

A FRAMEWORK FOR CHANGE

An enhanced environment for wildlife

JULY 2001



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“Each one of us carries a share of the responsibility
to keep alive the fascinating and wonderful miracles
of life on this planet. We can best do this by knowing
as much about them as we can.”

SIR JULIAN HUXLEY, FR.S.

1. Why a Framework for Change?

The Environment Agency's vision

In June 2000 the Agency consulted widely on its long-term objectives and goals. After taking into account the responses that we received, in January 2001 we published *An Environmental Vision: The Environment Agency's Contribution to Sustainable Development* (the *Vision*)¹.

This sets out our long term, aspirational objectives for the environment, grouped under nine environmental themes. In preparing it, we were very conscious that it would be the process by which those objectives are met - the route by which the Agency plans, in partnership with others, to make progress towards the long term destination - that would be of particular interest. This was reinforced by the comments we received during the consultation on the *Vision*.

Frameworks for Change

To show the route we propose to take, we have prepared a series of *Frameworks for Change*, one for each of the *Vision's* nine environmental themes. This document is one of these thematic *Frameworks* which are intended mainly for internal planning purposes though they are publicly available. They set out our proposals for the medium term to make progress towards the long-term objectives described in the *Vision*. These *Frameworks* - and the associated dialogue and business development that will flow from them - are not only intended to make progress towards the environmental outcomes in the *Vision*, but also to improve the Agency's service delivery to Government², industry, and the public. They are also intended to improve our own internal efficiency and effectiveness. Overall, we regard them as being beneficial to both our stakeholders, and society in general. They are frameworks with a menu of possible actions, rather than final plans, because we still have to agree the final proposals. We have to balance the competing priorities within them, take into account their specific implications for others, and match them to the resources we have available. This balancing and prioritisation has to be agreed with Government, and will be done through our corporate planning process, with our firmed-up work programmes appearing in our formal Corporate Plans. The Government's current

¹ The Environmental Vision, and Frameworks for Change is available on the Agency's website <http://www.environment-agency.gov.uk>

² References to Government include the UK Government and, where appropriate, the National Assembly for Wales.

revision of its statutory guidance in respect of our sustainable development remit will also help us clarify the routes and options available to us.

We will be discussing these proposals with our stakeholders. The main vehicle for this external dialogue and discussion will be a separate series of sector based *Frameworks* starting late in 2001. These will draw from the nine themes the issues and outcomes relevant to the sector concerned.

Working with partners

We recognise that we cannot on our own deliver the outcomes and goals we have set out. We already work in close partnership with a wide range of organisations and groups, and we are keen to explore how we can strengthen existing partnerships and develop new ones. This does not just involve seeking partners for Agency led projects, but also supporting the work of others. We will need to work with a wide range of bodies with an interest in land issues, including those we regulate. Below we list areas where we will want to work in partnership with others, but have not sought fully to specify who these others might be.

2. An enhanced environment for wildlife

Many people value wildlife as one of the key elements contributing to their quality of life, whether in their own backyard or the wider beyond. It follows that the variety and abundance of wildlife – plants, insects, fish, birds and mammals living on the land, in the water and around our coasts – provides a critical indicator of how successful we are in using our environment wisely.

Changes in wildlife

In Britain, the study of natural history has been a long-standing tradition, with thousands of amateur and professional naturalists and ecologists recording the distribution and abundance of dozens of different species. Consequently, the historical trends for those species concerned has been well documented. The fortunes of different types of wildlife have fluctuated as the landscape of England and Wales has been modified by human activity. Indeed, land-use has been, and continues to be, the single biggest influence on wildlife in Britain. The pace of change has been particularly rapid during the past century, during which time more than 100 species have become extinct in the UK. During the past 20–30 years several species traditionally regarded as common, notably the skylark and song thrush, have suffered serious declines. Reversing this unwelcome trend is a major challenge, and one which requires sustained effort both to protect the best remaining habitats and enhance the wider countryside and urban environments for wildlife.

It is not all bad news. Indeed, there have been notable recoveries, reflecting successful action to improve the environment. Overall, (and although further improvement is needed) both water and air quality have improved substantially in the past 50 years. As a result, many previously fishless reaches of industrial rivers now have thriving fisheries – salmon have returned to the Tyne, Thames, Taff and more recently the Mersey. Otters are now re-colonising many of their old haunts after a 30 year pollution-related absence.

