



Countryside Survey:

UK Headline Messages
from 2007

Foreword by Rt. Hon. Hilary Benn, M.P. Secretary of State for Environment, Food and Rural Affairs



The countryside lies at the heart of our prosperity, our health and our well-being. It provides us with food and water, it helps deal with flooding and store carbon, and it enriches our lives.

Now, more than ever, we cannot afford to take the countryside for granted. Faced with new pressures we must rebalance

our relationship with the natural world. We must ensure that the landscapes, wildlife and ecosystems that provide us with the essentials of life are not only looked after but are improved for future generations.

The health of the countryside is increasingly affected by climate change, pollution and the demand for land. These powerful, constantly shifting forces threaten the benefits that the natural world provides. So in responding it is vital that we improve our understanding of their impact.

The UK Countryside Survey helps us to do that. It provides the hard scientific evidence that we need to build a clear picture of the plants, habitats, soils and watercourses which determine the health of the countryside as a whole. I will be studying the findings of this report very carefully.

Carrying out a national survey on this scale is an impressive undertaking and I am greatly indebted to the team of research scientists and surveyors who worked through the exceptionally wet summer of 2007 to make it happen. I would like to acknowledge the support of the many land owners and managers throughout the country who gave permission for the survey to take place. The project was also made possible by the relationship between the Natural Environment Research Council and the other government partners representing all the devolved administrations and relevant agencies across the UK.

Hilary Benn

Foreword by Professor Alan Thorpe, Chief Executive, Natural Environment Research Council



The issue of the changing ecology of the UK countryside is of growing scientific and political importance, driven by concerns about land use changes, climate change, increased flood risks and sustainable energy resources.

The UK Countryside Surveys bring together the policy and scientific communities, and provide the basis to deal with a great number of scientific issues. They offer a unique way to monitor the changes in the environment's ecosystems brought about by our constant and varied demands on land and water resources, and by the impacts of climate change and air pollution. They analyse the relationships between soils, vegetation and water quality and identify when and how these affect biodiversity.

We now have a remarkably detailed 30 year record of where environmental changes have occurred. This is vital scientific evidence for policy makers and all those with interests in sustainable land management. The results from these surveys help to answer questions about why the changes have happened, and decide what policy decisions are needed to manage future change. They will be an invaluable data source for other strategic programmes, such as the 'Living With Environmental Change' partnership.

The Natural Environment Research Council is very proud to support this important scientific initiative, which addresses the environmental, social and economic challenges of providing a sustainable countryside for the UK.

Alan Thorpe

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▲ Dyffryn Ogwen, Wales • © NERC

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Headline Messages

1. Which plant species are increasing and decreasing the most?

Common plant species that have become more abundant since 1998 were Stinging Nettle, Hawthorn and Bramble, which all benefit from reduced management. Climbing species and species of unmanaged land were more frequent; species of wetland edges and short turf less frequent. Four of the most common non-native species became more frequent between 1998 and 2007.

2. Has botanical diversity in the countryside changed?

The species richness of plants growing in fields, woods, heaths and moors decreased by 8% in Great Britain between 1978 and 2007, but there was no decrease between 1998 and 2007. There was a greater decrease alongside linear features and in areas targeted because of their botanical interest, which continued from 1998 to 2007.

3. Has the biodiversity of arable land changed?

The area of arable land decreased by 9.1% in the UK between 1998 and 2007, mostly through conversion to grassland. Since 1998 plant species richness has increased in arable land by 30% in Great Britain, often associated with set-aside.

4. Has the area and condition of lowland agricultural grassland changed?

The area of agriculturally improved and neutral grasslands increased (by 5.4% and 6.0% respectively) in the UK between 1998 and 2007. In Great Britain, between 1998 and 2007, there was no change in plant species richness but there was a relative increase in taller species or those species that prefer shadier and/or wetter conditions.

5. Has the length and condition of hedges changed?

The total length of 'managed' hedges decreased by 6% between 1998 and 2007 in Great Britain, following a sharp decline from 1984 to 1990 and a period of stability from 1990 to 1998. The length of lines of trees increased between 1998 and 2007. Slightly less than half (48%) of the managed hedges in Great Britain were classified as being in good structural condition in 2007.

