Natura 2000 Seminars

Alpine Region

Background document

Freshwater - Draft 5

An initiative of the European Commission

NATURA 2000

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1. Introduction: the New Biogeographical Process in the Alpine Biogeographical Region

The purpose of the New Biogeographical Process is to help Member States to manage Natura 2000 as a coherent ecological network, whilst exchanging experience and best practice, addressing objectives and priorities and enhancing cooperation and synergies. The process should contribute to the achievement of Favourable Conservation Status (FCS) for those habitats and species of community interest (listed in annex one of the Habitats Directive) that have been identified as having priority within the given biogeographical region, with a special focus on the contribution of the Natura 2000 network, but without ignoring horizontal measures where necessary.

In the context of the viability of the Natura 2000 network it is important to know how to ensure that habitats also achieve a level of favourable conservation status outside Natura 2000 site boundaries, and also how to address the major threats that occur there.

The process for each biogeographical region consists of three milestone meetings:

1) Steering Committee (meetings): The Steering Committee has an essential role and each regional process starts with a meeting of the Steering Committee. It is composed of representatives of the Member States that fall in the biogeographical region and in addition the following organisations are also represented: European Commission (EC), European Environment Agency (EEA), and European Topic Centre on Biological Diversity (ETC/BD). Observers from other MS are also allowed to attend upon invitation. The Steering Committee reviews the pre-scoping document, and makes the final decision about the priority habitats and species, and the habitat groups.

2) Preparatory Workshop: The workshop is used to prepare the seminar. The workshop is a very informal working meeting that provides the basic material and preparation for the Seminar. It is informed by the Background Document but does not consider the content or technical detail of the latter; rather it provides a set of themes (crosscutting or unique to the individual habitat groups) whose elaboration in terms of solutions and actions will form the basis of the seminar document. The role of the contractor regarding the preparatory workshop is to work with the EC and to assist MS in preparation, minutes, proceedings, organising, leading discussions, and to decide with MS on themes.

3) Seminar: The Seminar is based on the Seminar Document whose content is derived from the preparatory workshop. Central to this document are a list of habitat groups related and crosscutting issues and problems whose solutions will directly contribute to achieving FCS. The seminar should draw conclusions and make recommendations regarding management and actions in relation to selected habitat types (based on the habitat specific and cross cutting issues). The seminar should result in a jointly agreed list of actions on the part of MS. As the seminar returns only once every five years, what happens in between is very important.

- Ad Hoc Expert Group Meetings can be held between the workshop and the seminar in order to address specific issues (which may be raised during the workshop or may become clear after the workshop).
- A pre-scoping document with lists of priority habitats and species is drafted by the ETC/BD. The pre-scoping document explains the selection of habitats and is posted on CIRCABC. The Contractor and partners are free to contact ETC/BD for information on the contents and composition of the pre-scoping doc.
- For each biogeographical region the pre-scoping document provides details on a selection of a manageable number of habitats and species: focusing on those habitat types where action is most needed. This first list is discussed and agreed with the Member States inside the biogeographical region during and shortly after a Steering Committee meeting.
- During any given biogeographical process, information is collected through the use of a targeted questionnaire. This is then compiled into a Background Document which informs the working groups within the preparatory workshop. The Background Document has a life beyond the seminar; it should therefore be continuously improved, modified and added to as each five-year cycle continues.
- The Seminar brings together key actors (including ministry and state institute officials, NGOs and stakeholders) from different countries for the exchange of practice and should result in the

creation of expert networks about similar habitats inside a biogeographical region. The Biogeographical Process is to be used to assess of management practices and best practices and result in the formulation of recommendations based on the process.

- Internal Communication within the process for each biogeographical region is particularly important; thus:
  - CIRCABC is currently the main internal information platform for the process: https://circabc.europa.eu;
  - In order to make the relevant documents easily accessible, special interest groups for each Biogeographical Region (BGR) are created on CIRCABC;
  - An Interest Group for the Alpine Steering Committee has already been created and is composed of representatives of the EC, the EEA, the ETC/BD and member states (MS).
  - For the moment CIRCABC is to be used to store meeting agendas, minutes, documents.

The Alpine process is led by Austria. The Steering Committee of the Alpine process is composed of representatives of the 12 Member States (AT, BG, CZ, DE, ES, FR, FI, IT, PL, SE, SI, SK) and the EEA, ETC/BD, and EC. Based on the pre-scoping document and the discussions of the Steering Committee, four focus habitat groups were selected: forests, wetlands; grasslands; freshwater. For the Alpine process, a number of species has been identified that will be covered as part of cross-cutting issues.
An internet based platform for external and internal communication is being developed as part of project. The primary target audience for the internet platform should include those people that can take action for Natura 2000 (in a first instance site managers but also policy makers, civil society, and land owners).

The drafting process of the background document

The Alpine Background Document compiles the readily available information regarding 22 selected habitat types, as selected by the MS for the Alpine Seminar Process. In its first version it contains the habitat descriptions as included in a pre-scoping document, prepared by the European Topic Centre on Biological Diversity (ETC/BD) and the EEA[1]. In a next steps, MS are invited to ask their habitat experts to complete an Expert Input Form to collect additional knowledge about the habitat types concerned.

The information that is collected in the pre-scoping document and by the expert input forms will be complemented by a selection of case studies that will illustrate specific issues that are referred to in the background document.

Description of the selected habitat types

This section provides overview information for each of the 22 selected priority habitat types.

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), grasslands (light green), wetlands (purple), forests (dark green).

CODE	HABITAT NAME
3140	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
3150	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation
3220	Alpine rivers and the herbaceous vegetation along their banks
3230	Alpine rivers and their ligneous vegetation with *Myricaria germanica*
3240	Alpine rivers and their ligneous vegetation with *Salix elaeagnos*

[1] Available online at https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=FormPrincipal:_id3&FormPrincipal_SUBMIT=1&id=31d9c683-b68d-47c7-b80e-900eca33c1e0&javax.faces.ViewState=rO0ABXVyABNbTGphdmEubGFuZy5PYmplY3Q7kM5YnxBzKWwCAAB4cAAAAAN0AAEzcHQAKy9qc3AvZXh0ZW5zaW9uL3dhaS9uYXZpZ2F0aW9uL2NvbnRhaW5lci5qc3A=

CODE	HABITAT NAME
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco - Brometalia*) * important orchid sites
6230	Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and sub-mountain areas in Continental Europe)
6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
6520	Mountain hay meadows
7110	Active raised bogs
7140	Transition mires and quaking bogs
7230	Alkaline fens
91D0	Bog woodland
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)
9130	*Asperulo-Fagetum* beech forests
9170	*Galio-Carpinetum* oak hornbeam forests
9180	*Tilio-Acerion* forests of slopes, screes and ravines
9260	*Castanea sativa* woods
9410	Acidophilous *Picea* forests of the montane to alpine levels (*Vaccinio-Piceetea*)

Legends for the maps, figures and tables

Factual information for each habitat type is given in the form of standard tables, figures and maps presented in the pre-scoping document. Reading and interpreting the maps, figures and tables provided by the EEA / ETC/BD requires a legend for their clear understanding. The respective legends and explanations are presented here, with cross-references to the sections within each habitat type.

For each habitat type, tables represent the conservation status of species and habitats in the following manner.

code	status
FV	Favourable
U1	Unfavourable – inadequate
U2	Unfavourable – bad
XX	Unknown

Pressures/threats are driven by the habitat type and the species sharing the same pressures/threats are noted in the table as well. This means that a species may have other pressures/threats as well, which do not appear in the table. Only those pressures/threats for habitat types are taken into account when they are reported by more than 1/3 of MS where the habitat type/species is present. If a pressure/threat is reported by more than 2/3 of MS this is indicated in light blue colour. If a pressure/threat is reported by all MS where the habitat type or species occurs, it is indicated with darker blue colour.

For each habitat type, a table presents the species that have been identified as particularly associated to the habitat type. It shows linkage at European level according to data by the ETC/BD. Where available, additional information on country level has been included.

Explanations:
HD Annex II & IV species occurring in 8-12 MS
HD Annex II & IV species occurring in 3-7 MS
BD Annex I species occurring in 8-12 MS
BD Annex I species occurring in 3-7 MS

All expert input has been collated into a series of tables for each habitat and a summary has been provided at the beginning of each section to provide a concise overview. Feedback that used the Article 17 threats/pressues codes and which linked advice between the different questions was captured first. This is reflected in the numbering of each table. So for example, threat number four will be linked to management requirement, solution and bottleneck number four in each habitat section. When recommendations have been made that are unconnected with previous questions/tables then the text has been shown in blue and is not numbered. Please note that the numbering does not indicate the priority of specific threats and pressures. Please also note that the numbering is only sequential in the first threats and pressures table for each habitat. This is because of the need to preserve the relationships between the tables in each section and the fact that the same threat/pressure was often identified by more than one MS.

Most text, especially additional information, has been edited for grammar and simplified in some cases to convey a clearer meaning. This has been done from both an ecological and liguistic perspective. A very limited amount of elaboration has been required in some cases where input has been incomplete. This has been indicated through the use of 'review comments', as has been the case for any direct comments made by experts about the background document itself. This was done to provide an initial audit trail to help in redrafting. It is enviaged that these will not be retained in the final document once the content has been agreed by the Alpine Steering Committee. As this is a 'living document' there will be opportunities for contributors to modify their own text if the wrong meaning has been conveyed through this process.

Blue text shows general recommendations not directly linked to specific threats or pressures. Information has been aggregated if listed as separate points in the original input in order to save space. This type of input was either replicated by individual experts as a generic recommendation across more than one habitat type or was simply not linked in the individual expert input form. This is why it cannot be directly associated with particular threats or pressures and lacks specificity in some cases.

Sub-section numbering was used for recommendations that addressed a specific pressure or threat but which had sufficiently different meanings or MS specificity to remain separate. The numbering of tables, apart from the threats and pressues table, is not sequential as suggestions relating to specific threats and pressures was often lacking in the expert input form. The number of times a threat or pressure was identified or recommendation made by experts from each country is indicated so that the relative importance of different issues can be quickly evaluated by users. This information was also used to support the overall summary for each habitat group. It was necessary to make a 'value judegement' in relation to the equivalence of the input in some instances which means that this process was not entirely objective or error free which was inevitable given the nature of the input. Where the meaning was equivocal or highly specific then a precautionary approach was used and a new entry was made.

No habitat-based expert input was received from Spain or the Slovak Republic at the time this draft was completed. Blank cells indicate this fact as well as a lack of comment from individual countries in relation to specific habitats or questions. Only one country provided general comments in relation to *Castanea sativa* woodlands (9260) possibly reflecting the limited extent of N2K sites in most of the countries of the Alpine Region.

2. Freshwater

Summary

Process participation and representation

The following figures summarise the input that was provided by the country experts for the freshwater habitat group that consisted of: 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation; 3220 Alpine rivers and the herbaceous vegetation along their banks; 3230 Alpine rivers and their ligneous vegetation with *Myricaria germanica*; 3240 Alpine rivers and their ligneous vegetation with *Salix elaeagnos*; 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; 91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*).

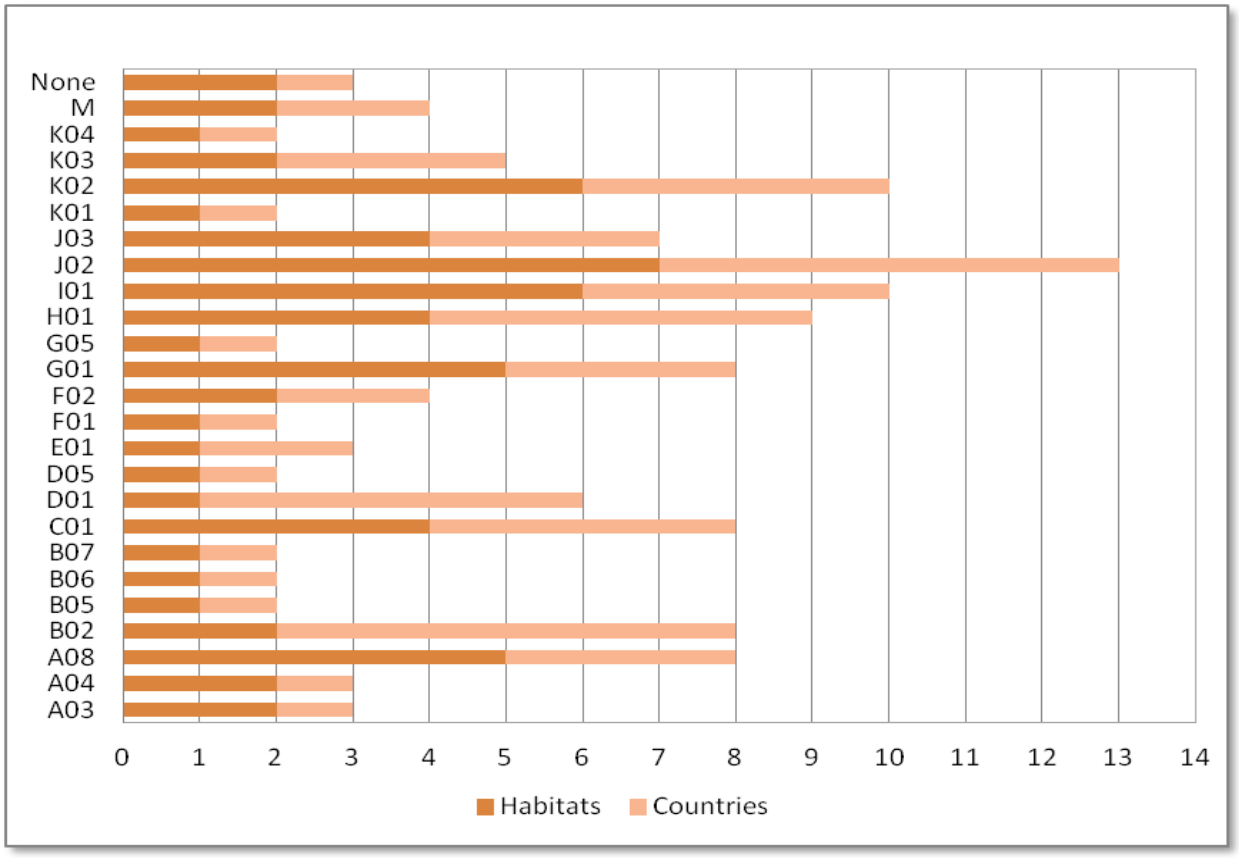
	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Number of habitats considered	7	0	6	0	4	7	0	5	0	2	1	0
Number of participating experts	5	0	7	0	4	3	0	5	0	1	1	0
Habitat area (1000s ha)	14.4	2.8	2.7	4.5	12.5	32.5	21.8	4.8	32.9	44.7	7.0	2.7
Habitats considered	all	n/a	3140 3150 3220 3230 3240 91E0	n/a	3220 3230 326 91E0	all	n/a	3150 3220 3230 3240 91E0	n/a	3220 3260	91E0	n/a

A detailed record of the submissions can be found in the following sections that show the number of experts and countries that made specific recommendations, in relation to particular threats and pressures, or more general recommendations that were either related to individual habitats or the overall habitat grouping. This section is designed to provide a rapid overview of the collated information but the figures need be interpreted with some caution because of the nature of the underlying data. This is because a number of experts applied the same comments to all the habitats which means that the number of habitats shown in the following figures may be indicating this fact in some instances rather than showing a genuinely emergent issue. The number of countries shown should also be carefully interpreted as it is directly related to the number of experts who participated in the process. As the preceding table shows, participation was highly variable between countries. This means that an issue that is apparently only present in one country could actually be more widespread. Overall, these issues only relate to less than 25% of submissions which should still enable a valid interpretation of the stronger patterns where an issue is associated with the majority of habitats and countries (experts). These could potentially indicate areas that need to be developed further in the workshop and provide the basis for some concrete collaborative actions across the alpine biogeographical region.

Threats and pressures identified by country experts

The human-induced changes in hydraulic conditions was the most frequently identified and widespread pressure for this freshwater habitats grouping as it was reported for all habitat types and for most of countries that responded. This reflects especially dynamic nature of the water regime of rivers – its alteration has significant impact to the status of related habitats of running waters, but also to other floodplain habitats like standing waters and floodplain forests. Several other pressures operate across most of habitats in this group, namely invasions of non-native species, biotic succession and fertilisation, i.e. water pollution. This habitat group includes habitats of standing waters, running water and floodplain forest and some pressures are specific for these broader types of habitats. For habitats of standing waters the water dynamics in the related river as well as processes of accumulation of materials and dead biomass represent important pressures. In the running water, issues of connectivity, barriers, natural regime of water dynamics connected with the material transport are important and the human activities related to the flood prevention, river regulation, hydroenergy production, river fragmentation, water pollution, materials (especially gravel) excavation represent

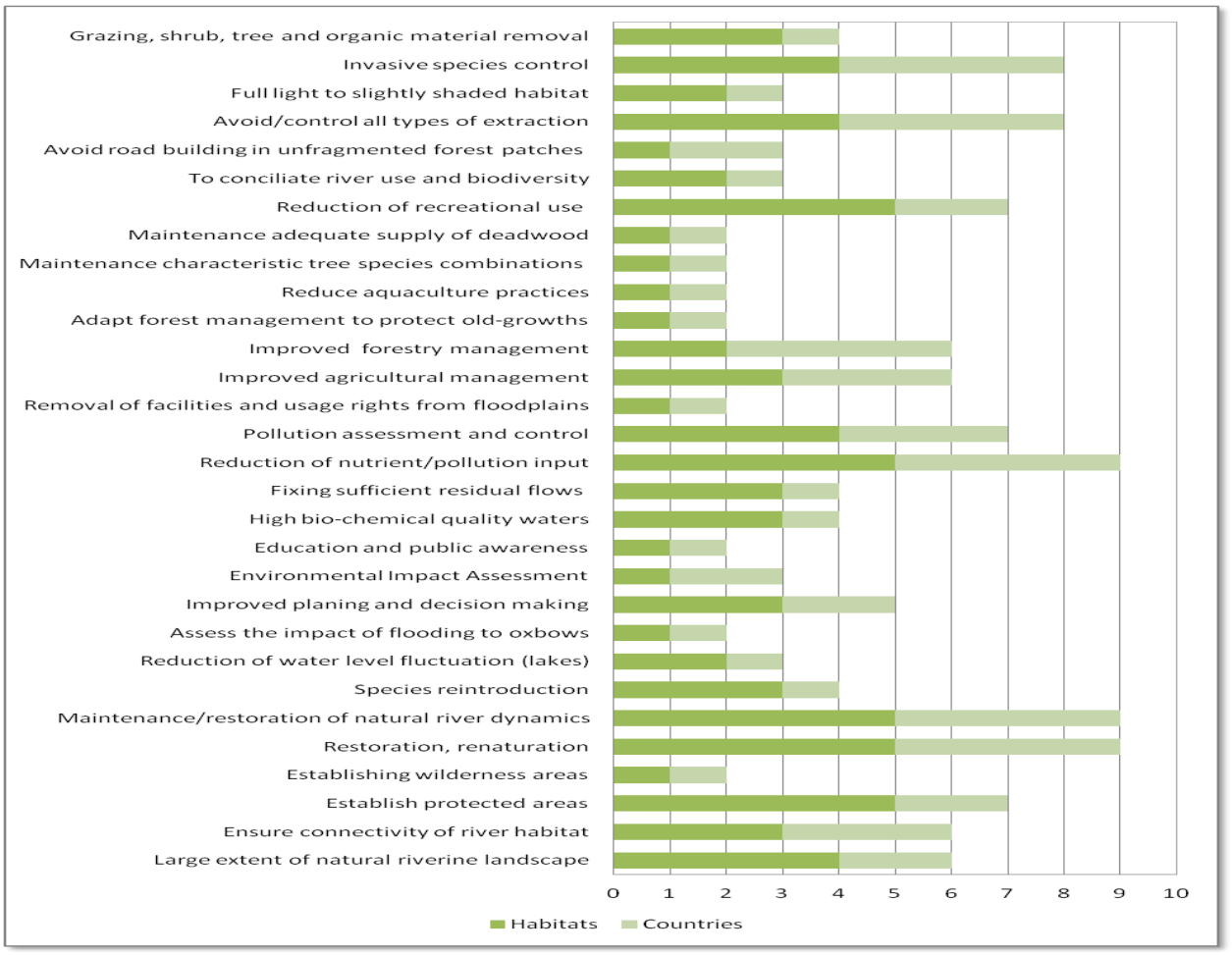
main threats. Floodplain forest habitat type 91E0 has certain pressures that were not reported for other habitat types of this grouping: grazing in forest, building roads, paths and railroad, improved access to site, urbanisation.
The habitat type 3260 is not under pressure in Finland where almost all habitat area is protected in the Natura2000 network and there are no significant pressures or threats within or outside Natura 2000 areas in the Finnish alpine region.



Mowing/cutting of grasslands (**A03)**; Grazing (**A04**), Fertilisation (**A08**); Forest or plantation management & use (**B02**); Use of fertilizers (forestry) (**B05)**; Grazing in forests/woodland (**B06**); Forestry activities not referred to above (**B07**); Mining & quarrying (**C01**); Roads, paths and railroad (**D01**); Improved access to site (**D05**); Urbanised areas, human habitation (**E01**); Marine and freshwater aquaculture (**F01**); Fishing and harvesting aquatic resources (**F02**); Outdoor sports & leisure activities (**G01**); Other human intrusions & disturbances (**G05**); Pollution to surface waters (**H01**); Invasive non-native species (**I01**); Human induced changes in hydraulic conditions (**J02**); Other ecosystem modifications (**J03**); Abiotic (slow) natural processes (**K01**); Biocenotic evolution, succession (**K02**); Interspecific faunal relations (**K03**); Interspecific floral relations (**K04**); Climate change (**M**).

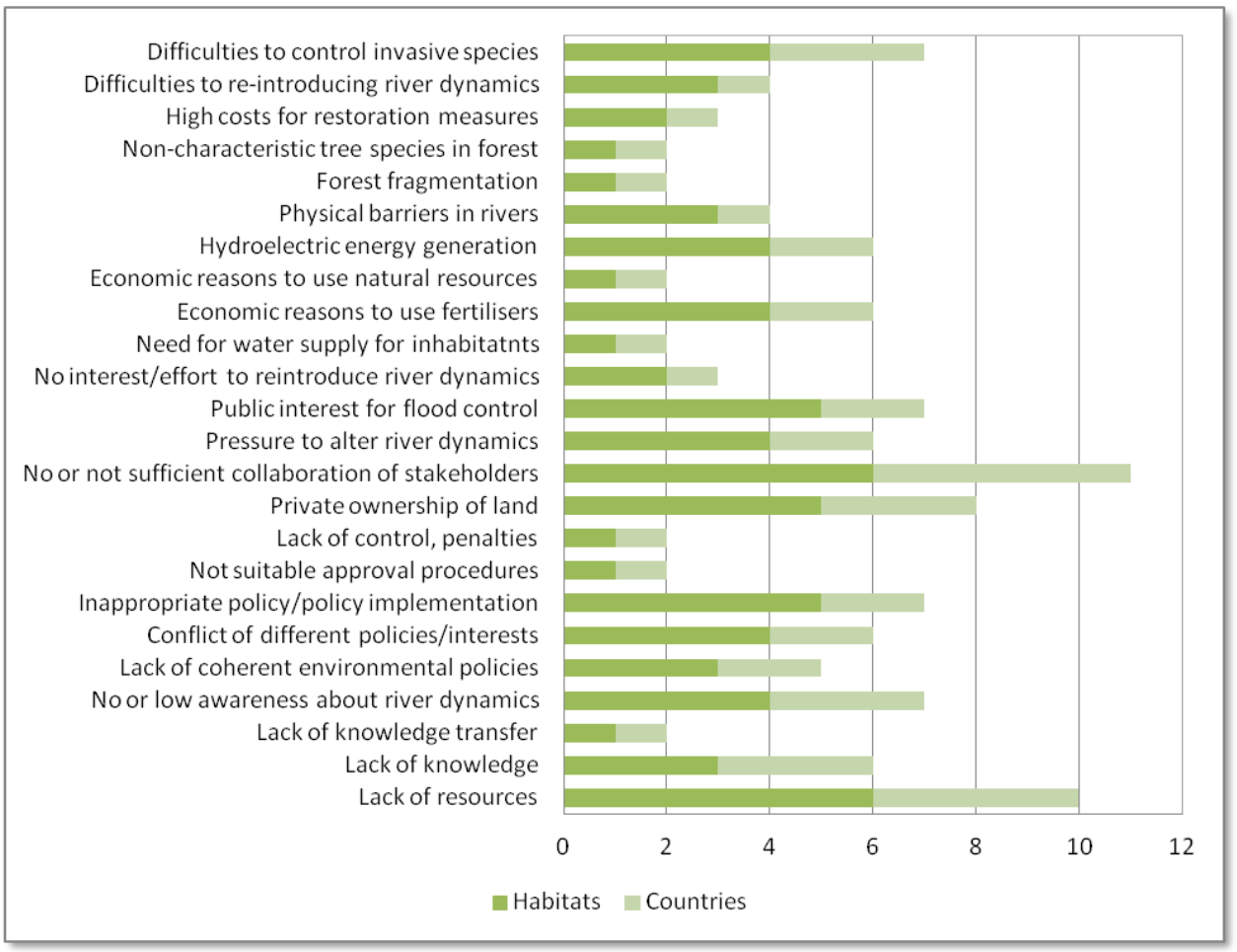
Management requirements identified by country experts

The maintenance or restoration of the natural river dynamics was the most frequently identified management requirement. Other frequently mentioned requirements included restoration or renaturation of freshwater habitats, ensuring the river connectivity, control of invasive species and reduction of pollution. The importance to maintain high bio-chemical quality of water was stressed for the habitat type 3140. The catchment or landscape-scale approach allowing strategic management was identified as good approach for maintenance and protection of the freshwater habitats of running waters. Specific requirements were reported for alluvial forest habitat 91E0, they 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 the forest fragmentation by road building in the unfragmented forest patches.



