WORKSHOP DOCUMENT

For the pilot Boreal Natura 2000 Workshop

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Content

Executive summary

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 biogeographic region, with a special focus on the contribution of the Natura 2000 network, but without ignoring horizontal measures were 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.

Within the framework of EU nature legislation all member states are committed to achieving favourable conservation status of species and habitat types of community interest and to improve the status of bird species naturally occurring in the EU. This objective is also fundamental to the attainment of the EU 2020 European biodiversity strategy. Designation of Natura 2000 sites requires that the necessary conservation measures are put in place, usually implying proactive management, sometimes including the restoration of sites.

Substantial work remains necessary both within the network and in the wider countryside around it in order to improve the current level of only 17% of assessments of the conservation status of species and habitat being favourable. A large variety of approaches, experience and best practices already become available and will likely continue to emerge in the future. There is also a need for clarity in relation to conservation and restoration priorities for Natura 2000 sites and improve the ways for attracting the financing for the network adequate dissemination and learning from these practices will be crucial in ensuring that the targets for nature conservation are met.

Initial assessment by the European Commission suggest that there are significant differences between member states in the level of progress and preparing us for the designation and management of Natura 2000 sites. The new process has been introduced in order to enhance cooperation and coherence in relation to the protection and management of Natura 2000 between member states which share the same biogeographic regions. It is a highly novel and innovative approach in that it involves all major actors involved in the management of Natura 2000 including the competent national authorities, the European Commission, the European Environmental Agency, the European Topic Centre on Biological Diversity, governmental and non-governmental experts, environmental NGOs and other stakeholder organistions from each of the countries involved.

This cooperative approach offers a number of advantages in terms of ownership for outcomes and solutions amongst the stakeholders and across country and other administrative boundaries. It has already established new networks within which key players can share practical (empirical) and technical knowledge in relation to the management of key habitats. The active debate has identified existing and emerging issues to be addressed, including examples of best practice and case studies.

The process itself involves the collection and compilation of information on management of selected habitat types, ad hoc expert meetings, workshops and culminates with seminars in which the outcomes of the workshop and its key recommendations can be debated and adopted. This Workshop document is the first major output of the New Biogeographical Process as applied to Boreal Biogeographical Region. It is aimed to establish the basis for the discussions during the preparatory workshop (25 and 26 January 2012 in Helsinki) and the preparation of the pilot biogeographical seminar for the Boreal region. The workshop document will serve as a technical background document for the discussions on the main issues which will start at the workshop and continue at the seminar where seminar conclusions and recommendations will be adopted. The workshop and the seminar will focus on possible

conclusions, recommendations and proposals for action that can be drawn from that document. The document can still be improved between the workshop and the seminar while new information becomes available. At the seminar it will be available as the 'seminar back-ground document'. After the seminar, the document can still be further improved, extended and updated while progressively developing towards an updated technical background document for the second Boreal seminar. This will happen through input from all actors (Member States, NGOs, expert networks) and be facilitated through the Communication Platform (to be established in 2012).The present document contains a detailed introduction to the New Biogeographic Process and its core objectives, a general introduction to the boreal biogeographical region and the rationale for the selection of habitat types and species. From there the key habitats are presented under the headings of the major ecosystems:

- Grasslands
- Wetlands
- Forests
- Coastal Habitats
- Freshwater Habitats

A total of 18 habitat types are considered under the main ecosystem headings. Within each Habitat type there is :

- A description of the habitat including its conservation status
- An indication of the key associated species with the habitat
- An evaluation of the main pressures and threats on the habitat
- A list of the main conservation requirements of the habitat
- A description of conservation targets where they have been set by the member states
- A description of exiting management measures
- An indication of the main constraints to management and of actual needs
- Recommendations for further action.

Whilst the document is clearly a work in progress, it represents a completely new and unique collation of the views of experts, supported by their technical understanding and practical application in relation to the management of these key habitats. As such it is a “living” document that should continue to be developed and refined as the expert and other networks that have been built as part of this process continue to function over time, until the next cycle begins in 5 to 6 years. It represents a solid basis for preparing conclusions and recommendations to be adopted at the seminars.

1. Introduction and general information

The new biogeographical process is very different from the previous one. It should help Member States to manage the Natura 2000 as a coherent ecological network, while exchanging experience and best practice, addressing objectives and priorities and enhancing cooperation and synergies. The process should contribute to achieving favourable conservation status of species and habitat types of Community interest with special focus on the contribution of the Natura 2000 network, but without ignoring horizontal measures where necessary. It is important to know how to achieve favourable conservation status also outside Natura 2000 (how to address major threats also there).

1.1 Objectives

Within the framework of EU nature legislation all Member States are committed to achieving favourable conservation status of species and habitat types of Community interest and to improve the status of bird species naturally occurring in the EU. This objective is also fundamental to attainment of the EU 2020 European biodiversity Strategy.

The establishment and functioning of the Natura 2000 network is a priority issue for the Member States and the European Commission. The key priority for the coming years will be the completion of the designation of SACs and putting in place effective management measures for sites in the Natura 2000 network. The six year deadline for SACs designation has already expired for some SCIs and will become increasingly relevant over the next few years.

The designation of Natura 2000 sites requires the necessary conservation measures to be put in place, usually implying proactive management, sometimes including restoration of sites. The Habitats Directive expects measures to be put in place to achieve a coherent European ecological network. Such plans and measures may include both conservation and restoration measures.

Substantial work remains necessary both within the network and in the wider countryside to move from the current level of only 17% of assessments of the conservation status of species and habitat types being favourable to the achievement of the overall aim of the Habitats Directive (CEC, 2009). A large variety of approaches, experience and best practice has already become available and will likely continue to emerge in the future. There is also a need for clarity in relation to conservation and restoration priorities for Natura 2000 sites and improved ways for attracting the financing for the network. Adequate dissemination and learning from these practices will be crucial in ensuring that the targets for nature conservation are met.

Initial assessments by the European Commission suggest that there are significant differences between Member States in their level of progress and preparedness for the designation and management of Natura 2000 sites as SACs. A serious problem inhibiting effective management of Natura 2000 has been the inadequate integration of Natura 2000 into the operation of different existing land and water use policies. The importance of integrative planning approaches has been emphasised, i.e. in rural and regional plans and in the context of cohesion policy and funding.

As many species and large areas of certain habitat types of Community interest occur mainly outside Natura 2000 sites, theapplication of adequate conservation measures are also needed outside the network.

1.2 Introduction to the biogeographical process

The new Biogeographical (Natura 2000) Seminars represent a new process and should not be confused with the Biogeographical seminars examining Member State proposals for SCI. These seminars have had a crucial role in the designation of the Natura 2000 network. The evaluation was carried out individually for each

Annex I habitat type and Annex II species in order to determine whether the sites proposed were sufficient and whether their distribution and variation were adequately covered. The outcome from those seminars was the creation of the Reference Lists of habitats/species that occur in each region/country, the related conclusions on sufficiency, and on what needs to be done to complete the network. The participants in these seminars included Member State delegations (through their nominated representatives), nature conservation NGOs (coordinated by the European Habitats Forum - EHF), land user/owners, independent experts invited by the Commission, European Commission through the Directorate General for the Environment (DG Environment), European Topic Centre on Biological Diversity (ETC/BD) and Observers. The ETC/BD was responsible for the technical and scientific support to the process through data analysis, the preparation of the background documents, etc. Finally, dependent on the conclusions, DG Environment requested that Member States submit additional sites to the list of pSCIs in case of insufficiency, or required a re-evaluation of the scientific information. The sufficiency of the new list was discussed on special bilateral negotiations.

With respect to the necessary measures to achieving favourable conservation status of species and habitat types of Community interest, a new process at the biogeographical level has been launched by the European Commission in order to exchange and analyse information on this issue. This new process will be organised around periodic seminars at biogeographical level and pays special attention to the management and coherence of the Natura 2000 network, involving Member States, key stakeholders, NGOs and independent experts. A first round of seminars including one seminar for each biogeographical region is planned to be organised between 2011 and 2015 (linked to Article 17 reporting round of 2007) and a second round of seminars to be organised between 2015 and 2020 (linked to the Article 17 reporting round of 2013). One preparatory workshop will be held for each seminar about 3-6 month before the seminar with the active participation and involvement of all actors and workshop documents will be prepared for these workshops. The workshop document will serve as a technical background document for the discussions on the main issues which will start at the workshop and continue at the seminar where seminar conclusions and recommendations will be adopted. The goal of the workshop and the seminar is not to discuss the background document but rather to focus on possible conclusions, recommendations and proposals for action that can be drawn from that document. The document can still be improved between the workshop and the seminar while new information becomes available. At the seminar it will be available as the 'seminar back-ground document'. After the seminar, the document can still be further improved, extended and updated while progressively developing towards an updated technical background document for the second Boreal seminar. This will happen through input from all actors (Member States, NGOs, expert networks) and be facilitated through the Communication Platform (to be established in 2012).

The new process is intended as a mechanism to improve cooperation and exchanges on conservation objectives and measures. It should make recommendations for proactive and coherent implementation of conservation measures, enhancing cooperation and building synergies.The process should facilitate discussion between Member States, experts, stakeholders, and the Commission on the management measures needed to adequately react to the findings of the conservation status analysis, including changing conditions, with a specific focus on the contribution of the Natura 2000 network.

The new biogeographical process will be chaired by the European Commission, hosted and facilitated by ‘Lead Member States’. Preparation of the seminars will be ensured by the Commission (with the help of its consultant), the lead Member State(s), the EEA & ETC/BD and with input from all Member States and other actors involved. For a good preparation of the seminar, it is essential to benefit from the existing experience of experts already working in the field on selected issues. Experts who can contribute to discussion (NGOs, scientists etc.) are to be involved into process. A Seminar Steering Committee composed of representatives of the Member States, the EEA-ETC/BD, the Commission and its consultant ensures the practical

organisation and preparation of the workshops and seminars. Representatives from NGOs and stakeholder orgaisations can be invited to steering committee meetings as observers.

The background document represents a first major output of the process as it includes summary information on the conservation status of selected habitats (and associated species) and on major threats, information on conservation objectives and measures applied, expert evaluation of objectives and measures, recommendation for further action where necessary as well as information, evaluation and comments on any issues of particular interest that Member States may wish to include on the agenda of the seminar.

The major result from the seminars will be the adoption of seminar conclusions and recommendations.

Another major result of the process will be the permanent enhanced exchange of information and cooperation between actors involved in Natura 2000 management, notably through the planned communication platform.

Natura 2000 funding should not be a separate point of the seminar, but the outcome of the seminar can help identifying priorities for financing.

The process for each biogeographical seminar can be divided five phases.

(1) A **pre-scoping phase** aims to identify the habitat types (and species) considered to be priorities for discussion at a seminar, using existing data from the biogeographical region and the Article 17 reporting process, also having regard to the nature sub-target of the new EU biodiversity strategy. As it is impossible and not relevant to deal with all species and habitat types in a Natura 2000 seminar of 2-3 days, the aim is to narrow down the selection and focus on those species and habitat types where a discussion at the biogeographical level has an added value. This phase involves a consultation between Member States and Commission to agree which criteria to use and to decide on the species and habitat types or clusters of species or habitat types that will finally be selected. Some criteria for prioritisation in the pre-scoping phase have been proposed by the ETC/BD, which concern the following main issues: A) the number of MS where species/habitat types are present, B) species and habitat types at unfavourable conservation status (U2 & U1 & XX), C) trend information. It is also recommended to work with bird species from Annex I of the Birds Directive.

(2) During the **scoping phase**, active input from Member States and their expert networks, the ETC/BD, the EEA, the Commission and the NGOs/users/stakeholder groups will be required. The Commission (via the contractor) will organise the necessary consultations, compile all relevant information from different actors, and prepare a draft of the Workshop document (background document). The main aim is compile information on on-going activities, national action plans, management measures and their extent, conservation objectives, good practices etc. that are already applied to species and habitat types to be considered at the seminar. All the participating Member States fill-in the Habitat Information Sheets. All these sheets elaborated by the Member States are placed on a restricted CIRCA site for which all Steering Group members have access. A part of the information collected is similar to different habitats (e.g. pressures, recommendations). This may allow for the formulation of proposals for more general recommendations in the background document. The initial evaluation of the appropriateness of existing objectives and measures and the preparation of draft recommendations on further action where necessary form also the part of this phase. All this information is includedin the Workshop document.

(3) The outputs expected from each individual seminar will be defined and well prepared in advance of each seminar through the organisation of **preparatory workshops**. The Workshop document (background document) prepared by the Commission (via its contractor) during the 'scoping phase' in consultation with the Member States involved and the other actors including NGOs and other stakeholder groups. The Workshop is organised around separate Working Groups (sessions) according to habitat clusters (habitats groups). The Leading Member State for each habitats group will lead “its” session. It willassist with the revision of the respective chapters of the background document where

necessary and lead on the discussions mainly aiming at preparing possible conclusions and recommendations to be adopted at the seminar. This means that the Leading Member States for the four habitat clusters in close cooperation with the other Member States and the consultant will have to prepare well for the discussions at the work shop based on the draft of the Workshop document. Each Member State will have a quota of participants for the workshop. This quota includes independent experts, NGOs and other stakeholders. The seminar will be open also for observers from other Member States but the workshop should in principle be restricted to representatives from the Boreal Member States and their relevant experts and stakeholders.

(4) The background document will be further elaborated and improved where necessary by the Commission, in cooperation with the other actors in the light of the discussions at the preparatory workshop and of new information that might become available. Input from all actors, including NGOs and other stakeholder groups is still possible after the preparatory workshop.

(5) During the **completion phase** the background document can be fien-tuned as described above, but the main activity during this period will be the preparation of proposed elements for draft seminar conclusions and recommendations, based on the discussions at the preparatory workshop, and to be adopted at the seminar. The respective lead countries will coordinate this work for each large group of selected habitat types in cooperation with the Commission and its contractor and in consultation with the other actors.

(6) The preparatory steps above will be used for each **biogeographical seminar** separately, as it is likely that the focus of each seminar will be depend on the list of species and habitats identified in the pre-scoping phase, and the issues which emerge as worthy of discussion. The output of the seminars will thus materialise in the form of a background document' and 'seminar conclusions & recommendations'. The latter should include recommendations or guidance that will help Member States and the Commission work towards achieving favourable conservation status of species and habitat types of Community interest and improving status of bird species - focusing on species & habitat types that need particular attention. The exact detail of the outputs will depend on the species and habitats being discussed, and the extent of interchange of Member State experience which is valuable.

The first seminar for Boreal biogeographical region will be held in Helsinki in May 2012. It will be a pilot seminar and as such it should be seen as part of a learning process also with a view to future seminars for other biogeographical regions. The preparatory workshop will be held also in Helsinki on 25 & 26 January 2012. The pilot seminar should not include the “boreal” part of the Baltic Sea and doesn’t deal with marine species and habitat types. Marine issues should be addressed in special 'marine' seminars.

It was decided that the pilot seminar will also deal with the Continental and Alpine biogeographical regions in Sweden and Finland.

1.3 Boreal biogeographical region

The Boreal region is the largest biogeographical region of Europe and involves five EU Member States:Sweden, Finland, Estonia Latvia and Lithuania. Taiga forests and mires, numerous lakes and rivers form the characteristic mosaic landscapes of the Boreal region. Along the coasts bedrock archipelagos intermingle with low-lying brackish fens and grasslands.

The geology of the Boreal region is characterised by old weathered sedimentary rocks and bedrock, such as gneisses and granites. Glacial and post-glacial erosion and associated deposits have formed large undulating plains and rolling hills broken by occasional mountain outcrops and river valleys.

The region has a cool-temperate, moist climate, varying from sub-oceanic in the west to sub-continental in the interior and the east. The most significant climatic factor for biodiversity is the length of the growing

season, which defines the productive period, and the amount and duration of snow cover. The summer growing period varies between 100 days in the north and 200 days in the south.

Human impact on biodiversity in the Boreal region is young, having started at the end of the last glacial period about 10 000 years ago. Agriculture is still dominating in the central and southern parts where terrain, soil conditions and climate are most suitable. Numerous small family holdings with combined forestry and agriculture have been characteristic of much of the region. Agriculture is now being intensified and concentrated to the main agricultural regions, while farmland in marginal areas is increasingly abandoned and the land returned to forest naturally or by planting. This process accelerated rapidly since the middle of the 20th century. The effect is a more uniform landscape with strong contrasts between open agricultural areas and closed forests.Widely spread reindeer-based settlements and nomadic herding in the northern parts of the region are now increasingly shifting to all-year settlements and mobile herding.

The Boreal biogeographical region is a transition zone from the climatic extremes of the Arctic region to milder regions of Europe. The table below shows the main habitat types of the Boreal biogeographical region; (definition according to EUNIS Habitat Classification - top categories).

Agriculture and gardens	**Grassland**	**Forest and other wooded land**	**Heath-land and scrubs**	**Wetlands (bogs and mires)**	**Rivers and lakes**	**Coastal and halophytic habitats**
17 %	14 %	58 %	2 %	2 %, in some areas up to 50 %	6 %	<1 %

Source: Compiled by ETC/NC and EEA from Corine Land Cover (EEA) and PELCOM map (Pan-European Land Cover Monitoring, Alterra 1999, NL). June 2000

More than 58 % of the region is covered by forests and other wooded land. There are large differences among northern and southern types. Over 90 % of the forests are under management, though in very varying degrees. The tree limit is in the attitude of 300-500 m in many northern areas and is even lower in the northernmost areas. The forest health condition is crucial to the region (see 2.3.5 Contaminants – Forest condition). The effects of acidification still cause severe problems.

Most of the boreal forests belong to the taiga type, dominated by a few conifer tree species, primarily Norway spruce (*Picea abies*) on moister ground and Scots pine (*Pinus sylvestris*) on drier ground.Vast forest areas were grazed by cattle until some decades ago. This has now diminished radically. The forest grazing kept forests open and with low litter accumulation, but it also made regeneration, both natural and by plantation very difficult. In the northern part large areas are still being grazed by reindeer. In many areas the large elk and deer populations influence the forest composition.

Towards the mountains in the Fennoscandian part of the Alpine region and the arctic tundra the forest is formed by birch (*Betula pubescens*) (including in the Kola Peninsula), while east of the White Sea this transitional zone is generally formed by Siberian spruce (Picea abies ssp. obovata) (Map 2).

