



# Natura 2000 Seminars

## Alpine Biogeographical Region

Alpine Seminar  
25 – 26 November 2013, Hotel Weitzer, Graz, Austria

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## 1 Introduction

This document forms the basic reference for the Alpine Natura 2000 Biogeographical Seminar that will take place in Graz on 25 and 26 November 2013. It presents in a digested form, the main outcomes of the Alpine process to date and proposes a number of concrete actions to address the main joint issues that have been identified as being important to ensure progress towards achievement of the favourable conservation status (FCS) of selected priority habitats in the Alpine region.

The introduction of this document provides an outline of the Natura 2000 biogeographical process, its purpose and objectives, along with main stages and milestones. Also, it places the Natura 2000 Biogeographical Process in the wider context of delivering the EU 2020 Biodiversity Strategy.

A key aim of the Process is to focus on common priorities and shared interests identified to improve habitat management that can usefully be developed for collaborative action. The issues and actions summarised in the Habitat Working Group tables have been formulated to reflect as closely as possible the variety of issues and actions flagged during the various stages of the process to date. All suggested actions have been duly recorded in the documents available on the **Natura 2000 Communication Platform**<sup>1</sup> and are still available for reference in the future stages of the Alpine process (and also other regions).

Additionally, during the process, a number of cross-cutting issues, relevant to achieving favourable conservation status (FCS) for habitats considered as part of this process, have been identified. These are summarised in Chapter 4.

The document concludes with lessons from LIFE+, a core delivery mechanism enabling adequate management of the habitats highly relevant to the Natura 2000 biogeographical process.

## 1 The Natura 2000 Biogeographical Process

### 1.1 Introduction

The Natura 2000 Biogeographical Process was launched by the European Commission in 2011 to assist Member States in managing Natura 2000 as a coherent ecological network. The process provides practical means to exchange information, experience and knowledge - that is required to identify and define common solutions and develop cooperative actions, which can be delivered to ensure progress towards the EU 2020 Biodiversity targets.

Clearly, as responsibility for implementation of Natura 2000 and ensuring progress towards the EU's Biodiversity Strategy targets lies with Member States, they are key actors in the Natura 2000

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<sup>1</sup> <http://ec.europa.eu/environment/nature/natura2000/platform/>

biogeographical process. Also, there are significant opportunities through the process to improve mobilisation of expert networks and inputs from other key stakeholders. This is important to benefit from the direct experience of Natura 2000 practitioners, expert stakeholders and Member States' representatives with specific responsibilities for implementation of Natura 2000. This underlines the strategic and operational importance of the Process and the integrated inputs required from diverse actors.

## 1.2 Core messages of the Natura 2000 Biogeographical Process

The following points highlight key features of the Natura 2000 biogeographical process:

- Participation in the Natura 2000 biogeographical process is voluntary;
- The process provides a valuable means to work collectively towards achieving the legal obligations of the Nature Directives;
- The process offers a practical framework for networking, sharing information and experience and building knowledge about the most effective ways to achieve more for habitats and species of European Community importance - this includes opportunities to identify and promote the multiple benefits linked to such actions;
- The process focuses on practical habitat management and restoration activities and provides a framework to share best practices, compare approaches, build contacts, exchange information and build new knowledge;
- The process is supported by networking events designed to build knowledge and capacity, along with a platform to communicate and share information.

Its aims and objectives are:

- To improve and strengthen implementation of Natura 2000 and ensure progress towards the EU 2020 Biodiversity Strategy targets<sup>2</sup>;
- To strengthen common understanding of what it means in practice to achieve favourable conservation for habitat types and species subject to protection in Natura 2000<sup>3</sup>;
- To take agreed priority management actions designed to improve or maintain favourable conservation status for those habitats and species that fall within their territory;

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<sup>2</sup> Target 1 of the 2020 Biodiversity Strategy is: to halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments: (i) 100% more habitat assessments and 50% more species' assessments under the Habitats Directive show an improved conservation status; and, (ii) 50% more species' assessments under the Birds Directive show a secure or improved status.

<sup>3</sup> There will be a need to examine ways of improving coherence with outcomes of work on assessing favourable conservation status through monitoring and reporting under Article 17, especially with regard to eventually determining how best to build a common understanding of what needs to be achieved for different habitats and species to reach FCS.

- To develop new management insights, cooperation between Member States, stakeholder organisations, environmental NGOs and specialist networks can lead to new ‘know-how’ to support the achievement of FCS;
- To strengthen recognition and action for management of Natura 2000 that also contributes to socio-economic objectives, through the multiple benefits that derive from such action.

As a dynamic and continuing process, Member States and their representatives are supported by the team of contractors and other actors working for and through the Natura 2000 biogeographical process.

### 1.3 The Natura 2000 Biogeographical Process’ contribution to the EU 2020 Biodiversity Strategy

The Natura 2000 Biogeographical Process is a vital means to help the European Commission, Member States and all other expert stakeholders in nature conservation to ensure progress to delivering the EU 2020 Biodiversity Strategy. As a reminder, the headline target is:

*“Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.”*

At the same time, ways to strengthen implementation of Natura 2000 through the Birds and Habitats Directive is the core subject of Target 1 of the Strategy:

*“To halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments: (i) 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status; and (ii) 50% more species assessments under the Birds Directive show a secure or improved status.”*

However, ensuring progress towards implementation of Natura 2000 should also be considered in the wider EU agenda, in particular the following strategic objectives:

- **A more resource efficient economy:** The EU’s ecological footprint is currently double its biological capacity. By conserving and enhancing its natural resource base and using its resources sustainably, the EU can improve the resource efficiency of its economy and reduce its dependence on natural resources from outside Europe;
- **A more climate-resilient, low-carbon economy:** Ecosystem-based approaches to climate change mitigation and adaptation can offer cost-effective alternatives to technological solutions, while delivering multiple benefits beyond biodiversity conservation;
- **A leader in research and innovation:** Progress in many applied sciences depends on the long-term availability and diversity of natural assets. Genetic diversity, for example, is a main source of innovation for the medical and cosmetics industries, while the innovation potential of ecosystem restoration and green infrastructure is largely untapped;
- **New skills, jobs and business opportunities:** Nature-based innovation, and action to restore ecosystems and conserve biodiversity, can create new skills, jobs and business opportunities.

TEEB estimates that global business opportunities from investing in biodiversity could be worth US\$ 2-6 trillion by 2050.

In the same way, synergies should be sought with the other 5 targets of the EU Biodiversity Strategy, these are:

- **Target 2:** By 2020, ecosystems and their services are maintained and enhanced by establishing **green infrastructure** and **restoring** at least 15 % of degraded ecosystems;
- **Target 3 A) Agriculture:** By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement<sup>4</sup> in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline, thus contributing to enhance sustainable management;
- **Target 3 B) Forests:** By 2020, Forest Management Plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size<sup>5</sup> that receive funding under the EU Rural Development Policy so as to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 Baseline;
- **Target 4 Fisheries:** Achieve Maximum Sustainable Yield (MSY) by 2015. Achieve a population age and size distribution indicative of a healthy stock, through fisheries management with no significant adverse impacts on other stocks, species and ecosystems, in support of achieving Good Environmental Status by 2020, as required under the Marine Strategy Framework Directive;
- **Target 5:** By 2020, **Invasive Alien Species** and their pathways are identified and prioritised, priority species are controlled or eradicated and pathways are managed to prevent the introduction and establishment of new IAS;
- **Target 6:** By 2020, the EU has stepped up its contribution to **averting global biodiversity loss**.

Therefore, through the Natura 2000 Biogeographical Process, there are vital opportunities available for all stakeholders to contribute to this wider agenda. Joint actions developed in the context of the Natura 2000 Biogeographical Process, create new scope to generate greater synergies, realise shared benefits and establish new ways to demonstrate the integral value of Natura 2000 to reaching societal goals and conservation objectives.

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<sup>4</sup> For both targets, improvement is to be measured against the quantified enhancement targets for the conservation status of species and habitats of EU interest in Target 1 and the restoration of degraded ecosystems under target 2.

<sup>5</sup> For smaller forest holdings, Member States may provide additional incentives to encourage the adoption of Management Plans or equivalent instruments that are in line with SFM (to be defined by the Member States or regions and communicated in their Rural Development Programmes).

## 2 The Alpine Natura 2000 Biogeographical Process

The focus of the Natura 2000 Biogeographical process is on stakeholders working together to develop practical management actions on the common issues and shared priorities they identify. As a continuing learning process, stakeholders can work together to seek answers for the following critical questions:

- What problems and issues are experienced and which are the common priorities?
- What information and practical experience is present and can be shared?
- What are the possible solutions and what can we do together to address these?
- What actions can we agree to commit to and work on together?

Therefore, the Alpine Process brings representatives from Member States, nature conservation organisations, NGOs and expert stakeholder networks together to discuss real problems linked to areas of shared priority. The networking events offer a practical means to develop collaborative thinking, scope opportunities for joint working and focus attention on nature management matters of shared concern and priority that is required to build knowledge about ways to improve the conservation status of habitats and species of Community interest and achieve progress for the EU 2020 Biodiversity Strategy targets.

The Alpine Seminar is a key milestone in a continuing process to identify the main threats and pressures on Alpine habitats, develop practical solutions for common habitat management priorities and propose possible scope for precise cooperative actions.

The (first) Alpine Seminar is by no means an end point: on the contrary, it is intended to be the catalyst for a continuing series of practical and feasible actions that will emerge from the Seminar. As such, it represents the starting point for a series of successful cooperative actions developed between stakeholders in Alpine countries. These actions should focus on the management and conservation of the habitats for priority consideration identified through this process.

The Alpine process is led by Austria, and the Federal State of Styria. The Steering Committee of the Alpine process is composed of representatives of the 14 Member States (AT, BG, CZ, DE, ES, FR, FI, HR, IT, PL, RO, SE, SI, SK) and the European Environmental Agency (EEA), the European Topic Centre on Biological Diversity (ETC/BD) and the European Commission. Based on the pre-scoping document and the discussions of the Steering Committee, four focus habitat groups were selected: forests, wetlands, dry and grasslands and freshwaters. For the Alpine process, a number of species has been identified that will be covered as part of cross-cutting issues.



## 2.1 Habitats selected in the Alpine Biogeographical Process

The habitat types are presented in ascending order of their Natura 2000 code as introduced in Annex I of the EC Habitats Directive. The colour codes refer to the habitat groups to which they belong: freshwater (blue), dry and wet grasslands (light green), wetlands (purple), forests (dark green).

CODE	HABITAT NAME
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.
3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation
3220	Alpine rivers and the herbaceous vegetation along their banks
3230	Alpine rivers and their ligneous vegetation with <i>Myricaria germanica</i>
3240	Alpine rivers and their ligneous vegetation with <i>Salix elaeagnos</i>
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco - Brometalia</i> ) * important orchid sites
6230	Species-rich <i>Nardus</i> grasslands, on silicious substrates in mountain areas (and sub-mountain areas in Continental Europe)
6410	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
6510	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> )
6520	Mountain hay meadows
7110	Active raised bogs
7140	Transition mires and quaking bogs
7230	Alkaline fens
91D0	Bog woodland
9130	Asperulo-Fagetum beech forests
9170	Galio-Carpinetum oak hornbeam forests
9180	Tilio-Acerion forests of slopes, screes and ravines
9260	<i>Castanea sativa</i> woods
9410	Acidophilous <i>Picea</i> forests of the montane to alpine levels ( <i>Vaccinio-Piceetea</i> )

## 2.2 The Alpine Preparatory Workshop

The Alpine Preparatory Workshop was held in Graz, on 12-14 June 2013, with over 90 delegates representing experts, practitioners and policymakers. Prior to the actual two-day workshop field excursions on selected habitat groups were organized by the host and the Naturpark Akademie Steiermark. The excursions provided first-hand experience of real-life issues and solutions with regard to managing Natura 2000 habitats. Also, for the first time as part of the Natura 2000 biogeographical process, the workshop was specifically scheduled to follow a LIFE project networking event: this enabled a solid link to be established between LIFE and the Natura 2000 biogeographical process. Also, it demonstrates the valuable opportunities to support the networking and knowledge building activities at the heart of the process available through this core EU funding mechanism.



*Plenary session of the Alpine Preparatory Meeting in Graz (June 2013)*

Hosted by the Government of Styria, the focus of the Workshop was to discuss the key conservation issues for each group of selected habitat types in the Alpine biogeographical region.

Working in Habitat Groups, the process used at the Graz Workshop was to:

- Identify and prioritise key issues in relation to establishing FCS for the identified four habitat groups and the habitat types and species within them;
- Discuss and prioritise potential solutions to those issues;
- Identify possible actions and consider what kind of concrete actions could be envisaged to accommodate key associated species.

<i>HABITAT GROUP</i>	<i>X-cutting issue</i>	<i>Lead MS / CHAIR</i>	<i>Workshop support by the contractor</i>	<i>Seminar support by the contractor</i>
Wetlands	Tourism	SI*: Peter Skoberne	Roger Catchpole	Roger Catchpole
Freshwater (Lakes and Rivers)	Landscape fragmentation	SK: Jana Durkošová	Bernie Fleming	Bernie Fleming

Dry and Wet Grasslands	Global change	PL: Andrzej Langowski	Neil McIntosh Richard Peters	Richard Peters Mark Snethlage
Forests	Stakeholder involvement	AT: Gerald Plattner (Workshop) AT: Georg Frank (Seminar)	Lawrence Jones-Walters	Johan Lammerant

In addition, a number of species had already been identified in the Background Document<sup>6</sup> for discussion. Also, the workshop investigated four cross-cutting issues:

- Tourism;
- Landscape fragmentation;
- Global change;
- Stakeholder involvement.

Participants were divided into four habitat working groups to discuss the key conservation issues for habitat types and to prepare for focused discussion and possible identification of priority actions at the Seminar in November 2013.

#### The next steps...

***The purpose of the Seminar and its expected outcomes are to discuss the concrete actions suggested in this document and to make recommendations and decisions about how to take these actions forward. Where possible, these recommendations and decisions should involve seeking necessary commitments to take agreed common priority actions forward. Preferably the seminar should define clear timetables for the actions, agreeing a division of roles and responsibilities and where necessary confirming a willing lead.***

***In the following pages provide summaries for the four habitat groups, followed by a chapter on cross-cutting issues and a chapter on the LIFE instrument. In particular, the tables that have been developed (one for each habitat group) deserve particular attention, as the solutions and proposed actions will be the focus of the discussions during the Seminar.***

***As far as possible, the aim of our work during the Seminar is to further discuss and specify agreed actions of common priority and shared interest in terms of resource inputs, roles, responsibilities and planning. As part of the Natura 2000 biogeographical process, Member States and other organisations present should seek to develop consensus and cooperative commitments about how to bring (a selection of) these actions to fruition in future.***

<sup>6</sup> Available for consultation on the Natura 2000 Communication Platform

### 3 Habitat group accounts

Results for each of the four habitat groups are presented in the following way. The first part of each habitat group account summarizes the information collected in the Alpine Revised Pre-scoping Document, the expert consultations reported in the Background Document and the Graz Alpine Workshop Report. These documents are available for consultation online or for downloading from the following locations:

- The new Natura 2000 Platform<sup>7</sup>
- Communication and Information Resource Centre for Administrations, Businesses and Citizens (CIRCABC, for registered users only)<sup>8</sup>

The second part of each habitat group account presents a “Working Group Table – Summary actions for discussion” building on the Preparatory Workshop (held in Graz on 12 to 14 June 2013) Report. The results included in these tables have been carefully reviewed and in particular, through consultation of workshop participants by the habitat group chairs and facilitators. An effort has been made to develop the solutions into a series of concrete, practical and realistic suggestions for joint action to be discussed by the Seminar participants.

