

Using climate projections to support nature conservation and environmental management

Mike Morecroft,

Principal Specialist, Climate Change, Natural England

mike.morecroft@naturalengland.org.uk

@mike_morecroft

There is strong evidence that climate change is affecting UK biodiversity

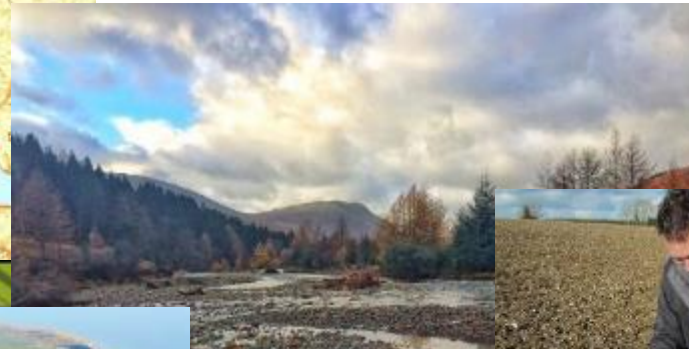
NATURAL
ENGLAND

- Species moving northwards
- Earlier spring events
- Changing populations, communities & habitats
- Interactions with other pressures e.g drainage, fragmentation
- Extreme event impacts e.g. droughts, heatwaves



Natural England From science to practice

NATURAL
ENGLAND



Biological Conservation 23 (2017) 124–134

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/bioco

A national-scale assessment of climate change impacts on the balance of risks and opportunities for multiple taxa

James W. Pearce-Higgins^{a,*}, Colin M. Beale^a, Tom H. Oliver^{a,c}, Tom A. Auerbach^a, Matthew Carroll^{a,b}, Dario Massimo^a, Nancy C. Koper^a, Christopher J. Wheatley^a, Malcolm A. Auden^a, Nicholas A. Mørgenroos^a, Colin J. McClean^a, Mike O'Leary^a, Oly Watts^a, Eyrin C. Beckmann^{a,b}, Richard Fox^a, Kevin J. Walker^a, Humphrey Q.P. Crick^b

Living with Environmental Change

**Biodiversity
Climate Change Impacts**

Report Card 2015

The calculator quantifies the impact that climate change is having on soil carbon and freshwater systems, habitats and wetlands in the UK. It also assesses the total available carbon within the catchment, taking account of the carbon stored in trees.

This Report Card is a series of 10 report cards published by the Living with Environmental Change Network. The network is a partnership of 15 organisations across the UK, with the aim of providing a national assessment of the impact of climate change on the environment. The network is a partnership of 15 organisations across the UK, with the aim of providing a national assessment of the impact of climate change on the environment.



