



Upland

habitats

AYRSHIRE BIODIVERSITY ACTION PLAN

Upland Heath

Blanket bog

Montane





Introduction

The upland hills and moors of Ayrshire are home to many priority species such as hen harrier, golden eagle, black grouse, water vole and whorled caraway, with many areas of international biodiversity importance. The landscape has been shaped by human activity over many years, and is the country of hill farming, forestry and commercial grouse shooting.



Upland Heath

Definition

Upland heath lies below the montane zone (which begins above the potential woodland limit at approximately 600 metres), and above the upper edge of the enclosed agricultural land, usually at around 300 to 400 metres. This habitat may descend to near sea level in the south west, for example at Ballantrae, and on the Isle of Arran. Upland heather moorland is usually found in areas with over 100 cm of precipitation a year and where nutrient poor acid soils are composed of peaty podsols or shallow peat. Variation in the vegetation communities is broadly linked to climate, but is also influenced by factors such as altitude, aspect, slope, maritime exposure and management practices (including grazing pressure and burning regime). This habitat is often found in mosaics with acid and neutral grassland.

Upland heath is generally dominated by dwarf shrubs such as ling heather, *Calluna vulgaris*. Other communities particularly in the wetter north and west may be dominated by mixtures of cross leaved heath *Erica tetralix*, purple moor grass *Molinia caerulea*, and *Sphagnum* mosses. Upland heath contains mosaics of dry heath, wet heath and blanket bog. There is much cross over between this habitat and the acid grassland habitats which are dealt with under the grassland section of this plan.

Current Status

Land Cover Scotland data from 1988, based on aerial photography, show Ayrshire's upland heathland cover 25 364 hectares (or 7.5% of the landcover). It is estimated that heather moorland cover in south Scotland has declined by an average of 40% since the second world war and Ayrshire appears to reflect that trend, although the loss on the Isle of Arran may be less. This has mostly been the result of afforestation, but also over-grazing.

Ayrshire has some of the best remaining large areas of open moorland in southern Scotland, especially in the Muirkirk Uplands, Glen App Hills and Clyde Muirshiel where traditional grouse moor estates have not converted land to forestry and have tried to maintain grazing levels to ensure the retention of heather. The Isle of Arran has some of the best heather moorland in Scotland.

Key Sites

- Muirkirk and North Lowther Uplands proposed SSSI/ SPA
- Galloway Forest Park (includes SSSIs)
- Auchenroy and Glenmount Uplands
- Afton Uplands
- Black Clauchrie
- Glen App and Galloway Moors SSSI/proposed SSSI/ SPA
- Drumlamford
- Knockdaw Hill SSSI
- Arran Northern Mountains SSSI
- Arran Moors SSSI/proposed SSSI
- Clyde Muirshiel Regional Park

Key Species

Mammals

- Otter (*Lutra lutra*)
- Mountain hare (*Lepus timidus*)
- Brown hare (*Lepus europaeus*)
- Pine marten (*Martes martes*)
- Water vole (*Arvicola terrestris*)
- Water shrew (*Neomys fodiens*)

Birds

- Golden eagle (*Aquila chrysaetos*)
- Hen harrier (*Circus cyaneus*)
- Merlin (*Falco columbarius*)
- Peregrine (*Falco peregrinus*)
- Golden plover (*Pluvialis apricaria*)
- Dunlin (*Calidris alpina*)
- Curlew (*Numenius arquata*)
- Snipe (*Gallinago gallinago*)
- Redshank (*Tringa totanus*)
- Black grouse (*Tetrao tetrix*)
- Short eared owl (*Asio flammeus*)
- Ring ouzel (*Turdus torquatus*)
- Stonechat (*Saxicola torquata*)
- Twite (*Carduelis flavirostris*)

Reptiles and Amphibians

- Common toad (*Bufo bufo*)
- Common frog (*Rana temporaria*)
- Common lizard (*Lacerta vivipara*)
- Adder (*Vipera berus*)

Invertebrates

- Emperor moth (*Saturnia pavonia*)
- Northern egger moth (*Lasioampa quercus callunae*)
- Scotch argus (*Erebia aethiops*)
- Large heath (*Coenonympha tullia*)
- Keeled skimmer (*Orthetrum coerulescens*)
- Golden ringed dragonfly (*Cordulegaster boltonii*)
- Four spotted chaser (*Libellula quadrimaculata*)
- The black darter (*Sympetrum danae*)
- Minotaur beetle (*Typnaeus typhoeus*)

Higher Plants

- Crowberry (*Empetrum nigrum* ssp *hermaphroditum*)
- Northern bedstraw (*Galium boreale*)
- Starry saxifrage (*Saxifraga stellaris*)
- Grass of Parnassus (*Parnassia palustris*)
- Whorled caraway (*Carum verticillatum*)
- Spignal (*Meum athamanticum*)
- Arran whitebeam (*Sorbus arranensis*/ *S. pseudofennica*)
- Rock whitebeam (*Sorbus rupicola*)
- Alpine enchanter's nightshade (*Circaea alpina*)
- Hairy stonecrop (*Sedum villosum*)
- Roseroot (*Sedum rosea*)
- Heath cudweed (*Gnaphalium sylvaticum*)
- Mountain everlasting (*Antennaria dioica*)
- Yellow saxifrage (*Saxifraga aizoides*)
- Alternate leaved golden Saxifrage (*Chrysosplenium alternifolium*)
- Mountain pansy (*Viola lutea*)
- Alpine willowherb (*Epilobium anagallidifolium*)
- Ivy leaved crowfoot (*Ranunculus hederaceus*)

Lower Plants

- Tunbridge filmy fern (*Hymenophyllum tunbridgense*)
- Parsley fern (*Cryptogramma crispa*)
- Wilson's filmy fern (*Hymenophyllum wilsonii*)
- Hay scented buckler fern (*Dryopteris aemula*)
- Green spleenwort (*Asplenium viride*)

Nature Conservation Importance

Dwarf shrub heaths have international conservation significance and are largely confined to the British Isles and to the western seaboard of Europe. In Ayrshire, this heathland is characterised by such plants as cloudberry, crowberry, blaeberry, mat grass, red fescue and sheep's fescue. Upland dwarf shrub heaths are derived from former woodlands or areas of shrub with dwarf shrub rich ground flora. Under low intensities of land use and management the dwarf shrub heath provides a refuge for many of the associated species of the original woodland ground layer.

