



# Farmland wildlife

Past, present and future

English Nature is the Government agency that champions the conservation of wildlife and geology throughout England.

This is one of a range of publications published by:  
External Relations Team  
English Nature  
Northminster House  
Peterborough PE1 1UA

[www.english-nature.org.uk](http://www.english-nature.org.uk)

© English Nature 2004

Printed on Evolution Satin, 75% recycled post-consumer waste paper, Elemental Chlorine Free.

ISBN 1 85716 792 9

Catalogue code IN14.3

Designed by  
Coral Design Management.

Printed by  
Belmont Press, 15M.

Front cover photographs:  
Top left: Tree sparrow  
Mike Lane/RSPB Images  
Bottom left: Gatekeeper butterfly  
Roger Key/English Nature  
Main: Farmland landscape, Cheshire Plain  
Peter Roworth/English Nature



Awarded for excellence

working today  
for nature tomorrow



Barn owl. Mike Read

## Farmland wildlife

Farmland is home to some of our best-loved wild plants and animals. Skylarks, barn owls, bumblebees, poppies and cornflowers all depend on farmland habitats.

Read on to find out:

- How farmers created these habitats
- Which plants and animals live on farmland
- Why the abundance of farmland wildlife has fallen in recent years
- What farmers and others are doing to conserve farmland wildlife

### How were England's farmland habitats made?

England's farmland history began thousands of years ago with the ring of the first stone axe on forest tree. Over time, farmers created a new landscape in place of wild wood and tangled swamp - an ordered patchwork of open fields edged with the green, grey and silver threads of hedgerows, walls and ditches. England's first fields were made over 5,000 years ago when small patches of ground were planted with primitive forms of wheat and barley. To begin with, pigs and cattle were the main livestock kept by prehistoric farmers, though by Iron Age and Roman times about 2,000 years ago, sheep had become important farm

animals. Cultivated crop fields, together with pastures and meadows for sheep, cattle and horses, have been the chief farmland habitats ever since the beginning of farming in England. Changes in the detail of this grassland and arable field pattern happened when new crops or kinds of livestock were introduced. Rye, flax and hemp were valuable food and fibre crops for Anglo-Saxon farmers. Orchards of pears and apples have been established at least since the medieval period. The rabbit is a farm animal that has 'gone native' since it was introduced by the Normans for its fur and meat. More recent agricultural landmarks were the appearance of the potato, which was



Rob Wolton/English Nature

Ruby Red cattle, north Devon.



brought over from America in the sixteenth century, and the rise of 'high farming' in the late seventeenth century. High farming was a sophisticated mixed system, where clover, grass and root 'fodder' crops for livestock were grown in rotation with cereals to maintain soil fertility.

As well as grassland and crop land, other farmland habitats were essential for working farms. Hedgerows, fences, walls and ditches kept livestock in pastures and out of growing hay and crops. Ponds were the water supply points for animals in pastures. Hay ricks, straw stacks and stock yards were needed for keeping livestock through winter time, and the animals' valuable manure was returned to the fields via the muck heap.



Farm pond. Peter Roworth/English Nature

## Which wild plants and animals live on farmland?

Many wild plant and animal species adapted to the new habitats created by farmers. Creatures of natural pools and swamps, like frogs and toads, colonised farm ponds, birds of woodland and scrub moved into hedgerows, tall herbs of damp riverbanks spread into flood meadows and plants growing on crumbling cliffs were able to exploit the regularly disturbed soil in arable crop fields.

