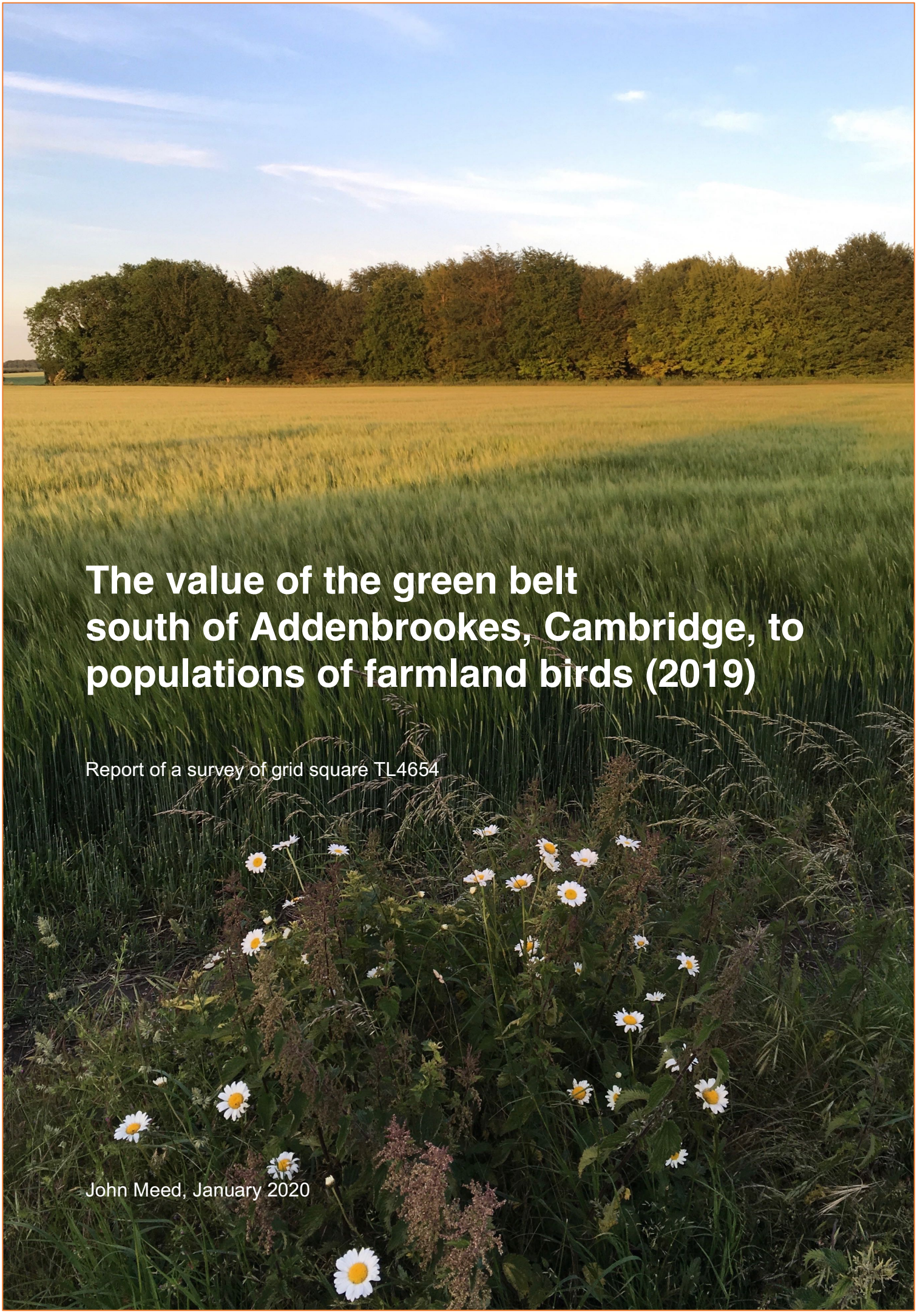


The value of the green belt south of Addenbrookes, Cambridge, to populations of farmland birds (2019)

Report of a survey of grid square TL4654

John Meed, January 2020

Introduction

For the last eight years I have surveyed breeding populations of farmland birds on a square kilometre of green belt south of Addenbrooke's Hospital in Cambridge to assess the levels of the biodiversity of an area close to the city.

The area studied is largely arable land, with 2.5km of mature hedgerows, 1km of streams/ditches, and 4+ha of scrub and woodland, including the Nine Wells nature reserve (right). It includes a cycle path and footpath, and land management has created several permissive footpaths, flower-rich field margins and additional woodland (see Appendix 1). It is widely used by walkers, cyclists, families and dog owners.

Why do farmland birds matter?

Farmland birds have suffered major declines in recent decades.

- Grey partridge declined by 92% between 1970 and 2015 and corn bunting (right) by 89% while yellow wagtail declined by 67%, skylark by 59%, yellowhammer by 56% and linnet by 55% (1).
- Farmland birds are indicators for the UK Government Sustainable Development Strategy (2) and 9 of the 18 indicator species are 'red list' birds of 'high conservation concern' (3).
- The city council's local plan identifies skylark (and brown hare) as priority species.

Birds are indicator species because of their place as consumers in the ecosystem, and declines in bird populations indicate wider problems: the *State of Nature 2019* report (4) states that 'bird species most closely associated with farmland have declined more severely than birds in any other habitat, with a fall of 54% in the Farmland Bird Indicator since 1970'.

Methodology

I monitor the area using a combination of methods. I adopt the British Trust for Ornithology (BTO) Breeding Bird Survey methodology (5), which involves a habitat survey and walking two parallel transects, each of 1 km, on 2–3 occasions early and later in the breeding season; this approach gives a good snapshot of the species present in an area. I did my transect walks on April 23, May 21 and June 12.

Between April and July I build up a more accurate picture of the number of breeding pairs, drawing on my experience as a surveyor for the Royal Society for the Protection of Birds (RSPB) Volunteer and Farmer Alliance (6). In these visits I focus on other areas in the square and on specific breeding signs such as singing males, territorial behaviour, courtship displays, nest building and juvenile birds. I also survey butterfly species using the UK Butterfly Monitoring Scheme methodology. I also visit the site regularly in the autumn and winter, monitoring winter visitors and in particular grey partridge populations. I carried out 31 visits over the year.

Findings

Over the eight years I have recorded 90 bird species including 18 red list species and 28 amber list species. See Appendices 2 – 4.

In 2019 I recorded 71 species on the three transect walks and other visits:

- On the first transect walk: 33 species and 215 individuals
- On the second transect walk: 38 species and 266 individuals
- On the third transect walk: 38 species and 307 individuals

The 71 species recorded included 16 of the 18 farmland bird indicator species for the Sustainable Development Strategy, of which 14 bred (Appendix 5). In total I recorded 13 red list species and 22 amber list species as follows.