The impact of human activities

Some of the changes in wildlife are caused by natural variations, but most can be attributed directly or indirectly to human activities. The major ones are:

- **Habitat loss and fragmentation** caused by urban development and an expanding transport network;
- **Intensification of agriculture and forestry**, leading to loss of habitat associated with low intensity land-use and field margins;
- **Nutrient enrichment** of rivers, lakes and coastal waters caused by inputs from sewage treatment works and excess fertiliser run-off;
- **Chemical compounds** in fresh and salt water producing various toxic and chronic side-effects;
- **sulphur and nitrogen oxide emissions** causing acid rain affecting water and soil;
- **Increased abstraction of water**, leading to drying out of wetlands;
- **Wetland loss** caused by land drainage and inappropriate water level management as part of flood and tidal defences;
- **Artificial barriers to fish migration** caused by weirs, barrages and pollution;
- **The spread of aggressive non-native species** (e.g. mink, signal crayfish, swamp stonecrop) that threaten native species.

Individually and collectively, the impact of these factors varies according to geographical location and sensitivity of particular habitats or species. An overview of the relative impact of specific factors is shown in Table 1 (page 17), whilst a more detailed account of the state of wildlife and impacts upon it appears in Table 2 (page 18).

Climate change

Climate change is undoubtedly one factor that has already begun to alter the distribution and behaviour of certain species. Recent examples include the spread northwards of the speckled wood butterfly within the UK, and the arrival of breeding birds such as the little egret from Northern Europe. The worrying decline in spring-run salmon may partly be due to sea temperature changes in the North Atlantic. An increased incidence of droughts would threaten vulnerable wetlands in South East England. Climate change also increases the risks of new parasites and diseases.

Policy Context

The UK Biodiversity Action Plan (UK BAP) is the Government's blueprint for wildlife conservation, setting out what action is required to protect and enhance wildlife under greatest threat. More than 400 individual plans for species and habitats provide the baselines against which future changes can be measured, and specific targets set. Air quality, water quality and quantity, energy, transport and, above all, land-use are seen as the key areas for improvement if wildlife is to thrive. The Countryside and Rights of Way Act 2000 provides a legal underpinning of the UK BAP. In addition, there is a Department for Environment, Food & Rural Affairs (DEFRA) Public Service Agreement target that 95% of Sites of Special Scientific Interest (SSSIs) in England should be in favourable conservation condition by 2010.

3. The Environment Agency's role

Nature conservation is not our primary role: the lead government agencies in England and Wales are English Nature and the Countryside Council for Wales respectively. However, through our statutory duty to further conservation our other duties we have a major part to play, particularly for rivers, wetlands and coastal areas in England and Wales. We can create suitable conditions for wildlife by setting and enforcing environmental standards and by managing habitats and water levels. We have significant obligations under the UK BAP when carrying out our regulatory and operational activities, and we actively promote and take part in river and wetland habitat restoration projects. As a public body we need to demonstrate that our action is effective.

For example, we have developed River Habitat Survey (RHS), a method that provides an assessment of the physical state of our rivers. This complements chemical and biological quality assessments and helps improve our understanding of the factors and processes influencing the overall ecological condition of rivers. It can be used to help plan improvement works with confidence and also establish how successful management action has been.

Environment Agency activities that benefit wildlife

Our obligations, responsibilities and examples of how the Agency contributes to wildlife conservation are set out in '*Focus on biodiversity*', published in July 2000. Our actions that help to create suitable environmental conditions for wildlife include:

- Regulating pollution to the air, land and water;
- Influencing water levels and flows by controlling abstraction from lakes, rivers and under ground sources;
- Controlling the exploitation and movement of fish stocks to prevent over-exploitation, poaching and the spread of non-native fish species and disease and parasites;
- Monitoring and assessing the chemical and biological and quality of rivers, lakes and estuaries to determine whether our environmental objectives and standards are being achieved;
- Ensuring that our flood and tidal defence works protect, and wherever possible, help to restore or enhance riverine, wetland and coastal habitats;
- Advising planning authorities on how best to protect and enhance wetland habitats, and, working with developers, achieving local habitat improvements to offset previous losses;
- Promoting the benefits of wildlife conservation locally through projects with partners and landowners; and
- Investing in research to understand better the environmental requirements of species and habitats.

Policy drivers

Major national and international drivers that will influence our actions over the period of this *Framework* include:

- **European and international drivers:** European Directives on: Habitats and Birds, Environmental Impact Assessment, Strategic Environmental Assessment, Integrated Pollution Prevention and Control, Water Framework, and Landfill. Also the proposed EU 6th Environmental Action Plan, the EU Biodiversity Strategy, the Rural Development Regulations, and the International Ramsar Convention on the Wise Use of Wetlands.
- **National and regional drivers:** UK Biodiversity Action Plan; Wildlife and Countryside Act; Countryside and Rights of Way Act; Water Industry Investment Programmes; the Rural and Urban White Papers; DEFRA (formerly DETR) high-level targets for flood and coastal defence, Government response to the Fisheries legislative review, DEFRA Planning Policy Guidance revisions; and the Water Bill.

