British Trust for Ornithology

BTO Research Report No. 196

An Analysis and Interpretation of the Surveys of Breeding and Winter Birds at Titley Court Farm, Herefordshire in 1997/98

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A report by the British Trust for Ornithology under contract to ADAS: Balancing Environment and Agriculture in the Marches

August 1998

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EXECUTIVE SUMMARY

Most farmland birds have undergone severe population declines over the last 25 years and this has been linked to agricultural intensification.

The BEAM project at Titley Court Farm offers an excellent opportunity to monitor the benefits of integrated crop management and agri-environmental schemes for the environment.

A bird monitoring programme, involving bird surveys during the breeding season and winter, was set up by the British Trust for Ornithology and Herefordshire Ornithological Society.

Seventy-one species of bird were recorded at Titley Court Farm during the 1997 breeding season. Forty-nine of these species held 551 breeding territories. The distribution and number of birds recorded on different parts of the farm was governed by habitat and crop type.

Forty-six species were recorded at Titley Court Farm during winter 1997/98. In common with the breeding season, the number and distribution of birds was governed by habitat and crop type.

A number of recommendations for further management are included within the report.

It is recommended that the surveys are repeated annually for the duration of the BEAM project and for a number of years into the future. However, a compromise of surveying every three years will allow monitoring of any future environmental benefits at Titley Court Farm.

1. INTRODUCTION

1.1 Background

Titley Court Farm is an agricultural estate of 300 hectares located in north-west Herefordshire. The farm operates a mixed farming system growing winter wheat and potatoes in the arable areas (152 ha) and supporting sheep and cattle on the grass leys (24 ha) and permanent pasture (108 ha). The farm has a diversity of wildlife habitats, including woodland, unimproved grassland, hedgerows, ponds and a mile of river. Further details on Titley Court Farm, its wildlife habitats and their management is given by Williams (1996). The landscape surrounding Titley Court is of rolling hills, farmland interspersed with woodland, hedgerows and rivers.

In 1996, a project entitled Balancing Environment and Agriculture in the Marches (BEAM), funded by the European Union was established. The aim of BEAM is to show how agriculture, through careful planning and management, can be integrated with the environment to benefit wildlife. At about the same time Titley Court Farm was entered into Countryside Stewardship under the guidance of Mike Williams (Herefordshire FWAG). To investigate the impact of the various changes to farm management on the local environment, a number of monitoring projects were established. A bird monitoring programme, led by the British Trust for Ornithology (BTO) was established in 1997.

1.2 Birds and Farmland

Bird populations, particularly those on farmland, are sensitive to changes in management practices. Most species of farmland birds have undergone severe population declines and range contractions over the last 25 years (Fuller *et al*. 1995). Intensification of agricultural practices over this period is considered the main cause of farmland bird declines. Conservation bodies and agricultural advisers now recognise the importance of initiatives, such as set-aside and agri-environmental schemes like Countryside Stewardship in addressing the problems caused by modern agriculture. The BEAM project represents an excellent opportunity to demonstrate how farming can be economically viable and at the same time benefit the environment.

1.3 Aims of Bird Monitoring

The report presents the results of bird monitoring work carried out in 1997/98. The aims of the monitoring work were:

1. To establish the number and distribution of breeding birds at Titley Court Farm. This information will provide a baseline to which future bird monitoring work can be compared to investigate the benefits to birds of future management.

2. To establish the number and distribution of birds at Titley Court Farm during the winter. This information will also be used as a baseline.

3. To investigate the distribution of breeding and wintering birds at Titley Court Farm in relation to current agricultural and management practices and wildlife habitats.

4. To make recommendations for changes in management and future bird monitoring at Titley Court Farm.

2. METHODOLOGY

To establish the number and distribution of birds using Titley Court Farm throughout the year, two surveys were carried out. The first was carried out during spring and summer 1997 to monitor breeding birds and the other during winter 1997/98 to monitor wintering birds. Titley Court Farm was too large to survey for birds as one study site, so it was therefore divided into four areas: Plot 1: Burnt House, Plot 2: Turning Ways, Plot 3: Titley Court and Plot 4: Lower Mowley (Figure 2.1 & 2.2). The Burnt House plot comprises solely of grassland and is grazed by both cattle and sheep. The eastern end of the plot is surrounded by woodland, deciduous to the north and coniferous to the south. Many of the hedges are grazed and are currently poorly managed. The plot occupies the highest ground on the farm. The Turning Ways plot is equally divided between arable and grassland. There is little surrounding woodland, except a small woodland at the south of the plot, known as Priory Wood. The external hedges are managed and thick in places, but the internal hedges are grazed and gappy. The Titley Court plot is predominantly parkland (i.e. grassland) with some arable areas. The plot is well wooded and contains a range of wildlife habitats including lake, ponds, marshland, etc. The southern boundary of the plot is the River Arrow. The Lower Mowley plot is predominantly arable with a small area of grassland. There are some small areas of woodland and a length of the River Arrow.

