Effective delivery of biodiversity policy and action in the uplands of Scotland

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Glossary

ATV	**All Terrain Vehicle**
BAP	**Biodiversity Action Plan**
CAP	**Common Agricultural Policy**
CBD	**Convention on Biological Diversity**
CCW	**Countryside Council for Wales**
DEFRA	**Department for Environment, Food and Rural Affairs**
EN	**English Nature**
FCS	**Forestry Commission Scotland**
GFP	**Good Farming Practices**
HAP	**Habitat Action Plan**
LBAP	**Local Biodiversity Action Plan**
LFA	**Less Favoured Areas**
LFASS	**Less Favoured Areas Support Scheme**
LMC	**Land Management Contract**
NNRs	**National Nature Reserves**
NRA	**Nature Reserve Agreement**
NSA	**National Scenic Areas**
RSS	**Rural Stewardship Scheme**
SAC	**Special Area of Conservation**
SAP	**Species Action Plan**
SFGS	**Scottish Forestry Grant Scheme**
SFPS	**Single Farm Payment Scheme**
SFS	**Scottish Forestry Strategy**
SNH	**Scottish Natural Heritage**
SPA	**Special Protection Area**
SRDP	**Scottish Rural Development Programme**
SSSI	**Site of Special Scientific Interest**
SBS	**Scottish Biodiversity Strategy**
SBL	**Scottish Biodiversity List**
SEERAD	**Scottish Executive Environment and Rural Affairs Department**
UNFCCC	**UN Framework Convention on Climate Change**

Background

In Scotland, as much as 50% of the land may be considered upland and, for many generations, the biodiversity of the uplands has underpinned the rural economy of much of the country. Economic and social forces have shaped the uplands in the past and continue to do so in the present. The biodiversity of the uplands is part of an intricate web of social, economic and environmental issues. Consequently it is influenced by a wide array of European and national policies. Furthermore, the infrastructure for the statutory delivery of biodiversity objectives for the UK as a whole is multi-layered, with national, regional, and local components.

In addition to the plethora of policies that currently impinge on the delivery of biodiversity objectives in the uplands, there are several characteristics of uplands that pose particular opportunities and constraints for action for biodiversity. Firstly, processes operate at a large scale. Upland habitats cover very large areas and the factors that influence them, such as grazing and pollution, are widespread rather than localised. Secondly, the uplands are sparsely populated and do not benefit from a coherent public lobby. Thirdly, the uplands are largely privately owned and non-designated, and therefore constitute part of the wider countryside over which there is limited public sector control.

Under these conditions, effective delivery of biodiversity objectives requires clear goals, good integration of policy and processes, appropriate fora for action, and high levels of communication and co-operation between stakeholders.

In 2005, a number of stakeholders agreed that a review of the effectiveness of biodiversity policy and action for the uplands of Scotland was required. This review was to have two main components.

1. A summary of all of the important policies that influence biodiversity in the uplands and analysis of their complementarities and potential conflicts.
2. A survey of expert opinion on issues relating to the effective delivery of biodiversity policy and action.

For the purpose of this study, uplands include areas above the upper edge of enclosed agricultural land (including the three priority upland habitats under the UK Biodiversity Action Plan: blanket bog, upland heathland, upland calcareous grassland), together with adjacent ecosystems such as montane heaths and montane scrub, and the ecotone areas of upland woodlands. However, it is recognised that, in some cases, the effective delivery of biodiversity policy may require consideration of activities in lower-altitude ecosystems.

PART I: COMPILATION OF DOCUMENTS

1. Introduction

The objective of the first part of this report is to inventory and critically analyse documents in order to identify existing and potential complementarities in terms of action and reporting. Furthermore it also aims to consider how various drivers might differently impact designated and non-designated sites.

The contents of the reviewed documents were scanned for issues relevant to biodiversity and the uplands. The following text therefore does not give a comprehensive summary of each document but specifically points out which sections are relevant for the further development of this study. This work was completed in mid-2006 and therefore does not take subsequent changes to policy into account.

2. Global Policies

2.1. The Convention on Biological Diversity

At the 1992 UN Conference on Environment and Development, or 'Earth Summit' in Rio de Janeiro, world leaders agreed on a comprehensive strategy for "sustainable development". One of the key agreements adopted at Rio was the Convention on Biological Diversity (CBD). *The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources* (CBD 2001-2005a). Article six of the convention urges the contracting parties to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.

At its seventh meeting, the Conference of the Parties to the CBD (COP 7) took into account the importance of mountain ecosystems as biodiversity hotspots and source of life for 22 per cent of the world's people and adopted a **programme of work on mountain biological diversity** in order to address characteristics and problems that are specific to mountains (CBD 2001-2005b).

2.2. The UN Framework Convention on Climate Change

The UN Framework Convention on Climate Change (UNFCCC) sets an overall framework for intergovernmental efforts to confront the challenge posed by climate change. Its objective is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. "Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner" (UNFCCC 1992:9).

In Article 4 of the Convention, the national Parties are asked to promote and adopt national policies to enhance greenhouse gas sinks and reservoirs, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems. Consequently, the preservation of peatlands, moors and bogs - all important upland ecosystems - together with afforestation would support the UK's efforts to implement the Convention.

3. European Policies

3.1. Nature and Biodiversity Protection in Europe

The first pan-European step towards the conservation of species and habitats was achieved in 1979, through the **Bern Convention** on the conservation of European wildlife and natural habitats by means of cooperation between States. In the same year, the **EC Birds Directive** (79/409/EEC) was passed in order to implement the Bern Convention. This Directive protects all wild birds, their nests, eggs and habitats within the European Community, with certain exceptions to allow for legal hunting and pest control. It gives EU Member States the responsibility to classify **Special Protection Areas (SPAs)** to protect birds which are rare or vulnerable in Europe, as well as migratory birds which are regular visitors. In Scotland, there are 139 sites classified as SPAs, covering a total area of approximately 612,000 hectares (Scottish Natural Heritage (SNH) 2006b). According to Robinson (2002), 27% of Scotland's SPAs are in mountain areas as defined by Kapos et al. (2000), and cover 6.1% of their area. Examples of SPAs which are situated in uplands include areas on Ben Alder or Ben Wyvis.

In 1992, the European Community adopted the **EC Habitats Directive** (92/43/EEC). The provisions of this Directive require Member States to introduce a range of measures including the protection of species and to undertake surveillance of habitats and species and produce a report every six years on the implementation of the Directive. The Directive gives the EU Member States the responsibility to classify **Special Areas of Conservation (SACs).** The Annexes of the Directive list Habitats and Species of Community Interest. Scotland has 65 of the 195 priority habitats for conservation listed in the Directive. In March 2005, 238 SACs were located in Scotland covering approximately 963,000 hectares (SNH 2006a). According to Robinson (2002), 42% of Scotland's SACs are in mountain areas as defined by Kapos et al. (2000), and cover 5.4% of their area. Distinctive upland habitats include: Caledonian forest, Alpine and boreal heaths, *Juniperus communis* formations on heaths or calcareous grassland, alpine and subalpine calcareous grasslands, siliceous alpine and boreal grasslands, species-rich *Nardus* grasslands on silicious substrates in mountain areas, mountain hay meadows, blanket bog, and Alpine pioneer formations of *Caricion bicoloris-atrofuscae*.

All SACs and SPAs are underpinned by the UK **Site of Special Scientific Interest (SSSI)** designation in the terrestrial environment and form the **NATURA 2000 network** of sites. Scottish Natural Heritage (SNH), under its **Natural Care Strategy**, is creating appropriate positive management of SSSI and NATURA sites. Another

mechanism to manage SACs is through partnership projects under the **European LIFE-Nature fund**. Currently there are two EU LIFE Nature Projects concerning uplands ongoing in Scotland: one on Scotland's Caledonian Forests and one on restoring active Blanket Bog in the North of Scotland.

Natura 2000 is a European network of more than 7000 protected sites which represent areas of the highest value for natural habitats and species of plants and animals which are rare, endangered, or vulnerable in the European Community. Member States must take all the necessary measures to guarantee the conservation and avoid deterioration of selected sites.

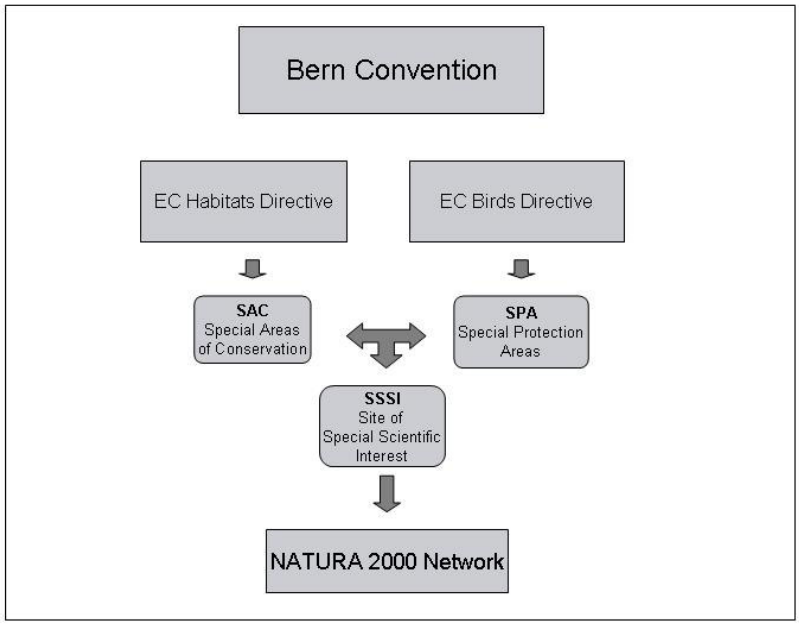

Figure 1: The interrelation of policies and protected area systems in the European Union

In 1998, as a major step towards the implementation of the CBD, the European Union adopted the **European Biodiversity Strategy** which aims to anticipate, prevent, and attack causes of significant reduction or loss of biological diversity at the source and to ensure the integration of biodiversity concerns into other policy areas (especially rural development and agriculture). The Strategy promotes and supports low-intensity agricultural systems, particularly in high natural value areas and the further development of agri-environment measures to optimise benefits for biodiversity. It recommends paying particular attention to unprotected, sensitive areas with high levels of biodiversity such as mountains, coastal areas and islands. Furthermore, it advocates that tourism activities which directly or indirectly contribute to the conservation and sustainable use of biodiversity should be promoted (EU 1998).

3.2. The Common Agricultural Policy

Through the Common Agricultural Policy (CAP), the European Union set up measures in support of biodiversity in areas managed for agriculture, to contribute to

reaching the 2010 Biodiversity Target of the CBD of halting the loss of biodiversity. The EC **Biodiversity Action Plan for Agriculture** which was adopted in 2001 is aiming at establishing an action plan to improve or maintain biodiversity status and prevent further biodiversity loss due to agricultural activities. Since then, agri-environment measures to preserve biodiversity have been implemented in most Member States, for example, by reducing or phasing out the use of fertiliser and pesticides, maintaining crop rotation, and reducing grazing pressure.

The CAP includes a **Less Favoured Areas Support Scheme (LFASS)** which supports farmers who have to cope with natural handicaps, e.g. steep terrain in mountainous areas. Farmers in Less Favoured Areas (LFA) are eligible for subsidies to compensate them for the additional costs they face. These payments now also take into account the role LFA farmers play in looking after the natural landscape. Farmers in areas subject to restrictions on agricultural use as a result of implementation of EU environmental protection rules (e.g. NATURA sites) can also benefit from payments intended to compensate for the additional costs and income losses linked to these constraints. Eighty-five percent of agricultural land of rural Scotland lies within Less Favoured Areas (Scottish Executive 2006a).

4. UK Policies

4.1. The UK Biodiversity Action Plan

The UK Biodiversity Action Plan (BAP) is the UK Government's response to the CBD. Article six of the CBD specifically requests each contracting party "to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity (…)" and to "integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies" (CBD 1992).

The objective of the UK BAP is to conserve and enhance biological diversity within the UK and contribute to global conservation. The Plan includes 391 Species Action Plans (SAPs), 45 Habitat Action Plans (HAPs) and 162 Local Biodiversity Action Plans (LBAPs) with targeted actions (Joint Nature Conservation Committee 2006). A special section of the UK BAP is dedicated to upland habitats. The Plan defines uplands as areas that are situated above enclosed farmland. Using this definition, about 30% of the land surface of Britain is defined as uplands and about 3% of the land surface is montane, i.e., above the potential tree line (at about 700 m). Much of this area is farmed as rough grazing (principally by sheep). Originally the lower zones were wooded, however most of the woods were lost during the course of history as a result of grazing and burning. Today, heather moorland, moorland and acid grassland are the major upland habitats. In poorly drained parts of the sub-montane zone, there are extensive blanket bogs. Upland areas support a unique assemblage of breeding birds including Golden Eagle, Peregrine, Raven, Ptarmigan and Red Grouse which breed in high numbers (Joint Nature Conservation Committee 2006). The Plan also states that upland habitats are endangered or under stress by increased recreational

access, unsustainable burning methods, drainage of moorland, replacement of moorland through conifer plantations and overgrazing through sheep and deer.

Specific actions and targets for the conservation and enhancement of biological diversity within the UK are featured in the respective HAPs, SAPs and LBAPs.

4.2. Relevant Habitat Action Plans for uplands

The UK BAP includes 42 Habitat Action Plans (HAPs) of which 9 concern upland and adjacent forested habitats. For every HAP there is a Lead Partner who takes responsibility for co-ordinating the work required to plan, monitor and review progress with the implementation of the Plans. The UK BAP distinguishes between priority habitats and broad habitats. The habitats below are present in the Scottish uplands:

Priority Habitats:

- **Blanket Bog** (Lead Partner: SNH)
- **Native Pine Woodlands** (Lead Partner: FCS)
- **Upland calcareous grasslands** (Lead Partner: Countryside Council for Wales (CCW))
- **Upland hay meadows** (Lead Partner: DEFRA)
- **Upland heathland** (Lead Partner: English Nature (EN))
- **Upland mixed ashwoods** (Lead Partner: FCS)
- **Upland oakwood** (Lead Partner: FCS)

Broad Habitats:

- **Acid Grassland** (Lead Partner: EN)
- **Montane Habitats** (Lead Partner: Not Known)

The following issues are discussed in every HAP and SAP: current status and condition of the habitat; current factors affecting the habitat; current action; action plan objectives and targets; proposed action with lead agencies; costing; key references; lead partner(s) and local implementation.

4.3. Relevant Species Action Plans for uplands

The UK BAP includes 391 SAPs, which give an overview of the status of species and broad policies developed to conserve them. There is a UK SAP for the following species which occur in Scottish uplands:

Birds:

- **Scottish Crossbill (*Loxia scotica*)** (Lead Partner: Royal Society for the Protection of Birds (RSPB))
- **Black Grouse (*Tetrao tetrix*)** (Lead Partners: RSPB, Game Conservancy Trust)

- **Common Scoter (*Melanitta nigra*)** (Lead Partners: RSPB, Waterfowl and Wetlands Trust)
- **Skylark *(Alauda arvensis)*** (Lead Partner: RSPB)

Vascular Plants:

- **Marsh Clubmoss (*Lycopodiella inundata*)** (Lead Partner: Plantlife)
- **Woolly Willow (*Salix lanata*)** (Lead Partner: National Trust for Scotland (NTS))
- **Oblong Woodsia (*Woodsia ilvensis*)** (Lead Partner: Royal Botanic Garden, Edinburgh (RBGE))
- **Juniper (*Juniperus communis*)** (Lead Partner: Plantlife)
- **Newman`s Lady Fern (*Athyrium flexile*)** (Lead Partner: SNH)
- **Mountain Scurvy-grass (*Cochlearia micacea*)** (Lead Partner: Plantlife)

Liverworts:

- **Stabler`s rustwort (*Marsupella stableri*)** (Lead Partner: Not Known)
- **Northern Prongwort (*Herbertus borealis*)** (Lead Partner: SNH)

Mosses:

- **Icy Rock Moss (*Andreaea frigida*)** (Lead Partner: RSPB)
- **Scottish Beard-moss (*Bryoerythrophyllum caledonicum*)** (Lead Partner: NTS)
- **Perthshire Beard-moss (*Didymodon mamillosus*)** (Lead Partner: SNH)
- **Slender Green Feather-moss (*Hamatocaulis vernicosus*)** (Lead Partner: CCW)
- **Hair Silk-Moss (*Plagiothecium piliferum*)** (Lead Partner: Not Known)
- **Baltic Bog-Moss (*Sphagnum balticum*)** (Lead Partner: Plantlife)

Lichens:

- **Snow Caloplaca (*Caloplaca nivalis*)** (Lead Partner: Not Known)
- ***Halecania rhypodiza*** (Lead Partner: NTS)
- ***Alectoria ochroleuca*** (Lead Partner: RSPB)
- ***Bellemerea alpina*** (Lead Partner: Not Known)
- **Stump Lichen (*Cladonia botrytes*)** (Lead Partners: RSPB, RBGE)
- ***Cladonia peziziformis*** (Lead Partner: Plantlife)
- ***Gyalideopsis scotica*** (Lead Partner: SNH)
- ***Hypogymnia intestiniformis*** (Lead Partner: Not Known)
- **Alpine Moss Pertusaria (*Pertusaria bryontha*)** (Lead Partner: Not Known)

Many of these species are addressed within the Scottish Local Biodiversity Action Plans (LBAPs).

4.4. The Biodiversity Action Reporting System

"The Biodiversity Action Reporting System (BARS) is a web-based information system that supports the planning, monitoring and reporting requirements of national and local Biodiversity Action Plans (BAPs)" (BARS 2006). It records information on BAP implementation, targets, status and trends. Currently the targets of the UK HAPs and SAPs are being reviewed and updated, as some of them are no longer adequate either because they are time-bound or because they were never quantitative and therefore difficult to measure. The actions are not being changed.

Every three years, a reporting cycle takes place in order to assess progress towards targets set in the HAPs, SAPs and LBAPs. Previous rounds were held in 1999 (without BARS), 2002 and 2005. Through these reporting exercises large knowledge gaps could be discovered. However, very little information overall is available outside designated sites. This is particularly a problem in the uplands where monitoring and reporting over vast areas is difficult and very cost intensive.

5. Scottish Policies

5.1. Policies and Plans managed by the Scottish Executive

The following section discusses documents produced by the Scottish Executive which are relevant to biodiversity management in uplands. These include not only plans and strategies which directly address biodiversity issues but also other documents such as rural development plans and agricultural policies which have indirect influences on the management of Scottish biodiversity.

5.1.1. "Scotland's Biodiversity, it's in your hands"

The Scottish Biodiversity Strategy

The Scottish Biodiversity Strategy (SBS), published in 2004, pursues the vision that in 2030 "Scotland is recognised as a world leader in biodiversity conservation. Everyone is involved; everyone benefits. The nation is enriched" (Scottish Executive 2004c:11). The overall objective of the Strategy is to "conserve biodiversity for the health, enjoyment and wellbeing of Scotland now and in the future" (Scottish Executive 2004c).

In order to achieve this ambitious vision the SBS foresees an agenda of actions for the coming 25 years. The required actions are composed of the following five themes: Habitats and Species; People; Landscapes and Ecosystems; Integration and Coordination; Knowledge.

The aim for the year 2030 concerning species and habitats is not only to halt their loss but also to increase their number and range. Comprehensive monitoring systems will be needed in order to secure an accurate assessment of the state of the biodiversity. Of special importance will be the improvement of the co-ordination and management of the LBAP network as well as the co-ordination of LBAPs with national biodiversity

objectives. Better planning, design and practice will be decisive to restore and enhance biodiversity in urban, rural and marine environments. Of crucial importance will be to maximise habitat linkage and minimise further fragmentation. The involvement of all stakeholders, including local people, land managers, local authorities, Government Departments and Agencies, higher education and research institutions, NGOs, the media and businesses will be the key of success for the strategy.

The priority actions and targets of the SBS are identified in the Strategy Implementation Plans which are published every three years.

Strategy and Implementation Plans 2005 – 2007

The first implementation plans prepared by the Scottish Biodiversity Forum were published in 2005. These plans which will be implemented by a wide range of organisations across Scotland cover three broad sectors: 1. Rural 2. Urban 3. Marine.

Uplands are addressed in the rural sector of the implementation plans. The vision for uplands and mountains given in the plan is to "enhance the ecological resilience and natural processes operating at a landscape-scale in order to maintain or enhance mosaics of semi-natural upland habitats that will be able to adapt to climate change and socio-economic change and still retain their characteristic species" (Scottish Biodiversity Forum 2005: 32).

Most of the uplands are covered by the UK HAPs for montane heath, blanket and raised bog, upland heath and calcareous grassland. The achievement of the upland HAP targets and designated area objectives will be crucial for the enhancement of upland habitats and species. According to Sally Johnson, upland network officer of JNCC, uplands are still in an "unfavourable" condition which is mainly caused by heavy grazing pressure and in some cases under-grazing, burning, lack of management, agricultural operations and recreational activities. The challenge for the future will therefore be to find ways to manage uplands on a large enough scale and to encourage land-managers to adopt best practice that sustainably uses, while at the same time conserves, biodiversity. Rural Stewardship Schemes, Natural Care incentives and EU LIFE funds are important tools to meet this challenge.

The specific targets for uplands listed in the current Rural Implementation Plan (Scottish Biodiversity Forum 2005: 37-49) are:

- 2.6: Develop targeted information programmes for local communities and the wider public (visitors and off site) on the biodiversity values of uplands and how individual and community actions can contribute to or decrease the effectiveness of biodiversity conservation;
- 2.7: Develop an approach among colleges and universities to create greater awareness among future land managers, researchers etc of upland and mountain issues in Scotland;
- 5.8: Develop and disseminate best practice in the business uses of moorland, including moorland management;
- 5.9: Research to understand the nature of environmental change affecting biodiversity values in the uplands (especially grazing intensity by different

species, restoration climate change) within a full range of socio-economic aspects; and to develop methods for adaptive management to achieve biodiversity goals (including definition of appropriate levels of management).

At the end of each three-year cycle of the implementation plans, i.e. in January 2008 for the current plans, Scottish Ministers have to report on the implementation of the Strategy to the Scottish Parliament.

The Scottish Biodiversity List

The Nature Conservation (Scotland) Act 2004 required the creation of a list of species of flora and fauna and habitats of principal importance for biodiversity conservation in Scotland. The Scottish Biodiversity List (SBL), published in December 2005, contains 2180 species and habitats. The criteria for selecting these species and habitats embrace: species which are internationally protected, all species and habitats defined as nationally rare, all UK priority species and habitats that are present in Scotland, species in Scotland which are declining and species or habitats which are unique or significant in Scotland (including endemic species). Introduced species were excluded from the list. Additionally, social criteria based on a household survey have been considered. In this social survey on the importance of Scottish habitats and species the interviewed members of the public ranked 'mountains' as number one among Scottish habitats. The SBL is being promoted as "a tool for public bodies and others doing their Biodiversity Duty and is an important source of information and guidance for all" (Scottish Biodiversity Forum 2006).

5.1.2. Rural development policies

The Rural Development Programme for Scotland 2007-2013. The Strategic Plan

The **Scottish Rural Development Programme** (**SRDP**) for 2007 – 2013 is currently in development. The Strategy will form part of the **UK National Strategy Plan** and aims at guiding the use of funds from the European Union (EU) and other sources for the positive rural development in Scotland. The three themes proposed for the strategy are:

Theme 1	Underpinning performance and quality in the agriculture, food processing and forestry sector
Theme 2	Enhancing rural landscapes and the natural heritage
Theme 3	Promoting a more diverse rural economy and thriving rural communities.

The following paragraphs focus on Theme 2, which is of greatest relevance for upland areas.

The strategy is supposed to meet international commitments including halting the loss of biological diversity under the EU Habitats Directive, the EU Water Framework Directive and contributing to the Kyoto climate change agreement. Proposed actions for the halt of biodiversity loss include:

- Scotland's natural resources should be conserved or enhanced for the long term with biodiversity as an integral component of actions across rural Scotland
- Monitoring and promoting sustainable farming, encouraging livestock and cultivation practices that conserve soils as landscape and conservation assets
- Achieving and maintaining favourable condition of designated sites (SSSIs, Natura, Ramsar) and undertaking targeted actions elsewhere
- Improving habitat networks
- Addressing threats to biodiversity from climate change
- Enhancing woodland management for biodiversity

In this strategy, upland issues are only approached indirectly. However, uplands form a very distinctive part of Scotland's natural and cultural heritage; biodiversity and landscapes are viewed as the main drivers behind a successful and growing tourism industry in rural Scotland.

Proposed actions concerning the sustainable development of rural Scotland which also apply to uplands are:

- Conserving and enhancing the distinct identity, the diverse character and special qualities of Scotland's landscapes
- Safeguarding and enhancing the distinct cultural and historic identity of each area
- Tackling climate change by enhancing the significant role played by carbon sinks in Scotland (e.g. by conserving moors and by woodland planting).

5.1.3. Agri-environmental plans and policies

Agri-environment schemes "are designed to encourage farmers and crofters to manage their land for the benefit of Scotland's wildlife and habitats". Besides contributing to the preservation of biodiversity, the schemes also help support local communities in Scotland's rural areas (Scottish Executive 2006c).

