

Making a difference for Scotland's Species: A Framework for Action

 PUBLIC CONSULTATION



Foreword by **Rhona Brankin**

I am delighted that Scottish Natural Heritage has produced this Consultation Paper to develop a strategic approach to species management in Scotland.

Scotland is rightly proud of its natural environment. Our plants, mammals and birds, both terrestrial and marine, are an aspect of our country that means much to our population and to the many millions of visitors who come to Scotland every year. We need to secure and enhance our existing species populations, identify and deal with threats, while also looking at options to reintroduce species that were once present in our country. This Consultation is the start of establishing priorities that will influence some of the important decisions affecting species management in Scotland for many years to come, and which will also influence decisions surrounding the funding of various programmes.

The Nature Conservation (Scotland) Act 2004 is an integral part of The Sustainable Development Strategy published in December 2005, and further highlights our commitment to halting the loss of biodiversity. The priorities for achieving this goal are detailed in the Scottish Biodiversity Strategy, and the Scottish Biodiversity List identifies the habitats and species that should be taken account of in our decision making, particularly in delivery by public bodies of their biodiversity duty.

This Framework is the next, logical step in the process and aims to assist in the identification of certain priority species where action in Scotland is required. We need to give an added level of attention and assistance to some of Scotland's most special species to secure their future, while managing others to minimise their impact on native biodiversity.

SNH has provided the people of Scotland, and others who have an interest in what makes Scotland's natural environment a very special place, with the opportunity to offer their views on where efforts should be targeted. The Consultation aims to obtain views not only on how halting biodiversity loss can be achieved but how we can enhance and restore the natural assets of Scotland.

I welcome this initiative from SNH and look forward to the ideas and recommendations which I am sure will follow from such an important consultation paper.

Rhona Brankin MSP
Deputy Minister for Environment
and Rural Development

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Introduction

Biodiversity means the variety of life, and includes species, habitats and ecosystems. Scotland has some of the best wild areas and iconic species in the whole of Europe. We have a clear responsibility to look after them. Scotland's biodiversity is a vital part of our natural and cultural heritage that enriches and underpins our lives – the air we breathe, the water we use and the soil we grow our food in, all depend on it. But our actions have had and continue to have a profound impact on Scotland's biodiversity. The Millennium Ecosystem Assessment has recently catalogued the key threats to biodiversity worldwide as habitat loss and damage, climate change, invasive non-native species, and overexploitation of species. In fact, human actions are threatening the ability of the earth's ecosystems to sustain us in future.

Over recent years, steps have been taken to address these threats at global, European, national and local levels. The UK has signed up to the Convention on Biological Diversity and to

the EU target to halt the loss of biodiversity by 2010. In Scotland the Nature Conservation (Scotland) Act 2004 makes it a duty on all public bodies to further the conservation of biodiversity, and the Scottish Biodiversity Strategy sets out what we need to do over the next 25 years to conserve and enhance biodiversity. We now need to prioritise actions, focusing on species where we expect significant gains to overall biodiversity will result.

Maintaining healthy ecosystems is the starting point, through sustainable land and water management. Our network of protected sites is also vital for many habitats and species, as is the legislation that protects species from harm, intentional or otherwise. Over-and-above these, biodiversity conservation sometimes demands management of individual species.

Red deer



This consultation paper

The first part of this consultation paper proposes a list of species where focused effort and resources over the next 3-5 years could make the most difference to biodiversity. Subsequent sections explain the rationale behind the list, and why and when species management is appropriate. Embedded in these aims, criteria and guiding principles is a policy framework on which we would welcome other views. It is a framework aimed primarily at species management for conservation, although parts will still be relevant to species management for pest, game or fisheries. Practitioners of these other kinds of management, along with other land and water managers, will be key partners in meeting biodiversity conservation objectives.

Responding to this consultation paper

We are inviting responses to this consultation paper by 30th June 2006.

This paper explains the background to SNH's species work and proposes some guiding principles for species management. It asks a series of questions regarding

- when species management is appropriate, and
- which species should be the focus of action in Scotland.

It seeks to gather the support of other bodies, and of the people of Scotland.

What happens next?

After the consultation closes, all responses will be analysed and considered in developing SNH's policy on species management. The Species Action List will be kept under review. In the first instance, we aim to issue a report on this consultation process by September 2006.

Where to find further details

Further details on how the Species Action List was developed can be found in a separate document available from the address below or on SNH's website at snh.org.uk.

