SER2008, Ghent, 8-12 September 2008

Conclusions

Maurice HOFFMANN (INBO, Belgium)

Towards a sustainable future for European ecosystems

Providing restoration guidelines for Natura 2000 habitats and species

1. **What did we release? → Towards a sustainable future**
2. What did we learn?
3. What about the future?

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Core message

Gathered together at the 6th European Conference on Ecological Restoration in Ghent (Belgium, 8-12 September), ca. 500 experts from more than 40 countries, concluded that **present measures for the restoration of Europe's natural resources need to be strengthened considerably**.

The Society for Ecological Restoration therefore urges priority action for ecological restoration throughout Europe; it states that:

"Investing in nature conservation and ecological restoration <u>pays</u>, economically as well as ecologically."

“Investing in nature conservation and ecological restoration pays!”(*)

The SER 2008 Congress strongly recommends greater investment in the science and practice of nature conservation and ecological restoration, as well as in better communication of the enormous ecological and socioeconomic benefits to be gained.

(*) On cost versus benefits, Rudolf de Groot

“Investing in nature conservation and ecological restoration pays!”

The Economist (2005) states: investing 1€ in nature conservation brings between 7.5 and 200€ in return.

- Input for implementation and maintenance of Natura 2000 network: **6 billion €/yr**, i.e. ca. **12 € / inhabitant** of the EU
- Estimated **economic benefits: 3-4 times higher**: ca. 20 billion €/yr

see also Costanza et al. (1997, Nature 387: 253)

What do we get for that money?

1. The **economic value** of maintained and restored ecosystem services within the Natura 2000 network, which are conservatively estimated to be **at least 20 billion €/year** from, for example, restored fisheries and forest-products, improved air and water quality, flood prevention, erosion control, and carbon storage, as well as enhanced cultural services such as recreation, eco-tourism, cultural heritage value and improved physical and mental health.

2. **Employment benefits** of **at least 125.000 new jobs** in activities directly related to nature conservation and restoration, **plus positive impact on millions more** related to enhanced ecosystem service use related to recreation, tourism, sustainable resource harvesting, etc.

3. **Biodiversity and ecological values** are safeguarded and restored, which is also **essential to achieve European commitments** under various conventions, such as the Convention on Biological Diversity, and Kyoto Protocol, as well as the Millennium Development Goals.

Where do we get the money?

1. Direct **payments by beneficiaries** of maintained and restored ecosystems providing goods and services could generate a big portion of the funds needed (e.g. Vitell Perrier pays farmers 3.5 million €/year in Switzerland to protect its mineral water source).

2. In addition, with proper communication and education, **most Europeans would be more than willing to pay the 12 Euros per year needed**, as shown by a study carried out in Scotland which showed that people would be willing to pay 315 million €/year for Natura 2000, that is 6 times the actual costs.

What does it cost to do nothing?

The current yearly cost of ecosystem degradation is estimated between **2 and 5 times GDP** (Gross Domestic Product) in most countries globally.

For the European Union, GDP in 2007 was 16 trillion €; 2% of that is 320 billion lost through ecosystem degradation each year**.**

The money needed for Natura 2000 (6 billion €/year) is only 2% of that huge cost.

Rania Spyropoulou (EEA): state of the art

1. From the first results of the EU member states reports to the European Commission in 2007, it was concluded that **less than 50%** of the species and habitat types protected by the EU Habitats Directive **are in favourable conservation status**.

2. Species-rich grasslands, bogs, mires and fens, freshwater habitats and dunes are among the most endangered habitat types.

3. With 60-80% of the habitat types in an unfavourable condition the Atlantic, Boreal, Continental, Macaronesian and Pannonic biogeographical zones of Europe are in the least favourable state..

On static versus dynamic: how to cope with climate change impact on biodiversity (Jim Harris)

Although many presentations were successfully focusing on a huge diversity of techniques to **conserve** particular habitats and species, several of the 323 scientific contributions concluded that present-day instruments will not be able to cope with the challenge that e.g. **climate change** raises.

