

# SCOTLAND'S BIODIVERSITY IT'S IN YOUR HANDS

A PROGRESS REPORT 2005-07



natural  
scotland  
SCOTTISH GOVERNMENT

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## Ministerial Foreword



Mike Russell

Biodiversity is the rich variety of life which surrounds us and including its relationships with ourselves. Biodiversity provides the essential resources and services that we depend on for our lives and livelihoods, directly and indirectly: food, materials, medicines, pollination, recycling of carbon, water cleansing, and flood control, to mention a few. Our life depends on continuing to safeguard a diverse and healthy biodiversity.

The Scottish Biodiversity Strategy *Scotland's Biodiversity: It's In Your Hands*, published in 2004, was a landmark strategy for Scotland. It sets out the vision for the future health of our biodiversity, and maps out a 25-year framework for action to conserve and enhance biodiversity for the health, enjoyment and well-being of all the people of Scotland. It makes clear that safeguarding Scotland's natural environment requires the commitment of each and every one of us.

Much has changed since 2004 when the Scottish Biodiversity Strategy was launched. But safeguarding Scotland's biodiversity remains at the heart of the Scottish Government's agenda. We have set out our commitment to build a greener Scotland, and the sustainable use and protection of our precious natural environment is at the heart of that. Our goal must be to achieve a fair and sustainable relationship between the needs of people and the natural environment – not just because caring for our environment is the right thing to do, but also because the quality of our environment is critical to our quality of life, our prosperity and our well-being.

This Report to the Parliament fulfils the requirement set out in the Nature Conservation (Scotland) Act 2004 and highlights achievements over the first three years of the Strategy by a wide range of organisations and individuals, each of whom has risen to the challenge of taking responsibility for Scotland's biodiversity and natural environment. The report shows how much has been achieved by a huge number of people to safeguard, enhance, understand and enjoy Scotland's biodiversity over the past three years.

The lessons that have been learned over these past three years will help steer our collective efforts in the years leading to 2010. That is an important date because of the European and international commitment to halt the loss of biodiversity by 2010. Scotland is playing its part energetically through implementation of the Scottish Biodiversity Strategy and through its participation, along with the other devolved administrations, in the UK Biodiversity Action Programme.

By its nature, biodiversity is diverse and complex; inevitably it takes time to see the impact of changes in our actions and behaviour. We need to be realistic and patient, yet also determined in our efforts to safeguard and enhance our natural environment, and to commit ourselves to the long haul. While there is still much to achieve for our biodiversity, there is much to celebrate as we enjoy and value the wonderful biodiversity of Scotland around us.



**Mike Russell**  
Scottish Government  
Minister for Environment

Native Scots Pine and Loch An Eilean: Image courtesy of SNH



# 1 BACKGROUND AND CONTEXT

# 1 – Background and Context

## Biodiversity

“Biodiversity” or “biological diversity” is the complete range and variety of all living things. Biodiversity is made up of many individual species of every kind, including humans – and the places or environments in which they live. It includes differences or diversity between species, diversity within individual species (at a genetic level), and diversity of habitats and ecosystems. And crucially, biodiversity also encompasses the complex and intricate web of connections and relationships between all life on our planet.

## Why does biodiversity matter?

Biodiversity matters because people and societies depend on plants, animals and almost every other part of the living environment for their existence and livelihoods. Although many of us nowadays live in towns and cities, biodiversity still provides the raw materials for most of our food, clothing, medicines, fuel, materials for construction, recreation, tourism, and much more. Biodiversity also provides the essential functions – sometimes called “ecosystem services” – that are the basis of our lives, such as soil formation, nutrient cycling, climate and disease regulation, carbon recycling, pollination, and purifying water supplies. There are important links between ecosystem services and climate change – with climate change impacting on ecosystems, and biodiversity providing potential for adaptation. Many people also value and appreciate the natural world as an indispensable element of their quality of life, gaining pleasure, meaning, or a sense of well-being from the natural world.

## Scotland's biodiversity

In Scotland we are lucky to have an enormously rich and varied biodiversity. Many of our plants and animals, the diversity of species and some of their genetic characteristics, are unique and distinctive. Many of them are internationally significant and important. A healthy and diverse natural environment is the essential foundation for our vision of a greener, stronger, healthier Scotland. We all depend on and benefit from Scotland's priceless biodiversity, and we have a responsibility and a duty to safeguard it.

The natural heritage of Scotland – its plants and animals, geology and landforms, natural beauty and amenity – is remarkably diverse. Scotland and its surrounding seas may support as many as 90,000 native species, from the largest mammal to a multitude of tiny organisms. We are only familiar with a very small proportion of this total.

As part of an island at a northerly latitude which was glaciated until around 10,000 years ago, Scotland and its biodiversity have much in common with Nordic countries at similar latitudes. Scotland does not have a particularly large variety of species compared to some other parts of the world, but it is nonetheless remarkable for its diverse mix of Atlantic, Arctic and Arctic-alpine environmental features. Many plants, particularly mosses and liverworts, have their European stronghold on Scotland's Atlantic and Western Isles coast. Around 30 species, including the Scottish crossbill and the Scottish primrose, occur nowhere else in the world.





Mixed woodland and farmland, Strathtay, Perthshire: Image courtesy of SNH

Scotland's seas, positioned between sub-polar and sub-tropical influences, are among the most biologically productive in the world. They support fascinating communities of marine habitats and species, including spectacular and surprising features like cold-water corals. The international importance of Scotland's seas is emphasised by the very significant breeding populations of seabirds and grey seals that they support.

Scotland's unique biodiversity is important for its own sake and because it supports the lives of everyone who lives here. But our natural environment is also appreciated and valued far beyond Scotland's borders by the many visitors who come to Scotland every year to enjoy its wonderful nature and scenery, and by people across the world who relish the foods and other products that Scotland's natural environment provides. So Scotland's natural riches provide a basis for its vital tourist industry and high quality food, drink and clothing industries, supporting thousands of jobs across the country.

### Working for a healthy planet

More than 150 countries, including the UK, have made a commitment to protecting biodiversity by signing the 1992 International Convention on Biological Diversity (CBD).<sup>1</sup> Scotland has an important part to play in this.



Vane Farm RSPB Reserve, Loch Leven: Image courtesy of SNH

The UK Biodiversity Action Plan, which was launched in 1994, has given the impetus for vital work to protect wildlife and habitats. Partners across Scotland, from Government bodies to non-governmental organisation and local community initiatives, are engaged in its delivery, including safeguarding habitats and species to which Scotland is home.

Scotland is committed to playing its part in the European Union target to halt the loss of biodiversity by 2010.<sup>2</sup> This is a challenging target and calls for determined effort to achieve it – for ourselves, for generations to come, and for the future of the planet. This report features many successes that will contribute to that goal, and also highlights the key challenges we need to address over the years ahead.

## Scottish Biodiversity Strategy

The Scottish Biodiversity Strategy *It's In Your Hands*,<sup>3</sup> published in 2004, presented a 25-year vision and framework for action to protect Scotland's biodiversity. The Strategy aims "to conserve biodiversity for the health, enjoyment and well being of the people of Scotland now and in the future", through five key objectives:

1. **Species and habitats:** To halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats.
2. **People:** To increase awareness, understanding and enjoyment of biodiversity, and engage many more people in its conservation and enhancement.
3. **Landscapes and ecosystems:** To restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice.
4. **Integration and co-ordination:** To develop an effective management framework that ensures biodiversity is taken into account in all decision making.
5. **Knowledge:** To ensure that the best new and existing knowledge on biodiversity is available to all policy makers and practitioners.