For further copies of the consultation paper please contact:

Anne Griffith
Species Consultation
Scottish Natural Heritage
12 Hope Terrace, Edinburgh EH9 2AS Tel 0131 447 4784

Where to send comments

Please send responses by email to: [**species.consultation@snh.gov.uk**](mailto:species.consultation@snh.gov.uk)
or by hard copy to the above address.

We would be grateful if you could clearly indicate which questions or parts of the paper you are responding to as this will aid our analysis of the responses received.

Who is being consulted?

As well as making the consultation document publicly available via the SNH website we are circulating it to public bodies, non-governmental organisations, and private interests in species management.

However, if you think anyone else or any other organisation should receive a copy, please let us know.

Which species should be the focus of species management efforts? – the 'Species Action List'

Many of Scotland's species do not need direct management at the present time. This 'Species Action List' proposes species where clear, targeted action would currently be most helpful. It was drawn up using the criteria proposed in **Box 4**. The species are, in alphabetical order:

Species Action List

1 SPECIES FOR CONSERVATION ACTION	QUALIFYING CRITERIA (SEE BOX 4)	2 INVASIVE NON-NATIVE SPECIES	QUALIFYING CRITERIA (SEE BOX 4)
Black grouse	1a, 5, 6, 7	American mink	2, 5, 6
Capercaillie	1a, 5, 6, 7	Rhododendron	2, 5, 6
Corn bunting	1a, 5, 6, 7	North American signal crayfish	2, 5
Corncrake	1a, 5, 6, 7	Hedgehog (on islands)	2, 5, 6
European beaver	1b, 5, 6, 7		
Freshwater pearl mussel	1a, 5, 6, 7	3 SPECIES FOR CONFLICT MANAGEMENT	QUALIFYING CRITERIA (SEE BOX 4)
Great yellow bumblebee	1a, 5, 6, 7	Greenland white-fronted goose	1a, 3a
Lesser butterfly orchid	1a, 5, 6, 7	Hen harrier	3a
Red squirrel	1a, 5, 6, 7 ¹		
Small cow-wheat	1a, 5, 6, 7	4 SPECIES FOR SUSTAINABLE USE	QUALIFYING CRITERIA (SEE BOX 4)
Scottish wildcat	1a, 5, 6, 7	Native oyster	4
Vendace	1a, 5, 6, 7	Red deer	3b, 4
Water vole	1a, 5, 6, 7		
White-tailed eagle	1b, 3a, 5, 6, 7		
Woolly willow	1a, 5, 6, 7		

More details on the reasons why these species are proposed and the action that needs to be taken is given in the following pages.

¹ Although the grey squirrel qualifies as an invasive non-native species, rather than double-count squirrels only the red is listed; however, much of the work required to enhance the red squirrel will involve direct action on the grey squirrel population.

A further list may be the focus of management efforts, depending on availability of resources and fit with other priorities:

1 SPECIES FOR CONSERVATION ACTION	QUALIFYING CRITERIA (SEE BOX 4)	2 INVASIVE NON-NATIVE SPECIES	QUALIFYING CRITERIA (SEE BOX 4)
Bird's nest stonewort	1a, 5, 6, 7	Brown rat (on islands)	2, 5, 6
<i>Blera fallax</i> (a hoverfly)	1a, 5, 6, 7	Feral cat	2, 5, 6
Great crested newt	1a, 5, 6, 7 ²	Giant hogweed	2, 5, 6?
Grey partridge	1a, 5, 6, 7	Japanese knotweed	2, 5, 6?
<i>Hammerschmidtia ferruginea</i> (a hoverfly)	1a, 5, 6, 7	New Zealand pygmyweed	2, 5, 6
Intermediate wintergreen	1a, 5, 6, 7		
New Forest burnet moth	1a, 5, 6, 7		
Prickly poppy	1a, 5, 6, 7		
Slender Scotch burnet moth	1a, 5, 6, 7		
Tree sparrow	1a, 5, 6, 7		

3 SPECIES FOR CONFLICT MANAGEMENT	QUALIFYING CRITERIA (SEE BOX 4)	4 SPECIES FOR SUSTAINABLE USE	QUALIFYING CRITERIA (SEE BOX 4)
Barnacle goose	3a ³	Skate	4

Question 1: Are the species listed in the Species Action List the right ones, or do you see the need to remove some or add others?

Question 2: Are the criteria in Box 4 the right ones for focusing effort on species management?

Question 3: What are you or your organisation already contributing to the management of these species, or what would you be able to contribute in the future?

² Listed in EU legislation and UKBAP list. No data to indicate significant decline in Scotland. However, UK is a stronghold, and there is evidence of decline at a UK level.

³ Qualifies as a native species listed on the Scottish Biodiversity List where conflict management is necessary but Greenland white-fronted goose is more in need of management because of its threatened status.