It was concluded that **a more dynamic approach at the ecosystem level** would be more appropriate then the static approaches of habitat and bird directive, which primarily thrive at rigid conservation, rather then **creating dynamic opportunities for biodiversity to establish, develop and evolve**.

How to cope with nature's dynamics in a static habitat approach (Paul Opdam)

An ecological restoration strategy for Europe can not only rely on the implementation of the Natura 2000 network alone. **In order to adapt for the impact of global climate change** and to allow migration of species between fragmented Natura 2000 areas, **stepping-stones, robust nature corridor areas and sufficient ecological connectivity within the (agricultural) landscape are essential**.

On society versus society: Stakeholder engagement and building partnerships are key factors for successful ecological restoration (Jozef Keulartz)

Despite a growing awareness among politicians in many of the EU member states, still more investments are needed **to support communication and cooperation between local groups and movements** (e.g. nature conservationists, farmers, foresters, fishermen, recreation people, landowners) with different perceptions or visions of nature.

(Re-) establishment of **trust** between these groups with a focus on **possible mutual ecological and socio-economical benefits** is necessary to facilitate ecological restoration and overcome conflicts.

Compensation measures in case of loss of private income **are a fair solution** in the pursuit of a sustainable, ecologically healthy society, common ecosystem services and the right of future generations to inherit a beautiful natural environment. Also care is needed to **ensure that** the **top-down** (European Commission to member state to local community) **and bottom-up** community-driven approaches **mesh** as much as possible.

On society versus society: Stakeholder engagement and building partnerships are key factors for successful ecological restoration (Jozef Keulartz)

In order to be effective, Europe's biodiversity and **ecological restoration policy needs to be better integrated and legally assured in other policy fields, such as agriculture, transport, energy, climate change and economic development**, both on the European and the regional scale. The integration of Natura2000 policy in the Water Framework Directive is exemplary.

An opposite example is **the relation between biodiversity and agricultural policy**:

In **eastern European countries**, a drastic deterioration of valuable habitats is currently taking place at an alarming rate due to changes in agricultural land use after transition to a market economy. Various types of semi-natural grasslands are most seriously affected, with abandonment on the one hand and agricultural intensification on the other hand.

Locally adapted agro-environmental schemes are urgently needed to counteract these losses. Otherwise the same development that appeared in Western Europe will take place with a considerable decline of valuable habitats and species, especially those depending on agricultural management of low intensity and a much higher cost for ecological restoration afterwards.

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Conclusions

Towards a sustainable future for European ecosystems

Providing restoration guidelines for Natura 2000 habitats and species

1. What did we release?
2. **What did we learn? → Providing restoration guidelines** (*)
3. What about the future?

(*): a good start is the conference accompanying CD with extended abstracts and the forthcoming information on the SER-Europe website

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Providing restoration guidelines

- Ecological restoration per habitat
- ER on behalf of species chances
- Modelling conditions, populations, …
- Ecological restoration planning
- Monitoring
- ER and society
- ER and politics
- ER and ethics
- ER in the future, new challenges to come

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About Habitats and species …

System	oral	poster
Eroded and former mining areas	13	9
Dry and moist grasslands, inland sand dunes	29	12
Dry and wet heathland	13	2
Wetlands, rivers and floodplains	46	21
Peatland, fens and lakes	24	10
Forests	14	6
Estuarine tidal systems	21	2
Coastal, coastal dune and marine systems	13	3
Species, (Natura 2000 species, invasive species introduced species, …)	38	26
Genes	-	1

SER2008, Ghent, 8-12 September 2008

… and beyond habitats and species …

System	oral	poster
Socio-economic and political issues	34	13
Planning	22	11
Monitoring	17	6
Restoration techniques	21	11
Modelling, environment	19	5
Climate change	11	1
General	7	3
Key notes	12	-

Eroded or formerly mined areas

(Ása Aradóttir and Karel Prach)

