Factsheet 23/13 Project FV 385

Field Vegetables

Management of farmland birds on vegetable farms

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In HDC project FV 385, the influence of vegetable production on farmland bird populations was assessed. This factsheet aims to assist growers in benefiting farmland bird populations further by:

- Identifying the bird species that are likely to occur on or near their farms
- Identifying the practices that are currently benefiting farmland bird species
- Suggesting management enhancements to benefit these populations further
- Providing links to agri-environment funding sources that can provide financial assistance for management
- Providing links to assurance scheme requirements, eg LEAF, Field to Fork

Introduction

HDC Project FV 385 measured the relationships between vegetable cropping and populations of 18 key farmland bird species. This was done by comparing data from the Breeding Bird Survey (BBS), carried out by the British Trust for Ornithology (BTO), the Joint Nature Conservation Committee (JNCC) and the Royal Society for the Protection of Birds (RSPB), with the distribution of HDC levy-paying farms.

In FV 385, some evidence was provided to suggest a positive correlation between horticultural cropping and numbers of several farmland bird species that rely on open field habitats to complete all or part of their life cycles. Taking information on the known benefits to birds of a number of UK-grown field vegetables, this factsheet provides growers with a guide to identifying 12 key 'open field' bird species on their land, and how to adopt simple farm management measures that will further improve the farmed habitat for these species while not negatively affecting commercial performance.

Bird species: status and requirements

The following key 'open field' species have all (with the possible exception of kestrel) been shown to be statistically more common in areas where field vegetables are grown.

Corn bunting

The corn bunting is a resident species that is widely distributed across the UK, although scarce in the south-west, north-east and all of Wales. It is probably the farmland bird that most depends on agriculture, yet over the last 25 years it has declined in numbers by 76%, placing it on the Red List of Birds of Conservation Concern.

The main reason for this decline is a reduction in the availability of food (seeds and insects). Corn buntings also nest on the ground in cereal fields, grass field margins or unimproved

1. **Corn bunting numbers are declining due to a reduced availability of food**

grassland. Egg-laying occurs late in the season (June and July) with many birds having flightless chicks in August, which means that nests are susceptible to being destroyed during harvesting or cutting.

Corn buntings require a safe nest site, invertebrate food for chicks and winter seed. These can be achieved by:

- Establishing wild bird seed plots and enhancing these with supplementary feeding where practical
- Creating grass margins around arable fields to create food and nesting habitat
- Using beetle banks in fields greater than 20 ha to provide nest sites and cover for overwintering invertebrates

Grey partridge

Grey partridges are widely distributed across the UK, although BBS data shows an easterly bias to their distribution that reflects their preferred habitat of arable farmland.

2. The grey partridge

The Red Listed grey partridge is a resident species and has declined in numbers by 79% over the last 25 years.

Grey partridges nest on the ground and place their shallow nest-scrapes in dense vegetation such as hedge bottoms, grass margins or in the crops themselves.

To survive, grey partridge chicks require insect food such as sawfly larvae, caterpillars, beetles, crickets, aphids and ants, especially during the first 14 days after hatching. To survive during the winter, grey partridges require a mix of green shoots and seeds as food.

The main cause of the decline in grey partridge numbers is a decrease in the availability of insect food for chicks. Secondary factors include a reduction of female survival rate during incubation, lower nest success and reduction of winter survival related to increased predation rates.

Kestrel

Kestrels had recovered from the effects of the use of organochlorine pesticides by the mid-1970s. However, since 1984 their numbers have declined again by 15% and they have been Amber Listed. Kestrels are an enigmatic bird most often seen on farms hovering above tussocky grassland in search of prey.

