UK Biodiversity Indicators in Your Pocket 2012

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UK Biodiversity Indicators in Your Pocket 2012

Measuring progress towards halting biodiversity loss

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Introduction

UK Biodiversity Indicators 2012

Biodiversity is the variety of all life on Earth. It includes all species of animals and plants, and the natural systems that support them. Biodiversity matters because it supports the vital benefits we get from the natural environment. It contributes to our economy, our health and wellbeing, and it enriches our lives.

The UK is a signatory to the Convention on Biological Diversity (CBD) and is committed to the new biodiversity goals and targets 'the Aichi targets' agreed in 2010 and set out in the Strategic Plan for Biodiversity 2011-2020. We are also committed to developing and using a set of indicators to report on progress towards meeting these international goals and targets.

There are related commitments on biodiversity made by the European Union, and the UK indicators may also be used to assess progress with these.

The UK indicators were comprehensively reviewed during 2011 and 2012 to ensure they continue to be based on the most robust and reliable available data; and remain relevant to the new international goals and targets[1]. The review identified a small number of gaps where there were no indicators for particular targets, or where the existing indicators were only indirectly linked to the Aichi targets. A number of further refinements to existing indicators were also identified to improve their relevance, make them easier to understand, or to address concerns over data quality or availability. As a result, the set of 18 indicators originally developed for reporting against previous international targets has been expanded to 24, as set out in this document. Where previous indicators remain relevant and robust, they have been retained. Others have been revised or replaced. Where possible each of the indicators has been updated with the most recent data, but in some cases development work is ongoing, and where this is the case, the work to develop them over the next two to three years has been described briefly.

Indicators are useful tools for summarising and communicating broad trends. They are not intended to incorporate all the relevant information available in the UK. They are best seen, as their name suggests, as indicative of these wider changes. The UK biodiversity indicators will form a major part of the UK's 5th National Report to the CBD in 2014 but will be supplemented with other information relating to UK biodiversity and implementation of the Strategic Plan for Biodiversity 2011-2020.

Biodiversity policy is a devolved responsibility in the UK, and England, Scotland, Wales and Northern Ireland have each developed or are developing their own biodiversity or environment strategies. Indicators are being developed to track progress with the respective commitments in each country. The UK indicators have a specific purpose for international reporting and were selected following consultation and agreement between the administrations. The indicators provide a flexible framework and a common set of methodologies which in some cases can also be used for country reporting.

The UK Biodiversity Indicators are dependent on a wide variety of data, provided by Government, research bodies, and the voluntary sector. As Official Statistics, the presentation and assessment of the indicators has been verified by the data providers, and the production and editing of the indicators has been overseen by Government statisticians.

The indicators may be subject to further review, particularly as the reporting requirements of the EU Biodiversity Strategy and the EU Marine Strategy Framework Directive are clarified.

Previous versions of the indicators are available for download at www.jncc.defra.gov.uk/biyp. Links are provided on the website to the full detail of each of the previous editions (stored on the National Archives website).

This is a Defra National Statistics compendium (see Annex for further details).

[1] This review involved wide consultation with the UK Biodiversity Indicator Forum involving key stakeholders.

Assessing indicators

Each indicator is composed of one or more measures which will show trends over time. Many indicators have a single measure, but where data cannot be combined logically, the indicator will have more than one measure. Each measure is summarised or assessed separately using a set of 'traffic lights'. The traffic lights show 'change over time'. They do not show whether the measure has reached any published or implied targets, or indeed whether the status is 'good' or 'bad', although where targets have been set, these are identified in the indicator text.

The traffic lights are determined by identifying the period over which the change is to be assessed and comparing the value of the measure in the base or start year with the value in the end year.

 Improving

 Little or no overall change

 Deteriorating

 Insufficient or no comparable data

Where possible the assessment has been made by evaluating trends using statistical analysis techniques. The assessment may be made by Defra statisticians in collaboration with the data providers, or undertaken by the data providers themselves. A green or red traffic light is only applied when there is sufficient confidence that the change is statistically significant and not simply a product of random fluctuations.

For some indicators, it is not possible to formally determine statistical significance and in such cases the assessment has been made by comparing the difference between the value of the measure in the base or start year and the value in the end year against a 'rule of thumb' threshold. The standard threshold used is three per cent, unless noted otherwise. Where the data allow it, a three year average is used to calculate the base year, to reduce the likelihood of any unusual year(s) unduly influencing the assessment. Where an indicator value has changed by less than the threshold of three per cent, the traffic light has been set at amber. The choice of three per cent as the threshold is arbitrary but is commonly used across other Government indicators, and use of this approach is kept under review

The traffic lights only reflect the overall change in the measure from the base to latest year and do not reflect fluctuations during the intervening years.

Where data are available, two assessment periods have been used:

1. Long-term – an assessment of change since the earliest date for which data are available, although if data do not precede 1996 a long-term assessment is not made.
2. Short-term – an assessment of change since 2000 (or the closest date for which data are available).

The UK Biodiversity Indicator Steering Group, which reports to senior civil servants in the four countries, is considering adopting a ten year rolling period for the short-term change assessment, which will mean that when 2020 is reached, the assessment will be over the period of the Strategic Plan for Biodiversity 2011-2020.

The individual indicators also have a third marker showing the direction of change in the last year. This period is too short for a meaningful assessment. However, when it exceeds a one per cent threshold, the direction of change is given simply as an acknowledgement of very recent trends and as a possible early warning of emerging trends.

Overview of assessment of change for all indicators

The table below summarises traffic light assessments over the longer term and since 2000, for the 24 indicators and their component measures.

Indicator number (Strategic Goal / number), title, and measures where applicable			Long-term change[1]	Change since 2000[2]
A1. Awareness, understanding and support for conservation			Under development, no interim measure(s) available	
A2. Taking action for nature: volunteer time spent in conservation			⋯	✓
A3. Value of biodiversity integrated into decision making			Under development, no interim measure(s) available	
A4. Global biodiversity impacts of UK economic activity / sustainable consumption			Under development, no interim measure(s) available	
B1. Agricultural and forest area under environmental management schemes	B1a. Area of land in agri-environment schemes	B1a(i). Higher-level / targeted schemes	✓ 1992-2011	✓
		B1a(ii). Entry-level type schemes	⋯	✓ 2005
	B1b. Area of forestry land certified as sustainably managed		⋯	✓ 2001
B2. Sustainable fisheries			✓ 1990-2010	✓
B3. Integration of biodiversity considerations into business activity			Under development, no interim measure(s) available	
B4. Pressure from climate change			Not assessed	Not assessed
B5. Pressure from pollution	B5a. Air pollution	B5a(i). Area affected by acidity	✓ 1996-2007	✓
		B5a(ii). Area affected by nitrogen	✓ 1996-2007	≈
	B5b. Marine pollution		✓ 1990-2010	✓
B6. Pressure from invasive species	B6a. Freshwater invasive species		✗ 1960-2008	≈
	B6b. Marine invasive species		✗ 1960-2008	✗
	B6c. Terrestrial invasive species		✗ 1960-2008	✗
B7. Water quality			✓ 1990-2009	✓
C1. Protected sites	C1a. Total area of protected sites: on land		✓ 1980-2011	✓
	C1b. Total area of protected sites: at sea		✓ 1980-2011	✓
	C1c. Condition of A/SSSIs		⋯	✓ 2005-6
C2. Habitat connectivity	C2a. Broad-leaved, mixed and yew woodland		⋯	⋯ 1998
	C2b. Neutral grassland		⋯	⋯ 1998

Indicator number (Strategic Goal / number), title, and measures where applicable		Long-term change[1]	Change since 2000[2]
C3. Status of threatened habitats			1999
C4. Status of threatened species			1999
C5. Birds of the wider countryside and at sea	C5a. Farmland birds	1970-2010	
	C5b. Woodland birds	1970-2010	
	C5c. Wetland birds	1975-2010	
	C5d. Seabirds	1970-2010	
	C5e. Wintering water birds	1975/6-2009/10	
C6. Insects of the wider countryside (butterflies)	C6a. Semi-natural habitat specialists	1976-2011	
	C6b. Species of the wider countryside	1976-2011	
C7. Plants of the wider countryside	C7a. Change in plant species richness (arable and horticultural land)	1990-2007	1998
	C7b. Change in plant species richness (woodland and grassland)	1990-2007	1998
	C7c. Change in plant species richness (boundary habitats)	1990-2007	1998
C8. Mammals of the wider countryside (bats)		1978-1992	
C9. Genetic resources for food and agriculture	C9a. Native sheep breeds		2001
	C9b. Native cattle breeds		2001
D1. Biodiversity and ecosystem services (marine - fish size classes in the North Sea)		1982-2010	
D2. Biodiversity and ecosystem services (other)		Under development, no interim measure(s) available	
E1. Biodiversity data for decision making		Under development, no interim measure(s) available	
E2. Expenditure on UK and international biodiversity	E2a. Expenditure on UK biodiversity		
	E2b. UK expenditure on international biodiversity		

1 The earliest available year is used as the baseline for assessment of long-term change. The base year used for each measure is shown in the table. Where data are unavailable, or do not precede 1996, a long-term assessment is not given.

2 If no data are available in 2000, the nearest alternative year has been used and is stated next to the traffic light.

Improving

Deteriorating

Little or no overall change

Insufficient or no comparable data

The individual assessments for each measure can be combined to produce an overall assessment. This provides a summary of progress without the need to combine the indicators themselves.

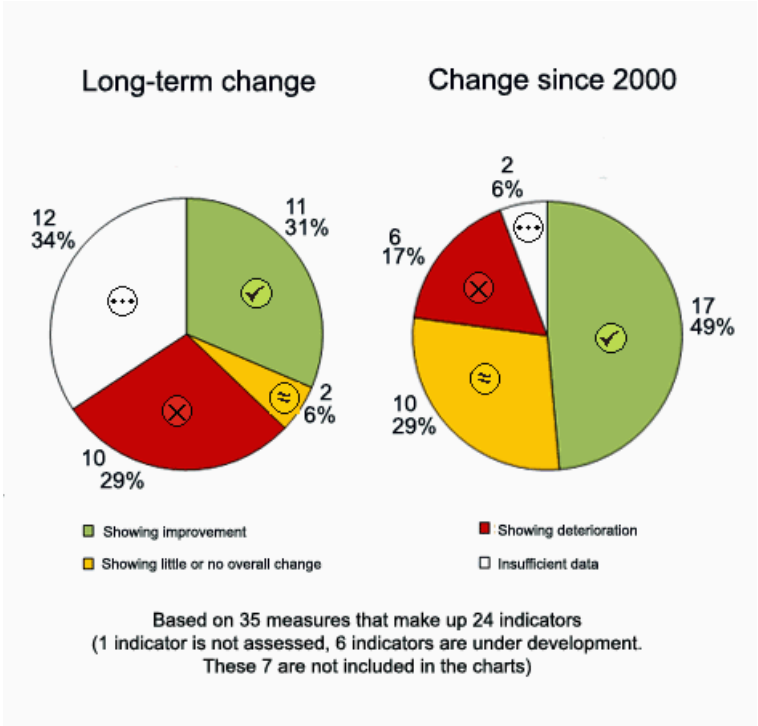
The pie charts below display the numbers of measures that have shown an improvement (green traffic light), a deterioration (red traffic light), little or no overall change (amber traffic light) or that have insufficient data for an assessment to be made (white traffic light). Assessments of change over the longer term and since 2000 are shown.

