

## **9 FARMLAND**

### **9.1 FARMLAND HABITATS**

#### **9.1.1 Summary**

**A patchwork of farmland fields and hedgerows is probably the dominant image of lowland English countryside. Within this patchwork are the fragments of semi-natural habitat such as woodlands, grasslands and river corridor wetlands that support the greatest variety of our wildlife. Agricultural practices are one of the most important influences on biodiversity in the UK, and have the potential to cause greatest damage.** However, the intensively managed countryside of arable, improved grasslands and field boundaries also support a distinctive and often specialised community of plants and animals that has developed over hundreds of years alongside human farming systems. Many, such as the Skylark and Poppy, are amongst the most familiar of our countryside plants and animals. Formerly widespread and abundant, many are however, now in sharp decline. It is this intensively managed farmland and its associated wildlife that is the main focus of this action plan. However, this plan is also critical to the success of those for semi-natural habitats as it is this fabric of farmland that they sit within.

#### **9.1.2 Arable Land**

Land under arable cultivation forms 44% of the total land area in England. Technological advances over the last 50 years have brought about greatly increased productivity in crop production with a consequent loss of semi-natural habitats under the plough. However, some wildlife has always found arable landscapes to its liking, and flourished. Now even many of these species are showing sharp declines as farming practices ever intensify.

In total nearly 300 kinds of wild plant grow on arable land. Some previously considered to be problem weeds, are now amongst our rarest plants. For example, the Corn Buttercup was widespread until the 1960's but is now found in fewer than 25 locations nationally. Other threatened plants include Cornflower, Corn Chamomile, Corn Cleavers and Ground Pine. Most arable weeds are annuals, either adapted to exploiting bare ground or depending on a large seed production and seed dormancy to ensure that populations survive through years when optimum growth conditions are absent. These plants in turn attract a range of animals, including invertebrates such as several grass feeding butterflies and a number of ground beetles, some of which are nationally rare or threatened.

Other features within the arable landscape can be important for wildlife, such as temporary and seasonally water-filled hollows, which can support a specialised suite of rare invertebrates, flowering plants and mosses,.

A large number of insects and other invertebrates spend part of their life-cycle in cereal fields. Many of these are a food source for birds and mammals. Birds such as Skylark, Grey Partridge, Corn Bunting and Lapwing nest in arable fields, often selecting crop types according to their structural suitability. Winter stubbles are used by seed-eating birds such as finches and buntings. Many of these have experienced significant declines, probably associated with changes in agricultural practices such as the widespread switch to autumn sowing.

### **9.1.3 Improved Grassland**

Improved grasslands account for the majority of all grasslands found in the UK. They are species-poor grass dominated swards, often sown for agricultural or recreational use, or created by modification of unimproved grasslands by drainage, the addition of fertilisers or herbicides. They are characterised by the abundance of Rye Grass and White Clover. Such grasslands may be temporary 'leys', sown as part of the rotation of arable crops, or may be more permanent pasture. Sown grasslands typically contain competitive varieties of plant, developed through breeding programmes.

The biodiversity of improved grassland is low. Fertiliser use stimulates the growth of competitive grasses and a few broadleaved plants, such as docks, at the expense of other plant species. Very locally such grasslands can be valuable for winter feeding of waterbirds where flooding occurs. Where machine use is low a range of grassland birds such as Lapwing and Skylark may breed.

In the past 50 years improved grasslands have increased by around 90% (Biodiversity: The UK Steering Group Report), usually at the expense of other habitats of high wildlife value. Increased agrochemical use and more intensive management such as high speed mechanised mowing has stimulated a change from hay to silage, further degrading their already limited biodiversity.

### **9.1.4 Boundary Features - Hedgerows and Grassy Margins**

Hedgerows resemble woodland edge and scrub habitats. They exhibit a wide range of variation and the most important are rich in relic species of ancient woodland. Some of these will be remnants of the original woodland cover retained to mark a boundary when the surrounding woods were first cleared. The oldest may have existed for more than 1000 years. These older hedges will usually contain a greater number of shrubs and trees than recent plantings and will therefore be of greater wildlife value. However, hedges of any age can be important if other wildlife habitats on a farm are scarce. Over 600 plants, 1500 insects, 65 birds and 20 mammal species are known to live or feed in hedgerows. Hedgerows provide a vital refuge for wildlife in intensively farmed areas and may also assist movement by linking woodlands and other semi-natural habitats.

Since 1945 there has been a drastic loss of hedgerows. Between 1984 and 1990 the net loss of hedgerow length in England was estimated at 21% (Countryside Survey 1990, DOE 1993). This loss was the result of a combination of outright removal (1.7% per annum) and neglect (3.5% pa). Since 1990 the loss has continued, with neglect becoming increasingly important and removal less so. The current UK total, assuming a

continued overall net loss of about 5% per annum may be estimated to be about 450,000 Km (Biodiversity: The UK Steering Group Report).

A number of factors have led to these losses. The decline of mixed farming means that on many farms hedges have no function in stock management. Hedges have been removed to increase field size because of larger machinery or larger herd size. Wire fences have replaced hedges as stockproof structures on many farms. Hedges that have lost their function have frequently either been neglected, and left to grow tall without structure, or conversely, over-managed until they become a remnant line of short separated bushes.

The margins of hedgerows can often be of considerable importance particularly where they are derived from semi-natural grassland. Such margins may be rich in wildflowers and will add to the value of the hedge. For example, butterflies and moths whose caterpillars feed on the hedgerow shrubs need sources of nectar and many of the flowers which grow in the field margin will provide this. Umbellifers are amongst the common hedge margin plants of great value to wildlife. Hoverflies, solitary wasps and longhorn beetles all feed from the flowers. Many of these insects will be valuable natural predators of arable crop pests.

The presence of a ditch, stream or farm pond alongside the hedge, a frequent occurrence on the heavier, clay soils, can add considerably to the value of the hedge and to species diversity. A range of damp-loving or marsh plants may be found and the potential for invertebrates will increase considerably. Feeding opportunities for many birds will increase.

#### **9.1.5 Farmland Trees**

Isolated trees in hedgerows or fields, although not as rich in wildlife as those in woodland, will support a variety of species. They may be particularly important for some birds. Many of our oldest trees remain not only in woodland but also in hedgerows. These veteran trees and those that show die-back may still live for many years and are invaluable for wildlife. Dead trees such as Elms provide a scarce resource for dead wood inhabitants. Pollards are particularly important as they provide nesting cavities for birds and habitat for uncommon insects.

#### **9.1.6 Farm Buildings and Walls**

Farm buildings and walls can provide an important habitat for a number of specialised plants and animals, including ferns, Barn Owls and bats. The value of such features depends on their method of construction, age and siting. Generally the older the building the greater the value.

