



MACIS



- Minimisation of and Adaptation to Climate change: Impacts on biodiversity -

Newsletter November 2007

Welcome to the first MACIS newsletter

Climate change is a hot topic, not only in the press or in science but also in policy. During the next UN Conference on Climate Change in Bali/Indonesia in December 2007, representatives from over 180 countries together with observers from intergovernmental and non-governmental organizations, and the media will find ways how to combat the negative effects of climate change. In January 2008 the first annual European climate change conference in Brussels will also discuss the policy options. Many scientists have shown how climate change influences the biological diversity on earth. More and more, the effects of the adaptations to climate change (like renewable plants, bio-mass) also caught scientists and public interest. Every day a number of publications is released - an amount of information that no stakeholder or policy maker could read and assess.

To support policy the project "Minimisation of and Adaptation to Climate change: Impacts on biodiversity (MACIS)" - funded by the European Union from November 2006 to October 2008 - reviews what is already known about the observed and the potential impacts of climate change on biodiversity. This includes the impacts of adaptations as well as mitigation measures. In co-operation with the EU projects COCONUT (www.coconut-project.net) and ALARM (www.alarm-project.net) the impacts of others global change drivers such as land use change are analysed.

MACIS will show available options to prevent and minimise the negative impacts of climate change on biodiversity up to the year 2050.

The partners in MACIS are the Helmholtz Centre for Environmental Research – UFZ (Germany), Centre de la Recherche Scientifique (France), University of Lund (Sweden), University of Oxford (UK), Université de Lausanne (Switzerland), Pensoft Publishers (Bulgaria), Consejo Superior de Investigaciones Científicas (Spain), University of Turin (Italy), University of Edinburgh (UK), Helsingin Yliopisto (Finland), South African National Botanical Institute (South-Africa), Oxford Brookes University (UK).

With the newsletter we want to show you, as a stakeholder or a policymaker, what is going on in the project concerning biodiversity and climate change.

We congratulate the winners of the NOBEL PEACE PRIZE FOR 2007, Albert Arnold (Al) Gore Jr. and the Intergovernmental Panel on Climate Change (IPCC) !

"This is an honour that goes to all the scientists and authors who have contributed to the work of the IPCC, which alone has resulted in enormous prestige for this organization and the remarkable effectiveness of the message that it contains" - says Mr. Rajendra Pachauri, the Chairman of the IPCC (www.ipcc.ch). The Co-Ordinators of the MACIS project, Ingolf Kühn and Josef Settele (Helmholtz Centre for Environmental Research, Germany) are proud that several scientists and authors are also partners in the MACIS project.

What are the MACIS partners doing ?

Today: **“Identification of policy options to prevent/minimise negative impacts”**



by Jake Piper, Oxford Brookes University

Our workpackage is concerned with policy: the impacts of policy in many sectors upon biodiversity, and policy options to protect biodiversity in the future. An array of actions is being suggested or taken across the EU, both

1. to mitigate climate change (that is, to reduce emissions causing climate change, e.g. through energy efficiency, or carbon management to maintain without alteration potential carbon sources such as peatlands); and
2. to adapt to climate change (that is, to be prepared for unavoidable climate change affecting, for example, water resources and flooding).

This workpackage and the workpackage “State-of-the-Art of methods” is examining how such policies and actions may have indirect impacts for biodiversity, to see what steps are needed to offset adverse effects or promote beneficial ones.

We are also working with the MACIS modellers to see how the results of modelling may be used by stakeholders in policy sectors. This may include, for example, their use in guiding the selection of biodiversity reserves, identifying likely refugia or safeguarding potential movement corridors.

As a means to promoting these tasks a workshop was held with policy stakeholders in Brussels on April 24, 2006. It was attended by staff of several Units from within DG Environment and DG Research, as well as major biodiversity-related organisations (BirdLife and IUCN). The MACIS project was outlined at this meeting and likely outputs were described. In particular, the range of existing or future “feedback” of indirect effects from other sectors and policies (e.g. biofuels) was discussed at length, as well as how policy-makers might be alerted to these effects.

Stakeholders at the workshop were given an opportunity to comment on the project and in particular on what would be helpful to them in their work. Stakeholders asked to be kept informed of the progress of MACIS and to be given further opportunities to collaborate with the project to ensure that it responds to the needs of policy-makers.

The workpackage is led by Oxford Brookes University - Jake Piper and Elizabeth Wilson - with further inputs from Oxford University (Pam Berry) and Edinburgh University (Mark Rounsevell).

The MACIS homepage www.macis-project.net also lists all institutions, and all partners in the project.

New publications

Araújo, M.B., Nogués-Bravo, D., Reginster, I., Rounsevell, M., & Whittaker, R.J. 2007. Exposure of European biodiversity to changes in human-induced pressures. *Environmental Science and Policy*. In press (<http://www.biochange-lab.eu/projects-macis-/publications>)

This paper explores the potential impacts of land use changes on important areas for terrestrial biodiversity (here breeding birds, mammals, amphibians and reptiles) in Europe. Results illustrate some possible 'what-if' consequences for biodiversity of adopting different development pathways in the future.

For example, pressures from urbanization are expected to increase in all scenarios because of the projected growth in human population and GDP. However, a 'greenworld' (B2) scenario, in which emphasis is given to local solutions for socio-economic problems, might lead to the greatest increase in urban pressure due to the development of medium and small-sized human settlements. Cropland abandonment is projected to increase in all of our scenarios although the impacts are spatially diverse. For example, under



Oak parkland and shrub land of southern Portugal. Species in Mediterranean landscapes are expected to be exposed to increases in aridity during the 21st Century, which may force them to shift their geographical distributions upward and northward. Planning for protected areas' conservation will need to take climate change challenges into account if persistence of biodiversity is to be ensured (picture provided by Miguel B. Araújo).

scenarios where economies of proximity are prominent, agricultural changes within areas selected for birds are reduced; this is because selected areas for birds have, in comparison with other groups, a greater tendency to be located in Central Europe, where agricultural yields are higher. Under these same scenarios, marginal

land for crop land, such as that found in Southern Europe, is projected to witness a steady reduction in anthropogenic pressures, with potentially beneficial implications for those conservation areas that are located in the south. Perhaps the most important lesson from this study is that impacts from land use changes are likely to be complex and that tradeoffs might exist among development strategies. The study also highlights the need to complement purely climate-driven assessments of environmental change impacts on biodiversity with projections of land use change.

Hannah, L., Midgley, G.F., Anelmand, S., Araújo, M.B., Hughes, G., Martinez-Meyer, E., Pearson, R. & Williams, P.H. 2007. Protected area needs in a changing climate. *Frontiers in Ecology and Environment* 5: 131-138.

Range shifts due to climate change are likely to cause species to move out of existing protected areas. Nevertheless, it is shown in this paper that existing protected areas are important cornerstones for biodiversity conservation and that additional protected areas would be required to buffer some of the impacts of climate change on biodiversity. Early action was shown to be both more effective (more species being adequately conserved) and less costly (less area required for conservation) than inaction or delayed action.

Contact

MACIS project
Helmholtz Centre of Environmental Research
Community Ecology
Dr. Ingolf Kühn and Dr. Ursula Nigmann
Theodor-Lieser-Str. 4
06120 Halle, Germany
ursula.nigmann@ufz.de

Impressum

Helmholtz Centre of Environmental Research, Community Ecology, Dr. Ingolf Kühn and Dr. Ursula Nigmann
Theodor-Lieser-Str. 4, 06120 Halle, Germany, ursula.nigmann@ufz.de