#### 3.1 Grasslands

##### 3.1.1 Introduction

The grasslands habitat group consists of following habitat types: Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco - Brometalia) \* important orchid sites (6210), Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and sub-mountain areas in Continental Europe) (6230), *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (6410), Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430), Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (6510), and Mountain hay meadows (6520).

In total 21 grassland habitat types of European importance occur in the Alpine biogeographical region. The 6 most widely distributed types were selected for the Natura 2000 biogeographical process. This group consists of one habitat type of dry calcareous grasslands (6210), three types of wet grasslands (6410, 6430, 6510) and two mountain grassland types (6230 and 6520). With respect to management requirements, 2 habitat types represent typical hay meadows (6510 and 6520), one habitat type is especially suitable for low-intensity grazing (6230), two habitat types (6210 and 6410) require low-intensity management (usually mowing), and for one habitat type (6430) a lower intensity of management or no interference is sufficient. However, management of these habitats varies in different parts of Europe.

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<sup>7</sup> [http://ec.europa.eu/environment/nature/natura2000/platform/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/platform/index_en.htm)

<sup>8</sup> <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>



*Field visit to a grassland site during the Alpine Preparatory Workshop in June 2013, Graz, Austria (Grassland working group 2013)*

The selected habitat types represent semi-natural grasslands, i.e. grasslands that were created by man, and their long-term persistence depends on a particular type and intensity of management measures. In this respect, the grasslands differ from the other selected groups of habitats and this causes their conservation and management to be more complicated. This is because, in addition to natural conditions, social and economic issues also play an important role and need to be taken into account. The involvement of farmers is inevitable: nature conservation is able to contribute to the protection of the most important patches of grasslands in protected areas, but the broad-scale maintenance of grassland habitat types requires agricultural management.

Table 1 Summary of most important issues and solutions for Alpine grasslands identified by country experts<sup>9</sup>. Numbers between brackets refer to the number of times the issue was mentioned by experts.

Threats and pressures	Management requirements	Bottlenecks	Solutions
Grazing (15)	Appropriate grazing (15)	Lack of knowledge (15)	Raising Awareness
Mowing/cutting of grassland (14)	Appropriate mowing (12)	Insufficient subsidies (14)	(Communication (12)
Fertilisation (12)	Reduced or no fertilisation (12)	Low profitability (12)	Financial Support Schemes (11)
Grazing in forests/ woodland (12)	Removal of bushes and trees (8)	Lack of funding/staff (11)	Stakeholder Engagement (Cooperation (11)
Biocenotic evolution/succession (12)	Appropriate Habitat Restoration (8)	No or not sufficient collaboration(11)	Better Policies/Legislation (10)
Modification of cultivation practices (11)	Stopping/avoiding afforestation (7)	Inappropriate policy/legislation (11)	Bio Farming (7)
Urbanised areas (human habitation (10)	Habitat mapping and analysis (5)	Lack of communication/knowledge transfer (10)	Demand for Local Products (7)
Human induced changes in hydraulic conditions (9)	Appropriate burning (4)	Difficult land conditions/access (9)	Education & Training (6)
Other ecosystem modifications (8)	Spatial Planning (4)	Conflicting policies/interests (8)	HNV identification (6)
Biocides (hormones & chemicals (6)	Establishment of protected areas (4)	Excessive bureaucracy (8)	Contracts for Management (6)
Cultivation (5)	Avoiding Modifications	Too few farmers (7)	Revitalize the economic return of agriculture (6)
Taking/Removal of terrestrial plants (general) (5)		No or low awareness (6)	Habitat Connectivity (5)
		No long-term management	Solutions for Carnivore Damages (5)
			Habitat Mapping and Analysis (5)
			Fundraising (4)

<sup>9</sup> for details please refer to the Alpine Background Document on Grasslands:

<http://www.natura2000communicationplatform.eu/sites/default/files/documents/ALP%20Background%20Document%20-%20Grasslands%202013.pdf>

Sport and leisure structures (5)	of Hydrology (3)	contracts (5)	Land Purchase or Lease (4)
Livestock farming and animal breeding (4)	Stopping/avoiding recreation extension (3)	Farms transformation to recreation facilities (5)	Increase of population of native herbivores (4)
Forest planting on open ground (4)	Control of invasive alien species (3)	Large carnivores (5)	Research Improvement (4)
Roads (paths and railroad) (4)		Farmland polarization (4)	Traditional Management Systems (3)
Problematic native species (4)		Private ownership of land (3)	Specific Management Prescriptions (3)
Annual and perennial non-timber crops (3)		Lack of interest to manage land (3)	Maintain/Control Nutrient Conditions (3)
Invasive non-native species (3)		Unsuitable practices of farmers (3)	
Changes in abiotic conditions (3)			

Because the selected grassland habitats represent semi-natural grasslands, the main threats and pressures identified in the Alpine NBP so far are related to management issues (mowing, grazing, fertilisation) - their intensity, timing or absence. There are threats and pressures operating across the entire group of selected grassland habitats: mowing/cutting and grazing regimes, fertilisation, afforestation, changes in land use, and secondary succession. Modification of cultivation practices, use of biocides and chemicals, changes in hydraulic conditions and other ecosystem modifications were also reported as threats and pressures for a large number of habitat types. These threats and pressures usually reflect two main processes: intensification of agricultural management and abandonment. Often both processes occur in the same region and this leads to the polarisation of the agricultural landscape: intensive use of fertile, easily accessible sites and abandonment of remote sites with low productivity. Similarly, contrasting grazing intensities are observed. Both undergrazing and overgrazing are reported across the Alpine region. Urbanisation and the reduction of habitat connectivity by fragmentation are also considered important pressures.

Incorrect management of grasslands is mainly driven by economic factors, because grassland management is mostly subsidy-driven rather than focusing on proper management. There are, on the other hand, also indications that farmers lack knowledge of correct practices. Farmers' traditional knowledge of how to manage grasslands properly is gradually decreasing and a significant loss of know-how is taking place. The natural site conditions, in particular soil properties, water availability and regime, and climatic conditions, determine the suitable, site-specific management of the grasslands, and the farmer needs to know their implications in order to decide on the correct management methods and the timing of their implementation.

The existence of multiple conservation targets introduces the requirement for special management measures. Besides habitat types the targets could also focus on the maintenance of viable populations of certain species, leading to the need for special management measures. Such measures could include shifting of implementation of the management measures (e.g. for birds or butterflies), mosaic management of grasslands, keeping small patches with a different form of management or without management inside the grassland area, and special management of ecotones.

The main challenges for grassland management are to ensure correct, non-intensive grazing and mowing, while avoiding abandonment or intensification. Not surprisingly, the top-ranked barriers were the lack of or insufficient funds for grassland management and the lack of knowledge. Lack of funds refers in particular to the CAP subsidies, and concerns both the amount of funds available for individual measures and the setting of measures (e.g. there are no suitable definitions, the measures are not very flexible, the

procedures and administration are complicated). Besides lack of funding, a lack of staff or low personnel capacity in institutions managing the funding schemes is also reported. Excessive bureaucracy in the form of demanding administrative procedures results in a situation in which it is fairly complicated for farmers to obtain financial support. This has a direct link to abandonment or incorrect management of grasslands.

The low profitability of grassland management represents another important barrier, as do the lack of or insufficient collaboration, conflicting policies and inappropriate policy and legislation. Improvements are particularly needed in communication with farmers and other stakeholders, education, awareness raising and transfer of knowledge.

Understanding of favourable conservation status (FCS) was found to be an issue. Inconsistencies in the interpretation of FCS exist at various levels. There is a difference between site-level assessments and national assessments, with interpretation at the national level leading to inconsistencies between countries. Lack of knowledge is an important issue in relation to these inconsistencies. In this respect, the question of how to arrive at a proper/workable definition and interpretation of FCS remains a challenge. The other important issue is how to measure FCS. Improving the list of indicator species is important in this respect. This is a task for each country, but also an area in which cooperation can take place. There is a need for assessment and improvement of the common understanding of the indicator species and their significance, and how to test for FCS.

Part-time farmers are a special issue, at least in part of Europe. They do not usually meet the definition of ‘farmer’ and so are not eligible to receive funding, but they often manage very important, high-quality grassland habitats. Their land typically covers a small area, which often creates the mosaic patterns of different land-use or intensity types that are characteristic of a high level of biodiversity and contribute significantly to the heterogeneity of the rural landscape. Finding a way to involve part-time farmers in the maintenance of grassland habitats of European importance is a real challenge for the next period.

The farmers want to make a living from food production and do not want to live on subsidies; they want to carry out N2000 management. These two statements were formulated during the Graz workshop. They express crucial, major challenges that extend far beyond nature conservation and agriculture, as they address the basic elements of the economic system and top-level policy issues. The development of a system that, on the one hand, ensures that the target grassland habitats are maintained in a favourable conservation status and, on the other hand, is also economically viable could be key to the long-term maintenance of the grassland habitats, including those of European importance.

Table 2 Issues and solutions overview for the Grasslands Habitat Group

Habitat group	Habitats	Issues	Solution
Grasslands [+ cross-cutting issues Global Change]	6210 <i>Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco - Brometalia) * important orchid sites.</i>	Avoid abandonment/avoid intensification	Developing small scale production
	6230 <i>Species-rich Nardus grasslands, on silicious substrates in mountain areas (and sub- mountain areas in Continental Europe).</i>	Definition of favourable conservation status (FCS)	Working group on the FCS
	6410 <i>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae).</i>	Lack of knowledge/awareness	Education, trust building, improve funding mechanisms and management
	6430 <i>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels.</i>	Conservation of species	Apply a landscape approach
	6510 <i>Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis).</i>		
6520 <i>Mountain hay meadows.</i>			



### 3.1.2 Grassland Working Group Table – Summary actions for discussion

Action	Notes/description	Mechanism/Partners	Who and When
<b>ISSUE: How to avoid abandonment/avoid intensification</b>		<b>SOLUTION: Developing small scale production</b>	
<p>Raising awareness by organizing events and sharing information on both grassland conservation and ecosystem services.</p> <p><i>Comment: Swedish examples on producing food products like cheese; Czech Republic example of burning briquettes [Life project but not in an alpine region]; Romania example on a rare plant species for medical use.</i></p>	<p><b>This action could include the following components:</b></p> <ul style="list-style-type: none"> <li>Collecting and sharing positive examples of farmers turning farming in the Natura 2000 in the advantage (how farming in Natura in line with nature conservation standards can make products more valuable and bring more return);</li> <li>Launching new calls for projects on Natura 2000 sites management, including grasslands habitats all over the EU, integrating the science projects with the best practices of the farmers, small businesses, pharmacists.</li> </ul> <p><b>Within this action ecosystem services are considered to be important. Therefore the following components are included:</b></p> <ul style="list-style-type: none"> <li>Collect information on and determine potential medicinal/product species;</li> <li>Generate an overview of potential ecosystem services delivered by Alpine grasslands;</li> <li>Initiate research on ecosystem services by integrating ecosystem services as a research priority in EU research programme;</li> <li>Determine ways to promote ecosystem service value of grasslands;</li> <li>Share knowledge on the link with climate change and urbanization;</li> <li>Develop a land use change ( and climate change) monitoring system or initiative.</li> </ul>	<p><b>Outputs:</b> conference(s), web pages, demonstration positive examples, Case studies, Manual, Multi-State groups, Shared knowledge, Twinning arrangements, EU research programme, Natura 2000 communication platform, ad hoc meetings, TEEB, nature conservation foras.</p> <p><b>Mechanisms:</b> ESF, EFI (like JEREMIE, JEESICA, JASPERS programmes), LIFE+, INTERREG.</p> <p><b>Partners:</b></p> <ul style="list-style-type: none"> <li>Policy-makers and grassland managers;</li> <li>Groups of stakeholders, site-managers;</li> <li>Member (and non-Member) States from across the Alpine Biogeographical Region and;</li> <li>DG Environment/DG Agri;</li> <li>EFNCP (The European Forum on Nature Conservation and Pastoralism) and other organizations with specific expertise.</li> </ul> <p><i>Comments: This is an action at local/regional level. The NBP can support by sharing experiences between MS through the communication platform or an ad hoc meeting. Example of the Netzwerk Land Brochure "Warum es sich auszahlt . Naturschutz am Betrieb" <a href="http://www.netzwerk-land.at/umwelt/betriebswirtschaft-naturschutz-broschuere/betriebswirtschaft-broschuere">http://www.netzwerk-land.at/umwelt/betriebswirtschaft-naturschutz-broschuere/betriebswirtschaft-broschuere</a> All the member states of EU must be involved in this action, under the Environment Ministries coordination.</i></p>	To be decided

Action	Notes/description	Mechanism/Partners	Who and When
	<p><b>Comments:</b> for general information on ecosystem services <a href="http://www.teebweb.org/wp-content/uploads/2013/01/Survey-on-grassland-ES_2011_final-report_ISBN.pdf">http://www.teebweb.org/wp-content/uploads/2013/01/Survey-on-grassland-ES_2011_final-report_ISBN.pdf</a>.</p>		
<b>ISSUE: How to avoid abandonment/avoid intensification</b>		<b>SOLUTION: Integrating conservation needs into agricultural actions (not included)</b>	
<p>Developing farm management plans with environment consultants.</p> <p><b>Comments:</b> The following comment was originally addressed only to the action component “To encourage DG-AGRI and DG-ENV to cooperate in conservation issues” - see the 4th bullet in the column on the right;. EC internal business, beyond NBP. We are considering to exclude this action due to the fact that this is mainly a concern for DG-AGRI and DG-ENV instead of the Member States. However if enough people feel the need to include this action than this is possible.</p> <p><b>There is still a discussion going on whether to include or exclude this action. We should find a proper place to avoid suggestion to exclude</b></p>	<p><b>This action could include the following components:</b></p> <ul style="list-style-type: none"> <li>• Generate examples on developing Natura 2000 management plans with agriculture consultants (together with the farmers) or developing farm management plans with environment consultants;</li> <li>• Research ways to enforce working according to the management plan inside an agri-environmental measure;</li> <li>• Develop a best practise manual on how to intergrate conservation needs into agricultural actions;</li> <li>• To encourage DG-AGRI and DG-ENV to cooperate in conservation issues.</li> </ul> <p><b>Comments:</b> Strengthen the integration of Biodiversity in LEADER projects. See Austrian project biodiversity &amp; LEADER <a href="http://www.umweltdachverband.at/themen/naturschutz/biodiversitaet/projekte/">http://www.umweltdachverband.at/themen/naturschutz/biodiversitaet/projekte/</a>. An international exchange conference is planned in April 2014 in Vienna.</p>	<p><b>Outputs:</b> Conference(s); Best Practise Manual; Demonstration sites, Shared knowledge, communication platform, EU research programme/</p> <p><b>Mechanisms:</b> ESF, EFI (like JEREMIE, JEESICA, JASPERS programmes), LIFE+, INTERREG, LEADERS.</p> <p><b>Partners:</b></p> <ul style="list-style-type: none"> <li>• Member (and non-Member) States from across the Alpine Biogeographical Region and;</li> <li>• DG Environment/DG Agri;</li> <li>• Policy-makers and grassland managers.</li> </ul> <p><i>Comments: This is an action at local/regional level. The NBP can support by sharing experiences between MS through the communication platform or an ad hoc meeting. Example of the Netzwerk Land Brochure “Warum es sich auszählt . Naturschutz am Betrieb“ <a href="http://www.netzwerk-land.at/umwelt/betriebswirtschaft-naturschutz-broschuere/betriebswirtschaft-broschuere">http://www.netzwerk-land.at/umwelt/betriebswirtschaft-naturschutz-broschuere/betriebswirtschaft-broschuere</a>. All the member states of EU must be involved in this action, under the Environment Ministries coordination.</i></p>	To be decided