Kestrels are a resident species, widely distributed across the UK. They feed mainly on small mammals and insects. To help safeguard this species, habitat for small mammals needs to be created. This can be achieved by:

- Creating grass margins around cultivated land
- Fencing out awkward field corners to create areas of tussocky/rank grassland
- Leaving an uncut margin on grassland

3. Kestrels can be found widely distributed throughout the UK

Erecting nest boxes can dramatically improve kestrels' fortunes by providing them with a safe place to nest. Boxes, which need to be large with an open front, can be placed on the outside of buildings or on a mature tree at least five metres from the ground, as long as there is a clear flight-path for exit and entry.

Lapwing

Over the last 25 years there has been a decline of more than 50% in the UK population of lapwings, caused primarily by a loss of mixed farming and spring cropping. As such, the lapwing has now been added to the Red List of Birds of Conservation Concern.

Lapwings are a resident breeder and are widely distributed throughout the UK, although there is some bias towards the north-west, east and north Pennines where habitat for breeding lapwings can still be found. During the winter, the UK breeding population is joined by winter visitors from continental Europe.

For nesting, lapwings require bare ground or short vegetation between mid-March and June, and soil and ground invertebrates throughout the year.

4. Lapwings require bare ground or short vegetation between mid-March and June for nesting

To help lapwings on cultivated land:

- Try to avoid destroying lapwing nests after mid-March during cultivation, hoeing or rolling operations – if a series of operations is necessary try to undertake these within a week so that failed pairs can re-nest safely
- Plan rotations in mixed farming areas so that some spring-sowing is located next to grazed pasture every year

On grassland:

- Consider whether you have any unimproved pastures where a short, tussocky sward could be maintained
- Create or maintain damp meadows or pastures
- Growing spring-sown arable fodder crops will benefit lapwings in areas of improved grassland

Linnet

The linnet is a resident species, although part of the population is migratory and can undergo short distance migration from breeding to wintering areas. Over the last 25 years there has been a 34% decline in their population numbers and as such they are on the Red List.

5. Linnets require access to seed food from wild bird seed, winter stubbles, root crops and break crops

Linnets are widely distributed across the UK and are more abundant where they can find access to seed food such as in wild bird seed crops, winter stubbles, root crops and break crops. They are one of only two finch species in the UK that feed their young on regurgitated seeds instead of insects (the other being its near-cousin the twite). For farmland nest sites, linnets prefer thick, thorny hedgerows, brambles and scrub.

Reed bunting

The reed bunting is a resident species on the Amber List that, according to BBS results, has shown a significant population increase in recent years.

6. Reed buntings are widely distributed in the UK

Reed buntings are widely distributed throughout the UK and are traditionally found in wetland habitats such as ditches, ponds, reed beds and watercourses. However, in recent years they have expanded into drier habitats, especially farmland. In the 1970s, the population of reed buntings declined rapidly and they were placed on the Red List, but due to the aforementioned BBS results they were downgraded to the Amber List in 2009. According to the BTO, farmland density populations are four times higher in oilseed rape than in cereals, with this crop being crucial in reducing the reed buntings' dependency on wetland habitats.

Skylark

The skylark is an iconic farmland bird found on all types of farmland, with densities highest on lowland arable and mixed farming systems. It is a resident species and widely distributed throughout the UK, although with a slight bias towards the predominantly arable areas of the east.

7. Skylarks prefer to nest on ground in vegetation that is 20-50cm high

Skylark numbers declined rapidly from the 1970s to the 1980s, which caused this bird to be placed on the Red List.

Skylarks prefer to nest on the ground in vegetation that is 20–50cm high. The vegetation needs to be open to give the birds easy access to the ground, particularly important given that they need to make two or three nesting attempts to keep the population stable. A number of the typical features of vegetable growing are likely to favour skylarks such as spring sowing, more complex crop structure and access to bare ground.

As is the case for a number of farmland birds, skylark chicks are fed exclusively on invertebrates, with adults feeding on weed seeds and shoots during the winter.