Over most of the region, wetlands such as mires, bogs and fens form characteristic landscape elements in mosaics with various forest types. In parts of northern Finland, mires cover almost 50 % of the surface area. Peat-rich mires are still abundant in Estonia and Latvia (Baltic Environment Forum, 2000), while Lithuania has lost around 70 % of such wetlands over 30 years.

The diversity of mires is very high both in terms of habitat types and associated species. Mires are defined as waterlogged ground with a peat layer made up of partly decomposed vegetation, at least 30 cm thick. In this region, it can reach up to 10 m thickness. Mires which receive virtually all their water and nutrient input from precipitation are ombrogenous, while mires where some of the water and nutrients also come from the mineral soil are minerogenous mires or fens. The most common types of mire in the Boreal region are fens

on level or gently sloping ground, often mixed with smaller areas of open water, raised bogs, and drier, firm ground. Characteristic ombrogenous raised bogs, with a central dome of accumulated peat, are mainly found in the southern part. In the most oceanic parts of the region, terrain-covering blanket bogs may have many similarities with North-Atlantic bogs. Special types of palsa mires, which are heaps of peat with a nucleus of ice, may be found in areas of permafrost, generally surrounded by fens. Various *Sphagnum* mosses dominate in bogs, but only a few vascular plants may be found there, such as species of sedges, cotton-grasses and rushes (*Carex, Eriophorum* and *Juncus spp.*), heather (*Calluna vulgaris*), and stunted Scots pine (*Pinus sylvestris*). Important plant species for animals are cloudberry (*Rubus chamaemorus*), cranberry (*Vaccinium oxycoccus*) and other berry-carrying dwarf shrubs. A special group of plants on bogs are the insect-eating sundews (*Drosera spp.*), which benefit from the extra nutrients in their animal diet. On rich fens a far greater range of species may be found, including orchids like the marsh helleborine (*Epipactis palustris*) and marsh orchids (*Dactylorhiza spp.*).

Although bogs and poor fens generally have rather few species, such habitats have great significance for several specialised species, including many of conservation interest. Of the most well-known are migrating birds such as common crane (*Grus grus*, Photo and BOX2) and wading birds like broad-billed sandpiper (*Limicola falcinellus*) and jack snipe (*Lymnocryptes minimus*). The remoteness and inaccessibility of many large mires provide important refuges for these sensitive species. Mires also provide special habitats for many species of insects and other invertebrates.

There are hundreds of thousands of lakes in the region; at least 3/4 of the approximately 600 000 European natural lakes larger than 0.01 km^2 are located here. Most of them are small (less than 1 km^2). Of the 24 European largest natural lakes, 21 alone are located in the Boreal region

Many of the Boreal lakes are young, succeeding the glacial period. Most of them are rather shallow, cold, clear, and oligotrophic with very low natural nutrient loads.Only the largest lakes and those in mountain areas have mean depths exceeding 20 m. Most boreal lakes are covered by ice for several months each year, develop sharp temperature profiles during summer, and have pronounced turnover of water in spring and autumn. Many of the small lakes associated with forests or mires are heavily influenced by peat deposits and have a dystrophic character with high humus content. Several lowland lakes and watercourses have become increasingly influenced by agriculture, forest industry, urban runoff and wastewater and have developed a more eutrophic character as a consequence.

Oligotrophic lakes are specifically mentioned as habitat types of priority for conservation in the EU habitats directive and by the Bern convention. In the Boreal region this applies in particular to lakes poor in dissolved inorganic carbon, so-called *Lobelia* lakes, which contain a suite of characteristic macrophyte species such as isoëtids (plants with basal rosettes growing on the bottom of shallow waters in clear, naturally oligotrophic lakes). The occurrence of isoëtids is used as a quality indicator. Sweden estimates still to have around 8 000 naturally oligotrophic lakes, but the occurrence of *Lobelia* is decreasing.

With the extensive bogs and mires, lakes and forests present in many river catchments of the region, there is a huge natural water storage capacity, resulting in a generally slow water release. However, the river flow in the Boreal region has heavy floods in spring and early summer, due to snow melt, while the flow is lowest in winter during the ice-bound period. In Fennoscandia rivers are rather fast-flowing and relatively small, draining local catchment areas. Species such as osprey (*Pandion haliaetus*), European beaver (*Castor fiber*) and European mink (*Mustela lutreola*), which used to be fairly widespread in Europe, now tend to have their major or only populations in association with lakes and rivers of the Boreal region, where they may encounter introduced populations of Canadian beaver (*Castor canadensis*) and American mink (*Mustela vison*).The ringed seals (*Phoca hispida saimensis* and *Phoca hispida ladogensis*) of lakes Saimaa and Ladoga represent endangered subspecies, which may be considered post-glacial relicts. Boreal waterbodies are important breeding habitats for numerous birds, several of high conservation value and sensitive to

disturbances, such as divers (*Gavia stellata, Gavia arctica*) and water birds like whooper swans (*Cygnus cygnus*), bean goose (*Anser fabalis*) and smew (*Mergus albellus*).

Boreal freshwater habitats are inhabited by substantial populations of economically important fish species of the families *Salmonidae, Cyprinidae,* and *Percidae*, as well as pike (*Esox lucius*) and burbot (*Lota lota*). There is a rich freshwater invertebratefauna, but few of these have been of substantial economic or conservation interest. The crayfish *Astacus astacus* and the mussel *Margaritana margaritifera* provide exceptions. Both of these species have been under traditional and partly modern exploitation with dangers of over-harvesting and are also under threat from changes in their habitat.

Along the Baltic Sea the coast is low with coastal meadows forming important habitats in some areas, often as part of the still ongoing succession resulting from land uplift. Sandy beaches occur but are not frequent. The coast of Sweden and Finland is rocky or rich in boulders.The multitude of islands in the archipelagos around the coasts of Sweden and Finland, including the Åland Islands, are of particular interest with their often dry climate. The larger islands – Gotland, Öland (in the Continental region), Saaremaa, and Hiiumaa – with calcareous soil are housing habitats, with many species to be found otherwise in warm and dry, steppe-like habitats in other regions. Continued traditional agricultural management is a prerequisite for preserving many of these habitats. Several national parks and reserves have been set up to protect habitats of the islands.

Permanent pastures, hay meadows and tree-rich meadows were formerly widespread, especially in small holdings, often in remote areas, in mosaics with forestry. These light open habitats with long continuity under the same special management type are very rich in specialist plants and associated insects. They are the habitat type in the most rapid change in the region.

There are about 1 800 indigenous vascular plant species in the Boreal region, most of them in the southern parts. The region provides important habitats for a large number of bryophytes, lichens and fungi. For instance, in Sweden alone there are about 1 200 species of bryophytes and 2 000 lichens. Many mire plants now have their main populations in the Boreal region, as such habitats have been considerably reduced in much of the rest of Europe. Similarly, several aquatic plants also have their main populations in the oligotrophic freshwater habitats of the Boreal region.

79 mammal species occur in the Boreal region. Among these are the four large predators of international interest: brown bear (*Ursus arctos*), wolverine (*Gulo gulo*), lynx (*Lynx lynx*), and wolf (*Canis lupus*). The Russian populations act as reservoirs for these species. There are important populations of smaller predators, as well as of the large ungulates elk (*Alces alces*) and forest reindeer (*Rangifer tarandus fennicus*). Just over a quarter of the boreal mammals (excluding whales) are listed in annex II of the Bern convention. 13 of these are bats and most of the rest are carnivores.

The elk and reindeer have fundamental impacts on many habitats of the Boreal region through their feeding on trees and bushes or on grass and lichens. The effects are only now being generally recognised. It is a delicate balance between too much and too little grazing. Browsing by elk is severely limits the rejuvenation of pines in many parts of the western Boreal region. The reindeer population consists of both domesticated, semi-domesticated and wild animal herds that are part of the populations of both the Arctic and the Boreal biogeographical regions. 25 % of the elk calves are taken by carnivores, mostly by bear.

Protection versus control of the large predators is a very sensitive political issue, leading to serious conflicts about their management. Damage by predators to reindeer was estimated for the 1990's in Finland and Sweden. For the period 1991–1998 in Finland around 13 000 reindeer were killed by bear, wolf, wolverine or lynx. During 1992–1997 eagles were estimated to have killed 2 400 reindeer. Damage recompensation payments were 7 million FMK in 1998. In Sweden 12 % of reindeer calves are estimated to have been taken by predators, with 35 million SKR set aside for damage compensation for 1999.

About half of the around 513 European bird species (around 270 species) have some part of their breeding range in the Boreal region. The composition varies within the region. In the Russian Federation the sparrow group (*Passeriformes*) constitutes around 46 % and the plovers (*Charadriformes*) around 17 % of 160 species.For several bird species associated with large forests, mire areas and oligotrophic lakes, the region is especially important because it provides a rich supply of such habitats which have been reduced in amount or quality elsewhere in Europe. Examples of such species are woodpeckers, forest grouse, and various water and wading birds. Many species are also of direct conservation interest, including several of mainly Siberian origin, such as great grey owl (*Strix nebulosa*), ural owl (*Strix uralensis*), three-toed woodpecker (*Picoides tridactylus*), Siberian jay (*Perisoreus infaustus*), Siberian tit (*Parus cinctus*), and red-flanked bluetail (*Tarsiger cyanurus*). Around 60 % of the boreal species are listed in annex II of the Bern convention, illustrating their international conservation importance.

Reptiles and amphibians are very sparsely represented in the Boreal region, with about 22 species, or about 10 % of the European species. Most occur in the southern part of the region, near the Baltic Sea. About half of the species are considered to be of particular conservation interest in all Europe; (according to annex II of the Bern convention). Freshwater fish constitute about half of the more widely distributed fish species in Europe and have considerable economic importance, especially the salmonid species.

It is not possible to assess the proportion of invertebrate species in the Boreal region compared to the rest of Europe. However, it appears that for some insect groups like moths and various dipterous insects (mosquitos, flies), the Boreal region is rich in species, perhaps surpassing the richness of some of the otherwise highly diverse biogeographical regions further south in Europe.

Human impact on biodiversity in the Boreal region is young, having started at the end of the last glacial period about 10 000 years ago. Agriculture is still dominating in the central and southern parts where terrain, soil conditions and climate are most suitable. Numerous small family holdings with combined forestry and agriculture have been characteristic of much of the region. Agriculture reached its widest extent towards the end of the 19th century. It is now being intensified and concentrated to the main agricultural regions, while farmland in marginal areas is increasingly abandoned and the land returned to forest naturally or by planting. This process accelerated rapidly since the middle of the 20th century. The effect is a more uniform landscape with strong contrasts between open agricultural areas and closed forests.

1.4 Selection of habitat types and species

The Steering Committee for the Boreal pilot seminar decided that this seminar will primarily deal with habitat types and only secondarily with associated species. The prioritisation is made on the base of the "Priority Index" counted according to three main criteria - number of Member States where the habitat types occurs, inadequate conservation status and information on trend (for details see the Pre-scoping document).

The criteria of draft Pre-scoping document prepared by ETC/BD help only for the pre-selection of habitat types to be discussed at the seminar. The list of habitat types selected (altogether 18 habitats in 5 Habitat Groups) was compiled at the 2nd meeting of the Steering Group for the Boreal pilot seminar on the basis of the revised pre-scoping document and filled thereafter by the participants. After the table had been filled, a preliminary decision of the inclusion or exclusion of habitats was reached, based on the number of Member States in which a certain habitat is present, and on the general interest in its management. The starting point for the selection was the highest ranked habitat groups by the ETC/BD analysis (see the Pre-scoping document), namely grasslands, wetlands and forests. In addition, one high ranked habitat type of the coastal ecosystems (1630) and freshwater ecosystems (3260) were selected following the interest of the Member States.

The Pre-scoping document gives a background and summarizes the work done for the pilot Boreal Biogeographical Seminar. It shows how data have been used to select the habitat types and species for discussion and also contains information on Art 17 statistics for 18 habitat types & associated species. A list

of species associated with the selected habitat types is also included and the procedure for identifying these species is described. Species which are typical to habitats or indicate habitat quality and species as conservation objects represent different point of views. Species management will not be discussed in the process as such but species which will benefit from the habitats management are an important element in the process. In case of conflicts between habitat management and management requirements of certain species these will be dealt with separately. The process will focus on species listed in the Annexes II and IV of the Habitats Directive and in the Annex I of the Birds Directive, and this only where there is a clear benefit from the conservation of selected habitat types and where there is a proven conflict between conservation measures for selected habitat types and species.

[Note: the habitat descriptions which follow include information from Habitats Information Sheets sent by Butterfly Conservation Europe (BCE)and proposed conservation measures for bird species associated with target habitat types provided by BirdLife International (BL)]

2. Grasslands

Sevenspecific habitat types were selected from 25habitats present in Boreal region:Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) (6210), Fennoscandian lowland species-rich dry to mesic grasslands (6270), Northern boreal alluvial meadows (6450), Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorbaofficinalis*) (6510) Fennoscandian wooded meadows(6530), Fennoscandian wooded pastures (9070)and Boreal Baltic coastal meadows (1630). Other endangered habitat types were also givenserious consideration for selection, mainly European dry heaths (4030).

Ninegrassland habitats occur in all 5 Member States of the Boreal biogeographical region.

Two habitat types are in favourable conservation - Siliceous alpine and boreal grasslands (6150) and Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii* (8230).

The grassland habitats and associated species in the Boreal region are influenced mainly by grazing and general forestry management and also by cultivation, urbanization and biocenotic evolution.

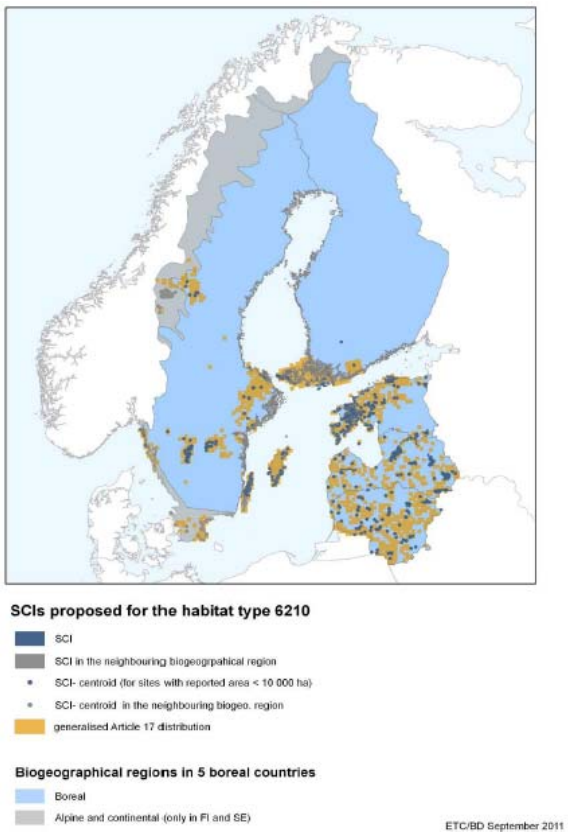
Tab. xx: Number of Natura 2000 sites and their area for habitat types selected in 5 Member States

Code		**Estonia**	**Finland**		**Latvia**	**Lithuania**	**Sweden**		
		Boreal	Alpine	Boreal	Boreal	Boreal	Alpine	Boreal	Continental
6210	Number of sites	82		25	29	65	4	136	33
	Habitat area (ha)	3070,5		458,2	1047,4	790,5	11,2	2876,2	4078,2
6270	Number of sites	75	4	97	39	11	3	546	104
	Habitat area (ha)	2471,9	6,5	535,0	971,5	222,7	17,4	4281,2	1810,8
6450	Number of sites	74		29	29	50	10	43	
	Habitat area (ha)	15675,4		2839,4	8840,1	5994,2	454,5	2573,1	
6510	Number of sites	56		39	51	73		273	14
	Habitat area (ha)	1764,2		397,8	1981,9	3249,8		632,9	96,3
6530	Number of sites	105		15	9	10		65	5
	Habitat area (ha)	4267,0		357,4	1061,3	92,8		222,7	17,6
9070	Number of sites	68		90		20	8	519	77
	Habitat area (ha)	2137,7		731,5		189,8	554,4	11227,8	1288,1
1630	Number of sites	49		88	7			145	39
	Habitat area (ha)	13843,4		2497,3	139,3			2574,5	833,0

Habitat type 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)

1 Description

Dry to semi-dry calcareous grasslands of the *Festuco-Brometea*. This habitat is formed on the one hand by steppic or subcontinental grasslands (*Festucetalia valesiacae*) and, on the other, by the grasslands of more oceanic and sub-Mediterranean regions (*Brometalia erecti*); in the latter case, a distinction is made between primary *Xerobromion* grasslands and secondary (semi-natural) *Mesobromion* grasslands with *Bromus erectus*; the latter are characterised by their rich orchid flora. Abandonment results in thermophile scrub with an intermediate stage of thermophile fringe vegetation (*Trifolio-Geranietea*).



The conservation status of this habitat type is assessed as 'unfavourable – bad'. The only parameter assessed as 'favourable' is range. Only in Finland the situation is slightly better, the habitat is assessed as 'unfavourable' there. Up to 50% of the habitat type is covered by SCIs. The habitat type is present in all Boreal countries.

In the Boreal region 277 Natura 2000 sites were designated. Estimated surface is 10,064 ha.

The area of this habitat type covered within Natura 2000 differs in individual Member States. In Sweden app. 27% of the habitat type area is situated in protected areas. In Latvia there is a current estimation that 40-80% of the total habitat cover could be situated in Natura 2000. In Finland most of the few known sites of this habitat are protected, excluding Åland (where majority of the sites are, but the information is insufficient). In Finland this habitat type mostly occurs as mosaics, together with other grassland and pasture types and it is often overlapping with other habitat types, such as 9070, 6530 or 6270 so the exact amount is unknown. Lithuania lacks of the information on the situation in their country.

2 Associated species

In Finland, there are endangered and valuable orchid species and other vascular plants conneted to this habitat type, among them especially *Dactylorhiza sambucina*, *Gymnadenia conopsea*, *Platanthera chlorantha* and *Gentianella amarella*, and on Åland also *Carlina vulgaris*, *Coeloglossum viride*, *Dactylorhiza fuchsii* and*Orchis mascula*.

