Department
for Environment
Food & Rural Affairs

Biodiversity 2020: a strategy for England's wildlife and ecosystem services

Indicators summary

December 2014

NATIONAL STATISTICS

Contents

Introduction

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.

In 2011, the government published *Biodiversity 2020: a strategy for England's wildlife and ecosystem services.* This new, ambitious biodiversity strategy for England built on the Natural Environment White Paper and provided a comprehensive picture of how we are implementing our international and EU commitments. It set out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea. It built on the successful work that has gone before, but sought to deliver a real step change.

Biodiversity 2020 also included plans to develop and publish a compact set of indicators to assess progress with delivery of the strategy. They were to be outcome-focused with an emphasis on indicators showing the status of components of biodiversity and with additional response and pressure indicators to show progress with the priority actions set out in the strategy.

The government's previous biodiversity indicator set was reviewed in 2011 to ensure that it continued to be based on the most robust and reliable available data. Some refinements to existing indicators were identified to improve their relevance, make them easier to understand, or address concerns over data quality or availability. Where the review identified gaps where there were no indicators for particular outcomes or actions in the Strategy, or where the existing indicators were only indirectly linked to outcomes, development work has been identified to fill these gaps. The set remains relevant to the new Strategy and to the new international framework of 'Aichi' targets[1] agreed under the Convention on Biological Diversity.

In 2012 a new set of 24 *Biodiversity 2020* indicators was published. In this 2014 publication, where possible each of the indicators has been revised or updated with the most recent data. In some cases work to fill gaps or improve indicators is ongoing and the work planned to further refine or deliver indicators is described briefly. The indicators may be subject to further review, particularly as the reporting requirements for the EU Biodiversity Strategy and the EU Marine Strategy Framework Directive are clarified.

The *Biodiversity 2020* 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 in Defra. For details of National Statistics designation see Annex 3.

At the 8th Biodiversity Indicators Forum, a recommendation was made to publish a transparent statement of the level of confidence that can be ascribed to each individual indicator. The Biodiversity Indicators Working group (Defra and JNCC) have undertaken a preliminary assessment (see Annex 4), which will be amended during 2015.

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1. The UK Government 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.

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 comparing the value of the measure in the base/start year with the value in the end year of the period over which change is to be assessed.

✅ 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 Government indicators, and 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 the data run is for less than ten years a long-term assessment is not made.
2. Short-term – an assessment of change over the latest five years. In a minority of cases the short term assessment has been carried out over a shorter time period, where the earliest data point is within the past five years but where statistical analysis allows a robust assessment of change over time.

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 indication of emerging trends.

Overview of assessment of change for all indicators

Strategy theme and relevant indicators		Long term change[2]	Short term change[3]
A more integrated, large-scale approach to conservation on land and at sea			
1. Extent and condition of protected areas and local sites	Extent of protected areas on land	✔ 1999-2014	≈ 2009-2014
	Extent of protected areas at sea	✔ 1999-2014	✔ 2009-2014
	Sites of Special Scientific Interest in favourable condition	⊙	✖ 2009-2014
2a. Extent and condition of priority habitats	Extent of priority habitats	⊙	⊙
	Condition of priority habitats	⊙	⊙
2b. Status of habitats of European importance	Percentage of habitats of European importance in favourable or improving conservation status	⊙	✖ 2007-2013
3. Habitat connectivity in the wider countryside	To be developed	Not assessed	Not assessed
4a. Status of priority species	Change in status of priority species - abundance	✖ 1970-2012	≈ 2007-2012
	Change in status of priority species – frequency of occurrence	✖ 1970-2011	Not assessed
4b. Status of species of European importance	Percentage of species of European importance in favourable or improving conservation status	⊙	✔ 2007–2013
5. Species in the wider countryside: farmland	Breeding farmland birds	✖ 1970-2012	✖ 2007-2012
	Butterflies of the wider countryside on farmland	✖ 1990-2013	✖ 2008-2013
	Bat populations	✔ 1999-2012	≈ 2007-2012
	Plant diversity, enclosed farmland – to be developed	Not assessed	Not assessed
6. Species in the wider countryside: woodland	Woodland birds	✖ 1970-2012	≈ 2007-2012
	Butterflies of the wider countryside in woodland	✖ 1990-2013	≈ 2008-2013
	Plant diversity, woodland plants – to be developed	Not assessed	Not assessed
7. Species in the wider	Breeding wetland birds	≈ 1975-2012	✖ 2007-2012

2. 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 if the data run is fewer than ten years, a long-term assessment is not given.

3. An assessment of change for the latest five years; or as shown if the data do not allow for an assessment over a five-year period.

Strategy theme and relevant indicators		Long term change[2]	Short term change[3]
countryside: wetlands	Wintering waterbirds	✓ 1975/76 - 2011/12	≈ 2006/07 – 2011/12
8. Species in the wider marine environment	Breeding seabirds	✓ 1986-2013	≈ 2008-2013
9. Biodiversity and ecosystem services: terrestrial habitats	Removal of greenhouse gases by forests in England	Not assessed	Not assessed
10. Biodiversity and ecosystem services: species	Status of pollinating insects	Not assessed	Not assessed
11. Biodiversity and ecosystem services: marine	Marine ecosystem integrity (size of fish in North Sea)	✗ 1983-2011	✓ 2006-2011
12a. Effective population size of sheep and cattle breeds	Native sheep breeds	⋯	≈ 2001-2007
	Native cattle breeds	⋯	✓ 2001-2007
12b. Plant genetic resources	Cumulative Enrichment Index	✓ 1960-2012	✓ 2007-2012
Putting people at the heart of biodiversity policy			
13. Public awareness, understanding and support for conservation	Proportion of people highly engaged with the issue of biodiversity loss	⋯	⋯
14. Taking action for the natural environment	Conservation volunteering	✓ 2000-2013	✗ 2008-2013
	Proportion of households undertaking wildlife gardening	⋯	⋯
15. Funding for biodiversity in England	Public sector expenditure on biodiversity	✓ 2000/01 - 2013/14	✗ 2008/09 – 2013/14
	Non-governmental organisation expenditure on biodiversity	⋯	⋯
16. Integrating biodiversity considerations into local decision making	Local sites under positive management	⋯	✓ 2008/09 – 2013/14
17. Global impacts of UK consumption	To be developed	Not assessed	Not assessed
Reducing environmental pressures			
18. Climate change impacts and adaptation	Timing of biological events – Spring Index	Not assessed	Not assessed
19. Trends in pressures on biodiversity: Pollution	Area affected by Sulphur (acidity)	✓ 1996-2011	✓ 2006-2011
	Area affected by nitrogen deposition	≈ 1996-2011	≈ 2006-2011
	Marine pollution: combined input of hazardous substances	✓ 1990-2012	≈ 2007-2012
20. Trends in pressures on	Terrestrial species	✗ 1960-2014	Not assessed

Strategy theme and relevant indicators		Long term change[2]	Short term change[3]
biodiversity: invasive species	Freshwater species	❌ 1960-2014	Not assessed
	Marine species	❌ 1960-2014	Not assessed
21. Trends in pressures on biodiversity: surface water status	Proportion of surface water bodies in England in a high or good state	⊙	≈ 2008-2012
22. Agricultural and forest area under environmental management schemes	Targeted agri-environment schemes	✓ 1987-2013	✓ 2008-2013
	Entry-level agri-environment schemes	✓ 2003-2013	✓ 2008-2013
	Uptake of priority ELS options	⊙	⊙
	Percentage of woodland certified as sustainably managed	✓ 2001-2014	≈ 2009-2014
23. Sustainable fisheries	Percentage of fish stocks harvested sustainably	✓ 1990-2012	✓ 2007-2012
Improving knowledge			
24. Biodiversity data and information for decision making	Cumulative number of records in the National Biodiversity Network	✓ 2004-2014	✓ 2009-2014
	Number of publicly accessible records at 1km^2 resolution or better	⊙	✓ 2009-2014

✓ = improving

≈ = little or no overall change

❌ = deteriorating

⊙ = insufficient or no comparable data

Assessment of change: all measures

There are 48 individual measures that make up 24 indicators.

In the short term:

- 12 measures (25 per cent) show an improvement;

- 12 measures (25 per cent) show little or no overall change; and

- 7 (15 per cent) show deterioration.

There are insufficient data to make an assessment for 6 measures (13 per cent) and 11 (23 per cent) are not assessed.

In the long term:

- 15 measures (31 per cent) show an improvement;

- 2 (4 per cent) show little or no overall change; and

- 10 (21 per cent) show a deterioration.

There are insufficient data to make an assessment for 14 measures (29 per cent) and 7 (15 per cent) are not assessed.

Eleven measures show an improvement in both the long term and the short term, or improvement in the short term (and a long-term assessment could not be made):

- Extent of protected areas at sea;
- Percentage of species of European importance in favourable or improving conservation status;
- Genetic diversity of native cattle breeds;
- Plant genetic resources – enrichment index;
- Local sites under positive management;
- Air pollution impacts on sensitive habitats: sulphur (acidity);
- Area of farmland under targeted agri-environment schemes;
- Area of farmland under entry-level agri-environment schemes;
- Fish stocks harvested within safe limits;
- Cumulative number of records in the National Biodiversity Network;
- Number of publicly accessible records at 1km^2 resolution or better.

Four measures have deteriorated in the long term but improved or remained stable in the short term:

- Change in the abundance of priority species;
- Woodland birds;
- Butterflies of the wider countryside on woodland;
- Marine ecosystem integrity (size of fish in the North Sea).

Conversely, two measures show improvement in the long term but are deteriorating in the short term:

- Time spent in environmental volunteering;
- Expenditure on biodiversity in England.

The following eight measures have deteriorated in all time periods over which assessments can be made:

- Proportion of Sites of Special Scientific Interest in favourable condition;
- Percentage of habitats of European importance in favourable or improving condition;
- Change in the frequency of occurrence of priority species;
- Breeding farmland birds;
- Butterflies of the wider countryside on farmland;
- Pressure on biodiversity from invasive species in freshwater environments;
- Pressure on biodiversity from invasive species in terrestrial environments;
- Pressure on biodiversity from invasive species in marine environments.

The charts below show the accumulative traffic lights for 48 measures and for the different themes.

All Indicators
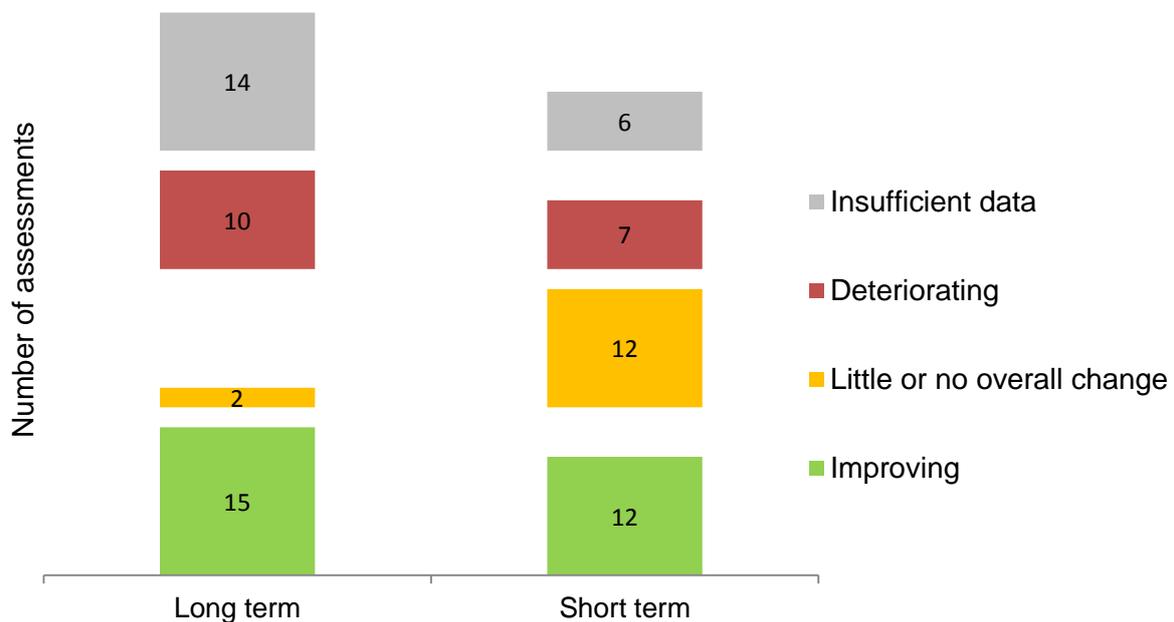
Note: Based on 48 measures, which make up 24 indicators (7 measures are not assessed in the long term and 11 measures are not assessed in the short term).

Theme 1 – A more integrated, large scale approach to conservation on land and at sea

- For this theme 7 measures have deteriorated in the long term and 5 measures in the short term. Meanwhile, 6 measures have improved in the long term, decreasing to 5 in the short term.

- All of the 6 measures that improved in the long term have continued to improve or remained stable in the short term.

- Of the measures for which it is not yet possible to make a long term assessment, but it is possible to make a short term assessment, 2 have shown improvement in the short term (including the percentage of species of European importance in favourable or recovering condition); 1 has shown no overall change; and 2 have deteriorated (including the percentage of habitats of European importance in favourable or recovering condition).

- There have been improvements in the extent of protected areas on land and at sea, and bat populations have shown signs of recovery after historical declines.

- Birds and butterflies found on farmland continue to decline.
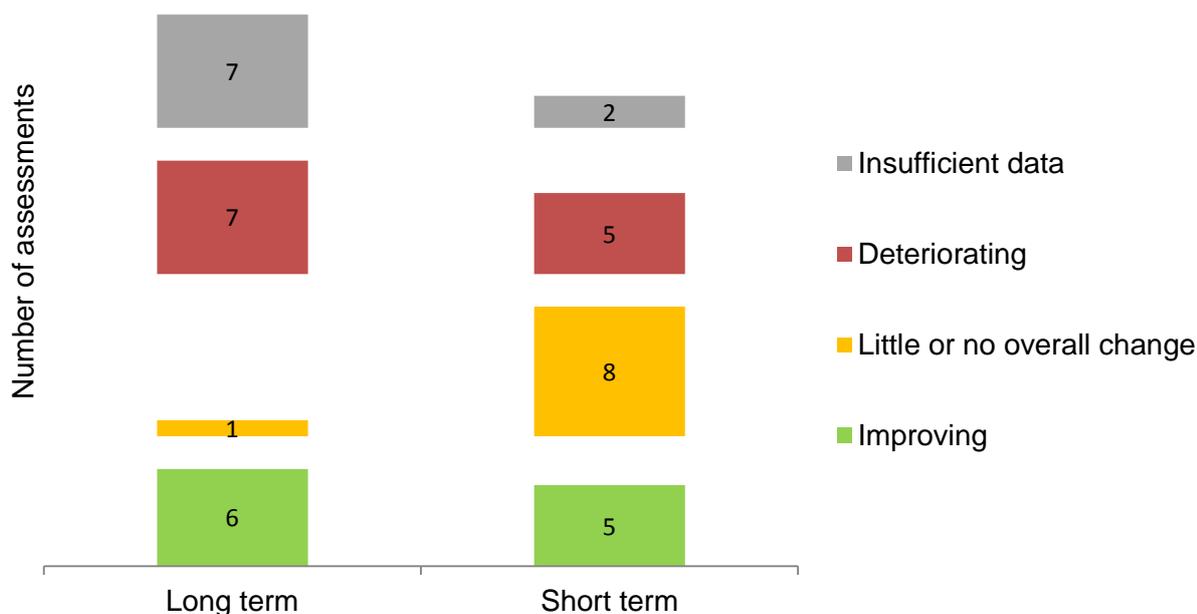
Note: Based on 26 measures, which make up 12 indicators (5 measures are not assessed in the long term and 6 measures are not assessed in the short term).

Theme 2 – Putting people at the heart of biodiversity policy

- For this theme 2 measures that show improvement in the long term have deteriorated in the short term; hours spent by members of the public engaged in conservation volunteering and public sector expenditure on biodiversity in England.

- The number of local sites in positive conservation management has increased in the short term (it is not yet possible to make a long-term assessment of this measure).
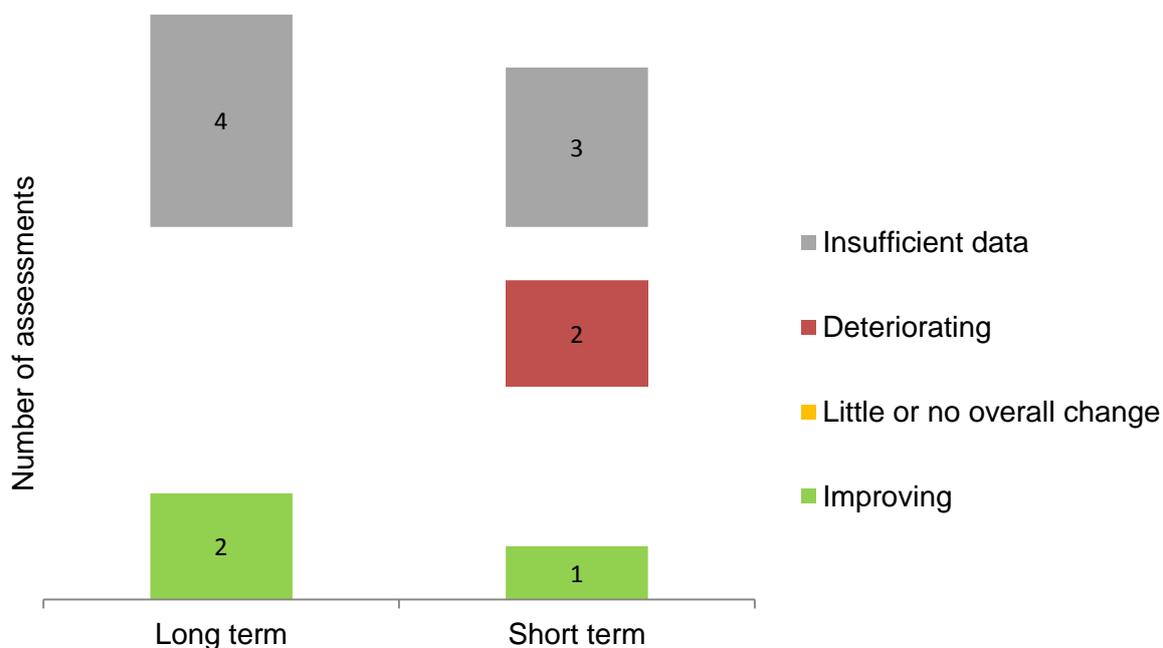
Note: Based on 7 measures which make up five indicators (1 indicator/measure is not assessed in the long term or the short term).

Theme 3 – Reducing environmental pressures

- For this theme 3 measures, all relating to pressure from invasive species, have deteriorated in the long term. It is not possible to assess these measures in the short term.
- Six measures have improved in the long term, decreasing to 4 in the short term.
- The area of land in agri-enviornment schemes has continued to increase in the long term and in the short term, as has the proportion of fish stocks harvested within sustainable limits. The area of habitat adversely affected by acidity has decreased in the long term and in the short term.
- However, the improvement in marine pollution levels and the proportion of woodland that is sustainably managed have stabilised.
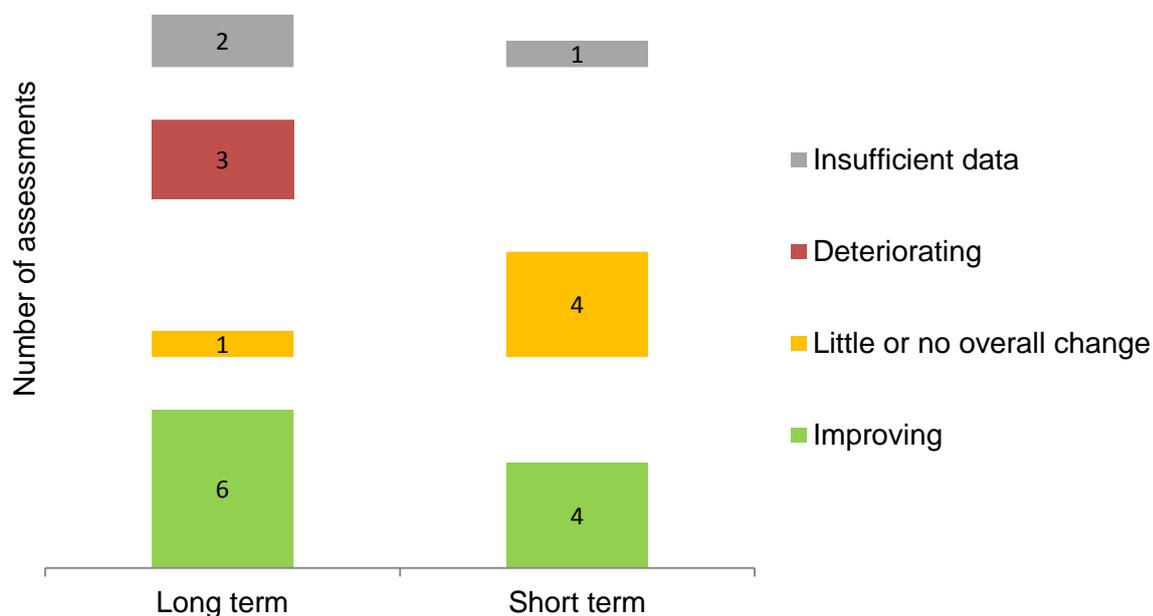
Note: Based on 13 measures which make up six indicators (1 indicator/measure is not assessed in the long term and 4 measures are not assessed in the short term).