"A Forward Strategy for Scottish Agriculture"

"A Forward Strategy for Scottish Agriculture" was published in 2001 and is currently being revised. It sets out action points for moving towards a better future for agriculture in Scotland. Its vision states that, apart from producing high quality food and being a driver for rural development, the farming industry should be a leading player in the protection and enhancement of the environment. Scottish agriculture contributes to the positive social and environmental development of the country. Many of the priority species and habitats of the UK BAP depend on agricultural land and on-going agricultural management of the land. The introduction and implementation of agri-environmental schemes should benefit economic, social and environmental aspects of sustainable development of the country.

However, the challenge for the coming years will be for the farming industry to remain competitive while at the same time environmentally sustainable. The Strategy therefore calls for the development of new farming practices which are both beneficial to the environment and cost-effective (Scottish Executive 2001).

The Forward Strategy does not include any specific upland biodiversity issues, yet, the announced implementation of certain agri-environmental measures is intended to benefit upland habitats as they will release them from grazing pressure.

The Rural Stewardship Scheme

"The Rural Stewardship Scheme (RSS), which is part of the Scottish Rural Development Plan, provides assistance to encourage farmers, crofters and common grazing committees to adopt environmentally friendly practices and to maintain and enhance particular habitats and landscape features" (Scottish Executive 2005a). Participating farmers must agree to manage the relevant areas of land and carry out the relevant capital works in line with the rules and conditions of the Scheme. There are various management options farmers can choose from.
The following paragraphs refer to a book published by the Scottish Executive (2004a).

Part one of the book provides general information about the Scheme; part two concerns general environmental requirements farmers must meet under the Scheme. The RSS is subject to the European Commission's **Standard of Good Farming Practices** (GFP). This means that farmers must ensure that livestock is managed in a way that avoids either overgrazing or undergrazing on rough grazings, unimproved grassland, reverted improved grassland, machair and dune grassland, wetlands and native, amenity or semi-natural woodlands. Furthermore, undertaking new drainage works, ploughing, clearing, levelling, re-seeding or cultivating in the mentioned areas is forbidden. Reduced grazing pressure could specifically benefit environmentally-sensitive upland habitats.

Part three of the book describes different land management options under the RSS. It provides information on the land that is eligible and the management requirements farmers must follow in order to receive assistance under the Scheme. Several of these options concern upland habitats and species, e.g., prescriptions for breeding sites of skylarks; for the management of species-rich areas, such as species-rich grassland and upland hay meadows; for the management of moorland, including upland heathland; for wetland management; and for woodland (native and semi-native woodlands), including upland oakwood and native pine woodlands. Part four of the book describes additional options on capital work to the benefit of other habitats such as black grouse breeding areas.

It is likely that the RSS will be subsumed within Tier 3 of the Land Management Contracts (see below).

Less favoured Areas (LFA) Support Scheme

"The Less Favoured Areas Support Scheme (LFASS) is a payment per hectare of land which provides support for certain eligible farming activities. Its objectives are to

ensure continued agricultural land use, to maintain the countryside, to maintain and promote sustainable farming systems and contribute to the maintenance of a viable rural community" (Scottish Executive 2005b). The LFASS replaced the Hill Livestock Compensatory Allowance Scheme (HLCA) and is very important for the sustainable management of Scottish upland areas.

Only farmers whose forage land has been classified as disadvantaged or severely disadvantaged within the designated Less Favoured Areas (LFA) in Scotland are eligible for subsidies to compensate them for the additional costs they face which emerge from natural handicaps, e.g. farmers whose land is on steep terrain in mountainous areas are specifically benefited by the Scheme. Since 2000, payments have been made on an area basis and no longer on a headage basis. The payment rates depend on the location of the main farm and the grazing category of the land (Scottish Executive 2006b).

The LFASS is very important for much of rural Scotland given that 85% of agricultural land lies within Less Favoured Areas. It is consequently critical to maintain agricultural activities in these areas from which environmental, economic and social benefits flow (Scottish Executive 2006a).

Like the RSS, the LFASS is subject to the Standard of GFP which implies that scheme participants are obliged to manage their stock in such a way as to prevent damage to sensitive habitats that are important for biodiversity reasons. Examples which concern uplands are juniper and montane scrub, already eroded areas and wetland habitats. Where overgrazing is identified, a management regime including a maximum (and where appropriate a minimum) stocking rate will be prescribed (Scottish Executive 2004a).

The Single Farm Payment Scheme

The Single Farm Payment Scheme (SFPS) is part of the CAP Reform arrangements announced in February 2004. The Scheme aims at decoupling support from production, which means that the subsidies that farmers receive will no longer be linked to the level of production. The SFPS replaced the existing direct, main support schemes.

In order to be eligible for this Scheme, farmers and crofters must meet the requirements of Cross Compliance[1] which include a) maintain their land under **Good Agricultural and Environmental Condition (GAEC)** and b) respect regulations relating to public, animal and plant health, environmental protection and animal welfare.

a) Managing the Land under Good Agricultural and Environmental Conditions means:

- protecting the soil from erosion;
- maintaining organic matter levels in the soil;

[1] ***Cross Compliance*** *means the conditions that a producer must respect (maintain their land in good agricultural and environmental condition and respect regulations relating to public, animal & plant health, environmental protection and animal welfare) in return for support under the SFPS (Scottish Executive 2004b).*

- maintaining soil structure; and
- ensuring a minimum level of maintenance for, and avoiding the deterioration of, habitats.

b) The EC Birds and Habitats Directive, the EU Groundwater regulations as well as the EU legislation on the Identification and Registration of livestock apply to this Scheme.

The SFPS is not subject to the stricter rules of the Standard of GFP. The GAEC does include looser provisions on stocking densities which could have negative effects on upland habitats and species (Scottish Executive 2004b). There are no specific upland issues addressed through this Scheme.

Land Management Contract Schemes

The Land Management Contracts (LMCs) Scheme is another outcome of the CAP reform. It is a system of support, which makes payments to farmers for the delivery of environmental, social and economic benefits. The full introduction of the Scheme is planned for 2007. The model of the LMCs is based on a three Tier structure: Tier 1 is an annual payment for "delivering a broad range of benefits from farming in accordance with good farming practice". Tier 2 is an additional annual payment "for delivering different combinations of economic, environmental or social benefits" and Tier 3 is a further payment "to reward more specific, possibly farm specific, benefits than Tier 2"(Scottish Executive 2004). For Tier 2 a menu of options is currently available from which farmers can chose depending on the circumstances of their individual farm. Currently the Scheme offers 17 different options. Tier 3 was still under development at the time of writing this report but it is understood that this will also operate on the basis of a menu of options.

5.1.4. National Planning Policy Guidelines 14: Natural Heritage

The National Planning Policy Guidelines 14 (NPPG 14) gives guidance on how the Government's policies for the conservation and enhancement of Scotland's natural heritage[2] should be reflected in land use planning (Scottish Executive 1999).

This document stands within the Framework of the CBD. Its commitments are reflected in the UK and Scottish programmes for sustainable development. The Scottish Government aims at an integrated approach of conservation of the natural heritage which recognises that the environmental, economic and social dimensions of life are intimately inter-related and equally important.

The Government's objectives for Scotland's natural heritage are to conserve, safeguard and, where possible, enhance:

- the overall populations and natural ranges of native species and the quality and range of wildlife habitats and ecosystems;

[2] Scotland's natural heritage includes its plants and animals, its landforms and geology, and its natural beauty and amenity.

- geological and physiographical features;
- the natural beauty and amenity of the countryside and the natural heritage interest of urban areas; and
- opportunities for enjoying and learning about the natural environment.

In order to achieve these objectives, co-operation and partnership between public agencies, local communities and the private and voluntary sector are seen as crucial. SNH is defined as the responsible agency for consulting and advising central and local governments on all aspects of Scotland's natural heritage.

The government is committed to conserve and enhance Scotland's varied landscapes and biodiversity. The document encourages planning authorities to make an important contribution to the achievement of biodiversity targets by adopting policies which promote and afford protection to species and habitats identified as priorities in LBAPs. Furthermore, planning authorities are advised to prevent further fragmentation and isolation of habitats.

The NPPG gives guidelines for the management of National Scenic Areas (NSAs), National Parks, SSSIs, National Nature Reserves (NNRs), Ramsar Sites, and Natura 2000 areas. Furthermore, the Plan stresses that natural heritage is not confined to designated areas but goes beyond them. Consequently, conservation and enhancement activities should also concentrate on habitats outside designated sites including unimproved grasslands and herb-rich meadows, heaths and peatlands which might be of value for habitat networks. Additionally, the document gives special guidance for the management of woodlands, lochs, ponds and wetlands.

At the end of the document, the function and action of Development Plans including Strategic Plans and Local Plans, in order to achieve national and local targets are defined. NPPG 14 does not include any specific upland biodiversity conservation issues.

5.2. Policies and Plans administered by the Forestry Commission Scotland

5.2.1. The Scottish Forestry Strategy

The first Scottish Forestry Strategy (SFS) was published in 2000. This strategy has now been revised and a new draft version of the SFS was published in March 2006. The following paragraphs refer to the Draft SFS (Forestry Commission Scotland 2006)[3].

One of the key themes addressed by the new SFS is biodiversity. The SFS 2006 is supporting the aims of the Scottish Biodiversity Strategy and is taking into account the proposed actions and targets of the LBAPs. The SFS recommends that biodiversity should be taken into account in all decision making and increased awareness and understanding of the importance of biodiversity should be generated

[3] The final version of the Scottish Forestry Strategy 2006 has subsequently been published.

among all different sectors of the society. Importantly, the SFS aims to protect and expand the remaining ancient woodland communities. Currently 29% of the Scottish woodlands are native, in 2025 the woodlands should include 35% native woods and by 2050 even 50%. By 2015 the area covered by native woodland should be expanded by at least 40,000 hectares (Forestry Commission Scotland 2006). Another important issue addressed by the SFS is the creation of forest habitat networks through expansion and linking of woodlands and preventing them from further fragmentation. In comparison to the first SFS (2000) the new strategy lays its emphasis more on the "right" woodland types (i.e. native woodlands) rather than on the fastest possible rate of afforestation. However, the target set in 2000 to increase the area covered by woodlands to 25% by 2025 of the total Scottish surface is still regarded as feasible.

Uplands are not specifically approached by the Draft SFS 2006. However, a great majority of the remaining native ancient woodlands occur in upland areas. In 2000 a total of 2% of the area of Scotland was covered in native woodlands. In the Scottish highlands, 88% of the forests were of natural-origin whereas only 12% in the lowlands (Scottish Executive 2000). Another issue which is particularly a problem in upland areas is overgrazing by deer. The SFS therefore calls for an effective deer management which ensures the regeneration of native woodlands.

5.2.2. The Scottish Forestry Grant Scheme

The Scottish Forestry Grant Scheme (SFGS) was introduced in 2003 to help implementing the **Scottish Forestry Strategy (SFS)** (see above).

Like the SFS the SFGS is also being revised with the aim that from 2007 onwards the forestry support can be delivered through Land Management Contracts (LMCs). The SFGS aims to encourage the creation and management of woodland and forests to provide economic, environmental and social benefits now and in the future. Grants are available for expansion (creating new woodlands), restocking (replanting after clear felling) and stewardship (improving the value of existing woodlands). Additionally, grants are also available for planting trees on agricultural land which has been cultivated during the previous three years (Forestry Commission Scotland 2005).

The Scheme is relevant for upland areas as it provides grants for restoring or enhancing native woodlands which contribute to the native woodland HAPs or SAPs. It also funds activities aiming at reducing deer numbers, as well as improving woodland biodiversity, which could have positive impacts on the conservation and enhancement of upland habitats. There are potential conflicts between the implementation of the SFGS and heather moorland management as, in many cases, afforestation means a loss of moorland habitats. However the SFS also foresees a removal of some woodland in cases where habitats of high natural value, such as raised bogs, have been afforested in the past.

5.3. Plans and policies administered by Scottish Natural Heritage

5.3.1. Sites of Special Scientific Interest

Sites of Special Scientific Interest (SSSIs) form a network of the best examples of species, habitats and rock and landform features throughout Scotland, and support a wider network across Great Britain and the European Union. Most SSSIs are in private ownership and under the management of SNH. SSSIs provide legal protection for flora, fauna, or geological or physiographical features (SNH 2006c). In November 2004, there were1451 SSSIs designated in Scotland. The principal legislation governing SSSIs is the Nature Conservation (Scotland) Act 2004.

SNH and other organisations defined criteria for the selection of SSSIs across the UK which are accessible on the **Joint Nature Conservation Committee** website. The principal criteria for site evaluation and selection are: size, diversity, population size, naturalness, rarity, fragility, typicalness and international importance. Priorities are given to "habitats which are still extensive and continuous, notably uplands, and some (but not all) types of coastland" (Nature Conservancy Council 1989:22). Chapter 9 of the report on Guidelines for Selection of Biological SSSIs, published by the Nature Conservancy Council (1989), is specifically dedicated to upland habitats. British uplands are classified as ecosystems which are unique in the world and therefore of great international importance. Blanket bog in Britain has one of its most extensive occurrences in the world. Other internationally important habitats listed in the report are dwarf scrub heath and anthropogenic vegetation such as heath and grassland.

For the management of all SSSIs, SNH has prepared Site Management Statements which provide guidance to the owners and occupiers of SSSIs as to how the natural features of the SSSI should be conserved or enhanced. Land managers of SSSIs can be compensated by the SNH Natural Care Programme (see 5.3.3 below).

5.3.2. National Nature Reserves

National Nature Reserves (NNRs) are either managed by SNH or, if privately owned, managed with the owner under a Nature Reserve Agreement (NRA). Some NNRs are owned and managed by other organisations including the FCS, National Trust for Scotland, and RSPB Scotland. The first NNRs were designated 50 years ago and recently were reviewed. In September 2005 there were 66 NNRs in Scotland; all are now designated as SSSIs in order to strengthen their protection. The principal objectives of NNRs are conserving habitats and species of national and international significance; increase awareness of the natural heritage; providing specialised management and encouraging research and demonstration (SNH 2005a).

The management of NNRs is set out in a **Reserve Plan**, the format of which is individual to the organisation which manages the reserve. Reserve Plans define the goals of the NNR and explain how reserve management will meet these goals. Stakeholder participation during the development phase of the plans is crucial.

Through reserve reports, local people and other involved stakeholders are informed about the progress of reserve management (SNH 2003).

Generally, there are no specific upland issues addressed by the NNR concept, as every reserve has its own management plan. However, as many NNRs are situated in uplands, upland biodiversity issues are tackled at a local level.

5.3.3. The Natural Care Programme

Natural Care was launched in 2001 to help improve **SSSIs** and **NATURA sites**. The programme offers financial support to land managers to manage these sites in the best possible way and to compensate them from possible loss of income.

Effective management of SSSIs and NATURA sites is crucial for the conservation of the special wildlife and geological features of Scotland. Under the Natural Care Strategy, several **management schemes** have been developed, some of which concern upland habitats including the Peatland management scheme (Caithness and Sutherland, Western Isles and Skye), the Mull Eagle scheme (Isle of Mull) and the Moorland Management scheme (Forth and Borders, Forest of Clunie, Arran Moors, Muirkirk and North Lowther Uplands; Glenn Up and Galloway Moors; Orkney Mainland Moor Scheme). The Schemes are locally tailored; they set out standard management requirements and offer standard payments (SNH 2006d).

The Natural Care Strategy reflects SNH's Corporate Strategy which has three main objectives: 1. Caring for the natural world; 2. Enriching people's lives and 3. Promoting sustainable use (SNH 2006d). Importantly, Objective No. 3 contributes to the conservation of upland habitats as it aims, among others, to secure grazing regimes for deer and domestic livestock which benefit the natural heritage, whilst meeting people's needs.

5.3.4. Scottish Natural Heritage Grant Programme

In addition to the Natural Care Programme, SNH has a grant programme which funds projects that aim at preserving and enhancing Scotland's natural heritage. The programme comprises eight different grant schemes for: special places; supporting biodiversity; enjoying Scotland's outdoors; paths and routes; attractive places to live; involving people; rural land use and waters for life (SNH 2005b). Three of these could be especially relevant for the sustainable management of upland areas.

Grants for sustainable land use

This scheme provides support for projects which do not qualify for any other schemes that fund environmentally-friendly land management practices such as agri-environment schemes; SFGS; and the Natural Care programme. Through this scheme SNH hopes to catalyze efforts to develop new sustainable ways of planning and carrying out land management. Whole-estate plans or farm plans which provide benefits for natural heritage are also eligible for funding given that they are not suited for receiving funding from programmes supported by SEERAD or the FCS. Additionally, projects whose objective is to bring different land managers together in order to agree on working together on economically, socially and environmentally

sound land management practices of the countryside for its natural heritage are also entitled for funding.

Grants for biodiversity action

This scheme supports actions of individuals, community groups and organisations which actively help in implementing the SBS and achieving targets set by LBAPs. Actions which are targeted at preserving and enhancing species and habitats which are on the SBL or on the UK BAP list of priority species and habitats will be supported. The scheme also funds managing invasive species and recording and sharing information on biodiversity. The latter activity is especially welcomed in areas, such as the uplands, where little biological recording has been done and only poor information is available.

Grants for managing special places

Special places are defined as areas which are particularly important and known for their natural, wildlife, and scenic qualities. These places deserve improved care and management to protect and improve their special qualities. SNH sponsors activities which include, among others, "Demonstrating new management techniques for the natural heritage and for people. Improving public understanding and appreciation of the wildlife, landscape, earth heritage and importance of special places. Helping communities and schools to get involved in setting up, managing and interpreting special places" (SNH 2005b).

5.3.5. Natural Heritage Futures

Hills and Moors

This document gives an overview of the current situation of the Scottish uplands (in 2002). It then proposes a vision of how the ideal management of the uplands could look in the year 2025. The document finishes with a number of objectives for the sustainable development of the Scottish uplands and proposes actions on how to achieve these objectives (SNH 2002).

The stated **objectives** of the document include:

- Achieve common agreement on a new approach to the use of Scotland's uplands which places the natural heritage and environmental values at the heart of land-use policies
- Secure improved diversity and good condition of Scotland's upland habitats and their fauna, and to protect features of earth heritage value.
- Safeguard the distinctive elements of Scotland's upland landscapes, in particular, the important areas of wildland
- Secure better balance between woodland and upland heaths and alpine habitats, with a substantial increase in native woodland and more natural transitions between these habitats
- Promote that land uses in the uplands are undertaken in an important contribution to the long-term wellbeing of communities

Proposed actions include:

- Ensure appropriate grazing levels.
- Ensure positive peatland management, promote the revised Muirburn code.
- Prevent large scale commercial peat extraction, curb wildlife crime.
- Support the implementation of LBAPs, promote best practices for the recovery of key habitats. Implement comprehensive deer management.
- Promote sustainable use of upland woods.

This overall document is supplemented by documents for 21 specific areas across Scotland, most of which include upland areas.

5.3.6. SNH Species Framework

In March 2006 SNH published a paper for consultation which includes a list of priority species for future action. Among the 25 species on the list for conservation action, five are predominantly found in upland habitats including woolly willow, black grouse, white tailed eagle, red squirrel and Scottish wildcat. Additionally, the hen harrier is listed as a species which is relevant for conflict management and the red deer for sustainable use. The consultation paper can be accessed on the web at: **http://www.snh.org.uk/strategy/sr-pc00.asp**

5.3.7. The Scottish Outdoor Access Code

The Land Reform (Scotland) Act which was passed in 2003 establishes a statutory right of responsible access to land for various purposes. The Scottish Outdoor Access Code provides advice for land managers, countryside users and recreation managers about statutory access rights, responsibilities, and how to manage access. The Code calls on the peoples' own responsibility to care for their environment and allows people to exercise access rights to hills, mountains and moorlands for recreational purposes, some educational activities and certain commercial purposes, as well as for crossing over land and water (OutdoorAccess-Scotland 2005).

5.4. Other management plans and policies

5.4.1. The Muirburn Code

In Scotland, burning has traditionally been used as a land management tool in upland environments. The Muirburn Code (2002) provides guidance for the wise and safe use of fire without causing damage to the moorland and gives information about the constraints that apply. The principal legislation governing muirburn is the Hill Farming Act 1946.

Depending on altitude, different burning seasons apply, i.e. above 450 m (1500 feet), burning is allowed between 1st October and 30th April, whereas below 450 m the burning season only lasts until the 15th April. This regulation depends on the nesting season of ground nesting birds. Muirburn may not be carried out on sites traditionally used for nesting by legally protected birds of prey. It should also not be allowed in woodlands, on blanket bogs, raised bogs and deep peat, on eroding soils as well as

summits, ridges or edges which are very exposed to wind and on steep slopes. Furthermore, the code implies that special advice by SNH has to be sought if the area is an SSSI or is situated close to native oak, juniper, Scots Pine, willow, birch and aspen (Scottish Executive 2002).

The Muirburn Code is a critical document which helps promote good practices in the preservation of upland moorlands and species which inhabit them.

5.4.2. The Deer Commission for Scotland: A long term strategy

This long-term strategy, published in 2001, defines the role of the Deer Commission for Scotland (DCS) in achieving the **Long Term Vision** for wild deer in Scotland which aims to further the conservation, control and sustainable management of deer. The principal legislation governing the Long Term Vision and Long Term Strategy is The Deer (Scotland) Act 1996 (Deer Commission for Scotland 2006).

In 2001, the DCS started concentrating its efforts on Priority sites. Currently (2005/2005) there are 18 sites. Each year from 2005 to 2008, 5 additional sites for priority action will be identified (Deer Commission for Scotland 2004). However, the DCS recognises that areas not identified as priority sites are at risk of being held in abeyance. They therefore started to produce **Best Practice Guidance** on the whole range of issues affecting deer and their management. There are 80 guides planned and to date 31 guides have been produced. Regarding upland biodiversity conservation, the guides on damage assessment, dwarf scrub heath and herb-rich grasslands are highly relevant.

In 2004, the DCS published a **Corporate Plan 2005-2008** which helps implement the long term Strategy. The technical strategic objective of this plan is "to promote through partnership effective sustainable deer management at a local level in Scotland taking account of biodiversity and other land use interests while minimising damage of danger to public safety" (DCS 2004: 8). It also aims to support Scottish Ministers' duty to protect designated sites of national or international importance and to continue to engage with National Park Authorities. In 2004, DCS, SNH, FC Scotland and SEERAD formally agreed to work together to address sites of high concern over grazing impact.

5.5. Local Biodiversity Action Plans

LBAPs translate national targets for species and habitats, as specified in the UK Action Plan, into effective action at the local level. Each LBAP works on the basis of a partnership to identify local priorities and to determine the contribution they can make to the delivery of the national Species and Habitat Action Plan targets (JNCC 2006). Given the large number of LBAPs considering upland areas, and the detailed information in each, they are included in Appendix 1. The LBAPs considered are:

- Argyll and Bute
- Ayrshire

- Cairngorms
- Clackmannanshire
- Western Isles
- Dumfries and Galloway
- North East Scotland
- Inverclyde, Renfrewshire and East Renfrewshire
- Tayside
- Stirling Council
- South Lanarkshire
- Scottish Borders
- Caithness
- Sutherland
- Wester Ross
- Ross and Cromarty
- Skye and Lochalsh
- Lochaber
- Inverness and Nairn

For each, the current status of and threats to upland habitats, as well as targets, are presented.

Part II: Critical Analysis of documents

The previous literature and policy review makes it apparent that a wide range of institutions and policies influence upland biodiversity management. Scotland currently finds itself in a very dynamic and interesting process of policy-making and planning. Policies and legislation from the global to the national and local level are influencing this process. In the near future, the management of upland biodiversity will especially be influenced by the implementation of the Land Management Contract Scheme.

The following figure (Figure 2) shows the most important institutions and stakeholders that are currently influencing upland biodiversity management in Scotland.

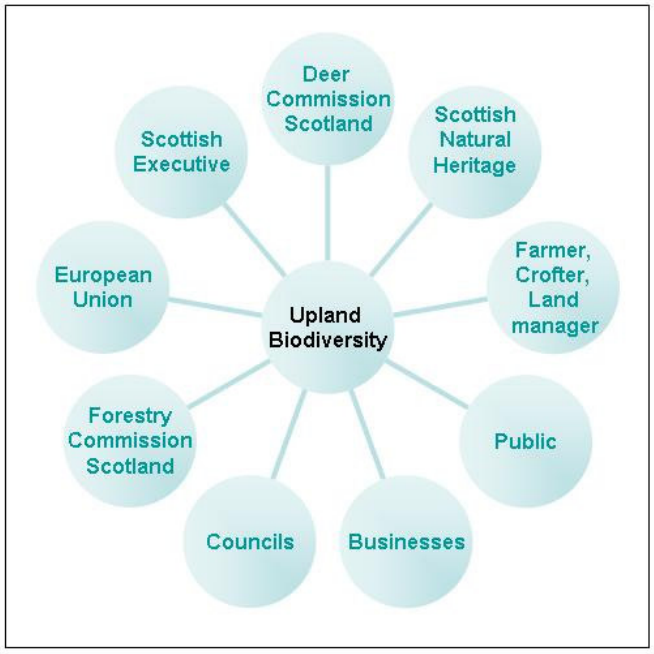

Figure 2: Institutions and stakeholders influencing the management of upland biodiversity

The subsequent chapters (Part II) will demonstrate the major issues and challenges but also the main opportunities regarding upland biodiversity management.

6. Opportunities for land managers

Many of the policies described in the literature review provide important opportunities for the management of upland habitats which will be described in this chapter. Even though some of these policies might not directly approach upland issues they are still of relevance for their management.