Specifically, under the UK BAP, we have lead responsibility for 39 species and 5 habitats of wetland character. These include otter, water vole, white-clawed crayfish, southern damselfly, depressed river mussel, chalk rivers and coastal saltmarsh. This is a very significant responsibility that reflects our expertise, experience and influence in riverine, coastal and wetland management.

There has been a significant shift from chemical to ecological measures for assessing environmental quality, reflected in Government headline indicators for sustainable development and the EU Water Framework Directive. The development of ecologically-based criteria for impact assessment and consent-setting will be a major challenge.

4. Working in partnership

The Environment Agency works closely on policy development with the Department for Environment, Food & Rural Affairs (DEFRA) and the National Assembly for Wales (NAW). We also maintain links with the Department of Transport, Local Government and the Regions (DTLR) on planning issues. Our activities are framed by, and help to implement a range of Government policies and commitments, including its Sustainable Development Strategy (and the supporting strategies and schemes of the DTI and NAW), its Urban and Rural White papers and Modernising Government and Better Regulation policies. We also have very close working relationships with the statutory nature conservation organisations (English Nature EN, Countryside Council for Wales CCW), other statutory countryside bodies, (e.g. Countryside Agency, Forestry Commission), voluntary conservation organisations (e.g. Wildlife Trusts, RSPB), fisheries organisations, academic and research institutions, and local authorities. In particular, the Agency's demanding programme for reviewing existing environmental licences, as required by the EU Birds and Habitats Directives, requires a very close working relationship with various Government departments, EN, CCW and local planning authorities.

The Agency's role in both helping to protect special wildlife sites and improve the environment in towns, the wider countryside and coasts means that partnership and collaboration are watchwords for success. *Focus on biodiversity* provides a flavour of the many hundreds of projects and local partners involved over the past five years. These range from large European-funded projects (e.g. Safeguarding *Natura 2000* rivers in the UK) and Heritage Lottery funded initiatives (Wetlands for Wales) to local partnerships with schools, local wildlife and community groups, and above all, landowners. We are actively supporting fisheries trusts that have been established to improve riverine habitats.

In delivering the activities set out in this *Framework*, we will seek to build on and develop partnerships such as these.

5. The Environment Agency's objectives

In *An Environmental Vision*, our overall long-term objective with respect to enhancing the environment for wildlife is:

Wildlife will thrive in urban areas. Habitats will improve, in extent and quality, to sustainable levels for the benefit of all species. Everyone will understand the importance of safeguarding biodiversity.

An enhanced environment for wildlife is one of the outcomes resulting from work within the other themes of the Vision. A 'greener' business world and *Wiser, sustainable use of natural resources* and *Improved and protected inland and coastal waters* provide mechanisms by which improvements to the state of our air, land and water will be delivered for the benefit of landscape and wildlife. Wildlife will also benefit from our proposals for addressing flood risk and climate change.

The *Vision* and long-term objectives will help achieve these outcomes:

- Degraded habitats, especially rivers, estuaries and wetlands, will have been restored.
- Wildlife corridors and their associated habitats will be of high quality, with no artificial barriers to wildlife movement.
- The UK Biodiversity Action Plan will have been successfully delivered and priority species will no longer be under threat.
- Rivers, estuaries, lakes and canals will all support appropriate fish communities.
- Urban and rural land-use practices will encourage the protection and restoration of habitats, species and natural processes.
- The management of land for wildlife and landscape benefits will be accepted and supported as a normal activity of rural life.
- There will be a broad consensus on how the environment should be managed against a background of climate change.
- Threats to the genetic integrity of our native wildlife will be greatly reduced.

Through a 'biodiversity check' on all our policies, plans and projects we will ensure that our activities and those we authorise do not threaten key species and habitats. We will continue to work with many partners at local, regional and national levels to safeguard and enhance biodiversity.

We will seek to achieve these goals in the most efficient and effective manner, taking into account the costs and benefits of the options available to do so. Better understanding of the requirements of wildlife, and risk-based decision making will be central to the success of our approach.

6. Goals and actions

For each outcome we have identified below a number of goals we intend to achieve in the short to medium term in order to move towards our vision for the environment. We have also outlined the activities that will help achieve these goals, together with the tests to assess progress in their delivery. In practice, activities may contribute to the achievement of more than one goal and outcome.

