The grey partridges of Nine Wells

A study of one square kilometre of arable land south of Addenbrooke's Hospital in Cambridge

John Meed, January 2016

Introduction

Grey partridge populations are a cause of great concern. According to British Trust for Ornithology (BTO) records grey partridge numbers in the UK fell by 91% between 1967 and 2010. The Game and Wildlife Conservation Trust (GWCT) estimate that there are now just 43,000 breeding pairs in the UK – a dramatic decline from the 1 million pairs in 1911 (1).

Methodology

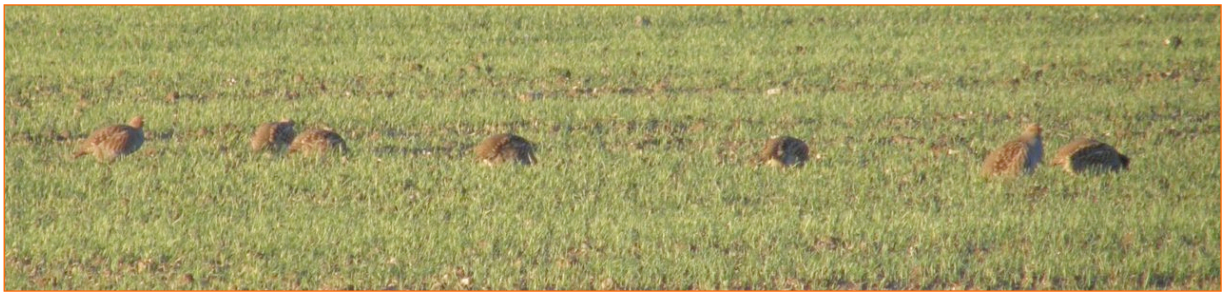
I have surveyed the area south of Addenbrookes over the last four years and have consistently recorded good grey partridge numbers. The area studied is largely arable land, with 2.5km of mature hedgerows, 1km of streams/ditches, and 4+ha of scrub and woodland, including the Nine Wells nature reserve. It includes a cycle path and footpath, and sensitive land management has created several permissive footpaths, flower-rich field margins and new woodland (2)

Throughout 2015 I continued to monitor the partridges, visiting the site on 28 occasions. I drew on my experience of surveying on behalf of both the BTO and RSPB. Appendix 1 records my spring and autumn field visits.

Findings

Winter coveys and spring pairs

Autumn stubble counts (below) towards the end of 2014 had shown up to 68 birds present. At least 4 coveys were regularly present in Field 2, with a further 4 coveys in Fields 5 and 6 and an additional covey in Fields 7 and 8. There were around 10 coveys in total.



Pairs began to form in early February. This change led to some territorial behaviour and a spreading out of the pairs. At least 13 pairs were present – 3 more than last year. In late March I recorded 8 pairs in Field 6, with the 5 other pairs spread across Fields 1, 2, 5 and 7 (see Appendix 2).

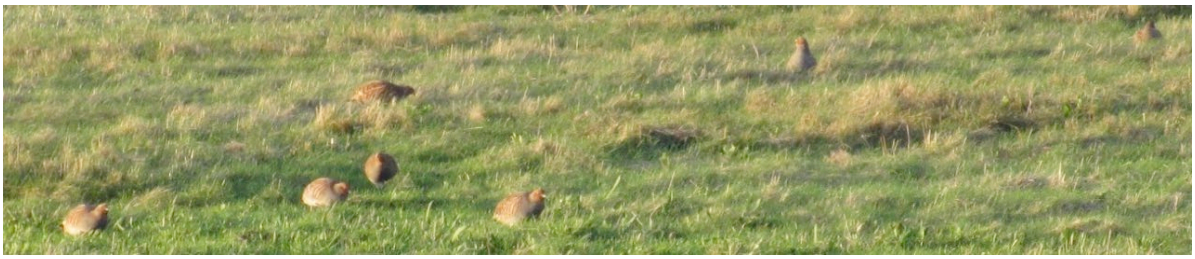
The birds became more discreet after the pairing up. After the end of March I usually recorded 2–3 birds on my visits. However the autumn coveys suggest that at least 13 pairs remained present throughout the summer.

Autumn coveys

Autumn counts in late 2015 showed at least 85 birds present, and probably 93, with 11 coveys and 2 additional pairs.