1. On sites with low resource availability and/or sites with unstable soil surface, initial interventions are usually necessary to overcome thresholds to succession. The interventions, however, need to be carefully selected as they can influence the subsequent successional trajectory
2. **Except extreme site conditions, spontaneous succession is often the best tool of restoration**
3. Regional landscape context should be considered in restoration programs
4. It is highly desirable to preserve at least some remnants of (semi-natural habitats in the surroundings of a disturbed site, which largely determine the course of spontaneous succession as well as supply by species to technically restored sites
5. **Especially in-site heterogeneity and interactions between vegetation and soil biota should be more considered in restoration efforts than have been till now**

Dry and moist grasslands

(Kati Török, Kathrin Kiehl, Sabine Tischew)

1. Large-scale restoration experiments are carried out in low productive, sandy, degraded areas in different parts of Europe. The success of these trials contributes to extend Natura2000 habitat types outside designated areas.
2. **Re-introduction of target plant species by hay transfer or seeding is very successful to overcome the problem of dispersal limitation, local provenance of seeds has to be assured.**
3. There are many successful (and often long-term) studies in restoring dry grassland:
   1. **top soil removal followed by hay transfer**
   2. **shrub removal followed by site-adapted grazing in co-operation with farmers**
4. BUT they must be implemented at a larger scale, must be adapted to changing conditions → monitoring
5. AND financial support for restoration measures within the financial instruments of the EU (CAP, ELER) is often not possible. The financial instrument of the Natura2000 network should more strongly focus on restoration and not only on already existing (well developed) habitats.

Heathlands

(Michiel Wallis De Vries)

1. **Dispersal from source populations limits the recolonization of restored heathlands** on former agricultural land both in plants and invertebrates (e.g. spiders, *Calluna*)
2. Small-scale measures may be beneficial to restore habitat quality for species requiring heterogeneity (e.g. butterfly *Maculinea alcon*)
3. **Scaling up restoration measures to a landscape scale is a main challenge for the future, because they have not been very successful so far (e.g. hay transfer to restore botanical diversity)**
4. Restoration measures such as **acidification (S-input)** to restore heathland **may be successful** to re-establish dominant plant species, such as *Calluna*, **but the remaining N-load** may lead to a totally different system from the intended heathland (e.g. high N-content leads to high grazing palatability).
5. **Soil fungi** may be an underestimated factor in heathland restoration on former agricultural land.

Wetlands, rivers and floodplains

(Francesco A. Comin, Vasillos Papanastasis and Kris Van Looy)

1. **Restored wetlands contribute to improve the water quality, biodiversity and landscape diversity** of watersheds, intensively homogenised by human activities. They are also promising tools for the integration of social and economic aspects of sustainable development of people, living in these watersheds.
2. Restoration of wet meadows for the benefit of endangered birds can be successfully accomplished by water buffalo grazing and summer cutting of high emergent helophytes.
3. LIFE-Nature projects can be efficiently implemented in wetlands if networking is applied to solve common problems.
4. To restore water quality and hydromorphology in lakes, a combination of technical works, such as islets, sandbanks and dams is needed.
5. **Chemical and radioactive pollution** of lakes used as coolers of nuclear power plants persist if the reactors are shut down.

Wetlands, rivers and floodplains

(Francesco A. Comin, Vasillos Papanastasis and Kris Van Looy)

1. **Integrated planning** is essential with respect to:
   - abiotic constraints and ecosystem functioning
   - users, stakeholders and authorities
   - species demands and dispersal abilities

2. **Knowledge on species ecology** is essential for control:
   - it allows prediction and evaluation of suitable sites and of species impacts
   - also interspecific relationships are important
   - so, the dynamics of invasive species needs to be assessed, in relation to characteristics of the degraded ecosystem

3. Management can be costly and time-consuming,
4. A support cell for invasive (plant) species (at national level) can help

Forest ecosystems

(Kris Vandekerkhove and Jos Van Slycken)

Essential question: restore to what condition, depart from what reference?