Theme 4 – Improving knowledge

Theme 4 has only 1 indicator, so no chart is shown. The cumulative number of records in the National Biodiversity Network has increased in the long term and in the short term. The number of publicly accessible records at 1km^2 resolution or better has also improved in the short term (this measure cannot yet be assessed in the long term).

1. Extent and condition of protected areas

1a. Extent of protected areas

Extent of national and European protected areas on land and at sea, 2000 to 2014

England
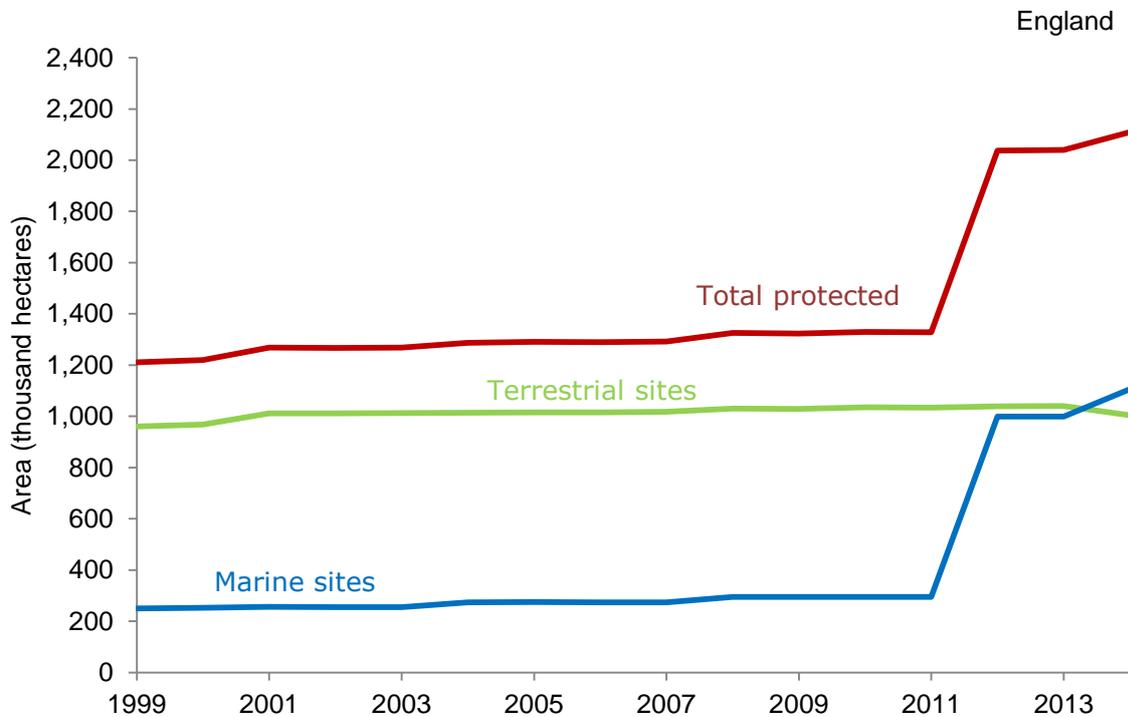
Notes:
1. Extent of protected sites is the cumulative area assessed in April of year shown.
2. Extent is based on the following designations: Sites of Special Scientific interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites and Marine Conservation Zones (MCZ).
3. For sites that span English borders, only the area within England is included.
4. Sites between mean low water and the 12 mile limit are included in the 'marine' measure; sites beyond 12 miles, in UK waters, are excluded. These are covered by the UK indicator on protected sites.

Source: Natural England.

- Designation and management of protected areas is a key mechanism for conserving wildlife and geological features on land and at sea.
- The total extent of land and sea protected in England through national and international protected areas increased from 1.2 million to 2.1 million hectares between 2000 and 2014; an increase of 74 per cent.
- Over 1 million hectares of terrestrial and freshwater areas have been designated, representing about 8 per cent of the land area of England. The area of marine sites (out to 12 nautical mile limit) increased substantially by more than 276 per cent to 1.1 million hectares between 2010 and 2014, representing about 21 per cent of England's inshore waters.

Indicator assessment

Assessment of change in extent and condition of protected areas and local sites			
	Long term	**Short term**	**Latest year**
Extent of protected areas on land	✓ 1999-2014	≈ 2009-2014	No change (2014)
Extent of protected areas at sea	✓ 1999-2014	✓ 2009-2014	Increased (2014)

1b Condition of Sites of Special Scientific Interest (SSSI)

Cumulative proportion of Sites of Special Scientific Interest in favourable or unfavourable recovering condition, 2003 to 2014
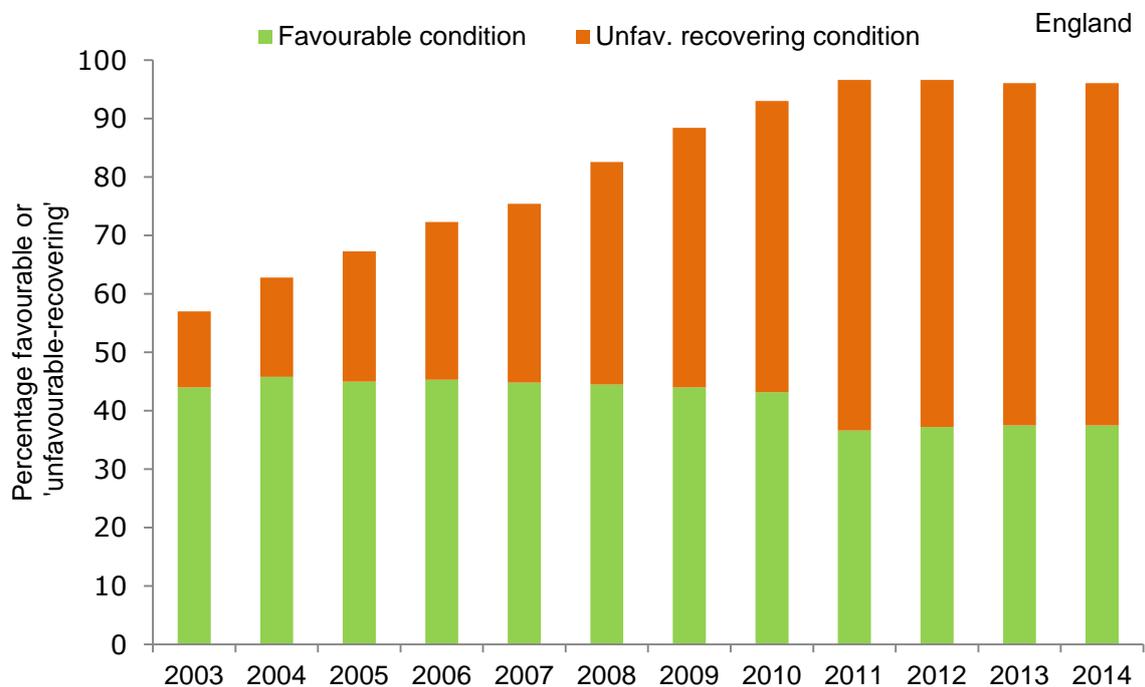
Note: Site condition is cumulative area assessed in April of year shown.

Source: Natural England.

- This indicator shows the proportion of SSSI features, by area, meeting set condition criteria. Features are the species or habitats for which the sites have been designated.
- There has been a net decrease in the area of SSSIs in favourable condition; down from 44 per cent in 2003 to 37.5 per cent in April 2014. This reflects the difficulty of restoring species and habitats to favourable condition – it will take many years to reverse previous declines in species populations, or to restore the ecological functioning of habitats.
- However, since 2011, there has been a small percentage point increase in the area in favourable condition, from 36.6 per cent to 37.5 per cent in 2014. The area of SSSIs in unfavourable recovering condition has increased substantially from 13 per cent in 2003 to 58.6 per cent in 2014. The overall proportion of SSSIs in favourable or recovering condition has remained above 96 per cent since 2011.

Indicator assessment

Assessment of change in extent and condition of protected areas and local sites			
	Long term	**Short term**	**Latest year**
SSSIs in favourable condition	🙂	❌ 2009-2014	No change (2014)

Note: Assessment of the individual measures are based on a three-year average from the baseline, using the three earliest consecutive years available.

2a. Status of threatened habitats

2a. Extent and condition of priority habitats

Condition of priority habitat by area (%), 2011 to 2014
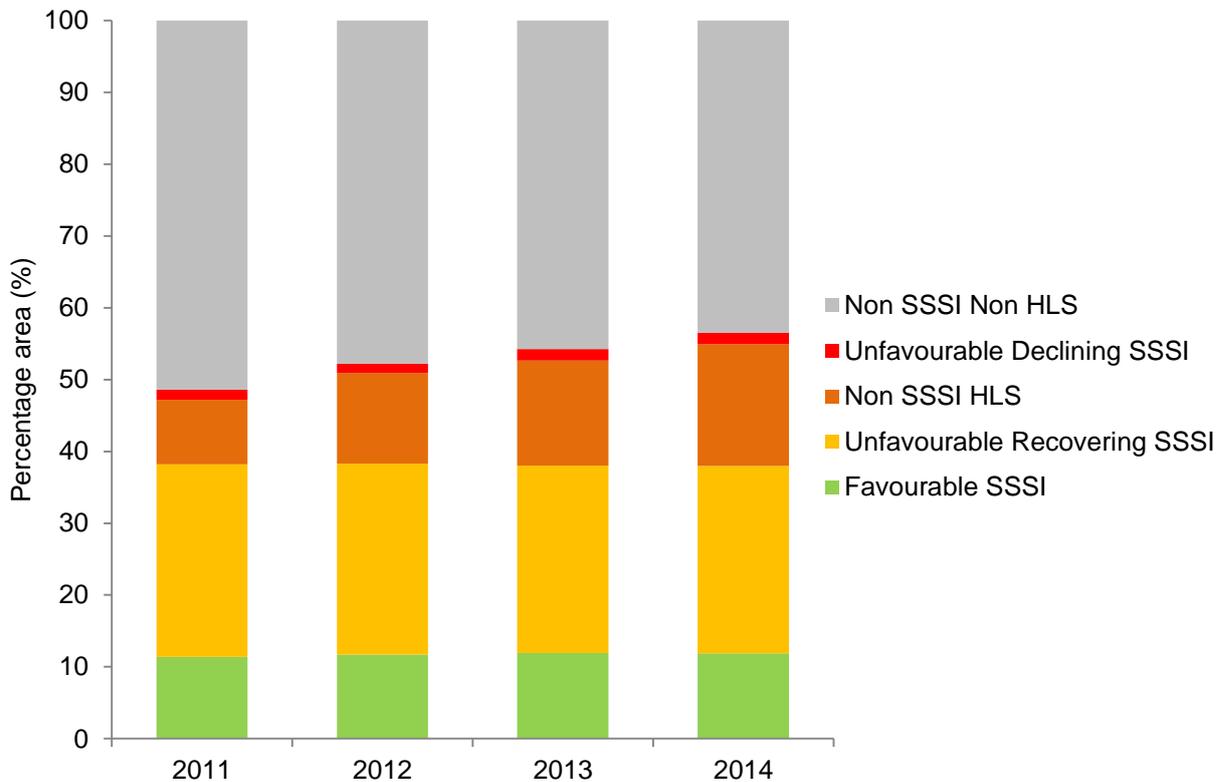
Source: Natural England.

- Priority habitats are a focus for conservation action in England. There are 56 habitats recognised as being of 'principal importance' for the conservation of biological diversity in England under section 41 of the Natural Environment and Rural Communities Act 2006. The first part of this indicator shows the extent of priority terrestrial and coastal habitat types across England. There are around 1.9 million hectares of terrestrial and coastal priority habitats across England, representing around 14 per cent of the land area. This indicator does not include freshwater and marine habitats.

- The second part of this indicator shows the percentage area of priority habitats in favourable, recovering and unfavourable condition. The condition figures are broken down by area within protected areas (Sites of Species Scientific Interest (SSSIs)) and outside protected areas under Higher Level Stewardship agreements (used as a proxy for favourable management). As of April 2014 just over 1 million hectares of priority habitats were in target condition (55 per cent in favourable or recovering condition). Broken down to within and outside protected sites this amounts to 39 per cent of priority habitats in favourable or recovering condition in SSSIs and a further 17 per cent of priority habitats outside SSSIs in favourable management (under HLS management).

Indicator assessment

Assessment of change in status of threatened habitats			
	Long term	**Short term**	**Latest year**
Extent of priority habitats	☺	☺	Not assessed
Condition of priority habitats	☺	☺	Not assessed

Note: A long term assessment is not made as the data do not go back more than 10 years.

2b. Status of threatened habitats: habitats of European importance

2b. Status of habitats of European importance

Percentage of UK habitats of European importance in improving or declining conservation status in 2007 and 2013
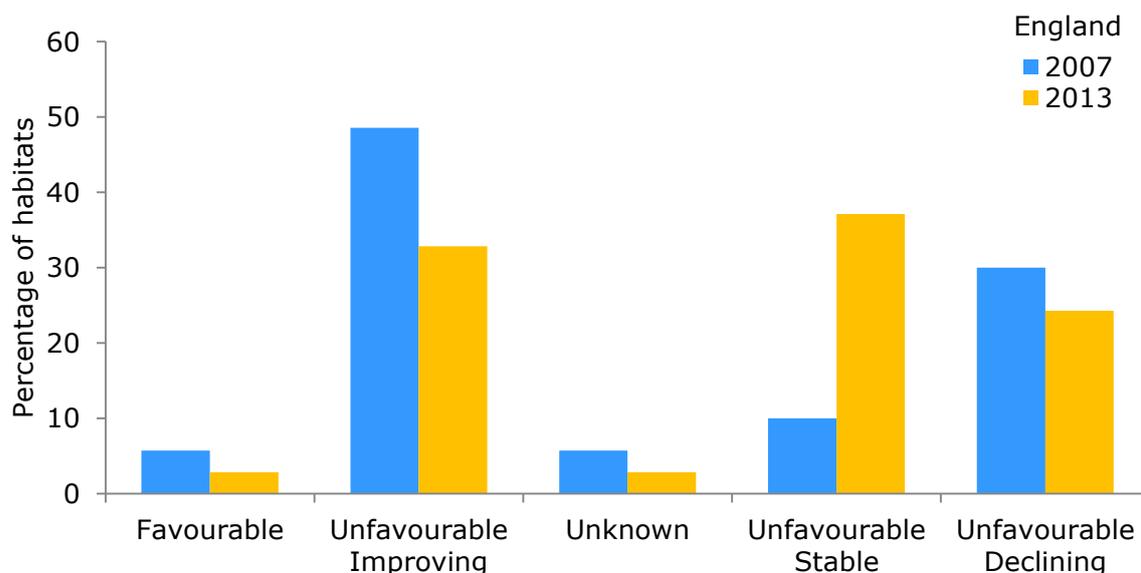
Notes: Graph based on 70 habitats listed on Annex I of the Habitats Directive that occur in England.

Source: UK Habitats Directive (Article 17) reports 2007 and 2013.

- This indicator shows progress with maintaining and/or restoring favourable conservation status for habitat types listed under Annex I of the Habitats Directive. The UK has European level conservation responsibilities for these species. The status assessments in this indicator are based on 70 UK habitats listed on Annex I of the Habitats Directive that are found in England.
- In 2007, six per cent of habitats listed on Annex I of the Habitats Directive occurring in England were in favourable conservation status, declining to three per cent in 2013.
- The conservation status of 49 per cent of habitats was improving in 2007. In 2013, 33 per cent were improving.
- The conservation status of 30 per cent of the habitats was declining in 2007. In 2013, 24 per cent were declining.

Indicator assessment

Assessment of change in conservation status of habitats of European importance			
	Long term	**Short term**	**Latest year**
Percentage of UK habitats of European importance in favourable or improving conservation status	☺	✖ 2007-2013	Decreased (2013)

3. Habitat connectivity in the wider countryside

This indicator is under development and no assessment has been made.

A measure of connectivity has been published previously within the biodiversity indicators set, based on an analysis of changes in land cover recorded in the Countryside Survey – a detailed periodic audit of a statistically representative sample of land across Great Britain. The measure required further analysis to better explain the causes of the changes in connectivity. It has not been possible to undertake the analysis required and, given the latest data available for the indicator is from 2007, it has been decided that this indicator is now too out-of-date to be retained within the indicator set. It is hoped that a new interim measure can be published in 2015.

Key messages from the previous indicator update are presented here.

The indicator presented the change in the degree of habitat connectivity in Great Britain between 1990 and 2007, for two broad habitats: broad-leaved, mixed and yew woodland and neutral grassland. The indicator showed an increasing trend in the connectivity of neutral grassland in the long term between 1990 and 2007, but not in the short term between 1998 and 2007. The indicator showed little or no overall change since 1990 in connectivity of broad-leaved, mixed and yew woodland.

Figure 3.1: Change in habitat connectivity for selected broad habitats in the wider countryside, 1990 to 2007.
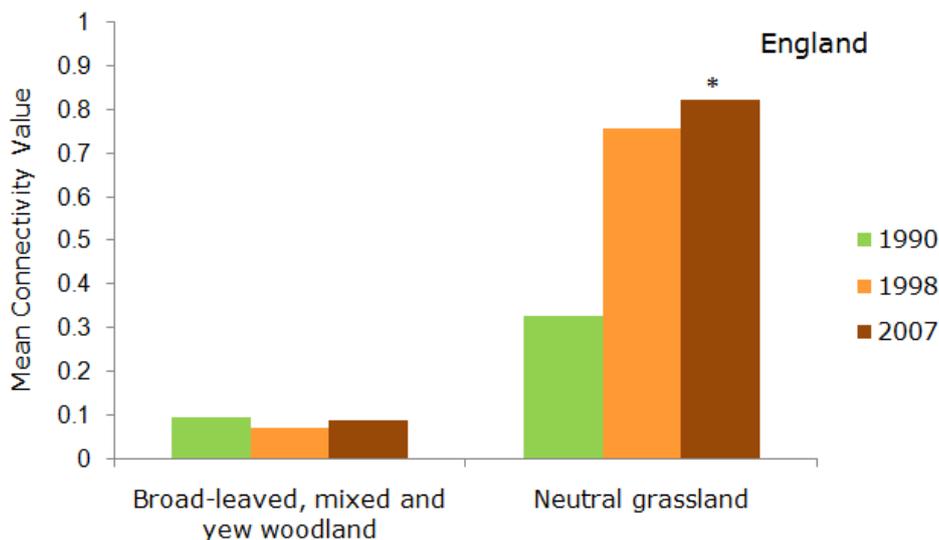
Notes:
1. The mean connectivity value is a measure of the relative connectivity of habitats on a scale of 0 (not connected) to 100 (contiguous habitat). Typical values are between zero and one.
2. Changes shown by an asterisk (*) indicate a significant change between 1990 and 2007.

Source: Forest Research, Centre for Ecology and Hydrology.