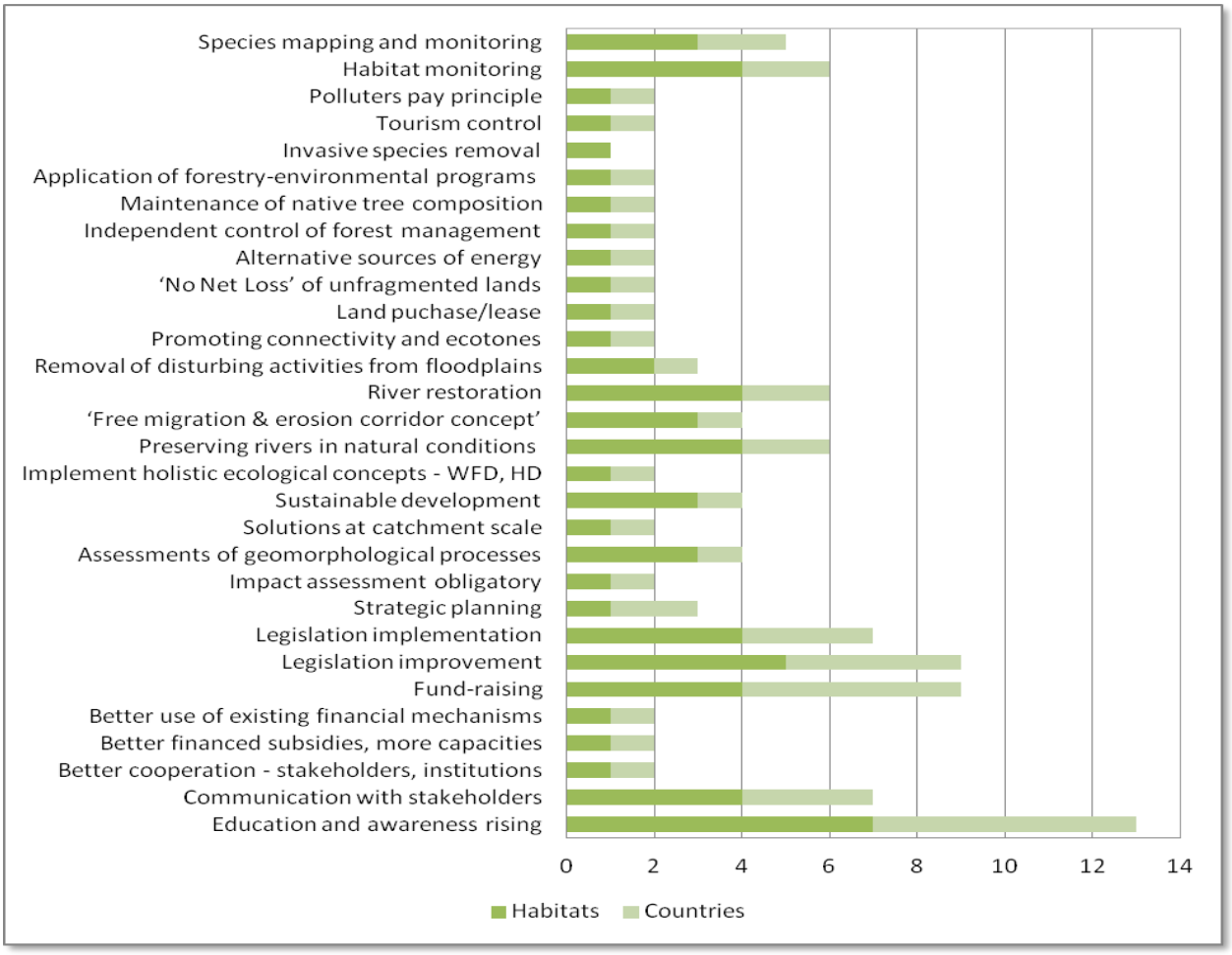
Barriers and bottlenecks identified by country experts

The identified barriers and bottlenecks indicate gaps or insufficiencies especially in the policy and governance areas. The inappropriate policy, the lack of comprehensive environmental policies, conflicts of different policies or interests, inappropriate policy implementation and not suitable approval procedures were reported by most of countries and they impact all assessed habitat types. The lack of knowledge as well as none or not sufficient cooperation between the relevant organisations and stakeholders represent another important barrier influencing the state of habitats in question. Quite commonly was reported lack of resources – this includes both funding and capacities. Quite important barriers are in economic field – there are economic interest for management of river and forests, for the natural resources use, but also the public interest for flood prevention and control. Some bottlenecks are related to complicated implementation of the management or restoration measures and their costs – this is true e.g. for re-introduction of river dynamics and control of invasive species. In the alluvial forests, the main problems are related especially to already existing forest fragmentation and non- characteristic tree species composition that are not adapted to the river dynamics and floodplain processes.



Solutions identified by country experts

The education and awareness rising were identified as the most promising approaches to eliminate threats and pressures to the freshwater habitats – they were reported by all responding countries and for all assessed habitat types. The better knowledge of habitats and understanding ecological principles and processes related to the well functioning of these habitats could eliminate or reduce majority of reported threats and pressures. The second group of recommendations is related to the holistic approach to freshwater habitats management: Solutions at catchment scale, implement principles of the sustainable development, implement holistic and integrated ecological concepts in the Water Framework Directive and the Habitats Directive, use 'free migration & erosion corridor concept' as a tool of rivers management and promoting connectivity and ecotones. As important are considered improvements in policy and planning: improvement and implementation of legislation, strategic planning, environmental impact assessment. Despite important, less were mentioned financial aspects: finances availability, better subsidies and improved institutional capacities, better use of existing financial mechanisms and fund raising. As a tools for the situation improvement were mentioned river restoration, land purchase/lease, compensation measures to ensure 'No Net Loss' of unfragmented lands, maintenance of native tree composition, application of forestry-environmental programs and polluters-pay principle, but also habitat and species mapping and monitoring.



Species requiring special management measures

A number of species, listed in the following table, that require special management consideration were identified by experts for this habitat grouping.

Species	3140	3150	3220	3230	3240	3260	91E0
Chondrilla chondrilloides			1	1	1		
Myricaria germanica				1	1		
Trifolium saxatile			1				
Typha minima			1	1	1		
Bryodemella tuberculata			1		1		
Psophus stridulus			1	1	1		
Tetrix tuerki			1		1		
Coenagrion mercuriale						1	
Coenonympha glycerion			1	1	1		
Euphydryas maturna							1
Lycaena helle							1
Parnassius mnemosyne							1
Plebejus idas			1	1	1		
Polyommatus baton			1	1	1		
Formica selysi			1		1		
Cottus gobio						1	
Galemys pyrenaicus			1	1	1		
Castor fiber						1	
Lutra lutra						1	

2.1. 3140 - Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

Habitats Manual (2007) Extract

Lakes and pools with waters fairly rich in dissolved bases (pH often 6-7) (21.12) or with mostly blue to greenish, very clear, waters poor (to moderate) in nutrients, base-rich (pH often >7.5)(21.15). The bottom of these unpolluted water bodies are covered with charophyte, *Chara* and *Nitella*, algal carpets. In the Boreal region this habitat type includes small calcareous-rich oligomesotrophic gyttja pools with dense *Chara* (dominating species is *C. strigosa*) carpets, often surrounded by various eutrophic fens and pine bogs.

Lundh, A. (1951) Studies on the vegetation and hydrochemistry of Scanian lakes. III. Distribution of macrophytes and some algal groups. *Bot. Not. Suppl*. 3(1):1-138.
Rintanen, T. (1982) Botanical lake types in Finnish Lappland. *Ann. Bot. Fennici* 19: 247-274.

Stoneworts (*Chara* spp) are aquatic green algae usually found in lakes which are nutrient poor but base rich. The plants often become encrusted with lime. Such lakes are widespread, particularly in northern Europe and the habitat has been reported from all biogeographical regions except Macaronesia.

Although reported as 'favourable' in Poland (Continental), Portugal (Mediterranean) and Alpine Sweden this habitat is assessed as unfavourable by most countries and for all regions except the Pannonic where it is assessed as 'unknown' with 'unfavourable-bad' in the Atlantic and Continental regions. 'Structure & functions' and 'future prospects' are assessed as unfavourable (or unknown) in all regions.

Conservation Status (CS) Assessed at the Alpine Region and MS Level

N2K code	Habitat name		AT	DE	ES	FI	FR	IT	SE	SI	SK	REGION
3140	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.	range	XX	FV	XX		FV	FV	FV	FV	XX	FV
		area	XX	FV	XX		XX	U1	FV	U1	XX	XX
		structure	XX	XX[2]	XX		XX	XX	FV	U2	XX	XX
		future	XX	FV	XX		U1	FV	FV	U1	XX	U1
		overall	XX	FV	XX		U1	U1	FV	U2	XX	U1

The overall assessment in Alpine region is "unfavourable - inadequate", the assessment follows the assessment of France. It looks, there is quite poor knowledge of this habitat because of frequent conclusion in category "unknown"; Austria, Spain and Slovakia assessed all parameters in this category. Favourable status was reported by Germany and Sweden. Many countries note that the threats to this habitat include problems with water quality, together with drainage and habitat destruction (Summary sheet of the online report on Article 17 of the Habitats Directive).

Many countries note that the threats to this habitat include problems with water quality, together with drainage and habitat destruction.

Reported pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
Outdoor sports and leisure activities	x

[2] According to the current draft Art. 17 report: FV

Modification of hydrographic functioning	**x**
Biocenotic evolution	**x**

Reported threats to this habitat and their importance to associated species (note that list does not correspond to level of importance)

Threats description (2nd level)	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
Outdoor sports and leisure activities	**x**
Pollution	**x**
Landfill, land reclamation and drying out	**x**
Modification of hydrographic functioning	**X**
Biocenotic evolution	

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	J 02 - groundwater abstractions for agriculture	1											
2)	K02.03 eutrophication (natural)	1											
3)	J02.12 Dykes, embankments, artificial beaches, general	1											
4)	J02.05 Modification of hydrographic functioning, general	1											
5)	G01 Outdoor sports and leisure activities, recreational activities	1		1									
6)	H01 Pollution to surface waters	1		1			1						
7)	A08 Fertilisation			1			1						
8)	J02 Human induced changes in hydraulic conditions			1			1						
9)	I01 Invasive non-native species						1						
10)	K02 Biocenotic evolution, succession						1						
11)	A04 Grazing			1									
12)	A03 Mowing / cutting of grassland			1									
13)	M Climate change			1									
14)	F02 Fishing			1									

Habitat Impacts: In **Austria** the main threats are related to eutrophication, water fluctuation in lakes, bank fixation and intensive recreational use of the habitat. The eutrophication leads to intensive growth of algae and spermatophytes and thus to loss of charophytes typical for this habitat. Water level fluctuations in lakes for hydroelectric energy generation represents another negative factor causing the loss of habitats due to temporal droughts. The loss of habitats is recorded especially in shallow areas, partly due to increasing wave action. The charophyte stands are damaged also by intensive recreation activities like shipping, diving and swimming (Pall). In **France** surrounding agriculture (A08), forestry, urban run-offs, fish farming and leisure fishing bring excess of nutrients and sediments which are either simply harmful for *Chara* sppl. and thin-leaved *Potamogeton* species (higher turbidity) or they are responsible for a stronger competition from bigger aquatic plants. The habitat is very sensitive to any repetitive physical alteration like the dregging of small lakes, ponds and ditches. Invasive non-native species like many *Jussia* spp. are of a major concern for the future (Mikolajczak). In case of **Germany** the fertilisation and related water pollution are considered as the most important pressures leading to water eutrophication, intensive growth of algae and water plants, oxygen decrease, increase of mud. As the main sources of pollution are identified sewage water, fertilisers and pesticides used in agriculture, atmospheric deposition and cattle breeding. The consequent ecosystem processes include erosion, browning, sensitive species loose, change of species composition. Other identified pressures are fishing (overstocking with fish - maybe wrong or alien species linked with introduction of parasites, diseases), outdoor sports (damage of littoral vegetation, disruption of sensitive species, waterfowl, birds) and human-induced changes of hydraulic conditions (use of hydropower, daming, changes of natural hydrology) (Schaumburg).

Management Requirements Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2)	Avoidance of nutrient input	1		1			1						
4)	Reduction of water level fluctuation amplitude	1											
3)	Renaturation of lake shores	1											
5)	Reduction of recreational use and/or concentration of recreational use in designated areas	1		1									
6,7,8)	High bio-chemical quality waters						1						
7)	To adapt agricultural practices			1			1						
8)	To conciliate electricity production and uses of the river and biodiversity						1						
10)	Full light to slightly shaded habitat						1						
Additional information. Austria: Avoidance of nutrient input (from point sources e.g. by installation of ring channels, from agriculture e.g. by installation of buffer zones, prohibition of fertilisation in lake-near areas (Pall). **France**: Weak turbidity, nutrient poor (H01, A08); depending often on particular hydraulic conditions like slightly running water table (water turnover) (Mikolajczak).													

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2)	Avoidance of nutrient input	1											
3)	Renaturation of lake shores	1											
5)	Reduction of recreational use and/or concentration of recreational use in designated areas	1											
6)	Implementation of buffer zones			1									
11)	Fencing against grazing cattle			1									
Additional information. France. Management may be locally efficient (e.g. reduced ditch clearings) but it lies often beyond the habitat location and depends on more global environmental policies.													

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2)	Non-cooperating landowners/landusers	1		1									
3.1)	High costs for renaturation measures	1											
3.2)	Private property of lake shores	1											
4)	Hydroelectric energy generation	1											
	Lack of knowledge			1			1						
	Not sufficient funds			1									
	Lack of global environmental policies to ensure an "upstream" management of habitat						1						
Additional information. France. Knowledge of *Chara* spp. habitats is still weak (Mikolajczak).													

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2, 5)	Education and communication	1		1									
3)	Fund raising	1		1									
4)	Communication with hydropower company	1											
	Monitoring and research			1									
Additional information. Austria: Providing knowledge on impacts of nutrient input and recreational use. Discussion on potential mitigation measures, discussion on alternative possibilities for energy generation (Pall).													

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

Case Studies Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

References Identified by Country Experts

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Pall K. (1996) Die Makrophytenvegetation des Attersees und ihre Bedeutung für die Beurteilung des Gewässerzustandes. Oberösterreichischer Seeuferkataster, Pilotprojekt Attersee Studie im Auftrag der Oberösterreichischen Landesregierung sowie des Bundesministeriums für Land- und Forstwirtschaft.

Pall K., Moser V. & S. Hippeli (2003) Makrophytenkartierung Mondsee. Bericht. Untersuchung im Auftrag der Landesregierung Oberösterreich, System Bio- und Management Consulting GmbH, Wien.

Other Information

According to the ETC/BD calculations 0-50% of the area of this habitat type are within SCIs. This means that potentially important part of the management needs of this habitat types occurs outside Natura 2000 network.

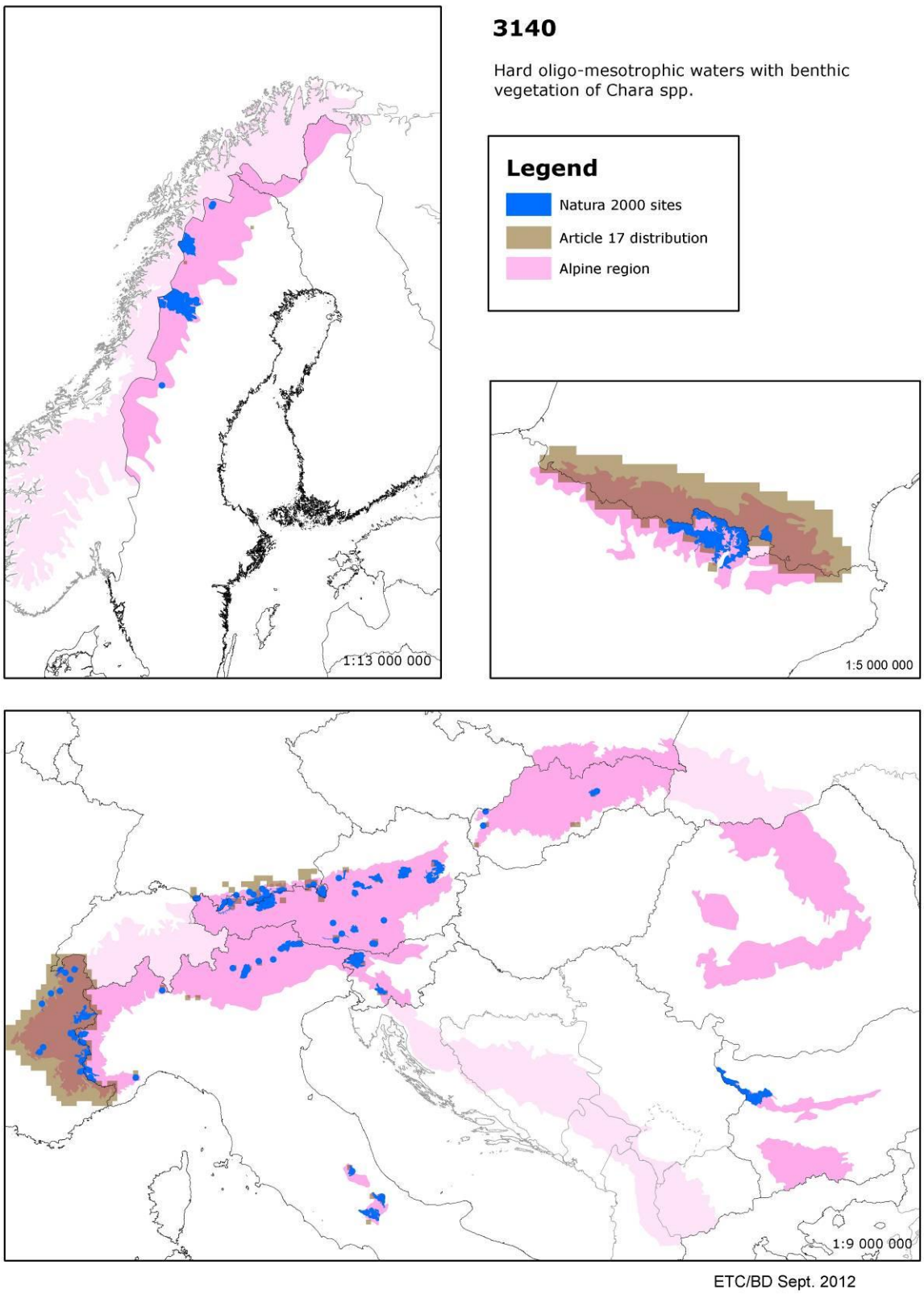
Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

	AT	BG	DE	ES	FR	IT	SE	SI	SK
Number of sites	17	2	13[3]	4	15	20	4	2	3
Habitat area (ha)	996	0	741	384	1013	1332	3692	894	10

The figures include all SCIs where the habitat type is mentioned including sites coded as D.

[3] 14 according to Rehklau.

Map of SCIs proposed for Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. & Article 17 distribution



2.2. 3150 - Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation

Habitats Manual (2007) Extract

Lakes and ponds with mostly dirty grey to blue-green, more or less turbid, waters, particularly rich in dissolved bases (pH usually > 7), with free-floating surface communities of the *Hydrocharition* or, in deep, open waters, with associations of large pondweeds (*Magnopotamion*). The Habitats Manual lists the following Annex II/IV plant species: *Aldrovanda vesiculosa.*

Dahl, E., Kalliola, R., Marker, E. & Persson, Å. (1971). Nordisk vegetationsklassificering för kartläggning. In: IBP i Norden 7. Universitetsforlaget, Oslo, pp. 3-12.

These are lakes which are naturally rich in nutrients and with many floating aquatic plants, this habitat is found in all biogeographical regions. Lakes which become eutrophic because of pollution are not included in this habitat type.

Although reported as 'favourable' in Italy (all three regions), Portugal (Mediterranean) and Alpine Sweden this habitat is assessed as unfavourable or unknown by most countries and for all regions, with 'unfavourable-bad' in the Atlantic and Continental regions. 'Structure & functions' and 'future prospects' are assessed as unfavourable (or unknown) in all regions.

Conservation Status (CS) Assessed at the Alpine Region and MS Level

N2K code	Habitat name		AT	DE	ES	FR	IT	PL	SE	SI	SK	REGION
3150	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation	range	XX	FV	XX	FV	FV	XX	FV	FV	XX	XX
		area	XX	FV	U1	U2	FV	XX	FV	FV	XX	XX
		structure	XX	XX[4]	U1	U2	XX	XX	FV	FV	XX	XX
		future	XX	FV	U1	U1	FV	U1	FV	FV	XX	XX
		overall	XX	FV	U1	U2	FV	U1	FV	FV	XX	XX

The overall assessment is Alpine region is "unknown" and follows evaluation of Austria that has the highest weight; this country assessed (together with Slovakia) all parameters as "unknown". Sweden and Slovenia assessed all parameters as "favourable", Germany and Italy one parameter as "unknown", all other parameters are "favourable". The pressures and threats reported include changes in water quality due to pollution and it seems unlikely that Italian lakes have escaped the pollution found elsewhere in Europe. Better information required (Summary sheet of the online report on Article 17 of the Habitats Directive).

Species Associated with this and their CS at the Alpine region and MS level

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1042	*Leucorrhinia pectoralis*	Invertebrates	range	FV		XX				XX			U2	XX
			population	XX		XX				XX			U2	XX
			habitat	U2		XX				XX			U1	U2
			future	U2		XX				XX			U1	U2
			overall	U2		XX				XX			U2	U2
1134	*Rhodeus sericeus amarus*	Fish	range	XX	XX							FV	FV	XX
			population	U1	XX							XX	FV	U1
			habitat	U1	XX							U1	FV	U1
			future	U1	XX							U1	FV	U1
			overall	U1	XX							U1	FV	U1
1166	*Triturus cristatus*	Amphibians	range	FV	XX			U2		FV			U2	U2
			population	U1	U1			U2		XX			U2	U2
			habitat	U1	U1			U2		U1			U2	U2

[4] According to the current draft Art. 17 report: FV

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
			future	U2	U2			U2		XX			U2	U2
			overall	U2	U2			U2		U1			U2	U2
1167	*Triturus carnifex*	Amphibians	range	FV					U1			FV		U1
			population	U1					U1			XX		U1
			habitat	U1					U1			U1		U1
			future	U1					XX			U1		XX
			overall	U1					U1			U1		U1
1177	*Salamandra atra*[5]	Amphibians	range	FV	FV			U2	U1			FV		FV
			population	XX	FV			U2	U1			XX		XX
			habitat	FV	FV			XX	FV			XX		FV
			future	FV	FV			XX	U1			FV		FV
			overall	FV	FV			U2	U1			XX		FV
code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1197	*Pelobates fuscus*	Amphibians	range							XX			U1	U1
			population							XX			U1	U1
			habitat							XX			U1	U1
			future							XX			U1	U1
			overall							XX			U1	U1
1201	*Bufo viridis*[6]	Amphibians	range	U1	U2				FV	FV		FV	FV	FV
			population	U1	U2				FV	XX		XX	U1	U1
			habitat	U1	U2				FV	XX		XX	U1	U1
			future	U1	U1				FV	FV		XX	FV	FV
			overall	U1	U2				FV	XX		XX	U1	U1
1202	*Bufo calamita*	Amphibians	range	U1		XX		U2						U2
			population	U2		XX		U2						U2
			habitat	U2		XX		U2						U2
			future	U2		XX		U2						U2
			overall	U2		XX		U2						U2
1203	*Hyla arborea*	Amphibians	range	FV	FV	XX		U2	U1	FV		FV	FV	FV
			population	U1	U1	XX		U2	U1	XX		XX	XX	XX
			habitat	U1	U1	XX		U2	FV	XX		U1	U1	U1
			future	U1	U1	XX		U2	U1	FV		XX	XX	XX
			overall	U1	U1	XX		U2	U1	XX		U1	U1	U1
1207	*Rana lessonae*	Amphibians	range	XX	XX					FV		FV	U2	XX
			population	U1	XX					XX		XX	U2	XX
			habitat	U1	XX					XX		U1	U2	XX
			future	U1	XX					XX		XX	U2	XX
			overall	U1	XX[7]					XX		U1	U2	XX
code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1209	*Rana dalmatina*	Amphibians	range	FV	FV			U1	XX			FV	FV	U1
			population	U1	XX			U2	XX			XX	U1	U1
			habitat	U1	XX			U2	XX			U1	U1	U1
			future	U1	XX			U1	XX			FV	U1	U1
			overall	U1	XX[8]			U2	XX			U1	U1	U1
1214	*Rana arvalis*	Amphibians	range	FV						XX	FV			FV
			population	U1						XX	FV			FV
			habitat	U1						XX	FV			FV
			future	U1						XX	FV			FV
			overall	U1						XX	FV			FV
1220	*Emys orbicularis*	Reptiles	range			XX			XX			XX		XX
			population			XX			XX			XX		XX
			habitat			XX			XX			U1		XX
			future			XX			XX			U2		U2
			overall			XX			XX			U2		U2
4045	*Coenagrion ornatum*	Invertebrates	range							XX		U1	U2	U2
			population							XX		U1	U1	U1
			habitat							XX		U1	U1	U1
			future							XX		U1	FV	U1
			overall							XX		U1	U2	U2
4046	*Cordulegaster heros*	Invertebrates	range									FV	U2	FV
			population									FV	XX	FV
			habitat									FV	FV	FV

[5]Definitely no typical species for any lakes or rivers; being an exception amongst amphibians it is a livebearing species which does not need any lakes or rivers at all for reproduction
[6]Just a very small isolated population in the Bavarian Alps living far away from any reals 3150 habitat (Rehklau).
[7]According to the current draft Art. 17 report: FV/U1/XX/XX
[8]According to the current draft Art. 17 report: FV/U1/U1/U1

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
			future									FV	FV	FV
			overall									FV	U2	FV

The pressures and threats reported include changes in water quality due to pollution and it seems unlikely that Italian lakes have escaped the pollution found elsewhere in Europe. Better information required (Summary sheet of the online report on Article 17 of the Habitats Directive).

