Bird Conservation and Agriculture

Populations of many species of farmland birds in Britain collapsed during the 20th century, creating one of the biggest conservation problems of the day and sparking a wave of research to find out why this happened, and devise practical solutions. This book summarises this story, exploring relationships between bird populations and agricultural land management. The first part of the book sets the historical context of change in agriculture and bird communities since the 18th century, and introduces the bird communities of agricultural land today. The second part provides an overview of this very active area of applied conservation science, including in-depth case studies of 16 species that have been the subject of detailed research effort and that, taken together, illustrate the many ways that agricultural intensification has affected bird populations. The last part shows how this evidence base, coupled with recent greening of agriculture policy, has provided opportunities to manage agricultural land to better integrate the needs of food production and bird conservation. The book concludes with a look forward to challenges that the conservation of bird populations on agricultural land is likely to face in the near future.

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Bird Conservation and Agriculture

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Preface

Recent estimates suggest that over a third of the world's land surface, over a third of terrestrial primary production and over a half of freshwater primary production are appropriated by human food chains (Gerard 1995; Tilman *et al.* 2001), a proportion that continues to increase as the global human population rises. Conversion of land to agriculture and the subsequent intensification of agricultural management are concerned with maximising the proportion of primary production that is channelled to human consumption, and to the extent that this is achieved, the rest of wild nature is bound to suffer (Krebs *et al.* 1999).

In many parts of the world, conservation is a backs-to-the-wall battle to protect remaining areas of pristine habitat and the richest of global biodiversity from conversion to agricultural use. Over much of Europe, and most of Britain, however, 6000 years of creation of cultural landscapes since the Neolithic means those pristine habitats have long been a thing of the past. As Bill Bryson (2000) wrote in reference to the English countryside, 'it is one of the busiest, most picked over, most meticulously groomed, most conspicuously used, most sumptuously and relentlessly improved landscapes on the planet'. It has been so for centuries and, as a consequence, the wildlife of Britain, including its bird populations, has long coexisted and coevolved with agriculture. The enduring fascination of its people with natural history, and indeed ornithology (the British Ornithologists' Union celebrated its 150th anniversary in 2008) has ensured that Britain's avifauna and its associations with agriculture are well documented back at least to the eighteenth century (Shrubb 2003). During the twentieth century the rise in support for wildlife conservation and for organisations able to coordinate long-term survey and recording effort, for example the British Trust for Ornithology, the Royal Society for the Protection of Birds and the Wildfowl and Wetlands Trust, means that knowledge of more recent change in bird populations is probably unrivalled anywhere in the world. This rich treasury of data was instrumental in enabling conservation scientists to detect declines in

bird populations associated with rapid, recent agricultural intensification (Newton 1986; O'Connor & Shrubb 1986; Potts 1986). Two decades of intensive research effort have followed, directed towards understanding the mechanisms through which agricultural change has caused bird population declines and other biodiversity losses in agricultural systems, and what management solutions might be found. The gradual 'greening' of agricultural policy both in Britain and across Europe as the damaging environmental effects of intensive agriculture and overproduction were recognised, redirected subsidy support to management for environmental goods on farmland. This in turn allowed management measures designed to restore biodiversity, including bird populations, to be tested in agri-environment schemes, on set-aside land and through the growth of organic farming. As a consequence, our understanding of the ecology and conservation of bird populations in modern agricultural systems has increased immeasurably.

This history makes a renewed case study of the relationships between birds and agriculture in Britain timely. Our aim is in part to synthesise the very large and scattered literature that has proliferated since O'Connor & Shrubb's seminal *Farming and Birds* (1986) reviewed the subject just over 20 years ago. We focus on Britain, but draw extensively on the wider literature, especially from similar temperate agricultural systems and bird communities across Europe, to provide context. Such a synthesis, however, is merely a pause to draw breath. The relationship between birds, wider biodiversity and agriculture in Europe is at a crossroads. The last 20 years of research and development of agri-environment policy and practice have undoubtedly given us an increasingly effective tool kit to help integrate wildlife conservation and productive agriculture in our fine-grained agricultural landscapes. However, globalisation of world markets, continuing growth of human populations and economic aspirations, and the need to both mitigate and adapt to changing climate pose growing challenges. We face a future in which our tool kit will need to grow and change to help us manage agricultural landscapes for a wider range of so-called ecosystem services – for example carbon sequestration and storage, water quality, flood prevention, wildlife conservation and energy generation, as well as food production – and all in a changing climate. To illustrate just how fast things change, as we go to press the European Union announced that the set-aside rate for 2008 should be set to zero, a change that will result in the removal of a huge area of beneficial fallow from the agricultural landscape. At the same time

rising commodity prices and renewed concerns for food security pose new challenges to environmental management in intensive agricultural systems.

If our work has value, it is perhaps mainly to the extent that it draws attention to the gaps in knowledge that we still need to fill to ensure that diverse and thriving bird populations are maintained as part of agricultural landscapes in meeting these challenges.

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This work could not have been completed without the collaboration, inspiration and insight of friends and colleagues across many institutions and over many years, but especially those at the Royal Society for the Protection of Birds, Natural England, British Trust for Ornithology and University of Oxford. We are especially grateful to Richard Bradbury, Rob Fuller, James Pearce-Higgins, Michael Usher, Juliet Vickery and Ellen Wilson who have each read all or parts of earlier drafts. Their insightful comments and criticism have improved the final manuscript immeasurably, and errors and inelegancies that remain are of our own making.

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