The birds showed a distinct preference for stubbles, and when these were ploughed they tended to move to an adjoining field:

- Following ploughing in October, the covey of 11 from Field 8 moved to Field 7; when this was in turn ploughed in early November they crossed Granham's Road to a field of winter wheat – the first time I had seen partridges on the other side of this road.
- Throughout October and early November Field 1 had winter wheat while Field 2 retained stubble. The 4–5 coveys in this area almost always preferred the stubble. However, following ploughing of Field 2 most moved to the winter wheat of Field 1.
- Field 6 is the largest field; again the coveys in this field almost always preferred one corner that remained as stubble after the rest was planted with winter wheat. Following ploughing in November, I only once recorded one of these coveys (in January). I was unsure whether they also had moved away, or were simply harder to record.
- The main exception was the two coveys on Field 0. This field was in effect grass ley awaiting Addenbrookes development. The two coveys moved very little throughout the autumn. The covey of 7 is pictured below.



Partridge generally feed in the early morning and in the time before dusk, probably to avoid predation. They roost during the day in areas of longer grass, hedge bottoms or areas of new tree planting, notably around the hedge running north-west from the Nine Wells nature reserve. They emerged in the hour or so before dark; some coveys (eg the 12 of Fields 1/2) seemed to emerge later than others (eg the 6 and 10 of Fields 1/2). When feeding one or two birds typically keep watch for predators while the rest of the covey eats.

There was often interaction between coveys – normally calling, but sometimes two coveys would move closer together and once intermingled. The weather appeared to influence partridge behaviour. In particular, I recorded far fewer birds on windy days.

Through the autumn there appeared to be little loss from predators. Although from mid November onwards I began to record fewer birds, I had the impression that this was because some coveys had changed their habits or location, rather than a reduction in the size of coveys. Nonetheless I had recorded fewer than half the number of birds across the site after spring pairing than during the previous autumn – was this due to predation or dispersal?

Appendix 3 shows typical sightings of the October coveys.

Other notable species

During my visits I recorded other species as well. The area supports wintering meadow pipit, skylark (winter flocks regularly numbered 30–50 birds, with 100 on December 1st), finches (flocks of linnet (up to 30), yellowhammer (at least 10), reed bunting, bullfinch, chaffinch and greenfinch, thrushes (fieldfare, redwing, etc.).

I also recorded visits by large flocks of golden plover (300+), lapwing (up to 12) and starling (typically 20–30) as well as individual snipe, kingfisher and little egret.

Discussion

My records show that the square km south of Addenbrookes has this year supported a partridge population of at least 13 spring pairs and 85 autumn individuals.

To put this in context it is possible to compare with other studies of the species, for example:

- The RSPB's Hope Farm Project, on the other side of Cambridge, recorded no grey partridge prior to management. Following management changes the Hope Farm population rose to around 3 pairs/km^2 in 2011 (there were 5 pairs across an area of 1.8km^2). The management measures included winter stubbles and seed-bearing cover crops for winter food; field margins to provide insect food for chicks in the summer; and reduced pesticide usage. (3)

- On the GWCT's Grey Partridge Demonstration Project near Royston the density of grey partridge pairs rose from under 3 pairs/km^2 before management to around 15 pairs/km^2, while autumn densities increased from 8 birds/km^2 before management to around 80 birds/km^2 (7). The management measures included game keeping, predator control, set-aside strips for brood rearing and overwinter cover. (4)

- The largest UK partridge study, the Sussex Study, provides valuable data on population densities. From 2003, major changes in management including game keeping, predator control, winter stubbles, beetle banks, wild bird cover and conservation headlands were introduced to one part of the study area and compared to the other parts of the area which remained conventionally farmed (5). The managed area saw an increase in autumn densities from 1.2 birds/km^2 in 2003 to 64 birds/km^2 in 2008 and around 200 birds/km^2 in 2015 while in other areas there were around 5 birds/km^2 throughout the period (6). Breeding density increased from 5.2 pairs/km^2 in 2004 to 20.1 in 2010 while on other areas the equivalent densities were 0.9 pairs/km^2 in 2004 and 2.4 in 2010 (7).

- The latest Partridge Count Scheme from GWCT suggests that in 2014 spring pair density was 3.4 pairs/km2 and autumn densities were 19.9 birds/km2. Figures were slightly higher in Eastern England at 5 pairs and 22.2 autumn birds. GWCT members would generally take some measures to support game bird populations including feeding (8).

To summarise these figures; with little or no specific management the arable farms typical of Cambridgeshire support between 0 and 5 pairs/km^2 and 0–20 birds/km^2 in the autumn. The Nine Wells population is several times greater than this. Only with high levels of management aimed at the species do numbers approach those around Nine Wells.

Factors affecting the success of grey partridge

The grey partridge has been researched extensively. The GWCT (9) suggest that the several measures can help with partridge survival:

- **A safe place to nest in tussocky grass** – in hedge banks, beetle banks and set-aside strips. On the Nine Wells site there are good areas of tussocky grass in hedge banks, grassy strips and areas of new tree planting, notably around the hedge running north-west from the Nine Wells nature reserve. Trumpington Farm Company entered higher level stewardship in 2009 and the agreement included woodland and hedge management.