### Grain and grass

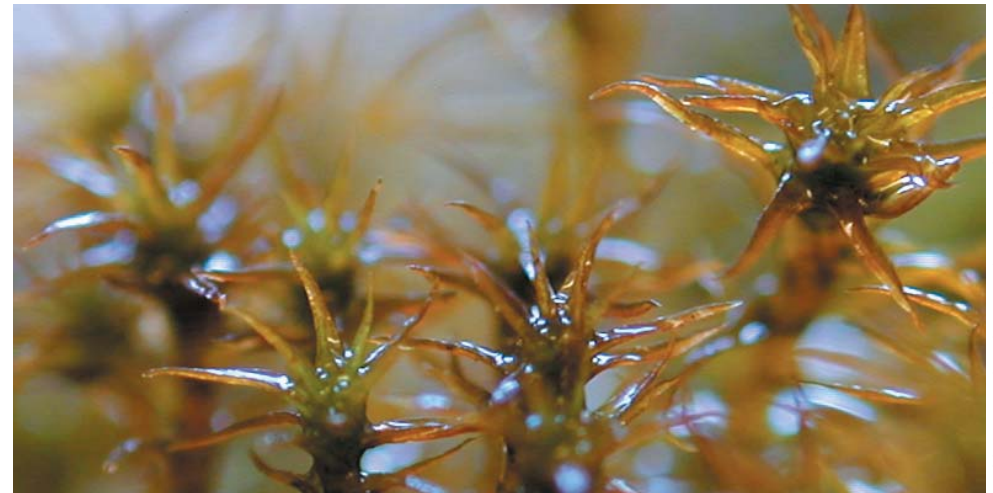
Colourful cornflowers and poppies are just two of over a hundred plant species found on arable land. These short-lived plants survive for part of the year as seeds in the soil, ready to take advantage of newly-ploughed fields prepared for autumn- or spring-sown crops. Many plants grow little, if at all,



Peter Roworth/English Nature

Cornflowers and poppies.

in the winter but a specialised group of arable mosses are able to thrive on the winter stubble fields left after harvest. Some arable plants, like the cornflower, grew in natural open habitats in England before farming began while others, like wild-oat and throw-wax, arrived with crops introduced from mainland Europe. A few species have been very successful in their new habitat and have proved troublesome, for example cleavers and black-grass.



Arable moss, *Diclymodon tomaculosus*. Ron Porley/English Nature

## Farmland habitats cover 60% of England

### Fields

Arable crops and temporary grass in crop rotations	4,500,000 ha	(35% of England)
Fallow land (set-aside)	520,000 ha	(4% of England)
Grassland – permanent pasture and meadows	2,900,000 ha	(22% of England)
Orchards	24,000 ha	(0.2% of England)

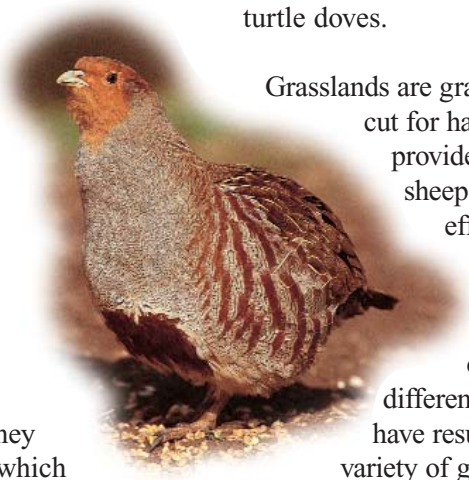
### Field boundaries and other habitats

Hedgerows	400,000 km
Relict and remnant hedgerows, lines of trees	160,000 km
Boundary banks / grass strips	51,000 km
Walls	90,000 km
Fences	350,000 km
Ditches	290,000 km
Ponds	200,000 no

Sources: Defra 2002 agricultural statistics, Countryside Survey 2000 and 1996 DETR pond survey  
ha = hectares; km = kilometres; no = number

Arable fields are important habitats for open country birds like skylark, grey partridge and corn bunting. The chicks of these birds depend on the insects and other invertebrates which live on crop plants and arable plants growing among the crop.

Later in the year, spilt grain and the seeds of broad-leaved arable plants like chickweed and fat hen are winter food for flocks of finches, buntings and other birds. The main crops grown in England are wheat and barley but they are not the only crops which are important habitats



Grey partridge. Roger Wilmschurst/RSPB Images

for birds. Sugar beet fields are used by nesting lapwing, skylark and the rare stone-curlew. The vivid yellow oil seed rape fields are nesting habitats for reed bunting and unripe rape seeds are eaten by linnets and turtle doves.

Grasslands are grazed by livestock or cut for hay and silage, which provide winter food for sheep and cattle. The effects of grazing and mowing, together with different soil and moisture conditions in different areas of England, have resulted in a great variety of grasslands. These range from the springy

turf on chalk downland, to riverside flood meadows, marshy rush pastures in poorly drained hollows and parched grasslands on acidic, sandy soils. This variety is reflected in the rich flora of wildflowers found in these grasslands. For example, 27 orchid species occur in old grasslands in England.

Many butterflies and other insects live in these grasslands and they are important nesting and feeding habitats for birds. Lowland wet grasslands are ideal for breeding birds such as snipe and lapwing and hay meadows are home to the rare corncrake. Coastal pastures and flooded washlands are important wintering areas for swans, geese and ducks.