The Strategy focuses on the relationship between biodiversity and people, reflecting our dependence on the natural environment, and the potential damage we can cause it. The Nature Conservation (Scotland) Act 2004 requires public bodies in Scotland to take biodiversity into account in their activities.

## Reporting on progress

Scottish Ministers are required by the Nature Conservation (Scotland) Act 2004 to report to the Parliament every three years on progress in implementing the Scottish Biodiversity Strategy.<sup>4</sup> This is the first Report. It has been compiled by the Scottish Government in consultation with a wide range of partners, including members of the Scottish Biodiversity Committee and Scottish Natural Heritage.

## Building on firm foundations

Legal protection of species in Scotland dates as far back as the Wild Birds Act 1880. Later legislation, including The National Parks and Access to the Countryside Act 1949, the Wildlife and Countryside Act 1981, and the European Birds and Habitats Directives<sup>5</sup> of the 1990s, reflects the importance of conserving biodiversity. Nationally and internationally important sites have been identified as Sites of Special Scientific Interest (SSSIs), Special Protection Areas, Special Areas of Conservation, and National Nature Reserves. The Nature Conservation (Scotland) Act 2004 established a new framework for nature conservation in Scotland, building on these strong foundations.



Portlethan Primary School pupils on a visit to SNH Nature Reserve at St Cyrus: Image courtesy of SNH



Dingy Skipper Butterfly: Image courtesy of SNH

The Scottish Biodiversity Strategy emphasises that we need to think more widely about how we protect and enhance biodiversity and safeguard our natural resources. Caring for the natural environment is not a matter just for specialists or conservationists, or something that belongs only to special areas. Each and every one of us relies on and uses natural resources in every part of our lives. Protecting biodiversity involves all of us. Put simply, we need to be aware of our dependence on the natural world, and to act responsibly in the way we live our lives and organise society. The Strategy provides a basis to do that.

Government has a vital role to play. As we think more broadly about protecting the natural world, it becomes apparent that some of the greatest gains are to be made by integrating it into work that is not solely about nature conservation. Over the past three years, biodiversity issues have been built into a range of policies delivered by the Scottish Government.

- **Biodiversity Duty:** the Nature Conservation (Scotland) Act 2004 gives all public bodies in Scotland a duty to conserve biodiversity as they carry out their work. This duty complements the drive to improve the environmental performance of public bodies across Scotland, giving a clear signal that safeguarding biodiversity is not an optional extra but an essential aspect of how we live and work. There are examples throughout this report of how public bodies across Scotland are turning the biodiversity duty into real improvements in our environment.
- **Supporting Agriculture:** the new Scotland Rural Development Programme for 2007-2013 has been designed to give land managers across Scotland clear incentives to work in harmony with nature and conserve biodiversity on their land.
- **Water Resources:** the European Water Framework Directive<sup>6</sup> requires Scotland to manage all its water resources in streams, rivers and seas to ensure they are in the best environmental condition. The work to implement this new approach offers enormous opportunities to enhance biodiversity across Scotland while protecting our waters.

- **Planning:** the need to take full account of the impacts of development on the natural environment and to mitigate damage is being integrated into the modernised development planning and development management systems.
- **Strategic Environmental Assessment (SEA):** Scotland has taken a positive decision in requiring that all major public plans, programmes and strategies (including policies) that are likely to result in significant environmental effects, if implemented, are fully assessed for their likely environmental impacts. The SEA approach includes, where relevant, an assessment of any significant impacts on biodiversity and the measures envisaged to prevent, reduce and offset as fully as possible any significant adverse effects.
- **Education:** the development of a new core Curriculum for Excellence for Scotland's schools provides a vital opportunity to ensure that our children and young people can learn about and learn from their natural environment.



## 2 BIODIVERSITY IN SCOTLAND TODAY

## 2 – Biodiversity in Scotland today

### The evidence – Scotland's Biodiversity Indicators

To measure progress towards the objectives of the Scottish Biodiversity Strategy it is essential to have information about the current status of biodiversity in Scotland. The first set of 22 Scottish biodiversity indicators was published in 2007 to provide a basis for that assessment.

These indicators provide insights into the state of Scotland's wildlife and natural environment. Reflecting the Strategy's strong emphasis on the relationship between the people of Scotland and their natural environment, the indicators also provide information on the extent of people's engagement with biodiversity and the natural world.

Five of the indicators (nearly a quarter) show improvement. A further five show no change, fluctuation or divergent trends. Nine of the indicators (two-fifths) are baseline assessments, for which no trend can be established, either because the way they are measured has changed over time, or because they are new indicators being assessed for the first time. Three of the indicators (one-seventh) show deterioration: seabird populations, plant diversity, and invasive non-native species.

Number	Title	Trend
<b>State Indicators</b>		
S1	BAP priority species	Baseline
S2	BAP priority habitats	Baseline
S3	Terrestrial breeding birds	Improvement
S4	Wintering waterbirds	Improvement
S5	Breeding seabirds	Deterioration
S6	Vascular plant diversity	Deterioration
S7	Woodland structure	Baseline
S8	Terrestrial insect abundance – butterflies	Divergence
S9	Terrestrial insect abundance – moths	Fluctuation
S10	Notified species in favourable condition	Baseline
S11	Notified habitats in favourable condition	Baseline
S12	Otter status	Improvement
S13	Freshwater macro invertebrates	No change
S14	Marine plankton	Divergence
S15	Estuarine fish diversity	Improvement
S16	Marine fish stocks within safe limits	Fluctuation
S17	Invasive non-native species	Deterioration
<b>Engagement Indicators</b>		
E1	Attitudes to biodiversity	Baseline
E2	Green space	Baseline
E3	Visits to the outdoors	Improvement
E4	Involvement in biodiversity conservation	Baseline
E5	Membership of biodiversity non-governmental organisations	Baseline

The first report on the Scottish Biodiversity Indicators<sup>7</sup> gives detailed information about the indicators. Following are some key highlights from this report.

### **Halting biodiversity loss**

The most recent assessment revealed that of 153 priority threatened species in Scotland, nearly 40% are increasing or stable, while 18% are declining. The status of around 30% of these species is not currently known. Of 41 priority habitats in Scotland, 35% are increasing or stable, while nearly 30% are declining. For 34% of habitats the status is unknown.

### **Birds**

Most land-based birds and waterbirds included in the indicators have remained stable or increased in recent years. However, the numbers of some seabirds have declined dramatically, indicating changes in the marine environment.

### **Plants**

The range and diversity of some types of plants (acid grasslands and some heathlands) have changed significantly, probably in response to nitrogen levels in air pollution.

### **Butterflies and moths**

Butterflies and moths are good indicators of habitat diversity, fragmentation and the impact of climate change. Generalist butterfly species that can live in a range of different habitats have increased substantially, whilst butterflies that specialise on particular habitats have done less well.

### **Protected areas**

Scotland has over 1,400 protected sites of various kinds on land and sea (Sites of Special Scientific Interest, Ramsar sites, Special Protection Areas and Special Areas of Conservation), often home to rare species. The most recent assessment shows that 50% of habitats, 89% of geological features and 70% of species in these sites were in favourable condition.

