

Symposium 08 Effects of global climate change on birds: evidence and predictions

Introduction

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Global climate change is probably the most important environmental challenge that faces our planet. The Intergovernmental Panel on Climate Change, in their monumental Third Assessment Report published in 2001, reported that global average surface temperature had increased over the 20th century by about 0.6 degree C. The 1990s was the warmest decade and 1998 the warmest year in the instrumental record, since 1861. Furthermore, the increase in temperature in the 20th century is likely to have been the largest of any century during the past 1 000 years. These changes have been accompanied by changes in precipitation patterns, measured decreases in snow cover and ice extent, and increases in sea-levels as ocean heat content has risen. The report concludes that there is strong evidence that most of the warming over the last 50 years is attributable to human activities, and that human influences will continue to change atmospheric composition throughout the 21st century. As a result, global average temperature and sea level are projected to continue to rise, along with considerable changes in precipitation patterns worldwide and increases in the frequency of extreme weather events.

The subject has received little coverage in previous IOCs, but recent publications have already reported probable effects of global climate change on birds in North America, USA, Europe, Central America, Antarctica, and

the Pacific. These effects include (1) earlier breeding, (2) earlier spring migration, (3) changes in breeding performance (egg size, nesting success), (4) changes in population sizes, (5) changes in population distributions, and (6) changes in selection differentials between components of a population. Birds are not only already being affected by global change but can serve as well as important bioindicators readily understood by the general public.

In this symposium we present a series of papers that cover important areas of research in this rapidly advancing field. These include the impact of climate change on the phenology of nesting and migration, how climate change may lead to mismatched timing between different parts of the food chain, the potential impacts of increased incidence of extreme events, changes over different temporal scales in marine ecosystems, and finally a case-study of the impacts of sea-level rise on conservationally important estuarine birds. These papers all present information on how climate change has already affected the ecology of a range of bird species in different situations. Although they attempt to predict how birds will be affected by future climate change, the consequences for the population dynamics, distributions and interactions of bird species with other components of the communities in which they live are still very uncertain and will require much further research.