4a. Status of threatened species

4ai. Status of priority species

Change in the relative abundance of priority species in the UK, 1970 to 2012
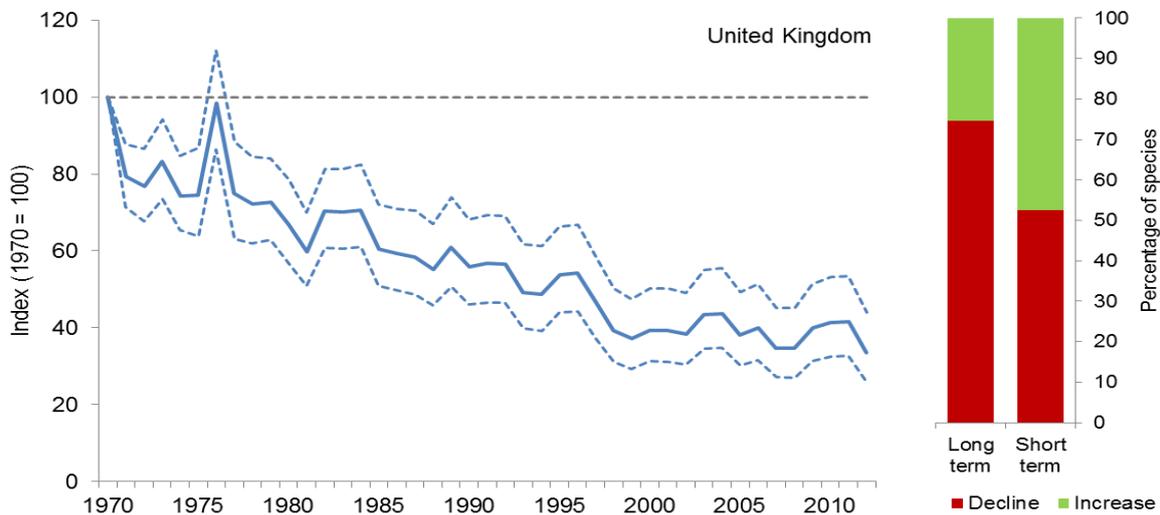
Notes:
1. Based on 213 species. Dotted lines show the 95 per cent confidence intervals relative to the 1970 reference year.
2. Bar chart shows the percentage of species increasing or declining over the long-term (1970 to 2012) and the short-term (2007 to 2012).

Source: Bat Conservation Trust, British Trust for Ornithology, Butterfly Conservation, Centre for Ecology & Hydrology, Defra, Joint Nature Conservation Committee, People's Trust for Endangered Species, Rothamsted Research, Royal Society for the Protection of Birds.

- This indicator shows population changes of priority species in the UK; defined as those on one or more of the biodiversity lists of each UK country (Natural Environmental and Rural Communities Act 2006 - Section 41 (England) and Section 42 (Wales), Northern Ireland Priority Species list, Scottish Biodiversity List). 213 species are included in the indicator. This selection is taxonomically limited at present. Currently this indicator can only be presented on a UK scale.
- Between 2007 and 2012, populations of priority species declined by four per cent relative to their value in 2007. This decrease is not statistically significant. Within the index over this short-term period, 47 per cent of species showed an increase and 53 per cent showed a decline.

Indicator assessment

Assessment of change in the relative abundance of priority species in the UK			
	Long term	**Short term**	**Latest year**
Relative abundance of priority species	❌ 1970-2012	😐 2007-2012	Decreased (2012)

4aii. Change in frequency of occurrence of priority species, 1970 to 2011
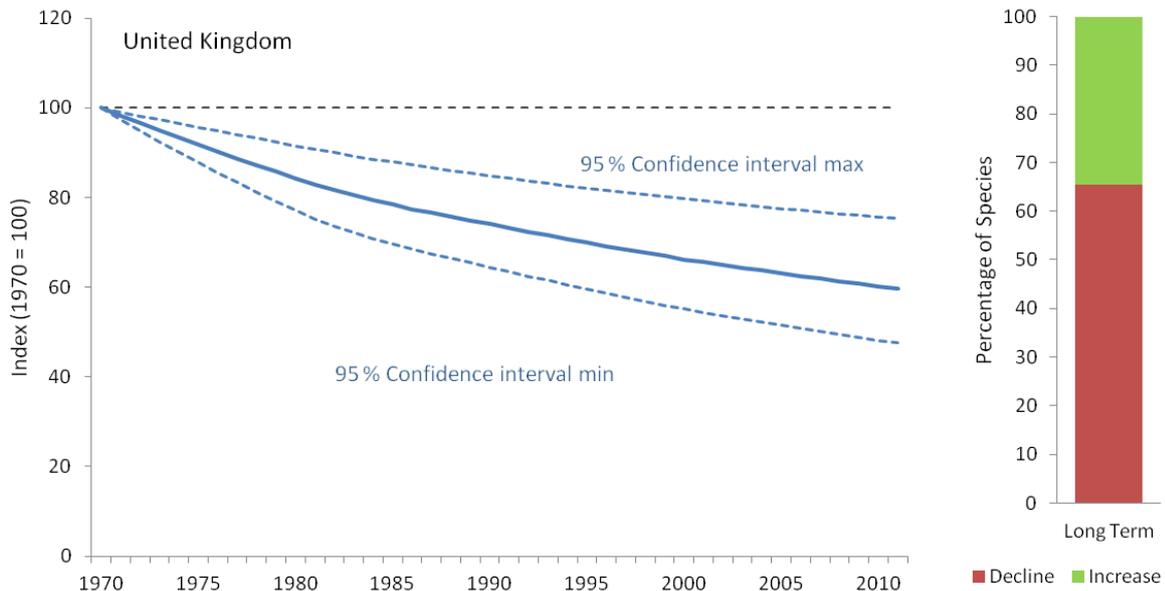
Notes:
1. Based on 179 species of insect.
2. Bar chart shows the percentage of species increasing or declining over the long-term (1970 to 2011).

Source: Bees, Wasps and Ants Recording Society; British Dragonfly Society; Biological Records Centre[4] Butterfly Conservation; Hoverfly Recording Scheme; Orthoptera Recording Scheme.

- This indicator uses biological records (observations of species in a known place in space and time) to model changes in the frequency of occurrence of a group of species.
- Between 1970 and 2011, the frequency of occurrence of those priority species included in this indicator has declined to 60 per cent of its value in 1970. Over this time period, 65 per cent of species experienced a decline and 35 per cent experienced an increase in their frequency of occurrence.

Indicator assessment

Assessment of change in the relative abundance of priority species in the UK			
	Long term	**Short term**	**Latest year**
Status of priority species; frequency of occurrence – insects	⊗ 1970-2011	Not assessed	Not assessed

Note: Short term and latest year assessments cannot be given for frequency of occurrence as the analytical technique currently used is not appropriate for the production of short term trends.

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[4] The Biological Records Centre is co-funded by the Centre for Ecology and Hydrology and the Joint Nature Conservation Committee

4b. Status of threatened species

4b. Status of UK species of European importance

Percentage of UK species of European importance in improving or declining conservation status in 2007 and 2013
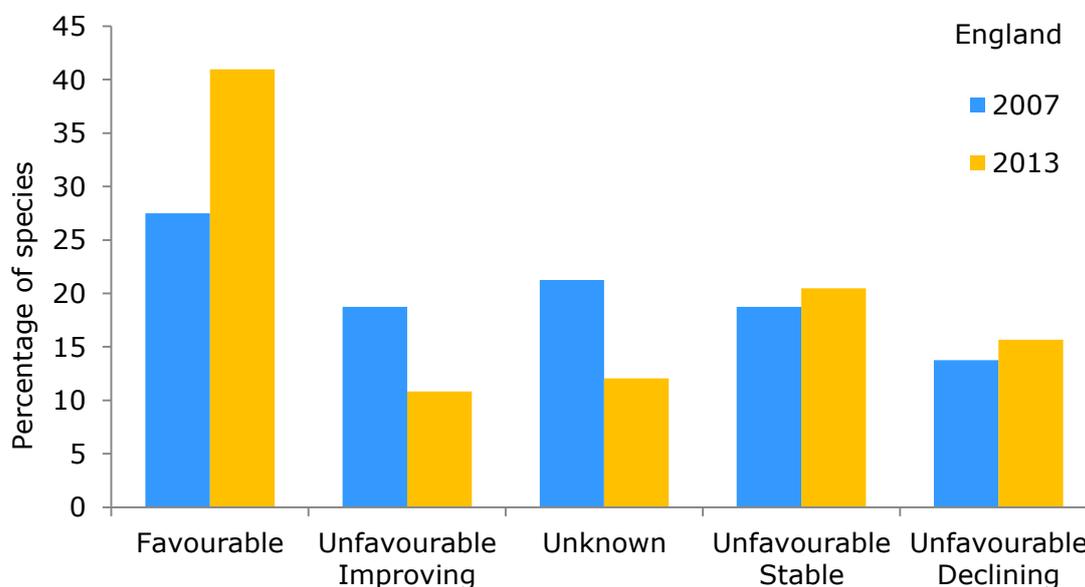
Notes:

1. The number of species assessed was 89 in 2007, and 93 in 2013.
2. Graph is based on species listed on Annexes II, IV and V of the Habitats Directive, but excluding vagrants.

Source: UK Habitats Directive (Article 17) reports 2007 and 2013.

This indicator shows progress with maintaining and/or restoring favourable conservation status for species listed under the Annexes of the Habitats Directive. The UK has European level conservation responsibilities for these species.

- In 2007, 26 per cent of species listed on Annexes II, IV or V of the Habitats Directive were in favourable conservation status, increasing to 39 per cent in 2013.
- The conservation status of 18 per cent of species was improving in 2007. In 2013, 10 per cent were improving.
- The conservation status of 13 per cent of the species was declining in 2007. In 2013, 15 per cent were declining.

Indicator assessment

Assessment of change in conservation status of species of European importance			
	Long term	**Short term**	**Latest year**
Percentage of UK species of European importance in favourable or improving conservation status	⊙	✓ 2007–2013	Increased (2013)

5. Species in the wider countryside: farmland

5a Populations of farmland species

Breeding birds on farmland in England, 1970 to 2013
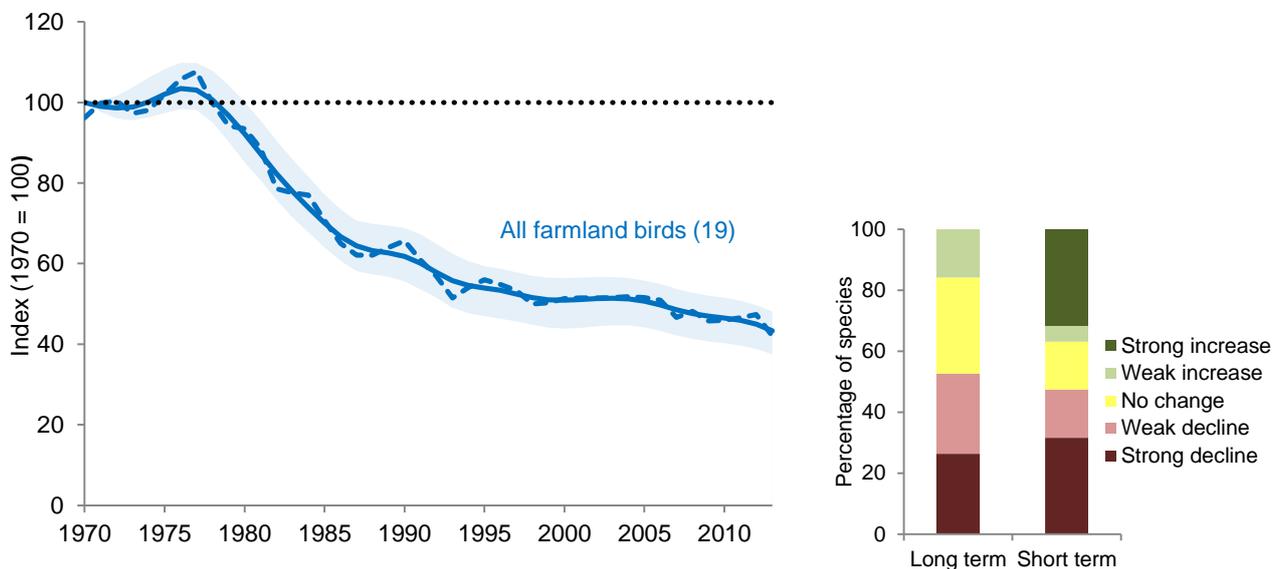
Notes:
1. Figure in brackets shows number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.

Sources: British Trust for Ornithology, Department for Environment Food and Rural Affairs, Joint Nature Conservation Committee and the Royal Society for the Protections of Birds.

Widespread butterflies on farmland in England, 1990 to 2013
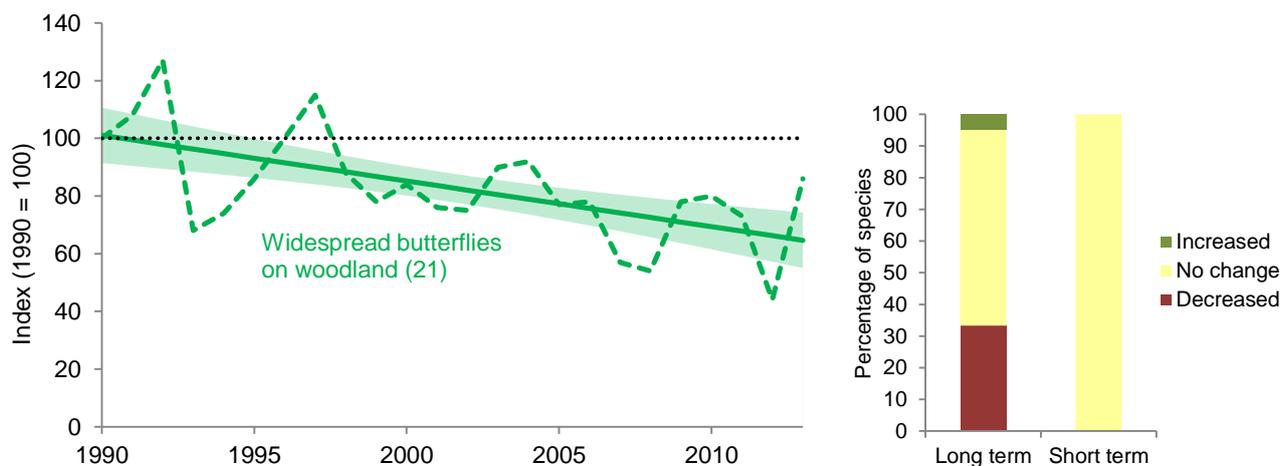
Notes:
1. Figure in brackets shows number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).

3. Bar chart shows the percentage of species within the indicator that have shown a statistically significant increase, statistically significant decrease or no change.

Sources: Butterfly Conservation, Centre for Ecology & Hydrology

Widespread bats on farmland in England, 1999 to 2013
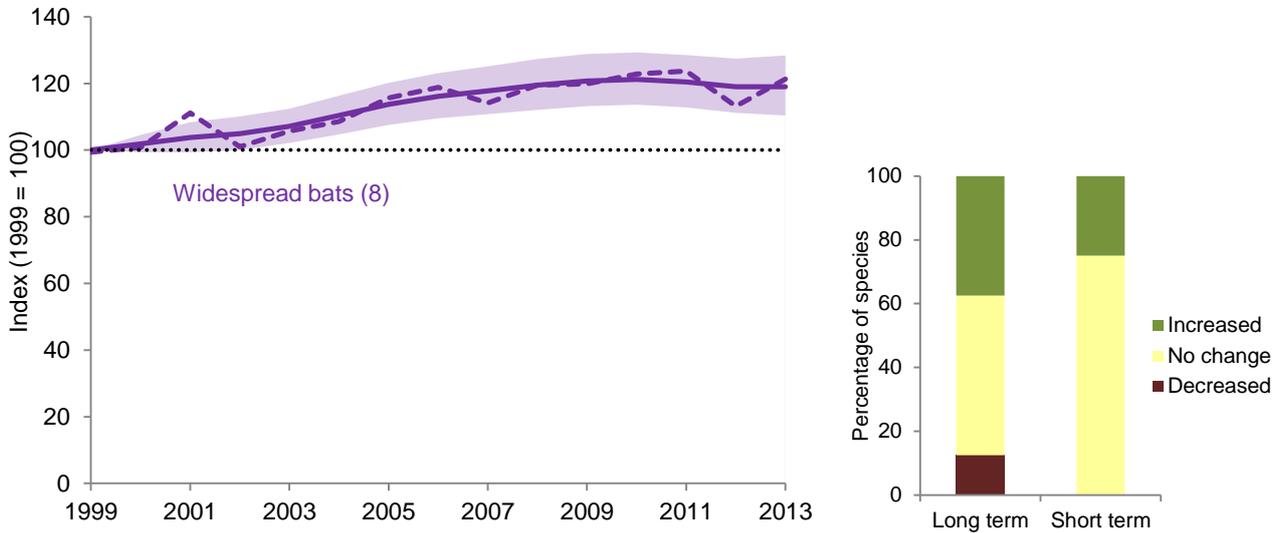
Notes:
1. The index is a composite of eight species: serotine; Daubenton's bat; Natterer's bat; noctule; common pipistrelle; soprano pipistrelle; brown long-eared bat; and lesser horseshoe bat.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have shown a statistically significant increase, statistically significant decrease or no change.

Source: Bat Conservation Trust

- The indicator shows changes in abundance of species on farmland (19 birds and 21 butterflies). It also shows changes in the combined population size of eight widespread bat species which use a variety of habitats including farmland.
- In 2013, the breeding farmland bird index in England reached its lowest recorded level; 56 per cent lower than its level in 1970. The largest declines in farmland bird populations occurred between the late seventies and the early nineties. However, there has been a significant on-going decline of seven per cent between 2007 and 2012.
- Since 1990 butterfly numbers on farmland have fallen by 14 per cent, reaching a historical low point in 2012 and making a substantial recovery in 2013. These figures demonstrate how numbers fluctuate from year to year, but overall, based on the underlying smoothed trend, the indicator has shown a significant decline since 2008.
- Between 1999 and 2013, populations of the bats in the indicator have increased by 22 per cent. In the short term, between 2007 and 2012, the indicator has remained stable. However, bat populations have undergone severe declines historically.

Indicator assessment

Assessment of change in abundance and diversity of species in the wider countryside (farmland)			
	Long term	**Short term**	**Latest year**
Breeding farmland birds	❌ 1970-2012	❌ 2007-2012	Decreased (2013)
Butterflies of the wider countryside on farmland	❌ 1990-2013	❌ 2008-2013	Increased (2013)
Bat populations	✅ 1999-2012	≈ 2007-2012	Increased (2013)

Note: To better capture patterns in the data, where possible, long term and short term assessments are made on the basis of smoothed data. Due to differences in the methods used to produce smooth trends for birds, butterflies and bats, long and short term assessments made on smoothed birds and bats data are made to 2012, while assessments made on smoothed butterfly data are made to 2013. All latest year assessments are based on unsmoothed data.

5b Farmland plant species richness

Until 2013 this indicator was based on an analysis of the change in plant species richness in the wider countryside. As the data has not been updated for a number of years and future opportunities to update the data in a consistent way are unlikely, the decision was taken by UK BISG to reclassify this indicator as 'under development'. Key messages from the previous indicator update are presented here.

There was a significant increase in plant species richness in *arable and horticultural land* in both the longer term (1990–2007) and shorter term (1998–2007). There was little or no overall change in species richness in *improved grassland* between 1990 and 2007. Within neutral grassland and boundary habitats, there was a significant decrease in plant species richness in all three habitats in the longer term, as well as a significant decrease in species richness in *stream sides* and *neutral grassland* in the shorter term.

Plant species richness in the wider countryside 1990 to 2007: enclosed farmland, neutral grassland and boundary habitats

England

Enclosed farmland

Neutral grassland and boundary habitats
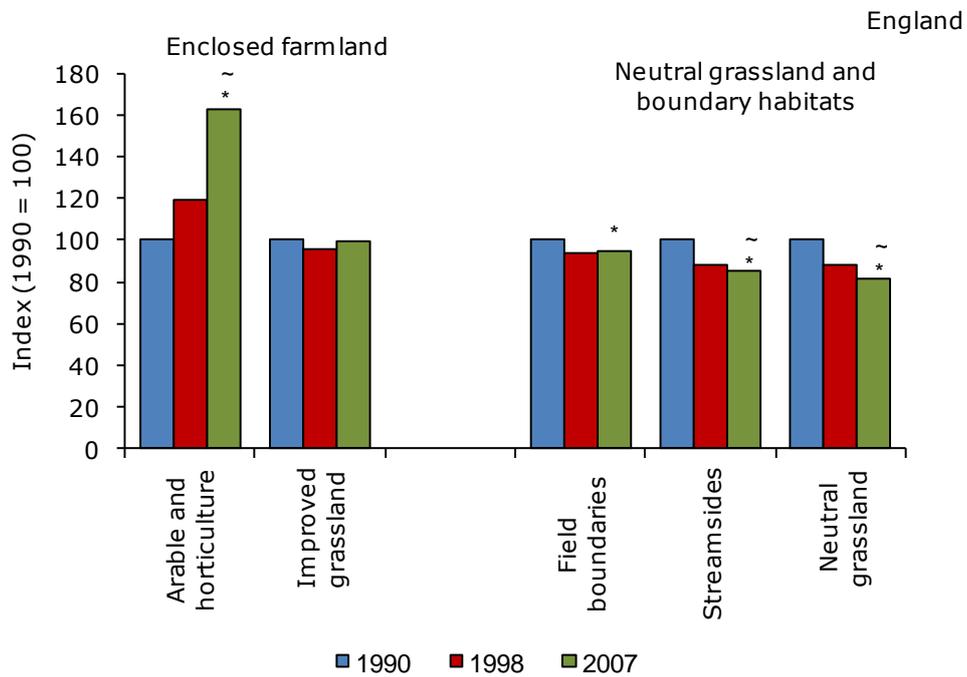
Notes:

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

Source: Countryside Survey, Centre for Ecology & Hydrology.