Tests for progress

The Government's set of sustainable development indicators³ help show, at a high level, whether we are on a sustainable track. The Agency has also developed its own set of environmental indicators⁴ that will be used to show progress towards the Vision. In addition to these, we have included some key tests for progress for each outcome.

Role of the Environment Agency

To clarify the role of the Agency in achieving each of these goals, we have allocated the supporting activities very approximately to one of three categories:

Environment Agency's role is central
Environment Agency as a substantial partner
Environment Agency's involvement to build understanding

³ DETR (1999) *Quality of life counts. Indicators for a strategy for sustainable development for the UK: a baseline assessment.*

⁴ Environment Agency (July 2000) *Environmental Indicators. A set of Environmental Indicators for Agency use (also available on the Agency's website <http://www.environment-agency.gov.uk>)*

Restoration of degraded habitats

Outcome 1 – Degraded habitats, especially rivers, estuaries and wetlands will have been restored.

(See also Framework documents *Improved and protected inland and coastal waters* and *Reducing flood risk*)

Tests for progress:

- Condition of rivers, estuaries and wetlands influenced by the Agency.
- Achievement of river, wetland and estuarine habitat action plan targets in the UK BAP.
- River habitat quality as measured by River Habitat Survey.
- Air, water and soil quality.

GOAL	ACTIVITY
<p>Goal 1.1 Conservation criteria for safeguarding and wherever possible enhancing key species and habitats applied to all our licensing and operational activities.</p>	<p>Ongoing:</p>
	<ul style="list-style-type: none"> • Restore urban rivers through our flood defence and fisheries enhancement works.
	<p>Short to medium term:</p>
	<ul style="list-style-type: none"> • Take a lead role in co-ordinated programme of river and river corridor habitat restoration. • Ensure that Catchment Abstraction Management Strategies and Eutrophication Action Plans take full account of wildlife conservation needs. • Ensure full implementation of 2000-2005 Water Industry investment programme. • Complete review of existing Agency consents known to be adversely affecting wetland SPAs and SACs at high risk and modify them. • Develop a GIS-based capability for determining all authorisations and operational work using risk-based decision tools. • Complete and begin to implement water level management plan for SSSIs.
	<p>Medium term:</p>
	<ul style="list-style-type: none"> • Ensure that the 2005-10 Water Industry investment programme takes full account of water quality and water quantity improvements needed for SSSIs. • Complete review of existing Agency consents thought to be affecting wetland SPAs and SACs at medium risk and modify accordingly.

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Wildlife corridors

Outcome 2 – Wildlife corridors and their associated habitats will be of high quality, with no artificial barriers to wildlife movement.

Tests for progress:

- Runs of salmon and other migratory fish , such as shad and eels.
- Populations of water voles, otters and other species (e.g. barn owls) dependent on river corridors.
- Length of uninterrupted high habitat quality rivers, hedges and other corridors.

GOAL	ACTIVITY
<p>Goal 2.1 An increased network of linked wildlife habitats and sites developed.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Use River Habitat Survey to identify a wildlife grid based on rivers. • Seek inclusion of Habitats Directive Article 10 requirement in revised PPG9. • Identify key gaps, bottlenecks and barriers that fragment or disrupt river corridors and wetlands and incorporate into river corridor habitat improvement programmes. • Help DEFRA and NAW target agri-environment schemes on key gaps needing to be bridged. • Agree with partners (organisations and landowners) a long-term plan for wildlife networks. <p>Medium term:</p> <ul style="list-style-type: none"> • Report with others on progress in expanding the network.
<p>Goal 2.2 Non-statutory river habitat objectives implemented to help improve wildlife corridors.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Develop and test river habitat objectives on pilot catchments, and then publish river habitat objectives for all rivers. <p>Medium term:</p> <ul style="list-style-type: none"> • Use flood defence programme to help deliver river habitat objectives.
<p>Goal 2.3 Fish passes installed on all major artificial barriers.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Identify key artificial barriers to fish migration. • Implement a rolling programme for fish pass installation and monitor the benefits on fish populations.

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UK Biodiversity Action Plan

Outcome 3 – The UK Biodiversity Action Plan will have been successfully delivered and priority species will no longer be under threat.

Tests for progress:

- Achievement of UK BAP species and habitats targets.
- Status of UK BAP priority species (such as otter and water vole) and habitats.