Main pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation	*Leucorrhinia pectoralis*	*Rhodeus sericeus amarus*	*Triturus cristatus*	*Triturus carnifex*	*Salamandra atra*	*Pelobates fuscus*	*Bufo viridis*
Fertilisation	x				X			
Modification of hydrographic functioning	x	x						
Biocenotic evolution	x							

Pressure description (2nd level)	*Bufo calamita*	*Hyla arborea*	*Rana lessonae*	*Rana dalmatina*	*Rana arvalis*	*Emys orbicularis*	*Coenagrion ornatum*	*Cordulegaster heros*
Fertilisation	x		x					
Modification of hydrographic functioning	x	x	x			X		
Biocenotic evolution								

Reported threats to this habitat and their importance to associated species (note that list does not correspond to level of importance)

Threats description (2nd level)	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation	*Leucorrhinia pectoralis*	*Rhodeus sericeus amarus*	*Triturus cristatus*	*Triturus carnifex*	*Salamandra atra*	*Pelobates fuscus*	*Bufo viridis*
Fertilisation	x				x			
Landfill, land reclamation and drying out	x	x			x			
Modification of hydrographic functioning	x	x	X					
Biocenotic evolution	x							

Threats description (2nd level)	*Bufo calamita*	*Hyla arborea*	*Rana lessonae*	*Rana dalmatina*	*Rana arvalis*	*Emys orbicularis*	*Coenagrion ornatum*	*Cordulegaster heros*
Fertilisation	x		x					
Landfill, land reclamation and drying out	x				x		X	

Modification of hydrographic functioning	x	x	x			X		
Biocenotic evolution							X	

Reported pressures on habitat and their importance to associated species

Pressure description (2nd level)	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
Outdoor sports and leisure activities	X
Modification of hydrographic functioning	X
Biocenotic evolution	X

Reported threats to habitat and their importance to associated species

Threats description (2nd level)	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
Outdoor sports and leisure activities	X
Pollution	X
Landfill, land reclamation and drying out	X
Modification of hydrographic functioning	X
Biocenotic evolution	

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	G05.04 Vandalism								1				
2)	H01 Pollution to surface water /eutrophication	1		1			1		1				
3)	J Natural system modification								1				
4)	K Natural biotic and abiotic processes								1				
5)	M Climate change			1					1				
6)	A08 Fertilisation			1			1						
7)	J02 Human induced changes in hydraulic conditions	1		1			1						
8)	I01 Invasive non-native species						1						
9)	K02 Biocenotic evolution, succession						1						
10)	G01 Outdoor sports and leisure activities, recreational activities	1		1									
11)	A04 Grazing			1									
12)	A03 Mowing / cutting of grassland			1									
13)	F02 Fishing			1									
14)	K01.02 Silting up	1											
15)	K01.03 Drying out	1											
16)	F01.01 Intensive fish farming, intensification						1						
17)	K03.03 Introduction of disease (microbial pathogens)						1						

Habitat Impacts: In **Poland** vandalism is considered an important threat as people treat such habitats like dustbins throwing their rubbish, car tyres, home wastes, etc. The pollution of surface water mostly originating from roads, sometimes from households, brings changes in whole ecosystem. This habitat type often occurs in oxbow lakes that are hydrologically linked with the specific river. The oxbow systems are very sensitive to modification in the river floodplain. The modification of rivers may lead to drying out of oxbows faster than would be expected through natural processes. The second threat from river modifications is the lack of places for natural oxbow formation. Floods may be good or bad for oxbows. If the river is polluted, flooding brings the additional pollutants to oxbows. The long-lasting droughts and less of precipitation resulting from climate change lead to low level of water in the river and lowering of ground water. The level of water in oxbow lakes also decreases and the accumulations of organic material and lake drying out (leading straight to disappearance of oxbow) faster than during 'normal' weather conditions. This may ultimately lead to disappearance of the habitat. Eutrophication - as natural process lead to shallowing of oxbows, rapid eutrophication leads to negative processes such as algal biomass increase, blooms of waters, oxygen lack periods, dying of fish etc. (Wilk-Woźniak). In **France** pollution of the surface water, changes in the hydrological regime, succession and invasions of alien species are the most important threats to the habitat. The habitat is very sensitive also to any repetitive physical alteration

like the clearing of small lakes, ponds and ditches. The invasive non-native species like many *Jussia* spp. is a major concern for the future (Mikolajczak). The introduction of fish for breeding destabilises native fish and invertebrate populations, especially if carnivorous fish are used. In addition, the aquaculture practices propagate the highly contagious disease chytridiomycose, caused by fungi. This disease affects amphibians worldwide and especially in the mountains it has caused massive mortality. The disease is propagated by aquaculture practices (FNE). For **Germany** the fertilisation and related water pollution were identified as the most important pressures leading to water eutrophication, intensive growth of algae and water plants, oxygen decrease, increase of mud. As the main sources of pollution are identified sewage water, fertilisers and pesticides used in agriculture, atmospheric deposition and cattle breeding. The consequent ecosystem processes include erosion, browning, sensitive species loose, change of species composition. Other identified pressures are fishing (overstocking with fish -maybe wrong or alien species linked with introduction of parasites, diseases), outdoor sports (damage of littoral vegetation, disruption of sensitive species, waterfowl, birds) and human-induced changes of hydraulic conditions (use of hydropower, daming, changes of natural hydrology) (Schaumburg). **Austria.** Water eutrophication and modification of water regime belong to most important pressures. Due to eutrophication, water plants even from brackish habitats are invading and replacing the plants that are less tolerant to increased nutrient content. Flooding modifications are caused especially by river regulation and the water table is lowering, especially in backwaters. Due to shrinking water tables habitats are drying out. The water plants are damaged or removed also by sport/leisure activities like swimming, boating, fishing, diving (Ehrendorfer-Schratt).

Management Requirements Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Improve the public awareness								1				
2.1)	Pollution assessment and control	1					1		1				
2.2)	Implementation of buffer zones	1		1									
2.3)	Wastewater treatment plants	1											
3)	Planning and decision								1				
4)	Assess the impact of flooding to oxbows								1				
6)	To adapt agricultural practices						1						
7.1)	Stabilization of water levels, especially in backwaters	1											
7.2)	To conciliate electricity production and uses of the river and biodiversity						1						
9)	Full light to slightly shaded habitat						1						
10)	Prohibition or reduction of leisure and sport activities	1											
11)	Fencing against grazing cattle			1									
16)	Reduce aquaculture practices						1						

Additional information. Poland: People aware how important is to have clean and healthy water ecosystem, and why they should protect waters. Encourage local people for order and cleanness. To establish local policy on how to avoid vandalism. Make proper decision for river's modification with taking account the functioning of oxbow (Wilk-Woźniak). **Austria:** Nutrient input has to be avoided - wastewater treatment plants, buffer zones, no fertilization in surroundings of waters, etc. Stabilization of water levels, especially in backwaters; prohibition or reduction of leisure and sport activities (Ehrendorfer-Schratt). **France**: Weak turbidity, nutrient poor (H01, A08); depending often on particular hydraulic conditions like slightly running water table (water turnover) (Mikolajczak).

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2)	Wastewater treatment plants	1											

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Lack of knowledge, lack of policy								1				
2.1)	A. Inappropriate policy. B. Lack of control and penalties								1				
2.2)	Use of agrochemicals in agriculture	1											
3)	Lack of knowledge			1			1		1				
7.1)	Restoration of rivers is very expensive and often impossible under present circumstances	1											
7.2	Hydraulic power stations	1											
	Lack of global environmental policies to ensure an "upstream" management of habitat						1						
	Private property of water and of lake shores	1											
	Insufficient funds			1									
	Non cooperating landowner			1									
	Non cooperating landusers			1									

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	A.Education, awareness raising. B. Implementing of law.								1				
2.1)	A.Education, awareness raising. B. Improvement of law.								1				
2.2)	Information on the impact of nutrients especially in aquatic habitats	1											
3.1)	Education			1					1				
3.2)	Expert assessment obligatory								1				
4)	Leaving rivers in natural conditions (at least parts)								1				
7)	Alternative sources of energy	1											
10)	Tourism-free zones along the water banks	1											
	Fund raising			1									
	Monitoring and research			1									
	Communication with the owners of land and waters: awareness raising	1		1									
Additional information. Poland. To keep the river in good condition. In the proper situation, oxbows disappear and are created continuously. If the river functioning is good, the new habitats (oxbows) will be created and then the continuity of existence of habitat is hold. If the river is modified, exist oxbow will disappear but a new one will not be created (Wilk-Woźniak).													

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

References Identified by Country Experts

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Analiza właściwego stanu ochrony starorzecza na przykładzie kompleksu starorzeczy „Wiśliska" - obszar Natura 2000 PLH 120084 (The analysis of favorite conservation status of old river beds system "Wiśliska" – Natura 2000 site PLH 120084). Chrońmy Przyrodę Ojczystą, (2013).

Case Studies Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

Other Information

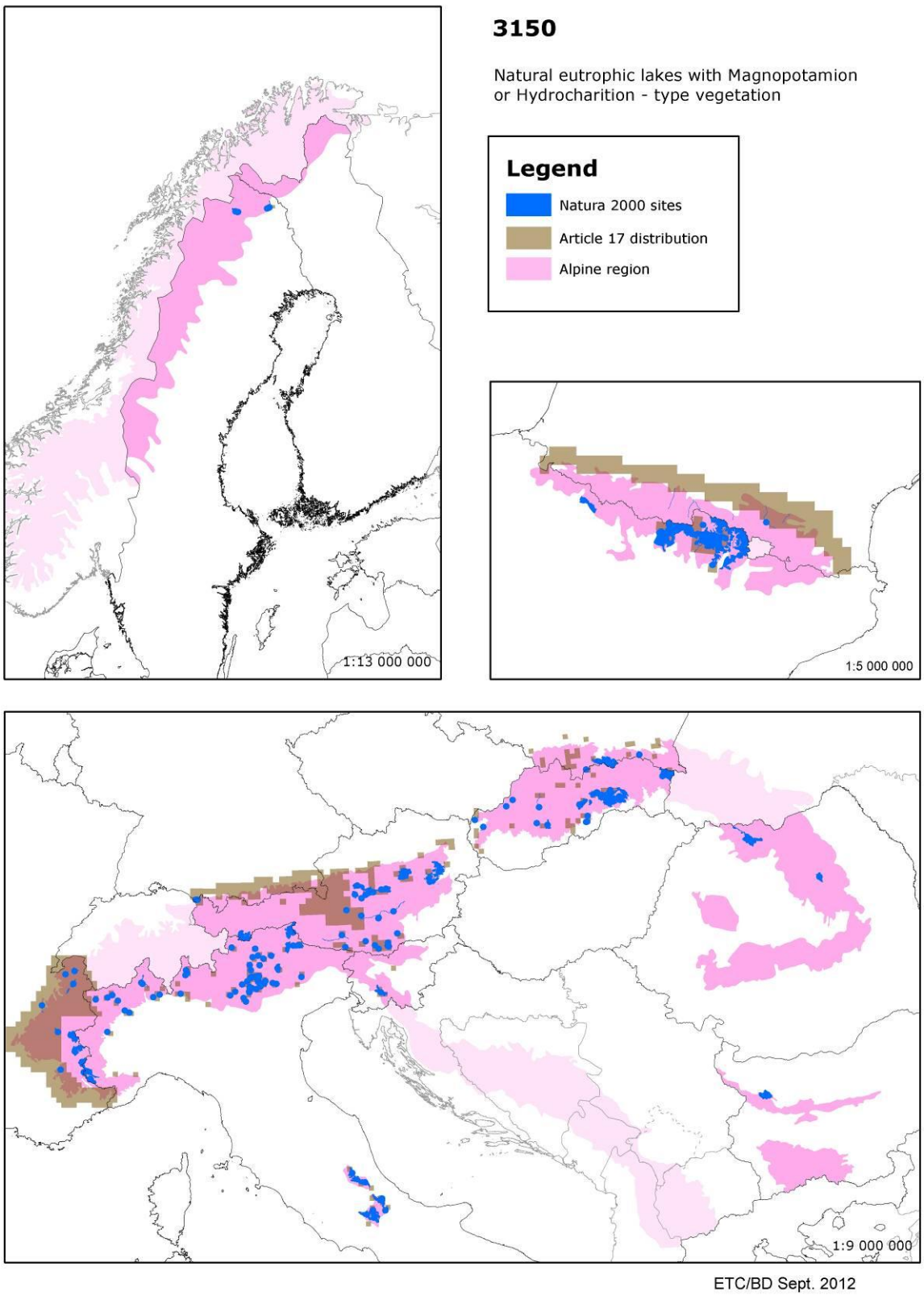
According to the ETC/BD calculations 0-50% of the area of this habitat type are within SCIs. This means that potentially important part of the management needs of this habitat types occurs outside Natura 2000 network.

Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

	AT	BG	DE	ES	FR	IT	PL	RO	SE	SI	SK
Number of sites	23	1		9	10	63	2	2	2	1	13
Habitat area (ha)	755	360		740	1521	3516	7	545	472	304	158

The figures include all SCIs where the habitat type is mentioned including sites coded as D.

Map of SCIs proposed for Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation& Article 17 distribution



2.3. 3220 - Alpine rivers and the herbaceous vegetation along their banks

Habitats Manual (2007) Extract

The habitat has 2 subtypes: 24.221 -Open assemblages of herbaceous or suffrutescent pioneering plants, rich in alpine species, colonising gravel beds of streams with an alpine, summer-high, flow regime, formed in northern boreal and lower Arctic mountains, hills and sometimes lowlands, as well as in the alpine and subalpine zones of higher, glaciated, mountains of more southern regions, sometimes with abyssal stations at lower altitudes (*Epilobion fleischeri* p.). 24.222 - Open or closed assemblages of herbaceous or suffrutescent pioneering plants, colonising, within the montane or sub-montane levels, gravel beds of streams with an alpine, summer-high, flow regime, born in high mountains (*Epilobion fleischeri* p., *Calamagrostion pseudophragmitis*).

This habitat includes rivers in the Alps and other high mountains where the banks are dominated by herbaceous plants rather than trees or scrubs. Although typical of the Alpine biogeographical region it is also reported from the Boreal, Continental, Macaronesian and Mediterranean regions.

In the Alps, where some 98% of this habitat occurs within the European Union, the habitat is assessed as 'unfavourable-inadequate' both overall and for all four parameters. This covers a wide range of variation, from 'unfavourable-bad' in Austria and Slovenia to 'favourable' in Italy and in the Finnish-Swedish subregion.

The habitat is also assessed as 'favourable ' in the Boreal region giving a clear difference in conservation status between north and central/southern Europe , it is also 'favourable ' in Macaronesia where this is a rare habitat and only in Portugal. In the Continental region the assessment is 'unfavourable-bad' overall and for all parameters except structure and function' which is unknown but unlikely to favourable given the reported threats and pressures which are mostly linked to human impact such as river engineering. In both the Atlantic and Mediterranean regions where the habitat is only reported by Spain the assessment is 'unknown' for all parameters. Better information required, especially from Spain.

Conservation status (CS) assessed at the Alpine region and MS level

N2K code	Habitat name		AT	DE	FI	FR	IT	PL	SE	SI	SK	REGION
3220	Alpine rivers and the herbaceous vegetation along their banks	range	U2	U1[9]	FV	U1	FV	FV	FV	FV	XX	U1
		area	U2	U1	FV	U1	FV	U1	FV	U1	XX	U1
		structure	XX	U1	FV	U1	XX	FV	FV	U2	U1	U1
		future	U1	U1	FV	U1	FV	XX	FV	U2	XX	U1
		overall	U2	U1	FV	U1	FV	U1	FV	U2	U1	U1

The overall assessment in Alpine region is "unfavourable - inadequate", because each parameter was assessed in this category by at least 3 countries, including France with weight 21.4%. The assessment of each parameter reached quite high (>60%) weight for conclusion "favourable" and 3 countries (FI, IT, SE) assessed the overall status in their territories as "favourable". AT and SI have final assessment "unfavourable - bad". The Polish NGOs suggest that Structure & function is not favourable in Poland due to gravel extraction and hydroelectric schemes and that future prospects are unlikely to be favourable (reported as unknown). The reported threats and pressures are mostly linked to human impact such as river engineering. Better information required Summary sheet of the online report on Article 17 of the Habitats Directive).

This habitat type and following habitats of running waters 3230 and 3240 have many common features and we report them here. Rivers and riverine landscapes are significantly shaped by recurrent natural disturbances. These dynamic processes initiate a complex mosaic of habitats resulting in a remarkable

[9] According to the current draft Art. 17 report: FV/U1/U1/U1

high diversity of aquatic, amphibious and terrestrial organisms linked to these aquatic systems. Without such natural disturbances associated with a decline of riverine landscape area, habitat unification and species loss in flora and fauna can be observed in river systems. Diversity in ecological niches within the riverine landscape has decreased along many running waters, mainly caused by man-made alterations in hydrology, sediment load and floodplain extent (Kudrnovsky).

Lack of natural river dynamics prevents necessary natural disturbance. The presence of floods ensures breaking of the vegetation succession, it rejuvenates vegetation and creates mosaic of different succession stages and forms, reflected also as 3220-3230-3240–(91E0) habitats. However, when there is often a lack of flooding, they occur rarely. Regular flooding may still occur in a limited area, but irregular widely spaced flooding is often missing. Vegetation thus keeps developing, accumulating organic material and producing denser stands. Butterfly or grasshopper species characteristic for early stages of the succession may disappear as a consequence.

Species associated with this habitat and their CS at the Alpine region and MS level[10]

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1105	*Hucho hucho*	Fish	range	U2	XX							FV	XX	U2
			population	U2	XX							U1	XX	U2
			habitat	U2	XX							U1	XX	U2
			future	U2	XX							U1	XX	U2
			overall	U2	XX[11]							U1	XX	U2
1114	*Rutilus pigus*	Fish	range	U2					U1			FV	XX	U1
			population	U2					U1			U1	XX	U1
			habitat	U2					XX			U1	XX	U1
			future	U2					U1			U1	XX	U1
			overall	U2					U1			U1	XX	U1
1122	*Gobio uranoscopus*	Fish	range	U2								XX	XX	U2
			population	U2								XX	XX	U2
			habitat	U2								XX	XX	U2
			future	U2								U1	XX	U2
			overall	U2								U1	XX	U2
1131	*Leuciscus souffia*	Fish	range	U2				U1	FV			FV		U2
			population	U2				U1	FV			XX		U2
			habitat	U2				U1	XX			XX		U2
			future	U2				U1	FV			U1		U2
			overall	U2				U1	FV			U1		U2
1137	*Barbus plebejus*	Fish	range			XX			U1			FV		U1
			population			XX			U1			U1		U1
			habitat			XX			XX			U1		XX
			future			XX			U1			U1		U1
			overall			XX			U1			U1		U1
1138	*Barbus meridionalis*	Fish	range			XX		U1	U1	U1		FV	XX	U1
			population			XX		U1	U1	U2		XX	XX	U2
			habitat			XX		U1	XX	U1		U1	XX	U1
			future			XX		U1	U1	U1		U1	XX	U1
			overall			XX		U1	U1	U2		U1	XX	U2
1160	*Zingel streber*	Fish	range	U2								FV	XX	U2
			population	U2								XX	XX	U2
			habitat	U2								U1	XX	U2
			future	U2								U1	XX	U2
			overall	U2								U1	XX	U2
1545	*Trifolium saxatile*	Vascular plants	range	XX				FV	FV					XX
			population	XX				FV	FV					XX
			habitat	XX				FV	XX					XX
			future	U1				U1	FV					U1
			overall	U1				U1	FV					U1
2511	*Gobio kessleri*	Fish	range							FV		FV	XX	XX
			population							FV		XX	XX	XX
			habitat							FV		XX	XX	XX
			future							FV		XX	XX	XX
			overall							FV		XX	XX	XX

[10] This list could/should also include *Cottus gobio* and *Thymallus thymallus* (Rehklau).
[11] According to the current draft Art. 17 report: FV/U2/U1/U1

Several characteristic and threatened butterfly and grasshopper species need habitat characteristics that are not reflected by annex I habitats, they may thus occur in habitats 3220, 3230, 3240 and others. Typical for early succession open gravel areas are e.g. the grasshoppers Bryodema tuberculata, Tetrix tuerki, with a bit more herb vegetation Psophus stridulus and the butterflies Coenonympha glycerion, Plebejus idas, Polyommatus baton (extremely rare and endangered) and with shrub vegetation the annex IV species Lopinga achine (also under a light tree cover) and Coenonympha hero. For all these species vegetation cover and density altering small-scale temperature and sun exposure is more important than habitat type after annex I. For some of them elevated air humidity, low nutrient level, and food-plant availability is important.

Main pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Alpine rivers and the herbaceous vegetation along their banks	*Hucho hucho*	*Rutilus pigus*	*Gobio uranoscopus*	*Leuciscus souffia*
Modification of hydrographic functioning	x				

Pressure description (2nd level)	*Barbus plebejus*	*Barbus meridionalis*	*Zingel streber*	*Trifolium saxatile*	*Gobio kessleri*
Modification of hydrographic functioning	x	x			x

Main threats on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Threats description (2nd level)	Alpine rivers and the herbaceous vegetation along their banks	*Hucho hucho*	*Rutilus pigus*	*Gobio uranoscopus*	*Leuciscus souffia*
Sand and gravel extraction	x				
Modification of hydrographic functioning	x		x	x	x

Threats description (2nd level)	*Barbus plebejus*	*Barbus meridionalis*	*Zingel streber*	*Trifolium saxatile*	*Gobio kessleri*
Sand and gravel extraction					
Modification of hydrographic functioning			x	x	

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	J02.06.06 Surface water abstractions by hydro-energy			1							1		
2)	J02.04.06 Lack of flooding										1		
3)	H01.05 Diffuse pollution to surface waters due to agricultural and forestry activities - forestry										1		
4)	J02.05 Modification of hydrographic functioning, general	1		2			2		1		1		
5)	H01.05 Diffuse pollution to surface waters due to agricultural and forestry activities - agriculture										1		
6)	C01.01 Sand and gravel extraction	1		1			3		2				
7)	J02.05.02 Modifying structures of inland water courses	1		1			1						
8)	I01 Invasive non-native species	1					2						
9)	A08 Fertilisation						1				1		
10)	B02.02 Forestry clearance										1		
11)	B05 Use of fertilizers (forestry)										1		
12)	J03.01 Reduction or loss of specific habitat features	1											
13)	J03.02 Anthropogenic reduction of habitat connectivity	1											
14)	J03.03 Reduction, lack or prevention of erosion			1					1				

15)	J02.12.02 Dykes and flooding defence in inland water systems								1				
16)	J02.04 Flooding modifications			2									
17)	K02 Biocenotic evolution, succession			3									
18)	J02.05.05 small hydropower projects, weirs	1		1									
19)	Outdoor sports and leisure activities, recreational activities (G01)	1		1									
20)	No threat or pressure					1							

Habitat Impacts: The modification of the water regime dynamics and river functioning and the modifications of the structures of river courses represent the commonly reported threats and pressures across countries. **Sweden:** A large part of Swedish watercourses are physically affected by earlier anthropogenic activities such as waterlogging, hydropower (mills and other small dams) or other modification of structures, e.g. canalisation. Rivers in the mountain areas are the least affected. While, in the forest landscape water logging and forestry are the most dominating pressures while agricultural leakage, canalisation and watercourse management (vegetation, banks and sediments) are the dominating pressure in the agricultural landscape. Faunal barriers e.g. dams inhibits dispersal of organisms both up- and downstream (von Wachenfeldt). The dam facilities building downstream is considered as important obstacle for the river fauna. Dam construction acts as barrier for fauna and inhibits organisms reaching the smaller rivers upstream. Small-scale hydropower (a recent interest) create faunal barriers at site in the rivers as well. The natural flood regimes are usually altered which adversely affects vegetation because of alteration in the deposition and transport of sediments. The regular removal of sediments and vegetation affect the habitat as well. The forestry practices significantly influence the habitat as well, namely by the logging and driving of heavy vehicles near to rivers; the transport of sediments and metals, and fertilizers. Forestry can increase leaching of organic matter, nutrients and metals due to altered runoff and groundwater tables from harvesting of the forest. Even tracks from vehicles act as conduits for transport enhancing release of particle bound metals. Fertilization increases the risk of leaching of nutrients. The influence of forestry upon the river is strongly dependent upon the "protection zone" i.e. the zone between the forest and the water where no cutting should take place. Agriculture and livestock increase leakage of nutrients, sediments and pesticides (von Wachenfeldt). **Germany:** Threats are connected: lack of natural river dynamics prevents necessary natural disturbances, especially lack of flooding that rarely occurs. Regular flooding may still occur in a limited area, but irregular widely spaced flooding is missing. Vegetation in latter parts keeps developing, accumulating organic material and producing denser vegetation (Dolek). Structures of the water courses and bedload transport often have been modified for security reasons and hydroenergy production: bedload is hold back in the more remote upper parts of the watercourses; the lower parts are often completely modified by embankments and dykes in densely built up valleys. In the latter the removal of the remaining bedload (gravel, dead wood) is also necessary to reduce flood risks (Rehklau). In many cases transversal structures are even found in the upper stream regions (Ammergebirge, Estergebirge, Halblech-area). They prohibit the natural morphodynamics and the delivery of pebbles and gravel. Subsequent delivery of gravel from the river banks and the river bed of torrents is often hardly limited. In some cases the composition of pebbles and gravel is disturbed because gravel is excavated for construction purposes. The amount of excavated material differs, but leads to a significant lack of bed load. In general excavation of gravel on a small scale is quite common as gravel is needed as indispensable construction material (e.g. Ammergebirge). Another reason for the excavation of gravel is the maintenance of reservoirs for hydropower plants (e.g. Halblech, Isar: Krüner Wehr, Finzbach). In some cases (Krüner Wehr/weir) the extraction of material produces a change in the composition of the bed load. As pebbles and gravel are removed, only sand and clay components are left. Willow shrub formations can easily develop on those sandy soils and fix the river bed and banks permanently (Zehm and Riehl). Succession processes lead just "one way" from gravel bars to willow shrubs, from Salix elaeagnos shrubs to other willow species showing less dynamic conditions, finally to forest types no more typical for alluvial conditions (Rehklau). These threats lead to a dramatic loss of typical organisms of the habitats like Chondrilla chondrilloides (nearly extinct), Bryodemella tuberculata, Tetrix tuerki, Formica selysi, butterflies, birds such as Charadrius dubius) and any fish (lack of water, migration barriers) (Zehm and Riehl, Rehklau). A lot of watercourses - both those already heavily modified in the way described above and others still being near natural from the point of view of structures – are heavily disturbed by water abstraction and/or dammed for hydropower plants. Others and often even headwaters are impacted by water abstraction for artificial snowing in skiing resorts. This leads to a loss of aquatic and floodplain habitats and a signification deterioration of the not directly modified parts. There is a loss of typical pioneer plants and an impoverishment of the remaining vegetation. The remaining natural or near natural watercourses may be impacted by leisure activities or invasive alien plants in the lower parts, too (Rehklau). **France:** Many alpine streams and rivers (mostly in the

northern French Alps) are managed to reduce flooding occurrences (natural hydro-dynamic functioning) by dams, canalisation, etc. (Mikolajczak). Sand and gravel extraction alters a water flow and result in difficulties in keeping a natural dynamics. The water flow is stronger (and thus more erosive) in the central floodplain. The banks of water courses are usually artificialized, with no native plants or seed bank. Both the modification of structures of inland water courses and sand and gravel extraction help to promote invasive non-native species. The invasive species often impoverish the native communities and the loss in floodplain biodiversity may be very high (Dentant). It was reported impact of sand and gravel quarries on *Trifolium saxatile* (species included in the IUCN red list). The hydroelectric installations have local impact on *Barbus meridionalis*) (FNE). In the deep valleys (low altitude), sand and pebble beaches along alpine streams and rivers are frequently colonised by invasive non-native species like *Reynoutria* spp. which displace natural plant communities (Mikolajczak). The habitat pollution from agriculture represents a common problem in several countries. The agriculture and livestock increase erosion of sediment, fertilisers and pesticides. Especially when the field crops are close enough to main water course, the pollution linked to excess of nitrogen can be striking. The river banks get richer in nitrophilous species the native species of floodplain may disappear and be replaced by alien invasive species (Dentant). Sand and gravels quarries are numerous along alpine streams and rivers (Mikolajczak).
Poland: The habitats 3220-3230-3240 should not be considered as stable patches, they represent dynamic complex of these habitats, being the part of dynamic river hydro-geo-ecosystem. Their best protection is the maintenance of natural processes creating habitats and modifying them, namely erosion process (supplying river with gravel), sediments transport process (without gravel transport barriers as dams), variation of water level and currents, including presence of high flows & water levels (floods), and finally sedimentation process. Each disturbance of these processes (e.g. preventing erosion by river embankment, river regulation, building dams stopping the gravel transport, gravel extraction from river, flood prevention and decrease of the floods frequency) disturbs dynamic process of creating gravel sediments and may threat habitats conservation status (Pawlaczyk). **Italy.** In the Italian Alps there are lots of structures to produce energy that use water. Especially in the alpine and subalpine belt, the amount of water used for this purpose is huge. The water is reintroduced in the river some kilometres further downhill. So the alpine and subalpine wet areas are most affected by this threat. One of the most impacted species in this context could be Parnassius phoebus. In **Finland** the habitat occurs mostly within Natura 2000 areas in the alpine region (Natura 2000 coverage ca. 90% of the region in Finland). There are no significant pressures or threats within or outside Natura 2000 areas in the Finnish alpine region (Ilmonen).

