HABIT-CHANGE
adaptive management for protected areas

HABIT-CHANGE NEWSLETTER

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Contents

CENTRAL EUROPE COOPERATING FOR SUCCESS.

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Editorial … and farewell for now!

It's time to say goodbye after three and a half years, seven project partner meetings, and countless workshops, meetings, and conferences. This newsletter sums up our main activities over the past months. As you can see we have been busy in the project's final phase!

In March we went to Brussels, where we organised our very own policy event informing politicians and policy makers about our work on climate change adaptation and gave recommendation for future conservation planning, protected area management, and land-use policies.

For this newsletter we also selected a few of our major project results and highlighted them. Among them are the Climate Change Adapted Management Plans (CAMPs) and the WebGIS.

Further topics cover the past two project partner meetings, the INTERREG Workshop on water-based ecosystems that took place in Dresden last December and two exhibitions that have been developed for the project's dissemination.

We hope you enjoyed our newsletters and would like to thank all partners, institutions, and individuals who accompanied and supported this project during its runtime. This project would not have been possible without you!

Best wishes,

The lead partner team
(… that needs a rest now like this dog seen during the field trip in the Danube Delta)

HABIT-CHANGE Policy Event, 5 March 2013 in Brussels, Belgium

"We cannot go back!" said **Karl Falkenberg**, Director General for the Environment of the European Commission at the HABIT-CHANGE policy event. Climate change is a fact and nature is responding at increasing speed. Healthy ecosystems are needed since they provide valuable services and will play a significant role in carbon sequestration. However, the preservation of ecosystems and habitats in times of changing climate conditions is a challenge. Europe's green infrastructure is part of the solution. So far, Natura 2000 is consisting mostly of isolated islands rather than functioning as a coherent network. "But it's hard to survive only on an island," Mr. Falkenberg pointed out. Consequently, the cohesion of the Natura 2000 network needs to be enhanced. More examples of adaptation action on site level are needed to prove the benefits of planned adaptation. HABIT-CHANGE presented such examples in Brussels.

Dr. **Andrej Sovinc**, head of the Secovlje Salina Nature Park in Slovenia, summarised the project results for his site. Sea-level rise, increasing numbers of summer storms, and human disturbances have a devastating effects on ground-nesting birds in the low lying wetlands. To tackle these problems, a "Ground-nesting Birds Action Plan" has been designed. Specific adaptation measures, like the creation of artificial islands, are now implemented.

Biebrza National Park in Poland demonstrated how nature conservation, agriculture, and tourism are affected by changing climate conditions. Protected wetlands often include meadows used for grazing, mowing, or other forms of agricultural production. Here, agricultural policy interferes with environmental protection. **Mateusz Grygoruk** illustrated how appropriate communication of climate-related challenges and awareness rising can improve the acceptance of adaptation actions. Active stakeholder involvement is essential to harmonise adaptation activities from agriculture with conservation goals.

For the past three years HABIT-CHANGE has been trying to figure out how habitats will react to climate change and measures to counteract negative results. 14 investigation areas representing 89 habitat types of European importance (Natura 2000) were analysed in the project. "During this intensive cooperation between partners from science and practice we have learned that climate adaptation on the local and regional level is not only affected by existing changes in climate. Also, the adaptive capacity of local institutions like administration of National Parks or Biosphere Reserves is a crucial component," underlined Dr. **Sven Rannow**, the coordinator of the project. The lack of expertise, methods, and tools for climate adaptation, as well as limited resources prevent proper management and adaptation. Much of the available knowledge and guidance does not reach local management. Dr. **Christian Wilke** (TU Berlin) added that technical and methodical guidance must be tailored to the requirements of protected area management and distributed actively. There are several ways to support the management of Natura 2000 sites in their adaptation. First of all, capacity should be enhanced to monitor, assess, manage, and report effects of climate change. In addition, transnational cooperation and experience exchanges on climate adaptation should be enhanced. But the existing gaps in knowledge also need to be closed. Further research is needed to analyse changes and succession of Natura 2000 habitats. Methods to handle results from scenario analysis must be developed in order to make decisions. Finally, biodiversity protection and climate adaptation must be mainstreamed and harmonised in EU policies. Otherwise, contradictory programmes will invest in antagonistic actions and valuable resources will be spent inefficiently.