Why do we manage species?

Species as components of habitats and ecosystems

The aim of the Scottish Biodiversity Strategy is “to conserve biodiversity for the health, enjoyment and well-being of the people of Scotland”. Habitats and ecosystems contain assemblages of species, reflecting the character of their surrounding environment. Within healthy ecosystems, species populations are not fixed at particular levels, rather their abundance and distribution fluctuates and their genetic make-up changes naturally in response to environmental change. Healthy and resilient ecosystems (See Box 1) will maintain not only biodiversity but also the services on which human life depends. Against the background of a changing climate (which could change the plants and animals considered ‘native’ at any given place), SNH’s



Scottish wildcat



Great yellow bumblebee

long-term aim for Scotland’s species is **for thriving, self-sustaining and self-regulating populations of native species distributed throughout their natural range.**

Question 4: Do you agree with this aim?



Capercaillie

It follows that biodiversity outcomes are usually better achieved not by managing individual species but by improving the habitats and ecosystems on which they depend. Much action for biodiversity - in protected areas as well as the wider countryside and coast, and in marine areas - is indeed through ‘broader management’, meaning:

Action promoting healthy systems and sustainable land and water use, so that natural processes can come to the fore.

BOX 1: WHAT IS A HEALTHY AND RESILIENT ECOSYSTEM?

An ecosystem is a community of plants and animals interacting with each other and with their environment. Resilient ecosystems are those capable of coping with disturbances, like storms, fire and pollution, without losing their overall structure and ability to function; to organise themselves and to recover from, or adapt to, change. A healthy ecosystem is one that continues to provide the services that support human life. It is also one in which species continue to find a niche, recognising that evolutionary forces may cause some species to decline or become extinct and new species to evolve or increase.



Barnacle geese

Despite this general ambition for healthy habitats within which species numbers can regulate themselves, the fact that habitats and ecosystems have been extensively modified by people means there are circumstances where, in our view, it is justified to focus management on individual species. By 'species management' we mean:

Action targeted to modify the population, behaviour, or habitat of a given species (or the human activity that influences it) in order to achieve biodiversity aims.

'Species' management and 'broader' management are distinguishable primarily by their *objectives* (either to change the fortunes of a single species, or an assemblage of them). SNH engages in species management for a variety of reasons, seeking to enhance the status of some species and control others, or to manage the interactions between species and people. Species management can of course be controversial: public attitudes about individual species may be polarised. We therefore recognise a responsibility to make the basis for species management decisions as clear as possible, and to encourage others to do so as well.

BOX 2: WHY ARE SOME NON-NATIVE SPECIES A THREAT TO BIODIVERSITY?

We value native species (primarily, species which have arrived since the end of the last ice age without assistance from humans) as key parts of our natural and cultural heritage. People have introduced species to Scotland for farming, forestry or horticulture for hundreds of years. These contribute to our economic prosperity, as well as the attractiveness of our gardens and diversity of our landscapes. Some non-native species have arrived accidentally, e.g. in the ballast water of ships.

Most non-native species never establish in the wild because they are not suited to our environment. Of those that do, a few become invasive, taking advantage of the absence of pests and diseases from their country of origin. These species can damage Scottish habitats or species through competition, predation or disease. Some also damage economic interests in agriculture, forestry or fisheries, or threaten public health. It is costly, or sometimes impossible, to control or eradicate them. So efforts should focus on preventing the arrival and establishment of those non-native species likely to become damaging. But action may also be needed to minimise the impact from any that establish and cause damage.

A programme of action on non-natives, which will link with the Framework, is being taken forwards through a new Scottish Working Group.

When is species management needed?

There are four situations where species management may be appropriate to achieve biodiversity aims.

1. Species conservation - where targeted action is focused on the needs of a species to increase its range or population size because it is at risk in Scotland or internationally, or because it plays a vital role in achieving healthy ecosystems.

Actions may include specific habitat measures aimed at the needs of the single species, translocations or reintroductions, or efforts to reduce the impact of human activity, e.g. through enactment or enforcement of legislation, voluntary agreements, or changing human behaviour through education.

2. Invasive non-native species - where species that are not native to a particular area threaten biodiversity aims (See Box 2).

Actions may include control of individuals to reduce their population or limit their spread, or efforts to modify the human activity contributing to their spread (i.e. through enactment or enforcement of legislation, voluntary agreements or through education and promotion of codes of practice).



American mink

3. Conflicts of interest involving native species - when the behaviour of a wild species brings it into conflict with people's interests or with the conservation of other species or habitats. Where socio-economic interests are involved, solutions need to be



Native oyster

found that ensure the conservation of the species whilst recognising these interests. Where a species impacts on habitats or on other species, the conservation of both is considered in finding solutions.