Management Requirements Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1)	Fixing ecologically sufficient residuals flows at any by passed river section			1									
1.2)	Open waterways for fish and other species	1					1				1		
2)	River restoration, creation of areas for flooding	1							1		1		
3)	Improved agricultural and forestry management										1		
4.1)	Management of streams	1									1		
4.2)	Restoration of natural hydro-dynamic functioning			2			1						
6)	Avoiding/control/management of all excavations	1		1			1		1				
7.1)	Remove buildings, facilities and usage rights from the flood plains to reduce high water protection efforts			1									
7.2)	Gravel management for hydropower plants			1									
8.1)	To limit spreading of invasive species in colonization front						1						
8.2)	Invasive alien plants control (in the upper parts of the watercourses)	1		1									
9)	Reduction or exclusion of fertilisation at borders of rivers						1						
12)	Large extent of natural riverine landscape	1											
14)	Continuous gravel delivering								1				
17.1)	Management measures slowing the natural succession of disturbed flowing waters			1									
17.2)	Supplementary. alternative measures, e.g. grazing, shrub and tree removal, surface alterations (removal of organic material)			1									
	Establishment of protected areas	1				1							

	Species reintroduction	1											
	Regulating/management exploitation of natural resources on land	1											
	Restoring/improving water quality	1											

Additional information. Sweden: In general, more consideration has to be taken to smaller rivers. Currently, economic reasons are mostly often prioritized over ecological values. Thus, conservation needs and reasons have to be taken into account. Open waterways for fish and other species are needed in most rivers and streams affected by old or recent damming activities. Either these barriers are removed or faunal passages are constructed to allow migration of organisms. This needs to be taken into account in case of construction of new (small-scale) hydropower facilities. Areas for flooding are needed in most river basins. Natural oscillations in water levels are not fully accepted and the understanding of natural waters dynamics is not understood. Restoration of bottom and shore is needed in areas of intensive water logging, damming and/or in areas of importance to threatened or valuable species. The restoration needs are understood, but other interests often dominate, juridical instruments are weak or lack of economic resources. One general conservation requirement is that the forestry and agriculture need to significantly improve the amount of consideration towards watercourses in the general landscape. Functional buffer strips, no logging or driving close to the streams etc. Conservation needs are sufficiently understood (in theory) but mostly not admitted. The needs are not prioritized because of economic reasons (von Wachenfeldt). **France**: To promote natural flood plain with natural water flow. To promote building out of the floodplain (Dentant) Natural hydro-dynamic functioning: high flow of water and sediments with frequent soil and plant communities renewals are also important (Mikolajczak). To avoid sand and gravel extraction in remaining natural rivers. At least in border of rivers, to promote cultivation requiring few fertilisation or any chemicals. To limit spreading of invasive non-native species in colonization front (Dentant). **Poland:** Occasional floods remodelling gravel sediments and vegetation, occasionally breaking vegetation succession. Erosion providing gravel to river and gravel transport by the river, without extraction, is necessary (Pawlaczyk). **Germany:** It is crucial to reintroduce a natural drift of pebbles and gravel bed load. A continuous natural dynamic reduces problems caused by a lack of bed load and slows down the velocity of gravel bank succession (Zehm and Riehl). Lack of bedload can be reduced by transforming torrent check dams in at least partly permeable check dams, restoration of bedload continuity at barrages, reintroduction of bed load material in non-lower river sections (Rehklau). For restoration of the natural dynamics a deconstruction of transverse and longitudinal structures is necessary. To reduce high water protection efforts (hampering the natural dynamics) it is necessary to take buildings, facilities and usage rights out of the flood plains. In addition hydro-engineering solutions are important to re-launch natural morphodynamics (Zehm and Riehl). Natural water dynamics should be restored under consideration of present bottlenecks in habitats, species distribution and habitat connectivity (not well reflected re-introduction of flooding regimes may destroy last remnants of important habitats, before new habitats are created). If the restoration of natural dynamics is not possible, alternatives should be developed and applied, e.g. grazing, shrub and tree removal, surface alterations (removal of organic material) (Dolek). Relocation of dykes and river embankments where ever possible. Implement regulations for common use of the floodplain for leisure activities in cooperation with land users, landowners, associations and NGOS; site managers for communication, setting up information centres or information points. To remove invasive alien plants in the upper parts of the watercourses (Rehklau) and the management measures slowing the natural succession of disturbed flowing waters (Zehm and Riehl).

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1)	A) Barriers registration; B) Identification of monitoring needs;										1		
1.2)	Approval procedure of new facilities						1				1		
1.3)	Fixing ecologically sufficient residuals flows at any by passed river section			1									
2)	(Drainage) ditches removal										1		
3)	Information on minimizing effects of forestry										1		
4.1)	River restoration	1		1							1		
4.2)	Maintenance and preservation of natural regime of runoff and sediment flow	1		1			1		1				
6.1)	Administrative permit needed for sand and gravel excavation						1		1				

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
6.2	Monitoring the impact of mines						1						
7.1)	Maintenance and preservation of natural riverine landscape along a longer river distance	1					1						
7.2	River restoration			1									
8)	Invasive species removal and control						3						
12)	Maintenance and preservation of the extent of natural riverine landscape	1											
17)	Measures to reduce the succession (manual measures, grazing)			1									

Additional information. Sweden: The habitat type in Alpine region was reported to have favourable conservation status in 2007. In addition the threats are not as impendent as compared to the Boreal and Continental region. Mainly because of that the anthropogenic pressures are lower in the Alpine region when it comes to agriculture, forestry, small scale hydropower and historical morphological alterations. Thus, dam facilities located in the tributaries of the larger rivers (e.g., 3210) may influence the dispersal of organisms upstream, inhibiting them to reach the smaller rivers. Information about dams is collected in a database creating an overview over existing dams. On regional level, some national administration boards have identified barriers for migrating species. There has also been a need to unravel what parameters and species should be monitored. New facilities have to be approved according to actual legislation. A project lead by "Miljösamverkan Sverige" examined both the legal conditions and suitable parameters to determine the effects of dams upon biota. Restoration and classification of rivers, because of logging activities a century ago, is done on regional level and local levels. In the alpine region, rivers situated in areas with forestry are mainly affected. There is information about forestry and effects on natural waters and what measures are needed to minimize negative effects (E.g., WWF, and National Board of Forestry). Information of the importance of buffer zones and ditches are important. Filling old ditches and not giving permit to clear existing ditches (von Wachenfeldt). **Germany:** Fixing an ecologically sufficient residual flow in Halblech torrent catchment, Ammergebirge Mountains, County of Ostallgäu. There are some efforts to work out concepts for gravel management. Torrent check dams are modified continuously when being rebuilt or repaired all over the Bavarian Alps; example of bigger dimensions: Lech river at border to Austria. Reintroduction of bed load material has begun continuously where ever possible when taking measures for river maintenance, e.g. Rivers Iller, Saalach, Wertach and Upper Isar. The bed of river Iller has been widened between Oberstdorf and Immenstadt, County of Oberallgäu: the main goal was flood protection but also new riverine habitats have been created; river embankments of Tiroler Achen partly removed near Schleching, County of Traunstein (Rehklau). There are some efforts to work out concepts for gravel management. In a long term the water authorities in Bavaria are on the way to empower the natural dynamics in the upper stream-regions. In particular cases measures are taken to reduce the succession of disturbed habitats (manual measures, grazing) (Zehm and Riehl). **Poland**: In many cases, flood relief works are implemented without any environmental assessment and without habitat assessment. Changing the river geo-ecosystem must influence also a gravel sediments and habitats far downstream. Small gravel extractions are often permitted without proper assessment (Pawlaczyk). **France:** Sand and gravel extraction is subject to administrative permit, but with weak effect. Permits are more or less always granted, the same is valid for modifying structures of inland water courses (Dentant). Preservation of river corridors (riparian corridors, hydraulic annex). Monitoring the impact of mines (example for Pennaroya mines in Pyrénées). Management measures for controlling invasive non-native species are carried out locally. The management may be locally efficient (e.g. invasive non-native species control) but it often lies beyond the habitat location and depends on specific policies about stream management (risk management, hydro-energy production, extraction of natural resources, …) (Mikolajczak).

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1) 6)	Lack of resources						1				1		
1.2)	Not suitable approval procedures for new installations										1		
4.1)	Not sufficient collaboration: authorities and owners						1				1		
4.2)	No or low awareness about river dynamics	1					1		1				
4.3)	Conflict of different policies	1		2									
4.4)	Still ongoing pressure to alter river dynamics: flood			3									

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	prevention, to raise production of renewable energies - hydro-electric power												
4.5)	Difficulties re-introducing river dynamics			1									
4.6)	Buildings, facilities and usage rights hamper the natural dynamics of the flood plains. E.g. Krün-Wallgau: grazing rights, withdrawal of drinking water, flood protection)			1									
4.7)	No efforts to reintroduce or enhance natural dynamics - in spite of existence of calculated models			1									
6)	Inadequate supervision of the rivers			1					2				
7.1)	Non cooperating stakeholders	1		1			1						
7.2)	Security requirements due to possible increasing natural disaster (flooding/climate change debris flows, landslides) in built up and populated area.			1									
7.3	Unknown effects of new technologies of ‚ecological' hydropower plants			1									
7.4)	Land ownership, long lasting water rights			1									
8.1)	Efficient control of invasive non-native species						1						
8.2)	Enormous efforts necessary for being successful in whole catchment areas, complete solution almost impossible			1									
9.1)	Lack of knowledge transfer to practitioners and politicians										1		
9.2)	Economic reasons to use fertilisers						1						
13)	Unbalanced interpretation of policies/strategies	1											

Additional information. Sweden: In general, there is a lack of resources at both practical and administrational levels. When it comes to hydropower there is often knowledge about what measures are needed. However, lack of resources and personnel at legal administration levels, resulting in that the rate of restoration is slow. Additionally, when measures have been taken, low resources are invested to follow up whether the measures were successful. Often many installations have permits which are valid for very long time periods. New installations are to be approved according to new legislation and consideration should be taken to species and habitat. There is knowledge about the importance of buffer zones adjacent to forestry and agriculture. However, this knowledge is often neglected or unknown to practitioners. There is need for a stronger collaboration between authorities and between authorities and land owners (von Wachenfeldt). **France:** In respect to the sand and gravel extractions, the economic argument is used: 'where can required sand and gravel for road and building be extracted?' Modifying structures of inland water courses are often built due to ignorance of local politicians about natural dynamics. The water pollution by agriculture is influenced by the strong industrial lobby which promotes large use of fertilisation (Dentant). Trade-offs among stakeholders' needs should be achieved (non-cooperating stakeholders, lack of policy). How to achieve an efficient control of invasive non-native species is still an important issue (lack of knowledge, lack of skills) (Mikolajczak). **Poland:** Necessity of assessment procedures is not clearly visible and not well known, because normally targeted habitat may be far away from impact source (Pawlaczyk). **Germany:** As the activities of the water authorities focus on the specified targets of the water framework directive the requirements of Natura 2000 habitats are not enough taken into account. E.g. the continuous flow of the Isar supports the succession behind the Krüner Wehr. In spite of calculated models (expertise of Prof. Dr. Reich; Isar) there are no efforts to reintroduce or enhance natural dynamics. Land ownership is not sufficient for natural dynamics and the relocation of the river banks, the long lasting rights for using water at hydropower plants. In general land or usage rights are not available for management measures. Some small scale excavations of gravel in the upper course areas are not legal and are not punished by local authorities (Zehm and Riehl). Land-owners or landusers are sometimes non-cooperating. Mainly security requirements due to possible increasing natural disaster (flooding/climate change debris flows, landslides) in built up and populated area. Need for existing and even new hydropower plants for producing electricity from renewal sources. High pressure for all kind of leisure activities especially at the edge of the Alps being near to big cities both added by weekend recreation and tourism. Enourmous efforts for invasive species removal is necessary for being successful in whole catchment areas, complete solution is almost impossible (Rehklau). **Austria:** The utilization of running waters is intensifying on both the European and national levels. This process is increasingly affecting aquatic ecosystems and it is threatening those ecosystems of running water bodies which are still intact although they are already substantially reduced in number and size. Directive 2009/28/EC for instance establishes a common framework for the production and

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
promotion of energy from renewable sources. This implies a continuation of a forced development of hydro power. Beside the energy demand, agriculture (e.g. irrigation, land use), tourism (e.g. technical snow production), natural hazard (e.g. protection measures) are further driving forces with impact on river systems (Kudrnovsky).												

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Solutions at catchment scale										1		
4.1)	Policy making, compliance with legislation						1		1		1		
4.2)	Education and awareness raising	1		1			1		1		1		
4.3)	Fund-raising										1		
4.4)	Including geomorphological processes to quality elements assessed								1				
4.5)	Intensive bed load management			1									
7.1)	Removal of disturbing and hammering activities and uses out of the flood plains			1									
7.2)	Sustainable development	1											
7.3)	Finding suitable solutions to serve the water rights and to regenerate the good status for habitats at same time			1									
9)	Polluters pay principle										1		
12.1)	Influencing policies	1											
12.2) 13.1)	Preserving the remnants of natural rivers with natural processes.			1					1				
13.2)	Use 'free migration & erosion corridor concept' as a tool of rivers management.								1				
	River restoration			1					1				
	Habitat monitoring						1						

Additional information. Sweden: There is a need for dealing with these issues on a catchment scale level, addressing both water and adjacent terrestrial ground. Education, training, increase the awareness, inform and influence stakeholders (von Wachenfeldt). **France:** To promote, in spatial plans the avoidance of the river bed. To set up documents explaining the natural dynamics of a stream flow, and the need to preserve it (Dentant). Habitat monitoring (namely photographic monitoring with permanent plots, linear) (Mikolajczak). **Poland:** Detail application of habitat assessment procedure (HD Art 6.3) and EIA procedure, especially for all flood relief works. Building awareness for necessity and proper methods of impact assessment. Including geomorphological processes, as erosion and sediments transport, not only presence of particular structures and biological elements, to quality elements assessed as a part of river ecological status assessment for the WFD purposes (Pawlaczyk). **Germany:** Finding suitable solutions to serve the water rights and to regenerate the good status for habitats at same time (Zehm and Riehl). For habitats in good status, awareness of negative developments needs to be raised to prevent new negative changes and give alternative management (development and application) a higher priority (Dolek). Realisation of the measures described above (management needs, management applied) as far as possible all over the country in close and improving cooperation between the water and conservation authorities, communities, stakeholders, land users and landowners (Rehklau).

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Typha minima is a plant that needs natural disturbances to reproduce and to spread. In dramatically modified river bed due to human activities, populations of this species may turn to be in 'dying' sites that is with no longer natural dynamics. These populations should be sampled and introduce in habitat with remaining natural dynamics (Dentant).						✓						
For *Trifolium saxatile* grazing by domestic herds is an efficient measure.						✓						
Species conservation measures and translocation of typical species like *Myricaria germanica, Chondrilla chondrilloides, Bryodemella tuberculata, Tetrix tuerki, Formica selysi* and others (Rehklau, Zehm and Riehl).			✓									
Galemys pyrenaicus, improve the knowledge about its species habitat and preserve it (Mikolajczak)						✓						
Several characteristic and threatened butterfly and grasshopper			✓									

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
species: grasshoppers *Bryodema tuberculata, Tetrix tuerki,* with a bit more herb vegetation *Psophus stridulus* and the butterflies *Coenonympha glycerion, Plebejus idas, Polyommatus baton* (extremely rare and endangered). For all these species vegetation cover and density altering small-scale temperature and sun exposure is important. For some of them elevated air humidity, low nutrient level, and food-plant availability is important. Named species are examples, the habitat complex is potentially rich in butterfly species (Dolek).												

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Case Studies Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

Other information

According to the ETC/BD calculations 0-50% of the area of this habitat type are within SCIs. This means that potentially important part of the management needs of this habitat types occurs outside Natura 2000 network.

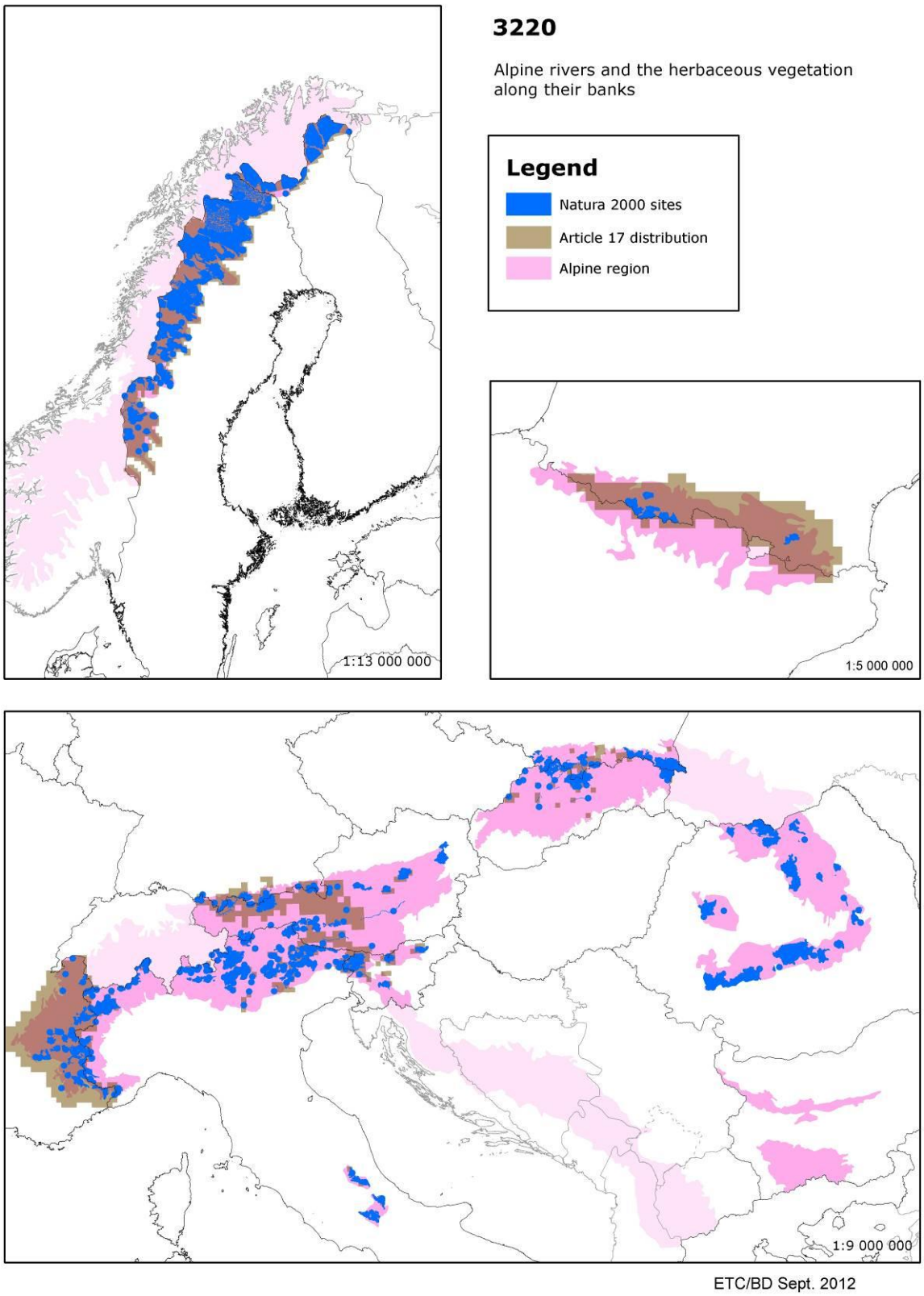
Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

	AT	DE	FI	FR	IT	PL	RO	SE	SI	SK
Number of sites	25	10[12]	11	34	104	14	29	80	7	18
Habitat area (ha)	4454	213	11301	4694	6173	244	13890	34258	1416	60

The figures include all SCIs where the habitat type is mentioned including sites coded as D.

[12] 11 according to Rehklau.

Map of SCIs proposed for Alpine rivers and the herbaceous vegetation along their banks & Article 17 distribution



2.4. 3230 - Alpine rivers and their ligneous vegetation with *Myricaria germanica*

Habitats Manual (2007) Extract

Communities of low shrubby pioneers invading the herbaceous formations of 24.221 and 24.222 on gravel deposits rich in fine silt, of mountain and northern boreal streams with an alpine, summer-high, flow regime. *Myricaria germanica* and *Salix* spp. are characteristic (*Salici-Myricarietum*).

Myricaria germanica, an endangered indicator species of alpine rivers, reflects riverine landscape diversity. German tamarisk (*Myricaria germanica*) occurs along rivers in the Alps and other mountains growing on silt rich gravel deposits. These deposits are usually dynamic, often being destroyed and recreated in floods.

Assessed as 'unfavourable-bad' in all three regions. Only in Finland is the habitat considered 'favourable' (although the species itself is noted as 'vulnerable' on the 2001 Finnish Red list). Elsewhere 'area' is always assessed as unfavourable except in Spain where it is unknown and 'unfavourable-bad' in the countries where the habitat is most wide spread. This is due to habitat destruction, often resulting from river engineering, which in many cases alters the natural flood regime. Several countries report one or more parameters as 'unknown' and better information is required, particularly from Spain.

Conservation status (CS) assessed at the Alpine region and MS level

N2K code	Habitat name		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
3230	Alpine rivers and their ligneous vegetation with *Myricaria germanica*	range	U2	FV	XX	FV	U1	FV	U1		U1	U1	U1
		area	U2	U2	XX	FV	U2	U1	U1		U1	U1	U2
		structure	XX	U1	XX	FV	U1	XX	FV		U1	FV	U1
		future	U1	U1	XX	FV	U2	FV	XX		U1	U1	U2
		overall	U2	U2	XX	FV	U2	U1	U1		U1	U1	U2

The overall assessment in Alpine region is "unfavourable - bad". The assessment of all parameters follows assessment of France although it is probably that the area (& range) have been overestimated in France compared to other countries. The decreasing trend in the habitat area is reported from 4 countries (DE, FR, PL, SI). Good situation is in FI that assessed all parameters as "favourable". However, according to the newest Finnish Red List *Myricaria germanica* is near threatened (NT), reason for that are threat posed by random factors; and population (or area of occupancy) which is extremely small (Pääkkö). Spain reported all parameters as "unknown". The Polish NGOs report that structure & function in Poland is not favourable due to gravel extraction & hydroelectric schemes and suggest that future prospects should be unfavourable rather than unknown. Main reported threats are habitat destruction, often resulting from river engineering, which in many cases alters the natural flood regime (Summary sheet of the online report on Article 17 of the Habitats Directive).