Breeding red list species (8-9)	Breeding amber list species (6-8)
• 50 pairs of skylarks • 17 pairs of linnets • 13 pairs of grey partridge • 14 pairs of yellowhammers (above) • 10 pairs of corn buntings • 1 pair of yellow wagtails • 4 pairs of song thrush and 1 possible pair of mistle thrush • 2 pairs of starlings	• 14 pairs of whitethroats • 15 pairs of dunnocks • 3 pairs of reed buntings, 2+ pairs of swallows and 2 pairs green woodpecker • 1 pair of stock dove and possible tawny owl and bullfinch • Kestrels, swifts and house martins nest nearby and visit regularly

Red list visitors include herring gull and whinchat, and in winter lapwing, fieldfare and redwing. In other years I have recorded cuckoo, house sparrow, merlin and turtled dove.

Amber list visitors include red kite, willow warbler, common tern, mallard, black-headed, common, great and lesser black-backed gull and in winter meadow pipit and little egret – and on one occasion a group of crane flew over. In other years I have recorded marsh harrier, kingfisher, mute swan, redstart, snipe and golden plover.

I will go on now to look in more detail at my findings about the populations between 2014 and 2019 of two key red list species that do unusually well in the fields around Nine Wells:

- Grey partridge
- Corn bunting

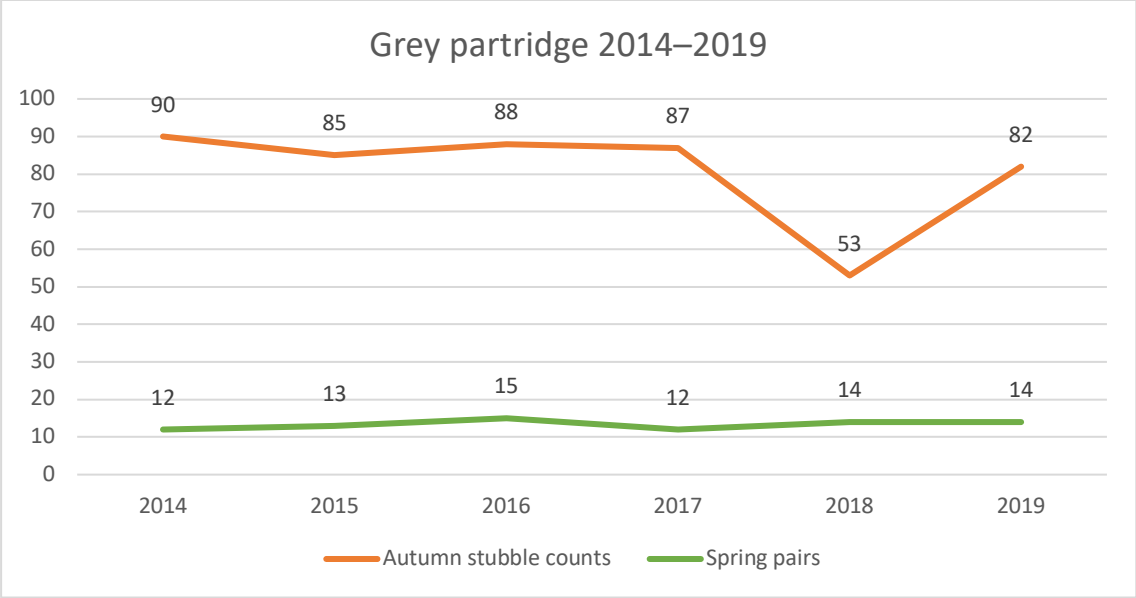
I will then go on to examine my findings for other species.

Grey partridge 2014–19

Grey partridge numbers have been remarkably high over the last six years.

- Between 2014 and 2019 autumn counts consistently revealed between 80 and 90 individuals. The autumn count for 2018 was lower, at 53 birds.
- Pairs have varied between 12 and 15.

The following chart shows numbers for the last six years.



These counts are high compared to other studies which suggest that the arable farms typical of Cambridgeshire support between 0–5 pairs/km^2 in spring and 0–20 birds/km^2 in the autumn. Only with high levels of management aimed at the species do numbers approach those at Nine Wells. For example, the GWCT's Grey Partridge Demonstration Project near Royston saw the density of grey partridge pairs rise from under 3 pairs/km^2 before management to around 15 pairs/km^2, while autumn densities increased from 8 birds/km^2 to around 80 birds/km^2 (8). The RSPB's Hope Farm had 7 pairs in 2017 in 1.8km^2 (9).

Autumn and winter coveys

Grey partridge have large broods and in the autumn families form groups known as 'coveys'. Numbers are at their highest in November and December, once youngsters have matured but before spring pairing starts. Most coveys ranged between 7 and 13 birds, though I recorded one covey of 16 in 2014 and one of 14 in 2016.

Generally speaking, the number of autumn coveys has reflected the number of spring pairs, suggesting that most pairs reared young successfully. Autumn 2018 was a significant exception, when 14 pairs produced just 8, generally smaller, coveys. However, in autumn 2019 numbers 14 pairs produced at least 12 coveys.

My autumn counts over the last six years have shown that:

- Coveys tend to move relatively little between fields and if undisturbed stay for much of the autumn in the same area. They show a distinct preference for stubbles over freshly ploughed land and in 2019 all coveys remained in Fields 3, 4, 5 and 6 which retained stubble throughout the autumn; in autumn 2016 four coveys were regularly present in Field 2 but moved to Field 1 after ploughing. In some years they have seemed more comfortable later in fields where winter wheat is starting to grow.

- Partridge often feed in the early morning and in the time before dusk, probably to avoid predation. They roost in areas of longer grass, hedge bottoms or patchy scrub. However, they generally avoid woodland and I have never recorded them near to the wood at the top of White Hill (though red-legged partridge do use this area). They emerge at different times, some just in the hour or so before dark. When feeding one or two birds typically keep watch for predators while the rest of the covey eats.

- These two factors – cropping and access to cover – have a major influence over where coveys spend their autumn. In 2019 5 coveys of 34 birds used Field 4 (stubble direct drilled without ploughing) and sometimes Field 5, roosting along the hedge bottom between the two fields – much the same had happened in late 2016, with four coveys moving very little. Similarly, Field 6 had 5 coveys of 40 birds on stubble in 2019, at least four in 2015 (between winter wheat and sugar beet) but only two regular coveys in 2014 and 2016 when ploughed; in both 2017 and 2018 two areas close to Granham's Road which remained unploughed and close to cover held four coveys.