Sweden proposed adding of *Saxifraga osloënsis* as it is a species favoured by grazing and occurs on dry calcareous soils, and of *Maculinea arion*. It pointed out that several nationally important species with Species Action Programmes (SAPs) are associated with the habitat. SAPs have been developed for *Maculinea arion*, for several other butterflies, for *Pseudorchis albida*, for mushrooms in natural grasslands, dungliving beetles in grasslands, and are under preparation for *Gymnadenia nigra*, gentians in natural grasslands, to mention some. The whole list of all species recommended for grasslands was submitted by Sweden – see the annex I. (Typical species are species that are used in monitoring/surveillance of the habitat, since they show the quality of the habitat. Not all species are equally relevant in all sites. In sites

with a high quality of the grasslands, more rare typical species are used. The suitability of the typical species also varies between regions.)

Benefiting species	**Species with conflict of managements**
Vertigo angustior	
Coenonympha hero	
Dactylorhiza sambucina (FI)	
Gymnadenia conopsea (FI)	
Platanthera chlorantha (FI)	
Gentianella amarella(FI)	
Carlina vulgaris (FI)	
Coeloglossum viride (FI)	
Dactylorhiza fuchsii (FI)	
Orchis mascula (FI)	
Saxifraga osloensis (SE)	
Maculinea arion (SE, BCE)	
Parnassius apollo (BCE)	
Lanius collurio (BL)	
Lullula arborea (BL)	
Sylvia nisoria (BL)	

Butterfly Conservation Europe suggested adding *Maculinea arion* and *Parnassius apollo* among the benefiting species. They also pointed out *Polyommatus dorylas*, *Melithea aurelia*, *M. cinxia* are the characteristic butterfly species of this habitat whose decline should be reversed, and *Phragmatobia luctifera* is a characteristic moth.

Birdlife International proposed adding three other species among the associated species: *Lanius collurio*, *Lullula arborea* and *Sylvia nisoria*. All these species are particularly important in Finland, *Lullula arborea* also in Sweden.

3 Main pressures and threats

Definitely the most often mentioned, common to all Boreal Member States, is abandonment. This pressure is caused by decline of traditional management and transfer of agricultural activities to more productive areas, insufficiency of current management and lack of financial sources to support suitable management.

The second important is fragmentation and decreased connectivity due to landscape changes, house construction, recreation and change of land use (mostly afforestation), as well as industrialization (harbours, limestone quarries etc.).

Thirdly it is unsuitable or too intensivemanagement, be it stock feeding, ploughing (more common in the past), cultivation, mulching (due to lack of livestock and decline of farming practise) and fertilization, and eutrophication (leads to expansion of nitrophilous species and expansion of tall grasses and herbs, weedy species; its effects are even supported due to abandonment).

And finally there is a group of pressures typical in every case just for one Member State, like open cast mining (FI), general forestry management (FI), beaver activities or wild boars (LV). In SE a potential threat is exploitation for windmills. Many of the limestone bedrock areas on Gotland and Öland are technically suitable for windmills, since they are windy, and the ground is easily accessible (flat) and stable.

4 Main conservation requirements

As to the active management, there is a general agreement that traditional ways of management need to be encouraged, both by setting suitable rules within the existing policies (especially CAP) and creating a convenient financial framework to support management of these areas. The traditional management consists of grazing (preference of cattle grazing at least in some MS due to their ability to consume young junipers – important e.g. in Estonia), mowing and its combination(promotion of habitat heterogeneities, variable grazing pressure and grazing cycles over different parts of the habitat, rotation of mowing and grazing), and clearing of shrub. It is also necessary to identify and restore abandoned habitats to reach increase in the managed area, improvement of effectiveness of management and improvement of connectivity of areas with this habitat type and of its areas under management.

Passive management lies predominantly in restricting destruction of this habitat (restriction of afforestation, alterations of meadows, construction activities etc.) and regulation of free development. Regulation of agricultural management as to the intensity of grazing, prohibition of additional food supply to the animals.

Finland also pointed out importance of increase in knowledge of the habitat type on a national basis by updating a national inventory and coordination of management and national monitoring of grassland habitats.

Birdlife International commented on the management required by the three proposed associated species: *Lanius collurio* and *Sylvia nisoria* require grasslands with scrubs and hedgerows. *Lanius collurio* prefers open areas with shrubs, scrubs, hedgerows and *Sylvia nisoria* open grasslands with shrubs and wetlands: maintenance of traditional landscapes by semi-intensive management - mowing, grazing, the presence of broad-leaved trees (birches, hawthorns, rowans) as single trees or small groups of trees with sunny-rich microhabitats, sparse bush coverage (10-40 % of all habitat) preferably with spiky species (junipers, roses, blackthorn). *Lullula arborea* depends on scattered forests and shrublands, with ideal management of preserving sparse woods and open spaces with scrubs.

5 Conservation targets

There are relatively big differences among Member States concerning setting conservation targets at both national and regional level. In Estonia the targets are defined in national action plan), as well as in Finland where the new national Action plan (2011) for improving the state of all threatened habitats types sets the general targets for all nationally classified habitats, but does not focus on such small and poorly known units as habitat type 6210. In other Member States there are only general biodiversity strategies like in Latvia (national biodiversity programme). The Member States without national or regional strategies are Lithuania and Sweden (in Sweden, however, there is a report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007, setting some regional targets).

The situation is better concerning guidelines and manuals – all Member States except Lithuania (no such document available yet) have these kinds of documents, just in Estonia some of these guidelines are still being under preparation.Butterfly Conservation Europe prepared Do‘s and Don'ts for management of Habitat Directive butterflies.

Management plans are prepared in all Member States, they exist for 2/3 of SCIs in Estonia, 1/5 in Latvia, 7/10 in Lithuania (but in this MS the management plans are in some cases prepared just for a part of a site). In Finland there are “General management plans for Natura 2000 sites” prepared that cover all Natura 2000 sites, while management plans specific for individual sites are prepared just for all national parks (only Archipelago National park being relevant for this habitat type). The few known sites in the Southwestern archipelago have detailed management plans and are also managed accordingly. Butterfly Conservation Europe pointed out proper financial schemes should be connected to these management plans to make them effective.

The habitat is so rare and scarce in Finland (total estimated area less than 150 ha) that no particular targets or objectives are set for it. Instead, the targets will be set to secure the status of the most threatened orchids and other species living in this habitat.

The conservation status of the habitat type must be improved to a more favourable level, eventually, by organizing appropriate management for all known valuable sites. This requires field research and monitoring and a thorough assessment of the status, including Åland.

Currently, there is a need to improve the quality and intensity of management actions of this habitat in Natura 2000 sites. The managed areas need supplementary actions to improve the habitat quality. Inventories, management planning, practical management and monitoring need more resources.

Sweden provided the following summary of conservation targets that can be used for all grasslands in monitoring of protected areas (this is a list of targets that can be used in all or most grassland habitats – depending of the qualities on a certain site and on whether they are relevant for a certain habitat.)

Area:

1 The habitat should have a certain area (stable or increasing)

Structures and functions:

2 The habitat should have a certain (specified within limits) coverage of trees and bushes

3 The habitat should not have any encroachment of vegetation de to lack of mangament

4 The habitat should have a certain (specified) amount of old and/or hollow trees

5 The habitat should have a certain (specified) amount of pollarded trees

6 The habitat should have a certain (specified) maximum height of the grass vegetation at the end of the grazing period

7 The habitat should have a certain (specified minimum) lengt of “blue border”

8 The habitat should be effected by prescribed burnings (only valid for calluna heathlands, 4030)

9 The habitat should have a certain (specified) amount of bare soil and/or open sand

Typical species:

10 The habitat should have a certain (specified) amount of typical species of vascular plants and/or mosses and lichens.

11 The habitat should have a certain (specified) amount of epiphytic lichens

12 The habitat should have a certain (specified) amount of typical bird species

13 The habitat should have a certain (specified) amount of dung-living beetles

14 The habitat should have a certain (specified) amount of typical butterfly species

15 The habitat should have a certain (specified) amount of bumblebees.

In the management plans, targets are formulated for area, for structures and functions and for typical species. This should be done in all plans, for the habitats found on the site, but it is common that the targets for structures, functions and typical species are only based on approximations, since no monitoring or surveillance had been started at the sites when the targets were formulated.

No targets have been formulated at regional or national level for specific habitats.

In Estoniathe national conservation targets for semi-natural habitats are worked out for the Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area of habitat type 6210 under optimal management shall be increased to 2350 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

A proportion of the habitat area under optimal management is rather low – between 10 and 33% (according to Butterfly Conservation Europe in Lithuania this percentage is even under 10%). The current measures consist of both recurrent and restoration management (mowing, grazing, cutting shrub). Management methods aim at increasing the openness, lightness and decreasing the nutrient levels. However, a substantial part of these grasslands are gradually overgrowing, becoming increasingly fragmented and isolated. Another problem is change in agricultural practices, insufficient management or on the contrary too intensive or unsuitable management (too intensive grazing, grazing by sheep), lack of financial sources to support management in these areas and inconvenient set of rules of measures under the current common agricultural policy framework – Sweden pointed out that the way of management is driven by requirements of the CAP, not by the needs of the habitat type. This is a problem since the requiremens of the CAP are often inconsistent with what is the best management for conservation purposes.

Experience of most Member States shows that the need for monitoring and scientific assessment of effectiveness of management is substantial, not only on the local level, but subsequently also on the national level. Some Member States (e.g. such as LT) confirmed a lack of these activities, usually due to a lack of sufficient resources. Information gap is generally shared situation in the Boreal region.Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011.

Butterfly Conservation Europe (BCE) network facilitates exchanges of experience.

There are good practice recommendations in Do‘s and Don'ts for management of Habitats Directive butterflies, prepared by Butterfly Conservation Europe.

In most Member States several projects have been realized, usually co-financed from the LIFE programme, e.g. Rehabilitation of the Baltic Coastal Lagoon Habitat Complex 2005 – 2011 (participation of Germany, Denmark, Sweden, Lithuania and Estonia), Natureship Interreg Central Baltic IV A. International cooperation is not typical for all Member States, some of them have experience rather with local initiatives (including successful LIFE projects like Ziemeļgauja LV0600700 in Latvia too) and national inventories (National inventory of traditional rural biotopes in Finland in 1990s, National habitats inventory in Lithuania).

In Sweden two large LIFE projects (LIFE 96 NAT/S/003185**,** LIFE00 NAT/S/007117) have been carried out on Öland, and two smaller ones (LIFE00 NAT/S/007118, LIFE06 NAT/S/000113) on Gotland, which both have had a focus on grasslands and pastures on limestone bedrock. Life Kinnekulle (LIFE02 NAT/S/008484) also worked with restoration of grasslands on limestone bedrock. The LIFE-projects on Öland were a major success, where the restorations lead to large increases in the managed areas on the island, and also lead to an increased interest from farmers in grazing these areas (the presence of CAP payments promoted the interest). One of the projects on Gotland had a special focus on *Euphydryas aurinia*.

There are currently two management measures in place for semi-natural habitat management in Estonia. For restoring the areas Estonian Environmental Investment Centre (EIC) provides up to 2 year project based opportunity to apply for support. These projects are mainly managed and carried out by Environmental Board (EB). Main activities supported are removing the bush coverage, reed and trees and building fences for livestock. NGOs and EB can also apply support to buy livestock and mowing machinery from the European Regional Development Fund and from the EIC. EB has applied for this support and created a system of giving livestock and machinery out for the farmers to use with no fee. After 5 years farmer has to return same age and same sex animals to the EB but can keep all the descendants of the original animals.

For managing the restored areas farmers can use the Estonian Rural Development Plan (RDP) agri-environemental measures. RDP are managed in cooperation with payment agency and Environmental Board. Main requirements for receiving the support payments are: proof of legal use of the land where semi-natural area is situated and that the area is carried into Estonian Environmental Registry (situated on Natura 2000 area). Main differences with regular RDP subsidies are the later mowing date and more environmentally friendly techniques like not mowing from the edges towards the centre as it traps birds in the middle of the field where they would perish when mowing the last strip of hay.

The main management activities for meadow habitats in Lithuania are bush cutting, mowing, grazing. In principle activities are being applied which protect meadows from becoming overgrown.

Examples of good practice:

MOVED TO: 1630***Latvia - Management of Ziemeļgauja LV0600700***

Planning of detailed management measures in each location in order to preserve the nature and landscape values and diversity. Informing land owners on receiving agro-environmental payments. Arranging the grassland management by regular mowing and/or grazing. Non-desirable measures mentioned, e.g. mulching, applying mineral fertilizers, sowing of grasses and leguminous plants, burning of dead litter, establishment of new drainage ditches.

Finland - Natureship Interreg Central Baltic IV A

A project to increase cooperation in habitat management (including grasslands and wooded pastures) and water protection in the Central Baltic operating area. In this project management planning tools are developed to take more effectively into account the valuable sites and plots of semi-natural grasslands, including this habitat type. Also, some habitat plots in Archipelago National Park were managed during this project.

7 Main constraints and actual needs

The main constraints for most of the Member States lie in socio-economic factors, e.g. change of rural lifestyles, changing farming practises. This situation is then inappropriately reflected in the current way of implementation of the Common agricultural policy. Is seems the measures and money spent do not bring sufficient benefits – on the contrary, the rules are often set in a way that damage the habitats concerned (unsuitable rules of measures, lack of long term commitments, ineffective measures). The second constraint often mentioned is lack of financial sources in general – nowadays support is aimed at insufficient part of the habitat areas. Some Member States also mentioned lack of knowledge (e.g. on invertebrates), deficiencies in advisory system (especially to farmers)and Butterfly Conservation Europe also mentioned insufficiencies in skills and competencies of responsible institutions (example of Lithuania).

Based on the above mentioned constraints, the Member States call for improvements in CAP implementation (especially agri-environmental payments), allocating more financial means for restoration and maintenance of these habitats, improvement of knowledge on the habitat management needs and

possibilities to imitate the disappearing traditional management practices, better inventories and monitoring, support of special restoration measures. And, as Sweden pointed out, there is a strategy needed even on the European level concerning prioritization of areas for restoration.

The Member States do not foresee substantial conflicts with other land use and economic activities. Partly it is caused by the fact that these areas are used for agriculture and there is not a pressure to other land use, partly as these areas are declared to be of a "very little economic value" (FI). The biggest problem is, as mentioned above, the abandonmentand unsuitable management (e.g. fertilization), partly also construction of recreational summer cottages – villages and limestone industries.

Dominance of private property is typical for all Member States; the biggest proportion of state owned land is in Estonia (about one third).

8 Recommendations

Most of the topics mentioned by the Member Stateshave to do with finding way how to maintain the habitat type areas under a suitable management, to avoid abandonment. It is therefore recommended to aim the future discussion at the following topics:

- Firstly it seems there should be a coordinated effort to suggest changes in common agricultural policy implementation – definition what are the main problems and how they could be challenged in favour of biodiversity. The problem lies both on the national level of individual Member States, and on the European level of setting the basic framework of CAP. As Sweden described, in this country the payments under pillar 1 have been used for pastures, but the rules in the regulation regarding this makes it hard to use the payments for pastures with high nature values, if it isn't evident that they are "productive". This has been made evident when Sweden have been revised, and the Swedish application of the pillar 1 payments deemed to generous. In some cases this was reasonable, because areas with little values had been registered as pastures, but it has also lead to significant adverse effects. The most valuable parts of a site can be excluded from payments (like the holes in a cheese), due to the fact that they have too many trees, to much exposed bedrock, or are too wet. This is the case even in these factors add to the conservation value of the pasture, and are a valuable part of a habitat such as 9070 or 1630. In many cases mast of the redlisted species in a such pasture are found in the "cheese-holes". Sometimes the result from the contols has been that farmers have taken down trees with high nature values, just to fulfil the requirements in the CAP. On Öland, it is not uncommon that juniper stands are removed with machines, that leave a thick "compost" layer that damages the pasture – but the practice is rewarded by the fact that the juniper-free areas fit in the CAP. The clearance of too many juniper stands is a threat to *Circus pygargus* and other species.
- Secondly, a topic interconnected with the previous one, and that is financing sustainable use of this habitat type areas. There are also other tools than CAP payments, some Member States mentioned for example need for discussion on the ecosystem services.
- Thirdly, also based on the topics mentioned by the Member States, it is recommended to prepare a manual on best management practices including less typical management practices like burning. The manual shall also contain instructions how to reconcile various conservation needs in one area so that conflicts among various groups of plants and animals are prevented.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 6210 prepared by FI

HIS for habitat type 6210 prepared by LV

HIS for habitat type 6210 prepared by LT

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by SE

HIS for habitat type 6210 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

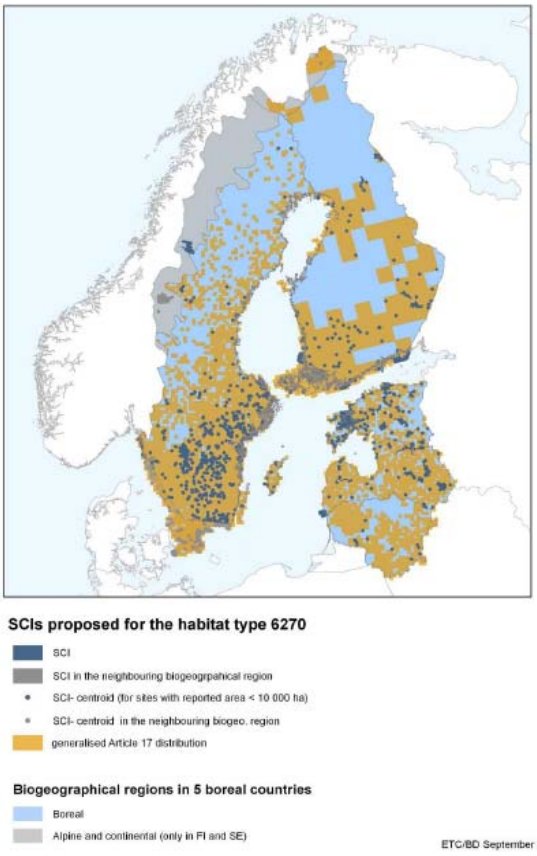
Habitat type 6270 Fennoscandian lowland species-rich dry to mesic grasslands

1 Description

This habitat type occurs in the Fennoscandian lowlands varying from dry to mesic grasslands mainly on siliceous substrates. The vegetation is formed by long-term continuous grazing and/or mowing. No fertilization may occur. Species composition varies in different geographical areas, on different soils and moisture regimes and different management regimes. Includes habitats which are still traditionally used and also recently abandoned habitats with species-rich grassland vegetation. The habitat often supports species-rich vascular plant communities. Several endangered fungi-species also occur.