Species associated with this habitat and their CS at the Alpine region and MS level[13]

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1105	*Hucho hucho*	Fish	range	U2	XX							FV	XX	U2
			population	U2	XX							U1	XX	U2
			habitat	U2	XX							U1	XX	U2
			future	U2	XX							U1	XX	U2
			overall	U2	XX[14]							U1	XX	U2

Historically *Myricaria germanica* was common at almost any suitable site situated in (pre-)alpine rivers. Since a dramatic loss of suitable sites for this species along European rivers in mountain regions took

[13] This list could/should also include *Cottus gobio* and *Thymallus thymallus* (Rehklau).
[14] According to the current draft Art. 17 report: FV/U2/U1/U1

place in the last 150 years, the actual distribution of *M. germanica* is very fragmented and can be considered as restricted to rivers (stretches) with near-natural site conditions and dynamics. Therefore actual occurrences along the last near natural river (stretches) should be regarded as protected with high priority, including considering upstream processes, threats and pressures. Additionally *M. germanica* can be considered as a keystone/flagship species for riverine landscape diversity, hence the protection and permanent maintenance of such near natural river (stretches) facilitate other habitats and species of Community interest (Habitat and Bird Directive) (Kudrnovsky).

Several characteristic and threatened butterfly and grasshopper species need habitat characteristics that are not reflected by annex I habitats, they may thus occur in habitats 3220, 3230, 3240 and others. Typical for early succession open gravel areas are e.g. the grasshoppers Bryodema tuberculata, Tetrix tuerki, with a bit more herb vegetation Psophus stridulus and the butterflies Coenonympha glycerion, Plebejus idas, Polyommatus baton (extremely rare and endangered) and with shrub vegetation the annex IV species Lopinga achine (also under a light tree cover) and Coenonympha hero. For all these species vegetation cover and density altering small-scale temperature and sun exposure is more important than habitat type after annex I. For some of them elevated air humidity, low nutrient level, and food-plant availability is important.

Main pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Alpine rivers and their ligneous vegetation with *Myricaria germanica*	*Hucho hucho*
Modification of hydrographic functioning	X	

Main threats on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Threats description (2nd level)	Alpine rivers and their ligneous vegetation with *Myricaria germanica*	*Hucho hucho*
Sand and gravel extraction	X	
Modification of hydrographic functioning	X	

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	C01.01 Sand and gravel extraction	1		1			3		1				
2)	J02.05.02 Modifying structures of inland water courses	1					1						
3)	I01 Invasive non-native species	1					2						
4)	A08 Fertilisation												
5)	J02.05 Modification of hydrographic functioning, general	1		1			2		2				
6)	J03.01 Reduction or loss of specific habitat features	2											
7)	J03.02 Anthropogenic reduction of habitat connectivity	1											
8)	J03.03 Reduction, lack or prevention of erosion			1					1				
9)	J02.12.01 Dykes and flooding defence in inland water systems								1				
10)	J02.04 Flooding modifications	1		2									
11)	K02 Biocenotic evolution, succession			2									
12)	J02.05.05 small hydropower projects, weirs	1											
13)	G01 Outdoor sports and leisure activities, recreational activities	1											

Habitat Impacts: Austria: The maintenance and preservation of natural river conditions is the key at sites with *M. germanica*. Otherwise the already fragmented actual distribution will worsen again. *Myricaria germanica*, an endangered indicator species of alpine rivers, reflects riverine landscape diversity. The most vulnerable part of the plant's life cycle is germination. The species has the capability to germinate immediately under suitable conditions, e.g. on wet sediment of newly created gravel bars with a high proportion of silty fine sand, but germination ability is limited after a few days. In Austria**,** the diversity in ecological niches within the riverine landscape has decreased along many running waters, mainly caused by man-made alterations in hydrology, sediment load and floodplain extent. Historically the species was common at almost any suitable site situated in (pre-)alpine rivers. The actual distribution of *M. germanica* is fragmented and can be considered as restricted to rivers

(stretches) with near-natural site conditions and dynamics (Kudrnovsky). In **France**, the river management that aims to reduce their natural hydro-dynamic functioning by dams, embankments, canalisation, etc. represents most important threat factor to the habitat type (Mikolajczak). In this way, the water flow is modified, it is stronger (and thus more erosive) in the central floodplain. The modified banks of water courses provides suitable habitat for alien invasive species, both the native plants and native seed bank disappear. Especially when the field crops are close enough to main water course, the pollution linked to excess of nitrogen can be striking. The river banks get richer in nitrophilous species the native species of floodplain may disappear and be replaced by alien invasive species. Sand and gravel extraction alters a water flow and result in difficulties in keeping a natural dynamics. The water flow is stronger (and thus more erosive) in the central floodplain. The banks of water courses are usually artificialized, with no native plants or seed bank. Both the modification of structures of inland water courses and sand and gravel extraction help to promote invasive non-native species. The invasive species often impoverish the native communities and the loss in floodplain biodiversity may be very high (Dentant). It was reported impact of sand and gravel quarries on *Trifolium saxatile* (species included in the IUCN red list). The hydroelectric installations have local impact on *Barbus meridionalis*) (FNE). In the deep valleys (low altitude), sand and pebble beaches along alpine streams and rivers are frequently colonised by invasive non-native species like *Reynoutria* spp. which displace natural plant communities. Sand and gravels quarries are numerous along alpine streams and rivers (Mikolajczak). **Germany:** Threats are connected: lack of natural river dynamics prevents necessary natural disturbances, especially lack of flooding that rarely occurs. Regular flooding may still occur in a limited area, but irregular widely spaced flooding is missing. Vegetation in latter parts keeps developing, accumulating organic material and producing denser vegetation (Dolek). Structures of the water courses and bedload transport often have been modified for security reasons and hydroenergy production: bedload is hold back in the more remote upper parts of the watercourses. In some cases the composition of pebbles and gravel is disturbed because gravel is excavated for construction purposes. The amount of excavated material differs, but leads to a significant lack of bed load. In general excavation of gravel on a small scale is quite common as gravel is needed as indispensable construction material. Another reason for the excavation of gravel is the maintenance of reservoirs for hydropower plants. In some cases the extraction of material produces a change in the composition of the bed load. As pebbles and gravel are removed, only sand and clay components are left. Willow shrub formations can easily develop on those sandy soils and fix the river bed and banks permanently(Zehm and Riehl). Succession processes lead just "one way" from gravel bars to willow shrubs, from *Salix elaeagnos* shrubs to other willow species showing less dynamic conditions, finally to forest types no more typical for alluvial conditions (Rehklau). These threats lead to a dramatic loss of typical organisms of the habitats like *Chondrilla chondrilloides* (nearly extinct), *Bryodemella tuberculata, Tetrix tuerki, Formica selys*i, butterflies, birds such as *Charadrius dubius*) and any fish (lack of water, migration barriers). A lot of watercourses - both those already heavily modified in the way described above and others still being near natural from the point of view of structures – are heavily disturbed by water abstraction and/or dammed for hydropower plants. Others and often even headwaters are impacted by water abstraction for artificial snowing in skiing resorts. This leads to a loss of aquatic and floodplain habitats and a signification deterioration of the not directly modified parts. There is a loss of typical pioneer plants and an impoverishment of the remaining vegetation. The remaining natural or near natural watercourses may be impacted by leisure activities or invasive alien plants in the lower parts, too (Rehklau). **Poland:** This habitat is part of dynamic river hydro-geo-ecosystem. Its best protection is the maintenance of natural processes creating habitats and modifying them, namely erosion process (supplying river with gravel), sediments transport process (without gravel transport barriers as dams), variation of water level and currents, including presence of high flows & water levels (floods), and finally sedimentation process. Each disturbance of these processes (e.g. preventing erosion by river embankment, river regulation, building dams stopping the gravel transport, gravel extraction from river, flood prevention and decrease of the floods frequency) disturbs dynamic process of creating gravel sediments and may threat habitats conservation status (Pawlaczyk). In **Finland** no threats or pressures are reported. Finland's habitat areas are a part of large range in Norway. Habitat 3230 is a pioneer plant community affected by flooding and erosion. Flooding, erosion and on the other hand vegetation succession cause natural changes in the occurrence of *Myricaria germanica*. The natural river dynamics of Pulmankijoki and Gálddašjohka are not threatened. Pulmankijoki and Gálddašjohka rivers and 2330 habitat are mainly in Natura 2000 areas, most of the area covered by habitat 3230 is managed by Metsähallitus, Natural Heritage Services (Pääkkö).

Management Requirements Identified by Country Experts

AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Avoid /control/management of all excavations	1		1			1		1				
2)	Open waterways for fish and other species						1						
3)	To limit spreading of invasive spercies in colonization front	1					1						
4)	Reduction or exclusion of fertilisation at borders of rivers						1						
5.1)	Management of streams	1											
5.2)	Restoration of river dynamics	1		1			1		1				
6,7)	Large extent of natural riverine landscape	1											
8)	Continuous gravel delivering								1				
11.1	Management measures slowing the natural succession of disturbed flowing waters			1									
11.2)	Supplementary. alternative measures, e.g. grazing, shrub and tree removal, surface alterations (removal of organic material)			1									
	Establishment of protected areas	1											
	Species reintroduction	1											
	Regulating/management exploitation of natural resources on land	1											
	Restoring/improving water quality	1											

Additional information. Poland: Occasional floods remodelling gravel sediments and vegetation, occasionally breaking vegetation succession. Erosion providing gravel to river and gravel transport by the river, without extraction, is necessary (Pawlaczyk). **France:** Natural hydro-dynamic functioning: high flow of water and sediments with frequent soil and plant communities renewals are also important (Mikolajczak). To promote natural flood plain with natural water flow. To promote building out of the floodplain. To avoid sand and gravel extraction in remaining natural rivers. At least in border of rivers, to promote cultivation requiring few fertilisation or any chemicals. To limit spreading of invasive non-native species in colonization front (Dentant). **Germany:** Natural water dynamics should be restored under consideration of present bottlenecks in habitats, species distribution and habitat connectivity (not well reflected re-introduction of flooding regimes may destroy last remnants of important habitats, before new habitats are created). If the restoration of natural dynamics is not possible, alternatives should be developed and applied, e.g. grazing, shrub and tree removal, surface alterations (removal of organic material) (Dolek). It is crucial to reintroduce a natural drift of pebbles and gravel bed load. A continuous natural dynamic reduces problems caused by a lack of bed load and slows down the velocity of gravel bank succession (Zehm and Riehl). Lack of bedload can be reduced by transforming torrent check dams in at least partly permeable check dams, restoration of bedload continuity at barrages, reintroduction of bed load material in non-lower river sections (Rehklau). For restoration of the natural dynamics a deconstruction of transverse and longitudinal structures is necessary. To reduce high water protection efforts (hampering the natural dynamics) it is necessary to take buildings, facilities and usage rights out of the flood plains. In addition hydro-engineering solutions are important to re-launch natural morphodynamics (Zehm and Riehl). Relocation of dykes and river embankments where ever possible. Implement regulations for common use of the floodplain for leisure activities in cooperation with land user, landowners, associations and NGOS; site managers for communication, setting up information centres or information points. To remove invasive alien plants in the upper parts of the watercourses (Rehklau).

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Administrative permit needed for sand and gravel excavation						1						
2.1)	Approval procedure of new facilities						1						
2.2)	Maintenance and preservation of natural riverine landscape along a longer river distance	1											
3)	Invasive species removal												
5.1)	River restoration	1		1									
5.2)	Maintenance and preservation of natural regime of runoff and sediment flow	1					1						
6)	Maintenance and preservation of the extent of natural	1					1						

	riverine landscape												
11)	Measures to reduce the succession (manual measures, grazing)			1									

Additional information. France: Sand and gravel extraction is subject to administrative permit, but with weak effect. Permits are more or less always granted, the same is valid for modifying structures of inland water courses (Dentant). Preservation of river corridors (riparian corridors, hydraulic annex). Monitoring the impact of mines (example for Pennaroya mines in Pyrenees). Management measures for controlling invasive non-native species are carried out locally. The management may be locally efficient (e.g. invasive non-native species control) but it often lies beyond the habitat location and depends on specific policies about stream management (risk management, hydro-energy production, extraction of natural resources) (Mikolajczak). **Poland**: In many cases, flood relief works are implemented without any environmental assessment and without habitat assessment. Changing the river geo-ecosystem must influence also a gravel sediments and habitats far downstream. Small gravel extractions are often permitted without proper assessment (Pawlaczyk). **Germany:** Fixing an ecologically sufficient residual flow in Halblech torrent catchment, Ammergebirge Mountains, County of Ostallgä. There are some efforts to work out concepts for gravel management. Torrent check dams are modified continuously when being rebuilt or repaired all over the Bavarian Alps; example of bigger dimensions: Lech river at border to Austria. Reintroduction of bed load material has begun continuously where ever possible when taking measures for river maintenance, eg. Rivers Iller, Saalach, Wertach and Upper Isar. The bed of river Iller has been widened between Oberstdorf and Immenstadt, County of Oberallgäu: the main goal was flood protection but also new riverine habitats have been created; river embankments of Tiroler Achen partly removed near Schleching, County of Traunstein (Rehklau). There are some efforts to work out concepts for gravel management. In a long term the water authorities in Bavaria are on the way to empower the natural dynamics in the upper stream-regions. In particular cases measures are taken to reduce the succession of disturbed habitats (manual measures, grazing) (Zehm and Riehl).

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Lack of resources						1						
2.1)	No or low awareness about river dynamics	1					1		1				
2.2)	Non cooperating stakeholders	1											
2.3)	Unknown effects of new technologies of ‚ecological' hydropower plants			1									
2.4)	Land ownership, long lasting water rights			1									
3.1)	Efficient control of invasive non-native species						1						
3.2)	Enormous efforts necessary for being successful in whole catchment areas, complete solution almost impossible			1									
4)	Economic reasons to use fertilisers						1						
5.1)	Conflict of different policies	1		2									
5.2)	Still ongoing pressure to alter river dynamics: flood prevention, to raise production of renewable energies - hydro-electric power			2									
5.3)	Difficulties re-introducing river dynamics												
5.4)	Buildings, facilities and usage rights hamper the natural dynamics of the flood plains. E.g. Krün-Wallgau: grazing rights, withdrawal of drinking water, flood protection)			1									
5.5)	No efforts to reintroduce or enhance natural dynamics - in spite of existence of calculated models			1									
7)	Unbalanced interpretation of policies/strategies	1											

Additional information. France: Trade-offs among stakeholders' needs should be achieved (non-cooperating stakeholders, lack of policy). How to achieve an efficient control of invasive non-native species is still an important issue (lack of knowledge, lack of skills) (Mikolajczak). In respect to the sand and gravel extractions, the economic argument is used: 'where can required sand and gravel for road and building be extracted?' Modifying structures of inland water courses are often built due to ignorance of local politicians about natural dynamics. The water pollution by agriculture is influenced by the strong industrial lobby which promotes large use of fertilisation (Dentant). Necessity of assessment procedures is not clearly visible and not well known, because normally targeted habitat may be far away from impact source (Pawlaczyk). **Germany:** As the activities of the water authorities

focus on the specified targets of the water framework directive the requirements of Natura 2000 habitats are not enough taken into account. E.g. the continuous flow of the Isar supports the succession behind the Krüner Wehr. In spite of calculated models (expertise of Prof. Dr. Reich; Isar) there are no efforts to reintroduce or enhance natural dynamics. Land ownership is not sufficient for natural dynamics and the relocation of the river banks. In general land or usage rights are not available for management measures. Some small scale excavations of gravel in the upper course areas are not legal and are not punished by local authorities (Zehm and Riehl). Land-owners or land users are sometimes non-cooperating. Mainly security requirements due to possible increasing natural disaster (flooding/climate change debris flows, landslides) in built up and populated area. Need for existing and even new hydropower plants for producing electricity from renewal sources. High pressure for all kind of leisure activities especially at the edge of the Alps being near to big cities both added by weekend recreation and tourism. Enormous efforts for invasive species removal is necessary for being successful in whole catchment areas, complete solution is almost impossible (Rehklau).

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2.1)	Policy making, compliance with legislation						1		1				
2.2)	Education and awareness raising	1							1				
2.3)	Sustainable development	1											
2.4)	Removal of disturbing and hammering activities and uses out of the flood plains			1									
5.1)	Including geomorphological processes to quality elements assessed								1				
5.2)	Intensive bed load management			1									
6)	Influencing policies	1											
6,7)	Preserving the remnants of natural rivers with natural processes.			1					1				
7)	Use 'free migration & erosion corridor concept' as a tool of rivers management.								1				
	Rivers restoration			1					1				
	Habitat monitoring						1						

Additional information. France: To promote, in spatial plans the avoidance of the river bed. To set up documents explaining the natural dynamics of a stream flow, and the need to preserve it (Dentant). Habitat monitoring (namely photographic monitoring with permanent plots, linear) (Mikolajczak). **Poland:** Detail application of habitat assessment procedure (HD Art 6.3) and EIA procedure, especially for all flood relief works. Building awareness for necessity and proper methods of impact assessment. Including geomorphological processes, as erosion and sediments transport, not only presence of particular structures and biological elements, to quality elements assessed as a part of river ecological status assessment for the WFD purposes (Pawlaczyk). **Germany:** Finding suitable solutions to serve the water rights and to regenerate the good status for habitats at same time (Zehm and Riehl). For habitats in good status, awareness of negative developments needs to be raised to prevent new negative changes and give alternative management (development and application) a higher priority (Dolek). Realisation of the measures described above (management needs, management applied) as far as possible all over the country in close and improving cooperation between the water and conservation authorities, communities, stakeholders, land users and landowners (Rehklau).

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Typha minima is a plant that needs natural disturbances to reproduce and to spread. In dramatically modified river bed due to human activities, populations of this species may turn to be in 'dying' sites that is with no longer natural dynamics. These populations should be sampled and introduce in habitat with remaining natural dynamics (Dentant)						✓						
Species conservation measures and translocation of typical	✓		✓									

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
species like *Myricaria germanica, Chondrilla chondrilloides, Bryodemella tuberculata, Tetrix tuerki, Formica selysi* and others (Rehklau, Zehm and Riehl).												
Galemys pyrenaicus, improve the knowledge about its species habitat and preserve it (Mikolajczak)						✓						
Several characteristic and threatened butterfly and grasshopper species: grasshoppers *Bryodema tuberculata, Tetrix tuerki,* with a bit more herb vegetation *Psophus stridulus* and the butterflies *Coenonympha glycerion, Plebejus idas, Polyommatus baton* (extremely rare and endangered). For all these species vegetation cover and density altering small-scale temperature and sun exposure is important. For some of them elevated air humidity, low nutrient level, and food-plant availability is important. Named species are examples, the habitat complex is potentially rich in butterfly species (Dolek).			✓									

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Case Studies Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Egger, G., K. Angermann, A. Gruber 2010. Wiederansiedlung der Deutschen Tamariske (Myricaria germanica (L.) Desv.) in Kärnten. Carinthia II 200/120.Jg., 393-418.	✓											
Egger, G., A. Gruber, S. Aigner, F. Lener, D. Melcher, D. Brunner 2011. Monitoring Natura-2000-Gebiet "Obere Drau" - Begleitende Untersuchungen zum LIFE II-Projekt - Analyse und Bilanz der Schutzobjekte Lebensraumtypen und Vegetation. Projektbericht. Klagenfurt (Umweltbüro Klagenfurt GmbH), 309 S. + 10 Pläne	✓											
Moritsch, S., A. Gruber, G. Egger 2012. Artenschutzprojekt Zwergrohrkolben (Typha minima) und der Deutschen Tamariske (Myricaria germanica). Wiederansiedelung an der Oberen Drau. Projektbericht. Klagenfurt (Umweltbüro GmbH), 66 S.	✓											
Schletterer M., T. Scheiber 2008. Wiederansiedlung der Deutschen Tamariske (Myricaria germanica (L.) DESV.) an der Leutascher Ache (Nordtirol, Österreich). Ber. nat.-med. Verein Innsbruck, Band 95, 53-65.	✓											

Other Information

According to the ETC/BD calculations 76-100% of the area of this habitat type are within SCIs. This means that Natura 2000 network provides an important framework for the management of this habitat type. According to another contributor a range for "habitat type within SCIs" should be 75-90%. At least for the Eastern part of the Alps there are not 100% within SCIs (e.g. populations on Isel and tributaries or Tagliamento and tributaries or Inn in Tyrol or Ötztaler Ache are not within SCIs). (Kudrnovsky).

Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

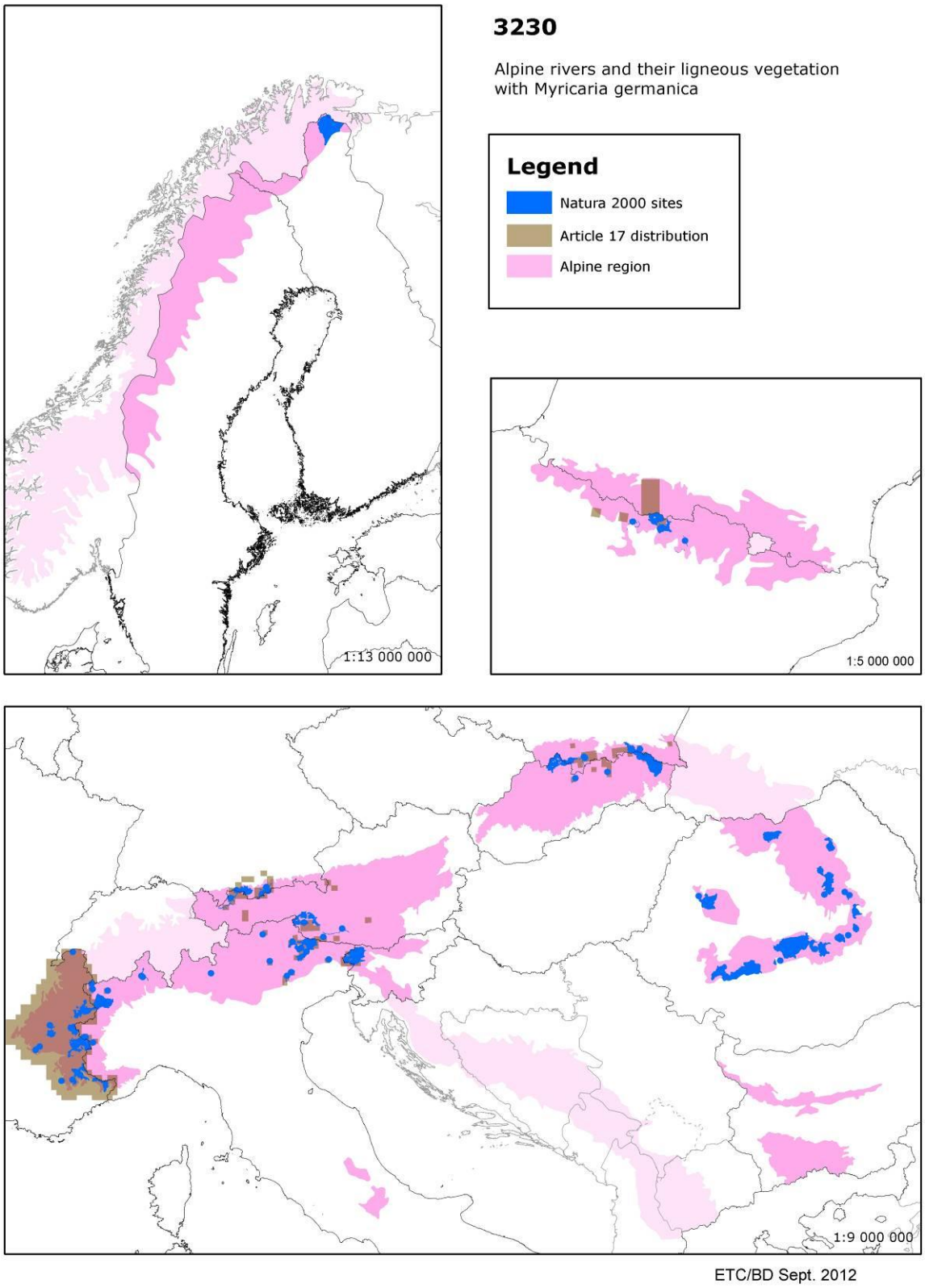
	AT	DE	ES	FI	FR	IT	PL	RO	SI	SK
Number of sites	4	4	5	2	13	15	5	21	3	6

Habitat area (ha)[15]	665	56	286	16	2580	729	10	6134	769	4

The figures include all SCIs where the habitat type is mentioned including sites coded as D.

[15] The area results for the MS seem too high and overestimated. This habitat is typical for river systems with (hydro-)dynamic modification of the riverine landscape and is realized always by small areas. Maybe n database issue (Kudrnovsky)

Map of SCIs proposed for Alpine rivers and their ligneous vegetation with *Myricaria germanica* & Article 17 distribution [16]



[16] The distribution of *Myricaria germanica* could be incomplete at least in the Eastern parts of the Alps (cf. Kudrnovsky in press. Alpine rivers and their ligneous vegetation with *Myricaria germanica* and riverine landscape diversity in the Eastern Alps: proposing the Isel river system for the Natura 2000-network. eco.mont).

2.5 3240 - Alpine rivers and their ligneous vegetation with Salix elaeagnos

Habitats Manual (2007) Extract

Thickets or woods of, among others, *Salix* spp., *Hippophae rhamnoides*, *Alnus* spp., *Betula* spp., on stream gravels of mountain and northern boreal streams with an alpine, summer-high, flow regime. Formations of *Salix elaeagnos*, *Salix purpurea* ssp. *gracilis*, *Salix daphnoides*, *Salix nigricans* and *Hippophae rhamnoides* of higher gravel shoals in Alpine and peri-Alpine valleys.

This habitat occurs along alpine rivers with banks dominated by woody vegetation including rosemary willow (*Salix elaeagnos*), other species of willow (*Salix* spp), birch (*Betula* spp), alder (*Alnus* spp) and sea buckthorn (*Hippophae rhamnoides*). The habitat occurs in the Alps together with other mountain ranges such as the Apennines, Cantabrians, Carpathians, and Pyrenees.

Spain has reported all parameters for this habitat as 'unknown' leading to regional assessments as 'unknown' for both the Atlantic and Mediterranean regions although reported as 'favourable' in the other Mediterranean countries where the habitat is present.