The UK Government is a signatory to the Convention on Biological Diversity (CBD) and is committed to the new biodiversity goals and targets agreed in 2010 and set out in the Strategic Plan for Biodiversity 2011-2020.[2] The Strategic Plan has five goals, each with a number of targets (the focus of each goal is shown by the words in bold type below):

A. Address the underlying causes of biodiversity loss by **mainstreaming** biodiversity across government and society
B. Reduce the direct **pressures** on biodiversity and promote sustainable use
C. To improve the **status** of biodiversity by safeguarding ecosystems, species and genetic diversity
D. Enhance the **benefits** to all from biodiversity and ecosystems
E. Enhance **implementation** through planning, knowledge management and capacity building

As well as overall summaries based on all measures in the indicators, separate summaries for Strategic Goals B and C are shown which are based on the indicators and measures linked to those goals (B1 to B7; C1 to C9). A number of indicators are under development for Strategic Goals A, D, and E, so they currently have very few measures - separate pie charts are therefore not shown.

Assessment of change: all measures

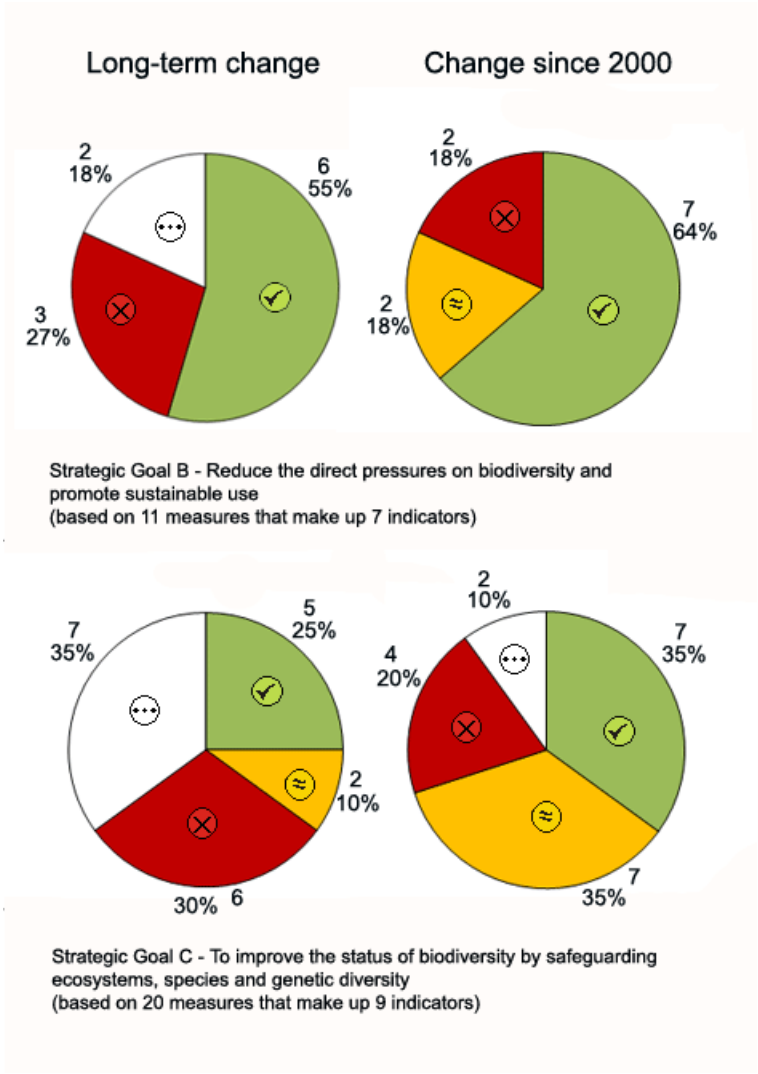


[2] The targets are known as 'Aichi' targets, after the province in Japan where they were agreed.

Of the 35 measures used to compile the 'all measures' summary chart, 17 (49 per cent) show an improvement since 2000, compared with 11 measures (31 per cent) showing improvement over the longer term. Those showing improvement since 2000 include conservation volunteering, the extent of protected sites both on land and at sea, the percentage of woodland certified as sustainably managed, sustainable fisheries, water quality, and expenditure on both UK and international biodiversity.

Measures showing long-term deterioration include populations of farmland birds and woodland birds, populations of butterflies which are strongly associated with semi-natural habitats, bat populations and plant diversity (in woodland and grassland, and in boundary habitats). Some of these measures have continued to deteriorate in the short term (e.g. farmland birds and the plant diversity of boundary habitats). Bat populations have shown improvement since 2000, whilst butterflies have shown little or no overall change for both semi-natural habitat specialists and butterflies of the wider countryside.

Assessment of change: Strategic Goals



The indicators under Strategic Goal B (indicator numbers prefixed 'B' in the summary table) show progress is being made to address the pressures on biodiversity (e.g. in the proportion of fisheries that are sustainable, in the area of land in agri-environment schemes, and in the area of woodland certified as sustainably managed). There is both long- and short-term deterioration for marine and terrestrial invasive species, reflecting a pattern of continuing or growing threat to biodiversity in the UK.

There were long-term declines for six measures (30 per cent) under Strategic Goal C (indicator numbers prefixed 'C' in the summary table, covering status of biodiversity), reflecting the declines in plant, bird, butterfly and bat populations seen in the 1970s and 80s. Since 2000, these long-term declines have generally slowed, with some measures previously assessed as deteriorating showing either improvement (e.g. bats) or little or no overall change (e.g. butterflies, woodland birds, wetland birds, and seabirds) since 2000. These conclusions should be viewed with some caution as changes are more difficult to assess over the short-term. One measure within Strategic Goal C, wintering water birds, shows a long-term improvement, but deterioration since 2000.

A1. Awareness, understanding and support for conservation

The UK Biodiversity Indicators were developed and published between 2007 and 2010 for reporting on progress with international and European commitments to halt or slow biodiversity loss by 2010. A new Strategic Plan was adopted by signatories to the United Nations Convention on Biological Diversity (CBD) in 2010. Following this change, the UK indicators were reviewed and a programme of work put in place to develop and refine the indicator set for future reporting to the CBD on UK progress with the goals and targets in the new Strategic Plan (2011 to 2020).

In the review, a small number of gaps were identified where there were no current indicators for particular CBD goals and targets. Indicators for reporting on public awareness of the value of biodiversity and the steps that can be taken to conserve it were identified as a gap.

The existing indicator on taking action for biodiversity (A2. Taking Action for Nature: volunteer time spent in conservation) provides part of the picture needed to show progress towards meeting Aichi Target 1. Work is now underway to review data availability and to develop options for an additional indicator on awareness, understanding and support.

Relevance

Public understanding and opinion on the value of biodiversity has strong implications for the acceptance and adoption of conservation measures. Indicator A2 on conservation volunteering shows that many people are already very supportive of conservation efforts and make an important contribution.

People value the natural world in different ways and for different reasons. They may simply value it for its own sake, because it makes our local environment more attractive, or because they enjoy experiencing nature-rich green places for recreation. Regular opportunities to experience the natural world are known to have positive impacts on our health.

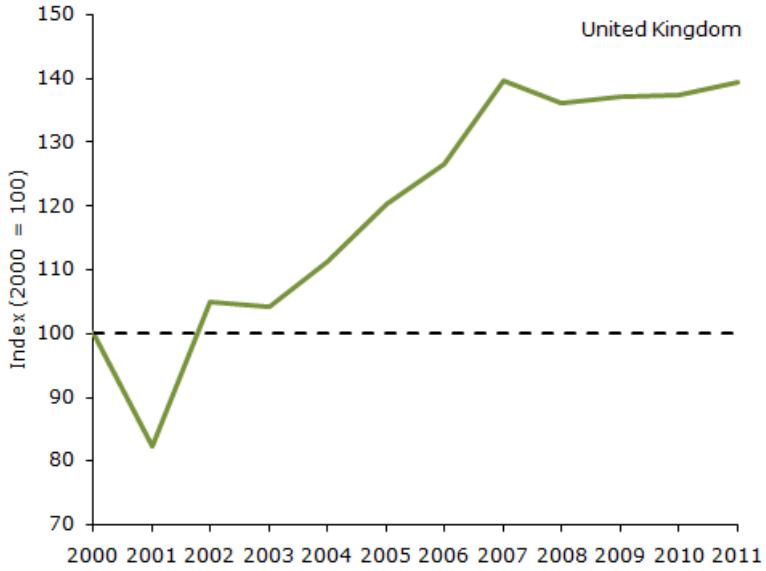
Progress to Date

A scoping exercise undertaken to review and synthesise the data used in the UK National Ecosystem Assessment (http://uknea.unep-wcmc.org/) has identified 19 datasets that may be suitable for developing this indicator. These datasets primarily relate to conservation related tourism and recreational activities. Results of the scoping exercise will inform and guide subsequent, more detailed data searches and development of indicator options and methodologies through consultation with experts in this field.

A2. Taking action for nature: volunteer time spent in conservation

Type: Response Indicator

Figure A2i. Index of volunteer time spent in selected UK conservation organisations, 2000 to 2011.



Notes:

1. The index is calculated using a non-weighted aggregation across organisations. It is therefore strongly dependent on the trends reported by the organisations recording large amounts for total volunteer hours, and furthermore strongly dependent on which organisations are included.
2. Interpolated estimates (based on assuming trends reported by other organisations can be applied) have been used by Defra to fill missing years for British Waterways (2000 to 2009), Butterfly Conservation (2000 to 2002), British Trust for Conservation Volunteers (2000 to 2005), Loch Lomond and The Trossachs National Park Authority (2000 to 2001, 2003), Lake District National Park Authority (2000 to 2005), Natural England (2000, 2002), Northumbria National Park Authority (2000 to 2003), North York Moors National Park Authority (2000 to 2003, 2005, 2010), Peak District National Park Authority (2006 to 2008), Plantlife (2000 to 2006), Soils Association (2000 to 2006, 2008), The Wildlife Trusts (2000 to 2005, 2010) and the Woodland Trust (2000 to 2001).
3. Interpolated data have also been used in 2011 for Botanical Society of the British Isles, Loch Lomond and The Trossachs National Park Authority, Natural England, Peak District National Park Authority and the Royal Society for the Protection of Birds.
4. Data provided by the British Trust for Conservation Volunteers, Loch Lomond and The Trossachs National Park Authority, Northumberland National Park Authority, North York Moors National Park Authority, Peak District National Park Authority and Royal Society for the Protection of Birds were for financial years rather than calendar years. Financial year data has been assigned to the first calendar year (e.g. 2010–11 data were allocated to 2010).

Source: Bat Conservation Trust, Botanical Society of the British Isles, British Trust for Conservation Volunteers, British Trust for Ornithology, British Waterways, Butterfly Conservation, Exmoor National Park Authority, Lake District National Park Authority, Loch Lomond and The Trossachs National Park Authority, Natural England, Northumberland National Park Authority, North York Moors National Park Authority, Peak District National Park Authority, Plantlife, Royal Society for the Protection of Birds, Soil Association, The Wildlife Trusts and the Woodland Trust.

Assessment of change in volunteer time spent in conservation			
	Long-term	Since 2000	Latest year
Conservation volunteering			Increased (2011)

- The amount of time people spend volunteering to assist in conservation in part reflects society's interest in and commitment to biodiversity. The work undertaken by conservation volunteers includes: assisting with countryside management, carrying out surveys and inputting data, assisting with administrative tasks, and fundraising.
- Between 2000 and 2011 the amount of time contributed by volunteers has increased by 39 per cent.
- Owing to a need to impute missing values for organisations that did not provide data for all years, the data series has been revised since the last publication in 2011.