Action	Notes/description	Mechanism/Partners	Who and When
<b>this key solution.</b>			
<b>ISSUE: Improvement of a proper definition of favourable conservation status (FCS) for grasslands across the Alpine Biogeographical Region</b>		<b>SOLUTION: Implement a working group on the FCS to establish quantifiable targets, reference values and share experience on a local level</b>	
<p>Develop a new method and knowledge on determining the FCS for Alpine grasslands and sharing information.</p> <p><i>Comments: It seems that FCS of habitats is mainly defined by plant species composition and vegetation types. However habitats also house many typical animals, which are generally more connected to structural parameters than vegetation type (esp. insects). Integrate such structural parameters into definition, maybe starting from searching minimum requirements on local levels for certain typical species (groups).</i></p>	<p><b>This action could include long-term analysis and sharing of knowledge and best practice via FCS concerns:</b></p> <ul style="list-style-type: none"> <li>• Article 17 reporting content;</li> <li>• National methodologies for FCS evaluation for species and habitats;</li> <li>• Develop an overview of FCS indicators for each habitat.</li> <li>• Defining (common) reference FCS values for the minimum requirements on biogeo/country/site level;</li> <li>• Quantified targets in the management of Natura 2000;</li> <li>• Assess dynamic of FCS in time and space and species-habitat and habitat-habitat interaction;</li> <li>• Create a clear definition on typical species for management evaluation.</li> </ul> <p>Subjects could include abandonment, intensification, eutrophication, fragmentation, typical/indicator species, alien species, over-exploitation (eg tourism, recreation), succession, pollution, monitoring, restoration, climate change resilience.</p> <p><i>Comments: Implement a scientific project on dynamic of FCS in time and space and species-habitat and habitat-habitat interaction; this work would include gathering of scientific information (study) as well as organising meetings as required. It should also be mentioned that after the next round in 2013 there is a review of method ongoing by ETC/BD. <a href="http://bd.eionet.europa.eu/activities/Reporting/Article_17">http://bd.eionet.europa.eu/activities/Reporting/Article_17</a>.</i></p>	<p><b>Outputs:</b> Conference(s); Manual; Demonstration sites, Ad hoc working group, Shared knowledge, Twinning arrangements, Natura 2000 communication platform, knowledge foras.</p> <p><b>Mechanisms:</b> ESF, EFI (like JEREMIE, JEESICA, JASPERS programmes), LIFE+, INTERREG.</p> <p><b>Partners:</b></p> <ul style="list-style-type: none"> <li>• Member (and non-Member) States from across the Alpine Biogeographical Region;</li> <li>• EEA or ETC;</li> <li>• Universities/Research Institutes.</li> </ul> <p><i>Comments: A workshop on setting conservation objectives could be developed to cover measures designed to achieve FCS and also measures designed to improve favourable condition. This would also ensure links to areas between and around Natura 2000 sites, for example.</i></p> <p><i>Possible that there is a link to the Boreal Grasslands group – in Finland, during the Boreal seminar and linking to work progressed by the EC's Natura 2000 Expert Group on Management of Natura 2000, it was suggested that it would be useful to organise a meeting on setting conservation objectives – how to make them 'SMART' and directly contributing to making a management plan and the measures it contains, more directly measurable.</i></p>	<p><i>Austria, France and Poland could provide some good examples</i></p> <p>To be decided</p>
<b>ISSUE: Lack of knowledge/awareness</b>		<b>SOLUTION: Education, trust building, improve funding mechanisms and appropriate management</b>	

Action	Notes/description	Mechanism/Partners	Who and When
<p>Develop ways to integrate a better and more meaningful environmental education, funding mechanisms and appropriate management into the education in agriculture (for farmers).</p> <p><i>Comments: We integrated environmental education, funding mechanisms and management into one because it overlaps in many ways and the understanding of this overlap is vital for education purposes.</i></p>	<p><b>Education, trust building and knowledge on funding mechanisms - promoted by integrating better and more meaningful environmental education into the education in agriculture including:</b></p> <ul style="list-style-type: none"> <li>• Educate Natura 2000 site-managers to know more about local conditions and local farming;</li> <li>• Share experience on how to build up trust; educating people for this task;</li> <li>• Enforcing environmental education for local farmers (respect the traditional knowledge);</li> <li>• Improve understanding of traditional approaches;</li> <li>• Excursions or study trips together with experts and farmers;</li> <li>• Make the use of existing funding mechanisms more flexible;</li> <li>• Sharing good practice and experience on result oriented measures;</li> <li>• Share knowledge on how to acquire funding.</li> </ul> <p><b>Apply appropriate management:</b></p> <ul style="list-style-type: none"> <li>• Knowledge gathering on management practises and share/spread/digest this information;</li> <li>• Make the link between management and science;</li> <li>• Sharing/gathering expertise on the removal of nutrients.</li> </ul> <p><i>Comments: Some good examples on awareness-raising already exist. See the good contribution of "Landwirte beobachten Biodiversität" to awareness raising. These actions also have a link with stakeholder</i></p>	<p><b>Outputs:</b> conference(s), web pages, demonstration positive examples, Case studies, Manual, Multi-State groups, Shared knowledge, Twinning arrangements, EU research programme, Natura 2000 communication platform, knowledge foras.</p> <p><b>Mechanisms:</b> ESF, EFI (like JEREMIE, JEESICA, JASPERS programmes), LIFE+, INTERREG.</p> <p><b>Partners:</b></p> <ul style="list-style-type: none"> <li>• policy-makers and grassland managers;</li> <li>• Groups of stakeholders, site-managers, farmers;</li> <li>• Member (and non-Member) States from across the Alpine Biogeographical Region and;</li> <li>• DG Environment/DG Agri.</li> </ul> <p><i>Comments: We need a volunteer MS to host site visits or training – there could be a link to the Compensation Scheme action proposed above. These issues could actually be of general interest, beyond the ALP region.</i></p> <p><i>Would an MS or other party be willing to host a science-policy networking meeting as part of the NBP? If so, what science and what policies would be of particular interest for the NBP goals and participants? Take into account that this is listed under the solution "apply appropriate management". This defines important participants as those, who have extensive practical management experience or those who study real management influences on habitats and species.</i></p> <p><i>Would a MS be willing to host an ad hoc meeting on the topic of "Sharing/gathering expertise on the removal of nutrients"? Or site visit? There is a link to be made to the Atlantic Region Nitrogen Deposition workshop being held in the UK from 2 to 4 December</i></p>	<p>To be decided</p>

Action	Notes/description	Mechanism/Partners	Who and When
	<i>involvement.</i>	2013.	
<b>ISSUE: Conservation of species</b>		<b>SOLUTION: Apply a landscape approach</b>	
<p>Develop and share knowledge on a landscape approach for grassland species.</p> <p><i>Comments: If you want to add or change any of these issues or solutions feel free to do so and send the changes back to the chair and facilitator.</i></p>	<p><b>When comparing species ranking and grassland habitats, there are some species as golden eagle which fall occur in landscape containing multiple habitats.</b> It has some overall needs for appropriately managing 100 sq. km area for eagle. We need to consider a landscape approach for these species instead of focusing on one specific site. Some species like golden eagles need ordered/organized/arranged view/vision and this touches multiple habitats within the landscape. Therefore species like golden eagle are more sensitive to large scale changes.</p>	<p><b>Outputs:</b> Conference(s); Manual; Spatial/Landscape Planning Roadmap for Golden Eagle, Guidelines, Demonstration sites, Multi-State groups, Shared knowledge, Twinning arrangements.</p> <p><b>Mechanisms:</b> ESF, LIFE+, INTERREG, individual actions at the group, organisation or state level.</p> <p><b>Partners:</b></p> <ul style="list-style-type: none"> <li>• Policy-makers and grassland managers;</li> <li>• Groups of stakeholders, site-managers, farmers;</li> <li>• (Non-) Member States from across the Alpine Biogeographical Region;</li> <li>• Other Member States with (sub-Alpine) upland areas.</li> </ul>	To be decided

## 3.2 Freshwater

### 3.2.1 Introduction

The freshwater habitat group consists of following habitat types: Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. (3140), Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation (3150), Alpine rivers and the herbaceous vegetation along their banks (3220), Alpine rivers and their ligneous vegetation with *Myricaria germanica* (3230), Alpine rivers and their ligneous vegetation with *Salix elaeagnos* (3240), Water courses of plain to montane levels with the *Ranunculum fluitans* and Callitriche-Batrachion vegetation (3260), and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) (91E0).



*Field visit to a freshwater site during the Alpine Preparatory Workshop in June 2013, Graz, Austria (photo Bernie Fleming)*

The freshwater habitats represent the “blue network” of the Alpine biogeographic region (BR) and are important for surface water storage, flood control, recreation and flow regulation. Out of 15 freshwater habitat types distributed in the Alpine BR, 6 habitat types were selected for the NBP along with alluvial forest (91E0). Overall, this group consists of 2 types of standing waters (3140 and 3150), 3 types of alpine rivers (3220, 3230, 3240), one lower altitude river habitat (3260) and the above-mentioned forest.

Both standing waters habitats represent base-rich conditions, but differ in their trophic status; 3140 dominates in oligotrophic to mesotrophic conditions whilst 3150 is found in eutrophic waters. Thus, 3140 is more sensitive to nutrient input in comparison with 3150. For example, whilst 3140 is dominated by macroscopic algae (*Chara* spp.), submerged or emerged macrophytes are typical for 3150. Alpine rivers with herbaceous vegetation along their banks are classified in 3220 while rivers with woody vegetation including *Myricaria germanica* are included in 3230; those located in mountain valleys dominated by

willows (especially *Salix eleagnos*) comprise habitat type 3240. The final habitat type of running waters (3260) includes both quickly and slowly flowing waters from mountains to lowlands with submerged and/or floating macrophyte vegetation. Habitat 91E0 covers natural forests along streams and rivers that are regularly flooded.

Table 3 Summary of most important threats, management requirements, bottlenecks and solutions for Alpine freshwaters identified by country experts<sup>10</sup>. Numbers between brackets refer to the number of times the issue was mentioned by experts.

Threats and pressures	Management requirements	Bottlenecks	Solutions
Human induced changes in hydraulic conditions (13)	Restoration, renaturation (9) Maintenance/restoration of natural river dynamics (9)	No or not sufficient collaboration of stakeholders (11)	Education and awareness rising (13) Fund-raising (9)
Invasive non-native species (10)	Reduction of nutrient/pollution input (9)	Lack of resources (10) Private ownership of land (8)	Legislation improvement (9) Communication with stakeholders (7)
Biocenotic evolution, succession (10)	Avoid/control all types of extraction (8)	No or low awareness about river dynamics (7)	Legislation implementation (7)
Pollution to surface waters (9)	Invasive species control (8) Establish protected areas (7)	Inappropriate policy/policy implementation (7)	Preserving rivers in natural conditions (6)
Fertilisation (8)	Pollution assessment and control (7)	Public interest for flood control (7)	River restoration (6) Habitat monitoring (6)
Forest or plantation management & use (8)	Reduction of recreational use (7) Large extent of natural riverine landscape (6)	Difficulties to control invasive species (7)	Species mapping and monitoring (5)
Mining & quarrying (8)	Ensure connectivity of river habitat (6)	Lack of knowledge (6)	Geomorphological processes to quality assessments (4)
Outdoor sports & leisure activities (8)	Improved agricultural management (6)	Conflict of different policies/interests (6)	Sustainable development (4) 'Free migration & erosion corridor concept' (4)
Other ecosystem modifications (7)	Improved planning and decision making (5)	Pressure to alter river dynamics (6)	Strategic planning (3)
Roads, paths and railroad (6)	Species reintroduction (4)	Economic reasons to use fertilisers (6)	Removal of disturbing activities from floodplains (3)
Interspecific faunal relations (5)	High bio-chemical quality waters(4) Fixing sufficient residual flows (4)	Hydroelectric energy generation(6)	
Fishing and harvesting aquatic resources (4)	Grazing, shrub, tree and organic material removal (4)	Lack of coherent environmental policies (5)	
Climate change (4)	Reduction of water level fluctuation (lakes) (3)	Physical barriers in rivers (4)	
Mowing/cutting of grasslands(3)	Environmental Impact Assessment (3)	Difficulties to re-introducing river dynamics (4)	
Grazing (3)	To conciliate river use and biodiversity (3)	No interest/effort to reintroduce river dynamics (3)	
Urbanised areas, human habitation (3)	Avoid road building in non-fragmented forest patches (3)	High costs for restoration measures (3)	
None (3)	Full light to slightly shaded habitat (3)		

A Europe-wide assessment reports that more than half of European rivers and lakes are not in a favourable ecological status. Hydro-morphological pressures resulting in altered habitats are the most common impact on water bodies, affecting around 40% of European rivers (EEA 2012).

The key elements of hydro-morphology of running waters are: runoff, sediment and riverine landscape. These elements are dynamically and spatio-temporally linked and interdependent (e.g. Gurnell et al. 2009). As human made hydro-morphological pressures (e.g. hydropower, dykes, embankment etc.) impact all 3 key elements, a unification of running waters (Surian & Rinaldi 2003) and a dramatic loss of riverine landscape diversity in running waters in the Alpine Biogeographical Region can be observed.

<sup>10</sup> for details please refer to the Alpine Background Document on Freshwaters:

<http://www.natura2000communicationplatform.eu/sites/default/files/documents/ALP%20Background%20Document%20-%20Freshwater%20220513.pdf>

Since runoff, sediment and riverine landscape are also the key elements of the habitats 3220, 3230 and 3240, the conservation status of these habitats is not favourable for the period 2001 – 2006 (article 17 report): unfavourable – inadequate (3220, 3240) and even unfavourable – bad for the habitat of *Myricaria germanica* (3230).

The reasons for not achieving favourable conservation status are mainly based upon two components: a dramatical loss of key species' occurrences and populations (e.g. *Chondrilla chondrilloides* for 3220, *M. germanica* for 3230, Kudrnovsky 2013) and bad habitat structures caused by human-made hydro-morphological changes of running waters.