Blanket bog, native pine woodland, upland calcareous grassland, upland hay meadows, upland heathland, upland mixed ashwoods, upland oakwoods – as well as acid grassland and montane habitats – are the nine UK priority and broad habitats which exclusively or mainly occur in Scotland's upland areas. In the following section, these habitats have been classified into three groups: woodland (including native pine woodland, upland mixed ashwood and upland oakwood); agricultural land (upland hay meadows, upland calcareous grassland and acid grassland) and non-woodland/non-agricultural land (blanket bog, montane habitat). A further distinction is made between designated areas and non-designated areas.

6.1. Opportunities for managing upland woodlands

Scotland's woodlands have undergone an immense decline over the past centuries. After decades of loss in woodland cover, forest cover was first increased through non-native timber plantations; only in the last 20 years was there more emphasis on native trees and sustainable forest management. NPPG 14 on Scotland's Natural Heritage stresses the high value of ancient and semi-natural woodlands and encourages planning authorities to seek protection for these habitats. It further advises that authorities should work closely with the Forestry Commission, which may be able to offer grant aid for positive management. The recently published draft of the Scottish Forestry Strategy (2006) also highlights the importance of focusing on native woodlands and biodiversity conservation.

The **Scottish Forestry Grant Scheme** (SFGS), introduced in 2003, currently provides the main opportunities for forest managers. This scheme has been developed to ensure that the forestry sector fosters economic, environmental and social benefits and does not conflict with other sectors and land management systems. Importantly, the SFGS supports the protection and expansion of remaining ancient woodland communities which contribute to the native woodland HAPs or SAPs, and further supports the creation of woodland habitat networks. Special grants are available for effective deer management. The implementation plans of the Scottish Biodiversity Strategy announce actions that will be taken to introduce woodland grazing incentives within the SFGS and integrate these with Rural Stewardship Scheme provisions by 2006 in order to maintain and restore traditional management practices which are beneficial to biodiversity. From 2007, the SFGS will partially be replaced by the **Land Management Contract Scheme**.

Other opportunities for funding are provided by the **EU Life Fund** which, for example, currently supports Natura 2000 sites, which include Caledonian forests or bog woodlands. There is also an EU Life Nature programme for Scotland's Caledonian forests and Core Forest Sites. Other grants might be available through the **Natural Care Scheme** which is managed by SNH. However, there are currently no subsidies available for woodlands through this scheme. The **Scottish Natural Heritage Grant programme** might be another source for activities for managing special places; for biodiversity conservation as well as for sustainable land use. All these options can be considered for planning initiatives which aim to enhance woodland areas in uplands.

Finally, farmers may get assistance for the management of native and semi-native woodlands through the **Rural Stewardship Scheme** administered by SEERAD.

6.2. Opportunities for managing upland agricultural land

Agricultural activities in uplands are mainly restricted to grazing by sheep and, in some places, cattle and goats. Heavy grazing by livestock and deer is one of the main issues which is affecting upland habitats. However, under-grazing might also be an problem in some places. Well managed grazing is seen as a key factor in maintaining open sub-montane habitats. **Agri-environmental schemes** are working in the direction of resolving or mitigating these issues. However, as these schemes were only recently implemented, no data are yet available on whether the state of upland habitats has improved as a result of these measures.

According to the Forward Strategy for Scottish Agriculture, the farming industry should be a lead player in the protection and enhancement of the environment. The Strategy further states that many of the UK Priority HAPs and SAPs depend on sustainably managed agricultural land. In 2004, about 5.5 million hectares in Scotland were used by agriculture of which 85% are situated in Less Favoured Areas (LFA). Of these 2,365,000 ha, or 43% of farmland were covered by agri-environment agreements (Scottish Executive 2004c).

The main opportunities for upland land managers, farmers and crofters are currently provided by the wide range of **agri-environment schemes,** which are administered by SEERAD and emerged through the CAP reform. Article 33 of the CAP on Rural Development Regulations secures grants for agricultural activities which support the protection of the environment in connection with land, forestry and landscape conservation as well as with the improvement of animal welfare.

Land managers can apply for the **Rural Stewardship Scheme** (RSS) as long as they are willing to manage their land under the Standard of Good Farming Practices (GFP). Under the RSS, different management options which are relevant for uplands are available: farmers may get assistance for the management of species-rich areas, for breeding sites of skylarks, for the management of species-rich grassland and upland hay meadows, and for the management of moorland, including upland heathland and wetland management. Scheme requirements have to be met for a minimum of five years.

The **Less Favoured Area Support Scheme** (LFASS) is highly relevant for upland areas. As already mentioned above, 85% of Scotland's agricultural land is situated in LFA and probably nearly 100% of the farmland in upland areas are classified as LFA. Under this scheme, only forage land which has been classified as disadvantaged or severely disadvantaged within the designated LFA of Scotland is eligible for subsidies. To be eligible under LFASS, farmers and crofters must respect the Standard of GFP.

The **Single Farm Payment Scheme** (SFPS) is another way for upland farmers and crofters to receive subsidies. This scheme is the least demanding in terms of conservational measures which have to be taken in order to receive subsidies. Land must be managed under the Good Agricultural and Environmental Condition (GAEC)

which has less strict provisions on stocking densities. Payments can also be obtained for set-aside areas where agricultural activities are restricted for a certain time period.

Additionally, the SFGS provides subsidies through the **farmland premium scheme** which is administered by SEERAD for improving the diversity of farmed or crofting landscapes.

In the near future, many of the schemes described above will be fully or partially replaced by **Land Management Contracts** (LMCs). These are to be fully introduced in 2007 with the aim of securing a sustainable future for agriculture in Scotland. These contracts should be tailored to help to achieve biodiversity goals set by the Scottish Biodiversity Strategy, such as halting the long term decline in the numbers of farmland birds, insects and wildflowers; halting losses and improving condition of farmland habitats including hedges, ponds, field margins and farms woods; improving the condition of semi natural habitats such as grassland and heath damaged through agriculture; and maintaining and enhancing Scotland's cultural landscapes.

The **EU LEADER programme,** a locally-based approach for enhancing economic and community development within rural areas, might also benefit upland farmers and crofters. The programme specifically focuses on remote and fragile areas (i.e. uplands) and is designed to promote innovations for diversification of mainly agricultural communities. From 2007, this will be an explicit element of rural development funding.

Other policies which apply to upland farming include the **Muirburn Code** and **the Deer Commission for Scotland Long Term Strategy**. Uncontrolled fire practice through poorly managed muirburn and heavy grazing by livestock and deer have both been identified by JNCC (2006) as primary issues affecting uplands. The Muirburn Code implies that burning should only be carried out where heather or bell heather is an important or dominant component in the vegetation and the burning season is restricted to certain time periods, depending on the altitude of the site. Grant aid for muirburn costs might be available under agri-environment schemes, administered by SEERAD. The Long Term Strategy of the Deer Commission foresees the reduction of deer numbers in places where deer cause serious damage to agricultural land.

Where agricultural land is within designated areas such as Natura 2000 sites, SSSIs or NNRs the **Natural Care Scheme** or the **EU Life Fund** might be applicable. The NATURA 2000 network includes many designated sites for grassland, heath or other dynamic, semi-natural habitats in Scotland. There is currently an EU Life Nature Fund project for mountain hay meadows and there are Natural Care projects on the Lendalfoot Grasslands Scheme for South Ayrshire (the scheme is open for applications until April 2007), and The Mull Eagle Scheme which offers support to hill farmers on Mull who have sea eagles and/or golden eagles on their land.

Finally, the **Scottish Natural Heritage Grant programme** provides funds for sustainable land use practices. This scheme only provides support for activities which do not qualify for any other schemes such as agri-environment schemes, the SFGS and the Natural Care Programme which is also administered by SNH. Funds originating from different schemes may not be accumulated.

6.3. Opportunities for managing non farmland/non woodland areas

Even though montane habitats and bogs are usually not used for intensive farming or forestry, they are very important for Scotland's environment, economy and people. Blanket bogs (UK priority HAP) are recognised as important features of the Scottish landscape and play a crucial role in tackling climate change as they serve as greenhouse gas sinks and support the UK's effort to implement the Framework Convention on Climate Change. Montane habitats are important for Scotland's tourism industry, one of Scotland's most important income sources. In 2003, 39% of overseas visitors stated that hiking, hill walking or rambling were one of their primary motivations for visiting Scotland (VisitScotland 2006). Promoting upland recreation could therefore be a promising opportunity for rural upland communities. Furthermore, in a social survey carried out by the Scottish Executive, hills and mountains were ranked the "number one habitats" of Scotland (Scottish Executive 2006d). However, as bogs and montane habitats outside designated areas are usually not used for agriculture or forestry, agri-environment schemes or the SFGS are not applicable in these areas. Other available grants including grants administered by the EU or SNH are mainly targeted to designated sites.

The **EU Life-Nature Fund** is currently supporting a project on restoring blanket bogs in Scotland. **Natural Care** is sustaining a Peatland Management Scheme (including blanket bog, wet heath and peatland breeding birds) for the Skye, Caithness and Sutherland and the Western Isles, and a Moorland Management Scheme for Forth and Borders, Forest of Clunie, Arran Moors, Muirkirk and North Lowther Uplands, Glen App and Galloway Moors.

The **EU LEADER Programme** could support new activities in these areas as it promotes innovations for diversification of income of rural communities. Given the case that an area, which is currently not used for farming, would be suitable for afforestation, the **SFGS** may provide opportunities for subsidies.

Another opportunity for claiming grants, whether the site is designated or not, is the **Scottish Natural Heritage Grant Programme**. The *Grant Scheme for Biodiversity Action* supports actions which help to implement the SBS and achieve the targets set by LBAPs. This Scheme also supports recording and sharing of information on biodiversity, especially in upland areas where little biological recording has been done and only poor information is available. The programme also provides funds for managing special places as well as for establishing and managing paths and routes in order to provide access to people who wish to enjoy the natural heritage as well as for raising awareness among the public on Scotland's natural heritage.

7. Complementarities and conflicts between policies

7.1. The UK BAP

The UK BAP was published in 1994 as a response to the Convention on Biological Diversity. There is currently a review of the UK HAP and SAP targets underway, as some are time bound and therefore no longer adequate or were never quantitative. This review is aiming to bring the targets of the different action plans in line with each other and to facilitate better understanding and comparability. The UK BAP served as a framework for most of the Scottish LBAPs and the first Scottish Forestry Strategy (FC 2000). Most LBAPs were developed before the SBS was published and therefore mainly refer to the UK BAP in setting their targets and planning action.

Since 2004, Scotland has had its own biodiversity strategy which particularly takes into account the local characteristics of Scottish landscapes and habitats. However, the UK BAP remains relevant to Scotland, as the HAPs and SAPs set common targets for the entire UK. This is particularly important for monitoring and reporting beyond country borders in order to gain comparable results. The Scottish Biodiversity Strategy was not produced with the intention of replacing the UK BAP but to complement it. In its introductory pages, it states that the SBS could not do "justice to the scope and value of Scotland's biodiversity and the complexity of issues associated with its conservation and enhancement …" (Scottish Executive 2004c:7). It refers to the UK BAP, which takes this complexity of issues into account and sets the framework for prioritised and targeted action.

In summary, the UK BAP remains the umbrella document which embraces all the other documents that are managing biodiversity at country level.

7.2. The Scottish Biodiversity Strategy

The SBS, along with its implementation plans, is among the most relevant documents influencing upland biodiversity and habitats in Scotland. The vision for uplands and mountains in the implementation plans is to "enhance the ecological resilience and natural processes operating at a landscape scale in order to maintain or enhance mosaics of semi-natural upland habitats that will be able to adapt to climate change and socio-economic change and still retain their characteristic species" (Scottish Biodiversity Forum 2005: 32). The achievement of this vision mainly depends on the implementation of LBAPs and cross border co-ordination between them.

As stated above, the SBS does not aim to replace the UK BAP but to complement it. The Strategy itself does not contain any measurable targets. However, targets are published every three years in the Strategy Implementation Plans. According to the strategy, mountains, heaths and bogs cover 50% of Scotland's surface and deserve special conservation. The implementation plans specifically dedicate a chapter to Uplands and Mountains where actions and targets are defined. In comparison to the UK BAP, the SBS puts greater emphasis on "soft targets" which focus on raising awareness among the public or increasing knowledge and developing best practices

rather than on “hard targets” which are time bound and measurable such as “Improve the condition of those areas of blanket mire which are degraded but readily restored, so that the total area in, or approaching, favourable condition by 2005 is 340,000 ha” (UK BAP 1994). This could cause problems as these “soft targets” are very difficult to measure and monitor. No targets for upland species and habitats are included in the SBS implementation plans.

The SBS influences many other policies in Scotland, for example the Deer Commission Long Term Strategy. One target given in the Implementation Plans of the SBS is to “Strengthen deer management policies and practices to meet biodiversity conservation objectives” (Scottish Biodiversity Forum 2005:45). The DCS should take the lead in achieving this target. Integrated deer management is crucial for upland areas, as over-grazing remains the number-one issue which adversely affects upland habitats (JNCC 2005). Another policy document which is influenced by and complements the SBS is the Scottish Forestry Strategy. The recently published draft SFS makes biodiversity one of its key themes. According to the Draft SFS (2006), the purpose of this key theme is to “Help to halt the loss of biodiversity, and continue to reverse previous losses, in woodlands and woodland-related habitats by supporting the Executive’s Scottish Biodiversity Strategy”.

7.3. The Scottish Biodiversity List

The Scottish Biodiversity List (SBL) was published to fulfil the requirements set by The Nature Conservation (Scotland) Act 2004. The list, published in December 2005, contains 2180 species and habitats and complements the broad and priority species and habitat list of the UK BAP**,** given that all species and habitats of the UK BAP were also included in the SBL. However, it is not clear if this list is meant to replace the UK BAP species and habitat list at a long term basis. At present, the SBL does not include any targets for the listed species or habitats and no prioritization of species or habitats has been made.

Additionally, in March 2006 SNH published the Species Framework, a paper for consultation, which comprises a list of species for conservation action, conflict management, sustainable use and the management of invasive non-native species. This framework is supposed to contribute to the aim of the SBS “to conserve biodiversity for the health, enjoyment and well-being of the people of Scotland”.

There are currently three lists of species and habitats coexisting which all aim to contribute to the conservation of Scotland’s biodiversity. This could lead to confusion, especially among LBAP officers who are supposed to implement the UK BAP targets and the SBS at a local scale. At the date of writing this report, it has not been clear what the exact role of the three different lists will be and how they relate to each other. As long as this relation and the concrete purpose of the different lists has not been officially made clear, conflicts about the relevance of these different lists might emerge and targeted actions might be slowed down.

7.4. The Scottish Forestry Strategy

As mentioned above, biodiversity is one of its key themes of the SFS, actively supporting the SBS as well as the UK BAP, given that the FC is the Lead Partner of the HAPs for native pine woodlands, upland mixed ash woods and upland oak woods.

The SFS also shows synergies with the Deer Commission Long Term Strategy, as both strategies aim to reduce deer numbers, enhance biodiversity and prevent damage to woodland. The Muirburn Code helps in protecting woodlands through policies which restrict burning close to woodlands and prosecute actions causing damage to woodlands.

The SFS aims to afforest large areas of Scotland: the long term aim for 2025 is to increase the area covered by woodlands to 25%. This goal stands in conflict with other Habitat Action Plans, including HAPs on upland heathland and blanket bog. In order to avoid conflicts between the different HAPs, it is recommended to plan afforestation well ahead after arrangement with all other interest groups. Areas which are suitable for afforestation should be defined, and moorland and bogs of high nature value should be designated, in order to prevent their loss. Furthermore, to enhance biodiversity, it will be crucial to afforest uplands with native species rather than fast-growing exotic conifers. Even though the draft SFS stresses the importance of native woodlands, there is no policy which compels land managers to exclusively use native species for afforestation in uplands.

The SFGS, administered by the FCS, is more complementary to the agri-environmental schemes managed by SEERAD than conflicting. In fact, some of the schemes will be unified in the near future under the Land Management Contract Scheme. The Farmland Premium Scheme could be seen as the linkage between the SFGS and the agri-environment schemes as it encourages the creation of new woodlands on agricultural land. All the schemes are aiming to conserve and enhance biodiversity.

7.5. Agri-environment Schemes

The Scottish agri-environmental plans and policies are a result of the European Union CAP reform which takes into account the targets set by the CBD to halt the loss of biodiversity by 2010. Article 33 of the CAP on Rural Development Regulations guarantees support to land managers who protect the environment in connection with land, forestry and landscape conservation. Furthermore, the agri-environment schemes are part of the Scottish Rural Development Plan and aim to support rural communities.

While the RSS and the LFASS are both subject to GFP, which implies that scheme participants are obliged to manage their livestock in such a way as to prevent damage to sensitive habitats (upland habitats are specifically fragile), the SFPS includes rather general policies on under- and over-grazing which do not directly refer to sensitive habitats. The Standard of GFP obliges land managers “to prevent damage to sensitive habitats that are important for biodiversity reasons. Examples are juniper and montane scrub, herb-rich swards, already eroded areas and wetland habitats as well as other

natural and semi-natural habitats" (Scottish Executive 2005a: 22). Under both standards (GFP and GAEC), measures will be taken by SEERAD in cases where overgrazing is identified and, where necessary, maximum (or where appropriate, minimum) stocking rates will be prescribed. Additionally, the SFPS commits land managers to follow the muirburn code and to maintain the field drainage system.

The RSS shows synergies with the UK BAP as it provides grants for activities which support several upland HAPs and SAPs including the plans on upland heathland, upland hay meadows, upland calcareous grassland, native pine woodlands, upland mixed ash woods and upland oak woods as well as for sky lark and black grouse.

All the schemes stand under the framework of The Rural Development Programme for Scotland (SRDP) 2007-2013 which itself must comply with the Rural Development Regulation of the EU, which aims at "improving the environment and countryside through land management" (Scottish Executive 2006a: 5). The RSS and LFASS are more relevant to uplands than the SFPS, as they specifically take into account the fragility of upland habitats. These schemes should therefore be particularly promoted in Scotland's uplands in order to achieve the vision and targets set by the SBS and the UK BAP as well as the CBD. From 2007, these schemes will be partially or entirely incorporated in the Land Management Contract Scheme which might increase the complementarities between the different schemes.

In summary, agri-environmental schemes show many synergies and are rather complementary in achieving the aim of halting loss of biodiversity set by the SBS. However, one conflict that could arise and negatively affect upland habitats might be that the SFPS could be more attractive to farmers as it is less strict and requires fewer measurements than the RSS or the LFASS. Only if payments for the LFASS and the RSS are significantly higher will it be attractive for land managers to fulfil the work intensive requirements of the GFP standard.

7.6. Other Grant Schemes managed by the EU and Scottish Natural Heritage

Like the agri-environmental schemes described above, the SNH Natural Care Scheme will partly be included in the LMC scheme; however, the extent to which this will occur is not yet known. The Natural Care Scheme was designed to help improve the management of SSSIs and NATURA 2000 sites. It supports the SBS in its objective "to halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats" as well as "to restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice" (Scottish Executive 2004c). As mentioned above, the scheme supports different programmes for protecting and restoring upland habitats throughout Scotland. However, the budget of the Scheme does not have the capacity to support appropriate management in all Scottish SSSIs and NATURA 2000 sites. The Natural Care Scheme does not compete with the agri-environment schemes administered by SEERAD, as it is not possible for land managers to accumulate subsidies for the same piece of land.

The EU Life Programme supports sites within the NATURA 2000 network. While the EU Life Programme currently supports projects in Caledonian forest, peatlands (including blanket bog) in Caithness and Sutherland, and mountain hay meadows, the Natural Care Scheme supports management schemes on grassland, peatland, moorland and eagles on Mull. The peatland management scheme for Northern Scotland is a common effort between SNH and the EU. A large advantage of the EU Life programme and the Natural Care scheme is, in comparison to the agri-environment schemes, that they are locally tailored and therefore fully take into account the particular natural and environmental circumstances of the target area.

While the EU Life Nature programme exclusively focuses on Natura 2000 sites, certain schemes of the Natural Care Programme may also provide opportunities outside SSSIs or Natura sites on land which either has the same or similar habitats as SSSIs or supports the same wildlife of special interest.

7.7. Local Biodiversity Action Plans

The general objective of the Local Biodiversity Action Plans (LBAPs) is to translate national targets for species and habitats of the UK Biodiversity Action Plan into effective action at local level. However, as there were no strict guidelines on how these plans should be developed, some LBAPs are better coordinated with the UK BAP than others. While some reflect the targets and actions set by the UK HAPs and SAPs accurately and are very detailed and well developed, others are rather descriptive and include targets which either do not match the ones set by the UK BAP or are not time bound or measurable. Some LBAPs even lack targets (e.g. those of the Highland Council, Scottish Borders, Caithness). Most Scottish LBAPs were developed before the publication of the SBS and therefore could not reflect the vision and targets set by the Strategy.

As the LBAPs are not very well coordinated on a UK, country or regional level and the targets of the different plans do not match with each other, monitoring on the current state of habitats and species and comparing data between them is very difficult or almost impossible, which could put the achievement of the vision and objectives of the SBS at risk. In order to successfully achieve the goals set by the SBS for 2030, important steps remain to be taken in order to better coordinate the LBAPs horizontally and vertically. After completion of the current review of UK HAPs and SAPs targets, all the LBAPs will have to be revised and adapted.

Part III: Survey of expert opinion

8. Introduction

The uplands present a number of particular challenges to the delivery of biodiversity objectives. Firstly, processes operate there at a large scale. Upland habitats cover huge areas and the factors that influence them, such as grazing and pollution, are widespread rather than localised. Secondly, the uplands are sparsely populated and do not benefit from a coherent public lobby. Thirdly, the uplands are largely privately owned and non-designated and therefore constitute part of the wider countryside over which there is limited public sector control. Under these conditions, effective delivery of biodiversity objectives requires clear goals, good integration of policy and processes, appropriate fora for action and high levels of communication and co-operation between stakeholders.

Part III of this report summarises a study conducted to explore how these issues impinge on the delivery of upland biodiversity objectives through a survey of expert opinion, undertaken in the second half of 2006. At the inception meeting with representatives of the funding organisations and Scottish Natural Heritage, several key issues were noted with respect to uplands biodiversity:

- There is a need to identify specific barriers to delivery of biodiversity action, especially at the large scale.
- Certain biodiversity actions may be in conflict at and near ecotones, e.g., between montane scrub and heathland. It is necessary to identify if there is a need to improve the processes for prioritising between habitats and species at the local level.
- There is a need to increase the value of biodiversity action for both local communities (geographical) and communities of interest, leading to increased involvement and both improved delivery of biodiversity objectives and tangible economic benefits.
- As much of the uplands is owned and managed privately, the respective stakeholders need to be involved.

The aim of this study was to obtain expert opinion on these issues through a series of face-to-face and semi-structured telephone interviews in order to arrive at a set of recommendations for improving the delivery of biodiversity policy and action in the uplands of Scotland.

9. Methodology

A total of 41 interviews were carried out in order to engage a wide range of expert opinion on these issues. Interviewees were selected from four broad groups:

1) Local Biodiversity Officers for three Local Biodiversity Partnerships (Cairngorms, Argyll & Bute, Dumfries & Galloway).
2) People involved with uplands biodiversity in these three areas, either directly participating in the Local Biodiversity Partnership or involved in other capacities.
3) UKBAP Lead Partners for upland habitats or species.
4) People with a national remit covering biodiversity.

A list of interviewees is included as Appendix 2.

Interviews with Group 1 and one person in Group 4 were carried out face-to-face and were broad-ranging discussions that helped to further define the key issues and develop the questions that were posed to the rest of the interviewees. Draft questions were also provided to the project sponsors, the three relevant Local Biodiversity Officers, Sally Johnson (JNCC, Upland Lead Co-ordination Network) and Andrew Midgley (Biodiversity Implementation Team) for comment before the final set of questions was agreed.

The questions posed to the rest of the interviewees by telephone (Appendix 3) can be divided into the following categories:

i. Linkages and communication between and across levels of biodiversity policy.
ii. Prioritisation and planning.
iii. Actions, co-operation and efficiency.
iv. Monitoring and reporting.
v. Opportunities for improvement.

The questions were designed to provoke broad discussion about the relevant issues. Where appropriate, interviewees were also asked to cite specific examples that could be used to illustrate issues and also examples of good practice.

Not all of the questions were appropriate for all of the interviewees, in which case they were not asked. Sometimes, time constraints arising during interviews meant that only the most appropriate questions for that interviewee had to be selected, leaving some unasked. In some cases, interviewees felt unable to offer a response to a question that was asked. The questions responded to by each interviewee are shown in Appendix 4.

Interviews were recorded, and notes and quotes arising from them were compiled during playback.

Points arising from the interviews are presented under the five broad headings under which the questions were formulated. Direct interviewee quotes are included in italics and identified to interviewee group by the number in square brackets following each quote. The examples included in boxes illustrate the immediately preceding point or points in the text.

10. Linkages and communication between and across levels of biodiversity policy

The UK Biodiversity Action Plan (UKBAP) was launched in 1994, outlining the UK response to the 1992 Convention on Biological Diversity. Action Plans have been established for 382 priority species and 45 priority habitats and each of these has been assigned a Lead Partner (LP). Across the UK, Local Biodiversity Partnerships (LBPs) have been established, each of which has written a Local Biodiversity Action Plan (LBAP). Local Biodiversity Officers (LBO) have been appointed by most LBPs to co-ordinate the LBAP activities. As stated on the UKBAP website, LBPs work "on the basis of partnership to identify local priorities and to determine the contribution they can make to the delivery of the national Species and Habitat Action Plan targets".