- There can be interaction between coveys – normally calling, but sometimes two coveys move closer together and may even intermingle. In December 2019 I once watched 5 coveys in Field 5 follow each other around. I have not witnessed agression between coveys. I have observed red-legged partridge coveys close to greys, and on a couple of occasions individual red-legs have joined a covey of greys, though probably temporarily.

- The weather appears to influence partridge behaviour, and I generally recorded fewer birds on windy or wet days.

The autumn coveys appear to suffer little loss from predators. While I often record fewer birds from mid November onwards, I have the impression that this results from changing covey habits or location, rather than a reduction in the size of coveys. I generally record fewer birds after spring pairing than during the previous autumn – I am unclear as to whether this results from predation, greater crop cover or dispersal.

Several aspects of the habitat may help to explain the success of grey partridge around Nine Wells. The birds feed at dawn and dusk in open fields, but need suitable cover during the day and the Nine Wells nature reserve together with the hedge, margin and copses running north-west from the reserve appear ideal. Grassy margins also provide food for chicks while autumn stubbles provide foraging for the coveys.

Spring pairs

Pairs begin to form in the new year, though timing varies from year to year. From mid-January in 2017 to mid-February in 2015. Pairing can vary from field to field: in 2017 the partridge in Field 6 were paired on January 18th, whereas those in Field 4 paired a week later.

- Initial pairing is often concentrated in specific fields. In early 2015 and 2017 I recorded at least 8 pairs in Field 6, almost two thirds of the total. By contrast, in early 2016 there were 12 pairs (out of 15) in Fields 1 and 2. Jenkins found that pairs come from different coveys, except when last year's pair reforms (9).

- Following pairing, the pairs disperse more widely across the area. Figure 1 shows the distribution of pairs in Spring 2019.

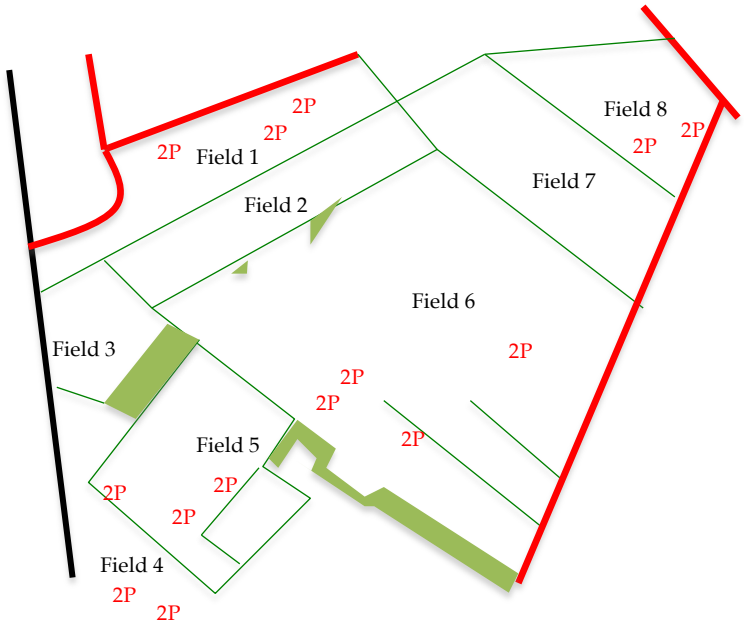


Fig 1: Pairs of grey partridge in late Spring 2019

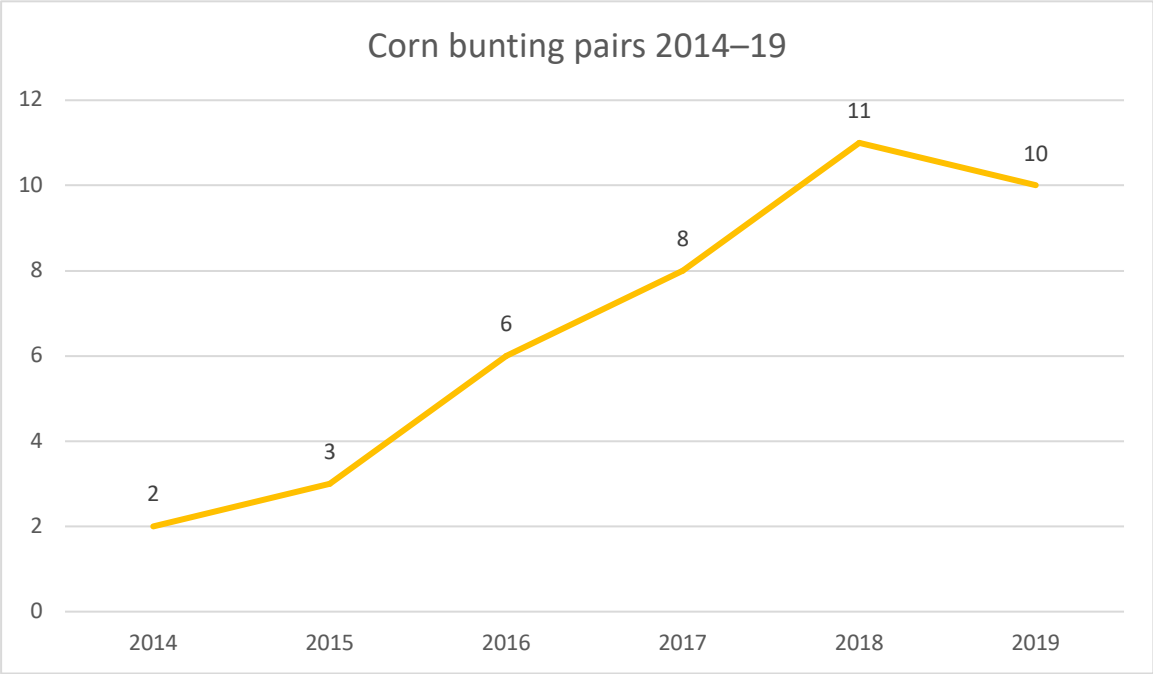
- Partridge behaviour changes during pairing. In the process of seeking a mate birds would call repeatedly – one bird calling could spark off others – and display their breast patches much more obviously. Birds will run and on occasion chase each other, which can end in flying to another spot. On one occasion in 2018 behaviour in the Field 6 stubble recalled a lek with 3 males displaying.

- Paired birds resume their normal placid behaviour, even if the above activity carries on in the same field, though they sometimes call. Interaction between pairs, even when close together, is also usually calm, with occasional breast patch display. As the spring develops and crop cover increases the pairs become increasingly discrete.