1. Abiotic conditions have changed:
   1. loss of water dynamics (floodplain forest)
   2. phosphorus accumulation
2. Exotic species invade
3. "Natural" species combinations change, because of
   1. climate change
   2. cessation of traditional management

→ **Restoration of the original is not realistic or too costly** (possible at small scale)

Alternative:

1. Restoration of forest dynamic processes, leading to

→ **NEW** forest types with their own species composition, where **new natural values** emerge, related to these processes, e.g. saproxylic beetles and fungi

Forest ecosystems

(Kris Vandekerkhove and Jos Van Slycken)

1. Restoration of forest ecosystems relying on natural processes is a long term process that could take several decades, so no spectacular changes are to be expected in absence of calamities. This was shown by a study on accumulation of dead wood in strict forest reserves that were withdrawn from regular management in North -West and Central Europe since 10 to 150 years and a history study over a period of 130 years of an Hungarian oak forest reserve. Also a modelling study on colonisation rate of the stag beetle proved the slowness . However human interventions simulating natural disturbances can accelerate this process, such as gap creation, girdling and burning as shown in a case study in Finland
2. Attention was asked on **the origin of shrubs and trees in restoration projects**. Autochtonous planting material should be used as the are adapted to the local conditions and fit with the lifecycle of may species of the European Birds an Habitat Directive . The approach in Flanders was illustrated.
3. As national borders are fading out with the extension of the European Union, **it is a challenge to establish trans-European mega corridors that allow connectivity to face climatic change**. A first attempt was demonstrated by the Birdlife European Task Force by mapping biologically important forests in order to bridging forest biodiversity centres from the Fennoscandia to the Balkans.
4. Restoration measures for Natura 2000 sites are not always straight forward, this was shown by a study on the habitat 9210* Apennine beech forest with *Taxus* and *Ilex*. It was shown that the requirements for restoration differs between both species and only a restricted area was suitable for the restoration of the habitat of both *Ilex* and *Taxus*

Tidal ecosystems

(Erika Vanden Bergh)

1. Restoration planning and design:
   - Reconstruction of **historical hydro-morphological developments** as a tool to identify measures that can reverse adverse developments.
   - **Modelling** of potentials for habitat creation under different environmental conditions as a tool to assess restoration scenario's.

2. **Monitoring** schemes for tidal restoration: besides the distance to target assessment evaluation of restoration measures should also include reference monitoring and verification monitoring.

3. Evaluation of tidal wetland restoration:
   - Structural and functional response to key forcing factors
   - Potential contribution to **estuarine functioning**: silica buffering
   - Adaptive management

Socio-economic and policy issues

(Geert Van Hoorick, An Cliquet and Wouter Van Reeth)

1. **Legislation can facilitate** ecological restoration by protecting valuable habitat types also outside Natura2000, thereby enhancing interconnectivity

2. **Sustainable tourism** can help to preserve open places. Developing a ‘great accommodation system” (private houses of character belonging to a unique reception system), revising of existing structures to avoid new structures

3. **Restoration can be “a trade and a skill” for private enterprises** specialised in ecological restoration on private lands (e.g. there are gardeners, landscape architects, etc.) It is not the exclusive task for governments and ngo’s.

4. **Economic development and ecological** restoration might often **seem contradictory** to one another. However, **win-win situations are possible**, through a variety of mechanisms, such as compensation obligations, temporary nature areas, reviewing permits for human activities, eco-trade or habitat banking and obligations on liability

Socio-economic and policy issues

(Geert Van Hoorick, An Cliquet and Wouter Van Reeth)

1. Although every contribution had its own uniqueness, some common denominators could be detected, summarized as follows:

	Traditional approaches	Contemporary and innovative approaches
1. Nature goals	Static, conservation aimed	Dynamic, controlled shifts in succession
2. Project focus and scale	Species and habitat	Ecological processes, landscape, ecosystem
3. Steering mechanism principles	Centralist, hierarchical, rule of law	Decentralist, network, incentives and win-win approach
4.Ideology	Implementing the vision of the professional	Sharing multiple visions
5. Financing	Funded by government capital	Enabled and sustained by government, private and social capital

Stakeholder involvement and ethics s.l.