A3. Value of biodiversity integrated into decision making

The UK Biodiversity Indicators were developed and published between 2007 and 2010 for reporting on progress with international and European commitments to halt or slow biodiversity loss by 2010. A new Strategic Plan was adopted by signatories to the United Nations Convention on Biological Diversity (CBD) in 2010. Following this change, the UK indicators were reviewed and a programme of work put in place to develop and refine the indicator set for future reporting to the CBD on UK progress with the goals and targets in the new Strategic Plan (2011 to 2020).

In the review, a small number of gaps were identified where there were no current indicators for particular CBD goals and targets. Indicators for reporting on mainstreaming biodiversity values were identified as a gap and work is now underway to review data availability and to develop options for a new indicator on how the value of biodiversity has been integrated into public decision making.

Relevance

Integrating the value of biodiversity use as part of mainstream decision making is important to allow us to continue to enjoy the benefits from biodiversity that we currently achieve. Potential means of measuring this will be dependent on a number of factors including the extent to which biodiversity can be integrated into national accounting systems.

Progress to date

Aichi Target 2 is focussed on mainstreaming biodiversity into national and local level decision making processes. Indicator A3 is expected to be focussed on developments in national accounting systems.

A4. Global biodiversity impacts of UK economic activity / sustainable consumption

The UK Biodiversity Indicators were developed and published between 2007 and 2010 for reporting on progress with international and European commitments to halt or slow biodiversity loss by 2010. A new Strategic Plan was adopted by signatories to the United Nations Convention on Biological Diversity (CBD) in 2010. Following this change, the UK indicators were reviewed and a programme of work put in place to develop and refine the indicator set for future reporting to the CBD on UK progress with the goals and targets in the new Strategic Plan (2011 to 2020).

In the review, a small number of gaps were identified where there were no current indicators for particular CBD goals and targets. Indicators for reporting on sustainable consumption and production were identified as a gap and work is now underway to review data availability and to develop options for a new indicator on global biodiversity impacts of UK economic activity.

Relevance

Production and consumption in the UK has an impact on the natural environment beyond our shores through the range of imports and exports of goods and services. Each of the countries of the UK has introduced or is introducing policies to promote sustainable production and consumption and thereby reduce our impact on biodiversity and promote sustainable use of natural resources.

Progress to date

Work is underway to assess how patterns of consumption impact on biodiversity overseas and identify options for mitigating our impact. Research has been commissioned to:

- Analyse trade pathways and supply chains for goods and services to identify important sources of production; and
- Identify the impact of key production systems and products on biodiversity.

The project is informed by both existing scientific literature and engagement with external biodiversity and trade modelling scientists, and policy makers. A final report is due in November 2012.

B1. Agricultural and forest area under environmental management schemes

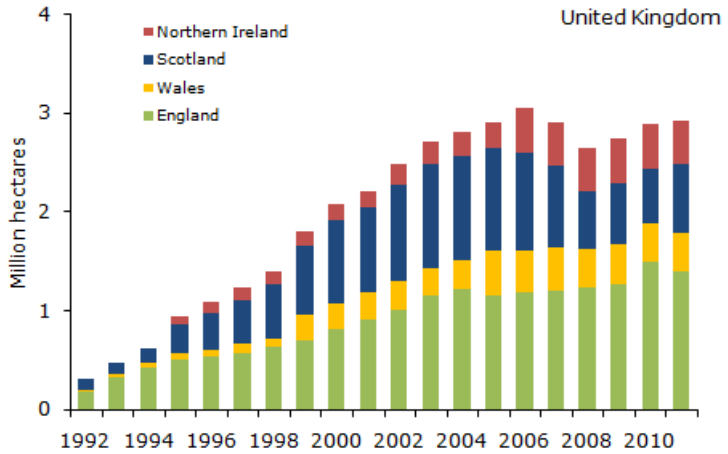
a. Area of land in agri-environment schemes

i. Higher-level / targeted schemes

ii. Entry-level type schemes

Type: Response Indicator

Figure B1ai. Area of land covered by higher-level or targeted agri-environment schemes, 1992 to 2011.



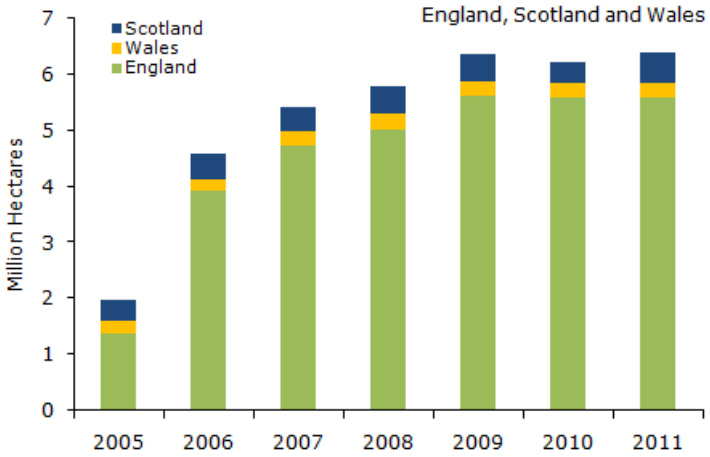
Notes:

1. The following schemes have been included as higher-level or targeted agri-environment schemes:
   England: Environment Sensitive Areas (ESA), Countryside Stewardship (CS), and Higher Level Stewardship (HLS).
   Scotland: ESA, Countryside Premium, and Rural Stewardship (HLS), Rural Priorities (RP).
   Wales: ESA, Tir Cymen, and Tir Gofal.
   N Ireland: ESA, Countryside Management.
2. Higher-level or targeted agri-environment schemes have stricter criteria for qualification than other agri-environment schemes.

3. Data for 2011 are provisional.

Source: Countryside Council for Wales, Department for Agriculture and Rural Development Northern Ireland, Defra, Natural England, Scottish Government, Welsh Government.

Figure B1aii. Area of land covered by entry-level type, whole-farm agri-environment schemes, 2005 to 2011.



Notes:

1. The following have been included here as entry-level type schemes:
   England: Entry Level Stewardship Scheme.
   Scotland: Land Management Contracts (previously Menu Scheme), Land Managers, Options Schemes, Habitat Scheme.
   Wales: Tir Cynnal.
2. Entry-type schemes have less strict criteria for qualification than other agri-environment schemes like the Higher Level Stewardship schemes shown in the previous chart.
3. Data for 2011 are provisional.

Source: Countryside Council for Wales, Defra, Natural England, Welsh Government, Scottish Government.

Assessment of change in area of land covered by agri-environment schemes

	Long term	Since 2000	Latest year
Higher-level, targeted schemes	1992-2011		No change (2011)
Entry-level type, whole-farm schemes		2005	No change (2011)

- Agri-environment schemes require farmers to implement environmentally-beneficial management and demonstrate good environmental practice on their farm.
- The higher-level or targeted schemes promote environmental management aimed to: conserve wildlife; maintain and enhance landscape quality and character; protect the historic environment and natural resources, and to promote public access and understanding of the countryside.
- The entry-level type schemes aim to encourage large numbers of farmers, across all types of farmland, to implement simple and effective environmental management on their farms that goes beyond the Single Payment Scheme requirements to maintain land in good agricultural and environmental condition. In England from 2010 the Entry Level Scheme data also include Upland Entry Level Schemes, however there is no large increase in the figures due to farmers being in the process of renewal for their Entry Level Schemes.
- In 2011 the total area of land in higher-level or targeted agri-environment agreements in the UK was just over 2.9 million hectares. In the individual countries the proportion of agricultural land managed under

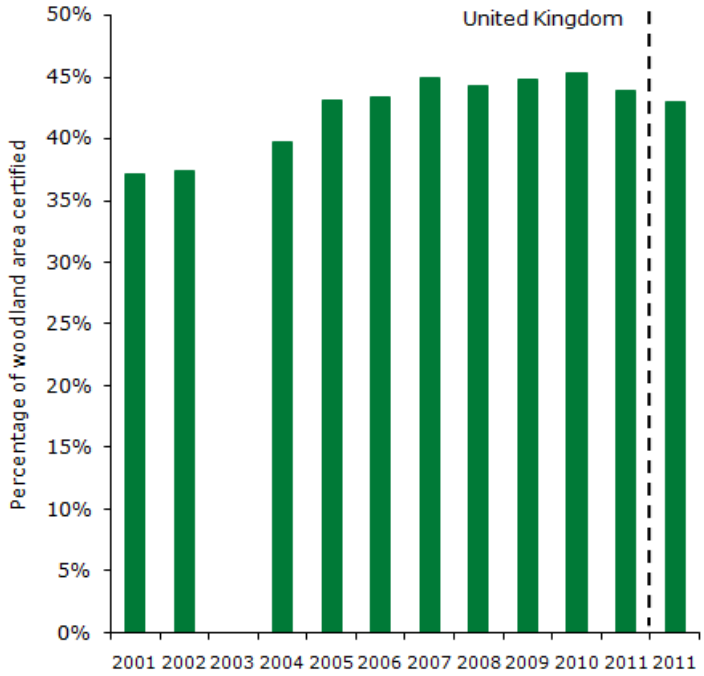
higher-level schemes amounts to 16 per cent in England; 25 per cent in Wales; 13 per cent in Scotland and 44 per cent in Northern Ireland.

- In 2011 the total area of land in entry-level type schemes in England, Scotland and Wales was 6.4 million hectares. In the individual countries the proportion of agricultural land managed under entry-level schemes amounts to 63 per cent in England; 16 per cent in Wales; and 10 per cent in Scotland.
- The majority of land on higher-level schemes is also in an entry-level type scheme (except in Wales), therefore the areas cannot be added to provide a grand total.

b. Area of forestry land certified as sustainably managed

Type: Response Indicator

Figure B1bi. Percentage of woodland area certified as sustainably managed, 2001 to 2011.



Notes:

1. Figures relate to certificates that were valid up to the 31 March 2011.
2. The dotted discontinuity line shows a change in the dataset in 2011 to include revised woodland area data from the National Forest Inventory together with geographical data for Forestry Commission land. 2011 has two datasets, one showing the previous data collection method for comparison with previous years and one showing the new method.

Source: Forestry Commission.

Assessment of change in area of woodland certified as sustainably managed			
	Long term	Since 2000	Latest year
Percentage of woodland certified	⋯	✓ 2001	Decreased (2011)

- Certification of woodlands promotes responsible forest management to safeguard forests' natural heritage and protect threatened species.
- Across the UK, the percentage of woodlands under certified sustainable management schemes dropped slightly from 45 per cent in 2010 to 44 per cent in 2011. The total area certified can

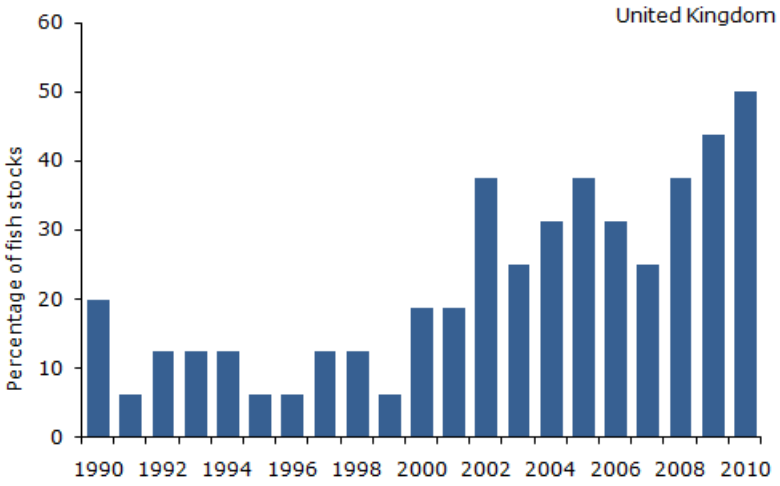
change if new woodlands are certified, if existing certificate holders decide not to renew, or if there is a delay in renewal of an existing certificate.