Human-induced changes in hydraulic conditions represent the most widespread pressure for this group of freshwater habitats as it was reported for all habitat types and for most of the countries that responded. This reflects the especially dynamic nature of rivers any changes to the hydraulic regime has the potential to result in significant impacts on the status of related habitats, not only of running waters, but also other floodplain habitats like standing waters and floodplain forests. In most cases, river habitats and species are in poor conservation status because of historical river regulation or infrastructure works, such as the straightening or deepening of rivers, construction of dams or dykes, removal of boulders, construction of hydro-power plants, etc. Riverbed deepening is a major threat because it functionally disconnects a river from its tributaries and/or from its alluvial floodplain, thereby disrupting connectivity. Several other pressures operate across most of the habitats in this group, namely invasions of non-native species, biotic succession and water pollution. The invasive alien species (mainly plant species) represent one of major threats for which no effective solutions currently exist.

Some threats are specific to certain types of habitats. For standing waters, the hydraulic regime of the related rivers as well as the accumulation of material and dead biomass represent important pressures. The alpine lakes are generally in good condition but there are signs of potential problems: increasing levels of tourism; alien and/or invasive species and climate change, e.g. 2°C rise in surface water temperatures.

With rivers, issues of connectivity, barriers (and their threat to the maintenance of a natural hydrodynamic regime including the transport of sediment) are important, along with flood prevention, river regulation, river fragmentation, water pollution and aggregate (especially gravel) extraction represent main threats. A new and growing threat, even for rivers within Natura 2000 sites, is the increasing demand for the construction of new hydro-power plants.

The inclusion of floodplain forest (91E0) introduces new pressures not reported for other habitats in this group: grazing in forest, roads, paths and railroad construction, improved access to site and urbanisation. In mountain valleys, the floodplains often represent the most suitable areas for urbanisation and human activities. Those floodplains that are already heavily utilised usually represent barrier in the river continuum and the pressure from urbanisation leads to the demand for strong regulation of river, modifications to natural hydrological and morphological conditions and to the lack of space for changes in river dynamics eg during floods.



Freshwater habitats are also affected by water abstraction for domestic and agricultural purposes and even for the production of artificial snow in tourist resorts. However, water pollution was not mentioned frequently. One possible reason was suggested by P. Gammeltoft in Jones et al. (2007): “in the last twenty years, initiatives to clean up Europe’s rivers and reduce the amount of industrial waste and sewage being discharged into rivers have had a marked impact. Today, rivers are not only sources of water, energy production, irrigation and transportation, they are once again becoming recreational sites, used for bathing, sailing and fishing”.

The maintenance or restoration of natural river dynamics was the most frequently identified management requirement, even for sometimes indirectly influenced habitats of standing waters. Other frequently mentioned requirements included the restoration or renaturation of freshwater habitats, ensuring river connectivity, control of invasive species and (perhaps surprisingly given the lack of concern above) the reduction of pollution. The importance of the need to maintain high bio-chemical quality of water was stressed for habitat 3140 which is highly sensitive to the pollution.

The (trans-boundary) catchment or landscape-scale approach allowing the integrated management of a range of freshwater (and other riparian) habitats was identified as a possible mechanism to achieve FCS.. Many of the issues raised above could be accommodated within broader programmes. This could also allow progress to be made against Water Framework Directive targets as well. Specific requirements were identified for alluvial forest (91E0), and included improved forestry management and its adaptation for protection of old-growth forests, maintenance or enrichment of an adequate supply of deadwood, maintenance of characteristic tree species combinations and avoidance of fragmentation for example by road building.

The identified barriers and bottlenecks indicate gaps or insufficiencies especially in the areas of policy and governance. Inappropriate policies, the lack of comprehensive environmental policies, conflicts between policies and/or interests, poor implementation and unsuitable approval procedures were reported by most of countries across all assessed habitat types. The lack of knowledge as well as inadequate cooperation between the relevant organisations and stakeholders represent another important barrier. Economic interests can also present powerful barriers. These can include competing objectives for river and freshwater management, competition for natural resources, navigation and water abstraction. This can also be accompanied by the public demand for flood prevention and control. Other bottlenecks are related to the complex implementation of management or restoration measures and their costs – e.g. for river restoration programmes and the control of invasive species. In alluvial forests, the main problems are related especially to existing forest fragmentation and non-natural tree species that are not adapted to the river dynamics and floodplain processes.

The main common challenge typical for this entire habitat group is the maintenance and restoration of natural river dynamics. Favourable conservation status where it is possible to allow natural (or near-natural) processes to function. In sites that are regulated or impacted by barriers upstream, restoration measures represent a possible solution. River restoration can create new habitats, and, if it includes the removal of the barrier, connectivity is also improved. The restoration of bed load transport was insufficiently addressed in past restoration activities. New restoration works must now ensure to not exaggerate bed-load transport, nor to reduce it excessively.

The dynamic nature of the floodplain habitats and ability of plants and animals to colonise new sites represent an advantage for habitat restoration – good results could be achieved usually in surprisingly short time. However, this ability also represents a threat because non-native, and/or invasive species have high colonisation potential. Therefore the succession of animal and plant communities in needs to be actively managed in order to prevent synanthropisation of restored habitats.

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### 3.2.2 Freshwater Working Group Table – Summary actions for discussion

POSSIBLE ACTIONS BASED ON OUTPUTS OF GRAZ WORKSHOP. INDIVIDUAL ACTIONS HAVE BEEN GROUPED TOGETHER INTO THEMES. FOR DISCUSSION BEFORE THE SEMINAR.			
Action	Notes/description	Mechanism/Partners	Who and When
<p>Maintain/Restore Favourable Conservation Status (FCS) in Alpine rivers and lakes by</p> <p><b>Developing best practice regarding the implementation of the Habitats Directive (Article 6) for hydropower schemes</b></p> <p>(in order to maintain/restore favourable conservation status of the concerned habitats and species of Community interest – FCS - within alpine rivers and lakes)</p> <p><i>EC guidance is currently being produced on Natura 2000 &amp; Hydropower. Subject to approval by expert committees, a final draft is expected in 2014.</i></p>	<p>This programme could identify:</p> <ul style="list-style-type: none"> <li>• Data standards (for EIA);</li> <li>• Share and learn from best practice elsewhere eg <a href="#">other conferences</a> and communication platform;</li> <li>• Address in-combination and cumulative effects;</li> <li>• Research needs eg fish passes, bed load studies, preventing/enabling species migration, habitat fragmentation;</li> <li>• Guidelines for decommissioning existing facilities;</li> <li>• Risks at the country level by establishing a monitoring programme of vulnerable sites</li> </ul> <p>Importantly, it could operate across catchments, across state boundaries and across biogeographical regions eg the Continental, Boreal and Mediterranean Biogeographic Regions.</p>	<p>Outputs: Conference(s); Manual (perhaps similar to guidance for Ports and Offshore renewables); Demonstration sites/catchment planning eg Bulgaria/Romania, Multi-State groups, Shared knowledge (including partners outside the N2000 community), Twinning arrangements.</p> <p>Mechanisms: LIFE+, INTERREG, Industry, individual actions at the group, organisation or state level, communication platform</p> <p>Partners: policy-makers and water managers from:</p> <ul style="list-style-type: none"> <li>• Member (and non-Member) States from across the Alpine Biogeographical Region and;</li> <li>• Other Member States with (sub-Alpine) upland areas (eg Scotland/Atlantic Region) and;</li> <li>• DG Environment</li> </ul> <p>Training partners (possible):</p> <ul style="list-style-type: none"> <li>• The Academy for Nature Conservation and Landscape Management (ANL – Bavaria)</li> </ul>	To be decided
<p><b>Develop and/or implement effective catchment management planning mechanisms</b> that operate across the borders of EU member states</p> <p>(in order to secure FCS mainly throughout Natura 2000 network, deliver other tasks of the EU 2020 Biodiversity Strategy, achieve Water Framework Directive targets and secure genuine stakeholder</p>	<p>In general terms this could include spatial planning but also climate change resilience and the provision of wider ecosystem benefits (including to a wider (non-ecological) audience eg local councils, politicians, business).</p> <p>Specific components could include measures to address land-banking, river restoration, flood defence, integrated floodplain management, fragmentation, aggregate extraction, bed-load and sediment management, communications, research, working with lowland programmes eg River Danube, hydropower, river restoration etc.</p>	<p>Outputs: Conference(s); Manual; Demonstration sites (eg integrated floodplain restoration, Austria), Revital (<a href="http://www.revital-ib.at">www.revital-ib.at</a>), Multi-State groups, Shared knowledge (including partners outside the N2000 community), Twinning arrangements.</p> <p>Mechanisms: LIFE+, INTERREG, Industry, individual actions at the group, organisation or state level.</p> <p>Partners:</p>	To be decided

POSSIBLE ACTIONS BASED ON OUTPUTS OF GRAZ WORKSHOP. INDIVIDUAL ACTIONS HAVE BEEN GROUPED TOGETHER INTO THEMES. FOR DISCUSSION BEFORE THE SEMINAR.			
Action	Notes/description	Mechanism/Partners	Who and When
involvement at all levels including individuals).	It could allow the identification and implementation of integrated management objectives not only for freshwater N2000 sites but also terrestrial sites and the wider landscape. In addition, it could develop specific management measures for characteristic species/groups/habitats eg bed load management for 3220-3240 habitats.  Note similarity to action identified by Atlantic Seminar.	<ul style="list-style-type: none"> <li>• Member (and non-Member) States from across the Alpine Biogeographical Region;</li> <li>• EEA</li> <li>• EU projects eg www.sedalp.eu</li> <li>• Flood control interests (on the one hand they act as powerful constraints on for ecological/natural management but if shared goals can be found eg dyke relocation, avoiding floodplains and river restoration, they can become powerful allies</li> </ul>	
Lakes. Explore reasons to explain differences in FCS for lakes across the Alpine Biogeographic Region	This action could include long-term sharing of knowledge and best practice via twinning arrangements. Subjects could include pollution, eutrophication, acidification, alien species, over-exploitation (eg sport fishing), monitoring, restoration, climate change resilience.	<p>Outputs: Conference(s); Manual; Demonstration sites, Multi-State groups, Shared knowledge, Twinning arrangements.</p> <p>Mechanisms: www.sednet.eu INTERREG</p> <p>Partners: Member States, Universities</p>	To be decided
Alien species. Explore vulnerabilities of the Alpine rivers and lakes mainly within the Natura 2000 network to invasive alien species invasion and identify common coping strategies.	This project could identify the main threats across the region (either sites or species or catchments) and bring best practice from elsewhere to find sustainable solutions and build resilience.  The need to ensure that these measures do not provide barriers to natural migration and movement draws obvious links with actions related to hydropower	<p>Outputs: Conference(s); Manual; Demonstration sites, Multi-State groups, Shared knowledge, Twinning arrangements.</p> <p>Mechanisms: LIFE+, INTERREG, Industry, individual actions at the group, organisation or state level.</p> <p>Partners:</p> <ul style="list-style-type: none"> <li>• Member (and non-Member) States from across the Alpine Biogeographical Region and;</li> <li>• Other Member States with (sub-Alpine) upland areas (eg Scotland/Atlantic Region)</li> </ul>	To be decided
Sharing knowledge	Possible establishment of an ad hoc working group to prepare a Europe-wide workshop one outcome of which could be a the		All – via communicatio

POSSIBLE ACTIONS BASED ON OUTPUTS OF GRAZ WORKSHOP. INDIVIDUAL ACTIONS HAVE BEEN GROUPED TOGETHER INTO THEMES. FOR DISCUSSION BEFORE THE SEMINAR.			
Action	Notes/description	Mechanism/Partners	Who and When
	establishment of an information platform especially for alpine rivers like <a href="http://riverwiki.restorerivers.eu/wiki/index.php?title=Main_Page">http://riverwiki.restorerivers.eu/wiki/index.php?title=Main_Page</a>		n platform

### 3.3 Forests

#### 3.3.1 Introduction

The forest habitat group consists of: Asperulo-Fagetum beech forests (9130), Galio-Carpinetum oak hornbeam forests (9170), Tilio-Acerion forests of slopes, screes and ravines (9180), the Vaccinio-Piceetea acidophilous Picea forests of the montane to alpine levels (9410) and Castanea sativa woodlands (9260). In addition, within the Alpine Natura 2000 biogeographical process two forest habitat types have been included in other habitat groups: bog woodland (91D0) in “Wetlands” and alluvial forests with Alnus glutinosa and Fraxinus excelsior (91E0) in “Freshwater”.



*Field visit to a forest site during the Alpine Preparatory Workshop in June 2013, Graz, Austria*

The habitats included in this group reflect the vertical zonation of forests in the Alpine region: they include forests typical of lower altitudes (9170 and 9260), of middle altitude (9130) and of the high mountain zone (9410) as well as the azonal habitat type (9180) on the steepest slopes. The Asperulo-Fagetum beech forests (9130) is the most widespread habitat type of beech forest. Its tree layer is composed either of pure beech or it has a mixed tree composition dominated by beech. The habitat type represents the climax vegetation on neutral or near-neutral soils. It occurs on gentle slopes, and nutrient-rich soils. Vegetation cover is usually high and consists of several vertical layers. The Galio-Carpinetum Oak Hornbeam forests (9170) are dominated by Quercus petraea and Carpinus betulus forests of regions with sub-continental climate within the central European range of Fagus sylvatica. The habitat type also includes similar Lime-Oak forests of Eastern and Eastern-Central European regions with a continental climate. The Tilio-Acerion forests of slopes, screes and ravines (9180) are composed of Maple-Ash-Lime on steep slopes and screes distributed over a wide range of altitudes – from sub-montane to high-mountain zone. The soils on which they grow are typically deep, nutrient-rich and have a high content of rocks. These forests usually occur in small patches. The communities are species-rich and also contain species of surrounding communities. The Vaccinio-Piceetea acidophilous Picea forests of the montane to alpine levels (9410) are Spruce-dominated conifer forests usually forming the vegetation belt below the upper tree line. This habitat is widespread in the Alps, Carpathians and Hercynian ranges. The Castanea sativa woodlands (9260) consist both of natural forests and of old established plantations of chestnut (Castanea sativa) with semi-natural undergrowth of Mediterranean mountains and the area

to their north. This habitat type is not typical for the Alpine region (the centre of its distribution lies in the Mediterranean biogeographical region) and no expert information related to his habitat type was received.

Table 4 Summary of most important threats, management requirements, bottlenecks and solutions for Alpine forests identified by country experts<sup>11</sup>. Numbers between brackets refer to the number of times the issue was mentioned by experts.

