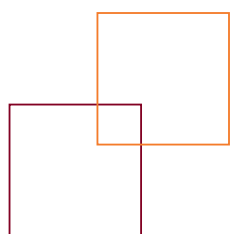


Biodiversity 2020:

A strategy for England's wildlife
and ecosystem services



Contents

Foreword by the Secretary of State for Environment, Food and Rural Affairs	02
Executive Summary	04
Chapter 1: Our ambition	08
Defining success – the vision and mission – and what outcomes we want to achieve over the next ten years	08
Chapter 2: Priorities for action – the strategy to 2020	17
• a more integrated large-scale approach to conservation on land and at sea	17
• putting people at the heart of biodiversity policy	21
• reducing environmental pressures	24
• improving our knowledge	33
Chapter 3: Delivering the strategy and measuring progress	35
Explaining the components of the supporting and enabling framework for delivery of the strategy	35
Annex A: Summary of priorities and key actions	39
Annex B: Convention on Biological Diversity (CBD) Strategic Plan ‘Aichi’ targets	41
Annex C: Table showing linkages between the strategy’s priorities/actions and (i) the strategy’s outcomes, (ii) the Convention on Biological Diversity (CBD) ‘Aichi’ targets and (iii) EU Strategy themes	43



Foreword by the Secretary of State for Environment, Food and Rural Affairs

In October 2010 in Nagoya, Japan, over 190 countries around the world reached an historic global agreement to take urgent action to halt the loss of biodiversity. This agreement recognised just how important our wildlife and ecosystems are for sustaining a healthy planet and for delivering essential benefits for people.

I was firmly committed to ensuring we reached an ambitious global agreement at Nagoya and I am equally committed to ensuring that we now play our part in delivering these commitments through action at home.

Biodiversity is key to the survival of life on Earth. Its loss deprives future generations of irreplaceable genetic information and compromises sustainability.

Our recent National Ecosystem Assessment also shows just how much nature provides for us in this country. For example, the enormous value of inland wetlands to water quality, the value of pollination to agriculture, the health benefits of experiencing nature and, not least, how nature and wildlife enrich all our lives.

This strategy will guide our conservation efforts in England over the next decade, including setting our ambition to halt overall loss of England's biodiversity by 2020. In the longer term, our ambition is to move progressively from a position of net biodiversity loss to net gain.

In our recent Natural Environment White Paper we responded to Sir John Lawton's call for a more integrated landscape-scale approach. We need to build a wider network of places across England which enable wildlife to thrive and natural processes to be sustained, alongside other land uses such as farming. This will help nature to better withstand future pressures such as climate change – and set our continuing conservation efforts for particular important species into a wider context.

Achieving our aims will be a big challenge. Government will play an important role but can't deliver this strategy alone. Our conservation charities, supported by millions of members of the public and volunteers, already make a vital contribution in protecting biodiversity. Equally, farmers and landowners have a central role to play as the stewards of England's countryside.

We fully recognise the importance of people in helping to arrest the loss of species. We must ensure that the value of nature's services is better understood and enhance people's personal connection with wildlife and nature. Ultimately, conservation efforts can only truly succeed with society's support.

This strategy provides the national framework for action to help us collectively achieve our goals. We need to work together, in partnership, to put this into practice, for the sake of England's wildlife, but also for ourselves and for future generations.

A handwritten signature in black ink that reads "Caroline Spelman". The signature is written in a cursive, flowing style.

The Rt Hon. Caroline Spelman MP

Executive Summary

1. Biodiversity is the variety of all life on Earth. It includes all species of animals and plants – everything that is alive on our planet. Biodiversity is important for its own sake, and human survival depends upon it.
2. The groundbreaking UK National Ecosystem Assessment (NEA) published in June 2011¹ provides a comprehensive account of how the natural world, including its biodiversity, provides us with services that are critical to our wellbeing and economic prosperity. However, the NEA also showed that nature is consistently undervalued in decision-making and that many of the services we get from nature are in decline. Over 40% of priority habitats and 30% of priority species were declining in the most recent analysis.
3. Our challenge is to halt this decline – for the benefit of this and future generations.
4. In October 2010, over 190 countries signed an historic global agreement in Nagoya, Japan to take urgent and effective action to halt the alarming global declines in biodiversity². This agreement recognised just how important it is to look after the natural world. It established a new global vision for biodiversity, including a set of strategic goals and targets to drive action.
5. In June 2011, the Government published The Natural Choice – the first Natural Environment White Paper for 20 years³. This responds to the global commitments made at Nagoya. It outlines the Government's vision for the natural environment, shifting the emphasis from piecemeal conservation action towards a more integrated landscape-scale approach. It also sets out how we can better value the natural environment in decision-making and thereby unlock growth in the green economy and reconnect people with nature.
6. Also in June 2011, EU Member States endorsed the European Commission's EU Biodiversity Strategy⁴ which has a particular focus on EU-level action. The EU Biodiversity Strategy will be used as a framework by Member States, along with the global Nagoya agreement, to inform their own national plans.
7. This new, ambitious biodiversity strategy for England builds on the Natural Environment White Paper and provides a comprehensive picture of how we are implementing our international and EU commitments. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes)⁵ and at sea. It builds on the successful work that has gone before, but also seeks to deliver a real step change.
8. The mission for this strategy, for the next decade, is:
to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.
9. We have developed a set of high-level outcomes to show what achieving this overarching objective by 2020 will mean in practice. These outcomes are set out in more detail in Chapter 1, which describes our ambition in greater detail.

1 UK National Ecosystem Assessment, <http://uknea.unep-wcmc.org>, (2011)

2 Convention on Biological Diversity, COP Decision X/2, Strategic Plan for Biodiversity 2011-2020 (2010)

3 Natural Environment White Paper, HM Government, <http://www.defra.gov.uk/environment/natural/whitepaper/> (2011)

4 Our life insurance, our natural capital: an EU biodiversity strategy to 2020, European Commission (2011)

5 Throughout this strategy, references to action on land should be taken to include freshwater environments.

10. We will deliver these outcomes through action in four areas⁶:
 - a more integrated large-scale approach to conservation on land and at sea
 - putting people at the heart of biodiversity policy
 - reducing environmental pressures
 - improving our knowledge
11. This is a Government strategy. However, it cannot be delivered by government alone. Conserving biodiversity in England has long depended on partnership, involving statutory, voluntary, academic and business sectors, and the public. To harness this collective effort, we will enable the establishment of Local Nature Partnerships across England – supported by a £1m fund in 2011/12.
12. Together, we will take forward action in the four priority areas.
14. Effectively establishing coherent and resilient ecological networks on land and at sea requires a shift in emphasis, away from piecemeal conservation actions and towards a more effective, more integrated, landscape-scale approach.
15. Actions we will take include:
 - Funding a competition to support the creation of Nature Improvement Areas⁸ in twelve initial areas, providing £7.5 million in the period 2011 to 2015. Lessons learnt will help us extend this approach.
 - Increasing the proportion of Sites of Special Scientific Interest (SSSIs) in favourable condition.
 - Establishing a well managed, ecologically coherent network of Marine Protected Areas (MPAs). By the end of 2016 this will contain in excess of 25% of English waters.
 - Agreeing a programme of targeted action with partners for the recovery of priority species.

A more integrated large-scale approach to conservation on land and at sea

13. The independent review of England's wildlife sites and ecological network, chaired by Professor Sir John Lawton⁷, concluded that England's collection of wildlife areas (both legally protected areas and others) does not currently represent a coherent and resilient ecological network capable of responding to the challenges of climate change and other pressures. The review concluded that establishing such a network would effectively conserve biodiversity and ecosystem services, delivering many benefits to people, while also making efficient use of scarce land and resources.

Putting people at the heart of policy

16. It is crucial to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help. Civil society organisations play a front line role, directly engaging and enthusing the public about biodiversity. We will work with them to engage more people and empower them to make a difference.

⁶ These four priority areas are broadly aligned to the strategic goals of the Convention on Biological Diversity Strategic Plan 2011-2020, adjusted to fit the priorities in England.

⁷ Making Space for Nature: a review of England's wildlife sites and ecological network (2010)

⁸ Reflecting the Making Space for Nature recommendation for 'Ecological Restoration Zones'.

17. Actions we will take include:

- Working with key stakeholders to consider how the nature conservation sector can engage the public even more effectively in future and how government might support this.
- Getting more children learning outdoors, removing barriers and increasing schools' abilities to teach outdoors.
- Establishing a new green areas designation, empowering communities to protect local environments that are important to them.
- Helping people 'do the right thing', at home, when shopping, or as volunteers. For example, we will provide funding to support the Big Wildlife Garden scheme and launch a new phase of the MuckIn4Life campaign, offering volunteering opportunities to improve the quality of life in towns, cities and the countryside.

18. We also need to take better account of how much nature does for us. Biodiversity provides a range of benefits to people, but these are often not taken into account in decision-making. This is often because biodiversity benefits are outside the market economy, meaning that they are unpriced and therefore too easily ignored in financial decisions. This strategy therefore draws on the Natural Environment White Paper, and aims to ensure that the value of biodiversity is reflected in decision-making in the public and private sector. Developing new and innovative financing mechanisms to direct more funding towards the achievement of biodiversity outcomes will be a key part of this.

Reducing environmental pressures

19. We need to ensure biodiversity is taken into account by decision-makers within sectors which have the greatest direct influence on our biodiversity, and we need to reduce direct pressures on our biodiversity. The approach will vary from sector to sector, covering a variety of uses of land and sea.

20. We have identified the key sectors we will work with and the actions we will take. These include:

- **Agriculture** – We will improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production by, for example, reviewing how we use advice and incentives, and how we use agri-environment schemes.
- **Forestry** – We will bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England.
- **Planning and Development** – Through reforms of the planning system, we will take a strategic approach to planning for nature. We will retain the protection and improvement of the natural environment as core objectives of the planning system. We will pilot biodiversity offsetting, to assess its potential to deliver planning policy more effectively.
- **Water Management** – We will protect water ecosystems, including habitats and species, through a river basin planning approach. We will also promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity.

- **Marine Management** – We will develop 10 Marine Plans which integrate economic, social and environmental considerations
 - **Fisheries** – We will ensure fisheries management supports wider environmental objectives, including the achievement of Good Environmental Status under the Marine Strategy Framework Directive.
21. We will also tackle the problems of air pollution⁹ and invasive non-native species.

Improving our knowledge

22. A good evidence base is an essential element of delivering the strategy effectively. It will help us make sure we are doing the right thing in the right place, and using our resources effectively, focusing on action that will have the most impact. In England we are fortunate in having widely available information on the status and trends in biodiversity, with much of that information collected by volunteers – an example of how important the wide biodiversity partnership is to the delivery of this strategy. The UK is also the first country to have undertaken a complete assessment of the benefits that nature provides, through the innovative NEA.
23. However, there remain gaps in our knowledge. Also, evidence is only helpful if it is accessible. So as part of delivering this strategy we need to improve access to knowledge through sharing of data and clear communication of evidence – putting power into the hands of people to act and hold others to account.

24. Actions we will take include:
- Investing almost £5 million over the next three years in England to directly support national and local organisations, and groups that co-ordinate volunteer recording and to contribute to the work of the National Biodiversity Network.
 - Investing a further £1.2 million to support data sharing, creating a new fund for biodiversity recording in the voluntary sector and, in partnership with volunteer groups, develop new and innovative approaches to biodiversity recording.
 - Launching three area-based pilot studies to trial new strategic approaches to wildlife recording, data sharing and interpretation services to better meet both local and national needs, working with local partnerships and local centres of expertise.
 - Following the NEA, we will support a further phase of ground-breaking research to identify the mix of future actions most likely to secure best overall value from our ecosystems, for nature and for people. It will also develop practical tools to assist decision-makers.