The conservation status of 6270 habitat type is assessed as 'unfavourable – bad' in Boreal region. It is only its range that is assessed as 'favourable'.

The conservation status of this habitat type is assessed as 'unfavourable – bad'. The only parameter assessed as 'unfavourable' is future. A better situation is only in Estonia with overall situation assessed as 'unfavourable'. Up to 50% of the habitat type is covered by SCIs.



Sweden lacksinformation on the proportion of the habitat area covered by Natura 2000, but in Swedish case it is probable that the proportion is significantly lower than the proportion of the 6210 habitat type. The exact proportion of the habitat type 6270 in the Finnish Natura 2000 network is not known. The total estimated area is 1 200 ha, but the number and location of the small sites is poorly known. A rough estimate is that less than fifth of the total area is covered by Natura 2000 network. The habitat type mostly occurs as mosaics, together with other grassland and pasture types. For Lithuania the proportion of Habitat 6270 covered by Natura 2000 network (calculated based on the values from Article 17 reporting data) is approximately 4 %.

2 Associated species

Euphydryas aurinia is assessed as 'unfavourable', *Maculinea arion* as 'unfavourable-bad' and only *Saxifraga osloënsis* as 'favourable' in all parametres, but data on this species was provided only by Sweden.

Finland questioned *Euphydryas aurinia* and *Maculinea arion* as the associated species, because they are too rare and restricted to indicate presence of this widespread habitat type. It declared they have no relevance for the Finnish evaluation process.

Latvia also proposed deleting *Maculinea arion* and informed that *Saxifraga osloënsis* does not occur in Latvia. Except for adding *Crex crex* among conflicting species it also suggested adding Feeding grounds for *Aquila pomarina* as conflicting for this habitat type, as well as possibly some other bird species.

For other typical species relevant for this habitat type Sweden referred to the national guidelines for this habitat.

In Sweden several nationally important species with Species Action Programmes (SAPs) are associated with the habitat. SAPs have been developed for several butterflies, for *Pseudorchis albida*, for mushrooms in natural grasslands, for dungliving beetles in grasslands, and a programme is under preparation for gentians in natural grasslands, to mention some.

Benefiting species	**Species with conflict of managements**
Euphydryas aurinia	*Crex crex*
Maculinea arion	*Aquila pomarina* (LV)
Saxifraga osloënsis	
Maculinea alcon (BCE)	
Melitaea cinxia (BCE)	
Melitanea britomartis (BCE)	
Crex crex (BL)	
Lanius collurio (BL)	
Sylvia nisoria (BL)	

Butterfly Conservation Europe mentioned the following species as relevant for management or conservation of this habitat type: *Maculinea alcon*, *Melitaea cinxia*, *M. britomartis*.

Birdlife International proposed adding three other species among the associated species: *Crex crex, Lanius collurio* and *Sylvia nisoria*. All these species are particularly important in Finland, *Crex crex* also in Lithuania and Estonia.

3 Main pressures and threats

As for all other grassland habitat types, abandonment is the main pressure, connected with overgrowing with shrub and trees. Change in land use has to do mainly with afforestation/general forestry management, recreation and construction – spreading of urban areas, industrialization. Another group of pressures are unsuitable ways of management – ploughing and cultivation, mulching, fertilization, eutrophication – or insufficient or too intensive management – weak grazing or inadequate clearing of bushes and trees.

Sweden also mentioned isolation and loss of mosaic biodiversity structures in landscape and pointed out negative role of national rules of CAP, which get into conflict with the habitat needs and lead to unfavourable and stereotype management of many grasslands, atmospheric nitrogen deposition and climate change.

Abandonment is evidently caused by socio-economic changes in rural area and agriculture. The traditional management is disappearing and effort to replace it with financial schemes like agri-environmental measures has not been very successful so far: according to Sweden these schemes cause unfavourable and stereotype management of many grasslands and assist in destruction of natural mosaic, functioning species metapopulations etc.

Fragmentation of this habitat type is caused by abandonment of traditional management practices as well. It leads to loss of functional connectivity and small isolated areas are also more difficult for providing suitable management efficiently.

Inadequate management consists of ploughing and cultivation (nowadays limited by agricultural policy), mulching and fertilization, but in Sweden there is also a problem perceived in rules regarding the number of trees, bushes and impediments allowed on grasslands. These rules are inconvenient for Swedish situation where grasslands traditionally have much higher concentration of these elements.

4 Main conservation requirements

The active management consists of ways of grazing and mixed grazing-mowing (except Finland, informing that in Finland mowing has disappeared as a common agricultural method) in a sufficient way and intensity, simulating traditional ways of management(promotion of habitat heterogeneities, variable grazing pressure and grazing cycles in over different parts of the habitat, varied management regimes, preferation of cattle grazing, extensive mowing), accompanied by restoration of abandoned grasslands through removal of trees and shrub. This requires efficient rules of agricultural policy, facilitating management of remaining valuable grasslands, often small areas in agricultural landscape – a functional green infrastructure and landscape structures.

Butterfly conservation Europe formulated the following recommendations on the management:

Do´s
Leave room for nectar plants, e.g. thistles.

- Maintain traditional extensive grazing management in alpine regions.
- Prevent succession of steppe-like habitat to scrubland and forest by removing scrub.

The passive measures are mostly restrictive: preventing afforestation and other alterations of grasslands, preventing unregulated developments,improving effectiveness of existing financial tools and developing new ones. Sweden pointed out support of ecological farming, especially in areas with intensive farming, and the need of cross-sectoral cooperation to deal with structural changes in agricultural landscape by economic and social instruments.

There are identified gaps in knowledge in monitoring and in compiling the available data into a common data system. There is a lack of information on some species, especially invertebrates, and their needs. It is necessary to improve knowledge on how effectively to maintain the relatively small areas of the habitat in agricultural landscape.

According Birdlife International the species *Lanius collurio* and *Sylvia nisoria* require grasslands with scrubs and hedgerows. *Lanius collurio* prefers open areas with shrubs, scrubs, hedgerows and *Sylvia nisoria* open grasslands with shrubs and wetlands: maintenance of traditional landscapes by semi-intensive management - mowing, grazing, the presence of broad-leaved trees (birches, hawthorns, rowans) as single trees or small groups of trees with sunny-rich microhabitats, sparse bush coverage (10-40 % of all habitat) preferably with spiky species (junipers, roses, blackthorn). *Crex crex* requires scattered forests and shrublands, riverine meadows and grasslands where grass is sufficiently high, agricultural fields. Specific recommendations for this species are: delay mowing in focal areas until August; take into account the direction of the mowing; avoid the use of fertilizers and pesticides in seminatural grasslands.

5 Conservation targets

There are relatively big differences among Member States concerning setting conservation targets at both national and regional level. In Estonia the targets are defined in national action plan, as well as in Finland where the new national Action plan (2011) for improving the state of all threatened habitats types sets the general targets for all nationally classified habitats, but does not focus on such small units as habitat type 6270. In other Member States there are only general biodiversity strategies like in Latvia (national biodiversity programme) or Sweden (report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007 and the Swedish environmental Objectives, setting general national targets for the areal and qualities of semi-natural pastures and mowed hay-meadows). The Member State lacking national or regional strategies is Lithuania.

The situation is better concerning guidelines and manuals – three Member States (SE, FI and EE) have these documents, just in Estonia some of these guidelines are still being prepared (also for the habitat type 6270). Guidelines are usually prepared for groups of habitat types like semi-natural grasslands. Latvia and

Lithuania have no such documents.

Management plans are prepared in all the Member States, they are prepared for 2/3 SCIs designated for semi-natural habitats in Estonia and for one site in Lithuania. In Finland there are "General management plans for Natura 2000 sites" prepared that cover all Natura 2000 sites, and furthermore there are many detailed management plans for most sites with this habitat type, both for protected areas and for private contract areas. Sweden has management plans for nearly all Natura 2000 sites, but these plans are formulated on a general level, not providing details of management for specific spots. In Latvia, as there are no SCIs exclusively for the 6270 habitat, but specific actions for this habitat are included in several management plans, but mostly the measures are targeted at restoration of semi-natural grasslands within the given area general.

In general the conservation status of the habitat type must be improved to a more favourable level, eventually, by organizing appropriate management for all known valuable sites. This requires continued field research and monitoring and a thorough assessment of the status. Currently, there is a need to improve the quality and intensity of management actions of this habitat both in Natura 2000 sites and outside the network. The managed areas need supplementary actions to improve the habitat quality. Inventories, management planning, practical management and monitoring need more resources.

Sweden provided the following summary of conservation targets that can be used for all grasslands in monitoring of protected areas (this is a list of targets that can can be used in all or most grassland habitats – depending of the qualities on a certain site and on whether they are arelevant for a certain habitat.)

Area:

1 The habitat should have a certain area (stable or indreasing)

Structures and functions:

2 The habitat should have a certain (specified within limits) coverage of trees and bushes

3 The habitat should not have any encroachment of vegetation de to lack of mangament

4 The habitat should have a certain (specified) amount of old and/or hollow trees

5 The habitat should have a certain (specified) amount of pollarded trees

6 The habitat should have a certain (specified) maximum height of the grass vegetation at the end of the grazing period

7 The habitat should have a certain (specified minimum) lengt of "blue border"

8 The habitat should be effected by prescribed burnings (only valid for calluna heathlands, 4030)

9 The habitat should have a certain (specified) amount of bare soil and/or open sand

Typical species:

10 The habitat should have a certain (specified) amount of typical species of vascular plants and/or mosses and lichens.

11 The habitat should have a certain (specified) amount of epiphytic lichens

12 The habitat should have a certain (specified) amount of typical bird species

13 The habitat should have a certain (specified) amount of dung-living beetles

14 The habitat should have a certain (specified) amount of typical butterfly species

15 The habitat should have a certain (specified) amount of bumblebees.

In the management plans, targets are formulated for area, for structures and functions and for typical species. This should be done in all plans, for the habitats found on the site, but it is common that the targets for structures, functions and typical species are only based on approximations, since no monitoring or surveillance had been started at the sites when the targets were formulated.

No targets have been formulated at regional or national level for specific habitats.

In Estoniathe national conservation targets for semi-natutral habitats are worked out for Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area under optimal management shall be increased to 1880 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

The 6270 habitat type requires mowing, grazing and mainly, with respect to the current state of the habitat, intensive restoration management of mowing, grazing and cutting shrub.

Although the situation of this habitat type differs among the Member States, there are common features. Reasons of the overall current situation are the same like for other grassland habitats: socio-economic development and structural changes in agriculture and land use. In Finland about half of the habitat sites are managed (the amount of sites being managed has grown), but often not optimally: the intensity is often too low (especially grazing and restoration clearings); only a small part of the total managed area is under optimal management. As most of the habitat areas are situated outside Natura 2000, cooperation among different operators is essential, as well as advisory services for farmers (the sites are mostly privately owned) and voluntary work. The main manegement measure is grazing (either by cows, sheep or horses). Mowing is conducted only in very small amount of sites. One of the most important matters in saving these habitats is assuring financing of restoration and continuous management. The most important financing method at the moment is the EU agri-environmental scheme and its support for managing traditional rural biotopes. Still, there are problems with the management quality in many cases: too small grazing pressure and lack of or inadequate restoration clearings. Only a small part of the total managed area is under optimal management. Often, these habitat types are already severely overgrown after years of abandonment and first major clearings are needed.

In Estonia the percentage of the habitat area under optimal management is relatively higher, about 1/3. In addition to that the restoration of habitat is being undertaken. For example, 49 ha of the 6270 habitat type are under restoration management in 2011. There are currently two management measures in place for semi-natural habitat management in Estonia. For restoring the areas Estonian Environmental Investment Centre (EIC) provides up to 2 year project based opportunity to apply for support. These projects are mainly managed and carried out by Environmental Board (EB). Main activities supported are removing the bush coverage, reed and trees and building fences for livestock. NGOs and EB can also apply support to buy livestock and mowing machinery from the European Regional Development Fund and from the EIC. EB has applied for this support and created a system of giving livestock and machinery out for the farmers to use with no fee. After 5 years farmer has to return same age and same sex animals to the EB but can keep all the descendants of the original animals.

For managing the restored areas farmers can use the Estonian Rural Development Plan (RDP) agri-environemental measures. RDP are managed in cooperation with payment agency and Environmental Board. Main requirements for receiving the support payments are: proof of legal use of the land where semi-natural area is situated and that the area is carried into Estonian Environmental Registry (situated on Natura 2000 area). Main differences with regular RDP subsidies are the later mowing date and more environmentally friendly techniques like not mowing from the edges towards the centre as it traps birds in the middle of the field where they would perish when mowing the last strip of hay.

In Latvia most of the habitat sites under management are mowed using the agri-environmental payments

(private land owners) and NGOs (restoration works). Continuous management of semi-natural grasslands including 6270 habitat is on-going in the largest sites in Latvia. Private landowners participate also at management of small protected areas. Management of this habitat type is not optimal either in Lithuania (according to expert evaluations), nor in Sweden a majority of the habitat areas are managed optimally. In Sweden the management is combination of CAP measures, LIFE projects and local initiatives on a communal level and by NGOs. 6270 can be described as the "typical" pasture type in Sweden, and in many protected areas it is well managed. This means that the grazing pressure is adapted to the productivity of the site, and in relevant cases also to the presence of sensitive species. Many present pastures have a history as meadows, and may include plant and insect species that are sensitive to continuous grazing. In such areas, it can be useful to protect parts of the area from grazing diring the first part of the summer, and only allow the cattle to go there from august or later. In most areas the problem is not overgrazing, but rather neglect or abandonment. This problem is if course most acute outside protected areas. It is a large problem in many of Swedens less populated areas, where few young people stay or settle, and many old farmers retire.

Two Member States (EE and LT) declare that no evaluation of existing management measures takes place in their country. In Latvia management effectiveness is being assessed only in few sites, where regular grassland monitoring is carried out, but there is uncertainty as for the future – there is a lack of funding for these purposes. In Finland and Sweden there is assessment in place (in Finland the Assessment of threatened habitat types in Finland and in Sweden both local and national monitoring is being developed).Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011.

Butterfly Conservation Europe marked that in Estonia, Mesic seminatural species-rich grasslands have been so abundant that they have not so far been set as a conservation target.

There is an important role played by LIFE projects aimed at sites with this habitat type and semi-natural grasslands in general. Finland mentioned a newly started (in 2011) Metsähallitus LIFE project with focus on active restoration actions in species rich habitats. For Latvia LIFE-Nature projects have often been impulses for initiation of restoration and management of these habitats, subsequently continued by land owners after the end of projects. And Sweden has several LIFE projects: Rosoris LIFE05 NAT/S/000108 was a project focusing on restoration of natural pastures and meadows in the county of Östergötland, and has restored important areas with 6270. In the county of Jämtland LIFE03 NAT/S/000070, LIFE08 NAT/S/000262 also have had a focus on restoration of meadows and pastures. Mia LIFE07 NAT/S/000902 and GRACE LIFE09 NAT/SE/000345 work with restoration of grasslands in the archipelagos in southern Sweden.

Butterfly Conservation Europe (BCE) network facilitates exchanges of experience.

There are good practice recommendations in Do's and Don'ts for management of Habitats Directive butterflies, prepared by Butterfly Conservation Europe.

Examples of good practice:

Estonia

MOVED TO: 1630LIFE02 NAT/EE/008559 Conservation of Natura 2000 biotopes in Karula National Park: Working in close collaboration with the local farmers, the project started by preparing a detailed management strategy for the 350 ha of semi-natural meadows identified as being of high conservation value and feasible for restoration. It then undertook the necessary restorative actions needed to bring the land

back up to a level where it can be grazed or mowed. Once this was achieved, management contracts were drawn up with local farmers for the long-term maintenance of the land. If necessary, the owners were loaned cattle or equipment from the National Park in order to encourage them to build up their own stock for the future (offspring became property of the farmer).

Finland

ULLA-project: local project of Association for Nature Conservation in Finland for managing threatened biotopes and species in Uusimaa region with the help of employment appropriation. Includes mainly grasslands, most of them this habitat type, having several declining grassland species. Project has managed nearly 100 sites around Uusimaa region and it has been very important for maintaining this habitat type regionally. Most of the project sites are privately owned. Main management activities in this project have been first clearings, mowing and controlling of invasive species. Project has also assisted in starting grazing as a continuous management method in several sites. Main funding for the project is from the employment funds, in additions foundations and local municipalities have taken part in the funding.

Latvia

Management plans for semi-natural grasslands in Teiči Nature Reserve LV0100500 and Krustkalni Nature Reserve LV0100400 and their implementation (carried out by the Teiči Nature Fund, formerly by the Administration of Teiči Nature Reserve).

LIFE-Nature project on restoring the floodplains by Latvian Fund for Nature and associated partners covering 15 N2000 sites (2004-2008). The project was targeted at floodplain grasslands, however, it covered also some sites with 6270 habitat as a part of floodplain complex. In numerous sites, the good practise is continued by land owners.

7 Main constraints and actual needs

The basic need is maintaining traditional management activities and starting management of sites that are currently without management, especially small areas that are usually abandoned first. A suitable management is grazing or mixed grazing-mowing; ensuring grazing in small remote grassland patches is difficult, therefore, in some cases, mowing as alternative approach could be used. As socio-economic conditions and rural life have changed substantially (the main current constraint for all grassland habitats), it is not possible without providing sufficient financial funds and finding efficient ways to support restoration and maintenance of this habitat type areas. It is evident that agri-environmental schemes play dominant role. These schemes should be revised to become more effective, more targeted, more motivating (adequate payments per hectare) and provide a long-term stability for farmers. Lithuania suggests funding for habitat areas that are currently in bad condition and for this reason do not meet requirements and do not reach agricultural payments. Estonia pointed out that a one-year project based approach when restoring the areas does not provide stability and good perspective to farmers. For Finland more funding for managing authorities and developing financial system for non-farmers are also important elements. Sweden declared necessity of increasing general standards of conservation requirements for grasslands in general, as most areas in Natura 2000 sites are managed in the same way as areas outside Natura 2000.