Assessed as 'unfavourable-inadequate ' in the Alpine region for all parameters, with only Italy assessing the habitat as 'favourable'. In many cases 'range' is assessed as 'favourable ' but the other parameters are mostly unfavourable, usually as a result of human impact including modification of the riverbed, including canalisation, and gravel extraction. Assessed as 'unfavourable-bad' in the Continental region and also for Austria, Czech Republic and France within the region with similar pressures as found in the Alpine region. Again only Italy has reported this habitat as 'favourable' although similar pressures and threats are noted. Better information is needed, particularly from Spain.

Conservation status (CS) assessed at the Alpine region and MS level

N2K code	Habitat name		AT	DE	ES	FR	IT	PL	SI	SK	REGION
3240	Alpine rivers and their ligneous vegetation with *Salix elaeagnos*	range	FV	FV	XX	U1	FV	U1	FV	FV	U1
		area	U1	U1	XX	U1	FV	U1	U1	FV	U1
		structure	U1	U1	XX	U1	FV	FV	U1	U1	U1
		future	U1	U1	XX	U1	FV	XX	U1	FV	U1
		overall	U1	U1	XX	U1	FV	U1	U1	U1	U1

The overall assessment in Alpine region is "unfavourable - inadequate", this category is the most used category in assessments of habitat area, structures & functions and future prospects. In total, 6 countries assessed the overall status in their territory as "unfavourable - inadequate". IT assessed all parameters as "favourable". The eventual correction of unexpected conclusion of FR for range would change the assessment of this parameter to "favourable", but would not affect the overall assessment. The Polish NGOs comment that structure & function in Poland is not favourable due to gravel extraction & hydroelectric schemes and suggest that future prospects are unfavourable. The human impacts include modification of the river bed, including canalisation and gravel extraction (Summary sheet of the online report on Article 17 of the Habitats Directive).

Species associated with this habitat and their CS at the Alpine region and MS level[17]

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1105	*Hucho hucho*	Fish	range	U2	XX							FV	XX	U2
			population	U2	XX							U1	XX	U2
			habitat	U2	XX							U1	XX	U2
			future	U2	XX							U1	XX	U2

[17] This list could/should also include *Cottus gobio* and *Thymallus thymallus* (Rehklau).

			overall	U2	XX[18]							U1	XX	U2

Several characteristic and threatened butterfly and grasshopper species need habitat characteristics that are not reflected by annex I habitats, they may thus occur in habitats 3220, 3230, 3240 and others. Typical for early succession open gravel areas are e.g. the grasshoppers Bryodema tuberculata, Tetrix tuerki, with a bit more herb vegetation Psophus stridulus and the butterflies Coenonympha glycerion, Plebejus idas, Polyommatus baton (extremely rare and endangered) and with shrub vegetation the annex IV species Lopinga achine (also under a light tree cover) and Coenonympha hero. For all these species vegetation cover and density altering small-scale temperature and sun exposure is more important than habitat type after annex I. For some of them elevated air humidity, low nutrient level, and food-plant availability is important.

Main pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Alpine rivers and their ligneous vegetation with *Salix elaeagnos*	*Hucho hucho*
Sand and gravel extraction	x	
Modification of hydrographic functioning		

Main threats to Alpine this habitat and their importance to associated species (note that list does not correspond to level of importance)

Threats description (2nd level)	Alpine rivers and their ligneous vegetation with *Salix elaeagnos*	*Hucho hucho*
Sand and gravel extraction	x	
Canalisation	x	
Modification of hydrographic functioning		

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	C01.01 Sand and gravel extraction	1		1			2		1				
2)	J02.05.02 Modifying structures of inland water courses	1		1			1						
3)	I01 Invasive non-native species	1					2						
4)	A08 Fertilisation						1						
5)	J02.05 Modification of hydrographic functioning, general	1		2			1		1				
6)	J03.01 Reduction or loss of specific habitat features	2											
7)	J03.02 Anthropogenic reduction of habitat connectivity	1											
8)	J03.03 Reduction, lack or prevention of erosion			1					1				
9)	J02.12.02 Dykes and flooding defence in inland water systems								1				
10)	J02.04 Flooding modifications			2									
11)	K02 Biocenotic evolution, succession			2									
12)	J02.05.05 small hydropower projects, weirs	1		1									
13)	G01 Outdoor sports and leisure activities, recreational activities	1											

Habitat Impacts: The modification of hydrographic functioning, especially modification of the natural river dynamic represents the most common threat to the habitat reported by countries. **Poland:** This habitat is part of dynamic river hydro-geo-ecosystem. Its best protection is the maintenance of natural processes creating habitats and modifying them, namely erosion process (supplying river with gravel), sediments transport process (without gravel transport barriers as dams), variation of water level and currents, including presence of high flows & water levels (floods), and finally sedimentation process. Each disturbance of these processes (e.g. preventing erosion by river embankment, river regulation, building dams stopping the gravel transport, gravel extraction from river, flood prevention and decrease of the floods frequency) disturbs dynamic process of creating gravel sediments and may threat habitats conservation status (Pawlaczyk). **France:** Many alpine streams and rivers (mostly in

[18] According to the current draft Art. 17 report: FV/U2/U1/U1

the northern French Alps) are managed to reduce flooding occurrences (natural hydro-dynamic functioning) by dams, canalisation, etc. The hydroelectric installations have local impact on *Barbus meridionalis*) (FNE). In the deep valleys (low altitude), sand and pebble beaches along alpine streams and rivers are frequently colonised by invasive non-native species like *Reynoutria* spp. which displace natural plant communities. Sand and gravels quarries are numerous along alpine streams and rivers (Mikolajczak). Sand and gravel extraction alters a water flow and result in difficulties in keeping a natural dynamics. The water flow is stronger (and thus more erosive) in the central floodplain. The banks of water courses are usually artificialized, with no native plants or seed bank. Both the modification of structures of inland water courses and sand and gravel extraction help to promote invasive non-native species. The invasive species often impoverish the native communities and the loss in floodplain biodiversity may be very high. Especially when the field crops are close enough to main water course, the pollution linked to excess of nitrogen can be striking. The river banks get richer in nitrophilous species the native species of floodplain may disappear and be replaced by alien invasive species (Dentant). **Germany:** Threats are connected: lack of natural river dynamics prevents necessary natural disturbances, especially lack of flooding that rarely occurs. Regular flooding may still occur in a limited area, but irregular widely spaced flooding is missing. Vegetation in latter parts keeps developing, accumulating organic material and producing denser vegetation (Dolek). Structures of the water courses and bedload transport often have been modified for security reasons and hydroenergy production: bedload is hold back in the more remote upper parts of the watercourses; the lower parts are often completely modified by embankments and dykes in densely built up valleys. In the latter the removal of the remaining bedload (gravel, dead wood) is also necessary to reduce flood risks. In many cases transverse structures are even found in the upper stream regions (Ammergebirge, Estergebirge, Halblech-area). They prohibit the natural morphodynamics and the delivery of pebbles and gravel. Subsequent delivery of gravel from the river banks and the river bed of torrents is often hardly limited (Rehklau). In some cases the composition of pebbles and gravel is disturbed because gravel is excavated for construction purposes. The amount of excavated material differs, but leads to a significant lack of bed load. In general excavation of gravel on a small scale is quite common as gravel is needed as indispensable construction material (e.g. Ammergebirge). Another reason for the excavation of gravel is the maintenance of reservoirs for hydropower plants (e.g. Halblech, Isar: Krüner Wehr, Finzbach). In some cases (Krüner Wehr/weir) the extraction of material produces a change in the composition of the bed load. As pebbles and gravel are removed, only sand and clay components are left. Willow shrub formations can easily develop on those sandy soils and fix the river bed and banks permanently (Zehm and Riehl). Succession processes lead just "one way" from gravel bars to willow shrubs, from Salix elaeagnos shrubs to other willow species showing less dynamic conditions, finally to forest types no more typical for alluvial conditions (Rehklau). These threats lead to a dramatic loss of typical organisms of the habitats like Chondrilla chondrilloides (nearly extinct), Bryodemella tuberculata, Tetrix tuerki, Formica selysi, butterflies, birds such as Charadrius dubius) and any fish (lack of water, migration barriers). A lot of watercourses - both those already heavily modified in the way described above and others still being near natural from the point of view of structures – are heavily disturbed by water abstraction and/or dammed for hydropower plants. Others and often even headwaters are impacted by water abstraction for artificial snowing in skiing resorts. This leads to a loss of aquatic and floodplain habitats and a signification deterioration of the not directly modified parts. There is a loss of typical pioneer plants and an impoverishment of the remaining vegetation. The remaining natural or near natural watercourses may be impacted by leisure activities or invasive alien plants in the lower parts, too (Rehklau).

Management Requirements Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1)	Avoid sand and gravel extraction						1						
1.2)	Avoiding/control/management of all excavations	1											
2)	Open waterways for fish and other species						1						
3)	To limit spreading of invasive species in colonization front	1					1						
4)	Reduction or exclusion of fertilisation at borders of rivers						1						
5.1)	Management of streams	1											
5.2)	Restoration of river dynamics	1		1			1		1				
6)	Large extent of natural riverine landscape	1											
8)	Continuous gravel delivering								1				
11)	Supplementary. alternative measures, e.g. grazing,			1									

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	shrub and tree removal, surface alterations (removal of organic material)												
	Establishment of protected areas	1											
	Species reintroduction	1											
	Regulating/management exploitation of natural resources on land	1											
	Restoring/improving water quality	1											

Additional information. Poland: Occasional floods remodelling gravel sediments and vegetation, occasionally breaking vegetation succession. Erosion providing gravel to river and gravel transport by the river, without extraction, is necessary (Pawlaczyk). **France:** Natural hydro-dynamic functioning: high flow of water and sediments with frequent soil and plant communities renewals are also important (Mikolajczak). To promote natural flood plain with natural water flow. To promote building out of the floodplain. To avoid sand and gravel extraction in remaining natural rivers. At least in border of rivers, to promote cultivation requiring few fertilisation or any chemicals. To limit spreading of invasive non-native species in colonization front (Dentant). **Germany:** For restoration of the natural dynamics a deconstruction of transverse and longitudinal structures is necessary. To reduce high water protection efforts (hampering the natural dynamics) it is necessary to take buildings, facilities and usage rights out of the flood plains. In addition hydro-engineering solutions are important to re-launch natural morphodynamics (Zehm and Riehl). Natural water dynamics should be restored under consideration of present bottlenecks in habitats, species distribution and habitat connectivity (not well reflected re-introduction of flooding regimes may destroy last remnants of important habitats, before new habitats are created). If the restoration of natural dynamics is not possible, alternatives should be developed and applied, e.g. grazing, shrub and tree removal, surface alterations (removal of organic material) (Dolek). Relocation of dykes and river embankments where ever possible. Implement regulations for common use of the floodplain for leisure activities in cooperation with land user, landowners, associations and NGOS; site managers for communication, setting up information centres or information points. To remove invasive alien plants in the upper parts of the watercourses (Rehklau) and the management measures slowing the natural succession of disturbed flowing waters (Zehm and Riehl). Lack of bedload can be reduced by transforming torrent check dams in at least partly permeable check dams, restoration of bedload continuity at barrages, reintroduction of bed load material in non-lower river sections (Rehklau).

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Administrative permit needed for sand and gravel excavation						1						
2.1)	Approval procedure of new facilities						1						
2.2)	Maintenance and preservation of natural riverine landscape along a longer river distance	1		1			1						
2.3)	Relocation of dykes and river embankments			1									
3)	Invasive species removal and control						2						
5.1)	River restoration	1		1									
5.2)	Maintenance and preservation of natural regime of run off and sediment flow	1					1						
5.4	Fixing ecologically sufficient residual flows at any by passed river section			1									
5.3)	Changing any existing hydropower plant to be permeable for bedload and/or reintroduction of removed bedload			1									
6)	Maintenance and preservation of the extent of natural riverine landscape	1											
	Regulations for leisure activities in cooperation with landuser, landowners, associations and NGOS; site managers for communication, setting up information centers or information points			1									

Additional information. France: Sand and gravel extraction is subject to administrative permit, but with weak effect. Permits are more or less always granted, the same is valid for modifying structures of inland water courses (Dentant). Preservation of river corridors (riparian corridors, hydraulic

annex). Monitoring the impact of mines (example for Pennaroya mines in Pyrenees). Management measures for controlling invasive non-native species are carried out locally. The management may be locally efficient (e.g. invasive non-native species control) but it often lies beyond the habitat location and depends on specific policies about stream management (risk management, hydro-energy production, extraction of natural resources) (Mikolajczak). **Poland**: In many cases, flood relief works are implemented without any environmental assessment and without habitat assessment. Changing the river geo-ecosystem must influence also a gravel sediments and habitats far downstream. Small gravel extractions are often permitted without proper assessment (Pawlaczyk). **Germany:** There are some efforts to work out concepts for gravel management. In a long term the water authorities in Bavaria are on the way to empower the natural dynamics in the upper stream-regions. In particular cases measures are taken to reduce the succession of disturbed habitats (manual measures, grazing) (Zehm and Riehl). The bed of river Iller has been widened between Oberstdorf and Immenstadt, County of Oberallgäu: the main goal was flood protection but also new riverine habitats have been created; river embankments of Tiroler Achen partly removed near Schleching, County of Traunstein. Reintroduction of bed load material has begun continuously where ever possible when taking measures for river maintenance, eg. Rivers Iller, Saalach, Wertach and Upper Isar. Torrent check dams are modified continuously when being rebuilt or repaired all over the Bavarian Alps; example of bigger dimensions: Lech river at border to Austria. Fixing an ecologically sufficient residual flow in Halblech torrent catchment, Ammergebirge Mountains, County of Ostallgäu (Rehklau).

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Lack of resources						1						
2.1)	No or low awareness about river dynamics	1					1		1				
2.2)	Non cooperating stakeholders	1					1						
3)	Efficient control of invasive non-native species						1						
4)	Economic reasons to use fertilisers						1						
5.1)	Conflict of different policies	1		1									
5.2)	Still ongoing pressure to alter river dynamics: flood prevention, to raise production of renewable energies - hydro-electric power			1									
5.3)	Difficulties re-introducing river dynamics			1									
7)	Unbalanced interpretation of policies/strategies	1											

Additional information. France: In respect to the sand and gravel extractions, the economic argument is used: 'where can required sand and gravel for road and building be extracted?' Modifying structures of inland water courses are often built due to ignorance of local politicians about natural dynamics. The water pollution by agriculture is influenced by the strong industrial lobby which promotes large use of fertilisation (Dentant). Trade-offs among stakeholders' needs should be achieved (non-cooperating stakeholders, lack of policy). How to achieve an efficient control of invasive non-native species is still an important issue (lack of knowledge, lack of skills). Strong industrial lobby promotes large use of fertilisation with consequences to water habitats (Mikolajczak). **Poland.** Necessity of assessment procedures is not clearly visible and not well known, because normally targeted habitat may be far away from impact source (Pawlaczyk). **Germany:** As the activities of the water authorities focus on the specified targets of the water framework directive the requirements of Natura 2000 habitats are not enough taken into account. E.g. the continuous flow of the Isar supports the succession behind the Krüner Wehr. In spite of calculated models (expertise of Prof. Dr. Reich; Isar) there are no efforts to reintroduce or enhance natural dynamics. Land ownership is not sufficient for natural dynamics and the relocation of the river banks, the long lasting rights for using water at hydropower plants. In general land or usage rights are not available for management measures. Some small scale excavations of gravel in the upper course areas are not legal and are not punished by local authorities (Zehm and Riehl). Land-owners or land users are sometimes non-cooperating. Mainly security requirements due to possible increasing natural disaster (flooding/climate change debris flows, landslides) in built up and populated area. Need for existing and even new hydropower plants for producing electricity from renewal sources. High pressure for all kind of leisure activities especially at the edge of the Alps being near to big cities both added by weekend recreation and tourism. Enormous efforts for invasive species removal is necessary for being successful in whole catchment areas, complete solution is almost impossible (Rehklau).

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
2.1)	Policy making, compliance with legislation						1		1				
2.2)	Education, awareness raising			1			1						
5)	Including geomorphological processes to quality elements assessed								1				
6,7)	Preserving the remnants of natural rivers with natural processes.			1					1				
7)	Use 'free migration & erosion corridor concept' as a tool of rivers management.								1				
	River restoration								1				
	Habitat monitoring						1						

Additional information. France: To promote, in spatial plans the avoidance of the river bed. To set up documents explaining the natural dynamics of a stream flow, and the need to preserve it (Dentant). Habitat monitoring (namely photographic monitoring with permanent plots, linear) (Mikolajczak). **Poland**. Detail application of habitat assessment procedure (HD Art 6.3) and EIA procedure, especially for all flood relief works. Building awareness for necessity and proper methods of impact assessment. Including geomorphological processes, as erosion and sediments transport, not only presence of particular structures and biological elements, to quality elements assessed as a part of river ecological status assessment for the WFD purposes (Pawlaczyk). **Germany:** Finding suitable solutions to serve the water rights and to regenerate the good status for habitats at same time (Zehm and Riehl). For habitats in good status, awareness of negative developments needs to be raised to prevent new negative changes and give alternative management (development and application) a higher priority (Dolek). Realisation of the measures described above (management needs, management applied) as far as possible all over the country in close and improving cooperation between the water and conservation authorities, communities, stakeholdes, landusers and landowners (Rehklau).

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Typha minima is a plant that needs natural disturbances to reproduce and to spread. In dramatically modified river bed due to human activities, populations of this species may turn to be in 'dying' sites that is with no longer natural dynamics. These populations should be sampled and introduce in habitat with remaining natural dynamics (Dentant)						✓						
Species conservation measures and translocation of typical species like *Myricaria germanica, Chondrilla chondrilloides, Bryodemella tuberculata, Tetrix tuerki, Formica selysi* and others (Rehklau, Zehm and Riehl).			✓									
Galemys pyrenaicus, improve the knowledge about its species habitat and preserve it (Mikolajczak)						✓						
Several characteristic and threatened butterfly and grasshopper species: grasshoppers *Bryodema tuberculata, Tetrix tuerki,* with a bit more herb vegetation *Psophus stridulus* and the butterflies *Coenonympha glycerion, Plebejus idas, Polyommatus baton* (extremely rare and endangered). For all these species vegetation cover and density altering small-scale temperature and sun exposure is important. For some of them elevated air humidity, low nutrient level, and food-plant availability is important. Named species are examples, the habitat complex is potentially rich in butterfly species (Dolek).			✓									

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Case Studies Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

Other information

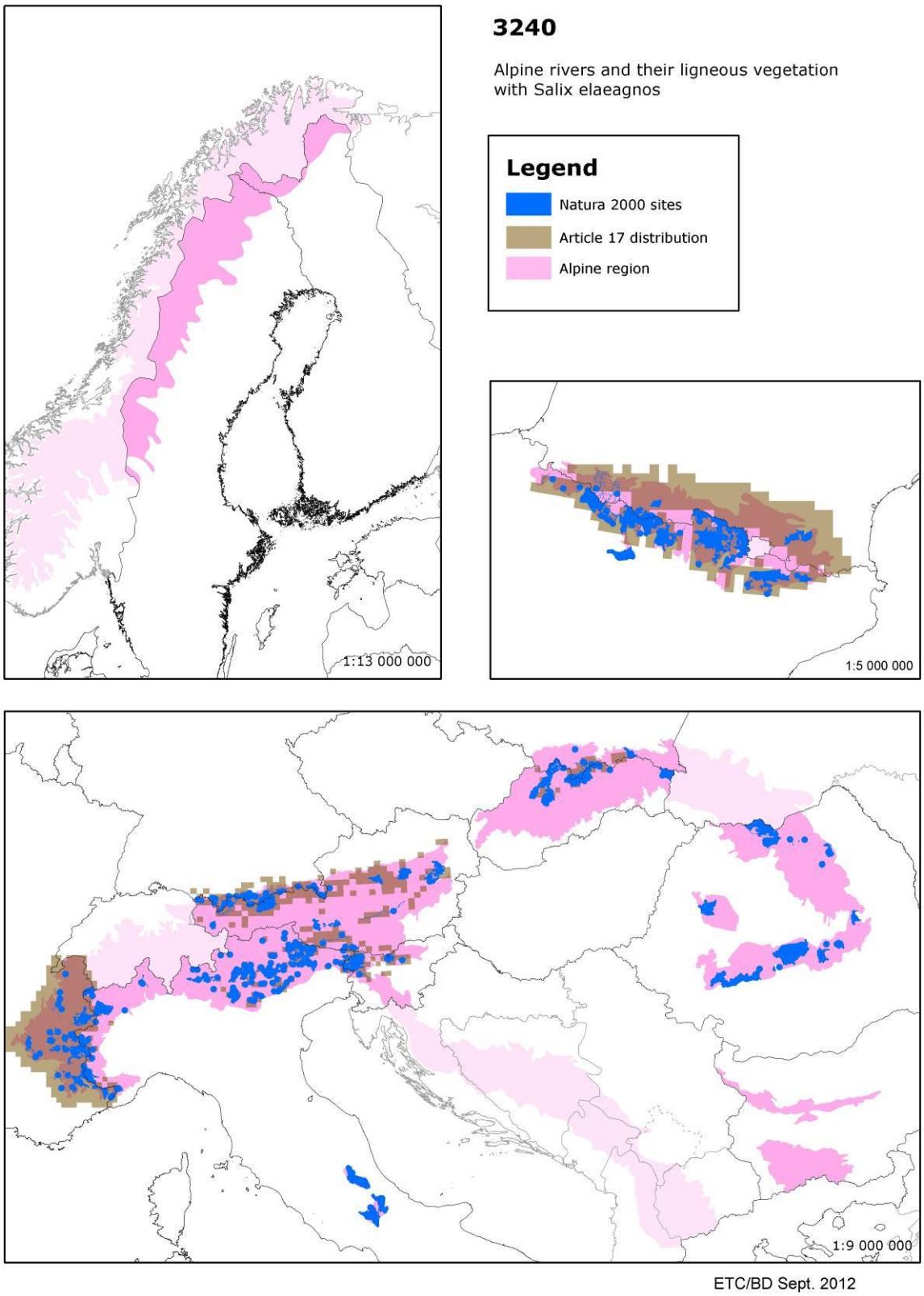
According to the ETC/BD calculations 76-100% of the area of this habitat type are within SCIs. This means that Natura 2000 network provides an important framework for the management of this habitat type.

Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

	AT	DE	ES	FR	IT	PL	RO	SI	SK
Number of sites	17	18	34	34	85	7	18	6	9
Habitat area (ha)	1531	781	2100	4614	5649	75	5977	997	63

The figures include all SCIs where the habitat type is mentioned including sites coded as D.

Map of SCIs proposed for Alpine rivers and their ligneous vegetation with *Salix elaeagnos* & Article 17 distribution



2.6 3260 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Habitats Manual (2007) Extract

Water courses of plain to montane levels, with submerged or floating vegetation of the *Ranunculion fluitantis* and *Callitricho-Batrachion* (low water level during summer) or aquatic mosses. This habitat is sometimes associated with *Butomus umbellatus* bank communities. It is important to take this point into account in the process of site selection.

Sjörs, H. (1967). Nordisk växtgeografi. 2 uppl. Svenska Bokförlaget Bonniers, Stockholm, 240 pp.

Rivers of temperate and northern Europe with floating vegetation often dominated by water crowfoot (*Ranuculus* spp) and other aquatic plants including mosses. The habitat is very widespread throughout Europe, although rare to the south.

Assessed as 'unfavourable-inadequate' in the Alpine and Continental regions, 'unfavourable-bad' in the Atlantic, Boreal and Pannonian regions while in the Mediterranean region it is 'unknown but not favourable'. Only in the Alpine regions of Finland and Sweden and in Greece is the habitat reported as 'favourable'. The former is probably a result of the low human impact in these areas while in Greece the habitat is naturally rare.
Reported threats and pressures mostly relate to human impact including modification of rivers (often related to navigation) and pollution.

Many countries (EU25) reported one or more parameters as unknown and better information is required, particularly from Austria, Luxembourg and Spain (Summary sheet of the online report on Article 17 of the Habitats Directive).

Conservation status (CS) assessed at the Alpine region and MS level

N2K code	Habitat name		AT	BG	DE	FI	FR	IT	RO	SE	SI	SK	REGION
3260	Water courses of plain to montane levels with the *Ranunculionfluitantis* and *Callitricho-Batrachion* vegetation	range	XX		FV	FV	FV	FV		FV	FV	XX	FV
		area	XX		FV	FV	U1	U1		FV	XX	XX	U1
		structure	XX		XX	FV	U1	XX		FV	U1	FV	U1
		future	XX		XX[19]	FV	U1	FV		FV	XX	FV	U1
		overall	XX		XX	FV	U1	U1		FV	U1	XX	U1

The overall assessment in Alpine region is "unfavourable - inadequate". All parameters were assessed as "favourable" by FI and SE, the situation on the north of Europe seems to be good. France had quite big influence on the assessment, reporting all parameters except range in category "unfavourable - inadequate". Austria assessed all parameters as "unknown". "Favourable" category reached quite high values - more than 60% of weight in all parameters. Reported threats and pressures mostly relate to human impact including modification of rivers (often related to navigation) and pollution (Summary sheet of the online report on Article 17 of the Habitats Directive).

Species associated with this habitat and their CS at the Alpine region and MS level

N2K code	Species name	Group		AT	DE[20]	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1032	*Unio crassus*	Molluscs	range	U2						FV		XX	FV	U2
			population	U2						U2		U1	FV	U2
			habitat	U2						U2		U1	FV	U2
			future	U2						U1		U1	FV	U2
			overall	U2						U2		U1	FV	U2

[19] According to the current draft Art. 17 report: FV
[20] Removed from the table for DE: removed from the Reference list for DE (Rehklau).