### **Fresh waters**

Many previously polluted rivers have improved in condition in the past 20 years, evidenced by increases in the range of invertebrate species, and the widespread return of otters to rivers across most of Scotland.

### **Estuaries**

Many fish species have returned to Scotland's major estuaries in recent years, demonstrating the improvement in water quality following extensive pollution from sewage and industrial pollution from the mid 19th to mid-20th century.



**Machair flowers, Barvas, Isle of Lewis:** Image courtesy of SNH



**Volunteers digging a pond, Chatelherault, Lanarkshire June 2006:** Image courtesy of Richard Davison

## The sea

Plankton is a vital food source for many other species in the sea. Plankton species that flourish in warmer water temperatures have increased dramatically in recent years, probably in direct response to rising sea temperatures due to climate change. The conservation of commercial fish stocks is of prominent national and international importance. Of 11 sea fish stocks assessed in 2005, seven were at full reproductive capacity.

## Non-native species

Around 1,000 non-native species occur in the wild in Scotland as a result of human intervention. Most of these do little or no known harm, and the majority have shown no change since the 1950s. However, 14% of these species have increased in prevalence, some of them becoming so invasive that they threaten native wildlife.

## Benefits for people

Four out of five people in Scotland live in towns and cities, and green spaces within them make settlements pleasant to live in, offering opportunities for people to experience and enjoy their natural surroundings and providing space for wildlife. A quarter of the area of Scotland's settlements is covered by local greenspace policies, half of which is designated as green belt or for its natural environment. Over three-quarters of Scottish adults made at least one visit to the outdoors during the past 12 months. Over three-quarters of adults surveyed recognised the relevance of biodiversity to them, and nearly 38% of adults had done some volunteering in 2004, including environmental projects.



Reef Loch Creran, Argyll: Image courtesy of Graham Saunders



### 3 IMPLEMENTING THE STRATEGY

## 3 – Implementing the Strategy

### Planning for implementation

The Scottish Biodiversity Strategy's 25-year time span recognises that improving the condition and conservation of biodiversity is a long-term agenda, where changes will take time to take effect. A lot of vital work to safeguard Scotland's natural environment has been happening across the public, private and non-governmental sectors for many years. To ensure that the Strategy acted as a focus for what was already happening, and to stimulate new action, a three-year biodiversity implementation plan was published in 2005 by the Scottish Biodiversity Forum, covering the period 2005 to 2007. The plan identified specific actions intended to bring the Strategy's vision to life.

A review of the first three years of implementation of the Scottish Biodiversity Strategy showed that the majority of the actions were successful, though a small proportion were not completed successfully. Actions were most successful where there was clear responsibility for leading and delivering them, either through a single organisation or a robustly-based partnership. A key feature of most successful actions was that they were integrated into the operational planning of the organisations involved in delivery and were allocated specific and adequate resources. Where actions were clearly linked to existing national targets (Scottish or UK) they were also more likely to be successful.

Conversely, some intended actions failed to deliver results, particularly where the aspirations were over-ambitious and reached beyond the sole influence of the lead organisation. Some actions also failed to achieve clear results when they were not sufficiently specific, or where they depended on other actions or activity beyond their control. Changes in the organisation that originally committed itself to the action, particularly where the lead person moved to new duties, also made it less likely that the intended actions would be successful.

Taken as a whole, the first set of implementation plans stimulated and focussed a wide range and variety of activity which helped to protect biodiversity in Scotland. The successes and challenges of the first three years have been used to improve the development of the next implementation plan, which will cover the period 2008-2010. Actions in the new implementation plan will be linked more clearly to the objectives of the Scottish Biodiversity Strategy, and will be expressed as specifically as possible. The new implementation plan will be subject to Strategic Environmental Assessment and public consultation before it is finalised and published early in 2008.



Clean up at Brockburn, Glasgow: Image courtesy of SNH

### Who is involved?

Biodiversity is a responsibility we all share, and making the Strategy happen inevitably involves many people. The Scottish Biodiversity Committee co-ordinated development of the implementation plan through its working groups on Rural, Marine, Urban, Local, Science, and Interpretation/Communication/Education issues. These working groups are made up of members from government, non-governmental organisations, business and local authorities. The working groups identified appropriate targets and actions to take forward the objectives in the implementation plan, and the final plan was endorsed by the Scottish Biodiversity Committee.

The Biodiversity Implementation Team, funded by the Scottish Government, Scottish Natural Heritage, Royal Society for the Protection of Birds, and the Scottish Wildlife Trust, supports the working groups and facilitates delivery of the actions in the plans.

### Local action

The goal of safeguarding and protecting biodiversity and our natural environment is driven by the need to look after the health of our planet as a whole, and its ability to carry on supporting our lives. But most of the work and projects that contribute towards these goals start at a very local level, involving people in recognising the importance, beauty and value of their natural environment and protecting and enhancing it. Biodiversity is literally all around us and vital to all our lives.



Machair, Isle of Coll: Image courtesy of SNH

It is by getting involved in local projects and activities – in communities, workplaces or special wild places – that the greatest differences can and must be achieved. Local authorities play a key role in this. Nearly every local authority in Scotland is a member of a Local Biodiversity Action Partnership (LBAP), which brings together a wide range of people and organisations round the shared goal of appreciating and protecting their natural environment. LBAPs provide the inspiration and resources to get a huge range of practical projects off the ground and in making a difference locally. Examples of the work of local authorities and LBAPs are highlighted throughout the rest of this report, and demonstrate how public bodies across Scotland are making a reality of their statutory biodiversity duty.



Frogs: Image courtesy of SNH

### Progress to date

The following sections report on progress over the past three years towards the five objectives of the Scottish Biodiversity Strategy. They highlight achievements by a wide variety of bodies and individuals, across a range of different sectors. In tune with the overarching approach of the Strategy, they include action that was directly stimulated by the Strategy, as well as other actions and initiatives delivering benefits for Scotland's biodiversity, that have been encouraged or given clearer focus through the Strategy.

Kittiwake pair displaying at nest site: Image courtesy of RSPB



# 4 PROGRESS BY OBJECTIVES

## 4 – Progress by Objectives

### Objective 1 – Species and Habitats

#### Strategy objective

*To halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats.*

Protection of species and habitats lies at the heart of the Scottish Biodiversity Strategy. This section highlights some achievements in targeted action for species and habitats.

#### Delivering for UK priorities

A wide range of partners across Scotland are actively involved in conservation projects for species and habitats to implement the UK Biodiversity Action Plan. The most recent report on progress<sup>8</sup> from 2005 shows clear benefits for some species and habitats which are increasing or are stable including capercaillie and corncrake, and the otter which is now widespread in Scotland again. There are also improvements in the status of some key Scottish habitats such as native pine woodlands and lowland bogs. There is still a number of species and habitats that need continued or further action to stop their decline and protect them properly. Scottish experts have been closely involved in revising the list of priority species and habitats for the UK, and the Scottish Government is considering with Scottish Natural Heritage and other partners the most effective approaches for Scotland to safeguard these species and habitats for the future.

#### A New Framework For Nature Conservation

The Nature Conservation (Scotland) Act 2004<sup>9</sup> revised nature conservation legislation in Scotland with the overall aim of protecting wildlife. For the first time in Scotland, the Act placed on public bodies a duty to further the conservation of biodiversity, as well as modernising the system for protecting Scotland's most precious areas for biodiversity (Sites of Special Scientific Interest) and strengthening the laws against wildlife crime.