Changing Habits in Habitat Conservation - A Call to Action

In the past three years, the project HABIT-CHANGE has evaluated how management of individual sites can be adapted to climate change. The partners of the HABIT-CHANGE project recommend several actions on EU level to foster adaptation to climate change in conservation planning, protected area management and land-use policies. The proposed recommendations build on the projects experience in the implementation of climate adapted management in Natura 2000 sites of Central and Eastern Europe and draw on a number of recent strategic initiatives in the field of climate adaptation and biodiversity conservation. The most important recommendations are:

1. To enhance adaptive capacity of Natura 2000 management by

- Strengthening the mandate to include climate change adaptation in Natura 2000 management through EU policy papers and guidelines like the EU Adaptation Strategy.
- Building capacity to monitor, assess, manage and report effects of climate change as well as their interaction with other pressures on site level and by ensuring adequate investment in their implementation and operation. This is especially relevant for long-term monitoring.
- Improving transnational cooperation and exchange of experience about climate adaptation in protected areas with a special focus on knowledge transfer across national borders between managers of individual sites.
- Raising awareness to the local effects of climate change on biodiversity and ecosystem services as well as the need for adaptation and the benefits of ecosystem-based adaptations.
- Strengthening stakeholder involvement in planning and management processes to guide autonomous or unplanned adaptation of existing land use (e.g. farming, forestry or water management) and prevent maladaptation.

2. To close knowledge gaps by

- Supporting research and applied projects that analyse the potential climate-induced changes and succession of specific Natura 2000 habitats as well as species and develop a framework for management under climate change.
- Focusing research on methods to handle multiple results from scenario analysis and methods to provide data and knowledge for evaluating potential local impacts of climate change on biodiversity and Natura 2000 sites.

3. To mainstream and harmonise biodiversity protection and climate adaptation in EU policies by

- Fostering existing efforts on EU level to mainstream biodiversity protection in other relevant sector policies and by making climate change adaptation an explicit cross-sector task of all planning procedures and to reduce existing conflicts between environmental and other policies (e.g. the Common Agricultural Policy).

6th Project Partner Meeting
15-19 October 2012, Gotha, Germany

The 6th project meeting was organised by Thuringian Forest Administrations (PP04) and the associated Partner Biosphere Reserve (BR) Vessertal-Thuringian Forest. The meeting was opened with a welcome address by **Ralf Brümmel**, the Director of the Service and Competence Centre of ThüringenForst and Jörg **Voßhage**, the head of the BR administration. The BR was presented with its natural inventory, landscape characteristics of the montane elevation zone in central Germany and its forestry and sport-touristic particularities. **Ingolf Profft** (TLWJF) outlined the specifics of climate adaptation policy in Germany and Thuringia. The federal structure of Germany leads to diverse solutions for the single federal states (climate adaptation programs and action plans), a national adaptation strategy („Deutsche Anpassungsstrategie (DAS)" and the development of indicators) and a range of concerned authorities, scientific, and other institutions.

Different project partners presented their results related to the BR. **Tobias Schmidt** (TU Berlin) informed about "Final Results of Remote Sensing analysis for BR Vessertal" targeting the detection of deciduous and coniferous forest areas and their respective changes regarding the species composition in order to evaluate forest habitat types. **Judith Stagl** and **Martin Gutsch** (PIK) presented hydrological models for the BR as well as first results of a master thesis on the climate change dependent, eco-physiological forest growth simulator 4C that has been calibrated with representative soil data of the BR. **Nico Frischbier** (TLWJF) illustrated the Natura 2000 network and the climate characteristics of the BR. Based on this, potential climate change influences on habitat types in the BR were derived and presented. The method applies ecograms of relevant forest habitat types and key species. Furthermore, the relief-dependent storm exposition of forest stands was discussed as well as the consensus on stakeholder involvements in terms of forest conversion strategy.

The next day an excursion to the BR was made, where the participants took part in a walking tour through the Vessertal guided by **Nico Frischbier**. At relevant stopping points the group discussed topics, such as the montane mixed forest (Luzulo-Fagetum, Natura 2000 code 9110), its determination and evaluation according to the Habitat Directive, forest management strategies in support of the habitat conservation status outside of the BR-core zone, forest conversion strategies in Thuringia and in the BR to enhance habitat connectivity, and the management of mountain hay meadows in the BR. Further topics covered were the challenges and chances for the rare silver fir under conditions of climate change; core zones and the respective monitoring methods, e.g. based on sampling techniques in natural forest stands; transitions of species composition between Luzulu- and Asperulo-Fagetum; gradual climate-induced changes in the tree species composition.