- Within the UK in 2011, the percentage of woodlands certified as sustainably managed was 28 per cent in England, 43 per cent in Wales, 56 per cent in Scotland and 72 per cent in Northern Ireland.
- In 2011, the Forestry Commission implemented a number of refinements to methods for calculating the area certified, using revised woodland area data from the National Forest Inventory together with geo-referenced data for Forestry Commission land. This produced a revised figure of 43 per cent of total woodland in the UK certified as sustainably managed in 2011, with 26 per cent in England, 44 per cent in Wales and 57 per cent in Scotland. This revised figure is shown on the chart for reference.

B2. Sustainable fisheries

Type: Pressure Indicator

Figure B2i. Percentage of fish stocks harvested sustainably and at full reproductive capacity, 1990 to 2010.



Notes: Based on 16 stocks for which accurate time series are available derived from stock assessment reports.

Source: International Council for the Exploration of the Sea, Centre for Environment, Fisheries and Aquaculture Science.

Assessment of change in stocks harvested sustainably and at full reproductive capacity

	Long term	Since 2000	Latest year
Sustainable fisheries	1990-2010		Increased (2010)

- Sustainable fisheries will help to ensure our marine ecosystems remain diverse and resilient, and provide a long-term and viable fishing industry.
- Since 2002, between 25 and 50 per cent of the fish stocks assessed have been considered to be harvested sustainably and at full reproductive capacity, compared with 6 to 20 per cent between 1990 and 2001. The figure was 19 per cent in 2000, but increased to 50 per cent by 2010.
- Despite these increases, between 50 and 81 per cent of the indicator stocks have had reduced reproductive capacity and/or have been harvested unsustainably each year since 2001.

- For most of the stocks now considered to be fished sustainably, further reductions in fishing rates would improve the long-term yield.

B3. Integration of biodiversity considerations into business activity

The UK Biodiversity Indicators were developed and published between 2007 and 2010 for reporting on progress with international and European commitments to halt or slow biodiversity loss by 2010. A new Strategic Plan was adopted by signatories to the United Nations Convention on Biological Diversity (CBD) in 2010. Following this change, the UK indicators were reviewed and a programme of work put in place to develop and refine the indicator set for future reporting to the CBD on UK progress with the goals and targets in the new Strategic Plan (2011 to 2020).

In the review, a small number of gaps were identified where there were no current indicators for particular CBD goals and targets. Indicators for reporting on mainstreaming biodiversity values were identified as a gap and work is now underway to review data availability and to develop options for a new indicator on how the value of biodiversity has been integrated into business decision making.

Relevance

Production and consumption in the UK has an impact within the UK as well as overseas, and so this indicator will complement indicator A4 on global impacts of UK economic activity. Decisions made by businesses of any size within key sectors such as agriculture, forestry, industry, housing and infrastructure development, water supply and fisheries can have significant biodiversity impacts. Whilst information on how biodiversity considerations have been integrated into agriculture, forestry and fishery sectors is included in other UK indicators, there are clearly other sectors that are not adequately covered.

Progress to date

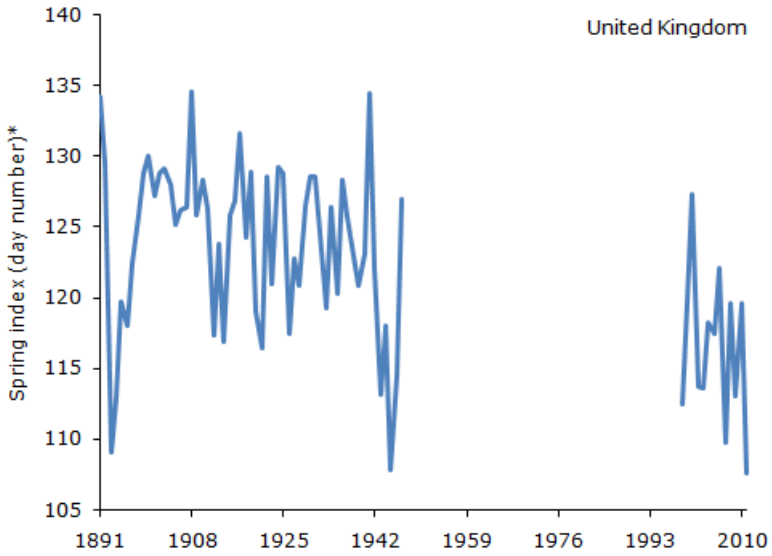
A scoping exercise undertaken to review and synthesise the data used in the UK National Ecosystem Assessment (http://uknea.unep-wcmc.org/) has identified 14 datasets that may be suitable for developing this indicator. These datasets primarily relate to urban populations and planning, provisioning services (forestry, agriculture, aquaculture), leisure and recreational activities, and valuing carbon sequestration in different habitats. Results of the scoping exercise will inform and guide subsequent, more detailed data searches and development of indicator options and methodologies through consultation with experts in this field.

B4. Pressure from climate change

Spring Index

Type: Context indicator

Figure B4i. **Index of the timing of biological spring events (number of days after 31 December) in the UK, 1891 to 1947 and 1999 to 2011.**



Notes: * Number of days after 31 December (e.g. day 121 = 1 May).

Source: 1891 to 1947 Royal Meteorological Society, 1999 to 2011 UK Phenology Network.

- This is a contextual indicator showing how changes in climate, particularly temperature, are associated with changes in the timing of biological events.
- The UK Spring Index is calculated from the annual mean observation date of the following four biological events: first flowering of hawthorn (*Crataegus monogyna*), first flowering of horse chestnut (*Aesculus hippocastanum*), first recorded flight of a orange-tip butterfly (*Anthocharis cardamines*) and first sighting of a swallow (*Hirundo rustica*).
- The 1891 to 1947 data were mostly collected by the Royal Meteorological Society and the 1999 to 2011 data by the UK Phenology Network.
- Since 1999, the annual mean observation dates have been around 7.5 days in advance of the average dates in the first part of the 20th century. The Index shows a strong relationship with mean temperature in March and April, and it advances more rapidly when the mean temperature exceeds 7°C. The mean observation dates in 2011 were the earliest for which there are records, being 0.2 days earlier than the previously most advanced dates in 1945. The warmest April in the Central England Temperature series (1659 onwards) occurred in 2011 and was likely to be a factor.

B5. Pressure from pollution

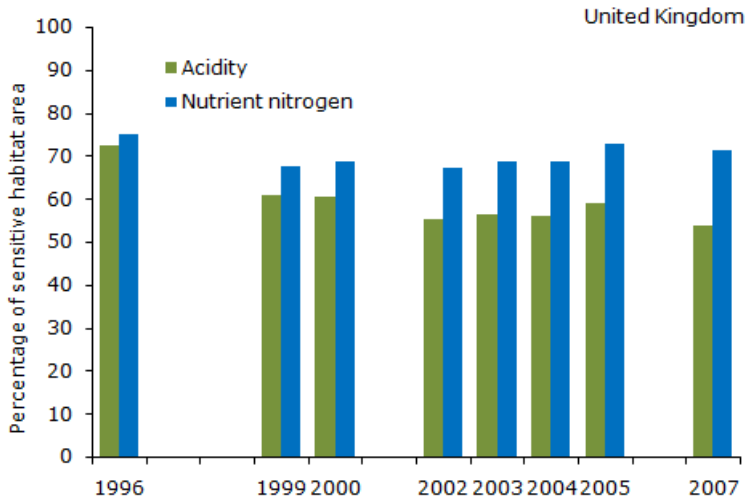
a. Air pollution

i. Area affected by acidity

ii. Area affected by nitrogen

Type: Pressure Indicator

Figure B5ai. Area of sensitive UK habitats exceeding critical loads for acidification and eutrophication, 1996 to 2007.



Notes:

1. Since 2002 nitric acid has been included in the estimates of nitrogen deposition and since 2003 aerosol disposition of sulphate, nitrate and ammonium have also been included. This additional deposition led to some increases in critical load exceedance compared with earlier periods.
2. Each column represents a three-year average of deposition data to reduce year-to-year variability.

Source: Centre for Ecology and Hydrology

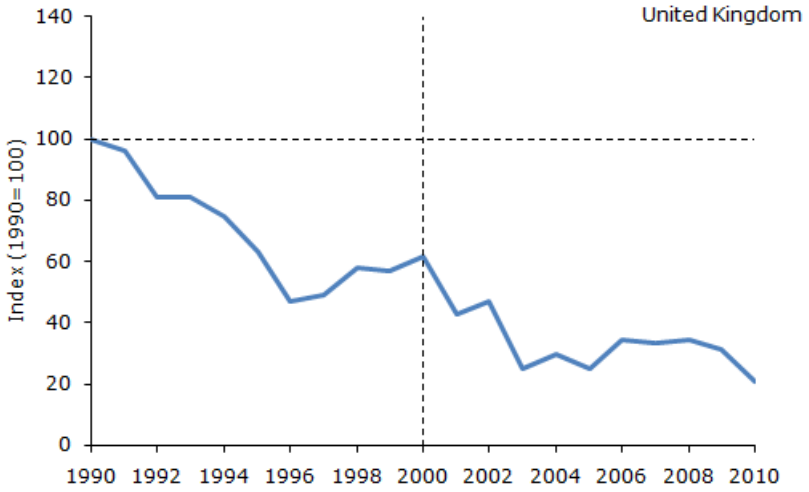
Assessment of change in area of sensitive habitat exceeding critical loads			
	Long term	**Since 2000**	**Latest year**
Area affected by acidity	1996-2007		N/A
Area affected by nitrogen	1996-2007	≈	N/A

- Critical loads are thresholds for the deposition of pollutants causing acidification and/or eutrophication above which significant harmful effects on sensitive UK habitats may occur. The pollutants arise mainly from burning fossil fuels and emissions from livestock waste. Around a third of UK land area is sensitive to acidification, and a third to eutrophication (with some areas sensitive to both).
- In 1996, the percentage area of sensitive habitats where acid deposition exceeded critical loads was 73 per cent, declining to 54 per cent by 2007. The percentage area affected has also declined since 2000.
- In 2007, the percentage area of sensitive habitats where nitrogen deposition exceeded critical loads was 71 per cent, down from 75 per cent in 1996. The percentage area affected changed little between 2000 and 2007.

b. Marine pollution

Type: Pressure indicator

Figure B5bi. Combined input of hazardous substances to the UK marine environment, as an index of estimated weight of substances per year, 1990 to 2010.



Source: Defra Marine Strategy and Evidence Division, using data provided by: Environment Agency, Scottish Environmental Protection Agency and Northern Ireland Environment Agency.

Assessment of change in input of hazardous substances			
	Long term	**Since 2000**	**Latest year**
Combined input of hazardous substances	1990-2010		N/A

- The indicator shows the combined input of six of the most hazardous substances to the UK marine environment.
- Levels of all six substances declined over the period 1990 to 2010. In the case of three substances (cadmium, lindane and mercury) inputs have declined by more than 75 per cent and in the case of copper, lead and zinc inputs have declined between 60 and 70 per cent.

