Adapting Nature Conservation to Global Change

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Abstract

Recent global environmental change is pushing many ecosystems towards their tipping points. Within the framework of a new cooperative graduate programme "Adaptive Nature Conservation under Climate Change“ of Potsdam University and University of Applied Sciences Eberswalde and in close collaboration with Postdam Institute for Climate Impact Research 10 research projects are carried out to develop methods and strategies for effective nature conservation under climate change. One project, presented here, deals with large scale spatial priority-setting in nature conservation under global change, considering ecological and socioeconomic proxies indicating effective allocation of conservation resources.

Introduction

Worldwide ecosystems are changing dramatically as a consequence of global and regional modification of climate and landuse. It has become a overarching responsibility of nature conservation to guard these changes of biodiversity and to strengthen resilience and adaptive capacity of ecosystems. A new cooperative graduate programme "Adaptive Nature Conservation under Climate Change” was launched in 2009. The programme has been established at the University of Potsdam and the University of Applied Sciences in Eberswalde. It is carried out in close collaboration with Potsdam Institute for Climate Impact Research to explore and develop sustainable concepts and strategies that will provide for conservation under conditions of rapid environmental change.

What is adaptive nature conservation under climate change?

Adaptive nature conservation under climate change reduces, accompanies or manages unavoidable negative effects of climatic changes on biological and ecological systems that society defines as targets to be conserved. The most important tasks for adaptive nature conservation under climate change are the conservation of (i) biodiversity, (ii) ecosystem services and (iii) the associated positive feedbacks on the climate system regarding plausible and relevant (climatic) futures. These futures are integrated proactively in the conception and application of today's conservation strategies following a precautionary principle. In this process targeted system states are not static, but have to be determined adaptively. Adaptive nature conservation under climate change thus conceives the consequences of global climate change as a central challenge for the maintenance of the well-being of today's and future generations.

The Graduate Programme

The graduate programme "Adaptive Nature Conservation under Climate Change“ serves as a framework for the exchange between different research projects (Fig. 1) and offers a coordinated education of junior researchers in the field of biodiversity conservation under conditions of a rapid environmental change. The programme is integrated in the Potsdam Graduate School (PoGS). The PoGS offers a network between the PhD and graduate programmes of all departments of Potsdam University, supports their efforts for quality assurance and offers interdisciplinary courses.