Monitoring and Reporting

25. We will develop and publish a set of indicators to assess delivery of this ambitious strategy for our biodiversity.

⁹ Water pollution is covered in the section on water management.

Chapter 1: Ambition



White cliffs of Dover.

- 1.1 Biodiversity is important for its own sake and has its own intrinsic value. A number of ground-breaking studies such as the National Ecosystems Assessment (NEA) have shown this value also goes further. It is the building block of our 'ecosystems'. These provide us with a wide range of goods and services that support our economic and social wellbeing. These include essentials such as food, fresh water and clean air, but also less obvious services such as protection from natural disasters, regulation of our climate, and purification of our water or pollination of our crops. Biodiversity also provides important cultural services, enriching our lives.
- 1.2 These goods and services are significant – for example the NEA demonstrated that our coastal wetlands can be valued at providing £1.5 billion annually in benefits through buffering the effects of storms and managing flooding. Historically such values have been taken for granted, but this cannot continue. This is why Government is committed to doing more to reflect the true economic value of biodiversity and its constituent ecosystems in our decisions and policies.



Bittern (*Botaurus stellaris*), photograph by Michael Hammett.
© Natural England

Key Messages from the National Ecosystem Assessment (NEA)

The UK is the first country to have undertaken a complete assessment of the benefits which nature provides; how they have changed over the past; the prospects for the future; and their value to our society. Some of the key messages of the NEA are set out below:

- The natural world, its biodiversity and its constituent ecosystems are critically important to our wellbeing and economic prosperity, but are consistently undervalued in conventional economic analyses and decision-making.
- Ecosystems and ecosystem services, and the ways people benefit from them, have changed markedly in the past 60 years, driven by changes in society.
- The UK's ecosystems are currently delivering some services well, but others are still in long-term decline. 30% of the services we get from UK's ecosystems are in decline.
- Population growth and climate change are likely to increase pressures on ecosystem services in future.
- Actions taken and decisions made now will have consequences far into the future for ecosystems, ecosystem services and human wellbeing. It is important that these are understood, so that we can make the best possible choices for present and future generations.
- We need to move towards a more integrated, rather than conventional sectoral approach to ecosystem management.

Although there is much more to learn about how valuable different aspects of biodiversity are to the delivery of ecosystem services, the NEA concludes that we have both the evidence of the benefits of managing our ecosystems more sustainably and enough information to start doing so.

1.3 Despite its importance, biodiversity is under threat. Although there have been some conservation successes in recent years and there are signs that losses are slowing, overall the picture in England remains one of decline.

1.4 The NEA and the major independent review of England's ecological network *Making Space for Nature* demonstrated that our biodiversity and natural infrastructure is fragmented. These findings have been supported by Defra's own biodiversity indicators for England. The indicators¹⁰ show a mixed picture – more had been done to protect wildlife: the area of protected sites in England had increased; more land was being managed for biodiversity in woodland and

agri-environment schemes; the condition of protected sites had improved; and people were spending more time on conservation volunteering. However, despite this positive action, many of the pressures on wildlife, for example from pollution, climate change and invasive species, were still increasing or at best had not diminished. Although some species, such as populations of widespread bats, have shown recovery in recent years, many species, such as birds, butterflies and plants, and habitats, particularly in the wider countryside, show long term declines. Over 40% of priority habitats and 30% of priority species¹¹ were still declining in the most recent analysis¹². Eight priority species were lost entirely from the UK between 2002 and 2008.

¹⁰ As updated in January 2011

¹¹ References to "priority" species and habitats refers to those species and habitats identified as being of principal importance in England, Section 41 of the Natural Environment and Rural Communities Act 2006.

¹² UK Biodiversity Action Plan highlights report, 2008 reporting round.

1.5 In October 2010, an historic global agreement was reached to take urgent and effective action to halt the alarming global declines in biodiversity. This provides a new global vision and direction for biodiversity policy, in response to the widespread recognition that efforts to protect and

enhance biodiversity need to be significantly increased. As part of that agreement, countries are expected to revise their own national strategies and plans for biodiversity to take account of the new global framework.

Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets

At the Nagoya UN Biodiversity Summit in October 2010, 192 countries and the European Union agreed to an ambitious conservation plan to protect global biodiversity. This new 'Strategic Plan' provides a flexible framework for all 193 Parties to the Convention of Biological Diversity to drive action on biodiversity by all Parties. It established a new global vision for biodiversity – a world of "living in harmony with nature" where:

- 'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.'

Parties also agreed a shorter term ambition to:

- 'Take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human wellbeing, and poverty eradication..'

To deliver this ambition, Parties agreed on a set of strategic goals and targets (the 'Aichi' targets) to drive action on biodiversity. These are set out in Annex B.

European Union Biodiversity

In March 2010, the EU agreed to an EU vision and 2020 mission for biodiversity:

- By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided.
- Halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restore them insofar as is feasible, while stepping up the EU contribution to averting global biodiversity loss.

The European Commission has adopted a new EU Biodiversity strategy to help meet this goal. The strategy provides a framework for action over the next decade and covers the following key areas:

1. Conserving and restoring nature
2. Maintaining and enhancing ecosystems and their services
3. Ensuring the sustainability of agriculture, forestry and fisheries
4. Combating invasive alien species
5. Addressing the global biodiversity crisis

- 1.6 We set out in the Natural Environment White Paper that the Government wants this to be the first generation to leave the natural environment of England in a better state than it was inherited. Part of this is moving progressively from a position of net biodiversity loss to net gain, by supporting healthy, well-functioning ecosystems and coherent ecological networks.
- 1.7 The Natural Environment White Paper was the first step in revising our national strategy in line with the commitments made at Nagoya. It outlines Government's vision for the natural environment and the shift in emphasis from piecemeal conservation action towards a more effective, innovative

and integrated landscape-scale approach to conservation. It also includes a range of measures for reconnecting people with nature and growing a green economy. This biodiversity strategy builds on the Natural Environment White Paper, sets out how our international commitments on biodiversity translate into action in England and the co-operation required between government and partners to realise these.

- 1.8 This is a government strategy. However, it cannot be delivered by government alone. To deliver the step change we want, we need continued engagement from the biodiversity partnership, and also a strengthening and further development of what it is able to do.

The Biodiversity Partnership

Our approach to conserving biodiversity in England has long depended on partnership, involving statutory, voluntary, academic and business sectors, and it is clear that action on biodiversity presents an excellent example of the Big Society. This wide 'biodiversity partnership' is absolutely central to conservation efforts in England, for example, being instrumental in successes such as recovery of the otter, bittern and stone curlew.

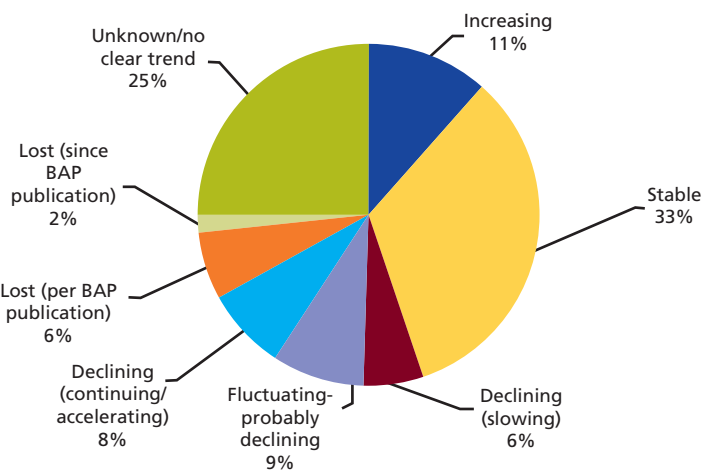
A huge number of individuals and organisations already make an absolutely vital contribution to the conservation and enhancement of our biodiversity. Nature conservation charities are engaged in activities such as managing land, engaging the public and leveraging in resources. Many have led the way in developing the landscape-scale approach which is central to this strategy.

Farmers and other land managers also play a crucial role in sensitively managing the environment – over 70% of land in England is farmed. A host of others also contribute in myriad ways, right down to individuals managing their gardens in a wildlife-friendly way.

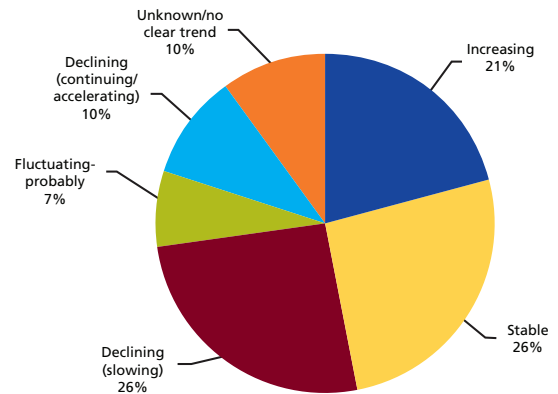
- 1.9 We have developed ambitious yet achievable goals for 2020 and 2050 – intended to provide better, more, bigger and joined sites for nature, as recommended by the *Making Space for Nature* review, to enable us to halt overall biodiversity loss. The outcomes – set out below – also draw on the suite of international targets agreed in Nagoya as part of the Convention on Biological Diversity strategic plan for 2011-2020 (see Annex B for more details). Achieving these outcomes

will require a co-ordinated set of actions – many of which will deliver for more than one outcome. For example, action to reduce pressures on biodiversity may be targeted at habitats but be beneficial for priority species. Similarly, improvements in our evidence base will support delivery of all four outcomes. This is set out further in Chapter 2 which we have grouped in 4 areas for action.

Detailed status of priority species in England, 2008
(n = 390)(includes species in grouped plans)



Detailed status of priority habitats, 2008



A Vision for England

By 2050 our land and seas will be rich in wildlife, our biodiversity will be valued, conserved, restored, managed sustainably and be more resilient and able to adapt to change, providing essential services and delivering benefits for everyone.

2020 Mission

Our mission is to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.

Outcome 1 – Habitats and ecosystems on land (including freshwater environments)

By 2020 we will have put in place measures so that biodiversity is maintained and enhanced, further degradation has been halted and where possible, restoration is underway, helping deliver more resilient and coherent ecological networks, healthy and well-functioning ecosystems, which deliver multiple benefits for wildlife and people, including:

- 1A. Better wildlife habitats with 90% of priority habitats in favourable or recovering condition and at least 50% of SSSIs in favourable condition, while maintaining at least 95% in favourable or recovering condition;
- 1B. More, bigger and less fragmented areas for wildlife, with no net loss of priority habitat and an increase in the overall extent of priority habitats by at least 200,000 ha;
- 1C. By 2020, at least 17% of land and inland water, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective, integrated and joined up approaches to safeguard biodiversity and ecosystem services including through management of our existing systems of protected areas and the establishment of nature improvement areas;
- 1D. Restoring at least 15% of degraded ecosystems as a contribution to climate change mitigation and adaptation.