B6. Pressure from invasive species

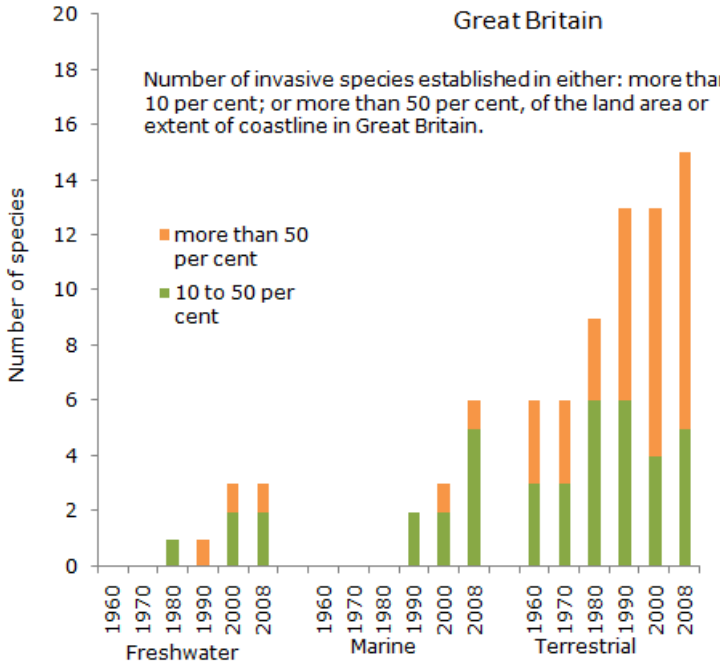
a. Freshwater invasive species

b. Marine invasive species

c. Terrestrial invasive species

Type: Pressure Indicator

Figure B6i. **Changes in the extent of widely established invasive non-native species in freshwater, marine and terrestrial environments, 1960 to 2008.**



Source: Centre for Ecology and Hydrology, British Trust for Ornithology, Marine Biological Association and the National Biodiversity Network Gateway.

Assessment of change in the extent of invasive species

	Long term	Since 2000	Latest year
Freshwater invasive species	1960-2008	≈	N/A
Marine invasive species	1960-2008	✗	N/A
Terrestrial invasive species	1960-2008	✗	N/A

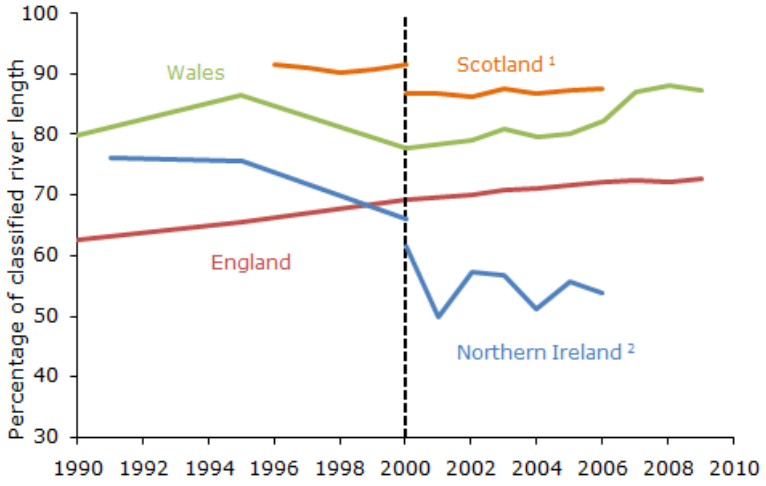
- Non-native species are those that have reached Britain by accidental human transport, deliberate human introduction, or which arrived by natural dispersal from a non-native population in Europe. Only species that arrived since 1500 are considered.
- Most non-native species are considered benign or positive but a few have a negative impact on native species through the spread of disease, competition for resources, or by direct consumption, parasitism or hybridisation. Invasive non-native species have one or more of these negative impacts and a high capacity for spread to natural and semi-natural habitats.
- Over the period 1990 to 2007, non-native species have become more prevalent in the countryside.
- Out of 3,500 non-native species in Britain, the 49 with the greatest potential impact on native biodiversity have been assessed for the extent to which they are established in Great Britain. The number of these 'most invasive' non-native species established in or along more than 10 per cent of Great Britain's land

area or coastline has increased since 1960 in the freshwater, terrestrial and marine environment, increasing the likely pressure on native biodiversity.

B7. Water quality

Type: State Indicator

Figure B7i. Length of UK rivers of good biological quality, 1990 to 2009.



Notes:

1. Scottish river classification is based on a combined chemical, biological and aesthetic assessment and is not directly comparable with other countries. The Scottish classification network changed in 2000.
2. Northern Ireland network significantly expanded in 2000. 2000 figures are shown for both the new and old basis.

Source: Environment Agency, Scottish Environment Protection Agency, Northern Ireland Environment Agency.

Assessment of change in percentage of rivers of good biological quality (England and Wales)

	Long term	Since 2000	Latest year
Biological river quality	1990-2009		N/A

- In 2009, the percentage of river lengths with good biological quality in England was 73 per cent, up from 63 per cent in 1990 and 69 per cent in 2000. In Wales, 87 per cent of assessed rivers were of good biological quality, up from 80 per cent in 1990 and 78 per cent in 2000.
- In Scotland, the percentage of river lengths with good quality in 2006 was 88 per cent. Between 2000 and 2006, this figure was stable between 87 per cent and 88 per cent, based on a combined chemical, biological and aesthetic assessment.
- In 2006, 54 per cent of rivers in Northern Ireland were of good biological quality.
- The overall assessments are based on the biological quality of river lengths in England and Wales only. It is not possible to produce aggregate UK measures.
- From 2007, monitoring in England was based on a smaller General Quality Assessment (GQA) monitoring network. Assessments prior to 2007 have been recalculated based on the smaller monitoring network. The results reported here, should therefore not be compared with results previously reported.

C1. Protected Sites

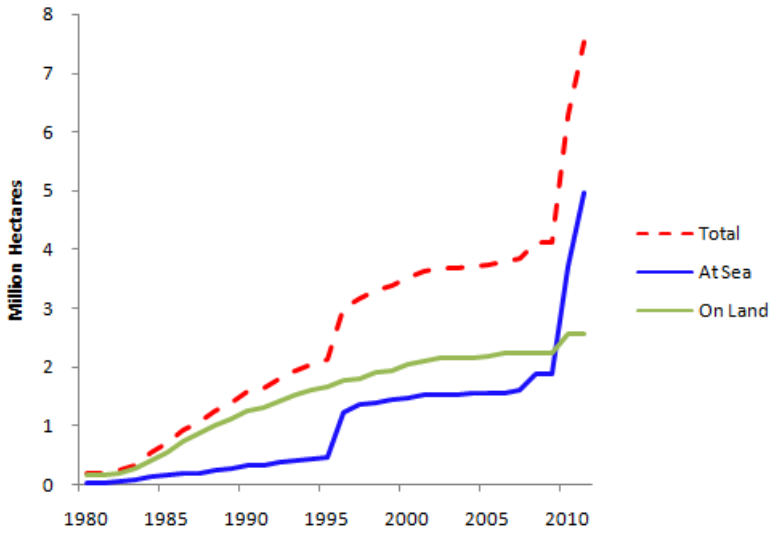
a. Total area of protected sites: on land

b. Total area of protected sites: at sea

c. Condition of Areas / Sites of Special Scientific Interest

Type: Extent – Response Indicator; Condition – State / Response Indicator

Figure C1i. Extent of UK nationally and internationally important protected areas: i) total extent; ii) on land; iii) at sea, 1980 to 2011.

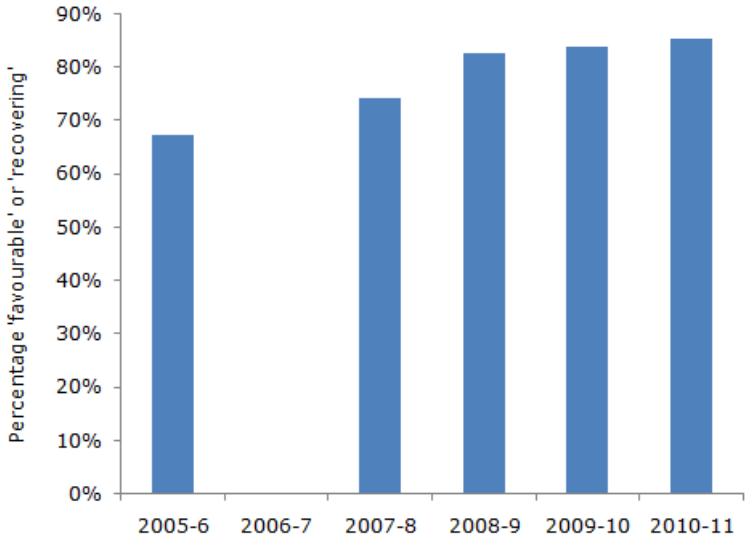


Notes:

1. The demarcation between the protected areas on land and at sea is mean high water (mean high water spring in Scotland). The calculations to create the indicator split the terrestrial and marine components of coastal sites between the 'on land' and 'at sea' lines shown.
2. Based on calendar year of site designation.

Source: Joint Nature Conservation Committee based on its own data and data from the Countryside Council for Wales, Natural England, Northern Ireland Environment Agency and Scottish Natural Heritage.

Figure C1ii. **Cumulative proportion of Areas of Special Scientific Interest (Northern Ireland) and Sites of Special Scientific Interest (England and Scotland) in 'favourable' or 'unfavourable recovering' condition, 2005 to 2011.**



Notes:

1. England figures based on area, Scotland and Northern Ireland figures based on number of features.
2. Based on financial years.

Source: Northern Ireland Environment Agency, Natural England, Scottish Natural Heritage.

Assessment of change in area and condition of UK protected areas

	Long term	Since 2000	Latest year
Extent of protected areas on land	1980-2011		No change (2011)
Extent of protected areas at sea	1980-2011		Increased (2011)
Condition of A/SSSIs		2005-6	Increased (2010-11)

Note: 'recovering' is used in this document as a convenient shorthand for the condition category 'unfavourable recovering' to aid readability of the text.

- The overall total extent of land and sea protected in the UK through national and international protected areas has increased from just under 0.2 million hectares in 1980 to just over 7.5 million hectares in December 2011.
- Since 2000 the total extent of protected areas has more than doubled, from 3.5 million hectares in 2000 to just over 7.5 million hectares in 2011; a large contribution to this has been from the marine environment following the designation of inshore and offshore marine sites under the Habitats Directive – the area of marine protected areas increased by more than 3 million hectares between 2009 and 2011. The extent of protected areas on land has increased by more than half a million hectares since 2000.
- The indicator also shows the condition of Areas or Sites of Special Scientific Interest (A/SSSIs) on land. A/SSSIs are surveyed periodically to assess whether they are in good condition (favourable) or, if not, they are under positive management (recovering). Since 2005 the percentage of features or area of A/SSSIs in favourable or recovering condition has increased by 18 per cent. This change reflects improved management of sites, but may also be affected by a greater number of sites/features having been assessed over time. The majority of protected areas on land are A/SSSIs, so the condition indicator is not representative of marine sites.

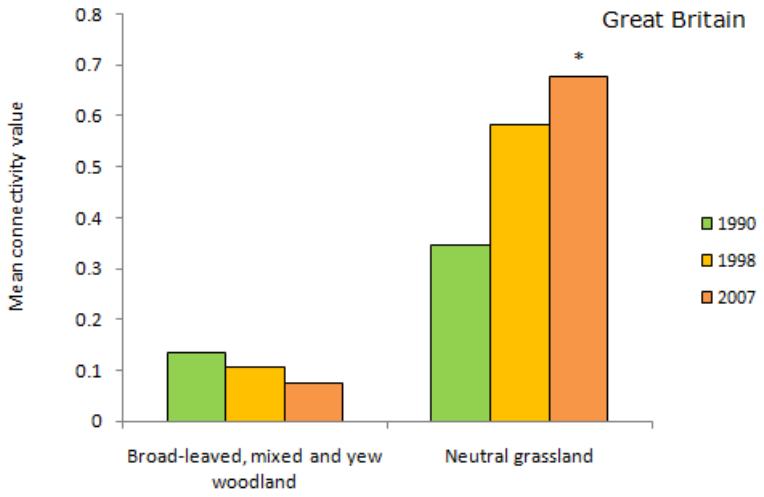
C2. Habitat connectivity

a. Broad-leaved, mixed and yew woodland

b. Neutral grassland

Type: State Indicator

Figure C2i. Change in habitat connectivity for selected broad habitats in the wider countryside, 1990 to 2007.



