- Plant native shrubs from local sources, such as willow, on deer lawns. This provides 'fraying stock' for male deer to clean velvet off their antlers and reduces deer damage to trees with greater biodiversity value.

Guidance for deer managers is available from the British Deer Society ([www.bds.org.uk](http://www.bds.org.uk)), Forestry Commission Scotland ([www.forestry.gov.uk](http://www.forestry.gov.uk)), Scottish Natural Heritage ([www.snh.org.uk](http://www.snh.org.uk)) and the Game Conservancy Trust ([www.gct.org.uk](http://www.gct.org.uk)).



## Sport fisheries

Fishing is the most popular participant sport in the UK. It is a sport that can deliver income whilst also contributing to biodiversity. Since fishes of the salmon family (salmon, trout and grayling) are the most important commercially and since their environmental requirements are highly demanding, land use practices which protect them will also protect the rest of the fish fauna and wider biodiversity.

### River Fisheries

With the exception of certain Border rivers, responsibility for managing salmon and sea trout fisheries rests with their owners whose rights to fish are independent of the ownership of the river bank. Over much of Scotland, this duty is derogated to locally constituted Salmon Fishery Boards. Fishery managers may wish to consider the following suggestions to enhance biodiversity.

- Create a mix of the three water habitats that salmonids need: pools with deep water for larger/adult fish; riffles (shallow stony areas) for juvenile fish; and clean gravels for spawning and incubation of eggs. A mix of these habitats will also promote aquatic biodiversity.
- Create and maintain bank-side buffer zones of permanent vegetation. Such buffer zones can reduce the adverse impacts of land use practices adjoining fishery banks and can

provide habitat for invertebrates (insect life) and bank side cover for fishes.

- Control over-shading of water areas. Over-shading reduces natural weed growth and since weeds host invertebrates, provide cover for fish and help oxygenate water, a balance of mainly open water with some shaded areas is ideal along flowing and still water margins.
- Relieving obstructions to fish passage is especially important to migratory species and should also benefit aquatic biodiversity.
- Avoid or reduce the extraction of water. Reducing the normal flow risks reducing aquatic biodiversity.
- Select native species of grasses, shrubs and trees. If planting adjacent to water, avoid conifers, which can acidify water.
- Use pesticides with care. Synthetic pyrethroids are particularly damaging to aquatic insect life, which is a critical part of the sport fish food chain. Relevant operations affecting watercourses must comply with the controlled activities regulations.
- Maintain livestock densities so that they do not damage banks or bankside vegetation. If this is not possible, stockfence bank margins. Most of the above relate to both river and still water fisheries.

# Sport fisheries

## Ponds, Lochs and Still Water Fisheries

- If stocking still waters, use native brown trout, especially where they connect with river systems.
- Some loch populations of brown trout are so prolific that food supply limits their growth, size and sport fishery potential. Reducing the population can increase average size and enhance angling potential.
- In coarse and game fisheries, aim to keep the population in balance with the food supply for the benefit of invertebrates and waterfowl.

Guidance on biodiversity for sport fishery managers is available from the Scottish Environment Protection Agency ([www.sepa.org.uk](http://www.sepa.org.uk)) and Scottish Natural Heritage ([www.snh.org.uk](http://www.snh.org.uk)).



# Lowland game

Scotland's undulating landscapes, mixed farming, forests and woods, wetlands and water areas, offer ideal habitats for game, wildfowl and other quarry species. Some measures that can enhance sporting interests and biodiversity include the following:

## Farmland

- Sow and maintain tussock grass-based strips around or across fields (beetle banks). This provides cover for ground nesting birds such as pheasants and partridges and also foraging areas for brown hares, small mammals, kestrels, barn owl and bats.
- Avoid or reduce the use of broadleaved herbicides and insecticides on cereal crop margins. This can increase insect numbers, which gamebird chicks need in the first days of life. Game Conservancy research demonstrated that this can double gamebird chick survival, some butterfly numbers and increase populations of some rare arable plants.
- Grow game crops to provide winter cover and feed for game. These provide cover or feed for a large numbers of farmland birds and mammals in winter.
- Spring-sown game crops provide bare soil nesting sites for waders such as lapwing and oystercatcher.

## Woodland

- Surround game coverts with hedging and shelter species to provide warm winter habitat for a range of insects, birds and mammals.
- If planting woodland for shooting, strips and shelterbelts provide more edge, which is beneficial for game and a wide range of other wildlife.
- Give priority to native species if planting for game.
- In larger woods make or leave wide curving rides. Cut half the ride vegetation in alternate years. This creates a greater degree of diversity and habitat and food sources for a range of species, including nectar sources for butterflies.
- Woods designed or managed for shooting should be planted mainly with non-shade-casting trees and kept well thinned to encourage a shrub layer. This understorey habitat, so important for pheasants and woodcock, is excellent for a range of insects, woodland birds and mammals as well as the plants themselves.



## Lowland game

### Water and Wet Areas

- Splashes, ponds and lochs created for flighting or driving duck can host a wide range of aquatic and wetland plants and animals. Try to provide a range of depths with shallow shelved bays of 0-20cm as feeding areas leading into deeper water of 2m or more.
- Duck should be fed to appetite only. Uneaten food risks polluting the water for other wildlife.
- Rushes and wetland areas can be managed for snipe and other waders. Keep the rushes "accessible" which

may require cutting strips through them in late summer. Grazing with cattle at this time encourages invertebrates, some of which provide food for snipe, woodcock and other waders.

