

FARMLAND: ARABLE FARMLAND, ARABLE FIELD MARGINS AND IMPROVED GRASSLAND

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CURRENT STATUS

Farmland is comprised of ploughed (arable) land for crops and grassland for grazing and silage. The very significant contribution of farmed land to current county biodiversity, and its enormous potential to provide more, can be seen from the following figures.

The total area of Nottinghamshire is approximately 220,000 ha, of which in June 2001, 152,000 ha were agricultural holdings, i.e. 69% of the land surface of the county. Of the agricultural holdings:

66.3% (100,780ha) was arable land;
15.5% (23,560ha) was grazing of five years old or older;
11.7% (17,780ha) was set-aside;
3.5% (5,320ha) was for other uses, including woodland.

These figures illustrate the dominance of arable land over grazing in terms of area. There has been a long-term decline in grassland cover within the county, but recently there has been a diversification in agricultural land use and crop types as farmers have sought new sources of income.

The expansion of arable farming at the expense of mixed farming and the consequent loss of grassland and hedgerows are addressed in other sections of the *Nottinghamshire Biodiversity Action Plan*. This chapter should be read in association with those covering such habitats as hedgerows and rivers and streams.

Arable farmland

Arable farmland provides vital habitat for many bird species, both for breeding and over-wintering. The grey partridge, quail and skylark are red-listed birds of conservation concern and are directly dependent on arable farmland for nest sites. Other species that are red- and amber-listed birds of conservation

concern depend on the seeds and invertebrates that arable areas and their associated margins provide. One example is lapwing, which is used as a target species in agri-environment schemes as it is a good indicator of habitat health. Arable fields also provide feeding and roosting opportunities for large numbers of birds such as geese, ducks, waders and gulls that visit the county in winter.

Few mammal species are wholly dependent on arable fields but instead may utilise arable field margins and associated edges. One example is the harvest mouse, a species that has declined as farming practices have changed, which has been recorded from field margins (often in association with hedgerows) and may exploit game cover crops. Habitat loss and fragmentation are a threat to this species. Hares have also declined nationally and have probably declined in Nottinghamshire due to changes in agricultural practices.

Plant species such as shepherd's needle, cornflower, hairy buttercup, red hemp nettle and spreading hedge parsley have been subject to catastrophic declines in the county as practices within arable farming have changed in the last century. This matches the national picture in which 8 of 10 species showing the largest relative decline are plants of arable fields. Arable fields can also support mature trees, often left isolated when the connecting hedgerows were removed. Many isolated trees are suffering from activities such as ploughing too close to the root zone and are thought to be declining in number.

Arable field margins

Arable field margins make an important contribution to the county's biodiversity. In the past, arable field margins have declined as hedgerows have been removed and agricultural improvements have allowed more intensive farming up to the field margin. Recently, this situation has changed as new options in agri-environment schemes have encouraged farmers to reinstate these habitats. Field margins provide nest sites for many hedgerow breeding birds, act as buffer zones around wetland habitats, and provide essential habitat for invertebrates. Over 2000 species of insect are associated with arable field margins. Many of these are common species with good powers of dispersal across the landscape such as butterflies and ladybirds.

Improved grassland

Improved grassland must not be confused with the other grassland habitats featured in the *Nottinghamshire Biodiversity Action Plan*. The habitat referred to here has been subject to modifications such as re-seeding and fertiliser applications such that the dominant species are rye grasses, clovers and other grass species typical of enriched soil conditions. These grasslands are not without biodiversity interest; they provide nesting opportunities for many of the same bird and animal species that are found in arable crops. Taller permanent grasslands can support large populations of small mammals which are vital food sources for birds of prey such as barn owl. Floral and invertebrate interest tends to be low in many grasslands if they are grazed

hard, but tussocks in lightly grazed grassland can be important over-wintering sites for invertebrates and provide essential cover for nesting birds and their young.