Actions in different cases may include supplementary feeding or scaring to modify the species' behaviour, lethal control to reduce the species' impact on other interests, or efforts aimed at changing the human activity that leads to the conflict, e.g. through voluntary agreements, public education or codes of practice. The particular actions will depend on the ecological situation and on the conservation needs of the species involved (which may be reflected in legal protection).

4. Sustainable use of species - where a species in the wild is a resource of social or economic benefit (e.g. field sports, fisheries). Use should be carefully managed, especially if it impacts upon biodiversity aims by threatening the target species' population or affecting the food webs and ecosystems in which the species plays a part.

Actions may include efforts to reduce the impacts of human activity on the species, e.g. through modifying harvesting methods or intensity.

Question 5: Do you agree that species management is appropriate in these types of situation? Are there other situations?

How do we manage species for biodiversity?

The following five principles should guide all species management.

1. Species management is a shared responsibility

The overall responsibility to safeguard biodiversity rests not just with Scottish Natural Heritage but with everyone. All public bodies, private companies, voluntary organisations and individuals need to look at how they can contribute to the actions identified for these and other species, by integrating biodiversity aims into economic, social and land use policies and practices.

Public attitudes and interests inform acceptable approaches to species management. Sometimes, of course, coexisting with the natural world means that we all need to learn to live with wild species.

2. There are ecological and socio-economic aspects to species management decisions

This means, for example:

- **Species conservation** action should take into account any socio-economic and environmental costs of management options.
- Decisions on how to deal with **invasive non-native species** involve both ecological and other practical considerations. In many



Corncrake

situations delay in taking action may make control impossible.

- Management to address **conflicts of interest involving native species** and people should take into account any risk to the species' conservation as well as the risk to economic or social interests. Similar judgments are needed where a native species affects other biodiversity interests.
- Management to **deliver sustainable use of species** needs to take into account affected interest groups, as well as wider ecosystem impacts of patterns of use.



Wildflower meadow

3. Species management benefits from a strategic approach

In the same way that it is better to manage habitats or ecosystems rather than species, so – when species management is appropriate – a strategic approach is better than taking case-by-case decisions. A strategic approach should consider interactions between species, and the needs of the species throughout its range rather than only in a single location. It may need a national or regional rather than just a local approach. It should take account of broader land and water management policies, and wider environmental change.

4. Species management needs an adaptive approach

Species management needs to be regularly reassessed against new research, survey, and monitoring to ensure the action is most likely to be effective. Adaptive management involves learning-by-doing, with responses reflecting changing circumstances, increasing knowledge and regular reviews of the methods used. We will never know everything about species and their management, but lack of complete knowledge should not be used to delay necessary but difficult change.

5. Management activity should have regard to animal welfare

Disease, food shortage and predation are natural processes integral to how ecosystems work. However, species management actions should follow accepted best practice in the welfare of animals and demonstrate a clear rationale where the welfare of animals may be affected through management action for conservation.

Question 6: Are these the right Principles? Are there others that should be included?



Japanese knotweed

BOX 3: AN EXAMPLE OF HOW TO APPLY THE PRINCIPLES: GOOSE MANAGEMENT FRAMEWORK

- 1: Goose policy is co-ordinated and informed by the National Goose Forum that includes all relevant stakeholders, and is delivered in a partnership between local land managers and public bodies.
- 2: Decisions on the national policy framework, and on when a local goose management scheme is appropriate, are informed both by evidence of economic impact and the implications of different management options for the conservation status of goose species in Scotland and elsewhere.
- 3: A national policy framework, and international flyway plans, inform the development of local management schemes.
- 4: Local management schemes are informed by regular goose counts. Population viability analyses of goose populations at Scottish and wider levels are fed into regular reviews of the national policy framework.

BOX 4: CRITERIA FOR IDENTIFYING SPECIES FOR MANAGEMENT

Stage 1: Species qualifying for management under the four situations above:

- 1a. Native species that are critically endangered in Scotland or elsewhere, or demonstrating significant decline, or for which Scotland is a stronghold (including species that are only found here, i.e. endemic), and there is a continuing threat to the species in the immediate future.
- 1b. Formerly native species now extinct in the UK, whose international conservation status could be improved by reintroduction to Scotland or which could play a significant role in enhancing ecosystem health and resilience.
2. Non-native species assessed as presenting the greatest risk to biodiversity.
- 3a. Native species that are threatened and that are the focus of conflicts of interest with stakeholders with other objectives, and for which coexistence appears most insoluble.
- 3b. Native species that threaten wider biodiversity aims whether ecosystems, habitats, or other species.
4. Native species that provide important socio-economic benefits in the wild and whose use impacts upon biodiversity.