Following devolution, the four countries of the UK have published country strategies to help guide the implementation of biodiversity conservation, sustainable development and environmental concerns. In 2004, the Scottish Executive launched the Scottish Biodiversity Strategy (SBS) with the publication of '*Scotland's Biodiversity: It's In Your Hands*'. In 2005, Implementation Plans for the SBS for 2005-07 were published. The 2005-07 Rural Implementation Plan includes some targets and actions specifically for the uplands, and others that are more general but have some relevance for the uplands.

In order to evaluate the effectiveness of the statutory UKBAP-LBAP structure for delivering biodiversity objectives for the uplands, interviewees were asked questions that sought to elucidate the strength of the links between the national and local processes and to examine the level of communication between them. Interviewees were also asked about the role of the SBS and their perception of how well integrated it is with the UKBAP and LBAP processes.

10.1. UKBAP-LBAP

10.1.1. Role of LBPs

There was a difference of opinion among interviewees about the role of the LBAP process. Some suggest that it should be the vehicle for delivering UKBAP targets. For example:

> *"LBAP's purpose is to deliver UKBAP at local level and thus complement the work of Lead Partners at the national level and ensure there are no gaps"* [4].

On the other hand, others suggested that it should be a grass-roots process generating local action for local priorities and concerns. For example:

> *"We had this discussion at our biodiversity committee and some people were concerned about us just becoming a vehicle for just delivering national targets*

set by people at a national level and that's not really what the LBAP process is about" [2].

Another interviewee expressed concern that, whilst LBAPs should 'dovetail' with the UKBAP, local priorities should not be subordinated to national priorities.

It was suggested by one local interviewee that LBPs started out as a bottom–up initiative that attracted volunteers and generated much energy locally in anticipation of receiving direct Government funding for projects. When this did not materialise, much of this grass-roots local energy was lost and now LBPs are dominated by Local Authority, agency and NGO staff.

It was suggested that the reason for this divergence of opinions about the role of LBPs could be traced back to their inception. The guiding purpose of LBPs at the time of setting them up was said to be obscure and this has led to a variety of interpretations of their role.

Currently, it is clear that LBPs are trying to clarify their role themselves as they review their plans. However, in the absence of a national steer, the role of LBPs is likely to continue being interpreted in different ways.

10.1.2. Co-ordination of priorities and targets

There is a widespread recognition that LBAPs should be better integrated with the UKBAP. Again the current lack of integration can be traced to the inception of LBAPs. It appears that the LBAP and UKBAP processes were never really designed to be totally integrated, as they started at different times.

LBPs have adopted a variety of approaches at the local level to the inclusion of UKBAP priority habitats and species in LBAPs. Some have tried for one-to-one correspondence by including priority habitats and species as defined by the UKBAP. Others have incorporated UKBAP priorities into locally tailored groupings. For example, the Cairngorms BAP has action plans with targets for each of the main UKBAP upland priority habitats. However, while it highlights the key species associated with these habitats, there are no species action plans. In Argyll and Bute, blanket bog and raised bog are dealt with together in a single Habitat Action Plan for Peatlands. While the one-to-one correspondence approach is better for integration with the UKBAP, the latter approach of working within broad habitat types may make the LBAP more accessible to landowners, land managers and the general public by using terms that they are more likely to understand.

For the most part there is a willingness among people involved with LBPs and with the UKBAP to work more closely together, and events have been held to encourage this. Recent or forthcoming reviews of LBAPs are seen as opportunities to achieve greater integration as well as to reinvigorate the LBAP process and re-extend the invitation to local partners to participate. However, at present, the UKBAP and LBAP processes largely work independently of each other, and it was suggested that lack of co-ordination and communication between LBAPs and UKBAP Lead Partners was the major barrier to better integration of the national and local processes (see sections 1.1.3 and 1.1.4).

Another barrier relating directly to the co-ordination of priorities and targets arises from the problems associated with defining upland habitats on the ground. Some Lead Partners suggest that one of the most useful objectives for LBAPs with regard to priority species and habitats is to record and report their extent and condition within the LBAP area, particularly outside of designated areas. However, this is complicated for upland habitats by difficulties associated with applying definitions of habitats and habitat condition on the ground. For example, in some circumstances the UKBAP suggests that land covered with very similar dwarf shrub vegetation should be determined as either Upland Heathland or Blanket Bog depending on the depth of peat on which it occurs – which is often extremely difficult to ascertain. Also, where habitats occur in mosaics it can be difficult to define which habitat should be recorded. This makes assessment of the base resource very difficult and thus complicates the identification of local priorities and the setting of appropriate targets.

A further barrier to better integration is the lack of standard terminology among LBAPs for goals, objectives, targets and actions, which impedes integration. Where it is not happening already, LBAPs could be encouraged to adopt standard terminology that is compliant with BARS.

The UKBAP is subject to periodic review of habitats and species to be included on the list of priorities and the targets set for them. Integration of UKBAP and LBAP processes requires that changes to UKBAP priorities and targets are incorporated into LBAPs. Therefore alignment of LBAP review cycles with each other and with UKBAP review cycles would help integration.

10.1.3. Co-ordination between LBPs and UKBAP Lead Partners

Communication between LBPs and Lead Partners is limited. The lack of communication is apparent in both directions. Interviewees raised several points with regard to this lack of communication.

- Some Lead Partners do not understand what LBPs do and how they operate. It is felt by some that Lead Partners tend to think of LBPs as autonomous organizations that have responsibilities for delivering biodiversity objectives, whereas in fact they are collections of partners who come together to inspire and co-ordinate local action.

- There is sometimes a communication gap between Lead Partner representation at the national and local level, such that local representatives of Lead Partner organisations on LBPs are not aware of the concerns of the national Lead Partner in the same organisation. This can give the impression that the national Lead Partner tends to be an individual who is isolated within an organization rather than the organization as a whole.

- Stronger links with Lead Partners may be hampered by the fact that they are often based in another country. Communication then depends on there being someone on the UK Steering Group for a HAP or SAP to represent Scotland.

If these Scottish representatives then become a focal point, do they see this as part of their remit when they are not officially designated as Lead Partner?

- Local Biodiversity Officers expressed a desire for Lead Partners to play a more strategic co-ordinating role. It was suggested that it would be useful if Lead Partners could help LBPs to define local, spatially-explicit targets for habitats and species. LBPs also require a steer from Lead Partners as to the importance of their areas in the national context for particular habitats and species, so that they can assess what their key priorities should be.

- Many Lead Partners say that they receive little contact from LBPs. Lead Partners are therefore often unaware of what is happening at the local level. Any contact tends to be with particular interested individuals, and therefore overall contact with LBPs is patchy.

- Lead Partners for rare species that occur in relatively few localities tend to see little added value in contacting LBPs directly, as they consider that everything that can be done for their species is already being done.

- Lead Partners for upland priority habitats tend to see their role more as one of co-ordinating and reporting on data and figures than as a strategic, proactive one.

- Lead Partners often expressed a desire to have a more strategic, proactive role leading and encouraging projects, identifying what needs to be done where but this is hampered by the scale of the task, particularly for the upland priority habitats and species with widespread distribution.

- Lead Partners from smaller organisations within the private/voluntary sector could do more if they were paid for it. As one interviewee put it, acting as Lead Partner "*gives a warm glow but we can still go bust*" [4].

Interviewees identified several opportunities for improvement in the co-ordination between LBPs and Lead Partners.

- Lead Partners could help LBAPs to define local, spatially-explicit targets for habitats and species.

- Links are likely to be strongest when there is a specific Project Officer for a particular habitat or species who links directly with a LBP.

- Demonstration days for priority habitats and species are a good way of disseminating practical advice regarding management and available grants.

Example – An excellent example of demonstration for an upland priority species was the Juniper Demonstration Day in 2003 initiated by Scottish Native Woods. This involved morning presentations of practical guidance leaflets on juniper regeneration and management and also an overview of all the possible grants available for juniper work followed by an afternoon field visit. The Lead Partner for Juniper in Scotland was able to use this event to present a booklet of practical guidance on the management of juniper ("*Managing uplands for Juniper"*, Plantlife Back from the Brink Management Series, **http://www.plantlife.org.uk/uk/assets/saving-species/saving-species-publications/Management-Managing-uplands-for-juniper.pdf**).

- Lead Partners could attend meetings of multiple LBPs in order to communicate and disseminate information. These would be good opportunities for LPs to deliver practical advice on how to improve delivery of biodiversity objectives.

- Lead Partners could have dedicated web pages on the UKBAP site for dissemination of practical advice, examples of good practice, sources of funding and news.

- BARS has great potential to improve communication and greatly facilitate the Lead Partners' task of collating and reporting action. The effectiveness of BARS depends on the extent to which LBPs and others use it. The use of BARS needs to be encouraged.

- In order to clarify responsibility and facilitate information exchange, Lead Partners could be identified at the country level rather than for the whole of the UK.

- The 2005 reporting round for the UKBAP could provide an opportunity to analyse in greater depth the issues surrounding the links between Lead Partners and LBAPs.

10.1.4. Communication

Good communication is an essential requirement for integration between local and national processes. The following points regarding communication were raised during the interviews.

- The Local Biodiversity Officer (LBO) obviously has a pivotal role. They are key nodes through which national and local developments and information are channelled. A majority of interviewees involved with the three LBPs cited the LBO as their main source of information regarding the UKBAP and Scottish Biodiversity Strategy (SBS).

- Much of the work involved with improving integration between local and national processes falls to the LBO. This is a lot of work and there are many other demands on LBO time. Uncertainty of funding means that some LBOs

have to spend a lot of time finding the money to fund their own post. This detracts from other activities including the work towards better integration.

- The UKBAP website is an important source of information and appears to be widely used both locally and nationally. This could be further developed as a 'one stop shop' for advice, guidance and news on UKBAP species and habitats.

- UKBAP news is disseminated through a newsletter, "Biodiversity News – The Newsletter for Biodiversity Action Partners". This is available for download from the UKBAP website. Such newsletters were considered useful sources of information. Some preferred e-newsletters with links to websites while others suggested that they were more likely to read a newsletter that they received as hard copy.

- A desire for UKBAP and SBS representatives to come and talk to people involved with LBAPs was expressed by some LBP members. Given the resource implications of visiting all of the LBPs individually, the SBF appears to be addressing this via the annual LBP Conference attended by LBOs, at which representatives of the national biodiversity process are able to update the audience. It then falls to the LBO to disseminate this information back to their LBPs.

- Representatives of national agencies who are involved with LBPs can also contribute information on national developments from their organisations' internal communication channels to other members of their partnership. LBPs could make better use of their own partners' knowledge by periodically collating summaries of national developments within particular organisations for dissemination to all partners.

10.2. Scottish Biodiversity Strategy (SBS)

The SBS was designed to operate at a strategic level, promoting the incorporation of biodiversity issues into other policy realms. In doing this, the SBS tries to promote the general conditions for meeting UKBAP targets. The actual link between the UKBAP and SBS is formed by two or three people from Scotland who sit on the UKBAP Standing Committee. Linkage between LBPs and the SBS is achieved by inviting LBOs to attend Scottish Biodiversity Forum (SBF) Working Group meetings. The post of Scottish LBAP Officer has now been incorporated into the SBF Biodiversity Implementation Team (BIT). This is an important role for promoting the national co-ordination of LBAPs. SBF and other Scottish biodiversity news is disseminated via "The Forum – The Newsletter for Scotland's Biodiversity". The LBAP Newsletter that was formerly a separate publication has now been incorporated into "The Forum" which is produced by the BIT twice per year.

At the local level, there is still some uncertainty as to the overall purpose of the SBS. In some quarters, it is seen as another layer of bureaucracy that has been inserted between the UKBAP and LBAP processes rather than as a national partnership that

seeks to deliver cross-cutting targets and promote conditions that aid the delivery of UKBAP targets.

There is a sense among people operating at the local level that the SBS is somewhat disconnected from the LBAP process at present. LBOs suggested that they are largely unaware of what the Scottish Biodiversity Forum (SBF) is doing; in general, its work appears to be largely unnoticed at the local level at present.

Where people were aware of the SBS Implementation Plans, they generally considered the targets included in these to be too aspirational and without enough thought as to who would actually deliver them in practice and how they might be achieved.

It is also recognised that the SBS Implementation Plans are relatively new and also that they are meant to be complementary to existing work rather than putting forward additional prescriptions. Therefore it is to be expected that their impact at the local level has been minimal to date.

The 2005 reporting round for the UKBAP could provide an opportunity to assess the issues surrounding delivery of HAPs and SAPs and incorporate these into the next round of Implementation Plans.

11. Prioritisation and planning

Consideration of the UKBAP can give rise to the suggestion that there is potential for conflict between upland priority habitats and/or species. Interviewees were asked to identify examples of any real or potential conflicts of biodiversity interest in the uplands. Where conflicts were identified, interviewees were asked to describe how these were overcome and, where appropriate, the process for prioritising between habitats and species.

11.1. Conflicts between upland habitats and/or species

The issue was well summarised by one interviewee who said:

> "*When wish lists were drawn up, nobody ever said they wanted less of their habitat*" [2]

Evidently, where priority habitats are adjacent, and there are aspirations to expand both, it may only be possible to expand one at the expense of the other.

The following examples of real or potential conflicts of biodiversity interest between upland habitats and/or species were highlighted.

11.1.1. Expansion of native woodland onto heathland/open habitats

This is the example of conflict that was most often raised. Several specific examples were highlighted.

Example – Forestry Commission, Glenmore Forest Park. The Management Plan called for the expansion of the Caledonian pinewood onto the open hill which includes other habitats that are included on Annex 1 of the EU Habitats Directive (European Dry Heaths and Northern Atlantic Wet Heaths with *Erica tetralix*). The conflict between biodiversity interests was resolved to some extent by comparing designations. Within Annex I of the EU Habitats Directive, Caledonian pinewood is denoted as a priority habitat whereas European Dry Heaths and Northern Atlantic Wet Heaths with *Erica tetralix* are simply listed habitats. Therefore, within the Natura process, pinewoods trump heaths and can be prioritised accordingly. An Environmental Impact Assessment was also carried out to look at the "pluses and minuses" across the whole area. The conclusion was that it would be appropriate to allow woodland expansion at the expense of the open habitats.

Example – RSPB Abernethy Reserve. In order to expand Caledonian pinewood onto upland heathland, RSPB had to apply to SNH for derogation for actions affecting designated open habitats. RSPB argued the case in terms of the fragility and poor extent of pinewoods and the added value of promoting Capercaillie interests.

Example – Glenlivet Estate. Crown Estates were very proactive in the early 1990's in initiating a birch woodland regeneration scheme. This encouraged the expansion of scrub birch woodland into overgrazed and degraded areas of moorland fringe habitat. An incentive for this was provided by pioneering a farm-based management scheme using Woodland Grant Scheme payments to provide grants to farmers to exclude stock and manage for woodland regeneration. Wetland and scrub birch woodland were subsequently included in the ESA scheme in 1992. Farmers responded well to these incentives that were motivated primarily by biodiversity interests. Shelter was a secondary benefit.

Some interviewees reported that landowners who fear the loss of moorland have concerns over the expansion of woodland within the Cairngorms National Park. It was suggested that they consider that moorlands are not sufficiently recognised for their international importance. This concern was expressed by one interviewee who said:

> "*In general, people are talking more about planting trees on moorland than they are about knocking holes in woodland to create moorland stepping stones or pathways.*" [2]

On the other hand, it was also suggested that Caledonian pinewood is only expanded into areas that are known to have been pinewood in the past. A remnant of pinewood is required to justify expansion.

11.1.2. Woodland expansion encourages birds of prey that predate other upland birds.

Example - In Dumfries and Galloway the suggested expansion of semi-natural oakwoods on one estate was inhibited by the fears of the sporting estate that this would attract crows that would predate upland birds.

11.1.3. Black grouse and commercial forestry

This is an ongoing issue. The woodland edge needs to be open-structured in order to benefit Black grouse. It was suggested that it has been difficult to get commercial foresters to manage in this way as their focus is on production. Getting additional funding to make payments to offset the loss of production has been a struggle. Private landowners tend to require 100% of costs for this form of management to even consider doing it.

In some cases, it may be desirable to expand woodland edges but this is made difficult by the presence of adjacent managed heath. Diversifying a woodland edge requires either woodland expansion onto open ground or opening up of edge at the expense of woodland.

11.1.4. Species-rich Nardus grassland and montane willow

Example – Species-rich *Nardus* grassland is the qualifying feature for Glen Coe SAC which is owned and managed by the National Trust for Scotland. There is also a large population of *Salix myrsinites* at the site. These features require different management in that the grassland requires some grazing while the willow requires none. This was overcome by agreeing with SNH to put a fence around the *Salix*.

11.1.5. Upland heath and montane willow

Example – White Coomb SAC was originally designated for dry heath. Suggestions to include montane willows and tall herbs on cliffs were not accepted at the time and now there is some management conflict. Fencing is beginning to be used to overcome this problem.

11.2. Prioritisation

The foregoing examples raise the issue of how to prioritise among priority habitats and species. On Natura sites, it is relatively straightforward to plan habitat expansion because, within Natura, the hierarchy of priority over non-priority habitat aids prioritisation. Within the UKBAP, however, everything is a priority. Outside designated sites, prioritisation depends to a large extent on what landowners want to do on their land and what they can obtain funding for.

At present, decisions regarding the expansion of one UKBAP priority at the expense of another are made on a case-by-case basis. Local assessments of cases of conflict that arise will look at the relative loss or gain of habitats in a particular area against their national extent. At a local level, one habitat is invariably deemed to be less important than another.

In general, conflicts like this may only be perceived at the local level. At the national level, it was suggested by one interviewee that the idea of conflict between upland habitats was "a red herring" as there is plenty of acid grassland, degraded bog and areas of habitat in unfavourable condition to absorb the desired expansion of priority habitats as long as one is careful about safeguarding the more restricted habitats.

Despite this, several interviewees suggested that there needs to be a clearer national steer on what the priorities for the uplands should be, both in broad land-use terms and in terms of more detailed prioritisation of habitats within the UKBAP process:

> "*Until there is a recognised national objective on what should be the balance between different land uses, it will be difficult to have meaningful control or incentive schemes*" [2]

> "*Strategic prioritisation of habitat expansion will be required eventually*." [2]

However, others commented that it is not desirable to make general prescriptions. Creating an overall national hierarchy among UKBAP species and habitats would be very difficult and could potentially cause conflict. Prioritisation should be considered on a case-by-case basis because conditions on the ground vary from place to place.

11.3. Planning

The idea of national-level prescriptive planning for biodiversity is viewed with some degree of discomfort in some quarters. One interviewee expressed an ethical objection to the idea of micro-managing the natural world as this leads to wholesale incorporation of biodiversity into state bureaucracies which lead us to consider it wholly subject to our control. On the other hand, concerns were expressed by another interviewee about losing control over the land:

> "*Woodland in the right place is fine. Losing open ground to invading woodland through lack of management is a problem*." [2]

Whatever the pros and cons of developing a national plan for the uplands, at some point it would need to be broken down to a scale that people can work with. Effective delivery of biodiversity action is more likely to be achieved where there is good alignment of the scales at which vision development, management planning and implementation are carried out.

Catchment Management planning was mentioned in many interviews and there are examples of this happening under the auspices of LBAPs in Dumfries & Galloway and Argyll & Bute. A catchment seems to be a reasonable 'bite-sized chunk' at which to look at integrated land use. It also lends a degree of ecological coherence to the process.

Example – Dumfries & Galloway Catchment Management Project. Arising from the Dumfries and Galloway Local Biodiversity Action Plan, the aim of this SEPA/SNH funded project is to co-ordinate a broad partnership to look at land management issues within individual river catchment areas. Catchment Management Plans have been written for the Annan, Dee-Ken and Nith catchments (**http://www.sepa.org.uk/catchments/index.htm**).

The Water Framework Directive (WFD) may further promote catchment-scale management. It has the potential to promote a broader management vision of how particular practices affect other components of the catchment, including biodiversity. The approach adopted by SEPA for delivering the WFD is not to develop plans on a catchment by catchment basis but to encourage Area Advisory Groups to take account of existing Catchment Management Planning (CMP) initiatives in developing their Area Management Plan, and to promote the establishment of new CMP initiatives where they consider this necessary to deliver effective management within their area. There are no plans at this stage to specifically represent biodiversity planning on the Area Advisory Groups but it is anticipated that biodiversity issues will be addressed through the Biodiversity Duty incumbent upon statutory Group members (**http://www.sepa.org.uk/wfd/rbmp/html/strategy/4.html#4.3.5**)

At the landscape scale, strategic planning for biodiversity seems to be most highly developed in the forestry sector where there are numerous examples of published strategic plans. This type of framework plan could be a useful approach for other upland habitats.

Example - Scottish Borders Woodland Strategy. This sets out policies and proposals for the future of trees, woodlands and forests in the Scottish Borders. **http://www.scotborders.gov.uk/life/planningandbuilding/plansandpolicy/5660.html**

Example – Cairngorms Forest and Woodland Framework. This is intended to provide a basis for guiding the future management of forests and woodlands across the Cairngorms National Park.
http://www.cairngorms.co.uk/parkauthority/forestryandwoodland/index.php

In Wales, a different approach to framework planning for protected sites is being developed. This approach adopts a strong visioning element by developing maps of desired future outcomes for specific upland sites.

Example - Upland Framework, Wales. In Wales, the developing 'Upland Framework' aims to set upland conservation objectives for protected sites within a broader context and longer timeframe. The best available data from vegetation surveys, species distributions and condition monitoring for all designated sites has been compiled. For each upland site, maps have been produced that outline the desired outcome for the site in 100 years. These maps are then used to guide action and funding.

11.4. Flexibility/Ecological dynamism

A common theme that was raised by interviewees was the opinion that the future for upland biodiversity probably lies in the further development of landscape-scale ecosystem management. In the words of one interviewee, "*strategic, process-orientated ecosystem planning that is robust enough to accommodate change*" [2]

The latter point about accommodating change is important because of the potential for significant climate change. As one interviewee put it:

> *"Climate change means that we are re-arranging deck chairs on the Titanic when we argue about small losses of open habitats to woodland expansion for example. We need to take away some of the constraints to dynamism such as overgrazing and burning and give the system some scope to adjust naturally to a changing climate."* [4]

In pursuit of good ecosystem management, the promotion of more habitat connectivity, habitat mixtures and habitat mosaics will require land managers to be accorded the freedom to reach beyond the constraints of the UKBAP system that tends to compartmentalize biodiversity.

> *"The way that Natura legislation is interpreted in this country means that we are bound to ecological stasis where everything has to stay the same as what it was designated for."* [4]

Ultimately the case for more flexible ecosystem management will be made on the basis of benefits to biodiversity.

> "*The greater benefits that may be derived from linking particular habitats might over-ride considerations about favouring one habitat over another or losing a bit of one habitat.*" [2]

12. Actions, co-operation and efficiency

Interviewees were asked: how effective they thought LBPs were for delivering upland biodiversity objectives; how much co-operation there is across LBP and ownership boundaries; what the main knowledge gaps for the delivery of upland biodiversity are; if they could think of any examples of community involvement with delivery of biodiversity action in the uplands; if they could think of any examples of social and/or economic benefits associated with upland biodiversity (see Appendix 3).

12.1. Effectiveness of LBPs for upland biodiversity

There are both strengths and weaknesses of LBPs as fora for biodiversity action in the uplands.

The partnership working of LBPs and the 'peer pressure' that arises from that can be a good stimulus to action. LBPs can provide the umbrella under which upland projects come into being. As these partnerships tend to bring together a diverse range of organisations, they form broad coalitions from which innovations can arise.

Example – Upland Grain Project, Cairngorms Biodiversity Partnership. 2004 saw the final year of the five-year Cairngorms Upland Grain Project involving 5 farms growing sacrificial crops for birds. These crops provide a valuable food source for winter birds. This pilot project was highly popular with the farming and crofting community in Strathspey, and influenced the incorporation of sacrificial cropping as a management option in the national Rural Stewardship Scheme.

Several interviewees highlighted the fact that LBPs are particularly focused on building local capacity for biodiversity action through demonstration of good practice and raising awareness of biodiversity issues among the public. Demonstration projects are excellent opportunities for bringing people together and promoting thought, articulation and awareness about land management issues.

Example – Land Use Demonstration Project, Argyll & Bute Biodiversity Partnership. Four, day-long events were held across Argyll (Mull, Kintyre, North Argyll, Mid-Argyll). SEERAD supplied a list of all the farmers in the area who had taken up agri-environment schemes. Invitations were sent to all of these and also to relevant agency staff. The project offered £50 plus travel expenses to land managers and farmers for attendance. 20-30 people attended each event, which consisted of a site visit in the morning and then a workshop in the afternoon. As well as addressing practical land management issues, this was a good opportunity for farmers to interact with agency staff and discover the "*surprising amount of common ground*" [2] between them.

Example - West Highland Woodland Grazing Project, Argyll & Bute Biodiversity Partnership. This project aims to demonstrate the conservation and economic value of woodland grazing. This was a direct result of the membership of the LBP being sufficiently broad to make this project happen.