## **9.2 HISTORY OF FARMLAND IN HERTFORDSHIRE**

### **9.2.1 Historical Development of Farmland**

Archaeologists have shown that from about 3500 BC the human population underwent a fundamental sociological change from a nomadic hunting existence to a more settled existence based on cultivation and pastoral farming. These changes were initiated by the Neolithic farmers who, in Hertfordshire, initially settled along the chalk escarpment and along river valleys. Areas of forest were cleared for cattle, sheep and pigs and for the growing of early forms of cereals such as barley and wheat. The full extent of these early forest clearances is unclear but it is likely that much of the chalk of north and west Hertfordshire would have been opened up for grazing or crops. The lack of ancient woodland in these areas indicates early clearance. Many settlements may have been rather transient, allowing the land to regenerate back to woodland, but where grazing persisted the grassland we now prize as semi-natural habitat began to develop.

As settlers moved from place to place they carried stocks of cereal seeds and amongst these would have been the seeds of other plants. So began the association of certain plants with farming. Detailed accounts of changes in the British flora and the relationship between forest clearance and weed or ruderal species have been clearly shown. It was not until the use of herbicides and screening techniques, combined with modern cultivation practices, that these arable weeds were all but eliminated. Early accounts of the Hertfordshire flora noted many as troublesome weeds, now the vast majority are surviving in only scattered localities and several may be extinct.

The pattern of fields and hedgerows in the countryside has developed as each successive system overlaid the last. From the 16th century onwards enclosures with small fields and well managed hedges became typical features of the local landscape, at least on the heavier clay soils. The structure and species composition of early enclosure hedges are usually more diverse than later enclosures. The differences this made on the landscape have been described in terms of either 'ancient' or 'planned' countryside. Hertfordshire has a mixture of these two types. Central Hertfordshire is dominated by 'ancient' landscape; small fields, sinuous hedges, woodlands and narrow lanes, its form being a key part of the aesthetic beauty of the countryside. In the centre and west, heathy commons were very much a feature of the countryside. The northern chalklands, formerly with open-field agriculture, remained most open, with large fields with trees and small woods as features in the landscape. It was not until the end of the 19th century that the present form of Hertfordshire's farmland became established after centuries of change.

However, the last 50 years has probably seen more rapid change in the agricultural landscape than ever before. Since the end of the Second World War, financial and other support to agriculture was strengthened with the aim of increasing production, productivity and quality. These national policies affected Hertfordshire as much as any other area. This period corresponds with the huge declines in semi-natural habitats, such as chalk grassland and riverside marsh, as more and more marginal land was brought into production. Although the major losses may well now be in the past, significant changes are still taking place to the present day.

## **9.2.2 Changes in Agricultural Practices in Hertfordshire Over the Last 20 Years**

Recent changes in the county's agricultural scene are shown by the Ministry of Agriculture, Fisheries and Food's (MAFF) agricultural holding censuses. In 1990 around 65% of the county was under agricultural use, a slight decline over the last 20 years.

Major changes have taken place in cropping patterns and the use of agricultural land over the last 20 years. The overall area of land used for cereal production has declined with the difference being a result of set-aside. In 1994 set-aside amounted to 13,400 ha or 13% of the agricultural area. There have also been significant changes in the crops grown. The amount of wheat more than doubled from 17000 hectares to 36000 hectares over the period 1969 - 1989. At the same time a significant decline has been seen in the amount of barley and oats. Wheat is concentrated on the boulder clay soils whereas barley is most frequent in the better drained lighter soils in the north and west.

Another major change has been the shift from spring to autumn sown cereals. Whereas most barley was sown in spring at one time only 56% was still spring-sown nationally in 1988. Non-cereal crops have also shown some changes. In 1969 Field Beans were the main such crop, occupying 4% of the agricultural area. By 1989 the area of Beans had increased to around 6% but the leading non-cereal crop was now Oilseed Rape, covering 7%. In general the overall variety of non-cereal crops grown has declined at the expense of those already mentioned.

Numbers of dairy cattle decreased by 44% in Hertfordshire between 1969 and 1989, withdrawing principally from the centre and east of the county. This reduction reflects national trends where milk production is becoming concentrated within larger units. Similarly beef cattle have become concentrated in local areas. Sheep farming has recently been increasing with the number of ewes rising by 58% between 1969 and 1989.

Overall, the trend is away from traditional mixed farming towards specialisation and monocultures. Livestock and grass-based farming has generally declined, while short-cycle arable cropping rotations have increased. The ecological principle of relying on natural predators and the use of rotational farming with fallow land has been replaced by precision applications of pesticides and herbicides. Farmers are very much caught in the middle, policy encouraging them to produce quality food ever more efficiently while at the same time they are being blamed for the state of the countryside. The result of these policies has been a steady degradation of wildlife-rich habitats and a corresponding reduction in biodiversity.

### **9.3 FARMLAND WILDLIFE- CURRENT STATUS, TRENDS AND THREATS**

#### **9.3.1 Current Status of Key Farmland Species**

##### Arable Weeds

There is a long list of plants that favour disturbed ground conditions and are known particularly as weeds of arable farmland, including such familiar groups as poppies, pansies and forget-me-nots. They can be divided into groups favouring different soil conditions. Many prefer poor chalky soils, these include Round Prickly-headed Poppy, White Mustard, Narrow-fruited Cornsalad, Vaillant's Fumitory, Small Toadflax, Sharp-leaved Fluellen and the strangely named Venus's-looking-glass. The plants of gravelly soils are less numerous but include Corn Spurrey, Prickly Long-headed Poppy, Annual Knawel and various cudweeds. Specialities of the chalky Boulder Clay soils include Shepherd's Needle, Corn Gromwell, Night-flowering Catchfly, Babington's Poppy and Broad-leaved Spurge. The majority of all such plants are declining in both abundance and distribution, many are now known only from a very few sites in Hertfordshire. Interestingly, some are now becoming familiar on other habitats that display similar ecological conditions, such as mineral workings or even disturbed ground in urban areas. The following national rarities or local specialities deserve further discussion.

**Shepherd's Needle.** This was once a considerable problem weed even preventing the cereal harvest on occasions, but is now found in a limited number of UK localities on heavy, calcareous soils. It grows best and produces most seed in autumn-sown crops. Susceptible to herbicides and with low potential for seed production, it has little persistence in the soil. Formerly very rare, it has re-appeared in some areas in north-east Hertfordshire and there are now 10 or more known sites in the county.

**Corn Buttercup.** Formerly a common weed of cornfields on calcareous soils, widespread until the 1960s but now a national rarity with only 25 sites nationally. Only 5 records from scattered localities in Hertfordshire since 1978.

**Fumitories.** The fumitories are typical plants of disturbed ground, only the Common Fumitory is at all frequent nowadays, found on lighter chalky soils. Locally, Vaillant's Fumitory may have declined the most. The Few-flowered Fumitory has always been rare with only a few recent records in the county.