2.1 Breeding Season Surveys

The four study sites at Titley Court Farm were surveyed for breeding birds between mid May and mid July using territory mapping methodology (Bibby *et al.* 1990). This methodology records and maps the location of every encounter with individual birds. The survey is carried out on foot with the observer walking along every field boundary and woodland edge in order to ensure that every part of the farm is surveyed. The birds' behaviour such as singing, alarm calling, carrying food and the locations of nests is recorded using established codes. Six territory mapping visits were carried out, two by BTO staff and four by Herefordshire Ornithological Club (HOC). All of the surveys were carried out from dawn until midday to coincide with the period of peak bird activity.

On completion of the bird surveys, all of the bird information was transferred to species maps and used to define the location and size of breeding territories. As six surveys were carried out, a minimum of two registrations was required to define a territory. This information was plotted to produce territory maps.

2.2 Winter Surveys

Three surveys of the four study plots were carried out by HOC during December 1997, January 1998 and February 1998. All of the field boundaries, woodland edges and, where necessary, the fields themselves were walked and all encounters with birds were recorded and mapped. During winter most birds do not perform territorial behaviour, so sightings of birds are generally restricted to observations of feeding birds.

On completion of the winter surveys, the bird observations were assigned to a habitat feature; fields, hedges, woodland and buildings, as defined in Figures 2.3 and 2.4. The number of birds recorded in the three visits were averaged for each habitat feature. The average number of birds seen on each habitat feature was then summed for each study plot.

2.3 Habitat Information

Habitat information was collected to investigate the distribution of breeding and wintering birds at Titley Court Farm in relation to current agricultural and management practices and the wildlife habitats present. Cropping information for the whole farm was provided by Derek Wade (ADAS). Although a detailed hedgerow survey has been carried out, the results were unavailable to include within this report. Information about hedge management was provided by Mike Williams (FWAG). Habitat information about all the field boundaries was collected by the BTO. Each boundary was categorised into six different classes (no hedge, short hedge no trees, short hedge with trees, tall hedge no trees, tall hedge with trees, line of trees) and the dominant hedge and tree species was recorded. In addition, every area identified as being important for birds (from the bird surveys) was visited and habitat information recorded (Figures 2.5 & 2.6).

3. RESULTS & DISCUSSION

3.1 Breeding Birds

This section presents an overview of the results collected on the whole farm and in each of the four study plots during the breeding season survey. The results for species which are of conservation concern (farmland Skylarks, thrushes, seedeaters) are discussed, specifically in relation to habitat, crop type and, where appropriate, management. These three groups of birds all utilise farmland but in different ways. Skylarks use the field part of farmland, farmland thrushes use woodland, hedges and fields, and seedeaters use the field margin and hedges.

3.2 The Whole Farm

The results of the bird surveys carried out during spring and summer 1997 at Titley Court Farm are shown in Table 3.1. A number of additional species were also present on the farm, but were not included in the survey as they tend to form flocks and are thus difficult to census, or they were seen only in flight. These species were Carrion Crow, House Martin, House Sparrow, Jackdaw, Rook, Sand Martin, Starling, Swallow and Swift. Any nocturnal species on the plot, such as Tawny Owl would not have been recorded. A total of 551 territories were recorded. Sixty-two species were present on the farm of which 49 were proved to be holding territory. The species recorded on the farm are representative of the geographical region and reflect the habitat which is present. Seven species are on the Birds of Conservation Concern Red List and another seven are on the Amber List. **Red List species (36 species) are those whose populations or range are under-going, or have recently faced, rapid declines. The Amber List (110 species) includes species which have undergone a moderate decline. The remaining bird species which breed in the UK are on the Green List (134 species).** The Red List species at Titley Court Farm were Bullfinch, Linnet, Skylark, Song Thrush, Spotted Flycatcher, Stock Dove and Tree Sparrow. The Amber List species were Blackbird, Dunnock, Goldfinch, Green Woodpecker, Kestrel, Redstart and Willow Tit.

3.2.1 Burnt House

Thirty-one species of bird were recorded at Burnt House, of which 21 were recorded as holding territory (Table 3.1). Ninety territories were recorded over the whole plot, and although territories were widespread, there was a concentration of birds at the western end of the plot, which is surrounded by woodland. The eastern side of the plot is more open and is surrounded by arable land and is less attractive to a range of bird species. The external boundaries, particularly the one along the green lane, supported a higher concentration of birds compared with the internal boundaries.