#### Protecting Scotland's Special Places for Biodiversity

We protect a selection of the most important and sensitive places for wildlife in Scotland, through the system of Sites of Special Scientific Interest (SSSIs). Scotland is also an active participant in the Natura 2000 European network of internationally important nature conservation areas. By 2007, nearly 1,500 SSSI's had been established in Scotland, covering about 13% of the country. Many of these sites are also part of the Natura network. The Scottish Government and Scottish Natural Heritage, in collaboration with many land managers, are working towards targets<sup>10</sup> to ensure these special areas are in the best possible condition.

## Species Action Framework

Among the wide range of species in Scotland, some species require particular actions to protect them or to control their impact on the environment. Scottish Ministers asked Scottish Natural Heritage to develop a Species Action Framework which would help direct future conservation efforts in Scotland towards species most likely to benefit from intervention. Following public consultation, 32 species were included in the final Framework. SNH have produced action plans for the next five years for each of the species, in partnership with other bodies which will be involved in delivering the action. Some of the plans are already well underway, including the reintroduction of white tailed sea eagles on the east coast of Scotland.

## Invasive non-native species

Invasive non-native species like Japanese Knotweed and Grey Squirrels can impact on our native species and habitats in a number of ways: by preying on native wildlife, competing for food and territory, and degrading habitat. The Scottish Government is playing an active part to develop more effective ways of preventing the spread of invasive non-native species through the Invasive Non-native Species Framework Strategy for Great Britain. The Scottish Government will work closely with a wide range of partners to ensure this strategy is implemented on the ground in Scotland.

## Forestry

Scotland's forests are home to some of our most special wildlife and plants. The Forestry Commission's Scottish Forestry Strategy<sup>11</sup> gives priority to managing woodland for the benefit of biodiversity and the Commission is closely involved in a range of projects to achieve that. In particular, the Commission is a partner in projects to increase the number of capercaillie and black grouse living and breeding in its forests. As a result of one such project in which FCS worked with Scottish Natural Heritage, RSPB, Highland Birchwoods, Forest Research, the Scottish Government, the Cairngorms National Park Authority and more than 30 private forest owners under a five-year European LIFE funded project, capercaillie had their most successful breeding season for 14 years in the summer of 2006.



**Children participating in the Salmon in the Classroom project:** Image courtesy of SNH

### CONSERVATION OF ATLANTIC SALMON IN SCOTLAND

Commencing in 2004, with a budget of £3m, the Conservation of Atlantic Salmon in Scotland LIFE project (CASS) is the single most significant salmon conservation project ever undertaken in Scotland with 18 partners and five co-financiers. Co-financed by the European Community's LIFE-Nature programme and led by Scottish Natural Heritage, the CASS Project is actively improving freshwater habitat for salmon on eight Scottish rivers designated as Special Areas of Conservation (SAC). These rivers comprise almost 40% of Scotland's Atlantic salmon resource. Due for completion in July 2008, the project to date has decommissioned five netting stations on two rivers, removed or bypassed 18 obstacles to fish passage, opened up over 100 km of freshwater habitat, restored a variety of in-stream habitats, restored riparian vegetation through fencing, coppicing and forestry management, completed a draft Code of Practice for gravel extraction on salmon rivers, has run the Salmon in the Classroom programme across seven rivers, and has had extensive publicity. As the project enters its final phase, the demonstration of the success of the restorative actions will become the focus, with a final project conference in June 2008 being one tool for dissemination of project results.



**Volunteer with the Sustain Dundee Red Squirrel Project:** Image courtesy of the Sustain Dundee Red Squirrel Project

### RED SQUIRRELS

The red squirrel is one of the most threatened mammals in the UK. The Scottish Red Squirrel Action Plan 2006-2011<sup>12</sup> was launched in 2006 by Scottish Natural Heritage, the Forestry Commission and the Scottish Government to address the main threats to the species. The Sustain Dundee Red Squirrel Project is one of many projects delivering practical action on the ground to protect red squirrels. This project has raised awareness of Dundee's red squirrels and fostered partnerships to protect them, including a group of volunteers collecting data, which is fed into a national survey. The project has worked closely with the local media to deliver the difficult message of the need to control grey squirrels to protect the city's reds. Red squirrels are now being seen in areas where they have been absent for a number of years.



## LOCAL DELIVERY

### **Comhairle nan Eilean Siar (Western Isles Council)**

Comhairle nan Eilean Siar (Western Isles Council) is taking part in the Hebridean Mink Project to protect populations of ground-nesting birds in the Western Isles, which are internationally important under European law. Phase 1 of the project successfully eradicated mink from the islands of North Uist, Benbecula and South Uist, and Phase 2 in 2007 aims to eradicate mink from Lewis and Harris.

### **Scottish Borders Council**

Scottish Borders Local Biodiversity Action Plan Partnership (LBAP), led by Scottish Borders Council, is working with over 80 farmers to protect threatened birds through its Farming for Partridges and Sparrows project. Since 2002 this project has provided seed and advised farmers on how to create wild bird cover on their farms, bringing the grey partridge population up to UK Biodiversity Action Plan target levels and sustaining local populations of tree sparrow. This project has been widely recognised as an example of good practice.

## Objective 2 – People

### Objective

*To increase awareness, understanding and enjoyment of biodiversity, and engage many more people in conservation and enhancement.*

Increasing awareness, understanding and enjoyment of biodiversity, and engaging many more people in conservation and enhancement is central to the Strategy. We all have a responsibility to safeguard and enjoy Scotland's biodiversity so that it flourishes and continues to support our lives. People and nature is a key theme in the Scottish Government's objective to achieve a greener Scotland.

## Achievements

### Volunteering

Volunteering is a practical way for everyone to participate in helping to protect nature. The Scottish Government is developing a stronger framework for encouraging volunteering, and in June 2007 the Cabinet Secretary for Rural Affairs and the Environment announced funding of up to £250,000 a year to encourage more people to become involved in environmental volunteering in Scotland. These funds will help support the non-governmental organisations which are at the heart of this activity.



Volunteers at the Dundee Green Gym in October 2004: Image courtesy of BTCV

### GREEN GYMS

Green Gyms, run by the British Trust for Conservation Volunteers (BTCV), provides exercise through working on conservation projects that improve local surroundings. Volunteer participation promotes health, well being, learning and social connections. The support of voluntary and statutory health organisations, local authorities and corporate sponsorship has contributed to the establishment of over 20 Green Gyms since 2004 where participants have learned about nature by conserving it.

## Health

There is a clear link between people's health (and their recovery from ill health), and their relationship with the natural environment. The health benefits of achieving recommended physical activity levels are second only to those of stopping smoking. Supporting people to be more active in everyday pursuits, for instance through walking, cycling or playing in outdoor environments, is one of the best ways to help people achieve these levels. The Scottish Government<sup>13</sup> promotes walking by supporting the upgrading of walking paths, which can empower communities to improve their surroundings, including through small plantings, and by sponsoring initiatives such as the *Paths to Health* led-walk schemes. Combining access to green spaces with physical activity can increase the physical health and mental wellbeing of individuals as they connect with each other and with the natural world.

The Strategic Framework for Environment and Health which is currently being taken forward will also have links to biodiversity and seeks to ensure we can deliver integrated health and environmental policy. This project will ensure we go beyond tackling environmental hazards to promoting environments which nurture positive health states.