6. Has the area and condition of woodland changed?

The area of broadleaved woodland increased by 6.9% and there was no significant change in the area of coniferous woodland in the UK between 1998 and 2007. Plant species richness of the woodland ground flora in broadleaved woodlands in Great Britain did not change between 1998 and 2007, but a longer term decrease of 7% was detected between 1990 and 2007.

7. Has the area and condition of moorland, heathland and bog changed?

The estimated area of bracken decreased and acid grassland increased in the UK between 1998 and 2007. Heathland increased in England by 15% between 1998 and 2007. Competitive species, especially grasses, increased in heathland and bog in Great Britain between 1998 and 2007, suggesting a deterioration in condition.

8. Has the condition of freshwater habitats continued to improve?

The first results for freshwaters from Countryside Survey in 2007 show continued improvements in condition in headwater streams in Great Britain. The number of ponds increased by 11% but their biological condition deteriorated in Great Britain between 1996 and 2007.

9. Have there been detectable effects of air pollution and nutrient inputs on vegetation and soils?

Soil acidity decreased from 1978 to 2007 in Great Britain, mirroring declining emissions and deposition of sulphur. Vegetation showed only a partial recovery. Plant species that prefer higher nutrient levels increased between 1978 and 1998 but decreased between 1998 and 2007.

10. Has average carbon concentration in soils (0-15cm) changed?

Countryside Survey found no overall change in average carbon concentration in soil (0-15cm) in Great Britain since 1978, contrasting with a previous study in England and Wales. Changes in carbon concentration in soil are important as losses could contribute to climate change.

11. Have climate change impacts been detected in the UK countryside?

Since 1978, Countryside Survey has detected no changes in plant distribution or abundance that appear consistent with climate change. As the weather has generally become warmer and wetter since 1978, taller plant species and those preferring wetter conditions have become more abundant across Great Britain. No direct cause-and-effect relationship has yet been established.



▲ Surveyors at work, Scotland • © NERC

Introduction to Countryside Survey

Countryside Survey is a unique study of the natural resources of the UK countryside. The survey has been carried out at intervals since 1978 with the latest survey in 2007. The countryside is sampled and studied using rigorous scientific methods, so that the results from the 2007 survey can be compared with those from previous years. In this way the gradual and subtle changes that occur in the UK countryside can be studied over time.

Countryside Survey provides scientifically reliable evidence about many aspects of the state of the UK countryside today. The results from 2007 can be compared with the findings of the previous surveys in 1998, 1990, 1984 and 1978 to measure and analyse change. This evidence can be used to review and develop policies that influence the management of the countryside.

There are two main elements to Countryside Survey: the Land Cover Map and the field surveys. The Land Cover Map uses data from satellites to form a digital map of the different types of land cover across the UK and will be published in 2009. The field surveys involve an in-depth study of a sample of nearly 600 1km x 1km squares across Great Britain and 285 0.5km x 0.5km survey squares in Northern Ireland. The two field surveys are undertaken separately but the results are brought together where possible in this report for the UK.

Individual survey squares were selected at random so that they represent variations in climate and geology across the UK. All widespread terrestrial habitat types are sufficiently well represented to enable robust and reliable statistical analyses. The locations of the survey squares are not disclosed to avoid any deliberate influences that could affect them or the features within them. In this way the survey squares will remain representative of changes in the wider countryside and will continue to provide a reliable comparison for future surveys. Vegetation, freshwaters and other landscape features were studied in detail within each square (using various types of sampling 'plots') and compared with findings from previous Countryside Surveys, enabling identification of change in the countryside.

The results presented here focus on changes in the nine years since the last Countryside Survey in 1998 and, where possible and relevant, they are set within the longer timescale from the first survey carried out in 1978. Changes are only described and discussed where they are statistically significant (where they could only occur by chance in less than 5% of cases).