N2K code	Species name	Group		AT	DE[20]	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1037	*Ophiogomphus cecilia*	Invertebrates	range	U1						XX			U2	U1
			population	U1						XX			U1	U1
			habitat	U1						XX			FV	U1
			future	U1						XX			U1	U1
			overall	U1						XX			U2	U1
1039	*Sympecma braueri*	Invertebrates	range	U1						XX			U2	XX
			population	U1						XX			U2	XX
			habitat	U2						XX			U2	XX
			future	U2						XX			U1	XX
			overall	U2						XX			U2	XX
1044	*Coenagrion mercuriale*	Invertebrates	range	FV	FV			U2						U2
			population	U2	U1			U2						U2
			habitat	U2	XX			U2						U2
			future	U2	U1			U2						U2
			overall	U2	U1[21]			U2						U2
1092	*Austropotamobius pallipes*	Invertebrates	range	FV		U1		U1	U1			FV		U1
			population	U2		XX		U2	U1			XX		U2
			habitat	FV		XX		U2	U1			U1		U2
			future	U2		U2		U2	U1			U1		U2
			overall	U2		U2		U2	U1			U1		U2
1093	*Austropotamobius torrentium*	Invertebrates	range	U1	XX				XX			FV	U1	U1
			population	U1	U1				XX			XX	U2	U1
			habitat	FV	U1				U1			U1	FV	U1
			future	U1	XX				U1			U1	U1	U1
			overall	U1	U1				U1			U1	U2	U1
1096	*Lampetra planeri*	Fish	range					FV		XX			XX	XX
			population					XX		XX			XX	XX
			habitat					XX		FV			XX	XX
			future					U1		FV			XX	U1
			overall					U1		XX			XX	U1
1106	*Salmo salar*	Fish	range			XX	FV	U2			FV			FV
			population			XX	FV	U2			U2			U2
			habitat			XX	FV	U2			FV			FV
			future			XX	FV	U2			U1			U1
			overall			XX	FV	U2			U2			U2
1146	*Sabanejewia aurata*	Fish	range							FV		FV	XX	XX
			population							FV		XX	XX	XX
			habitat							FV		XX	XX	XX
			future							FV		U1	XX	XX
			overall							FV		U1	XX	XX
code	**Species name**	**Group**		**AT**	**DE**	**ES**	**FI**	**FR**	**IT**	**PL**	**SE**	**SI**	**SK**	**REGION**
1149	*Cobitis taenia*	Fish	range	U2					U1	XX		FV	XX	XX
			population	U2					U1	FV		XX	XX	XX
			habitat	U2					XX	FV		U1	XX	XX
			future	U2					U1	FV		U1	XX	U1
			overall	U2					U1	FV		U1	XX	U1
1163	*Cottus gobio*[22]	Fish	range	FV	FV	XX		FV	U1	FV	FV	FV	XX	FV
			population	FV	XX	XX		FV	U1	FV	FV	XX	XX	U1
			habitat	FV	FV	XX		XX	XX	FV	FV	U1	XX	XX
			future	FV	FV	U1		FV	U1	FV	FV	U1	XX	U1
			overall	FV	FV	U1		FV	U1	FV	FV	U1	XX	U1
1193	*Bombina variegata*[23]	Amphibians	range	FV	FV			U2	U1	FV		FV	FV	FV
			population	U1	XX			U2	U1	FV		XX	U1	U1
			habitat	U1	FV			XX	U1	XX		U1	U1	U1
			future	U1	FV			U1	U1	FV		FV	U1	U1
			overall	U1	FV			U2	U1	FV		U1	U1	U1
1337	*Castor fiber*	Mammals	range	U1	FV			FV		FV	FV		FV	FV
			population	U1	FV			FV		FV	FV		FV	FV
			habitat	XX	FV			XX		FV	FV		FV	FV
			future	U1	FV			FV		FV	FV		FV	FV
			overall	U1	FV			FV		FV	FV		FV	FV
1355	*Lutra lutra*	Mammals	range	U2	XX	XX	FV			FV	FV	U1	U1	U1

[21] According to the current draft Art. 17 report: U1/U1/U1/U1
[22] According to one contributor species is important for 3220, 3230, 3240, but not 3260
[23] Must be an error; *Bombina variegata* does not have any relation to 3260! (Rehklau).

N2K code	Species name	Group		AT	DE 20	ES	FI	FR	IT	PL	SE	SI	SK	REGION
			population	U2	XX	XX	FV			FV	FV	U1	U1	U1
			habitat	XX	XX	XX	FV			FV	FV	FV	U1	U1
			future	U1	XX	XX	FV			FV	FV	U1	FV	FV
			overall	U2	XX	XX	FV			FV	FV	U1	U1	U1

Main pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Water courses of plain to montane levels with the *Ranunculionfluitantis* and *Callitricho-Batrachion* vegetation	*Unio crassus*	*Ophiogomphus cecilia*	*Sympecma braueri*	*Coenagrion mercuriale*	*Austropotamobius pallipes*
Fertilisation	x	x				
Pollution	x					
Modification of hydrographic functioning	x	x	x		x	x

Pressure description (2nd level)	*Austropotamobius torrentium*	*Lampetra planeri*	*Salmo salar*	*Sabanejewia aurata*	*Cobitis taenia*	*Cottus gobio*	*Bombina variegata*	*Castor fiber*	*Lutra lutra*
Fertilisation							x		
Pollution					x	x	x		x
Modification of hydrographic functioning	x			x					x

Main threats to this habitat and their importance to associated species (note that list does not correspond to level of importance)

Threats description (2nd level)	Water courses of plain to montane levels with the *Ranunculionfluitantis* and *Callitricho-Batrachion* vegetation	*Unio crassus*	*Ophiogomphus cecilia*	*Sympecma braueri*	*Coenagrion mercuriale*	*Austropotamobius pallipes*
Fertilisation	x	x				
Pollution	x		x			x
Modification of hydrographic functioning	x	x	x		x	x

Threats description (2nd level)	*Austropotamobius torrentium*	*Lampetra planeri*	*Salmo salar*	*Sabanejewia aurata*	*Cobitis taenia*	*Cottus gobio*	*Bombina variegata*	*Castor fiber*	*Lutra lutra*
Fertilisation							x		
Pollution	x		x			x	x		x
Modification of hydrographic functioning	x	x							x

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	J02.05.02 Modifying structures of inland water courses	1											
2)	J02.05.02 Small hydropower projects, weirs	1					1						

3)	H01 Pollution to surface waters	1											
4)	No threats or pressures					1							
5)	B02 Forest and plantation management and use						1						

Habitat Impacts: In **Austria**, the weirs on water courses cause the reduction of flow velocity and thus loss of stands of Ranunculus fluitans and other species adapted to fast flowing water. The channel modification, straightening of river beds and bank fixation are main factors of the loss of structures appropriate for the type-specific macrophyte species. The water pollution has also adverse effect - high nutrient concentrations affect the type-specific species (Pall). **France:** The afforestation along river brooks and modifying structures of inland water courses represent the main identified threats. The transversal works can reduce ecological connectivity for certain species, such as *Castor fiber* (Alps) and *Lutra lutra* (Pyrenees). Impacts of fight against 'damaging' species may harm the same species. *Cottus gobio* seems sensitive to dams (FNE). In **Finland** the habitat occurs mostly within Natura 2000 areas in the alpine region (Natura 2000 coverage ca. 90% of the region in Finland). There are no significant pressures or threats within or outside Natura 2000 areas in the Finnish alpine region (Ilmonen). **Sweden:** A large part of Swedish watercourses are physically affected by earlier anthropogenic activities such as waterlogging, hydropower (mills and other small dams) or other modification of structures, e.g. canalisation. Rivers in the mountain areas are the least affected. While, in the forest landscape water logging and forestry are the most dominating pressures while agricultural leakage, canalisation and watercourse management (vegetation, banks and sediments) are the dominating pressure in the agricultural landscape. Faunal barriers e.g. dams inhibits dispersal of organisms both up- and downstream (von Wachenfeldt). The dam facilities building downstream are considered as important obstacle for the river fauna. Dam construction acts as barrier for fauna and inhibits organisms reaching the smaller rivers upstream. Small-scale hydropowers (a recent interest) create faunal barriers at site in the rivers as well. The natural flood regimes are usually altered which adversely affects vegetation because of alteration in the deposition and transport of sediments. The regular removal of sediments and vegetation affect the habitat as well. The forestry practices significantly influence the habitat as well, namely by the logging and driving of heavy vehicles near to rivers; the transport of sediments and metals, and fertilizers. Forestry can increase leaching of organic matter, nutrients and metals due to altered runoff and groundwater tables from harvesting of the forest. Even tracks from vehicles act as conduits for transport enhancing release of particle bound metals. Fertilization increases the risk of leaching of nutrients. The influence of forestry upon the river is strongly dependent upon the "protection zone" i.e. the zone between the forest and the water where no cutting should take place. Agriculture and livestock increase leakage of nutrients, sediments and pesticides (von Wachenfeldt).

Management Requirements Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Restructuring of river beds and river banks	1											
2)	Reduction of weirs	1											
3)	Reduction of nutrient input	1											
	Establish protected areas/sites					1							
	Establishing wilderness areas/ allowing succession					1							

Sweden: In general, more consideration has to be taken to smaller rivers. Currently, economic reasons are mostly often prioritized over ecological values. Thus, conservation needs and reasons have to be taken into account. Open waterways for fish and other species are needed in most rivers and streams affected by old or recent damming activities. Either these barriers are removed or faunal passages are constructed to allow migration of organisms. Areas for flooding are needed in most river basins. Natural oscillations in water levels are not fully accepted and the understanding of natural waters dynamics is not understood. Restoration of bottom and shore is needed in areas of intensive water logging, damming and/or in areas of importance to threatened or valuable species. The restoration needs are understood, but other interests often dominate, juridical instruments are weak or lack of economic resources. One general conservation requirement is that the forestry and agriculture need to significantly improve the amount of consideration towards watercourses in the general landscape. Functional buffer strips, no logging or driving close to the streams etc. Conservation needs are sufficiently understood (in theory) but mostly not admitted. The needs are not prioritized because of economic reasons (von Wachenfeldt).

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Restructuring of river beds and river banks	1											
2)	Reduction of weirs	1											
3)	Reduction of nutrient input	1											
	Majority of the habitats is in established protected areas					1							

Additional information. Sweden: The habitat type in Alpine region was reported to have favourable conservation status in 2007. In addition the threats are not as impendent as compared to the Boreal and Continental region. Mainly because of that the anthropogenic pressures are lower in the Alpine region when it comes to agriculture, forestry, small scale hydropower and historical morphological alterations. Thus, dam facilities located in the tributaries of the larger rivers (e.g., 3210) may influence the dispersal of organisms upstream, inhibiting them to reach the smaller rivers. Information about dams is collected in a database creating an overview over existing dams. On regional level, some national administration boards have identified barriers for migrating species. There has also been a need to unravel what parameters and species should be monitored. New facilities have to be approved according to actual legislation. A project lead by "Miljösamverkan Sverige" examined both the legal conditions and suitable parameters to determine the effects of dams upon biota. Restoration and classification of rivers, because of logging activities a century ago, is done on regional level and local levels. In the alpine region, rivers situated in areas with forestry are mainly affected. There is information about forestry and effects on natural waters and what measures are needed to minimize negative effects (E.g., WWF, and National Board of Forestry). Information of the importance of buffer zones and ditches are important. Filling old ditches and not giving permit to clear existing ditches (von Wachenfeldt).

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Public interest for flood control, no space for a "free flowing" river	1											
2)	Hydroelectric energy generation, public interest for flood control	1											

Additional information. Sweden: In general, there is a lack of resources at both practical and administrational levels. When it comes to hydropower there is often knowledge about what measures are needed. However, lack of resources and personnel at legal administration levels, resulting in that the rate of restoration is slow. Additionally, when measures have been taken, low resources are invested to follow up whether the measures were successful. Often many installations have permits which are valid for very long time periods. New installations are to be approved according to new legislation and consideration should be taken to species and habitat. There is knowledge about the importance of buffer zones adjacent to forestry and agriculture. However, this knowledge is often neglected or unknown to practitioners. There is need for a stronger collaboration between authorities and between authorities and land owners (von Wachenfeldt).

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1 & 2)	Education and communication	1											
3)	Awareness raising	1											

Additional information. Sweden: There is a need for dealing with these issues on a catchment scale level, addressing both water and adjacent terrestrial ground. Education, training, increase the awareness, inform and influence stakeholders (von Wachenfeldt).

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
For *Coenagrion mercuriale* (1044): ensure alteration of shaded and light patches, prevent uniform afforestation (FNE).						✓						
For *Castor fiber* (1337) and *Lutra lutra* (1355): identify conflict points between ecological connectivity and artificial barriers and						✓						

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
make a link with the green and blue main structure. Inspection by environment policy officers on proper implementation of regulations concerning fight against 'damaging' species (FNE).												
Cottus gobio: reduce/remove watrer courses fragmentation by barrier removal						✓						

References Identified by Country Experts

No references provided

Case Studies Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
No suggestions												

Other Information

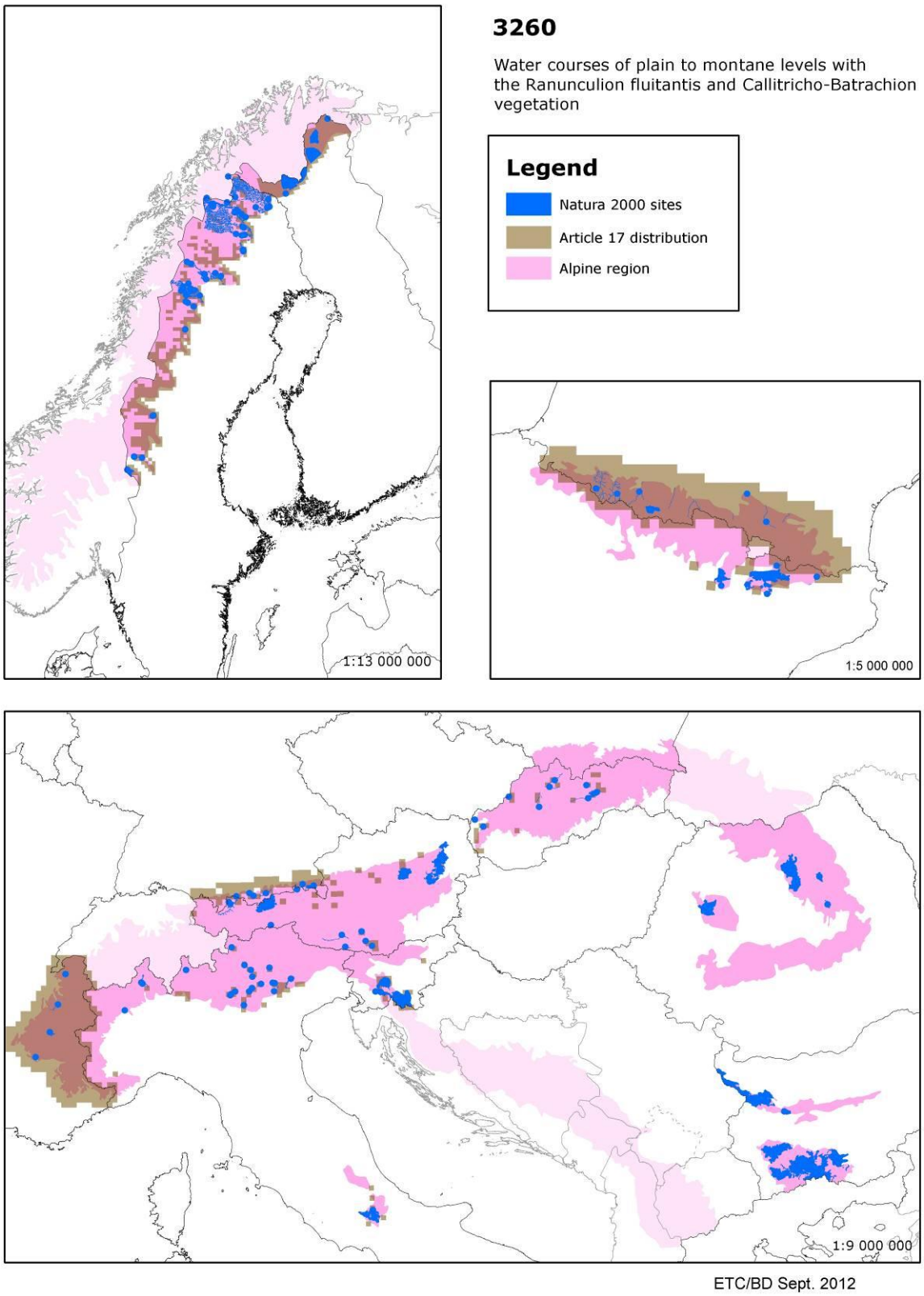
According to the ETC/BD calculations 76-100% of the area of this habitat type is within SCIs. This means that Natura 2000 network provides an important framework for the management of this habitat type.

Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

	AT	BG	DE	ES	FI	FR	IT	RO	SE	SI	SK
Number of sites	13	10	6	6	6	10	22	4	11	7	9
Habitat area (ha)	852	1275	25	93	32	1040	1252	863	1966	2198	134

The figures include all SCIs where the habitat type is mentioned including sites coded as D.

Map of SCIs proposed for Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation & Article 17 distribution



2.7 91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnionincanae, Salicionalbae)

Habitats Manual 2007 Extract

Riparian forests of *Fraxinus excelsior* and *Alnus glutinosa*, of temperate and Boreal Europe lowland and hill watercourses (44.3: *Alno-Padion*); riparian woods of *Alnus incanae* of montane and sub-montane rivers of the Alps and the northern Apennines (44.2: *Alnion incanae*); arborescent galleries of tall *Salix alba, S. fragilis* and *Populus nigra*, along medio-European lowland, hill or sub-montane rivers (44.13: *Salicion albae*). All types occur on heavy soils (generally rich in alluvial deposits) periodically inundated by the annual rise of the river (or brook) level, but otherwise well-drained and aerated during low-water. Montane types occur not on heavy soils, but rather coarse-grained substrates due to high flow velocity of rivers (Ewald).The herbaceous layer invariably includes many large species (*Filipendula ulmaria, Angelica sylvestris, Cardamine* spp., *Rumex sanguineus, Carex* spp., *Cirsium oleraceum*) and various vernal geophytes can occur, such as *Ranunculus ficaria, Anemone nemorosa, A. ranunculoides, Corydalis solida*.

This habitat includes several sub-types: ash-alder woods of springs and their rivers (44.31 – *Carici remotae-Fraxinetum*); ash-alder woods of fast-flowing rivers (44.32 - *Stellario-Alnetum glutinosae*);ash-alder woods of slow-flowing rivers (44.33 - *Pruno-Fraxinetum, Ulmo-Fraxinetum*); montanegrey alder galleries (44.21 - *Calamagrosti variae-Alnetum incanae* Moor 58); sub-montane grey alder galleries (44.22 - *Equiseto hyemalis-Alnetum incanae* Moor 58); white willow gallery forests (44.13 - *Salicion albae*). The Spanish types belong to the alliance *Osmundo-Alnion* (Cantabric atlantic andsoutheast Iberia peninsula).

Most of these forests are in contact with humid meadows or ravine forests (*Tilio-Acerion*). A succession towards *Carpinion* (*Primulo-Carpinetum*) can be observed (Summary sheet of the online report on Article 17 of the Habitats Directive).

Brunet, J. (1991) Vegetation i Skånes alm- och askskogar. *Sven. Bot. Tidskr.* 85: 377-384.

This varied habitat type includes riparian ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*) forests and willow (*Salix alba, S. fragilis*) and black poplar (*Populus nigra*) galleries[24] along lowland and hill watercourses together with grey alder (*Alnus incana*)riparian forests of sub-montane to sub-alpine rivers. The habitat occurs on heavy and periodically inundated soils. The herb layer is composed of tall herb species preferring humid and nutrients rich soils.

This habitat type is relatively wide-spread, but occurs as fragmentary stands where the hydrologic regime is favourable. It is, especially in lowland areas, seriously threatened due to management of water levels and regulation of water courses. The conservation status is 'unfavourable bad' in all regions. Member State assessments for the Atlantic, Continental and Pannonian regions are mostly 'unfavourable-bad'. In the Alpine and Mediterranean regions only France assessed this habitat as 'unfavourable-bad' while in the Boreal only Finland assessed this habitat as 'unfavourable-bad'. In these regions, at the country level, the status of the habitat was mostly 'unfavourable-inadequate' (Summary sheet of the online report on Article 17 of the Habitats Directive).

As a habitat of the butterfly *Euphydryas maturna* (Annex II & IV), management is needed to maintain a suitable structure, this is increasingly missing due to socio-economic changes or national park regulations where no management is prescribed. There are only few localities of *E. maturna*, some of which are associated with this habitat. They need to be prioritised for the maintenance of suitable conditions (i.e. sun exposure down to soil level, high air humidity, food-plant availability, nectar resources). Although the local distribution and habitats are not always adequately known, very good basic knowledge is available.

[24] It is questioned if galleries show all ecological characteristics of alluvial forests so that this type can be included in 91E0? (Kudrnovsky).

Conservation status (CS) assessed at the Alpine region and MS level

N2K code	Habitat name		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK	REGION
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	range	FV		FV	U1	FV	FV	FV	FV		FV	FV	U1	FV
		area	U1		FV	U1	FV	U2	U1	U1		FV	U1	U1	U2
		structure	U1		XX[25]	U1	FV	U2	XX	U1		FV	FV	U1	U2
		future	U1		FV	U2	FV	U2	FV	XX		FV	FV	FV	U2
		overall	U1		FV[26]	U1	FV	U2	U1	U1		FV	U1	U1	U2

Species associated with this habitat and their CS at the Alpine region and MS level

N2K code	Species name	Group		AT	DE	ES	FI	FR	IT	PL	SE	SI	SK	REGION
1337	*Castor fiber*	Mammals	range	U1	FV			FV		FV	FV		FV	FV
			population	U1	FV			FV		FV	FV		FV	FV
			habitat	XX	FV			XX		FV	FV		FV	FV
			future	U1	FV			FV		FV	FV		FV	FV
			overall	U1	FV			FV		FV	FV		FV	FV
1381	*Dicranum viride*	Non-vascular plants	range	U1	FV	XX		XX	U1	FV		FV	XX	U1
			population	XX	FV	XX		XX	U1	U1		XX	XX	XX
			habitat	U1	FV	U2		XX	XX	U1		U1	XX	U1
			future	U1	FV	U2		XX	XX	U1		U1	XX	U1
			overall	U1	FV	U2		XX	U1	U1		U1	XX	U1
1386	*Buxbaumia viridis*	Non-vascular plants	range	U2	XX	U2		FV	FV	U1		FV	XX	U2
			population	U2	XX	XX		FV	FV	U2		XX	XX	U2
			habitat	U1	XX[25]	XX		FV	XX	U1		FV	XX	XX
			future	U2	XX	U2		XX	FV	U2		XX	XX	U2
			overall	U2	XX	U2		FV	FV	U2		XX	XX	U2
1387	*Orthotrichum rogeri*	Non-vascular plants	range	U1	XX			FV	XX					XX
			population	U2	XX			FV	XX					U2
			habitat	U1	XX			XX	XX					XX
			future	U1	XX			XX	XX					XX
			overall	U2	XX			XX	XX					U2
4116	*Tozzia carpathica*	Vascular plants	range							FV			FV	FV
			population							FV			FV	FV
			habitat							FV			FV	FV
			future							FV			XX	XX
			overall							FV			FV	FV

Main pressures on this habitat and their importance to associated species (note that list does not correspond to level of importance)

Pressure description (2nd level)	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	*Castor fiber*	*Dicranum viride*	*Buxbaumia viridis*	*Orthotrichum rogeri*	*Tozzia carpathica*
General Forestry management	x		x		x	
Communication networks	x	x				
Modification of hydrographic functioning	x					

Main threats to this habitat and their importance to associated species (note that list does not correspond to level of importance)

[25] Currently: FV (Rehklau).
[26] Under long-term-trend of the past 100 years: highly questionable in light of widespread changes of inundation regime on large alpine rivers and fragmentation by forest roads on smaller rivers (Ewald).

