

## **Effects of global warming already evident - scientists**

### **IAN SAMPLE**

Thu, May 15, 2008

ENVIRONMENT:GLOBAL WARMING is disrupting wildlife and the environment on every continent, according to an unprecedented study that reveals the extent to which climate change is already affecting the world's ecosystems.

Scientists examined published reports dating back to 1970 and found that at least 90 per cent of environmental damage and disruption around the world could be explained by rising temperatures driven by human activity.

Big falls in Antarctic penguin populations, fewer fish in African lakes, shifts in American river flows and earlier flowering and bird migrations in Europe are all likely to be driven by global warming, the study found.

The team of experts, including members of the UN's Intergovernmental Panel on Climate Change (IPCC) from America, Europe, Australia and China, is the first formally to link some of the most dramatic changes to the world's wildlife and habitats with human-induced climate change.

In the study, which appears in the journal Nature, researchers analysed reports highlighting changes in populations or behaviour of 28,800 animal and plant species. They examined a further 829 reports that focused on different environmental effects, including surging rivers, retreating glaciers and shifting forests, across the seven continents.

To work out how much global warming played a role, the scientists checked historical records to see what impact natural variations in local climate, deforestation and changes in land use might have on ecosystems and species. In 90 per cent of cases, the shifts in wildlife behaviour and populations could only be explained by global warming, while 95 per cent of environmental changes, such as melting permafrost, retreating glaciers and changes in river flows were consistent with rising temperatures.

"When we look at all these impacts together, it is clear they are across continents and endemic. We're getting a sense that climate change is already changing the way the world works," said lead author Cynthia Rosenzweig, head of the climate impacts group at Nasa's Goddard Institute for Space Studies in New York.

Most of the reports examined by the team were published between 1970 and 2004, during which time global average temperatures rose by around 0.6 degrees. The latest report from the IPCC suggests the world is likely to warm up between two and six degrees by the end of the century.

"When you look at a map of the world and see where these changes are already happening, and how many species and systems are already responding to climate change after only a 0.6 degree rise, it just heightens our concerns for the future," Ms Rosenzweig said. "It's clear we have to adapt to climate change as well as try to mitigate it. It's real and it's happening now."

In many regions, snow and ice melts earlier in the year, driving up spring water levels in rivers and lakes, with droughts following in the summer. Understanding shifts in water availability will have a big impact on water management, the scientists say.

Disruption to one part of the environment has knock-on effects elsewhere. In one study rising temperatures caused sea ice in Antarctica to vanish, prompting an 85 per cent fall in the krill population. A separate study found that the population of Emperor penguins, which feed on krill in the same region, had also fallen by 50 per cent during one warm winter.

A loss of krill, also a dietary staple for whales and seals, was cited as a factor in recent accounts of cannibalism among polar bears in the Arctic.

- (Guardian service)  
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