6. Species in the wider countryside: woodland

6a Populations of woodland species

Widespread breeding birds in woodland in England, 1970 to 2013
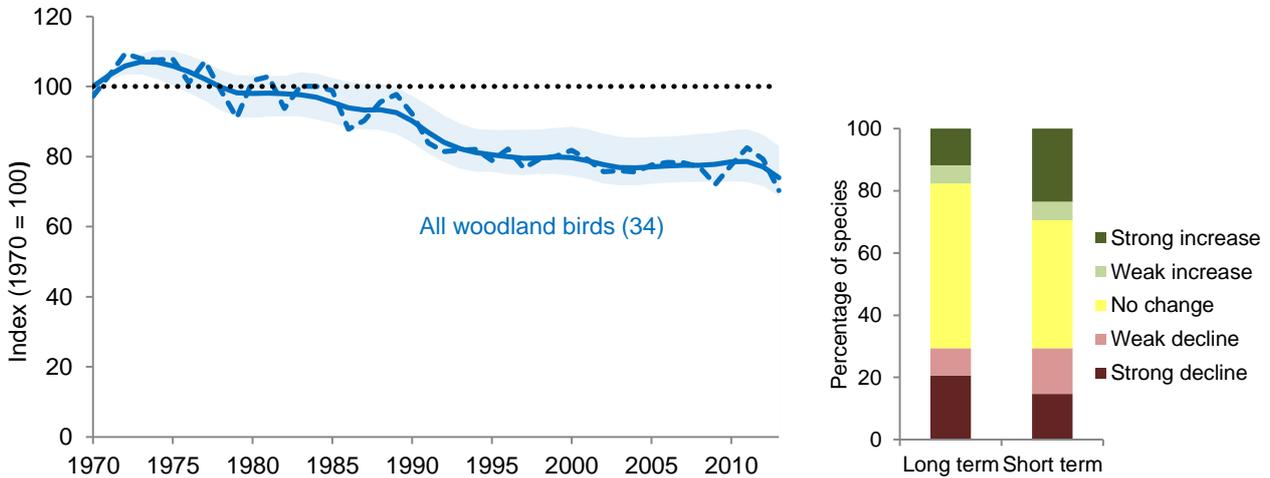
Notes:
1. Figures in brackets show the number of species. There is one less species in the indicator than in previous years: hawfinch has been removed as its population trend is felt to be unreliable. The index has been recalculated with 34 species for the whole period 1970-2013: the effect of removing hawfinch on the trend has been negligible.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.

Source: British Trust for Ornithology, Department for Environment, Food and Rural Affairs, Joint Nature Conservation Committee and the Royal Society for the Protection of Birds.

Widespread butterflies in woodland in England, 1990 to 2013
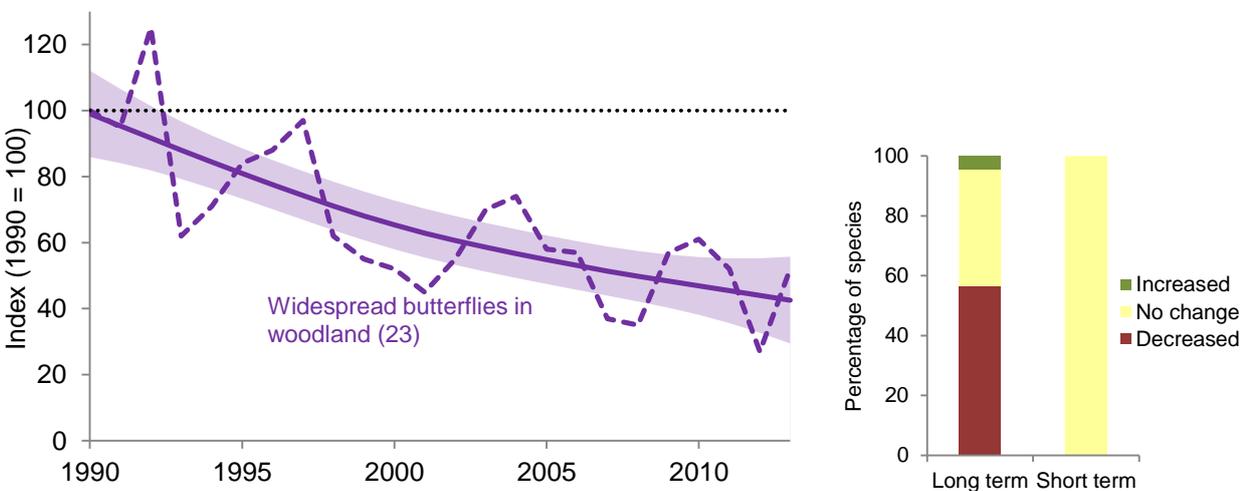
Notes:
1. Figures in brackets show the number of species.

2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have shown a statistically significant increase, statistically significant decrease or no change.

Source: Butterfly Conservation, Centre for Ecology & Hydrology.

- The indicator shows changes in abundance of species in woodland (34 breeding birds and 23 widespread butterflies).
- In 2013, the breeding woodland bird index in England reached its lowest recorded level, 28 per cent lower than in 1970. The greatest decline of woodland birds occurred from the late eighties until the mid-nineties. Apart from the decline evident between 2011 and 2013, the index has been relatively stable in recent years.
- Since 1990 butterfly numbers on woodland have fallen by 48 per cent, reaching a historical low point in 2012 and making a substantial recovery in 2013. These figures demonstrate how numbers fluctuate from year to year; statistical analysis of the underlying smoothed trend shows no overall change since 2008.

Indicator assessment

Assessment of change in abundance and diversity of species in the wider countryside (woodland)			
	Long term	**Short term**	**Latest year**
Woodland birds	❌ 1970-2012	≈ 2007-2012	Decreased (2013)
Butterflies of the wider countryside in woodland	❌ 1990-2013	≈ 2008-2013	Increased (2013)

**Note:** To better capture patterns in the data, long term and short term assessments are made on the basis of smoothed data, with analysis of the underlying trend undertaken by the data providers. Due to differences in the methods used to produce smooth trends for woodland birds and butterflies, long and short term assessments made on smoothed birds data are made to 2012, assessments made on smoothed butterfly data are made to 2013. All latest year assessments are based on unsmoothed data.

6b Woodland plant species richness

Until 2013 this indicator was based on an analysis of the change in plant species richness in the wider countryside. As the data has not been updated for a number of years and future opportunities to update the data in a consistent way are unlikely, the decision was taken by UK BISG to reclassify this indicator as 'under development'. Key messages from the previous indicator update are presented here.

Within woodlands and hedgerows there was no significant change in plant species richness over the period 1990 to 2007.

Plant species richness in the wider countryside 1990 to 2007: woodland
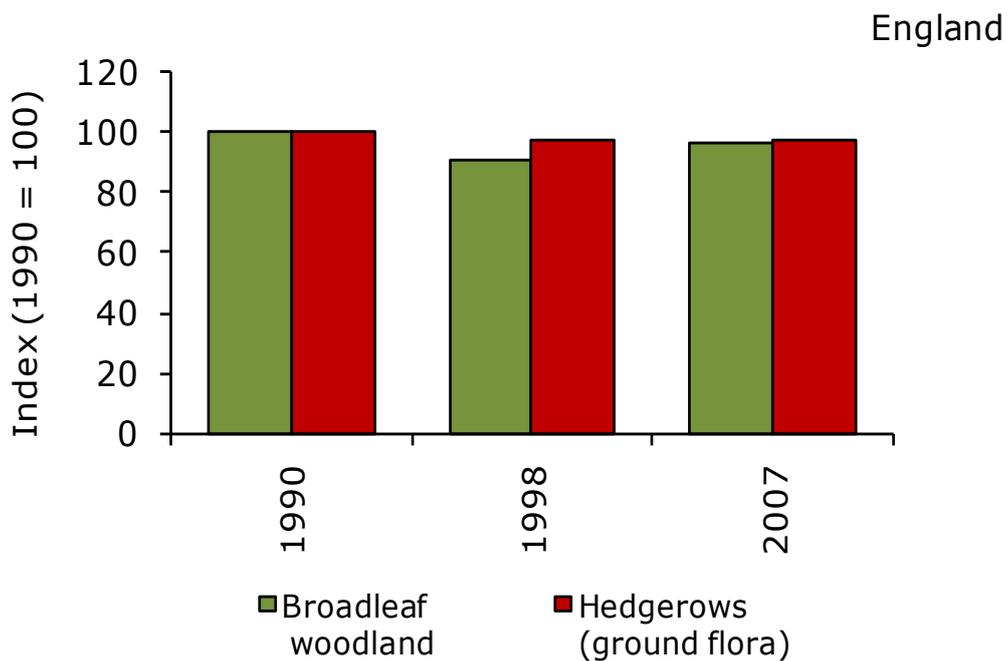
England

Source: Countryside Survey, Centre for Ecology & Hydrology.

7. Species in the wider countryside: wetlands

Populations of breeding wetland birds in England, 1975 to 2013
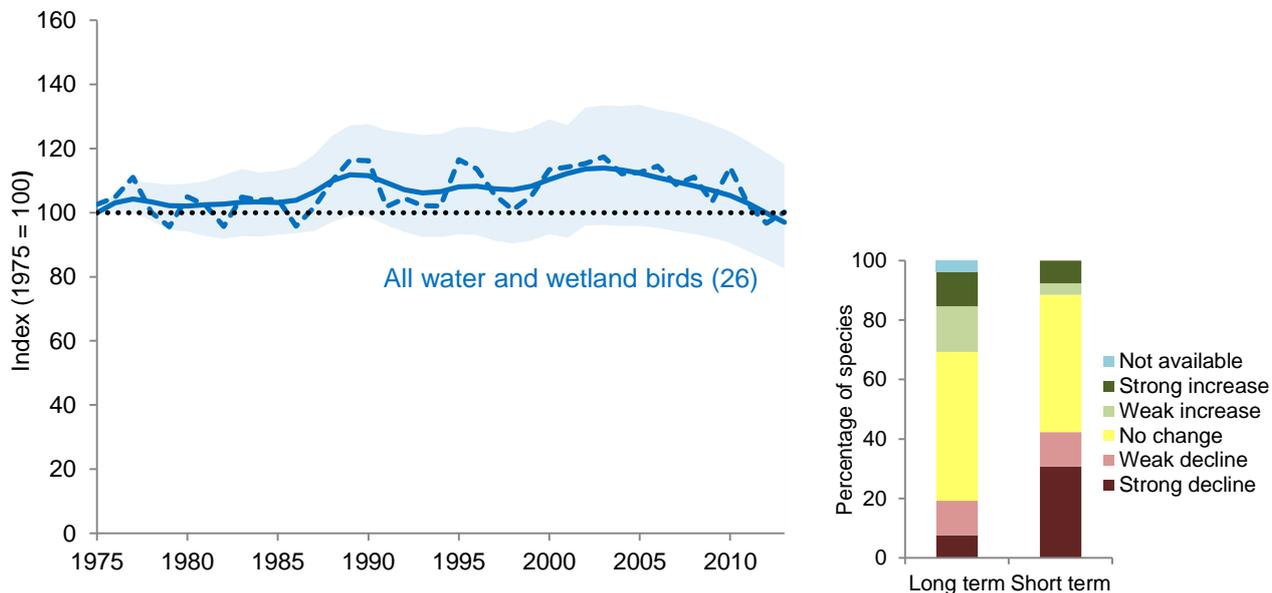
Notes:
1. Figure in brackets shows the number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.

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

Populations of wintering waterbirds in England, 1975/76 to 2012/13
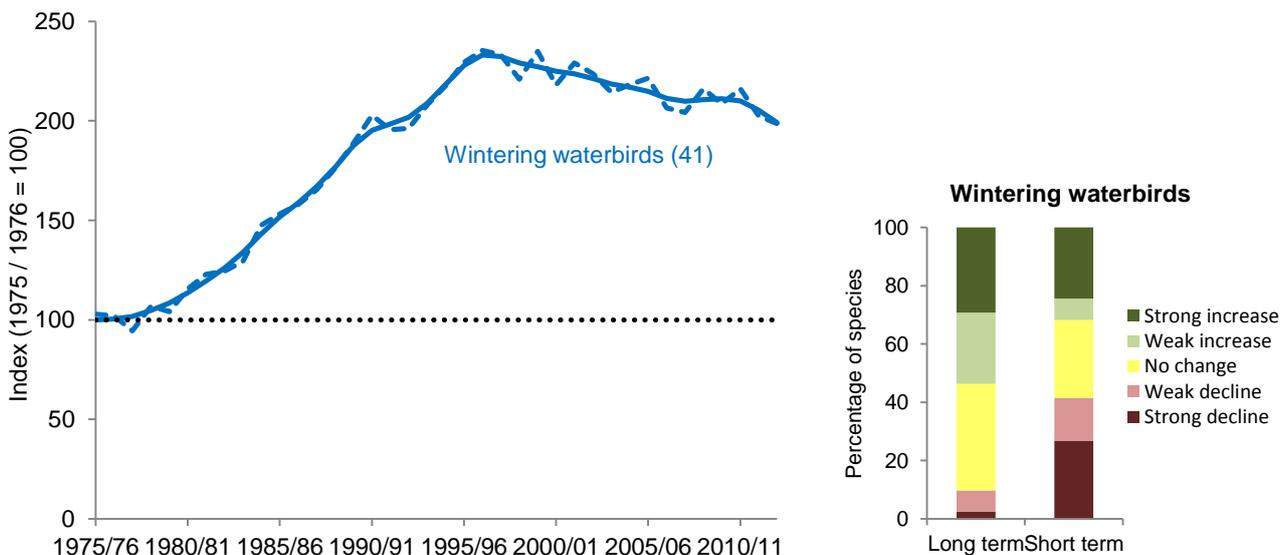
Notes:
1. Figure in brackets shows the number of species.

2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line). Data from surveys of wintering waterbirds are based on full counts on wetland and coastal sites of markedly varying size. This means that standard indicator bootstrapping methods cannot be applied and the trend is presented without confidence intervals.
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.

Source: British Trust for Ornithology, Defra, Joint Nature Conservation Committee, the Royal Society fot the Protection of Birds and The Wildfowl and Wetlands Trust.

- The indicator shows changes in abundance of wetland bird species.
- Between 1975 and 2013, populations of breeding wetland birds fluctuated from year to year but have remained broadly stable. However, in 2013 the index in England was 2 per cent lower than at the start of monitoring in 1975 and has showed a statistically significant decline of 9 per cent in the short term between 2007 and 2012.
- In the winter of 2012/13 the wintering waterbirds index in England dropped 2 per cent to a value just under double (up 93 per cent) its 1975/76 level. The smoothed index showed a non-significant decline of 3 per cent over the short term between 2006/07 and 2011/12.

Indicator assessment

Assessment of change in abundance and diversity of species in the wilder countryside (wetland)			
	Long term	**Short term**	**Latest year**
Breeding wetland birds	≈ 1975-2012	✖ 2007-2012	No change (2013)
Wintering waterbirds	✓ 1975/76 – 2011/12	≈ 2006/07 – 2011/12	No change (2012/13)

Note: To better capture underlying trends, long term and short term assessments are made on the basis of smoothed data. Due to the smoothing method, the most recent smoothed data point is likely to change when a subsequent year of data is added. Long and short term assessments using smoothed data are therefore made to 2012 whereas all latest year assessments are based on unsmoothed data. The significance of change in the breeding wetland bird indicator is tested by bootstrapping, a formal statistical approach. This is not appropriate for assessing the wintering waterbird indicator. On the advice of the data providers, changes

8. Species in the wider marine environment

Population trend of seabirds in England, 1986 to 2013
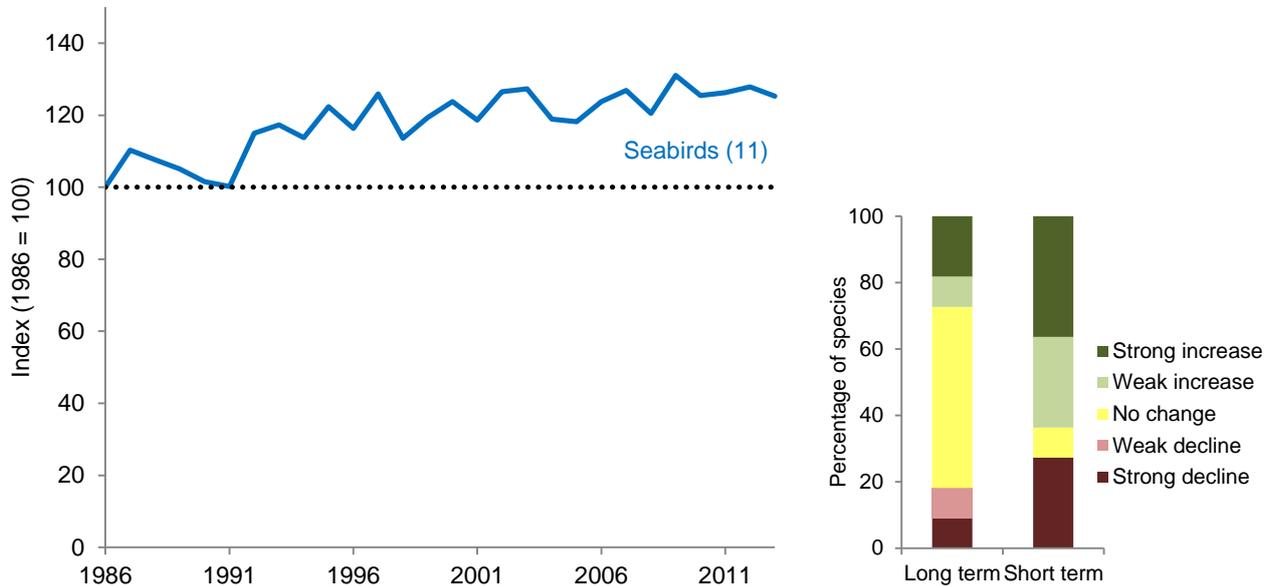
Notes:
1. Figures in brackets show the number of species.
2. Graph shows unsmoothed trend (solid line) - no smoothed trend is available for seabirds as individual species population trends are analysed using an imputation procedure that does not include smoothing.
3. The trend published here is not directly comparable with the England seabird trend published in 2013.
4. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.

Source: British Trust for Ornithology, Royal Society for the Protection of Birds, Joint Nature Conservation Committee, Department for Environment Food and Rural Affairs.

- The indicator shows changes in the abundance of breeding seabirds around England's coast.
- In 2013, the breeding seabird index in England was 25 per cent higher than its baseline level in 1986. The index has shown a smaller increase of 4 per cent in the short term, between 2008 and 2013; because of the high degree of variation from year to year this change is not considered significant.