3.2.2 Turning Ways

The Turning Ways plot is very open with very little woodland surrounding it and is more arable in nature. This was reflected by a lower number and diversity of species compared to the other plots. Thirty species were recorded on the plot and only 17 species held territory (Table 3.1). Although the distribution of territories appears not to be associated with any particular habitat features, the internal boundaries held fewer birds compared to the external boundaries. There was a Rookery located in the Priory Wood, but by the time the survey started it was too late to count nests due to leaf emergence.

3.2.3 Titley Court

The Titley Court plot has a very diverse mix of habitats and this is reflected in the number and range of bird species recorded there. Two-hundred-and-twenty-seven territories occupied by 35 different species were recorded on the plot, with a further 14 species not holding territories (Table 3.1). Birds were recorded throughout the whole plot, but the woodland and areas adjacent to the gardens in Titley Village held the highest concentration of birds. In particular, birds were concentrated at the wetland area behind Shawl Farm.

3.2.4 Lower Mowley

The Lower Mowley plot is the most intensively farmed of all the plots with crops predominantly of Winter Wheat. Compared to the Titley Court plot it supports little woodland. Thirty-six species were recorded on Lower Mowley of which 25 species held 160 territories (Table 3.1). The two areas of woodland and the river corridor, in the south-western corner of the plot, held the highest concentration of birds.

3.3 Functional Groups

3.3.1 Skylark

Skylark is a common and widespread species in Britain, found predominantly on open habitats such as farmland, moor and heath. The size of the UK's Skylark population has decreased by more than 50% over the last 25 years, which puts the species on the Birds of Conservation Concern Red List. This decline is linked to intensification of agriculture and changes in crop rotations, especially the switch from spring- to autumn-sown cereals. Skylarks eat seeds and plant material, but feed their chicks on insects (Green 1978). Skylarks prefer to nest in short vegetation (<30 cm) and in open areas away from trees and hedges (Wilson *et al*. 1997). Therefore, Skylarks raise fewer young if high pesticide usage reduces insect numbers and chick survival. Also autumn-sown crops remove stubbles and produce tall dense crops in early spring which reduces the number of broods Skylarks will raise.

On the whole of Titley Court Farm, 24 Skylark territories were recorded either on the farm or very close to the boundary (Table 3.1). Skylarks are difficult to census and have comparatively large territories compared to similar sized birds, which makes locating the exact nesting site difficult. Fifteen Skylark territories were recorded on the Lower Mowley plot, which is the highest density of Skylarks on the farm (Table 3.1 & Figure 3.2). On the Burnt House plot, five Skylarks were on the eastern side on the plot (Figure 3.1). This area is best suited to Skylarks as it is away from the wooded areas on the west of the plot and has more arable land surrounding it. On the Turning Ways plot five Skylark territories were recorded (Table 3.1). These were located on the open arable area in the north of the plot (Figure 3.1). Birds were concentrated near the area of set-aside which would undoubtedly have been a good feeding area. The number of Skylarks in each of the plots was affected by cropping patterns and by field boundary characteristics. No Skylark territories were recorded on the Titley Court plot (Table 3.1). This is probably due to the large number of trees on the plot, which made it less suitable for Skylarks.

<u>Recommendations</u>

At Titley Court Farm, Skylarks are likely to benefit from an overall reduction in grazing pressure on the grassland areas. Research (Wilson *et al.* 1997) has shown that Skylarks have a strong

preference for set-aside, therefore if legislation allows an increase in the area of set-aside at Titley Court Farm this would benefit Skylarks. Reduced usage of pesticides is likely to improve breeding success, and keeping over-winter stubbles may increase over-winter survival. A switch to spring-sown crops would also benefit Skylarks.

3.3.2 Thrushes

At Titley Court Farm, "thrushes" include Blackbird, Mistle Thrush and Song Thrush. All of these species nest in woodland or hedges but feed predominantly on fields. The thrushes feed almost exclusively on invertebrates, particularly worms and grubs, although berries and apples feature in the diet during autumn and winter. In common with other farmland birds, the thrushes have experienced a population decline. The worst affected is the Song Thrush which has declined by about 75% over the last 25 years on farmland.

The total number of Song Thrush recorded at Titley Court Farm was 13, which is higher than expected (Table 3.1). The majority of Song Thrushes were concentrated around the Parkland and grass areas of the Titley Court plot (Figures 3.3 & 3.4). These would have been good feeding areas, surrounded by good nesting sites, in the wood and scrub areas. Song Thrushes were notably absent from the Lower Mowley plot.

Blackbird, which has declined by 35% over the last 25 years, was the second most numerous species at Titley Court Farm, with 53 territories being recorded (Table 3.1). Blackbirds were widespread across all four study plots, favouring the woodland areas (Figures 3.3 & 3.4). There was an association with the taller hedges.

