

Note on Corn Bunting Territories.

Mr Guy Stone. Biodiversity. Arcadis.

Territory Size

1. I have based an estimate of the numbers of corn bunting territories based on findings of the following two papers:

(1) Lilleor, Ole. (2007). *Habitat selection by territorial male Corn Buntings Miliaria calandra in a Danish farmland area*. Dansk Ornitologisk Forenings Tidsskrift (DOFT). 101.

2. This study mapped male corn buntings in a 28 km² farmland area in Djursland, Denmark. Mean territory density was 8.8 territories km² but with great local variation, up to a maximum of 23.9 territories km². The distribution of birds and habitat characteristics (crops, hedgerows, soil types etc.) were analysed by using Principal Component Analysis (PCA) and linear multiple regression. The highest corn bunting densities were found on the most fertile soil type, while the birds strongly avoided bog, forest and humus soil areas. There was a clear preference for areas with the greatest proportion of tillage, but with a strong preference for tilled land with many fields and high crop diversity. Corn bunting density correlated significantly with several crop types, but sometimes this was merely due to a preference for tilled land per se.

(2) P. F. Donald & A. D. Evans (1995) *Habitat selection and population size of Corn Buntings Miliaria calandra breeding in Britain in 1993*, Bird Study, 42:3, 190-204, DOI: 10.1080/00063659509477168

3. This paper presents the results of a survey of breeding corn buntings in Britain in 1993. Numbers of corn buntings and land-use types and field boundaries present were recorded by volunteers from over 1300 tetrads selected across the range of the species in Britain. The study found that even in the most densely populated regions, corn bunting regional density did not exceed 0.4 territories km².
4. Regional populations were positively correlated with the overall areas of cereals and total tilled land but not with the total area of farmland nor with the proportion of total tilled land made up by cereals. This suggests that the total area of tilled land is a more important factor in determining population size than the total area of farmland or of cereals alone. The results of the 1993 corn bunting survey therefore supported neither the hypothesis that corn buntings have declined because of regional declines in arable agriculture nor that declines in the cultivated area of spring barley are responsible. Stubble fields, particularly those rich in arable weeds, are the most important foraging habitat of wintering corn buntings in Britain, but that large areas of apparently suitable stubble were not occupied, suggesting that, at least immediately after the proliferation of rotational set-aside, wintering habitat is not a limiting factor to population size (although it may have been so before 1992, when the introduction of rotational set-aside greatly increased the availability of winter

stubbles). The reasons for the recent range and population declines are therefore still unclear, and do not correlate simply with large-scale patterns of land use change.

Territories within Exchange Land and Adjoining Arable Land.

5. The area of exchange land is approximately 0.02 km². Based on the findings of the research papers above, this could currently support
 - **0.008** territories at the lowest density findings (0.4 territories/km²)
 - **0.48** territories at the highest density findings (23.9 territories/km²)
6. In either case this is a low number and represents only part of the territory for one pair of birds (should a corn bunting territory be established to include the area to be occupied by the exchange land). Therefore, enhancing this area for corn bunting use could only bring benefits by bringing in features, such as song posts, and weedy areas, required for breeding and providing food for fledgelings.
7. The total area of arable farmland south of Addenbrookes Road and west of the scheme (rail line) to Hobson's Brook is approximately 0.37 km².
8. This alone could support:
 - **0.15** territories at the lowest density findings (0.4 territories/km²)
 - **8.83** territories at the highest density findings (23.9 territories/km²)
9. These figures could be doubled considering arable farmland also borders the east side of the rail line and the corn buntings were observed during the field survey singing from the overhead wires for the rail line (so territories could be on either side). There is clearly theoretical capacity for the area south of Addenbrookes Road to support more corn bunting territories which would be encouraged by the mitigation proposed. During the breeding bird surveys we established there were three corn bunting territories extant south of Addenbrookes Road.
10. In terms of individual territory size for a pair of corn buntings, the research papers support the following:
 - at the lowest density recorded (0.4 territories/km²), the territory for an individual corn bunting pair has been found to occupy an area of 2.5km². To put into context this is comparable to a circle with a radius of 0.89km (in practice bird territories are not perfect circles).
 - at the highest density recorded (23.9 territories/km²), the territory for an individual corn bunting pair has been found to occupy an area of 0.04km². To put into context this is comparable to a circle with a radius of 0.11km.
11. Considering the exchange land occupies an area of approximately 0.02km², the maximum usage that this would provide in its current state would be for half the territory of a single pair of corn buntings. In practice it is likely to be far lower; however, the mitigation measures proposed for corn bunting are targeted at increasing its suitability.