- However some unpaired male birds remain (most noticeably in 2018). Unpaired males call and display breast patch more than those in pairs. Jenkins observed an excess of males which would sometimes pair later in the year with a female whose partner had died, or whose original pair bond was weak (9).

Corn bunting 2014–19

10 pairs of corn bunting bred in 2019, maintaining the excellent population of this species.



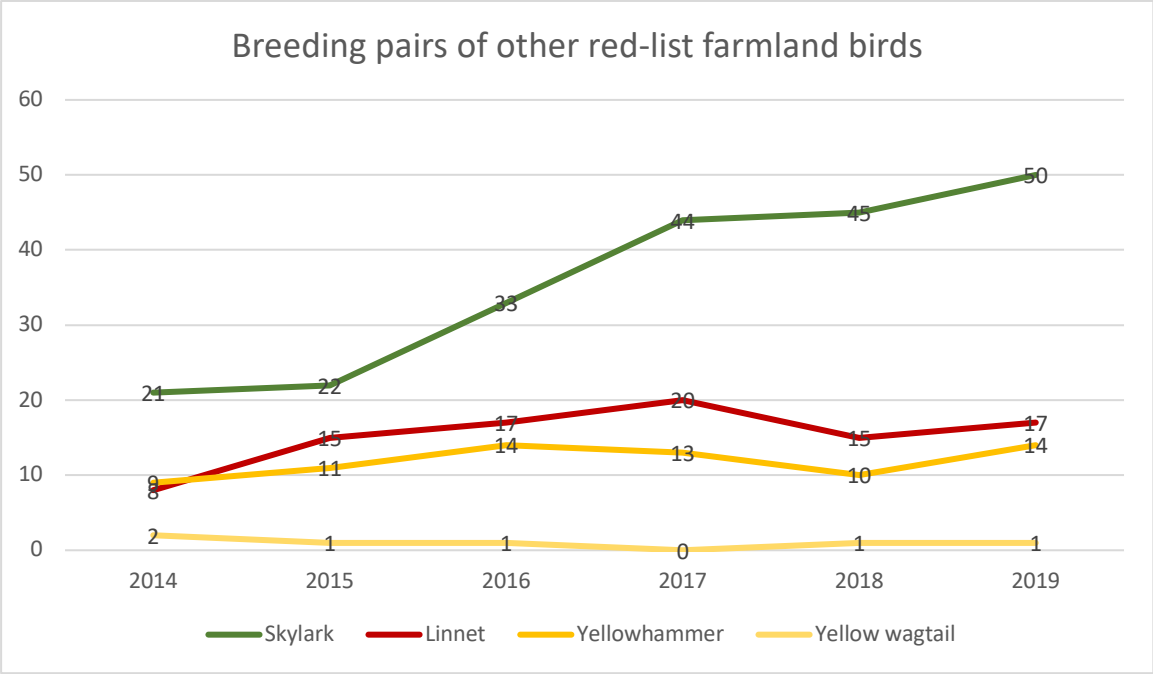
Corn bunting populations in the UK declined by 89% between 1970 and 2015, and their breeding range has contracted by 56% over the same period.. There are now only 11,000 birds in the UK and the BTO's Breeding Birds Survey recorded corn buntings in just 145 of the 3,941 squares surveyed in 2017. The species' recent extinction in Ireland risks being repeated in large parts of Britain if its breeding sites are not protected. A recent survey of populations across Cambridgeshire found singing males in only just over half the tetrads surveyed, and in only two tetrads did they approach the population density of the area I survey (cornbunting.birdsurvey.org.uk). The RSPB's Hope Farm had 2 pairs in 2017 in 1.8km^2 (9).

So, the number of birds recorded in this study, and the general trend, is important. This importance increases when added to the population across the railway line in Hobson's Park – the 2018 Bioblitz there recorded 8 singing males.

I have also recorded some interesting behaviour – which could only be observed because of the good numbers of populations. On both May 7 and 9 2018 I recorded a group of over 10 corn buntings on the corner of the hedge between Fields 4 and 5. This was too late to be a winter flock, and too early to be a family group. Males had been singing for some weeks by then across the site, but fewer did so at this time.

I have searched the literature for any accounts of similar gatherings. The only one I have been able to find was from a century ago (long before the major crash in numbers), when John Walpole-Bond reported singing 'conducted by many males together in a flock, generally from some bush or stunted hedge' (British Birds, Vol 25, No 10, pages 292-300). My group was not singing, however.

Other red-list farmland birds



- **Skylark** populations (right), with around 50 breeding pairs, remain good. The increase between 2015 and 2019 may result from better recording – I base estimates of skylark numbers on singing males observed (greatest on May 21st). This population density is higher than the mean recorded for similar crops in the BTO's skylark survey (10). Winter flocks regularly numbered over 100 birds.
- The **linnet** population I estimated at 17 pairs; linnets are less territorial and more communal than some other species (11) so this estimate is based on the number of regularly used song posts; from April onwards I regularly recorded over 20 birds. Winter flocks were also present, with 40+ birds on November 26th.

- **Yellowhammer** populations, at around 14 breeding pairs, were higher than the 10 recorded last year. This compares well with populations found by Bradbury et al (12). Densities were highest in the hedge along Granhams Road and the ditch along the cycle path. Birds were also present in winter, with 30+ birds on November 26th.
- At least one pair of **yellow wagtail** was also present, and appeared to breed successfully.

At least two pairs of **starlings** bred; flocks of over 70 were present in the autumn with over 400 birds on November 26th. Four different pairs of **song thrush** bred – **mistle thrush** have also bred in the past but I am not certain they have done so this year. **Lapwing** occasionally visit, but no longer breed on the site. **Herring gull** visit regularly and **fieldfare** and **redwing** in the winter.

Amber list farmland birds

For the amber list farmland bird indicator species present:

- **Whitethroat** populations, with 14 breeding pairs, were lower than 2018 (16) or 2017 (22). Densities were highest along the hedges around Nine Wells and in the hedges along Granham's Road. The most birds on one occasion was 9, on May 9th.

- Around 15 pairs of **dunnock** bred, similar to recent years.
- **Reed bunting** (right) populations (3 pairs) were lower than the 7 in 2018, probably reflecting changed cropping. At least one pair of **stock dove** also probably breed, and possibly **bullfinch**.
- **Kestrel** are present and breed nearby.

Other notable amber list breeding species include **green woodpecker,** and **swallow** and probably **tawny owl.** In winter the site provided habitat for **meadow pipit** and **little egret**. **Mallard**, **black-headed**, **common**, **great** and **lesser black-backed gull** also visit and **common tern** occasionally fly over.