In Ayrshire, as elsewhere, upland heathland is prime habitat for a suite of birds including black and red grouse, hen harrier, merlin, golden plover and twite. Some areas of upland heathland are very rich in bryophyte and lichen communities. Significant areas of upland heathland have already been destroyed, and replaced with improved grassland or conifer plantation; this is most marked in South Ayrshire.

Important guidance is available from SNH about upland heathland biodiversity. This guidance outlines minimum areas of upland heathland required to maintain biodiversity interest, good muirburn codes etc. Further information can be obtained on minimum areas of suitable habitat needed to maintain viable populations of upland birds such as golden plover, curlew and dunlin.

Biodiversity Context

There is a UK Broad Habitat Statement for upland heathland (Tranche 2 Vol 6). This gives the following conservation direction:

"Maintain the extent, enhance the quality, and restore upland dwarf shrub heath as part of upland mosaics and transitions of semi-natural and natural habitats appropriate to soils and climate."

Measures to be considered further include:

- Encourage sympathetic management of upland heath for wildlife, structural diversity and rich lower plant communities;
- Promote demonstrations and advice on good muirburn practices;
- Encourage studies to investigate the effects of acid deposition;
- Encourage measures which reverse habitat fragmentation;
- Reduce grazing pressure by red deer and sheep by reducing numbers;
- Protect from inappropriate development by identification in relevant development plans and Indicative Forestry Strategies.

Current factors affecting the habitat

Land Use and Management

This is, in the most part, a habitat type created by human management, principally for grouse shooting but also by stock farming. Changes in the way these activities are carried out means that heaths are under threat. Mainly, this results from:

- Conversion to more intensive forms agriculture, such as pasture improvement, particularly at lower elevations;
- Poorly managed muirburn, which is particularly damaging to lower plant communities;
- Changes in hill grazing, resulting in the loss of heather and spread of bracken;
- Replacement with forestry, which can alter the habitat entirely once the tree canopy closes.



Development Pressure

Opencast coal mining in East Ayrshire has resulted in the loss or degradation of upland heath.

Wind farm development is an increasing threat to this habitat. The development of wind farms may lead to loss of habitat under the development footprint, access roads and thereby also habitat fragmentation.

Pollution

Acidification from atmospheric deposition is a risk, although its impact on Ayrshire's uplands has not been widely examined.

Opportunities and Current Action

- Areas have been designated;
- Working to and promoting good management practice is underway by various agencies;
- Increased support for good management practices is needed;
- The RSS gives a limited protection to existing moorland, but further opportunities exist, for example, reduction of overgrazing by use of area payments instead of headage payments;
- Restructuring forestry at the upper margins through long term strategic design planning and Forest Design Plans;
- The NTS is carrying out annual heather monitoring and small scale bracken control on the Isle of Arran;
- Muirkirk Estates, Douglas and Angus Estates and Dumfries House Estates have or are seeking to reduce sheep numbers;
- The Heather Trust has a demonstration site for moorland management best practice at Clyde Muirshiel Regional Park;
- FE/SNH/RSPB black grouse recovery project is underway in the Galloway Forest Park;
- Monitoring by South West Scotland Raptor Study Group;
- The Ayrshire Joint Structure Plan and East Ayrshire Council proposed Local and Minerals Subject Plan policies are helping to protect key upland habitats;
- East Ayrshire Council, SNH and RSPB are leading an initiative to encourage opencast coal operators to protect and enhance habitats in their ownership. For example, Scottish Coal is working to improve management of heather moorland to benefit biodiversity at the Gasswater opencast site, near Cumnock;
- East Ayrshire Council proposed Local and Minerals Subject Plan policies;
- Minerals companies are being encouraged to manage areas of heather moorland to benefit biodiversity at opencast sites
- Efforts are underway to tackle illegal persecution of moorland birds, especially of hen harriers.
- An Indicative Forest Strategy is being developed by various interested parties, to guide afforestation away from upland areas that are important for wildlife.

Fungi

- Earth tongue (*Geoglossum uliginosum*, *Thuemenidium atropurpureum*)
- Wax cap (*Hygrocybe calyptraeformis*, *Hygrocybe spadicea*)
- Agaric (*Russula persinica*)
- Fairy club (*Clavaria zollingeri*)

Lichens

- *Lecidea fuliginosa*
- *Trapelia mooreana*
- *Arthonia arthoides*
- *Toninia verrucarioides*
- *Stereocaulon leucophaeopsis*
- *Pertusaria coccodes*
- *Thelotrema lepadinum*

Habitat Objectives

Main Objective

Maintain and enhance the quality and area of important upland heathland habitat in Ayrshire.

Target

No net loss in area or quality of habitat except through the natural process of succession eg. to scrub and native woodland by 2005.

Work Objectives

Objective 1

Determine, in detail, the area, extent and condition of upland heathland in Ayrshire.

Target

Complete survey of area and condition by 2005.

Objective 2

Restore and extend upland heathland habitats in the region by at least 200 ha.

Target

Restore at least 200 hectares by 2010 by identifying good opportunities for moorland re-instatement

Objective 3

Set up a five year programme to raise awareness of biodiversity, its importance and the need for its conservation in Ayrshire. Include upland heathland in this programme.

Targets

Establish a public awareness programme for communities, landowners and tourists by 2002;
Run public awareness programmes until 2006.