The overarching objectives of Countryside Survey in 2007 were:

- To record and report on the amount and condition of widespread habitats, landscape features, vegetation, land cover, soils and freshwaters.
- To assess changes in the countryside and improve our understanding of the causes and processes of change, by comparison with data from earlier surveys.
- To collect, store and analyse data in ways that optimise the integration of Countryside Survey data through time and make it compatible with other data sources.
- To provide access to data and interpreted results that underpin a range of policy and science needs for major environmental zones and landscape types in the UK, Great Britain, England, Scotland, Wales and Northern Ireland.
- To contribute to the development of an integrated assessment of the drivers and pressures of change and better understand their effects on the UK countryside and their implications for ecosystem goods and services.



▲ Field Surveyors, N. Ireland • © N. Ireland Environment Agency



▲ Surveying, England • © NERC

The findings will be used...

The findings will be used for a range of scientific (**Box 1**) and policy (**Box 2**) applications.

Box 1. Scientific applications of Countryside Survey

Areas of research underpinned by data from the 2007 Survey will include:

- Further analysis and interpretation of stock and change estimates;
- Attribution of ecological change to pressures and drivers, e.g. land management, climate and air pollution;
- Mechanisms and inter-dependencies between soils, vegetation and water quality, underpinning ecosystem models linking biodiversity and biogeochemical cycling;
- Development of indicators of environmental benefits (ecosystem services);
- Linking observations to experimental evidence and models, to assess past changes and test future policy scenarios.

The longer-term scientific aim is to deliver an integrated analysis of selected environmental benefits, drawing on vegetation, freshwater and soils data from Countryside Survey in 2007, from previous Surveys and other relevant datasets.



▲ Surveyor at work, England • © NERC

Box 2. Policy applications of Countryside Survey

The UK Sustainable Development Strategy 'Securing the Future' (2005) committed the Government to undertake a new Countryside Survey in 2007 to assess the status of natural resources in the UK countryside. Countryside Survey has many potential policy applications:

- Biodiversity: assessment of status and trends in Broad and Priority Habitats, measuring progress towards the 2010 target of halting biodiversity loss;
- Natural environment: measurement and improved understanding of ecosystem goods and services;
- Sustainable agriculture and agri-environment schemes: understanding effects of agricultural policy on the natural environment, including assessment of farmland habitats such as grasslands, hedges and cereal field margins;
- Water resources: context and baseline assessment for the EU Water Framework Directive, especially for headwater streams and ponds;
- Soil protection: measurement of long term trends in soil quality, including soil carbon;
- Sustainable forestry: information on isolated trees and plant diversity within woodlands, to supplement the National Inventory of Woodlands and Trees;
- Urban development: estimates of areas of habitat affected by urban development;
- Air quality: assessment of impacts of air pollution on terrestrial habitats, soils and headwater streams;
- Climate change: provide information to help estimate carbon emissions from land cover change and soils, and to detect impacts of climate change in the countryside.

Reports from Countryside Survey

The findings of Countryside Survey at the UK level are published in two reports: this summary report 'Countryside Survey : UK Headline Messages from 2007' and a main report 'Countryside Survey : UK Results from 2007'.

The 'UK Headline Messages' use the results from 2007 to answer selected questions that have arisen from previous Countryside Surveys or have been prompted by recent policy developments. The Headline Messages are not intended to cover all of the results from Countryside Survey, nor are they systematic in addressing key habitats or policy issues; they are simply intended to present key findings as an introduction to the main results and subsequent reports.



▲ Brambles • © Sue Wallis

1. Which plant species are increasing and decreasing the most?

Common plant species that have become more abundant since 1998 were Stinging Nettle, Hawthorn and Bramble, which all benefit from reduced management. Climbing species and species of unmanaged land were more frequent, species of wetland edges and short turf less frequent. Four of the most common non-native species became more frequent between 1998 and 2007.

Rye grass is consistently the most common species recorded in Countryside Survey. The list of the top ten most abundant species of Great Britain shows that the countryside has tended to become more strongly dominated by shrubs like Hawthorn, Bramble and Blackthorn and tall herbs like Stinging Nettle, which moved up the ranking list (**Table 1**). All these species thrive where management of the land is reduced. In contrast, several grass species of managed land have moved down the ranking list. The list below is based on the percentage cover that each species occupied within the sampling plots, including many alongside linear features.