Indicator assessment

Assessment of change in abundance and diversity of species in the wider marine environment			
	Long term	**Short term**	**Latest year**
Breeding seabirds	✔ 1986-2013	≈ 2008-2013	No change (2013)

9. Biodiversity and ecosystem services: removal of greenhouse gases by forests in England

Annual net removal of greenhouse gases by forests in England, 1990-2012.
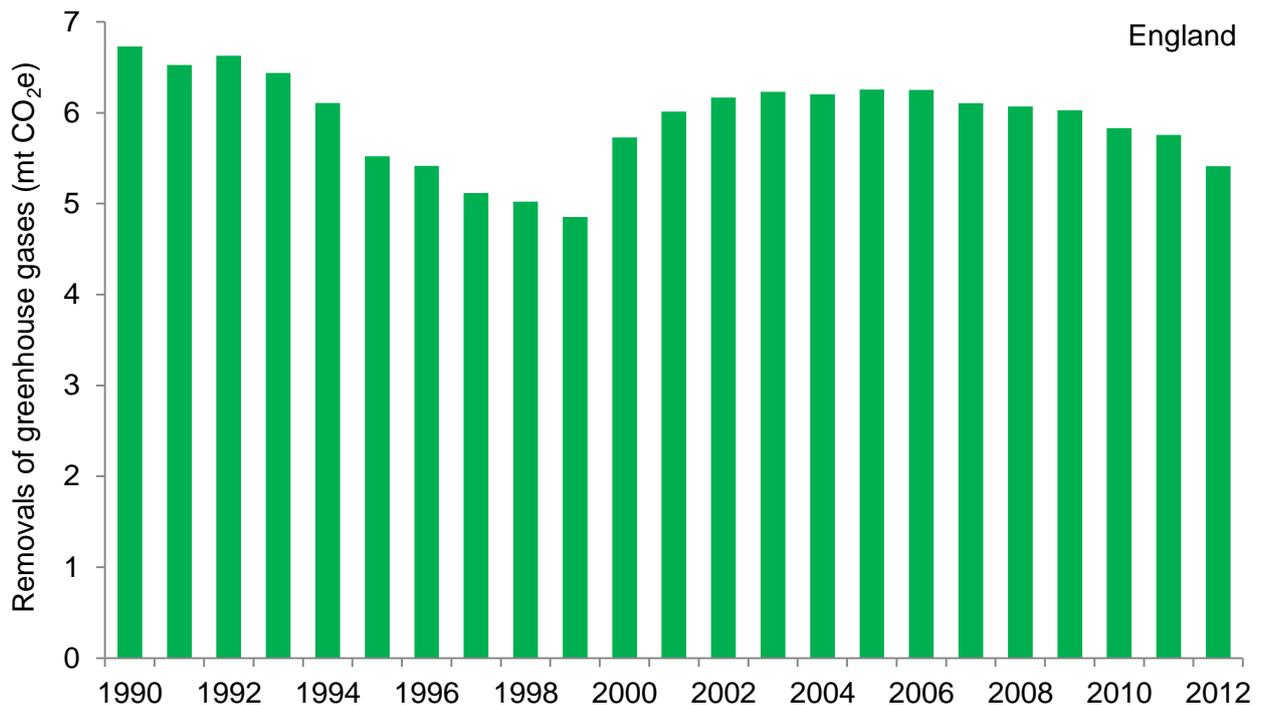
Notes:
1. Annual net removals of greenhouse gases (carbon dioxide (CO_2), methane (NH_4) and nitrous oxide (N_2O)) from the atmosphere by forests in England.
2. The indicator presented here is provisional, prior to significant changes to input data and model development that will be implemented in 2015.

Source: Land Use, Land Use Change and Forestry greenhouse gas inventory.

- This indicator is in development and is not assessed. It shows the annual net removal of greenhouse gases from the atmosphere by forests in England between 1990 and 2012. Greenhouse gas removal is a regulating service that contributes to reducing the scale and future impacts of climate change (climate change mitigation).
- In 2012, forests in England are estimated to have removed the equivalent of 5.4 million tonnes (mt) of CO_2 from the atmosphere.
- In future updates we anticipate that it will be possible to provide greenhouse gas removals by type of woodland (conifer or broadleaf). This is interesting from a biodiversity perspective as it allows clearer presentation of the contribution made to greenhouse gas removals by native woodland habitat (i.e. broadleaf).

10. Biodiversity and ecosystem services: experimental statistic on the status of pollinating insects – bees

Change in the relative occupancy of bees in the UK between 1980 and 2010.
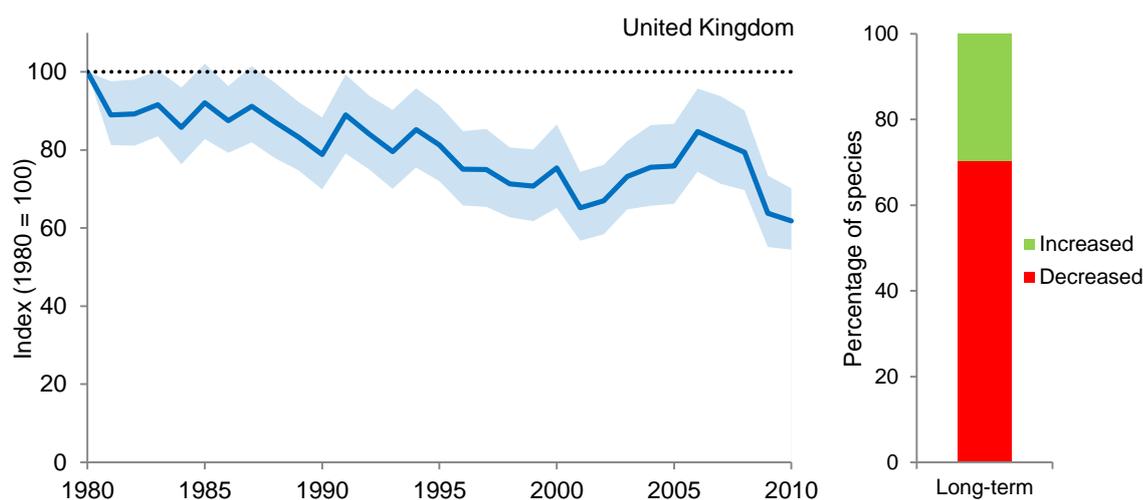
Notes:
1. Based on 216 species of bee.
2. Graph shows unsmoothed trend (solid line) with its 95 per cent confidence interval (shaded).
3. Bar chart to the right shows the percent of species that increased or decreased between 1980 and 2010.

Source: Bees, Wasps & Ants Recording Society; Biological Records Centre (supported by Centre for Ecology & Hydrology and Joint Nature Conservation Committee)

- The indicator illustrates changes in bee species occupancy in the UK between 1980 and 2010. The indicator, which is based on 216 species, covers the vast majority of the UK bee fauna. Bees are key pollinators and are presented here as a proxy indicator of overall pollinator trend. The indicator cannot be disaggregated to country level at this stage.
- Between 1980 and 2010, the relative occupancy of bees in the UK (the index) fell to 62 per cent of its 1980 value. 70 per cent of species declined over this period.

Indicator Assessment

Assessment of change in relative occupancy of bees in the UK			
	Long term	**Short term**	**Latest year**
Relative occupancy of bees in the UK	Not assessed	Not assessed	Not assessed

Note: The indicator has not been assessed as it is an experimental, interim statistic. Further development should allow the indicator to be assessed in future years.

11. Biodiversity and ecosystem services: marine (fish size in the North-western North Sea)

Proportion of large fish (equal to or larger than 40cm), by weight, in the North-western North Sea, 1983 to 2011
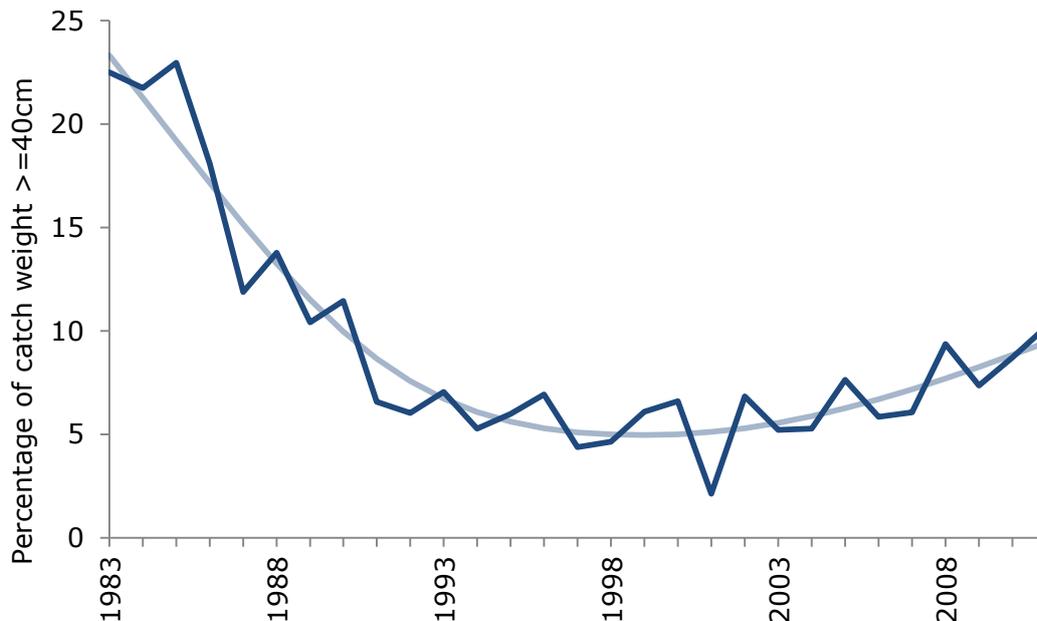
Source: Marine Scotland, Centre for Environment, Fisheries and Aquaculture Science.

- The indicator shows changes in the proportion of individuals equal to or over 40cm in length in fish populations in part of the North Sea, from the Humber Estuary to the Shetland Islands. Changes in the size structure of fish populations reflect changes in the health of the fish community.
- The proportion of large fish declined since 1983, although there is considerable year-to-year variability in fish size in trawl catches. The proportion of large fish declined most rapidly from the mid-1980s to the mid-1990s but stopped declining in the late-1990s and increased between 2001 and 2011. The indicator is assessed as deteriorating in the longer term but as increasing between 2006 and 2011.

Indicator Assessment

Assessment of change in the proportion of large fish, by weight in the North-western North Sea			
	Long term	**Short term**	**Latest year**
Marine ecosystem integrity (fish size class)	❌ 1983-2011	✅ 2006-2011	Increased (2011)

12a. Genetic resources for food and agriculture

12a. Effective population size of sheep and cattle breeds

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

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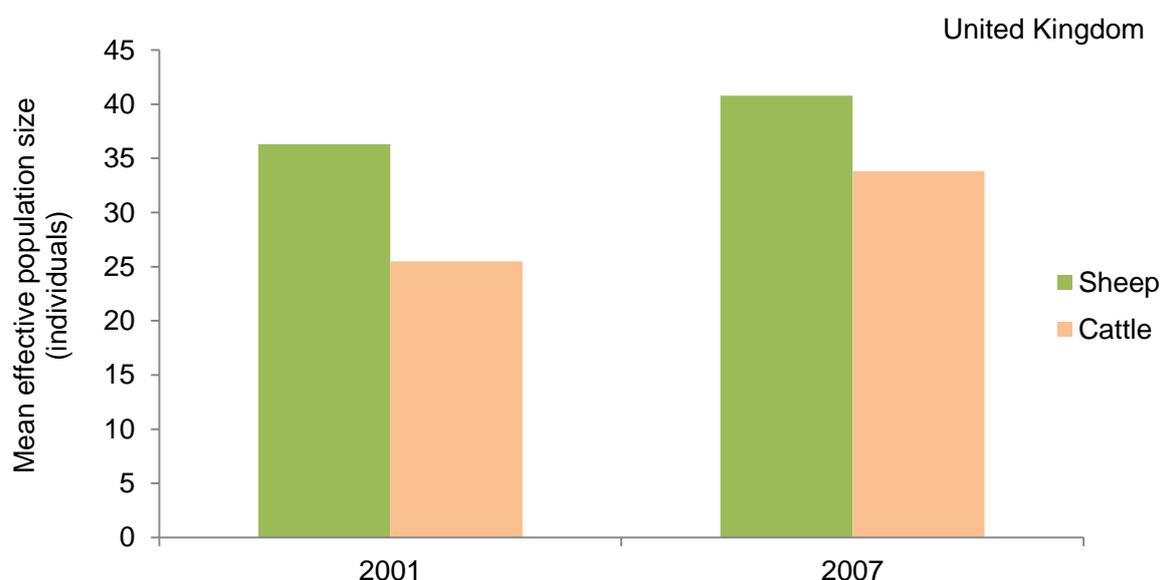
Note: The 2001 values are based on assessments for 27 sheep breeds and 18 cattle breeds. The 2007 values are based on assessments for 26 sheep breeds and 20 cattle breeds. Breeds at greatest risk have the lowest effective population size and are a sub-set of the breeds assessed in each year.

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

- This indicator shows the change in the average effective population size for the breeds with the lowest effective population size, which signifies a greater likelihood of in-breeding and risk of loss of genetic diversity, in the UK.
- From 2001 to 2007, the mean effective population size for breeds most at risk rose by 12 per cent for sheep breeds and by 32 per cent for cattle. The increase for cattle breeds is significant, but the increase for sheep breeds is not significant. There has been no reported UK extinction of any breed of sheep or cattle since 2001.

Indicator assessment

Assessment of change in effective population size			
	Long term	**Short term**	**Latest year**
Native sheep breeds	⊙	☺ 2001-2007	N/A
Native cattle breeds	⊙	✓ 2001-2007	N/A

12b. Genetic resources for food and agriculture

12b. Plant genetic resources

Cumulative Enrichment Index of plant genetic resource collections held in the UK, 1960 to 2012
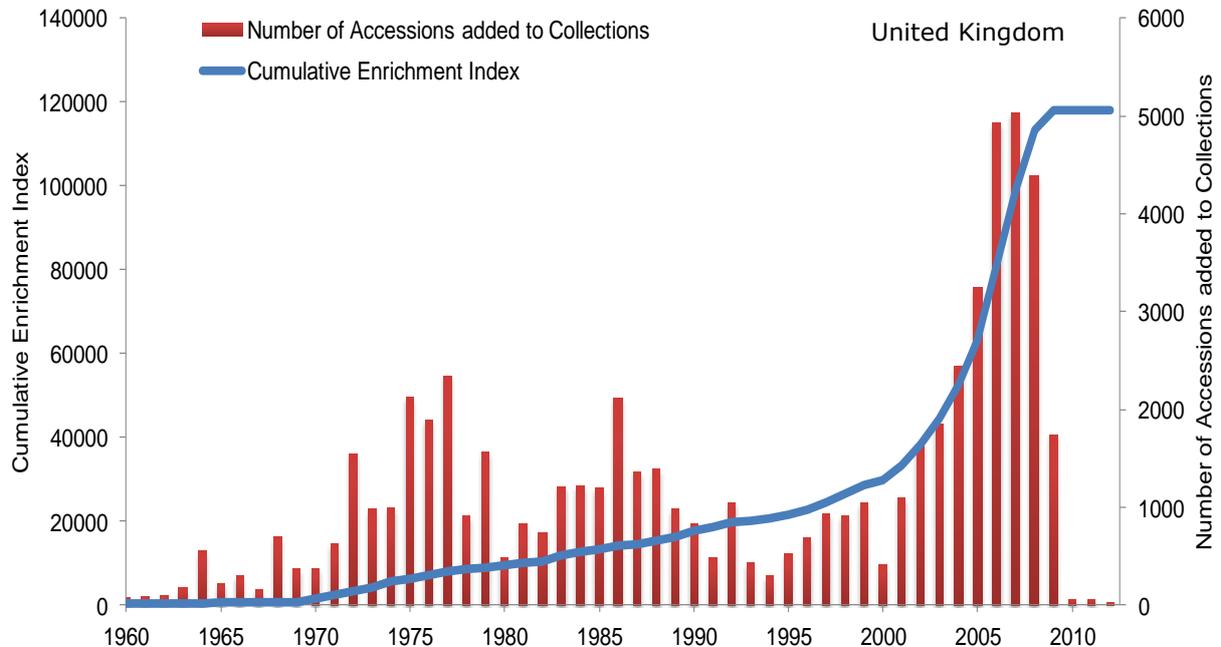
Notes: 1. An *accession* is a collection of plant material from a particular location. 2. The Enrichment Index is an assessment of the genetic diversity held in gene banks; it is affected by the number of accessions which are added in a given year, but provides a better reflection of the genetic diversity already held in gene banks as reduced weight is given to new accessions of existing taxa.

Source: EURISCO Catalogue (http://eurisco.ecpgr.org, date of data consultation 2 October 2013), based on UK contributions from: Genetic Resources Unit, Institute of Biological Environmental & Rural Sciences, Aberystwyth University; Garden Organic - the Organic Organisation, Heritage Seed Library; Nottingham Arabidopsis Stock Centre; Germplasm Resources Unit, John Innes Centre, Norwich Research Park; Millennium Seed Bank Project; Science and Advice for Scottish Agriculture, Scottish Government; Warwick Crop Centre, Genetic Resources Unit.

- This indicator presents the genetic diversity of cultivated plants and their wild relatives in the UK, including other socio-economically and culturally valuable plant species, by assessing the genetic diversity of target plants held in UK germplasm collections. These encompass plants grown in a farming or horticultural setting, or both, as well as commercial cultivars, landraces and traditional varieties and their wild relatives.
- There is considerable annual variability in the number of new accessions into UK germplasm collections. The total number of accessions has risen since the year 1960, peaking at 46,210 accessions of target species. A rapid rise in the Enrichment Index between the years 2000 and 2009 can be attributed to the concerted collection effort by the Millennium Seed Bank.
- There was a 19 per cent increase in the Enrichment Index between 2007 and 2012, but there has been virtually no change since 2010. This is partly as a result of a backlog in submitting information to EURISCO.

Indicator assessment

Assessment of change in status of ex *situ* conservation of cultivated plants and their wild relatives			
	Long term	**Short term**	**Latest year**
Cumulative Enrichment Index	✔ 1960-2012	✔ 2007-2012	No change (2012)

13. Awareness, understanding and support for conservation

Public engagement with biodiversity loss: awareness, concern and action. Preliminary data, 2014.
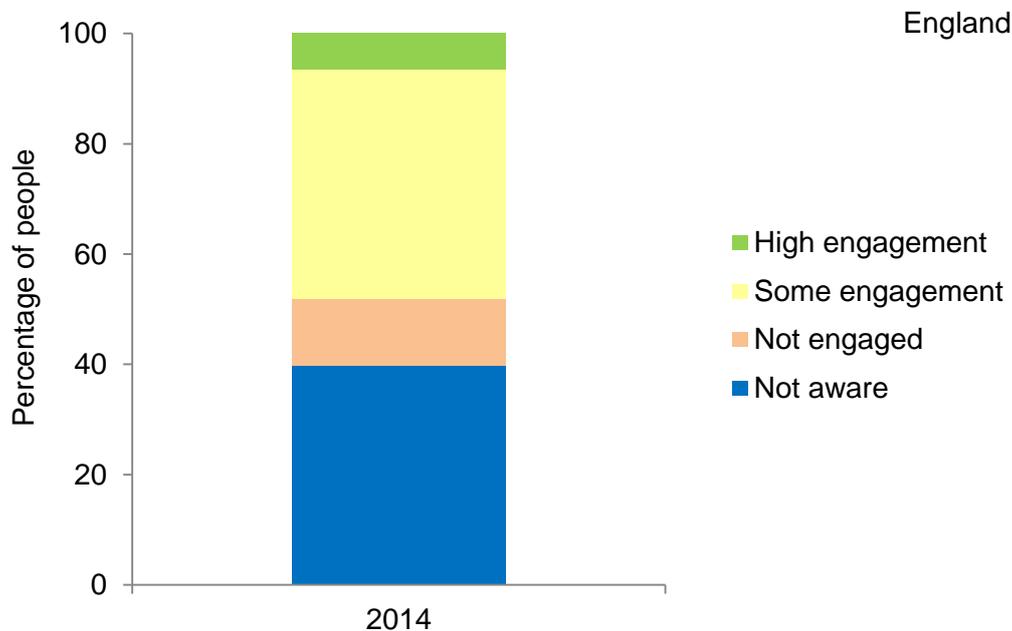
Notes:
1. This chart shows preliminary data, collected over 6 months in 2014. The first full year of data will be published in 2015. These figures are provisional and subject to change once the final dataset becomes available.
2. Groups are defined as follows:
   - o 'Not aware' – does not anticipate any loss of biodiversity in the UK;
   - o 'Not engaged' – believes there will be a loss of biodiversity, but is not concerned;
   - o 'Some engagement' – believes there will be a loss of biodiversity, is concerned and performs 0-2 'day-to-day' actions to support and protect biodiversity.
   - o 'High engagement' – believes there will be a loss of biodiversity, is concerned and performs 3 'day-to-day' actions; or 1-2 'day-to-day' actions and at least one 'higher effort' action; or all 3 'day-to-day' actions as well as 1-2 'higher effort' actions.

Source: Monitor of Engagement with the Natural Environment Survey (Natural England).

