



PARTRIDGE - monitoring breeding songbirds

Background

The PARTRIDGE project, led by the GWCT, part-funded by Interreg North Sea Region runs from 2016 to 2023, with 12 European partners in six participating countries (Belgium, Denmark, England, Germany, the Netherlands and Scotland). The project seeks to showcase at 10 demonstration sites (500ha in size, two in each country, except Denmark) how best practice and novel management solutions can be used to enhance biodiversity on arable farmland to help achieve the EU's and the UK's 2030 Biodiversity Targets. The project's locally-adapted management plans are tailored to the grey partridge, because existing evidence shows that partridge-friendly measures, in particular wild bird seed mixes and wild-flower blocks, benefit farmland biodiversity in general.



The project successfully promoted wildlife-friendly habitats, such as this PARTRIDGE wild-flower block, to encourage farmland birds and insects.
© Jannie Timmer

During the PARTRIDGE project, we increased the amount of good- to high-quality (i.e. wildlife-friendly) habitats by 4.1% on average across 10 demonstration sites (see *Review of 2021*, p.22-25). The project's key high-quality measure is the PARTRIDGE wildflower plot, which provides suitable habitat year-round for the grey partridge and a wide range of other farmland wildlife. An important element of the project is to provide evidence that the project's approach delivers more biodiversity and hence several indicator species were monitored throughout the project, including songbirds on farmland during the breeding season. Habitat measures tailored at grey partridge conservation were implemented, and monitoring took place, on each demonstration site, with monitoring also undertaken at 10 paired 500 hectare (ha) reference sites. The aim of the bird monitoring was to quantify the difference made by the habitat measures implemented at the demonstration sites to breeding densities and species diversity.

Breeding songbird numbers were monitored using a well-tested, but slightly adapted territory mapping method, originally developed in the Netherlands. At each of the 10 demonstration and reference sites, we surveyed all farmland birds along a six to seven kilometre (km) transect, five times between early April and the end of June, from 2017 to 2022. Each transect was surveyed on foot between sunrise and no later than 10am. In Scotland, the two demonstration sites are Balgonie and Whitburgh, while in England they are Rotherfield and Loddington. Observations were recorded on a handheld tablet with GPS using the AVIMAP app developed by SOVON (the Dutch equivalent of the British Trust for Ornithology) and data were uploaded to a server for analysis by INBO (the Research Institute for Nature and Forest in Flanders), our project's data managing partner.

Across all sites, the number and diversity of farmland songbird species varied greatly between the different demonstration and reference sites, making direct comparisons between countries difficult. Nevertheless, there were three main findings:

- 1) Of the 12 farmland songbird species (skylark^R, yellow wagtail^R, tree sparrow^R, linnets^R, yellowhammer^R, common whitethroat^A (hereafter referred to as whitethroat), rook^A, white wagtail, meadow pipit, stonechat, lesser whitethroat and



The stonechat was a new coloniser at Oude Doorn (NL), Nesselröden (D), and Rotherfield (England) during the course of our PARTRIDGE project.
© Markus Jenny



goldfinch; R = UK red-listed, A = UK amber-listed, species ordered by red-list status and taxonomy) recorded across most demonstration sites, six (skylark^R, linnets^R, yellowhammer^R, whitethroat^A, lesser whitethroat and goldfinch) had, on average, significantly higher territory densities across all demonstration sites compared to the control sites. For two species (tree sparrow^R and meadow pipit) there was a tendency for densities to be higher, while the two wagtail species (yellow and pied) showed similar densities. The stonechat was a new coloniser at Oude Doorn (the Netherlands), Nesselröden (Germany) and Rotherfield (England) during the course of our project; numbers were too low for statistical analysis, but at all sites they nested and foraged in our PARTRIDGE flower blocks.