## Revitalising urban communities

Greenspaces, the 'green lungs' of our towns and cities, offer benefits for nature and people. They provide corridors linking habitats which give species more areas in which to flourish. They are also a key ingredient in revitalising urban communities as proximity to nature contributes to the quality of life and health of all who use the space.<sup>14</sup> The experience in our most disadvantaged communities is often of a degraded and uninspiring environment characterised by a lack of greenspaces, litter and graffiti. The Scottish Government is determined to tackle these issues and we will work to support the provision of attractive, high quality, greenspaces in our most disadvantaged communities.

## Making woodlands accessible

Most of the Scottish population live a long way from woodlands. Woodlands provide a rich habitat for a variety of species and provide sustainable goods, environmental services and recreational benefits enhancing people's quality of life. The FCS Woods In and Around Towns project seeks to breathe new life into the woodlands in and close to towns for the benefit of nature and people by giving grants to a wide range of organisations. Since the project started in 2004 nearly 22,000 hectares of urban woodland have been brought back into positive management for the benefit of people across Scotland.

## LOCAL DELIVERY

### Argyll and Bute Council

In Argyll and Bute Council schools, the Rivers in the Classroom project gave children the chance to raise salmon from the egg to fry stage and release them back into the river of origin. This led to improved awareness of freshwater biodiversity including river ecology and water quality.

### Clackmannanshire Council

Since April 2003 all government agencies, public bodies and local authorities have been required to engage actively with the communities they serve in planning their service provision for community planning purposes. In Clackmannanshire a pilot Green Map was created with community groups and local primary schools which shows the things that make life worthwhile in Sauchie on the urban fringes of Clackmannanshire. One outcome is that people have given their views on local biodiversity and the Clackmannanshire Biodiversity Partnership has implemented projects requested by the community. This process has engaged a wider range of people in biodiversity conservation, and is an innovative way of promoting interest in biodiversity and offers a springboard to future public participation in biodiversity projects.



Seal watching: Image courtesy of SNH

### SCOTTISH MARINE WILDLIFE WATCHING CODE

Watching wildlife is one way of enjoying Scotland's wonderful biodiversity and is important for Scotland's tourism. The Scottish Marine Wildlife Watching Code, launched in 2006, gives guidance for everyone who watches marine wildlife around Scotland to maximise their enjoyment while minimising disturbance to marine biodiversity. The Code is aimed at wildlife watchers on the sea, in the sea, and on the coast. By increasing their understanding of marine wildlife, it is hoped that these people will be aware of how their behaviour affects the animals they have seen and reduces their impacts on marine biodiversity.

## Objective 3 – Landscapes and Ecosystems

### Objective

*To restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice*

The Scottish Biodiversity Strategy emphasises the importance of restoring and enhancing biodiversity not just by protecting individual species, but by aiming to create ecologically healthy landscapes in all our urban, rural and marine environments, particularly through better planning, design and practice.

## Achievements

### Protecting Scotland's seas

Scotland's seas are home to a very large share of its biodiversity. Yet the sea is also the part of our natural environment about which we know the least, and which it is most difficult to protect from other influences. In order to develop a more coherent and effective approach to conserving the marine environment, a fundamental review of legislation and policy was recently carried out by the Advisory Group on Marine and Coastal Strategy (AGMACS).<sup>15</sup> This group made wide-ranging recommendations in March 2007, including the development of explicit ecosystem objectives for our seas, coordinated spatial planning for seas across the UK, and new marine protected areas. This rigorous analysis of the issues facing biodiversity in our seas will provide a firm foundation for more effective marine policy and law.

### Seas and oceans

Scottish Ministers have nominated 29 marine and coastal areas around Scotland as part of the UK's set of marine protected areas under the international OSPAR Convention<sup>16</sup> on international marine co-operation. In addition, two Special Protection Area sites for marine birds have been established in Scotland: the Forth Islands Special Protection Area because of its large numbers of breeding seabirds, and the Imperial Dock in Leith because of the common terns that breed there.

### National Parks

We have established Scotland's first National Parks to protect and ensure access to some of Scotland's most special landscape areas, in Loch Lomond and the Trossachs and in the Cairngorms. The National Park Authorities are working to protect and enhance biodiversity across their areas through local biodiversity action plans.



**An aerial view of the Edinburgh and the Lothians forest habitat network:** Image courtesy of Patricia and Angus MacDonald, Aerographica

### CONNECTING OUR FORESTS

Woodland ecosystems constitute a significant proportion of Scotland's biodiversity. Over time many of our woods have become fragmented as land has been cleared for agriculture or lost to development. As woodlands become isolated, the ecosystems they support are less resilient, and less able to recover from disturbance and external threats. This is because the less mobile woodland specialist plants and animals cannot move between isolated woodland patches. Forest Research, working with the Local Authorities of Edinburgh and the Lothians, Scottish Natural Heritage and Forestry Commission Scotland have used landscape ecology modelling techniques to produce a forest habitat network for the region. The resulting maps will be used by planners and developers to identify priority areas for managing woodlands, and areas to target for new planting. In particular, the work has identified opportunities for woodland to be incorporated within areas designated for development so that existing habitat is linked. In the future these woodlands will provide habitat for biodiversity, reduce stress, pollution, and noise for urban communities and offer opportunities for education, relaxation and recreation.



**Controlling Giant Hogweed at Kelso:** Image courtesy of Tweed Forum

### TWEED INVASIVES PROJECT

The Tweed Invasives Project is a programme to control invasive, non-native plants throughout the 3,000 square miles of the River Tweed Catchment, primarily focusing on Giant Hogweed and Japanese Knotweed. The project is coordinated by the Tweed Forum in partnership with public bodies, local farmers, landowners, fishing and community groups. The Project acts as a point of contact for the public to report sightings of the plants, and also offers advice, training and practical support for controlling them. Over the past five years it has made huge progress, and landscapes in the lower reaches of the Tweed catchment which used to be dominated by invasive plants have been restored to a more natural ecosystem with native plants and trees. The Project is widely recognised as a blueprint for sustainable, long-term control of invasives and a model of effective partnership working.

## Planning our landscapes

The systems for protecting particularly valuable sites for biodiversity play a vital role in conserving our natural environment in these special places. The planning system operated by local authorities is a key tool for ensuring that developments do not damage these valuable areas. The new Planning etc (Scotland) Act 2006 delivered the most comprehensive reform of the Scottish planning system in 60 years. The need to factor biodiversity issues into planning processes is being built into new Scottish Planning Policies to complement the new Act, including new policies on Green Belts, Fish Farming, Natural Heritage and Open Space and Physical Activity.

## Managing deer

Since 2004 the Forestry Commission, the Deer Commission for Scotland, Scottish Natural Heritage, and the Scottish Government have developed close joint working arrangements to identify areas under greatest threat from grazing deer, and to take prompt action to manage deer where they are damaging the natural environment.

## LOCAL DELIVERY

### North Lanarkshire

Local authorities own and manage large areas of our landscapes, and can have a major impact on them. Since 2005 North Lanarkshire Council has changed the way it manages grassland at 15 public greenspace sites, in order to create spring and summer meadows in areas which were previously mown. The result has been an increased biodiversity on these sites and an involvement with local community groups planting native wildflowers to further improve the diversity. The project has also contributed to raising awareness and skills among Council staff including through their grounds maintenance apprentice scheme.