- This indicator addresses people's awareness of biodiversity and understanding of its value, concern about biodiversity loss, as well as support for performing actions that can help to conserve biodiversity.
- In 2014, 7 per cent of people in England were highly engaged with the issue of biodiversity loss. These are people who are aware of the threat to biodiversity in England, are concerned about the loss of biodiversity and take actions to support and protect biodiversity.
- Twelve per cent of people are aware of the threat to biodiversity, but are not concerned about it, while 42 per cent of people are aware of the threat to biodiversity and are concerned about it, but take little action to support or protect biodiversity.

- Forty per cent of survey respondents stated that they were not aware of the threat to biodiversity in England.

Indicator assessment

Assessment of change in the percentage of people highly engaged with the issue of biodiversity loss			
	Long term	**Short term**	**Latest year**
Percentage of people highly engaged	⊙	⊙	Not assessed

Definitions

A 'higher effort' action is a behaviour that has the capability to persuade others and lead to changes that might impact on biodiversity loss at a national level. Higher effort behaviours require the participant to act outside the realms of regular daily life and are adopted by only a niche group of people. The higher effort actions asked about in the questions used to inform this indicator are; volunteering with a project or organisation to help protect the environment/wildlife; and signing of a conservation petition or participation in a conservation campaign (online or other).

'Day-to-day' behaviours are more a measure of engagement than behaviours that will actually prevent biodiversity loss. The day-to-day behaviours asked about in the questions used to inform this indicator are: wildlife gardening; green consumerism; and membership of an organisation that helps to look after wildlife or the natural environment.

14. Taking action for the natural environment

14a Conservation volunteering

Index of volunteer time spent on the natural environment for selected organisations in England, 2000 to 2013

England
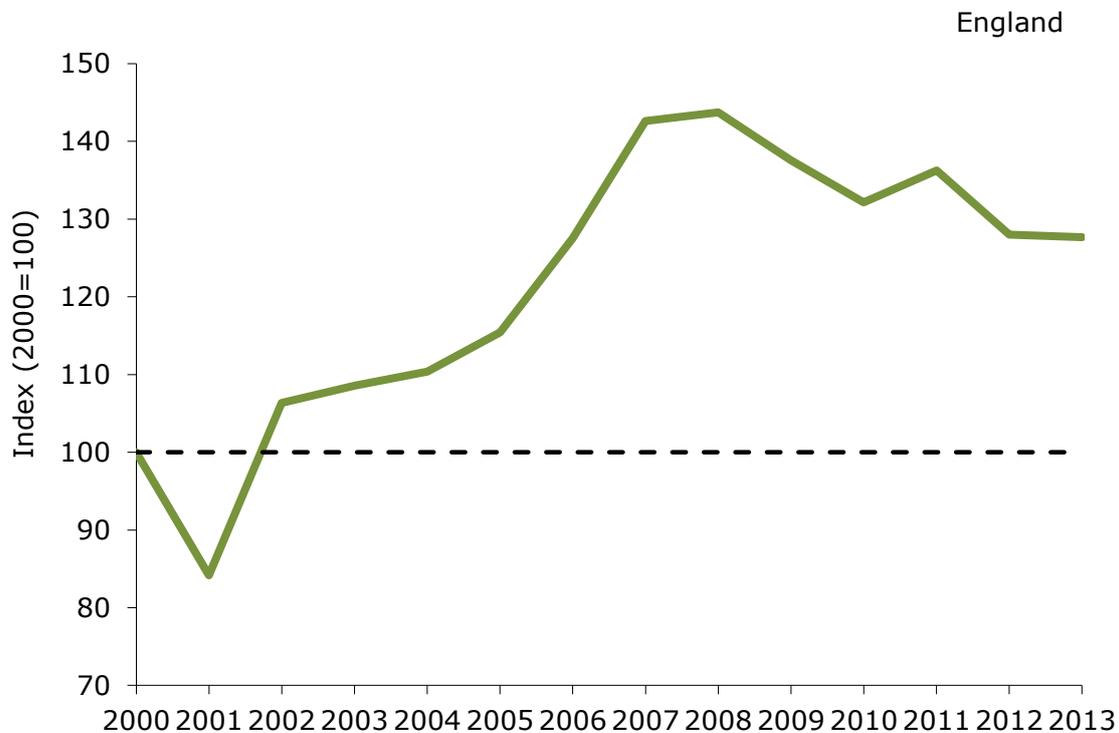
Notes:

1. The index is calculated using a non-weighted aggregation across organisations. It is therefore strongly dependent on which organisations are included and on the trends reported by the organisations recording large amounts for total volunteer hours.
2. Data were not available for all organisations in all years. To make best use of available data and to allow a combined index to be compiled, data interpolation has been used to fill gaps (based on assuming trends reported by other organisations can be applied). Further details are given in the background section. Data for British Waterways includes volunteering carried out in Wales.
3. As data provided by The Conservation Volunteers, Canal and River Trust and National Parks England were for financial years as opposed to calendar years, 2012-13 data were allocated to 2012.

Source: Bat Conservation Trust, The Conservation Volunteers, Canal and River Trust, National Parks England, Plantlife, Natural England, RSPB, The Wildlife Trusts, Botanical Society of Britain and Ireland, British Trust for Ornithology.

- This indicator shows the amount of volunteer time spent undertaking conservation activities for ten organisations across the environmental sector in England. 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 2013 the amount of time contributed by volunteers increased by 28 per cent but in the five years to 2013 it decreased by 16 per cent. It has remained unchanged between 2012 and 2013 with index values of 128.

Indicator Assessment

Assessment of change in taking action for the natural environment			
	Long term	**Short term**	**Latest year**
Conservation volunteering	✅ 2000-2013	❌ 2008-2013	No change (2013)

14b. Households encouraging wildlife in their garden in England

Responses to questions relating to access to a private garden and to encouraging wildlife in that garden, 2013-2014
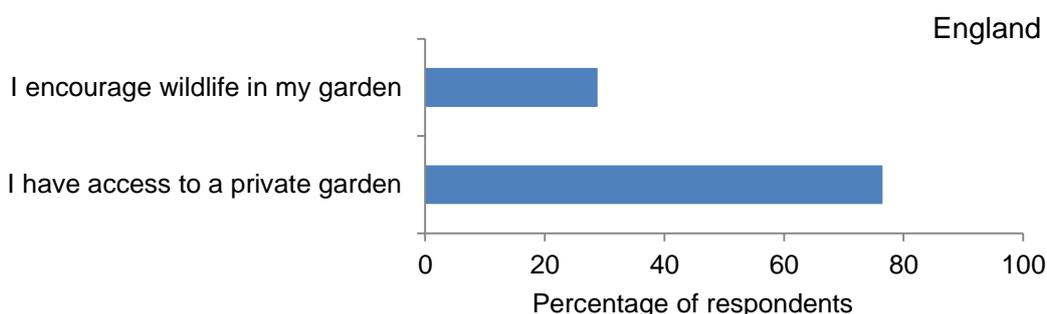
England

Source: Monitor of Engagement with Natural Environment (MENE) survey 2013-14.

- This indicator provides estimates of the number of households encouraging wildlife in their garden in England. It was previously principally taken from the Survey of Public Attitudes and Behaviours towards the Environment and is now (from 2013-2014) taken from the Monitor of Engagement with Natural Environment (MENE) survey.
- Seventy six per cent of respondents in 2013 said they owned a garden or shared a garden with others. Twenty nine per cent of respondents who had a garden agreed 'they encouraged wildlife in their gardens' (e.g. through feeding areas or planting).

Indicator Assessment

Assessment of change in taking action for the natural environment			
	Long term	**Short term**	**Latest year**
Wildlife gardening	⋯	⋯	Not assessed

15. Funding for biodiversity

Public sector expenditure on biodiversity in England, 2000-01 to 2013-14

England
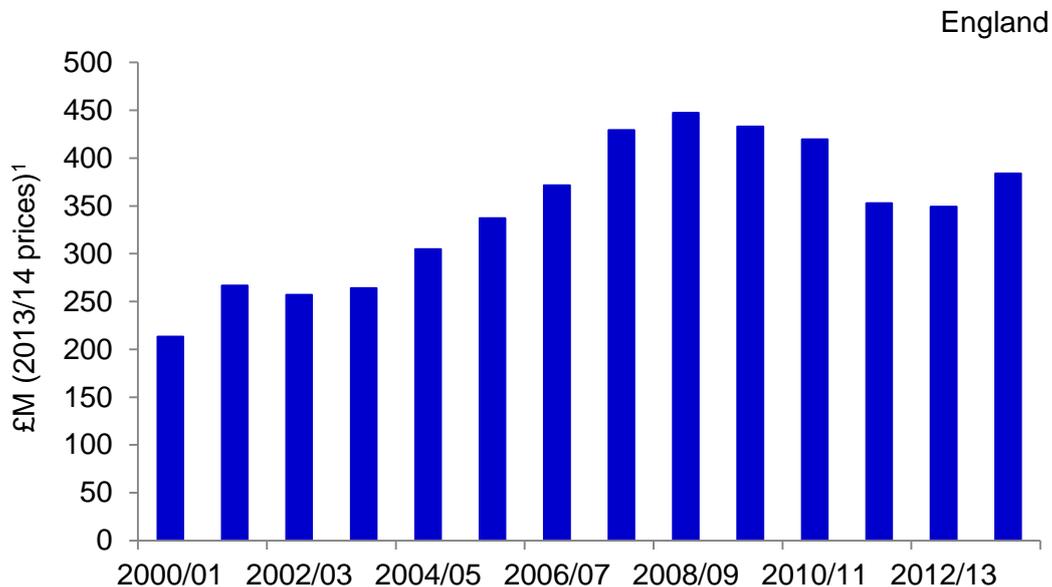
Notes:
1. Deflated using UK Gross Domestic Product Deflator.
2. Small revisions to past data series as a result of improved estimation methodology can mean the indicator does not show exactly the same pattern between years.

Source: Department for Environment Food and Rural Affairs.

NGO expenditure on biodiversity in the United Kingdom, 2010-11 to 2012-13

United Kingdom
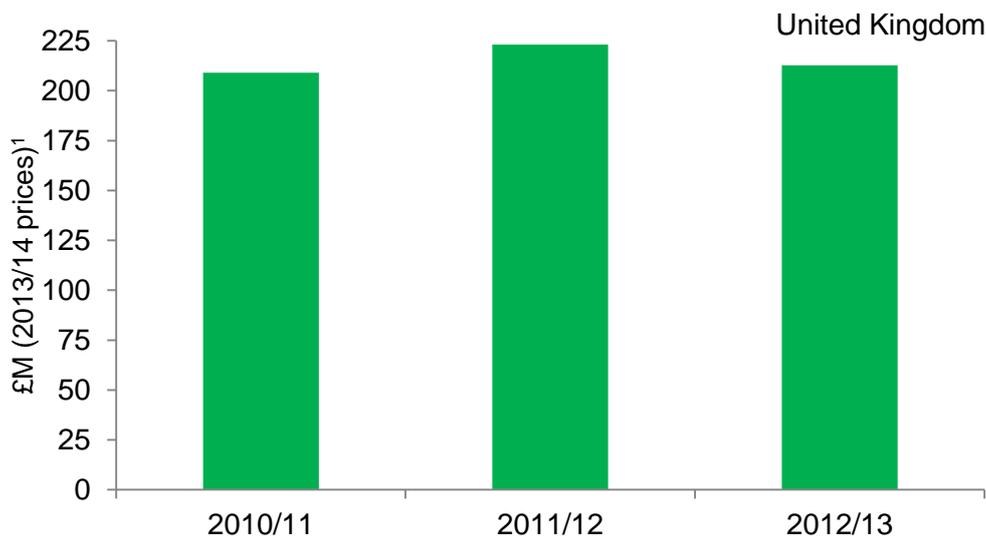
Notes:
1. Deflated using UK Gross Domestic Product Deflator.
2. Non-governmental spend is net of government funding.

Source: Defra.

- The first part of this indicator shows the level of spending on biodiversity in England by the public sector, for the period 2000-01 to 2013-14. The second part of the

indicator shows the level of spending by non-governmental organisations (NGOs) on biodiversity in the UK for the period 2010-11 to 2012-13. It is not possible to disaggregate NGO spending to country level at present.

- In 2013-14, £384 million of public sector funding was spent on biodiversity in England. This compares with £213 million (at 2013-14 prices) in 2000-01, which is equivalent to a 56 per cent increase in spending.
- Although public sector expenditure on biodiversity has risen considerably in the long term, since 2000-01, it has been falling since 2008-09 and is assessed as decreasing in the short term; expenditure fell by 12 per cent between 2008-09 and 2013-14 in England. In the most recent year (2013-14), expenditure increased compared to 2012-13.
- In previous years this indicator has only covered public sector expenditure, understating total expenditure on biodiversity. In 2014 Defra developed an additional measure of non-governmental organisation (NGO) spend on biodiversity (net of government funded spend). NGO support and action on biodiversity, some of which is funded by businesses and private individuals, is vitally important. Capturing the contribution of NGOs is a key element of tracking the UK's conservation efforts.
- Although not available at the England level, spending on biodiversity in the UK by non-governmental organisations (NGOs) with a biodiversity or nature focus was £213 million (at 2013-14 prices) in 2012/13. This value is likely to be an underestimate as the indicator does not include all NGOs with a biodiversity or nature focus.

Indicator assessment

Assessment of change in expenditure on biodiversity			
	Long term	**Short term**	**Latest year**
Public sector expenditure on biodiversity in England	✅ 2000-01 – 2013-14	❌ 2008-09 – 2013-14	Increased (2013-14)
Non-governmental organisation spending (net of Government funding) on biodiversity in the UK	⊙	⊙	Decreased (2012-13)

16. Integrating biodiversity considerations into local decision making

Proportion of local sites under positive conservation management, 2008-09 to 2013-14
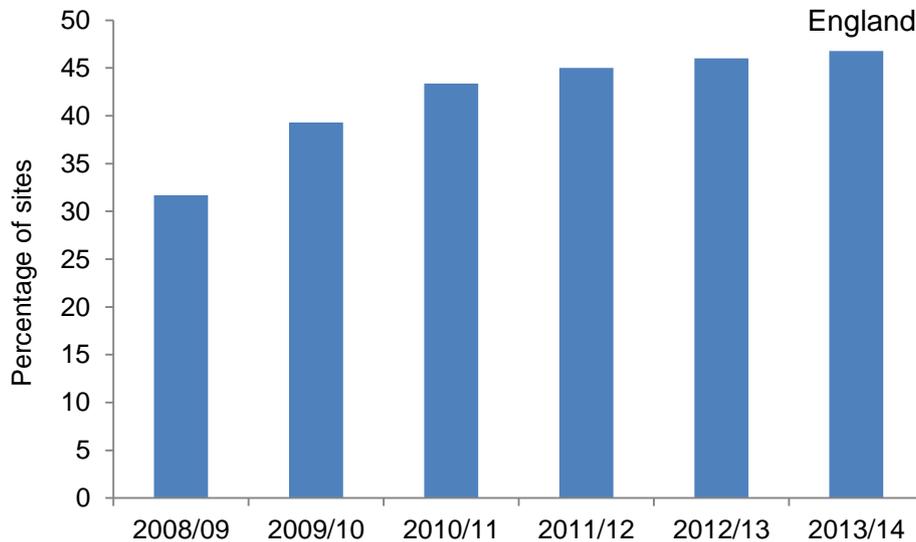
Note:

1. In 2013/14, 74 per cent of local authorities submitted their data on local sites. Where a local authority did not submit data in 2013/14, the most recently submitted data for those local authorities was used to calculate the overall percentage of sites in positive conservation management.
2. The total number of responding LAs and number of sites varies between years. In 2013/14 142 LAs were included in the analysis.

Source: Defra, Local Authority Single data list 160-00 on local nature conservation/biodiversity.

- This indicator shows the proportion of the total number of local sites in England where positive conservation management is being implemented or has been implemented in the last five years.
- In 2013-14, 47 per cent of local sites across England were in positive conservation management. This represents around 20,500 sites and an increase of 15 percentage points in the number of sites in positive management since 2008-09 when the data was first collected.

Indicator Assessment

Assessment of change in extent and condition of protected areas and local sites			
	Long term	**Short term**	**Latest year**
Local sites under positive management	⊙	✓ 2008/09-2012/13	No change (2013-14)

17. Global biodiversity impacts of UK consumption

This indicator is under development and no assessment has been made.

During the review of Biodiversity 2020 indicators, a small number of gaps were identified where there were no current indicators for particular outcomes. 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.

Development planned

Research has been undertaken at the UK level to assess how patterns of consumption impact on the key drivers of biodiversity change overseas and identify options for mitigating those impacts. This includes:

- analysis and modelling of trade pathways and supply chains for goods and services to identify important sources of production; and

- identification of the potential impact of key production systems and products on biodiversity.

An assessment framework has been developed to provide information on the direct and indirect links between consumption in the UK and environmental impacts that occur due to production in other countries. A global trade model that retains product-level production detail and quantitative links to associated environmental impacts has been developed to allow top-down assessment of potential impacts. This model facilitates the selection of priority commodities and regions which can then be investigated in more detail using a case-study approach. Further research was undertaken in 2014 to further develop this approach.

In combination, these projects have defined what data are available on biomass flows into the UK economy, and the scope for undertaking the same analysis at country level using Scotland as a model. However further improvements to the models are needed before indicators can be developed.

18. Climate change impacts and adaptation

Index of the timing of biological events in England 1891 to 1947 and 1999 to 2014

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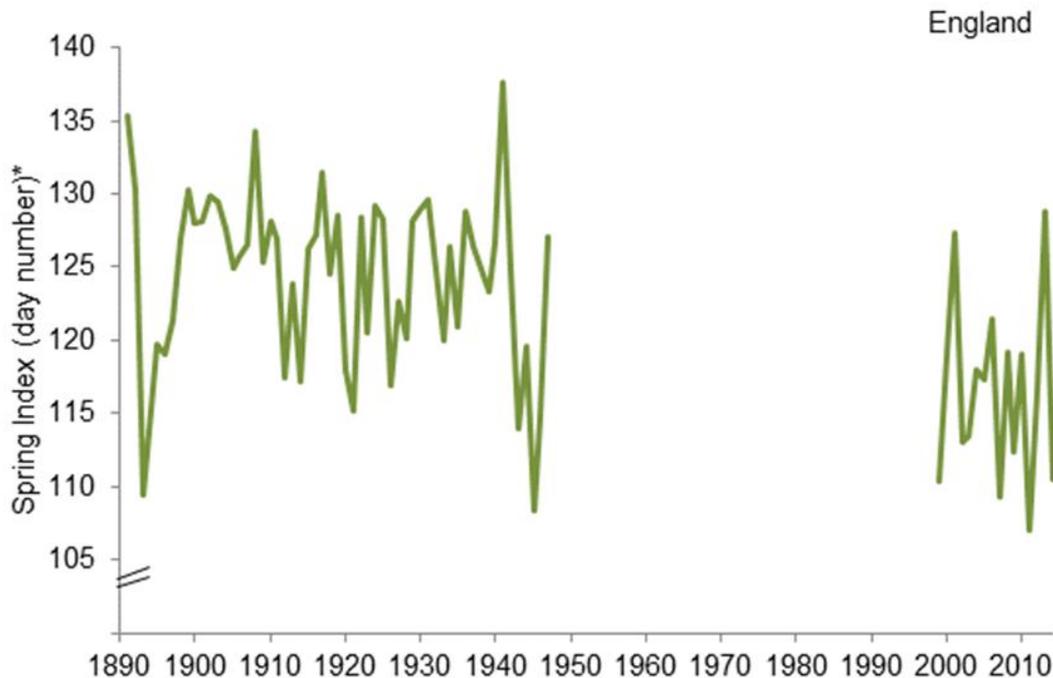
Notes: * Number of days after December 31st (e.g. day 121 = May 1st).

Source: 1891-1947 Royal Meteorological Society, 1999-2014 UK Phenology Network.

- This indicator shows the impact of temperature change on the timing of biological events such as bud-burst or migration in spring. The Spring Index is a measure of changes in the timing of spring events over the last century, using comparable data sources from the periods of 1891 to 1947 and 1999 to 2014.
- The Index is calculated from the dates of four different annual biological events: the first recorded flowering of hawthorn and horse chestnut, and the first recorded sighting of a swallow (a migratory bird) and of an orange tip butterfly.
- Since 1999, the average annual index dates have been around 8 days in advance of the average dates in the first part of the 20th Century.
- The indicator is provided for context only and is not assessed, as the impact of these changes on the conservation status of the species is not known. However, it is becoming increasingly clear that climate change is having a significant negative impact on many species.