Except lack of financial sources for practical management there should be also an emphasis to supplementary actions like inventories, management planning and monitoring. Cooperation with different authorities is important, as well as cooperation with local people. Advisory system for farmers is another key element.

A dominating activity is farming, so there shall be in principal no conflict with conservation needs (being the agricultural policy set in harmony with the habitat needs, which is not always the case). The main conflicting activity mentioned by several Member States is forestry, for Finland also commercial use of

land for construction. In Sweden the situation is even more complicated by the fact that in this Member State, after 3 years of abandonment grassland is automatically transformed into forest land. Latvia estimates that land use in about one half of the habitat coverage could be compatible with the conservation needs of the habitat type. There is no potential conflict in Lithuania as the main economic activity is traditionally farming.

Dominance of private property is typical for all Member States; the biggest proportion of the state owned land is in Estonia (about one third).

8 Recommendations

Most of the topics mentioned by the Member States have to do with finding way how to maintain the habitat type areas under a suitable management, to avoid abandonment. It is therefore recommended to aim the future discussion at the following topics:

- Firstly it seems there should be a coordinated effort to suggest changes in common agricultural policy implementation – definition what are the main problems and how they could be challenged in favour of biodiversity. Seemingly the problems lie both on the national level of individual Member Statesand on the European level of setting the basic framework of CAP. As Sweden pointed out, it is most important that the definition of pastures and meadows in the CAP regulation focuses on the historical use and values (cultural, biodiversity) of grasslands, not just on their net productivity of grass/herbs. Secondly, a topic interconnected with the previous one, and that is financing sustainable use of this habitat type areas. There are also other tools than CAP payments, some Member States mentioned for example need for discussion on the ecosystem services.
- Thirdly, also based on the topics mentioned by the Member States, it is recommended to prepare a manual on best management practices including less typical management practices like burning. The manual shall also contain instructions how to reconcile various conservation needs in one area so that conflicts among various groups of plants and animals are prevented.

National regulations for management of biologically valuable grasslands (late mowing dates, so that the cut grass cannot be used as fodder and therefore mostly mulched and left on field; increased benefits in intensive farming in comparison to extensive grassland management etc.), which do not encourage the farmers to manage the habitat.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 6270 prepared by FI

HIS for habitat type 6270 prepared by LV

HIS for habitat type 6270 prepared by LT

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by SE

HIS for habitat type 6270 prepared by BCE

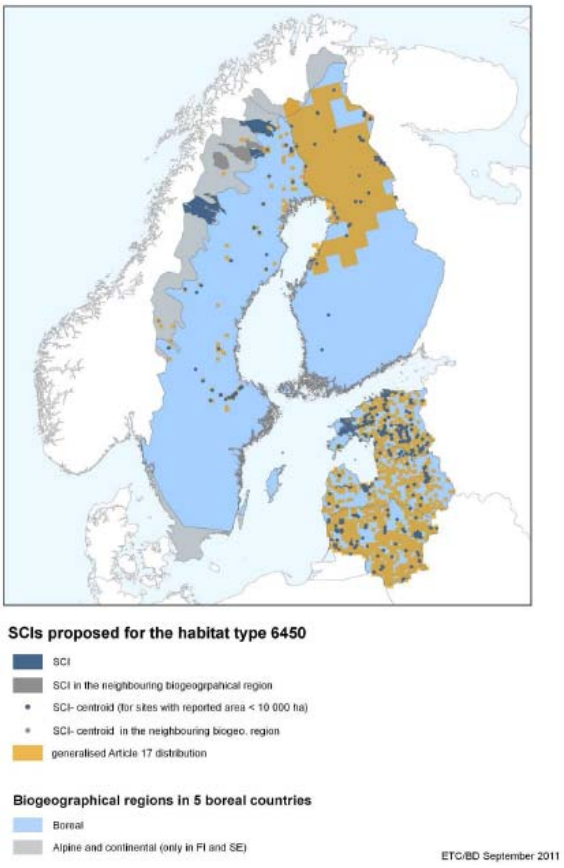
Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

Habitat type 6450 Northern boreal alluvial meadows

1 Description



Along large rivers with placid river sections which are frozen every winter, the habitat type is affected by flooding in spring. The traditional management as hay meadows has usually ceased. Type includes areas that are not yet severely overgrown with trees and bushes. Includes several vegetation types which vary according to the moisture (flooding) gradient: Equisetum fluviatile-alluvial meadows, *Carex acuta* or *C. aquatilis*-alluvial meadows, *Calamagrostis*-alluvial meadows, *Phalaris*-alluvial meadows, *Deschampsia caespitosa*-alluvial meadows, tall-herb alluvial meadows, dry alluvial meadows.

The conservation status of this habitat type is assessed as 'unfavourable – bad'. The only parameter assessed as 'unfavourable' is future. It is noted as 'unfavourable' by Latvia, 'unfavourable-inadequte'by Estonia and 'unfavourable-bad' by the rest of Member States. Over 76% of the habitat type is covered by Natura 2000 sites. The habitat type is present in all Boreal countries.

In the Boreal region there are 174 Natura 2000 sites designated. Estimated surface is 27,922 ha.

Area covered within Natura 2000 sites varies in different Member States: in Finland this area is rather small; while in Latvia it is up to 80% (all the largest sites are included). Estonia provided information on semi-natural habitats as the whole (about 75% of them are situated within Natura 2000) and there is no available data in Lithuania and Sweden (in SE this data shall be available soon).

2 Associated species

For Latvia the species *Tringa glareola* is not an important species, because in Latvia in prefers nesting in mires. At the same time it recommended adding *Crex crex* among conflicting species as it suffers from intensive grazing (an extensive one is all right). Latvia suggested other species for the list: *Angelica palustris, Lycaena dispar, Ophiogomphus cecilia, Leucorrhinia pectoralis, Parnassius mnemosyne, Crex crex, Gallinago media, Acrocephalus paludicola, Porzana porzana, Vanellus vanellus, Philomachus pugnax, Tringa totanus* (especially pastures), *Aquila pomarina* (feeding grounds),*Coturnix coturnix* (irregularly in the habitat), *Perdix perdix* (irregularly in the habitat), *Gallinago gallinago* (irregularly in the habitat), *Ciconia ciconia* and *Alauda arvensis* (the last two are the species benefiting from management of 6450, but are feeding or dwelling in cultivated grasslands and/or other habitat types as well). It also proposed *Crex crex* as a conflicting species.Estonia proposed adding four species to the list: *Angelica palustris, Parnassius mnemosyne, Gallinago media* and *Crex crex*. Lithuania proposed adding *Lycaena dispar* and *Gallinago media* to the list. And finally Sweden suggested adding *Arctophila fulva* (dependent on mowing and grazing along shores in the northern part of the Baltic Sea and along the river Torneälven) and *Persicaria foliosa* (favoured by grazing along shores in the northern part of the Baltic Sea and along rivers).
Sweden provided the whole list of all species recommended for grasslands was submitted by Sweden – see

the end of grasslands text. (Typical species are species that are used in monitoring/surveillance of the habitat, since they show the quality of the habitat. Not all species are equally relevant in all sites. In sites with a high quality of the grasslands, more rare typical species are used. The suitability of the typical species also varies between regions.) Several nationally important species with Species Action Programmes (SAPs) are associated with the habitat. SAPs have been developed for several butterflies, for *Pseudorchis albida*, for mushrooms in natural grasslands, for dungliving beetles in grasslands, and a programme is under preparation for gentians in natural grasslands, to mention some.

Sweden also noted that the proposed species are more dependent on other habitats in Sweden, and therefore it is suggested that the focus in the discussion is whether active management is required or not for this habitat, and that it also covers the likely development/succession in formed flooded meadows, that are now unmanaged.

Benefiting species	**Species with conflict of managements**
Philomachus pugnax	*Crex crex* (LV, BL)
Tringa glareola	
Angelica palustris (EE, LV)	
Parnassius mnemosyne (EE, LV)	
Gallinago media (EE)	
Crex crex (EE, LV)	
Lycaena dispar (LV, LT, BCE)	
Ophiogomphus cecilia (LV)	
Leucorrhinia pectoralis(LV)	
Gallinago media (LV, LT)	
Acrocephalus paludicola(LV)	
Porzana porzana(LV)	
Vanellus vanellus(LV)	
Philomachus pugnax(LV)	
Tringa totanus(LV)	
Aquila pomarina(LV)	
Coturnix coturnix(LV)	
Perdix perdix(LV)	
Gallinago gallinago(LV)	
Ciconia ciconia(LV)	
Alauda arvensis(LV)	
Arctophila fulva (SE)	
Persicaria foliosa (SE)	
Erebia polaris (BCE)	
Lycaena helle (BCE)	
Aricia nicias (BCE)	
Aricia artaxerxes (BCE)	
Aricia eumedon (BCE)	
Lycaena hippotoe (BCE)	
Philomachus pugnax (BL)	
Tringa glareola (BL)	
Asio flammeus (BL)	
Gallinago media (BL)	
Porzana porzana (BL)	
Anser albifrons (BL)	
Grus grus (BL)	
Cygnus cygnus (BL)	

Butterfly Conservation Europe recommended adding *Erebia polaris*, *Lycaena helle* and *Lycaena dispar* among the benefiting species and *Aricia nicias*, *A. artaxerxes*, *A. eumedon* and *Lycaena hippotoe* among other relevant species.

Birdlife International recommended adding the following species to the list: *Philomachus pugnax*, *Tringa glareola* (both especially important in Finland and Lithuania), *Asio flammeus* (Sweden), *Crex crex* (Finland, Latvia, Estonia, Lithuania), *Galinago media* (Sweden, Finland, Estonia), *Porzana porzana* (Finland, Estonia), *Anser albifrons* (Finland, Sweden, note: Reintroduced and not dependent on this habitat anymore), *Grus grus* and *Cygnus Cygnus* (both especially important in Sweden).

3 Main pressures and threats

The Member States perceive abandonment as the main pressure for this habitat type. This pressure is common for all the grassland habitat types. The second important pressure is modification of hydrographic functioning, drainage, and water pollution. These pressures are followed by change in land use like afforestation, construction activities, industrialization and fragmentation – isolation and loss of mosaic biodiversity structure in landscape. And the third substantial type of pressure is unsuitable or too intensivemanagement ploughing and cultivation, mulching, fertilization, eutrophication, or insufficient management – inappropriate grazing or inadequate clearing of bushes and trees.

Abandonment is connected to overgrowing with shrub and trees. It is evidently caused by socio-economic changes in rural area and agriculture. The traditional management is disappearing and effort to replace it with financial schemes like agri-environmental measures has not been very successful so far: according to Sweden these schemes cause unfavourable and stereotype management of many grasslands and assist in destruction of natural mosaic, functioning species metapopulations etc.

Modification of hydrological functioning: according to Latvia massive drainage caused decline of the habitat type in the second half of the 20th century; absence of flooding impact still is a significant factor hindering renaturalization of floodplain grasslands. Adverse process is paludification and transformation into reed beds and fens in drained areas inhabited by beaver.

Sweden pointed out a negative role of national rules of CAP, which gets in conflict with the habitat needs and lead to unfavourable and stereotype management of many grasslands, atmospheric nitrogen deposition and climate change.

Fragmentation of the habitat type is also caused by abandonment of traditional management practices. It leads to loss of functional connectivity and small isolated areas are also more difficult for providing suitable management efficiently.

Inadequate management consists of ploughing and cultivation (nowadays limited by agricultural policy), mulching and fertilization, but in Sweden the problem is also with rules regarding the number of trees, bushes and impediments allowed on grasslands. These rules are inconvenient for Swedish situation where grasslands traditionally have a much higher concentration of these elements.

4 Main conservation requirements

The active management consists of ways of mowing and mixed mowing-grazing - promoting habitat heterogeneities, variable grazing pressure and grazing cycles over different parts of the habitat, implementation of varied regimes, avoiding adding extra nutrients to the ground and no additional food supply to animals. Many of the habitat areas are drained and transformed into arable land or modified into sown grasslands, eventually abandoned (LV). The remnants of the habitat often occur in hardly accessible places, laborious to manage (FI).

For the above mentioned reasons the active management should primarily be targeted at restoration of hydrological regime (restoration of floodplain regime and/or maintenance of drainage systems). In Latvia negative effects of beaver activities (permanent paludification) shall be prevented. Secondly, re-

establishment of mowing and grazing or mixed management in addition to clearing of shrubs and trees are essential - in a suitable way and intensity, simulating traditional ways of management. This requires efficient rules of agricultural policy, facilitating management of remaining valuable grasslands, often small areas in agricultural landscape – a functional green infrastructure and landscape structures.

The passive measures are restrictive: preventing afforestation and other alterations of grasslands, preventing unregulated developments,improvingeffectiveness of existing financial tools and developing new ones. Sweden pointed out support of ecological farming, especially in areas with intensive farming, and the need of cross-sectoral cooperation to deal with structural changes in agricultural landscape by economic and social instruments.

There are identified gaps in knowledge in monitoring and in compiling the available data into a common data system. There is a lack of information on some species, especially invertebrates, and their needs. It is necessary to improve knowledge on how effectively to maintain the relatively small areas of the habitat in agricultural landscape.

According Birdlife International *Philomachus pugnax* and *Tringa glareola* require marshes and peatlands. Recommendations for *Philomachus pugnax*:

- Restore habitats where drained.
- Maintain (by mowing or pasture) and restore (by removing shrub and reed) coastal and alluvial meadows. Control predator population.Remove all artificial constructions, which create closeness of habitat. Improve openness of shoreline. Remove dense bushes and trees to create extra openness.
- Make sure that open coastal meadow is not narrower than 200 metres (most coastal waders avoid edges). Remove anything which drain subcoastal moist depressions. Restore the matrix of moist depressions and drier elevations. Separate the meadows by wide and deep channels to control mammal predators (where feasible, e.g. polders, at the very tip of capes).
- In the beginning of May the vegetation should not be higher than 10 cm (including stems and straws of previous years vegetation). Improve bird community with umbrella species (eg. breeding islands for terns)

Recommendations for *Tringa glareola*:

- Restore natural water dynamics, e.g. by filling ditches on margins or core areas of the focal sites. Create openness by removing pines from core areas.
- Restore habitats where drained.
- Preserving peatlands is crucial

Asio flammeus requires preserved ecotone forest-scrub-open spaces and thus needs management consisting of restoration of natural water dynamics, e.g. by filling ditches on margins or core areas of the focal sites. *Crex crex* requires scattered forests and shrublands, riverine meadows and grasslands where grass is sufficiently high, agricultural fields. Specific recommendations for this species are: delay mowing in focal areas until August; take into account the direction of the mowing; avoid the use of fertilizers and pesticides in seminatural grasslands. *Galinago media* depends on preserved open swamps, woodswamps, floodplain meadows, maintained by mowing and restored by removing shrubs of the alluvial meadows and water regime in waterbodies (management for migrating individuals is only relevant for Sweden). *Anser albifrons* needs preserved open grasslands with shrubs and wetlands with the following management:

- Mimic the effect of ice block erosion by breaking some vegetated parts of shore lines, mainly in the portions where vegetation consists of non-palatable plant species.
- Remove all artificial constructions, which are potential objects of collision (poles, towers, wires,

turbines) or prevent the use of some parts of feeding grounds.

- Restrict human disturbance.

Grus grus requires preserved open grasslands with shrubs and wetlands, restoration of natural water dynamics, e.g. by filling ditches on margins or core areas of the focal sites, is recommended. And *Cygnus cygnus* needs preserved open agricultural lands and open swamps.

5 Conservation targets

There are relatively big differences among Member States concerning setting conservation targets at both national and regional level. In some Member States the targets are defined relatively in detail in national action plans (EE, FI), in other Member States there are only general biodiversity strategies like in Latvia (national biodiversity programme) or Sweden (report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007 and the Swedish environmental Objectives, setting general national targets for the areal and qualities of semi-natural pastures and mowed hay-meadows). The Member State without national or regional strategies is Lithuania.

Regarding guidelines and manuals – three Member States (SE, FI and EE) have these documents. Guidelines are usually prepared for groups of habitat types like semi-natural grasslands. Finland has a set of guides for various types of management (mowing, restoration, management planning, management methods and costs, management of the mesic meadows, management of the wooded pastures etc.) Latvia and Lithuania have no such documents. Latvia substitutes them by documents defined within different conservation projects and applicable in other areas, and it has management guidelines prepared within several management plans for selected SCIs/protected areas.

Management plans are prepared in all the Member States. They are prepared for 2/3 SCIs designated for semi-natural habitats in Estonia and for 11 sites in Lithuania. In Finland there are “General management plans for Natura 2000 sites” prepared that cover all Natura 2000 sites, and furthermore there are many detailed management plans for most valuable and important SCIs of this habitat type. Sweden has management plans for nearly all Natura 2000 sites, but these plans are formulated on a general level, not providing details of management for specific spots (the plans are often formulated like: “in this site the area of habitat XY are not allowed to decrease and the structures and functions must be good and the typical species are not allowed to diminish”.). In Latvia, as there are no sites exclusively for this habitat type, but specific actions for this habitat are included in almost all their management plans, but mostly the measures are targeted at restoration of semi-natural grasslands within the given area general.

In general, The conservation status of the habitat type must be improved to a more favourable level, eventually, by organizing appropriate management for known best Natura 2000 sites. This requires continued field research and monitoring and a thorough assessment of the status. Currently, there is a need to improve the quality and intensity of management actions of this habitat in Natura 2000 sites and sites with contracts in the EU agroenvironmental scheme, in particular. Elsewhere the management is largely decreasing since it is not profitable. The managed areas need supplementary actions to improve the habitat quality. Inventories, management planning, practical management and monitoring need more resources.

Sweden provided the following summary of conservation targets that can be used for all grasslands in monitoring of protected areas (this is a list of targets that can can be used in all or most grassland habitats – depending of the qualities on a certain site and on whether they are arelevant for a certain habitat.)