Threats and pressures	Management requirements	Bottlenecks	Solutions
Forest management & use (10)	Retain deadwood (8)	Lack of funding (7)	Awareness raising (deadwood) (7)
Roads, paths and railroad (7)	Old growth protection (8)	Lack of knowledge (6)	Education and training (6)
Changes in abiotic conditions (5)	Non-intervention areas (7)	Conflicting policies (5)	Adapt forestry practices(5)
Biocenotic evolution, succession (5)	Avoid fragmentation (roads) (6)	Lack of sustainability (5)	Regulate hunting (4)
Hunting & collection of wild animals (5)	Promote natural processes (5)	Lack of education / training(4)	Bio indicator monitoring (4)
Forestry activities not referred to above (5)	Manage open areas (5)	Lack of cooperative from some owners (4)	New legal obligations (4)
Air pollution, air-borne pollutants (4)	Appropriate grazing (5)	High deer population (4)	Legislation enforcement (3)
Sport and leisure structures (4)	Awareness raising (5)	Lack of law enforcement (4)	Longer management agreements (3)
Outdoor sports & leisure activities (4)	Deer population control (5)		Stakeholder participation (3)
Grazing in forests/woodland (4)	Deploy EIA (5)		Limit / Prevent clear cutting (3)
			More effective subsidies (3)
			More advisory staff (3)
			Manage / regulate grazing rights (3)
			Strategic planning (3)
			Adapt existing laws (3)
			Compensation measures (3)
			Develop new policies (3)
			Independent management body (3)

Inappropriate management by both state institutions and private individuals is often indicated as being the most widespread threat to forest conservation. The removal of dead and dying trees, leading to significant reductions in the volume of deadwood is the most common issue. Other issues include: the lack of protection of old growth forests and their increasing isolation, resulting from intensive forestry practices in surrounding areas. In some parts of the central European Alpine region, intensive, clear-fellings with short rotation times are considered to put an additional pressure on forests. Across the Alpine range, the internal fragmentation of habitats due to the construction of logging extraction roads was reported as another issue. Roads cause disturbance to a number of species, as well as direct destruction of habitats and encourage the spread of invasive alien species. Ski resorts appear to be a particular problem throughout the region. Climate change is identified as a pressure that will not only lead to shifts in the species distribution and changes in the dominant tree species but it will also affect the zonation of forestry practices. Climate change will probably make future favourable conservation status (FCS) reporting an interesting challenge. The impact of high ungulates population densities on forest regeneration and the need to regulate these populations is noted in a number of commentaries. Also invasive alien species may be an important issue both in non-intervention and managed forests.

In most countries, the conservation management practice that applies to most habitats are the protection of old-growth forest and deadwood retention. The need to retain both standing and fallen deadwood is widely noted. Veteran trees are seen as a particularly important feature because they provide habitat for other species. The establishment of 'non-intervention' areas is recommended in

<sup>11</sup> for details please refer to the Alpine Background Document on Forests <http://www.natura2000communicationplatform.eu/sites/default/files/documents/ALP%20Background%20Document%20-%20Forests%20220513.pdf>

particular cases and circumstances where it may contribute to achieving specific conservation objectives. Some respondents suggested that up to 10% (according to circumstances) of a forest area could be designated for non-intervention by designating strict forest protection zones and core non-intervention areas. In a normal context of multi-functional forestry such non-intervention areas are however seen as a major problematic issue not only from the side of forest owners but also by many forest managers. In this context, the identification and management of ‘biodiversity hotspots’ at smaller scales in managed forests is relevant. The issue of using non-intervention as a particular management technique in Natura 2000 forests is currently also being discussed in the context of the ad-hoc working group that started its work on 14 October 2013 to elaborate new Commission guidance on Natura 2000 and Forests. Furthermore, the broader issue of wilderness management in Natura 2000 has been subject to a specific Commission guidance document published in 2013 (See: [http://ec.europa.eu/environment/nature/natura2000/wilderness/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/wilderness/index_en.htm)).

A widespread barrier affecting all habitats for which information was provided, is the lack of funding for conservation measures in Natura 2000 forests, in particular those which may involve income loss for forest owners. This is related both to insufficient levels of subsidy for private actors and to insufficient funds provided to the authorities to create spatial plans to enhance conservation management notably of old-growth forests. Two other barriers are connected to this last issue: the lack of enforcement of existing regulations and insufficient number of staff. The next most important barrier identified by the experts is insufficient information for individual citizens and sometimes the lack of education or training of forest owners and / or managers. On the other hand, there is also often a lack of dialogue and cooperation between the nature conservation community and the forestry community.

Awareness-raising, education and training are identified as important solutions for this habitat group. Awareness-raising should be focused on explaining the multi-functional character of forest management, the multiple benefits of forests and forest ecosystem services, as well as the high biodiversity values of forest habitats, including issues such as dead wood, non-intervention areas, etc.

Regarding forest management, the need to consider different forest functions is highlighted: adaptive and integrated management in order to conserve the full scope of biodiversity is considered a suitable solution. The combination of non-intervention and multifunctional approaches needs to be discussed. The aim should be the promotion of multifunctional forestry in the context of sustainable development. It is noted that the difference between non-intervention and minimum intervention (e.g. linked to issues of bark beetle, public access, research, etc.) should be defined carefully. The protection of forests functions often requires thinking at a larger spatial scale in order to save key structures and ecosystem functions. Under most circumstances, forestry activities can be carried out in Natura 2000 forests. These activities should benefit from very clear conservation and other objectives. The question of how best to integrate biodiversity conservation into existing forestry and socio-economic context still needs further discussions. The ad-hoc working group on Natura 2000 and Forests will be an important Forum for these discussions and developing common understanding.

Few suggestions were made to address the funding issue although lack of funding was widely identified as a barrier for effective forest conservation. The better use of EU regional funds could contribute to the development of integrated forest management schemes. Interestingly, no suggestions were made about



the use of ecosystem service reasoning to highlight the important value of Natura 2000 forests. Also beyond the scope of the Natura 2000 biogeographical process, a need for better enforcement of existing regulations in some countries was highlighted.

### 3.3.2 Forest Working Group Table – Summary actions for discussion

THEMED FOREST WORKING GROUP ACTIONS			
Action	Notes/description	Mechanism/Partners	Who/ When
<p><i>Many of the proposed actions below follow the same concept, i.e. expert workshop on a specific issue on short term, followed by a manual/guidance on that issue on medium term. Therefore we suggest to organise a <b>workshop cycle</b> – with thematic workshops, possibly each organised by another Member State/other organisation – followed by an overall guidance on ‘Forest management actions for Natura 2000 areas in the Alpine Biogeographic Region’, each of the chapters being based on a thematic workshop and subsequent exchange of practices. This guidance should be a further elaboration of the new EC guidance on Natura 2000 and Forests, with a specific focus on the Alpine region and on defined specific issues.</i></p>			
<b>ISSUE: FRAGMENTATION of ALPINE FORESTS</b>		<b>SOLUTION: CONNECTIVITY MEASURES</b>	
<p>Actions on improving connectivity in and between Alpine forests’</p>	<p>In many cases fragmentation inside and between Alpine forests is a threat for reaching FCS in Alpine Natura 2000 forest habitats and for Alpine Natura 2000 species. Enhancing connectivity by taking defragmentation measures and realising ecological corridors at a landscape scale might contribute significantly to solving this problem. The recent EU Green Infrastructure Communication promotes this type of actions. However there is a need for guidance and showcasing good practices.</p> <p>Key questions that could be further discussed are (non-exhaustive list!):</p> <ul style="list-style-type: none"> <li>• how to “measure” or identify significant needs for corridors?</li> <li>• ecological requirements for building these corridors,</li> <li>• spatial planning instruments,</li> <li>• costs and benefits (also in terms of ecosystem services), financing possibilities, ...</li> </ul>	<p><b>Outputs:</b> guidance on enhancing connectivity in and between Alpine forests</p> <p><b>Potential mechanisms:</b> workshop, field trips, good practices sharing on CP, LIFE+ project(s)</p> <p><b>Partners:</b> ecologists, foresters, spatial planners, transport infrastructure sector, tourism infrastructure planners,</p>	<p>To be decided</p>
<b>ISSUE: LACK of KNOWLEDGE on different FOREST MANAGEMENT OPTIONS</b>		<b>SOLUTION: CLEAR RECOMMENDATIONS</b>	
<p>Actions on investigating pro’s and con’s of different forest management options for forest habitat types in the Alpine Biogeographic Region (eg; integrative management, non-intervention management,..)</p>	<p>During the Preparatory Workshop there was a lively debate between proponents and opponents of non-intervention management (NIM). However it should be clear that there is no black-and-white picture, and that for reaching N2000 targets many management approaches can make sense. NIM is one of the many measures that can be taken in the framework of Natura 2000 habitat restoration or conservation. The challenge is how to choose or to balance between different approaches. Key questions that could be further discussed are (non-exhaustive list!):</p> <ul style="list-style-type: none"> <li>• In which circumstances can NIM be considered as an appropriate way for reaching FCS? (specific situation of</li> </ul>	<p><b>Outputs:</b> a balanced set of recommendations for the management of Natura 2000 forests in the Alpine Biogeographic Region, ideally in the form of a <b>manual for practitioners</b> (see ISSUE ‘ALPINE N2000 FOREST MANAGEMENT GENERAL’), highlighting forest management options such integrative management or non-intervention management)</p> <p><b>Potential mechanisms:</b></p> <ul style="list-style-type: none"> <li>• an expert workshop with results being condensed in</li> </ul>	<p>To be decided</p>

THEMED FOREST WORKING GROUP ACTIONS			
Action	Notes/description	Mechanism/Partners	Who/ When
	<p>Alpine Bio-geographic Region to be considered). functions)</p> <ul style="list-style-type: none"> <li>• Which are the environmental, social and economic advantages and disadvantages of different approaches? (here issues such as ecosystem services should be considered too)</li> <li>• Should existing guidelines for management of wilderness areas in Natura 2000 be adapted to the specific situation in the Alpine region?</li> <li>• Are standard guidelines applicable or should we rather consider a case-by-case approach?</li> </ul>	<p>well-defined ‘work packages’ (e.g. “gather case studies on bark-beetle management in non-intervention areas”)</p> <ul style="list-style-type: none"> <li>• work packages are dealt with by dedicated working groups who deliver outcomes of their work in written form and in a consistent format within 6 months</li> <li>• reports to be edited and bundled into a final publication (see ISSUE ‘ALPINE N2000 FOREST MANAGEMENT GENERAL’);</li> </ul> <p><b>Partners:</b> ecologists, (decision makers,) foresters, forest-owners and land-users</p>	
ISSUE: CONSERVATION OBJECTIVES UNCLEAR FOR FORESTERS		SOLUTION: SMART DESCRIPTION OF FCS	
<p>Actions on clarification of conservation objectives and translation into silvicultural practices</p>	<p>For foresters it is often not clear what silvicultural practices are most appropriate in relation to FCS for Natura 2000 forest habitats and species. Therefore the ecological requirements of forest habitats and species should be translated into practical silvicultural management techniques to be applied to the respective habitat types. The following issues could be considered (non-exhaustive list!):</p> <ul style="list-style-type: none"> <li>• clear description of the habitat type and associated species</li> <li>• specific conservation objectives</li> <li>• a set of target species</li> <li>• general management guidelines and specific recommendations of silvicultural practices (including indicators<sup>12</sup>), also considering target</li> </ul>	<p><b>Outputs:</b> workshop report, Best Practice Guidance on Forest Management in Alpine Natura 2000 Forests (see ISSUE ‘ALPINE N2000 FOREST MANAGEMENT GENERAL’)</p> <p><b>Potential mechanisms:</b> workshop, field trips, good practices sharing on CP</p> <ul style="list-style-type: none"> <li>• an expert workshop with results being condensed in well-defined ‘work packages’ (e.g. “Define threshold values for minimum necessary amounts of deadwood classified by forest habitat type in managed forests”)</li> <li>• work packages are dealt with by dedicated working groups who deliver outcomes of their work in written form and in a consistent format within 6</li> </ul>	<p>To be decided</p>

<sup>12</sup> Some examples only for illustrative purposes ( some might be hard to apply in practice but this should be the goal of the exercise!); appropriateness and extent of non-intervention area; amount of deadwood (m<sup>3</sup> per hectare); vertical structure; non-native species; tree species composition; deer densities; browsing intensity; wildlife management

THEMED FOREST WORKING GROUP ACTIONS			
Action	Notes/description	Mechanism/Partners	Who/ When
	<p>species (PRO SILVA Principles could be a good basis for this approach)</p> <ul style="list-style-type: none"> <li>priority setting: which management actions are most urgent?</li> </ul> <p>This requires a 2-way communication between ecologists and foresters.</p> <p><i>NOTE: check for overlaps with EC guidance!; EC guidance most probably will not deal with all N2000 forest habitats and species in EU, so might be a good basis to be refined per bio-geographical region (to be checked)</i></p>	<p>months</p> <ul style="list-style-type: none"> <li>reports to be edited and bundled into a final publication (see ISSUE 'ALPINE N2000 FOREST MANAGEMENT GENERAL'); publication should be ready a year after the first workshop at the latest</li> </ul> <p><b>Partners:</b> site managers, forestry associations (e.g. Pro Silva Europe), forestry and ecology research institutions</p>	
<b>ISSUE: LACK of FUNDS for ALPINE FORESTS RESTORATION and CONSERVATION</b>		<b>SOLUTION: APPROPRIATE AND SUSTAINABLE FINANCING SCHEMES</b>	
<p>Actions on innovative financing mechanisms for restoring and protecting Alpine forests</p>	<p>Appropriate and sustainable financing of N2000 restoration and conservation in Alpine forests is key for reaching and maintaining FCS. But it is a major challenge. New or 'innovative' financing mechanisms such as public-private financing and payments for ecosystem services (PES) might offer potential but there is a huge lack of expertise and experience. A dedicated workshop might support this thinking process and could deal with the following issues (non-exhaustive list!):</p> <ul style="list-style-type: none"> <li>which types of innovative financing might be appropriate for (Alpine) forests, and under which conditions (e.g. adapted legislative framework, adapted market mechanisms, etc.)</li> <li>case studies</li> <li>how to speed up implementation of these innovative mechanisms?</li> </ul> <p>If a workshop is organised also presentations with regard to the funding possibilities in the new CAP and Multiannual Framework Program could be included</p>	<p><b>Outputs:</b> guidance on innovative financing mechanisms for restoring and protecting Alpine forests</p> <p><b>Potential mechanisms:</b> workshop, good practices sharing on CP, LIFE+ project(s)</p> <p><b>Partners:</b> ecologists, foresters, environmental economists, (decision-makers)</p>	To be decided
<b>ISSUE: ALPINE N2000 FOREST MANAGEMENT GENERAL</b>		<b>SOLUTION: MANUAL / GUIDANCE</b>	
<p>Publication "Recommendations for forest management in Natura 2000 areas of the Alpine Biogeographic Region"</p>	<p>Such publication can bundle chapters which are based on the thematic workshops and subsequent exchange of practices. This guidance should be a further elaboration of the new EC guidance on Natura 2000 and Forests, with a specific focus on the Alpine region</p>	<p><b>Outputs:</b> Publication "Recommendations for forest management in Natura 2000 areas of the Alpine Biogeographic Region"</p> <p><b>Potential mechanisms:</b> see above</p> <p><b>Partners:</b> ecologists, foresters, environmental economists,</p>	To be decided