The excursion also covered the Schneekopf bog, where **Ingolf Profft** and Jens-**Karsten Wykowski** informed about renaturation measures, clearance of shrubs, regulations of the water balance and the long-term monitoring of bog habitats in the BR. Lastly, Ms. **Elke Hellmuth** gave a short lecture on the subject of visitor monitoring, visitor controlling and guidance in the BR. Visitor statistics in the BR partly originate from hidden photoelectric counting devices. This hidden monitoring procedure provides information on the frequency of unpermitted access on total reserve areas and thus contributes to the development of suitable visitor management measures for the BR.

The third day of the meeting focused on the adaptation of conservation management and policies (**Jadwiga Sienkiewicz, Moritz Gies**). Within the frame of group discussions (World Café sessions) three different perspectives on conservation were taken into account: the protected area level, the national level and the international level. The most important results of this discussion on national level was the support for a suitable organisational structure for the planning process. It should include feedback-loops for the cyclic evaluation and progressive development of adaptation strategies and measures. Guidelines for this procedure should allow for bi-directional and cross-sectoral communication and coordination.

The session in Gotha was closed with a presentation by **Martina Mund** (University of Göttingen) addressing the carbon budget and hence the climate protection potential of forests and timber products, acknowledging former and current research on this subject in Thuringia. In this view, a connection between climate adaptation and climate protection efforts was built for the participants from different regions and disciplines.

7th Project Partner meeting
18-21 February 2013 in Bolzano, Italy

The project meeting was kicked-off with a welcome speech by **Marc Zebisch**, Head of the Institute for Applied Remote Sensing at EURAC. **Barbara Stoinschek** and **Kathrin Renner** (EURAC) presented results of the fieldwork and remote sensing work carried out within the investigation area Rieserferner-Ahrn Nature Park, such as a study of long-term changes in land cover for the past 150 years. The techniques of classifying alpine habitats as an input for habitat mapping using remote sensing were discussed. The remote sensing work was explained in detail, including the characteristics of the investigation area, the input data that was used, and the applied methods as well as results.

Astrid Berens (IOER) presented ideas for a HABIT-CHANGE exhibition and visualised four posters that were done already. **Anca Sârbu** informed the meeting participants about an exhibition by the University of Bucharest. **Tanja Menegalija** showed how TNP implemented their ideas on communicating climate change impacts on habitats to visitors of the National Park.

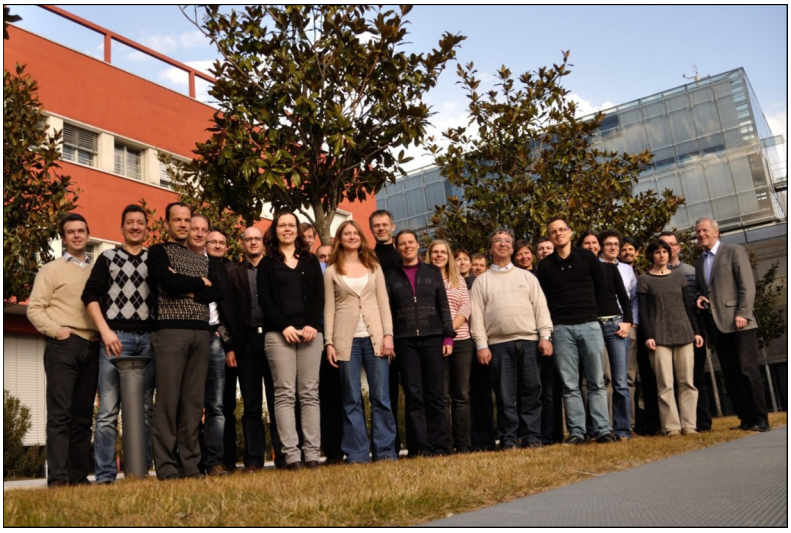
Participants in a brainstorming session

Sven Rannow informed participants about the then upcoming policy event in Brussels and discussed the content and focus of the policy brief that was handed out during the event, as well as individual contributions by partners.

Lars Stratmann (IOER) gave a talk on the state of the Management Handbook and the report on the management guidelines carried out in WP5 describing in detail how guidelines were evaluated. As part of the management handbook a step-by-step guide is to be developed. **Kathrin Renner** (EURAC) presented the current state of the Decision Support System developed within WP5 and demonstrated using the online tool. **Moritz Gries** and **Juliane Albrecht** (IOER) presented the findings of their studies on legal issues in the context of adaptation of habitat management to climate change.