THREATS

The main factors affecting the county's arable field biodiversity are:

- Crop density and time of planting. Modern varieties of autumn sown crops are densely sown and mature early, limiting nesting opportunities for ground-nesting birds. The lack of open foraging areas in crops reduces food availability and the removal of winter stubbles with spilt seed and seed-bearing plants restricts feeding opportunities for small songbirds. Autumn sown crops can also grow too high and too early for hares.
- Reduction in mixed farming (arable/grassland). Many birds and insects need a variety of agricultural habitats in close proximity to each other as their use of habitat varies throughout the year.
- Lack of field margins adequate to support birds, mammals and insects. Narrow field margins do not provide enough cover for nests (both bird and mammal) and do not provide the intricate mosaic of micro-habitats that many insects require to complete their life cycle.
- Land drainage. Arable land is usually well drained with sub-surface drains and deep ditches. Such areas lose water rapidly which reduces the diversity of flora and invertebrates. This, in turn, affects the potential of the field to support breeding birds.
- Herbicide use prevents growth of annual seed-bearing and insect supporting plants, which also limits the food available for breeding birds.
- Insecticide use limits invertebrate number and species diversity which also has implications for food availability for birds.

The main factors affecting the county's permanent grasslands in addition to those listed above include:

- Early grass cutting. This is done primarily to produce silage although many grasslands cut for hay are now also cut earlier. This affects both invertebrate and bird interest, as plants are not allowed to flower, nesting opportunities are reduced and nests can be destroyed. Practices such as harrowing and rolling can also destroy nests and features such as grass tussocks that birds nest in.
- Over- and under-grazing. Over-grazing removes tussocks that nesting birds may use. High stocking rates can disturb birds on nests and trampling can destroy nests and eggs. Under-grazing can allow the

grassland to become too tall for ground-nesting birds that prefer long sight lines around the nest to observe predators at distance. Many insects require a mosaic of tall and short vegetation and insect diversity can therefore be low in hard-grazed pasture.

- Lack of infrastructure support for stock farming. The number of stock farmers in the county is small and declining. Most do not have the capacity in their businesses to greatly alter the way they farm. Acquiring stock can be difficult and the skills base for stock farming has declined significantly. Reduced access to local abattoirs and markets has also increased problems for local meat producers.
- Modern worming treatments. Modern treatments linger for many months in animal dung, killing virtually all insects that come into contact with it. Dung is an important habitat for many invertebrates which in turn are fed on by birds and bats.

CURRENT INITIATIVES - EXAMPLES

Arable fields and arable field margins

Most initiatives in the wider countryside have been carried out by private landowners and funded under the Countryside Stewardship Scheme (CSS). Nottinghamshire had 200 CSS agreements in place in November 2003. In 2005, the CSS was replaced by a new Environmental Stewardship scheme comprising of the Entry Level Scheme (ELS), Organic Entry Level Scheme (OELS) and the Higher Level Scheme (HLS). ELS has been designed to be accessible to farmers and simple to administrate, by adopting this approach it is hoped that ELS will achieve high uptake across large areas of arable land. It is proposed that the scheme will support many of the options previously available under CSS including:

Permanent grass margins around fields to provide refuges for insects and birds and help reduce pesticide and fertiliser pollution of watercourses;

Cultivated wildlife strips: annually cultivated field margins; they often work better on lighter soils where the risk of pernicious weed infestation is lower. The main objective with this option is to provide suitable conditions for rare arable plants to flower and set seed - these species benefit from regular disturbance. Seed production and invertebrate numbers can be high, these conditions will provide good feeding habitat for farmland birds.

Conservation headlands: headlands of a cereal crop that are sprayed selectively to allow populations of broadleaved weeds and their associated insects to develop. This provides feeding habitat for farmland birds, such as grey partridge, tree sparrow and yellowhammer.

Wild bird cover crops: this option will continue to be available under ELS to provide winter seed sources for birds, as well as roosting sites and refugia from predators. They should be placed next to hedgerows and woodlands to optimise their benefit.