▼ **Table 1:** Changes in the ranking of the top 10 most abundant plant species recorded in Countryside Survey sampling plots in Great Britain between 1990 and 2007.

Names		Rank		
		2007	1998	1990
<i>Lolium perenne</i>	Rye Grass	1	1	1
<i>Holcus lanatus</i>	Yorkshire Fog (Grass)	2	3	3
<i>Arrhenatherum elatius</i>	False-oat (Grass)	3	2	5
<i>Urtica dioica</i>	Stinging Nettle	4	6	11
<i>Crataegus monogyna</i>	Hawthorn	5	8	9
<i>Agrostis stolonifera</i>	Creeping Bent (Grass)	6	4	2
<i>Rubus fruticosus</i> agg.	Bramble	7	13	14
<i>Dactylis glomerata</i>	Cocksfoot (Grass)	8	10	8
<i>Agrostis capillaris</i>	Common Bent (Grass)	9	5	4
<i>Festuca rubra</i> agg.	Red Fescue (Grass)	10	9	7
<i>Calluna vulgaris</i>	Heather	11	7	10
<i>Elytrigia repens</i>	Couch (Grass)	17	11	6

▼ **Table 2:** Plant species in rank order showing the largest increase and decrease in frequency of occurrence in Countryside Survey sampling plots in Great Britain between 1998 and 2007.

Rank	Increasing		Decreasing	
	Species	Name	Species	Name
1	<i>Tamus communis</i>	Black Bryony	<i>Epilobium montanum</i>	Broad-leaved Willowherb
2	<i>Geum urbanum</i>	Wood Avens	<i>Drosera intermedia</i>	Oblong-leaved Sundew
3	<i>Hedera helix</i>	Ivy	<i>Alopecurus geniculatus</i>	Marsh Foxtail
4	<i>Crepis capillaris</i>	Smooth Hawks-beard	<i>Valeriana dioica</i>	Marsh Valerian
5	<i>Sonchus asper</i>	Prickly Sow Thistle	<i>Salix aurita</i>	Eared Willow
6	<i>Fraxinus excelsior</i>	Ash	<i>Fragaria vesca</i>	Wild Strawberry
7	<i>Senecio vulgaris</i>	Groundsel	<i>Carex dioica</i>	Dioecious Sedge
8	<i>Picris echioides</i>	Bristly Oxtongue	<i>Campanula rotundifolia</i>	Harebell
9	<i>Alopecurus myosuroides</i>	Black Grass	<i>Myosotis scorpioides</i>	Water Forget-me-not
10	<i>Calystegia sepium</i>	Hedge Bindweed	<i>Koeleria macrantha</i>	Crested Hair-grass

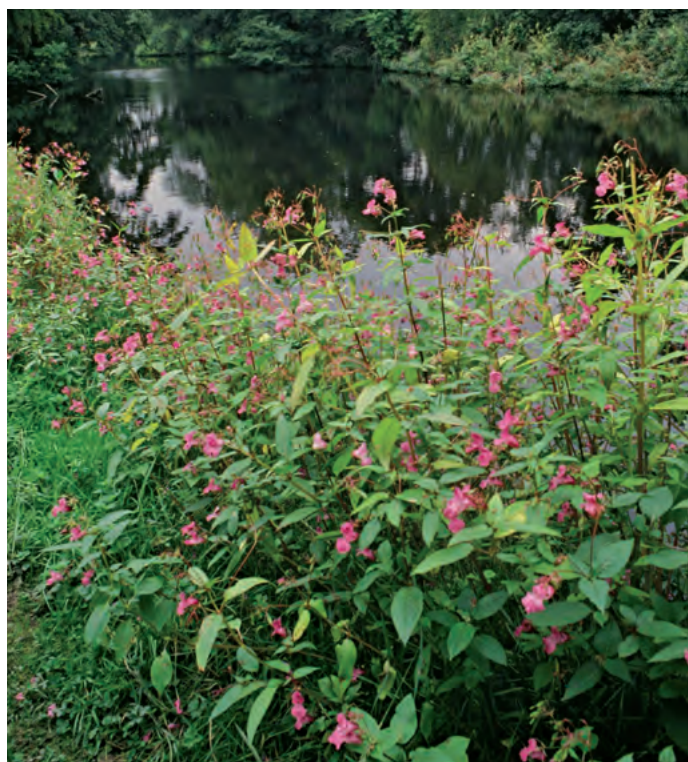
A similar message about the effects of reduced management emerges from the list of plant species that showed the largest increases and decreases in frequency (the number of sampling plots in which a species was recorded) since 1998 (*Table 2*).