Farmers have selected some grassland plants for hay and silage that can be grown in short-term rotations with arable crops, for instance, red clover and sainfoin. These crops are important nectar and pollen sources for insects, especially bumblebees.

### Hedges and other edges

Hedgerows have a long history in England, some of them were being planted and managed as far back as Roman and Anglo-Saxon times. The network of hedgerows in the countryside was extended in the eighteenth and nineteenth centuries through enclosure of common land. Hedgerows are really a kind of scrub, and like scrub they provide habitats



Common spotted orchid. David Townshend/English Nature



Dormouse. John Robinson/English Nature

for a wide number of plants and animals. Primroses and bluebells are examples of woodland wildflowers that grow at the base of undisturbed hedgerows and on hedgerow banks. Hedgerows and their adjacent field margins are home to a great variety of insects, such as the brown hairstreak butterfly, which lives on blackthorn, and the gatekeeper butterfly which feeds on tall grasses along hedgerow margins. Green lanes, which are double hedgerows separated by a grassy track, can be especially rich in wildlife, including butterflies.

Blackbirds, robins, dunnocks and bullfinches are among many songbirds nesting in hedgerows. Three-quarters of England's lowland mammal species,

including the dormouse, find shelter and food in hedgerows. The abundant soft fruit supplied by hedgerow shrubs, in particular blackberries and rose hips, as well as hard hazelnuts and acorns, are important dormouse foods. Hedgerow trees and lines of trees are also important habitats. Very old, 'veteran', trees are hosts to many lichens and fungi species as well as providing nest holes for birds like the tree sparrow and roosting places for bats.

Dry-stone walls around fields are good substitutes for natural rock habitats. They are colonised by mosses, lichens and ferns and give shelter to snails, common lizards and slow-worms.



Roger Key/English Nature

Large red damselfly.

Ditches, or 'wet fences', have a rich flora and fauna as well as being of use to the farmer for draining wet land and keeping livestock from straying. Water plants such as yellow flag iris, water-milfoils, reeds and bulrushes are often abundant, as are aquatic animals like diving beetles, dragonflies and damselflies. The soft, damp ground on ditch margins is valuable feeding habitat for birds like the song thrush, especially in dry weather.



Cardinal beetle.  
Roger Key/English Nature

## Fruits of the forest

The ancestors of cultivated fruit trees were probably found on the edges of woodland glades and clearings. In England, wild cherries and apples increased in abundance along with forest clearances in prehistoric times. The Romans used wild crab apples as root stocks for sweeter introduced varieties. Old orchards today are important habitats for specialised beetles which live in dead and rotting wood. The striking cardinal beetle is a fine example. Grassland beneath the fruit trees can be rich in

wildflowers and a wide variety of birds feed or nest in orchards, including bullfinch, great spotted woodpecker and spotted flycatcher.



John Bingham/English Nature

Orchard blossom, Worcestershire.



The football-jersey hoverfly lives in wet, muddy places.

### Ponds and puddles

Farm ponds, temporary pools, puddles and spongy wet patches are valuable habitats for wildlife on farmland. The larvae of colourful creatures like damselflies, soldier flies and dance flies live in muddy ground or shallow water and the adults hunt amongst damp vegetation. Frogs, newts and toads all need wet habitats for breeding. Common nesting birds of pond margins include moorhen and



Bumblebee. Roger Key/English Nature

sedge warbler. Swarms of insects in the air over ponds attract hunting bats, swallows and house martins.

### Barn, byre and stable

Wild animals have not neglected the possibilities for living space provided by farm buildings. Barn owls and tawny owls nest in buildings, as do swallows and house martins and many bat roosts occur in farm buildings. Muck heaps, waste straw, grain and hay attract linnets, house sparrows and other birds looking for food around the farmyard.

### Habitat mosaics: the right place at the right time

Birds, bees and other animals often need a mix of different habitats, not just one type. Bumblebees depend on

pollen and nectar supplies throughout the spring and summer so they visit a wide range of habitats at different times of year, including hedgerows, orchards, woodland edges, field margins, hay meadows and clover fields. They also need rough grassland for nest sites and the bumblebee queens like to hibernate over winter in cool ground beneath hedges. The yellowhammer, a small songbird, also relies on a range of habitats. It nests in low hedges and grassy ditch margins and feeds its chicks on grasshoppers, spiders and other invertebrates found in these habitats. In winter, adult birds feed on the seeds of weeds found in crop stubbles. The lapwing likes mixed arable and grassland farms. This beautiful bird lays its eggs in spring-sown crops and when the chicks are able to leave the nest their mother takes them to feed in adjoining grassland.



