



## Ecochange Stakeholder Meeting

9 November 2011, mundo b, Brussels

### Agenda

- 13:00-13:30 Arrival and coffee
- 13:30-13:45 Introduction and tour de table
- 13:45-14:00 Welcome and start of the meeting
- Introduction to EcoChange by Hartmut Barth (European Commission) and Nick Zimmermann (EcoChange Strategic Committee, Eidgenössische Forschungsanstalt WSL, CH)
- 14:00-15:00 Key research findings and their policy context
- New DNA technology for rapid biodiversity surveys (Mary Edwards, University of Southampton, UK)
- Climate change and biodiversity (Nick Zimmermann, Eidgenössische Forschungsanstalt WSL, CH)
- Conservation (Wilfried Thuiller, Centre national de la recherche scientifique, France, presented by Nick Zimmermann)
- Sustainable development & ecosystem goods and services (Mark Rounsevell, University of Edinburgh, UK)
- 15:00-15:15 Questions
- 15:15-15:30 Keynote speech
- Karin Zaunberger (European Commission)
- 15:30-15:45 Coffee break
- 15:45-16:50 Stakeholder discussion
- Panel discussion with Heidi Wittmer (UFZ, TEEB), Rob Tinch (Environmental Futures Ltd) and previous speakers
- Discussion with the audience
- 16:50-17:00 Wrap-up and conclusions
- 17:00 Small buffet, networking

## Participants

**Moderation: Jill Jäger**

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<b>Name</b>	<b>Organisation</b>
Aurélien Carbonnière	Fondation pour la Recherche sur la Biodiversité
Elke Pirgmaier	Sustainable Europe Research Institute SERI
Gabor von Bethlenfalvy	Federation of Associations for Hunting and Conservation of the EU
Hartmut Barth	European Commission
Hector Pollitt	Camecon
Heidi Wittmer	Zentrum für Umweltforschung UFZ, TEEB
Jill Jäger	Sustainable Europe Research Institute SERI
Karin Zaunberger	European Commission
Lisa Bohunovsky	Sustainable Europe Research Institute SERI
Louis Francois	Université de Liège
Marie Dury	Université de Liège
Mark Rounsevell	University of Edinburgh
Mary Edwards	University of Southampton
Nick Zimmermann	Eidgenössische Forschungsanstalt WSL
Rob Tinch	Environmental Futures Ltd
Sari Pynnönen	European State Forest Association

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## Introduction

**Hartmut Barth** (EU project officer of the EcoChange project) stresses the importance of communicating project results and the policy-science interface, the Commission is keen on best-practice examples.

**Nick Zimmermann** (see ECOCHANGE\_Zimmermann\_Introduction\_2011.pdf) introduced the Ecochange project including several highlights

- rich data collection
- novel approaches (see presentation of Mary Edwards)
- novel agent-based model to project land use change (see presentation of Mark Rounsevell)
- novel techniques in biodiversity projections (e.g. evolutionary information added to analyse if extinction occurs for random species or clustered – in order to find out how much evolutionary depth we lose)
- implementing species migration routine in two biogeochemical models
- assess the value of existing reserve networks / identify conservation gaps

## Presentation of key messages

**Mary Edwards** (see ECOCHANGE\_Edwards\_2011.pdf) stressed the relation of Ecochange research to EU policy, as it is designed to address issues central to Sustainable Development Policy Goal 7 of the Millennium development goals: to improve knowledge in support of the effective management that is essential to preserve and enhance ecosystem services. Moreover, it contributes to the aims of the Convention on Biodiversity, Habitats Directive, and Natura 2000 network: to maintain valued sites for their biodiversity within a context of human activities and ensure the free migration of species across the landscape.

Edwards then presented the development of new DNA technology (metabarcoding) for rapid biodiversity surveys. This novel approach can be used across a range of temporal and spatial scales. It can contribute to modelling efforts that seek to understand biodiversity responses to future climate change and which are informed by long-term perspectives on the nature and dynamics of plant communities. Forensic-style investigations of landscape and ecosystem history are also possible with this method and can be used to reveal past human impacts as well as natural changes.

Current species distribution data (e.g., those used in climate modelling) are not sufficient as species today may not occupy all potential climate space due to other factors such as competition or land-use change. Historical data improve information on overall potential ranges and thus modelling of future change.

### Potential applications and uptake

Findings suggest that current estimations of potential niches might be too pessimistic.



