



# European Policy Review Biodiversity and climate change<sup>☆</sup>

Ben Delbaere

European Centre for Nature Conservation, P.O. Box 90154, 5000 LG Tilburg, Netherlands

## KEYWORDS

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approach

## Summary

Climate change and its impacts on biodiversity have gained much political and scientific interest over the past decade. In order for the right policy measures to be taken on adaptation and mitigation, research and stakeholder involvement has a strong role to play to support decision makers. This paper provides an overview of recent developments and research needs in Europe.

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There remains no doubt that climate is changing globally at a speed that is higher than observed in the past 10,000 years or so. On average, global temperature has increased by 0.7 °C over the past century. Regionally the increase may be sharper, with average temperature rise in Europe, for example amounting to 1 °C in 100 years. This may not sound a lot, but effects of this climate change are already visible today and projections into the future show an acceleration of global temperature rise. With a few exceptions, there is overall consensus by scientists around the world that most

of the recent change is caused by human activities, most notably the ever-increasing emission of greenhouse gases.

There is increasing evidence that the changes in climate – not only temperature increase but also changing precipitation patterns and more frequent extreme events, for example – are affecting biodiversity at various levels. The obvious example of a direct impact is that of the ‘summit trap phenomenon’; species inhabiting mountain summits are forced to move to higher altitudes when temperatures increase. They have no escape route and may become locally extinct. Since many species of mountain summits are endemics (sometimes only occurring on one mountain top) they face global extinction.

Other climate-induced changes affecting biodiversity at various scales include shifting distribution ranges of species and the habitats they compose, changing phenology (such as earlier arrival dates of migratory birds and butterflies), effects on plant

<sup>☆</sup>This section provides a short analysis of and opinion on international biodiversity policymaking throughout Europe. It focuses on highlights and major developments of the last months. The views expressed are those of the authors.

E-mail address: [delbaere@ecnc.org](mailto:delbaere@ecnc.org).

physiology, and changing community structure and species interactions.

Climate change has been the focus of political discourse for a number of years. The establishment of the International Panel on Climate Change in 1988 and the agreement of the UN Framework Convention on Climate Change in 1992 with the subsequent Kyoto Protocol in 1997 illustrate the political interest at the highest political level. Also, more recently, the impact of climate change on biodiversity is being debated within policy circles.

In Europe, this increased interest is exemplified by objective 4 of the Message from Malahide (Duke, 2005): 'To prevent or minimise the negative impacts on biodiversity and optimise opportunities to benefit biodiversity, in relation to climate change adaptation and mitigation'. This policy document was adopted by a stakeholder conference under the Irish European Union Presidency in May 2004. It builds on the European Community Biodiversity Strategy and forms the basis for future priority action in reaching the 2010 EU target of halting the loss of biodiversity by that date.

Now, more than 1 year after the Message from Malahide, the European Commission's Directorate-General for the Environment has held its annual 'Green Week' from 31 May to 2 June, which aims at raising awareness on European environmental issues. This year's focus was on 'Getting to grips with climate change', including sessions on the link with biodiversity.

In terms of mitigating or reducing climate change and its impacts, the European Council recently stepped up its efforts towards implementing the Kyoto Protocol to reduce greenhouse gas emissions and to take further action beyond the Kyoto deadline of 2012. In its post-2012 climate change communication 'Winning the Battle Against Climate Change,' it calls for a European approach to climate change.

A final indication of the high policy interest in the topic of climate change is the priority that has been given to it by the UK's Presidency of the G8 this year. When meeting in July 2005 in Gleneagles, UK, the leaders of the eight major industrial democracies gathered in G8 to discuss climate change issues, with a focus on how science can contribute a solid foundation for policy action. The UK Prime Minister has said climate change is 'probably, long-term the single most important issue we face as a global community'. The outcome of the Gleneagles summit includes a communiqué that includes a political statement and an action plan covering

climate change, clean energy and sustainable development.

This brings us to the role that science can play in helping to support the political debate. Much is already known about climate change and its impacts on biodiversity. The recently published Millennium Ecosystem Assessment holds an extensive overview of current state of knowledge globally. However, many research questions remain unanswered, which also became obvious during the EC's Green Week. How does climate change impact on ecosystem functions? How do cumulative effects of climate change with land-use change work? What will be the effect of changing species distribution ranges on species interactions and community structure? In how far are species able to adapt to climate change? What role can connectivity play in helping species populations to survive? What will be the effect of changing biodiversity on ecosystem function and human health? Or, how can biodiversity policies take into account the dynamics of changing conditions in ecosystems and protected areas?

When taking climate change and its impacts on biodiversity as a fact (and evidence goes beyond anecdotes to date) science has a big responsibility towards society and policy to contribute answers that may help to overcome the major climate impacts and support the conservation of biological diversity for centuries to come, even if they get warmer. Importantly, approaches to be taken need to be stakeholder oriented and require cooperation between many players. A platform for cooperation may provide a good opportunity to bring together spatial planners, ecologists energy industry, policy-makers and many others.

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