**Spreading Hedge-parsley.** A widespread and troublesome arable weed in the 19th century now possibly surviving at only two or three sites.

**Corn Parsley.** Formerly reported as quite common around Hitchin, this is now a very rare plant of arable fields and grassy banks.

**Great Pignut.** Formerly known as an arable weed on chalk this plant is now largely restricted to chalky road verges and trackways. A nationally rare plant restricted to the Cambridge/Beds/north Herts area. Still at around ten sites in Hertfordshire.

**Ground Pine.** An inconspicuous plant of stony chalk soils showing a severe national decline and now subject to a recovery programme by Plantlife. No recent Hertfordshire records but still present just across the county border in the Hexton/Telegraph Hill/Pirton area, close to the last known county locations.

**Cornflower.** An attractive and formerly abundant cornfield weed, now all but eradicated apart from as a garden flower. Last possibly natural occurrence in 1986.

**Corn Cleavers.** Recent records in Hertfordshire only from Rothamsted, now possibly one of its last sites in the UK.

**Night-flowering Catchfly.** This is now very rare in Hertfordshire, and is specially vulnerable to herbicides.

### Farmland Birds

The recent publication 'Birds of Conservation Concern' (RSPB et al 1996) lists species in 3 categories: red, species of high conservation concern; amber, species of medium concern; and green, all other species which are of lower concern. Red list species are those whose population or range is rapidly declining and those of global conservation concern. The red list numbers 36 species and the most surprising recent additions are several formerly common farmland birds. These include Grey Partridge, Turtle Dove, Skylark, Tree Sparrow, Linnet and Corn Bunting. All have suffered large declines in recent years. The amber list also contains birds typical of farmland. The Lapwing and Barn Owl are both typical Hertfordshire breeding birds in decline, while the upland breeding Golden Plover makes use of our wide open arable landscapes in winter. Likewise, the montane Dotterel may seem a strange inclusion in a farmland plan but the regular spring parties of migrants in bean fields in North Hertfordshire are very much a part of the local ornithological scene. Key species are dealt with in further detail.

**Grey Partridge.** Over the last 40 years the numbers of Grey Partridges in the UK have declined by 82%. Partridges usually nest at the edge of a field, on a bank or in long grass. The chicks spend most of their time in cereals or in other long grasses feeding on insects, particularly those associated with broad-leaved weeds. The use of insecticides and herbicides reduces the food resource. The Grey Partridge is still widespread in central and northern Hertfordshire but nowhere abundant. The county population total is estimated to be between 1000 and 2000 pairs. However, there has been a significant decline over the last 20 years that is still continuing.

**Stone Curlew.** Stone Curlews have declined nationally by at least 85% since 1940 to around 160 pairs. These are largely restricted to the East Anglian brecks and to parts of the west country. Their favoured habitat is open downland but they also nest on arable farmland. They require open habitats with all-round vision from the nest and the decline on farmland is associated with the change to autumn sown crops which have grown too tall by the spring. The Stone Curlew last nested in Hertfordshire in 1981. The north-east of the county was the

favoured area and low numbers still breed not far over the border into Cambridgeshire.

**Lapwing.** Formerly common, the Lapwing has undergone a substantial decline in recent years, largely as a result of changes in agricultural practices. Nationally they show a clear preference for nesting on arable farmland, particularly spring tillage.

**Quail.** The Quail is an erratic breeder in Hertfordshire with numbers following national fluctuations. Most records are from the north and west of the county on the chalk where there is an association with large areas of Barley production.

**Turtle Dove.** A summer visitor to Europe, the Turtle Dove winters in sub-saharan Africa. It favours open rural localities and arable farmland with nearby shrubs and trees for nesting. It feeds primarily on arable weed seeds and its breeding distribution closely matches the distribution of the Common Fumitory. In recent years the Turtle Dove has withdrawn significantly from south and west Hertfordshire. The most recent estimation of population is put at 670 territories and decreasing.

**Skylark.** The Skylark is one of our most familiar birds of open grassy habitats. They feed almost exclusively on the ground on a diet of invertebrates, seeds and other vegetation. The national population has fallen by 58% over the last 20 years. In Hertfordshire the Skylark is still well distributed throughout the county but given the national decline it is unlikely to be following a different trend in Hertfordshire.

**Tree Sparrow.** The Tree Sparrow is a bird of hedgerow trees, parkland and open woodland. The national population has suffered a massive decline of 89% over the last 25 years. The reasons for this collapse are not clear but changes in agricultural practices affecting its seed diet are thought likely to be part of the cause. In Hertfordshire the national collapse has been mirrored. From being widespread across the county in 1970 it is now very rare to find breeding birds.

**Corn Bunting.** The Corn Bunting is very much a bird of arable farmland. In Hertfordshire the Corn Bunting expanded its range during the 1950s and 1960s but subsequently went into decline with the population withdrawing to the north and west of the county. The decline is thought to be linked to change in agricultural practices such as increasing intensification and the shift to autumn sowing.

### Other Species

A large number of insects and other invertebrates make use of farmland, many in hedgerows, some spending part of their life cycle in arable crops. Grass banks may support a number of ground beetles, some of which are nationally rare or threatened. Many mammals will make use of farmland at some time but it is the Brown Hare that is most characteristic.

**Brown Hare.** The Brown Hare is a conspicuous and well known farmland animal, with its spring displays a familiar sight in the countryside. However, it has undergone a substantial decline since the 1960s due to conversion of grasslands to arable, loss of habitat diversity in the agricultural landscape and changes to cropping and planting regimes. Hares are still widespread in Hertfordshire but declining. They are most frequent in the north and east.

### **9.3.2 Key Areas for Farmland Wildlife in Hertfordshire**

The nature of farmland makes it difficult to define key sites within the county as locally distinctive landscape, from the open chalklands of the north to the pasture and hedgerows of the south, holds its own associated wildlife. It is perhaps better to define broad tracts of land with similar ecological and social characteristics in the way that is being developed by English Nature (Natural Areas) and the Countryside Commission (Countryside Character Areas).

A similar approach but on a finer scale has been taken by Hertfordshire County Council in defining Countryside Heritage Areas. Fifteen such areas have been identified (see section 9.5 - Vision) and relate well to the Natural Areas/Character Areas. The following are particularly important for farmland wildlife.

**Benington - Ardeley Plateau.** An area of ancient countryside with small woods, winding green lanes and numerous stream-eroded valleys. Beds of sands and gravels intermix with the predominate chalky boulder clay and increase the ecological complexity of the area. Key areas include Oxshott Hill and the farmland around Combs Wood. Key species: arable weeds of both chalk and gravel (Prickly Round-headed Poppy, fumitories, Corn Spurrey), farmland birds such as Corn Bunting, Turtle Dove, Skylark and Grey Partridge.