Tree sparrow

The tree sparrow is a resident breeder and is Red-Listed as a result of a population decline of 81% between 1984 and 2009. However, since 1994 BBS data has shown a significant increase in numbers of this species thanks to hard work by farmers and conservationists who are working together to provide the right conditions for its survival.

8. The tree sparrow

Tree sparrows, as do most farmland birds, require a safe place to nest, insect food for chicks and winter weed seed food for adults. They generally require a cavity in a tree or a nest box in which to place their nest, although they will sometimes nest in buildings or dense vegetation. Tree sparrows can be helped by:

- Providing suitable nest sites by managing old pollard trees, retaining any old bushes, trees or farm buildings or putting up nest boxes to supplement the number of nest sites
- Using low-input crop management, field margins or wetland features to create insect-rich habitats
- Using overwintered stubble or wild bird seed mixtures to provide seed throughout the winter and enhancing these with supplementary feeding where practical

Turtle dove

This summer visitor, which is largely confined to the south and east of the UK, is in real trouble. From 1984–2009 its numbers have declined by 86%, placing it on the Red List. There are several reasons for the decline, including the intensification of agriculture in the turtle doves' wintering grounds in central and southern Africa, hunting pressure in southern Europe when large numbers are shot on migration, and a reduction in the number of breeding attempts on UK farmland due to reduced food availability through herbicide use. Turtle doves benefit from the provision and sympathetic management of nesting habitat.

9. Turtle doves are usually found in the south and east of the UK

To benefit turtle doves, try to:

- Ensure that there is some seed food available throughout the spring and summer
- Maintain tall, thick hedgerows and areas of scrub on the farm
- Allow the shrub layer to develop along woodland edges

Whitethroat

The whitethroat is a widespread summer migrant in the UK that occupies scrubby farmland habitat.

It winters just south of the Sahara, in the Sahel region of West Africa, and is susceptible to drought conditions in this region. Indeed, a drought in 1968 caused a decline of 90% of the whitethroat population in the UK; a crash from which numbers still have not fully recovered. Due to this historical decline, the whitethroat is Amber Listed, but between 1984 and 2009 there has been a 117% increase in the UK population.

10. Whitethroats are summer migrants to the UK

Yellow wagtail

The population of this summer visitor from South Africa declined by 75% between 1984 and 2009, leading to it being placed on the Red List of Birds of Conservation Concern.

Yellow wagtails are traditionally a wet grassland bird, but more recently they have adapted to arable land and now have an easterly bias to their distribution in the UK.

11. Yellow wagtails prefer spring-sown crops to grassland

The decline of the yellow wagtail in pastoral habitats in the west of the UK has been mainly attributed to a loss of wet grassland habitats and insects associated with cattle. BTO data from the east of England suggests a strong avoidance of grassland and a preference for spring-sown crops – this is perhaps why healthier populations of yellow wagtails are associated with vegetable growing. Nevertheless, these birds are still in real trouble.

Yellow wagtails can be helped on cultivated land by:

- Having a wide crop diversity
- Establishing skylark plots
- Creating a network of insect-rich habitats

On grassland by:

- Maintaining water levels and extensive grazing on wet grassland to provide nesting cover
- Extensive summer grazing along watercourses
- Delaying cutting of hay/silage crops until mid-July

Yellowhammer

This Red Listed species is distributed widely across the UK, but has a slight easterly bias due to a preference for arable farmland. Between 1984 and 2009 it declined in number by 54%.

Like a number of seed-eating farmland birds, yellowhammers require insect food for their chicks in the summer and seeds/ cereal grain in the winter. Nests are placed in dense vegetation such as hedgerows and scrub.

It is thought that the population decline can be mainly attributed to, for example, loss of winter stubbles and a reduction in weed densities, which in turn has caused a reduction in the availability of winter seed. Research carried out by the BTO showed that yellowhammer declines were less steep in areas where the species received supplementary food, especially in late winter when the demand for seed food is greatest. This has resulted in the inclusion of supplementary feeding in Entry Level Stewardship.