The one Mistle Thrush territory at Titley Court Farm was also situated on the Park (Table 3.1 & Figure 3.4).

Recommendations

Thrushes are likely to benefit from reduced pesticide usage, particularly Mulluscicides, as this will increase invertebrate availability. Changes in hedge management, particularly cutting, which should be carried out in February every two to three years, will increase the amount of berries available during the winter. Woodland management will benefit the thrushes by providing feeding and nesting opportunities.

3.3.3 Farmland Seedeaters

Farmland seedeaters are a broad group of birds including finches, buntings and sparrows. Most farmland seedeaters have undergone serious population declines over the last 25 years. The worst affected species are Tree Sparrow and Corn Bunting which have undergone population declines of about 90%. Exceptions are Chaffinch, Greenfinch and Goldfinch which have maintained stable populations. All farmland seedeaters feed their young on invertebrates, with the exception of Linnet which feeds on plant seeds.
Chaffinch was the most numerous and widespread species on Titley Court Farm (Table 3.1 & Figure 3.5). Ninety-seven territories were located across all four survey plots (Table 3.1 & Figures 3.5 and 3.6). Chaffinches nest in any habitat provided there are trees present. At Titley Court Farm Chaffinches were found in every woodland and nearly all hedges.

Yellowhammer was particularly numerous at Titley Court Farm, with 47 territories being

recorded on all four plots (Table 3.1). This is a particularly high number of birds, especially considering that the UK's Yellowhammer population has decreased by 5% over the last 25 years. At Titley Court Farm the majority of Yellowhammers were found on the arable areas (Figures 3.7 & 3.8). For example, at Burnt House, birds were concentrated towards the eastern side of the plot which was adjacent to arable fields and birds were not as widespread across the grassland of the Titley Court plot. There was also an association with the shorter, thicker, managed hedges. Bullfinch, Goldfinch, Greenfinch, Linnet and Tree Sparrow were also present at Titley Court Farm, but in low numbers (Table 3.1 & Figures 3.9 & 3.10).

Recommendations

Integrated crop management will benefit farmland seedeaters by allowing winter stubbles and reducing pesticide levels. Over-winter stubbles provide important feeding areas, where birds are able to feed on spilt grain and weed seeds. A reduction in pesticides would result in an increase in the availability of invertebrates, which are fed to nestlings. Set-aside is used extensively by finches, buntings, etc., particularly in the winter and these birds will further benefit from the planting of a Wild Bird Mixture on set-aside. Management of hedges which results in thicker hedges with a dense field layer (i.e. plants at the bottom of the hedge) will increase the number of nest sites.

3.4 Wintering Birds

In winter birds are more difficult to record compared to the breeding season, when birds have territorial displays and are generally more obvious. In addition, the number of different species present is much reduced because many have migrated to wintering areas. A few species migrate to Britain for the winter, but this does not match the number which have left. Many species of birds also congregate into flocks. Throughout this section it is necessary to refer to Figures 2.3 & 2.4 for the code numbers given to the habitat features.

The numbers of species recorded at Titley Court Farm was lower in winter compared with the breeding season. Forty-six species were recorded on the whole farm (Table 3.2). The most numerous species on all plots was Chaffinch, with an average of 178 birds being recorded throughout the winter on the whole farm. An average of almost 100 Yellowhammers on the farm is very noteworthy. On the four survey plots, the number of birds and species recorded were linked to habitat and crop diversity.

3.4.1 Burnt House

The Burnt House plot supported 21 different species (Table 3.2) and the number of individuals recorded at Burnt House was low compared to the other sites. This is due to the more open, exposed nature of the plot, owing to its higher altitude. Also there is lower habitat availability and feeding opportunities. The main area of habitat for wintering birds was the scrub around the Burnt House buildings itself (B1 on Figure 2.3) (Table 3.3). The fields at Burnt House offered very limited feeding opportunities for birds, except for thrushes which may search amongst the grass for invertebrates. Field One supported the highest number of birds (Table 3.3). The hedges at Burnt House did not support very many birds, probably due to the limited amount of berries and fruit available. Hedge Two held the highest number of birds (Table 3.4). Compared to the hedges, the woodland edges supported more birds.

3.4.2 Turning Ways

The Turning Ways plot supported 26 species (Table 3.2). The less exposed nature of the plot and the increased diversity in habitat and crop type resulted in a higher number of birds compared with the Burnt House plot. The main habitats which supported the largest number of birds on the plot were Hedge Seven, Field One and Woodland One (Table 3.4). Of particular note is that Field One contained an area of set-aside which probably accounted for the high number of Yellowhammers, Chaffinches and Skylarks.