The ten plant species that showed the greatest increase in frequency of occurrence in sampling plots are most often associated with reduced management of lowland habitats. Half of these are tall plants that occur in places like road verges and field corners. The others include hedgerow vines and creepers such as Black Bryony, Hedge Bindweed and Ivy. Four of the increasing species (Smooth Hawks-beard, Prickly Sow Thistle, Groundsel and Bristly Oxtongue) are commonly found on wasteland and other disturbed areas.

Nine of the ten decreasing species are low growing plants, sensitive to competition from more vigorous plants. Oblong-leaved Sundew, Marsh Foxtail, Marsh Valerian, Dioecious Sedge, Water Forget-me-not and Eared Willow are plants found on the edges of bogs, fens and other wet places.

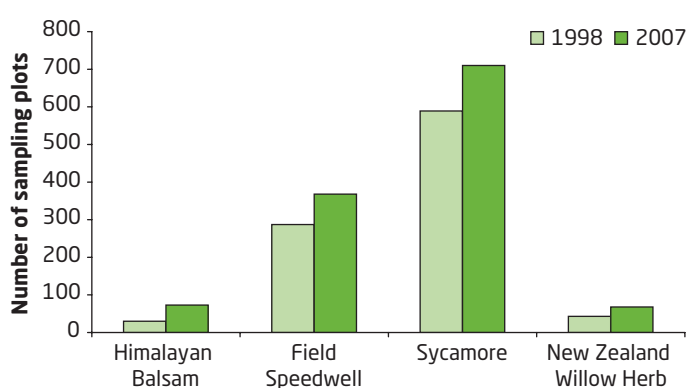
The number of non-native or ‘alien’ plant species recorded in Great Britain has increased greatly in the past sixty years. Most non-native species remain relatively scarce in the Countryside Survey sampling plots (over 14,000 in this analysis), although locally they can be very abundant e.g. Rhododendron and Japanese Knotweed. Together, non-native species now account for nearly 2% of the vegetation cover of the British countryside.

Between 1998 and 2007 four non-native species showed larger increases in the number of plots occupied within Countryside Survey than others. Himalayan Balsam, New Zealand Willow Herb and Common Field Speedwell increased in local abundance (*Fig.1*). Sycamore is a common tree species which continues to increase. Lack of disturbance on stream sides favours Himalayan Balsam, while less intensive arable field margin management encourages the spread of Common Field Speedwell. New Zealand Willow Herb has increased continuously since 1978 in its favoured sites on bare, damp soil along upland streams and flushes.



▲ Himalayan Balsam • © Natural England

▼ **Figure 1:** Changes in the number of sampling plots in which four common non-native plant species were recorded in Great Britain between 1998 and 2007.





▲ Glen Nevis, Scotland • © NERC

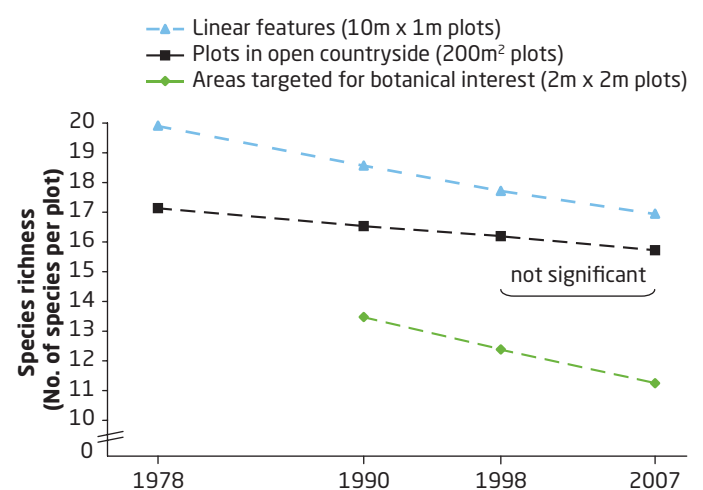
2. Has botanical diversity in the countryside changed?