Stage 2: Species that qualify under Stage 1 were then assessed against questions about the practicality and feasibility of delivering benefits for biodiversity :

5. Is there sufficient knowledge of the species (ecology, requirements etc.) to inform management action? (If not then such species should become a research priority).
6. Is targeted action likely to make a difference? Assessed through three questions:
 - 6a. Can an effective species management action be identified? (Where no effective solution can be identified the situation may become a research priority . In some cases species management may realistically not be able to address the reasons for the decline of species identified under Criterion 1a. This assessment should take account of the effectiveness of any management already undertaken).
 - 6b. Would the targeted action raise awareness of biodiversity issues more broadly?
 - 6c. Does the species have a key influence on ecosystem function so that its management would contribute to wider ecosystem health and resilience?
7. For species under Criterion 1a, particularly those that are still widespread in Scotland – Would 'broader management' improvements to their habitat or ecosystem be more effective in the species' recovery than action targeted at the individual species? If so, 'broader management' is the preferred approach.
8. For species under Criterion 1b – Would any reintroduction proposal once developed into a project be likely to meet the IUCN Guidelines, e.g. sufficient habitat and public support?

The Species Action List

SPECIES FOR CONSERVATION ACTION



A survey in 2004 showed that **black grouse** is still declining rapidly. This has resulted from loss of habitat, inappropriate management, absence of predator control, and deer fences. Most of the UK population breeds in Scotland.

A number of projects across Scotland are addressing these factors, by improving habitat management, marking and removing deer fences, and controlling crows and foxes. Reserves for conserving black grouse and their habitats are important but land management to meet the needs of black grouse in the wider countryside is also necessary to maintain the population in Scotland.



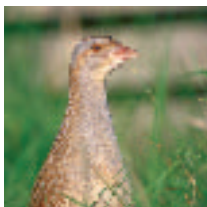
Capercaillie are dependent on native and managed coniferous woodland. Numbers have declined significantly since the 1970s because of increased deaths through fence collisions as well as poor breeding success due to predation, inappropriate habitat management and unfavourable weather. However, more recently the decline appears to have stopped, probably as a result of intense conservation efforts and good weather during the breeding seasons.

An EU-funded multi-partner project is improving habitat management, predator control and removing fences in sensitive areas. Key sites are protected, but there is a need to increase the species' range and to connect isolated populations.



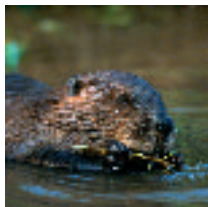
Corn buntings are becoming increasingly rare in Scotland and are now restricted to small areas in the east of Scotland and the Western Isles. It is likely that agricultural intensification, including the loss of winter stubbles may have played a part in the decline but the full picture is not yet known.

Conservation action for corn buntings has involved targeted research in key areas, as well as urgent management action through provision of winter food for remnant populations. In the long term, agri-environment schemes should support corn buntings, but in the short term, direct action may continue to be needed to retain corn buntings as a breeding species in Scotland.



Although once widespread across the UK, the **corncrake** is now mainly restricted to the Scottish islands of the far west and north. Populations reached a low point in the early 1990s as a result of the loss of breeding habitat and chicks dying before they fledged. However, recent conservation action has led to a partial recovery to more sustainable levels. An action plan led by RSPB has resulted in corncrake numbers increasing to their highest point in 27 years of monitoring, although the species' range has increased only a little. Management action for corncrakes has included schemes to support corncrake-sensitive farming, designation of core populations within protected sites, and grant schemes aimed to address the causes of decline.

SPECIES FOR CONSERVATION ACTION



The **European beaver** became extinct in Scotland around the 16th century as a result of over-hunting for its valuable pelt. It creates wildlife habitat such as coppiced woodland, dead wood, ponds and wetlands.

Action for this species involves identifying a suitable site for beaver and then running a carefully managed, scientifically-based reintroduction project. The beaver could also be used as a means of encouraging woodland (including aspen) restoration.

To date, work has been led by SNH, in partnership with the Scottish Wildlife Trust, Mammals Trust UK and Forestry Commission Scotland.



Scotland is now a global stronghold for the **freshwater pearl mussel**. However, even here it has suffered substantial declines as a result of pearl fishing, pollution and habitat loss. Its larval stage lives as a parasite on salmon and trout which have also declined.