Notes:

1. The mean connectivity value is a measure of relative connectivity on a scale of 0 to 100. Typical values are less than 1.
2. Change shown by asterisk (*) indicates a statistically significant change between 1990 and 2007. No other changes are statistically significant.

Source: Forest Research, Centre for Ecology and Hydrology.

Assessment of change in habitat connectivity for selected broad habitats

	Long term	Since 2000	Latest year
Broad-leaved, mixed and yew woodland		1998	N/A
Neutral grassland		1998	N/A

- Connectivity is a measure of the size and distribution of patches of habitat and the relative ease with which typical species can move through the landscape between the patches. The measures here show connectivity for woodland and neutral grassland habitats. Maintaining and improving connectivity is important in ensuring the long-term survival of biodiversity in a fragmented landscape, especially under a changing climate.
- There was little or no overall change in the degree of connectivity for broad-leaved, mixed and yew woodland between 1990 and 2007. Over the same period there has been an increase in the area of broad-leaved woodland, which would tend to increase connectivity. However this may have been countered by changes in woodland pattern, changes in the wider landscape, or both, which reduced connectivity, and hence overall there was no significant change.
- There was an increase in the degree of connectivity for neutral grassland between 1990 and 2007, although the change between 1998 and 2007 is not statistically significant. Between 1990 and 2007 there has been an increase in the overall area of neutral grassland. The increase in connectivity is most

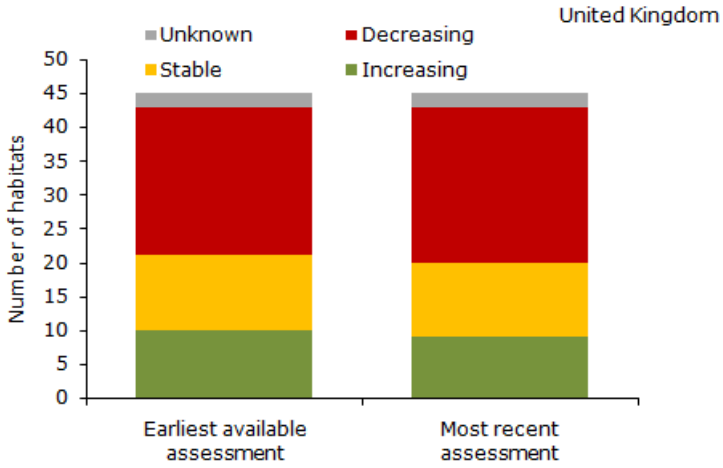
likely to be related to an increase in habitat area, but there may also be effects from changes in habitat pattern in the wider landscape.

- The indicator is based on an analysis of changes in land cover recorded in Countryside Survey – a detailed periodic audit of a statistically representative sample of land across Great Britain. Expert opinion was used to assess the relative likelihood of movement, by species characteristic of each habitat, between habitat patches, across different intervening land cover types found in the survey.
- Further analysis is required to better explain the causes of the changes in connectivity (which may be due to changes in the extent of the habitat or changes around the habitat blocks). Until this analysis has been undertaken, the current information is insufficient for an assessment of change to be made, despite the statistically significant increase seen in connectivity in neutral grassland habitat.

C3. Status of threatened habitats

Type: State Indicator

Figure C3i. Changes in the status of UK BAP priority habitats, 1999 to 2008.



Notes:

1. 72 per cent of the 'earliest available' assessments were made in 1999 or 2002; the remainder were made in later years. 81 per cent of the 'most recent' assessments were made in 2008; the remainder were made in earlier years.
2. Based on 45 listed priority habitats.

Source: Joint Nature Conservation Committee, the UK Biodiversity Partnership and Defra.

Assessment of change in status of UK priority habitats

	Long term	Since 2000	Latest year
UK priority habitats that were stable or increasing		≈ 1999	N/A

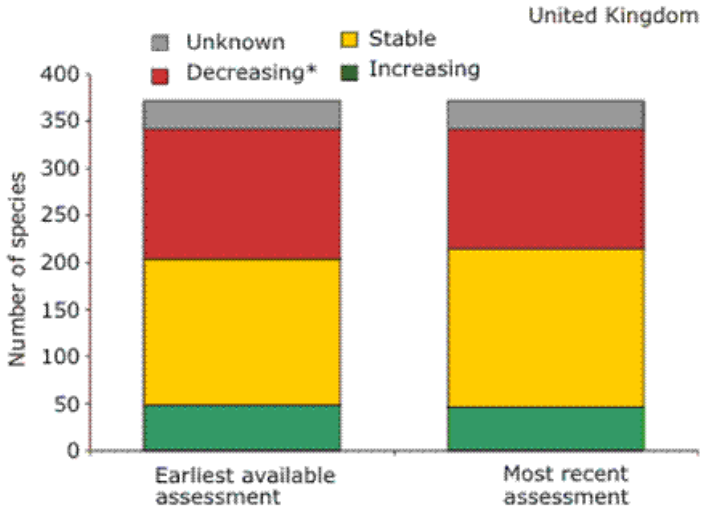
- The UK Biodiversity Action Plan (UK BAP) was the UK's national biodiversity strategy produced in response to the Convention on Biological Diversity. The Plan identified a set of UK priority habitats as a focus for conservation action. The indicator is based on the 45 habitats which were assessed between 1999 and 2008.
- An assessment of the status of the priority habitats was provided every three years, between 1999 and 2008, by experts across the UK.

- A status assessment is available in at least one of the assessment years for 43 habitats. Two remained 'unknown' throughout the period.
- Based on a comparison of the earliest available and most recent assessment for each habitat, the number either 'stable' or 'increasing' in area fell from 21 to 20 (2.5 per cent of the known habitats).
- Despite this position of little or no overall change, of the 35 habitats for which an assessment was made in 2008, 15 priority habitats (44 per cent) were still declining in extent.
- The UK BAP was replaced in 2011 with a UK framework, with priorities set at country level, for example through the Scottish Biodiversity Strategy. A new indicator is being developed to reflect these country priorities.

C4. Status of threatened species

Type: State Indicator

Figure C4i. Changes in the status of the UK BAP priority species, 1999 to 2008.



Notes:

1. 'Decreasing*' includes 17 species assessed as lost within the 'earliest available assessments' and 20 species assessed as 'lost' within the 'most recent assessments'.
2. 74 per cent of the 'earliest available' assessments were made in 1999 or 2002; the remainder were made in later years. 85 per cent of the 'most recent' assessments were made in 2008; the remainder were made in earlier years.
3. Based on 371 listed priority species.

Source: Joint Nature Conservation Committee, the UK Biodiversity Partnership and Defra.

Assessment of change in status of UK priority species

	Long term	Since 2000	Latest year
UK priority species that were stable or increasing	⋯	✓ 1999	N/A

- The UK Biodiversity Action Plan (UK BAP) was the UK's national biodiversity strategy produced in response to the Convention on Biological Diversity. The Plan identified a set of UK priority species as a focus for conservation action. The indicator is based on the 371 priority species which were assessed between 1999 and 2008.
- An assessment of the status of the priority species was provided every three years, between 1999 and 2008, by experts across the UK.

- A status assessment is available in at least one of the assessment years for 339 species. Thirty-two species had an unknown status over the period.
- Based on a comparison of the earliest available and most recent assessment for each species, the number either 'stable' or 'increasing' (in number or extent) has risen by 3.5 per cent from 202 to 214. The number decreasing (or lost) fell from 137 to 125. The number of species assessed as 'increasing' fell from 48 to 45.
- Of the 289 species for which an assessment was made in 2008, 88 were still declining and eight were lost from the UK since the Plan was published in 1994. Those that were stable may have had populations well below target levels set in the Plan.
- The UK BAP was replaced in 2011 with a UK framework, with priorities set at country level, for example through the Scottish Biodiversity Strategy. A new indicator is being developed to reflect these country priorities.

C5. Birds of the wider countryside and at sea

a. Farmland birds

b. Woodland birds,

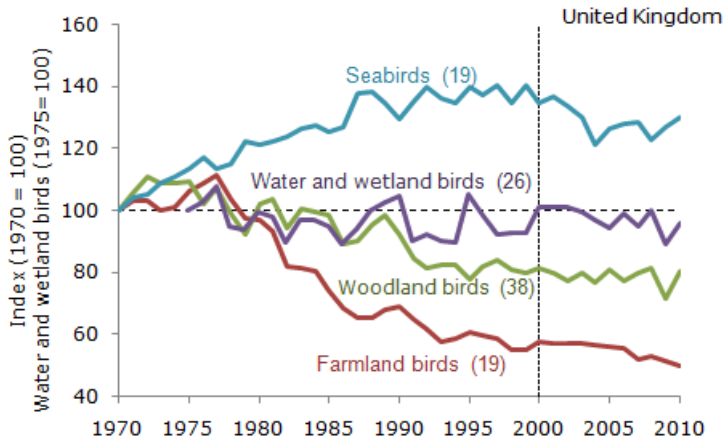
c. Wetland birds

d. Seabirds

e. Wintering water birds

Type: State Indicator

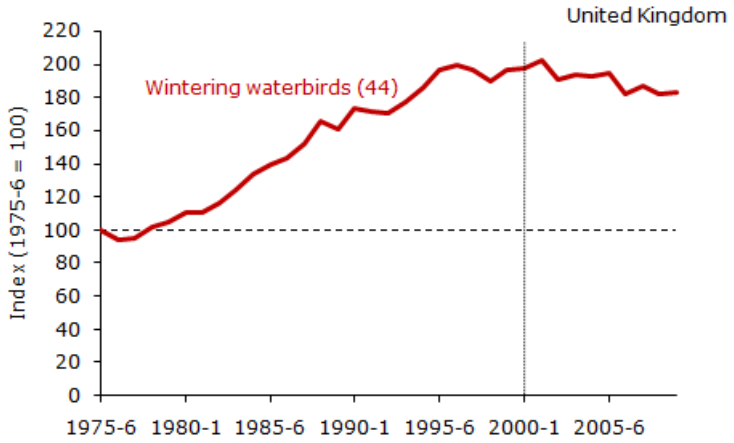
Figure C5i. Breeding farmland birds, woodland birds, wetland birds, and seabirds, 1970 to 2010.



Notes: Figures in brackets show the number of species included in each measure.

Source: British Trust for Ornithology, Defra, Joint Nature Conservation Committee, Royal Society for the Protection of Birds.

Figure C5ii. Wintering water birds, 1975-6 to 2009-10.



Notes:

1. Figures in brackets show the number of species included in each measure.
2. Based on financial years.

Source: British Trust for Ornithology, Defra, Joint Nature Conservation Committee, Royal Society for the Protection of Birds.

Assessment of change in bird populations

	Long term	Since 2000	Latest year
Farmland birds	1970-2010		Decreased (2010)
Woodland birds	1970-2010		Increased (2010)
Wetland birds	1975-2010		Increased (2010)
Seabirds	1970-2010		Increased (2010)
Wintering water birds	1975/6-2009/10		No change (2009/10)

Note: In order to better capture patterns in the data, all assessments, except for the latest year, are made on the basis of smoothed data, with analysis of the underlying trend undertaken by the data providers.