### East Dunbartonshire

East Dunbartonshire Council has taken action to ensure that biodiversity is a key issue in its Greenspace Strategy, a key strand of which is the Local Biodiversity Action Plan and has set up a Greenspace service to turn this Strategy into improvements on the ground. This service is consulted on all planning applications, and is carrying out a review of all Sites of Importance for Nature Conservation throughout East Dunbartonshire. These are sites which are important for wildlife and habitats, and their protection depends on close co-operation with land owners and managers.

## Objective 4 – Integration and Co-ordination

### Objective

*To develop an effective management framework that ensures biodiversity is taken into account in all decision making.*

Sometimes targeted conservation action is necessary to protect wildlife from acute threats. But sustainable improvements in the natural environment require biodiversity considerations to be integrated into all aspects of our decision-making, systems and processes. In this section there are several examples of good practice which could inspire and encourage wider application.

### Achievements

#### Protecting fresh water

The Water Environment and Water Services (Scotland) Act 2003 (implementing the EU Water Framework Directive) introduced a new approach to protecting the quality of fresh water across whole “river basins” or catchment areas. The Scottish Environment Protection Agency (SEPA) is taking the lead in implementing this new approach in Scotland, working closely with many stakeholders whose activities directly affect rivers and lochs to identify and manage risks to the water environment. SEPA’s monitoring of fresh water includes ecological parameters to ensure protection for the natural environment alongside rivers, burns and lochs. They also consider which key invasive species to include in their monitoring systems. SEPA published Significant Water Management Issues Reports<sup>17</sup> in October 2007 for Scotland’s two River Basin Districts, Scotland and the Solway Tweed, which highlight a range of significant pressures on fresh water in these areas, and much of the action to manage these will benefit biodiversity.



Coastline of the South Mainland of Shetland: Image courtesy of Dr Lorraine Gray

#### SHETLAND SUSTAINABLE MARINE ENVIRONMENT INITIATIVE – PILOT PROJECT

This three-year pilot partnership project<sup>18</sup> between Shetland Islands Council, the Scottish Government, Scottish Natural Heritage, the Crown Estate and other partners is developing a voluntary marine spatial planning system in the inshore waters off the Shetland Islands. Information on the natural environment features in the coasts and seas around Shetland and uses of the sea has been consolidated electronically to prepare a marine spatial plan. This plan will be used to identify conflicts of interest between the natural environment and human uses of it, so these can be resolved without damage to Shetland’s unique landscape and wildlife.



### Fishing within safe limits

Scotland's fishing industry is dependent on the health of our seas and their fish stocks. Through partnership working through stakeholder groups such as the Sea Fisheries Advisory and Reference Group (SEAFAR), and to be continued through a new Scottish Fisheries Council, a sustainable approach to fisheries in Scotland based round the new concept of "Maximum Sustainable Yield" for deep water fishing has been developed. This approach seeks to match the amount of fishing effort, equipment and areas of activity with the long-term delivery of benefits for biodiversity and the health of the natural environment. This has been accompanied by moves to increase local management of inshore fisheries, encouraging local fishing practices to suit local fisheries and environmental concerns.

### Transport

Transport infrastructure – including roads, railways, airports – can have a major impact on biodiversity and landscapes. Transport Scotland, the Scottish Government agency responsible for planning, design, construction and management of transport infrastructure, has integrated biodiversity issues into management of Scotland's trunk road network. Roads managers are required to take into account the natural characteristics and distinctiveness of the local environment, including the use of native plants and any nationally protected species or habitats in deciding how to develop and manage Scotland's trunk road network.

### Higher education sector

Colleges and universities, like many public bodies, can have a major impact on biodiversity and the natural environment through the land and buildings they control, and how they carry out their functions. The Environmental Association for Universities and Colleges developed a guide to Biodiversity on Campus in 2006,<sup>19</sup> identifying a wide range of ways in which higher education institutions can manage their estates to benefit biodiversity, and create links between their teaching and research and the natural environment. This guide, which has been widely acclaimed in the education world, is equally relevant to many other organisations, and is being used to inspire similar work within the NHS.

### Public bodies setting an example

Since 2004 the Scottish Government has been working with public bodies and agencies to decrease their impact on the environment by adopting environmental management systems and policies, and encouraging them to report on their progress. This initiative, which complements the biodiversity duty under the Nature Conservation (Scotland) Act 2004, is being developed further under the Government's Greener Scotland Strategy to build the role of public sector bodies as examples of best practice.

The Health Directorate's Environmental Management Policy for NHSScotland<sup>20</sup> advises all NHS bodies in Scotland that they now have a duty under the 2004 Act to think about the impact of their activities on the natural world, reduce any negative effects on biodiversity and, look for ways of benefiting biodiversity in the way that they go about their business. This means explicitly integrating biodiversity considerations into all activities, operations, plans and policies. To support NHSScotland in achieving these aims, Health Facilities Scotland has produced a guidance document *The Biodiversity Duty and NHSScotland*, which is publicly available for download from the Health Facilities Scotland website.<sup>21</sup>



Linton Fen: Image courtesy of Derek Robeson

### BORDERS WETLAND VISION

The Scottish Borders includes wetland areas that are home to biodiversity that is nationally and internationally important. Wetlands are also valuable for other reasons, enhancing the landscape, buffering flood waters, helping to manage pollution impacts, and providing first hand opportunities to study and enjoy the natural world. Scottish Borders Council has pioneered a new approach by developing a strategic planning tool to map existing and potential wetland areas in the Borders. The tool is already being used directly to support the Council's Development Plan and Flood Management Programme. A sustainable flood management demonstration site is being developed at Craik Forest, and the tool may also help to identify where wetlands can be protected and utilised to ensure land use and development opportunities comply with the EU Water Framework Directive. This tool was commended in the Royal Town Planning Institute in Scotland 2006 "Scottish Awards for Quality in Planning" scheme.

## LOCAL DELIVERY

### **Orkney Islands Council**

Waste in the sea or on beaches, particularly plastics, is a widespread hazard to marine wildlife, through being swallowed or by entangling animals and birds. Each spring Orkney Islands Council's Technical Services Department supports voluntary beach clean-ups throughout the islands, supplying gloves and bags and removing all rubbish collected, making the beaches more attractive and enjoyable, and protecting wildlife from harm.

### **Fife Council**

Fife Council has taken firm action to build biodiversity issues into the full range of its operations, in line with its biodiversity duty. All Council strategies and plans are assessed for their impact on biodiversity, through the Strategic Environmental Assessment approach. As part of this approach, mitigation measures will be proposed where decisions negatively affecting biodiversity are made. In addition, a pilot scheme is underway whereby Council Committee papers are reviewed for their health, equalities and environmental impacts including impacts on biodiversity. Proactive work has also been undertaken by a dedicated cross-Service group which has reviewed all areas of work affecting biodiversity. Action Plans have been produced for all Services that have a significant impact on biodiversity on Fife Council-owned and managed land.

## Objective 5 – Knowledge

### Objective

*To ensure that the best new and existing knowledge on biodiversity is available to all policy makers and practitioners*

Up-to-date information about biodiversity is vital to help protect it effectively. Information suitable for its audience will encourage people to take account of their natural environment and to get involved with it. The examples in this section cover education, research and communication campaigns.