Lapwing. George McCarthy/RSPB images



Greater horseshoe bat. Stephen Dalton/NHPA

### Whole farms and landscapes

Some farmland wildlife may range over a whole farm or an even wider area. Bumblebees can fly a kilometre or more from their nest to collect pollen and nectar. Some animals depend on landscapes that include other habitats as well as farmland. The great crested newt needs water and land habitats for its amphibious lifestyle. It thrives in 'pondscapes' where hedgerows, rough pasture, stone walls and woodlands are the landscape setting for the ponds that the newts use for egg-laying. The network of land habitats provides food and shelter for newts as well as routes for them to move between ponds. Greater horseshoe bats hunt for insects at distances as far as several kilometres from their roosts. Their insect prey is especially abundant in landscapes that are mixtures of woodland, old orchard and permanent pasture, linked by tall, bushy hedgerows and lines of trees.



Intensive crop management with pesticides. Peter Roworth/English Nature

### Why has farmland wildlife declined?

The second half of the twentieth century has seen huge increases in crop and livestock production in England through intensification of farming methods and specialisation of farming businesses, in response to economic pressures and government policies. For instance, compared with the 1970s, yields of wheat per hectare have doubled and almost twice as much milk is produced per dairy cow. This has been achieved through increased use of pesticides and artificial fertilisers, ploughing and re-seeding of old grassland, more mechanisation and land drainage, introduction of high-yielding crop varieties and a switch from spring-sown crops to autumn-sown crops. Many farms have become all-arable

or all-livestock businesses rather than having a mixed system. Some types of agriculture, such as fruit production, have declined sharply because of reduced economic returns.

Unfortunately, increases in food production have been at the expense of farmland wildlife. Habitats have been lost or reduced to small fragments and their capacity to support wild plants and animals has been degraded. Widespread 'grubbing-up' of orchards has occurred; for instance 95% of Wiltshire's traditional orchards have been lost since 1945. Specialised arable farms no longer need hedgerows as stock-proof boundaries. These barriers hinder economic and effective use of large combine harvesters and other machines. Over 20% of hedgerows were lost between



Combine harvester. Janet Roworth/English Nature

1984 and 1990 alone. Ponds were no longer needed for watering livestock and were filled in. Pond numbers in England have fallen by a third since the Second World War and the average density has decreased from 6 ponds to 1.7 ponds per kilometre square.

Arable plants are now the fastest declining group in the British flora. Five species are extinct in arable habitats, including corncockle, and many others, like the cornflower, are rare. Major causes of loss have been more efficient seed cleaning, widespread use of herbicides, competition from crops adapted to high fertiliser inputs, earlier autumn sowing and the reduced area of spring-sown

crops. Changes in sowing patterns mean that bare ground is no longer available at the right time of year for arable plants, like corn parsley, to grow.

Populations of farmland birds have declined dramatically. Between the 1970s and the late 1990s the numbers of skylarks, grey partridges, corn buntings and tree sparrows in England fell by more than three-quarters. A combination of causes has been responsible, including a 75% reduction in the area of spring-sown crops and their winter stubbles.

These changes reduced winter feeding grounds and limited the availability of



Ponds are vital habitats for great crested newts. Jim Foster/English Nature



large, infrequently-trimmed hedgerows, with their abundant harvest of nuts and berries for dormice and other animals.

Old grasslands that have remained 'unimproved' by artificial fertilisers, herbicides, drainage and re-seeding have become very rare. By the mid-1980s, 97% had been lost. Improved grasslands harbour few wild plants and animals, for example, they provide little nectar and pollen for bumblebees and butterflies. Loss of rough grassland has reduced available habitats for hunting barn owls, which feed on the small mammals that live in tussocky grassland.



Ditch banks damaged by intensive farming. Heather Robertson/English Nature

bare ground in spring for nesting lapwings and skylarks. The loss of mixed arable and livestock farms has also reduced the habitat variety favoured by birds like the lapwing.