**Northern Chilterns.** The steep Chiltern scarp is largely in Bedfordshire while the more gentle southern dip slope is in Hertfordshire. It is a rolling, generally open, "upland" area with chalky soils dominated by arable cultivation. Key farmland areas generally abut the remaining chalk grasslands at Hexton, Telegraph Hill and Tingley Wood. Key species: arable weeds (Poppies, Narrow-fruited Cornsalad, Ground Pine), abundant Brown Hares and birds (Grey Partridge, Turtle Dove)

**North-east Chalk Plateau.** The Chilterns merge gently into the East Anglian chalk plateau, an open rolling countryside of arable fields and remnant chalk downlands. This area changes to the south into the chalky boulder clay plateau, with more woodlands, notably of Ash/Maple, and many spring sources. Key areas; Barkway-Scales Park, Sandon-Kelshall, Baldock-Wallington, Ashwell-Newnham. Key species: arable weeds (Shepherd's Needle, Corn Gromwell) and birds (Quail, Corn Bunting, Stone Curlew, Golden Plover, Dotterel, Turtle Dove, Skylark)

**Vale of St Albans.** Although not defined as a countryside heritage area the vale of St Albans is important for farmland birds. It typically has flat open farmland with large fields and scattered gravel workings. Key areas: Symondshyde-

Stanborough, Tyttenhanger-Colney Heath. Key species: Golden Plover, Lapwing, Tree Sparrow.

### **9.3.3 Existing Policies Which Contribute to Enhancing the Environmental Value of Farmland**

A number of existing policies and measures are designed to safeguard or enhance the environmental value of farmland. The most significant are described below and some conclusions drawn.

#### **Agri-environmental Schemes**

The following schemes offer incentives to farmers to manage their land in a way which delivers environmental benefits.

**Environmentally Sensitive Areas (ESA's).** This scheme helps protect those areas where the landscape, wildlife or historic interest were of national importance from the changes brought about by more intensive farming methods. The "Conservation Headlands" option within certain ESA's aims to increase the wildlife conservation value of arable field margins. Results show an increased variety of weeds growing amidst the crop edges. There are currently no ESA's in Hertfordshire.

**Nitrate Sensitive Areas (NSA's).** Introduced in 1990 NSA's aim to protect valuable supplies of drinking water by assisting farmers to reduce nitrate leaching in sensitive areas. One NSA is in north Hertfordshire.

**Countryside Stewardship Scheme.** Countryside Stewardship was introduced by the Countryside Commission in 1991 to encourage farmers to manage selected habitats for environmental and public benefit. It aims to help reverse declining landscape and wildlife habitat quality by combining commercial farming with sensitive land management through a system of incentives and agreements. It has now been adopted by MAFF. Between 1991 and 1995 sixty agreements were approved in Hertfordshire. These have proved beneficial principally in assisting management of semi-natural grasslands but have also allowed the re-creation of habitats on arable land in appropriate locations.

**Organic Aid Scheme.** Aid is available throughout England to farmers who wish to convert to organic production.

**Habitat Scheme.** This scheme aimed to protect and enhance wildlife habitats on or adjoining land formerly in the 5 year set-aside scheme. It includes an option in certain areas (not Hertfordshire) aimed at water fringes to benefit water quality.

**Countryside Heritage Project.** A Hertfordshire County Council scheme, administered by the Countryside Management Service, that provides advice and small scale grant aid to managers of sites of significant wildlife or geological importance. Around 40 sites are currently designated as Heritage Sites.

## Set-aside

Set-aside was introduced as part of the reform of the Common Agricultural Policy (CAP) to reduce cereal production rather than bring environmental benefits. It was originally introduced by MAFF as a voluntary scheme in 1988 and by 1991 covered 2,818 Ha (3%) of Hertfordshire's farmland. Evolving almost year by year, set-aside has been through five-year, one-year, rotational, non-rotational and flexible options. From 1992 it became compulsory, with farmers only eligible for cereal subsidies under the Arable Area Payments Scheme (AAPS) if they set-aside a percentage of their land (initially set at 15%). The set-aside rules have been kept under review and in recent years options designed to enhance environmental benefits, such as "wild bird cover", have been introduced. There have been widely conflicting views on the future of set-aside and despite some claims that it may rise to 35%, by 1996/97 the figure for compulsory set-aside had been lowered to 5%, against a background of increasing cereal shortages and the BSE crisis in the beef industry. The future may well see compulsory set-aside reduced to zero.

Despite the considerable misgivings of both farmers and conservationists, it is clear that set-aside has had some beneficial effects for farmland wildlife. On some sites there has been a blossoming of flowering plants. In others butterflies and grasshoppers have rapidly colonised pesticide-free grassland. Small mammal populations have increased, with predators such as Kestrel, Barn Owl and Short-eared Owl possibly benefiting. Research by the RSPB has shown that significantly more birds may be found feeding on set-aside fields compared with neighbouring conventional cereal fields. Often set-aside has brought colour and variety into previously monotonous landscapes.

However, the scheme is far from ideal. Although benefiting in the short-term, rare arable weeds may be threatened under long-term set-aside. The species that have benefited have been the quick colonists. Misguided cutting obligations on farmers frequently did more harm than good and the short term nature of the scheme allowed few long term benefits to accrue. Farmers frequently feel that the land is an eyesore and has no clear management objectives. Overall, although set-aside is a supply control rather than an environmental measure, it does show that farmland wildlife can recover if given a chance. Further changes to conditions would bring greater benefits. For example, the option for low intensity grazing would assist in the development of species-rich habitats. However, the recent reduction in set-aside highlights the need for more long-term agri-environmental schemes in arable areas.

## Advice

The Farming and Rural Conservation Agency (FRCA), formerly the Agricultural Development and Advisory Service (ADAS), is an executive agency of MAFF. One of its objectives is to provide advice to farmers through its Project Officers. MAFF part funds the Farming and Wildlife Advisory Group (FWAG) to provide free initial on-farm advice on the conservation and enhancement of the countryside. The Hertfordshire CMS also provide advice to landowners and farmers. The Game Conservancy Trust provides advice through their Regional Adviser.

Such advice is invaluable and it is clear that many farmers are uncertain about the often detailed requirements of the agri-environmental schemes. Conservation advice delivery in Hertfordshire is however rather unco-ordinated, with the unfortunate situation that Hertfordshire FWAG is severely short of resources and therefore cannot take a leading role.

#### Minimisation of Pesticide Use

The UK's policy of encouraging farmers to minimise their use of pesticides was set out in the 1990 White Paper "This Common Inheritance". The policy is pursued in a number of ways including a rigorous approvals process, setting maximum residue limits in food, surveillance monitoring and advice. The annual tonnage of agricultural products applied fell by 9000 tonnes between 1983 and 1993. However, tonnage is at best a crude indicator of the environmental risks posed by pesticides. At the local level the Environment Agency and water companies such as Three Valleys Water are trying to raise landowners awareness of water pollution issues.