A2 work contributes to the understanding of ecosystem trajectories through time and to the improvement of models – including those taking human impact into account – that are critical to effective habitat management and conservation planning.

Of particular promise is the new DNA methodology that can fill a critical gap in scientific knowledge needed to sustain ecological systems in the face of climate change: a new tool for biodiversity surveying and monitoring. This has particular promise for initial rapid scoping surveys in understudied regions and for areas that have undergone major changes due to human impact.

At this time, the meta-barcoding work is still in development. It is currently being extended to other groups of organisms and further tested by Ecochange partners. Applications are likely to be available within the next year or two, and as these are developed we plan meetings with stakeholders (e.g., conservation and land managers) interested in both aquatic and terrestrial ecosystems.

**Nick Zimmermann** (see [ECOCHANGE\\_Zimmermann\\_Biodiv\\_2011.pdf](#)) on global change and biodiversity:

Ecochange was central for developing the applicability of species distribution models (SDMs). Several studies have been done within EcoChange to overcome drawbacks (e.g. missing mortality and migration).

- a. A sensitivity analysis to climate variability: Future changes in climate variability will strongly affect species' ranges and biodiversity
- b. Ensemble modelling to better assess uncertainties: there is not one correct model, but many model results are likely to happen; Ecochange aimed at visualising uncertainties, thus maps were developed that visualise agreement between models; Scientists can visualise how much uncertainty there is, but practitioners/managers have then to decide on the level of risk suitable for management decisions.
- c. Assessing local vs. continental scale effects: Modelling on global scale may oversize extinction; choice of statistical method has strong effect on outcomes → models need thorough interpretation;
- d. Plant migration and time lag effects: Time lags in migration and die-off processes need to be considered when analysing species distribution in future climates.

Overall conclusions:

- ECOCHANGE has modelled biodiversity futures of many species groups in Europe with novel methods: Mammals, Birds, Amphibians, Reptiles, Plants, Trees
- Important advances have been made with regards to assessing climate extremes, model uncertainty, transient response through migration modelling, and analysis of extinction debt.
- This allows for much improved conservation planning and assessment of threats and potentials of managing biodiversity under global change.

**Nick Zimmermann** on Biodiversity change and Conservation (see ECOCHANGE\_Thuiller\_Conservation\_2011.pdf from Wilfried Thuiller)

In regard to biodiversity loss decisions have to be taken on which species or which sites should be preserved – different criteria for selection discussed.

How does the existing network of protected areas and Natura 2000 sites protect biodiversity?

Ecochange analysed this question by gap analysis:

Example 1: Bird species in Finland: considerable gaps of protection in deciduous forests and arctic mountains → Future processes caused by climate change should be accounted for even if they are uncertain, because current distribution may lead to misleading results;

Example 2: There are winners and losers in conservation areas. Protected areas tend to retain climate suitability better than expected by chance; this is not true for Natura 2000 sites!

*Question: Striking results on deficient ability of Natura 2000 sites to protect species! Where does this difference between protected sites and Natura 2000 come from?*

*→ Results reflect protection in future climates, not current one! Difference might have something to do with spatial distribution of sites; question will be forwarded to authors (W. Thuiller and M. Araujo)*

**Mark Rounsevell** (see ECOCHANGE\_Rounsevell\_2011.pdf) on sustainable development and ecosystem goods and services

This part of the EcoChange project deals with the question of relations between land use, environmental changes, preferences of land users and how this might affect the provision of ecosystem services. It followed an agent-based-model (ABM) approach that is integrated in an integrated sustainability assessment.

The team did an extended social survey on farmers' behaviour that shows different motivations for different types of farmers. These differences should be taken into account when developing policies.

Interesting insight from case studies: farmer's attitudes towards land use are quite similar in Switzerland and Scotland.

Main links to policy:

- Highlights the importance of understanding farmer behaviour in designing agri-environment policy
- Different farmer profiles and scenarios lead to different future land use and ES outcomes
- Farmer profiles may change in the future (and implications for CAP design)
- The social impact (acceptability) of different farm management strategies
- Expected outputs in terms of policy responses from on-going stakeholder process

*Question: Which ecosystem services did you include?*

*The work includes a wide range of EGS covering provisioning, regulating, cultural, supporting. The final list of EGS included will depend also on limitations from the modelling approach and quantification possibilities.*

**Key note from Karin Zaunberger (see ECOCHANGE\_Zaunberger\_2011)**

Knowledge on biodiversity is increasing fast, but this arises more questions and “Buts”. Knowledge is not always put into action. We don't act according to our best knowledge.