ACTIONS Upland Heath	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY)					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Ensure that the policies of all partners seek to conserve and enhance the biodiversity value of important upland heathland in Ayrshire.	All		•	•	•	•	•	•
Ensure that the importance of upland heathland is fully considered in Structure, Local and Subject Plans and strategies.	AJSP ALA RSPB	SWT	•	•	•	•	•	•
Following a survey of upland heathland (see research and monitoring) designate important sites as Wildlife Sites as appropriate and incorporate into the planning system.	SWT SNH ALA	SWT					•	
Define local application of WGS guidelines with regard to new planting and restocking of upland heathland.	FC	PWO FE	•	•	•	•	•	•
Site Safeguard and Management								
Ensure full consideration is given to the value of upland heathland when considering proposed developments which threaten loss or damage to this habitat .	AJSP ALA	RSPB SWT SNH FC, MinCo	•	•	•	•	•	•
Notify the best areas of heather moorland with appropriate qualifying bird interest as Special Protection Areas under the terms of the EU Birds Directive 79/409. Ensure appropriate management regimes to enhance biodiversity are put in place.	SNH		•	•	•		•	
Seek to develop the RSS locally to identify upland heathlands as a priority habitat within farm plans/audits and to allow restoration and enhancement of upland heathland on the whole farm.	SERAD SAC FWAG	RSPB	•	•	•			
Identify and evaluate opportunities for the reestablishment of upland heathland as areas of forestry are redesigned at felling and restocking.	FC FE PWO	RSPB	•	•	•	•	•	•
Prioritise management actions on sites following an audit and survey of site conditions.	SNH ABG Land	SWT	•	•	•	•	•	•
Proposals for development which could affect upland heath habitat will be assessed to ensure that appropriate measures are proposed to conserve the site's wildlife or habitat interest.	ALA SNH	RSPB MinCo	•	•	•	•	•	•
Advisory								
Use demonstration sites such as Clyde Muirshiel to provide advice on best management and restoration practices for upland heathland.	CMRP Heather Trust		•	•	•	•	•	•
Research and Monitoring								
Produce a map identifying all upland heathland areas and details of habitat condition where known .	SNH ABG							
Survey all upland heathland to at least Phase 1 Habitat Survey , to assess habitat quality where data is currently not available .	SNH ALA	SWT		•	•	•	•	•
Identify afforested upland heathland areas within forestry blocks for possible restoration. Use monitoring of areas where restoration to upland heathland has been attempted to assess new possibilities, their practicality and habitat value.	FC FE PWO							
Survey heather moorland areas and designate important sites as Wildlife Sites and incorporate them into the planning system.	SWT SNH ALA			•	•	•	•	•
Use the data obtained from surveys (see above) as a baseline for a monitoring programme for upland heathland to be conducted every five years .	ABG All				•	•	•	•
Continue raptor monitoring programme.	SSRG			•	•	•	•	•
Apply the "McGrady model" on forestry and golden eagles to the home ranges of this species and ascertain a programme for habitat enhancement for this species.	FE RSPB		•	•	•	•	•	•
Monitor the delivery of this Plan yearly and in detail every five years, starting in 2002.	ABG			•	•	•	•	•
Ensure that all data collected is held by the Ayrshire Biological Records Centre.	All ABRC		•	•	•	•	•	•
Communications and Publicity								
Raise public awareness of upland heathland through guided walks, talks, publications, press releases, and environmental education opportunities .	ABG RSPB NTS FE SNH	Rangers All	•	•	•	•	•	•
Raise awareness of the importance of upland heathland with landowners.	SLF	RSPB	•	•	•	•	•	•

Blanket Bog

Definition

The term blanket bog refers to the layer of peat that has accumulated over significant parts of the uplands and is fed mainly by rainfall and snow melt (i.e. an ombrotrophic wetland). Over time, these bogs have developed through the accumulation of dead plant matter that fails to break down in the cool wet flooded climate of these areas. Blanket bog support other features such as flushes, where water is channelled over the surface or where there is general surface seepage. Some bog systems have been accumulating peat for 10 000 years, although most bogs have origins between 2 000 and 7 000 years ago. The peat forms in wet hollows, flat land and across hills with slopes up to 30 degrees (hence the name blanket bog). Active blanket bogs are those in which the peat is still capable of accumulating through growth and impeded decay of bog plants. Typical of these are Sphagnum species and Eriophorum rich communities.

Current Status

Blanketbog in Ayrshire occurs from 70 metres above sea level to altitudes of nearly 700 metres in the Galloway Forest Park. From Land Cover Scotland data obtained in 1988 by aerial photography the extent of blanket bog and wet heath in Ayrshire is 31 329 ha or 9.28% of the total landcover. Blanket bog is characteristic of the wettest parts of the UK and is distributed mostly in the north and west of Britain. There are approximately 1 500 000 ha of this habitat in the UK, most of which is found in Scotland. A large proportion of Europe's blanket bog is found in the UK.

Nature Conservation Importance

Most of the European blanketbog is found in Scotland. It is a habitat listed on Annex 1 of the EU Habitats Directive and is therefore subject to special conservation measures. Plants such as ling, cross leaved heath, blaeberry, crowberry, sundew, butterwort, bog asphodel, cotton grass and deer grass are widespread on blanket bog habitat. Many areas of blanketbog are important for black grouse since young birds feed on the cotton grass which can be abundant in these areas, and the shoots of cotton grass are an important protein source for a variety of breeding bird species in the spring. Wading bird species such as curlew, golden plover and dunlin and rare dragonflies are associated with this habitat.

Key Sites

- Muirkirk and North Lowther Uplands /proposed SPA
- Airds Moss /proposed SAC
- Galloway Forest Park (includes Merrick Kells SSSI)
- Afton Uplands
- Glaisnock Moss
- Martyr's Moss
- Glen App and Galloway Moors SSSI/potential SP
- High Altercannoch to Loch Duisk
- Drumlamford
- Stinchar Valley
- Knockdaw Hill SSSI/SAC
- Arran Northern Mountains SSSI
- Arran Moors SSSI/proposed SR
- Clyde Muirshiel Regional Park

Key Species

Mammals

- Water vole (*Arvicola terrestris*)
- Otter (*Lutra lutra*)
- Water shrew (*Neomys fodiens*)

Birds

- Red throated diver (*Gavia stellata*)
- Hen harrier (*Circus cyaneus*)
- Merlin (*Falco columbarius*)
- Short eared owl (*Asio flammeus*)
- Black grouse (*Tetrao tetrix*)
- Golden plover (*Pluvialis apricaria*)
- Dunlin (*Calidris alpina*)
- Curlew (*Numenius arquata*)
- Snipe (*Gallinago gallinago*)
- Skylark (*Alauda arvensis*)
- Twite (*Carduelis flavirostris*)

Reptiles and Amphibians

- Common toad (*Bufo bufo*)
- Common frog (*Rana temporaria*)
- Adder (*Vipera berus*)

Invertebrates

- A water beetle (*Dytiscus lapponicus*)
- Four-spotted chaser (*Libellula quadrimaculata*)
- Black darter (*Sympetrum danae*)
- Keeled skimmer (*Orthetrum coerulescens*)
- Large heath (*Coenonympha tullia*)

Higher Plants

- Bog rosemary (*Andromeda polifolia*)
- Lesser twayblade (*Listera cordata*)
- Bog orchid (*Malaxis paludosa*)
- Cloudberry (*Rubus chamaemorus*)
- Broad leaved cottongrass (*Eriophorum latifolium*)
- Black bog rush (*Schoenus nigricans*)
- Lesser tussock sedge (*Carex diandra*)
- Bottle sedge (*Carex rostrata*)
- Brown beaked sedge (*Rhynchospora fusca*)
- Marsh clubmoss (*Lycopodiella inundata*)
- Northern bedstraw (*Galium boreale*)
- Bog sedge (*Carex magellanica*)

Lower Plants

- Moss (*Sphagnum imbricatum*)

Habitat Objectives

Main Objective

Maintain and enhance the quality of important blanket bogs in Ayrshire.

