

## Birds and Climate Change

### *Impacts and Conservation Responses*

From the red grouse to the Ethiopian bush-crow, bird populations around the world can provide us with vital insights into the effects of climate change on species and ecosystems. They are among the best studied and monitored of organisms, yet many are already under threat of extinction as a result of habitat loss, overexploitation and pollution.

Providing a single source of information for students, scientists, practitioners and policy-makers, this book begins with a critical review of the existing impacts of climate change on birds, including changes in the timing of migration and breeding and effects on bird populations around the world. The second part considers how conservationists can assess potential future impacts, quantifying how extinction risk is linked to the magnitude of global change and synthesising the evidence in support of likely conservation responses. The final chapters assess the threats posed by efforts to reduce the magnitude of climate change.

Supplementary material is available for download at [www.cambridge.org/9780521114288](http://www.cambridge.org/9780521114288).

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The world's biological diversity faces unprecedented threats. The urgent challenge facing the concerned biologist is to understand ecological processes well enough to maintain their functioning in the face of the pressures resulting from human population growth. Those concerned with the conservation of biodiversity and with restoration also need to be acquainted with the political, social, historical, economic and legal frameworks within which ecological and conservation practice must be developed. The new Ecology, Biodiversity and Conservation series will present balanced, comprehensive, up-to-date and critical reviews of selected topics within the sciences of ecology and conservation biology, both botanical and zoological, and both 'pure' and 'applied'. It is aimed at advanced final-year undergraduates, graduate students, researchers and university teachers, as well as ecologists and conservationists in industry, government and the voluntary sectors. The series encompasses a wide range of approaches and scales (spatial, temporal and taxonomic), including quantitative, theoretical, population, community, ecosystem, landscape, historical, experimental, behavioural and evolutionary studies. The emphasis is on science related to the real world of plants and animals rather than on purely theoretical abstractions and mathematical models. Books in this series will, wherever possible, consider issues from a broad perspective. Some books will challenge existing paradigms and present new ecological concepts, empirical or theoretical models and testable hypotheses. Other books will explore new approaches and present syntheses on topics of ecological importance.

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## *Impacts and Conservation Responses*

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To my dear family (JWPH)

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## Foreword

If you ask anyone what he or she considers to be the greatest environmental problem of our times, it is likely that *Climate Change*, or something similar to this, will be the reply. The unusual weather patterns – droughts in some parts of the planet, floods in other parts, temperature records (both maxima and minima) being broken, the frequency of cyclones and gales – are associated phenomena. A couple of decades ago, as well as predictions of rising average temperature, another prediction was that there would be more frequent extreme events. So it is not just the trends in warmth or rainfall, or those of the melting of Arctic sea ice or of glaciers, that affect birds, but also the extremes of all aspects of our climate.

Try asking people about their favourite wildlife and almost certainly *Birds* will feature strongly in the replies. Birds have a charisma which appeals to so many people. Small birds inhabit our gardens and parks, larger birds are a feature of our coasts, estuaries and seas, and the raptors – owls, hawks and eagles – have a particular appeal. Although there are other charismatic and iconic species of wildlife, birds have a particular appeal because they fly by day, occur everywhere and often interact with people because of their endearing habits.

Put these two replies – *Climate Change* and *Birds* – together, and what a tremendous appeal this book must inevitably have. The authors are extremely well known for their research and writing about ornithology in general and the potential effects of climate change on birds in particular. This breadth of knowledge is manifest in the chapters, reviewing the increasingly extensive literature. Entering the two words *climate change* into a popular internet search engine you get 495 million results. Add the third word *bird* and the search engine still indicates 75 million results. This is in October 2012, but by the time the book reaches anyone's bookshelf I suspect that these numbers will be much larger. However, they indicate the huge interest in the subject matter of this book.

I have no doubt that the chapter topics, and the wealth of examples, will fascinate many readers. It is important that the impact of climate change, not just on birds, but on wildlife in general, is understood if the planet's loss of biodiversity is ever to be halted. But equally, people involved in policy issues need to understand why mitigation to limit the magnitude of climate change may also have detrimental effects on birds and wildlife. These are important and difficult issues which the authors wrestle with. Whereas policy shifts are essential, so equally are the practical responses of the practitioners on the ground, and a key section of the book summarises how conservationists can help wildlife populations



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adapt to the changing environment in which they live. Given this wide-ranging subject matter, and the global focus of the book, I believe that *Birds and Climate Change: Impacts and Conservation Responses* has something for everyone, be they bird watchers, wildlife researchers, policy advisers or practical conservationists.

*Michael B. Usher*  
*University of Stirling*

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