### Achievements

#### Spreading the message

To increase public awareness and appreciation of biodiversity and its contribution to our lives in the face of many competing demands for attention requires fresh and relevant approaches to communication. The BBC has been running its ambitious Breathing Places campaign since 2006, with flagship TV and radio programmes which encourage people to create new special places for nature in their own communities. Two Breathing Places festival days were held in South Lanarkshire (2006) and Glasgow (2007), attracting large audiences who were given the chance to find out more about the natural environment and to try their hand at nature conservation work.

#### Education

There are opportunities through the formal education system and informal learning to increase understanding of wildlife and habitats, and to encourage people of all ages to get involved with the natural environment. The Scottish Government's action plan for the UN Decade of Education for Sustainable Development, *Learning for our Future*,<sup>22</sup> includes a commitment to integrate sustainable development issues, including biodiversity, into the new *Curriculum for Excellence*<sup>23</sup> in Scottish schools. The Scottish Government actively supports the Eco Schools programme which brings the environment into schools, engaging children and staff in learning about the natural world and reducing the environmental impact of their school. A biodiversity module was added to the programme in September 2005. There are now over 2,900 schools in Scotland registered on the programme and, as at September 2007, over 500 schools had attained Green Flag status.

## Research

### The Scottish Biodiversity List

To protect our most threatened wildlife and habitats it is essential to have good information to identify them. The Scottish Government published a Scottish list in 2005 of flora, fauna and habitats considered to be important for biodiversity conservation, a requirement under the Nature Conservation (Scotland) Act 2004. This first ever Scottish list of threatened and important biodiversity was produced through a rigorous process involving scientists and a wide range of stakeholders. This list has been used by public bodies as a source of information in carrying out their biodiversity duty. The list is currently being reviewed to take account of new information from the recent revision of the UK list of priority habitats and species.

### Climate change and biodiversity research

Climate change poses a major threat to biodiversity, and we need more information to understand its impacts and the best responses to it. The Scottish Government, in partnership with Scottish Natural Heritage and other Scottish partners, has supported the ground-breaking MONARCH project (Modelling Natural Resource Responses to Climate Change) to investigate the potential impact of climate change on a sample of individual wildlife species. The report published in May 2007<sup>24</sup> confirmed the scale of the threat posed by climate change, forecasting that for most of the species studied there were likely to be changes in the places where the climate meets their requirements.

### Learning more about native woodlands

Native woodlands are some of our richest areas for biodiversity, and also some of the most threatened. Forest Research started a pioneering Native Woodland Survey of Scotland (NWSS) in November 2006. This five-year survey will reveal the full extent, health, composition and location of Scotland's native woodlands. Over 400,000 hectares of native and ancient woodland will be surveyed, and the results will provide an invaluable resource for woodland owners and managers in their planning. The survey will also help the Forestry Commission to target grants in the most important woodland areas.

### Countryside Survey 2007

In 2007 the fifth and most comprehensive survey ever undertaken of the natural resources of the British countryside was carried out. The Scottish Government and other partners support this survey, using it to collect vital information on Scotland's countryside and landscapes. The results of the survey will provide further vital information on the condition and extent of natural resources, which will help us tackle climate change, pollution and invasive non-native species.



Winners of the Scottish Finest Woods Awards from St Crispin's Special School for their forest school work: Image courtesy of FCS

## BIODIVERSITY AND EDUCATION

Biodiversity and education can complement each other in a range of ways, both through learning opportunities, and buildings and facilities. The Forestry Commission in Scotland has produced an Education Strategy,<sup>25</sup> encouraging schools to use the outdoors for teaching and learning opportunities. St Crispin's Special School in Edinburgh takes pupils with severe and complex learning needs to woodland for lessons, while pupils and teachers at Menteith Primary School, Stirling, have regenerated an area of local woodland with members of the community.



Counting Wildlife: Image courtesy of BRISC

## MAKING WILDLIFE COUNT

Over the past two years, Biological Recording in Scotland (BRISC<sup>26</sup>) has, in close partnership with BTCV Scotland, been actively widening the appeal of biodiversity awareness and biological recording through their innovative Wildlife Counts Project. The project has been successfully delivered in the local authority areas of Stirling, North Lanarkshire and Falkirk, targeting individuals and communities who have had little or no opportunity to appreciate their wildlife. The year-long schedule of free workshops enables participants to identify and record their wildlife. They also engage with other volunteers, learn new lifeskills and hopefully maintain an interest in protecting and recording their wildlife.

## LOCAL DELIVERY

### Aberdeenshire and Aberdeen City Council<sup>27</sup>

High quality biological data is vital to inform local development, conservation and land management. Aberdeenshire and Aberdeen City Councils jointly support the North East Scotland Biological Records Centre, one of a number of Local Record Centres that play a vital role in collating and co-ordinating local biodiversity information for a range of organisations, groups and individuals. All the information collected through the centre is also made publicly available through the National Biodiversity Network database.

### North Lanarkshire

In North Lanarkshire the Local Biodiversity Action Partnership has worked with the Council to design swift nest sites into new school buildings to include provision for swifts to nest there. The outcome benefits swifts, a bird whose numbers have declined sharply, and pupils who become keenly aware of the wildlife sharing their school.



## 5 – Analysis

The Scottish Biodiversity Strategy's five objectives cover a wide range of aspects of biodiversity conservation.

1. **Species and habitats:** To halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats.
2. **People:** To increase awareness, understanding and enjoyment of biodiversity, and engage many more people in its conservation and enhancement.
3. **Landscapes and ecosystems:** To restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice.
4. **Integration and co-ordination:** To develop an effective management framework that ensures biodiversity is taken into account in all decision making.
5. **Knowledge:** To ensure that the best new and existing knowledge on biodiversity is available to all policy makers and practitioners.

### Current status

The Scottish Biodiversity Strategy Indicators provide evidence of the current state of biodiversity in relation to the first two of the Strategy's objectives – Species and Habitats, and People. They point to the following key conclusions.

#### *Species and Habitats*

- Of the 153 UK priority species in Scotland, nearly 40% are increasing or stable, while 18% are declining. The status of around 30% of these species is not currently known.
- Of the 41 UK priority habitats in Scotland, 35% are increasing or stable, while nearly 30% are declining. For 34% of habitats however the status is unknown.
- Four indicators show biodiversity responses to climate change across terrestrial, coastal and marine environments. Major declines in some nesting seabirds are of particular concern.
- Several indicators show species faring better as a result of improvements in environmental management and legislation, including the recovery of otters, estuarine fish, and increases in some breeding and wintering birds. However, nitrogen pollution continues to affect some plant types, and many of Scotland's commercial fish stocks remain outside safe limits.
- Increases in generalist species and declines of those specialising in particular habitats (e.g. amongst butterflies) and the spread of some non-native species are reducing the distinctiveness of Scotland's biodiversity.

#### *People*

- Most people in Scotland care about the natural world. An increasing majority participate in outdoor activities, and a small but increasing minority are more actively involved in conservation through volunteering or membership of environmental and conservation organisations.
- The green space in towns and villages provides a key opportunity for people to connect more with the natural world.



## Conclusions

The status of many *species and habitats* in Scotland is good or improving, with the status of some species having improved dramatically as a result of improvements in their environments resulting from control of pollution, or protective legislation. Targeted conservation action, often through partnership with the non-governmental sector, has produced significant successes for some species and habitats. The integration of biodiversity considerations into other policies is likely to continue these improvements.



