

Wintering birds on Organic Farms

Title

Wintering birds on Organic Farms 2000/01 and 2002/03

Description and Summary of Results

There is plenty of evidence to show that recent large-scale declines in farmland biodiversity in Europe are linked to profound changes in agricultural management. As there is generally more wildlife on organic farms, organic farming has been proposed as a potential tool by which biodiversity declines may be reversed.

Organic farms tend to have greater range of habitats due to differences in cropping patterns and better and often more extensive non-crop habitats. It therefore remains unclear whether organic farms support more wildlife because of management of inputs to the system (eg no pesticides or fertilizers), to a wider range of other habitats or both.

Bird and habitat data were collected on 48 paired organic and conventional farms over two winters to determine the extent to which habitat differences could explain overall differences in farmland bird abundance. Density was significantly higher on organic farms for six out of 16 farmland indicator species examined (Stock Dove, Starling, Jackdaw and Linnet in 2001, and for Woodpigeon and Greenfinch in 2003) and the majority of the others had higher densities on organic although not significantly so. No species had significantly higher density on conventional farms. Total abundance of all species combined was higher on organic farms in both years.

Organic farming as currently practised may not therefore provide significant benefits to those bird species that are limited by winter food resources, in particular, several declining granivores.

Methods of Data Capture

Organic sites were selected from a certified list and paired with a conventional farm on the basis of proximity and crop type. Bird surveys took place on a target field and up to a maximum of five adjacent fields. During each survey visit, the observer walked the perimeter and once across the centre of each field, and the locations of all birds seen or heard were recorded when first detected.

Surveys were undertaken once per month to each site between October and February inclusive and were carried out over two winters. Forty-three farm pairs were surveyed in 2000/01 and 34 pairs in 2002/03 with 29 covered in both years. Habitat attributes of the fields and non-crop habitats were recorded.

Analysis focussed on the 16 Farmland Bird Indicator species that occur in the UK in winter: Kestrel *Falco tinnunculus*, Grey Partridge *Perdix perdix*, Lapwing *Vanellus vanellus*, Woodpigeon *Columba palumbus*, Stock Dove *C. oenas*, Skylark, Starling *Sturnus vulgaris*, Rook *Corvus frugilegus*, Jackdaw *C. monedula*, Tree Sparrow *Passer montanus*, Greenfinch *Carduelis chloris*, Goldfinch *C. carduelis*, Linnet *C. cannabina*, Yellowhammer *Emberiza citrinella*, Reed Bunting *E. schoeniclus* and Corn Bunting *Miliaria calandra*.

Purpose of Data Capture

The aim was to determine whether or not organic farms held more birds than conventional farms during the winter. (This followed an earlier project investigating the breeding season, and which was part of a wider project looking at other taxa.)

Geographic Coverage

In practice all the farms covered were in England. The list of organic farms surveyed was from a certified list and the conventional farms used for comparison were nearby.

Temporal Coverage

Fieldwork was carried out over two winters 2000/01 and 2002/03. (The 2001/02 winter was not used because of the access restrictions imposed following the outbreak of Foot and Mouth Disease.) Bird counts were carried out monthly from October to February although not every farm was visited in every month.

Other Interested parties

The survey was part of a larger project involving the Centre for Ecology and Hydrology (CEH), the Royal Agricultural College and WildCru (Oxford University Wildlife Conservation Unit) as well as the BTO. The Soil Association and Organic Farmers and Growers provided the necessary contacts to farmers. Funding came from Defra.

Organiser(s)

Dan Chamberlain

Current Staff Contact

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Publications

The main report of the survey has been published as:

Chamberlain, D.E., Joys, A., Johnson, P.J., Norton, L., Feber, R.E. & Fuller, R.J. 2009. Does organic farming benefit farmland birds in winter? *Biology Letters* 6: 82-84.

A briefer report but covering a wider range of taxa is:

Fuller, R.J., Norton, L.R., Feber, R.E., Johnson, P.J., Chamberlain, D.E., Joys, A.C., Mathews, F., Stuart, R.C., Townsend, M.C., Manley, W.J., Wolfe, M.S., Macdonald, D.W. & Firbank, L.G. 2005. Benefits of organic farming to biodiversity vary among taxa. *Biology Letters* 1: 431-434.

There was also a fuller report made to Defra but this has not been published.

The survey was noticed in *BTO News* number 216/7 (combined issue).

Available from NBN?

No.

Computer data -- location

BTO Windows Network central area.

Computer data -- outline contents

A bird data and a habitat data file (Excel spreadsheets) for each winter. A list of habitat codes and the contents of Dan Chamberlain's directory as he left it.

Computer data -- description of contents

Bird data file contains:

Site number; ftyp (farm type) C or O; patch number; visit number (1,2,3); species (2-letter code); count; id (?)

Habitat data file contains:

Site number; ftyp; patch; hab2_1 (no. of hab3 columns in most cases 1-5); hab1keep (the main habitat type P S R J A M N Q G as per listing in file); hab3A to hab3E up to 5 columns containing a number as per habitat file.

The habitat code file

A zipped file containing the contents of Dan Chamberlain's directory for the project containing data files as input (the above are ready for analysis), reports, etc.

Information held in BTO Archives

4 Transfer Cases stored in conjunction with the earlier Organic project.

Notes on Access and Use**Other information needed****Notes on Survey Design**

The selection procedure for study sites focused initially on the organic farms. Criteria for selecting organic farms were: 1) they should be at least 30ha; 2) highly fragmented holdings where organic fields were interspersed with non-organic fields were avoided; 3) agro-forestry and predominantly horticultural and grass enterprises were excluded. The outcome was that virtually all suitable organic farms in England were used.

A study design of paired organic and conventional farms was adopted to control for large-scale geographic variations, and also enabled control of observer differences as the same observer carried out surveys on both farms in a pair. Critically, the organic farms were paired with conventional farms on the basis of geography only and not on any attributes of either system. Initially, the match was tried by Land Classes, involving finding the Land Class

of the 1-km square containing the organic farm and then identifying all potentially matching 1-km squares within 10km. This approach successfully resulted in the samples being matched mainly by location (80% of pairs were within 10km), but less so by Land Class (63% of pair members were the same). Approximately 25% of conventional farmers approached agreed to take part in the study. None of the matched conventional farms was adjacent to the organic farm, and none was included on the basis of recommendation by the organic farmer.

The pairing procedure was centred on a 'target' cereal field, which had to be the same crop type (winter wheat or spring cereal) for both farms in a pair -- the target field approach was to enable precise control of crop type for other taxa considered in the project.

Specific Issues for Analysis