THEMED <b>FOREST</b> WORKING GROUP ACTIONS			
Action	Notes/description	Mechanism/Partners	Who/ When
		decision-makers, spatial planners	
<p>Relevant LIFE projects that could be highlighted at the seminar:</p> <p><a href="#">LIFE11 NAT/RO/000825</a> (2012-2017) Conservative management for 4070 and 9260 habitats of ROSCI0129 North of Western Gorj. <a href="#">Juveloiu Elisabeta</a>.</p> <p><a href="#">LIFE11 NAT/IT/000213</a> (2012-2015) Habitat conservation and improvement of <i>Carabus olympiae</i> populations in Val Sessera. <a href="#">Massimo Curtarello</a>.</p> <p><a href="#">LIFE08 NAT/RO/000502</a> (2010-2013) Securing favourable conservation status for priority habitats from SCI Calimani-Gurghiu. <a href="#">Calin Cengher</a>.</p> <p><a href="#">LIFE08 NAT/S/000264</a> (2010-2014) Demonstration of an integrated North-European system for monitoring terrestrial habitats. <a href="#">Hans Gardfjell</a>.</p>			

### 3.4 Wetlands

#### 3.4.1 Introduction

The wetland habitat group consists of following habitat types: active raised bogs (7110), transition mires and quaking bogs (7140), alkaline fens (7230) out of 12 habitat types of raised bogs, mires and fens of the European importance occurring in the Alpine biogeographic region. These tree habitats are completed by one bog woodland type (91D0). The common feature of these habitats is their dependence on specific water regimes, high water tables and presence of peaty soils. There are significant differences in their origin and nutrient status. Raised bogs (7110) developed through precipitation and they represent a highly acidic, nutrient-poor habitat type. Transition mires and quaking bogs (7140) represent a transition between raised bogs and fens. They are based on the nutrient-poor (oligotrophic to mesotrophic) groundwater supply and therefore their soils have a slightly acid to neutral status. They support a large and diverse range of plant communities. Alkaline fens (7230) are extremely nutrient-rich habitats of calcareous fens and peaty meadows, supplied mostly by the underground water. Rich fens are exceptionally endowed with highly specialised, geographically restricted species. Both 7140 and 7230 commonly occur in habitat mosaics with springs and other wetland habitats. Bog woodlands (91D0) usually occur on the periphery of bogs or in the relief depressions. The peat-forming process gives rise to water that is always very poor in nutrients. Birch, pine and spruce are typical species with these habitats often representing a successional sequence towards swamp forests. All these types represent habitats that are sensitive to disturbance and which require specific water regimes. They support a highly diverse range of rare and threatened species which gives them a high nature conservation value.



*Field visit to a wetland site during the Alpine Preparatory Workshop in June 2013, Graz, Austria (Photo: Dr Roger Catchpole)*

Table 5 Summary of most important threats, management requirements, bottlenecks and solutions for Alpine wetlands identified by country experts<sup>13</sup>. Numbers between brackets refer to the number of times the issue was mentioned by experts.

Threats and pressures	Management requirements	Barriers & Bottlenecks	Solutions
Grazing (11)	Ditch & drain blocking (9)	Lack of knowledge (7)	Landowner dialogue (7)
Human induced changes in hydraulic conditions (9)	Appropriate grazing (6)	Lack of funding (7)	Wider communication (7)
Changes in abiotic conditions (7)	Reduce N deposition (6)	Uncooperative owners (7)	Stakeholder participation (7)
Biocenotic evolution, succession (7)	Extensive buffer zones (6)	Lack of staff (6)	Higher subsidies (6)
Air pollution, air-borne pollutants (7)	Nutrient management research (5)	Inappropriate restoration (5)	Knowledge transfer (6)
Roads, paths and railroad (7)	Appropriate cutting (5)	Excessive bureaucracy (5)	Simplify subsidies (5)
Modification of cultivation practices (6)	Livestock fencing (4)	Poor administration (5)	Educate children (5)
Forest or plantation management & use (6)	Hydrological management (4)	Lack of monitoring (5)	Coordinated government (5)
Changes in biotic conditions (5)	Appropriate burning (4)	Lack of political will (4)	Enact legislation (5)
Biocides, hormones & chemicals (5)	Awareness & education (4)	Lack of targets (N) (3)	Identify ecotones (5)
Outdoor sports, leisure activities (5)	Tree & scrub control (4)	Private ownership (3)	Transnational networking (5)
Mining & quarrying (4)	Extend SCI network (4)		Provide training (5)
Pollution to surface waters (4)	Prohibit livestock biocides (3)		Fundraising (4)
Other ecosystem modifications (4)	Larval web management (3)		Demonstrate management (3)
Mowing / cutting of grassland (3)	Visitor management (3)		Consult specialists (3)
Fire & fire suppression (3)	Waste water treatment (3)		Monitor <i>E. aurinia</i> (3)
	Stop intensive use (3)		Bridge science & policy (3)
	Habitat restoration (3)		Habitat inventories (3)
	Enhance subsidies (3)		
	Collaborative agreements (3)		

A suitable hydrologic regime is crucial for these wetland habitats and this is reflected by their main threat: anthropogenic changes to hydrology. This is related mainly to drainage and unsustainable water abstraction from both groundwater and surface water, but impacts also arise from hydroelectric schemes. Whilst drainage was a historical issue in some countries, it is clear that this is still on-going in others. Another widespread pressure for this habitat group is grazing. Whilst high grazing intensity was an issue across all habitats, abandonment was also an issue in some places, as was a lack of mowing and extensive (non intensive) cattle grazing. This affected all habitats apart from bog woodland. Active raised bogs (7110) are also threatened by peat mining, nutrient enrichment and tourism (trampling). In transition mires and quaking bogs (7140) the consequences of climate change (including willow development) and pollution from cattle manure are also important issues. The expansion of forestry activity in the alpine region represents a source of additional pressure, e.g. resistance to mire protection, forest promotion, road cutting for access. The fragmented nature of alkaline fens (7230) represents a risk factor in itself as any negative impacts could lead to their local extinction. They are particularly sensitive to fertilization of nearby crop areas that can lead to eutrophication and colonisation by more aggressive species. Abandonment is also an important issue as the maintenance of the traditional management (handy cutting) is difficult to ensure and mechanisation can lead to vegetation damage. The threats typical for bog woodlands (91D0) include selective promotion of spruce for small-scale forestry; disruption of habitat structure; damage by heavy machinery (including logging); and use of all-terrain vehicles (including disturbance from noise).

The three most widespread barriers were uncooperative land owners, a lack of funding and a lack of knowledge. The disinterest of agricultural community in managing these habitats as well as the

<sup>13</sup> for details please refer to the Alpine Background Document on Wetlands:

<http://www.natura2000communicationplatform.eu/sites/default/files/documents/ALP%20Background%20Document%20-%20Wetlands%20220513.pdf>

reluctance of landowners to collaborate (related especially to alkaline fens – 7230) needs to be addressed by increased communication with stakeholders. The issues that are presented must be of interest to local communities in order to motivate their involvement. These activities could include the promotion of greater awareness of ecosystem services, e.g. wetland habitats provide important non-production ecosystem services and this knowledge could increase the support for wetland maintenance and restoration. The lack of funding had several dimensions that include: an insufficient level of subsidy; a lack of subsidy to reduce grazing pressure; and the absence of adequate funding for habitat restoration. As subsidies often fail to meet the full economic costs of managing specific habitats, there is little financial incentive to perform management activities. A lack of environmental cross-compliance regulation of subsidies that encouraged intensive management of adjacent land was seen as a barrier owing to the negative impacts that this caused. The lack of knowledge that was identified was principally associated with the management of hydrology, nutrients and species.

The achievement and maintenance of the favourable hydraulic conditions represents the main challenge for wetland habitats. One pragmatic approach to restoration was the blocking of drainage ditches. If more demanding restoration measures need to be taken, such restoration is usually very costly and needs to be carefully planned. The communication and agreement with surrounding landowners is essential to success if this is to be undertaken. The use of historical maps and documents is recommended so that historical land use / management can be used to guide the restoration approach. Groundwater monitoring should also accompany the restoration and subsequent management of sites. In order to support the conservation of active raised bogs (7110) over its entire geographic range, marginal areas of lower quality degraded habitat may need to be included, protected and, where practicable, regenerated. Where the bog woodland (91D0) has colonized open bogs because of human impacts (bog degradation), this should be removed in order to restore favourable conservation status of the former habitat type (types 7110, 7130 and 7140).

In some wetland habitats simply getting the hydrology right will allow restoration to occur naturally in the longer term. In other situations, such as fens, low-intensity management is necessary because of the cessation of traditional management practices, such as reed-cutting and the production of bog hay. It was noted that without subsidies abandonment would become more widespread. Environmental cross-compliance can be useful under these circumstances but can clearly only be used when a management agreement is in place and there are sufficient staff resources to undertake the necessary enforcement action.

Management plans need to be developed that adopt a more holistic approach, e.g. vegetation, species, hydrology, nutrients, climate adaptation etc. Conservation grazing schemes and collaboration with different stakeholders should be considered, as well as management schemes that aim to maintain different successional stages on individual sites. All habitat management decisions need to be supported by appropriate monitoring and management adapted in the light of the results. Where metapopulations of target organisms are present, e.g. butterflies, it is important to manage habitats beyond the N2K sites. The need for more sustainable tourist development was also highlighted as a groundwater abstraction for public water supply is an issue, particularly during drought periods.



### 3.4.2 Wetland Working Group Table – Summary actions for discussion

WETLAND WORKING GROUP ACTIONS: ISSUE 1			
Action	Notes/description	Mechanism/Partners	Who/ When
<b>ISSUE: Favourable Hydraulic Conditions</b>		<b>SOLUTION: Knowledge Transfer</b>	
Organise two field-based workshops in countries with contrasting management issues to consider <b>practical</b> management solutions.	This could be organised on a reciprocal basis between countries that are attempting to secure FCS for the priority wetland habitats that have been identified for the Alpine Region. It should include sites that are unfavourable and not simply focus on areas that in good condition in order to provoke debate.	<b>Outputs:</b> Best practice guide, workshop reports, LIFE+ proposal and a new knowledge network. <b>Mechanisms:</b> Workshops, field visits, the Platform and email. <b>Partners:</b> NBP participants, site managers and NGOs	To be decided
<b>ISSUE: Favourable Hydraulic Conditions</b>		<b>SOLUTION: Monitoring</b>	
Organise field-based calibration meetings for staff involved in monitoring as well as an ad hoc meeting on the role of remote sensing.	Collate information on monitoring protocols from different countries that are relevant to the priority wetland habitats for the Alpine region. Ensure an emphasis on the use of remote sensing techniques. This could also include a calibration exercise within and between different Alpine countries in order to share experience and encourage greater FCS reporting consistency. It could also include an appraisal of how remote sensing techniques might be incorporated into monitoring systems in the future.	<b>Outputs:</b> Common standards monitoring framework for the Alpine region and a new knowledge base. <b>Mechanisms:</b> Workshops, field visits and the Platform. <b>Partners:</b> University geosciences departments, national/regional government.	To be decided
<b>ISSUE: Favourable Hydraulic Conditions</b>		<b>SOLUTION: Controllable Ditch Blocking</b>	
Integrate with first action.	Collate information from all biogeographic regions on projects that have developed successful artificial hydrological control systems relevant to the management of the priority wetland habitats identified in the Alpine region.	<b>Outputs:</b> Best practice guide, workshop reports, LIFE+ proposal and a new knowledge network. <b>Mechanisms:</b> Workshops, field visits, the Platform and email. <b>Partners:</b> NBP participants, LIFE, site managers and NGOs	To be decided
<p>Relevant LIFE projects that could be highlighted at the seminar:</p> <ol style="list-style-type: none"> <li><a href="#">LIFE09 NAT/SI/000374</a> (2011-2015) Conservation and management of freshwater wetlands in Slovenia (<a href="#">Nika Debeljak Šabec</a>)</li> <li><a href="#">LIFE08 NAT/S/000268</a> (2010-2015) Life to ad(d)mire - Restoring drained and overgrowing wetlands in Sweden (<a href="#">Lisa Tenning</a>)</li> <li><a href="#">LIFE07 NAT/D/000233</a> (2009-2014) ReHa Federseemoor - Restoration of habitats in the Federsee bog (ReHa Federseemoor) in Germany (<a href="#">Stefan Schwab</a>)</li> <li><a href="#">LIFE03 NAT/S/000070</a> (2003-2008) Härjedalen - Natural pastures and hay meadows in Jämtland/Härjedalen in Sweden (<a href="#">Emma Bergman</a>)</li> </ol> <p>Best practice that could be highlighted at the seminar or form the basis for a study tour:</p> <ol style="list-style-type: none"> <li><a href="#">Allgäuer Moorallianz</a> (<a href="#">Ulrich Weiland</a>)</li> <li><a href="#">BayernNetzNatur</a> (<a href="#">PAN</a>)</li> <li><a href="#">DSS WAMOS</a> (<a href="#">Jutta Zeitz</a>)</li> </ol>			

WETLAND WORKING GROUP ACTIONS: ISSUE 2			
Action	Notes/description	Mechanism/Partners	Who/ When
<b>ISSUE: Climate Change</b>		<b>SOLUTION: Functional Habitat Networks</b>	
Hold an ad hoc meeting to scope how existing mechanisms and management practices can help to deliver FHNs outside N2K sites for the priority wetland habitats identified in the Alpine Region.	An extremely large literature is present on the science and practice of ecological networks/functional habitat networks (FHN). The meeting will have to be tightly focussed on the management and restoration of Alpine wetland networks. This could include information on mapping methods, transnational initiatives, ecological triage (i.e. what needs a network and what needs to be translocated), ecohydrology etc.	<b>Outputs:</b> Best practice guide and knowledge network. <b>Mechanisms:</b> Workshop and the Platform. <b>Partners:</b> Universities, ECNC and NBP partners.	To be decided
<b>ISSUE: Climate Change</b>		<b>SOLUTION: Climate Finance Agenda</b>	
Hold an ad hoc meeting to explore funding opportunities for all the priority habitats identified for the Alpine Region.	Link into wider discussions / meetings at an EU level. Also use meeting to explore potential opportunities to develop collaborative actions through the development of Prioritized Action Frameworks. There could be scope to develop an Integration Project....	<b>Outputs:</b> Users guide to funding sources. <b>Mechanisms:</b> Workshop and the Platform. <b>Partners:</b> DG CLIMA, DG ENV, NBP partners	To be decided
<p>Relevant LIFE projects that could be highlighted at the seminar:</p> <ol style="list-style-type: none"> <li><a href="#">LIFE08 NAT/S/000268</a> (2010-2015) Life to ad(d)mire - Restoring drained and overgrowing wetlands in Sweden (<a href="#">Lisa Tenning</a>)</li> </ol> <p>Best practice that could be highlighted at the seminar or form the basis for a study tour:</p> <ol style="list-style-type: none"> <li><a href="#">Ecological Continuum Initiative</a></li> </ol>			