The participants also brainstormed in small groups about PR activities and how scenarios of climate change impacts in their own protected areas could be used for it.

After the official part was over a field trip was organised from Bolzano to Renon by cable car, where a walk through winterly forests offering striking views of the surrounding Dolomites took place.



INTERREG-Workshop "CC adaptation of European water-based ecosystems"
4.-5 December 2012, IOER, Dresden, Germany

Experts from the projects EULAKES, BaltCICA, and HABIT-CHANGE, as well as the Leibniz Institute of Ecological Urban and Regional Development met in Dresden to discuss the Climate Change (CC) adaptation of European water-based ecosystems.

The first session was dedicated to CC effects on coastal areas, estuaries and their ecosystems. It was opened by **Daniel Ivajnsic** (University of Maribor) who presented the modeling results of habitat changes in coastal wetlands of the Adriatic coast. The model can be used to assess future changes due to sea level rise. The results imply different management options. In the discussion it was highlighted that the model has great potential to also reflect CC impacts on groundwater and might be transferable to other coastal areas as well as other habitat types. The resulting maps also provide a good tool for communicating CC impacts. On a more general level the differing impacts of CC in regard to slow and abrupt changes as well as time lag of species reaction was discussed. Especially invasive species might be favoured by abrupt habitat changes following extreme events.

The second session was dedicated to the effects of CC on lakes. **Nicola Gallinaro** (Communitá del Garda) gave an overview on the work done in EULAKES and used Lake Garda in Northern Italy to illustrate results. In the following discussion all participants agreed that maps are an important tool to communicate CC effects on the local level. It became obvious that the interaction of anthropogenic pressures (e.g. tourism) and CC are hard to detangle. This is a challenge for adaptation. **Nora Kovats** (University of Pannonia) elaborated on this topic in regard to invasive species using the artificially introduced Chinese pond mussel as an example to illustrate effects on Lake Balaton. One of the aspects discussed was the interaction and combination of artificially introduced species and the migration of species due to CC.

Communication of CC effects to local stakeholders became a main issue on 5 December. **Gerd Lupp** (Leibniz Institute of Ecological Urban and Regional Development) presented preliminary results from the Project BiKliTour (Biodiversity, Climate Change and Tourism) and described the methodology used to engage tourism stakeholder in the discussion about CC effects. He highlighted the potential of extreme habitats (e.g. bogs) and flagship species (e.g. capercaillie) to illustrate CC effects. They provide a useful link between biodiversity and landscape based tourism that can be used for communication.

Inga Haller (Leibniz Institute for Baltic Sea Research) added insights to the question how to initiate adaptation processes in local tourist organisations in the Baltic Sea region. The result from perception analysis indicate that most local stakeholder consider climate adaptation as somebody else's problem (e.g. governments, state institutions). In the stakeholder discussions storytelling has proven valuable to transfer the abstract information of climate models into everyday experience for non-experts. Science-based scenarios can be presented as letters or newspapers from the future. Ms Haller presented anecdotal evidence that several aspects from (future) scenarios were reported as already existing events by the addressed stakeholders. However, climate change should not be discussed in isolation, but as part of the overall future challenge in regional or business development.

Mateusz Grygoruk (Biebrza National Park) joined the meeting via Skype and presented his latest experience from stakeholder involvement in the Biebrza Valley. He reported on problems to communicate CC effects as National Park administration due to its institutional role and general perception of the stakeholders. As long as the National Park is considered an obstacle for regional development new topics introduced by the administration will be connected with negative emotions. This has to be overcome in order to develop acceptable local solutions. The example of flood water storage and protection was used to illustrate the ecosystem services of the natural wetlands in the National Park. A second example was used to illustrate the negative effect of maladaptation, like enhanced drainage of wetlands for local tourism. Mateusz Grygoruk drew the conclusion that the discussion about financial benefits of nature protection and ecosystem-based adaptation is a useful tool to engage with local communities. This assumption was discussed afterwards. The difference between the discussion of CC effects on tourism sector and nature conservation was highlighted. Financial arguments may not solve the conflict between the protection of common goods and the pursuit of private benefits.

Selection of HABIT-CHANGE project results

The **"Habitats with conservation value from Bucegi Natural Park" book** (**output 2.2.11**) documents results from field work and habitat mapping done by UniB and is part of the capitalization activities. The well-designed and comprehensive book describes the habitats from Bucegi Natural Park both in English and Romanian language.