Example – Linking the Ling Moorland Management Project, Dumfries & Galloway Biodiversity Partnership. This project involves the demonstration of suitable techniques for heather and moorland management. The aim is to demonstrate to landowners and farmers how land management could include biodiversity in ways that would not be detrimental to their farming practice. Four sites have been selected and fenced off and subjected to different management practices. Funding was made available to landowners for the fencing and they were encouraged to try different practices through management agreements. The funding included money for survey and monitoring which is due to extend beyond the three-year core funding period of the project. There has been a lot of positive feedback about the project and there has been talk of rolling this model out to other areas.

Despite the evident capacity for LBPs to influence land management for biodiversity in the uplands through demonstration projects, the uplands present significant challenges to LBPs in terms of their ability to instigate and deliver projects that are directly related to upland habitat creation, expansion or restoration. These include the following points:

1. The huge scale of upland habitats is utterly disproportionate to the staffing and funding levels of LBPs. LBAP projects tend to be quite small scale. With limited resources, LBAP projects are prioritised on the basis of practicality and deliverability, both of which are less certain in the uplands.

2. LBP action tends to be stimulated by issues of public interest because raising public awareness of biodiversity is a key LBP objective. However, as the uplands are sparsely populated, public interest is less important as a driver for action. The most common impression among interviewees was that LBPs tend to focus more on lowland projects where local groups can get involved.

3. Much of the uplands are owned privately and not designated for conservation. They are therefore largely outwith direct public sector action and control. This negates one key strength of the LBPs: the ability to influence the public sector in terms of integrating biodiversity issues into local and regional strategies and plans. Action in the uplands depends largely on landowners and land managers and, despite some exceptions, these groups are generally not directly connected to the LBP process.

12.2. Co-operation across boundaries

Given the large scale of the uplands and the fact that habitats and species do not respect human boundaries, effective action for biodiversity requires co-operation across boundaries, be they LBP or land ownership boundaries.

12.2.1. LBP boundaries

The Local Biodiversity Officers reported good communication with neighbouring LBPs. This tends to take the form of meetings twice per year and email contact throughout the year. The primary purpose of the communication is to keep each other informed of work ongoing and planned so as to reduce the potential for duplication of effort. This process is also facilitated by the SBF BIT which pools and disseminates information about what the different LBPs are working on.

Although there is evidently potential for cross-boundary biodiversity projects and in some cases there are discussions underway regarding projects, the LBPs involved in this study did not currently or recently have any such projects.

When asked to identify if there were any specific barriers to joint working with neighbouring LBPs, lack of time and money was the unanimous response from the LBOs. Organising cross-border projects is generally more difficult. Given that there is so much to do within the LBP boundary, the easier or more practicable within-boundary options are generally chosen over the more difficult cross-boundary projects.

12.2.2. Ownership boundaries

Several interviewees suggested that, in general, it is difficult to get private landowners and/or farmers to work together on common projects – particularly biodiversity projects, because biodiversity is often not very high on their agendas.

Barriers to joint working lie mostly in the fact that neighbours often have different objectives, interests, ways of thinking and ethos for land management. Sometimes they simply do not get along with each other. The extra effort required to develop joint working projects with neighbours means that, both physically and psychologically, it is easier to work within one's own boundaries. This sense of separation is probably reinforced by the topographical separation resulting from boundaries which run along the tops of watershed divides.

Despite these barriers, it was pointed out that landowners are willing to co-operate when it is in their interest to do so.

Example - Angus Glens Moorland Health Project. A collaborative scheme with farmers, keepers and proprietors working together to reduce sheep tick and tick-borne diseases by reducing deer numbers and using sheep treated with acaricides as 'tick mops'. "*…the innovative project has attracted the unanimous support of all 11 upland proprietors in the locality, who recognise that a joined-up approach is essential to reducing tick densities and therefore tick-borne diseases in the area"* (**http://www.gct.org.uk/article.asp?PageId=78&ArticleId=97**)

Example – "*Deer Management Groups comprise groups of estates or other landholdings which share access to a discrete population or herd of deer which is managed as a common resource. They have been set up over the last 30 years with the encouragement of the Deer Commission for Scotland, which is the Government agency with the responsibility for the conservation and control of all four species of deer presently found in Scotland*" (**http://www.deer-management.co.uk/**). Deer Management Groups have begun to look at cross -border issues and to recognise that there can be land management objectives other than those relating to sporting interests.

Interviewees highlighted several opportunities for promoting co-operation among landowners in relation to upland biodiversity issues.

- Incentives for landscape-scale co-operation on management for upland biodiversity could be built into agri-environment schemes. These would need to be attractive enough to overcome the difficulties of collaborative working in terms of the time and effort required.

- The promotion of catchment-scale management through the Water Framework Directive (WFD) could help to promote a culture that considers how individual actions affect other people, areas and issues.

- Open days and demonstration days could be held to bring people together.

- The success of Deer Management Groups could be built on, to broaden their vision to include wider biodiversity issues.

- Landowners who manage their land for biodiversity continue to engage in the slow process of building relationships with neighbours and demonstrating good practice.

12.3. Knowledge gaps

Interviewees were asked what they thought were the main knowledge gaps affecting the delivery of biodiversity objectives in the uplands. Responses were grouped under six broad headings: basic information; management; climate change; ecology; social dimension; vision.

12.3.1. Basic information

- Basic data on the distribution and status of species and habitats in the wider countryside is often lacking. "*In a lot of cases we don't actually know where stuff is!*" [4]

- Lack of basic data is an issue in the uplands even for relatively well-studied groups. For example, the distribution, status, population trends and habitat requirements of upland birds is less well understood than for lowland birds.

- There is a lack of specialists for rare taxa (particularly lower plants and fungi). This means that there is a basic lack of knowledge regarding their current status, inhibiting the ability to make sensible value judgements about them.

- The condition of habitats outside designated areas remains largely unassessed and unknown.

- The effect of designation on habitat condition has not been systematically studied by comparison with non-designated land.

12.3.2. Management

- We still do not know what the best management prescriptions for many habitats and species are.

- The 'nuts and bolts' of good moorland management and restoration are not well documented.

- Restoration of blanket bog. Is it possible in the present climate? What is the right management? Should cattle be used? If so, how many? Are there any additional management measures that can be added to drain blocking, and grazing and burning reduction in order to speed the process?

- The effect of reduced grazing. We need long-term research and monitoring to assess the effects of upland abandonment.

- Optimal burning techniques. At what temperature should a fire burn for optimal heather regeneration?

- Lack of practical land management experience.

- There is a need to translate research into good practical guidelines.

- There is a need to translate biodiversity action plans into simple practical guidance for land managers.

- Lack of knowledge regarding long-term outcomes of management actions. There is a need for long-term demonstration projects.

- How to manage land collaboratively on a large scale. Lack of a culture of collaboration in land management.

- How to manage land for lower plants and fungi.

12.3.3. Climate change

- Population dynamics and response to climate change.

- There is a need for better climate change scenarios.

- The interaction between climate change, heather beetle, heather quality and heather management.

- Impact of climate change on the National Vegetation Classification. To what extent are species mixes likely to change and therefore make the NVC more difficult to use?

- The response to climate change of lower plants.

- Response of species and habitats to air pollution and the interaction with climate change.

12.3.4. Ecology

- "*We still know surprisingly little about the needs of particular species and how they relate to each other*" [3].

- Ecology of montane habitats.

- Ecology of sheep tick.

- Ecology of heather beetle.

- Regeneration ecology of upland species (e.g., *Woodsia, Salix*)

- Ecosystem ecology. There is still a lot to learn about the ways in which species interact with habitats.

- Minimum Viable Habitats. What is the minimum functional area for upland habitats?

12.3.5. Social dimension

- There is a lack of good understanding of how people perceive the uplands. Delivery of biodiversity objectives is essentially a "social process" and therefore we need a better understanding of what motivates land managers, how they relate to each other and to the conservation lobbies and *vice versa*.

- Many land managers and landowners still don't know that LBPs exist; LBPs need to target information better.

12.3.6. Vision

- There is a lack of a vision for the uplands that balances all interests.

- There is a lack of understanding of the key objectives for upland biodiversity. Land managers on non-designated sites do not know what is expected of them.

12.4. Local community involvement

One of the perceived barriers to the uplands receiving greater public support is that they do not have a coherent and vocal public lobby promoting their cause. This may be because the public are generally disconnected from the uplands. Their perception of the public benefits of the uplands is therefore limited and the case for public money is diminished.

Interviewees were asked to identify barriers to greater public involvement with the uplands and if they could think of ways in which local communities could be encouraged to become more involved. They were also encouraged to highlight examples of good practice.

Interviewees made a distinction between communities of interest for the uplands – such as walkers, climbers and naturalists – and local communities living in close proximity to the uplands.

Communities of interest tend to be dispersed, which makes co-ordinated action among them more difficult to achieve. Local communities are often more interested in other things such as employment, local services, history and tradition. Even among local communities where there is interest in biodiversity issues, proximity is the key to local action. Most local communities get involved in projects that are close to home. In this sense, uplands can get left out because they are rarely close to home.

A further barrier may lie in the perception of the uplands held by the general public. There may be a perception among 'lay' people that the uplands look the same year on year and that therefore there are probably no real problems that need addressing. The perception of threat is limited by the slow pace of change in the uplands. As one interviewee put it, there is a perception that:

> *"the hill is there, the hill has always been there, the hill always will be there. It doesn't change.*" [3]

The uplands may just be too big for people to comprehend what they could actually usefully do there. It is also perceived that uplands biodiversity is generally taken care of by someone else, either by Government agencies or through agri-environment schemes. Furthermore, many people may be inhibited by their perception of the uplands as a hostile environment.

In general, the promotion of community involvement requires a holistic approach. Local involvement is likely to be best promoted when environmental interests are bundled together with socio-economic gains. Several areas of opportunity for promoting community involvement were highlighted during the interviews.

12.4.1. Education

There is a continuing need to raise awareness about the value of upland habitats and species and the management issues that affect them. Compared to woodlands, it can be more difficult for people to connect with the uplands from a biodiversity point of view because the uneducated eye sees only a "*flat bit of ground with nothing on it*" [2]. This sort of basic education can be aimed at schoolchildren in imaginative ways.

Example – Cairngorms Moorland Project. As part of this demonstration project, schoolchildren were educated about moorland habitats and species and land management through a series of classroom workshops and site visits to a demonstration moor. During the site visit, children were engaged in a role playing exercise where they took it in turns to act as heather, sheep or shepherd.

Much depends on the private landowners. There is a need for mechanisms that encourage relationships and co-operation between landowners and local communities. Local communities need to understand the constraints that landowners work under. One possibility could be for estates and other landowners to be encouraged to hold more open days during which members of the local community could be introduced to the day-to-day activities associated with land management.

Example – Langholm Initiative Moorland Project. In this partnership between the Langholm Initiative and Buccleuch Estates Ltd, rangers from Buccleuch Estates contribute by running Land rover tours up onto the moor.

Ranger services have an important role to play because they can facilitate access to and interpretation of upland areas.

There is also a need to look for other opportunities to raise biodiversity awareness. For example, local features of historic interest could provide a focus for biodiversity enhancement and interpretation so that people pick up an interest in biodiversity through their interest in other things. In the words of one interviewee,

> "*once you get them out there, do something with them*". [4]

12.4.2. Biodiversity recording

Both local communities and communities of interest could be encouraged to do more wildlife recording in order to foster their interest in and involvement with biodiversity.

Example - Local Wildlife Recording Group, Glenlivet Estate. Crown Estates have initiated this group after sending a questionnaire to all the households on the Estate asking what people valued and whether there was any interest in getting more involved. As a result, a voluntary group was set up and training in wildlife identification organised. The aim is to establish a web-based data recording system that will feed into other regional and national databases.

Example - Langholm Initiative Moorland Project. A web based wildlife recording scheme has been developed as part of the moorland project. **http://www.langholm-online.co.uk/pages/content.asp?PageID=415**.

Local wildlife recording could also contribute to the local economy if local recording groups were encouraged to build relationships with local landowners and supply them with local biodiversity information that they can include in their marketing of holiday cottages.

12.4.3. Access/Interpretation

As well as facilitating access by providing good paths, there is a need to provide something for people to focus on that will engage their interest. It was suggested that this probably needs to be more than a whole hillside of heather.

Example - Linking the Ling Moorland Management Project, Dumfries & Galloway. As a spin-off from this project, one of the partners (RSPB) has focused some interpretation work on one particular burn that runs close to the Southern Upland Way. The burn provides a focus of interest alongside which interpretation about wider moorland issues can be communicated.

12.4.4. Ownership/control

It was suggested that if local communities had more control over the ways in which money (including agri-environment payments) is spent in the uplands then they would be more likely to become involved.

The ultimate incentive for involvement is where communities actually own the land and have control over how it is managed.

Example - Carrifran Wildwood Project. "*Carrifran Wildwood is a bold initiative in ecological restoration, spearheaded by a group of friends in the Scottish Borders, with over 800 major supporters across Britain and overseas. The idea is to re-create an extensive tract of wild and largely wooded land, evoking the pristine countryside of six thousand years ago. Once again there will be a haven for a rich array of native Scottish plants and animals excluded for centuries from these denuded hills"* (**http://www.carrifran.org.uk/index.htm**). Money to purchase a 1600 acre valley in the Moffat Hills was raised without public sector funding; the project is overseen and managed by unpaid volunteers who operate through a registered charity which employs a project officer.

Other models of community-driven land management could be developed by which local people can become more involved in the uplands. For example, collective management of a cattle herd through cattle clubs can promote social cohesion, economic gains and biodiversity interests at the same time. There is an opportunity to promote this approach more vigorously within crofting townships where individuals have a share in a common grazing.

Outside crofting townships, the uplands tend to be managed by individuals. In the current climate of economic change in farming, there may be opportunities to develop collaboration between private landowners and local communities to promote sustainable farming practices for the uplands. For example, Community Supported Agriculture schemes are being promoted by the Soil Association. These foster a partnership between farmers and consumers where the responsibilities and rewards of farming are shared. Farmers benefit from a guaranteed market for their produce and a fair return. Consumers benefit from fresh local produce and opportunities to be involved in on-farm activities. Financial partnership may also operate through community rental of land or shares in particular crops. At present, these schemes operate mainly in the lowlands. It would be interesting to see if this concept could be taken up the hill and linked specifically to biodiversity gains by promoting sustainable sheep or cattle management.

12.4.5. Volunteering opportunities

Provision of more practical volunteering opportunities in the uplands would help to promote community involvement. Examples highlighted were limited to tree planting at Carrifran and path maintenance at various locations.

12.4.6. Consultation

Consultations with local people on land management issues are a good opportunity to raise awareness and develop understanding among the public.

Example - The Forestry Commission employs people to do local consultations and take people out to forest sites to show them how they are going to be managed. There is nothing comparable for the uplands/open ground.

Example - The RSPB consult with local communities during the development of management plans for their Reserves. Draft plans are made available in local libraries before being authorised.

12.5. Social and economic benefits

It is important to promote the social and economic benefits of upland biodiversity in order to promote public engagement and also to facilitate the support of upland management that benefits biodiversity from a broader range of funding sources.

> "*Getting local communities to have a sense of ownership of habitats and species because they can see the economic benefits will, in the long run, have more benefit than legislation because politicians will take more notice if local communities are behind the process*". [2]

Interviewees identified several examples of uplands biodiversity providing tangible social and economic benefits to local communities, showing that biodiversity should be viewed as an economic asset rather than as a liability – as it still is by some.

12.5.1. Tourism/recreation

Tourism is the largest and fastest growing industry in Scotland, and ecotourism forms an increasingly important part of the sector. Where tourists are attracted specifically to view particular species in the wild, the benefits to the local economy from tourist spending on accommodation and services can be attributed as a value of biodiversity.

Examples

- Black Grouse lekking tours in April/May. These provide an opportunity for extending tourism at the beginning of the season.
- Rutting deer tours in October. These provide an opportunity for extending tourism at the end of the season.
- White-tailed Sea Eagles on Mull. These attract ca. £1.5 million p.a. to the local economy (**http://www.rspb.org.uk/Images/watchedlikeneverbefore_tcm5-101241.pdf**).
- Ospreys at Loch Garten. Over 2 million people are estimated to have visited the site since 1975 attracting approximately £1.5 million p.a. to the Badenoch and Strathspey economy (**http://www.rspb.org.uk/Images/watchedlikeneverbefore_tcm5-101241.pdf**).
- Caper-Watch at Loch Garten. This has attracted over 10,000 visitors over the six years of its operation. This operates from the beginning of April to mid-May which is traditionally a low period of the tourist season, thus boosting the local economy at a time of year that is otherwise quiet (**http://www.rspb.org.uk/Images/watchedlikeneverbefore_tcm5-101241.pdf**).

12.5.2. Direct employment

Management operations for biodiversity provide employment opportunities for local contractors.

Examples

- Removal of non-native trees from Caledonian Pinewoods.
- Drain blocking for restoration of bog woodlands.
- Predator control for Capercaillie.
- Local fencing contractors used to fence demonstration sites for Cairngorms Moorland Project.

A further opportunity for generating local employment may be to find ways of engaging local communities in heather management in areas that are no longer managed for grouse but where managed heathland is still considered a conservation priority. This would require a high degree of flexibility because the work is weather-dependent. It would also require training the local workforce. There would be issues to do with Health & Safety surrounding the use of prescription burning and ticks, but these could be overcome by developing an accredited training course for prospective moorland managers. Such a scheme would be aimed at bolstering the capacity of local communities to supply appropriately skilled labour in areas where traditional management for sporting purposes has fallen into decline.

12.5.3. Business opportunities

Integration of biodiversity and economic objectives can be promoted where there are opportunities for local business to be generated on the back of action for biodiversity.

Example – Glenlivet Estate Birch Woodland Management Scheme. Through the Wood Grant Scheme, farmers were offered incentives to promote birch woodland on their land for biodiversity interests. This stimulated the establishment of a local business by one farmer who set up a sawmill on his farm to supply birch firewood logs to local households.

12.5.4. Eco-labelling

Marketing local produce on the back of conservation interests could promote biodiversity gains for the uplands. Several interviewees cited examples of food that was marketed as 'local produce' but there were no examples of food being directly marketed under a 'conservation friendly' label. This may be an opportunity for promoting upland management for biodiversity. However, it was pointed out that there is a significant barrier in that people would not generally be prepared to pay a premium price for meat with a conservation label. Furthermore, the success of any eco-labelling scheme relies on public awareness of and interest in biodiversity so that they consider it worth paying extra for in the shops.

13. Monitoring and reporting

13.1. Survey and monitoring

This is still one of the areas receiving the least attention. Monitoring of biodiversity project outcomes, in particular, is always written into plans. In reality it is always the lowest priority, and too often receives insufficient attention.

Interviewees identified several reasons for this:

- People are good at setting up new projects but rarely follow through properly with monitoring. Monitoring and reporting is seen as a bureaucratic requirement. People prefer to move onto the next project. "*Good intentions often get lost in the rough and tumble of the next new project*" [2].

- The short-term nature of most biodiversity projects in the uplands renders most monitoring schemes set up for them inadequate because of the slow response of upland habitats to management changes. This slow response generally makes monitoring the effect of management changes difficult. Getting the timing right is crucial. Monitoring too soon may not detect any changes that are occurring; monitoring too late may fail to detect things going wrong.

- There is a perception that surveying is good but limited resources should be prioritised towards action rather than surveying. "*Survey does not achieve front line delivery*" [2].

- There may also be an element of not wanting to find out that things have not worked. People need to be more open and willing to accept that mistakes can be made.

- The large scale and remoteness of the uplands and therefore the expense of carrying out survey and monitoring activities means that these are often the first to suffer when money is cut back.

- There is still a need to develop appropriate indicators for monitoring biodiversity outcomes. With limited resources, it is necessary to know which key indicators should be monitored to maximise efficiency. The development of good indicators means facilitating the right balance between monitoring intensity and extent. There is also a requirement for indicators that can be easily used by land managers and yet are robust and reliable.

- There is a lack of specialists to call on to do survey and monitoring work, especially for lower plants and fungi.

Interviewees also identified several opportunities for improvement of the delivery of monitoring in the uplands.

- Link monitoring and reporting to additional tangible benefits such as further funding. Consider penalties for failing to carry out monitoring.

- Widening Site Condition Monitoring to the wider countryside could be good but it is necessary to ensure that results are presented in a useable way, e.g., having a red/amber/green system for habitat condition of particular sites.

- Integrate SEERAD monitoring and reporting of agri-environment schemes with the UKBAP process in order to fill the gap in the wider uplands outside designated areas. This is inhibited by a lack of alignment of terms and definitions. Agri-environment land cover definitions are chosen to fit with farmers' perceptions rather than UKBAP habitats.

- Train people to be able to survey and monitor data-poor taxa. For example the successful apprenticeship scheme for lichens at the Royal Botanic Garden Edinburgh could be rolled out to fungi and bryophytes.

- Develop better remote sensing techniques for discerning the location and extent of upland habitats.

- Group the species targeted for monitoring in order to maximise efficiency of effort.

- We are good at getting information from projects that restore habitats and improve habitat condition but we are not good at picking up on the numerous small losses of habitats due to small developments. E.g., "*a road-widening scheme here, a new lay-by there, a wind farm, a hydro scheme, a tree planting scheme*" [3]. These small losses are not recorded anywhere. There is a need to build a network of people within agencies who are responsible for recording these small habitat changes.

13.2. Reporting

The Biodiversity Action Recording Scheme (BARS) is generally perceived as having great potential for improving the recording of action and communication of biodiversity information between different sectors of the biodiversity process. However, to date, BARS is underused.

Interviewees raised several issues regarding BARS.

- The system is too detailed and therefore onerous for LBP partners or the LBO to undertake the huge job of inputting all of their plan actions and targets. A personal communication from the BARS team suggested that it would still be useful for people to input what they could manage even if this was incomplete. A general communication of this sort might help to overcome the overwhelming nature of the task and get the ball rolling.

- A lot of the reporting to BARS falls to the LBO, leading to a major time constraint.

- Each action needs to be manually typed in. There is no facility for copying and pasting targets direct from the LBAP.

- BARS need to be more flexible. For example, adjusting targets downwards for declining species is not possible.

- BARS needs to be able to accommodate spatial information. This is important to avoid duplicating records.

14. Opportunities for improving delivery

At the end of the interviews, interviewees were asked to identify what they thought were the most important opportunities for improving the delivery of biodiversity action in the uplands. The responses were collated under a number of headings.

14.1. Support schemes

Most interviewees identified the next generation of agri-environment support schemes (Land Management Contracts [LMCs]) as the most significant opportunity for improving the delivery of upland biodiversity objectives.

- There is a need to develop appropriate agri-environment schemes for encouraging good active management of the uplands; to keep people farming but with biodiversity in mind.

- LMCs need to be properly resourced. "*If* [LMCs] *are not adequately funded we're really going to come up against the brick wall*" [4].

- LMCs need to be tailored to local concerns and local priorities.

- All upland land managers should be able to get into schemes and participate in land management that contributes to delivery of biodiversity objectives. The exclusion of farmers from schemes should be avoided. Exclusion from the Rural Stewardship Scheme due to insufficient points has put more land managers off conservation than any other single factor.

- Support schemes should give farmers more freedom to manage land towards agreed biodiversity objectives.

- Support schemes should form part of a strategy for combating agricultural depopulation. The ewe population of the Highlands is 400,000 less than it was five years ago. We are losing the tools with which to do the job of upland land management. The future will require creative entrepreneurs to find new ways of managing the land. A lot will depend on how clever farmers can be in making schemes work for the farm and the farm work for the market.

14.2. Target awareness raising and demonstration projects at landowners and land managers

It was widely recognised that land managers are the people who actually deliver biodiversity action on the ground, and therefore a significant effort needs to be focused on engaging them with biodiversity issues.

- There is a need to target land managers to get them more involved with biodiversity issues. They are still broadly sceptical and unable to see the

benefits. They think that the whole biodiversity process just creates extra work for them when they are hard-pressed already.

- It is necessary to create the right incentives and provide the right resources for land managers who are responsible for biodiversity delivery. Incentives need to be easily accessible and to fit in with legitimate land management activities. "*At the end of the day biodiversity doesn't make money* [directly]*, it costs money for those involved. We need to create a complementary situation where biodiversity gains are a spin-off from good land management for economic benefit. We can do that partly through cross-compliance measures but have probably hit the wall on what this sort of regulation can achieve. We need incentives over and above the minimum regulation. We also need demonstration, awareness-raising and training so that people are actually better placed to deliver"* [4].

- Research is required into the right incentives to encourage landowners and land managers to respond positively to the invitation to manage land for multiple objectives, including biodiversity.

- More demonstration projects that can demonstrate land management practice that is good for both economic and biodiversity interests should foster better ecological awareness among landowners.

- Management for habitat connectivity and mosaics should be encouraged and promoted.

14.3. Co-operation

- A culture of co-operation and integration is needed, with commitment from the relevant agencies and authorities to work together on biodiversity issues and set up the structures required to facilitate this.

- The social dimensions need to be addressed, including breaking down the divide between sporting and conservation stakeholders. This may include the development of fora where people can come together and understand each other's concerns. There is a need to put away the politics of individual organisations.

- Regional fora are an opportunity for people to come together around a common interest – i.e., the land in their area.

14.4. Vision and planning

- There is a need to take a holistic long-term view, define a clear vision and then manage towards that, rather than always working on a problem-solving basis, managing from one problem to another.

- There is a need to develop strategic, process-orientated ecosystem planning that is robust enough to accommodate change. Different habitat and species groups should be encouraged to work together more.

- It is vital to convince people that integrated biodiversity planning is needed and can be achieved, to combat the apathy associated with the size of the task.