- **Insect food for chicks** – in set-aside strips, conservation headlands, reduced pesticide use. On the Nine Wells site the same areas are likely to provide insect food in the summer. There are also several margins and strips in Field 6 and along the cycle path.

- **Food and cover for winter and spring survival** – in stubbles, seed-bearing crops and feeders. On the Nine Wells site areas of stubble remained until November and as we have seen these areas saw the greatest concentration of autumn coveys. The hedges, new woodland and margins provide cover, as did the scrubby areas of the Nine Wells nature reserve though I have not recorded roosting partridge here since clearance in 2014.

Dick Potts (10) argues that in addition **game keeping and predator control** can help partridge numbers increase, a view shared by Aebischer and Ewald (11). The Nine Wells site is not managed for shooting and although there is occasional control of woodpigeons I am not aware of formal predator control. Potts points out that key nest predators include corvids and foxes, as well as stoat, rat and badger, and all are well represented on the site, with at least one fox and several pairs of magpie and carrion crow. Sparrow hawk and buzzard, and occasionally peregrine and red kite, also hunt the area. It is possible that the good areas of cover help reduce predation.

It is likely that the **mild winters** of 2013–14 and 2014–15 may have helped survival rates.

The area is widely used by walkers, cyclists, families and dog owners and this does not seem to disturb unduly the partridges which usually squat down to make themselves less visible or walk or run further away from pedestrians – even when dogs run across stubble fields it is quite unusual for the birds to fly off. The grey partridge appear to have adapted to the presence of people who may even on occasion discourage predators.

The area also supports pheasant and red-legged partridge, but these are much less numerous than the grey partridge. The maximum numbers recorded were 3 pheasant and 8 red-legged partridge, though I estimate that there may be 15 or so red-legged partridge in total.

Conclusions

In conclusion:

1 The square kilometre of green belt arable land immediately south of the Addenbrooke's site (grid reference TL4654) supports an exceptional population of grey partridge. It also supports good populations of other farmland birds, notably the red list species skylark, linnet, yellowhammer, corn bunting and yellow wagtail.

2 The success of the grey partridge is likely to result from appropriate habitat and sympathetic land-management, notably the combination of arable crops with grassy margins, hedges and areas of scrub and woodland – in particular, the hedge, margin and new woodland running north-west from the Nine Wells nature reserve.

3 Although the main partridge predators are present on the site, and the site is extensively used by people, this does not seem to impact unduly on partridge survival rates.

4 Given the catastrophic decline in grey partridge numbers in the UK, it is important that the area continues to be conserved and managed sensitively.

References

1 GWCT, 2006, *Conserving the Grey Partridge*, GWCT. See also Musgrove, A et al, 2013, Population estimates of birds in Great Britain and the United Kingdom, *British Birds*, 106, February 2013, 64–100

2 Meed, John (2016) *The value of the green belt south of Cambridge to populations of farmland birds: Report of a survey of grid square TL4654 (2015)*, www.johnmeed.net.

3 RSPB (2012) *Hope Farm: Farming for Food and Wildlife*, RSPB

4 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

5 Potts, G R, 2012, *Partridges: Countryside Barometer*, Collins

6 Potts, G R, Ewald, J A and Aebischer, N J, 2008, Grey partridges on the Sussex Downs, *Game and Wildlife Review*, 08

7 Ewald, J A, Potts, G R, and Aebischer, N J, 2012, Restoration of a wild grey partridge shoot: a major development in the Sussex study, UK, *Animal Biodiversity and Conservation*, 35.2: 363–369