Rationale:

Although we have made some progress, biodiversity continues to decline¹³. The independent review of England's wildlife sites and ecological network, *Making Space for Nature* chaired by Professor Sir John Lawton, concluded that England's collection of wildlife areas (both legally protected areas and others) does not currently represent a coherent and resilient ecological network that would be capable of responding to the challenges of climate change and other pressures. The review concluded that establishing such a network would effectively conserve biodiversity and ecosystem services, delivering many benefits to people, while also making efficient use of scarce land and resources. It recommended that priorities in England should include better, more, bigger and joined sites for nature. Ecological networks are considered to be an effective means to conserve ecosystems and wildlife in environments, such as England, that have become fragmented by human activities. Some work on ecological restoration is already underway¹⁴, but we need to extend this approach much more widely¹⁵.

Outcome 2 – Marine habitats, ecosystems and fisheries

By 2020 we will have put in place measures so that biodiversity is maintained, further degradation has been halted and where possible, restoration is underway, helping deliver good environmental status and our vision of clean, healthy, safe productive and biologically diverse oceans and seas. This will be underpinned by the following:

- 2A. By the end of 2016 in excess of 25% of English waters will be contained in a well-managed Marine Protected Area network that helps deliver ecological coherence by conserving representative marine habitats;
- 2B. By 2020 we will be managing and harvesting fish sustainably;
- 2C. By 2022 we will have marine plans in place covering the whole of England's marine area, ensuring the sustainable development of our seas, integrating economic growth, social need and ecosystem management.

Rationale:

A more integrated approach is also needed to conserve biodiversity at sea. We have already made some progress towards our vision of clean, healthy, safe, productive and biologically diverse seas, with recent improvements in the state of some fish communities in most regions, but climate change will add to the pressures from human activities and there is a need to ensure resilience of biological communities through effective conservation measures. There is a need to conserve and where appropriate or feasible restore our marine habitats, take steps to alleviate pressures on threatened species and ensure that the way we manage our marine environment is based on an ecosystem approach. This will not only build resilience in our marine environment, but also contribute to the sustainable use of its resources.

¹³ Evidence includes UKBAP 2008 reporting round, Defra's suite of indicators for the previous England Biodiversity Strategy, Natural England's State of the Natural Environment report 2008.

¹⁴ For example, the Wildlife Trusts' Living Landscapes, RSPB's Futurescapes, and the eight Integrated Biodiversity Delivery Area pilots (ref ThinkBIG, England Biodiversity Group 2011, www.naturalengland.org.uk)

¹⁵ Outcomes 1C and 1D also reflect particular Nagoya commitments.

Outcome 3 – Species

By 2020, we will see an overall improvement in the status of our wildlife and will have prevented further human-induced extinctions of known threatened species.

Rationale

The strategy's integrated landscape-scale approach to improve ecological networks is the core means to conserve our wildlife. But this approach will not be sufficient to achieve the recovery of all priority species and so, in some cases, it will need to be complemented by specific tailored action. The curlew, bunting, freshwater pearl mussel and fen raft spider are all examples of species requiring special help if they are to recover and thrive again in England. Marine species which may require specific action include dolphins, porpoises and whales, sharks, skates and rays (elasmobranchs) and seabirds.

Conserving and enhancing biodiversity is not just an issue for wild species. It also applies to cultivated plants and farmed animals as well as to their wild relatives. England is relatively rich in wild relatives of crops, landraces of cereal, vegetable and fruit crops, and traditional orchard trees. There are also over two hundred native breeds of farm animals which are often associated with traditional land management required to conserve important habitats. The great genetic diversity which these provide can make an important contribution to the ecosystem provisioning service of food security by offering genes that are important for future crop or livestock breeding.

Outcome 4 – People

By 2020, significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action.

Rationale:

Public understanding and opinion on the value of biodiversity has strong implications for the acceptance and adoption of conservation measures.

Many people in England are already very supportive of conservation efforts and make an important contribution through a variety of activities, for example, through management of their land, environmental volunteering or simple activities such as feeding birds in the garden. We need to build on this so that society better understands and more strongly supports the need for a step change in our conservation efforts, and more people choose to play a positive part. For this reason, earlier in 2011 the United Nations General Assembly declared the period 2011-2020 to be "the United Nations Decade on Biodiversity".

People value the natural world in many different ways and for different reasons. These include valuing it for its own sake (sometimes called its 'intrinsic' or 'existence' value), because it makes our streets and gardens more attractive, or because people enjoy experiencing nature-rich green places for recreation, whether a walk in a park or in relatively wild places such as National Parks. Others enjoy bird watching, or activities such as angling or wildfowling. Evidence supports what many people feel

instinctively – that regular opportunities to experience natural environments have quantifiable positive impacts on our mental and physical health¹⁶. A host of other ecosystem services are also becoming better understood. All can motivate people to take or support positive action for biodiversity.

The level of direct contact with nature is a factor in influencing attitudes towards it¹⁷ suggesting that the more we can stimulate interest in and access to nature, the more people will be willing to contribute to its protection and enhancement. We also need to build a greater understanding of indirect effects, such as biodiversity loss overseas resulting from imported goods and services, so that people and business are more aware and actively engaged to reduce this impact.

Although biodiversity provides a range of benefits to people, these are often outside the market economy, meaning that they are unpriced and therefore too easily ignored in financial decisions¹⁸. We need to better take account of the values of biodiversity in decision-making. There is potential to expand and establish new markets and financing approaches for nature's services.



North Wessex Downs AONB (Area of Outstanding Natural Beauty).
© Crown Copyright



Rural countryside – people looking out at the views from Box Hill.
© Crown Copyright

¹⁶ For example, the National Ecosystem Assessment and the Marmot review, Fair Society, Healthy Lives (2010), cover the positive impact that nature and green space have on mental and physical health.

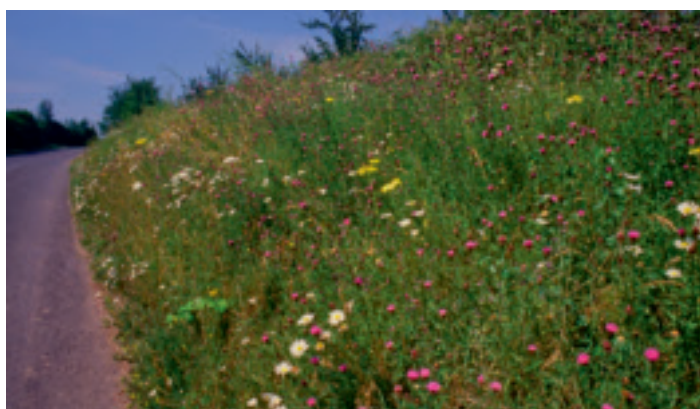
¹⁷ Attitudes and Behaviours towards the Natural Environment among the general public in the UK: A Review of Existing Evidence, COI report for Defra (2008)

¹⁸ National Ecosystem Assessment

Climate Change

1.10 To date, climate change has had a relatively small impact on the UK's biodiversity and ecosystems, though it has, for example, affected species ranges, population sizes, timing of biological events such as flowering, and increased sea levels. However, further climate change is unavoidable because of previous emissions and both the direct and indirect impacts are expected to become a more significant and increasing pressure over the coming decades.

1.11 This strategy therefore has to be set in the context of a possible 2-4°C increase in mean summer temperatures in the longer term¹⁹, milder winters, changes in rainfall distribution and seasonality, more extremes of weather and sea level rise²⁰. The effects of these changes on biodiversity are uncertain and may occur as sudden and unexpected step changes. However, we do know that in the longer term, over a fifth (22%) of priority habitats are at high risk of direct impacts²¹, including montane habitats, grazing marsh, saltmarsh and lakes. Marine ecosystems are likely to be particularly seriously affected,



Roadside verge, with rich flora, County: Herefordshire, Photographer: Peter Wakely

including as a result of ocean acidification due to rising CO₂ levels. The indirect effects of climate change, including adaptation action by other sectors that are key to land and water management, could have a significant impact in the short term and may bring positive or negative consequences for biodiversity and the delivery of ecosystem services.

1.12 We do know that managing our biodiversity is important to both 'mitigation' (addressing the causes of climate change by removing greenhouse gases from the atmosphere) and 'adaptation' (helping to reduce the impacts of climate change). All of this poses a challenge to the way we try to conserve biodiversity and this strategy is designed to help increase resilience to climate change and other pressures. As we implement the strategy over the next ten years, we will keep under active review our response to, and our increasing understanding of, the implications of climate change.



Walkers enjoying a Cornish valley at spring time.© Crown Copyright

¹⁹ UK Climate Predictions (UKCP09): central estimate for change in mean summer temperature in south east England in the 2080s under a medium emissions scenario is 3.9C, but could be between 2.0C (10% probability i.e. highly unlikely to be less than) and 6.5C (90% probability i.e. highly unlikely to be more than).

²⁰ UKCP09

²¹ Mitchell, et al, England Biodiversity Strategy – towards adaptation to climate change, final report to Defra for contract CR0327, (2007)

Chapter 2: Priorities for action – the strategy to 2020

2.1 Government will play a leading role in delivering the vision, mission and intended outcomes. We have developed four priority areas for action by Government, its agencies, the wider biodiversity partnership and others to achieve our ambitions, including addressing the pressures outlined in the last chapter:

- a more integrated large-scale approach to conservation on land and at sea²²
- putting people at the heart of biodiversity policy²³
- reducing environmental pressures²⁴
- improving our knowledge²⁵

2.2 These four priority areas are based on the five strategic goals of the Convention on Biological Diversity (CBD) Strategic Plan 2011-2020, but re-cast and re-ordered to better fit the priorities here in England. Our approach will be informed by the list of priority species and habitats in England²⁶. Much of the action proposed will contribute to more than one of the outcomes outlined in the previous chapter.

2.3 The strategy will be taken forward in a way which is compatible with Government's other priorities. We do not intend to introduce unnecessary burdens or regulations; rather our aim is for the outcomes and priorities to be used as a focus and driver for action by partners under this strategy. We want to inspire action at all levels by all partners.

A more integrated large-scale approach to conservation on land and at sea

2.4 In order to *halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people*, we need to establish more coherent and resilient ecological networks on land and at sea. Targeted action is also needed in respect of some priority species whose conservation is not delivered through these wider habitat and ecosystem measures, and also to conserve agricultural genetic diversity in cultivated plants, farmed animals and wild relatives.



Arrowhead/industry, Site of Special Scientific Interest: Huddersfield Narrow Canal, County: West Yorkshire, Photographer: Peter Wakely

22 Broadly reflects CBD Strategic Plan strategic goals C (improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity) and D (enhance the benefits to all from biodiversity and ecosystem services)

23 Broadly reflects CBD Strategic Plan strategic goal A (address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society)

24 Broadly reflects CBD Strategic Plan strategic goal B (reducing the direct pressures on biodiversity and promote sustainable use)

25 Broadly reflects CBD Strategic Plan strategic goal E (enhance implementation through participatory planning, knowledge management and capacity building)

26 Species and habitats identified as being of principal importance in England, Section 41 of the Natural Environment and Rural Communities Act 2006.

What is a 'coherent and resilient ecological network'?

(this is explained in a land, rather than marine, context drawn from *Making Space for Nature*)

What we mean by an ecological network

Much of England's wildlife is now restricted to wildlife sites, which consist largely of semi-natural habitats. However, surviving in small, isolated sites is difficult for many species, especially in the longer term and given climate change.

We want a large number of high quality sites which contain the range and area of habitats that species require. We also want ecological connections that allow species, or their genes, to move between these sites. For many species, habitat does not have to be a continuous, physical connection for them to disperse.

An ecological network is this network of high quality sites, protected by buffer zones, and connected by wildlife corridors and smaller, but still wildlife-rich, "stepping-stone" sites.