3.4.3 Titley Court

The diverse mix of habitats and crops on the Titley Court plot probably accounted for the wide range and number of birds recorded on it. Thirty-eight species were recorded on the plot (Table 3.2) The mixture of woodlands, hedges, grassland and crops (particularly cereal stubbles) would have presented a range of feeding opportunities for birds. The principal habitats were Hedge Five, which was adjacent to Winter Wheat stubble, Woodland One (adjacent to set-aide) and Field Eleven (surrounded by set-aside) (Table 3.5).

3.4.4 Lower Mowley

The Lower Mowley plot supported 27 bird species, which is less than the Titley Court plot (Table 3.2). The lower number of species is probably due to reduced range of habitats. The main habitats on the plot were Field One (Spring Beans), Hedge Four (adjacent to Field One) and Woodland Eight (adjacent to set-aside) (Table 3.6).

3.5 Comparison of Breeding Populations with Local and National Densities

There are six farmland CBC plots relatively close to Titley Court, which were surveyed in 1997. Densities of species were very variable across these six plots (Table 3.7). Densities of Yellowhammer (Plots 1, 2 and 4) and Chaffinch (Plot 1) at Titley Court were higher than the six comparison plots. Most other species tended to be as common at Titley Court, on at least one plot, as at the six comparison plots. Mistle Thrush, House Sparrow, Greenfinch and Goldfinch were either absent or at lower densities at Titley Court than the best comparison plots (although densities were also very low on other comparison plots).

This pattern is also emphasised in the national ranking (Table 3.8). Titley Court has very high populations of Chaffinch (Plot 1), Bullfinch (Plots 1 and 2) and Yellowhammer (Plots 1, 2 and 4) and Plot 4 is highly ranked for Tree Sparrow (although the density is low). However, it has low populations of Mistle Thrush, Greenfinch, Goldfinch and Linnet.

4. RECOMMENDATIONS FOR FURTHER SURVEY WORK

The environmental schemes currently being carried out at Titley Court Farm represent an excellent opportunity to demonstrate how an integrated approach to combining agriculture and the environment on a commercial farm can benefit wildlife and birds in particular. A number of recommendations for future management have been made in the preceding text, many of which will be carried out at Titley Court over the next few years. The opportunity therefore exists to monitor birds in the future, using the data presented in this report as a baseline, to investigate the benefits of environmental concessions and habitat management. Ideally bird monitoring should be carried out every year throughout the duration of the BEAM project and for a number of years after its completion. However, a compromise of surveying every three years will allow monitoring of any future environmental benefits at Titley Court Farm.

It would be possible to include some simple experimental work within the survey. For example, hedgerows could be managed in different ways to demonstrate the effect on birds. Different hedges could be cut either every year, every two years or every three years and the differences in bird numbers measured.

Acknowledgements

We wish to thank Mike Williams (FWAG) and Derek Wade (ADAS) for their help and advice. We also thank Mr David Forbes for allowing us access to all areas of Titley Court Farm. We thank Dr Nick Carter of the BTO for his comments on earlier drafts of this report. This study was funded by the BEAM project.

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References

Bibby, C.J., Burgess, N.D. & Hill, D.A. (1990) *Bird Census Techniques*. Academic Press, London.

Fuller, R.J., Gregory, R.D., Gibbons, D.W., Marchant, J.H., Wilson, J.D., Baillie, S.R. & Carter, N. (1995) Population declines and range contractions among lowland farmland birds in Britain. *Conservation Biology*, **9**(6), 1425-1441.

Green, R. (1978) Factors affecting the diet of farmland Skylarks *Alauda arvensis*. *Journal of Animal Ecology*, **47**, 913-916.

Williams, M. (1996) *Titley Court, Titley*. FWAG Report.

Wilson, J.D., Evans, J., Browne, S.J. & King, J.R. (1997) Territory distribution and breeding success of skylarks *Alauda arvensis* on organic and intensive farmland in southern England. *Journal of Applied Ecology*, **34**, 1462-1478.

Species	BOCC	Plot 1	Plot 2	Plot 3	Plot 4	Total
Blackbird	A	6	6	19	22	53
Blackcap	G	3	✓	10	6	19
Blue Tit	G	8	3	21	16	48
Bullfinch	R	2	1	1	✓	4
Buzzard	G	1	1	1	2	5
Canada Goose	G	0	0	✓	0	✓
Chaffinch	G	21	13	31	32	97
Chiffchaff	G	1	1	8	5	14
Coal Tit	G	0	1	4	✓	5
Collared Dove	G	0	✓	✓	✓	✓
Cuckoo	G	✓	0	0	0	✓
Dipper	G	0	0	✓	✓	✓
Dunnock	A	1	4	8	8	21
Garden Warbler	G	✓	0	4	2	6
Goldcrest	G	6	✓	8	2	16
Goldfinch	A	0	✓	2	0	2
Great Tit	G	2	2	7	13	24
Great Spotted Woodpecker	G	1	0	2	1	4
Green Woodpecker	A	0	✓	1	0	1
Greenfinch	G	✓	✓	2	3	5
Grey Wagtail	G	0	✓	0	0	✓
Heron	G	0	0	✓	0	✓
Jay	G	✓	0	✓	0	✓
Kestrel	A	0	0	✓	0	✓
Linnet	R	✓	1	2	1	4
Little Owl	G	0	0	0	2	2