(Jac. Swart)

1. The recognition of the dynamic behaviour of ecosystems and populations is highly relevant, especially because of the current climate change. **This requires a more dynamic and adaptive legislation.**
2. **Public participation in decision-making** with respect to restoration is an important pre-condition for successful restoration as it may channel public concern and contribute to consciousness of the importance of restoring damaged ecosystems.
3. Ecological restoration in combination with the **involvement of stakeholders may contribute to a revitalisation of urban and rural areas** as it enhances the living conditions of people and may reconnect them to nature.
4. To be successful, **stakeholder participation requires involvement in early phases of the decision procedures**. Delayed involvement may lead to resistance when basic decisions are made without them. Hence, stakeholders involvement requires taking part in the process of visioning.
5. **Ethical issues e.g. with respect to the intrinsic value of animals and ecosystems** and how to deal with laymen's knowledge on nature are often on stake in concrete restoration projects. These issues should be taken into account in restoration projects it implies and that restorers should develop answers on ethical questions from the public

Comment on monitoring

(Wim Buysse)

Appeal to funding agencies to provide means for monitoring for much longer time frames after a restoration project has been finished, then is currently the case.

examples: presentations 275, 276, 289

Contradictions or complementarity?

1. Pattern versus Process
2. Static versus Dynamic
3. Climate Anticipation versus Rigid Conservation
4. Habitat versus Species
5. Species versus Genes
6. Habitat versus Vegetation Type
7. General versus Specific
8. Large scale versus Small scale
9. Evidence-based versus Experience-based
10. Monitoring versus ‘We’ll see’
11. Models versus Planning
12. Costs versus Benefits
13. Ethics versus Non-interference
14. Short term versus Long term time frames
15. Environment versus Biota
16. Wilderness versus Ruling, Management
17. Society versus Society

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1. What did we release?
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Take home messages

1. Keep on restoring habitats (s.s.) and safeguard biodiversity: restore chances for biodiversity to maintain and develop
2. Keep dynamics as red line through restoration initiatives: its an essential characteristic of nature and biodiversity; a dynamic approach is needed to cope with future changes, particularly those due to climate change
3. **Ecological restoration is not about ruling, managing, determining, it is all about *facilitating*, giving chances to biodiversity to (spontaneously) establish, develop and evolve**
4. Thrive for evidence-based rather then experience-based decisions: monitoring and research remain and will remain necessary
5. Involve all societal partners in ecological restoration; explaining about costs and benefits is a very strong tool to do so
6. Prioritize process above pattern
7. In the end, prioritize wilderness above control

Come to the conference in Avignon in 2010!!

SER-commitment

The European Chapter of the Society for Ecological Restoration International offers its experience to those who need it to improve the ecological status of degraded habitats in Europe, not in the least those included in Natura 2000.

Conclusions stated on behalf of the SER-2008 conference participants:

Albania	1	Germany	32	Romania	6
Australia	1	Greece	12	Russia	3
Austria	3	Hungary	7	Senegal	1
Belgium	163	Iceland	2	Serbia	1
Bulgaria	1	Ireland	4	Slovakia	2
Canada	1	Israel	3	Slovenia	1
Croatia	2	Italy	7	Spain	26
Cyprus	1	Japan	2	Sweden	4
Czech Republic	5	Latvia	3	Switzerland	1
Denmark	12	Lithuania	3	The Netherlands	55
Estonia	16	Luxembourg	2	Ukraine	1
Finland	6	Norway	5	United Kingdom	18
France	25	Poland	5	USA	7
Georgia	5	Portugal	2	together	457 (*)

(*) With further contributions from Brasil, Turkey and other countries