GOAL	ACTIVITY
<p>Goal 3.1 Pollution control, water abstraction, flood and tidal defence work and fisheries management measures are sufficient for Agency targets in the UK BAP to be achieved on time.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Determine, publish, and, with partners, implement 5-year targets for UK BAP and DEFRA high-level targets for biodiversity species and habitats for which we have lead responsibility. • Produce annual update report on progress towards our UK BAP targets, with a full report every five years. • Ensure monitoring systems are in place for these species and habitats. • Help establish, through collaborative survey and research, better understanding of environmental requirements for key species and habitats. <p>Medium term:</p> <ul style="list-style-type: none"> • Implement AMP3, Eutrophication Catchment Action Plans, Habitats Directive, Water Level Management Plans plus other initiatives to help deliver UK BAP targets.

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Fish communities

Outcome 4 – Rivers, estuaries, lakes and canals will all support appropriate fish communities.
 (see also Framework document *Improved and protected inland and coastal waters*)

Tests for progress:

- Self-sustaining salmon and sea-trout populations in rivers.
- Sustainable eel stocks.
- Catches of game and coarse fish.

GOAL	ACTIVITY
<p>Goal 4.1 An improved ability to measure the population and health of fish.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Implement improved monitoring strategy and sampling procedures for fish in rivers. • Report annually on fish populations at key river monitoring sites. • Improve information from angler catch records. • Improve information on health status of fish populations. <p>Medium term:</p> <ul style="list-style-type: none"> • Fish counters installed on all principal salmon rivers.
<p>Goal 4.2 Action plans delivered to ensure an increase in healthy fish populations.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Target high-risk illegal fish transfers to combat disease, prosecuting where necessary. • Prepare contingency plans to combat new fish parasites and diseases. • Implement Salmon action plans. • Help DEFRA/NAW develop proposals for improved regulation of fish farms and dealers to reduce fish disease risks. <p>Medium term:</p> <ul style="list-style-type: none"> • Implement coarse fish population targets for main rivers.
<p>Goal 4.3 Reduced illegal catches and overexploitation of salmon and eel stocks.</p>	<p>Ongoing:</p> <ul style="list-style-type: none"> • Implement catch returns for eels and elvers. <p>Short to medium term:</p> <ul style="list-style-type: none"> • Introduce a risk-based approach for targeting poaching and over exploitation of salmon to reduce illegal and unreported catch. • Develop and implement an eel strategy and new byelaws to reduce the exploitation of eels and elvers. <p>Medium term:</p> <ul style="list-style-type: none"> • Develop a stock recovery plan for eels as part of wider European Management Programme.
<p>Goal 4.4 Natural distribution and range of native fish species protected.</p>	<p>Ongoing:</p> <ul style="list-style-type: none"> • Improve control over release of alien fish species into the wild. <p>Short to Medium Term:</p> <ul style="list-style-type: none"> • Revise guidelines and procedures on fish introductions. • Work with DEFRA/NAW to improve legislation so that conditions can be applied to consents to introduce fish.

Land-use practices

<p>Outcome 5 – Urban and rural land-use practices will encourage the protection and restoration of habitats, species and natural processes.</p> <p>Tests for progress:</p> <ul style="list-style-type: none"> • The quality and extent of wetland and other habitats. • Extent and effectiveness of buffer zones to protect designated wildlife sites. 	
GOAL	ACTIVITY
<p>Goal 5.1 Habitat restoration is integral to development policies and plans.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Promote wildlife corridor network approach with regional and local government in structure plans. • Develop and promote Environmental Impact Assessment for policies and development plans. • Promote geomorphological principles in sustainable catchment management. • Promote with local authorities the basis for setting targets to reverse habitat fragmentation. • Promote the improved management of urban green spaces.
<p>Goal 5.2 Our own land shows overall increase in biodiversity.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Set targets for habitat improvement and reporting progress on them. • Implement habitat improvement programmes on our landholdings. <p>Medium term:</p> <ul style="list-style-type: none"> • Link Agency land into to local wildlife corridor network.
<p>Goal 5.3 Every opportunity is taken to create and restore habitats.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Introduce strategic environmental assessment of flood defence plans. • Implement water level management plans and promote flood storage wetlands consistent with the wise use of wetlands principle (Ramsar). • Exploit 'planning gain' to restore river and wetland habitats. • Implement with others, managed retreat on coastlines where this is the best practicable environmental option.

- Environment Agency's role is central**
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Land management

Outcome 6 – The management of land for wildlife and landscape benefits will be accepted and supported as a normal activity of rural life.