Other records

The remaining green list indicator species are all present as well as breeding lesser whitethroat, greater-spotted woodpecker, pied wagtail (with large flocks in the autumn) and moorhen. Buzzards bred in the woods on White Hill.

The habitat survey showed 10 mature, species rich hedgerows with thick growth and good variety; 2 important watercourses and extensive grassy and flower-rich margins; and 3 small areas of scrub and woodland, plus the Nine Wells nature reserve.

Other species of wildlife present include::

- good numbers of **water vole** in Hobson's Brook; water vole numbers in Britain have fallen disastrously so this population is important.

- regular spring counts of 20+ **brown hare**; Hutchings and Harris (13) recorded 7.12 hares/km^2 on arable land; over the course of my study I have also recorded muntjac and roe deer, badger, fox, stoat (right), weasel, rabbit, mole, bank vole and wood mouse. A survey in June 2017 (14) also recorded common pipistrelle, soprano pipistrelle and noctule bats.
- good populations of butterflies including in 2019 brimstone, comma, common blue, Essex skipper, gatekeeper, green-veined white, holly blue, large skipper, large white, marbled white, meadow brown, orange tip, painted lady, peacock, red admiral, ringlet, small skipper, small tortoiseshell, small white, speckled wood; I recorded small heath in 2018 while a moth trap in June 2017 also recorded 30 species of moth as well as other invertebrates; dragonflies are also common.

- threatened arable flowers, including chamomile, furmitory, mallow, poppy, speedwell and viper's bugloss. A 2017 survey (14) recorded a further 45 species of flowering plant in the Nine Wells nature reserve, as well as 12 trees/shrubs, 9 mosses and 7 grasses.

The impact of development

Since I began my study of the area there has been significant encroachment from development – principally the expansion of the Biomedical Campus, but also the Nine Wells housing development and infrastructure projects. The impact of this has been complex, and has particularly affected the following fields on my maps

- Field 0 is now covered by the University of Cambridge Research Facility. Prior to construction, in 2015, this area was in effect grass ley, and was home to two grey partridge coveys during the autumn, and two pairs in Spring 2016. It was also used by skylark. Since construction began I have not recorded any of the red list farmland species there, though reed buntings continue to make some use of the adjoining small area of reed bed.

- Field 1 is now partly covered by the Abcam building, and is also the site of the hospital helipad. Two-three coveys had used this field in Autumn 2018, and at least two pairs were present in early Spring 2019; however I have not recorded coveys there in Autumn 2019, despite apparently favourable cropping. The field continues to be a good site for skylark, and the ditch running along the southern edge remains important for yellowhammer, linnet and reed bunting. The young trees that line the ditch beside the Abcam building were used as song posts by corn bunting, linnet and yellowhammer.

- Field 8 was used by two grey partridge pairs in the Spring. However, during the second half of 2019 the track along the hedge between Fields 7 and 8 has been used for access for construction vehicles working on infrastructure beside the Nine Wells housing development. I have not recorded any partridge in Field 8 since the work began, probably as a result of disturbance. This suggests that even temporary disruption can have an impact on bird behaviours.

It is clear that the Biomedical Campus development has resulted in lost farmland habitat, while the infrastructure work has led to (hopefully) temporary habitat fragmentation. So far, this does not appear to have led to a significant reduction in numbers of farmland birds. However, the autumn has seen a concentration of grey partridge in Fields 3, 4, 5 and 6, where fortunately cropping patterns have been favourable to them. We will need to wait to assess what the longer-term impact may be.

It has been suggested that birds displaced by development will find homes in neighbouring fields. I have no evidence that this is currently the case; in particular, the fields on the other side of Granham's Road do not appear as attractive to grey partridge as those I study, and would require significant habitat creation to make them more attractive.

Conclusions

The data I have gathered over the last eight years – and particularly between 2014 and 2019 – provide a picture of an area of green belt arable land on the outskirts of the city of Cambridge that supports important breeding populations of threatened farmland birds, as well as mammals, plants, butterflies and other invertebrates.

1 Over the period between 2014 and 2019 the site has supported exceptional populations of grey partridge and corn bunting (species that have declined by around 90% since 1970) and the site may well be among the best in Cambridgeshire for both species.

2 Other red list species also thrive in the area, notably skylark, yellowhammer, linnet and yellow wagtail. The area also supports good populations of water vole and brown hare.

3 Habitat variety and land management contribute to the richness of the area. The combination of arable crops with margins and areas of bare earth benefit grey partridge, skylark, corn bunting and yellow wagtail; the ditches benefit yellowhammer and reed bunting, as well as water vole, while hedges are well used by linnet, yellowhammer, whitethroat and dunnock, and by grey partridge for cover. In particular, the hedges running from the Nine Wells nature reserve provide excellent habitat for grey partridge, linnet and yellowhammer and must be conserved.

4 The expansion of the Biomedical campus and infrastructure work has resulted in lost farmland habitat and some habitat fragmentation. This does not appear to have reduced significantly populations of red list birds, but may well have led to a concentration of birds in the relatively undisturbed areas, and it is difficult to assess what the longer-term impact may be. Further construction and infrastructure development could place real pressure on populations.

5 The area provides an important green space and area for walking, cycling and relaxation for local residents who are clearly able to co-exist with nature; the land also forms part of that covered by the Gog Magog Countryside Project proposed in the Cambridgeshire Green Infrastructure Strategy.

John Meed, January 2020

References

1 Hayhow D.B., Ausden M.A., Bradbury R.B., Burnell D., Copeland A.I., Crick H.Q.P., Eaton M.A., Frost T., Grice P.V., Hall C., Harris S.J., Morecroft M.D., Noble D.G., Pearce-Higgins J.W., Watts O., Williams J.M. (2017) *The state of the UK's birds 2017*. RSPB, BTO, WWT, DAEFRA, JNCC, NE and NRW, Sandy

2 HMSO (2005) *Securing the Future: Delivering UK Sustainable Development Strategy*, London, The Stationery Office

3 Eaton M A, Aebischer N J, Brown A F, Hearn R D, Lock, L, Musgrove A J, Noble D G, Stroud D A and Gregory R D (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 108, 708–746

4 Hayhow, D.B., Eaton, M.A., Stanbury, A.J., Burns, F., Kirby, W.B., Bailey, N., Beckmann, B., Bedford, J., Boersch-supan, P., Coomber, F., Dennis, E., Dolman, S., Dunn, E., Hall, J., Harrower, C., Hatfield, J., Hawley, J., Haysom, K., Hughes, J., Johns, D., Mathews, F., McQuatters-Gollop, A. Noble, D., O'Brien, D., Outhwaite, C., Parry, M., Pearce-Higgins, J., Prescott, O., Powney, G., Symes, N., Weighell, T. and Williams, J. (2019*) The State of Nature 2019*. The State of Nature partnership.