Nectar and pollen flower mixtures to boost numbers of pollen and nectar feeding insects, including butterflies and Bumblebees.

Beetle banks are permanent grass mounds, generally about 2 metres wide that run the length of a field, across the middle, whilst still allowing the field to be farmed. They provide habitat for ground nesting birds, small mammals and insects.

The overwintered stubble option under ELS will provide an important winter food source for seed eating birds from spilt grain and the seeds of broad-leaved weeds. It also provides a beneficial habitat for brown hares.

- It is proposed that ELS will also include the following new options:

Skylark Plot: unsown areas of between 9 and 144m² in winter cereals to provide suitable nesting habitat for this species.

Awkward field corner management: under this option farmers take unproductive or awkward field corners out of production. These areas are often difficult to reach with machinery and are of lower productivity. However, the provision of a grassy corner will increase the wildlife interest of the field.

- It is proposed that ELS provides a fixed payment rate per hectare. For farmers that wish to go beyond the ELS scheme requirements they may be eligible for HLS, this scheme will give support for capital works; tree planting, fencing, pond creation etc., and for more demanding conservation land management, including arable options not available under ELS. HLS will continue to fund the reversion of arable land to grassland on suitable sites.
- Set-asides, both rotational and permanent, have resulted from Common Agricultural Policy rules to limit arable crop production within the EU. Up to 10% of the arable cropping area is set aside either on an annual or non-rotational basis. It is essentially a production control rather than a biodiversity-enhancing measure although biodiversity enhancement can be part of the practice, eg by placing rotational set-aside areas beside hedgerows to benefit seed-eating birds and allowing the creation of bare soil areas on ploughed plots within the set-aside which are allowed under derogations from the regulations. Permanent set-aside can be whole field or in strategically placed areas within fields, wild flowers can be added to grass mixes and the late-cutting of the grassland will benefit ground-nesting birds.

Improved grassland

- ELS and HLS will provide management options that are suitable for improving the biodiversity of improved grassland. The ELS scheme

proposals include two management options that require low or very low fertiliser inputs with the general aim of improving overall biodiversity. HLS includes options tailored to restore or maintain habitat for the benefit of specific groups of species.

- Fenced off grassland strips that are mown or grazed infrequently will create tussocky grassland which will provide nest sites, seeds and cover for invertebrates.
- The Native Seed Supplement applies for both existing improved grassland and arable reversion to grassland. Payments are made for the use of locally-sourced seeds to improve the sward for biodiversity.

TARGETS

Again, due to the encompassing nature of this habitat, defining the baseline resource was difficult. Data is available on the length and condition of field margins, therefore it was suggested that this be created as a separate HAP.

Although a local habitat type, this habitat falls under the UK Broad Habitat classification of Arable and Horticulture. It is comprised of ploughed (arable) land for crops and grassland for grazing and silage. Improved grassland must not be confused with the other grassland habitats featured in the Notts LBAP. The habitat referred to here has been subject to modifications such as re-seeding and fertiliser applications such that the dominant species are rye grasses, clovers and other grass species typical of enriched soil conditions. The UK Priority Habitat type of Cereal Field Margins has similarities to elements of this habitat.

Target Type	Target Text	Units	2005 Baseline	2010 Target	2015 Target
Maintain Extent	Maintain the extent of all existing farmland (arable field margins, arable and improved grassland).	Ha	No data	No data	No data
Achieve Condition	Maintain and improve by management existing farmland (arable field margins, arable and improved grassland).	Ha	No data	No data	No data
Restoration	Improve the condition of relict habitat so that it qualifies as farmland (arable field margins, arable and improved grassland).	Ha		No data	No data
Expansion	Encourage the re-establishment and increase the area of farmland (arable field margins, arable and	Ha			

	improved grassland).				
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PROPOSED ACTION

Policy and legislation

1. Ensure the incorporation of relevant (inter-)national law, policies and guidance into all plans and policies relating to the protection, enhancement and management of arable farmland, arable field margins and improved grassland habitat.