The species richness of plants growing in fields, woods, heaths and moors decreased by 8% in Great Britain between 1978 and 2007, but there was no decrease between 1998 and 2007. There was a greater decrease alongside linear features and in areas targeted because of their botanical interest, which continued from 1998 to 2007.

The Countryside Surveys of 1990 and 1998 reported decreases in plant species richness (*defined in Box 3*) in the most common habitats of Great Britain. In each survey, vegetation was recorded in three different sampling plot types: in the open countryside (fields, woods, heaths and moors); alongside linear features; and in areas targeted by Countryside Survey for their botanical interest.

Over 2000 vegetation sampling plots, randomly located in open countryside, were tracked from 1978. At the outset these plots contained 17.1 different plant species but by 2007 they contained on average 1.4 fewer species, an 8% decline in species richness. However, no change was detected between 1998 and 2007 (*Fig. 2*).

▼ **Figure 2:** Average species richness of vegetation in plots in the open countryside (fields, woods, heaths and moors), linear features and areas targeted for their botanical interest in Great Britain, between 1978 and 2007. All changes between years are statistically significant apart from the change in open countryside plots between 1998 and 2007.



Box 3. Species richness and vegetation condition

Species richness is the number of different species found in a given area (a site, habitat or region). It is an expression of the variety of species found, not of their abundance. In Countryside Survey, species richness is the number of vascular plant species recorded in the sampling plots. A small number of pairs or groups of species that are very difficult to distinguish consistently from one another are removed from the analyses to remove bias between surveyors and survey years.

Vegetation condition was analysed using different measures. The system developed by *Ellenberg* provides a score for the vegetation based on the environmental conditions that species growing in it prefer on a scale from 0-9. For example, a Fertility Score of 9 would mean the vegetation was made up of species that prefer very fertile soils. A decrease in the value of the Light Score shows that species casting or preferring shade have become more prominent. The Competitor Score is based on the system developed by *Grime*. Other scores were used but not mentioned in this report.

There are many reasons for the decrease in plant species richness, and they affect different habitats to varying degrees in different parts of the country. The majority of the plots included in Countryside Survey are subject to some form of agricultural management, ranging from intensive cropping to extensive grazing; others occur within commercial forests or amenity land, so land management is clearly a critical factor. In some cases, especially for linear features, it is changes in management that contribute to the decrease in abundance of some low growing plants, as shrubs and trees become more dominant. The sampling plots are also influenced by factors such as air pollution and climate change.



▲ Species rich grassland • © Ian Simpson



▲ Dark Green Fritillary • © Ian Simpson

626 sampling plots have also been recorded in each survey alongside linear features such as field boundaries, streamsides and road verges, which can act as refuges for species that cannot exist in intensively managed land. Although these plots are smaller they generally contained more species, but the 15% decrease in species richness between 1978 and 2007 was more acute than in the open countryside. In this case the decrease was also detected between 1998 and 2007. There was an increase in the cover of trees and shrubs leading to a more shaded, taller type of vegetation.

The greatest decrease (17%) in species richness between 1990 and 2007 was found in approximately 2500 sampling plots, in areas targeted by Countryside Survey for their botanical interest in 1990 (*Fig. 2*).

The long-term decrease in plant species richness coincided with the decline in abundance of farmland birds and butterflies over the same period.

The overall figures for all sampling plots across Great Britain conceal some significant differences between countries and habitat types. For example, plant species richness increased in arable land in England between 1990 and 2007, but not in Scotland or Wales.



▲ Arable farmland, England • © Andrew Stott

3. Has the biodiversity of arable land changed?

The area of arable land decreased by 9.1% in the UK between 1998 and 2007, mostly through conversion to grassland. Since 1998 plant species richness has increased in arable land by 30% in Great Britain, often associated with set-aside.