Area:

1 The habitat should have a certain area (stable or indreasing)

Structures and functions:

2 The habitat should have a certain (specified within limits) coverage of trees and bushes

3 The habitat should not have any encroachment of vegetation de to lack of mangament

4 The habitat should have a certain (specified) amount of old and/or hollow trees

5 The habitat should have a certain (specified) amount of pollarded trees

6 The habitat should have a certain (specified) maximum height of the grass vegetation at the end of the grazing period

7

8 The habitat should have a certain (specified minimum) lengt of "blue border"

9 The habitat should be effected by prescribed burnings (only valid for calluna heathlands, 4030)

10 The habitat should have a certain (specified) amount of bare soil and/or open sand

Typical species:

11 The habitat should have a certain (specified) amount of typical species of vascular plants and/or mosses and lichens.

12 The habitat should have a certain (specified) amount of epiphytic lichens

13 The habitat should have a certain (specified) amount of typical bird species

14 The habitat should have a certain (specified) amount of dung-living beetles

15 The habitat should have a certain (specified) amount of typical butterfly species

16 The habitat should have a certain (specified) amount of bumblebees.

In the management plans, targets are formulated for area, for structures and functions and for typical species. This should be done in all plans, for the habitats found on the site, but it is common that the targets for structures, functions and typical species are only based on approximations, since no monitoring or surveillance had been started at the sites when the targets were formulated.

No targets have been formulated at regional or national level for specific habitats.

In Estoniathe national conservation targets for semi-natutral habitats are worked out for Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area under optimal management shall be to 12 200 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

Management measures realized by the Member States consist especially of mowing, grazing and restoration clearing. There is also a substantial restoration effort in improvement water regime of the habitat areas.

Although the situation of this habitat type differs among the Member States, there are common features. Reasons of the overall current situation are the same like for other grassland habitats: socio-economic development and structural changes in agriculture and land use. In Finland this habitat is mostly situated outside Natura 2000 and conservation areas, on privately owned meadows. In Natura 2000 many sites are managed, the quality and intensity of management varies. As most of the habitat areas are situated outside Natura 2000, cooperation among different operators is essential, as well as advisory services for farmers

(the sites are mostly privately owned) and voluntary work. On many of the Finnish Natura 2000 sites active management actions such as restoration clearing, mowing and grazing have been and are conducted. One of the most important matters in saving these habitats is assuring financing of restoration and continuous management. The most important financing method at the moment is the EU agri-environmental scheme and its support for managing traditional rural biotopes.Even with the managed area (ca 400 ha, 20 % of the total), there are problems with the management quality, such as too small grazing pressure and lack of or inadequate restoration clearings. Only a small part of the total managed area is under optimal management.

In Estonia the percentage of the habitat area under optimal management is relatively higher: about 1/3. In this country 6,700 ha of this habitat type are managed yearly, 190 ha are in restoration in 2011. There are currently two management measures in place for semi-natural habitat management in Estonia. For restoring the areas Estonian Environmental Investment Centre (EIC) provides up to 2 year project based opportunity to apply for support. These projects are mainly managed and carried out by Environmental Board (EB). Main activities supported are removing the bush coverage, reed and trees and building fences for livestock. NGOs and EB can also apply support to buy livestock and mowing machinery from the European Regional Development Fund and from the EIC. EB has applied for this support and created a system of giving livestock and machinery out for the farmers to use with no fee. After 5 years farmer has to return same age and same sex animals to the EB but can keep all the descendants of the original animals. For managing the restored areas farmers can use the Estonian Rural Development Plan (RDP) agri-environemental measures. RDP are managed in cooperation with payment agency and Environmental Board. Main requirements for receiving the support payments are: proof of legal use of the land where semi-natural area is situated and that the area is carried into Estonian Environmental Registry (situated on Natura 2000 area). Main differences with regular RDP subsidies are the later mowing date and more environmentally friendly techniques like not mowing from the edges towards the centre as it traps birds in the middle of the field where they would perish when mowing the last strip of hay. A top-up system for the main management scheme is planned for the next RDP perios on alluvial meadows in Estonia in order to improve the situation of the species on that habitattype.

In Latvia a substantial effort in floodplain grassland restoration was made, using various programmes, especially EU funds (e.g. LIFE, agri-environmental measures). About half of thearea of the habitat type in Latvia (4000-5000 ha) is under management. Information on optimality of this management is missing, but Latvia stated that extent of management is not sufficient as the habitat remains threatened. Management of this habitat type is optimal in substantial part of the habitat area in Lithuania (according to expert evaluations). In Sweden majority of the habitat areas are not managed optimally. In Sweden, fem sites with this habitat are properly managed. Many of the most valuable sites have a history of mowing, and their quality depens on continued management. It is however difficult to manage them with modern methods, and very small areas are mown today. In some protected areas in mid- and northern Sweden alluvial meadows have been restored with good results, but the management is expensive and timeconsuming.
No evaluation of existing management measures takes place in Lithuania. In Latvia, monitoring of the Natura 2000 sites is carried out. There is habitat mapping for most of SCIs available, though mapping is still in progress. Currently site-specific plot-based monitoring of the management effectiveness is carried out in some Natura 2000 sites. In Finland and Sweden there is assessment in place (in Finland the Assessment of threatened habitat types in Finland and in Sweden both local and national monitoring are being developed).Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011. There is an important role played by LIFE projects aimed at sites with this habitat type and semi-natural grasslands in general. Finland mentioned a new (started 2011) Metsähallitus LIFE project with focus on active restoration actions in species rich habitats. Latvia was active during the last decade in using LIFE project for floodplain grassland restoration – with subsequent use of agri-environmental schemes for

maintenance of the habitat.

Butterfly Conservation Europe (BCE) network facilitates exchanges of experience.

There are good practice recommendations in Do‘s and Don'ts for management of Habitats Directive butterflies, prepared by Butterfly Conservation Europe.

Examples of good practice:

Latvia - LIFE project Restoration of the floodplain grasslands

Restoration of Lubāns wetland complex (Lubāna mitrājs LV0536600), covering about 1,000 hectares of grasslands, formerly modified by drainage (in the 1970s), ploughing, fertilization and sowing highly productive grasses.

Restoration measures implemented within LIFE project LIFE03NAT/LV/000083 in 2005-2006 included cutting of shrubs, mowing, blocking of drainage ditches (Bergmanis 2008, V.Kreile, pers.com.).

Latvia - LIFE project LIFE2002/NAT/LV/8496

A novel approach for Latvia in restoring the floodplain regime in deteriorated floodplain grassland. In a drained floodplain the small straightened Slampe stream was re-meandered, the water table raised and year-round grazing area established (in 2004-2005). The best practise example will be extended to the neighbouring similar area by implementing similar restoration measures as an activity supported by LIFE10NAT/LV/000160 (since 2011).

Finland

In Oulanka National park an alluvial meadow within the park is mowed yearly by volunteers in a public happening organised by Metsähallitus. Besides the practical management measures a goal is to raise public awareness of the situation of the habitat type. Information of the happening:

http://www.luontoon.fi/Ajankohtaista/uutiset/Sivut/Oulangallahoidetaantulvaniittyja.aspx

http://fi-fi.facebook.com/event.php?eid=243261245700535

Finland

In Ounasjoki Natura-site (Rovaniemi) the alluvial meadows are managed in co-operation between the local ELY-centre, the private landowner and a local farmer. The ELY-centre has done the restorational clearings with national funding (YTY-rahoitus), and the local farmer organizes grazing, financed by the EU agri-environmental scheme.

7 Main constraints and actual needs

The basic need is providing suitable management – sometimes it means accompanying the current management by supplementary actions to improve the habitat quality. Restoration of sites damaged by abandonment or by previous inconsiderate actions like drainage construction is necessary too. A suitable management is mowing or mixed mowing-grazing. As socio-economic conditions and rural life have changed substantially (the main current constraint for all grassland habitats), it is not possible without providing sufficient financial funds and finding the most efficient way to support restoration and maintenance of this habitat type areas. It is evident that agri-environmental schemes play a dominant role. These schemes should be revised to become more effective, more targeted, more motivating (adequate payments per hectare) and provide a long-term stability for farmers. Lithuania suggests funding for habitat

areas that are currently in bad condition and for this reason do not meet requirements and do not reach agricultural payments. Estonia pointed out that one-year project based approach when restoring the areas does not provide stability and good perspective to farmers. For Finland more funding for managing authorities and developing financial system for non-farmers are also important elements. Sweden declared necessity of increasing general standards of conservation requirements for grasslands, as most areas in Natura 2000 sites are managed in the same way as areas outside Natura 2000.

Except of lack of financial sources for practical management there should also be an emphasis to supplementary actions like inventories, management planning and monitoring. Cooperation with different authorities is important, as well as cooperation with local people. Advisory system for farmers is another key element.

A prevailing activity is farming, so there is in principal no conflict with conservation needs (being the agricultural policy set in harmony with the habitat needs, which is not always the case). Quite often the habitat areas are managed for nature conservation purposes, without seeking financial profit from this economic activity. The main conflicting activity mentioned by several Member States is forestry and afforestation, river regulation destroying the habitat, and for Finland regular conflicts of farmers with bears. In Sweden the situation is even more complicated by the fact that in this Member State after 3 years of abandonment grassland is automatically transformed into a forest land. Latvia estimates that land use in about one half of the habitat coverage could be compatible with the conservation needs of the habitat type.

Dominance of private property is typical for all Member States; the biggest proportion of the state owned land is in Estonia (about one third).

8 Recommendations

Most of the topics mentioned by the Member States have to do with finding way how to maintain the habitat type areas under a suitable management, to avoid abandonment. It is therefore recommended to aim the future discussion at the following topics:

- Firstly it seems there should be a coordinated effort to suggest changes in common agricultural policy implementation – definition what are the main problems and how they could be challenged in favour of biodiversity. The problem lies both on the national level of individual Member States and on the European level of setting the basic framework of CAP, especially payments under pillar I.
- Secondly, a topic interconnected with the previous one, and that is financing sustainable use of this habitat type areas. There are also other tools than CAP payments, some Member States mentioned for example need for discussion on the ecosystem services.
- Thirdly, also based to the topics mentioned by the Member States, it is recommended to prepare a manual on best management practices including less typical management practices like burning. The manual shall also contain instructions how to reconcile various conservation needs in one area so that conflicts among various groups of plants and animals are prevented.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 6450 prepared by FI

HIS for habitat type 6450 prepared by LV

HIS for habitat type 6450 prepared by LT

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by SE

HIS for habitat type 6450 prepared by BCE

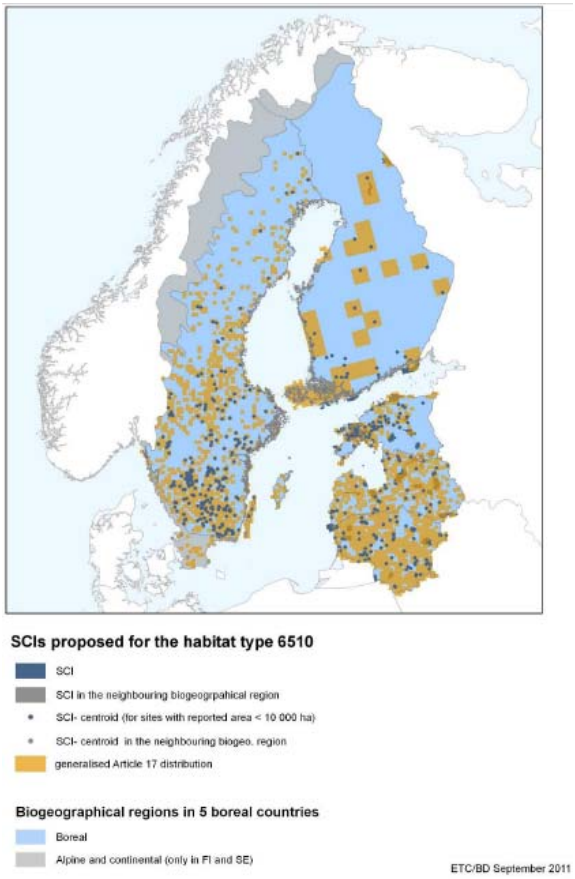
Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

Habitat type 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

1 Description



Species-rich hay meadows on lightly to moderately fertilised soils of the plain to submontane levels, belonging to the *Arrhenatherion* and the *Brachypodio-Centaureion nemoralis* alliances. These extensive grasslands are rich in flowers and are not cut before the grasses flower and then only one or two times per year. Wet to dry sub-types occur. If management practices become intensive with heavy applications of fertiliser, the species diversity rapidly declines.

In Boreal biogeographical region the conservation status of this habitat type is assessed as 'unfavourable – bad', only range being 'favourable'. The best situation is in Estonia, where all parametres are assessed 'favourable', the worst situation in Finland and Sweden (overall situation 'unfavourable-bad'). Up to 50% of the habitat type is covered by SCIs. The habitat type is present in all Boreal countries.

Area covered within Natura 2000 sites varies in different Member States: in Finland management actions are widely needed outside the Natura 2000 sites, because most of the privately owned sites are situated outside the Natura 2000 network. Estonia provided information on semi-natural habitats as the whole (about 75% of them are situated within Natura 2000) and there is no available data in Latvia, Lithuania and Sweden (in SE this data shall be available soon).

2 Associated species

The species *Saxifraga osloënsis* is assessed as 'favourable' in the Boreal region, *Parnassius mnemosyne* as 'unfavourable' and *Coenonympha hero* and *Lycaena helle* even 'unfavourable-bad'.

For Finland only *Parnassius mnemosyne* is a relevant species for the habitat, the others are not. In Finland there are several vascular plant species that are nationally considered indicator species for this habitat type. *Saxifraga osloënsis* is not present in Latvia, on the other hand it recommended adding *Crex crex* among conflicting species, as well as feeding grounds for *Aquila pomarina*. *Crex crex* and *Maculinea teleius* were also recommended by Lithuania. For other typical species relevant for this habitat type Sweden referred to the national guidelines for this habitat. It also recommended taking into account potential conflicts with some species like dung beetles, requiring intense, early grazing while this management is detrimental to many other grassland species.

In Sweden Several nationally important species with Species Action Programmes (SAPs) are associated with the habitat. SAPs have been developed for several butterflies, one of them is *Euphydryas aurinia*, for *Pseudorchis albida*, for mushrooms in natural grasslands, for wild bees living in dry grasslands, for several different plants and a programme is under preparation for gentians in natural grasslands and for botrychium species associated to meadows, to mention some.

Benefiting species	Species with conflict of managements
Coenonympha hero	*Crex crex* (LV, LT, BL)
Lycaena helle	*Aquila pomarina* (feeding grounds) (LV)
Parnassius mnemosyne	
Saxifraga osloënsis	
Maculinea teleius (LT, BCE)	
Maculinea nausithous (BCE)	
Maculinea alcon (BCE)	
Melita cinxia (BCE)	
Zygaena species (BCE)	

Butterfly Conservation Europe recommended adding *Maculinea teleius*, *M. alcon* and *M. nausithous* among benefiting species and added also two other relevant species: *Melita cinxia* and *Zygaena* species.

Birdlife International recommended adding *Crex crex* to the list. This species is especially important in Estonia, Lithuania and Finland.

3 Main pressures and threats

Typically for grassland habitat types, abandonment is the main pressure, connected with overgrowing with shrub and trees. Change in land use has to do mainly with afforestation/general forestry management, recreation and construction/urbanized area. Another group of pressures are unsuitable ways of management – cultivation, ploughing and mulching, fertilization, eutrophication, or insufficient management – weak grazing or inadequate clearing of bushes and trees.

Sweden also mentioned isolation and loss of mosaic biodiversity structures in landscape.

Sweden pointed out negative role of national rules of CAP, which get into conflict with the habitat needs and lead to unfavourable and stereotype management of many grasslands, atmospheric nitrogen deposition and climate change.

Abandonment is evidently caused by socio-economic changes in rural area and agriculture. The traditional management is disappearing and effort to replace it with financial schemes like agri-environmental measures has not been very successful so far: according to Sweden these schemes cause unfavourable and stereotype management of many grasslands and assist in destruction of natural mosaic, functioning species metapopulations etc.

Fragmentation of the habitat type is also caused by abandonment of traditional management practices. It leads to loss of functional connectivity and small isolated areas are also more difficult for providing suitable management efficiently.

Inadequate management consist of ploughing and cultivation (nowadays limited by agricultural policy), mulching and fertilization, but in Sweden there is also a problem with rules regarding the number of trees, bushes and impediments allowed on grasslands. These rules are unsuitable for Swedish standards where grasslands traditionally have a much higher concentration of these elements.

4 Main conservation requirements

The active management consists of ways of mowing, grazing and mixed grazing-mowing, in a sufficient way and intensity (pasturing in the second crop in late summer-autumn), simulating traditional ways of management– promotion of habitat heterogeneities, variable mowing cycles in over different parts of the habitat, implementation of varied regimes, accompanied by restoration of abandoned grasslands through

removal of trees and shrub. Just Finland informed that mowing has disappeared as a common agricultural method. This requires efficient rules of agricultural policy, facilitating management of remaining valuable grasslands, often small areas in agricultural landscape – a functional green infrastructure and landscape structures.Advisory services to farmers are also relevant.

Butterfly conservation Europe formulated the following recommendations on the management:

Do's

- In the northern part of the species range, mowing is the best management regime to keep the vegetation open and the soil sunny and warm and to maintain a high *Myrmica* ant nest density.
- In northern Europe it thrives on sites cut every second year or even every year; under warmer climates longer intervals of up to 5-10 years between cutting are ideal, although the foodplant requires periodic mowing to ensure regeneration.
- Depending on the productivity of the soil, meadows may be cut once a year, and should be left uncut at regular intervals.
- At the landscape scale, create a mosaic of interconnected (within 5 km dispersal potential of species) patches of low intensity agricultural use with both host plants and host ants for the establishment of a meta-population. Always allow patches of fallow land as refuges for the host ants. The distance between patches should preferably not exceed 1 km.
- Monitor populations of the butterfly and its host ants carefully, and adjust management when needed.
- Try to apply rotational management on tall and rough vegetation at meadow edges and along hedges, bushes and forests, cutting it only every three to ten years depending on the productivity of the soil.
- Monitor populations of the butterfly and its host ant carefully, and adjust management when needed.

Don'ts

- Do not intensify agricultural use of the fields.
- Do not graze habitats in the northern part of the range.
- Do not allow long term abandonment of fields with single populations. Abandonment is only acceptable if temporary and if the abandoned field is part of a meta-population.
- Do not mow the fields when the butterflies are on the wing and the caterpillars are in the buds of the host plant (roughly in July and August).
- Do not use manure or biocides.