### **9.3.4 Trends and Threats**

Overall, the continuing intensification of both cereal production and grassland management, as well as increasing specialisation within all forms of agriculture, are widely seen as the key threats. A MAFF working group looking at enhancing the conservation value of arable land has recently summarised the impacts of modern arable production. The following issues are drawn heavily from that work.

**Ploughing out of grasslands and scrub.** Important grasslands are still being lost, albeit at a lower rate. Such actions lead to the direct loss of habitats of high natural value, increase the fragmentation of remaining semi-natural habitats and reduce the mosaic of arable and grass within farmland. This results in increasing species isolation, local extinctions, less ability to continue traditional grazing management and landscape degradation.

**Simplified and continuous cropping patterns.** A general change from spring to autumn sown cereals has caused a loss of feeding opportunities on winter stubbles and a loss of suitable conditions in spring for ground-nesting birds. Over-wintering opportunities for invertebrates are lost. Other significant changes include the simplification of the crop rotation cycle with less use of grass leys and fallow, as well as a decline in the use of root crops in stock-rearing areas. Such patterns lead to an increased reliance on pesticides and other inputs. It also leads to a more uniform and degraded farmed landscape.

**Universal use of fertilisers.** The loss of nutrient-poor habitats, increased fertilising of field margins and the increasing eutrophication of waterways all lead to a decline in sensitive flora and fauna, dominance by aggressive weeds and suppression of arable weed species. Run-off of fertiliser into waterways is having a marked effect both on groundwater and surface wetlands away from farming areas.

**Universal use of pesticides.** The widespread use of pesticides to ensure a pest and weed free monoculture is a major factor determining species diversity. Elimination of floral diversity and insects is the key issue. This leads to eradication of arable weeds,

disruption of food chains, loss of food sources, direct kill of beneficial insects and secondary mortality of vertebrates from seed-dressing, molluscicides etc. Specific problems include the use of Ivermectin with cattle, resulting in sterilisation of dung and the loss of species responsible for its recycling. The development of genetically modified seeds that are resistant to certain herbicides will increase that herbicide's effectiveness on arable weeds.

**Removal of boundaries and other features.** Loss of such features reduces refuges for wildlife (including beneficial fauna) for nesting, foraging and movement. The loss of scattered farmland trees through senescence and felling without replacement is also a threat. The loss of traditional farm buildings and a general over-tidyness results in reduced roosting and feeding opportunities. The conversion of old barns is a particular problem for bats, Barn Owls and Swallows.

**Neglect of appropriate hedgerow management.** Many hedges are now either neglected or inappropriately managed in order to keep them low and tidy. This leads to reduced diversity within the hedge and ultimately increased pressure for hedge removal as the hedge becomes 'gappy' and sparse and its natural function declines .

**Irrigation and water abstraction.** The lowering of surface water levels and depleting of ground water reserves leads to the serious threat of drying out of wetland habitats and exacerbates problems of low flows in rivers.

**Drainage.** Drainage leads to the lowering of water tables, loss of wetland habitats including grass swards on low-lying land and the loss of aquatic flora and fauna along deepened water courses and ditches. Quicker water movement off the land leads to increased erosion, siltation, reduced filtering out of contaminants and increased risks of flash flooding elsewhere.

**Lack of advice.** Poor, unco-ordinated and misguided advice can be a threat to wildlife habitats. Advice on agri-environmental schemes, as well as training in implementing them and reducing damaging practices, is lacking.

## **9.4 FUTURE FOR FARMED HABITATS IN HERTFORDSHIRE**

### **9.4.1 The Value of Farmland for People**

The aesthetic beauty of the countryside is partly derived from the way it has been shaped and maintained by years of farming activity into locally distinctive patterns. Plants and animals contribute strongly to the local distinctiveness of an area and such countryside areas, eg the Chilterns, are a focus for recreation and tourism. Biodiversity is strongly linked to cultural diversity and identity. Many countryside plants have strong symbolic associations, such as poppy, mistletoe and holly. The degradation of the countryside into a monotonous landscape lacking in colour and form will be detrimental to us all.

Maintaining biodiversity can also have clear economic benefits for farming. Biological pest control, which has been developed through an understanding of ecosystems and predator-prey relationships, has in some cases allowed reduction in the use of pesticides. Biodiversity has played a vital role in enabling agriculture to reach its current productive state. Genetic variation within plants and animals has allowed breeders to select desirable characteristics. This manipulation of genetic diversity will be a significant factor in the future stability of agriculture. A reduction in the variety of available crops and livestock may result in a greater vulnerability to disease and pest attack. An attractive countryside, rich in wildlife, is also a basis for farm diversification through the growth in farm tourism and can bring benefits to the wider rural economy. The effect of leaching or run-off of fertilisers or pesticides into river channels can have huge repercussions for the water industry in the form of increased costs for water treatment. Finally, the widespread and costly effects of the BSE crisis and its links to human health, must have raised awareness of the need for a return to more traditional and environmentally aware farming methods.

Field sports are widely practised in the countryside and will always be a controversial issue. Many farmers have retained hedgerows and copses, or carried out woodland management, specifically to improve habitats for game species such as Pheasants. Likewise, management of arable margins has been carried out specifically for Grey Partridge. This has all had benefits for wildlife in general. On the negative side, poorly managed game estates can degrade important sites. Overall, the role of field sports in the rural economy and its potential to gain biodiversity benefits should be recognised.

### **9.4.2 The Future of Agricultural Policy**

Changes in agricultural practice over the last few decades have been dramatic. This period of rapidly improving productivity and quality in food production has also resulted in substantial loss of semi-natural habitats and wildlife. Following the UK joining the European Union in the 1970s, the support for increases in agricultural production that dated from the end of the Second World War was directed through the Common Agricultural Policy (CAP). With one effect of this being large surpluses of cereals and other products, pressure for policy reform grew. Since the mid 1980s there have been continuing changes, culminating in the latest reforms of the CAP and in the signing of the General Agreement on Tariffs and Trade (GATT). Farmers were asked to set-aside land, a policy which satisfied neither farmer nor conservationist. As a result of the signing of the EC Agri-Environment Regulation (1992), MAFF announced new

environmental measures to complement and extend the range of financial incentives already available to farmers. However, the take-up of agri-environmental schemes remains poor as payments remain low, rules are inflexible, requirements complex and advice is poor. The result is that the fundamental problems which have led to a decline in farmland biodiversity have yet to be addressed. **Whilst recognising the primary role of farmland in food production, a more environmentally sensitive approach to farming that integrates both agriculture and conservation is urgently required.**

Arable farming is arguably more profitable now than it has been for many years. Cereal prices are buoyant with the result that subsidies (Arable Area Payments Scheme - AAPS) may be seen as a bonus rather than a necessary payment to maintain the viability of the farm. However, it is difficult to predict future trends and this situation may well change. With issues such as the current profitability of arable farming and the problem of high overheads, farmers are understandably reluctant to take profitable land out of intensive production and into an agri-environmental scheme that is seen to have a lower return. The future of wildlife of farmed habitats is therefore largely policy driven and linked to CAP reform. It is clear that without some form of policy intervention arable farmers are unlikely to make changes to farming practice that would have major environmental benefits.