Target

No net loss in area or reduction in quality of habitat ~~text~~ through natural processes of succession eg. to scrub and native woodland, by 2006.

Work Objectives

Objective 1

Determine in detail the area, extent and condition of blanket bog within Ayrshire.

Target

Complete survey of area and condition by 2003.

Objective 2

Increase the current area and quality of blanket bog in Ayrshire through management, restoration, tree removal, and drain blocking.

Targets

Identify suitable areas for restoration by 2002, particularly adjacent to SACs/SSSIs and other notified areas. Enhance 250 ha of degraded blanket bog by 2005;

Remove trees and block drainage on 200 ha by 2010;

Establish management agreements over 200 ha of degraded blanket bog by 2005 in order to improve habitat quality.

Objective 3

Set up a five year programme to raise awareness of biodiversity, its importance, and the need for its conservation ~~in Ayrshire~~. Include blanket bog in this programme.

Targets

Establish a public awareness programme for communities, landowners* and tourists by 2002;

Run public awareness programme until 2006.

Biodiversity Context

There is a UK Broad Habitat Statement for Blanket Bog (Tranche 2, Vol 6). This gives the following conservation direction;

“Minimise deterioration and promote appropriate management of areas of active blanket bog which retain their hydrological characteristics and rehabilitate areas of damaged blanket bogs where the hydrological integrity is suitable for restoration eg. drain blocking. ”



Measures to be considered further include:

- Develop national inventories and agree a UK framework for identifying extent and quality of the resource, the factors affecting the habitat and action required to conserve it, in line with international obligations;
- Identify and protect important active blanket bogs from inappropriate uses by identifying them in Mineral Plans, in Indicative Forestry Strategies and other planning documents;
- Promote alternatives to peat as sources of energy and alternatives to moss for use in horticulture;
- Examine further the role of peatlands as carbon dioxide sinks;
- Examine further the functional role of peatlands as dominant factors in catchment districts eg. for major sources of drinking water, maintenance of water quality and prevention of soil erosion;
- Secure cross sector government department policies for sustainable utilisation of extensive peatland resources, based on principles of conservation;
- Encourage appropriate grazing, burning, and other management of blanket bogs.



Current factors affecting the habitat

Factors which influence the structure and flora composition of blanket bog habitats include;

- Previous planting of trees, mainly non native species, over extensive tracts of blanket bog;
- Commercial peat extraction for horticultural use;
- Domestic peat extraction for fuel;
- Grazing and uncontrolled burning which can lead to increased erosion and loss of characteristic bog species;
- Moorland drainage (very widespread);
- Acidification (from atmospheric pollution);
- Natural erosion processes;
- Mineral extraction. Many coal and other mineral reserves lie beneath peatland areas.



- NTS Ranger lead walks on the Isle of Arran and the Council Ranger Service in Clyde Muirshiel Regional Park lead bog walks and interpret bogs through displays.

Incentive Schemes

- A SNH or SERAD Peatland Management Scheme could be run offering financial assistance to encourage maintenance of sympathetic land management on peatland SSSIs (as in Caithness and Sutherland). SNH involvement may be restricted to Natura 2000 sites.

Restoration

- Funds from EU LIFE (Nature) Programme could be used to develop techniques for the management and restoration of peat bogs where appropriate;
- RSPB project at Airds Moss Nature Reserve to restore biodiversity of blanket bog which has been modified by past agricultural operations;
- Restoration of sites given over to other land uses should be encouraged where appropriate. Reinstatement of currently afforested areas should be encouraged where possible;
- Minerals operators have the opportunity to restore sites which lie outwith operational areas but within landholdings;
- NTS undertaking bog restoration on the Goatfell property through blocking drainage channels.

Opportunities and Current Action

Research and Monitoring

- National Peatlands Resource Inventory (NPRI) to estimate blanket bog resource in the UK, resourced by SNH. This maps and assesses peatland resource using satellite imagery and soil map information, backed up by validation in the field.

Policy Guidelines and Advisory Work

- The Forestry Commission and SNH are currently drafting the forestry and peatland guidelines to restrict tree planting on important peatland sites including bogs;
- Recently established SEPA and the new Scottish water authorities are developing the conservation duties of the predecessor organisations. These bodies have a statutory responsibility for pollution control;