14.5. Prioritisation

- Better prioritisation is required. Crude ranking of habitats and species may be undesirable and even unethical (who decides what is more valuable?). However, criteria could be prioritised – e.g., threat of extinction is more important than public perception. Urgency should be the most important criterion – e.g., scarce and threatened species and habitats may be more important to address than rare but stable ones.

- One priority in setting targets should be to concentrate on those areas where the biggest impact can be made for biodiversity and for public awareness. It is not possible to do everything.

- Identify the best areas for biodiversity and connect them up (e.g., Plantlife Important Plant Areas).

14.6. Promote wider understanding

- Wider involvement and wider understanding among local communities and communities of interest need to be promoted. "*People don't understand it, people think of it as a wilderness and yet it is a vastly sensitive ecosystem that is slow to respond…but it underwrites an awful lot of what Scotland is about*" [2].

- Wider support for biodiversity would be assisted by making it easier to understand at the basic level, i.e., for people who are not directly involved with it. "*Biodiversity is a bit wrapped up in gobbledygook at the moment*" [2].

- There is a need for greater awareness among upland user groups (sporting/recreation) of their impact and how to minimise it, so that they can begin to self-assess and self-regulate.

14.7. Basic knowledge

- For many species and habitats, basic knowledge of what is there and what condition it is in is lacking; this knowledge is essential.

- Data systems must be in place in order to know what is actually happening. It is hard to justify spending money on habitat restoration and improvement unless results can be demonstrated.

14.8. Other policy instruments

- Climate change and the delivery of ecosystem services may drive land management much more in the future. This would emphasise the delivery of biodiversity gains through carbon, water and catchment management. The Water Framework Directive may provide an opportunity to develop catchment-scale, ecosystem management.

14.9. Markets

- One means to encourage afforestation is to develop markets for woodland products.

PART IV: SYNTHESIS

15. Document summary

> *"The vision for uplands and mountains is to enhance the ecological resilience and natural processes operating at a landscape-scale in order to maintain or enhance mosaics of semi-natural upland habitats that will be able to adapt to climate change and socio-economic change and still retain their characteristic species"* (Scottish Biodiversity Forum 2005: 32).

According to a recent publication of the JNCC (2006), a wide range of issues are still affecting the UK's uplands including:

- Deforestation and heavy grazing by livestock and deer
- Agricultural improvement (ploughing, draining, re-seeding and use of fertilisers)
- Afforestation with exotic conifers during the 20th century
- Uncontrolled fires, through accidents and poor muirburn practices
- Poorly managed recreation pressure
- Badly routed and constructed access tracks
- Development of structures (wind farms and telecommunication masts in areas sensitive to disturbance)

These issues need first to be overcome in order to achieve the vision of the SBS Implementation Plans quoted above. The JNCC (2006) states that: Policies and practices at an EU and UK level should have environmental sustainability and biodiversity at their heart. Furthermore, dialogues between land users, managers and conservationists should be improved.

The wide range of policies described above, from European, UK and Scottish level, all aim in the direction of improving the environment and the countryside by supporting land management, improving the quality of life in rural areas and the competitiveness of agriculture and forestry as stated in the Rural Development Plan for Scotland (Scottish Executive 2006a). However, there is still a way to go especially in terms of coordinating these policies. The following paragraphs describe the main problems concerning these policies and provide recommendations for the improvement of upland biodiversity conservation at different administrative levels.

EU Level

Regarding the issues mentioned above, CAP reform should play a major role for improving the current situation of upland habitats. At a European scale, active supervision of agri-environment schemes which are currently being implemented at country level and of the Birds and Habitat Directives will be decisive for conserving and enhancing environmentally sound and diverse upland habitats.

UK Level

At UK level, coordination between the UK BAP and the LBAPs is very important. Special attention should be paid to the role of the lead partners, which function as the linkage between national and local level. One major challenge to be overcome is that lead partners are defined at UK level but, in fact, usually function at a regional level and therefore have often only limited knowledge with regard to the state of habitats on a national scale. This is especially a problem when it comes to reporting, as every lead partner has to report at UK level even though his information might be defective.

BARS is currently the only mechanism for reporting at UK level, and reporting cycles are on a three-year cycle. One problem regarding reporting and monitoring is that research in uplands is work- and cost-intensive, and therefore often does not go beyond designated areas as funds are generally tight. Furthermore, changes happen slowly in uplands and might not be visible over the short term.

Another problem which needs to be approached at a UK level is the definition of the exact role of the UK BAP in relation to the biodiversity strategies at country level. The exact relation of the UK BAP to the SBS as well as of the UK habitat and species list in relation to the Scottish Biodiversity List has yet to be made clear.

Scottish Level

At a country level, the Scottish agricultural and forestry policies are probably the most relevant instruments to address the issues affecting uplands listed above. In fact, the sound management of upland habitats depends on the implementation of the most appropriate agri-environment scheme, which needs to take into account the particular natural and environmental circumstances of the target area. Generally speaking, the different agri-environment schemes are well-designed and tend to be complementary than competitive. In the future, it will be important to gather information on the actual impact of agri-environment schemes on upland biodiversity conservation. As the Schemes have only been implemented very recently, there are currently no relevant data available on their effectiveness and impact. At present, a year-long investigation on the effectiveness of agri-environment schemes in Argyll and Bute is underway, initiated by the LBAP officer of Argyll and Bute.

The Scottish Forestry Strategy makes biodiversity one of its key themes and plans to afforest large areas with mainly native trees. The effective implementation of the SFS, together with meeting the conditions of the Muirburn Code and the Deer Commission Long Term Strategy, will be decisive for upland habitats and species. Furthermore, awareness-raising of the Rural Access Code among land managers, tourists and day trippers will help in preventing damage to fragile upland habitats.

16. Recommendations arising from the survey of expert opinion

1. To strengthen the integration and effective delivery of the UKBAP and LBAPs, several measures could be considered. A fundamental need is for common agreement about whether LBAPs are to include actions for all of the UKBAP species and habitats

occurring in their areas or to what extent they should be selective. If – as seems likely given available resources and knowledge – they are to be selective, clear guidelines for a selection process and the criteria for inclusion are essential. Lead Partners and LBPs need to jointly develop and agree criteria for inclusion or even prioritisation among included species and habitats. LBPs require information from Lead Partners about how their area fits in to the national context of the species or habitat so that they can identify their key UKBAP priorities. Lead Partners could rank LBP areas in terms of high, medium or low priority for a particular species or habitat and, where possible, help them to set appropriate local targets that fit in with national targets. This could significantly assist LBPs in delivering their objectives[4]. Where there are data deficiencies that inhibit Lead Partners' ability to do this, targeted data gathering should be a priority for LBPs with that species or habitat in their area. Given the size of this task, it is suggested that Lead Partners be identified for each of the countries, with one retaining the overall responsibility for UK-wide reporting.

2. A Lead Partners' Charter is needed to clarify the role and responsibilities of Lead Partners. In addition to promoting closer co-operation between Lead Partners and LBPs as suggested in the previous point, a charter could include suggested activities, such as creation of websites that include relevant information, organisation of demonstration days, and the creation or compilation and dissemination of management guidance literature.

3. Further integration of the UKBAP and LBAPs could be achieved by aligning the LBAP review cycles with each other and with the UKBAP review cycle.

4. Work needs to be done to clarify the role of the Scottish Biodiversity Strategy, its Implementation Plan, and the Scottish Biodiversity Forum to LBPs – and to make clear how these fit with the UKBAP and LBAP processes.

5. To maximise awareness of national developments, LBPs should make the best possible use of their own partners who represent national organisations. Periodically, some time at LBP meetings could be devoted to summarising national information. This could be pre-warned as an agenda item, to allow individuals time to gather information.

6. Given that much of the uplands in Scotland are privately owned and outwith designated areas, successful delivery of upland biodiversity objectives requires the engagement of private landowners. Research is required to understand better what motivates landowners and land managers, and how they relate to each other and to the conservation organisations and *vice versa*. Understanding their perceptions of biodiversity and how it fits in with their social and economic concerns is essential to learning how to engage them effectively. There is a need to break down the barriers between conservation stakeholders and other groups of land-use stakeholders and build a culture of partnership and co-operation.

7. Given the large scale of uplands and the key requirement to engage private landowners in collaborative action for biodiversity, the promotion of more Upland Partnerships should be considered. If Upland Partnerships are concerned with the promotion of

[4] Action on this widely recognised issue was recently initiated at a meeting (15/12/2006) of the Scottish Biodiversity Forum Biodiversity Implementation Team and Action Plan and Science Group who intend to develop a proposal to fund a project looking at ways of fostering this linkage between LBPs and Lead Partners.

sustainable, integrated land management that delivers social, economic and environmental objectives, landowners may be more likely to participate than with LBPs which have a more specifically biodiversity focus. A number of successful models already exist, from the national (e.g., Scotland's Moorland Forum) to the local, as noted in several of the examples given by interviewees.

8. There is much talk of a need to move towards ecosystem management in the uplands. However, there is little guidance available as to how ecosystem management would work on the ground. There is a need to develop and demonstrate good practice in landscape-scale planning and delivery of integrated land use and ecosystem management[5].

9. While many knowledge gaps and research requirements have been identified, it is difficult to ascertain which, if any, of these are already being worked on. There is a need to make a detailed assessment of current uplands research and use this as a basis for determining key research requirements[5].

10. Fostering greater community involvement with uplands biodiversity is important because of the lack of a coherent and vocal public lobby for the uplands. Where the public are disconnected from the uplands, their perception of the public benefits of the uplands is limited, and the case for public money is diminished. The stronger the case for linking upland biodiversity to the health, wealth and well-being of the population, the stronger will be the incentive for government agencies to put sufficient money into providing for upland biodiversity. Greater recognition of the diversity of public benefits associated with upland biodiversity – such as tourism, recreation, employment, local business and ecosystem services – could be used to facilitate lobbying for more diverse sources of funding for land management for that underpinning biodiversity.

11. The Biodiversity Action Recording Scheme (BARS) has great potential to improve the level of information exchange between national and local levels in the UK biodiversity process. However, it is currently still underused. Efforts need to be made to encourage greater use. One barrier to greater use is that much of the work at local level falls to the Local Biodiversity Officers. The initial stage of inputting all of the targets and actions from LBAPs into BARS is a daunting task for many LBOs who would rather devote their time to facilitating biodiversity action. Consideration should be given to funding short contracts to facilitate this initial data input.

12. There is a widely acknowledged lack of data about the condition of upland (and other) habitats outside of designated sites. Monitoring of the outcome of agri-environment grants under Land Management Contracts could be integrated with BARS to help improve this situation.

[5] Recommendations 8 and 9 have been discussed as potential targets for the next Scottish Biodiversity Strategy Rural Implementation Plan (2008-2010).

17. Conclusion

The main challenge for effective biodiversity management in the uplands is to coordinate and connect existing policies and most importantly, to translate them into action. New strategies will be needed for managing uplands on a large enough scale and for encouraging land-managers to adopt practices that sustainably use and, at the same time, conserve biodiversity. High levels of co-operation and joint-working between stakeholders are required. Central to this will be encouraging the engagement of private land owners with biodiversity interests and persuading all land owners and land managers that biodiversity is an asset that can and should be protected through good land management that also delivers desired economic and social objectives.

The process of engagement needs to be extended also to communities that have a stake in the uplands, whether they are local communities or communities of interest. Greater awareness among the public of the value of uplands biodiversity could be a catalyst for attracting greater and more diverse funding for the land management that delivers biodiversity objectives.

Important to the process of greater stakeholder engagement will be further clarification and simplification of both the desired outcomes for the uplands and the processes by which they will be delivered. The most important factor that will influence delivery of biodiversity objectives in the uplands in the immediate future will be the successful operation of the Land Management Contracts, which are due to be fully available in 2007.

Survey, monitoring and reporting will remain crucial tools for enhancing upland biodiversity management. Delivery of biodiversity objectives for the uplands is currently undermined by the lack of basic information on the status and distribution of many habitats and species outside of designated areas. Attention must be given to filling these gaps. This will require the development of the skills base needed to carry out this work, in particular for taxa that are often overlooked, such as lower plants and fungi. Engagement of other stakeholders, such as local communities and communities of interest, in data gathering will have multiple benefits, and self-monitoring by land managers as part of their involvement with agri-environment schemes should be encouraged. There is need to build on the good development of reporting structures, notably the BARS database, by encouraging wider use so that their full potential can be realised.

In addition to filling gaps in basic information there is need for further strategic research, particularly on climate and socio-economic change. A comprehensive review of existing uplands research is an essential first step towards identifying the key research requirements for the future. Funds will be needed for research in order to provide a solid knowledge-base for future policy-making.

Finally, institutions which consider policies concerning upland biodiversity should also look at the bigger picture, i.e. they should take into account the interrelation between uplands and lowlands. For example, in some areas, upland heath extends almost down to sea level. It is therefore crucial that the responsible bodies for coastal management work closely together with institutions that are focusing on uplands in order to share valuable knowledge and *vice versa*. This can avoid conflicts and save costs.

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APPENDIX 1. Current status, threats and targets for upland habitats featured in Local Biodiversity Action Plans

A1.1 Argyll and Bute LBAP

The Argyll and Bute LBAP was prepared by the Argyll and Bute Local Biodiversity Partnership and published in 2001. It comprises the following HAPs and SAPs relevant for uplands:

Native Pinewood

Current Status: According to the Caledonian Pine Wood Inventory updated in 1997, Argyll has 10 out of 84 native pinewoods in Scotland (Argyll and Bute Local Biodiversity Partnership 2001).

Threats: The native pinewoods in Argyll are fragmented and there is a risk of further loss of area. Some woods are affected by heavy browsing by deer which prevents regeneration. Fire can destroy vast areas and regeneration would take decades. Native pines compete with non-native wood plantations.

Targets:

- No reduction in the extent of the current surface covered by native pinewoods
- All native pinewoods in Argyll and Bute should be under management by 2005
- Current extent should be increased by 10% in 2005

Unimproved Grassland

Current Status: This habitat occupies about 32.7% of Argyll & Bute's land surface. It contains a wide range of different grassland communities which have not been managed; a large proportion is on open unenclosed hill ground.

Threats: The habitat is negatively influenced by over grazing and, in certain cases, under grazing. Badly managed muirburn can be another factor which puts the habitat at threat.

Targets:

- Secure positive management and no net loss of these habitats
- Identify degraded sites and secure positive management and restoration of these sites

Peatlands (including Blanket and Raised Bogs)

Current status: In Argyll the main type of peatland is ombrotrophic (exclusively rain fed) which includes Raised and Blanket Bog. In Scotland 30.5% of the land surface is peatland (Argyll and Bute Local Biodiversity Partnership 2001). There are no data for the extent of peatland is in Argyll.

Threats: Peatlands are coming under threat from heavy grazing, peat extraction, drainage, uncontrolled muirburn and afforestation. Other negative influences include acid deposition from the atmosphere and erosion.

Targets:

- Ensure no net loss or reduction of the habitat
- Carry out a survey on the extend and condition of the peatland in Argyll and Bute
- Develop a public awareness programme (Argyll and Bute Local Biodiversity Partnership 2001)

There are Species Action Plans for the Black Grouse, Hen Harrier and Alpine Woodsia**.**

A1.2 Ayrshire LBAP

The Ayrshire LBAP was published in 2001 by the Ayrshire Biodiversity Group and includes a chapter on upland HAPs: Upland Heath, Blanket Bog and Montane.

Upland Heath

Current Status: According to the Land Cover Scotland data from 1988, upland heath covers 7.5% (25,364 ha) of the total land surface of Ayrshire. Ayrshire is known for having one of the best remaining large areas of open moorland in southern Scotland. Key sites are Muirkirk Uplands, Glen App Hills and Clyde Muirshiel). The Isle of Arran supports one of the best heather moorlands in Scotland (Ayrshire Biodiversity Group 2001).

Threats: The most important negative impacts now and in the past are overgrazing and afforestation. Other impacts affecting the habitat are land management changes, poorly managed muirburn, open cast coalmining, wind farm development and pollution.

Targets:

- No net loss in area or quality of the habitat unless through natural processes of succession
- Carry out a complete survey of the habitat by 2005
- Restore at least 200 ha by 2010
- Establish and run awareness programme for communities land managers and tourists

Blanket Bog

Current status: The extent of blanket bog and wet heath in Ayrshire is 31,329 ha (9.28%) of the total land area of Ayrshire (according to Land Cover Scotland data from 1988). In the Galloway Forest Park, the habitat is found from 70 to 700m above sea level.

Threats: Peat extraction, overgrazing, previous planting of trees, moorland drainage, acidification and natural erosion processes.

Targets:

- No net loss in area or quality of the habitat unless through natural processes of succession by 2006
- Carry out a complete survey of the habitat by 2002
- Identify areas suitable for restoration by 2003 and enhance 250 ha of degraded blanket bog by 2005
- Establish and run awareness programme for communities land managers and tourists

Montane Habitat

Current status: About 1.15% (3,873 hectares) of Ayrshire could be classed as montane habitat, according to the Land Cover Scotland data from 1988 (Ayrshire Biodiversity Group 2001).

Threats: Negative impacts on the habitat include habitat fragmentation, overgrazing by sheep, deer and goats and increasing pressure through recreational activities such as walking, mountain biking etc. Additionally fire, wind farm and other developments, pollution and global warming can have adverse impacts on the habitat.

Targets:

- Identify best examples of the habitat by 2002, secure good practice management of these sites by 2003 and secure no net loss in area or reduction in quality by 2005.
- Identify requirements of improved management of montane habitat by 2002, improve the management of at least three sites by 2006
- Establish and run awareness programme for communities land managers and tourists

Native Woodland

Current status: The total extent of native woodland (including upland oakwood and mixed Ashwood, wet woodlands and scrub woodland) estimated for Ayrshire is 4331 ha, however it is commonly recognized that the actual surface covered in native woodlands exceeds this estimation (Ayrshire Biodiversity Group 2001).

Threats: Native woodlands have come under threat from overgrazing by livestock and deer, invasion of non native species, abandonment of economic activities, people visiting the woods and development pressure (new roads, coal mining).

Targets:

- Carry out a comprehensive survey of all remnant woodland by 2002.
- Increase the area of native woodland by 25% by 2005
- Prepare management plans to guide restoration of degraded upland oak and birch wood by 2005 and restore all examples of the habitat with more than 50% species characteristic of the habitat within two plan periods (2010) (Ayrshire Biodiversity Group 2001).

Acid Grassland:

Current Status: There are no data available on the total extent of acid grassland in Ayrshire. On the Isle of Arran where this habitat is very important there are 1,143 ha. On the mainland the only statistic that is available is for Nardus/Molinia grassland which covers 11.4% (30,340 ha) of the total area.

Threats: Among the negative factors which affect acid grassland are forestry planting, inappropriate grazing, abandonment, liming and open-cast mining.

Targets:

- Maintaining and enhancing the quality of the habitat commencing in 2002
- Identify location, extent and biodiversity importance of acid grassland by 2002

- Enter in dialogue with key groups for awareness rising about the importance of the habitat by 2002

Base-rich Grassland

Current status: Again there is no figure available for the extent of base-rich grassland in Ayrshire. However, several SSSIs and Wildlife Sites, mostly situated in South Ayrshire, support these habitats.

Threats: Among the factors which negatively affect the habitat are agricultural intensification, over grazing especially in uplands and lack of knowledge about the habitat.

Targets:
- Maintaining and enhancing areas of base-rich grassland commencing in 2002
- Identify location, extent and biodiversity importance of acid grassland by 2002
- Enter in dialogue with key groups for awareness rising about the importance of the habitat by 2002

There are Action Plans for the Black Grouse and the Hen Harrier. In the Clyde Muirshiel Regional Park there is a Juniper propagation programme in conjunction with a local volunteer group.

A1.3 Cairngorms LBAP

The Cairngorms LBAP was published in 2002 by the Cairngorms National Park Authority Board including parts of four local Authority areas: Highland Council; Aberdeenshire; Moray; Angus. The following HAPs relevant for uplands are covered by the plan.

Montane; Heath and Bog habitats:

Current status:
Montane: The Cairngorms represent 29% of the British montane habitat and are considered as one of the most important examples of this habitat type in Europe as well. The extent of the Cairngorms montane habitat is about 25,000 ha.
Upland heath: Is the most extensive habitat type in the Cairngorms Partnership area, representing about 16% of the British total. It covers approximately 41% (2689 km^2) of the area, frequently in mosaics with blanket bog (Cairngorms National Park Authorities 2002).
Blanket Bog: This habitat covers about 1,242 km^2 in the Cairngorms (9% of the British total). The largest extent of this habitat type can be found in the Monadh Liath, the Atholl-Drumochter Hills, the hills of Angus, the Ladder Hills and large areas of Deeside (Cairngorms National Park Authority 2002).

Threats:
Montane: The main factors influencing the habitat are damage thorough increased recreational activities such as trampling or hacking turf off cliff areas.
Upland heath: General threats affecting upland heath are habitat fragmentation, change in land use and new developments (including wind farms, pylons).
Blanket Bog: Big areas of this habitat have been lost by afforestation, other factors which cause degradation of the habitat include: overgrazing, burning and moorland drainage.

Targets:

- Ascertain the distribution, area and ecological status of montane, heath and blanket bog habitats in the Cairngorms – by 2005.
- Ensure no net loss in overall area of montane, key upland heath and blanket bog habitats in the Cairngorms – by 2006.
- Maintain and restore good ecological status/quality* of key montane, upland heath and blanket bog sites in the Cairngorms – by 2008.
- Ensure no net loss in the number and/or range of important LBAP species in the Cairngorms associated with montane habitats, upland heath or blanket bog habitats respectively – by 2008.
- Ensure minimal management intervention above the tree-line and target management to areas below the tree-line that allow the full range of species to interact, thereby allowing 'natural ecological processes' to occur.

Woodland habitats (including upland oak and mixed ash woodland, native pine wood and montane scrub):

Current status:

Upland Oak woodland: Oak trees are uncommon in the Cairngorms and only form a small proportion of the broad-leafed forest.

Upland Mixed Ashwoods: Like oakwoods, upland mixed ashwoods are rather uncommon in the Cairngorms. "There are only a few scattered stands in Strathspey, Donside and Deeside contain significant proportions of Ash, but the richest surviving example of native Ash woodland is in Angus at the Den of Airlie on the border of the Cairngorms Partnership area" (Cairngorms National Park Authorities 2002:179).

Montane Scrub: This habitat type is very rare in Britain and has been reduced to only a few hundred sites in Scotland. One example can be found in the northern Cairngorms around Meall a'Bhuachille.

Native Pine Wood: There is a good knowledge about the distribution and the state of native pine woods in the Cairngorms. The Cairngorms hold 60-80% of the UK total of this habitat. The two best examples of continuous forest can be found in Strathspey and Badenoch. In Deeside the area covered by this habitat type is smaller and more fragmented.

Threats:

General issues which affect all mentioned types of woodland are lack of data, insufficient information available for woodland managers, lack of funding, loss of habitats, fragmentation or inappropriate management

Montane scrub: Has undergone decades of decline. It is currently at an "emergency status". The main problems are a lack of data and insufficient funding for developing projects.

Native Pine Woodland: Inappropriate management, fragmentation and loss in area are the main factors which negatively influence the state of the habitat.

Targets:

Upland Oakwood and Mixed Ashwood:

There are no specific targets for upland oakwood and mixed ashwood in the Cairngorms LBAP.

Montane Scrub:

- Ensure no loss of key montane scrub remnants in the Cairngorms – ongoing.
- Ensure good ecological status/quantity of key montane scrub remnants in the Cairngorms through innovative restoration programmes by 2010.

- Double the area of montane scrub in the next decade by directing existing relevant management and expansion of woodland 'up the hill' to regenerate high altitude scrub and to reinstate natural treelines – ongoing (Cairngorms National Park Authority 2002: 182).

Native Pine Woodland:

- Ensure no net loss of key native pine woodlands in the Cairngorms – effective immediately.
- Ensure good ecological status/quality of key native pine woodlands in the Cairngorms by directing woodland management to enhance key BAP species associated with native pine woodlands.
- Ensure no net loss in the number and/or range of key BAP species associated with native pine woodlands in the Cairngorms – by 2010. This is linked with strategic evaluation of other habitats such as moorlands.
- Focus any further expansion of native pine woodlands towards connecting isolated stands and thereby supporting functional native pine wood habitat networks – effective immediately (Cairngorms National Park Authority 2002: 187).

Grassland Habitats (Calcareous and Acid Grassland)

Current Status:

Calcareous Grassland: There are no data for the extent of calcareous grassland in the Cairngorms, however it is believed to occupy a very small percentage of the area. There are possibly some patches along the River Dee which could be classified as calcareous grassland. *Acid Grassland*: There are about 13,400 ha of 'poor rough grassland' mainly in the west of the Cairngorms and 42,500 ha of 'good rough grassland' mainly below 600 m above sea level (Cairngorms National Park Authority 2002). The surface covered by acid grasslands is increasing in the Cairngorms because of heavy grazing on heather moorland resulting in a reduction of species and converting this habitat into species poor grasslands.

Threats:

General threats affecting both grassland types are habitat loss (or change), fragmentation and inappropriate management

Targets:

Calcareous Grassland and *Acid Grassland*:

- Ascertain the distribution, area and ecological status of important calcareous and acid grassland in the Cairngorms – by 2005.
- Ensure no net loss of calcareous and key floristically rich acid grassland in the Cairngorms – by 2006.
- Maintain and restore good ecological status/quality of key calcareous and acid grassland sites in the Cairngorms – by 2008/2010 respectively.
- Ensure no net loss in the number and/or range of key LBAP species in the Cairngorms associated with calcareous and acid grassland – by 2008/2010 respectively.