The passive measures are restrictive: preventing afforestation and other alterations of grasslands, preventing unregulated development, improving effectiveness of existing financial tools and developing new ones. Sweden pointed out support of ecological farming, especially in areas with intensive farming, and a need for cross-sectoral cooperation to deal with structural changes in agricultural landscape by economic and social instruments.

There are identified gaps in knowledge in monitoring and in compiling the available data into a common data system. There is a lack of information on some species, especially invertebrates, and their needs. It is necessary to improve knowledge on how effectively to maintain the relatively small areas of the habitat in agricultural landscape.

Birdlife International pointed out management requirements of *Crex crex*: this species requires scattered forests and shrublands, riverine meadows and grasslands where grass is sufficiently high, agricultural fields. Specific recommendations for this species are: delay mowing in focal areas until August; take into account the direction of the mowing; avoid the use of fertilizers and pesticides in seminatural grasslands.

5 Conservation targets

There are relatively big differences among the Member States concerning setting conservation targets at

both national and regional level. In Estonia the targets are defined in national action plans, as well as in Finland where the new national Action plan (2011) for improving the state of all threatened habitats types sets the general targets for all nationally classified habitats, but does not focus on such extremely rare and small units as habitat type 6510. In other Member States there are only general biodiversity strategies like in LV (national biodiversity programme) or Sweden (report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007 and the Swedish environmental Objectives, setting general national targets for the areal and qualities of semi-natural pastures and mowed hay-meadows). The Member State without national or regional strategies is Lithuania.

Regarding guidelines and manuals – four Member States (SE, FI, LV and EE) have these documents. Guidelines are usually prepared for groups of habitat types like semi-natural grasslands. Finland has a set of guides for various types of management (mowing, restoration, management planning, management methods and costs, management of the mesic meadows, management of the wooded pastures etc.) Lithuania has no such documents. In Latvia the management guidelines are given in the manual of the habitats of EU importance in Latvia (Rūsiņa 2010).

Management plans are prepared in all Member States. They are prepared for 2/3 of SCIs designated for semi-natural habitats in Estonia, for 16 sites in Lithuania. In Finland there are “General management plans for Natura 2000 sites” prepared that cover all Natura 2000 sites, and furthermore there are some detailed management plans for the Natura 2000 sites of this habitat type, both in the protected areas and in the private contract areas, including detailed methods for restoration, grazing and mowing in a given site. Sweden has management plans for nearly all SCIs, but these plans are formulated on a general level, not providing details of management for specific spots (the plans are often formulated like: “in this site the areal of habitat XY are not allowed to decrease and the structures and functions must be good and the typical specie are not allowed to diminish”.). In Latvia, there are no SCIs exclusively for this habitat type, the habitat is usually protected as one of the habitats present in the SCI. Furthermore, for this habitat type there are no specific conservation actions proposed, but the actions targeted at the habitat type are the same as for other grassland habitats.

In Finland the habitat is so rare and scarce in Finland (total estimated area ca 50 ha) that no particular targets or objectives are set for it. Instead, the targets are set to secure the status of the most valuable complexes of threatened grassland types and to support the mowing management in general, at least in some sites.

In general the conservation status of the habitat type must be improved to a more favourable level, eventually, by organizing appropriate management for known valuable sites. This requires field research and monitoring and a thorough assessment of the definition and status of the habitat type. Currently, there is a need to improve the quality and intensity of management actions of this habitat in Natura 2000 sites. The managed areas need supplementary actions to improve the habitat quality. Inventories, management planning, practical management and monitoring need more resources.

Sweden provided the following summary of conservation targets that can be used for all grasslands in monitoring of protected areas (this is a list of targets that can can be used in all or most grassland habitats – depending of the qualities on a certain site and on whether they are arelevant for a certain habitat.)

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1 The habitat should have a certain area (stable or indreasing)

Structures and functions:

2 The habitat should have a certain (specified within limits) coverage of trees and bushes

3 The habitat should not have any encroachment of vegetation de to lack of mangament

4 The habitat should have a certain (specified) amount of old and/or hollow trees

5 The habitat should have a certain (specified) amount of pollarded trees

6 The habitat should have a certain (specified) maximum height of the grass vegetation at the end of the grazing period

7 The habitat should have a certain (specified minimum) lengt of "blue border"

8 The habitat should be effected by prescribed burnings (only valid for calluna heathlands, 4030)

9 The habitat should have a certain (specified) amount of bare soil and/or open sand

Typical species:

10 The habitat should have a certain (specified) amount of typical species of vascular plants and/or mosses and lichens.

11 The habitat should have a certain (specified) amount of epiphytic lichens

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In the management plans, targets are formulated for area, for structures and functions and for typical species. This should be done in all plans, for the habitats found on the site, but it is common that the targets for structures, functions and typical species are only based on approximations, since no monitoring or surveillance had been started at the sites when the targets were formulated.

No targets have been formulated at regional or national level for specific habitats.

In Estoniathe national conservation targets for semi-natutral habitats are worked out for Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area under optimal management shall be increased to 1350 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

The 6510 habitat type requires mowing, grazing (mowing in midsummer and possible grazing in late summer) and mainly, with respect to the current state of the habitat, intensive restoration management of mowing, grazing and clearing shrub.

Although the situation of this habitat type differs among the Member States, there are common features. Reasons of the overall current situation are the same like for other grassland habitats: socio-economic development and structural changes in agriculture and land use). In Finland the 6510 habitat is very rare and restricted (the total estimated area app. 50 ha) – and yet only a small part of its area is under optimal management. The positive aspect is that the most valuable spots are best taken care of. The main problem is that traditional mowing management nearly vanished in Finland (Farmers tend to manage their sites only by grazing and mowing has decreased and carried out nowadays only marginally, by very old farmers or volunteers etc.). As most of the habitat areas are situated outside Natura 2000, cooperation among different

operators is essential, as well as advice services for farmers (the sites are mostly privately owned) and voluntary work.

In Estonia the percentage of the habitat area under optimal management is substantially higher: about a half. In this country 10 ha of the 6510 habitat type are under restoration management in 2011. There are currently two management measures in place for semi-natural habitat management in Estonia. For restoring the areas Estonian Environmental Investment Centre (EIC) provides up to 2 year project based opportunity to apply for support. These projects are mainly managed and carried out by Environmental Board (EB). Main activities supported are removing the bush coverage, reed and trees and building fences for livestock. NGOs and EB can also apply support to buy livestock and mowing machinery from the European Regional Development Fund and from the EIC. EB has applied for this support and created a system of giving livestock and machinery out for the farmers to use with no fee. After 5 years farmer has to return same age and same sex animals to the EB but can keep all the descendants of the original animals. For managing the restored areas farmers can use the Estonian Rural Development Plan (RDP) agri-environemental measures. RDP are managed in cooperation with payment agency and Environmental Board. Main requirements for receiving the support payments are: proof of legal use of the land where semi-natural area is situated and that the area is carried into Estonian Environmental Registry (situated on Natura 2000 area). Main differences with regular RDP subsidies are the later mowing date and more environmentally friendly techniques like not mowing from the edges towards the centre as it traps birds in the middle of the field where they would perish when mowing the last strip of hay.

In Latvia most of grasslands are gradually overgrowing and therefore becoming increasingly fragmented and isolated, but both regular and restoration managements take place, financed from agri-environmental schemes (maintenance) and LIFE projects (restoration). The realized measures are mowing, grazing including year-round grazing, removal of shrubs and in some small areas up to few hectares fragmentary mowing and pasturing is realized. The estimated share under optimal management is similar to Estonia. The development of managed areas in the last decade shows that the situation is not deteriorating, but there are still large areas without management. In contrast there is a good perspective (significant improvements) for the areas under management. Management of this habitat type is not managed optimally in Lithuania (according to expert evaluations). Sweden has very small areas left of 6510, and many of the remaining meadows are very small, far below 1 ha. Their quality can be very high in spite of this, but the limitied area makes the possible population sizes of typical or rare species small, and subsecptible to random extinctions from the sites. Many of the remaing meadows are still managed by the farmer families that hae owned the sites for a long time, but a large part of the managers are aged, between 60 and 80 years old. Usually there is no new generation that will take over after them, which means that the managers of protected areas will ha to take over the responsibility for the sites soon. To manage the often uneven and stone-rich meadows requires good skills with the scythe, and is timeconsuing and thus expensive. The recommended management practice for lowland meadows is removal of dead branches and other litter in the spring, traditional mowing with a scythe or other sharp/cutting tools in august, removal of the dried hay, and if possible grazing by cattle during autumn. In Sweden the management is combination of CAP measures, LIFE projects and local initiatives on a communal level and by NGOs.

No evaluation of existing management measures takes place in Lithuania. In Latvia habitat mapping is available for most of Natura 2000 sites, while plot-based management aimed at assessment of management effectiveness is carried out in few Natura 2000 sites. There is, however, uncertainty as for the future – there is a lack of funding for these purposes. In Finland and Sweden an assessment is in place (in Finland the Assessment of threatened habitat types in Finland and in Sweden both local and national monitoring are being developed).Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011.

There is an important role played by LIFE projects aimed at sites with this habitat type and semi-natural

grasslands in general. Finland mentioned newly started this Metsähallitus LIFE project with focus on active restoration actions in species rich habitats. For Latvia LIFE-Nature projects were often impulses for initiation of restoration and management of these habitats, continued by land owners after the end of projects. In Sweden Rosoris LIFE05 NAT/S/000108 was a project focusing on restiration of natural pastures and meadows in the county of Östergötland, and has restored important areas with 6270. In the county of Jämtland LIFE03 NAT/S/000070, LIFE08 NAT/S/000262 also focuson restoration of meadows and pastures. Mia LIFE07 NAT/S/000902 and GRACE LIFE09 NAT/SE/000345 work with restoration of grasslands in the archipelagoes in southern Sweden.

Butterfly Conservation Europe (BCE) network facilitates exchanges of experience.

There are good practice recommendations in Do‘s and Don'ts for management of Habitats Directive butterflies, prepared by Butterfly Conservation Europe.

Examples of good practice:

MOVED TO: 1630***Finland – Life to Koli***

In Life to Koli project some of the most important sites for this habitat type at Koli National Park were managed by clearings and mowing, and the representativeness of the habitats were greatly improved. One goal was to increase the public awareness for these habitats, and information materials and few nature trails were produced.

Latvia

LIFE project N2000 site “Ziemeļgauja” LV0600700 (Northern Gauja) - grassland management.

7 Main constraints and actual needs

The basic need is providing suitable management – sometimes it means accompanying the current management by supplementary actions to improve the habitat quality (FI). Restoration of sites damaged by abandonment or by previous inconsiderate actions like drainage construction are necessary too. A suitable management is mowing or mixed mowing-grazing, restoration management includes clearing shrub. According to Latvia small land units, scattered distribution of the habitat and a lack of interest (lack of economic motivation) from land owners in farming are nearly inevitable constraints in restoration and/or continuous maintenance of the remnant habitat patches. As socio-economic conditions and rural life have changed so substantially (the main current constraint for all grassland habitats), it is not possible without providing sufficient financial funds and finding the most efficient way to support restoration and maintenance of this habitat type areas. It is evident that agri-environmental schemes play dominant role. These schemes should be revised to become more effective, more targeted, more motivating (adequate payments per hectare) and provide a long-term stability for farmers. Lithuania suggests funding for habitat areas that are currently in bad condition and for this reason do not meet requirements and do not reach agricultural payments. Estonia pointed out that one-year project based approach when restoring the areas does not provide stability and a good perspective to farmers. For Finland more funding for managing authorities and developing financial system for non-farmers are also important elements. Sweden declared necessity of increasing general standards of conservation requirements for grasslands in general, as most areas in Natura 2000 sites are managed in the same way as areas outside Natura 2000.

Except lack of financial sources for practical management there should be also emphasis to supplementary actions like inventories, management planning and monitoring. Cooperation with different authorities is

important, as well as cooperation with local people. Advisory system for farmers is another key element.

Prevailing activity is farming, so there is in principal no conflict with conservation needs (being the agricultural policy set in harmony with the habitat needs, which is not always the case). Latvi,a however, highlighted that good-quality soils are an important factor why these habitats are converted into arable land and cultivated. The main conflicting activity mentioned by several Member States is forestry and afforestation. In Sweden the situation is even more complicated by the fact that in this Member State after 3 years of abandonment grassland is automatically transformed into the forest land. Latvia estimates that land use in about one half of the habitat coverage could be compatible with the conservation needs of the habitat type.

Dominance of private property is typical for all Member States; the biggest proportion of the state owned land is in Estonia (about one third).

8 Recommendations

Most of the topics mentioned by the Member Stateshave to do with finding way how to maintain the habitat type areas under a suitable management, to avoid abandonment. It is therefore recommended to aim the future discussion at the following topics:

- Firstly it seems there should be a coordinated effort to suggest changes in common agricultural policy implementation – definition what are the main problems and how they could be challenged in favour of biodiversity. The problem lies both on the national level of individual Member States, and on the European level of setting the basic framework of CAP.
- Secondly, a topic interconnected with the previous one, and that is financing sustainable use of this habitat type areas. There are also other tools than CAP payments, some Member Statesmentioned for example need for discussion on the ecosystem services.
- Thirdly, also based to the topics mentioned by the Member States, it is recommended to prepare a manual on best management practices including less typical management practices like burning. The manual shall also contain instructions how to reconcile various conservation needs in one area so that conflicts among various groups of plants and animals are prevented.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 6510 prepared by FI

HIS for habitat type 6510 prepared by LV

HIS for habitat type 6510 prepared by LT

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by SE

HIS for habitat type 6510 prepared by BCE

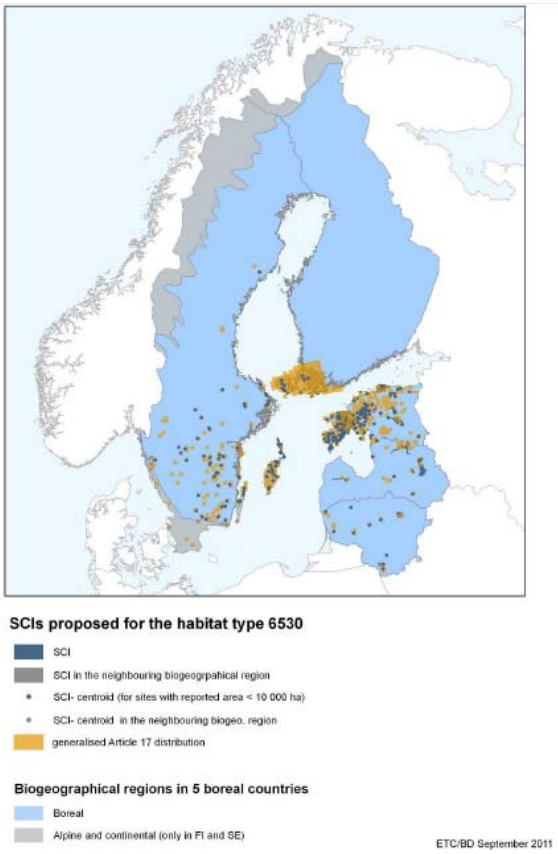
Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

Habitat type 6530 Fennoscandian wooded meadows

1 Description



A vegetation complex consisting of small copses of deciduous trees and shrubs and patches of open meadows. Ash (*Fraxinus excelsior*), birch (*Betula pendula*, *B. pubescens*) and *Quercus robur*, *Tilia cordata*, *Ulmus glabra* or *Alnus incana* are the common tree species. Nowadays very few areas are managed but traditionally these areas were managed by a combination of raking, hay-cutting, grazing of grassland and pollarding or lopping of trees. Species-rich vegetation complexes with rare and threatened meadow species and well developed epiphytic flora of mosses and lichens are characteristic. Many threatened species preferring old pollarded deciduous trees of semi-open habitats occur. The habitat type includes managed areas and overgrown areas with old pollarded or lopped deciduous trees. The type does not include abandoned meadows being invaded by trees.

The conservation status of this habitat type is assessed as 'unfavourable – bad'. The only parameter assessed as 'unfavourable-inadequate' is future. A better situation is only in Estonia with overall situation assessed as 'unfavourable'. Over 76% of the habitat type is covered by Natura 2000 sites. The habitat type is present in all Boreal countries.

Area covered within Natura 2000 sites varies in different Member States. In Finland management actions are widely needed outside the Natura 2000 sites, because most of the valuable areas are situated outside the Natura 2000 network. In Latvia most of the sites are included in N2000 network, but the exact proportion of the habitat coverage inside Natura 2000 is unknown. Estonia provided information on semi-natural habitats as the whole (about 75% of them are situated within Natura 2000). Data is not available in Lithuania and partly neither in Sweden where there is just information for continental region (32% in protected areas).

2 Associated species

Out of nine associated species of this habitat type only one is reported as 'favourable' – *Agrimonia pilosa*. Three species are assessed as 'unfavourable – bad' (*Anthrenochernes stellae*, *Orthotrichum rogeri* and *Parnassius apollo*), the rest is classified as 'unfavourable'. In case of *Thesium ebracteatum* there is a lack of information except the 'range' parametre, which is assessed as 'favourable'. In general the lack of information concerns mainly Latvia, where data is missing on several species (except *Thesium ebracteatum* especially *Anthrenochernes stellae*).

Finland reported that there are many vascular plant species important for the habitat type and responding to the management indicating the improvement of the conservation status, e.g. *Dactylorhiza sambucina*, *Polygala amarella*, *P. vulgaris*. Latvia pointed out the following species: *Dendrocarpos medius*, *Picus canus*, as well as importance of the 6530 habitat type as a feeding ground for *Strix uralensis* and *Aquila pomarina*.

Estonia proposed deleting *Saussurea alpina* ssp. *esthonica* from the list of associated species.

In Sweden several nationally important species with Species Action Programmes (SAPs) are associated with the habitat. SAPs have been developed for several butterflies, for mushrooms in natural grasslands, for *Osmoderma eremita*, and for several other species associated to oak, to mention some.