The quality of other habitats has been degraded. Most hedgerows are now cut every year, reducing the quantity of berries produced and many hedges are thin shadows of once-vigorous boundaries. Particularly scarce are



Remnant hedgerow. Heather Robertson/English Nature

Ground-nesting birds like lapwing and snipe have suffered from drying-out of lowland wet grasslands and increased livestock numbers. More livestock per field multiplies the risk of nest destruction, as does the frequent cutting of silage.

Since the early 1980s, the numbers of breeding lapwing on lowland wet grassland have declined by 38% and snipe numbers have decreased by 61%. Corncrakes, which nest in hay meadows, had become almost extinct in England by the 1990s.

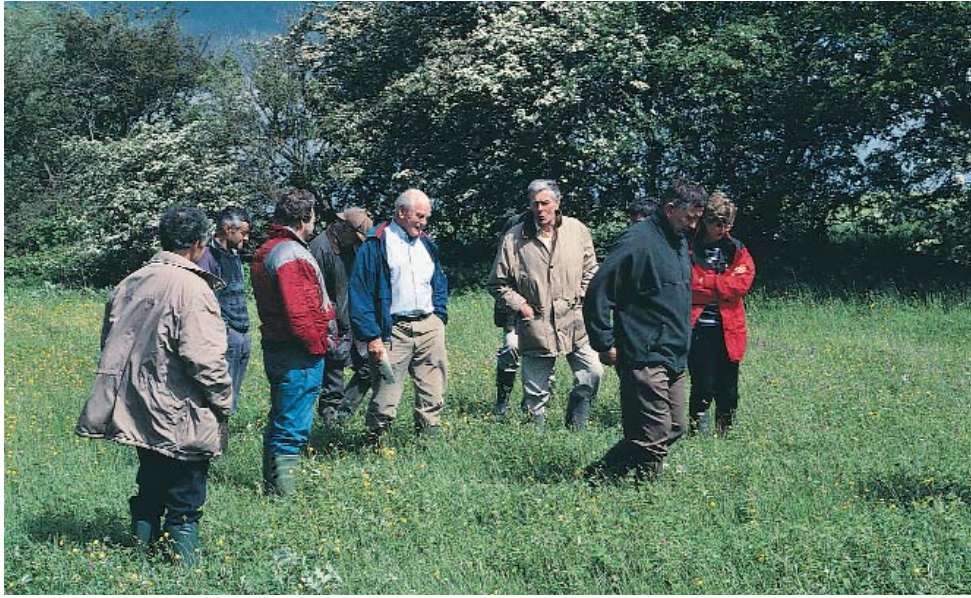
Water quality of ponds, ditches and other freshwaters has been damaged by run-off of nitrogen and phosphorus fertilisers from fields. Run-off of

slurry and manure from intensive livestock areas and silt from easily eroded soils in arable landscapes have added to water quality problems. Over-enrichment with these nutrients causes murky blooms of algae and loss of larger water plants like water-crowfoot. Silt washed into rivers from surrounding fields clogs the river gravels that are prime fish spawning grounds.

### Conservation action for farmland wildlife

The problems affecting our farmland wildlife have been recognised by farmers, naturalists, conservation organisations and Government departments who are all working hard





Farming for wildlife: farmers sharing their expertise.

to reverse the declines in habitats and species. Farmland habitats and species have been recognised as priorities in the UK's Biodiversity Action Plan and the Government has adopted a Public Service Agreement target to reverse declines of farmland birds by 2020. Priority habitats include ancient and species-rich hedgerows, cereal field margins and unimproved grasslands.

Wildlife singled out for special conservation effort include greater horseshoe bat, dormouse, great crested newt, several bumblebee species, skylark, grey partridge and corn bunting. There are 15 arable plants on the priority Biodiversity Action Plan list including cornflower, pheasant's-eye and shepherd's-needle. Three scarce mosses are also part of this priority list.

Farmers can receive payments through Government agri-environment schemes towards the costs of conservation of farmland wildlife. These schemes have already had successes. For instance, over 15,000 hectares of wildlife habitat has been created along arable field margins and several thousand kilometres of hedgerows have been restored.

Wildlife is now looked after and encouraged on many farms to a very high standard. To help expand this good work, naturalists and conservation organisations are working to make more information about wildlife available to farmers, and Government is putting more resources into agri-environment schemes.