- 2) Overall, farmland songbird species diversity was significantly higher at the demonstration sites (mean = 22.9 ± 0.1 SE) compared with the control sites (19.4 ± 0.1).
- 3) Across the six-year period and across all sites, the average annual rate of increase in numbers of territories for linnets^R and whitethroat^A was significantly higher overall at our demonstration sites than our reference sites. These two species appear to have benefited the most from the new measures implemented by the project. Furthermore, the tree sparrow^R, meadow pipit, lesser whitethroat and stonechat showed a strong but non-significant tendency for a higher increase at the demonstration sites, possibly because our time series of seven years was still too short to pick up significant trends.

Across all demonstration sites, the following songbirds were observed nesting (n) or foraging (f) in our PARTRIDGE flower blocks during the breeding season: skylark^R (n,f), marsh warbler^R (n,f), whitethroat^A (n,f), stonechat (n,f), yellow wagtail^R (n,f), bluethroat (n,f), reed bunting (n,f), linnets^R (f), yellowhammer^R (f), goldfinch (f), greenfinch^R (f), yellow wagtail (f), chiffchaff (f), willow warbler^A (f), duncock^A (f), blackbird (f), song thrush^A (f). Non-passerines included grey partridge^R (n,f), pheasant (n,f), quail (n,f), kestrel^A (f), sparrowhawk^A (f), tawny owl^A (f), barn owl (f) and lapwing^R (f). Further records in PARTRIDGE flower blocks from outside our project areas included corn crane^R (n,f), corn bunting^R (n,f) and grasshopper warbler^R (n,f).

Overall, wildlife-friendly habitats covered more than 10% of the 500-ha demonstration areas (excluding urban areas but including woodland) at seven of the 10 sites (including Rotherfield in England), with 7-9% of wildlife-friendly habitat on two sites (Loddington, England and Balgonie, Scotland) and 5% on one, (Whitburgh, Scotland). All except one reference site had less than 5% of its area in wildlife-friendly habitat. Our results provide good evidence that arable farmland areas with at least 7% wildlife-friendly habitat provision, are a suitable way to recover farmland songbirds of conservation concern, in line with the EU's and UK's Biodiversity Targets for farmland.

Key findings

- Across all 10 demonstration sites, six of 12 songbird species found on farmland (three of which are red-listed) had significantly higher numbers of breeding territories than at the 10 reference sites.
- Overall, farmland songbird diversity was significantly higher at the demonstration sites than at the reference sites.
- Linnets and whitethroat, two species of conservation concern, had a significant increase across all 10 demonstration sites.
- Among the four UK demonstration sites, Rotherfield had the highest density of territories of farmland songbirds of conservation concern, which increased by 90% during the project period, while at Loddington the trend remained stable for the same species.
- In Scotland, the farmland songbirds of conservation concern present at the two demonstration sites increased by 70% at Balgonie and 40% at Whitburgh.

Francis Buner
Fiona Torrance
John Szczur
Luc De Bruyn

TABLE 1

Breeding territory densities of farmland songbirds of conservation concern recorded at the four UK PARTRIDGE project demonstration areas at the beginning of the project in 2017 for Rotherfield and Loddington, and 2018 for Balgonie and Whitburgh, compared with the end of the project in 2022

Territories per 100 hectares

Demonstration site	Skylark ^R		Linnet ^R		Yellowhammer ^R		Whitethroat ^A		Tree sparrow ^R	
	2017/18	2022	2017/18	2022	2017/18	2022	2017/18	2022	2017/18	2022
Rotherfield	20.3	40.5	15.7	41.8	26.1	30.7	12.4	30.7	n/a	n/a
	100% increase		166% increase		18% increase		48% increase		-	
Loddington	11.3	12.7	6.7	7.3	10.0	8.7	16.0	14.7	1.3	0.7
	12% increase		9% increase		13% decrease		8% decrease		46% decrease	
Balgonie	15.4	24.6	3.1	13.1	16.2	25.4	7.7	17.7	6.2	3.8
	60% increase		323% increase		57% increase		130% increase		39% decrease	
Whitburgh	13.4	17.7	1.8	1.2	6.1	14.0	7.3	9.8	4.9	5.5
	32% increase		33% decrease		130% increase		34% increase		12% increase	
UK trend 2015-2020 mean (95 CI)*	8% (4 to 13%)		2% (-5 to 9%)		-10% (-14 to -6%)		-7% (-11 to -4%)		-9% (-22 to 5%)	

Only species with high enough numbers to allow comparison included (R = UK red-listed, A = UK amber-listed). *From BTO Breeding Bird Survey (BBS).