8 GWCT, *Grey Partridge News*, Issue 22, Spring 2015, GWCT

9 GWCT, 2006, ibid

10 Potts, G R, 2012, ibid

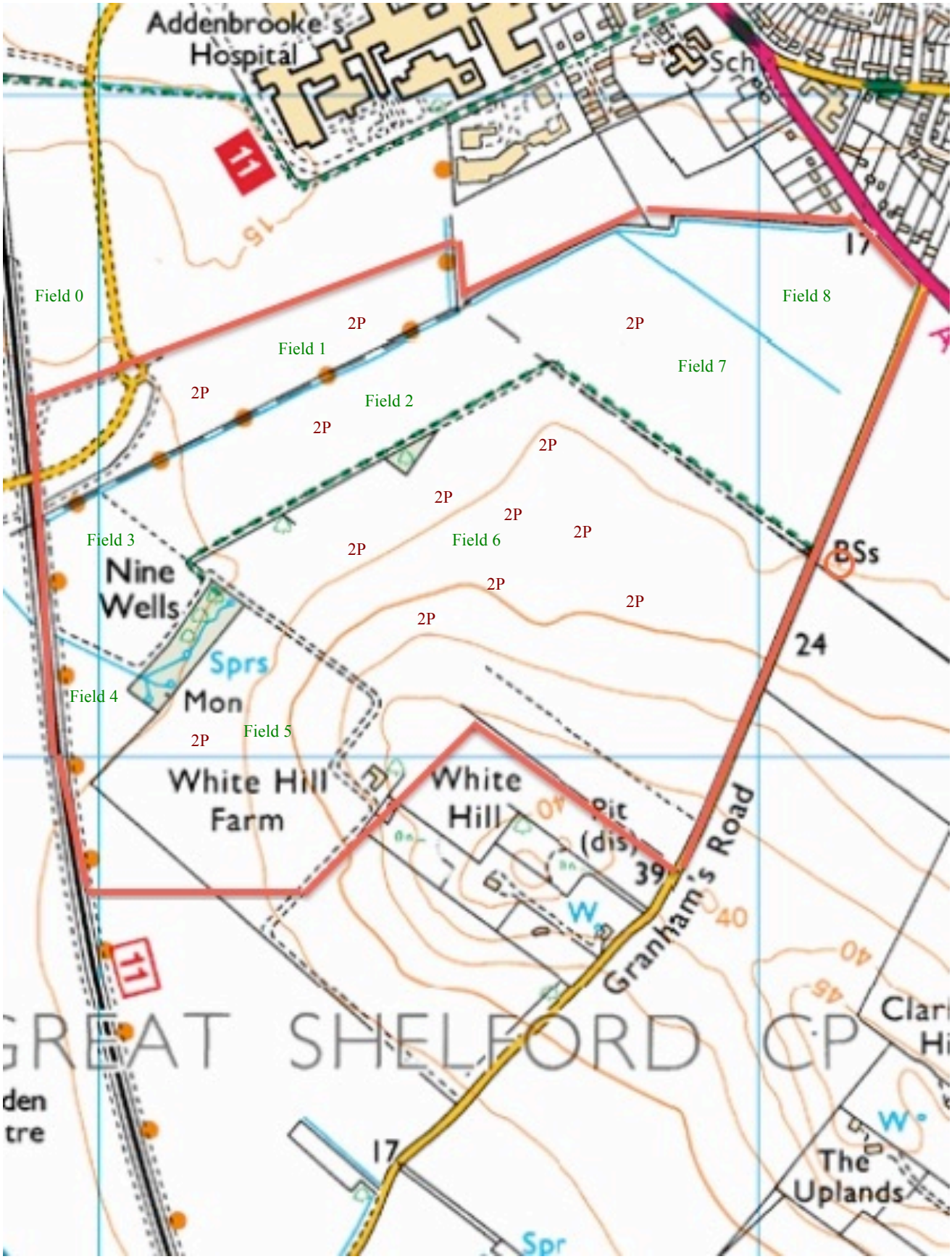
11 Aebischer, N. J. and Ewald, J. A., 2012, ibid

Appendix 1: Sightings during the spring and autumn of 2015

Field number	0	1	2	3	4	5	6	7	8	Total
19th January					1	11	9			21
27th January					1	8	7			16
4th February				1	8	1	12			22
10th February		1	1	1	1		2	3		9
17th February		2					2, 2			6
27th February					2	2	2, 2			8
6th March						2, 2	2, 2, 2, 2			12
20th March		2, 2	2			2, 2	2, 2, 2, 2, 2, 2, 2	2		26
23rd March						2, 2, 2	2, 2, 2, 2, 2, 2, 2			22
From late March to early September I usually recorded 2–3 birds on my visits										
3rd September			5						11	16
18th September			3						11	14
14th October			5							5
19th October		11?	10+8					7?		36
20th October		12	10+8+4				5+6	11		56
22nd October			6?+12+8+3				5	11		45
23rd October	7+10	6	8+12+2?							47
26th October	7+10		8+10+12+6				5+6+10	11		85
30th October		10	6+12+2+8				8+1?	11+6?		64
2nd November	10		8+6+12+1?				8+5+2	11		63
5th November			4+6+10+12		4					36
10th November	7	8+10	6+10?		3					44
19th November	7+10	6+10+12			4+2					51
25th November	7+13	10+12			2					44
1st December	7+9	6+12+1?								35
7th December	7+10	6+10+12								45

Note: the count on 26/10 was particularly accurate. A 1? means covey was heard but not seen. Any other coveys with question marks are where the count may have been an underestimate.

Appendix 2: Typical spring records of grey partridge pairs (13 on March 20th)



Appendix 3: Typical late October 2015 records of grey partridge coveys