Table 3.1 The number of breeding territories recorded for different bird species on each of the four study plots. A ✓ indicates that the bird was recorded, but was not holding a territory. The BOCC column refers to the birds Bird of Conservation Concern status, being either **Red, Amber or Green**.

Species	BOCC	Plot 1	Plot 2	Plot 3	Plot 4	Total
Long-tailed Tit	G	✓	0	✓	1	1
Mistle Thrush	G	0	0	1	✓	1
Moorhen	G	0	0	2	0	2
Nuthatch	G	✓	✓	4	0	4
Pheasant	G	0	✓	8	3	11
Pied Flycatcher	G	1	0	1	0	2
Pied Wagtail	G	0	0	✓	0	✓
Raven	G	0	✓	1	✓	1
Red-legged Partridge	G	0	0	✓	0	✓
Redstart	A	✓	✓	2	1	3
Robin	G	6	4	19	12	41
Sedge Warbler	G	0	0	0	✓	✓
Skylark	R	5	5	0	15	24
Song Thrush	R	1	1	7	4	13
Sparrowhawk	G	0	0	✓	1	1
Spotted Flycatcher	R	✓	0	2	0	2
Stock Dove	R	1	✓	5	✓	6
Tawny Owl	G	✓	0	✓	0	✓
Tree Sparrow	R	0	✓	✓	1	1
Tree Pipit	G	0	0	✓	0	✓
Treecreeper	G	1	0	1	1	3
Turtle Dove	G	0	0	1	0	1
Whitethroat	G	2	7	3	5	17
Willow Warbler	G	5	1	5	7	18
Willow Tit	A	0	0	1	✓	1
Wren	G	9	6	20	7	42
Yellow Wagtail	G	0	0	✓	0	✓
Yellowhammer	G	7	11	11	18	47

Table 3.1 continued. The number of breeding territories recorded for different bird species on each of the four study plots. A ✓ indicates that the bird was recorded, but was not holding a territory. The BOCC column refers to the birds Bird of Conservation Concern status, being either **Red, Amber or Green**.

Species	Plot 1	Plot 2	Plot 3	Plot 4	TOTAL
Blackbird	5.7	10.4	30.3	33.4	79.7
Bullfinch	2.0	2.4	4.67	7.0	16.0
Blue Tit	7.0	14.4	40.3	20.4	82.0
Buzzard	2.3	<1.0	2.0	<1.0	5.0
Carrion Crow	2.7	0	2.4	0	5.0
Chaffinch	19.0	39.0	58.7	61.4	178.0
Coal Tit	0	<1.0	4.0	1.0	5.7
Collared Dove	0	0	1.0	0	1.0
Crossbill	0	7.0	0	0	7.0
Dunnock	1.4	3.4	7.7	7.4	19.7
Fieldfare	1.4	4.4	6.0	43.7	55.4
Goldcrest	0	<1.0	2.3	0	2.7
Goldfinch	0	1.0	3.3	14.7	19.0
Greenfinch	2.0	0	8.7	2.0	12.7
Green Woodpecker	0	<1.0	<1.0	<1.0	1.4
Great Spotted Woodpecker	<1.0	0	<1.0	<1.0	1.4
Great Tit	3.4	1.0	5.7	5.0	15.0
House Sparrow	0	<1.0	13.7	0	14.4
Jackdaw	0	0	6.0	0	6.0
Jay	1.0	0	1.0	0	2.0
Kestrel	0	0	<1.0	0	<1.0
Linnet	0	<1.0	0	0	<1.0
Little Owl	0	0	0	<1.0	<1.0
Long-tailed Tit	3.0	0	2.0	<1.0	5.7
Magpie	1.4	<1.0	2.0	0	4.0
Meadow Pipit	0	0	<1.0	17.7	18.0
Mistle Thrush	0	0	3.0	0	3.0

Table 3.2 The average number of birds recorded at Titley Court Farm on each of the four study plots and the whole farm during winter 1997/98.