Threats description (2nd level)	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	*Castor fiber*	*Dicranum viride*	*Buxbaumia viridis*	*Orthotrichum rogeri*	*Tozzia carpathica*
General Forestry management	x				x	
Communication networks	x	x				
Pollution	x		x	x		
Modification of hydrographic functioning	x					

Threats and Pressures Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Modifying structures of inland water courses (J02.05.02)	2		2			1						
2)	Invasive non-native species (I01)	1		1			1		2				
3)	Sand and gravel extraction (C01.01)						1		1				
4)	Forest and Plantation management & use (B02)	2					1		1				
5)	Roads, paths and railroads (D01)	1		1			1		1				
6)	Improved access to site (D05)								1				
7)	Urbanised areas, human habitation (E01)	1							1				
8)	Outdoor sports and leisure activities, recreational activities (G01)	1							2				
9)	Human induced changes in hydraulic conditions (J02)	2							1				
10)	Modification of hydrographic functioning, general (J02.05)	1		1					1				
11)	Reduction or loss of specific habitat features (J03.01)	2		1									
12)	Anthropogenic reduction of habitat connectivity (J03.02)	1		1					1				
13)	Lack of flooding (J02.04.02)			1									
14)	Reservoirs (J02.05.04)			1									
15)	Forestry activities not referred to above (B07)			1									
16)	Removal of dead and dying trees (B02.04)			2									
17)	Surface water abstractions for agriculture (J02.06.01)							1					
18)	Paths, tracks, cycling tracks (D01.01)							1					
19)	Introduction of disease (microbial pathogens) (K03.03)	1						1					
20)	Forest replanting (non native trees) (B02.01.02) - species											1	
21)	Grazing in forests/ woodland (B06)	1											
22)	Biocenotic evolution, succession (K02)								1				
23)	Competition (K04.01)								1				

Habitat Impacts: In **France** water course modification leads to an alteration of both water flow and the seed bank. This leads to difficulties in maintaining natural dynamics and promotes the spread of invasive non-native species. What's more, most of the time the banks are artificialized, with a lack of any native plants or seed bank. The water flow becomes stronger (and thus more erosive) in the central floodplain. Invasive non-native species are related to the previous threat and leads to an impoverishment of natural native communities. The loss in floodplain biodiversity may also be very high! Sand and gravel extraction has similar consequences to the previous two threats (Dentant). In general terms, the demand for wood is increasing, which increases the pressure of remaining forests. It is important to be alert for a better conservation of forest biodiversity (FNE). In **Austria** nearly every large project, such as golf courses, hydroelectric power plants or new roads, damage populations of *Parnassius mnemosyne* and other butterfly-species. Butterfly habitats can be completely destroyed or temporarily destroyed for a 100 year period (Koschuh). As for rivers and riverine landscapes in general, they are ecosystems significantly shaped by recurrent natural disturbances. These dynamic processes initiate a complex mosaic of habitats resulting in a remarkably high diversity of aquatic, amphibious and terrestrial organisms linked to these aquatic systems. Without such natural disturbances, habitat unification and species loss is typically observed in river systems. Diversity in ecological niches within the riverine landscape has decreased along many running waters, mainly caused by man-made alterations in hydrology, sediment load and floodplain extent (Kudrnovsky). In **Poland** logging is quite intensive and the machinery used is very destructive. It produces high erosion (even landslides) as well as a high

sediment load in rivers and streams. Insufficient amounts of dead wood are retained. Forestry practice generally leads to the destruction of habitat and disappearance of old-growth forest. Forest roads can occur at high densities and provide access to previously remote areas, thus increasing human disturbance, promoting land use change, increasing the risk of hunting/poaching and other extractive activities. They also facilitate the spread of invasive species. Large disturbance-free areas that are needed by many species are lacking. In practice, there are no limitations on building in remote and forest areas. Urban spatial plans are also not obligatory. Urban sprawl and dispersed building across the landscape is common in the Polish Carpathians and is increasing which has led to the direct loss and fragmentation of this habitat. The number of ski resorts is increasing, as well as activities like off-road motorized driving (snow-scooters, quad) which may disturb alpine fauna and flora, especially in winter which is a critical period for many animals (Selva). Nowadays we rather observe the results of former drainage, carried out to enable use of wetlands (forest management). However some drainage activities are still continued. The fragmentation of alluvial vegetation leads to loss of its important function for whole riverine ecosystems, including animal populations. The fragmentation was connected with anti-flood management measures, such investments as roads, bridges etc., tree cutting. Due to the fragmentation of the habitat, the invasion of alien plants species is observed, such as: *Impatiens glandulifera, Heracleum sosnovskii, Echinocystis lobata, Reunoutria japonica*. The invasion of alien species leads to changes in species composition. Moreover changes in water conditions cause that less hygrophile species compete with typical flora of 91E0 (Mróz). In **Germany**, alpine valleys are subject to an extremely high density of infrastructure of various types and floodplains are among of the most severely affected features. Along smaller alpine rivers, forest roads are preferentially built at the expense of floodplain forest habitat. The structure and function of major floodplains has been altered by dams, barrages (on the river Isar with water diversions for hydroelectric power stations), resulting in lower groundwater tables, low frequency flooding regimes and isolation from upstream bed load sources. This has caused significant structural fragmentation of this habitat. Both hydroelectric dams and water diversions have affected alpine floodplains on a large scale. These impacts have resulted in an overall reduction of habitat area. Significant threats remain from the development of infrastructure and settlements that will further reduce fluvial morphodyanmics and other hydrological functions and properties (Ewald). The threats and pressures on forest habitats are estimated to be less sweeping than in the continental region, as indicated by the favourable conservation status of many forest habitats in the Bavarian Alps. Remoteness, inaccessibility, steepness, and harsh environmental conditions have led to a higher proportion of well-preserved woodland that has been spared from settlement, forest clearing and urban development. The ranking level "high" in the alpine region is not comparable with "high" in the continental region (Kanold). The threats and pressures in the alpine region are estimated to be generally in a lower level as in the continental region, based on the favourable conservation status in the Bavarian Alps. In many cases, the natural flooding dynamics of small streams in alpine regions have been stopped by canalisations, water diversions or bank reinforcements to protect villages or roads from flooding and mudflows. In a few sites alien species like *Heracleum mantegazzianum* or *Impatiens glandulifera* were extensive. Boosted by the energy revolution, more and more deadwood and dying trees are used for energy, e.g. as wood chips or fire wood. In state forests, an increasing number of whole trees are processed (Mittermeier). In **Italy** the extraction of water for irrigation or drinking are the main threats to this habitat. Low water tables are also an issue (Unterthiner). In **Finland** this habitat type does not have any specific threats or pressures in the Alpine region. The great share of of it is found within established wilderness or protected areas, where forestry is not allowed and construction is restricted. This contributes to the favourable conservation status of this habitat type in Finland. Forestry is virtually not practiced in Alpine region outside PA's either (Ojala). In **Slovenia** the main pressure on butterflies arises from the replanting of *Populus* x *canadensis* clones (Čelik).

Management Requirements Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1)	Promote natural flooding regimes and morphodynamics in flood plains to extend the food plain and increase residual flow.			2			1						
2)	Limit the spread of IASs at their colonization front or eradicate before they become widespread. Sometimes, trying to remove them once they're well established can have a greater negative impact than leaving them in			1			1		2				

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	situ. Any measures leading to removal of aliens species shall be supported. The hand removal if possible is highly recommended due to the smallest negative effects of such activities												
3)	Avoid all extraction in remaining natural rivers!						1		1				
4)	a) Adapt forest management to protect old-growths. Require Environmental Impact Assessment of all forest management plans. b) Maintain/create islets of ageing stands, old trees as well as dead wood on the forest floor as well as standing. c) Consider non-intervention, respect the soil						1		1				
5)	Require Environmental Impact Assessment for all new forest roads. Restore habitat and decommission/remove forest roads once the logging activity has ceased.			1					1				
6)	Avoid road building in large unfragmented forest patches and any increases in traffic volume in forest areas. See point above.			1					1				
7)	Implement urban spatial plans in municipalities with N2000 sites, with the corresponding Environmental Impact Assessment.								1				
8)	Require Environmental Impact Assessment for all new ski resort, and undertake a Strategic Environmental Assessment for the whole Polish Carpathians or at least in Voivodships								1				
9)	a) Maintain adequate groundwater level for habitat type. b) Make a link between forest conservation and prevention of natural hazards						1		1				
10. 1)	The ecological restoration of rivers and riverbanks of the Alpine region should be a legal obligation (Lassen & Savoia 2005) to foster the natural dynamics of a braided river (flood regime, shifting of watercourses, abrasion and sedimentation…)			1									
10. 2)	Any anti-flood protection activities shall be analyzed in view of minimization of negative effect for alluvial forests – and if it is possible – modified. It is also very important in spatial planning to leave the necessary space for natural river dynamics – not urbanized, particularly in higher mountain localities								1				
12)	The possibility of alluvial forest restoration shall be analyzed and if possible – implemented by reforestration. Fragmentation may be also decreased by leaving a buffer zone with not managed non-forest habitats, such as tall herb communities, wet grasslands, scrub communities.								1				
15)	Maintenance of characteristic tree species combinations through fostering spatiotemporal patterns and the targeted removal of atypical tree species not associated with this habitat type.			1									
16)	**a)** Maintenance or enrichment of an adequate supply of deadwood of different species that is integrated with forest management practices; **b)** Conservation of stands without any intervention by humans, including brooks and flood channels within strict forest reserves and core areas of Biosphere Reserves and National parks.			2									
20)	Prevent creation of inappropriate plantations and lanes						1						
22)	Increasing of water level, temporal flooding of alluvial forests, removal of alien plant species								1				
	For Butterflies: **a)** Maintain grassland in this habitat type; **b)** Have regard for key species in projects; **c)** Maintain trees and butterfly related features; **d)**	1											

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	Remove all neophyte; and **e)** Cut very small gaps and promote regeneration of shrubs and trees.												
	Ensure (near) natural run off and sediment flow up stream	1											
	Enlarge the extent of natural riverine landscape through river restoration and manage for landscape diversity along longer river distances	1											
	Establish protected areas/sites					1							
	a) Establishing wilderness areas/ allowing succession; **b)** Restoration measures (habitat and natural process restoration); **c)** Invasive/ problematic species control; **d)** Site/area management; **e)** Adapt forest management; **f)** Invasive/problematic species control; **g)** Restoring/improving forest habitats; **h)** Restoring/improving the hydrological regime; **i)** Establish protected areas/sites; **j)** Manage landscape features; and **k)** Awareness and communications etc.	1				1			1				
	a) Prevent creation of inappropriate plantations and lanes (pistes?); **b)** Respect the soil; **c)** Maintain/create islets of ageing stands with old trees; **d)** Increase fallen and standing dead wood; **e)** Consider non-intervention; and **f)** Make a link between forest conservation and prevention of natural hazards, e.g. flooding.						1						

Additional Information: In **Germany** this habitat type is protected by the Federal Nature Conservation Act (Article 30, Legally Protected Biotopes). Measures that may lead to the destruction or any other significant or lasting adverse impact (e.g. by forest road construction or any other paths or tracks) are prohibited (Kanold). In **Italy** it's very important that experts decide which silvicultural measures need to be taken to maintain this habitat. A procedure of "tree marking" by forest experts (forest engineers, Forest Service) is very important. It is also very important to have well prepared documents (e.g. "le tipologie forestali") in order to do the "tree marking" in the best way (Unterthiner).

Current Management Practices Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1)	Subject to administrative permit, but ineffectual as permits are more or less always granted.						1						
1.2)	Restoration in individual areas has occured as a consequence of the European Water Framework Directive.			1									
2.1)	A range of different control experiments have been carried out.						1						
2.2)	Rooting out manually by NGO work parties			1									
2.3)	Pilot project of mountain river restoration is carried out in the Biała Tarnowska valley. The project includes hand removal of aliens plants species, and planting willow shrub on the sites where the invasive species were removed								1				
3)	Subject to administrative permit, but ineffectual as permits are more or less always granted						1						
10.1)	Protection and restoration of rivers within the meaning of the Water Framework Directive.			1									
10.2)	The pilot projects were realized in site: Torfowiska Orawsko-Nowotarskie within Financial Mechanism of European Economic Area (removal of pine), the other activities are planned within the conservation measures plans of Natura 2000 sites, but their implementation is dependent on available financial and organizational resources								1				
12	Pilot project of mountain river restoration is carried out								1				

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	in the Biała Tarnowska valley. The project include such activities as: planting willows species on the alluvial ground bought from local owners, and buying grounds for alluvial buffer zone as well. The works leading to vegetation restoration are also accompanies by supporting the animal population (Bombina variegata and Unio crassus)												
15)	**a)** Silvicultural operations that foster successional sequences, including open communities of earlier stages. Selected stands are managed as coppice, coppice with pollards and coppice with standards; **b)** Creation of open forest structures and preservation or recovery of coppice systems are eligible for grant from the "Environmental Contracting Program Forests" (VNP Wald; available for municipal and private owned forests); and **c)** The Bavarian state forest company (public-law institution) has fixed suitable measures in its "nature conservation concept".			1									
16)	**a)** Preservation of characteristic tree species, deadwood and abandonment of forestry. Municipal and private owned forests eligible for grants through the "Environmental Contracting Program Forests" (VNP Wald); **c)** The Bavarian state forest company (public-law institution) has fixed suitable measures in its "nature conservation concept".			2									
	Mapping of geophyte plants and other characteristic species of this habitat	1											
	Maintain diversity and regeneration of typical trees and shrubs	1											
	River restoration	1											
	Maintenance and preservation of the extent of natural riverine landscape	1											
	Maintenance and preservation of natural run-off and sediment up stream	1											
Additional Information: In **Austria** the maintenance and preservation of (near) natural river conditions and recovering riverine landscape is the key to improve the unfavourable conservation status of this habitat type (Kudrnovsky). In **Italy** the Forest Service in the Autonomous Province of Bolzano is responsible for the "tree marking". We hope that this procedure will not change! (Unterthiner).													

Barriers and Bottlenecks Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1)	Most of the time, these structures are due to ignorance of local politicians about natural dynamics. They want to 'clean' the flood plain.	1					1						
1.2)	In many cases the physical protection of villages, roads etc. takes priority. This is likely to increase as a result of the climate change and the more frequent flood events that are predicted.			1									
2)	Almost impossible to control dispersal of *Impatiens* and *Heracleum* along streams and rivers. Lack of understanding amongst the general public e.g. seeds are often spread with garden waste. Effective control measures for *Reynoutria japonica* and *Heracleum sosnowskyi* also a problem in Poland.			1					2				
3)	Mainly economic arguments such as: "Where can required sand and gravel for road and building be extracted?"						1						

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
4.1)	Lack of law enforcement; lack of cooperation from principal stakeholder (State Forest in PL); lack of knowledge.	1							1				
4.2)	Long-term forest management requirements also require contractual measures to be of longer duration. After Natura 2000 contracts come to an end, perhaps the measures should be rendered perennial by inclusion into documents on sylvicultural management.						1						
4.3)	Ensuring good group cooperation between DOCOB (action plans) and relevant stakeholders and ensuring that these stakeholders sign the contract.						1						
5)	Lack of knowledge; lack of law enforcement; and lack of policy.								1				
6)	Lack of policy								1				
7)	Insufficient funds for municipalities making urban plans and inappropriate laws.								1				
8)	Lack of law enforcement and lack of policy.								1				
9)	Need to supply households with water during drought periods								1				
10)	**a)** Fragmentation, succession towards zonal forests; **b)** Physical barriers like dams, hydropower plants and installations for flood control; **c)** Opposing demands (flood protection of infrastructure, hydro energy and nature conservation); **d)** insufficient funds; and **e)** a variety of institutional players and non-cooperating stakeholders			1					1				
15)	Establishment of non-characteristic tree species (sensitive to flooding) when river dynamics are absent			1									
16)	**a)** Non-cooperating private forest owners; **b)** increase of wood biomass energy systems; **c)** subsidies of the "Environmental Contracting Program Forests" are too low			2					1				
	Very strong conflicts with aims of revitalisation projects on river systems	1											
	Lack of butterfly species distribution mapping, especially by experienced specialists	1											
	Conflict of different policies	1											
	Unbalanced interpretation of policies/strategies	1											
	Land consumption: ineffectual policy frameworks and a lack of priority in regional and community development strategies			1									
	Restoration: insufficient funds to buy floodplain land and water rights and compensate for damages arising from increased frequency of flood events			1									
	Climate change is a long term threat to most of the Alpine Habitat types. It may compromise the results of most measures taken to manage the habitat types, including the most important measure for this habitat type 'establishing wilderness and protected areas'.					1							
	Private ownership								2				
	Butterflies: Insufficient funds, missing framework for management, missing knowledge on detailed distribution and national park regulations	1						1					

Additional Information: In **Austria** revitalisation of rivers seems to be more important than saving habitat 91E0 in nature restoration practice. Habitats with butterflies are overlooked and the destruction of populations under these circumstances are then accepted. Forest replanting as a so-called improvement also destroys butterfly habitat (Koschuh). The utilization of running waters is intensifying on both European and national level. This process is increasingly affecting aquatic ecosystems and is threatening those ecosystems of running water bodies which are still intact although they are already substantially reduced in number and size. Directive 2009/28/EC, for

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
instance, establishes a common framework for the production and promotion of energy from renewable sources. This implies a continuation of a forced development of hydro power. Beside the energy demand, agriculture (e.g. irrigation, land use), tourism (e.g. technical snow production), natural hazard (e.g. protection measures) are further driving forces with impact on river systems (Kudrnovsky). In **Italy** in the silivicultural management of forest it's always necessary to find a compromise between the (economic) benefits to the owner and the benefits to the general public (Unterthiner). **Poland:** in some cases the obstacle might be not clear ownership structure of the grounds and therefore trouble with obtaining the owner acceptation or (preferable) buying off the ground. A very important bottleneck is also lack of alluvial forests tree seedlings. Main trouble in this case is recurring invasion of removed species. It seems that the chemical treatment might be better solution to cope with alien species – but this method is not recommended in protected areas due to water and ground pollution. In places where water conditions are deeply decreased - the succession may be to advanced and the restoration activities have very limited success (Mróz).												

Potential Solutions Identified by Country Experts

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
1.1)	Mainly education & communication that promotes protection of water courses in urban plans to avoid disturbance of the river bed. Also need to create documents that explain the natural dynamics of a stream flow and the need to preserve it.						1						
1.2)	Better financed subsidies, more personnel, more space for water courses to spread during flood events and no more industrial parks within floodplains			1									
2)	Increasing public awareness and discussion with garden owners			1									
3)	No suggestions						1						
4)	Education; training; law enforcement; establishment of an independent body for controlling forest exploitation; and management.								1				
5)	Raising awareness; implementing new policies avoiding further fragmentation of forest; and compensation measures to ensure 'No Net Loss' of unfragmented lands.								1				
6)	Raising awareness and influencing policies.	1							1				
7)	Change of the current law and new legal obligations placed on spatial urban plans created by municipalities.								1				
8)	Law enforcement; strategic plans; and influencing policies.								1				
10)	Setting up holistic and integrated ecological concepts on the basis of both the EU Water Framework Directive and the EU Habits Directive (Wendler 2007, Cyffka et al. 2008)			1									
15)	**a)** Along river stretches without the possibility to restore floodplain dynamic typical tree species combinations and structures should be systematically managed by silvicultural measures to function as stepping stones; **b)** promoting ecotones and connectivity in floodplain river ecosystems (Ward et al. 1999); **c)** Implementation of habitat connectivity projects in the state forest (eligible as "particular welfare measures", Bavarian state forestry law, according to Article 22 (4)); **d)** More financially attractive subsidies.			1									
16)	Awareness-raising and better financed subsidies.			2					1				
22)	This threat can by limited by increasing of water level, temporal flooding of alluvial forests, removal of alien								1				

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	plant species. The mentioned activities help also to cease the succession of wetland forests into less hygrophile communities												
	Planning of management actions on rivers to minimise impacts on insect populations	1											
	Collate all data resources on protected species from specialists and make it widely available	1											
	Regulation of negative impacts on butterfly populations by competent personal in government agencies during large projects	1											
	Mapping of butterfly distributions on rivers	1											
	Reduce impact on butterfly populations by planning actions on rivers appropriately	1											
	Improve habitat conditions for butterflies on rivers by: saving soil with geophytes; creating better grassland habitat; saving existing semi-natural grasslands; and removing spruce	1											
	Participation	1											
	Sustainable development	1											
	Increase further education (owners) and further training (Forest Service)							1					
	Land buyouts or leasing, monitoring of the effectiveness of different measures/practices, cooperation with local communities and construction supervision.								1				
	In relation to butterflies: **a)** Awareness raising; **b)** Fund raising (financial stimulation of owners, financial support for basic studies on species ecology, ecosystem functioning and effects of specific anthropogenic activities on species/ecosystems); **c)** Better cooperation between policy-makers, owners and other stakeholders; and **d)** Better communication between policy-makers and scientist/experts.											1	
	a) Better implication of European regional funds (Natura 2000); **b)** Application of forestry-environmental programs comparable with ÖPUL; and **c)** Coordinated measures related to spatial planning awareness raising, influencing policies.	1											
	a) Ensuring good group cooperation between DOCOB (action plans) and relevant stakeholders and ensuring that these stakeholders sign the contract; **b)** Measures that can be contracted out should be more ambitious and better remunerated. Long-term forest management requirements also require contractual measures to be of longer duration; **c)** After Natura 2000 contracts come to an end, perhaps the measures should be rendered perennial by inclusion into documents on sylvicultural management.						1						
	Effective fund raising. The planned projects should provide support both for direct conservation measures such as improvement of water conditions, reforestation, removal of alien species and for research (to optimize the measures effectiveness) and what is very important for training and education.								1				
	Development of long-termed strategy/policy how to maintain the results of restoration activities, supported with appropriate financial mechanism is indispensable. Otherwise such effort will have the character of accidental actions and in longer perspective will have negative influence for the perception of nature								1				

		AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
	conservation by the local communities.												
	Finding compromise between anti-flood protection and maintenance of alluvial vegetation.								1				

Species Management Requirements Identified by Country Experts

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Parnassius mnemosyne: Check potential-habitats by measuring the points of spread in *Corydalis* spp. and searching for feeding marks of caterpillars. ***Euphydryas maturna***: Counting larval-webs on forest frings on *Fraxinus excelsior*. ***Euphydryas maturna***: Check flowering richness of meadows and forest frings by evaluation nutrient conditions by characteristic plants and analysing it by Ellenberg et al. ("Zeigerwerte"). ***Lycaena helle***: Check meadows of open forest with stocks of *Polyganum bistorta* and searching for butterflies, eggs and caterpillars (Koschuh).	1											
Management for species is not different than it is for the habitat. Actually, especially for mosses, it is highly recommended to focus on habitat management rather than species as they would not be present without the trees (Dentant).						1						
The real protection of large carnivores requires keeping road-free (or unfragmented) large forest areas, e.g. for wintering bears and cub-raising. These large unfragmented forest patches should be protected for further road developments. Compensation for the same amount of unfragmented land and mitigation measures that include road closure and restoration once the activity ceased should be more generally adopted (Selva).								1				
Semi-open dry areas and ecotones ("Gries", "Brenne") must be managed by special species conservation concepts. They are extraordinarily species rich and hot spots of endangered species (e.g. *Salicion eleagni* and *Berberidion*). The longitudinal connectivity must be restored as one of the main tasks (see EU WFD) because the distribution of seeds and individuals can thus be supported (Cyffka et al. 2008) (Kanold).			1									

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Case Studies Identified by Country Experts

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Identification of secure habitat areas for the brown bear in the Polish Carpathians (within the preparation of the brown bear management plan for Poland). See: http://gatunki.sggw.pl/ & www.carpathianbear.pl								✓				
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Góry Słonne (PLH180013): Elaboration of the site management plan (data survey phase and first drats of management proposals). Elaboration of the site management plan (data survey phase and first drats of management proposals)								✓				

Other Information

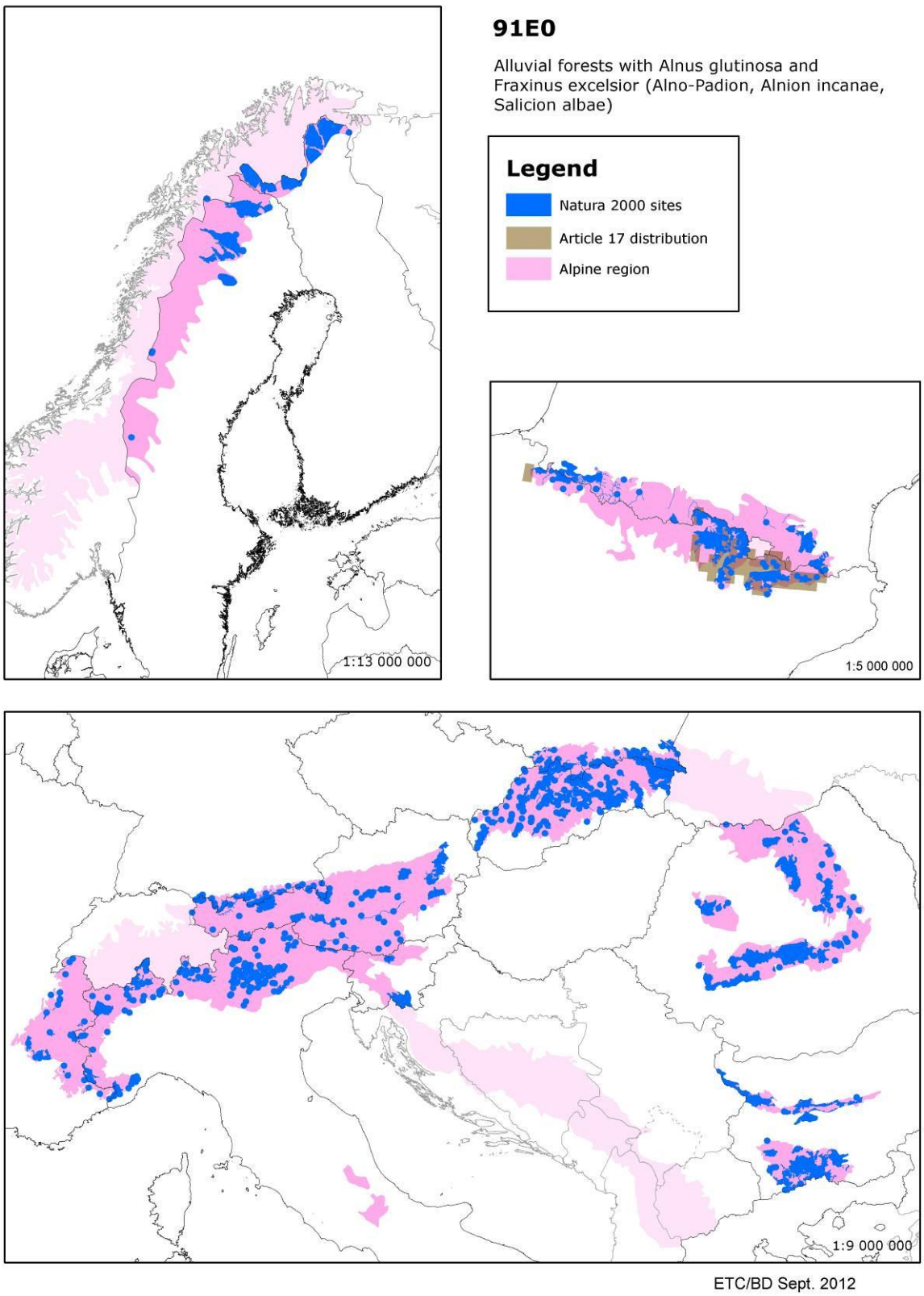
According to the ETC/BD calculations 0-50% of the area of this habitat type are within SCIs. This means that potentially important part of the management needs of this habitat types occurs outside Natura 2000 network.

Number of SCIs and habitat area (ha) within SCIs per Member State in the Alpine biogeographical region

	AT	BG	DE	ES	FI	FR	IT	PL	RO	SE	SI	SK
Number of sites	49	17	21	22	10	41	127	23	49	11	3	105
Habitat area (ha)	5173	1205	867	944	1127	17008	3167	4423	5513	4325	428	2311

The figures include all SCIs where the habitat type is mentioned including sites coded as D. Data source ETC/BD.

Map of SCIs proposed for Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) & Article 17 distribution



Kapitola 2 Annex 1: Expert Questionnaires

Austria (AT)

Bulgaria (BG)

Germany (DE)

Spain (ES)

France (FR)

Italy (IT)

Sweden (SE)

Slovenia (SI)

Slovakia (SK)