Maps with impacts of different management strategies for the area of the Vessertal - Thuringian Forest Biosphere Reserve, Germany (**output 3.4.2**) shows the result from the forest growth model 4C. The main objectives of this study was, i) to find out which tree species will profit most under a changing environment with respect to site-specific conditions (e.g. soil) and ii) what kind of implications for the forest management can be made. The maps were prepared by PIK in cooperation with ThuringianForest.

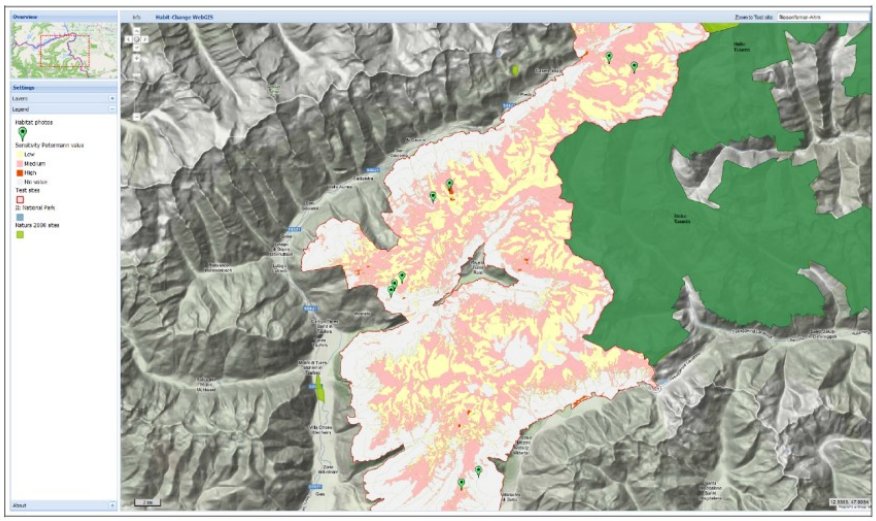
Selection of HABIT-CHANGE project results

Flood extent maps for the Biebrza Valley, Lower Biebrza Basin (**output 4.6.3**) were prepared by BNP in order to provide a quantitative assessment of hydrological impacts to ecosystems and management. Six maps show 1% (100 year), 5% (20 year), 10% (10 year), 20% (5 year), 50% (2 year) flood extent and comparison of flood extents.

The **Report on Management Guidelines** (**output 6.2.1**) analyses existing guidance for adaptation to climate change and conservation management and presents best practise examples from nature conservation and protected area management. The review and analysis of available guidelines and recommendations focused on relevant methods, strategies, and work steps for the adaptation of management planning. The report is the basis and reference for the **HABIT-CHANGE Management Handbook** (**output 5.3.2**) that provides guidance for protected area managers having to adapt their management to climate change consequences. The maps were prepared by TUB in cooperation with IOER.

Report on the implementation of the Web-GIS (**output 3.2.6b**) and **Web-GIS**. WebGIS is a major advancement for the dissemination of cartographic products, making it possible for anyone with internet access to interact with spatial data, such as habitat information. Visualising maps by the means of a WebGIS allows the examination and evaluation of spatial information. Maps available online can easily be updated and modified and if generated automatically from databases, they can display information in almost real time. Thus, online mapping is a flexible and cost-effective solution to integrate new geodata, to personalise map contents, and to share geographic information. The HABIT-CHANGE WebGIS connects the assessed qualitative information of WP3 with the spatial decision support system (DSS) of WP5. It visualises all spatial outputs created in the project and is aimed at the general public as well as experts interested in nature protection and climate change in Central Europe.

The following information layers are available for Central Europe: Natura 2000 sites, protected areas categorised by IUCN category, biogeographic zones, climate scenarios, sensitivity maps for some investigation areas, and photo locations with representative photos and descriptions of habitat types in the investigation areas.



Sensitivities mapped according to Petermann at Rieserferner-Ahrn.

The climate scenario layer shows temperature changes in °C for each season and changes in precipitation in percent. The differences are calculated as the mean of the years 2036/2065 and 1971/2000. For each year the scenario was calculated as the multi-modal-mean using ENSEMBLE data.

The sensitivity layer indicates the sensitivity of habitat types towards temperature and moisture. The Petermann value was also mapped in some of the investigation areas. A detailed description of the approach to calculate the sensitivity values is also available on the website.