Action includes enforcing the ban on pearl fishing and the illegal trade of pearls. Catchments can be managed to improve river quality and numbers of salmon and trout. Reintroductions to historical sites could also be undertaken.

Scottish Natural Heritage leads action for this species with help from the Police, Scottish Environment Protection Agency and others.



Although the **great yellow bumblebee** once occurred across Britain, it is now restricted to the flower-rich grasslands of the far west and north of Scotland. Such flower-rich grasslands have disappeared elsewhere as land-use practices have become more intensive.

Further decline would be prevented by ensuring that the sites on which the species occurs are managed sympathetically. Suitable management elsewhere would, in time, enable this bumblebee to return to some of its former range.

RSPB and the Bombus Working Group lead an action plan for this species with help from other bodies.



The **lesser butterfly orchid** occurs in a wide range of grassland and moorland habitats but was lost from nearly one third of 10km squares in Scotland between 1964 and 2002. Upland populations have been lost to increased grazing while in the lowlands, habitat has been lost as a result of agricultural intensification and, sometimes, development.

Conservation action should focus on ensuring that appropriate grazing is reintroduced and draining and fertilisation of these diverse areas is prevented through agri-environment schemes.

SPECIES FOR CONSERVATION ACTION



Scotland is now the UK stronghold for the native **red squirrel**. However, it is threatened by grey squirrels, which were introduced to the UK at the end of the 19th century. Grey squirrels compete with red squirrels for food and can pass on a virus that is deadly to red squirrels.

Action for this species includes the management of woodland, such as altering tree species composition and age structure, which will benefit red squirrels more than grey squirrels. Preventing the spread of grey squirrels into red squirrel population strongholds is also important.

This work is currently being done under a Species Action Plan, led by the Forestry Commission Scotland.



The **small cow-wheat** is found mainly in humid, ravine woodlands. Once found at over 200 sites in Britain and Ireland, it is now restricted to only 22 sites, 19 of which are in Scotland. Afforestation, nutrient enrichment and grazing have been implicated in its decline. The species is an annual plant and so is dependent on growing from seed each year. Studies of its genetic diversity indicate that this is very low, almost certainly because of its annual life-style and its now small and isolated populations.

Our knowledge of this cryptic plant has improved but conservation action must now move to experimental management, focusing on increasing the size of existing populations and reintroducing greater genetic diversity in replacement populations.



The **Scottish wildcat** once occurred throughout Britain but is now restricted to northern Scotland. It is under threat from disease transmission and hybridisation with feral/domestic cats.

Action for this species needs to start with an assessment of its current status, and then move onto education campaigns aimed at reducing illegal and accidental killing. Hybridisation could be reduced by encouraging domestic cat neutering in some areas.

There is currently no Species Action Plan for wildcat. SNH managed a programme of research on the species in the 1990s.



Vendace is the rarest freshwater fish species in the UK and has been extinct in Scotland since the 1960s. Fish from Cumbria, in England, were translocated to two suitable lochs in the 1990s and they have become established in one of these. Introduced predatory fish species, such as ruffe, and nutrient enrichment of their habitat are major threats at their English localities. The current status of vendace in the two new Scottish sites needs to be fully determined and further management undertaken. Further translocations of vendace to suitable lochs may be required. Work on this species in Britain is being done under an action plan led by the Environment Agency in partnership with other bodies in Scotland.

SPECIES FOR CONSERVATION ACTION



Once widespread, the **water vole** has undergone one of the most dramatic declines of any Scottish mammal. To a large extent this has been due to predation by introduced American mink. Pollution and habitat loss have also been factors.

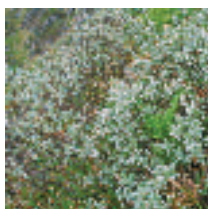
Targeted mink control in specific water catchments is one of the main actions that will benefit water vole. Habitat along their waterways can also be enhanced.

An action plan for water vole in the UK is led by the Environment Agency, in partnership with a wide range of government and non-government bodies in Scotland.



White-tailed or sea eagles were reintroduced into the UK in the 1970s. Since then the population has slowly recovered to the point where there are about 30 breeding pairs, and many juvenile birds. The population is still restricted to the west coast islands, especially Mull, Skye and Western Isles.

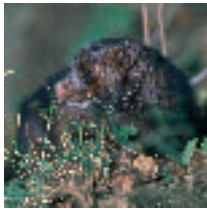
Despite its recovery the population is still very vulnerable, and an increase in both numbers and range is necessary to secure its future. There is sufficient habitat across much of Scotland and the conditions which led to its extinction have been removed, so there is no reason why this species should not continue to recover, though it might need a little help.



