

POSTER ABSTRACT

Understanding trade-offs between food production and bird conservation on two commercial farms

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Being associated with anthropogenic landscapes, farmland birds have a cultural value to society. However, bird abundance is negatively affected by intensity of food production, with diverse, low external input farming systems supporting highest bird numbers and species richness.

Food production is rising up the political agenda in response to population growth, increasing consumption and resource depletion. We use two case studies (the GWCT 'Allerton Project' farm at Loddington, Leicestershire, and the RSPB's 'Hope Farm' in Cambridgeshire) to examine to what extent bird conservation can be achieved without compromising food production, while also maintaining or contributing to other ecosystem services. The Allerton Project farm combines crop and livestock production in a diverse landscape of undulating topography with woods, hedges, ponds and other habitat. Game management for shooting has influenced the management of the farm. Hope Farm is in a simpler arable-dominated landscape, with some horse and sheep-grazed permanent grass paddocks and few trees.

Habitat management was introduced at both farms in relatively unproductive areas of fields, to minimise impacts on crop production, and took the form of buffer strips, beetle banks, unharvested crop or conservation headlands, wild bird seed mixtures and nectar flower mixtures. Hedge cutting frequency was reduced on both farms. At Loddington, ponds and woods were created, some predators were controlled (1993-2001), and grain was provided in winter (1993-2006). At Hope Farm, skylark plots and within-ditch sediment detention ponds were created and spring beans introduced into the crop rotation.

Bird numbers doubled at Loddington between 1992 and 2001, after which they declined in response to the dismantling of the game management system for research purposes. Game management is currently being restored. Wild pheasant numbers increased at Loddington and five shoots were held each year until 2001. At Hope Farm, bird numbers increased by 200% between 2000 and 2010, without game management. There were considerable differences between species and between farms in changes in bird numbers. Although the arable area was reduced, crop yields on the remaining land were maintained on both farms.

We explore the impact of conservation measures on crop production at the farm scale, using crop yield data to estimate yield loss associated with conservation management. We discuss the different responses in bird numbers at the two farms and the implications for setting of targets for withdrawing land from production for wildlife conservation, and other ecosystem services. We also discuss the influence of game management on bird conservation.