(See also *Framework document Restored, protected land with healthier soils*)

Tests for progress:

- Level of economic support for agri-environment and wildlife incentive schemes.
- Demand and uptake of wildlife-friendly management techniques.
- Land-use and landscape quality.
- Soil structure and quality.
- Silt load in rivers.

GOAL	ACTIVITY
Goal 6.1 Wildlife-friendly farming and forestry is widely adopted.	<p>Ongoing:</p> <ul style="list-style-type: none"> • Influence agricultural priorities, incentives and best practice. • Promote social, economic and environmental benefits of wildlife-friendly practices. <p>Ongoing:</p> <ul style="list-style-type: none"> • Advise on environmental conditions for farming and forestry incentives.
Goal 6.2 Good environmental practice is a benchmark evaluation criterion for economic support for land managers.	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Identify key areas for effective uptake of agri-environment schemes. • Promote cross-compliance between economic subsidies and environmental outcome to help bring about improvement of river habitats and wetlands. • Encourage the uptake of wildlife-friendly goods and services.

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Biodiversity and climate change

Outcome 7 – There will be broad consensus on how biodiversity should be managed against a background of climate change.

(see also Framework document *Limiting and adapting to climate change*)

Tests for progress:

- Long-term strategy for sustainable protection of designated wildlife sites agreed.
- State of knowledge regarding likely changes in habitat and species distribution.

GOAL	ACTIVITY
<p>Goal 7.1 Likely changes in species and habitat distribution under climate change scenarios determined.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Undertake collaborative research with the nature conservation agencies and research councils to identify high-risk sites and species.
<p>Goal 7.2 Species and habitat changes taken into account in determining environmental licences, carrying out our flood and tidal defence works, and managing our own land.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Establish environmental change parameters for Catchment Abstraction Management Plans, Eutrophication Catchment Plans and flood defence programmes. • Modify monitoring strategy to reflect the need to assess sensitive species. • Agree with EN and CCW acceptable limits of change on all SSSIs, SPAs, SACs and Ramsar sites. • Take account of climate change in all management plans for Agency-owned land. • Complete Coastal Habitat Management Plans and begin to implement actions to protect internationally important sites.

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Genetic Integrity

Outcome 8 – Threats to the genetic integrity of our native wildlife will have been greatly reduced.

Tests for progress:

- Incidence of new hybrids.
- Occurrence and distribution of existing hybrids and ornamental/exotic varieties in the wild.
- Genetic variety of key native species.

GOALS	ACTIVITIES
<p>Goal 8.1 The genetic variation in key native species established.</p>	<p>Medium term:</p> <ul style="list-style-type: none"> • In partnership with research institutes, undertake genetic studies of rare, declining or vulnerable species (e.g. black poplar, wild brown trout).
<p>Goal 8.2 The risks to genetic integrity caused by the accidental or deliberate introductions of non-native species and varieties determined.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Monitor incidence of key non-native species and varieties during routine biological and fisheries surveys and report publicly. • Determine the risk of hybridisation / genetic loss to vulnerable species.
<p>Goal 8.3 The impact of non-native species and varieties minimised.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Prevent the release of non-native fish by increased enforcement and prosecutions where necessary. • Promote legal controls on import and distribution of non-native species. • Promote a ban on sales of aquatic and other waterside non-native invasive plants. • Help establish effective ways of containing or eradicating non-native species (e.g. signal crayfish, invasive aquatic plants).
<p>Goal 8.4 Effective methods to maintain genetic diversity identified.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Assess level of hybridisation and non-native varieties recorded in fisheries surveys. • Use native plants from local sources during Agency operational work and planting on our own landholdings. • Ensure stocking policy protects native wild fish stocks (e.g. brown trout). • Identify one or more key catchments to be treated as 'alien-free' and, with others, implement action to keep them that way. <p>Medium term:</p> <ul style="list-style-type: none"> • Determine feasibility of establishing gene-banks for endangered fish species.

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7. Research and development

Knowledge about the ecological requirements of many habitats and species is still poor. This limits our confidence in setting environmental standards and determining operating procedures. Improving understanding of ecological requirements is therefore fundamental.

Uncertainties associated with climate change make it even more important to better understand ecological requirements and the sensitivities of key habitats and indicator species. This means developing decision-making tools that take account of risks and uncertainties in the context of cost and effectiveness. This applies particularly to less well-known species and to inter-tidal habitats along coasts with rising sea-levels, and sensitive wetlands vulnerable to prolonged drought.