Target for *calcareous grass*land only:

- Where underlying geology and soils allow, attempt to establish habitat links between important isolated calcareous grassland patches – by 2008.

Target for *acid grassland* only:

- Areas of acid grassland that are not floristically diverse, species rich or known to be of particular value for breeding birds, should be considered as sites for potential conversion to heather moorland (by low levels of grazing if present) or to native woodland (by planting or by natural regeneration) - whenever opportunities arise.

There are no specific action plans for species covered by the Cairngorms LBAP.

A1.4 Clackmannanshire LBAP

This BAP was published in 2003 by the Clackmannanshire Biodiversity group together with the Council. In Clackmannanshire, upland habitats can be found in the Ochil Hills. The following upland habitats and species are covered by the plan:

Upland habitats (Blanket Bog and unimproved grassland/heathland mosaic):

Current Status:
Only two percent of the Olchis Hills are heath land, the rest are acid grassland/heath mosaic of which two thirds are dry heath/acid grassland and one third wet heath/acid grassland. Acid grassland covers about 2,881 ha within Clackmannanshire; the area covered with upland calcareous grassland has not been defined. There are about 272 ha of heathland habitat.

The key sites for this *unimproved heathland/grassland mosaics* are:

- Myretoun Hill and Craigleith SSSI – neutral and calcareous grasslands;
- Dollar Glen SSSI – acid grasslands, base-rich flushes and heathland;
- Ben Cleuch – best example of sub-montane acid grassland in the Ochils;
- The Ochil Glens - best example of the full mosaic of acid grassland, calcareous grassland and heathland.

Blanket bog occurs at two key sites in Clackmannanshire: Alva Moss (meets the criteria for selection as an SSSI) and Menstrie Moss. These two sites cover an area of 324 ha. Smaller remnants of blanket bog occur in the Ochils. Of the total extent of blanket bogs in Clackmannanshire, 200 ha are considered as being intact (Clackmannanshire Biodiversity Partnership 2003).

Threats:
Blanket Bog: Moorland drainage, muirburning and grazing pressure.
Unimproved Grassland heathland-mosaic: Grazing is the main factor affecting this habitat type. Lack of knowledge is another problem associated with this habitat which makes it difficult to develop an effective conservation strategy.

Targets:
Blanket Bog:

- Ensure no net loss or reduction of peatland habitat.
- Liaise with landowners/managers and farmers to promote positive conservation management.
- Complete Phase II habitat survey on the extent quality and nature conservation of blanket bogs by 2004.
- Link local culture and biodiversity values through archaeological and paleobotanical survey work.
- Produce an Ochil Hills leaflet to include section on blanket peats and link with SWT's Peatlands Campaign.
- Produce information for farmers, landowners, garden centres and general public on alternative uses to peat for horticultural purpose.

Unimproved Grassland heathland-mosaic:

- Complete Phase II habitat survey on the extent quality and nature conservation of upland neutral/calcerous grassland and heathland by 2004
- Develop conservation strategy to address issues of over-grazing and fragmentation (i.e. expand resource by linking remnants).
- Monitor rare plants and associated species with upland heathland (e.g. northern Brown Argus).
- Develop a conservation strategy to address issues of over-grazing and fragmentation of upland heathland
- Produce an Ochil Hills leaflet to include section on the upland grassland/heathland mosaic.

Broadleaved woodlands (Upland Oak- and Birchwood, Upland Mixed Ashwoods)

Current Status:
No information is given on the extent of these habitats in the Clackmannanshire BAP (2003). The key sites for these habitat types are:

- *Upland Oakwood*: Dollar Glen and Blutherburn, Craigmad Wood SSSI.
- *Upland Birchwood:* Back Burn Wood and Meadows SSSI, Brandyhill Wood, Delph Wood, Cowpark Wood and Inglewood.
- *Upland Mixed Ashwood*: Back Burn Wood and Meadows SSSI, Linn Mill SSSI, Dollar Glen SSSI and Devon Gorge SSSI. Sloped upland ash / elm woodland at the Menstrie Community Wood and Braewood.

Threats:
The most common negative factors affecting these habitats include among others: overgrazing, development pressure (new roads etc), pollution (acidification), lack of appropriate management and bracken which are limiting regeneration.

Targets:

- Maintain the current extent of broadleaved woodland.
- Initiate measures to achieve favourable condition in all woodland SSSIs by 2012.
- Initiate measures to achieve favourable condition in 50% of the total woodland resource by 2017.
- Identify the extent of the woodland resource by 2005.
- Initiate colonisation or planting of 150 ha broadleaved woodland on un-wooded or ex plantation sites. Complete establishment of 50% by 2010 and 100% by 2017.
- Establish concept of a Forest Habitat Network (FHN) by 2005 with all lead partners.
- Use FHN guidance system for all woodland management by winter 2005.
- Communicate the biodiversity and cultural value of broadleave woodlands to the general public, including schools.
- Liaise with farmers and landowners / managers to promote best practice of managing existing woodlands and planning for new woodlands.

There are Action Plans for the following species which are associated with upland habitats: Mountain Hare, Black Grouse and Ring Ouzel.

A1.5 Western Isles LBAP

The LBAP for the Western Isles, published by the Western Isles Biodiversity Steering Group, contains only one Action Plan concerning uplands: the Native Woodland Action Plan. An Action Plan on Blanket Bog is currently in preparation.

Native Woodlands

Current Status:
The woodlands of the Western Isles are dominated by downy birch, grey willow and rowan. Hazel and Juniper have a fragmented distribution over the isles. There are no exact data available on the extent of semi-natural woodlands on the Western Isles; the total area of native woodlands is estimated to be 200 ha (Western Isles LBAP Steering Group 2004).

Threats:
The main factors affecting the habitats are: grazing by sheep and browsing by deer, burning and fragmentation of the habitat.

Targets:
- Survey all semi-natural woodlands by end of 2005
- No net loss or reduction in quality of the habitat.
- 25% increase in semi-natural woodland area by 2010.
- Collect and store/propagate representative genotypes from a number of areas.
- Complete and adopt Woodland Strategy; make a case for Scottish Forestry Grants Scheme: Locational Premium (SFGS:LP) and increased Rural Stewardship Scheme (RSS).
- Demonstration projects established by 2008.

The SAP of the Dunlin *(Calidris alpine)* also refers to upland areas.

A1.6 Dumfries and Galloway LBAP

The LBAP of Dumfries of Galloway (1999) is currently being reviewed as some of its targets are out of date.

Upland Habitats (Montane, Upland Heath)

About one sixth of the area of Dumfries and Galloway is classified as upland habitat. In the past this zone came increasingly under pressure by heavy grazing, recreational activities and was converted for forestry.

Current status:
Montane habitat: According to the LBAP of Dumfries and Galloway (1999) there are approximately 30,000 ha of montane habitat above 600m.
Upland Heathland: There are no exact data for the extent of upland heathland in Dumfries and Galloway. It is estimated that about 100,000 ha of this habitat remains, mainly in the Southern Uplands (Dumfries and Galloway Council 1999). In the past there have been significant losses of this habitat type (63% between 1940 and 1980).

Threats:
Montane Habitat: Inappropriate management of grazing by sheep and browsing by red deer can significantly harm the habitat, fire spreading from the sub-montane zone further adversely affects the montane habitat. Other factors include increased recreational pressure causing damage to the vegetation and soil, pollution and wind farms and other development.
Upland heath: The main issues affecting this habitat include inappropriate management of grazing sheep and browsing red deer; loss of the habitat through afforestation, intensification of agriculture and poorly managed muirburn.

Targets:
Montane Habitat:

- Identify best examples of montane habitat by 2000
- Secure sympathetic management of these habitats by 2001
- No net loss in area or reduction in quality of habitat by 2002
- Improve at least five sites by sympathetic management by 2005
- Identify requirements for widespread improvement by 2002

Upland Heath:

- No net loss in area or reduction in quality of habitat, except through natural processes of succession, e.g. to scrub and native woodland, by 2005
- Restore at least 200 ha by 2010 by identifying good opportunities in Forest Design Plans and restocking proposals.
- Complete survey of area extent and condition by 1999
- Set up public awareness programme 1999
- Run public awareness programme until 2005. Audiences: Landowners, local people, tourists

Blanket Bog

Current Status:
In Dumfries and Galloway, blanket bog occurs from 70 metres (Wigtownshire mosses) to altitudes of almost 700 metres (Merrick/Kells and the Moffat Hills). The surface covered by blanket bog is less than 50,000 ha (Dumfries and Galloway Council1999).

Threats:
Among the factors which negatively affect the habitat are peat extraction (commercial and domestic), planting trees, grazing and uncontrolled burning, acidification as well as natural erosion processes.

Targets:

- No net loss in area or reduction in quality of habitat, except through natural processes of succession, e.g. to scrub and native woodland, by 2005.
- Restore 250 ha of blanket bog by 2002
- Remove trees and block ditches on 200 ha by 2010
- Complete survey of area and condition by 1999
- Set up public awareness programme 1999
- Run public awareness programme until 2005 Audiences: landowners, local people, tourists

Grassland Action Plans (Acid Grassland and Calcareous Grassland)

Current Status:
Acid Grassland: There are no numbers given about the extent of the area where acid grassland can be found. However, the LBAP states that the proportion covered by this habitat is significant. During the past a lot of it has been lost mostly through afforestation.
Calcerous Grassland: There are only estimates of the extent of calcareous grassland in Dumfries and Galloway as this habitat has never been surveyed. The estimated area of calcareous grassland is around 50 ha. Small pockets of this habitat type can be found within acid grassland in the Skyreburn and the Cleugh SSSI (Dumfries and Galloway Council 1999).

Threats:
Acid Grassland: Current factors affecting the habitat are agricultural intensification or change in agricultural land management, inappropriate grazing management (leading either to over or under grazing) abandonment and forestry planting.
Calcerous Grassland: The same factors which affect acid grassland also affect this habitat type. Additionally a lack of knowledge about its extent or importance makes the planning for conservation difficult.

Targets:
Acid Grassland:

- No net loss in area or reduction in quality of habitat by 2005
- Survey and determine importance of acid grasslands by 2002
- Set a target for restoration of acid grasslands by 2002
- Designate important sites as appropriate by 2005
- Establish a Grassland Group and programme of work for this group by 1999
- Set up public awareness programme 1999
- Run public awareness programme until 2005 (Audiences: landowners, local people, tourists)

Calcareous Grassland: There are no targets given for this habitat type. Current actions include, among others, a survey to determine the extent of the habitat, designation of sites for their wildlife interest.

Native Woodland:

Current Status:
There are only a few native woodlands in Dumfries and Galloway (estimated 2 ha). Broad leaved woodland has declined by about 21% between 1940 and 1980 and further decreased since then. “The main types of native woodland in Dumfries and Galloway include upland birchwood, upland oakwood and wet woods “(Dumfries and Galloway Council 1999: 146).

Threats: Major threats include conversion of the habitat into conifer plantations, invasion of non native species and over grazing by sheep and deer inhibiting regeneration.

Targets:

- No net loss or reduction in quality of habitat by 2005
- Increase the area of native woodlands by 25% by 2005
- Restore all native woodlands with more than 50% native species by 2010
- Set protocol for stock used in management work by 2000
- Survey all native woodland by 2000

- Train all appropriate advisors in sustainable woodland management by 2002.
- Carry out study into viable markets for sustainably produced timber by 2005
- Consider disturbance in all proposed management of native woodlands: Ongoing
- Set up a public awareness programme 1999
- Run a public awareness programme until 2005. Audiences: landowners, local people, walkers, tourists, tourist board

The Dumfries and Galloway LBAP includes species action plans for Alpine Foxtail, Azure Hawker, Black Alpine Sedge, Black Grouse, Broad-bordered White Underwing Moth, Golden Eagle, Hen Harrier, Juniper, Large Heath Butterfly, Peregrine, and Slender Green Feather Moss.

A1.7 North East Scotland LBAP

This LBAP was edited by the North East Biodiversity Steering Group and published in 2000. Action plans specifically for upland species-rich grassland, upland heath, blanket bog and montane habitat are in preparation

Native Pine Woodland

Current Status:
This habitat type is mainly present in the Cairngorms (in Strathspey and Badenoch). It is estimated that native pine woodland covers about 2% of the Cairngorms partnership area.

Threats: There is a lack of information on the size, quality or the management of some rare or threatened woodland habitats which makes conservation difficult. Other factors influencing the habitat are loss of its extent, fragmentation and inappropriate management as well as pollution and climate change.

Targets:
- Ensure no net loss of key native pine woodlands in the Cairngorms – effective immediately.
- Ensure good ecological status/quality of key native pine woodlands in the Cairngorms by directing woodland management to enhance key BAP species associated with native pine woodlands.
- Ensure no net loss in the number and/or range of key BAP species associated with native pine woodlands in the Cairngorms – by 2010. This is linked with strategic evaluation of other habitats such as moorlands.
- Focus any further expansion of native pine woodlands towards connecting isolated stands and thereby supporting functional native pine wood habitat networks – effective immediately.

Species-Rich Grassland:

Current Status:
There are only estimations available about the extent of this habitat type due to difficulties in defining it, the small sites and lack of information. It is thought that the habitat has declined in size. This action plan includes neutral, acidic and calcareous grassland.

Threats:
This habitat type is under threat from agricultural intensification, inappropriate grazing management (over or undergrazing), cutting and burning, pollution and habitat fragmentation.

Targets:
- No loss of existing species-rich grassland habitat. Successful creation of 100 ha of new species rich grassland by 2010.
- With owners consent, establish and maintain a register of all significant sites, which will include information on habitat types, ownership, location, historic and current management, condition and existing designation (by 2002).
- Prevent and/or reduce threats through continuation/introduction of established management techniques on all recorded existing sites.
- Reinstate in excess of 100 ha of species rich grassland at carefully selected sites.
- Use available research to provide effective training and guidance for landowners and advisors.
- Integration of this action plan into other initiatives and policy documents – ongoing

There is an action plan for the Red Squirrel.

A1.8 Inverclyde, Renfrewshire and East Renfrewshire LBAP

Broad and mixed woodland:

Current Status:
In East Renfrewshire, Renfrewshire and Inverclyde, there are 358 ha of semi-natural woods, 641 ha of mixed woodlands, 2660 ha plantations of broadleaved trees and 1,873 ha of non native conifer plantations (Inverclyde, Renfrewshire and East Renfrewshire LBAP Partnership 2004). Semi-natural and mixed woodlands within the East Renfrewshire, Renfrewshire and Inverclyde Biodiversity Partnership area are protected by a wide range of policies and designations including SSSIs and Sites of Importance for Nature Conservation (SINC).

Threats:
Among the adverse factors which cause loss or degradation of this habitat are increasing land use pressure, invasion of non-native species, lack of woodland management, pressure from people due to recreational activities and over grazing which inhibits regeneration.

Targets:
- Ensuring no further loss in extent and quality of existing woodland habitat - 2004-2007
- Reviewing available survey information to establish size and condition of main sites – 2004-2005
- Encouraging natural regeneration, colonisation and native tree planting in appropriate sites – 2004-2010
- Encouraging sympathetic, site-specific management regimes – 2004-2007
- Promoting an appreciation of the value of woodlands to local communities – 2004 – 2007
- Monitoring and recording actions towards these objectives – ongoing/annual

Unimproved Grassland

Current Status:
This Action Plan includes acid neutral and calcareous grassland. Key sites of *acid grassland* can be found "around the Clyde Muirshiel Regional Park. but also on other high ground along the Gleniffer Braes or Lochliboside Hills, and on higher ground to the south of East Renfrewshire"(Inverclyde, Renfrewshire and East Renfrewshire LBAP Partnership 2004). In most cases, acid grassland is associated with upland pastures.
Calcareous grassland is very rare or absent in the LBAP area. There are no numbers given about the area covered by acid grassland.
Neural grasslands occur mainly in lowland areas and are therefore not relevant for this report.

Threats:
Current factors affecting this habitat type include: Agricultural intensification, over grazing, neglect (encourages the spread of scrub, notably birch, hawthorn or gorse, and bracken), woodland planting, built development and unsympathetic management.

Targets:
- Surveying all known semi-natural grasslands to identify key ecological areas – 2004-2005
- Developing policies which promote management practices that enhance and restore unimproved grassland habitats – 2004-2007
- Introducing restoration work and sympathetic management over at least 25% of the current resource – 2004-2010
- Working with partners to promote relevant guidance literature - 2004-2007
- Monitoring and recording actions towards these objectives – annual/ongoing

Dwarf Shrub Heath

Current Status:
Dwarf Shrub Heath only occurs on the western seaboard of Europe and is therefore internationally important. In the LBAP Partnership area there are a number of key areas of Dwarf Shrub Heath including the Clyde Muirshiel Regional Park, North of Lochwinnoch, on the upland fringes of the Marshall Moor, Craig Muir and Moyne Moor as well as some sites on the Liboside hills.

Threats:
"Today, the upland Heaths within the LBAP Partnership area, as with the rest of the UK, are typically managed for grouse shooting or free range stock farming, the level of which may not be sustainable" (Inverclyde, Renfrewshire and East Renfrewshire LBAP Partnership 2004). Further factors causing loss or decline of this habitat type include: Agricultural intensification, overgrazing, woodland planting, lack of management, new developments, recreational pressure and poorly managed muirburn.

Targets:
- Establish baseline percentage heather cover at all known sites.
- Ensure no loss in area or reduction of quality of the current heathland sites.
- Introduce sympathetic heathland management.
- Increase the current area of heathland through restoration and positive management.
- Asess the impact of moorland management on farms managed by the Regional Park.

- Promote awareness and value of heathlands to landowners, managers and the general public.
- Review this plan on an annual basis, beginning in 2005.

There are Species Action Plans for the Black Grouse, Hen Harrier and Common Juniper.

A1.9 Tayside LBAP

The Tayside Biodiversity Action Plan covers the areas of the councils of Angus, Dundee and Perth & Kinross. It was published in 2002 by the Tayside Biodiversity Partnership.
Apart from the habitat action plans described below, further plans for blanket bog, upland birchwood, upland mixed ashwood are planned but not yet published.

Upland Habitats (Montane and Upland Heath)

Current Status:
Montane habitat: According to the definition given in this LBAP, montane habitat occurs above the natural tree line (around 600 m asl). About 5% of the area covered by the Tayside LBAP belongs to this habitat. According to the Land Cover Survey (1988), about 36,000 ha were classified as montane habitat: nearly 15% of the Scottish total (Tayside Biodiversity Partnership 2002). Key upland sites of international importance are Ben Lawers, Drummochter Hills, Beinn a'Ghlo and Caenlochan, all of which are very important for their overall species diversity.

Upland heath: About 12% of the whole area is covered by upland heath. 95,400 ha are classified exclusively as heather while another 128,800 ha form a mosaic with peatland, rough grassland and montane habitat resulting in a total of 223,300 ha heather being found in Tayside. The extent of this habitat has undergone significant losses in the past (35% prior to 1988) (Tayside Biodiversity Partnership 2002)

Threats:
Montane Habitat: Surveys demonstrated that the area is degrading in some places because of grazing and trampling impacts by deer and sheep, fragmentation of the habitat as a result of long-term grazing, poorly managed muirbun, increasing recreational pressure causing damage to soil and the fragile vegetation as well as climate change and pollution (Tayside Biodiversity Partnership 2002)
Upland Heath: The following factors cause damage or loss of upland heath: over grazing, poorly managed grouse shooting and muriburn, afforestation and increase in red deer numbers (causing over grazing).

Targets:
Montane habitat:
Given that half of the montane habitat area is also included within the Cairngorms Partnership, Tayside Partnership is planning to work in conjunction with them to set up an awareness raising programme.
There are no targets mentioned in this action plan but a wide range of actions are announced, including:
- Ensure that all policies of all partners will result in no further deterioration in quality or area of montane habitats and species (on going)
- Develop and implement Deer Management Plans in all sub-areas of Deer Management Groups following the DCS Guidelines (on going)

- Help achieve UK HAP targets of favourable condition for at least 75% of calcareous by 2006 grassland
- Encourage landowners and tenants to apply for RSS to get sheep numbers in balance with requirements of the habitat (ongoing)
- Raise awareness of the biodiversity value of upland areas and best practice management among all those involved in its management.

The full range of targets can be accessed on the web at: http://www.taysidebiodiversity.co.uk/

Upland Heath:
- No net loss in area of good quality upland heath habitat by 2010
- Complete survey of condition of key upland heath habitats by 2006
- Set up an awareness programme by 2003

Calcareous and base rich grassland:

Current status:
Calcareous grassland can be found in the North and West of Tayside where it is quite widespread. Base-rich substrates are present in the Sidlaw and Ochil hills. There are no data for the extent of this habitat. Key sites in Tayside which include pockets of calcareous grassland are Ben Lawers NNR, Beinn a'Ghlo SSSI, Ben Vrackie SSSI, Caenlochan NNR (Glen Doll and Glen Fee), Tulach Hill and Glenfender Meadow SSSIs (Tayside Biodiversity Partnership 2002).

Threats:
Among the factors which negatively affect the habitat are agricultural intensification (application of fertilisers, herbicides), heavy grazing and in some cases under grazing, acidification and nitrogen enrichment (Tayside Biodiversity Partnership 2002)

Targets:
Targets for the conservation and enhancement of calcareous grassland in Tayside include:
- A target of the UK HAP is to achieve favourable condition for at least 75% of (Upland) are Calcareous Grassland (i.e. 7,000 - 9,750 ha. in Scotland) through sympathetic management by 2005 or as soon as biologically practical thereafter. A target for Tayside should be between 1,000 ha. and 1,500 ha.
- Ensure that SSSIs containing calcareous grassland are managed sympathetically and where necessary management agreements entered into. A target of the UK HAP is "By 2004, prepare and implement management plans for all SSSI and Natura 2000 sites".
- Undertake a detailed survey to determine the extent and quality of calcareous grasslands and limestone pavement throughout Tayside.
- Encourage the restoration of degraded calcareous grasslands and limestone pavements where they buffer or link small or discontinuous sites.

The full range of targets can be accessed on the web at: http://www.taysidebiodiversity.co.uk/

Woodland (Native Pinewood and Upland Oakwood)

Current status:
Native Pinewood: According to the FC Native Pinewood inventory, there were 1,288 of this habitat in Tayside. Estimations from 1995 came to the result that the extent of native

pinewood ranks around 1554 ha which is 8% of the total area covered by the Tayside LBAP (Tayside Biodiversity Partnership 2002).
Upland Oakwood: According to the Tayside Native Woodland Inventory of 1995 were 1,900ha of upland oakwood (Tayside Biodiversity Partnership 2002). This woodland type is of international importance and has been reduced by 30-40% in Britain over the past 60 years.

Threats:
Native Pinewood: This habitat type is characterised by a long history of decline in area in Britain. Only one percent of its original extent remains. This loss was mainly caused through over-exploitation and replacement with exotic species. Currently over grazing and climate change are putting the remnants of native woodlands at threat.
Upland Oakwood: Historical under-planting of oakwoods with coniferous species, heavy grazing, lack of management, the spread of bracken and an unfavourable market for hard wood timber are putting this habitat type at risk.

Targets:
Native Pinewoodland: A wide range of targets apply to this habitat type (please consult the full list at: **http://www.taysidebiodiversity.co.uk/**)

- Expand native pinewood areas in the Caledonian Pinewood Inventory regeneration zones by 1,700 ha by 2005.
- Raise awareness of the importance of native pinewoods to woodland owners, through examples of good practice, workshops, publicity and other promotional opportunities.
- Raise the public's awareness of the importance of native pinewoods and newly planted pinewoods within the Tayside area.
- Ensure that native pinewood sites are incorporated into positive management through the new SFGS by 2005.

Upland Oakwood:
Among the targets set for upland oakwoods are:

- Restore 360 ha by 2015 completing half of this by 2010
- Raise awareness of the importance of upland oak woods to woodland owners, through examples of good practice, workshops, publicity and other promotional opportunities
- Raise the public's awareness of the importance of upland oakwood and newly planted pinewoods within the Tayside area
- Ensure that all new upland oakwood sites are incorporated into positive management through the new SFGS by 2005

A1.10 Stirling Council LBAP

The first part of the Stirling Council LBAP was launched in 2001, the second part in 2002 and the third and final volume in 2004.

Montane habitat and inland rock

Current Status:
"There are some 4,323 ha of montane habitats in the Stirling Council Area" (Stirling Biodiversity Steering Group 2004). This habitat type can be found in the uplands north of the Carse of Stirling. About 40% or 1757 ha are designated as SSSIs (Ben Lomond, Ben Lui (cSAC), Glen Falloch, Meall Ghaordie, Meall na Samhna (cSAC), Stob Binnein/ Ben More, and Ben Heasgarnich (cSAC)).

Threats:
The soils and vegetation of montane habitats are generally very fragile and therefore prone to being damaged by animals (over grazing) and recreational activities e.g. hill walkers, mountain bikers or rock climbers (causing erosion and damaging vegetation). Other factors which can harm the habitat are inappropriate burning, acidification and effects of climate change as well as potential impacts of new developments (e.g. wind farms).

