

FARMLAND HABITATS INCLUDING ARABLE FIELD MARGINS IN OXFORDSHIRE

UK Biodiversity Action Plan - Priority Species associated with farmland

Brown hare
Pipistrelle bat
Bechstein's bat
Bullfinch
Corn bunting
Grey partridge
Linnet
Reed bunting
Song thrush
Skylark
Tree sparrow
Turtle dove
Robberfly
Broad-fruited cornsalad
Broad-leaved cudweed
Cornflower
Perfoliate penny-cress
Red hemp-nettle
Shepherds needle
Small-flowered catchfly
Spreading hedge parsley

Local Characters Species

Harvest mouse
Barn owl
Lapwing
Red kite
Swallow
Yellowhammer
Noble chafer
Broad-leaved spurge
Corn marigold
Corn parsley
Round-leaved fluellen
Sharp-leaved fluellen
Grass-poly
Pheasant's eye
Venus's-looking-glass

1. CURRENT STATUS

1.1 Current status in the UK

Oxfordshire is primarily a rural, agricultural county with a large proportion of its biodiversity dependent upon farmland. It is essential, therefore, that means are found to integrate modern agriculture and wildlife conservation effectively.

Farmland once contained a range of habitat and landscape features arising from both its land use and management history. Increasing intensification and specialisation has resulted in the loss of many of these features leading to a less diverse structure. Different habitat features support different species. Therefore, to conserve arable habitat species, it is necessary to restore and manage the full range of arable conditions.

Over the last 50 years there has been a considerable decline in wildlife species characteristic of farmland which has been most marked during the last two decades. In common with other parts of lowland Britain, many once-familiar plants, birds and mammals of the farming landscape have become very scarce in Oxfordshire. Examples include the tree sparrow, grey partridge and corn bunting. At the same time, some nationally declining species, such as the brown hare and skylark, are not uncommon in the county. The decline in the general biodiversity of farmland is also having a knock-on effect for animals such as bats as their insect prey becomes less abundant, and wild bees as the wild flowers they depend on become scarce.

There have been striking countrywide declines in the numbers of several bird species during the last two decades. Some national figures are given in Table 1. In farmland, corn buntings, tree sparrows and grey partridges have been most severely affected. On arable land in Oxfordshire, species of particular concern are corn

<i>Species</i>	<i>Overall population change 1974-1999</i>	<i>Farmland population change 1974-1999</i>
Barn owl	n/a*	n/a*
Bullfinch	-57%	-71%
Corn bunting	-89%	-90%
Grey partridge	-84%	-83%
Linnet	-55%	-46%
Lapwing	-41%	-45%
Reed bunting	-63%	-58%
Skylark	-55%	-54%
Song thrush	-53%	-66%
Tree sparrow	-95%	-93%
Turtle dove	-69%	-81%
Yellowhammer	-54%	-42%

Table 1: National population declines of farmland birds (updated 2003)

*Annual population monitoring of barn owls is no longer carried out by BTO.

bunting, grey partridge, lapwing and tree sparrow (all red or amber list species) although detailed figures for the decline in the county are not available.

There have been similar declines in the occurrence of several plant species which were once common on farmland, both locally and nationally. Some examples are given in Table 2.

3	Key species	1930-60 No. 10km squares	1970 No. 10km squares	>1980 No. 10km squares	Oxon status (No.records F of O)*	Oxon sites post 1990#
	Broad-fruited cornsalad			4	RDB rare (7)	0
	Broad-leaved cudweed	99	12	9	RDB rare (1)	1 (in quarry)
	Cornflower	267	127	78	RDB scarce (27)	5 (farm)
	Perfoliate penny-cress	9	3	4	RDB rare (5)	1 farm + 2 others
	Red hemp-nettle	233	116	61	scarce (57)	2 (farm)
	Shepherds needle	Common	131	85	rare (24)	13 farm + 1 other
	Spreading hedge parsley	137	82	>20	rare (17)	1
<i>Other species which will benefit from HAP actions</i>						
	Grass-poly	42	2	6	One site	1 (pond edge)
	Pheasant's eye	62	12	10	RDB rare	2 (farm)

Table 2: Some plants of farmed land which have shown major declines

Sources: * Killick, Perry and Woodell, 1998: Flora of Oxfordshire;
J Killick and S Gregory, pers. com.

1.2. Current status in Oxfordshire

Although the total area farmed has remained broadly unchanged in recent years, there have been considerable changes in farming practice.

The area of farmland in the county, including farm woodland, totalled 201,196 ha in 2001. There has been a steady decline in the area of grassland, which made up about 50% of the total in 1910 declining to 30% in 2001, with a 14% reduction between 1986 and 2001. There has been a corresponding increase in the area of cropping and fallow to make up 65% of the total in 2001 compared with 30% in 1910. Recent changes have resulted from a reduction in mixed farming, which often has a high diversity of habitats, to specialised arable farms which tend to have low crop and habitat diversity and a consequently lower number of wildlife species.

2 CONSERVATION

2.1 Arable land

Land under arable cultivation forms 44% of the total land area of England. Oxfordshire has a tradition of mixed farming in many areas but there have been widespread changes in management practices including increasing areas of arable cropping. Technological advances over the last 50 years have included improved weed control, larger and faster machinery, new crop varieties with different timing of sowing and harvesting, extensive land drainage and less reliance on traditional crop rotations with grass. More permanent, unfarmed features of arable land, including field boundaries and margins, field corners, tracks and trees, have also been lost in the drive to intensify production.