Guidance on biodiversity for lowland game managers is available from SNH ([www.snh.org.uk](http://www.snh.org.uk)), the Game Conservancy Trust ([www.gct.org.uk](http://www.gct.org.uk)), RSPB ([www.rspb.org.uk](http://www.rspb.org.uk)), BASC ([www.basc.org.uk](http://www.basc.org.uk)), and SAC ([www.sac.co.uk](http://www.sac.co.uk)).



## Upland game

Four grouse species inhabit Scotland's uplands – red grouse, black grouse, capercaillie and ptarmigan. Red grouse are by far the most numerous in Scotland, and large tracts of heather moorland are managed in whole, or in part, to produce a sustainable crop of grouse for shooting. Managing for red grouse also provides many benefits for black grouse, ptarmigan, waders and many other species.

### Management for Red grouse

Moors managed for grouse typically have greater biodiversity than those without such management. For example, Game Conservancy Trust research has demonstrated that grouse moors typically support five times as many golden plovers as unmanaged moors and twice as many merlins. Predation control explains most of these differences.

Those involved in upland game management may wish to consider the following suggestions to enhance both sporting interests and biodiversity.

- Avoid overgrazing of heather by livestock or wild herbivores. Heather plants can tolerate about 30% of the annual growth removed each year. Heavier grazing can weaken and damage the plants. It is most important to avoid over-grazing in autumn and winter when heather is selected as grasses become less palatable.

- Avoid localised over-grazing. This can affect sheltered areas where both domestic and wild animals congregate. Areas close to the inbye often suffer most because livestock collect or may be fed there. Rabbit damage is also common on the hill edge. Avoid supplementary feeding of livestock and 'wild stock' on vulnerable areas.
- Carry out appropriate burning or cutting of heather to encourage a mosaic of young, building and mature heather. Red grouse rarely go more than 17m from tall heather to feed, therefore strip fires/cuts about 34m wide are ideal for red grouse. Burning heather for grouse can provide food and nesting sites in close proximity and increase the quality of the habitat and grazing, also benefiting other species.
- Avoid burning on scree, blanket bog, hill tops where heather is stunted by wind or altitude and sites within 50 metres of bracken. The Muirburn Code provides important advice on legal issues and best practice.
- Enhance the moor's insect availability by making shallow dams and blocking drains to create insect-rich areas. Insects are important food for many upland species, especially grouse and wader chicks.

# Upland game

## Management for Black grouse

Black grouse inhabit moorland and especially the moorland fringe encompassing both woodland and farmland. They benefit from red grouse management, but additional measures to benefit black grouse include the following:

- Grassy areas used for lekking (mating display) should be managed to maintain a short sward.
- Woodland edges can be enhanced by planting scattered native tree and shrub species.
- Create a mix of heather, blaeberry, grasses and rushes.
- Provide winter black grouse feeding by creating small areas of arable crops.
- Mark fences in areas frequented by black grouse to reduce the risk of collision.

## Management for Capercaillie

The largest British grouse is a woodland species favouring older, wided spaced Scots pine and conifer forestry where there is a good shrub layer. Four measures to consider:

- Regularly thin woods to encourage plenty of light for shrub layer e.g. blaeberry.
- Avoid over-grazing of woodland ground flora by 'wild' stock.
- Try to avoid new wire mesh deer fencing. If essential, mark it.
- Do not set snares within woods known to hold caper or within 500m of them.

Guidance on biodiversity for upland game managers is available from SNH ([www.snh.org.uk](http://www.snh.org.uk)), the Game Conservancy Trust ([www.gct.org.uk](http://www.gct.org.uk)), RSBP ([www.rspb.org.uk](http://www.rspb.org.uk)), Heather Trust ([www.heathertrust.co.uk](http://www.heathertrust.co.uk)), and SAC ([www.sac.co.uk](http://www.sac.co.uk)).

# Why help biodiversity?

## There are many arguments in favour of supporting biodiversity:

- it increases the variety of wildlife on the farm and can enhance the sporting interest, tourist potential and the enjoyment of wildlife for its own sake.
- it creates a better balance by preventing the loss of genetic material and beneficial organisms.
- enhancing biodiversity is a strong public relations argument which helps the whole of the agricultural, forestry and sporting industries.
- by becoming more involved in the biodiversity process and raising your awareness of the issues involved, you are likely to be better placed to deal with any cross-compliance and GAEC measures introduced as part the agricultural support schemes.
- the satisfaction of knowing that you are contributing to an ideal which has widespread support and encouragement from Government, conservation bodies and the industry generally. You, as a land manager, are now able to do something practical about the situation.

## Organisations represented on the Farmland and Lowland Ecosystems Group:

- |                              |                           |
|------------------------------|---------------------------|
| Crofters Commission          | Scottish Environment Link |
| Forestry Commission          | SCRI                      |
| Game Conservancy Trust       | SGRPID                    |
| LBAPs                        | SEPA                      |
| NFUS                         | SNH                       |
| SAC                          | SRPBA                     |
| Scottish Crofting Foundation |                           |





Other Leaflets in the series are:

- 1) Biodiversity on lowland arable farms
- 2) Biodiversity on hill and upland farms
- 3) Biodiversity on croftland and common grazing
- 4) Biodiversity on intensive grassland
- 6) Biodiversity and sporting enterprises

To obtain the other leaflets contact your local adviser or consultant or visit [www.biodiversityscotland.org.uk](http://www.biodiversityscotland.org.uk)

[www.snh.gov.uk](http://www.snh.gov.uk)

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