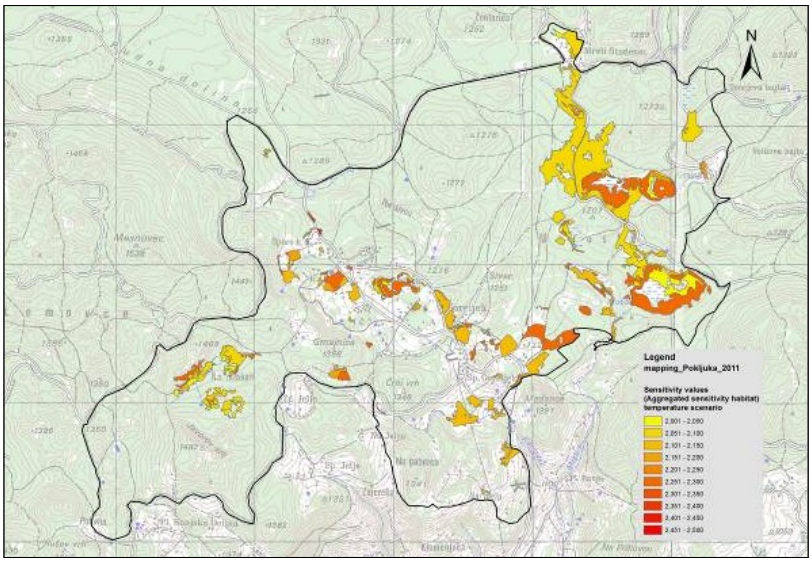
Web-GIS was developed by EURAC and is available to the public at http://webgis.eurac.edu/habitchange/.

Selection of HABIT-CHANGE project results
Climate Change Adapted Management Plans

Climate Change Adapted Management Plans (CAMP) are one of the Core Outputs of HABIT-CHANGE. They cover all aspects of climate change relevant to the respective protected area and its management. The main objectives of climate change adapted management plans are to:

- Analyse and evaluate data about existing, as well as expected pressures, on protected habitats, and about observed and projected future climatic conditions
- Assess potential impacts of climate change on conservation features and identify priorities for a climate-adapted management
- Introduce the concept of an Adaptive Management that enables protected areas to handle uncertainties and reduce gaps in knowledge by simultaneously managing and learning
- Improve effectiveness of adaptation and conservation management by involving relevant stakeholders in the planning and management process

HABIT-CHANGE CAMPs are developed for Balaton Uplands National Park, Biebrza National Park, Danube Delta Biosphere Reserve, Körös-Maros National Park, Sečovlje Soline Nature Park, and Triglav National Park. The first three CAMPs are ready.



Sensitivity map for the Natura 2000 site at Pokljuka plateau. Displayed is the aggregated habitat sensitivity regarding the temperature scenario for the 19 habitats (Source: Scholl, 2012)

Triglav National Park developed two CAMP documents for Pokljuka area and Velo Polje area in cooperation with Christine Scholl. They include: (1) an evaluation of nature conservation, ecological characteristics, physio-geographical and anthropogene features, (2) problem assessment and plan of management measures, (3) a monitoring program, and (4) layout of the stakeholders' involvement. Further steps require (5) implementation, (6) execute monitoring in the field in order for it to become the feedback on efficiency of management actions, (7) evaluation, and (8) adjustment.

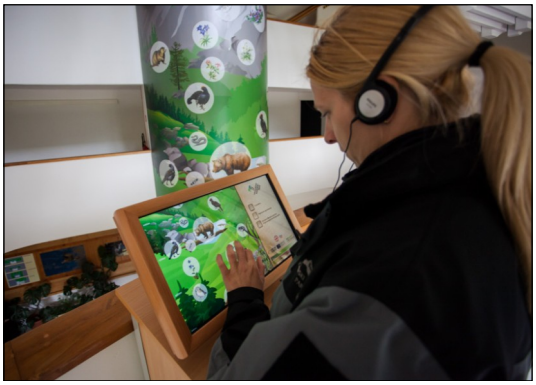
The CAMP for Köros-Maros National Park includes information how climate might change in the region, how sensitive protected habitats are to these changes in climate, what impacts climate change might have on protected habitats, and how to manage protected habitats and obtain a favorable conservation status under expected and already observed climatic conditions.

"BIODIVERSITY OF TRIGLAV NATIONAL PARK"
HABIT-CHANGE exhibition opening at the Triglav National Park (TNP) information centre

Text: Tanja Menegalija, Urška Smukavec

The new permanent exhibition "Biodiversity of Triglav National Park" was recently opened at the Information Centre Trenta Lodge. It presents a variety of plants and animals in TNP and also explains the effects of climate change on their distribution. The exhibition is an enrichment for the information centre, which attracts around 25.000 visitors per year. The first visitors of the exhibition were pupils of the primary school Soča, the only school within the border of TNP. During the scientific days for schools (dedicated to Slovene seismologist and conservationist Albin Belar) on 22 and 23 May over 500 children visited the exhibition.