WETLAND WORKING GROUP ACTIONS: ISSUE 3			
Action	Notes/description	Mechanism/Partners	Who/ When
<b>ISSUE: Ecosystem Service Awareness</b>		<b>SOLUTION: Key Message Communication</b>	
Develop a sector specific communication package for the benefits that wetland habitats provide.	Will need to review existing resources e.g. <a href="#">Ecosystem Services Partnership</a> , <a href="#">CBD Case Studies</a> , <a href="#">Wetlands International</a> to see what can be borrowed to successfully communicate key messages concerning the priority wetland habitats that have been identified for the Alpine region. Also consider the development of products suitable for school curricula and media campaigns.	Outputs: Communication toolkit Mechanisms: The Platform Partners: <a href="#">IPBES</a> , NBP partners, teachers	To be decided
<b>ISSUE: Ecosystem Service Awareness</b>		<b>SOLUTION: Describe and Evaluate Services</b>	
Organise ad hoc meeting or conference on how an ES approach can support N2K sites	Member States should share examples of initiatives on the Communication Platform that are relevant to the priority wetland habitats identified for the Alpine Region. It might be possible to link such a meeting with an event planned by a European stakeholder network or an academic conference. It could cover areas such as: valuation methods, mapping techniques, adaptive management, implementation mechanisms etc. Illustrate with best practice examples where <a href="#">relevant and successful practical implementation</a> has led to an improvement of habitat/species FCS.	<b>Outputs:</b> Conference proceedings, database and practical implementation guide. <b>Mechanisms:</b> The Platform, workshop/conference <b>Partners:</b> NBP partners, Universities and private sector	To be decided
Useful Resources and References:			
<a href="#">Resilience Alliance</a> <a href="#">CBD Case Studies</a> <a href="#">IPBES</a> <a href="#">InVEST</a> <a href="#">MIMES</a> <a href="#">Wildlife Habitat Benefits Estimation Toolkit</a> <a href="#">ARIES</a> <a href="#">OE</a>			
<p><b>Jax, K. (2010)</b> Ecosystem Functioning. Cambridge University Press. <b>Raffaelli, D.G. &amp; Frid, C.L.J. (2010)</b> Ecosystem Ecology A New Synthesis. Cambridge University Press. <b>Begon, M., Townsend, C.R., Harper, J.L. (2005)</b> Ecology: From Individuals to Ecosystems, 4th Edition. Wiley. <b>Daily, G.C. ed. (1997)</b> Nature's Services: Societal Dependence on Natural Ecosystems. Island Press. <b>Rounsevell, M.D.A. et al. (2010)</b> Biodiversity Conservation, 19: 2823–2842. <b>Seppelt, R. (2012)</b> Ecological Indicators, 21: 145–154. <b>Haines-Young, R.H. &amp; Potschin, M.B. (2009)</b> Methodologies for defining and assessing ecosystem services. Final Report. JNCC Project Code C08-0170-0062.</p>			

## 4 Cross-cutting issues

Global change, landscape fragmentation, tourism and stakeholder involvement were selected as the four cross-cutting themes of major importance to the Alpine Region. Three questions were posed to discuss the themes:

- How do these cross cutting themes impact on favourable conservation status?
- What are the potential ways forward/approaches to address these cross cutting themes?
- Are there concrete possibilities for collaboration or cooperative action linked to the preferred solutions that could be launched at the Seminar?

### 4.1 Global change

The Global Change group concluded that the main issue which should be addressed is climate change and related processes. Due to climate change, various countries will suffer from rising sea level with associated impacts on land use, resource use and migration patterns. Rising sea-level can for instance have an indirect impact on Alpine habitats. Other issues identified included:

- Changes in river dynamics and hydrology (due to changes in glaciers and rivers, increased erosion in grasslands and shifts in water balance);
- Increases in invasive species and pathogens,
- Reduction of habitats (seen to impact especially on less mobile species);
- Changes in ecosystem dynamics and diversity (for example, different ecological processes becoming out of balance or loss of synchronicity between specific species and habitats);
- Increased extreme weather events (especially in terms of the frequency and magnitude of, for example, storms, dry and wet periods, longer seasons and season shifts);
- Changes in species populations and distribution shifts (timberline changes are a particular issue);
- The need for increasing recognition of climate change impacts and appropriate adaptive management responses (to increase the resilience);
- Increased mountain lake temperature; changes connected with renewable energy (biofuels/bioenergy/hydropower).

For climate change mitigation, the following objectives were proposed:

- Increase focus on (whole) ecosystem management;
- Take steps to improve adaptive capacity and resilience of ecosystems (improve the health, integrity and structure of the system);
- Increase carbon sequestration and biomass (i.e. use nature to help mitigation actions);
- Increasingly, develop approaches to include cost-effectiveness into climate adaptation and mitigation projects;
- Develop suitable management activities for specific habitats; increase public awareness and seek appropriate incentives for actions.

From land use and land cover change issues, changes in crop compositions, productivity yields and increasing urbanization were found to be the most important, induced by climate change and further exacerbated by changing economic incentives. Chemical pollution in general could have severe effects on ecosystems, with nitrogen-driven eutrophication and acidification (increasing nitrogen deposition) and ozone pollution being identified as of particular concern. As part of wider global change, population shifts are expected with people becoming environmental refugees due to climate change, freshwater shortage and resource issues.

To cope with global changes, it is necessary to improve adaptation in order to enhance the resilience and functioning of ecosystems. It was observed that, whilst there is a lot of scientific data, there is a need to improve know-how about its application. We need to improve monitoring systems to help thinking about how to address global change, continuously and transparently shared between and across countries. There is a need to find ways to promote scientific and management information to local stakeholders. In addition, there are significant advantages in being part of an exchange network, to benefit from inputs from other actors perhaps in other fields with specific expertise in public communication. As a part of this people-focused network, one idea mentioned would be to use 'local satellites' to gather their ideas/best practises/topics of interest/specific public engagement management techniques. Linked with this proposed action, seek to establish a forum and pool expertise to increase climate change awareness whilst they may not be convinced now, there is an opportunity to proactively engage people. Associated concrete activities included translations of relevant available guidance on climate change and increase use of social media.

In terms of practical management actions for climate change, it was noted that some management practices would need to change as they may not remain sustainable. As part of changing priorities, it would be beneficial to think in terms of ecosystem status and whether or not adaptation or restoration is manageable. In this respect, natural processes should be placed on the central stage, the cost-effectiveness of appropriate or required management actions should be assessed and flexibility should be increasingly incorporated in the management formulation process.

In connection with climate change as part of global change, increased attention should be given to raising public awareness, to show people how habitats and the landscape are going to change. For this purpose, a scenario approach could be a useful tool for awareness rising: here, the science used to predict scenarios, can also be used to make positive predictions on the future landscape and to find appropriate incentives. It was noted that Green Infrastructure could be part of solution, as well as that mitigation is one of the purposes of carbon storage in green areas.

<b>Issue 1: Land use and land cover change</b>		
<b>Solution</b>	<b>Possible action</b>	<b>Suggestions for actions/ possible areas for focus</b>
Change in crops and productivity yields		
	Also linked to climate change, but this refers to the shift of agricultural fields	<i>It seems that several processes are referred to implicitly here: changes in land cover due to climate change, and change in land cover due to other factors such as changing agricultural practices, changes in crop choice (linked to new needs of primary production such as biofuels or climate change adaptation) and land abandonment – these would benefit from being further discussed or defined according to feedback from stakeholders before or during the Alpine Seminar.</i>
Urbanization		
	Induced by both climate change and changing economic incentive	<i>?This requires some clarification – is it that population shifts to urban areas are being propelled because of the impacts of climate change – e.g. when areas are becoming economically non-viable? Or that urbanisation is contributing to exacerbating the effects of climate change?  Would there be value in an ad hoc event to discuss ways to develop more adaptive management responses, which also focuses on practical management steps that are designed to achieve that?  Link to the EC Climate Change Guidelines, produced by Alterra and Eurosite – just recently/ soon to be released?</i>

<b>Issue 2: Chemical pollution</b>		
<b>Solution</b>	<b>Possible action</b>	<b>Suggestions for actions/ possible areas for focus</b>
Chemical pollution		
	Pollution in general could have severe effects on ecosystems	<i>Management / restoration of Natura 2000 areas can have beneficial effects in regulating water flow, and therefore tampering surface water runoff and decreasing flow of chemicals to streams</i>

		<i>Seems a logical part of a discussion on water basin level management , landscape or ecosystems approach to Natura 2000 management How to align Natura 2000 management planning with local and regional spatial planning</i>
Nitrogen eutrophication and acidification		
	Increasing nitrogen deposition that leads to eutrophication and acidification	<i>A subject addressed in the context of the Atlantic Seminar process in an Ad Hoc Meeting in Peterborough (UK) in Oct December 2013. Results might also be of interesting for Alpine region</i>
Ozone pollution		

<b>Issue 3: Human shifts</b>		
<b>Solution</b>	<b>Possible action</b>	<b>Suggestions for actions/ possible areas for focus</b>
Impacts on the landscape		
	Due to climate change various countries will suffer from the rising sea level and therefore have an impact on land use change, resource use and migration patterns.	<i>Risk and threat assessment, horizon scanning. Might be an interest subject for an expert meeting: how to anticipate on possible future major changes in technology, environmental change etc and their effects on Natura 2000</i>
People as environmental refugees		
	Freshwater shortage; resource issues	<i>idem</i>

<b>Issue 4: Climate Change</b>		
<b>Solution</b>	<b>Possible action</b>	<b>Suggestions for actions/ possible areas for focus</b>
Monitoring		
	Difficult in climate change monitoring and land use change	<i>Stepping up monitoring and devising schemes that anticipate on the effects of climate change to inform the adaptive management process and increase understanding of the relationship between climate change , ecosystem functioning and management (see also comments inserted above)</i>
Adaption of agriculture and management strategies		
	This for instance applies to management changes which account for eutrophication and nitrogen loads	

## 4.2 Stakeholder participation

The stakeholder participation is important in activities discussed in all working groups. The stakeholders could contribute to the achievement of the favourable conservation status of habitats and species by giving the positive influence to the management of N 2000 (local knowledge). The motivation of stakeholders increases with their involvement, therefore the awareness raising and work with stakeholders should be one of priorities in all nature conservation, management and restoration activities. More and earlier involvement leads to positive impact, without stakeholder involvement the management regimes and activities could be not accepted. The stakeholder involvement will also help to accumulate resources in the long run. The planning for longer periods (more than 5 years) provides security to stakeholders, increases their involvement and the success.

The Natura 2000 biogeographical process itself represents one of solutions for the improvement of the stakeholder participation and the Process should continue. The information on best practice examples could be disseminated via Communications platform, the web site of the LIFE Programme represent also one rich source of information on best practices and the relevant methods of habitat management and restoration. The award scheme linked to existing best practice could also promote the suitable management of the Natura 2000 sites, habitats and species and improve the public knowledge. On the local level, the incorporation of stakeholders to the steering committees for Natura 2000 sites and then elaboration of the management plans together with stakeholders should be helpful. The promotion of economic benefits of Natura 2000 could be done by the branding and labelling schemes involving the producers and supply chains. It is possible to use existing consulting or agricultural agencies for improvement of the communication with and involvement of stakeholders – the respective funds need to be created. Several measures could be used for good publicity for Natura 2000, like joint actions with press (specialist journalists), field trips with stakeholders at regional level, translation of the EC brochures (including the LIFE Nature publications) into the local languages.

The successful stakeholder involvement will result in long term sustainable and multifunctional management. It should happen via interaction at different levels with different sectors. The communication platform of the Natura 2000 biogeographical process should play a key role in the stakeholders' involvement especially by disseminating best practice and exchanging information, promoting events. The stakeholder involvement can result in extending the possibilities for finance/financing schemes (including stakeholders). But the stakeholder involvement itself needs investment of some resources – human and other.

## 4.3 Fragmentation

Fragmentation is defined both by the landscape structure and by species/population dynamics. It can be determined by physical barriers, but it can result from inappropriate management as well. The successful resolution of fragmentation/connectivity issues will be crucial for the maintenance or enhancement of FCS at all spatial scales (micro, local, landscape) as they have a fundamental impact on the maintenance of viable populations – ranging from genetic structure to the distribution of a species. In contrast, when thinking about measures to decrease fragmentation and improve connectivity, it should be taken into



account that some species require isolation (genetic barrier against hybridisation with the related species) and the improved connectivity can allow or improve also distribution of the invasive and/or alien species.

There are multiple potential ways forward. Probably the first step is comprehensive monitoring and the identification of good indicators. Spatial planning is an important mechanism that could contribute significantly to the reduction and reversal of fragmentation now and in the future. For major developments, potential impacts must be considered at the earliest stages of project design and the decisions must be able to rely on a landscape-scale master plan. This demands truly integrated landscape planning at the supra-national scale which should link into local laws and planning and should be compulsory. Whilst this may mean new priorities focussed on networks and not patches it should enable connectivity to be maintained or restored by linking sites with appropriate networks and improving the quality of habitats both within and outside N2000 sites. When planning, a mix of landscape, habitat and species approaches should be used (a multi-scale approach) and both for design and implementation, the best practice must be shared. Here is also an important role of national bodies/government to provide (over-arching) guidance and to ensure the appropriate legislation to support the Habitats Directive to make it happen.

There are some concrete possibilities for action, all of the will require co-operation with all sectors, landowners, businesses, authorities, the scientific community, NGOs and investors via a stakeholder platform. By definition, the process but be carried out at all levels from the landscape to the local scale, within, across and between member states, and outside the community. The process should be bottom up and top down and deal with conflicting needs and interest. The co-operation between different sectors is needed also to inform master planning. The fragmentation issue represents an ideal opportunity for LIFE+ to encourage collaboration at the landscape scale.

#### **4.4 Tourism**

Despite especially threats and the relevant solutions were discussed so far, it was highlighted that the tourism can be also positive and useful also for nature conservation.

As the most important threats were identified 1) fragmentation and loss from infrastructure development and 2) the disturbance of sensitive areas. The fragmentation and loss from infrastructure development included the construction of buildings, roads, electricity facilities, water and production of waste as well as the ski slope creation and management. The disturbance of sensitive areas was considered especially in relation to vertebrates and vegetation, with main focus to off-piste skiing, snow shoes, all-terrain vehicles (ATV) use and geocaching, it is connected with the loss of intact wildlands for large carnivores. Other mentioned threats were pollution from nutrients, cars, coaches, rubbish etc; regulation of rivers for boat recreation (flow modification, access infrastructure); failure to follow rules (e.g. fires) and feeding animals (habituation and artificially high numbers).

The possible solutions were discussed for 3 most important threats. For fragmentation and habitat loss as the most relevant ones were identified: the landscape spatial planning (e.g. zonation), use of Article 6.3 & 6.4, utilise low impact infrastructure (building materials – their source and suitability; technical

solutions, e.g. composting toilets and ecological solutions, e.g. ecoducts and tunnels) and the restoration after use ends (e.g. logging roads). The awareness raising (tourists and tourist sector), the conservation management strategies and the improvement of the urban environment and quality of life were discussed as well. As the most suitable solutions in relation to the disturbance of sensitive areas were considered: the regulation enforcement (more rangers); awareness raising (tourism organisations, tour operators, resorts, alpine clubs etc.), monitoring and assessing impact (site carrying capacity). Other proposed solutions include clear, legally-binding regulation, the enhancement of the 'honey pot' areas and the physical path blocking and bridge removal. In relation to the reduction of pollution related to tourism are recommended to develop visitor management strategies (e.g. 'park and ride'), use renewable sources of energy to power mountain huts (PVs), and the awareness raising. Other possible measures include more natural sewage treatment (e.g. reed beds) and more rangers to enforce environmental protection.