ACTION: Government Agencies, Local Authorities, NGO's.

2. Through planning control or other land use consultation processes, allow no further loss of areas of arable farmland, arable field margins and improved grassland habitat and seek opportunities to enhance existing areas and create new areas through approved development.

ACTION: Government Agencies, Local Authorities, NGO's.

3. Ensure agri-environment, forestry and other funding schemes include appropriate management options and design measures to suit local nature conservation needs.

ACTION: Government Agencies.

Site safeguard and management

4. Review the extent of SSSI coverage of farmland habitat and consider notifying further sites as necessary.

ACTION: Government Agencies.

5. Designate SINCs and declare Local Nature Reserves on appropriate areas of habitat or instigate other appropriate measures for their protection.

ACTION: Government Agencies, Local Authorities, NGO's.

6. Promote the uptake of positive management with owners of SSSIs, LNRs, SINCs and any other areas of arable farmland, arable field margins and improved grassland habitat.

ACTION: Government Agencies, Local Authorities, NGO's.

7. Carry out appropriate habitat management on sites controlled by BAP partners.

ACTION: Government Agencies, Local Authorities, NGO's.

8. Ensure sites containing ditch habitat have appropriate management plans that are working towards improving site management and condition

ACTION: Government Agencies, Local Authorities, NGO's.

9. Acquire land to ensure good habitat management or to create habitat.

ACTION: NGO's.

Advisory

10. Provide formal or informal training in management techniques for arable farmland, arable field margins and improved grassland habitat to land managers, site wardens, volunteers, etc.

ACTION: Government Agencies, Local Authorities, NGO's.

11. Establish demonstration sites or projects to demonstrate/publicise good habitat management techniques.

ACTION: Government Agencies, Local Authorities, NGO's.

Future research and monitoring

12. Establish and maintain a monitoring programme (a site register) to determine progress towards county HAP targets.

ACTION: Government Agencies, Local Authorities, NGO's.

13. Ensure that areas of arable farmland, arable field margins and improved grassland habitat are periodically resurveyed to establish extent and condition. Update resulting habitat inventory every 5 years and revise targets and HAPs if necessary.

ACTION: Government Agencies, Local Authorities, NGO's.

Communications and publicity

14. Improve public awareness and appreciation of arable farmland, arable field margins and improved grassland habitat by providing appropriate interpretation, education and access (where appropriate).

ACTION: Government Agencies, Local Authorities, NGO's.

15. Improve awareness of the value of, and appropriate management techniques for arable farmland, arable field margins and improved grassland habitat among site owners and occupiers.

ACTION: Government Agencies, Local Authorities, NGO's.

WHAT YOU CAN DO

- Join Nottinghamshire Birdwatchers, RSPB or British Trust for Ornithology (BTO) and survey farmland birds near your house in schemes organised by these organisations.
- Find out where access agreements on farmland are near where you online at: www.magic.gov.uk

SPECIES LIST

The following are examples of species of conservation concern (Appendix A) which are likely to benefit from this action plan:

- Noctule bat
- Brown hare
- Harvest mouse
- Barn owl
- Corn bunting
- Grey partridge
- Lapwing
- Skylark
- Tree sparrow
- Bumble bees
- Butterflies

References

- 1 Region in figures: East Midlands, Office for National Statistics, Winter 2002.
- 2 The Population Status of Birds in the UK. Birds of conservation concern 2002-2007 RSPB 2003
- 3 New Atlas of the British and Irish Flora, Preston, CD, Pearman, DA, Dines, TD, OUP, 2002
- 4 The species counted as part of the Defra RDS farmland bird index are:

Kestrel
Turtle dove
Linnet
Barn owl
Grey partridge
Skylark
Tree sparrow
Reed bunting
Lapwing
Yellow wagtail
Yellowhammer
Corn bunting
Stock dove
Whitethroat

Goldfinch
Rook
Woodpigeon
Jackdaw
Starling
Greenfinch