## How to have more farmland wildlife

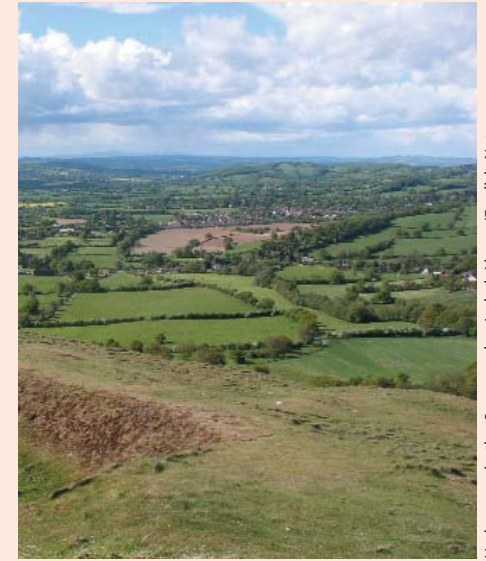
### Top tips from farmers and wildlife experts

Manage wildlife habitats as part of an overall farm plan and seek advice where needed

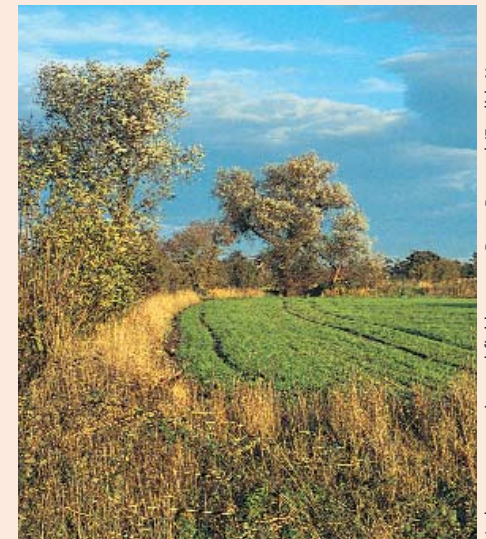
A rotational hedge-trimming regime across the farm produces a variety of hedgerows to suit different birds, insects and other animals

Provide the mixture of habitats that wild animals need throughout their lives

Bumblebees need a combination of grassy margins, field corners, hedgerows and flowery banks



Hedgerows in the Severn vale. Isabel Alonso/English Nature



Hedgerows, margins and field corner. Peter Roworth/English Nature

## Avoid spreading organic manures and other fertilisers on non-crop habitats

Plants, dragonflies, beetles and frogs thrive in ditches that have clean water



Pevensy Levels ditch. Peter Wakely/English Nature

## Restore existing wildlife habitats

Hedge-laying and re-planting gaps will restore hedgerows to prime wildlife habitats



Hedge-laying. Eric Wright

## Create new wildlife habitats

Sowing wildflowers in field margins provides pollen and nectar for insects



Courtyard Farm, Ringstead, Norfolk. Peter Lambley/English Nature

## Manage fallow land, such as set-aside, to benefit wildlife

Skylarks breed successfully where set-aside is not sprayed-off with non-selective herbicides and is left uncut until the birds have finished nesting



Skylark. Mark Hamblin/RSPB Images

## Minimise the impact of pest and weed control on non-target plants and animals

Lacewings eat aphid pests and can be encouraged by integrated crop management or organic methods



Green lacewing. Roger Key/English Nature

## Take advantage of financial incentives to farm less intensively within fields

In winter, yellowhammers feed on stubble fields maintained through agri-environment schemes



Yellowhammer. Steve Knell/RSPB Images



Wild flower field margin, F. J. Cope &amp; Sons farm, Bedfordshire.

### Further reading

BRIGHT, P., & MACPHERSON, D. 2002. Hedgerow management, dormice and biodiversity. Peterborough: *English Nature Research Reports, No 454*.

KIRBY, P. 2001. *Habitat management for invertebrates: a practical handbook*. Sandy: Royal Society for the Protection of Birds.

LACK, P. 1992. *Birds on lowland farms*. London: HMSO.

Royal Society for the Protection of Birds, English Nature & the Institute for Terrestrial Ecology. 1997. *The wet grassland guide: managing floodplain and coastal wet grasslands for wildlife*. Sandy: Royal Society for the Protection of Birds.

WILLIAMS, P., BIGGS, J., WHITFIELD, M., THORNE, A., BRYANT, S., FOX, G., & NICOLET, P. 1999. *The pond book: a guide to the creation and management of ponds*. Oxford: The Pond Conservation Trust.

WILSON, P., & KING, M. 2003. *Arable plants – a field guide*. Old Basing: WILDguides Ltd.

