BTO
Looking out for birds

Climate Change Research

Climate change has been widely cited as one of the most significant threats to biodiversity and its impact is projected to be increasingly severe during the course of this century. The BTO gathers evidence to describe species and population responses to climate change, and this information contributes to adaptation policies and action. BTO research on climate change documents the impacts, predicts the future, and informs adaptation.

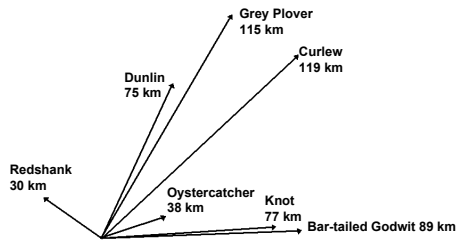
Documenting Impacts

BTO long-term datasets have: identified how warming conditions are leading to earlier nesting in birds; described distributional shifts of up to 150 km in wintering waterbirds; reviewed how changes in temperature and rainfall are driving population changes of a wide-range of taxa as part of the BICCO-Net project (www.bicco-net.org).

Projecting the future

BTO analysts are developing models to: project how species distributions and population sizes may change in response to climate change and; assess which species are likely to decline through effects of climate change on survival and productivity.

Wader centres of distribution change in NW Europe with warming winters



Please contact to discuss how BTO can help you:

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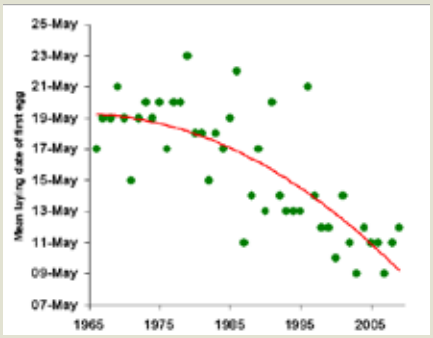
Photographs: Simon Thurgood, Edmund Fellowes, www.grayimages.co.uk, John Harding,

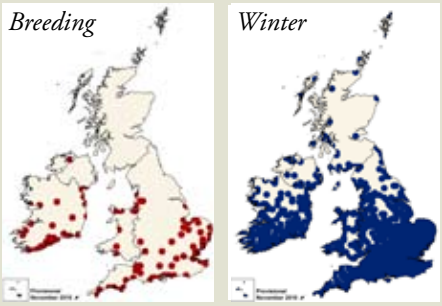
'BTO analysts are developing models to: project how species distributions and population sizes may change in response to climate change'

Pied Flycatcher are now nesting earlier than they used to

BTO is currently examining whether these changes have been sufficient for them to adapt to warmer spring conditions



Little Egret provisional results Nov 2010



Informing Adaptation

Projected changes in species distributions and populations are being used to assess the resilience of the UK Special Protection Area (SPA) network to climate change. In addition, analyses of Common Bird Census (CBC) and Breeding Bird Survey (BBS) data on birds and mammals are testing evidence underpinning adaptation principles.

Phenological Change

BTO research first reported advances in the timing of egg-laying in UK bird species from 1971-1995. A subsequent BTO study has shown that these changes are related to increases in temperature as a result of climate change.

Recent analysis of broad phenological data found that different taxa respond to increases in temperature at different rates. Plants have advanced their phenology more rapidly than invertebrates, and invertebrates respond more rapidly than vertebrates. This may cause a mismatch for species that rely on seasonal peaks in food abundance, such as insectivorous birds. There is some evidence that phenological mismatch has reduced the productivity and abundance of a number of insectivorous and migratory bird species in Europe. BTO research is examining the evidence for similar impacts on the UK's avifauna.

Changes in Bird Distribution

Wetland Bird Survey (WeBS) counts show that the distributions of wintering waders have shifted eastwards. Warmer winters enable birds to take advantage of greater food resources on east coast estuaries. The forthcoming Bird Atlas 2007-11 will highlight distributional changes in other species. Previous atlases, for example in 1998-91, recorded few if any Little Egrets. Provisional results from Bird Atlas 2007-11 show their widespread range in winter and many breeding records, a colonisation perhaps facilitated by climate change.

Changes in bird distribution as a result of climate change may have implications for the network of protected areas. We are working with DEFRA to examine the implications of these for the UK Special Protection Areas.

Partners: JNCC is the statutory adviser to Government on UK and international nature conservation, on behalf of the Council for Nature Conservation and Countryside, the Countryside Council for Wales, Natural England and Scottish Natural Heritage.

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Expertise Brochure

The British Trust for Ornithology (BTO) is one of the world's leading scientific research organisations specialising in birds and habitats. We are based in Thetford, Norfolk, England, with offices in Scotland, Wales and Northern Ireland.

We undertake impartial research and analysis, relating to birds, other wildlife and habitats, to advance the understanding of natural systems. The BTO provides high quality, impartial and policy-relevant data and information, relied upon for informed decision making. We work in partnership with the academic and conservation science communities, with Government Departments and Agencies, and with the private and voluntary sectors. The BTO has a unique combination of professional scientists and volunteers, and undertakes modern statistically robust surveys with web-based on-line data entry and retrieval. We add value to data through high powered analysis and a strong modelling capability.

Please contact to discuss how BTO can help you:

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Photographs: Dawn Balmer, Sarah Eglington, John Harding, Cathy Ryden, 1-Vision

BTO Strategy

The BTO has a vision of a world in which nature conservation and sustainable development are founded on evidence-based decision-making, and in which society understands, values and contributes to that process. We are in a time of unprecedented awareness and acknowledgement of environmental change, and the human response to that change must be informed by knowledge and understanding of species and habitats - the ecosystems that underpin our planet's life support. The BTO has a vital role to play in the provision of that knowledge, with citizen science being core to the delivery of the BTO strategy.

BTO Science Themes

Monitoring changing bird populations

Our ability to coordinate thousands of motivated and skilled volunteers, together with professional expertise, enable us to track many aspects of birds' lives. We provide facts, figures and indicators that Government and decision-makers use to inform policy, and which is the context for measuring change in our environment.

Population dynamics and modelling

We integrate records collected by volunteers from many aspects of birds' life-cycles, through nest recording, ringing, and survey monitoring. This integrated population modelling means we are well placed to investigate the effects of environmental change on bird populations.

Black-tailed Godwit being colour-marked as part of an international migration project

Ecosystems: from territories to landscapes

We are at the forefront of land-use issues in ornithology, with unique expertise of studying bird ecology in farmland, woodland, upland and urban habitats at multiple spatial scales. We employ traditional field approaches, innovative technology and state-of-the-art analytical techniques to investigate the consequences of land-use change.

Migration and the ecology of migrant birds

Understanding the ecology of migration, as birds move between habitats and countries is important if we are to understand the effects of environmental changes at a global scale. Our underpinning knowledge comes from a century of bird ringing and nest recording, and we are now using modern transmitter technology to unravel the ecology of migrant birds.

Climate change

Climate change impacts on biodiversity become apparent over long timescales, and the BTO's long-term datasets are ideally suited to understanding the underlying processes. We develop indicators and provide advice to Government, international and national bodies to inform policy.

Dr Phil Atkinson Head of International Research demonstrating research results to, the BTO's Patron, HRH The Duke of Edinburgh KG KT during a visit to BTO HQ

Wetland and marine research

Inland, coastal and marine waters of the UK all hold internationally important bird populations. BTO is at the forefront of delivering information on waterbirds in response to the requirements of legislation, infrastructure development and policy development. We are actively investigating energy developments offshore.

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