12. Yellowhammers require supplementary food in late winter.

Case study: J.E. Piccaver & Co, Gedney Marsh, Lincolnshire.

The farm was traditionally run with beef cattle, cereals, sugar beet and potatoes being the main enterprises. Then, with expansion of the farm came a split, with the conventional arable cropping let, leaving the business concentrating on 440ha of high value salads grown both on the home farm and rented land locally. In November 2010 the farm was awarded the coveted FWAG Silver Lapwing Award for the conservation work carried out alongside the commercial salad enterprise.

Continuing bird surveys have highlighted the presence of a number of the key species in this study. Management options to enhance populations of these species include:

- The farm is covered by ELS and HLS schemes. This includes an extensive reed-bed re-creation area.
- Wild bird seed mixes cover around 4ha. These comprise kale, quinoa and spring cereals. These mixes are enhanced bi-annually by including additional components such as fodder radish & Gold of Pleasure.
- Pollen & nectar mixes are dispersed across the farm to provide foraging areas for bees, insects and birds.
- The provision of around 25ha of over-wintered stubbles works in well with salad & veg cropping & also provides vital winter food for skylark, yellowhammer and other species.
- All non IDB ditches are managed on rotation & not in the bird nesting season.
- Hedges & ditches not managed under ELS/HLS are not cut until the end of August, allowing yellowhammers the chance to raise an extra brood.
- Saplings are allowed to grow up in hedgerows to provide song posts. A number of hedgerows have also been laid to benefit linnet, yellowhammer and other species.
- Hedgerow planting has created over 8 miles of new habitat.
- Farm Woodland Grant Schemes covering 4ha are now well established.
- ‘Dead hedging’ has been created along woodland edges with brash produced by woodland management. This has created habitat for a number of species, as well as warming the plantations.
- Small areas of scrub are being allowed to develop in some margins. This will create additional nesting opportunities for yellowhammer & linnet.
- The business has had a Whole Farm Conservation Plan produced under its obligations to LEAF Marque. This has identified many of the suggestions listed above.

Grey partridge numbers have increased by around 40% since 1998. In the same time period tree sparrow & yellowhammer numbers have also risen by 15-20%; this due almost entirely to the above mentioned conservation work undertaken on the farm.

16. Sensitive margin management and provision of nest boxes is benefiting kestrel and barn owls at J.E. Piccaver & Co

Vegetable types: attributes to bird species

Whilst there has been very little scientific work carried out to assess the value of individual vegetable types to key farmland bird species, the BTO research outlined in HDC project FV 385 provides some evidence that the vegetable crop types outlined below do provide significant benefits to key open field bird species. The following text is based on anecdotal experiences of the authors and a number of growers.

In general, a high proportion of spring and summer-sown vegetable crops, more complex rotations and the generally open aspect of vegetable cropping offer more opportunities to farmland birds than combinable crops (Chamberlain, Vickery & Gough, 2000). This section lists some of the more crop specific benefits to bird species which might occur.

Brassicas

13. Spring sown Brassicas may offer nesting opportunities for birds such as skylark and lapwing

- Overwintered stubbles preceding spring/summer Brassicas
- Spring-sown Brassicas favour nesting skylark/lapwing/yellow wagtail (Figure 5)
- Open crop aspects/wide plantings
- Greater populations of seed-producing weeds such as fat hen, charlock and chickweed, in some cases

Carrots

- Straw mulches provide foraging opportunities for linnet, yellowhammer and corn bunting
- Bed formation gives nesting opportunities for yellow wagtail
- May introduce spring cropping to areas in which it does not usually occur
- Crop residues may offer foraging opportunities

14. Raised beds can offer potential nesting habitat for yellow wagtail

Leeks & onions

- Overwintered stubbles preceding leeks and onions
- Spring-sown leeks and onions favour nesting skylark/lapwing/yellow wagtail
- Year round cultivations and subsequent bare soil
- Some crops of onions (and other field vegetables) require no insecticide applications, providing obvious benefits to insectivorous bird species