There is much debate over the likely direction of future policy. One option is that subsidies will remain, but CAP reform will bring about policies that link them, or other incentive schemes, ever more strongly with environmental and social needs. This principle is known as 'cross-compliance'. The idea of attaching environmental conditions to AAPS has gained favour amongst some conservationists. For example, an idea currently being discussed is that all farmers receiving AAPS should introduce conservation field margins and/or avoid damage to hedgerows.

A second, more likely, option is that production control measures will fail or will be abolished and farmers will be forced to compete on the world market. Profitable farms on the best land are likely to expand, while smaller ones in marginal areas may be forced out. Such an outcome may provide both threat and opportunity for wildlife. However, if only a small percentage of the huge amount of money saved by ending agricultural subsidies were to be directed towards environmental improvements in more marginal or sensitive farming areas, the wildlife gain could be significant.

During 1997 the European Commission published its proposals for reforming the EU's budgets : *Agenda 2000*. Central to these proposals are ideas for CAP reform that will continue the process started in 1992. It makes the case for radical reform and includes the integration of environmental goals as one of its objectives. However, the view of environmental organisations is that it fails to deliver the radical changes it proposes.

Whichever way policy goes it is clear that significant gain in biodiversity will only be achieved when it is recognised that this is of benefit to us all and is reflected in the policy through economic support. Over £1 billion is currently paid to arable farmers in AAPS in England alone while the total agri-environmental budget is only £77 million. The balance of this funding must shift and management of the countryside that benefits the environment be fully accepted. In effect we need to pay farmers to 'farm' Skylarks or Poppies, as indicators of the quality of the environment. This does not mean that the knowledge gained in post-war agriculture is ignored. Rather that a new underlying

thinking in farming strategy ensures that not only is sufficient food produced but that environmental and social needs are also met.

### A Farmland Strategy

This new thinking should begin with a strategy for farmland that promotes sustainable agriculture. This should acknowledge that all farmland is environmentally sensitive to some degree and should recognise local distinctiveness. Although farming will be driven by market forces and will produce food in quantity, the long-term strategy should be a progressive transfer of funds from the present unconditional commodity and compensation payments to environmental and social support. Further developments in farming technology will allow productivity but not at the expense of the environment. Broad tracts of countryside, of the highest value for biodiversity, will be recognised as "environmentally sensitive farmland". Such areas will have targeted agri-environmental support schemes to deliver specific environmental and social objectives.

Such policy changes will undoubtedly only be implemented in the longer term and in Hertfordshire we must play our part in achieving them by feeding local information into the national picture and lobbying for change at the appropriate time. **In the short term we must increase the take-up of agri-environmental schemes and increasingly target them to the most deserving areas or sites.**

### Existing Agri-environmental Schemes

The agri-environmental schemes introduced so far have demonstrated a range of benefits to the environment and clearly show what can be achieved. The majority of schemes are targeted at the maintenance and restoration of semi-natural habitats, such as grasslands, within the farmed landscape. This is undoubtedly a priority and more refining of the targeting is required. However, the take-up rate is low and a much increased effort in persuading farmers and landowners to consider these schemes is required. It may be possible to establish demonstration farms in key areas with a high percentage of semi-natural habitats. These farms could promote the latest schemes and techniques as well as contribute significantly to biodiversity conservation. They should ideally demonstrate mixed farming methods.

An Arable Stewardship scheme is being piloted in two areas of the UK, including part of Hertfordshire. If widely taken up, this promises substantial benefits for wildlife of arable farmland. In Hertfordshire we have the role of ensuring the success of the pilot by encouraging uptake and monitoring the results, in order to promote the scheme to the rest of the country.

There are currently no designated Environmentally Sensitive Areas (ESAs) in Hertfordshire. The benefits of increased support schemes within ESAs are well known. The designation of the Chilterns AONB as an ESA should be a priority target. This area has a high density of semi-natural habitats (chalk grassland, neutral grassland and woodlands) and a high degree of local distinctiveness.

There is a need to continue limiting the use of pesticides in order to reduce risk both to the environment and human health. Certain areas, such as watercourses need protection from pollution by agricultural chemicals. Overall there should be a move to a reliance

on more natural methods of pest control. The benefits of Organic Farming and Integrated Crop Management (where farming balances the requirements of running a profitable business with responsibility and sensitivity to the environment - see case study below) should be more widely promoted.

### **9.4.3 Key Areas for Targeting Environmental Support**

#### Wildlife Sites

The immediate priority for nature conservation within farmed landscapes must be to maintain and enhance the existing semi-natural habitats of high wildlife value. Without the maintenance of such areas the recolonisation of degraded habitats will be at best slow, if not impossible. The Hertfordshire Habitat Survey has identified "Wildlife Sites" of at least district importance for wildlife. Many are dependent on continued agricultural management for their survival. It is an absolute priority that agri-environmental schemes such as Countryside Stewardship are targeted towards these sites to enable farmers to continue sensitive management. In addition, the use of any scheme to expand, buffer and link these sites should be strongly supported.

#### River Corridors

There is a clear environmental benefit in targeting agri-environmental schemes to the margins of water courses and to river valleys in general. Buffer strips along such water courses can act as pollutant filters and reduce soil erosion, more extensive grasslands or marsh can act as flood storage areas and help alleviate low river flows. This should be our aim. We need to restore grasslands to our river valleys (see Chapter 5 - Wetlands). The restoration of flood meadows (that flood !) should be sought in appropriate locations. These damp grasslands will provide lush grazing for cattle as other pasture becomes increasingly parched and yellow during hot summers. There will be direct benefits to wildlife by linking and expanding existing sites of high wildlife value and allowing the movement of species between sites.

#### Arable Fields, Margins and Headlands

Although it is important not to forget the entire cropped area, work on field edges by the Game Conservancy, has shown that conservation effort in these areas can bring considerable benefits. This may be achieved by creating grassy margins (beyond the crop edge) or conservation headlands (altering crop management, eg not spraying within the outer strip). Margins can provide a connecting network of wildlife habitats across the farm.

A mixture of field margin types provides a variety of habitats and spreads the workload over the farming year. Good margins need planning but need not cost more. The new 'Arable Field Margins' option within Countryside Stewardship offers financial help.