- Between 1970 and 2010, populations of breeding farmland and woodland birds declined by 50 per cent and 19 per cent respectively. The breeding seabirds were 30 per cent higher than the 1970 level and the population measure for breeding water and wetland birds was 4 per cent lower than in 1975.
- Since 2000, populations of breeding farmland birds have declined by almost 14 per cent, whilst water and wetland birds, woodland birds and seabirds have all declined by just over 3 per cent, although the analysis of the underlying trends shows little or no overall change.
- In 2009-10, populations of the wintering water birds were 83 per cent higher than in 1975-6; populations peaked in 2001-2, but there has been a decline in more recent years; the measure has fallen by almost 8 per cent since the winter of 2000-1.

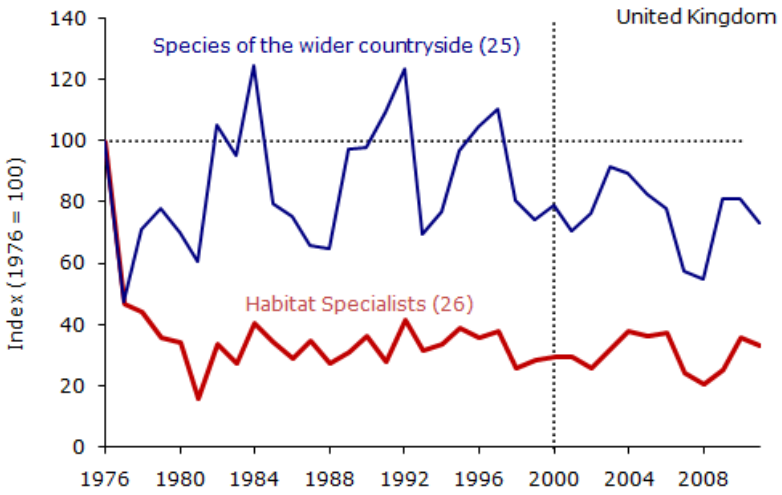
C6. Insects of the wider countryside (butterflies)

a. Semi-natural habitat specialists

b. Species of the wider countryside

Type: State Indicator

Figure C6i. Trends in butterfly populations for habitat specialists and species of the wider countryside, 1976 to 2011.



Notes: Figures in brackets show the number of species included in each category.

Source: Butterfly Conservation, Centre for Ecology and Hydrology, Defra, Joint Nature Conservation Committee.

Assessment of change in butterfly populations

	Long term	Since 2000	Latest year
Semi-natural habitat specialists	1976-2011	≈	Decreased (2011)
Species of the wider countryside	1976-2011	≈	Decreased (2011)

- Since 1976, the indices for butterflies associated strongly with semi-natural habitats (specialists) and for those found in the wider countryside show apparent declines of 67 per cent and 27 per cent respectively.
- Large fluctuations in numbers between years are typical features of butterfly populations. The assessment of change is therefore made on an analysis of the underlying trends undertaken by Butterfly Conservation and the Centre for Ecology and Hydrology.
- This analysis shows that since 1976 specialists have declined significantly but for species of the wider countryside there has been little or no overall long-term change, although the current index is significantly lower than over the period 1988 to 1996.
- Since 2000, specialists have shown a small increase from 29 per cent to 33 per cent of the 1976 level. Species of the wider countryside have shown a small decrease from 79 per cent to 73 per cent of the 1976 level. However, the underlying analysis shows that there was little or no overall change for these measures.
- In 2011, specialists decreased by 3 per cent since the previous year, whilst wider countryside species decreased by 8 per cent.

- Data for previous years are also updated retrospectively as there are delays in submitting data, for example in 2011 extra data were also added for 2009 and 2010. This means that the species indices for previous years will also change, as a new year of data is added to the model that is used to fill in missing data sites.

C7. Plants of the wider countryside

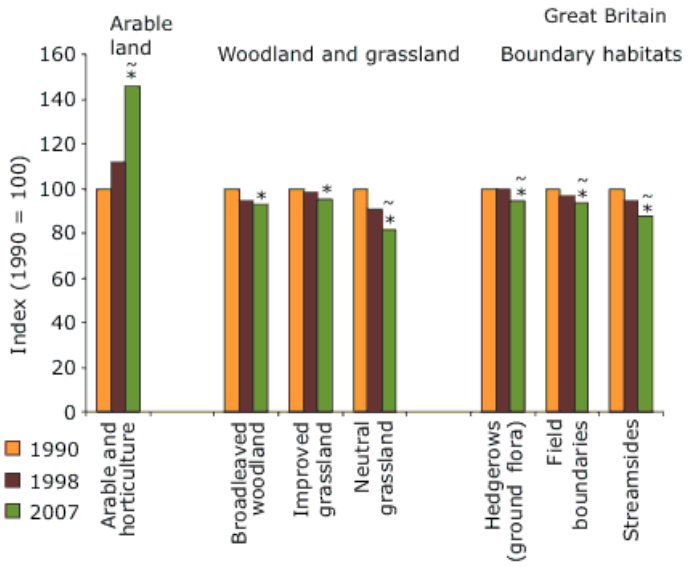
a. Arable and horticultural land

b. Woodland and grassland

c. Boundary habitats

Type: State Indicator

Figure C7i. Change in plant species richness in the wider countryside, 1990 to 2007.



Notes:

1. * A statistically significant change between 1990 and 2007.
2. ~ A statistically significant change between 1998 and 2007.

Source: Centre for Ecology and Hydrology, Countryside Survey.

Assessment of change in plant diversity in the wider countryside

	Long term	Since 2000	Latest year
Arable and horticultural land	1990-2007	1998	N/A
Woodland and grassland	1990-2007	1998	N/A
Boundary habitats	1990-2007	1998	N/A

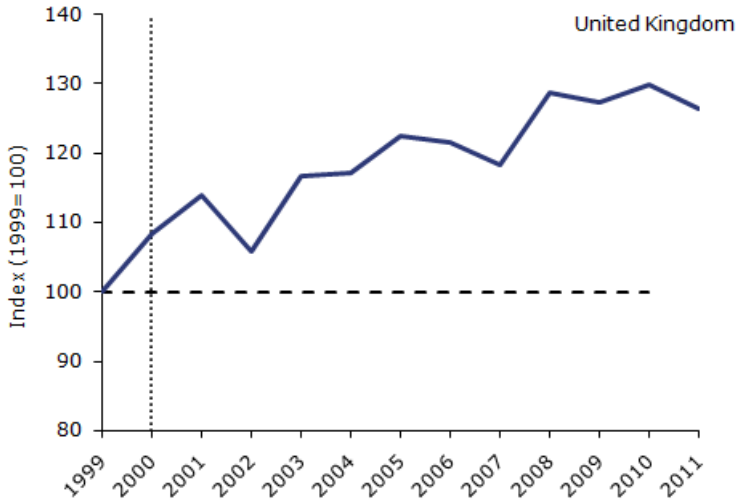
- Within arable fields there was an increase in plant species richness (number of species per survey plot) both in the longer term (since 1990) and shorter term (since 1998).
- In woodland and grassland, plant diversity has declined in both the longer and shorter-term. For neutral grassland, broad-leaved woodland and improved grassland, plant species richness fell over the longer-term by 19, 7 and 5 per cent respectively and by 10, 2 and 3 per cent since 1998.

- In boundaries, plant species richness of the ground flora has also declined in both the long and shorter-term. For stream-sides, field boundaries and hedgerows plant species richness fell over the longer-term by 13, 6 and 5 per cent respectively and by 7, 3 and 5 per cent since 1998.

C8. Mammals of the wider countryside (bats)

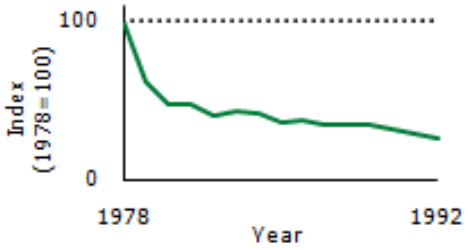
Type: State Indicator

Figure C8i. Trends in widespread bat populations, 1999 to 2011.



Notes: The headline measure is a composite index of six species: Daubenton's bat, noctule, serotine, lesser horseshoe bat, common pipistrelle and soprano pipistrelle.

Source: Bat Conservation Trust.



Notes: Estimates for combined (common and soprano) pipistrelle, 1978-1992. Although based on limited data, this places the more recent trends in a longer-term context.

Source: Bat Conservation Trust. Data from: Harris, S., Morris, P., Wray, S. and Yalden, D. 1995. *A review of British mammals: population estimates and conservation status of British mammals other than cetaceans.* Peterborough. JNCC.

Assessment of change in widespread bat populations			
	Long term	Since 2000	Latest year
Bat populations	1978-1992		Decreased (2011)

- Bat populations are considered to be a good indicator of the broad state of wildlife and landscape quality because they utilise a range of habitats across the landscape and are sensitive to pressures in the urban, suburban and rural environment.

- Bats have undergone severe declines historically. However since 2000, bat populations have increased by 17 per cent.

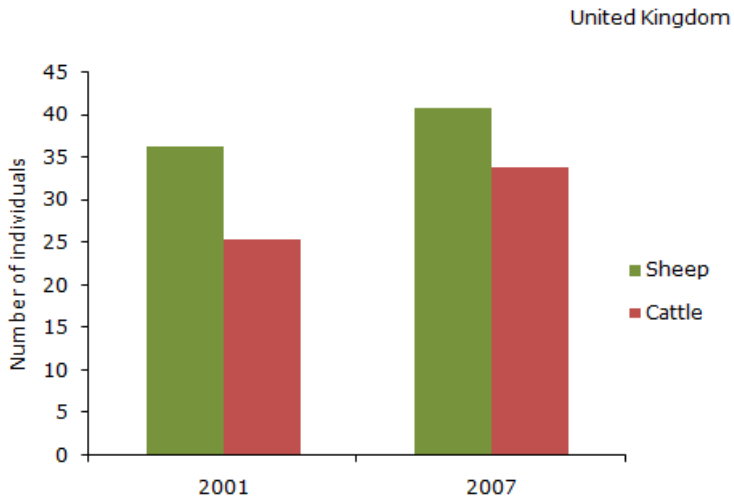
C9. Genetic resources for food and agriculture

a. Native sheep breeds

b. Native cattle breeds

Type: State / Benefit Indicator

Figure C9i. Change in effective population size for native breeds of sheep and cattle at greatest risk of loss of genetic diversity, 2001 to 2007.



Notes:

1. The 2001 values are based on assessments for 27 sheep and 18 cattle breeds. The 2007 values are based on assessments for 26 sheep and 20 cattle breeds.
2. Breeds at greatest risk have the lowest effective population size and are a sub-set of the breeds assessed in each year.

Source: Scottish Agricultural College, Roslin Institute, Grassroots Systems Ltd.

Assessment of change in effective population size

	Long term	Since 2000	Latest year
Native sheep breeds	•••	≈ 2001	N/A
Native cattle breeds	•••	✓ 2001	N/A

- Genetic diversity is an important component of biological diversity. Rare and native breeds of farm animals are part of our cultural heritage and are often associated with traditional land management required to conserve important habitats.
- The genetic diversity in UK breeds of cattle and sheep can be assessed by the effective population size, which accounts for the total number of animals in a population and the likely relatedness to other animals with which they breed. A low effective population size signifies a greater likelihood of in-breeding and risk of loss of genetic diversity.
- The mean effective population size for breeds most at risk of loss of genetic diversity has risen by 4.5 individuals for sheep breeds (12 per cent) and by 8.3 individuals for cattle (32 per cent). This increase

for sheep breeds is not statistically significant due to variability in the data and the measure is therefore assessed as showing little or no overall change.