ACTIONS Blanket Bog	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY)					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Ensure that the policies of all partners promote no net loss blanket bog biodiversity in Ayrshire.	All		•	•	•	•	•	•
Complete Special Areas of Conservation consultation process and subsequent notification for all blanket bog areas on current lists in Ayrshire.	SNH				•			
Ensure that the status of blanket bogs as a European priority habitat is fully considered in Structure, Local and Subject Plans.	AJSP ALA SWT		•	•	•	•	•	•
Following a survey of blanket bogs (see research and monitoring) designate important areas as Wildlife Sites as appropriate and incorporate into the planning system.	SWT SNH ALA		•	•	•	•	•	•
Apply the joint Forestry Commission/SNH guidance on peatland and refine local application of WGS guidelines with regard to new planting and restocking of blanket bogs with regards to local circumstances.	FC FE PWO SNH		•	•	•	•	•	•
Identify areas of high conservation value which should be preserved from peat extraction.	ALA SNH	SWT	•	•				
Full consideration of alternatives to horticultural peat by all statutory agencies. Encourage voluntary agencies to do likewise.	ALA All	SWT						
Site Safeguard and Management								
Ensure full consideration is given to the value of blanket bog when considering proposed developments which threaten loss of or damage to this habitat.	ALA	SWT SNH RSPB	•	•	•	•	•	•
Identify blanket bogs as priority habitats within farm plans/audits, and allow restoration and enhancement of blanket bogs on the whole farm through RSS and other mechanisms.	SERAD SAC FWAG		•	•	•	•	•	•
Restore blanket bog vegetation on landholding at Airds Moss .	RSPB		•	•	•	•	•	•
Protect and restore blanket bog on areas adjacent to mineral workings.	SNH RSPB ALA	MinCo						
Identify and evaluate opportunities for the reestablishment of active blanket bog habitats as forests are redesigned at felling and restocking.	FC FE PWO RSPB	SWT	•	•	•	•		
Prioritise management actions on sites, following an audit and survey of site conditions.	All							
Advisory								
Use demonstration sites to provide advice on best management and restoration practices for blanket bog.	SNH NTS RSPB	SWT FC	•	•	•	•	•	•
Research and Monitoring								
Using data from the Ayrshire and Arran Environmental Audit, produce a map identifying all blanket bogs and details of habitat condition where known.	ABG SNH		•	•	•	•	•	•
Survey all blanket bogs to at least Phase 1 Habitat Survey quality, to assess habitat quality where data is currently not available.	SNH ALA		•	•	•	•	•	•
Identify afforested blanket bog areas within forestry blocks for possible restoration. Use monitoring of areas where the restoration of active blanket bogs has been attempted to assess new possibilities, their practicality and habitat value.	FC FE PWO SNH	SWT	•	•	•	•	•	•
Use the data obtained from surveys (see above) as a baseline for a monitoring programme to be conducted every five years.	ABG		•	•	•	•	•	•
Monitor the delivery of this plan yearly and in detail every five years starting in 2002.	ABG		•	•	•	•	•	•
Set up a Biological Record Centre for Ayrshire and ensure all data collected for this plan are held there.	ABRG		•	•	•	•	•	•
Communications and Publicity								
Raise public awareness of blanket bog through guided walks, talks, publications, press releases, and environmental education opportunities, including National Bog Week .	ABG RSPB NTS SWT	CMRP Rangers	•	•	•	•	•	•
Use Airds Moss as a demonstration of good practice.	RSPB SWT			•	•	•		
Raise awareness of the importance of blanket bog with landowners.	All							
Promote the use of peat alternatives for horticultural use by improving availability of information about alternatives.	All							

Montane

Definition

Montane habitat is defined as the area above the potential woodland limit at 600 metres in altitude, but this habitat may extend lower in exposed areas. In Ayrshire, montane habitats are influenced by the coastal climate. Montane habitat comprises many different sub habitats supporting a wide range of plant and animal communities.

Current Status

Land Cover Scotland data from 1988, based on aerial photography, demonstrates that about 1.15% of the land cover or 3 873 hectares of Ayrshire could be classed as montane habitat. This habitat occurs mostly above 600 metres in altitude, or above the natural tree line, although it may descend lower than this altitude in some places, and vegetation may differ from that which could be described as a typically montane type. Over 90% of the 600 000 hectares of the montane habitat in the UK is in Scotland.

Nature Conservation Importance

Montane areas are made up of many types of habitat and support a wide range of plant and animal communities. Less disturbed upland areas are characterised by a range of semi natural plant communities. These include internationally significant types such as oceanic and southern outliers of arctic alpine assemblages. Other globally threatened types, including those particularly well represented in Scotland can also be found, such as near natural dwarf shrub heaths, moss heaths and grasslands. Late lying snow patches have characteristic bryophyte and lichen communities, whilst spring flushes, screes, rock crevices and outcrops, freshwater seepages, rills, streams and pools provide a range of micro habitats which support specialised plants and animals such as arctic-alpine willows and other relict arctic alpine species.

The montane communities in Ayrshire are characteristic in that they contain the most northerly occurrence of a range of southern species and vice versa. The Isle of Arran is particularly important for its arctic alpine communities.

Key Sites

- Galloway Forest Park (includes SSSIs)
- Afton Uplands
- Isle of Arran Northern Mountains SSSI/proposed SPA
- Muirkirk and North Lowther Uplands /proposed ASP
- Shalloch on Minnoch

Key Species

Mammals

- Mountain hare (*Lepus timidus*)
- Stoat (*Mustela erminea*)

Birds

- Golden eagle (*Aquila chrysaetos*)
- Ptarmigan (*Lagopus mutus*)
- Golden plover (*Pluvialis apricaria*)
- Dotterel (*Charadrius morinellus*)
- Ring ouzel (*Turdus torquatus*)
- Snow bunting (*Plectrophenax nivalis*)

Higher Plants

- Crowberry (*Empetrum nigrum* ssp *hermaphroditum*)
- Bearberry (*Arctostaphylos uva-ursi*)
- Dwarf willow (*Salix herbacea*)
- Arran whitebeam (*Sorbus arranensis*/S. *pseudofennica*)
- Rock whitebeam (*Sorbus rupicola*)
- Alpine enchanter's nightshade (*Circaea alpina*)
- Tufted hair grass (*Deschampsia cespitosa* ssp *alpina*)
- Northern Buckler Fern (*Dryopteris expansa*)
- Three leaved rush (*Juncus trifidus*)
- Chickweed wintergreen (*Trientalis europaea*)
- Hairy stonecrop (*Sedum villosum*)
- Mountain sorrel (*Oxyria digyna*)
- Stiff sedge (*Carex bigelowii*)
- Starry saxifrage (*Saxifraga stellaris*)
- Alpine saw wort (*Saussurea alpina*)
- Stone bramble (*Rubus saxatilis*)
- Alpine meadow rue (*Thalictrum alpinum*)

Lower Plants

- Alpine club moss (*Diphasiastrum alpinum*)
- Lichens
 - Lecidea fuliginosa
 - Trapelia mooreana
 - Arthonia arthoniodes
 - Toninia verrucariodes
 - Stereocaulon leucophaeopsis
 - Pertusaria coccodes
 - Thelotrema lepadinum



Habitat Objectives

Main Objective

Maintain and enhance the quality of montane habitats in Ayrshire.

Targets

Identify best examples of montane habitat by 2002;

Secure sympathetic management of these habitats by 2003;

No net loss in area or reduction in quality of habitat by 2004.

