Climate change impacts on UK seas

A new report has documented the impacts of climate change on the UK marine environment. In addition to rises in temperature and sea level, notable effects are a 50-400 km northwards shift in the range of some fish species and a 9 per cent decrease in the number of breeding seabirds, for which climate change is partly responsible.

The Marine Climate Change Impacts Annual Report Card commissioned around 100 leading UK marine climate scientists from almost 40 institutions to review high quality evidence on climate change impacts on the UK's seas. The report considered several new topics, such as the exchange of CO₂ between the air and sea, and potential future increases in marine vibrios (bacteria that cause illness associated with seafood).

1. Climate of the marine environment. Marine air and sea surface temperatures have risen over the north-east Atlantic and UK waters in the last 25 years with the largest increases in the Southern North Sea of between 0.6°C and 0.8°C per decade. However, variability between years is high. For example, the 2008 UK coastal sea surface temperature was lower than the 2003-2007 mean.

The ocean is becoming more acidic as it absorbs more CO₂ and the rate of change in surface pH over the past 250 years is the fastest experienced in the last 55 million years.

2. Marine Ecosystems. There has been a shift in the distribution of a number of marine species. Many plankton have shifted northwards by more than 10° latitude in last 50 years and some fish species have moved 40 to 500 km northwards in the last 30 years, especially coldwater species such as monkfish.

There is also evidence of eastward and northward shifts in overwintering wader birds and shifts in some species of toothed whales and dolphins. The shifting distribution of seabirds’ prey may be affecting their breeding; between 2000 and 2008 the total number of seabirds breeding in the UK decreased by 9 per cent. Most affected are the Artic skua, black-legged kittiwake and shag. The decline in plankton has also contributed to reduced food resources for seabirds, such as sandeels.

Rising temperatures may have also contributed to the establishment of non-native marine species, such as the Pacific oyster, which has spread from oyster farms, and red seaweed, introduced from Asia.

3. Pollution and human health. Future coastal flood events are likely to be more severe due to rising sea levels and it is predicted that an increase in storm events would have an impact on pollution through increased sewage overflow.

4. Commercial value of seas. Sea level rises and coastal flooding could affect ports, shipping and tourism. Fishing could be affected by shifting distributions of fish and there is evidence that locations of high catches of cod, haddock, plaice and sole have moved. Whilst there are likely to be some negative effects on commercial activities, there will be others that are at least partially beneficial. For example, UK coastal tourism may grow through an extended tourist season, although this would place stress on coastal infrastructure, and warm-water fisheries may expand, with bigger catches of species such as seabass, anchovy and red mullet.


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