8. Implications for the Environment Agency

Our ability to deliver these goals varies. Some are entirely within our power, others depend on influencing others, working in partnership or even amending legislation. Successful delivery will depend on a combination of external and internal factors and will require effort on several fronts:

Legal and policy obligations

- Effective implementation of existing and new European legislation (e.g. Birds, Habitats, IPPC, Groundwater, Water Framework Directives).
- Fulfilling obligations for public bodies under the Countryside and Rights of Way Act.
- Fulfilling UK BAP requirements.
- Implementing environmental initiatives such as Restoring Sustainable Abstraction Projects, Catchment Abstraction Management Strategies, Eutrophication Catchment Action Plans and Fisheries Action Plans.
- Anticipating the requirements of the Strategic Environmental Assessment Directive.

Internal awareness and culture

- A higher profile of ecological outcomes in Agency strategic planning and decision-making.
- Increased internal awareness and understanding of wildlife conservation issues through biodiversity checks on all policies and activities.
- A shift from site-based to process-related environmental and impact assessment.
- A shift to risk-based ecological assessment and environmental management.

Knowledge and expertise

- Better understanding of physical processes and biological interactions.
- Better understanding of the ecological requirements of species and habitats, and their sensitivities to pollution, land-use and climate change.
- Wider expertise base to understand land, water, air and marine ecosystems.
- Consideration of wildlife requirements in all Agency activities.
- Better ability to determine and manage risk.
- Development of practicable decision-making and post-project appraisal tools.

Monitoring and reporting

- Re-balanced monitoring effort for more effective assessment of the effects of Agency activities on UK BAP species and habitats.
- Better co-ordinated information systems, common standards and shared databases.
- Simple performance measures for easy public understanding.
- A smarter approach including surveillance and monitoring by remote-sensing.

Influencing and education

- Providing clear leadership in setting environmental standards and risk management.
- Demonstrating that our actions make a real difference to wildlife and landscapes.
- Generating public support for our aims, whilst managing unrealistic expectations.
- Demonstrating the socio-economic benefits of wildlife-friendly action.
- Improving our ability to attract collaborative funding for habitat improvements.
- Promoting environmental education in schools and universities.

New and revised legislation

- Working with national Government to shape and implement new wildlife and fisheries legislation.
- Helping develop ecological methods and technical standards to support new European Directives.
- Applying Strategic Environmental Assessment to policies and work programmes.

The Planning System

- Ensuring that UK BAP obligations are included in land-use and planning decisions.
- Working with local and regional government to achieve sustainable land use plans.
- Applying Strategic Environmental Assessment to structure plans and to Regional Planning guidance.
- Influencing strategic plans and development projects early in their preparation.

TABLE 1: Variation in environmental pressures on wildlife based on Agency Regions

Pressure	Anglian	Midland	North East	North West	Southern	South West	Thames	Wales
River habitat modification	H	M	M	M	M	L	H	L
River quality (biological)	M	M	H	H	M	L	M	L
Sea-level rise	H	N/A	M	L	H	M	H	M
River quality (nutrients)	H	M	M	L	M	M	H	L
River quality (chemical)	H	M	M	H	M	L	M	L
Nitrogen deposition (exceedance of critical loads)	M	L	M	M	M	H	L	H
Soils (exceedance of acidity critical loads)	M	L	M	H	L	M	L	H

KEY

This has been based on selecting the two Regions with the greatest breaches of standards, poorest quality or highest loadings and ranking these as H – highly impacted; the two Regions with the best quality or lowest loadings are ranked as L – least impacted. The other Regions are ranked M – moderate (where the impacts are about equal, more than two Regions may be designated H or L).

Source: Environment Agency (2000) *Environment 2000 and beyond*.