Peas & beans

- Overwintered stubble preceding peas and spring beans
- Often spring-sown, which favours nesting skylark/lapwing
- Crop residues may offer foraging opportunities

Salads, herbs & speciality veg

- Overwintered stubble preceding salads and herbs
- Spring-sown, which favours nesting skylark/lapwing
- May introduce spring cropping to areas in which it does not usually occur

15. This lettuce crop offers a sterile environment for invertebrates. Nectar mixes elsewhere on the farm can help to mitigate this

Case study: J. & V. Casey and Son Ltd, Coningsby, Lincolnshire.

Originally the farming was dairy, beef and arable, but now almost the whole farm is arable. Sugar beet, cereals and some potatoes are grown but the main focus of the farm is growing leeks. In 1991 around 6 acres were grown; this has escalated and now some 160 acres are grown annually.

A search on Natural England's 'Nature on the Map' website at http://www.natureonthemap.naturalengland.org.uk/identify.aspx highlights the local presence of a number of the key species in this study, namely corn bunting, lapwing, turtle dove, grey partridge & yellow wagtail. As part of its commitment to the Campaign for the Farmed Environment, the business entered ELS in 2011. ELS management options include:

- 3.1ha of grassland in very low input management. This field includes an extensively managed pond & is therefore valuable to reed bunting & yellow wagtail.
- 7.5km of hedge & ditch management, providing habitat for reed bunting, yellowhammer & tree sparrow.
- 22ha of over-wintered stubbles, benefiting corn bunting, grey partridge & skylark.
- 4ha of field corner management, sited to maximise opportunities for grey partridge & linnet.
- 14.5km of 4 & 6m margins which help to simplify spraying by lessening the need for LERAPs assessments. In addition, these provide nesting habitat for corn bunting and grey partridge and hunting areas for kestrels.

In addition the farm supports:

- 5 acres of woodland.
- The maintenance of 1 Ha of low lying wet land.

Each managed outside of ELS requirements.

Guide to benefiting bird populations on your farm

Agri-environment funding

HDC project FV 385 provided some evidence to suggest a positive correlation between horticultural cropping and a number of farmland bird species that rely on open field habitats to complete all or part of their life cycles, however, it is possible to provide further habitat enhancement through the provision of Entry Level Stewardship (ELS) options. Furthermore, ELS can provide financial assistance in the management of habitats to benefit farmland bird species.

ELS is an agri-environment scheme that provides funding to farmers and other land managers in England in return for delivering environmental management on their land. ELS is one of three elements of Environmental Stewardship (ES); the other two being Organic Entry Level Stewardship (OELS) and Higher Level Stewardship (HLS). At the time of writing (October 2013), ELS is closed to new applicants, although existing scheme holders can amend their agreements to include suggested measures.

The Campaign for the Farmed Environment is encouraging farmers and land managers across England to protect and enance the environmental value of farmland, through environmental measures that sit alongside productive agriculture. The CFE includes a number of Voluntary Measures similar to ELS options. Adoption of these measures will help populations of farmland birds and helps to demonstrate how the industry takes responsibility for addressing environmental issues alongside profitable farming.

Farmland birds have three basic requirements to maintain or increase their populations, sometimes referred to as the 'Big 3'. These are:

- Safe nesting habitat
- Summer insect food for chicks
- Winter food

To make best use of ELS options on farm to enhance the basic requirements of farmland birds, it is necessary to look at which of the basic requirements are being met by current practice. Once this has been done it is then possible to 'plug the gap' by utilising an ELS option that will provide the missing basic requirement(s).