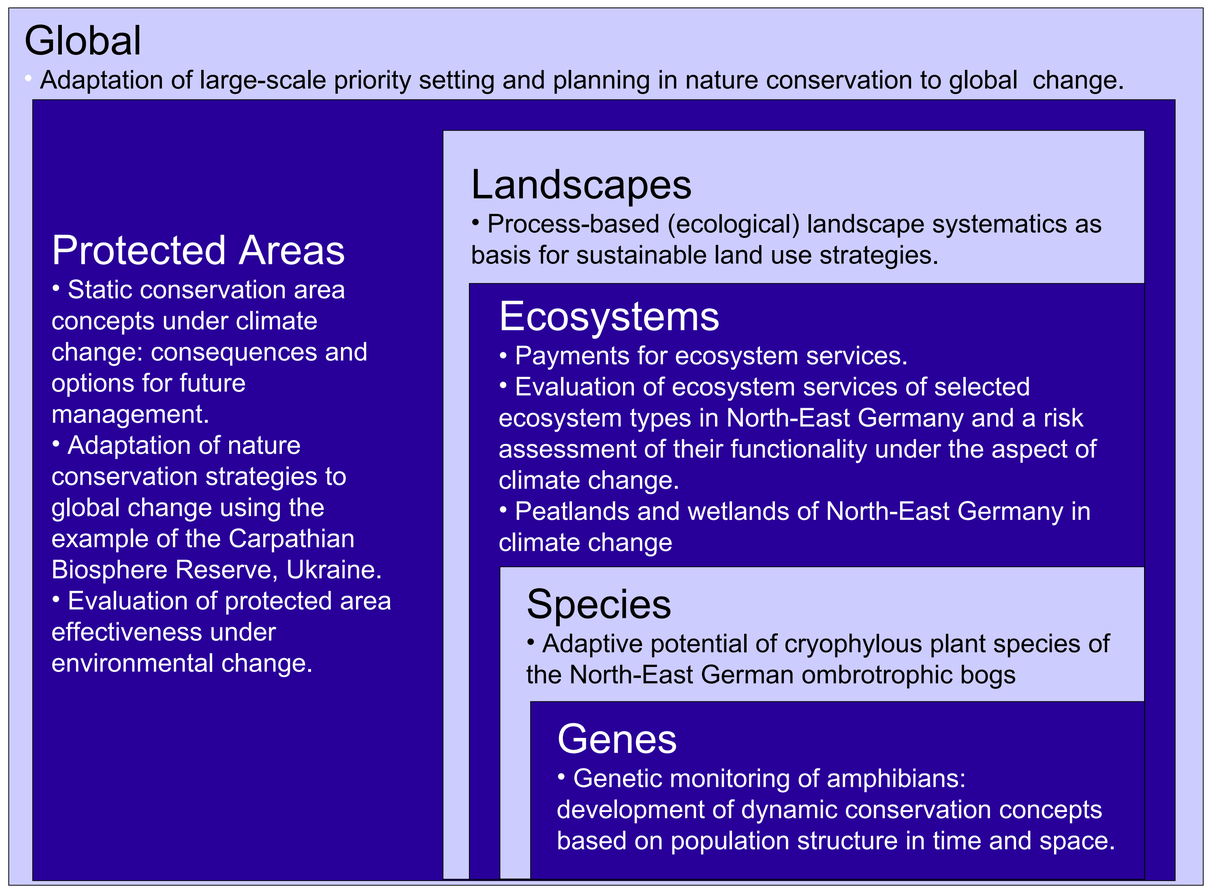

Figure 1: Nested structure of current research projects within the cooperative graduate programme “Adaptive Nature Conservation under Climate Change” and the ecological or organisational level they are assigned to.

Spatial Priority Setting in Nature Conservation

Most spatial priority setting approaches in nature conservation are focussing on patterns as uniqueness and threat status of species (e.g., Global Biodiversity Hotspots). These attempts prioritize especially highly vulnerable areas and do not consider global change. Recent work done by Brooks et al. (2006) showed that *reactive* (prioritizing high vulnerability) and *proactive* (prioritizing low vulnerability priority setting approaches are not congruent (Fig. 2A and 2B). A new large scale priority setting approach is elaborated in the doctorate theses “Spatial Priority Setting in Nature Conservation” (L. Freudenberger) within the graduate programme. This approach factors in projected global environmental change scenarios. In addition, it includes socioeconomic and political factors. This approach is designed to show not only which areas are more important to be conserved but also in which areas nature conservation efforts are most likely to succeed.

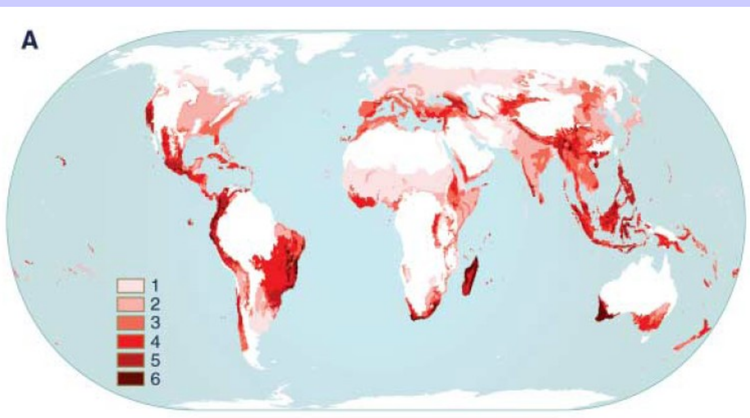

Figure 2A: Mapping the overlay of approaches prioritizing reactive conservation (Brooks et al 2006).

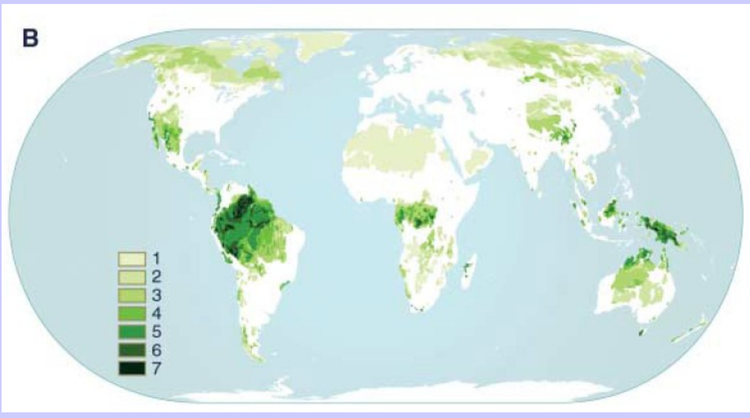

Figure 2A: Mapping the overlay of approaches prioritizing proactive conservation (Brooks et al. 2006).

Literature:
Brooks T. M. , R. A. Mittermeier, G. A. B. da Fonseca, J. Gerlach, M. Hoffmann, J. F. Lamoreux, C. G. Mittermeier, J. D. Pilgrim, A. S. L. Rodrigues (2006) Global Biodiversity Conservation Priorities. Science, 313, 5783, pp. 58-61

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