In 2007, arable and horticultural crops covered an estimated 4.7 million ha of the UK. As well as being intensively farmed for food production, arable land also includes land under set-aside or under horticulture and temporary grass. Arable fields form part of a mosaic of other farmland habitats and field boundaries which provide important habitats for wildlife, including UK Biodiversity Action Plan 'Priority Species' e.g. Pheasant's Eye, Grey Partridge and Brown Hare, for which conservation targets have been agreed.

Following a fairly stable period between 1984 and 1998 during which the total arable area changed relatively little, the period from 1998 to 2007 showed a major shift away from arable crops towards grassland. Grassland typically has greater plant species richness than arable land and the existence of patches of grassland within otherwise arable areas provides a patchwork of habitats that is beneficial to a wide variety of wildlife.

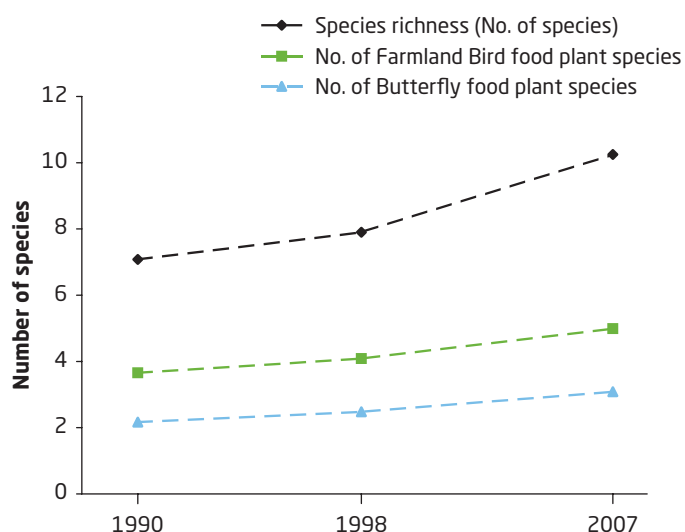


▲ Arable weeds in cereal crop • © Ian Simpson



▲ Oilseed rape field, England • © Sue Wallis

▼ **Figure 3:** Changes in the average species richness, number of Farmland Bird food plants, and the number of Butterfly food plants in sampling plots in arable land in Great Britain between 1990 and 2007.



Countryside Survey reported previously a decrease in plant species richness in arable fields of 29% in Great Britain between 1978 and 1990. Between 1998 and 2007 the average of 7.9 plant species per sampling plot increased to 10.3 reversing the previous decline (Fig. 3).

The diversity and abundance of species of wild plants are important in their own right and because they provide food and shelter for animals in a wide range of habitats. In Countryside Survey, food plants for farmland birds and butterflies are used as examples to explore the potential of habitats to support a wide range of biodiversity.

The numbers of farmland bird and butterfly food plant species in arable fields increased by 22% and 24% respectively between 1998 and 2007. However, the number of species of plants is not directly related to the quantity of food available to farmland birds and butterflies and additional information can be gained by investigating the proportion of ground covered by plants.



▲ Arable margins, England • © Natural England

The proportion of ground covered by common species used as food by butterflies or birds has increased in arable land between 1998 and 2007 but was still less than 1% of the cropped land.

Since the late 1990s farmers have been encouraged to create arable margins under agri-environment schemes, usually sown with varying mixtures of grasses and wild flower species. Arable margins introduced a higher level of diversity to the arable landscape and Countryside Survey found they had more than twice as many species as crops and a much higher percentage cover of plants.

Between 1978 and 1990 there was a decline in biodiversity of arable land (as represented by plant species richness), but the most recent Countryside Survey showed that this biodiversity has recovered. Arable landscapes became more diverse due to conversion to grassland, set-aside and the introduction of arable margins. These changes are likely to benefit farmland birds, butterflies and other animal species and further investigations to understand these relationships are continuing. These gains in the biodiversity of arable habitats will be very susceptible to future market prices and policy changes, including the removal of compulsory set-aside in 2008.