5 BTO/JNCC/RSPB (2015) *Breeding Bird Survey Instructions*

6 RSPB (2012) *RSPB Volunteer and Farmer Alliance Training Manual*

7 Aebischer, N J and Ewald, J A (2012) The grey partridge in the UK: population status, research, policy and prospects. *Animal Biodiversity and Conservation*, 35.2: 353–362. (Other comparisons: the RSPB's Hope Farm Project, also nearby, recorded no grey partridge prior to management. Following management changes the population rose to 3 pairs/km^2 in 2011. The largest UK partridge study, the Sussex Study, recorded under 2 pairs/km^2 with typically 5 birds/km^2 in the autumn. Major changes in management – including game keeping and predator control – on one area of the Sussex Study led to autumn densities of 64 birds/km^2 by 2008 with around 20 breeding pairs/km^2 by 2014.)

8 Ceci, Chiari (2017) *Record highs for Hope Farm monitoring*, RSPB (at https://ww2.rspb.org.uk/community/ourwork/b/biodiversity/archive/2017/10/02/record-highs-hope-farm-monitoring-blog-summer-2017.aspx). The Hope Farm before and after management figures provide useful comparisons but it is important to recognise that the Hope Farm bird-friendly management measures are more extensive than those on the Nine Wells site.

9 Jenkins, D (1961) 'Social behaviour in the partridge *Perdix perdix*, The Ibis, Vol 103a, No 2 – a 3-year study of partridge on 640 acres (260 ha or 2.6km^2) of downland near Winchester

10 Browne, S, Vickery, J and Chamberlain, D (2000) Densities and population estimates of breeding skylarks *Alauda arvensis* in Britain in 1997, *Bird Study* 47, 52-56 (Density for spring cereals: just over 12 per km^2; for root crops was under 10. The RSPB's Hope Farm skylark density was 6 per km^2 before management and 19 per km^2 after management – see 12 below)

11 Moorcroft, D and Wilson, J (2000) The ecology of linnets *Carduelis cannabina* on lowland farmland, in Aebischer, N J et al, *Ecology and conservation of lowland farmland birds*, British Ornithologists' Union, pp 173–181. The RSPB's Hope Farm density was 3 before and 11 per km^2 after management.

12 Bradbury, R et al (2000) Habitat associations and breeding success of yellowhammers in lowland farmland, *Journal of Applied Ecology*, 37, 789-805 (The density of breeding yellowhammers varied between 0.5 and 3 pairs per km of hedgerow, and two thirds of hedges surveyed in 1997 held fewer than 2 pairs per km. The RSPB's Hope Farm density was 8 before and 17 per km^2 after management)

13 Hutchings, M.R. and Harris, S., (1996), *The current status of the brown hare (Lepus europaeus) in Britain*

14 Boreham, S, Hobson's Brook Bioblitz, http://hobsonsbioblitz.org.uk/

Appendix 1a: The area covered

Looking towards White Hill

Nine wells from White Hill

Mature hedge and permissive path

Cycle path and flower-rich margin

Grey partridge on Field 2, autumn 2016

Yellowhammer on Field 2 ditch, spring 2016

Appendix 1b: Butterflies of Nine Wells

 Painted lady	 Marbled white	 Small tortoiseshell
 Comma	 Ringlet	 Green-veined white
 Peacock	 Gatekeeper	 Speckled wood
 Small white	 Common blue	 Holly blue
 Essex skipper	 Small skipper	 Large skipper

Appendix 2: Species recorded (2012–19)

This list shows the 90 species recorded over the last 8 years, organised in order of 18 red list birds, 28 amber list birds, and 44 green list species (*italic* = not recorded in 2019).

Species	1st transect	2nd transect	3rd transect	Other visits	Estimated pairs
Corn bunting	6	6	9	x	10
Cuckoo				–	–
Fieldfare				x	–
Grey partridge	13	7	4	x	13
Herring gull		2		x	–
House sparrow				–	–
Lapwing				x	–
Linnet	10	13	19	x	17
Merlin				–	–
Mistle thrush				x	?
Redwing				x	–
Skylark	30	41	16	x	50
Song thrush	1	3		x	4
Starling		1		x	2
Turtle dove				-	–
Whinchat				x	–
Yellowhammer	7	8	5	x	14
Yellow wagtail		2		x	1
Black-headed gull		3	5	x	–
Bullfinch				x	?
Common gull				x	–
Common tern				x	–
Crane				x	–
Dunnock	5	3	4	x	15
Golden plover				-	–
Green woodpecker	2	1		x	2
Great b-b gull				x	–
House martin			5	x	–
Kestrel				x	–
Kingfisher				–	–
Lesser b-b gull				x	–
Little egret				x	–
Mallard	9	-	1	x	–
Marsh harrier				–	–
Meadow pipit				x	–
Mute swan				–	–
Red kite				x	–
Redstart				–	–
Reed bunting	2	3	2	x	3
Snipe				–	–
Stock dove			1	x	1
Swallow	1	7	3	x	2?
Swift		2	2	x	–
Tawny owl				x	–
Whitethroat		5	6	x	14
Willow warbler				x	–

Species	1st transect	2nd transect	3rd transect	Other visits	Estimated pairs
Blackbird	5	5	9	x	13
Blackcap	4	4	5	x	8
Blue tit	11	5	4	x	10
Buzzard			2	x	1
Canada goose				*x*	–
Carrion crow	9	7	10	x	Not counted
Chaffinch	2	4	2	x	3
Chiffchaff	3	2	1	x	7
Coal tit				x	–
Collared dove				x	–
Cormorant				x	–
Egyptian goose				–	–
Feral pigeon			1	x	–
Garden warbler		1	1	x	2
Goldcrest	*1*			-	*?*
Goldfinch	2	8	9	x	3
Gt-sp woodpecker	1	1		x	1
Great tit	2	4	4	x	8-9
Greenfinch	2	2	4	x	4
Grey heron				x	–
Greylag goose	1	4		x	–
Hobby				x	–
Jackdaw	1	3	2	x	Not counted
Jack snipe				–	–
Jay	2	1		x	1
Lesser whitethroat	3		1	x	3
Long-tailed tit	2	1	7	x	5
Magpie	3	4	9	x	Not counted
Moorhen	1	1	1	x	2
Peregrine				x	–
Pheasant	2	1		x	3
Pied wagtail		1		x	2
R-L partridge	2			x	6
Reed warbler				–	–
Robin	6	5	3	x	12
Rook	4	17	24	x	–
Sand martin				x	–
Sedge warbler				–	–
Siskin				–	–
Sparrowhawk				x	–
Stonechat				-	–
Wheatear				–	–
Wood pigeon	42	27	38	x	Not counted
Wren	7	3	6	x	15