Species	Plot 1	Plot 2	Plot 3	Plot 4	TOTAL
Nuthatch	1.4	<1.0	2.4	<1.0	4.4
Pheasant	0	0	10.3	<1.0	10.7
Pied Wagtail	0	0	<1.0	0	<1.0
Robin	6.7	5.7	15.7	6.7	34.7
Red-legged Partridge	0	0	0	1.4	1.4
Redwing	5.0	9.3	15.7	2.7	17.0
Reed Bunting	0	0	<1.0	0	<1.0
Rook	0	10.0	0	0	10.0
Skylark	0	10.7	4.7	5.7	21.0
Snipe	0	0	<1.0	0	<1.0
Song Thrush	0	1.0	0	6.0	7.0
Sparrowhawk	0	0	0	<1.0	<1.0
Starling	0	0	3.0	0	3.4
Stock Dove	6.0	0	1.0	0	7.0
Treecreeper	0	0	2.3	0	2.4
Tree Sparrow	0	<1.0	0	1.7	2.4
Woodpigeon	<1.0	4.7	4.0	0	9.0
Wren	2.7	1.7	5.0	4.7	14.7
Yellowhammer	2.0	33.0	35.0	23.7	94.4

Table 3.2 continued. The average number of birds recorded at Titley Court Farm on each of the four study plots and the whole farm during winter 1997/98.

Field Boundary Type/Number	Number of Birds	Field Boundary Type/Number	Number of Birds
B1	16.4	H6	4.0
F1	10.7	H7	<1.0
F2	0	H8	<1.0
F3	1.7	H9	<1.0
F4	0	H10	3.7
F5	<1.0	H11	1.0
F6	0	H12	<1.0
F7	0	H13	<1.0
H1	3.4	H14	2.0
H2	6.0	H15	3.0
H3	3.4	W1	7.0
H4	1.7	W2	6.0
H5	4.3		

Table 3.3 The average number of birds recorded on each habitat feature at Burnt House during winter 1997/98. B=Boundary, F=Field and H=Hedge, the location of each specific habitat is given in Figure 2.3

Field Boundary Type/Number	Number of Birds	Field Boundary Type/Number	Number of Birds
F1	13.4	H6	1.0
F2	4.4	H7	34.7
F3	0	H8	9.7
F4	8.0	H9	0
F5	3.7	H10	7.7
H1	9.7	H11	<1.0
H2	4.0	H12	10.7
H3	10.4	H13	3.4
H4	0.4	H14	8.3
H5	2.0	W1	31.7

Table 3.4 The average number of birds recorded on each habitat feature at Turning Ways during winter 1997/98. B=Boundary, F=Field and H=Hedge, the location of each specific habitat is given in Figure 2.3.

Field Boundary Type/Number	Number of Birds	Field Boundary Type/Number	Number of Birds
B1	2.7	H6	6.4
B2	3.0	H7	<1.0
F1	0	H8	7.7
F2	3.4	H9	1.0
F3	5.0	H10	9.0
F4	0	H11	11.0
F5	10.4	H12	7.7
F6	9.7	H13	0
F7	4.0	H14	<1.0
F8	10.4	H15	10.7
F9	<1.0	H16	7.4
F10	0	H17	14.0
F11	21.0	H18	4.0
F12	0	H19	7.0
F13	8.3	H20	<1.0
F14	2.0	H21	13.7
F15	<1.0	H22	14.0
F16	4.7	W1	30.4
F17	2.7	W2	5.0
H1	13.4	W3	4.0
H2	<1.0	W4	<1.0
H3	1.0	W5	7.0
H4	4.0	W6	4.0
H5	30.4	W7	7.7

Table 3.5 The average number of birds recorded on each habitat feature at Titley Court during winter 1997/98. B=Boundary, F=Field and H=Hedge, the location of each specific habitat is given in Figure 2.4.

Field Boundary	Field Boundary

Type/Number	Number of Birds	Type/Number	Number of Birds
B2	0	H8	13.7
B3	1.7	H9	0
F1	25.7	H10	2.4
F2	1.4	H11	2.0
F3	0	H12	1.0
F4	1.4	H13	0
F5	0	H14	2.3
F6	0	H15	5.0
F7	5.4	H16	12.0
F8	0	H17	6.4
F9	2.0	H18	1.3
F10	0	H19	3.0
F11	1.4	H20	1.4
F12	18.4	H21	0
F13	0	H22	1.4
F14	<1.0	H23	5.7
H1	8.0	H24	4.0
H2	23.0	H25	2.7
H3	7.4	H26	10.7
H4	21.4	W7	1.4
H5	13.4	W8	24.4
H6	3.0	W9	14.0
H7	14.0	W10	7.4

Table 3.6 The average number of birds recorded on each habitat feature at Lower Mowley during winter 1997/98. B=Boundary, F=Field and H=Hedge, the location of each specific habitat is given in Figure 2.4.