Indicator Assessment

Assessment of change in the timing of spring events
No assessment – indicator provided for context only

19. Trends in pressures on biodiversity – pollution

19a. Trends in pressures on biodiversity – air pollution

Area of sensitive habitats in England where critical loads for nutrient nitrogen and acidity are exceeded, 1996 to 2011
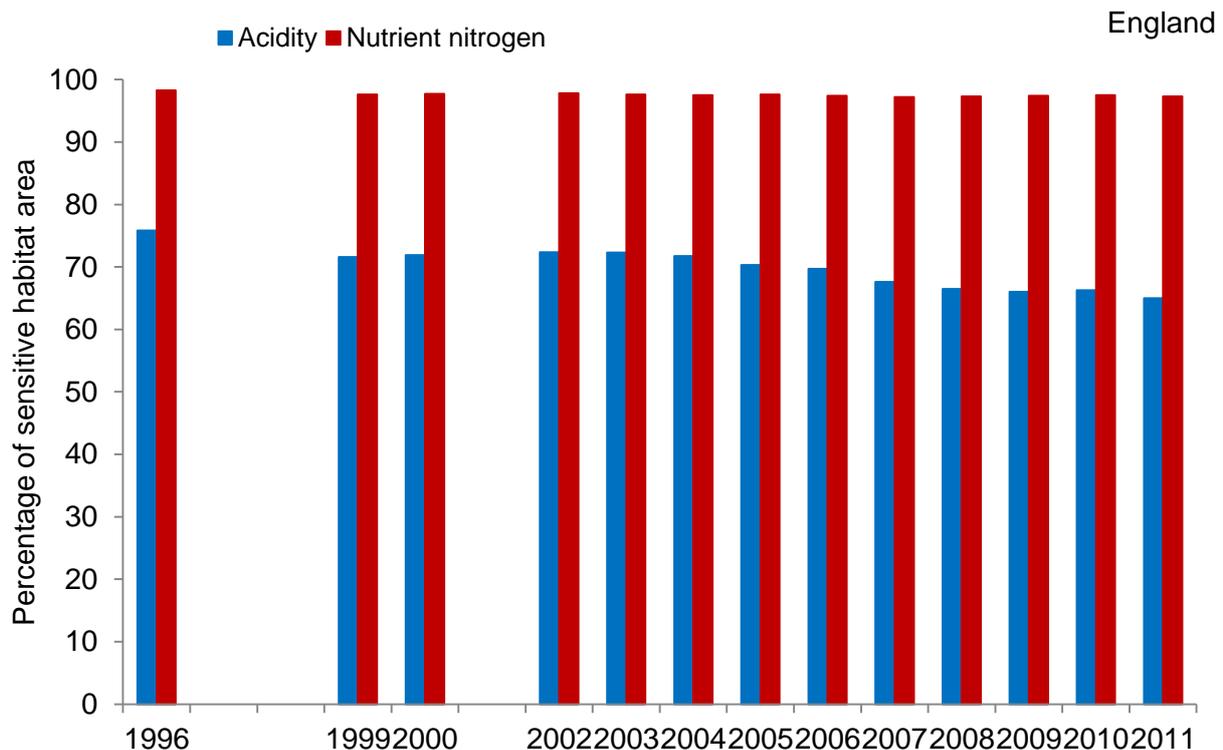
Notes: Since 2000 nitric acid has been included in the estimates of nitrogen deposition and since 2003, aerosol deposition of sulphate, nitrate and ammonium have also been included. This additional deposition led to some increases in critical load exceedance compared with earlier periods. Each bar represents a three-year average of deposition data to reduce year-to-year variability.

Source: Centre for Ecology and Hydrology.

- This indicator shows changes in pressures on biodiversity from air pollution in England. Critical loads are air pollution thresholds above which significant harmful effects occur on sensitive habitats in England. Approximately 18,600km2 of terrestrial habitat areas are sensitive to acid deposition and about 19,500km2 are sensitive to nutrient nitrogen; many areas are sensitive to both.
- The percentage of sensitive habitat area exceeding critical loads for acid pollution fell from 76 per cent in 1996 to 65 per cent in 2011. During the same period, the percentage area of sensitive habitats where nutrient nitrogen pollution exceeded critical loads remained stable; (98 per cent exceeded critical loads in 1996 and 97 per cent exceeded critical loads in 2011).

Indicator Assessment

Assessment of change in area exceeding air pollution critical loads and in the input of hazardous substances to the UK marine environment			
	Long term	**Short term**	**Latest year**
Area affected by sulphur (acidity)	✓ 1996-2011	✓ 2006-2011	Decreased (2011)
Area affected by nitrogen	≈ 1996-2011	≈ 2006-2011	No change (2011)

19b. Trends in pressures on biodiversity – marine pollution

Combined input of hazardous substances to the UK marine environment, as an index of estimated weight of substance per year, 1990 to 2012
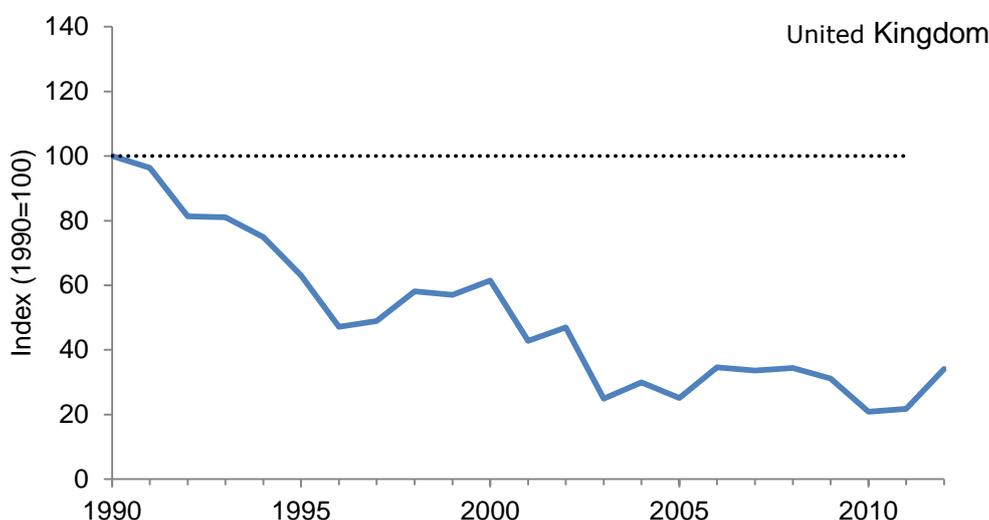
Source: Defra Marine Strategy and Evidence Division, using data provided by: Environment Agency, Scottish Environmental Protection Agency and Northern Ireland Environment Agency.

- This indicator shows changes in pressures on marine biodiversity from waterborne pollution in the UK, five heavy metals (cadmium, mercury, copper, lead and zinc) and one organic compound; lindane.
- Levels of all six substances declined over the period 1990 to 2012. Inputs of three substances (cadmium, lindane and mercury) declined by more than 70 per cent over this time period, while zinc has declined by 51 percent; copper by 44 per cent and lead by 7 per cent.

Indicator Assessment

Assessment of change in area exceeding air pollution critical loads and in the input of hazardous substances to the UK marine environment			
	Long term	**Short term**	**Latest year**
Combined input of hazardous substances	✓ 1990-2012	≈ 2007-2012	Increased (2012)

20. Trends in pressures on biodiversity – invasive species

Number of non-native invasive species established in or along more than 10 per cent of Great Britain's land area or coastline, 1960-2014.

Great Britain
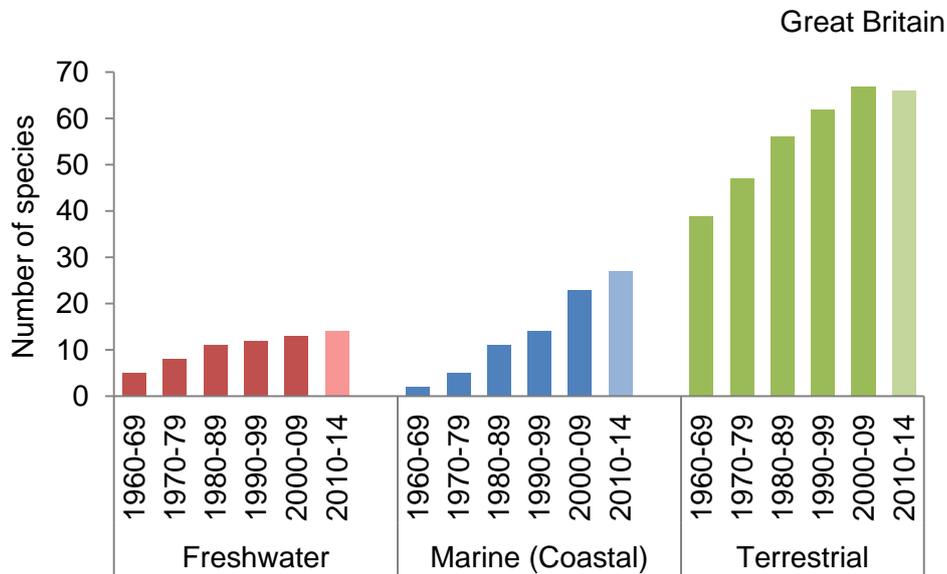
Note: The last time period covers a shorter period than the other bars (2010-2014).

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

- The indicator shows the change in the extent of the most invasive species in Great Britain. 179 species with the greatest potential to impact negatively on native wildlife have been identified from a list of more than 3,000 non-native species.
- Over the period 1960 to 2014, the number of 'most invasive' non-native species established in or along more than 10 per cent of Great Britain's land area or coastline has increased in Great Britain. This is likely to have increased the pressure exerted by invasive species on native biodiversity.

Indicator assessment

Assessment of change in the extent of invasive species			
	Long term	**Short term**	**Latest year**
Terrestrial species	❌ 1960-2014	Not assessed	Not assessed
Freshwater species	❌ 1960-2014	Not assessed	Not assessed
Marine (coastal) species	❌ 1960-2014	Not assessed	Not assessed

21. Trends in pressures on biodiversity – surface water status

Status classifications of surface water bodies in England under the Water Framework Directive, 2008-2012
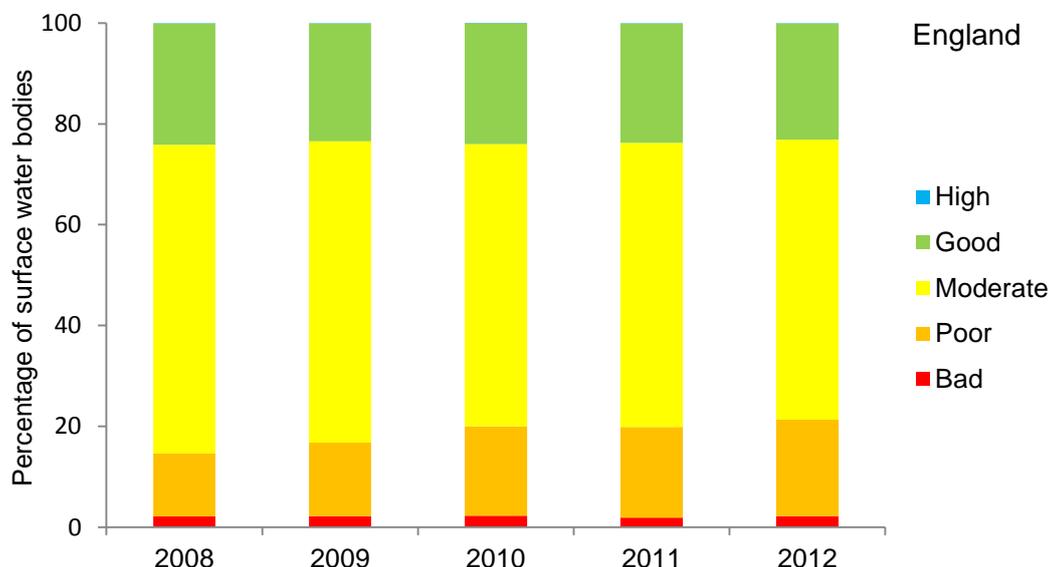
Notes:
1. Based on numbers of surface water bodies classified under the Water Framework Directive in England. Includes rivers, canals, lakes, estuaries and coastal water bodies.
2. A water body is a management unit, as defined by the relevant authorities.
3. The number of water bodies assessed varies slightly from year to year: in 2012 it was 5,735.
4. Water bodies that are heavily modified or artificial (HMAWBs) are included in this indicator.

Source: Environment Agency.

- The indicator shows the percentage of surface water bodies in England in each status class under the Water Framework Directive between 2008 and 2012.
- There was no significant change in the overall number of water bodies awarded high or good surface water status between 2008 and 2012. In 2012, 23 per cent of surface water bodies assessed under the WFD were in high or good status.

Indicator assessment

Assessment of change in status of surface water bodies in England			
	Long term	**Short term**	**Latest year**
Percentage of surface water bodies in High or Good ecological status in England	⊙⋯⊙	≈ 2008-2012	No change (2012)

22. Agricultural and forest area in environmental management schemes

22a. Area of land in agri-environment schemes

Area of land under targeted agri-environment scheme agreements in England, 1987 to 2013
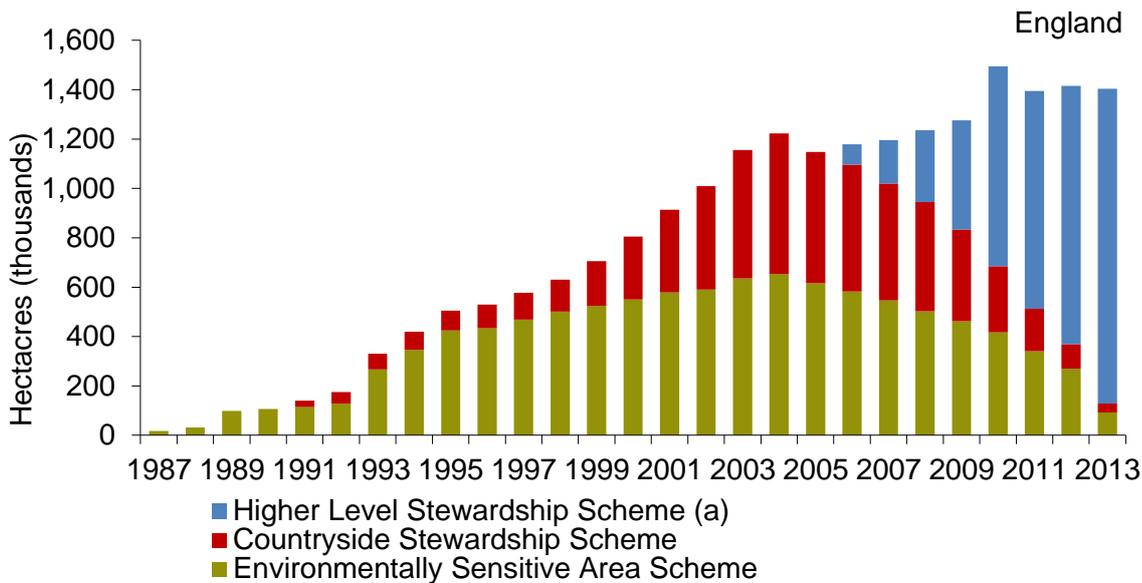
England

Note: Systematic data collection started in 1992; areas from 1987-91 are estimated. Uptake figures are the cumulative area assessed in December of year shown.

Source: Natural England, Department for Environment Food and Rural Affairs.

Area of land under Entry Level Stewardship Scheme, 2003 to 2013
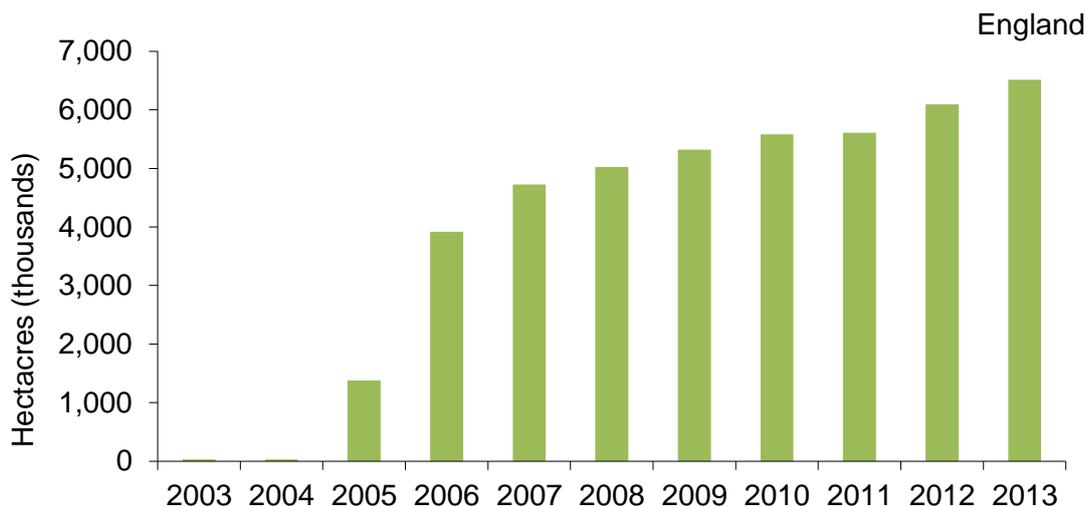
England

Notes: 1. Uptake figures are the cumulative area assessed in December of year shown.

Source: Natural England, Department for Environment Food and Rural Affairs.

- There are two main types of agri-environment scheme in England: Higher Level Environmental Stewardship (HLS) and other targeted schemes that protect or restore land, focusing on parts of the farm or land-holding that are of high

environmental / biodiversity value; or potential and Entry-Level Schemes (ELS), which are whole farm schemes that have a simple set of prescriptions providing basic environmental protection and enhancement.

- In 2013, the area under targeted agri-environment schemes was just over 1.4 million hectares.
- The area of land in Entry Level Stewardship (ELS) shows significant uptake since the pilot schemes were introduced in 2003-4, reaching around 6.5 million hectares in 2013 (72 per cent of available farmland).

Indicator assessment

Assessment of change in environmental management schemes			
	Long term	**Short term**	**Latest year**
Targeted agri-environment schemes	✅ 1987-2013	✅ 2008-2013	No change (2013)
Entry-level agri-environment schemes	✅ 2003-2013	✅ 2008-2013	Increased (2013)

22b. Uptake of Entry Level Stewardship Scheme priority options for biodiversity, resource protection and climate change

Area of land under priority options in the Entry Level Stewardship Scheme, 2011 to 2014
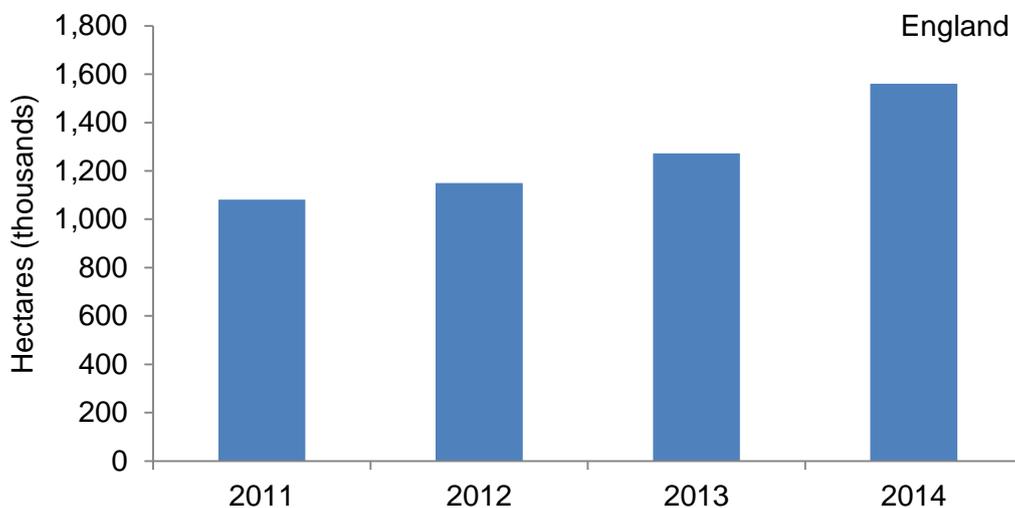
Note: Uptake figures is the cumulative area assessed in March of year shown.

Source: Natural England.