Dark Bordered Beauty Moth: Image courtesy of Roy Leverton

There remain a significant number of species and habitats whose status is deteriorating, and there is a need to focus new action towards those. Loss of habitat is a significant issue that still needs to be halted. There is also an urgent need to improve the quality of information we have about the status of a number of species and habitats. The review of priority species and habitats that has recently been carried out across the UK will help ensure that effort is prioritised towards those aspects of our natural environment that are most under threat and reduced where it has achieved sustainable improvement.

There has been significant progress towards the Strategy's aim of increasing the number of *people* who are aware of and involved with their natural environment. Major communication campaigns, particularly through broadcasting media, are reaching growing numbers of people and stimulating interest in biodiversity and in practical work to improve their natural surroundings.

In addition to direct nature conservation work, much has been achieved to *integrate* biodiversity issues more widely into other areas of policy and work. In the long term, it is through this approach that the most significant and sustainable improvements for biodiversity may be delivered. Public bodies have launched a range of initiatives in response to their duty to conserve biodiversity as part of their work, including through the implementation of the European Water Framework Directive, developments in management of sea fisheries, transport infrastructure, and crucially as an integral part of the new arrangements for supporting land managers in Scotland. Integration remains a key area where further progress can and should be made over coming years, building on these successes.



Bumble Bee: Image courtesy of SNH



Scots Pine woodland and blanket bog, Loch Maree Islands National Nature Reserve: Image courtesy of SNH

In terms of *knowledge* about the status of our biodiversity, some significant progress has been achieved. The publication of the first Scottish Biodiversity Indicators is an important development. More people are involved in learning about and collecting information on the natural environment and information about biodiversity is being collated and used more effectively. Understanding of the natural environment is increasingly built into the school curriculum. However, there remain major gaps in our knowledge of the status of some aspects of our natural environment, and in the impact of climate change on biodiversity, and effort will be required to address these.



# 6 SETTING CONTEXT FOR 2007-10

## 6 – Setting Context for 2007-10

This report illustrates a wide range of successes that have been achieved for Scotland's biodiversity during the last three years. It also highlights issues and policies that will be important as we move forward to the next three years of action for biodiversity. The Scottish Biodiversity Strategy Implementation Plan for 2008-2010 has identified significant challenges from climate change, invasive non-native species, habitat loss and fragmentation, and pressure from development.

### Climate change

Climate change poses the most serious threat to biodiversity and our natural environment as a whole. In addition to seeking to minimise the impact of our activities on the environment, it will be a priority for us to increase our understanding of the impact of likely climate change scenarios on biodiversity through research and evaluation. We need to increase our knowledge of how species and habitats are likely to be affected by climate change, and to develop strategies and approaches to maximise the opportunities for wildlife to adapt to changes. We also need to re-evaluate future priorities for conservation action in the light of climate change, to ensure effort and resources are focussed on those species and areas where the need is most acute and there is a realistic chance to make a difference. In 2008 the Scottish Government will publish an adaptation strategy for Scotland, to emphasise these priorities.

### Invasive non-native species

Invasive non-native species remain a major threat to our native biodiversity, and pose a continuing challenge as increasing global trade and travel makes the pathways along which they spread ever more available. The priority remains to prevent the arrival and spread of invasive non-native species, although we need to continue to devote efforts to mitigate their negative impacts or to control species where this is possible. Effective information and communication is indispensable, as the spread of invasive species is frequently the result of a failure to appreciate the risks, and to ensure public support for control and eradication programmes.

### River basin management

River basin management plans will be developed by the end of 2009. These plans will set objectives for water bodies and identify actions to manage the main threats to them. We need to ensure that delivery mechanisms are co-ordinated with other initiatives, including Local Biodiversity Action Plans, management of protected areas, management of invasive non-native species, and the Scotland Rural Development Programme and the relevant development plan. The river basin planning process may also generate new activity which may enhance or protect biodiversity. The Scottish Environment Protection Agency will play a leading role in driving forward this work to protect substantial areas of Scotland's natural environment.



**Herring:** Image courtesy of Fisheries Research Services Marine Laboratory

### Sustainable management of the natural world

Our land management and fishing industries are key sectors of our rural economy, and vital guardians of our natural environment, depending on it for their very survival. Through a range of mechanisms, including the Scotland Rural Development Programme, there is a need to build awareness among all land managers in Scotland of the importance of a healthy natural environment, and to deliver effective incentives to achieve and safeguard that environment. It will also be important to develop the support arrangements for other managers of the land or water environment, including the fishing industry, to ensure that they give suitable incentives and signals to manage these resources sustainably.

### Wildlife crime

In addition to encouraging land managers to look after their land for the benefit of the environment overall, we need to continue to seek out and crack down on the isolated cases where wildlife is deliberately and illegally harmed or destroyed, because it is seen as threatening economic interests. The police are already extremely vigilant for any illegal damage to wildlife, and they are developing their expertise and capability further, in close partnership with Scottish Natural Heritage, the Scottish Government, local authorities and stakeholders from the rural sector. It is vital that the police and the courts make use of the stronger provisions to control wildlife crime in the Nature Conservation (Scotland) Act 2004. Again, this is a key area for effective and coordinated communication by a range of partners, to build public understanding of the issues.

### Policy developments

In several areas there are significant policy developments in view that will deliver benefits for our efforts to safeguard biodiversity. A crucial area is Scotland's marine environment, which is home to most of our biodiversity although much of it is still not discovered or understood. The Scottish Government is determined to clarify and strengthen legislation and policy affecting Scotland's seas, and a key ingredient of this will be the need to conserve and enhance biodiversity.



**Red Squirrel:** Image courtesy of SNH

As our understanding of the impact of climate change continues to develop, and our knowledge of the natural environment widens and helps us identify more species and habitats that need protection, we will need to review approaches to conservation policy and delivery across the UK. The Scottish Government, drawing on expert advice from Scottish Natural Heritage, is playing an active part in the development of ideas for an ecosystem approach to conservation, action for expanding the traditional approach to conserving biodiversity through individual species and habitats, and producing a more holistic and more effective way of addressing the needs of our natural environment as a whole.

### **Communication**

It is vital to involve as many people as possible in appreciating, enjoying and looking after the natural environment as part of the way they live, rather than as a specialist activity. Effective communication about biodiversity is at the heart of this goal, coupled with clearly signposted and widely available opportunities for all of us to be involved with the natural world. There is a key challenge for public bodies and all organisations involved in communicating about the natural environment to harness and share resources and ideas, so that their communications have the greatest possible impact, and individual communication campaigns reinforce and complement each other.



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Otter: Image courtesy of SNH

25 Forestry Commission Scotland Education Strategy was published in 2006 (<http://www.forestry.gov.uk/forestry/inf-d-6cjdgl>).

26 <http://www.brisc.org.uk/wcounts.php>

27 Other partners include SNH, RSPB, University of Aberdeen, SEPA, The National Trust for Scotland, FCS, Fisheries Research Services, Centre for Ecology and Hydrology, The Scottish Wildlife Trust, Scottish Agricultural College (SAC), the former Scottish Government Environment and Rural Affairs Department (SEERAD) and the Macaulay Land Use Research Institute. Further details are provided at <http://www.nesbrec.org.uk/partnership.asp>



Isle of May, National Nature Reserve Open Day 2004: Image courtesy of SNH



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