School class during field trip (Photo: A. Zdešar)



Visitor at touch screen (Photo: A.Zdešar)

The pillar in the centre of the lobby represents plant and animal species in different environments and altitude zones from the valley to the peaks. The aim of the exhibition, which perfectly enriches and upgrades the existing presentations, is to show just a small piece of rich nature in a meaningful way. The main 11-meters tall pillar in the lobby of Trenta Lodge represents a colourful world of the park. The drawings present 34 plant and animal species in their typical environment. Another achievement is the touch-screen displays with written descriptions of species, as well as audio versions with animal sounds suitable for visually impaired visitors. Touch screens also offer information about the HABIT-CHANGE project and the results are presented in the form of posters.

Around 40 people were present for the opening ceremony on 17th of May. The speakers were: Martin Šolar, director of Triglav National Park; Marko Pretner, head of Information centre; and Tanja Menegalija, coordinator of the project. All of them pointed out the importance of the exhibition for environmental education about climate change issues, biodiversity, and nature conservation. The cultural programme was prepared by the pupils of music school from Tolmin.

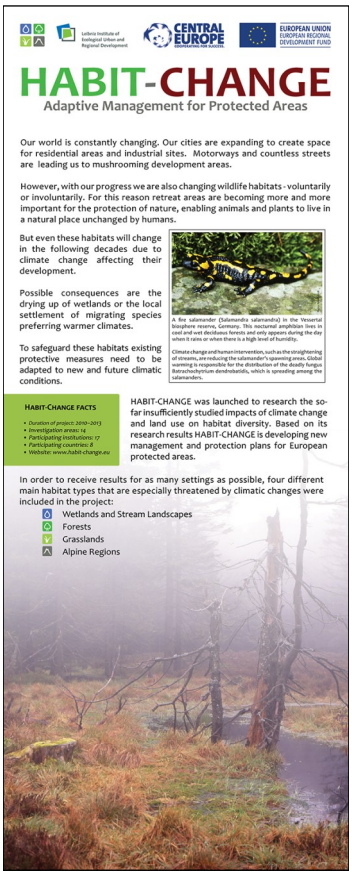
Impressions from the exhibition opening on 17 May. (Photos: Mojca Pintar)

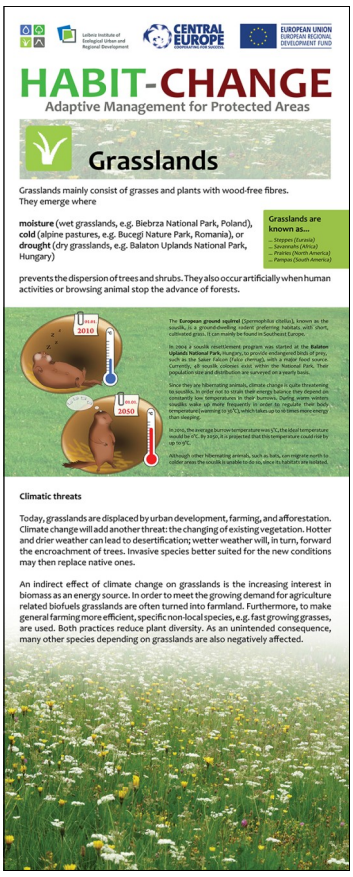
HABIT-CHANGE Exhibition

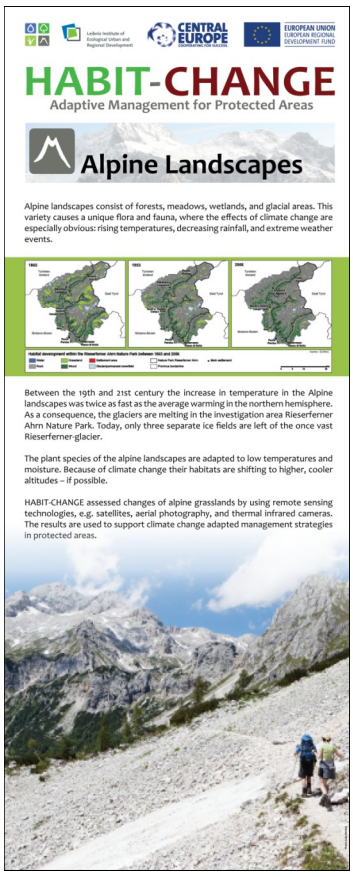
The IOER developed a HABIT-CHANGE exhibition showcasing some of the research and work that was done over the past three years. The aim of the exhibition is to inform the public in a generally understandable way about climate change in protected areas and adaptation measures that are being initiated in HABIT-CHANGE's investigation areas.