Margins can eliminate compaction problems in headlands, make use of areas that are awkward to farm, or increase flexibility for operations such as hedge management in winter. They can help remove weed infestations and encourage predatory insects. Whilst the value of bees as crop pollinators and ladybirds as predators of greenfly is well known, the value of natural predators of other pests is less well understood, despite the

large amount of scientific data. Aphids are serious pests of cereal crops. If their natural predators such as ground beetles, rove beetles and spiders can be encouraged on arable land then it may be possible to reduce reliance on pesticides. Hedgerows and field margins can provide good breeding and over-wintering habitat for these predators.

### **CASE STUDY - GREYS, THERFIELD**

Greys is a family farm managed by Edward Darling. It extends to 230 hectares over chalk soils with a thin clay cap. The emphasis is on producing premium cereal crops, especially barley, used to produce malt for brewing and other uses. Milling wheat and a small amount of oats complete the cropping with peas or beans as a break crop.

Edward Darling follows a philosophy of Integrated Crop Management (ICM), combining sound land management with responsible conservation techniques. He has focused on woodland, hedgerow and grassland with the overriding aim of promoting diversity of habitat alongside economic crop management.

The Woodland Grant Scheme is used to progressively clear and re-plant the mainly beech woodlands. Some Sycamore coppice is managed for rotational firewood production. Hedges are rotationally cut, some are being prepared for laying and overall there has been a net gain in hedgerow length. Nearly 1 km of new hedge has been planted to provide corridors for wildlife between woodland pockets. A hedgerow rejuvenation scheme is being undertaken with an ongoing coppice rotation.

Broad grassy headlands are maintained around fields and are left unsprayed to encourage wildlife. This, combined with the imaginative use of set-aside, has assisted an amazing increase in the population of Grey Partridge on the farm.

Greys is The LEAF Association (Linking Environment and Farming) demonstration farm for the area. With the farm abutting Therfield Heath, one of the county's most important semi-natural grasslands, there can be little doubt that the ICM approach is beneficial.

However, it must be appreciated that work on margins will not help all farmland species. In some areas, where the ecological needs of key species require, it will be necessary to retain the whole arable field within a less intensive regime. This may apply to farmland birds in particular. The pilot Arable Stewardship has the potential to deliver in this area.

### Hedgerows

The loss of hedgerows by direct destruction to create larger fields has slowed and some increase in hedgerow length has taken place. However, it is not so much the actual length of hedge that is important, but rather its physical quality and floristic diversity. With this in mind it is worrying to note that a large part of the hedgerow resource is unmanaged and gradually disappearing. Neglect (no cutting or laying) leads to hedgerows changing into lines of trees and the development of gaps. This reflects modern high labour costs, the loss of traditional skills and, most significantly, the decline in hedge function as a stockproof barrier. Too frequent and badly timed cutting

leads to poor habitat condition and the development of gaps. In addition, inappropriate husbandry, such as the spraying out of hedge bases, also increasingly impoverishes the resource. Fertiliser run-off leads to nutrient enrichment. Increased stocking rates, particularly of sheep, leads to hedgerow damage and the need to fence fields. The presence of fences reduces the agricultural necessity for hedge maintenance and so hastens their decline.

There are some data giving evidence of hedgerow loss in Hertfordshire. A study by the RSPB on 8 sample tetrads covering 32 sq kilometres in north Hertfordshire showed a 31% loss of hedges from 24,036 metres in 1947 to 16,457 in 1985. However, during the period 1991/2 to 1994/5, 3161 Km of hedge restoration work was agreed in England under Countryside Stewardship agreements. This represents an expenditure of £700,000 per annum. Such schemes clearly need to be expanded.

In June 1997 new rules on hedgerows came into force under the Hedgerows Regulations. This made it an offence to remove a hedgerow without permission, gained through the local planning authority. The Regulations aim to protect the most important countryside hedgerows through a system of notification administered by local planning authorities. However, there are widely expressed concerns about the limitations of the Regulations and the government has initiated a review of the situation.

### Roadside Verges

Roadside verges are generally managed by the Local Authority but most rural verges are very much influenced by the adjacent farming operations. They often form the vestiges of semi-natural grassland in rural areas and act as a refuge or habitat corridor for many farmland plants and animals. Of the total of about 6,000 kilometres of roadside verge in Hertfordshire, a large percentage has lost most of its wildlife interest, due to a variety of factors. These factors include eutrophication, scrub invasion, chemical weed control, salt spray, ploughing close to the roadside and the lack of appropriate management.

A reduction in flail mowing and the use of chemicals on roadside verges may have had some beneficial effects for wildlife. However, where management has ceased completely, rank grassland, scrub and woodland may be replacing more important semi-natural vegetation particularly species-rich grassland. Small patches of remaining semi-natural grassland are still being lost. There is increasing disturbance of roadside verges to lay and maintain services, such as gas, electricity and telecommunications. Road widening and re-alignment has resulted in the loss of hedgerows and verges.

In many counties roadside verges are designated as nature reserves. In 1994 there were just 2 designated Heritage Roadside Verges in Hertfordshire (see case study below). Concern about the degradation of verges in the county led to the Roadside Verges Working Party (RVWP) being established in October 1994. This group aims to develop the ecological features of roadside verges through improved design and management practices. The RVWP has had a positive and successful start. By 1997 there were 6 designated Heritage Verges and a further 3 under sympathetic management. However, although the designation system brings results, it is overly bureaucratic and will only ever affect a minority of the important verges. With the identification of a large number of verges under the Wildlife Sites system, a more direct means of influencing the management of these important sites is urgently required.

### **CASE STUDY - WALKERN HERITAGE ROAD VERGE**

The Walkern Road, running from Walkern to Watton-at Stone, passes through the land of Mr H A Bott of Bennington Lordship. The underlying geology is chalk, much of which is overlain by varying depths of boulder clay. The roadside verge supports a rich mixture of calcareous herbs including Marjoram, Wild Basil, Small Scabious and Large Thyme. In addition, the arable fields adjacent to the verge have long been known as a rich area for arable weeds. Recently recorded species include several species of poppy, including Prickly Round-headed Poppy, as well as other scarce plants such as Toothed Cornsalad, Longleaf and Venus's-looking-glass.

In 1991 the verge was designated as the county's first Heritage Roadside Verge with the permission of Mr Bott. Marker posts were installed and the verge cut to an agreed plan by the County Highways Department.

In addition Mr Bott treats the margins of the fields adjacent to the road as a conservation headland, restricting the spraying of chemicals. In combination these developments have allowed the rich verge and arable field flora to flourish and demonstrate positive action for the conservation of such farmland habitats.