There is a considerable time lag between knowledge and being heard by policy. When input is given by science it is important to repeat, repeat, and repeat the message! Use media! Policy could be, but at the moment fails to be the necessary trend-setter, it's more reacting; this makes the responsibility for science rather big.

Description of EU policy development on biodiversity; also current resource efficiency roadmap and „other“ policies – CAP, cohesion, fisheries,... need be taken into account for biodiversity issues - these are often much more influential than environmental policies

Economic language should be used to get heard by policy, but we should not forget our own language; many things that matter can and perhaps even should not be measured!

At the moment there is a strong momentum for (economic) measuring. This means that we risk to ignore things that cannot be measured. Economists, political scientists and lawyers are more easily heard than ecologists.

**Comment from Heidi Wittmer**

Ecochange has some good messages:

- There seems to be some hope that nature's adaptability is larger than we assume;
- conservation policy might be easier than we think if we find some general trends for groups of species as shown in Ecochange;
- taking into account human decision making: purely economic reasons are not as determinant as one would assume (as Mark showed)

Main question:

- What is your contribution from Ecochange to the broader policy set (except biodiversity policy) that have much more impact?

- Do you have recommendations for moving applied research in the direction of maximising ecosystem services? There is still a lot of optimising that does not take into account the broader picture.

### **Comment from Rob Tinch**

Link to other projects in order to increase impact: Two new FP7 projects (Martin Sharman) – BESAFE and BIOMOT– both look at how does measuring biodiversity affect people’s behaviour, both are case study based. Other running projects such as SPIRAL.

### **Discussion:**

In the following the discussion was opened up. Main discussion points are summarised below.

#### Modelling & predictions

- There is a general interest in extending the use of agent-based models.
- When communicating (ABM) model results, it is important to emphasize that we cannot make predictions. Models can be rather used as learning tools. A strategy could be to communicate overall trends/the process of learning/ranges of possible outcomes.
- It is right that models are often overestimated and that they cannot find solutions for all problems, but it is different to say that quantitative models are not always possible. The communication of model outcomes is very important. Also narrative storylines should be seen as outcomes of science.
- It is crucial to clarify what models can answer and where complexity is too high to use modelling as an approach.
- In relation to AP6 the importance of small-scale decision making has to be emphasized. Many decisions are made by landowners or small groups, which in sum have a major impact. The same point can be made for the forestry sector.
- Analysing what models can do: Explain robust results because in some cases the results may not be robust (i.e. part of a sensitivity experiment that may be misleading if not put in context--don't send people off on false trails). Example: Natura 2000 sites in Finland that appear less efficient on conserving bird diversity but it may be an experimental effect
- We need to explain when models are useful for stakeholders (as opposed to developmental/experimental results). There are often enormous uncertainties in data as well as models, which have to be communicated.

- Focus in efforts should not be laid on optimising ecosystem services: it's not only a scientific problem – in regard to EGS, trade-offs and value-judgements need to be taken into account.

#### Main outcome

- Results need to be integrated and main outcomes of the project have to be made as accessible as possible to users (e.g on website).
- EcoChange has already an impressive list of scientific publications and deliverables, but the dissemination to non-scientists should be enforced.

#### Policy-Science-Interface

- Outcomes of the project should provide inputs to policy briefs and research policy briefs. Part of the message needs to be about what we are losing- that would be a strong message for the public. One policy channel EcoChange could feed into is the mapping of ecosystem services by 2014
- It is difficult to make synthesising statements of the EcoChange work-what level of detail is needed for policies? Currently, scientists are not encouraged to make policy-relevant statements, there is a big gap between the science world and the policy world. When thinking of “policy makers, these should include the EU-level, but also the local level. We should include stakeholders more from the beginning and also identify potential users of our results.
- It would be groundbreaking if EcoChange was up-front about how much decision-makers should rely on modelling as opposed to a mixed approach that combines models and non-quantitative methods.
- It was suggested to provide structures on how to present project results in order to make them more and easier comparable and to harmonise input from different projects.
- We need to ensure that EcoChange findings are known to the next generation for EU projects to reduce overlap and repetition. We have to think about what could be funded next, and participate in the new projects to bring continuity. Another suggestion is to host a workshop where people from different biodiversity studies get together.

#### Positive scenarios

- There is a demand for positive scenarios for the future; to know/imagine what kind of future we desire, and to discuss pathways to get there. However, it has to be clear that this will not happen in a nice and gentle linear route.