Work Objectives

Objective 1

Improve the quality of degraded areas of montane habitat in Ayrshire.

Targets

Identify requirements for widespread improvement by 2002;

Improve at least three sites by sympathetic management by 2006.

Objective 2

Establish a five year programme to raise awareness of montane biodiversity, its importance and the need for its conservation.

Targets

- Establish a public awareness programme for communities, landowners and tourists by 2002;
- Run public awareness programmes until 2006.



Biodiversity Context

There is a UK broad habitat statement for montane, which gives the following conservation direction:

“Minimise further deterioration of the resource of near natural montane and high altitude moorland: restore areas of scrub, herb and moss cover, and minimise damage and disturbance.”

Measures to be considered further include:

- Carry out surveys to identify areas of near natural montane communities;
- Reduce grazing pressure from deer;
- Encourage lower levels of sheep grazing and burning management to maintain montane vegetation;
- Protect from inappropriate development and discourage disturbance and damage from inappropriate forms and levels of use, including recreational;
- Consider the need for studies to investigate the effects of acid deposition on montane communities;

Current factors affecting the habitat

- Poor soils and extreme climate render montane areas unsuitable for forestry or intensive agriculture. However, the shallow soils, the restricted growing season, and the fragmented distribution render montane areas especially vulnerable;
- Overgrazing by sheep, goats and deer has caused the loss of much alpine and sub alpine dwarf shrub heath, scrub, herb rich vegetation and moss heath by conversion to grazing tolerant grasses. Sheep and deer tracks lead to erosion;
- Increasing recreational pressure from walkers causing damage to the fragile vegetation and soils. Access by estate tracks leads to erosion in places. On the Isle of Arran the creation of cairns by hillwalkers appears to present a localised problem;



- Fires spreading from the sub montane zone causing destruction of soils and of vegetation;
- The long term effects of pollution such as acidification and global warming may result in the possible loss of species that are unable to recolonise;
- Wind farm and other developments such as radio masts causing erosion due to infrastructure workings.

Opportunities and Current Action

- Stock reduction prescriptions exist under current agriculture and environment schemes such as the RSS.
- Forest Design Plans are lowering the upper forest margins where appropriate and creating opportunities for the establishment of intergrade habitats between high moorland and montane habitats.
- Management works by NTS and the Arran Access Trust in north Arran to prevent erosion and recreational damage to sensitive habitats. There is a need to develop techniques to establish appropriate high level paths on ridges which lead to the prevention of erosion in these areas.
- Integration of the protection of montane habitats needs to take place within programmes to extend cycleway and footpath schemes.
- The NTS have identified the need to monitor summit heath vegetation on the Isle of Arran in the 1998-2003 workprogramme.



Key Contacts

Simon Zisman
 RSPB South and West Region, Unit3.1
 West of Scotland Science Park, Kelvin Campus,
 Glasgow. G20 OSP. Tel: 0141 576 2616
 E-Mail: simon.zisman@rspb.org.uk

Further Information

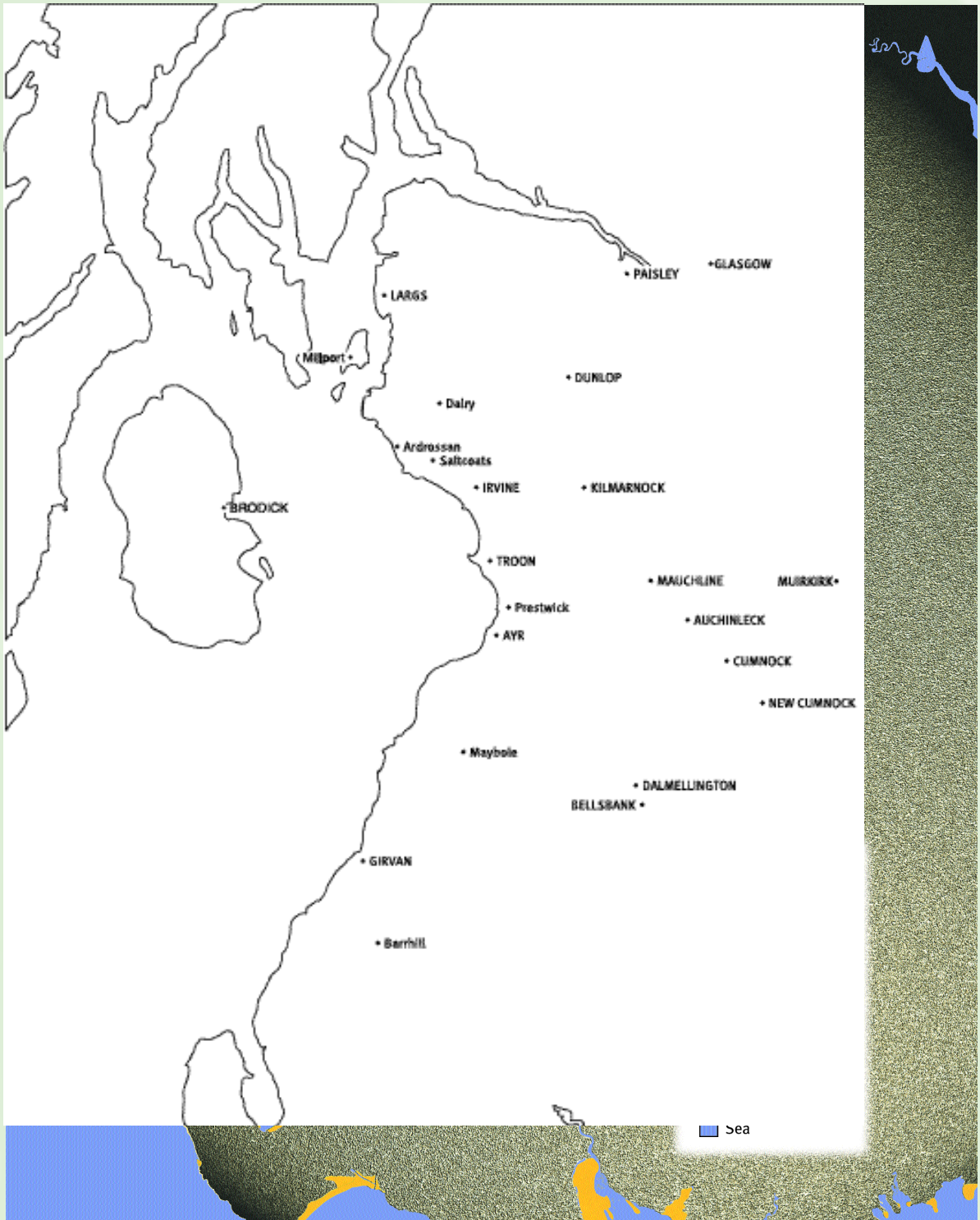
SNH Ayr 01292 261392
 NTS (Arran) 01770 302462
 Clyde Muirshiel Regional Park 01505 614791
 FWAG Ayrshire 01292 290065