TOURISM X-CUTTING THEME: ISSUE 1			
Action	Notes/description	Mechanism/Partners	Who/ When
<b>ISSUE: Habitat Fragmentation &amp; Loss</b>		<b>SOLUTION: Landscape Spatial Planning</b>	
Embed green infrastructure within development control systems.	This can only be achieved if constraints maps are developed that have statutory force within territorial planning systems. These must show <u>existing</u> infrastructure rather than aspirational infrastructure that would be created. They must also be as relevant in urban areas as they are elsewhere. A nested approach is needed so that more local initiatives are linked to bigger national and extra-territorial levels. This should be done through consideration of the <u>ecological requirements</u> of the priority species and habitats that have been identified for the Alpine Region. This will help also help to deliver Article 10 obligations.	<p><b>Outputs:</b> Maps showing national and local green infrastructure networks that incorporate N2K sites that contain supporting interest features. Sector specific guidance for planners and developers - this should include development planning, e.g. zonation of development and development control.</p> <p><b>Mechanisms:</b> Participative mapping; landscape ecological modelling; catchment-based management planning; and legislative change.</p> <p><b>Partners:</b> Municipal Authorities; Universities; Council of Europe; Regional Authorities; Federal Conservation Agencies etc.</p>	To be decided
<b>ISSUE: Habitat Fragmentation &amp; Loss</b>		<b>SOLUTION: Restoration</b>	
Restore habitat degraded by human activity that has ceased.	The ecological impact of plans and projects is typically evaluated in three distinct phases: construction, operation and decommissioning. The last phase often includes the restoration of features that were previously present. Opportunities need to be exploited during the last phase either where tourist-related developments are no longer viable, e.g. ski resorts experiencing climate change, or where recreational development is proposed in previously developed/intensively managed areas, e.g. mountain bike/walking trails in forests. Restoration should be considered where such areas have/or will create a barrier to the movement of priority species or affect the ecological coherence of priority Natura 2000 habitats.	<p><b>Outputs:</b> Maps showing priority restoration zones. Simple habitat restoration guides for non-specialists. Collation and translation of habitat specific restoration methods.</p> <p><b>Mechanisms:</b> Tourist tax to pay for restoration initiatives. Environmental compliance standards and sustainability assessments of all recreational development on state-owned land. Planning permission conditions that either require future development to restore key habitats and features or more general 'offsetting' to compensate for the loss of biodiversity outside N2K sites.</p> <p><b>Partners:</b> Workshop Participants; Municipal Authorities; National Park Authorities; State Forest Service; Federal Conservation Agencies; NGOs; Tourism Sector; Trade Bodies etc.</p>	To be decided
<b>ISSUE: Habitat Fragmentation &amp; Loss</b>		<b>SOLUTION: Awareness Raising</b>	
Develop generic campaign material that can be used in different countries	The material should be capable of influencing the behaviour of the tourism sector as well as citizens who undertake recreational activity in the priority habitats that have been identified through this process.	<p><b>Outputs:</b> Recreational stakeholder analysis of groups and activities that are contributing to the unfavourable conservation status of the priority habitats and species that have been identified in the Alpine region. Comparative study of campaigns that have led to behaviour change in different countries. Generic guide on campaigning and communications. Code of recreational conduct.</p>	To be decided

TOURISM X-CUTTING THEME: ISSUE 1			
Action	Notes/description	Mechanism/Partners	Who/ When
		<p><b>Mechanisms:</b> Social media; schools; leaflets for hotels in and around sensitive habitats; information/interpretation boards etc.</p> <p><b>Partners:</b> Workshop Participants; NGOs; Tourism Sector; National Park Authorities; and Federal Authorities.</p>	

TOURISM X-CUTTING THEME: ISSUE 2			
Action	Notes/description	Mechanism/Partners	Who/ When
<b>ISSUE: Disturbance</b>		<b>SOLUTION: Awareness Raising</b>	
Develop a code of conduct for tourists and outdoor recreational users linked to specific habitats.	This will require engagement with tourism organisations and tour operators to assess their needs and how key messages can be communicated to customers that use N2K sites. For example a code of conduct for water sports in the IJsselmeer Natura 2000 area (NL) was jointly developed by the managers and users of the area. Another possibility would be to set up a regional stakeholder group on tourism and nature to address issues of disturbance, e.g. <a href="#">Regiegroep Recreatie Natuur</a> . Links should also be made with the EUROPARC Federation and their <a href="#">Sustainable Charter for Tourism</a> initiative.	<p><b>Outputs:</b> Collation of existing codes of conduct and the capture of case studies demonstrating best practice.</p> <p><b>Mechanisms:</b> Social media; leaflets for hotels in and around sensitive habitats; information/interpretation boards etc.</p> <p><b>Partners:</b> Workshop Participants; NGOs; EUROPARC; Tourism Sector; National Park Authorities; and Federal Authorities.</p>	To be decided
<b>ISSUE: Disturbance</b>		<b>SOLUTION: Enforcement</b>	
Prepare an overview of voluntary schemes that support of N2K managers.	Consider the feasibility of volunteers to act as wardens who are equipped with modern ITC that would allow the rapid and accurate reporting of disturbance events. See <a href="#">Birdlife Netherlands</a> for an example. Links should also be made with the EUROPARC Federation and their <a href="#">Sustainable Charter for Tourism</a> initiative.	<p><b>Outputs:</b> Report on the topic and links to relevant websites on the Platform.</p> <p><b>Mechanisms:</b> Literature and best practice review.</p> <p><b>Partners:</b> Workshop Participants; NGOs; EUROPARC; Tourism Sector; National Park Authorities; and Federal Authorities.</p>	To be decided
<b>ISSUE: Disturbance</b>		<b>SOLUTION: Visitor Management</b>	
Hold workshop or ad hoc meeting on visitor management in and around protected areas.	Exchange knowledge and experience on how to assess human carrying capacity and control access to N2K sites with the priority habitats and species that have been identified for the alpine region. Identify examples of best practice in visitor management as well as the potential use of NP zoning plans in and around N2K sites. Develop specific impact assessment criteria for priority species and habitats to enable monitoring. Identify best practice examples for the enhancement of	<p><b>Outputs:</b> Proceedings or workshop report.</p> <p><b>Mechanisms:</b> Literature and best practice review.</p> <p><b>Partners:</b> Workshop Participants; NGOs; EUROPARC; EUROSITE; National Park Authorities; and Federal Authorities.</p>	To be decided

TOURISM X-CUTTING THEME: ISSUE 2			
Action	Notes/description	Mechanism/Partners	Who/ When
	'honey pot' areas, e.g. <a href="#">Hoge Kempen</a> National Park in Belgium, and instances where the removal of access to sensitive areas has been successful, e.g. conflict resolution of path blocking and bridge removal.		

TOURISM X-CUTTING THEME: ISSUE 3			
Action	Notes/description	Mechanism/Partners	Who/ When
<b>ISSUE: Pollution</b>		<b>SOLUTION: Sewage Treatment</b>	
Collate and publish information on proven, small scale, natural sewage treatment methods.	Seek concrete examples of established initiatives that use methods such as phytoremediation, helophyte filters and artificial wetlands that clean water that would otherwise pollute downstream habitats. Creation can also be linked to the creation of new habitat in strategic areas. The scale would vary from individual dwellings in mountain areas to large resorts. The installation of natural treatment systems could become a standard condition for any planning permission in areas that are sensitive to this type of pollution.	<p><b>Outputs:</b> Proceedings or workshop report. Identification of N2K sites where the reasons for adverse condition are linked to sewage discharge. Regulatory task force to remedy problem.</p> <p><b>Mechanisms:</b> Literature and best practice review. Article 17 reporting results.</p> <p><b>Partners:</b> Workshop Participants; Commercial Water Companies; Universities; Environmental Protection Agencies; Municipal Authorities; and Tourism Sector.</p>	To be decided
<b>ISSUE: Pollution</b>		<b>SOLUTION: Buffer Zones</b>	
Identify N2K sites that are vulnerable to pollution and regulate discharge within a buffer zone linked to the main pollutant.	Critical load modelling can be used to determine the impact of atmospheric deposition in sensitive areas, however regulation of this type of pollution often involves trans-national regulation that is difficult to achieve. A more tractable solution might to set catchment-based buffer zones in which land use can be regulated to reduce diffuse pollution on vulnerable N2K sites. Individual point pollution sources could also be identified and environmental regulation imposed.	<p><b>Outputs:</b> Analysis of N2K sites vulnerable to pollution. Definition of buffer zones around sensitive sites/features</p> <p><b>Mechanisms:</b> Enforce polluter pays principle and ensure that all point pollution sources are subject regulatory control; target agri-environment subsidies to reduce artificial fertiliser input around sensitive sites/features; and encourage buffer strips along all water courses in farming areas.</p> <p><b>Partners:</b> Workshop Participants; Landowners; Regulatory Bodies; Federal Conservation Agency and National Government.</p>	To be decided
<b>ISSUE: Pollution</b>		<b>SOLUTION: Visitor Management</b>	
Develop 'park and ride' schemes in areas where pollution from car use is leading to adverse condition of species and habitats identified as priorities in the alpine region.	See above.	See above.	To be decided

## 5 Lessons from Alpine LIFE+ projects

The LIFE programme is the EU's financial instrument supporting environmental and nature conservation projects throughout the EU, as well as in some candidate, acceding and neighbouring countries. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental policy and legislation. This is achieved by co-financing pilot or demonstration projects with European added value. Since 1992, LIFE has co-financed some 3954 projects, contributing approximately €3.1 billion to the protection of the environment. The Nature & Biodiversity component co-finance best practice or demonstration projects that contribute to the implementation of the Birds and Habitats Directives and the Natura 2000 network.

The LIFE programme is very relevant to the Natura 2000 biogeographical process. During the 20 years of its existence, LIFE projects have accumulated a vast amount of knowledge and experience in management, restoration and protection of habitats and species in Europe. Particularly in recent years (LIFE+), the emphasis has been on innovative approaches to management and restoration and thus have increasingly tested new methods, measures and approaches. LIFE projects are obliged to disseminate their results, and the information and knowledge collected have been published in the form of guidelines, methodologies, management plans, best practice brochures, leaflets and books<sup>14</sup>. These documents are usually available on the relevant project website (another obligation of LIFE projects). The LIFE programme website contains a searchable database of projects. Various criteria (including habitat type and species name), alone or in combination, can be used to identify relevant projects. Basic information about projects can be found on the LIFE website together with a link to the project website, where more detailed information is available, including project outputs.

Knowledge and experience gathered under the LIFE programme are also published in the form of thematic publications, in recent years under the title "LIFE Focus". A list of thematic issues relevant to the Natura 2000 biogeographical process is presented below. These and other LIFE publications can be downloaded from the LIFE programme website. Good practices in Natura 2000 site management have been summarised in the form of the web site that also provides useful information for the Natura 2000 biogeographical process<sup>15</sup>. In addition, the LIFE programme regularly organises LIFE conferences and LIFE platforms. The LIFE platform is intended for project teams working in the same field, on the same or a similar topic, to exchange experience.

The LIFE platform meetings were identified as a suitable tool for summarising and delivering the knowledge and experience of LIFE projects to the Natura 2000 biogeographical process. Therefore, the LIFE platform meeting for the Alpine biogeographical seminar was organised on 10 and 11 June 2013 in Schladming (Austria). The aim was to compile experience in best practices developed through LIFE Nature projects focused on the habitats selected for the NBP in the Alpine region. The meeting participants were managers of the LIFE projects that restore and manage Alpine habitats and species. In addition to plenary presentations and a fieldtrip, there were also group discussions. The same habitat groups as in the Alpine NBP (freshwater, wetlands, dry and wet grasslands, and forests) were created. In

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<sup>14</sup> <http://ec.europa.eu/environment/life/publications/lifepublications/>

<sup>15</sup> <http://ec.europa.eu/environment/life/bestprojects/index.htm>

the group discussions the participants were asked to provide their knowledge related to threats, management requirements, barriers and bottlenecks, solutions identified and species requiring special management measures. A rapporteur was nominated for each group to summarise the results of the discussions. This rapporteur then presented the recommendations and findings from the LIFE platform meeting directly to the respective thematic group in the preparatory workshop of the Natura 2000 seminar for the Alpine region (Natura 2000 biogeographical process), which took place in Graz (Austria) from 12 to 14 June 2013. In this way, the outcomes from the LIFE platform were incorporated and reflected in the documents of the Alpine biogeographical process and communicated to the participants of the Graz workshop. The recommendations have also been incorporated into the latest version of the Alpine Background Document available on the Natura 2000 Platform<sup>16</sup>.

The meeting in Schladming demonstrated the usefulness of the LIFE platform meetings for the Natura 2000 biogeographical process. The managers of the LIFE projects shared their practical knowledge and experience in the management and restoration of target habitats and delivered this relevant and very useful information to the Alpine process. However, the LIFE platform meeting was in some respects incomplete. For the Schladming meeting it was not possible to ensure the participation of managers of completed LIFE projects, because there was no funding to cover their costs. However, the managers of completed projects have the most experience with the practical implementation of individual measures. Therefore, it would be good to find a way to involve them in any future LIFE platform meetings related to the Natura 2000 biogeographical process.

LIFE publications relevant to the Natura 2000 biogeographical process:

- LIFE and human coexistence with large carnivores (2013);
- LIFE managing habitats for birds (2013);
- LIFE and invertebrate conservation (2012);
- LIFE preventing species extinction: Safeguarding endangered flora and fauna through ex-situ conservation (2011);
- LIFE and European Mammals: Improving their conservation status (2011);
- LIFE building up Europe's green infrastructure (2010);
- LIFE improving the conservation status of species and habitats (2010);
- LIFE and Europe's reptiles and amphibians: Conservation in practice (2009);
- Protecting Europe's Nature: Learning from LIFE (2009);
- LIFE and Europe's grasslands: Restoring a forgotten habitat (2008);
- LIFE and endangered plants - conserving Europe's threatened flora (2008);
- LIFE and Europe's wetlands - restoring a vital ecosystem (2007);
- LIFE and Europe's rivers - protecting and improving our water resources (2007);
- LIFE and European Forests (2006);
- Good practices in managing Natura 2000 sites (2006);
- Integrated management of Natura 2000 sites - the contribution of LIFE-Nature projects (2005);
- LIFE, Natura and the military (2005);

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<sup>16</sup> <http://ec.europa.eu/environment/nature/natura2000/platform/>

- LIFE for Birds – 25 years of the Birds Directive: the contribution of LIFE-Nature projects (2004);
- LIFE-Nature: Communicating with stakeholders and the general public - Best practice examples for Natura 2000 (2004);
- Alien species and nature conservation in the EU: The role of the LIFE programme (2004);
- LIFE and agri-environment supporting Natura 2000 - Experience from the LIFE programme (2003);
- Conserving Mires in the European Union (1999);

These publications are available from the LIFE programme website:

<http://ec.europa.eu/environment/life/publications/lifepublications/index.htm>