Traditional features:

- Stubble, with or without crop residues, over-wintered before a spring crop
- The crop itself and associated non-crop plants
- Non-cropped field margins
- Field trees of any age

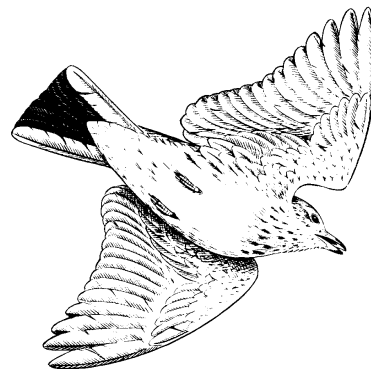
Specific problems associated with arable:

Increased soil erosion in susceptible areas; nitrate leaching from arable land has had an impact on water quality and waterside habitat; effects of herbicides and insecticides – both directly on arable plants and invertebrates, and indirectly on birds and mammals; widespread

occurrence of autumn-sowing of arable crops, with concurrent loss of winter stubbles and fewer breeding attempts in the summer crop by birds such as skylark; early harvesting of cereals leading to failure of repeat breeding attempts by late nesters such as corn bunting.

Sustainable features to promote biodiversity

- Field margins (uncropped grass strips around the perimeter of cultivated fields)
- Beetle banks (2-metre strips of tussocky grassland established within large arable fields)
- Unfarmed field corners
- Wild bird cover (or game crops for brood rearing or winter cover)
- Conservation headlands (areas in which certain herbicides and insecticides are excluded from the outer strip of cereal encouraging annual plants and insects)
- Set-aside, when managed in a wildlife-friendly way
- Sterile strips between crop and field margin (it helps farmers prevent plants in field margins expanding into the crop)
- Cultivated margins (an uncropped but cultivated margin designed to encourage rare arable plants)
- Low-input cereal crops (spring-sown cereal grown with low fertiliser and pesticide inputs)
- Cultivated fallow (specifically created in an agri-environment scheme or on set-aside to benefit lapwing, stone curlew and/or rare arable plants)
- Skylark patches (undrilled areas in winter wheat to benefit skylarks in summer)



Skylark *Alauda arvensis*

2.2 Agriculturally improved grassland

Agriculturally improved grasslands account for the majority of all grasslands found in the United Kingdom. Countrywide, their area has increased by around 90% over the last 50 years (Biodiversity: The UK Steering Group Report), often at the expense of habitats of high wildlife value such as Neutral Grassland and Chalk / Limestone Grassland. Improved grasslands are species-poor, grass-dominated swards characterised by an abundance of rye grass and white clover, often sown for agricultural or recreational use, or created by modification of unimproved grasslands by drainage or the application of fertilisers or herbicides. Such grasslands may be sown as part of the rotation of arable crops or may be permanent pasture. Grass leys have been a feature of the county for several decades but they are very different today compared with earlier this century and it is unclear how these changes have affected biodiversity.

Biodiversity of improved grassland is generally low, except for those pockets which are impossible to improve due to waterlogging, steep slopes or other factors. Fertiliser use stimulates growth of competitive grasses and a few broad-leaved plants, such as docks, at the expense of other plant species. Such grasslands may be locally valuable for winter feeding of waterbirds where flooding occurs. Increased agrochemical use and improved technology has led to more intensive management. In particular there has been a marked increase in silage making rather than hay. Where machine use is low, a range of grassland birds such as lapwing and skylark may breed.

Management to promote biodiversity;

- The biodiversity of the entire field including both the centre and edge features needs to be considered.
- Adoption of sympathetic mowing patterns and timing and use of fertilisers and herbicides to minimise effect on wildlife.

2.3 Non - Farmed features

Farmland includes a range of non-farmed features associated with existing or former management practices. The most significant of these for biodiversity are ponds, fishponds, wet

areas, boundary features, farmland trees, farm buildings, tracks, hardstanding and walls.

2.3.1 Boundary features

Hedgerows and grassy margins, which usually separate fields, may resemble woodland edge and scrubland or rough grassland habitats. Since 1945 there has been a drastic loss of hedgerows through removal and neglect, although there is some evidence that this is now being reversed in England (Countryside Survey 2000). Hedgerows provide a key refuge for wildlife in intensively farmed areas and may also provide links for movement between woodlands and other semi-natural habitats.

2.3.2 Farmland trees

Isolated trees in hedgerows or fields will support a variety of species but they are vulnerable to close ploughing. They may be particularly important for some bats, birds and insects. Dead trees are valuable wildlife habitat.

2.3.3 Farm Buildings, Tracks, Hardstanding and Walls

Farm buildings, tracks, hardstanding and walls can provide an important habitat for a number of specialised plants and animals including barn owls, bats, annual plants, stonecrops, mosses and ferns. Replies to the Oxon Farming Study questionnaire indicated that 54% of farms had redundant buildings and 68% of these were built before 1940. Such buildings generally have more nooks and crannies, which provide access and shelter for wildlife.



Brown hare *Lepus capensis*