Further Reading

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ACTIONS Montane habitat	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY)					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Complete the notification of any proposed Natura 2000 sites which include montane habitat	SNH			•				
Using results of survey and monitoring (see research and monitoring below) seek to establish a planning strategy to ensure that development in vulnerable areas can only proceed where it can be demonstrated there is no significant adverse effect on the habitat.	AJSP ALA			•	•	•	•	•
Following a detailed survey of montane sites in the region (see research and monitoring) designate important sites as Wildlife Sites and incorporate them into the planning system.	ALA SNH SWT			•				
Site Safeguard and Management								
Within the planning context, ensure that full consideration is given to the value of the habitat when considering proposed developments which threaten loss or damage to the habitat. Where development is liable to proceed, endeavour to minimise any adverse effects through the use of planning conditions and agreements.	All		•	•	•	•	•	•
Complete and maintain active, current management plans for areas designated SSSI	SNH SLF			•	•	•	•	•
From results of grazing survey (see research and monitoring) develop a strategy to identify priority areas which might respond to a reduction in grazing pressure.	SERAD SAC FWAG SNH	NTS FE SLF			•			
Encourage landowners to actively manage deer populations in montane areas.	DCS SNH	SLF	•	•	•	•	•	•
Develop a management policy for feral goats.	FE SNH	SLF		•				
From survey identify areas most vulnerable to recreational disturbance	SNH SWT RSPB	NTS FE		•				
Ensure that organised events are excluded from vulnerable zones (eg. mountain marathons, orienteering etc.)	SNH FE	NTS SLF		•	•	•	•	•
Ensure that Galloway Military Training Area excludes vulnerable zones, and that HMS Gannet search and rescue excludes vulnerable zones whilst training on the Isle of Arran	MOD	FE NTS		•	•	•	•	•
Where appropriate seek to restore EU priority habitats (eg Rhacomitrium heath) to natural grazing.	SNH			•	•	•	•	•
Consider whether any reintroduction programmes for species of local conservation concern are feasible and/or desirable.	SNH RSPB	SWT		•				
Advisory								
Promote the use of agriculture and environment schemes (ESA/CPS/RSS) to encourage appropriate grazing regimes on montane sites.	SERAD SAC FWAG		•	•	•	•	•	•
Research and Monitoring								
Survey the extent of montane habitat and status of grazing regimes in Ayrshire.	SNH ALA	SWT		•				
Agree the important areas of montane habitat with best examples of near natural vegetation mosaics.	ABG SNH	SWT		•				
Identify the grazing regimes used to manage the best examples of montane habitat.	ABG SERAD SNH			•				
Establish a 10 yearly programme to measure the extent of EU priority habitat types in the montane zone.	SNH							•
Extend the Moorland Birds Survey to establish the number and distribution of montane zone breeding waders and assess changes at five yearly intervals.	SNH RSPB			•				
Monitor the delivery of the Plan yearly and in detail every five years, starting in 2002.	ABG			•	•	•	•	•
Contribute information to the Ayrshire Biological Records Centre and ensure that all relevant information is collated and held there.	ABRC All			•	•	•	•	•
Communications and Publicity								
Raise public awareness of the importance of blanket bog habitats through the press, publications, and environmental education opportunities	all			•	•	•	•	•





Species Action Plans

AYRSHIRE LOCAL BIODIVERSITY ACTION PLAN

Northern Brown Argus

Corncrake

Brown Hare

Water Vole

Oyster Plant

Song Thrush

Lesser Whitethroat

Pipistrelle Bat

Hen Harrier

Black Grouse

Pink Meadowcap



Species Profile

UK Biodiversity Status:
Priority Species.

Ayrshire Status:

Ayrshire is nationally important for the conservation of this species.

Relevant Habitat Action Plans:

Upland oakwood, upland mixed ashwoods, wet woodlands, acid grassland, upland heathland, blanket bog, planted coniferous woodland, fen, carr, marsh, swamp and reedbed.

Statutory Protection:

Special protection under Annex 1 of the EC Birds Directive, Appendix II of the Bern Convention & Schedule 1 of the Wildlife and Countryside Act 1981.



Black Grouse (Tetrao tetrix)

Current Status

The black grouse is a bird of open woodland and moorland edges, found around the northern Palearctic (northern Europe to northern Asia). Fennoscandia and Russia contain the great majority of black grouse in Europe (around 90%) and elsewhere the species is less common particularly towards the western extremity of its range.

Black grouse numbers started to fall in the latter half of the 19th century, accelerating over 1970-1990 in almost all western, central and eastern European countries. In Denmark, Netherlands, Belgium and other areas, the species is practically extinct. Contraction in its range has led to regional extinctions elsewhere. Sweden is the only European country (for which information is available), where the population is currently increasing.

The population total for black grouse in Europe is between 580 000 and 2 000 000. In Britain, surveys carried out by the Royal Society for the Protection of Birds (RSPB), the Game Conservancy Trust (GCT) and Forest Enterprise (FE) show that the UK black grouse population fell from around 25 000 males in the early 1990s to an estimated 6 510 males in 1995/6. Continued monitoring of leks (areas where black grouse males gather at dawn to display in competition for female black grouse (grey hens) suggests that the current population could be as low as 4 500 males.

In England, birds are now restricted mostly to the North Pennines (about 700 males). The Welsh population is scattered and is approximately 160 males. The remainder of

the UK population (around 3 500 males) is spread widely, but thinly, mainly in suitable areas throughout Scotland. There are no black grouse in Ireland.

Existing count data is being collated to determine the trends in Ayrshire's black grouse population. By far the most comprehensive information comes from the Galloway Forest Park, where regular comprehensive surveys have been carried out by FE staff.