Across the four UK demonstration sites the results varied greatly, reflecting the different geographical areas, farming systems, amounts of available wildlife-friendly habitat and predation management systems implemented.

- 1) The demonstration site that had the highest density of breeding UK red-listed farmland songbird territories was Rotherfield (mean = 185 ± 27 SE per 100ha, calculated from 2020-2023 data). Across our four UK sites, we recorded 10 farmland songbird species that are included in the UK farmland bird indicator (skylark^R, yellow

wagtail^R, starling^R, tree sparrow^R, linnet^R, yellowhammer^R, greenfinch^R, whitethroat^A, rook^A and goldfinch). Comparing the two English sites, the number of red-listed farmland birds (only the five songbird species with more than two territories per 100ha included) roughly doubled at Rotherfield during the project period (+90%), while at Loddington they remained unchanged (-1%). In Scotland, the same species increased by +70% at Balgonie compared with +40% at Whitburgh (see Table 1).

UK-wide, the population trends between 2015-2020 (BTO bird trends) were: skylark (+8%), linnet (+2%), yellowhammer (-10%), whitethroat (-7%) and tree sparrow (-9%). The combined population trend of the red-listed species described in Table 1 was significantly better at all our UK sites (average +50%) compared with the national trend (-16%) during similar time periods.

- 2) Overall, species diversity of UK farmland songbirds was similar between Rotherfield (eight species) and Loddington (nine species), with Balgonie and Whitburgh both having seven species. Farmland bird diversity did not increase at any of the four UK sites during the project period.
- 3) Across the six-year period, the average annual rates of change in the number of territories of linnet^R, greenfinch^R, whitethroat^A and goldfinch at Rotherfield increased significantly (+17% to +32%) compared with the same species at its reference site where there was no change (-0.02% to -0.09%). At the other three UK sites, the average rates of change on the demonstration areas were higher for some farmland songbird species than on the corresponding reference areas, but none of the differences were significant.

Apart from regional differences, the difference in the number of red-listed farmland songbird breeding territories between the four sites may be explained by the different wildlife management strategies in place, in particular the availability of wildlife-friendly habitats and the level of predator management.

At Rotherfield, the amount of wildlife-friendly habitat increased by 3.3% from 14.8% to 18.1% between 2017 and 2022, at Loddington by 0.1% to 9.8%, at Balgonie by 2.3% to 8.2% and at Whitburgh it decreased by 2.9% from 8.2% to 5.3% of the total demonstration area. Predator management levels varied from high at Rotherfield and Whitburgh (full-time wild bird keeping) to intermediate at Loddington (part-time keeping) and no predation management at Balgonie (no keeping).

Farming with Nature

In 2020 we published a booklet that summarises the evidence upon which our project approach is based: *Farming with Nature – promoting biodiversity across Europe through partridge conservation*. This can be downloaded here: northsearegion.eu/partridge/output-library/.



Overall, farmland songbird diversity was significantly higher at the demonstration sites

Acknowledgements

This project would not be possible without the help of hundreds of supporters. We thank all participating GWCT staff (in particular Dave Parish, Chris Stoaite, Steve Moreby and Beth Brown), the PARTRIDGE co-ordinating partner organisations BirdLife NL, the Flemish Land Agency (VLM), INBO, the University of Göttingen and the Danish Hunters Association together with their local PARTRIDGE partner organisations, all the participating farmers, hunters, volunteers, NGOs and Government agencies, the Steering Committee members, and, last but not least, the NSR Interreg Secretariat in Denmark.

The PARTRIDGE wildflower plot provides suitable habitat year-round for farmland birds. © Francis Buner/GWCT