Climate Change Adaptation Manual

Evidence to support nature conservation in a changing climate

www.naturalengland.org.uk

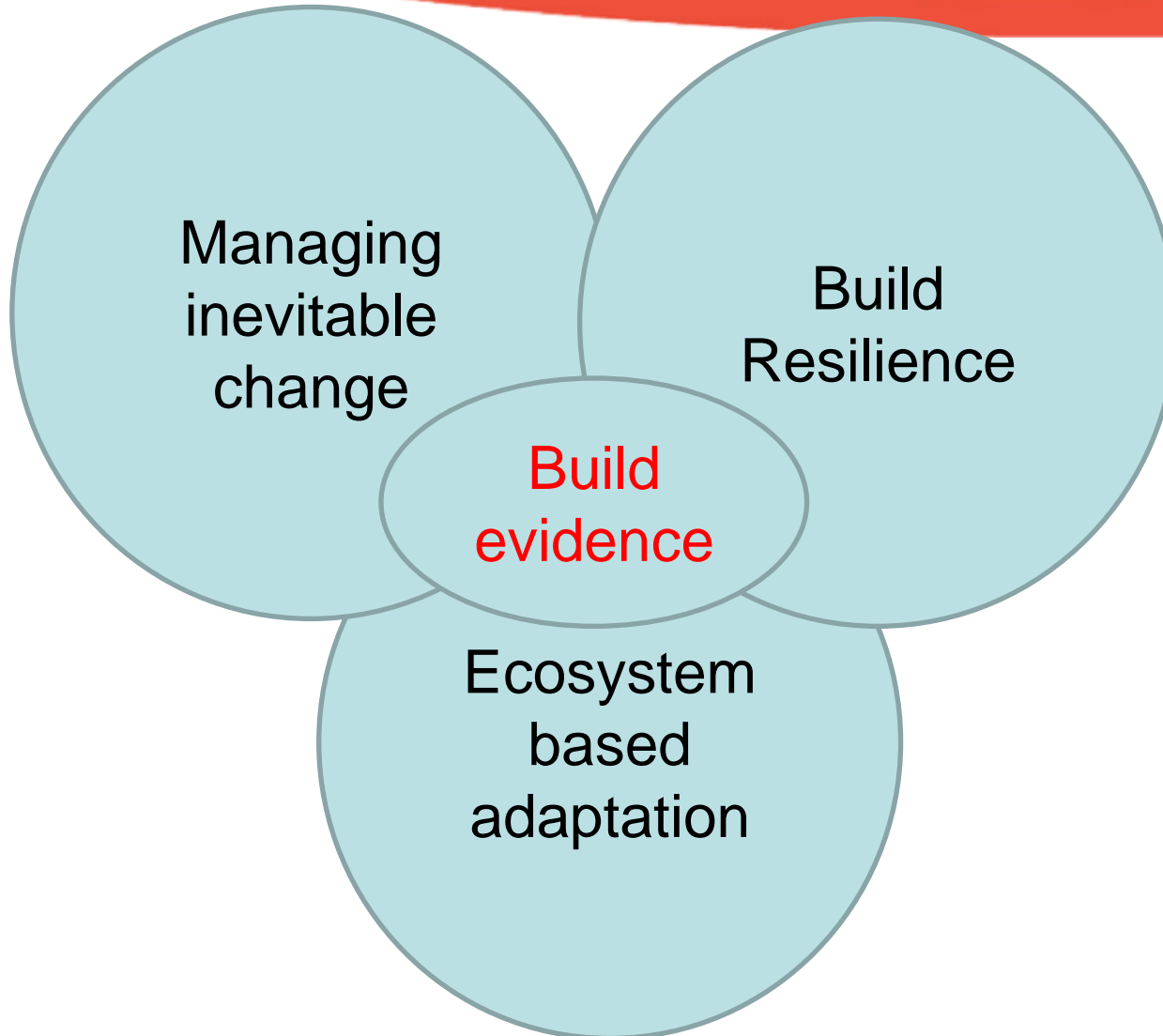
rspsb
Rural
Science
Partnership

NATURAL
ENGLAND



Adaptation for biodiversity and ecosystems

NATURAL
ENGLAND



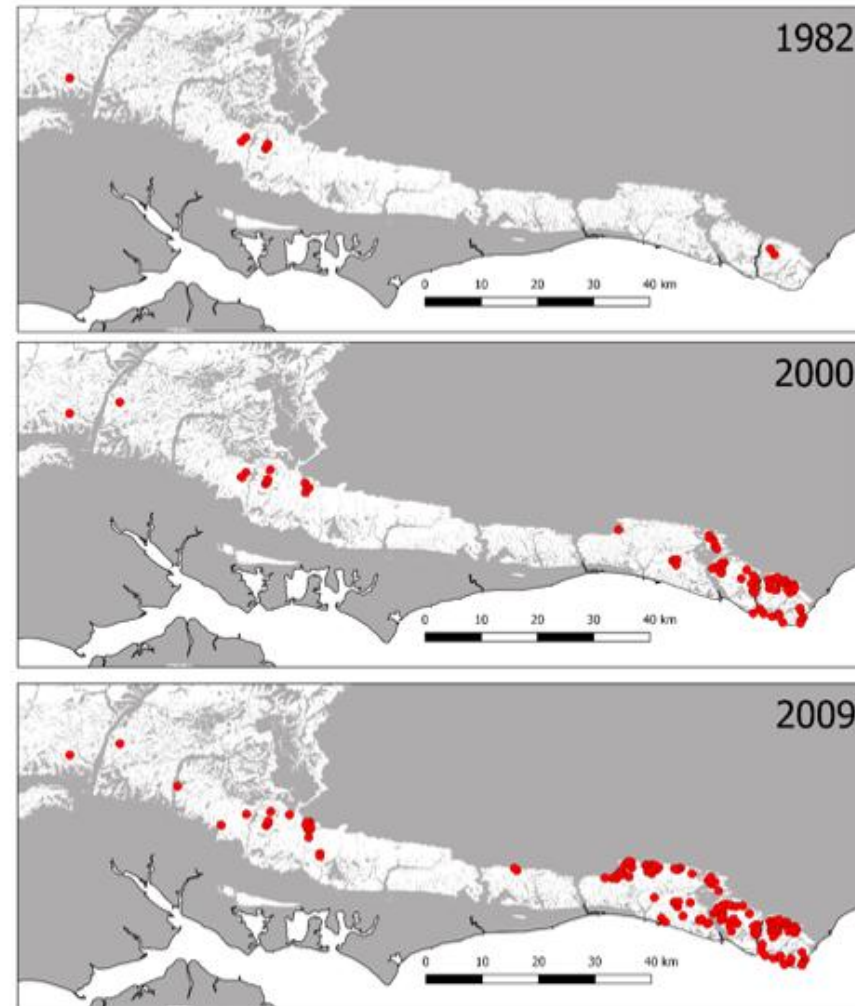
Building Resilience

Restoring ecological processes
Reducing fragmentation



Managing for inevitable change

NATURAL
ENGLAND



Ecosystem based adaptation

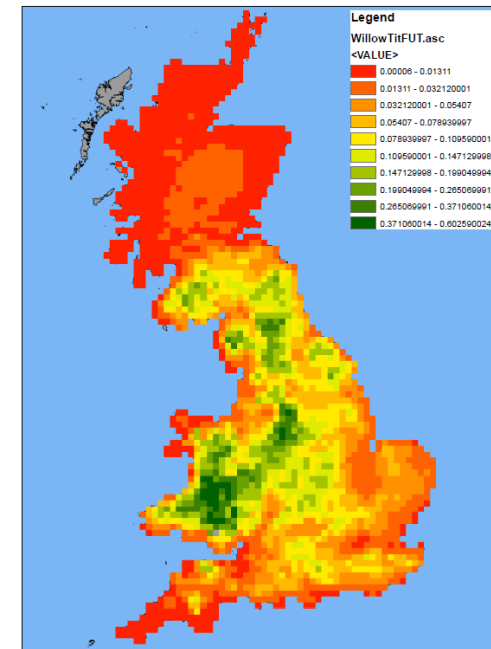
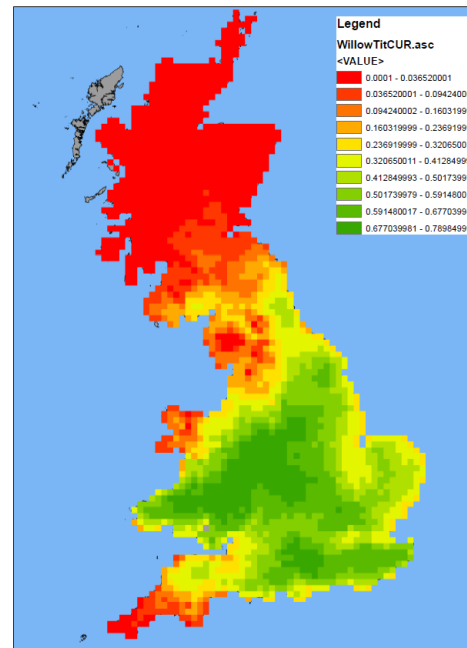
Helping people adapt



Projecting Potential Changes in Species Distribution



Willow Tit Current Modelled Distribution



National Nature Reserves



1. Projected Climate Change

2. Impacts

3. Vulnerability Assessment

4. Responses

What projection data are most useful



- Temperature
- Rainfall
- Sea level rise
- Extreme events – drought

Conclusions

- Adaptation is essential for conservation and land management
- Climate projections form a starting point for adaptation
- Climate projections *can* be used in a quantitative way to drive models of impacts
- More often projections are used qualitatively to give an idea of the range of possible futures
- Uncertainty in ecological impacts is considerable
- Adaptation needs to take account of the range of potential impacts, direct and indirect