## **9.5 A VISION FOR FARMLAND**

**The Hertfordshire landscape of the future will be one in which the production of high quality food and a countryside rich in wildlife are maintained in a sustainable manner. A strategy for sustainable agriculture will promote methods which minimise damage to the environment and will include policies for positive environmental and social support.**

In the shorter term, those areas requiring the most environmentally sensitive farming will be the targets for agri-environmental support schemes. A new Chilterns Environmentally Sensitive Area (ESA) will have been introduced. These sensitive areas will be based on locally high biodiversity, local distinctiveness in landscape and character, and important natural features such as river corridors. They are likely to include many of the following areas:

- The north-east chalklands
- The chalky boulder clay plateau
- The Bennington and Ardeley plateau
- The east Hertfordshire river valleys
- The River Stort flood plains
- The north Chilterns
- The Hitch Wood/Knebworth plateau
- The west Chilterns
- Wilstone Vale
- The Lee Valley
- The Mimram Valley and Bramfield plateau
- Broxbourne Woods
- The River Chess and lower Gade Valley
- The North Mymms/Shenley Ridge

Such areas will be central to the vision of extending, linking and buffering key environmental assets in order to maintain and enhance biodiversity. Local distinctiveness will be promoted and enhanced. Demonstration farms will have been established in key areas to promote environmentally sensitive farming methods. Farmers will receive integrated and coherent advice and training on farming for wildlife.

## **9.6 TEN YEAR TARGETS**

To move towards policies that promote sustainable agriculture.

To develop a more strategic approach to agri-environmental support in Hertfordshire and to ensure that a minimum of 2500 hectares (from the current 830 ha) of farmland and 50,000 metres of grass margins (from the current 9700 m) are entered into such schemes by 2007.

To compile accurate information on the farmland wildlife resource of Hertfordshire

To seek reductions in chemical use

To promote the conservation of notable farmland species.

## **9.7 PROPOSED ACTIONS**

### **9.7.1 Policy and Legislation**

**FA1.** Work in partnership to lobby for changes in policy in the UK and Europe that will lead to sustainable agriculture. Disseminate relevant information from Hertfordshire into regional or national fora annually.

**Action:** HEF, HCF, MAFF, FRCA, HCC, CLA, NFU, RSPB, WCCF, HMWT, LA's, CMS.

**FA2.** Target agri-environmental schemes to Wildlife Sites from 1998 and revise targeting statement annually.

**Action:** FRCA, MAFF, WCCF.

**FA3.** Lobby for the extension of the Arable Stewardship pilot into a national scheme (incorporating lessons learnt from the pilot) within 5 years.

**Action:** EN, RSPB, GCT, FRCA, HMWT, WCCF, CMS.

### **9.7.2 Site Safeguard and Management**

**FA4.** Actively promote the uptake of agri-environmental schemes in Hertfordshire, including favourable management of hedgerows. Target: 170 hectares per annum.

**Action:** FRCA, CMS, HMWT, WCCF, FWAG.

**FA5.** Seek to implement and expand current ideas for effective buffering of river and stream courses. Produce leaflet by 1997 and establish pilot/demonstration area, e.g. in the Beane or Rib Valley, by 1999. If successful, extend programme.

**Action:** CMS, HMWT, MAFF, EA, WCCF, NFU.

**FA6.** Actively promote the pilot Arable Stewardship scheme in north-east Hertfordshire, ensuring all farmers within the scheme area are aware by 1999.

**Action:** FRCA, HMWT, CMS, RSPB.

**FA7.** Seek to establish at least one arable weeds nature reserve and develop a seed bank of locally distinctive species within 5 years.

**Action:** HMWT, LA's.

**FA8.** Establish sympathetic management of roadside verge Wildlife Sites, including roadside hedges, 50% by 2002, 100% by 2007.

**Action:** HCC, LA's, landowners.

### **9.7.3 Species Management and Protection**

**FA9.** Meet conservation targets for the most threatened species.

**Action:** HERC, HNHS, HMWT, CMS, FRCA, RVWP, HO, RSPB, GC, HertsBC, HMG, BTO, Rothhamsted, PL, CLA.

**Tree Sparrow.** Encourage recording. Initiate nest box conservation scheme and local habitat studies. (see Chapter 15).

**Stone Curlew.** Re-establish as a regular breeding species in partnership with farmers in north-east Hertfordshire. (see Chapter 17).

**Skylark.** Maintain current populations and encourage an increase through existing land management schemes.

**Great Pignut.** Protect roadside verges through management agreements with Highways Authority (see Chapter 24).

**Cornflower.** Develop and maintain a viable population at its only known local location (see Chapter 25).

**Corn Cleavers.** Maintain and expand at present site. Consider establishing additional site.

**Corn Parsley.** Maintain, expand and protect present sites by agreement.

**Ground Pine.** Search for any existing populations. Draw up plan for re-introduction to re-establish seedbank.

**Grey Partridge.** Halt current decline and reverse trend by targeting appropriate schemes to key farmland areas.

**Corn Bunting.** Halt current decline and reverse trend by targeting appropriate schemes to key farmland areas. Maintain regular surveys.

**Corncrake.** Immediately implement protection scheme if any breeding birds return.

**Brown Hare.** Halt current decline and double numbers by 2010, by targeting appropriate schemes to key farmland areas. Monitor shooting and coursing.

#### **9.7.4 Advisory**

**FA10.** Provide a fully integrated and coherent conservation advisory service for farmers and landowners, particularly regarding agri-environmental schemes. Produce a database of good farming practice (and farmers willing to share experience) by 2000.

**Action:** FRCA, CMS, HMWT, FWAG, WCCF, MAFF, GCT, RSPB.

**FA11.** Co-ordinate existing schemes aimed at giving advice to farmers on pollution issues. Seek initial 'partnership' meetings in 1998.

**Action:** EA, Water companies, FRCA, HMWT, FWAG.

#### **9.7.5 Research and Monitoring**

**FA12.** Compile a list of the county's road verges meeting Wildlife Site criteria by 1998.

**Action:** HMWT, HERC, RVWP.

**FA13.** Establish local community hedgerow surveys, building on existing initiatives, aiming for complete county coverage by 2007.

**Action:** WHC, LAs, HERC, WCCF, PC.

**FA14.** Monitor and report annually on area and location of farmland entered into agri-environmental schemes.

**Action:** FRCA, MAFF.

**FA15.** Monitor pilot Arable Stewardship scheme, notably effects on target species.

**Action:** MAFF, FRCA, RSPB, HMWT, HERC, HNHS.

**FA16.** Maintain and support current monitoring schemes that cover farmland species (e.g. Breeding Bird Survey). Report annually.

**Action:** HNHS, HertsBC, HERC, BTO, RSPB, HMWT.

#### **9.7.6 Communication and Publicity**

**FA17.** Promote awareness and publicise good farming practice by disseminating information in farming publications, arranging farm walks etc.

**Action:** FWAG, NFU, CLA, LEAF, RSPB, WCCF.

**FA18.** Provide concerned farmers with information needed to farm less intensively, e.g. Pesticides Trust, Organic Aid Scheme.

**Action:** FRCA, FWAG, CMS, HMWT, RSPB, WCCF, HCC.

**FA19.** Provide appropriate training in traditional countryside skills e.g. hedgerow management. At least 2 events annually.

**Action:** CMS, FWAG, GCT.