Species	Plot 1 (30.0 ha)	Plot 2 (32.7 ha)	Plot 3 (146.4 ha)	Plot 4 (116.1 ha)	CBC 1513 (35.0 ha)	CBC 1514 (59.4 ha)	CBC 777 (51.4 ha)	CBC 927 (72.5 ha)	CBC 1334 (39.8 ha)	CBC 1372 (44.2 ha)
Blackbird	20.0	18.3	13.7	19.8	20.0	6.7	66.2	34.5	50.3	9.0
Bullfinch	6.7	3.1	0.7	0.9	0.0	0.0	7.8	1.4	2.5	0.0
Chaffinch	73.3	39.8	23.9	31.0	20.0	23.6	56.4	31.7	32.7	36.2
Goldfinch	0.0	0.0†	1.4	0.0	0.0	0.0	3.9	8.3	2.5	2.3
Greenfinch	0.0†	0.0†	2.0	3.4	0.0	0.0	23.3	15.2	12.7	4.5
House Sparrow	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	20.1	0.0
Linnet	0.0†	3.1	1.4	0.9	0.0	0.0	5.8	4.1	5.0	9.0
Mistle Thrush	0.0	0.0	0.7	0.0†	0.0	0.0	3.9	0.0	2.5	4.5
Reed Bunting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0
Skylark	16.7	15.3	0.7	12.9	20.0	20.2	0.0	11.0	0.0	9.0
Song Thrush	3.3	3.1	5.5	3.4	0.0	0.0	17.5	2.8	5.0	2.3
Tree Sparrow	0.0	0.0†	0.0†	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Yellowhammer	23.3	33.6	10.2	19.8	14.3	10.1	11.7	0.0	7.5	0.0

Key: Location of other CBC sites: 1513 & 1514 = Gloucestershire; 777 and 927 = Gwent; 1334 = Herefordshire; 1372 = Shropshire.

† Recorded but not considered to be holding territory.

Note. As surveying started late in summer, only six visits were carried out (compared to 10-12 on most CBC plots). As a consequence, a minimum of two registrations was used to denote a territory (compared with three on CBC plots). Territory numbers in Table 3.1 are adjusted to include territories in inter-plot boundaries on both plots. Also normal CBC plots include territories adjacent to the plot so densities are actually higher (e.g. Skylark territories on a 100 ha plot with three on neighbouring land would have 13 territories/100 ha).

Table 3.7 Comparison of farmland bird densities on the four plots at Titley Court with six farmland Common Birds Census plots in Herefordshire or neighbouring counties.

Species	Plot 1	Plot 2	Plot 3	Plot 4
Blackbird	38	48	64	39
Bullfinch	4	9	38	38
Chaffinch	3	21	56	37
Goldfinch	83	83	61	83
Greenfinch	86	86	63	54
Linnet	87	48	71	78
Mistle Thrush	73	73	50	73
Skylark	30	31	82	38
Song Thrush	32	33	17	32
Tree Sparrow	54	54	54	12
Yellowhammer	5	3	36	10

Note. As surveying started late in summer, only six visits were carried out (compared to 10-12 on most CBC plots). As a consequence, a minimum of two registrations was used to denote a territory (compared with three on CBC plots). Territory numbers in Table 3.1 are adjusted to include territories in inter-plot boundaries on both plots. Also normal CBC plots include territories adjacent to the plot so densities are actually higher (e.g. Skylark territories on a 100 ha plot with three on neighbouring land would have 13 territories/100 ha).

Table 3.8 Ranking of the four plots at Titley Court with national farmland Common Birds Census plots, on a species-by-species basis.

Figure 2.1 Cropping plan for Plot 1 and Plot 2.

Plot 4.

Figure 2.2 Cropping plan for Plot 3 and

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Figure 2.5 The distribution of hedge types and woodland within Plots 1 and 2 and woodland adjacent the plots.

Figure 2.6 Woodland and within Plots 3 and 4 and distribution of woodland types adjacent the plots.

Figure 3.1 The location of Skylark territories on Plots 1 and 2.

territories on plots 3 and 4.

Figure 3.2. The location of Skylark

Figure 3.3 The location of thrush territories on Plots 1 and 2.

Figure 3.4 The location of thrush territories on Plots 3 and 4.

Figure 3.5 The location of Chaffinch territories on Plots 1 and 2.

territories on Plots 3 and 4.

Figure 3.6 The location of Chaffinch

Figure 3.7 The location of Yellowhammer territories on Plots 1 and 2.

Figure 3.8 The locations of Yellowhammer and Tree Sparrow territories on Plots 3 and 4.

Figure 3.9 The location of Bullfinch and Linnet territories on Plots 1 and 2.

Figure 3.10 The location of Bullfinch, Goldfinch, Greenfinch and Linnet territories on Plots 3 and 4.