Appendix 3: Evidence of breeding populations

This table shows breeding signs recorded for the red and amber list species on the site:

Species	Estimated pairs*	Breeding signs
Skylark	50 (45)	Singing males; pairs; fledged young
Yellowhammer	14 (10)	Singing males; pairs; nest sites; fledged young
Linnet	17 (15)	Singing males; pairs; nest sites; fledged young
Grey partridge	13 (14)	Courtship behaviour; pairs; fledged young
Corn bunting	10 (11)	Singing males; pairs; fledged young
Yellow wagtail	1 (1)	Singing male; pair
Mistle thrush	? (2)	Singing male; breeding uncertain
Song thrush	4 (2)	Singing males
Starling	2 (2)	Pairs; nest sites; fledged young
Whitethroat	14 (16)	Singing males; pairs; nest sites; fledged young
Dunnock	15 (12)	Singing males; pairs; nest sites; fledged young
Green woodpecker	2 (2)	Pairs
Reed bunting	3 (7)	Singing males; pairs; nest sites; fledged young
Stock dove	1 (1)	Pair
Swallow	2 (2)	Singing males; pairs; nest sites; fledged young
Bullfinch	? (?)	Recorded; breeding uncertain
Tawny owl	? (?)	Recorded: fledged young in 2017

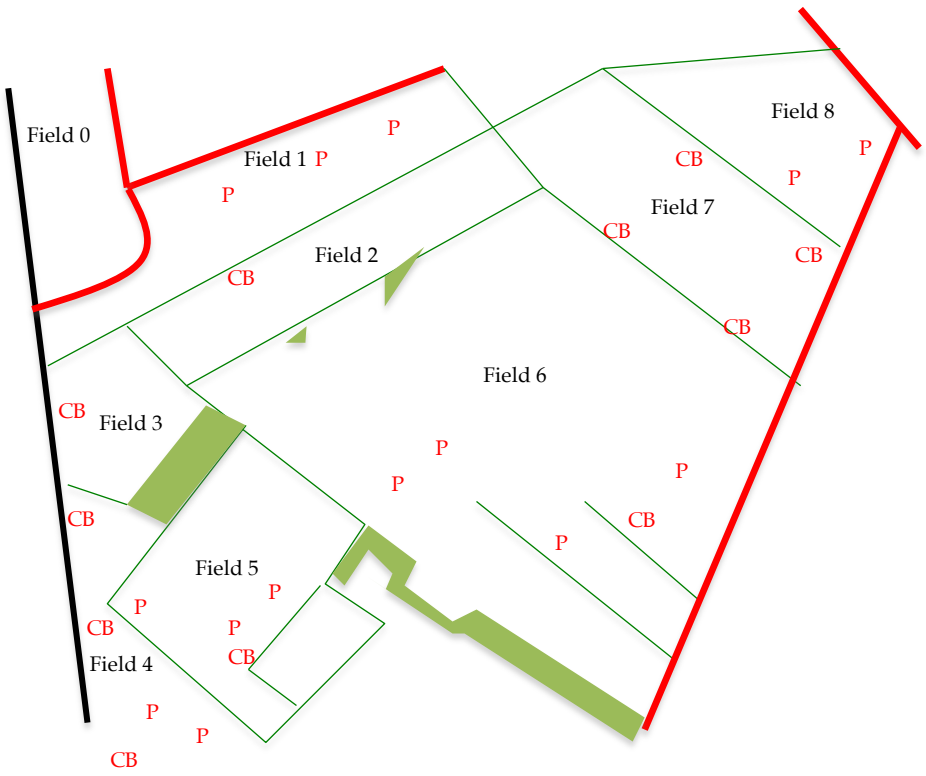
* Figures in brackets show estimates for 2018

For other red and amber species: no breeding signs were observed for herring gull, lapwing, black-headed gull, kestrel, house martin, swift and mallard: these species visit to feed. Increased visits by red kite suggest that they also now breed nearby. The whinchat and willow warbler were on autumn passage. The common tern and crane were flying over. The fieldfare, redwing, meadow pipit, little egret, lesser, common and great-black-backed gull were winter visitors, all using the site to feed.

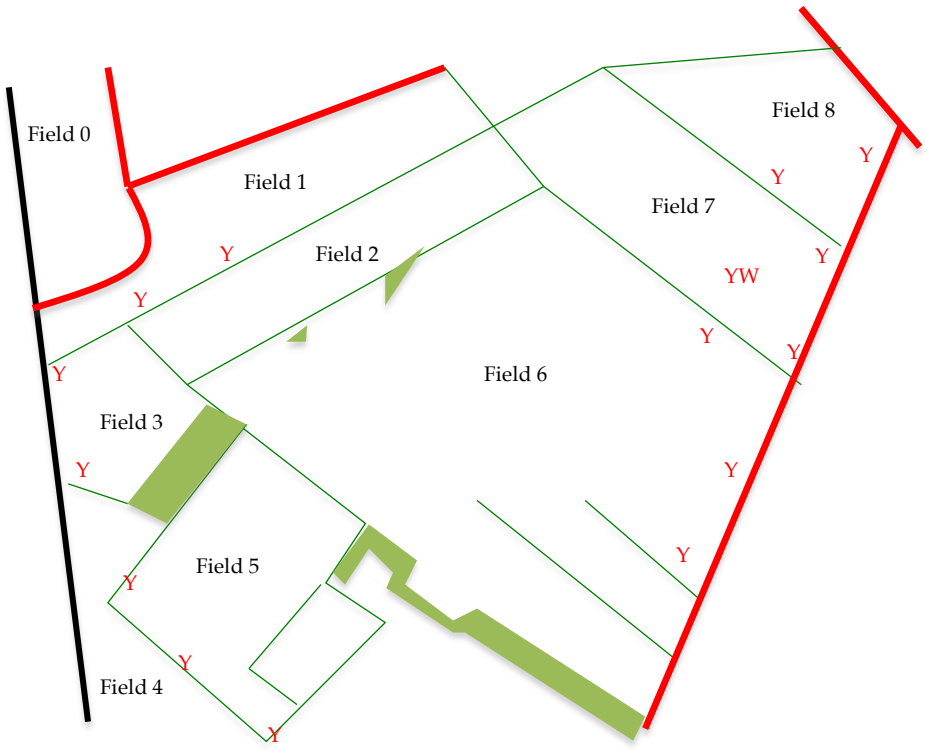
Appendix 4: Maps showing breeding pairs

These maps show estimated breeding pairs in 2019 of the red- or amber-listed farmland bird indicator species breeding in the one kilometre square:

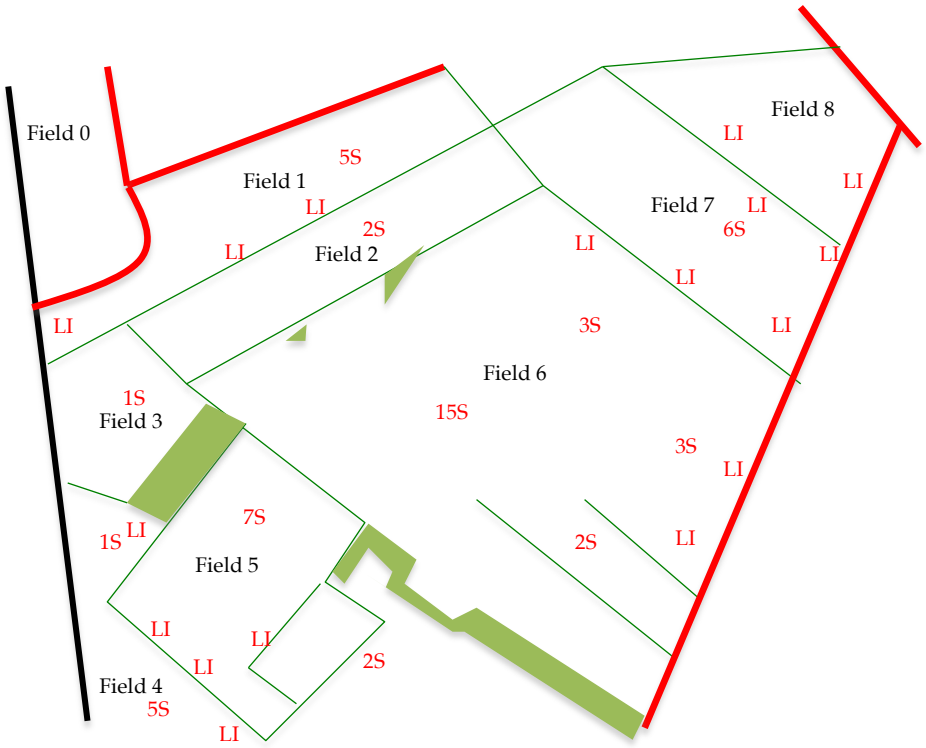
Grey partridge (P) and corn bunting (CB)



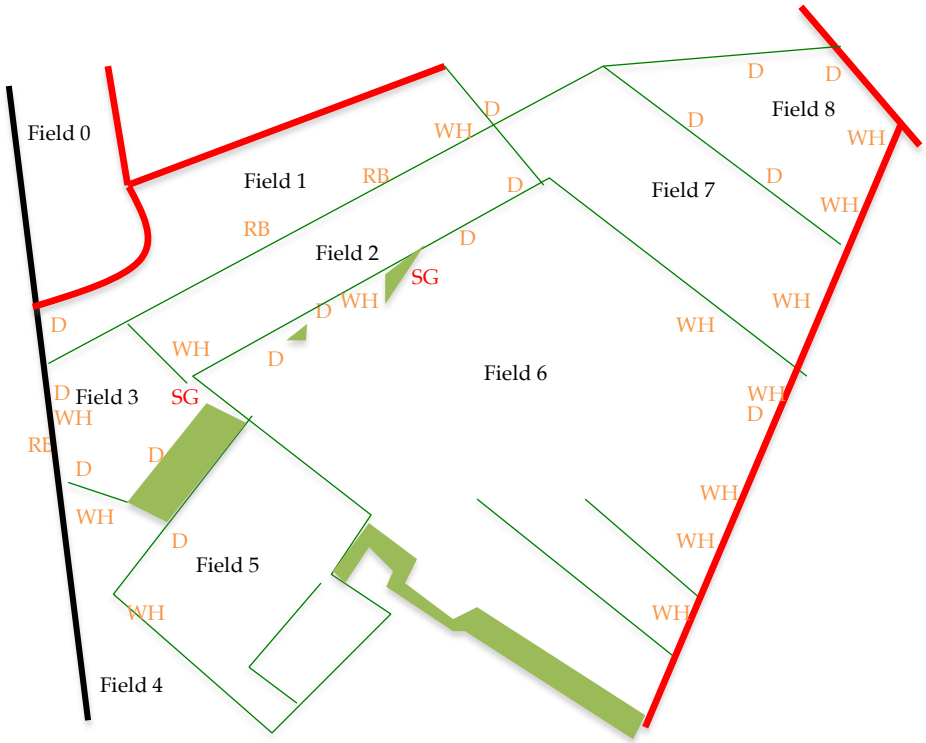
Yellowhammer (Y) and yellow wagtail (YW)



Linnet (LI) and skylark (S)



Whitethroat (WH), dunnock (D), reed bunting (RB) and starling (SG)



Appendix 5: Farmland bird indicator species

This table shows the 18 species on the UK Farmland Bird Indicator; the per cent change shows their population trends for the period 1970-2015:

Species	Present?	Breeding?	Per cent change*
Turtle dove	–	–	-98%
Grey partridge	☒	☒	-92%
Corn bunting	☒	☒	-89%
Tree sparrow	–	–	-90%
Starling	☒	☒	-81%
Yellow wagtail	☒	☒	-67%
Skylark	☒	☒	-59%
Yellowhammer	☒	☒	-56%
Linnet	☒	☒	-55%
Kestrel	☒	–	-50%
Reed bunting	☒	☒	-31%
Greenfinch	☒	☒	-46%
Whitethroat	☒	☒	+6%
Stock dove	☒	☒	+113%
Woodpigeon	☒	☒	+123%
Jackdaw	☒	☒	+149%
Goldfinch	☒	☒	+159%
Rook	☒	–	n/a

Skylark is also a priority species in Policy 70 of the Cambridge Local Plan

• Source: Hayhow D.B., Ausden M.A., Bradbury R.B., Burnell D., Copeland A.I., Crick H.Q.P., Eaton M.A., Frost T., Grice P.V., Hall C., Harris S.J., Morecroft M.D., Noble D.G., Pearce-Higgins J.W., Watts O., Williams J.M. (2017) *The state of the UK's birds 2017*. RSPB, BTO, WWT, DAEFRA, JNCC, NE and NRW, Sandy

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See: http://johnmeed.net/john-meed/nine-wells/