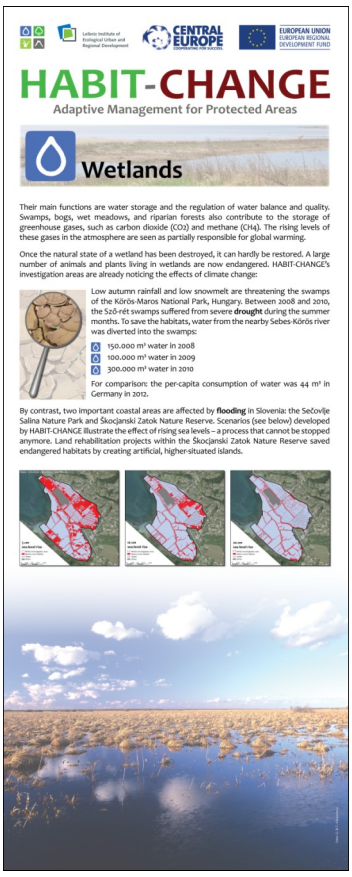
The main focus lies on the different habitat types that will probably be most affected by climate change: alpine landscapes, forest landscapes, grasslands, and wetlands.

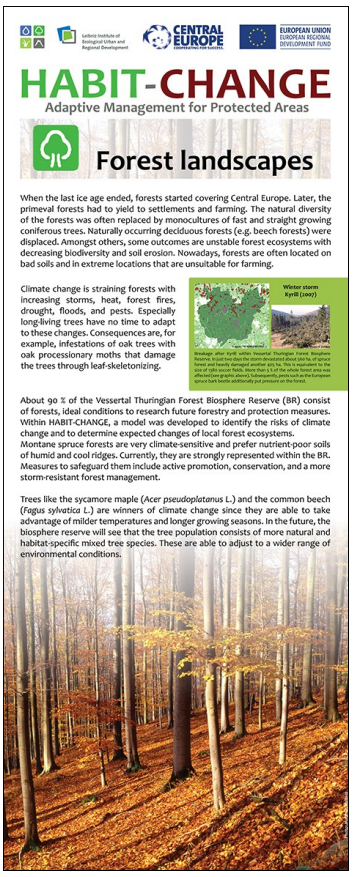
Six poster templates (see right and below), both in English and German, are available on the HABIT-CHANGE website for further use.





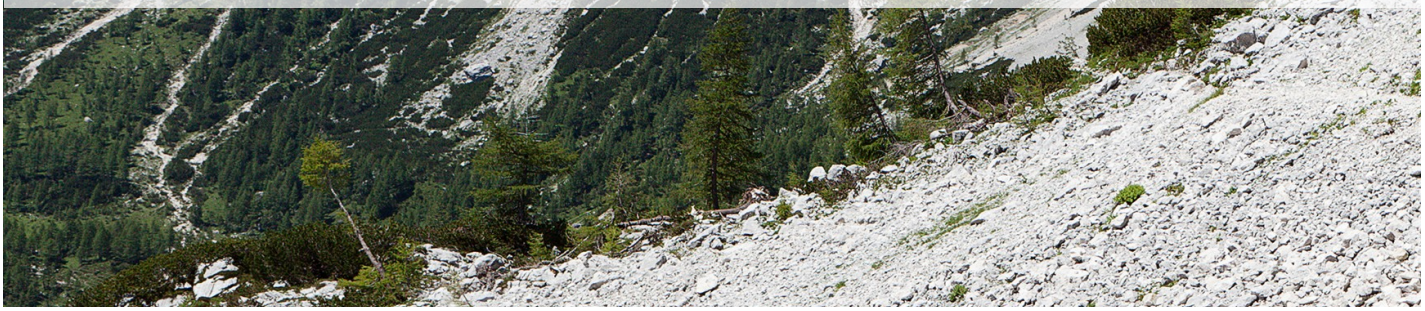






For further information on the HABIT-CHANGE project please visit www.habit-change.eu

Feedback and comments to this newsletter are highly appreciated. Please contact M.Neubert@ioer.de



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