Targets:
- Identify best examples of montane habitat outside SSSIs - by 2005**.**
- Secure sympathetic management of these habitats - by 2010
- Identify the extent of degraded habitat - by 2005.
- Establish sympathetic management of at least 50% of degraded habitat - by 2010.
- Organise a workshop on practical montane and inland rock management - by 2002.
- Organise montane related public events - annually.

Upland Mosaic Habitats (Acid Grassland, Blanket Bog, Upland heathland)

Current Status:
As these three habitats only occur in a mosaic form in Stirling Council area they are unified in one single action plan. No numbers are given about the extent of upland mosaic habitats
Threats:
Not indicated.
Targets:
There are no targets given in this action plan. A list of planned actions can be accessed on the web at: **http://www.stirling.gov.uk/upland_mozaic_habitats_act.pdf**.

Woodlands (Native Pine Woodland and Upland Oakwood)

Current status:
Native Pine Woodland: There are only two known sites in Stirling Council (Coille Coire Chuilc and Glen Falloch) where genuinely native woodland occurs. These examples are fragmented and poor in structure and ecological condition (Stirling Biodiversity Steering Group 2004).
Upland Oakwood: The extent of this habitat in the Stirling Council area is about 2-3% of the UK's upland oakwood, which is estimated to be between 70,000 and 100,000ha. Key sites where upland oakwood can be found include: the northern slopes of Lochs Katrine, Venachar and Ard and the eastern banks of Loch Lomond (Stirling Biodiversity Steering Group 2004)

Threats:
Native pine woods: Poor natural regeneration through browsing of deer and sheep, isolation and limited diversity of the woods are additional problems affecting native pine woodlands.
Upland oakwood: This habitat is threatened by historical under planting of oakwoods with coniferous species, spread of bracken which limit regeneration, new developments (roads, recreational access), lack of appropriate management and limited markets for hardwood timber (Stirling Biodiversity Steering Group 2004).

Targets:
Native Pine Woodlands:
- Reduce grazing pressure by deer and domestic grazing animals to allow natural regeneration of trees and associated pinewood flora - by 2010.

- Expand the area of pinewood in Coille Coire Chuilc and Glen Falloch from 81 ha to130 ha - by 2010
- Establish 500 ha of pinewood on ecologically suitable sites - by 2010.
- Develop and implement a Forest Habitat Network Strategy for the Loch Lomond National Park - by 2005.
- Raise the public's awareness of the importance of native pinewoods and newly planted pinewoods within the Stirling Council Area.

Upland Oakwood: Among the targets in the action plan for this habitat are:

- Expand the area of upland oakwood by 200 hectares (10%) - by 2005.
- Bring 50% of upland oakwood in SSSI's into favourable or unfavourable but recovering condition – by 2010.
- Encourage / develop new markets for oak products.
- Ensure woodland habitat networks are prioritised within agriculture and forestry local strategies.
- Double the size of 10 ancient upland oak woodlands under 2 hectares to at least 3 hectares (ha) - by 2010.
- Organise oakwood related public events - annually.

There are Species Action Plans for **birds:** Black Grouse, Golden Eagle, Mountain Ringlet, Ring Ouzel; **mammals:** Mountain Hare; **vascular plants:** Juniper; Wooly Willow; **liverworts**: Stabler's rustwort; **lichen:** Elm gyalecta lichen, *Halecania rhypodiza*, Bacidia incompta, *Catillaria aphana*; **mosses:** Lead moss, Perthshire beard moss,Scottish beard, and Sward Grass Moss.

A1.11 South Lanarkshire LBAP

This LBAP was prepared by the South Lanarkshire Biodiversity Partnership and launched in 2003.

Upland Heath

Current Status:
In South Lanarkshire13.5% (23,500 ha) of the total land area is classified as "upland" but there are no data for the extent of upland heath given in the LBAP. Key sites are the uplands around Leadhills, North Lowther and Muirkirk. In the past, there has been a major loss in size of this habitat. Of the total "upland" area of South Lanarkshire, 2736 ha are designated as SSSIs (South Lanarkshire Biodiversity Partnership 2003).

Threats: The main factors causing loss or decline of the habitat are overgrazing, badly managed muirburn, drainage of moorland, conversion into grassland (through ploughing, reseeding and liming), increased recreational activities, abandonment and new planning developments (e.g. wind farms)

Targets: There are no targets listed for this habitat type in the South Lanarkshire BAP However, a list of proposed action can be accessed on the web at:
http://www.step.gb.com/la21/biodiversity.html .

Broadleaved & Mixed Woodland

This action plan includes the following woodland types: Upland mixed ashwood, lowland wood-pasture and parkland, upland oakwood, upland birchwood and wet wood.

Current status: Valley/gorge upland mixed ash woodland is the most important type in South Lanarkshire. Key sites for mixed ash woodland are the Clyde Valley Woodlands cSAC and the Hamilton High Parks SSSI. Only remnants of upland oak and birch woodland can be found in South Lanarkshire, best examples occur in the Douglas Valley.

Threats: Factors which negatively influence this habitat type include the conversion to commercial conifer plantations, overgrazing, changes in management practices, invasion of non native species, development pressures (new roads, housing etc), lack of regeneration as well as air pollution and acid deposition (South Lanarkshire BAP 2003).

Targets:
Upland mixed Ashwood:

- Maintain the current extent
- Initiate measures to achieve favourable condition to all SSSIs and SACs, and 80% of the total resource by 2005, and all resource by 2010.
- Initiate restoration of 20ha to upland mixed ashwood by 2005. Complete restoration to site-native species of 25% by 2010 and 50% by 2015.
- Initiate expansion of 420 ha of upland ashwood onto open ground by planting and natural regeneration by 2005, complete 25% by 2010 and 50% by 2015. 50 year target 420 ha.

Upland Oakwood (and Upland Birchwood):

- Maintain the current extent
- Initiate measures to achieve favourable condition to all SSSIs, and in 80% of the total resources by 2005, and all resources by 2010.
- Initiate restoration of 60 ha to upland oakwood and birchwood by 2005. Complete restoration to site-native species of 25% by 2010 and 50% by 2015 period. Plan to restore 50 ha.
- Initiate expansion of 360 ha of upland oakwood and birchwood onto open ground by planting and natural regeneration by 2005, complete 25% by 2010 and 50% by 2015. 50 year target 360 ha.

There are species action plans for the black grouse and common juniper.

A1.12 Scottish Borders LBAP

This plan was prepared by the Scottish Borders Local Biodiversity Partnership.

Upland heathland

Current status: About 5% of the country's heathland are in the Scottish Borders, occurring both as dry grouse moor and in mosaic with blanket bog and upland grassland.

Threats: Some areas are considered over-stocked and too heavily burned.

Targets: No specific targets are given for this habitat type.

Blanket bog

Current status: The Borders' blanket bog area represents an 'important part' of the British total which in turn makes up '10% of the world's' resource. (No actual estimate given.) The plan states that blanket bog area was reduced by 75% between the 1940s and 1980s.

Targets: No specific targets are indicated in the plan.

Montane plateaux

Current status: Areas over 600 metres

Threats: Threats to montane habitats include development, recreational pressures, over grazing and climate change.

Targets: No specific targets

Upland glassland

Current status: Much of the upland grassland in the Scottish Borders is "in fact degraded heathland and bogs damaged by drainage, burning and heavy grazing."

Threats: Threats consist of heavy burning and grazing.

Targets: No specific targets

General issues which affect all upland habitats in Scottish Boarders are:

- Awareness raising of the international importance and value of regional Upland Habitats
- Climate change
- Changing land use and local disturbance
- Development issues
- Habitat loss due to drainage, grazing and inappropriate burning
- Illegal persecution of birds of prey
- Management research and advice

Native woodland

Current status: Native woodlands in the Borders are of 'small size and fragmented nature' with high numbers of non-native species.

Threats: Browsing by deer and stock has led to few young trees.

Targets: No specific targets

A1.13 Caithness LBAP

Blanket bog:

Current Status:
Caithness is important for upland biodiversity as it holds the world's largest intact blanket bog (together with Sutherland about 4000km^2).

Threats:
In the past big areas of bog have been drained. Uncontrolled muirburning and overgrazing are issues which currently affect blanket bogs. Afforestation and other human activities can additionally damage bogs. Crows and Foxes are disturbing breeding birds.

Targets:
No specific targets given.

Heather Moor

Current Status:
According to the Caithness LBAP, large areas are covered in heather moor, but no specific number for the exact extent is given. Parts of the heather moor derive from former peatlands which have been drained in the past. Thanks to regular burning the heather is not converted into birch woods.

Threats:
In some places heath has already been converted into grassland due to over grazing by deer and sheep and reduced sheperding. Other threats include uncontrolled burning, all terrain vehicles and new developments (e.g. wind farms); wildlife crime is another issue that affects heather moor biodiversity, especially birds.

Targets:
No specific targets given.

A1.14 Sutherland LBAP

Mountains and Moor

Montane Habitat

Current Status:
Alpine and sub-alpine heath characterise the vegetation of this habitat type. One key site is Seana Bhraigh, in the Parish of Kincardine and Croick, "which holds an important montane flora" (Sutherland Biodiversity Group 2003: 28). Nothing is mentioned about the extent of this habitat.

Threats and Targets:
Not given.

Upland Calcareous grassland

Current Status:
This habitat type can also occur at sea level. The Mountain avens variant is associated with this habitat type and occurs along the north coast of Sutherland.

No additional information is given for this habitat type.

Blanket Bog:

Current Status:
Sutherland together with Caithness holds Europe's most extensive oceanic blanket bog (together 2000 km^2) (Sutherland Biodiversity Group 2003).

Targets: none indicated

Threats:
The most important issues which affect these three habitat types are over grazing by deer and sheep which leads to an expansion of rough grassland on the expense of heath and unmanaged burning.

A1.15 Wester Ross LBAP

Current Status:

Montane Habitat:
Wester Ross is famous for its impressive mountain environment. This habitat type holds a rich variety of alpine plants including "alpine and sub-alpine heaths which consist of a low lying mat of hardy mosses, sedges and dwarf shrubs such as alpine bearberry, juniper, crowberry, cowberry, mountain azalea and mountain sedge" (Wester Ross Biodiversity Group 2004:42).
Moors (Blanket Bog):
Key areas in Wester Ross which support blanket bogs are: The area west of Shieldaig forest, Gairloch and east of Redpoint, Inverasdale and the area lying to the west of Strath More across to Dundonnell Forest.
Grassland:
This habitat type dominates where soils are wetter and where snow tends to lie for a big part of the year. In areas with calcareous rock substrate, *calcareous grassland* can dominate. No indication is given on the extent or location of this habitat type.

Threats to Mountain and Moor Habitats in Wester Ross:
Afforestation can displace these habitat types. Inappropriate grazing by deer and sheep and muirburn are other issues which affect Mountains and Moors. Recreational activities such as hill walking but also the use of all-terrain vehicles (ATVs) have increased during the past years, which causes degradation to the fragile vegetation of the uplands.

Targets:
There are no specific targets for upland habitats given in the LBAP of Wester Ross. However, some planned actions are mentioned which include promoting the muirburn code and responsible access, producing a brochure to raise awareness on countryside access and recreation issues and raise awareness among landowners on the negative impact of ATV tracks on upland vegetation.

A1.16 Ross and Cromarty LBAP

Current Status:
Montane Habitat:
Ben Wyvis (1046 m above sea level) and its surroundings is a key site for this habitat type. It is especially important for its extensive montane heathland habitat. "Heath is particularly well developed in the Fannichs, and a continuous woolly fringe moss heath – the largest single

stretch in Britain - covers the whole of the top of the massive summit ridge of Ben Wyvis (Ross & Cromarty (East) Biodiversity Group 2004: 51). Due to high pressure of red deer montane scrub is almost absent in Ross and Cromarty.
Blanket Bog:
This habitat type is present over a wide altitudinal range and is dominated by the sphagnum bog-moss. Again Ben Wyvis is internationally recognized for its extensive areas of high altitude blanket bog.
Lowland Heathland:
There are only a few relict areas remaining of this habitat type. Most of it has been lost in the past due to afforestation. One surviving key site is Belmaduthy, inland from Munlochy. Other small areas can be found in Calrossie, Rosemarkie and Newhall. Juniper scrub can be found scattered over the Black Isles.

There are no numbers given about the extent of these upland habitat types.

Threats:
The main issues that have been identified which affect the uplands of Ross and Cromarty are the conversion of open habitats into woodland, overgrazing by deer or sheep, inappropriate muirburning, increased recreational activities as well as climate change and a lack of knowledge about some species that inhabit mountain and moorland which makes it difficult to protect them.

Targets:
No targets are included within this LBAP. Suggested future actions include: Identify the most important areas of open ground which should not be used for afforestation. Encourage land managers to appropriately control grazing. Provide trainings for appropriate management of heather land with a particular focus on muirburning. Restrict ATVs, prevent erosion through path repair, raise awareness on upland habitat management among businesses involved in recreational activities and the public.

A1.17 Skye and Lochalsh LBAP

Mountain and Moorland:

Current Status:
Heather Moorland, Peatland and Acid Grassland
These three habitat types are treated as one in this LBAP as they often occur together forming a mosaic. Peatlands are widespread in Skye and Lochalsh and often occur as mosaics of blanket bog and heathland. Areas of deeper peat can be found at lower altitudes, key sites include Mointeach nan Lochan Dubha and Sligachan on Skye (Skye and Lochalsh Biodiversity Group 2003).
No indication about the extent of these habitats is given.

Threats:
Key issues which have been identified that cause damage to these habitats are afforestation, grazing pressure by deer and sheep, inappropriate muirburn practices, recreational activities, vehicles (e.g. ATVs), wildlife crimes and new developments such as wind farms or pylons etc.

Targets:
No targets listed in this LBAP. Planned future actions include among others:

- Support practical training programmes for the management of mountain, hill and moorland habitats.
- Encourage land managers to reduce grazing pressure in some areas, through reduction in deer or sheep numbers and the use of deer fencing where appropriate.
- Encourage research into deer populations in Skye and Lochalsh, population movement, density, including the sika deer populations and effects on biodiversity through the Deer Management Groups.
- Promote the national Access Code, highlight local issues surrounding access and biodiversity, e.g. effects of litter, disturbance to breeding birds and help people reduce potential negative impacts.

A1.18 Lochaber LBAP

Mountain and Moorland

Lochaber is internationally well known thanks holding the highest peak of the UK, Ben Nevis and a range of other mountains that stretch up to 900 m above sea level which are supporting a unique biodiversity.

Current Status:
Montane Heath: this habitat is consisting of dwarf shrubs or moss heaths and Arctic-Alpine plant communities. "Liverwort-rich, oceanic montane heath is an internationally important plant community that is almost unique to north-west Scotland"(Lochaber Biodiversity Group 2003:42).
Upland calcareous grassland: also occurs in Lochaber and supports rare plant species such as moss campion and mountain avens.

Blanket Bog: is an extensive habitat in Lochaber which often occurs together with wet and dry heath and acid grassland.

Upland and moorland habitats are generally very important for a wide range of birds including the golden eagle, dotterel, ptarmigan, greenshank and golden plover.
No indication is given about the extent of the habitat types mentioned above.

Threats:
In some areas high densities of red deer and sheep are a problem, inappropriate muirburn, recreational activities, wildlife crimes and new developments such as wind farms further damage these habitats or set them under pressure.

Targets:
Again there are no targets given for Mountains and Moorland in Lochaber. Planned future actions include:

- Encourage land managers to review the carrying capacity of their ground and adjust stock or deer numbers accordingly to achieve an appropriate balance for grazing.
- Raise awareness amongst land managers of how fires adversely affect biodiversity e.g. in blanket bogs and montane heaths, and that measures to prevent inappropriate muirburn could be avoided by application of the Muirburn Code.
- Raise awareness of the importance of blanket bogs, both in terms of biodiversity and as a carbon sink.
- Investigate potential impacts of new developments on biodiversity.

A1.19 Inverness and Nairn LBAP

Moorland and Hills

Current Status:
Blanket bog mainly occurs in the Monadliaths and the western uplands.
Upland heath together with grassland mosaics occur in the west of the area covered by this LBAP. This habitat supports the black mountain moth which is nationally rare.

No numbers about the extent of these habitats are given.

Threats:
As in all the other areas of the Highland Council over grazing is a significant problem. Other important issues are a lack of knowledge on species and habitats outside the borders of designated areas, increasing recreational activities (hill walking and climbing, mountain biking, ATVs), inappropriate muirburning and the effects of climate change.

Targets:
No targets listed. Planned actions include:

- Identify the most important areas of open ground through survey and local consultation, and feed this into the planning process through Strategic Environmental Assessment.
- Encourage land managers to reduce, maintain or, in some cases, increase numbers of grazing animals (including deer, sheep and cattle) to levels that permit the survival and expansion of grazing-sensitive species while enhancing the welfare and quality of the remaining, smaller deer population
- Encourage adherence to good practice guides such as those mentioned above, and give thought to whether burning is required at all in some locations.

APPENDIX 2. Interviewees

Name	Group[1]	Area	Organisation	Relevant role
Marina Curran-Colthart	1	Argyll & Bute	Argyll & Bute Biodiversity Partnership	Local Biodiversity Officer
Stephen Corcoran	1	Cairngorms	Cairngorms Biodiversity Partnership	Local Biodiversity Officer
Peter Norman	1	Dumfries & Galloway	Dumfries & Galloway Biodiversity Partnership	Local Biodiversity Officer
Lucy Sumsion	2	Argyll & Bute	Farming & Wildlife Advisory Group	Farm Conservation Advisor
Gordon Gray Stephens	2	Argyll & Bute	Scottish Native Woods	Director
Donald Harrison	2	Argyll & Bute	Scottish Agricultural College	Field Advisor
Keith Miller	2	Argyll & Bute	Forestry Commission Scotland	Policy & Development Officer
Ross Lilley	2	Argyll & Bute	Scottish Natural Heritage	Area Officer
Gavin Smith	2	Argyll & Bute	Scottish Natural Heritage	Area Officer
Robert Leach	2	Argyll & Bute		Farmer
Stewart Roberts	2	Cairngorms	Angus Council	Planning Department
David Jardine	2	Cairngorms	Forestry Commission Scotland	Forest District Manager
Andy McMullen	2	Cairngorms	Cairngorms Moorland Project	Project Officer (ex)
Andrew Wells	2	Cairngorms	Crown Estates	Countryside and Forest Services Manager
Keith Duncan	2	Cairngorms	Scottish Natural Heritage	Area Officer
Stuart Black	2	Cairngorms	Highland Council	Councillor, Cairngorms National Park Authority Board Member, hill farmer
Geoff Shaw	2	Dumfries & Galloway	Forest Enterprise, Galloway	Ecologist
Stuart Graham	2	Dumfries & Galloway	Scottish Natural Heritage	Area Officer
Simon Thorp	2	Dumfries & Galloway	Heather Trust	Director
Pip Tabor	2	Dumfries & Galloway	Project Manager	Southern Uplands Partnership
Wendy Fenton	2	Dumfries & Galloway	Farming & Wildlife Advisory Group	Farm Conservation Advisor
Anne Connick	2	Dumfries & Galloway	Scottish Environment Protection Agency	Catchment Management Planning Officer
Richard Riley	2	Dumfries & Galloway	Buccleuch Estates	Head Ranger
David Baines	3	National	Game Conservancy Trust	Lead Partner, Black Grouse
Fiona Hunter	3	National	Royal Society for the Protection of Birds	Lead Partner, Black Grouse
Andrew Coupar	3	National	Scottish Natural Heritage	Lead Partner, Blanket Bog
Deborah Long	3	National	Plantlife	Lead Partner, Juniper
Heather McHaffie	3	National	Royal Botanic Garden Edinburgh	Lead Partner, Oblong Woodsia

Barbara Jones	3	National	Countryside Council for Wales	Lead Partner, Upland Calcareous Grassland
Mick Rebane	3	National	Natural England	Lead Partner, Upland Heathland
Richard Luxmoore	3	National	National Trust for Scotland	Lead Partner, Woolly Willow
Sally Johnson	4	National	Joint Nature Conservation Committee	Upland Lead Co-ordination Network
Mike Daniels	4	National	Deer Commission Scotland	Research and Data Manager
Duncan Orr-Ewing	4	National	Royal Society for the Protection of Birds	Head of Species and Land Management
Sam Gardner	4	National	Royal Society for the Protection of Birds	Conservation Policy Officer
Ian McCall	4	National	Game Conservancy Trust, Scotland	Director
Jim Robb	4	National	National Farmers' Union Scotland	SBF Rural Land Use Working Group, hill farmer
Alan Boulton	4	National	Farming & Wildlife Advisory Group	Farm Conservation Advisor, hill farmer
Ro Scott	4	National	Scottish Natural Heritage	Biodiversity Co-ordinator, SBF LBAP Working Group
Andrew Midgley	4	National	Scottish Biodiversity Forum	Biodiversity Implementation Team
Jonathan Hall	4	National	Scottish Rural Property & Business Association	Head of Rural Policy

[1] Group 1 – Local, Biodiversity Officers; Group 2 – Local, other; Group 3 – National, Lead Partners; Group 4 – National, other

APPENDIX 3. Semi-structured interview questions.

	Linkages and communication between and across levels of biodiversity policy
1	How well are the UKBAP, Scottish Biodiversity Strategy and LBAP processes integrated with each other? Which links are strong and which are weak in your experience?
2	How is information communicated within and between components of the statutory biodiversity delivery structure (UKBAP-SBS-LBAP)? What is working and what isn't in your experience? What are your main sources of information? What is useful, what isn't?
	Priorities and planning
3	Can you think of any examples of conflicts of biodiversity interest between uplands habitats and/or species? How were these overcome? How do you prioritise?
	Actions, cooperation and efficiency
4	How effective are LBPs in delivering both local and national biodiversity objectives for the uplands? Do you have any examples to illustrate this?
5	How much co-operation is there across LBP or ownership boundaries? Are there any specific barriers to this? What are the opportunities for improved co-operation?
6	What are the main knowledge gaps affecting delivery of upland biodiversity objectives?
7	What would encourage local communities to become more involved in upland biodiversity action? Do you know of any examples of good practice here?
8	Can you think of any examples where upland biodiversity action has resulted in tangible social or economic benefits to the local community?
	Monitoring and reporting
9	What are the challenges associated with monitoring and reporting of upland biodiversity action? Examples?
	Opportunities for improvement
10	What do you think are the most important opportunities for improving delivery of biodiversity policy and action in the uplands of Scotland?

APPENDIX 4. Interviewee responses to questions in Appendix 3.

Group[1]	Area[2]	Name	Question									
			1	2	3	4	5	6	7	8	9	10
1	A&B	Marina Curran-Colthart	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1	C	Stephen Corcoran	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1	D&G	Peter Norman	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2	A&B	Lucy Sumsion	y	y	y	y	y	y	y	y	y	y
2	A&B	Gordon Gray Stephens	y	y	y	y	y		y	y	y	y
2	A&B	Donald Harrison		y	y	y	y	y	y		y	y
2	A&B	Keith Miller	y	y	y	y	y		y	y	y	y
2	A&B	Ross Lilley	y	y	y	y	y		y	y	y	y
2	A&B	Gavin Smith	y	y		y		y	y			y
2	A&B	Robert Leach								y		y
2	C	Stewart Roberts	y	y	y	y	y		y	y		y
2	C	David Jardine	y	y	y	y	y	y	y	y	y	y
2	C	Andy McMullen	y		y	y		y	y	y	y	y
2	C	Andrew Wells	y	y	y	y	y	y	y	y		y
2	C	Keith Duncan	y	y	y	y	y	y	y	y	y	y
2	C	Stuart Black	y	y	y	y	y		y	y	y	y
2	D&G	Geoff Shaw		y	y	y	y	y		y	y	y
2	D&G	Stuart Graham	y	y	y	y			y	y		y
2	D&G	Simon Thorp			y			y	y	y	y	y
2	D&G	Pip Tabor	y	y	y	y	y	y	y	y	y	y
2	D&G	Wendy Fenton		y		y	y	y	y		y	y
2	D&G	Anne Connick	y	y	y	y	y	y	y		y	y
2	D&G	Richard Riley	y	y	y		y	y	y	y	y	y
3	National	Heather McHaffie	y	y	y	y	y	y			y	y
3	National	Richard Luxmoore	y	y	y	y		y			y	y
3	National	David Baines	y	y	y			y			y	
3	National	Barbara Jones	y		y			y	y	y	y	y
3	National	Andrew Coupar	y	y	y	y	y	y	y	y	y	y
3	National	Fiona Hunter	y	y	y			y			y	y
3	National	Deborah Long	y	y	y	y	y	y	y	y	y	y
3	National	Mick Rebane	y	y	y			y	y	y	y	y
4	National	Sally Johnson	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4	National	Mike Daniels	y	y	y		y	y			y	y
4	National	Duncan Orr-Ewing			y		y	y	y	y	y	y
4	National	Sam Gardner	y									
4	National	Ian McCall	y	y	y	y	y	y	y			y
4	National	Jim Robb	y		y	y			y	y		y
4	National	Alan Boulton	y	y		y	y	y	y	y	y	y
4	National	Ro Scott	y		y	y	y	y	y		y	y
4	National	Andrew Midgley	y	y	y	y	y	y	y	y	y	y
4	National	Jonathan Hall	y		y	y	y			y		y
		Total responses	31	28	32	27	25	27	28	25	28	35

[1] Group 1 – Local, Biodiversity Officers; Group 2 – Local, other; Group 3 – National, Lead Partners; Group 4 – National, other

[2] A&B – Argyll & Bute; C – Cairngorms; D&G – Dumfries & Galloway