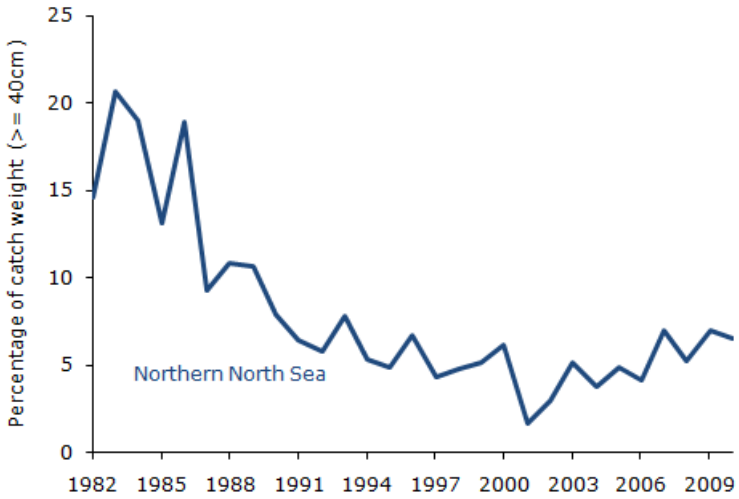
- There has been no reported UK extinction of any breed of sheep or cattle since 2001.

D1. Biodiversity and ecosystem services

(marine - fish size classes in the North Sea)

Type: State Indicator

Figure D1i. Proportion of large fish (equal to or larger than 40cm), by weight, in the Northern North Sea, 1982 to 2010.



Source: Marine Scotland, Centre for Environment, Fisheries and Aquaculture Science.

Assessment of change in the proportion of large fish, by weight

	Long term	Since 2000	Latest year
Northern North Sea	1982-2010	≈	Decreased (2010)

Note: The assessment for 'Since 2000' has been made by the Centre for Environment Fisheries and Aquaculture Science by fitting a smoothed trend to the index. The change from the year 2000 to the latest year was then statistically assessed by calculating the difference in the smoothed values and an associated confidence interval.

- Changes in the size structure of fish populations and communities reflect changes in the health of the fish community.
- This indicator shows changes in the proportion of large fish (40cm or greater in length) in the Northern part of the UK area of the North Sea.
- The proportion of large fish in the Northern North Sea fell from about 15 per cent by weight of the fish community in 1982 to around seven per cent in 2010; however this is an increase from a low of two per cent in 2001. The proportion of large fish in the Northern North Sea fell by 0.5 per cent between 2009 and 2010. Large fluctuations in numbers between years are typical features of the size of North Sea fish populations.
- The measure for the Northern North Sea is used as the main indicator because it is based on the largest dataset and provides the most reliable indicator of change. In addition, the North Sea supports important fisheries and several are still recovering from over-exploitation. Although the figures are less up-to-date, there has been a similar modest increase in recent years in some other seas around the UK since 2000.

D2. Biodiversity and ecosystem services (other)

The UK Biodiversity Indicators were developed and published between 2007 and 2010 for reporting on progress with international and European commitments to halt or slow biodiversity loss by 2010. A new Strategic Plan was adopted by signatories to the United Nations Convention on Biological Diversity (CBD) in 2010. Following this change, the UK indicators were reviewed and a programme of work put in place to develop and refine the indicator set for future reporting to the CBD on UK progress with the goals and targets in the new Strategic Plan (2011 to 2020).

In the review, a small number of gaps were identified where there were no current indicators for particular CBD goals and targets. Indicators for reporting on enhancing benefits from biodiversity were identified as a gap and work is now underway to review data availability and to develop options for a new indicator on biodiversity and ecosystem services.

Relevance

The benefits that humans receive from the environment have recently become more widely recognised. Four types of benefits were recognised in the Millennium Ecosystem Assessment: Provisioning, Supporting, Regulating, and Cultural. Without these services humans would not survive on earth. Measuring the status of these services is therefore a critical part of the indicator set.

Progress to date

A scoping exercise undertaken to review and synthesise the data used in the UK National Ecosystem Assessment (http://uknea.unep-wcmc.org/) has identified 177 datasets that may be suitable for developing this indicator. These datasets primarily relate to species and habitat extent, abundance, distribution and condition; or to agricultural, forestry and fisheries outputs. Results of the scoping exercise will inform and guide subsequent, more detailed development of indicator options through consultation with experts in this field.

E1. Biodiversity data for decision making

The UK Biodiversity Indicators were developed and published between 2007 and 2010 for reporting on progress with international and European commitments to halt or slow biodiversity loss by 2010. A new Strategic Plan was adopted by signatories to the United Nations Convention on Biological Diversity (CBD) in 2010. Following this change, the UK indicators were reviewed and a programme of work put in place to develop and refine the indicator set for future reporting to the CBD on UK progress with the goals and targets in the new Strategic Plan (2011 to 2020).

In the review, a small number of gaps were identified where there were no current indicators for particular CBD goals and targets. Indicators for reporting on decision making were identified as a gap and work is now underway to review data availability and to develop options for a new indicator on availability and use of biodiversity data in decision making.

Relevance

Good policy is based on evidence. We need evidence to guide our decisions, from issues of national policy to choices about individual site management; we also need to continue to develop and test solutions to address biodiversity loss and engage people, natural resource managers and business.

Progress to date

The UK National Ecosystem Assessment is currently being reviewed to identify datasets that may be suitable for developing this indicator. Results of the review will inform and guide subsequent, more detailed data searches and development of indicator options and methodologies through consultation with experts in this field.

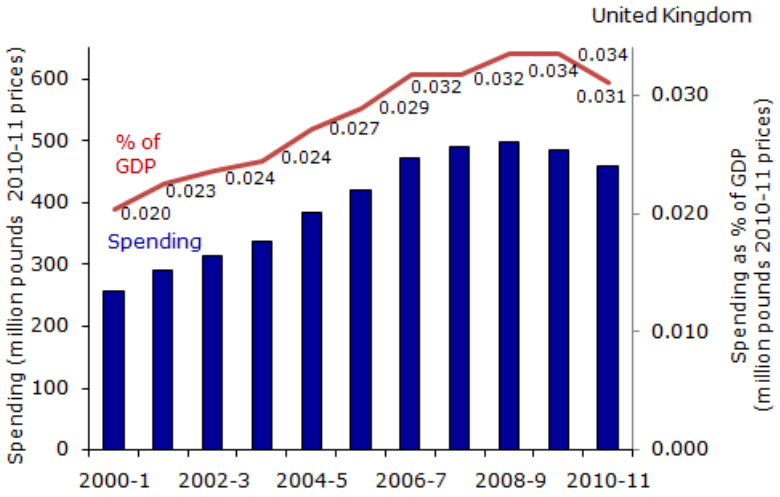
E2. Expenditure on UK and international biodiversity

a. Expenditure on UK biodiversity

b. UK expenditure on international biodiversity

Type: Response Indicator

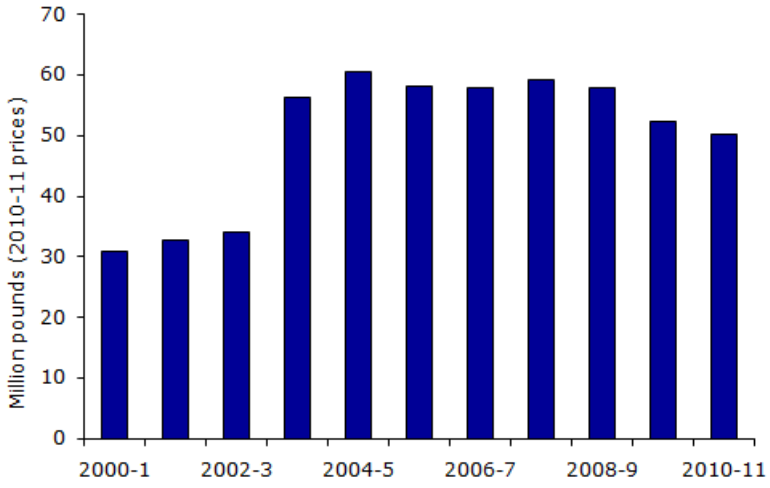
Figure E2i. Public sector expenditure on biodiversity in the UK, 2000-1 to 2010-11.



Notes: Deflated using UK Gross Domestic Product Deflator.

Source: Defra, Her Majesty's Treasury.

Figure E2ii. UK public sector expenditure on international biodiversity, 2000-1 to 2010-11.



Notes: Deflated using UK Gross Domestic Product Deflator.

Source: Defra.

Assessment of change in public expenditure on biodiversity			
	Long term	Since 2000	Latest year
Public sector expenditure on biodiversity in the UK			Decreased (2010-11)
UK public sector expenditure on international biodiversity			Decreased (2010-11)

- Spending is one way of assessing the priority that is given to biodiversity within the UK public sector. Funding for international biodiversity is essential for the implementation of the Convention on Biological Diversity in developing countries.
- In 2010-11, £458.9 million of UK public sector funding was spent on UK biodiversity, a decrease of 5 per cent compared with 2009-10. Between 2000-1 and 2010-11, public sector spending on UK biodiversity increased by 79 per cent in real terms.
- In 2010-11, UK public sector funding for international biodiversity totalled £50.2 million. International spending by the UK public sector has increased by 62 per cent since 2000-1 in real terms. However, there has been a reduction since 2007-8.
- In 2010-11, GDP in the UK was £1,477,883 million, an increase of 2 per cent compared with 2009-10. Since 2000-1 UK GDP has grown by 17 per cent. Public sector funding on UK biodiversity relative to the GDP fell in 2010-11.

Enquiries about indicators or this publication

This publication has been produced by Natural Environment Science, Environment Statistics Service and UK Biodiversity Policy Teams (Defra), working with the Joint Nature Conservation Committee (JNCC).

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We would welcome feedback on this publication. If you have any comments or questions about the published biodiversity indicators please contact:

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Information on other environmental statistics is also available on Defra's webpages at http://www.defra.gov.uk/statistics/environment/biodiversity/.

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For further details on all the indicators, including data sources and assessment methods, please visit the Joint Nature Conservation Committee (JNCC) website: www.jncc.defra.gov.uk/biyp.

Annex: National Statistics

Some key Governmental statistical outputs are designated as National Statistics. The Statistics and Registration Service Act 2007 gives the UK Statistics Authority a statutory power to assess sets of statistics against the Code of Practice for Official Statistics. Assessment will determine whether it is appropriate for the Statistics to be designated as National Statistics.

Designation as National Statistics means that the statistics comply with the Code of Practice. The Code is wide-ranging. Designation can be interpreted to mean that the statistics: meet identified user needs; are produced, managed and disseminated to high standards; and are explained well.

Designation as National Statistics should not be interpreted to mean that the statistics are always correct. For example whilst the Code requires statistics to be produced to a level of accuracy that meets users' needs, it also recognises that errors can occur – in which case it requires them to be corrected and publicised.

The UK Biodiversity Indicators (published as Biodiversity Indicators in Your Pocket) is a Defra National Statistics compendium). The designation does not mean that all the individual statistics presented are National Statistics in their own right. Rather it means that the compilation and publication has been undertaken in compliance with the Code of Practice.

The following individual statistics presented in the publication are National Statistics:

B1. Area of forestry land certified as sustainably managed

B7. Water quality

C5. Birds of the wider countryside and at sea

Although all other statistics in this compendium are not designated as National Statistics individually this is not to suggest that they should be regarded as being less reliable, as all are subject to rigorous quality assurance by the data owners and general quality assurance by Defra and the Joint Nature Conservation Committee. The presentation of the statistics, the commentary, and the traffic light assessments have been overseen and quality assured by Defra Statisticians.