The **woolly willow** is the rarest of our mountain willows now found only in a handful of inaccessible locations. Scrub with willows like this is an important feature above the treeline in nearly all mountain systems but has been almost eliminated in Britain by grazing.

Under the current action plan, two populations that had been reduced to single bushes have been supplemented by planting but future conservation action will need to ensure that grazing around the other small and isolated populations is controlled sufficiently to permit them to become self-sustaining.

INVASIVE NON-NATIVE SPECIES



The **American mink** is now found in all parts of Britain apart from some islands and the far north of Scotland. It is a generalist feeder and so can hunt prey species to local extinction without suffering any hardship itself because it can transfer to other prey. Water voles and ground-nesting birds have been particularly hard hit.

Action is needed especially where we need to protect conservation features of key sites. The mink is being eradicated from the Western Isles where there are internationally important populations of ground-nesting birds and it may also be possible to prevent invasion of the north Highlands where there are also many important sites for birds.



Rhododendron is widely invasive but causes particular damage in western woods in Scotland. Its dense growths eliminate most other species and do particular damage to the internationally important populations of mosses and lichens that occur here; it even halts the natural regeneration of the woodlands.

Conservation action will involve the eradication of rhododendron from key woodland sites such as the west coast oak woods, which are of European importance.



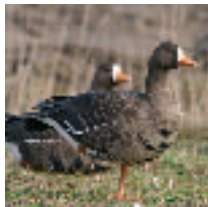
The **North American signal crayfish** is a non-native species that was introduced into England in the mid-1970s but has recently been found in several Scottish sites. This is a serious concern since it is an aggressive and invasive species which can have a major effect on our native freshwater biodiversity. Animals may colonise new catchments through natural dispersal, or through misguided and illegal movements by humans. In order to prevent the further spread of this species, quick, coordinated and effective action is required to remove animals as soon as they are recorded in a new area. Education programmes need to be targeted at preventing the human movement of signal crayfish, and encourage people to report records in new areas as soon as possible. Work to develop containment or eradication procedures for this species to date has been carried out by a range of bodies south and north of the border.



The **hedgehog** occurs naturally throughout mainland Britain, but it has also been introduced to several Scottish islands. In 1974 they were introduced to the Uists where there is now a population of several thousand animals. As a result, internationally important populations of wading birds (such as dunlin, ringed plover and snipe) have suffered from low breeding success caused by high levels of egg predation by the hedgehogs. In 2000 the Uist Wader Project was established to investigate and implement methods to restore and safeguard the wading bird populations, which has included the trapping and humane destruction of hedgehogs.

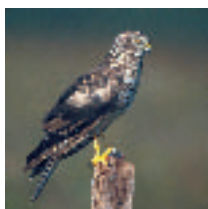
The ongoing Uist Wader Project is managed by a partnership of SNH, the RSPB and the Scottish Executive.

SPECIES FOR CONFLICT MANAGEMENT



The **Greenland white-fronted goose** increased throughout much of the 1980s and 1990s, but has since shown a rapid and serious decline. The population is restricted to Scotland and parts of Ireland over winter, with the main wintering area on Islay, where the goose comes into conflict with agricultural interests.

The conservation needs of this population are currently addressed by the Goose Management Scheme on Islay, which also addresses the agricultural loss and damage. The decline may be due to factors operating on the breeding or staging areas in Greenland and Iceland, so conservation management at the international level is needed, but action on the wintering area is essential to maintaining this important race.



The **hen harrier** population in the UK has shown some signs of recovery in recent years after declining as a breeding species on its moorland breeding grounds. Most of the UK population breeds in Scotland, but it is still sometimes persecuted, especially on some managed grouse moors where it feeds on red grouse. This threatens its long-term future.

SNH is developing a long-term plan for this species, which will address its conservation requirements as well as the conflict between it and managed grouse moors. Site designation plays an important part in its conservation and monitoring by Raptor Study Groups is necessary as part of any long term conservation action.

SPECIES FOR SUSTAINABLE USE



The **native oyster** is also known as the flat or common oyster. It grows in shallow coastal waters. They have long been a sought-after delicacy and have been fished and cultivated for centuries. A fishery for the native oyster still takes place in Loch Ryan.

Since the late 19th century native oysters have declined in Scotland and have been lost from areas where they were once plentiful like the Firth of Forth. This decline was due to a combination of factors such as poor water quality and over-exploitation. It is now largely confined to some sea lochs on the west coast.

Through a Species Action Plan a campaign has been started to tackle the problem of illegal fishing for oysters that continues to put isolated populations in jeopardy.