The ecological networks for different species work at varying scales: some species need a large area, others a much smaller area. An ecological network for England therefore consists of a range of networks.

What we mean by coherent and resilient

A **coherent** ecological network is one that has all the elements necessary to achieve its overall objectives; the components are complementary and mutually reinforcing so that the value of the whole network is greater than the sum of its parts.

A **resilient** ecological network is one that can absorb, resist or recover from disturbances and damage caused by natural influences and human activities (including climate change), while continuing to meet its overall objectives of supporting biodiversity and providing ecosystem services.

Components of an ecological network

Ecological networks generally have five components.

- **Core areas of high nature conservation value** which contain rare or important habitats or ecosystem services. They include protected wildlife sites and other semi-natural areas of high ecological quality.
- **Corridors and 'stepping stones'** enabling species to move between core areas. These can be made up of a number of small sites acting as 'stepping stones' or a mosaic of habitats that allows species to move and supports ecosystem functions.
- **Restoration areas**, where strategies are put in place to create high value areas (the 'core areas' of the future), restoring ecological functions and wildlife.
- **Buffer zones**, that protect core areas, restoration areas, and 'stepping stones' from adverse impacts in the wider environment.
- **Sustainable use areas**, areas of surrounding land that are managed in a sustainable and wildlife friendly way.

Priority action: Establish more coherent and resilient ecological networks on land that safeguard ecosystem services for the benefit of wildlife and people

2.5 The *Making Space for Nature* review summarised what needs to be done to establish a more coherent and resilient network in 4 words, which describe our ambitions under this priority: **better, bigger, more and joined**.

- **Better:** we will improve the quality of priority habitat both within and outside protected sites, including where appropriate, by improving the heterogeneity and structural diversity of habitats which in turn will provide suitable niches for a wider range of species and enhance resilience to climate and other environmental change. The *Making Space for Nature* review concluded that the first priority is to protect and enhance the quality of existing priority habitat. It is much harder, more expensive and not always possible to re-create habitat than it is to look after what we currently have.



Bolt Tail, Bolberry Down – gorse, Site of Special Scientific Interest: Slapton Ley, National Nature Reserve: Slapton Ley, County: Devon, Photographer: Peter Wakely

- **Bigger:** we will increase the size of remaining areas of priority habitat where appropriate
- **More:** we will create new areas of priority habitat where appropriate
- **Joined:** we will enhance ecological connections between, or join up, existing areas of priority habitat, increasing opportunity for wildlife to move around the landscape by making use of 'stepping stones', 'corridors' and other features

2.6 To achieve this, we will take and encourage a more spatially-based approach, focussed on places, and landscape-scale action. Approaches aimed at establishing ecological networks should join up with other activities and achieve multiple benefits for biodiversity and people where possible.

- We will learn from the experience of organisations and partnerships that have already adopted a landscape-scale approach to ecological restoration, such as the Wildlife Trusts' Living Landscapes, RSPB's Futurescapes, and the eight Integrated Biodiversity Delivery Area pilots²⁷. National Parks and AONBs have potential to be exemplars of good practice. We will encourage adoption of integrated, landscape-scale approaches. This approach will also help achieve multiple outcomes, including conserving geodiversity and enhancing landscapes in our towns and countryside.
- We will enable partnerships of local authorities, local communities and land managers, the private sector and conservation organisations to establish new Nature Improvement Areas (NIAs), based on a local assessment of opportunities for restoring and connecting

nature on a significant scale. We want to see Nature Improvement Areas wherever the opportunities or benefits are greatest, driven by the knowledge and vision of local partnerships. Working within the framework of the National Policy Statements and the Government's planning reforms, local authorities will be able to use local planning to support Nature Improvement Areas, including identifying them in their local plans where they choose, while not deterring sustainable development.

- We are funding a competition to support the creation of Nature Improvement Areas in twelve initial areas, providing £7.5 million in the period 2011 to 2015. Lessons learnt will help us extend this approach.
- Natural England and other partners will ensure that management of SSSIs and other habitats takes better account of the requirements of a wider range of species. Natural England will consider the impact of climate change and other long-term processes on the existing SSSI network through its Notification Strategy, which will also identify gaps in the present coverage of priority habitats and species within the SSSI series.
- We will encourage local authorities to take a more active and positive role in the management of Local Sites, including through reporting data on such sites in the Government's new Single Data List.
- We will work with transport agencies and key delivery partners to create coherent and resilient ecological networks in the natural areas at the edges of our strategic roads and railways, which cover approximately 60,000 hectares. The Government will host a forum with environmental stakeholders to inform

future priorities for the enhancement of these green corridors.

- To aid an integrated approach, the Government's environmental bodies are reforming the way they work together, so their decisions can better reflect the full range of environmental objectives, and so they can provide more coherent advice on the natural environment to local partners.

Priority action: Establish and effectively manage an ecologically coherent network of marine protected areas which covers in excess of 25% of English waters by the end of 2016, and which contributes to the UK's achievement of Good Environmental Status under the Marine Strategy Framework Directive

- A key element of our approach will be the establishment of a well-managed, ecologically coherent network of Marine Protected Areas (MPAs). The Marine Strategy Framework Directive recognises the important role that Marine Protected Areas will play in helping to protect biodiversity and requires Member States to put in place spatial protection measures contributing to coherent and representative networks of Marine Protected Areas.
- By the end of 2016 in excess of 25% of English waters will be contained in a well-managed Marine Protected Area network. This will help with the delivery of ecological coherence, help conserve and protect rare and threatened species and habitats, and ensure valuable marine ecosystems are resilient to future change, including climate change. It will contribute to a UK and international network. The new marine planning system created under the Marine and Coastal Access Act 2009 is explained more fully in the section on marine management.

Priority action: Take targeted action for the recovery of priority species, whose conservation is not delivered through wider habitat-based and ecosystem measures

- We, through Natural England, will agree a prioritised programme with our partners, allocating responsibilities for recovery action for the species. Greatest priority will be given to species at most risk of extinction, and those for which England has a particular international responsibility, for example, species that are endemic or which are threatened at European or global scales. We will work with a range of public bodies and authorities to encourage community action, including by supporting communities in 'adopting' locally-relevant species.
- We will ensure that relevant species are given sufficient protection, for example, through the quinquennial review of schedules 5 and 8 of the Wildlife and Countryside Act 1981, and also in the marine environment, for example, tackling bycatch through fisheries measures.
- We will reduce wildlife crime by working through the Partnership for Action Against Wildlife Crime (PAW) and by contributing to funding for the National Wildlife Crime Unit for a further two years, from 1 April 2011. We have confirmed new UK wildlife crime priorities for them to target over this period.
- We will strive to ensure that cetacean bycatch is reduced to the lowest level possible, and is always below the 1.7% best population estimate that indicates that it is not adversely affecting populations.
- On the principal threat of bycatch we have worked, and will continue to work, with the fishing industry to develop an effective and safe acoustic deterrent, as this has been identified as the most effective way of mitigating bycatch in our fisheries.

- For elasmobranch (shark, skate and ray) species, our shark, skate and ray conservation plan clearly lays out how we will work to secure our overarching aim of managing elasmobranch stocks sustainably so that depleted stocks recover and that those faring better are fished sustainably.

Priority action: Ensure that 'agricultural' genetic diversity is conserved and enhanced wherever appropriate

- We will raise awareness of existing genetic diversity within cultivated plants, farmed animals and their wild relatives, and its importance for food security and renewable supplies of plant materials.
- We will encourage responsible management and conservation of our genetic diversity resource by relevant stakeholders.
- We will incorporate the sustainable maintenance of genetic diversity into key relevant policies and programmes, including incentive measures, protective arrangements and integrated ecosystem landscape-scale approaches.
- We will update the UK's inventory of farm animal genetic resources, establishing as far as possible efficient identification and monitoring systems for genetic diversity and maintaining existing ex situ collections (such as the National Fruit Collection at Brogdale and the Pea Collection at the John Innes Centre at Norwich).

Putting people at the heart of biodiversity policy

Priority action: Work with the biodiversity partnership to engage significantly more people in biodiversity issues, increase awareness of the value of biodiversity and increase the number of people taking positive action

2.7 People are at the heart of this biodiversity strategy and involving the wider public is an important consideration across many of the conservation actions set out under the strategy, not just those with the primary aim of public engagement. Civil society organisations play a critical front line role directly engaging and enthusing the public about biodiversity and the wider natural environment such as geodiversity, and this priority is a call for renewed and expanded action. Government will contribute primarily by helping facilitate the sector in this role and creating the conditions whereby people are empowered to make a difference.

- We will establish a working group involving key stakeholders as part of the strategy's governance structure, tasked with a remit to consider how the sector can address this key action more effectively in future and how government might provide support. This work will inform the strategy's delivery plan. Through the working group, we will build a partnership approach to addressing this challenge whilst also coming up with more detailed action on particular key issues. In addition to better engaging society in general, we envisage the working group will need to consider engagement with priority groups and sectors, such as those identified in the section on reducing environmental pressures, which have particular influence over biodiversity. It will also need to consider issues such as opportunities for synergies and greater collaboration by the partnership, and also how greater community engagement can be supported.

2.8 Government's wider decentralisation and localism agenda will assist by empowering local communities to have more influence over local decisions which affect them. The Natural Environment White Paper sets out a range of relevant key reforms, including:

- Improving public health locally, by making high quality green space available to everyone;
- Action to get more children learning outdoors, removing barriers and increasing schools' abilities to teach outdoors. The Natural Connections initiative provides an example of Natural England and the nature conservation sector coming together to try to become more effective in engaging schools through a collaborative approach;
- A new green areas designation, empowering communities to protect local environments that are important to them;
- Help for everyone to 'do the right thing', at home, when shopping, as volunteers. For example, we will provide funding to support the Big Wildlife Garden scheme and launch a new phase of the MuckIn4Life campaign, offering volunteering opportunities to improve the quality of life in towns, cities and the countryside;
- Help for public bodies to fulfil their duty under the Natural Environment and Rural Communities Act 2006 to take account of biodiversity, by developing tools and guidance for them to use, and by raising the profile of this duty with Parish Councils.

Priority action: Promote taking better account of the values of biodiversity in public and private sector decision-making, including by providing tools to help consider a wider range of ecosystem services

2.9 In February 2011, we published our new strategy *Mainstreaming sustainable development – The Government's vision and what this means in practice*. This set out our approach for mainstreaming sustainable development which seeks to

embed sustainable development into policy. Government has also agreed the Greening Government Commitments to drive sustainability and efficiency in the way we manage our operations and procurement, including a commitment to be open and transparent on the steps taken to address biodiversity and natural environment. The Natural Environment White Paper sets out a wide range of further relevant action to take this forward on a wider natural environment basis. Key reforms include:

- The consideration of nature's value in all relevant Impact Assessments. Later in 2011 we will publish new supplementary guidance to the Treasury's Green Book for use by all Government Departments on valuing the natural environment in appraisals.
- A new independent Natural Capital Committee, to advise Government and put the value of England's natural capital at the heart of our economic thinking.
- Inclusion of natural capital in our national accounts alongside GDP, to capture nature's value in how we measure economic progress. Further research will be undertaken to do this, building on the results of the NEA.
- Actions to support the creation of new markets for green goods and services, expanding the opportunities for UK business.
- New support and guidance for businesses, to promote responsible use of natural capital. For example, we will support a new international coalition of businesses and business organisations to follow up the "TEEB for Business" report to help businesses to understand and address their environmental impacts.
- The inauguration of a network of 50 Natural Value Ambassadors to engage key decision-makers and opinion formers using the latest evidence and materials available.