Although most estates operate a voluntary ban on shooting black grouse, it remains a quarry species, protected by the Game Acts with a closed season from 11 December to 19 August. It is also protected under Annex II/2 of the EC Habitats Directive and Appendix III of the Berne Convention.

Current Factors Causing Loss or Decline

The main reasons thought to have contributed to the decline of black grouse include:

- Loss, degradation and fragmentation of habitat through intensive sheep grazing, agricultural improvements, drainage and over-frequent burning;
- Changes in agricultural practices including the increased use of fertilisers, pesticides and herbicides, the loss of stubble fields and the re-seeding of traditional hay meadows and rough grazing;
- Canopy closure in afforested areas on poorer quality agricultural land;
- Increased numbers of predators such as foxes and crows, especially where black grouse numbers are already low;

Species Action Plan Objectives

Main Objective

Maintain and enhance the population and distribution of black grouse in Ayrshire.

Work Objectives

Objective 1

Establish the population and distribution of black grouse and identify trends in their numbers and range.

Targets

Survey black grouse leks in Ayrshire, aiming to consistently cover at least 25 sites each year by 2004.

Objective 2

Evaluate habitat quality around black grouse leks and identify opportunities for enhanced management and habitat creation.

Targets

Working with interested parties, examine the habitat around major leks by 2003;

Compile a detailed report on the location, population trends and habitat enhancement opportunities in East Ayrshire for black grouse by 2003.

Objective 3

Increase the availability of suitable habitat for black grouse.

Target

Secure the enhancement of habitat around at least 10 leks by 2005 and a further 15 by 2010;

Provide interested land owners with management plans for the enhancement of habitat.

Objective 4

Raise awareness about black grouse and their management needs.

Target

Share between interested parties information on habitat management to benefit black grouse.

Objective 5

Investigate the feasibility and appropriateness of re-introducing black grouse on Arran.

Target

Identify the causes of extinction on Arran and the extent of suitable remaining habitat by 2002.

Objective 6

Raise community awareness of black grouse.

Target

Ensure black grouse feature in wildlife events and education activities in Ayrshire.

- Poor weather conditions which can affect black grouse chick survival;
- Disease which can be a factor in local declines;
- Collisions with deer fences and other obstacles;
- Historical over-shooting and continued shooting in some areas;
- Human disturbance at lek sites.

Opportunities and Current Action

- Several black grouse recovery projects have been initiated in the UK with the support of conservation, forestry, farming and landowning bodies. Work aims to publicise the decline of black grouse numbers and to attempt to halt it by offering practical advice to landowners and farmers on habitat management;
- Agri-environment and woodland schemes can offer some funding for habitat improvements and creation;
- Some estates have introduced voluntary bans on shooting black grouse;
- Forest Enterprise are carrying out a comprehensive range of measures aimed at enhancing black grouse habitat. Annual lek surveys have also been undertaken for several years at the Galloway Forest Park;
- Consultation with private landowners and forestry companies aims to implement new forestry fencing guidelines, by sensitive location of new fences and fence marking.

References

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Birds in Europe: their Conservation Status.

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ACTIONS Black Grouse	POTENTIAL DELIVERERS		YEAR (TO BE COMPLETED OR IN PLACE BY)					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Support further protection of black grouse until a more viable population exists in the UK.	SERAD	RSPB SNH SWT	•	•	•	•	•	•
Ensure that the emerging Indicative Forest Strategy for Ayrshire takes full account of protecting black grouse habitat.	ALA SNH	RSPB FE FC	•	•				
Target black grouse as a priority within agri-environment and woodland planting schemes.	SERAD	FWAG SAC SNH RSPB	•	•	•	•	•	•
Obtain greater opportunities and resources for habitat management work to benefit black grouse.	SERAD	SNH RSPB SWT	•	•	•	•	•	•
Site and Species Safeguard and Management								
Ensure that full account is taken of black grouse and the need for their protection when considering development proposals and ongoing operations.	SNH	ALA RSPB SWT FE	•	•	•	•	•	•
Draw up black grouse management plans for nature reserves and key land-holdings with black grouse. In appropriate areas, encourage minerals companies to restore habitats to benefit black grouse.		FE FWAG RSPB Landowners	•	•	•	•	•	•
In appropriate areas, encourage minerals companies to restore habitats to benefit black grouse.	RSPB	ALA MinCo	•	•	•	•	•	•
Undertake a feasibility study of the re-colonisation of black grouse on Arran.	SNH	RSPB SOC FE Landowners FWAG	•					
Ensure guidance on deer fence marking is adhered to in black grouse areas.	FC	FWAG SAC SNH FE RSPB	•	•	•	•	•	•
Ensure that all relevant Forest Design Plans, Woodland Grant Schemes, Long-term Forest Plans etc. are sensitive to the requirements of black grouse.	ALA SNH	FE RSPB	•	•	•	•	•	•
Advisory								
Promote best practice in moorland management to owners and managers of moorland.	SNH	FWAG SAC RSPB GCT Heather Trust	•	•	•	•	•	•
Provide advice to landowners, managers and advisers on habitat preference and management prescriptions for black grouse through workshops.	RSPB	FWAG SAC SNH SERAD	•				•	•
Work with landowners to encourage voluntary bans on shooting black grouse on all estates.	GCT	RSPB	•	•	•	•	•	•
Research and Monitoring								
Confirm status of all known current lek sites by survey and continue to monitor.		ALL	•	•	•	•	•	•
Undertake habitat assessment within 1.5km core area of major lek sites to build into management plan.	RSPB	SNH MinCo FWAG SAC	•	•	•	•	•	•
Expand monitoring effort to include targeted management and recovery project especially linking current with historical lek sites.		ALL	•	•	•	•	•	•
Report any sightings of black grouse to the County Bird Recorder.		ALL	•	•	•	•	•	•
Monitor fences to check for collisions and report fence collisions to the forestry operator.			•	•	•	•	•	•
Monitor the delivery of this plan yearly and in detail every 5 years, starting in 2001.	ABG		•	•	•	•	•	•
Communication & Publicity								
Publicly promote the black grouse as a species in need of conservation assistance using press releases, articles, newsletters, talks etc.	RSPB	SNH FWAG SOC	•	•	•	•	•	•
Investigate the feasibility of setting up a public viewing site at a black grouse lek.	RSPB	ALA FE		•	•			