The **red deer** is one of two Scottish native deer and a valued part of Scotland's natural heritage. As natural grazers of grasslands, moorlands and woodlands, they directly influence the plant species that make up the vegetation and so, indirectly, the other animals that live in these habitats. The management of red deer as a sporting resource, and the absence of natural predators, can lead to locally high numbers leading to high levels of grazing and trampling on natural habitats.

The Deer Commission for Scotland works with SNH, Forestry Commission Scotland, other public bodies, local deer managers and estates to promote the sustainable management of red deer and to deliver a wide range of economic, social and environmental benefits.

How to contribute

In summary we would welcome your views on the following questions:

Question 1:

Are the species listed in the Species Action List the right ones, or do you see the need to add others?

Question 2:

Are the criteria in Box 4 the right ones for focusing effort on species management?

Question 3:

What are you or your organisation already contributing to the management of these species, or what would you be able to contribute in the future?

Question 4:

SNH's long-term aim for Scotland's species is for thriving, self-sustaining and self-regulating populations of native species distributed throughout their natural range.

Do you agree with this aim?

Question 5:

Do you agree that species management is appropriate in these types of situation?

Are there other situations?

Question 6:

Are these the right Principles?

Are there others that should be included?

Where to send comments

We are inviting written responses to this consultation paper by **30th June 2006**.

Please send your response to: **species.consultation@snh.gov.uk** or to the address on **page 6**.

Glossary of terms:

Adaptive management:

Management that responds to new information as it becomes available from monitoring.

Conservation status:

Summarises the distribution and abundance of a species within a geographical area. It is usually defined in terms of population trends (and sometimes dynamics such as breeding success), distribution trends and may include an assessment of habitat and current threats.

Ecosystem:

A community of plants and animals interacting with each other and with their environment.

Endemic species:

A species of animal or plant confined to a particular region or island and having, so far as is known, originated there.

Native species:

A species occurring naturally in an area (its natural range), in this case Scotland.

Natural range:

The geographic area over which a species is or was present in the absence of human intervention, i.e. where it is a natural part of the ecosystem having colonised or evolved alongside other native species. The historical natural range of a species is often difficult to establish and depends on historical records. A species' natural range may change in time in response to environmental change such as in climate.

Non-native species:

Refers to a species introduced (i.e. by human action) outside its natural range. We use this term to refer particularly to those that were introduced to Scotland since around 1500. Species that came to Scotland as a result of human activities before 1500 are now considered part of our natural heritage, e.g. brown hare and many arable 'weeds'. This threshold is only indicative, and often there is uncertainty as to when and how species arrived in this country. Species that are native to Britain are not necessarily native to the whole country, e.g. hedgehogs are not native to the Western Isles but were introduced during the last century.

Population:

A group of organisms of the same species occupying a particular geographic region.

Reintroduction:

The deliberate release of a living organism into the wild in an area (e.g. country, region, site) that was once part of its natural range but from which it has become extinct.

Species:

A group of actually or potentially interbreeding populations that can successfully produce viable, fertile offspring. The species is the basic level of taxonomy, i.e. the naming and classification of plants and animals. In this document, 'species' can encompass subspecies where there is a reason to consider conservation at the level of subspecies, e.g. the slender Scotch burnet moth *Zygaena loti scotica*.

Translocation:

A general term for the transfer, by people, of any organism from one place to another.

Photo credits:

Ted Benton: Great yellow bumblebee, front cover, p9 and in Species Action List (SAL)

Niall Benvie: European beaver and hedgehog, front cover; black grouse, corncrake, European beaver and American mink in SAL

Pete Cairns: Scottish wildcat, front cover, p9 and in SAL

Laurie Campbell: grey partridge, black grouse and lesser butterfly orchid, front cover; American mink, p11; corncrake, p12; corn bunting and sea eagle in SAL

David Donnan/SNH: native oyster, front cover, p11 and in SAL

Lorne Gill/SNH: Japanese knotweed and giant hogweed, front cover; wildflower meadow, p12; Japanese knotweed, p13; Glen Derry, p15; red deer, vendace, rhododendron and woolly willow in SAL; rhododendron, p22

Mark Hamblin: hen harrier, front cover and in SAL

Natural Image/Bob Gibbons: small cow-wheat in SAL

Digger Jackson: hedgehog, in SAL

Neil McIntyre: red squirrel, front cover, p4, and in SAL; red deer, p5; capercaillie, p9 and in SAL

Alan Ross: water vole, front cover and in SAL

Sue Scott/SNH: freshwater pearl mussel in SAL

David Whitaker: Greenland white-fronted goose, front cover and in SAL; barnacle geese, p10