ELS options

ELS options that will help to provide the three basic requirements of farmland bird species can be found in the 4th Edition Entry Level Stewardship Handbook, or online at: http://www.naturalengland.gov.uk/ourwork/farming/funding/es/els/default.aspx

Environmental assurance schemes

Many growers are now accessing premiums on commodities by supplying outlets requiring the LEAF Marque, Tesco Nurture or M&S Field to Fork. These schemes often have challenging environmental targets but do offer opportunities to focus management for the benefit of farmland birds. JE Piccaver, for example, has specific management options in place for yellowhammer and grey partridge, as well as barn owl and marsh harrier.

To achieve LEAF Marque status, a Whole Farm Conservation Plan (WFCP) is required. A WFCP should provide a structure for management for farmland birds (and other species and habitats), without affecting the commercial performance of the farm. Many of the Integrated Farm Management practices advocated by LEAF are potentially practical for field vegetable growers to adopt. For example:

- Use insecticide seed dressings where possible rather than field sprays
- Use a threshold, rather than prophylactic, approach in peas for pea aphid, leeks for thrips, and Brassicas for aphid
- Use targeted or systemic chemicals where possible; ask your agronomist for the least damaging approach

Many of the requirements for these schemes overlap. For further information, go to: www.leafuk.org

Case study: J Appleton, Ormskirk, Lancashire.

The farm grows 20 ha of oil seed rape, 16 ha of carrots, 57 ha of potatoes, 24 ha of fodder beet, 24 ha of sugar beet and the remaining 182 ha is down to grass and cereals including winter wheat, spring wheat and winter barley. There is a local presence of a number of the key species namely: corn bunting, lapwing, grey partridge and tree sparrow.

The farm has a long history of supporting declining farmland bird populations through the provision of suitable habitat, firstly as part of a Countryside Stewardship Scheme agreement that commenced in 2002 and more recently by entering into ELS in 2007 with a suite of arable options and in 2012 under a combined ELS / HLS agreement. ELS / HLS management options include;

- 17 km of 6m margins which help to simplify spraying by lessening the need for LERAPs assessments. In addition, these provide nesting habitat for corn bunting and grey partridge and hunting areas for kestrels.
- 1.73 ha of nectar flower mixture that will provide an important nectar & pollen source for insects, which will in turn provide summer chick food for a wide range of farmland bird species including grey partridge, skylark, tree sparrow, corn bunting, reed bunting, whitethroat and yellowhammer.
- 5.99 ha of enhanced wild bird seed mix plots providing important seed food over winter for grey partridge, tree sparrow, corn bunting, yellowhammer, linnet and reed bunting. These areas will also provide nest sites for corn buntings.
- 1.25 km of beetle bank providing nest sites for grey partridges and skylarks, as well as providing habitat for over-wintering invertebrates.
- 50 skylark plots, providing suitable habitat in winter cereal crops throughout the breeding season.
- 4.5 ha of un-cropped, cultivated areas for ground nesting birds. This provides breeding sites for ground nesting farmland birds such as lapwing. It will also provide foraging habitats for species such as grey partridge, skylark, linnet, yellowhammer and corn bunting.
- 55 nest boxes for tree sparrows, providing a safe place to nest.

Conclusions

If one or more of the basic requirements of the farmland birds listed in this project are provided for by field vegetable cropping, growers can take some simple steps to benefit these species further.

Despite some limitations (notably the fact that field vegetables are often grown on high grade soils and on short term lets), the provision of safe nesting habitat, summer insect food for chicks and a winter food supply can be achieved on many vegetable farms.

Agri-environment funding, notably Environmental Stewardship, is providing financial support to growers to provide these basic requirements. Environmental assurance schemes such as LEAF Marque are often required by growers to access premiums on commodities. Requirements for these schemes often overlap with many of the suggestions in this report.

There is a comparative lack of science on the relationship between field vegetable cropping and populations of key farmland bird species. Further research is required to evaluate the true value of field vegetables to farmland birds. From this, more informed choices on land management practices could be made.

References

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