▲ Calcareous grassland, England • © Peter Carey

4. Has the area and condition of lowland agricultural grassland changed?

The area of agriculturally improved and neutral grasslands increased (by 5.4% and 6.0% respectively) in the UK between 1998 and 2007. In Great Britain, between 1998 and 2007, there was no change in plant species richness but there was a relative increase in taller species or those species that prefer shadier and/or wetter conditions.

In 2007, Countryside Survey estimated that intensively managed, improved grassland covered about 5.1 million ha, over a fifth of the land area of UK, an increase of 5.4% since 1998. This grassland is the most important for livestock production but generally has low levels of plant diversity, although it provides a widespread habitat for farmland birds and other animals.

The area of neutral grassland was 2.4 million ha in 2007, about 10% of the land area of the UK and an estimated increase of 6% since 1998. The area of chalk and limestone grassland was much smaller, around 59,000 ha in 2007, about 0.2% of UK. Less intensively

managed neutral and calcareous grasslands are important habitats for farmland biodiversity, including several UK Biodiversity Action Plan 'Priority Habitats' and their associated species. They include wildflower meadows and chalk downlands with high botanical diversity. Newly created neutral grassland, although not usually of special conservation value, is likely to benefit farmland biodiversity generally, including wild birds.



▲ Lowland grassland, England • © Natural England



▲ Cattle on improved grassland, England • © Sue Wallis



▲ Baling hay, England • © Sue Wallis

Previous Countryside Surveys in 1990 and 1998 reported decreases in the species richness of grasslands. The current survey shows that in improved grasslands, there was a small decrease in species richness in Great Britain between 1990 and 2007, though no significant change was detected between 1998 and 2007. The less intensively managed neutral grassland also showed no significant change in species richness. Countryside Survey did not detect a change in the condition of chalk grasslands (which because of their rarity are not adequately represented in the sampling strategy).

Competitive species, tall or shade tolerant species and species preferring wetter conditions increased in improved and neutral grasslands, whilst species of open ground and those that prefer more fertile conditions decreased (*Table 3*).

▼ **Table 3:** Changes in the condition of vegetation in improved and neutral grasslands in sampling plots in Great Britain between 1998 and 2007. Up arrows indicate a significant increase and down arrows a significant decrease.

	Improved Grassland			Neutral Grassland		
	1998	2007	Change	1998	2007	Change
Competitor Score	2.71	2.74		2.75	2.81	↑
Light Score	7.09	7.05	↓	7.01	6.98	↓
Moisture Score	5.35	5.38	↑	5.45	5.52	↑

Lowland grasslands are the mainstay of the UK livestock industry supporting 10 million cattle, 35 million sheep and over 1 million horses. Numbers of cattle decreased by 10% and sheep by 20% between 1998 and 2007, following a sharp rise in sheep numbers between 1983 and 1990. The outbreak of Foot and Mouth Disease in 2001 had a major impact on UK livestock production. The findings of Countryside Survey are consistent with a reduced intensity of grassland management reflecting an overall decrease of grazing pressure. Previous decreases in species richness of widespread lowland grasslands appear to have slowed or halted, and the increased area of neutral grassland represents a gain for farmland biodiversity between 1998 and 2007.



▲ Hedgerows, Wales • © NERC

5. Has the length and condition of hedges changed?

The total length of ‘managed’ hedges¹ decreased by 6% between 1998 and 2007 in Great Britain, following a sharp decline from 1984 to 1990 and a period of stability from 1990 to 1998. The length of lines of trees increased between 1998 and 2007. Slightly less than half (48%) of ‘managed’ hedges in Great Britain were classified as being in good structural condition in 2007.

Hedgerows are characteristic features of the UK countryside. They are important for the habitats they provide, the connections they make between habitats and their contribution to the landscape. Since 1997, the Hedgerow Regulations have severely restricted the removal of hedgerows in England and Wales; this halted the reduction in hedge length recorded between 1984 and 1990. The biggest threats now to the stock of hedgerows are neglect and over-management.



▲ Managed hedgerow, England • © Ian Simpson

¹ This does not include relict hedges or lines of trees/shrubs