In the marine environment:

- Identification of possible Marine Conservation Zones (MCZs) under the Marine and Coastal Access Act 2009 is being led by individuals, businesses, communities and organisations through four regional MCZ projects. Through these projects, local stakeholders will have a genuine opportunity to shape where MCZs are located, their objectives, and management, encouraging local responsibility and pride – a feeling of affiliation and stewardship for their marine environment.
- For MCZs and sites designated under European Directives the Government envisages that Inshore Fisheries and Conservation Authorities (IFCAs) and the Marine Management Organisation will work closely with local interest groups to develop management measures to ensure they achieve their objectives. We will also explore the scope for local bodies and interest groups to have a role in owning voluntary management measures where these are appropriate and the monitoring and surveillance of these sites including carrying out surveys and related activities.
- For the wider marine environment, the new Marine Planning system introduced under the Act provides everyone with an interest, the opportunity to have a voice in how the marine area is managed. This engagement will help raise awareness of the marine environment.

Priority action: Develop new and innovative financing mechanisms to direct more funding towards the achievement of biodiversity outcomes

2.10 We need to consider how we might develop new and innovative financing mechanisms. One way of achieving this is through voluntary schemes where payments, called 'payments for ecosystem services', are made to compensate for actions undertaken to deliver enhancements in nature's services. The Natural Environment White Paper sets out Government's role in enabling and facilitating these voluntary schemes to harness their potential for protecting and enhancing nature's services and commits to action including:

- Publishing an action plan in 2012 to expand schemes in which the provider of nature's services is paid by the beneficiaries, after undertaking a full assessment of the challenges and barriers.
- Introducing a new research fund targeted at these schemes and publishing a best practice guide for designing them. Pilots will also be encouraged to develop across a broad spectrum of nature's services and beneficiaries.
- More broadly, the setting up of a business-led Ecosystem Markets Taskforce to review the opportunities for UK business from expanding green goods, services, products, investment vehicles and markets which value and protect nature's services. It will report back to Government in 2012-13.
- We will continue to work with partners to help the biodiversity sector make the most of existing sources of funding, which will continue to be highly important to support the strategy's priorities.

Reducing environmental pressures

Integrate consideration of biodiversity within the sectors which have the greatest potential for direct influence, and reduce direct pressures

2.11 In seeking to achieve the strategy's outcomes, our approach needs to set out a range of positive action to improve the status of biodiversity but also action to reduce direct and indirect pressures on biodiversity, particularly in those sectors that have the greatest potential impacts on biodiversity. Using a range of evidence, including the National Ecosystem Assessment²⁸, we have identified the key sectors we will work with, and the pressures we will address.

2.12 This section sets out the key actions we will take relating to each sector. Many of these commitments are also set out in the Natural Environment White Paper. We will respond to further priorities that may arise over the lifetime of this strategy by updating the rolling delivery plan.

Sectors:

- Agriculture
- Forestry
- Planning and Development
- Water Management
- Marine Management
- Fisheries

Direct pressures:

- Air Pollution
- Invasive Non-Native species

²⁸ Informed by a range of evidence including the National Ecosystem Assessment, Natural England's State of the Natural Environment report 2008, UKBAP 2008 reporting round, Convention on Biological Diversity strategic plan, *Making Space for Nature* (2010) and stakeholder input.

Agriculture

Priority action: Improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production

2.13 Over 70% of England is farmed and therefore agricultural land management practices are one of the most important influences on our biodiversity and ecosystem services. Agriculture shapes the landscapes we value, and contributes significantly to the UK economy. Farmers and land managers play a vital role, not only as food suppliers, but also as the stewards of our countryside. Their cooperation is crucial in achieving our ambitions for biodiversity. We acknowledge that potential tensions exist between improving the environment and increasing food production and this requires all interested parties to work together.

- We will carry out a review of advice and incentives for farmers and land managers, to create a more integrated, streamlined and efficient approach that is clearer for farmers and land managers and yields better environmental results.
- We will bring together government, industry and environmental partners to reconcile how we will achieve our goals of improving the environment and increasing food production. We will publish our conclusions within the next twelve months.
- We will work with our delivery partners and stakeholders to develop and test an approach to Environmental Stewardship that increases its focus on outcomes, including encouraging more collaborative working to achieve landscape-scale action and the possibility of allowing greater flexibility within agreements in how outcomes are achieved.

- We will seek to maximise the contribution which Environmental Stewardship and the Woodland Grant Scheme make towards our overarching objective to promote multiple benefits from ecological restoration at a landscape scale, including through Nature Improvement Areas. Funding for Higher Level Stewardship (HLS) will grow by over 80% between 2010 and 2014.

Priority action: Reform the Common Agricultural Policy to achieve greater environmental benefits

- The future role of the Common Agricultural Policy (CAP) from 2014 to 2020 is key to achieving our ambitions for enhancing environmental outcomes in tandem with food production. Successive reforms of the CAP have given it a greater focus on the achievement of public benefits, such as environmental outcomes and we want to see an acceleration of this process. Expenditure in a significantly smaller CAP Budget should tackle the key objectives of encouraging a competitive, sustainable EU agriculture sector, reducing reliance on subsidies and focusing resources on the provision of environmental public goods.



Dyer's greenweed and resting cattle, County: Hampshire, Photographer: Chris Gomersall

Forestry

Priority action: Bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England

2.14 Woodlands are one of our richest habitats, containing a very wide diversity of wildlife. Woodlands cover 10% of England, of which around half is 'priority woodland habitat' (i.e. ancient and native woodland).

2.15 Active management of woodland can prevent and address the most widespread and serious problems affecting ecological condition, for example, shadiness and high deer populations causing a loss of shrub-layer and ground cover. It can also deliver other benefits, for example, woodfuel and timber and recreation and leisure.

2.16 Our woodland resource is highly fragmented. Small, isolated patches of ancient woodland are particularly vulnerable to climate change and other pressures. Many species typical of ancient woodland are slow to colonise new areas and only move slowly across the landscape. Enlarging and buffering ancient woods is therefore often a more immediate priority than attempting to create large-scale networks and corridors.



Child looking at heath spotted orchids, County: Devon, Photographer: Paul Glendell

- We have appointed an Independent Panel on Forestry to advise the Secretary of State on forestry policy and the role of the Forestry Commission, and have asked the panel to provide advice on the appropriate level of ambition for woodland creation and more active management, including how woodland biodiversity should be conserved.
- We are committed to providing appropriate protection to ancient woodlands and to more restoration of plantations on ancient woodland sites (in recognition of their particular value). We have asked the Independent Panel on Forestry for advice on the restoration of open habitats and plantations on ancient woodland sites.
- The Forestry Commission and Natural England will consider the role that Environmental Stewardship can provide to support farmers in conserving other 'woody habitats', such as field trees, parkland, hedges and patches of scrub scattered through the landscape, which are vital habitat for woodland wildlife.

Planning and development

Priority action: Through reforms of the planning system, take a strategic approach to planning for nature within and across local areas. This approach will guide development to the best locations, encourage greener design and enable development to enhance natural networks. We will retain the protection and improvement of the natural environment as core objectives of the planning system

2.17 Although affecting a much smaller proportion of the land each year than agriculture, development (including for urbanisation, infrastructure and industrial use) can also drive ecosystem and biodiversity change as a result of a range of direct effects, such as land take, and indirect

effects, such as fragmentation of habitats and degradation, for example, due to water abstraction or pollution.

2.18 The Government expects the planning system to deliver the homes, business, infrastructure and thriving local places that the country needs, while protecting and enhancing the natural and historic environment. Planning has a key role in securing a sustainable future. However the current system is costly and bureaucratic with excessive central control, preventing local communities from shaping development in their neighbourhoods. It is also failing to achieve the kind of integrated and informed decision-making needed to support sustainable land use. We must enable communities to achieve lasting growth in a way that meets all of their needs: economic, social and environmental.

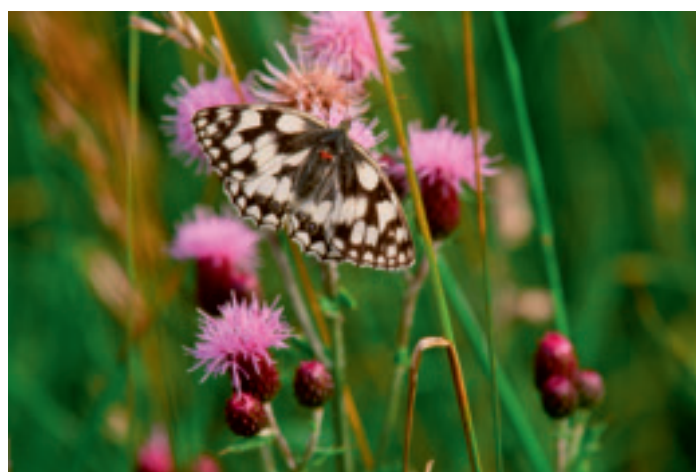
2.19 The Natural Environment White paper sets out our approach on planning and the natural environment. Key points relevant to this strategy are:

- We will retain protection and improvement of the natural environment as core objectives for local planning and development management. The planning system will continue to facilitate coherent and resilient ecological networks in association with local partners and reflect the value of natural systems.
- We want the planning system to contribute to our objective of no net loss of biodiversity; to encourage local authorities to promote multi-functional development so that we get the most from land; and to protect our best and most versatile agricultural land.
- The Government will consult extensively on a draft of the National Planning Policy Framework, and has already

invited comments on its content and received responses from a wide range of environmental and other interests.

Priority action: Establish a new, voluntary approach to biodiversity offsets and test our approach in pilot areas

- We will support biodiversity offsetting pilots through a two-year test phase, until spring 2014. Natural England will work with pilot areas, providing advice, support and quality assurance. The aim is to develop a body of information and evidence, so that the Government can decide whether to support greater use of biodiversity offsetting in England, and, if so, how to use it most effectively.



Marbled white butterfly, County: Hampshire, Photographer: Chris Gomersall

Water management

Priority action: Align measures to protect the water environment with action for biodiversity, including through the river basin planning approach under the EU Water Framework Directive

2.20 There are opportunities for seeking more integrated delivery of environmental outcomes through aligning water management with action on biodiversity.

2.21 Water is highly relevant to conservation of biodiversity both in terms of the quality and quantity of water that is available to support the survival of water dependent species and wetland habitats. The Government is committed to protecting water ecosystems to achieve good ecological status through a river basin planning approach, under the EU Water Framework Directive. We will reduce water pollution, building on action under regulations such as the Nitrates Directive and the Urban Waste Water Treatment Directive, which control some causes of water pollution. We need to increase the rate of progress towards good ecological status by working at catchment level to involve interested parties and address the pollution sources that are causing water bodies to fail.

- We will develop a strategy to identify and address the most significant diffuse sources of water pollution from non-agricultural sources. We will reduce the impact of land management on water by ensuring pollution and flood risk is addressed at source, through targeted risk-based enforcement of existing regulatory instruments, and beyond this by identifying where land can be managed to deliver multiple benefits, including improving water quality, flood alleviation and biodiversity.
- We will increase the proportion of water bodies in Good Ecological Status from 26% now to 32% by 2015, working through 11 river basin management plans; we will then get the majority of our water bodies to GES as soon as possible, and get as many of our water bodies as possible to GES by 2027. The river basin management plans tackle many pressures including point and diffuse sources of pollution arising from activities on land and in water, non-native species, habitat connectivity and unsustainable abstraction.

