

Climate change is having a significant impact on our seas, according to a new report, as many small effects are being magnified through important links within the marine environment.

The Marine Climate Change Impacts Partnership (MCCIP) 'ecosystem linkages' report card highlights just how much climate change is affecting the UK marine environment and shows how impacts as wide ranging as melting sea ice and shifting species relate to each other, with potentially important consequences for us.

Key findings from the report published today include:

- CO<sub>2</sub> and ocean acidification. In the last 200 years, ocean acidity has increased by 30% and at a rate much faster than anytime in the last 65 million years. This has serious implications for marine ecosystems and climate regulation.
- Arctic sea-ice. In the last decade there has been a 35% decrease in summer sea ice extent and a 15% reduction in winter sea-ice, leading to changes in habitats and ecosystems.
- A view from above: changing seas, seabirds and food sources. Climate change has already caused changes in plankton, fish distribution and species composition in the seas around the UK. Declines in some seabird populations such as black legged kittiwakes, terns and skuas may continue as a result.
- Non-native species. Most introductions of non-native species arrive via human intervention, intentional or otherwise. The likelihood that they will establish and flourish in the UK marine environment could be greater due to climate change.
- Coastal economies and people. Many of our coastal communities will face both challenges (e.g. increased flood and erosion risks, declining traditional fisheries) and opportunities (e.g. new tourism patterns, new fisheries) through climate change.

The UK's ocean acidification programme, a collaborative 5-year research programme worth approximately £11m, will also be highlighted at the launch. This research programme will focus on the North-East Atlantic (including European shelf and slope), Antarctic and Arctic Oceans.

Huw Irranca-Davies, Defra Minister for the Natural and Marine Environment, said:

"Climate change is happening now, and its impact on the marine environment affects all of us.

"The fight against climate change and protection of the natural environment are inextricably linked, and we are witnessing unprecedented effects on our seas.

"We also need to find out more about the scale and nature of the effects of ocean acidification on marine life and habitats, and I am pleased to announce today new research into its likely impacts."

The Scottish Government's Cabinet Secretary for Rural Affairs and the Environment Richard Lochhead said:

"I am delighted to support the MCCIP partnership which has done a great job translating the complex science of marine climate change into everyday language.

"Today's launch is timely as this month has witnessed the official launch of Marine Scotland, our new champion for Scotland's marine environment. It will have direct responsibility for marine science, take forward the Scottish Marine Bill and actively participate in MCCIP.

"We are also taking strong action on climate change including the Climate Change (Scotland) Bill and development of Scotland's first Climate Change Adaptation Framework."

Welsh Assembly Government Minister for Environment, Sustainability and Housing Jane Davidson said:

"This report on our seas is a stark reminder of the impact of climate change on our daily lives - from the impact on plants and wildlife to the danger of potential flooding and the threat to people's livelihoods.

"It is important that we develop an understanding of both short and long term trends to shape our policy and inform how we manage the impact of climate change.

"The Assembly Government has made a major commitment to cutting our carbon footprint and is developing strategies and action to deliver 3% annual emission reductions per year from 2011 onwards in devolved areas."

Other key findings from the report include:

- Climate change impacts in the Arctic are likely to have important implications for the UK, through impacts on the global climate system and major changes to North-Atlantic ecosystems. Changes in sea-ice extent will also affect access to natural resources in the Arctic and open up shipping routes.
- The oceans are an enormous store of carbon, substantially greater than on land or in the atmosphere and hence play a key role in the global carbon cycle, especially in helping regulate the amount of CO<sub>2</sub> in the atmosphere. Reduced buffering capacity of the ocean to take up CO<sub>2</sub> will increase the amount of CO<sub>2</sub> retained in the atmosphere.
- Seabirds sit at the top of the marine food web and hence are sensitive to human activities, and changes in environmental and biological conditions which affect the whole ecosystem. There is growing evidence that the scale of impact of climate change on marine waters around the UK is becoming sufficiently pronounced to have a noticeable effect on seabird populations.
- Economically speaking, non-natives can have an impact on fisheries and aquaculture (fish farms).
- For coastal economies and people, relative sea-level rise with increased rates and extent of coastal erosion and higher frequency of flooding are likely to be the main direct impacts. This could have important implications for coastal defence costs, landscape quality, public safety, tourism and recreation activities and property and infrastructure loss.

#### **Notes for news editors**

1. The Minister for the Natural & Marine Environment, Wildlife and Rural Affairs, Huw Irranca-Davies will address the launch event. Dr Matthew Frost of the Marine Biological Association, Coordinator of the Marine Environmental Change Network and chair of the MCCIP report card working group and Tim Jickells, Professor of Environmental Sciences at UEA and NERC theme leader for Earth System Science will also speak at the launch event.

1. Detailed briefings on all the topics covered in the report card can be found on the MCCIP website [www.mccip.org.uk/elr](http://www.mccip.org.uk/elr) The MCCIP Secretariat is contactable on 01502 524508 and [office@mccip.org.uk](mailto:office@mccip.org.uk)
2. The Marine Climate Change Impacts Partnership (MCCIP) was launched in March 2005 and is a partnership between scientists, Government, its agencies, and NGOs. The principal aim is to develop a long term approach to understanding and communicating the implications of climate change in our seas.
3. MCCIP partner organisations are:
  - Agri-Food and Biosciences Institute (AFBI)
  - British Energy
  - Cefas
  - Countryside Council for Wales
  - The Crown Estate
  - Defra
  - Department of Energy and Climate Change
  - Department of the Environment Northern Ireland
  - Environment Agency
  - Fisheries Research Services
  - Joint Nature Conservation Committee
  - Marine Environmental Change Network
  - Marine Institute, Galway
  - Natural England
  - NERC 'RAPID-WATCH' programme
  - RSPB
  - Sir Alister Hardy Foundation for Ocean Science
  - Scottish Environment Protection Agency
  - Scottish Government
  - Scottish Natural Heritage
  - States of Guernsey
  - States of Jersey
  - UK Climate Impacts Programme
  - Welsh Assembly Government
  - WWF
1. The drivers and rationale for the UK acidification programme are detailed in the NERC Earth System Science Theme Action Plan -[www.nerc.ac.uk](http://www.nerc.ac.uk).