UK Steering Group. 1995. *Biodiversity: the UK Steering Group Report*. London: Her Majesty's Stationary Office.

### Contact names and addresses:

#### Buglife – The Invertebrate Conservation Trust

170A Park Road  
Peterborough PE1 2UF  
Tel: 01733 315410  
www.buglife.org.uk  
Charity concerned with the conservation of all insects and other invertebrates.

#### Butterfly Conservation

Manor Yard  
East Lulworth  
near Wareham  
Dorset BH20 5QP  
Tel: 0870 7744309  
www.butterfly-conservation.org  
Charity concerned with the conservation of butterflies and moths and their habitats.

#### Department for Environment, Food & Rural Affairs

Nobel House  
17 Smith Square  
London SW1P 3JR  
Tel: 020 7238 6000  
www.defra.gov.uk  
Government department: contact for information on agri-environment schemes in England. Co-ordinates implementation of the UK Biodiversity Action Plan.

#### English Nature

Northminster House  
Peterborough PE1 1UA  
Tel: 01733 455000  
www.english-nature.org.uk  
Public body: contact for all matters concerning nature conservation, Sites of Special Scientific Interest and the Wildlife Enhancement Scheme.

#### Environment Agency

Rio House  
Waterside Drive  
Aztec West  
Almonsbury  
Bristol BS32 4UD  
Tel: 0845 9333111  
www.environment-agency.gov.uk  
Public body responsible for protecting and improving the environment of England and Wales including air and water quality.

#### Farming and Wildlife Advisory Group

The National Agricultural Centre  
Stoneleigh  
Kenilworth  
Warwicks CV8 2RX  
Tel: 01203 696699  
www.fwag.org.uk  
Charitable organisation providing farm conservation advice throughout the UK.

#### Forestry Commission England

Great Eastern House  
Tenison Road  
Cambridge CB1 2DU  
Tel: 01223 314546  
www.forestry.gov.uk  
Government department responsible for the protection and expansion of Britain's forests and woodlands. Contact for information on the Farm Woodland Premium Scheme and Woodland Grant Scheme.

#### Froglife

White Lodge  
London Road  
Peterborough  
Cambs PE7 0LG  
Tel: 01733 558844  
www.froglife.org  
Charity concerned with the conservation of native amphibians and reptiles in Britain and Ireland.

### Game Conservancy Trust

Fordingbridge  
Hampshire SP6 1EF  
Tel: 01425 652381  
www.gct.org.uk  
Charity concerned with the ecology and conservation of game and other species in farmland and other habitats.

### Herpetological Conservation Trust

655A Christchurch Road  
Boscombe  
Bournemouth  
Dorset BH1 4AP  
Tel: 01202 391319  
www.hcontrst.f9.co.uk  
Charity concerned with the conservation of reptiles and amphibians.

### LEAF: Linking Environment and Farming

The National Agricultural Centre  
Stoneleigh  
Warwickshire CV8 2LZ  
Tel: 0247 6413911  
www.leafuk.org  
Charitable organisation which develops and promotes Integrated Farm Management to help farmers improve their environment and business performance.

### Plantlife International

14 Rollestone Street  
Salisbury  
Wiltshire SP1 1DX  
Tel: 01722 342730  
www.plantlife.org.uk  
Charity concerned with the conservation of wild plants and their habitats.

### Ponds Conservation Trust

BMS  
Oxford Brookes University  
Gipsy Lane  
Headington  
Oxford OX3 0BP  
Tel: 01865 483249  
www.pondstrust.org.uk  
Charity concerned with the conservation of ponds and pond research.

### Royal Society for the Protection of Birds

The Lodge  
Sandy  
Bedfordshire SG19 2DL  
Tel: 01767 680551  
www.rspb.org.uk  
Charity concerned with the conservation of wild birds and their habitats.

### Soil Association

Bristol House  
40-56 Victoria Street  
Bristol BS1 6BY  
Tel: 01179 290661  
www.soilassociation.org  
Charity concerned with the promotion and certification of organic farming.

### The Wildlife Trusts UK Office

The Kiln  
Waterside  
Mather Road  
Newark NG24 1WT  
Tel: 0870 0367711  
www.wildlifetrusts.org  
Charity concerned with the conservation of wildlife throughout the UK. Contact for information on Local Wildlife Trusts.

Bullfinch. Mark Hamblin/RSPB Images