- This indicator shows the area of land under high priority options for biodiversity, natural resource protection and climate change adaptation/mitigation in the Entry Level Stewardship Scheme. The options have been identified to help reverse the decline of farm wildlife such as farmland birds and to ensure that natural resources such as water and soils are protected and resilient to changing environmental conditions. This is an interim measure until a new environmental land management scheme is launched in 2016.

- In March 2014, 1.56 million hectares of farmland were under priority options in the Entry Level Stewardship scheme, accounting for 17 per cent of the available farmland in England.

Indicator assessment

Assessment of change in environmental management schemes			
	Long term	**Short term**	**Latest year**
Uptake of priority ELS options	⊙	⊙	Increased (2014)

22c. Area of forestry land under certified sustainable management schemes

Percentage of woodland in England certified as sustainably managed, 2001 to 2014
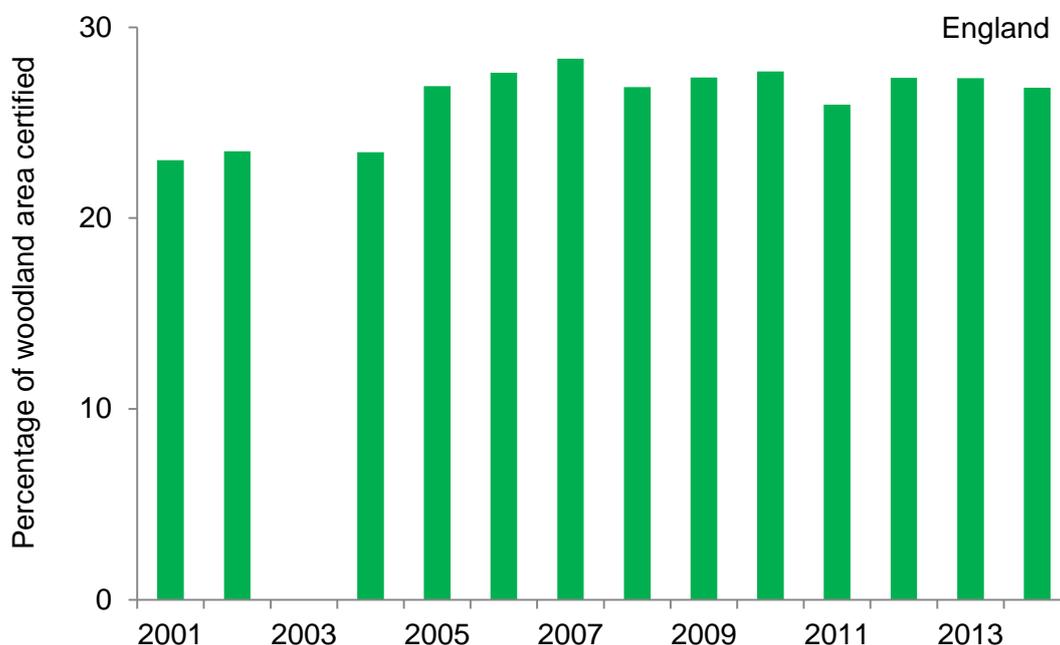
Notes:

1. Figures relate to certificates that were valid up to the 31st March 2014.
2. Data collection started in 2001, with regular data collection from 2004.

Source: Forestry Commission.

- This indicator shows the percentage of the woodland area in England that is certified against agreed environmental standards. Woodland certification schemes promote good forest practice and are used to demonstrate that wood or wood products come from well-managed forests.
- 349,000 hectares of woodland across England were certified in March 2014, representing 27 per cent of the total woodland area. The proportion of woodland certified as sustainably managed has remained constant between 2009 and 2014.

Indicator assessment

Assessment of change in environmental management schemes			
	Long term	**Short term**	**Latest year**
Percentage of woodland certified as sustainably managed	✅ 2001-2014	≈ 2009-2014	No change (2014)

23. Sustainable fisheries: fish stocks harvested within safe limits

Percentage of fish stocks harvested sustainably and at full reproductive capacity, 1990 to 2012
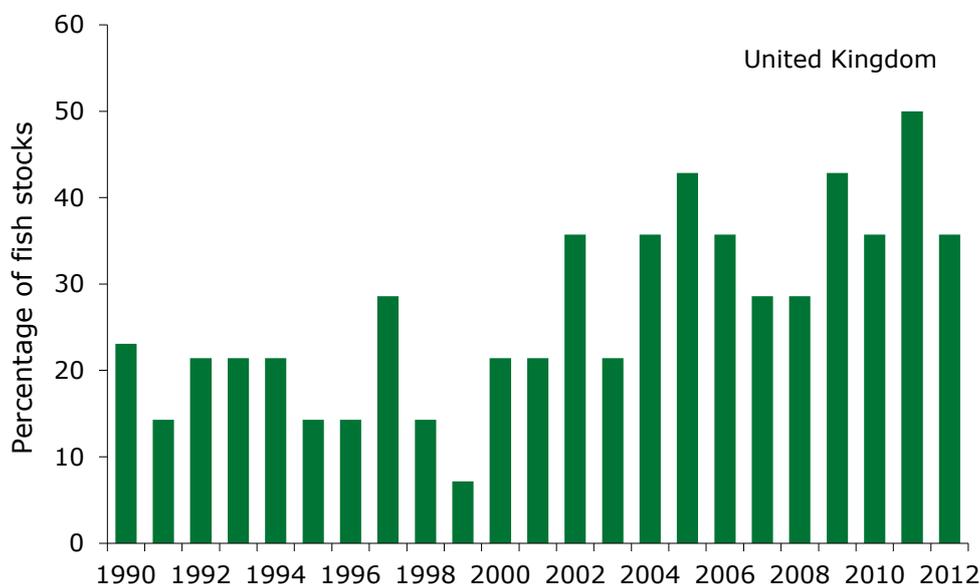
Notes: Based on 14 stocks for which accurate time series are available derived from stock assessment reports.

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

- The proportion of assessed fish stocks harvested sustainably and at full reproductive capacity ranged from 7 per cent to 29 per cent in the period 1990 to 1999, before increasing to between 21 and 50 per cent since 2000. The highest proportion of fish stocks harvested sustainably was in 2011.

Indicator Assessment

Assessment of change in percentage of fish stocks harvested within safe limits			
	Long term	**short term**	**Latest year**
Percentage of fish stocks harvested sustainably	✓ 1990-2012	✓ 2007-2012	Decreased (2012)

24. Biodiversity data and information for decision making

Records added to the National Biodiversity Network Gateway, 2004 to 2014
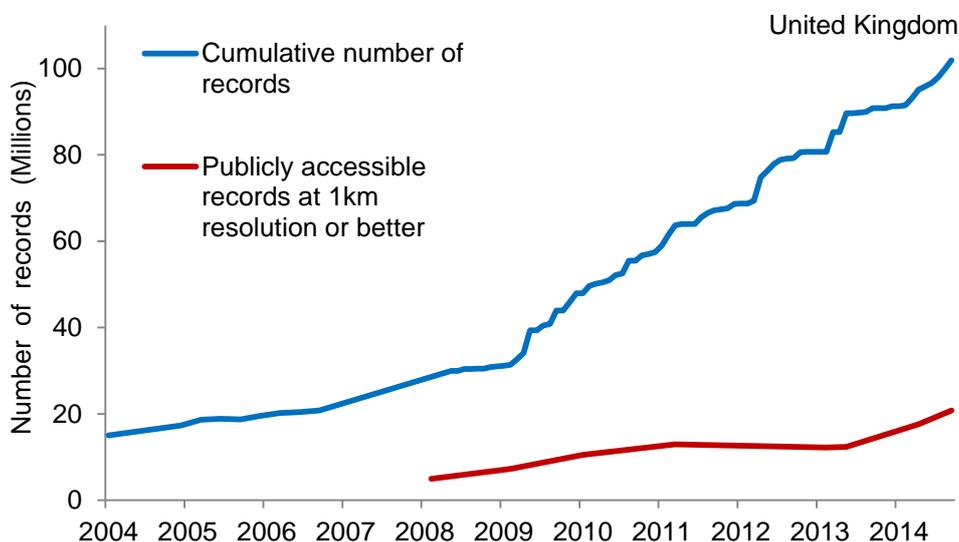
Notes: Data available to 1 September 2014.

Source: National Biodiversity Network.

- This indicator provides an evaluation of the number of records added to the National Biodiversity Network Gateway (NBN) per year, and the resolution of those data, as a proxy for the evidence available to underpin conservation decision making.

- The number of records within the National Biodiversity Network Gateway has increased from 15 million at the start of 2004 to 31 million at the start of 2009, and to over 101 million at the end of August 2014.

- The number of publicly accessible records which are at 1km^2 resolution or better increased from 7.2 million at the start of February 2009 to 20.7 million at the start of September 2014. Over time more high-resolution data are becoming available; this is important because more detailed records are of more value for conservation.

Indicator assessment

Assessment of data for decision making			
	Long term	**Short term**	**Latest year**
Cumulative number of records	✅ 2004-2014	✅ 2009-2014	Increased (2014)
Number of publicly accessible records at 1km^2 resolution or better	Not Assessed	✅ 2009-2014	Increased (2014)

Enquiries about indicators or this publication

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Information on other environmental statistics is also available on Defra's web pages at https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/biodiversity-and-wildlife-statistics.

For enquiries about wider aspects of biodiversity conservation please refer to the Natural England website (www. www.naturalengland.org.uk) or contact Defra's Biodiversity Programme:

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Annex 1. Biodiversity 2020 Outcomes and Themes

Relationship between Biodiversity 2020 indicators and the outcomes and themes in the strategy for England's Wildlife and Ecosystem Services

Biodiversity 2020 Outcomes and Themes		Relevant indicators
Biodiversity 2020 outcomes		
Outcome 1. Habitats and ecosystems on land. 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.	**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.	1, 2, 3, 4, 5, 6, 7, 9, 10, 12
	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, are 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.	
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,	**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.	1, 8, 11, 23

Biodiversity 2020 Outcomes and Themes		Relevant indicators
restoration is underway, helping deliver good environmental status and our vision of clean, healthy, safe productive and biologically diverse oceans and seas.	**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.	
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.		4, 5, 6, 7, 8
Outcome 4 - People. By 2020, significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action.		13, 14
Biodiversity 2020 themes		
Theme 1. A more integrated, large-scale approach to conservation on land and at sea.		As outcome 1 above: 1, 2, 3, 4, 5, 6, 7, 9, 10, 12
Theme 2. Putting people at the heart of biodiversity policy.		As outcome 4 above: 13, 14
Theme 3. Integrate considerations of biodiversity within sectors which have the greatest potential for direct influence, and reduce direct pressures.		16, 17, 18, 19, 20, 21, 22
Theme 4. Improving our knowledge.		24

Note: Indicator 15 on expenditure is cross cutting and not linked to a specific outcome or theme in Biodiversity 2020. It is however relevant to other international commitments (see Annex 2).

Annex 2. International Goals and Targets

Relationship between the Biodiversity 2020 Indicators and the Convention on Biological Diversity (CBD) Aichi Targets

CBD Strategic Goals	CBD Aichi Targets 2011-2020	*Biodiversity 2020* Indicators	
		Primary indicators	**Other relevant indicators**
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.	13, 14	-
	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.	None (indicator is being developed at UK scale)	15, 16
	Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed, applied consistently and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.	22	15, 16
	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.	None (indicator is being developed at UK scale)	22, 23
Strategic Goal B. Reduce the direct pressures on biodiversity	**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.	2, 3	1, 5, 6, 7

CBD Strategic Goals	CBD Aichi Targets 2011-2020	*Biodiversity 2020* Indicators	
		Primary indicators	**Other relevant indicators**
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.	23	8, 11
	Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	22	5, 6, 7
	Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	19, 21	-
	Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	20	-
	Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	18, 19	-
Strategic Goal C. To 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.	1	2, 3

CBD Strategic Goals	CBD Aichi Targets 2011-2020	*Biodiversity 2020* Indicators	
		Primary indicators	Other relevant indicators
	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.	4	5, 6, 7, 8
	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 minimizing genetic erosion and safeguarding their genetic diversity.	12	-
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystems	**Target 14:** By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	9, 10, 23	1, 2, 13, 21, 22
	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.	9, 10	2, 3, 5, 6, 7, 8
	Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	No indicator proposed	
Strategic Goal E. Enhance implementation through planning,	**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.	No indicator proposed	

CBD Strategic Goals	CBD Aichi Targets 2011-2020	*Biodiversity 2020* Indicators	
		Primary indicators	**Other relevant indicators**
knowledge management and capacity building	**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	No indicator proposed	
	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.	24	-
	Target 20: By 2020, at the latest, the mobilization 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 Mobilization 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.	15	-

Annex 3. National Statistics

This publication is designated as National Statistics. This means that the UK Statistics Authority, which was given a statutory power to assess sets of statistics against the Code of Practice for Official Statistics in the Statistics and Registration Service Act 2007, has assessed the indicators as complying with the Code of Practice for Official Statistics. The Code is wide-ranging, but designation can broadly be interpreted as meaning that the statistics meet identified user needs, are well explained and readily accessible, are produced according to sound methods and are managed impartially and objectively in the public interest.

The UK Statistics Authority's assessment of these indicators, alongside other environmental statistics, can be found in its report on [Statistics on Sustainability and the Environment in England and the UK (Department for Environment, Food and Rural Affairs)](#), and its final confirmation of National Statistics status in its [Letter of Confirmation as National Statistics](#).

Designation does not mean that all the individual statistics presented are National Statistics in their own right, but it does mean that the compilation and publication has been undertaken in compliance with the Code of Practice.

The following statistics presented in the publication are National Statistics in their own right:

5.   Species in the wider countryside: farmland (bird statistics only)

6.   Species in the wider countryside: woodland (bird statistics only)

7.   Species in the wider countryside: wetlands (bird statistics only)

22c. Area of forestry land under certified sustainable management schemes

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 Natural England. The presentation of the statistics, the commentary and the traffic light assessments have been overseen and quality assured by Defra Statisticians.

Annex 4. Confidence in trends and assessments

At the last Biodiversity Indicators Forum, held in June 2014, a recommendation was made to provide a transparent statement of the level of confidence that can be ascribed to each individual indicator in the Biodiversity Indicator set. This recommendation was accepted by the UK Biodiversity Indicators Steering Group, who tasked the Biodiversity Indicators Working Group to devise a method for assigning a level of confidence in a trend, and the assessment of that trend, for individual indicators.

The proposed approach to award a level of confidence is based on:

- the methodology used to collect the data for the indicator; and

- the method used to statistically assess the trend.

Using this preliminary method, the levels of confidence given to each indicator are listed in the table below. It is important to note that the method used to assign a level of confidence to each indicator has not yet been peer reviewed; it is being presented here to demonstrate work in progress. Therefore, confidence levels are not stated on individual indicator pages at present. Peer review will occur in early 2015 by the newly formed ad hoc Science Panel tasked to quality assure the indicators; the approach to assigning confidence and the levels of confidence awarded may subsequently be amended. Ultimately, the level of confidence given to each indicator using the final methodology will be included in the relevant indicator pages.

Indicator	Measures	Overall assessment	Data collection	Rigour of assessment
1. Extent and condition of protected and local sites	Extent of protected areas on land and at sea	High	High	High
	Sites of Special Scientific Interest in favourable condition	Medium	Medium	High
2b. Status of habitats of European importance	Percentage of UK habitats of European importance in favourable or improving conservation status	Medium	High	Medium

4a. Status of priority species	Change in status of priority species - abundance	Low	Low	High
	Change in status of priority species - frequency	Low	Low	High
4b. Status of species of European importance	Percentage of UK species of European importance in favourable or improving conservation status	Medium	High	Medium
5. Species in the wider countryside: Farmland	Breeding farmland birds	High	High	High
	Populations of farmland butterflies	High	High	High
	Bat populations	High	High	High
6. Species in the wider countryside: Woodland	Woodland birds	High	High	High
	Widespread butterflies in woodlands	High	High	High
7. Species in the wider countryside: Wetlands	Breeding water and wetland birds	High	High	High
	Wintering water birds	High	High	High
8. Species in the wider marine environment		High	High	High
11. Biodiversity and ecosystem services: Marine		High	High	High
12a. Effective pop size of sheep and cattle breeds		Medium	Medium	Medium
12b. Plant genetic resources		Medium	Medium	High
14. Taking action for the natural environment	Time spent in environmental volunteering	Low	Low	High
15. Funding for biodiversity in England	Public sector expenditure on biodiversity in England	Medium	Medium	High
16. Biodiversity considerations in local decision making		Medium	Medium	Medium
19. Trends in pressures on biodiversity: Pollution	Air pollution impacts on sensitive habitats	Medium	Medium	Medium
	Marine pollution: heavy metals	Medium	Medium	Medium
20. Trends in pressures on biodiversity: invasive species		Low	Low	Medium
21. Trends in pressures on biodiversity: surface water status		Medium	High	Medium

22. Agricultural and forest area under environmental management schemes	Area of land in agri-enviornment schemes	Medium	Medium	High
	Percentage of woodland certified as sustainably managed	High	High	High
23. Sustainable fisheries		Medium	Medium	Medium
24. Biodiversity data and information for decision making		Low	Low	Medium

The following indicators do not have levels of confidence because they are currently not assessed:

2a. Extent and condition of priority habitats	Extent of priority habitats
	Condition of priority habitats
3. Habitat connectivity in the wider countryside	
9. Biodiversity and ecosystem services: Terrestrial	
10. Biodiversity and ecosystem services: Species	
13. Public awareness, understanding and support for conservation	
14. Taking action for the natural environment	Proportion of households undertaking wildlife gardening
15. Funding for biodiversity in England	NGO expenditure on biodiversity in England
17. Sustainable consumption	
18. Climate change impacts and adaptation	
22. Agricultural and forest area under environmental management schemes	Uptake of priority ELS options

The two-stage method for assigning a level of confidence in an indicator is outlined below.

Stage 1: assign Low/Medium/High to each indicator for 'data collection' and 'rigour of assessment', using the criteria provided to award a total score under each heading.

Data collection Total possible score = 15

Criteria	Levels	Score
Method for data collection	[Stratified] Random sampling or census	3
	Defined methodology	2
	Ad hoc data collection	1
Transparency and soundness of methodology	Methodology externally published and peer reviewed	3
	Methodology available but not peer reviewed e.g. recording schemes website	2
	Methodology not available	1
Comparability	Data fully comparable over time and domain	3
	Some break in the data series due to changes in method through time	2
	Inconsistent method/data through time	1
Quality assurance of data	Detailed verification in place and documented	3
	Some verification checks in place	2
	Unverified data	1
Data coverage	Data are representative/unbiased	3
	Data are representative/without strong bias	2
	Data are unrepresentative/biased	1

Score bands

Level	Score range	Explanation
High	13-15	This would translate as having a minimum of 3 top scores At the bottom of the score band you could have – 3 top scores (=9) and 2 middle scores (=4) – No 1s allowed - if an indicator scores any low scores it gets a 'Low'.
Medium	10-12	This would translate as having a minimum of 3 middle scores At the bottom of the score band you could have – 5 medium scores (=10) – No 1s allowed – if an indicator scores any low scores it gets a 'Low'.
Low	5-13	At the top of the score band you could have – 4 high scores (12) and 1 low score (1)

Criteria	Levels	Score
Analytical technique	Uncertainty is quantifiable and a statistical test is used to assess change	3
	Understanding of the level of uncertainty around, and variation in, a trend means a judgement based rule (includes 3% rule and 5% rule for birds) is used to assess change	2
	Unknown precision means it is not possible to statistically assess trends	1
Time series availability	Both long and short -term trends can be assessed (10+ years data)	3
	Sufficient data to make an assessment of progress (5-10 years)	2
	Insufficient data for assessment (<5 years)	1
Timeliness	Assessment is up to date	3
	Assessment is slightly out of date but likely to still be relevant	2
	Assessment is out of date to the point that we no longer know if it is relevant	1

Rigour of assessment of change Total possible score = 9

Score bands

Level	Score range	Explanation
High	8-9	This would translate as having a minimum of 2 top scores At the bottom of the score band you could have – 2 top scores (=6) and 1 middle scores (=2) – No 1s allowed - if an indicator scores any low scores it gets a 'Low'.
Medium	6-7	This would translate as having a minimum of 3 middle scores At the bottom of the score band you could have – 3 middle scores (=3) – No 1s allowed - if an indicator scores any low scores it gets a 'Low'.
Low	3-7	At the top of the score band you could have – 2 high scores (6) and 1 low scores (1)

Stage 2: use Low/Medium/High ratings for each axis with the confidence grid below to assign overall confidence: