



ESSEX
Wildlife Trust

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*DEFRA support the
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Dave Smart

Field margin at Abbotts Hall Farm

Farming is the dominant land use in the UK, so has a huge impact on wildlife. A hundred years ago food production and wildlife went together but now changes in agricultural technology mean that farms can become wildlife deserts unless positive action is taken. Here, we look at how to redress the balance.

Wildlife on farms

Farmland has the potential to support wildlife from fungi to field mice and beetles to brown hares, as well as seasonal breeding and over-wintering birds.

At Abbotts Hall Farm there are over 40 species of birds breeding on the farmland, (not counting those on the new wetland and lake) and at least another 20 species visiting to feed on seeds, berries and insects.

There are butterflies such as orange tips, painted ladies, the small copper and the brown argus; invertebrates including the stag beetle; and amphibians like frogs, toads and great crested newts around the farm ponds. Farmland mammals include water vole, bats, brown hare, as well as rabbits and foxes. Of course all these depend on the presence of invertebrates, flowering plants, fungi and so on.

Reasons for declining farm wildlife

Farming practices have changed radically since the 1950s. There have been dramatic effects on the quality of farmland wildlife habitats through

- increasing mechanisation of farming
- greater density of modern crops and grass
- autumn sowing of crops
- land drainage
- chemical fertilisers, pesticides, and herbicides.

In recent times the use of larger farm machinery has led to increased field sizes, the removal of hedges and reduced field margins. Frequent grass cutting for silage has reduced the variety of flowering plants. Annual hedge cutting leaves no older wood to produce flowers and berries and reduces the cover, nesting sites and song posts available to birds. Neat farms with no wild areas, uncut hedges or spilt grain leave little room for wildlife. Wildlife areas that remain are often small and isolated, making them of limited value.

A hundred years ago crops were taller and less densely planted and a wider range of crops were grown, providing habitats in cropped areas. Today, wildlife is largely confined to field boundaries, though even here the wildlife value can be very low unless suitable plants are grown.

The lapwing is one of the species affected. The UK breeding population of lapwing declined by 40% between 1970-1998 and the sight of large flocks of lapwing on coastal fields is now a rarity. This has been largely caused by the virtual elimination of mixed (arable and livestock) farming and spring cropping, and the intensification of grassland management.



Dave Smart

Pipistrelle bat

Farmland habitats

Farmland provides a variety of wildlife habitats including hedges, grassland, arable crops, field margins, ditches and ponds. The habitat value is affected by farming practices such as the choice of crop varieties, planting and harvesting times, the use of chemical fertilisers, insecticides and herbicides, hedge cutting and grazing regimes, and stubble management.

Arable crops

Land converted to arable within the last 100 years, or which is subject to repeated and heavy use of herbicide and fertiliser, stands little chance of supporting uncommon arable plants.

The weeds found in arable fields are those with the best chance of reproduction in the arable management system. These are mostly annuals, particularly those with efficient dispersal mechanisms, such as the small wind borne seeds of poppies. They also include a few perennials like common couch and field bindweed that maintain themselves by vegetative growth.

Farmers apply herbicides to control weeds because they reduce crop yields by competing for the available nutrients. Tall weeds such as charlock will also shade short-stemmed cereals. Some weed species are particularly difficult to control because they are not sensitive to herbicides, or because there is no selective treatment available.

Many of the invertebrates found in woods and grassland are absent from arable land because of the annual removal of vegetable matter. Lack of winter shelter reduces insect habitats.

Insects such as midges, sawfly, aphids and mealy bugs can damage cereal crops by consuming tissue, sucking sap or spreading viral diseases. Farmers control insects by spraying with insecticides, but these may also kill hover-flies, lacewings and ladybirds, which are their natural predators. The timing of spraying is critical in limiting the effect to selected species.

Arable fields also provide food for mice, hares, rabbits, and birds. Birds nesting in crops include skylark, lapwing and corn bunting. Wood pigeons and rooks are attracted by newly sown and ripening cereals, while stored grain brings sparrows and finches, mice and rats, which in turn attract barn owls.



Joan Hardie

Blackthorn in blossom at Abbots Hall Farm

Grassland

Grassland is described as *improved* if fertilisers or pesticides have been applied or *unimproved* if not. If it has never been ploughed it is called *rough grazing*.

Grasslands are maintained either by grazing or cutting for hay or silage, otherwise they return to scrub and eventually woodland. Unlike most other plants the buds and growing points of grasses are close to the soil surface so that they continue to grow when the upper leaves are eaten or mown.

Grassland provides habitats below and above the ground for a wide variety of wildlife including fungi and bacteria, insects, spiders, worms and snails, amphibians and reptiles, birds and mammals. Ground nesting birds include pipits, skylark, lapwing and plovers. Grasslands also provide valuable feeding grounds for wildfowl and raptors such as kestrels and owls.



Alan Williams

Lapwing

Hedges

In Britain farm hedges are often dominated by hawthorn but may include other shrubs such as elder and blackthorn. Most were planted to restrict the movement of stock and help mark out plots for crop rotation. With the increasing use of farm machinery there has been widespread uprooting of hedges.

Traditionally hedges were managed by coppicing or layering, though now most are cut by machine. Hedges that are cut annually provide little support for animals. Removal of the summer growth in winter means that few flowers are available for insects, or fruits for birds and other animals. Hedges that are allowed to grow wider and taller with fallen branches left to rot and if possible, a ditch alongside, have high habitat value. Such hedges provide food, shelter and breeding sites for a wide variety of invertebrates, insects, birds and small mammals such as mice, shrews, voles, stoats and weasels.

Ground-dwelling invertebrates such as woodlice live in the leaf-litter under hedges, and they bring predatory ground-dwellers such as centipedes and ground beetles. The greater the variety of herbaceous plants, the greater the range of ground-dwelling animals supported.

Insects feed selectively on particular plant species, with some species such as hawthorn, hazel and blackthorn supporting large numbers of insect species – up to 150 for hawthorn. Insects may be beneficial to crops, such as bees, or harmful, like aphids.

Field Margins

Arable plant management is normally focused on the field edges where the seeds of diverse plant species are most likely to be found.

Arable margins are 2m or 6m strips that are either sown with specially selected seed mixes or allowed to regenerate naturally to provide permanent grassy cover. A six-metre margin is often both the most convenient area for the farmer and the best area for plants. It also protects the hedge from sprays.

Uncropped Cultivated Margins may be cultivated at the same time as the rest of the field, but no crop is drilled and no agrochemicals applied.

Conservation Headlands are field margin strips sown with a crop along with the rest of the field. Only highly specific herbicides are used, and there are restrictions on fungicide and herbicide use. They may be fully or partly fertilised.

Supporting wildlife at Abbots Hall Farm

As over 80% of Essex is farmland, farming has a major effect on the county's wildlife. The Essex Wildlife Trust aims to demonstrate at Abbots Hall Farm how habitats can be managed for wildlife without damaging the farm's economic viability. The Single Farm Payment and Environmental Stewardship schemes aim to encourage all farmers to adopt similar approaches.

Crops

Every effort is made to reduce the need for spraying. A crop rotation scheme is used to maintain soil fertility and prevent the build up of diseases, and wherever possible crop varieties with high resistance to pests and diseases are chosen. When pesticides are used they are applied very selectively and at times least likely to damage scarce species.

Although autumn sown crops are generally more successful than spring sown ones, some fields are sown in the spring resulting in a more open sward offering sites for ground nesting birds such as skylark. Patches are left undrilled in autumn sown crops for skylarks to nest.

The organic fields contain a greater number and variety of weeds and insects than the other fields. This was particularly noticeable during the conversion period when there were hoards of painted lady butterflies and regular visits by owls.

Field Margins

The field margins are managed in a variety of ways to support biodiversity. Some have been sown with specially formulated grass mix and are left to regenerate naturally, supporting plants such as teasels. Cultivated margins are ploughed each year to allow annual plants to grow.

For the 6 metre wide margins, the inside 4 metres are cut once a year in the autumn, while the outer 2 metres are cut every 2-3 years so that tussocky grass forms. This provides habitats for beetles, spiders and nesting birds.

Under the Single Farm Payment scheme, hedges must be at least 2 metres wide. The combination of hedge and field margin provides a good base for wildlife and the network of hedges and field margins across the whole farm forms a valuable wildlife corridor of connected habitats.

Woodland

The woodland at Abbots Hall is left unmanaged except for some thinning of the trees in newly planted areas. The woodland supports a wide range of insects, small mammals, and birds, such as tawny owls, woodpeckers, tits and chaffinch, as well as rabbits and foxes that are rather less welcome to farmers.



Dave Smart

Organic clover at Abbots Hall Farm



Jean Hardie

New hedges at Abbots Hall Farm



Dave Smart

6 metre grass margin at Abbots Hall Farm



Dave Smart

Kestrel chicks at Abbots Hall Farm

Hedges and trees

Road and trackside hedges are trimmed with a hedge flail to allow access but some 2-year-old wood is left to flower. This provides pollen for insects and fruit for birds. Mature trees have been left in some hedges to support bats and owls. What looks to some people like an "overgrown" hedge is providing hundreds of wildlife species with food, cover or sites for breeding.

The hedges between fields are being restored at a rate of 400 metres each year by coppicing trees to the ground and planting saplings in any gaps. This ensures that there are always hedges of different heights providing song posts for bullfinch and lesser whitethroat, as well as low hedges for grey partridge. This work is supported through the Countryside Stewardship Scheme.

Two and a half kilometres of new hedges have been planted with a mix of 80% hawthorn interspersed with oak, ash, field maple and hazel. New hedges have to be protected with rabbit-proof fencing until the plants are well established.

Grassland

Half of the grassland at Abbots Hall Farm is let out for grazing from spring until the autumn. The grass is fertilised in the spring but is not sprayed. The other half of the grassland is left unfertilised to encourage thinner grass for bird nesting, and is cut for hay in the late summer. These fields are grazed in the autumn to improve the grass cover in the following year.

In the winter the short grass is used by birds including Brent geese, wigeon, lapwing and starling.

Ponds

The six ponds at Abbots Hall Farm are not managed, though some of the pond-side trees are coppiced. Mid-field ponds are surrounded by 6 metre field margins to support amphibians such as newts that leave the water in summer. Care is taken not to spray too close to the ponds.

The pond wildlife at Abbots Hall includes aquatic insects and larvae, frogs, great crested newts, water voles, nesting reed bunting, reed and sedge warblers, and visiting goldfishers.

Threatened species

Threatened species are included in international, national and local red or amber lists according to the severity and nature of their decline. There are many threatened wildlife species on the Essex Red Data List that could be supported in suitably managed farmland habitats.

Skylarks like open habitats with short, open vegetation structure provided by thin spring-sown cereal crops and patchy set-aside, heathland, grassland, dunes and saltmarsh.

They like mixed cropping with a mosaic of crops providing suitable habitat throughout the year. Skylarks like weedy crops, stubbles and pasture with weed seeds and invertebrates for chick food and winter survival. They are on the National Red list



Bob Glover

Skylark

Grey partridge like weed-rich and insect-rich arable farmland and rough pasture, with plenty of rough, grassy ground cover for winter shelter and nesting sites.

Spring sown cereals, especially without spring herbicides and summer insecticides, promote insect food and greater chick survival. Conservation headlands, wild bird cover with small-seed mixes and overwintering stubbles help boost winter food supplies and cover.



Bill Varney

Grey Partridge

Yellowhammers like a scrubby summer landscape with thick hedges, wide grassy margins or ditches next to cereals and grassland. In the winter they prefer winter stubbles and places with spilt grain, such as farmyards and barns.

The adult birds feed on a wide range of plant seeds all year, including dead nettles, groundsel, sorrel and cereal grains. Chicks depend on insects and spiders in the summer.



David Harrison

Yellowhammer

Corn buntings like a fairly open landscape with well-positioned song posts on weed-rich and insect-rich arable farmland, heaths and rough pasture, with plenty of rough, grassy ground cover for overwintering shelter and nesting sites.

They prefer a mixed rotational farming system with weed- and insect-rich arable crops in the summer. Weedy stubble fields are the most important feeding habitat during the winter.

Great crested newts need about one hectare of varied habitat around a pond to support a sustainable population. As well as food supplies of water creatures, small land invertebrates, and worms, they need shelter and hibernation sites. Rough, tussocky pasture with patches of rotationally cut scrub, together with piles of logs within 200-500m of their breeding pond is ideal.

For breeding they need a large pond at least 0.5m deep, fairly free of ducks and fish, with plenty of aquatic plants.

The **water vole** is found in lowland areas near water – in ponds, drains, streams, canals and slow rivers with plenty of marginal plant growth.

The water vole mainly grazes on bankside vegetation but will take fresh water molluscs, nuts, earthworms, insect larvae and dead fish. It forms a burrow in banks, with one hole at water level and another emerging from the top of the bank in case of flooding.

Monitoring wildlife at Abbots Hall Farm

Since the year 2000, Trust staff, volunteers, or partner organisations have undertaken surveys of plants and animal species at Abbots Hall Farm. They have monitored breeding and over-wintering birds, butterflies, amphibians and reptiles, mammals, invertebrates and flowering plants. Surveys give useful snapshots of the wildlife at the farm and highlight areas of concern and action, although it is difficult to separate the effects of changes on the farm from wider trends in population sizes and distributions. The species present also depend on the weather conditions each year. The presence of breeding birds can be used to indicate the health of an environment and are monitored annually. Farmland birds that we hope will breed at AHF include skylark, yellowhammer, corn bunting, linnet, yellow wagtail, grey partridge and lapwing.

Further Information

The Natural History of Britain, Fields & Lowlands, Derrick Boatman, 1979, Hodder & Stoughton

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Farming at Abbots Hall, Abbots Hall Farm Fact Sheet 7, Essex Wildlife Trust

Farm Economics, Abbots Hall Farm Fact Sheet 8, Essex Wildlife Trust

The Farming Business, Abbots Hall Farm Fact Sheet 10, Essex Wildlife Trust