- We are establishing ten catchment-level partnerships to develop and implement plans for creating and maintaining healthy water bodies. We will also support additional groups who wish to take a lead in trialling a catchment approach. We will then use the lessons learned from trialling the catchment approach in pilot areas, to develop new guidance on river basin management planning from 2015 to 2021.
- The Environment Agency and Natural England will work together with farmers to encourage the inclusion of Entry Level options under the Environmental Stewardship scheme where there are diffuse pollution problems and to ensure they are located appropriately.
- We will provide funding of £92 million over the next four years 2011/12 to 2014/15 to clean up our rivers.
- We will continue the Catchment Sensitive Farming (CSF) Initiative with a programme budget of £18 million for 2011-12.

Priority action: Continue to promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity

- We will encourage research and innovative practices which help us understand how we can more effectively reduce the risk of flooding and erosion to people and property through working with natural processes.

Priority action: Reform the water abstraction regime. The new regime will provide clearer signals to abstractors to make the necessary investments to meet water needs and protect ecosystem functioning. We will also take steps to tackle the legacy of unsustainable abstraction more efficiently

2.22 This will involve continuing to prioritise reducing impacts on the most important sites for biodiversity, such as Natura 2000 sites and SSSIs. The forthcoming Water White Paper will set out further details.

Management of the marine environment

Priority action: Develop 10 Marine Plans which integrate economic, social and environmental considerations, and which will guide decision-makers when making any decision that affects, or might affect, a marine area. This action in England is part of the UK vision for 'clean, healthy, safe, productive and biologically diverse oceans and seas'

2.23 Our seas are subject to competing demands, pollution and other damage, and yet the ecosystem services they provide are invaluable (e.g. regulation of climate change, flood risk and water quality and cultural services such as recreation). The previous system for management has been considered to be ad hoc, inconsistent, incoherent and not able to fully consider the cumulative impact the decisions we took had on the environment. We need to manage our seas strategically and holistically through the new comprehensive marine planning system developed under the Marine and Coastal Access Act 2009.

- The Marine Plans being developed by Marine Management Organisation will guide developers about where they are likely to be able to carry out activities, or where conditions or restrictions may be placed on what they do. Marine Plans will also encourage an understanding of the marine environment and the activities taking place in each area.
- **The Marine Policy Statement (MPS)** provides the framework for the marine planning system. It facilitates and supports the formulation of Marine

Plans, ensuring that marine resources are used in a sustainable way providing a coherent approach to management of the demands and pressures on our seas with consideration of cumulative effects. The MPS provides the policy context, within which national and sub-national Marine Plans will be developed, implemented, monitored, amended and will ensure appropriate consistency in marine planning across the UK marine area.

- The first two Marine Plans (East of England Inshore and Offshore marine plan areas) will be completed in 2013. The Marine Management Organisation will have a complete system of 10 Marine Plans in place for the whole of the English marine area by 2022.



Algae in rock pool, Site of Special Scientific Interest: Lundy, County: Devon, Photographer: Paul Glendell

- Marine litter is also an issue. It can affect important marine species and place an additional pressure on the viability of already stressed fisheries. We know this happens across the world, but we do not fully understand the scale of the impacts. We will identify any additional measures necessary to move us towards achieving Good Environmental Status, ensuring these are in place by 2016. By 2014, our

marine monitoring programmes will be helping to deliver a better understanding of how current marine and terrestrial measures to address litter, contribute to managing the problem.

Fisheries

Priority action: Implement actions and reforms to ensure fisheries management directly supports the achievement of wider environmental objectives, including the achievement of Good Environmental Status under the Marine Strategy Framework Directive

2.24 There is some way to go before the exploitation of the majority of commercial fish stocks is at safe levels, but there have been some improvements, probably in the main because of a general reduction in fishing effort. However, a number of species are suffering sharp declines, particularly sharks and rays, which are especially vulnerable to fishing pressure.

2.25 Overall, the Common Fisheries Policy (CFP) has failed to deliver healthy stocks, with over-fishing widespread across EU stocks and an economically fragile fishing industry. The nature of the CFP regime, with detailed, 'one-size fits all' decisions being taken at the very highest level, has meant that decisions have not been responsive to the needs of specific fisheries or wider environmental policies. Fisheries clearly therefore present risks for marine biodiversity – and it is important that this is addressed through future fisheries management.

- We will seek to reform the Common Fisheries Policy (CFP) to enable individual Member States to manage marine resources more effectively through better

integration of fisheries management with other marine policies, and to put in place any additional fisheries management measures necessary to achieve the wider conservation objectives of the Marine Strategy Framework Directive.

- We will seek changes to the CFP that enable Member States to develop and implement measures to manage marine ecosystems beyond the 6 nm limit in a more straightforward way. We want a simplified and decentralised decision-making framework that allows those closest to a fishery to take decisions on appropriate management measures.
- We will trial a new approach to fishing quotas that could help minimise discards, and a reformed CFP that prioritises tackling this problem.
- Consulting on the English fishing fleet in Spring 2011, aiming to improve environmental, economic and social sustainability.
- We will support Inshore Fisheries and Conservation Authorities (IFCAs), providing an additional £3m each year over the next 4 years to help them achieve their aims of ensuring healthy seas, sustainable inshore fisheries and a viable industry.
- We will support the development of competitive and sustainable aquaculture²⁹ industries. The English aquaculture sector has the potential for growth and the government has acted as a facilitator, drawing together key interests to develop their Aquaculture Plan for England.

²⁹ Aquaculture is the process of farming or culturing aquatic organisms, and has the potential to make an increased contribution to food security

- We will identify additional measures needed to achieve Good Environmental Status, and put these in place by 2016.
- By 2014, our marine monitoring programmes will be helping to deliver a better understanding of how current marine and terrestrial measures to address litter, contribute to managing the problem.

Air pollution

Priority action: Reduce air pollution impacts on biodiversity through approaches at national, UK, EU and international levels targeted at the sectors which are the source of the relevant pollutants (nitrogen oxides, ozone, sulphur dioxide, ammonia)

2.26 Pollution presents a wide range of pressures and risks to the natural environment, damaging our biodiversity and ecosystems. In addition to water pollution, covered above, the impacts of air pollution on plant species are detectable throughout the countryside. Some air pollutants (such as oxides of nitrogen, ammonia and ozone) travel great distances and cause harmful effects far from their source, so action is needed at domestic, EU and international levels.

2.27 The legislative framework enables action to tackle some major sources of pollution and there have been major gains in reducing the impact of air pollution over recent decades. However, many sensitive ecosystems are still exposed to acidity and nutrient enrichment (eutrophication) at a level which risks damage (i.e. exceeding critical loads). There is a need to do more.

2.28 Current climate change mitigation plans are expected to deliver reductions in air pollution by 2020 and beyond. We also expect negotiations on a revised UNECE Gothenburg Protocol to conclude in 2011 and for this to set new emission ceilings for

key air pollutants for 2020. A key aim for the EU is to widen ratification of any revised protocol so as to reduce transboundary air pollution and the damaging effects on biodiversity and ecosystems.

- We will implement existing and planned policies to reduce UK emissions. As a result of this action the proportion of sensitive ecosystems which exceed the critical load for acidity is projected to fall to 59% in England by 2020 (from 67% in 2006-08) and the proportion exceeding the critical load for eutrophication, falling to 94% in England (from 97% in 2006-08). The magnitude of those exceedances will also reduce, further lowering the risk of impacts on biodiversity.
- Defra will continue to work with the Department of Transport to explore means of further reducing emissions from transport sources, including shipping.
- We will use the farming Integrated Advice Pilot to explore the effectiveness of providing guidance to the agricultural sector and we will explore the opportunities offered by reform of the Common Agricultural Policy to provide mechanisms to encourage emission reductions.
- We will work collaboratively with the agricultural sector (responsible for 89% of UK ammonia emissions) to increase nitrogen use efficiency through the Nitrates Action Plan and Integrated Advice Pilot and the agricultural industry's Greenhouse Gas Action Plan. These plans will also reduce greenhouse gas emissions, and improve air and water quality.

Invasive non-native species

Priority action: Continue to implement the Invasive Non-Native Species Framework Strategy for Great Britain

2.29 Invasive non-native species have an impact on native biodiversity in a number of ways, such as displacing or preying upon native species, dominating habitats or by introducing new diseases or parasites. Their impacts can take decades to become apparent but, by their very nature, once established they are likely to cause long term effects.

2.30 Appreciation of the impacts of invasive non-native species has grown significantly. They are currently costing Britain at least £1.7billion per annum in damage and management costs³⁰ and it is estimated that the European equivalent figure exceeds €12billion³¹. Evidence³² indicates that the number of non-native species being introduced to Europe is increasing and so the cost is likely to continue to increase if the problem is not addressed. Climate change may increase the problem.

- We will continue to develop the following key areas:
 - the evidence base – to support proportionate and effective decision-making;
 - an inclusive approach to surveillance and detection of threats;
 - our ability to deliver rapid responses to new threats;
 - our relationship with stakeholder and key interest groups, such as garden centres, to influence the right kind of behaviours;

- stimulating and supporting civil society engagement to help embed a wider recognition that human behaviours are the key cause of this issue and therefore a key part of the solution.

- We will work with other member states to develop the EU Strategy on Invasive Alien Species. This EU Strategy needs to build the right connections between existing EU regimes, for example, the EU Plant and Animal Health regimes.
- In the marine context, we will consider the need for additional measures to control the introduction and spread of marine invasive non-native species (in addition to those measures which are already being taken forward) as part of our programme of measures for achieving Good Environmental Status.



Volunteer actively engaged in rural community/voluntary work.
© Crown Copyright

30 The Economic Cost of Invasive Non-Native Species on Great Britain - F. Williams, R. Eschen, A. Harris, D. Djeddour, C. Pratt, R.S. Shaw, S. Varia, J. Lamontagne-Godwin, S.E. Thomas, S.T. Murphy; CAB/001/09 November 2010.

31 Kettunen, M., Genovesi, P., Gollasch, S., Pagad, S., Starfinger, U. ten Brink, P. & Shine, C. 2008. Technical support to EU strategy on invasive species (IAS) - Assessment of the impacts of IAS in Europe and the EU (final module report for the European Commission). Institute for European Environmental Policy (IEEP), Brussels, Belgium. 44 pp. + Annexes.

32 European Environment Agency – State of the environment report 1/2007 - “Europe’s environment — The fourth assessment”, Chapter 4 – Biodiversity.

Improving our knowledge

- 2.31 In England we are fortunate in having widely available information on the status and trends in components of biodiversity, with much of that information collected by volunteers. There remain gaps in our knowledge. We know more about species and habitats on protected sites than outside them; more about 'popular' groups such as birds and higher plants than 'cryptic' ones such as fungi and lichens; and more about species and habitats than about genetic diversity.
- 2.32 We have identified many of the pressures that are driving biodiversity loss but some pressures are better understood than others and we know more about their impacts on some species and habitats than on others. We are developing our understanding of the impacts of climate change and starting to understand the likely impact of emerging or future potential threats, such as energy infrastructure, geoengineering, genetically modified organisms and disease, but even those that are more widely researched are constantly changing and the evidence base needs to keep up with this change.
- 2.33 We are also starting to better understand the consequences of biodiversity change on the services or benefits to society – how biodiversity change affects the water or carbon cycle or the pollination of important crops. The NEA tells us much about the benefits of key species and habitats and about their equivalent economic value, but there is still a great deal we do not understand in terms of the relationship between components of biodiversity and the provision of ecosystem services.
- 2.34 Above all, we need evidence to guide our decisions, from issues of national policy to choices about individual site management and we need to continue to develop and

test solutions to address biodiversity loss and engage people, natural resource managers and business.

- 2.35 Continued investment in **research and development** is essential to better understand why biodiversity is changing, the consequences of these changes, to predict likely future change, and to design and test approaches to managing our biodiversity. We also need to better understand the link between biodiversity and ecosystem services, and develop approaches to biodiversity conservation that deliver multiple benefits.
- 2.36 **Monitoring and surveillance** to track biodiversity change allows us assess the effectiveness of biodiversity policy. Monitoring plays a critical role in alerting society to changes in the health of our environment.
- 2.37 To deliver this strategy, data, information and advice need to be accessible to the full range of people and organisations that have a role to play in delivering this strategy. We will make sure this happens by taking action in two further areas. Firstly, **improved data sharing** to achieve better prioritised decision-making locally and nationally. Secondly, **clear communication of the evidence** so that policy makers and wider society can understand the importance of biodiversity and use it to take action for conservation.

Research and development:

Priority action: Work collaboratively across Defra and the relevant agencies to direct research investment within Government to areas of highest priority to deliver the outcomes and priorities set out in this strategy, and in partnership with the Research Councils and other organisations in the UK and Europe to build the evidence base

Monitoring and surveillance

Priority action: Put robust, reliable and more co-ordinated arrangements in place, to monitor changes in the state of biodiversity and also the flow of benefits and services it provides us, to ensure that we can assess the outcomes of this strategy

Improved data sharing and clear communication of evidence

Priority action: Improve public access to biodiversity data and other environmental information – putting power into the hands of people to act and hold others to account. Also communicate progress towards the outcomes and priorities of this strategy and make available information to support decision-making at a range of scales to help others contribute to the outcomes (more detail is set out in chapter 3)

- We will update the Defra strategy for investment in research and development to address the priorities identified in this strategy.
- We will continue to support surveillance schemes undertaken by the voluntary and academic sectors and working with the voluntary recording community to develop new approaches to further increase the value of the volunteer schemes for assessment and decision-making. Defra's agencies plan to invest almost £5 million over the next three years in England to support national and local organisations and groups that coordinate volunteer recording and to contribute to the work of the National Biodiversity Network. In addition, we will invest a further £1.2 million to support data sharing, create a new fund for biodiversity recording in the voluntary sector and, in partnership with volunteer groups, develop new and innovative approaches to biodiversity recording.
- We will set out clearly the data and information needed to support national and local decision-making and to meet international commitments to monitor and assess the status of biodiversity. We will launch three area-based pilot studies to trial new strategic approaches to wildlife recording, data sharing and interpretation services that better meet both local and national needs, working with local partnerships and local centres of expertise.
- We will support the development of web-based applications that enable local partnerships, voluntary groups and agencies to share information about the actions they are taking to conserve biodiversity. This will encourage more joined-up working, and allow people and groups to see how they locally contribute to national and international plans and programmes.
- Our environmental agencies are reforming the way they work together, to provide more coherent advice and support to local partners. In support of this, Natural England is producing maps that show how national character areas, water catchments, and local authority boundaries relate to each other. Building on this, we will pool and share our information to help everyone prioritise action in areas with the greatest environmental risks or opportunities.
- The NEA has brought new insights and we are committed to growing this knowledge base. We will support a further phase of ground-breaking research. It will identify the mix of future actions most likely to secure best overall value from our ecosystems, for nature and for people. It will also develop practical tools to assist decision-makers in applying the lessons of the NEA.

Chapter 3: Delivering the strategy and measuring success

3.1 This strategy:

- **is a call to action to a wide biodiversity partnership to work together to achieve the strategy's aims.** Government and its agencies will play a leading role delivering the strategy, but cannot achieve success alone. The wider partnership of stakeholders and society, that has already played a hugely important role, is essential for success.
- **provides a supporting and enabling framework for action across England by partners at all levels. It is intended to help guide, inform, empower and support action for biodiversity, setting out national objectives and priorities to be achieved and identifying how partners can best contribute.** The strategy is designed to deliver its outcomes, while allowing partners and local areas freedom to choose how they might contribute and how to best deliver according to their local circumstances.

Key elements of the framework

Long-term vision, 2020 mission and national framework of desired outcomes

3.2 The overarching long-term vision, the 2020 mission and the framework of desired outcomes (in chapter 1) inform delivery action by partners at all levels, including grant-giving bodies, enabling everyone to clearly understand what the national priorities are.

Priorities to be addressed to 2020

3.3 The strategy sets out the approach to biodiversity conservation and the priority areas for action during 2011-2020 (in chapter 2, summarised in Annex A).

Government is taking action in these areas. These priorities are also intended as a call to action to all partners. They can also be used by grant-giving bodies to help determine how well funding bids will contribute to nationally-identified priorities.

The delivery plan

- 3.4 Defra, on behalf of HM Government, will be accountable for overall delivery of the strategy. Natural England will be the lead statutory body for delivery on the ground, though with many partners assisting with this.
- 3.5 We will develop a delivery plan³³ in partnership with key stakeholders. This plan will be used by government and non-government partners to set out, and monitor, the details of actions taken to deliver the strategy on the ground. It will be a rolling delivery plan, looking three years ahead, so that it can be flexible and respond to changing circumstances. Natural England will play a lead role in this work.

Governance of the strategy

- 3.6 We will establish a streamlined, fit for purpose governance structure for managing, coordinating and reporting on the delivery of the biodiversity strategy in England. The governance structure will provide clear accountability for delivery. Ministers will meet with key civil society organisations annually to take stock of progress. A steering group will be chaired by Defra with participation from the wider biodiversity partnership. Natural England will lead a delivery group for the strategy.

Support for local delivery

- 3.7 Local action for biodiversity essential to achieve our objectives.

³³ Initial plan expected to be in place within 6 months of publication of the strategy.

- In the Natural Environment White Paper, we proposed the establishment of Local Nature Partnerships to strengthen action at the right scale.
- Partnerships which fulfil the broad vision set in the White Paper will be recognised by Government and its environmental bodies. We will host an annual Ministerial event at which partnerships can come together to share best practice, discuss implementation issues and celebrate success.
- The Government will provide support to both new and existing partnerships wishing to adopt this integrated, ecosystem approach, delivering at a landscape scale. We will provide a one-off fund in 2011/12 and 2012/13 worth a total of £1 million to help national and local partners develop Local Nature Partnerships. Our agencies will work together to support local delivery and engage with these partnerships, alongside other integrated landscape-scale initiatives.
- Our agencies, Natural England, the Environment Agency and the Forestry Commission, will support this by delivering more joined-up advice and engagement for local areas, including to local authorities and developers. Where the environmental opportunities and risks are greatest they will offer local areas streamlined support through the “Single Voice” initiative.

Measuring Success

- 3.8 Biodiversity is complex and constantly in flux, and cannot therefore be adequately assessed by a single measure.
- 3.9 The Government’s 2020 ambition is to halt overall biodiversity loss. Halting biodiversity loss is shorthand, that signifies halting overall declines in the extent, condition, distribution and abundance of important habitats and species, and the ecosystem services they

provide, accepting that flux means there will be some losses and gains.

- 3.10 This takes account of the fact that, in some cases, biodiversity losses may be inevitable, for example, due to unavoidable climate change. Any such losses should be offset by gains in other important species and habitats, not by replacing the rare and threatened with the commonplace, but by ensuring the natural environment remains diverse and continues to provide essential services. Similarly, to achieve no net loss of priority habitat (as in Outcome 1B) we aim for no net loss of any individual priority habitat type, though pragmatically unavoidable losses in one type could be balanced by gains in others.
- 3.11 We will develop and publish a set of indicators chosen to assess delivery of the strategy. They will be limited in number so that they are easily understood, easy to use and cost-effective. Our strategy is outcome-focused and we will primarily use **state** indicators to measure progress towards the desired outcomes of the strategy. We will also use a small number of **response** and **pressure** indicators to show progress with priority actions and steps taken to address the threats to biodiversity.
- 3.12 Defra already publishes a set of England Biodiversity Indicators³⁴, which were recently reviewed to ensure that they were based on the best available data sources. Our strategy addresses new challenges and pressures on biodiversity and the adoption of a new global framework. Nonetheless, many of the current indicators remain relevant to the strategy. We will therefore refine and improve them rather than develop a completely new set. The indicators will be aligned with frameworks being developed at the UK, European and global levels so that we can report on progress in England towards internationally agreed targets, with minimum additional effort.

³⁴ www.defra.gov.uk/statistics/environment/biodiversity/england-biodiversity-indicators/

3.13 The key areas that we expect to need to measure are listed in the table below. These are organised according to the four priority areas of the strategy, and cross-referenced to the strategy headline outcomes and the internationally agreed Aichi targets. The table also summarises the availability of data

and existing indicators which can be used to measure progress. We have identified some gaps where further development will be needed.

Table: Measuring progress against priority areas and outcomes

Strategy priority areas	Possible elements to measure	Availability of data and indicators	Related EBS headline outcomes ³⁵	Related CBD 'Aichi' targets ³⁶
A more integrated large-scale approach to conservation on land and at sea	Extent and condition of selected habitats	Data available. Some indicator development required.	1, 2	5, 15
	Extent and condition of protected sites	Data and indicators available.	1, 2	5, 10, 11
	Habitat connectivity.	Data available. Some indicator development required	1	5, 11
	Status of priority species	Data available. Some indicator development required	3	12
	Trends in abundance and distribution of selected species (birds, butterflies, bats and plants)	Data and indicators available	1, 2, 3	5, 7, 12
	Status of habitats and species providing essential services (e.g. water quality, water regulation, carbon capture, pollination and public enjoyment)	Data available Some indicators available and some development required	1, 2	14, 15
	Genetic diversity in native breeds of farm animals and cultivated varieties of agricultural and horticultural crops.	Data available. Some indicator development required	3	13

35 1 = habitats and ecosystems; 2 = marine; 3 = threatened species; 4 = people

36 All Aichi targets covered apart from 16 = ABS, 17 = NBSAPs and 18 = traditional knowledge

Putting people at the heart of biodiversity policy	Awareness, understanding and support for biodiversity conservation.	Data and indicators available	4	1
	Taking personal action for biodiversity	Data and indicators available.	4	1, 20
	Valuation and accounting for biodiversity	Data and indicator require development ³⁷		2
	Integrating biodiversity considerations into local decision-making	Data available. Some indicator development required	1	1, 2
	Innovative financial mechanisms.	Data and indicator require development ³⁸		3, 20
	Sustainable consumption	Data and indicator require development.		4
	Expenditure on domestic and international biodiversity	Data and indicators available.		20
Reducing environmental pressures	Trends in pressures on biodiversity (climate change impacts, pollution, invasive species)	Data available. Some indicators available and some development required.		8, 9, 10
	Integration of biodiversity into key production sectors (agriculture, forestry, fisheries)	Data and indicators available.	1, 2, 3	4, 6, 7, 10, 11, 12
Improving our knowledge	Availability of biodiversity data and information for decision-making	Data available. Some indicator development required ³⁹ .		19

3.14 We will produce an indicators discussion paper in summer 2011, alongside this strategy. Following this, we will publish an interim set of indicators in Spring 2012, as part of the UK report to the Convention on Biological Diversity on progress with revision of national strategies.

This work will be undertaken alongside the review of indicators set out in the Natural Environment White Paper.

³⁷ Indicators may not be appropriate. Progress could be assessed by other means.

³⁸ Indicators may not be appropriate. Progress could be assessed by other means.

³⁹ Indicators may not be appropriate. Progress could be assessed by other means.

Annex A: Summary of priorities and key actions

Theme 1. A more integrated large-scale approach to conservation on land and at sea

Priority action 1.1: Establish more coherent and resilient ecological networks on land that safeguard ecosystem services for the benefit of wildlife and people

Priority action 1.2: Establish and effectively manage an ecologically coherent network of marine protected areas which covers in excess of 25% of English waters by the end of 2016, and which contributes to the UK's achievement of Good Environmental Status under the Marine Strategy Framework Directive

Priority action 1.3: Take targeted action for the recovery of priority species, whose conservation is not delivered through wider habitat-based and ecosystem measures

Priority action 1.4: Ensure that 'agricultural' genetic diversity is conserved and enhanced wherever appropriate

Theme 2. Putting people at the heart of biodiversity policy

Priority action 2.1: Work with the biodiversity partnership to engage significantly more people in biodiversity issues, increase awareness of the value of biodiversity and increase the number of people taking positive action

Priority action 2.2: Promote taking better account of the values of biodiversity in public and private sector decision-making, including by providing tools to help consider a wider range of ecosystem services

Priority action 2.3: Develop new and innovative financing mechanisms to direct more funding towards the achievement of biodiversity outcomes

Theme 3. Reducing environmental pressures

Integrate consideration of biodiversity within the sectors which have the greatest potential for direct influence, and reduce direct pressures

Agriculture

Priority action 3.1: Improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production

Priority action 3.2: Reform the Common Agricultural Policy to achieve greater environmental benefits

Forestry

Priority action 3.3: Bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England

Planning and development

Priority action 3.4: Through reforms of the planning system, take a strategic approach to planning for nature within and across local areas. This approach will guide development to the best locations, encourage greener design and enable development to enhance natural networks. We will retain the protection and improvement of the natural environment as core objectives of the planning system

Priority action 3.5: Establish a new, voluntary approach to biodiversity offsets and test our approach in pilot areas

Water management

Priority action 3.6: Align measures to protect the water environment with action for biodiversity, including through the river basin planning approach under the EU Water Framework Directive

Priority action 3.7: Continue to promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity

Priority action 3.8: Reform the water abstraction regime. The new regime will provide clearer signals to abstractors to make the necessary investments to meet water needs and protect ecosystem functioning. We will also take steps to tackle the legacy of unsustainable abstraction more efficiently

Management of the marine environment

Priority action 3.9: Develop 10 Marine Plans which integrate economic, social and environmental considerations, and which will guide decision-makers when making any decision that affects, or might affect, a marine area. This action in England is part of the UK vision for 'clean, healthy, safe, productive and biologically diverse oceans and seas'

Fisheries

Priority action 3.10: Implement actions and reforms to ensure fisheries management directly supports the achievement of wider environmental objectives, including the achievement of Good Environmental Status under the Marine Strategy Framework Directive

Air pollution

Priority action 3.11: Reduce air pollution impacts on biodiversity through approaches at national, UK, EU and international levels targeted at the sectors which are the source of the relevant pollutants (nitrogen oxides, ozone, sulphur dioxide, ammonia)

Invasive non-native species

Priority action 3.12: Continue to implement the Invasive Non-Native Species Framework Strategy for Great Britain

Theme 4. Improving our knowledge

Research and development:

Priority action 4.1: Work collaboratively across Defra and the relevant agencies to direct research investment within Government to areas of highest priority to deliver the outcomes and priorities set out in this strategy, and in partnership with the Research Councils and other organisations in the UK and Europe to build the evidence base

Monitoring and surveillance

Priority action 4.2: Put robust, reliable and more co-ordinated arrangements in place, to monitor changes in the state of biodiversity and also the flow of benefits and services it provides us, to ensure that we can assess the outcomes of this strategy

Improved data sharing and clear communication of evidence

Priority action 4.3: Improve public access to biodiversity data and other environmental information – putting power into the hands of people to act and hold others to account. Also communicate progress towards the outcomes and priorities of this strategy and make available information to support decision-making at a range of scales to help others contribute to the outcomes (more detail is set out in chapter 3)

Annex B: Convention on Biological Diversity (CBD) Strategic Plan 'Aichi' targets

The CBD Strategic Plan adopted in Nagoya, Japan, in October 2010 includes 20 headline targets for 2020 (the 'Aichi' targets). These targets provide a flexible framework to inform the establishment of national plans, taking into account national circumstances and priorities. Countries do not necessarily need to develop a national target for each and every global target. The England Strategy has therefore been developed to address our national priorities, in an England-context, but with reference to this flexible international framework.

CBD Strategic Plan 'Aichi' targets

Strategic goal A (address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society)

Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimise or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Strategic goal B (reducing the direct pressures on biodiversity and promote sustainable use)

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9: By 2020, invasive alien species and pathways are identified and prioritised, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimised, so as to maintain their integrity and functioning.

Strategic goal C (improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity)

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimising genetic erosion and safeguarding their genetic diversity.

Strategic goal D (enhance the benefits to all from biodiversity and ecosystem services)

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and wellbeing, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation is in force and operational, consistent with national legislation.

Strategic goal E (enhance implementation through participatory planning, knowledge management and capacity building)

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred and applied.

Target 20: By 2020, at the latest, the mobilisation of financial resources for effectively implementing the Strategic Plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilisation should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.

Annex C: Table showing linkages between the strategy's priorities/key actions and (i) the strategy's outcomes, (ii) the Convention on Biological Diversity (CBD) 'Aichi' targets and (iii) EU Strategy themes

This table provides an indication of how the strategy's priorities and key actions contribute to achieving the strategy's outcomes (see chapter 2) and also how they link to the CBD 'Aichi' targets (see Annex B for a full list) and themes of the EU Biodiversity Strategy (see * below the table for a list). Many areas could be interconnected in a multitude of ways and so this table focuses on key linkages only and is intended to give a summary overview rather than definitive analysis of all potential links.

Key Actions	Outcomes								CBD	EU*	
	1A	1B	1C	1D	2A	2B	2C	3			4
A more integrated large-scale approach to conservation on land and at sea										Broadly reflects strategic goals C and D	
Establish more coherent and resilient ecological networks on land that safeguard ecosystem services for the benefit of wildlife and people.	X	X	X	X				X		5, 7, 10, 11, 12, 14, 15	1, 2, 3
Establish and effectively manage an ecologically coherent network of marine protected areas which covers in excess of 25% of English waters by the end of 2016, and which contributes to the UK's achievement of Good Environmental Status under the Marine Strategy Framework Directive					X			X		7, 10, 11, 12, 14, 15	1, 2, 3
Take targeted action for the recovery of priority species, whose conservation is not delivered through wider habitat-based and ecosystem measures								X		6, 12	1
Ensure that 'agricultural' genetic diversity is conserved and enhanced wherever appropriate	X		X							13	3
Putting people at the heart of biodiversity policy										Broadly reflects strategic goal A	
Work with the biodiversity partnership to engage significantly more people in biodiversity issues, increase awareness of the value of biodiversity and increase the number of people taking positive action	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	1, 4	1, 2, 5
Promote taking better account of the values of biodiversity in public and private sector decision-making, including by providing tools to help consider a wider range of ecosystem services.		X	X	X				X		1, 2, 3, 4,	1, 2, 5
Develop new and innovative financing mechanisms to direct more funding towards the achievement of biodiversity outcomes	X	X	X	X	X	X	X	X	X	20	

Reducing environmental pressures												Broadly reflects strategic goal B	
Improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production	X	X	X	X	X	X	X	X	X	X	X	1, 3, 4, 5, 7, 8, 10, 11, 12, 13, 14, 15	1, 2, 3
Reform the Common Agricultural Policy to achieve greater environmental benefits	X	X	X	X	X	X	X	X	X	X	X	3	3
Bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England	X	X	X	X	X	X	X	X	X	X	X	3, 4, 5, 7, 9, 11, 12, 14, 15	1, 2, 3
Through reforms of the planning system, take a strategic approach to planning for nature within and across local areas. This approach will guide development to the best locations, encourage greener design and enable development to enhance natural networks. We will retain the protection and improvement of the natural environment as core objectives of the planning system.													
Establish a new, voluntary approach to biodiversity offsets and test our approach in pilot areas.													
Align measures to protect the water environment with action for biodiversity, including through the river basin planning approach under the EU Water Framework Directive	X	X	X	X	X	X	X	X	X	X	X	4, 5, 6, 8, 9, 11, 14	1, 2, 6
Continue to promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity	X	X	X	X	X	X	X	X	X	X	X	4, 5, 11, 12, 14, 15	1, 2
Reform the water abstraction regime. The new regime will provide clearer signals to abstractors to make the necessary investments to meet water needs and protect ecosystem functioning. We will also take steps to tackle the legacy of unsustainable abstraction more efficiently	X	X	X	X	X	X	X	X	X	X	X	4, 5, 11, 12, 14, 15	1, 2
Develop 10 Marine Plans which integrate economic, social and environmental considerations, and which will guide decision-maker when making any decision that affects, or might affect, a marine area. This action in England is part of the UK vision for 'clean, healthy, safe, productive and biologically diverse oceans and seas'											X	4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15	1, 2, 4
Implement actions and reforms to ensure fisheries management directly supports the achievement of wider environmental objectives, including the achievement of Good Environmental Status under the Marine Strategy Framework Directive.				X							X	3, 4, 6, 7, 11, 12, 14	1, 2, 3

Reduce air pollution impacts on biodiversity through approaches at national, UK, EU and international levels targeted at the sectors which are the source of the relevant pollutants (nitrogen oxides, ozone, sulphur dioxide, ammonia)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4, 8	1, 2, 6
Continue to implement the Invasive Non-Native Species Framework Strategy for Great Britain	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1, 4, 5, 7, 9, 12	1, 2, 5
Improving our knowledge																			Broadly reflects strategic goal E	
Research and development: Work collaboratively across Defra and the relevant agencies to direct research investment within Government to areas of highest priority to deliver the outcomes and priorities set out in this strategy, and in partnership with the Research Councils and other organisations in the UK and Europe to build the evidence base	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19, plus all other targets	All themes
Monitoring and surveillance: Put robust, reliable and more coordinated arrangements in place, to monitor changes in the state of biodiversity and also the flow of benefits and services it provides us, to ensure that we can assess the outcomes of this strategy	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19, plus all other targets	All themes
Improved data sharing and clear communication of evidence: Improve public access to biodiversity data and other environmental information – putting power into the hands of people to act and hold others to account. Also communicate progress towards the outcomes and priorities of this strategy and make available information to support decision-making at a range of scales to help others contribute to the outcomes (more detail is set out in chapter 3).	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19, plus all other targets	All themes

*The European Commission's EU Biodiversity Strategy contains six themes.

1. Conserving and restoring nature
2. Maintaining and enhancing ecosystems and their services
3. Ensuring the sustainability of agriculture, forestry and fisheries
4. Combating invasive alien species
5. Addressing the global biodiversity crisis
6. Contributions from other environmental policies and initiative