TABLE 2: Summary of the state of wildlife and key impacts

Viewpoint	State and trends
Land use and resources	<p>Habitats: Some 42 per cent of river length is extensively modified physically and less than 15 per cent of lowland streams and rivers still retain semi-natural channel structure. Overdeveloped channels and land drainage have resulted in a huge loss of floodplain wetlands.</p> <p>Over 90 per cent of saltmarshes have been lost due to erosion, land claim and coastal squeeze. Over 4000ha of important coastal habitat could be lost by 2025 due to rising sea levels.</p> <p>Some 78% of man-made ponds have been lost since 1880, but garden ponds, reservoirs and gravel pits provide new open water areas.</p> <p>Semi-natural areas: Cover 13 per cent of the land but they have declined in extent, and become fragmented over time, with the most areas intact now existing in the uplands and Wales. Unimproved grassland and heathlands of the south and east have declined dramatically.</p> <p>Habitat fragmentation: Urban and industrial development and associated transport links, together with intensification of agriculture have had a major impact on landscape quality and habitat integrity. The disconnection of functioning floodplains from river channels is particularly significant. Agri-environment schemes, organic farming, river rehabilitation projects, and wildlife-friendly forestry have begun to consider the importance of landscape features, though so far only a tiny fraction of the landscape has been improved as a result.</p>
Key populations	<p>Plants: There has been a significant reduction in species diversity in moorlands, upland woods and lowlands since 1978. Some 20 to 30 per cent of aquatic species have been lost from some places in the past 150 years.</p> <p>Invertebrates: Dragonfly and butterfly species have declined, although some butterflies are increasing their range and number. The White-clawed crayfish has disappeared from several catchments and is declining in others.</p> <p>Fish: The burbot became extinct in early 1970s. Vendace are under threat from eutrophication in their last remaining locations in the Lake District. Wild brown trout are declining and spring salmon numbers have reduced substantially over the last 25 years. Coarse fish populations appear stable and many new coarse and game fisheries have been created on gravel pits and other still waters. Several non-native species (e.g. zander) now established in the wild. Commercial sea fish populations (e.g. cod) are at low levels and severe restrictions catch quotas have been introduced.</p> <p>Birds: Breeding populations of many farmland (e.g. skylark, tree sparrow), woodland (e.g. turtle dove) and wetland birds (e.g. redshank, lapwings, yellow wagtail) have declined. Others, such as mute swan and buzzard, have increased significantly due to increased protection measures.</p> <p>Amphibians and reptiles: Some species such as natterjack toad and adders have become confined to fewer sites but others are still widespread.</p> <p>Mammals: About half of small mammal species (e.g. dormouse) have declined in number, but some larger mammal species (e.g. badger) have increased. Otters are returning well in some catchments. Water voles have declined by 88 per cent.</p>

TABLE 2: Summary of the state of wildlife and key impacts *continued*

<p>Compliance with standards, targets and classification schemes</p>	<p>Only 57 per cent of SSSIs were in favourable condition in 1997/98, and 12 per cent were in a poor state and declining.</p> <p>At least 26 SSSIs in England are affected by over-abstraction and low water levels – a further 170 sites are vulnerable and require further investigation to establish impacts.</p> <p>Sulphur dioxide eradicated sensitive lichens in much of England from the mid-19th century onwards, but some species have started to recolonise as a result of cleaner air.</p> <p>Acidification of upland waters in the 1970s led to declines of mosses, liverworts and lichens, and freshwater species including salmon, trout, invertebrates and dippers. High nitrogen deposition causes eutrophication; it has probably damaged mosses in the southern Pennines and may lead to the replacement of heather by grassland. As deposition reduces, affected ecosystems may recover only slowly and may not return to their former state.</p> <p>Sulphur and nitrogen deposition exceeds critical loads of acidity over a significant area of the UK. International agreements are likely to lead to significant reductions in emissions of sulphur and nitrogen by 2010, but, critical loads in parts of Wales, Cumbria and the Pennines will still be exceeded. Nutrient nitrogen exceeds critical loads in many regions. The input of nitrogen into the atmosphere may be significant for remote marine areas, increasing the risk of eutrophication.</p> <p>Almost 20 per cent of rivers in some Agency regions are still in a poor or bad biological state. Targets and standards associated with the water company investment programme (AMP 3) and EC Directives should improve river and estuary water quality further.</p> <p>Eutrophication of rivers and lakes is still a major concern in some lakes, with soil erosion and agricultural runoff a principal cause of nitrate input and sewage-works for phosphorus. Five estuaries and 75 river stretches are designated as 'eutrophic sensitive areas'. There are generally greater problems in the south and east, but algal blooms can occur in several coastal areas and inland waters.</p> <p>Ninety-two per cent of estuaries were classified as having good or fair quality water in 1995; 17 percent of sites failed water quality standards for shell fisheries in 1998; certain pesticide concentrations still exceed operational standards in rivers, notably in Yorkshire and Humberside. Acidity has increased under many grassland soils.</p>
<p>Human and environmental health</p>	<p>Harmful effects caused by endocrine disruptors evident in some fish, but are largely unstudied in other wildlife. Synthetic pyrethroids (used in sheep-dips) have had a devastating effect on aquatic insects and fish in some upland rivers in Wales and the North-West. Harmful effects caused by endocrine disruptors evident in some fish, but are largely unstudied in other wildlife.</p>
<p>Aesthetic quality</p>	<p>Litter is a continuing and increasing problem along urban rivers and some beaches. Fly-tipping is increasing in some places.</p>

Source: Environment Agency (2000) *Environment 2000 and beyond*.

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