Benefiting species	**Species with conflict of managements**
Agrimonia pilosa	
Anthrenochernes stellae	
Lopinga achine	
Orthotrichum rogeri	
Osmoderna eremita	
Parnassius apollo	
Parnassius mnemosyne	
Saussurea alpina ssp. *esthonica*	
Thesium ebracteatum	
Cypripedium calceolus	
Dactylorhiza sambucina (FI)	
Polygala amarelle (FI)	
Polygala vulgaris (FI)	
Dendrocarpos medius (LV)	
Picus canus (LV)	
Strix uralensis (feeding ground) (LV)	
Aquila pomarina (feeding ground) (LV)	
Euphydryas maturna (BCE)	
Euphydrias aurinia (BCE)	
Coenonympha hero (BCE)	
Lopinga achine (BCE)	
Parnassius mnemosyne (BCE)	
Lycaena helle (BCE)	
Lycaena dispar (BCE)	
Hamearis lucina (BCE)	
Zygaena osterodensis (BCE)	
Zygaena viciae (BCE)	
Strymon w-album (BCE)	

Butterfly Conservation Europe pointed out the following associated species benefiting from management of this habitat type*: Euphydryas maturna, E. aurinia, Coenonympha hero, Lopinga achine, Parnassius mnemosyne, Lycaena helle, L. dispar*. They also reminded there could be a potential conflict with forest moth species (however, according to them the risk of such a conflict is not very big with respect to the area of forests as the whole), and that there are also other relevant species: *Hamearis lucina, Zygaena osterodensis, Z. viciae, Strymon w-album, ilicis*.

3 Main pressures and threats

Abandonment represents the main pressure for the 6530 habitat, naturally followed by overgrowth, afforestation (LT), transfer of these habitats in urban areas (FI), fragmentation (SE) or transformation of land through establishing drainage systems (LV, LT) etc. The causes of this process are evident: cease of traditional management, structural changes in agriculture, concentration of agriculture in more productive areas.

Apart from abandonment the second important pressure is unsuitable management. Usually it is insufficient management unable to prevent degradation of this habitat type through its overgrowth, but is some areas the problem is also cultivation or in general a too intensive management.

Thirdly, several Member States mention forestry management: Finland (general forestry management) and Latvia (clearcuts or cutting the big trees, removal of fallen/cut trees).

Sweden pointed out negative role of national rules of CAP, which get into conflict with the habitat needs and lead to unfavourable and stereotype management of many grasslands.

4 Main conservation requirements

The active management consists of ways of mowing and grazing in a sufficient way and intensity, simulating traditional ways of management, accompanied by restoration of abandoned grasslands through removal of trees and shruband burning, on the contrary avoiding coppicing. This requires efficient rules of agricultural policy, facilitating management of remaining valuable grasslands, often small areas in agricultural landscape – a functional green infrastructure and landscape structures.

Butterfly conservation Europe formulated the following recommendations on the management:

Do's

- Maintain open woodland habitat, preferably by coppicing.
- Cut part of the ash trees when they reach a height of 5 meters to allow younger saplings to proliferate.
- Maintain wide and diverse woodland edges and preserve wide open corridors along forest roads.
- Protect or re-create natural fringe vegetation around clearings and meadows.
- Keep flower rich meadows near larval habitats with late season hay-cutting.
- Manage habitats across the whole landscape scale with mosaics of woodlands, clearing and low intensity managed meadows.
- Continue traditional low-intensity management.
- Maintain semi-open woodland by keeping a mosaic of woodland and meadows.
- Create woodland gaps e.g. by coppicing.
- Maintain wide and diverse woodland edges and preserve wide open corridors along forest roads.
- Restore overgrown localities.

Don'ts

- Do not remove all decidious-trees.
- Do not let the forest grow to closed canopy stage.
- Do not mow road edge vegetation mechanically from mid May to mid August.
- Do not replace deciduous forest with conifer trees.

Dead trees should not be removed as they are important to such species as *Lucanus cervus*, *Cerambyx cerdo* or *Osmoderma eremita*.

The passive measures are restrictive: preventing afforestation and other alterations of grasslands, preventing unregulated developments,improving effectiveness of existing financial tools and developing new ones. Sweden pointed out support of ecological farming, especially in areas with intensive farming, and the need of a cross-sectoral cooperation to deal with structural changes in agricultural landscape by economic and social instruments.

There are identified gaps in knowledge in monitoring and in compiling the available data into a common data system. There is a lack of information on some species, especially invertebrates, and their needs. It is necessary to improve knowledge on how to maintain effectively relatively small areas of the habitat in agricultural landscape.

5 Conservation targets

There are relatively big differences among the Member States concerning setting conservation targets at both national and regional level. In some Member States the targets are defined relatively in detail in national action plans (EE, FI), in other Member States there are only general biodiversity strategies like in Latvia (national biodiversity programme) or Sweden (report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007 and the Swedish environmental Objectives, setting general national targets for the areal and qualities of semi-natural pastures and mowed hay-meadows). The Member State without national or regional strategies is Lithuania.

The situation is better concerning guidelines and manuals – Sweden, Finland and Estonia have these documents. In Estonia the guidelines for habitat types 6530 and 9070 are finished and are now available for public use at the Environmental Board website:http://www.keskkonnaamet.ee/keskkonnakaitse/looduskaitse-3/pool-looduslikud-kooslused-2/ under section “Pool-looduslike koosluste hoolduskavad”. In addition the guidelines are finished for the habitat types 6450, 1630, 6280, 1530; the guidelines for habitat types 4030, 6210, 6210*, 6270, 6410, 6430, 6510, 7230 will be finished. Guidelines are usually prepared for groups of habitat types like semi-natural grasslands. Lithuania and Latvia have no such document available yet (Latvia has a publication where habitat characteristics and suggestions for management are described).

Management plans are prepared in all the Member States, they are prepared for 2/3 SCIs designated for semi-natural habitats in Estonia, for 5 SCIs in Latvia, for 3 sites in Lithuania (but there the management plans are sometimes prepared just for a part of an SCI). In Finland there are “General management plans for Natura 2000 sites” prepared that cover all Natura 2000 sites, and furthermore there are management plans for most sites with this habitat type. Sweden has management plans for nearly all SCIs, but these plans are formulated on a general level, not providing details of management for specific spots.

In Finland the target for 6530 is to get the conservation status of the habitat type to a more favourable level, by organizing and securing appropriate management for all known valuable sites. This requires field research and monitoring and a thorough assessment of the status, including Åland. (Majority of all sites are situated on Åland, where they are mostly private and unprotected.). Currently, there is a need to improve the quality and intensity of management actions of this habitat in Natura 2000 sites. The managed areas need supplementary actions to improve the habitat quality. Inventories, management planning, practical management and monitoring need more resources. Regional management plans for this and connected habitat types need to be compiled in different areas, paying attention also to habitat requirement of species and population connectivity. Management actions are widely needed outside the Natura 2000 sites, because valuable wooded meadows are situated outside the Natura 2000 network, especially on Åland. This habitat type belongs to the nine habitat types listed in the Nature Conservation Act as protected habitat types. They are investigated and protected by the regional ELY-centers. Metsähallitus Natural Heritage Services and Southwest Finland ELY-center have together set a target to manage all the valuable sites of this habitat through METSO programme and different projects in the region.

Sweden provided the following summary of conservation targets that can be used for all grasslands in monitoring of protected areas (this is a list of targets that can can be used in all or most grassland habitats – depending of the qualities on a certain site and on whether they are arelevant for a certain habitat.)

Area:

1 The habitat should have a certain area (stable or indreasing)

Structures and functions:

2 The habitat should have a certain (specified within limits) coverage of trees and bushes

3 The habitat should not have any encroachment of vegetation de to lack of mangament

4 The habitat should have a certain (specified) amount of old and/or hollow trees

5 The habitat should have a certain (specified) amount of pollarded trees

6 The habitat should have a certain (specified) maximum height of the grass vegetation at the end of the grazing period

7

8 The habitat should have a certain (specified minimum) lengt of "blue border"

9 The habitat should be effected by prescribed burnings (only valid for calluna heathlands, 4030)

10 The habitat should have a certain (specified) amount of bare soil and/or open sand

Typical species:

11 The habitat should have a certain (specified) amount of typical species of vascular plants and/or mosses and lichens.

12 The habitat should have a certain (specified) amount of epiphytic lichens

13 The habitat should have a certain (specified) amount of typical bird species

14 The habitat should have a certain (specified) amount of dung-living beetles

15 The habitat should have a certain (specified) amount of typical butterfly species

16 The habitat should have a certain (specified) amount of bumblebees.

In the management plans, targets are formulated for area, for structures and functions and for typical species. This should be done in all plans, for the habitats found on the site, but it is common that the targets for structures, functions and typical species are only based on approximations, since no monitoring or surveillance had been started at the sites when the targets were formulated.

No targets have been formulated at regional or national level for specific habitats.

In Estoniathe national conservation targets for semi-natural habitats are worked out for Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area under optimal management shall be increased to 3300 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

The 6530 habitat type requires mowing and grazing and mainly, with respect to the current state of the habitat, intensive restoration management of mowing, grazing and cutting shrub.

Although the situation of this habitat type differs among Member States, there are common features. In Finland its conservation status is improving due to long-term management measures like restoration clearing, mowing and grazing. However, only about 15% of this habitat type is under optimal management. In Finland, as most of the habitat areas are situated outside Natura 2000, cooperation among different operators is essential. On the Natura 2000-sites active management actions such as restoration clearing, repeated spring cleanings by raking and burning the twigs, pollarding, mowing and grazing have been and are conducted. Metsähallitus Natural Heritage Services are responsible for management of the state owned

conservation areas and the wooded habitats in private protected areas. Voluntary work is also in an important role in managing this habitat in voluntary restoration camps. The management of the habitat type 6530 is much more labour intensive and expensive than hardly any other habitat type. Therefore the farmers cannot take care of the proper management and the agro-environment scheme does not cover the costs of the whole series of management measures required for keeping the consrevation status ot this habitat. The management thus requires special funding and expertise from the nature conservancy. The optimal management is not possible annually, but the conservation status of the habitat is improving in the Natura 2000 network due to long term management. Development of cost-efficient management methods is needed.

A similar percentage as in Finland, about 20%, of the habitat type is under optimal management in Estonia. In this country the two most important sites (Laelatu and Nedrema wooded meadows) are under on-going management, and there is restoration realized on 101 ha this year. The situation is more complicated in Latvia, where most areas of this habitat type are abandoned and overgrown, or even used as forest lands. Only small areas in some locations are being restored. Management of this habitat type is not managed optimally in Lithuania. Reasons of the overall current situation are the same like for other grassland habitats: socio-economic development and structural changes in agriculture and land use.Sweden has very small areas left of 6530, and many of the remaining meadows are very small, far below 1 ha. Their quality can be very high in spite of this, but the limitied area makes the possible population sizes of typical or rare species small, and subsecptible to random extinctions from the sites. Many of the remaing meadows are still managed by the farmer families that hae owned the sites for a long time, but a large part of the managers are aged, between 60 and 80 years old. Usually there is no new generation that will take over after them, which means that the managers of protected areas will ha to take over the responsibility for the sites soon. To manage the often uneven and stone-rich meadows requires good skills with the scythe, and is timeconsuing and thus expensive. The recommended management practice for lowland meadows is removal of dead branches and other litter in the spring, traditional mowing with a scythe or other sharp/cutting tools in august, removal of the dried hay, and if possible grazing by cattle during autumn.

“There are currently two management measures in place for semi-natural habitat management in Estonia. For restoring the areas Estonian Environmental Investment Centre (EIC) provides up to 2 year project based opportunity to apply for support. These projects are mainly managed and carried out by Environmental Board (EB). Main activities supported are removing the bush coverage, reed and trees and building fences for livestock. NGOs and EB can also apply support to buy livestock and mowing machinery from the European Regional Development Fund and from the EIC. EB has applied for this support and created a system of giving livestock and machinery out for the farmers to use with no fee. After 5 years farmer has to return same age and same sex animals to the EB but can keep all the descendants of the original animals. For managing the restored areas farmers can use the Estonian Rural Development Plan (RDP) agri-environemental measures. RDP are managed in cooperation with payment agency and Environmental Board. Main requirements for receiving the support payments are: proof of legal use of the land where semi-natural area is situated and that the area is carried into Estonian Environmental Registry (situated on Natura 2000 area). Main differences with regular RDP subsidies are the later mowing date and more environmentally friendly techniques like not mowing from the edges towards the centre as it traps birds in the middle of the field where they would perish when mowing the last strip of hay.”

TwoMember States point out that no evaluation of existing management measures takes place in their country: Latvia and Lithuania. Latvia pointed out that in general “the current management applied suggests that the measures might significantly improve the habitat quality if continued in the next decades.” In Finland and Sweden there is assessment in place (in Finland the Assessment of threatened habitat types in Finland and in Sweden both local and national monitoring being developed).Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the

specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011. Finland draw attention to the fact that managing the 6530 habitat type is more demanding than hardly any other habitat type with respect to labour, intensity and finance. Therefore financial schemes like agri-environmental measures should be adjusted to this fact and be prepared for special funding and expertise from the nature conservancy.

Three Member States mentioned projects aimed at this habitat type. In Finland there have been several projects (Niitty LIFE), an ongoing Interreg -project (Natureship) and the national Forest Biodiversity Programme METSO in which the best sites of this habitat have been managed. A new five year Life-project, owned by Metsähallitus, with focus on active restoration actions in species rich habitats (such as 6530) started 1.9.2011. Latvia has a LIFE project since 2010, targeted at conservation of two protected beetles and restoration of woodland meadows in several N2000 sites (Eremita meadows, LIFE09 NAT/LV/000240). In Sweden a large LIFE project has been carried out focusing on Osmoderma eremita LIFE97 NAT/S/004204, LIFE Rosoris, MIA, GRACE and Kinnekulle also have dealt with wooded meadows or similar biotopes (former wooded meadows that are now considered as 9070). In southern Sweden, especially on the Gotland island, and in the county of Småland, pollarded trees are common in wooded meadows, and recurring cutting of the branches of the trees is an important part of the management of the meadows. See also the text under 6510.

Butterfly Conservation Europe (BCE) network facilitates exchanges of experience.

There are good practice recommendations in Do‘s and Don'ts for management of Habitats Directive butterflies, prepared by Butterfly Conservation Europe.

In Estonia, there is a positive example of NGO activities thanks the organization Estonian Seminatural Community Conservation Association.

Examples of good practice:

Finland

Natureship Interreg Central Baltic IV A project to increase cooperation in habitat management (including grasslands and wooded pastures) and water protection in the Central Baltic operating area. In this project special management methods at Archipelago National Park are tested to develop and improve the practices for laborious and expensive tree pollarding. For example different tree species and varying cutting directions are tested. Entrepreneurs are trained for the pollarding work in the archipelago. In addition, project is developing tools for better identifying of potential habitat plots, including old wooded meadows.

MOVED TO: 1630***Latvia***

LIFE project Protection and management of the Northern Gauja Valley

The main achievement of the project was the drawing up of the management plan and the new individual regulations on the protection and use of the Project area. These documents created the basis for the sustainable long-term management and conservation of this site. More than 300 ha of grassland habitats have been restored and nearly 500 ha were maintained by grazing. The project activities have significantly facilitated the elaboration, improvement and use of agro-environmental schemes - agro-environmental plans have been drawn up for 56 individual farms, which cover around 990 ha of agricultural land.

7 Main constraints and actual needs

The basic need is maintaining traditional management activities. As socio-economic conditions and rural life have changed substantially (the main current constraint for all grassland habitats), it is not possible

without providing sufficient financial funds and finding the most efficient way to support restoration and maintenance of this habitat type areas. It is evident that agri-environmental schemes play dominant role. These schemes should be revised to become more effective, more targeted, more motivating (adequate payments per hectare) and provide a long-term stability for farmers. Estonia pointed out that one-year project based approach when restoring the areas does not provide stability and good perspective to farmers.For Finland more funding for managing authorities and developing financial system for non-farmers are also important elements. Sweden declared necessity of increasing general standards of conservation requirements for grasslands in general, as most areas in Natura 2000 sites are managed in the same way as areas outside Natura 2000.

Except lack of financial sources and inefficient financing in general there is a lack of advisory services for potential managers. And finally there is still better knowledge needed on ways of management as well as conservation needs of the target habitats and species. This knowledge needs a better interconnection with agricultural policy measures and with advisory system to farmers, as well as a better understanding and will to change current practices.

Butterfly Conservation Europe also pointed out one important legislative requirement: legalization of grazing in woodland.

In Latvia where this habitat type occurs mostly in woodland meadows and according to national regulations these areas – as they are not interpreted as open agricultural land – are not included in so called land blocks and thus ineligible for agri-environmental payments.

The main conflicting activity mentioned by nearly all Member States is forestry, for Finland also commercial use of land for construction. Former wooded meadows in Sweden usually fit into the forest types that are protected as “key biotopes”, and the very limited areas of reming wooded meadows (including the abandoned ones) makes the conflict with forestry quite small. But any forest activity that means that the old trees are taken down of course means that the habitat is destroyed. This means that former wooded meadows usually need some sort of formal protection. A complicating factor concerning restoration of 6530 is that abandoned wooded meadows usally develop high qualites as forest types (they can eventyelly turn into 9020 types, and 9020 is also a habitat where we have too small areas), and can harbour many rare forest species. If they are restored to more to a more open state, i.e. restored to wellmanaged wooded meadows, some of the “forest” species can suffer.

A Swedish legal regulation states that grasslands can’t be transformed to forest by active means, without permission from the County Adminstrative Boards. But if they are abandoned long enough, they turn into forest spontaneously.

Dominance of private property is typical for all Member States; the biggest proportion of state owned land is in Estonia (about one third).

8 Recommendations

Most of the topics mentioned by the Member States have to do with finding way how to maintain the habitat type areas under a suitable management, to avoid abandonment. It is therefore recommended to aim the future discussion at the following topics:

- Firstly it seems there should be a coordinated effort to suggest changes in common agricultural policy implementation – definition what are the main problems and how they could be challenged in favour of biodiversity.
- Secondly, a topic interconnected with the previous one, and that is financing sustainable use of this habitat type areas. There are also other tools than CAP payments, some Member States mentioned for example need for discussion on the ecosystem

services.

- Thirdly, also based to the topics mentioned by the Member States, it is recommended to prepare a manual on best management practices including less typical management practices. The manual shall also contain instructions how to reconcile various conservation needs in one area so that conflicts among various groups of plants and animals are prevented.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 6530 prepared by FI

HIS for habitat type 6530 prepared by LV

HIS for habitat type 6530 prepared by LT

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by SE

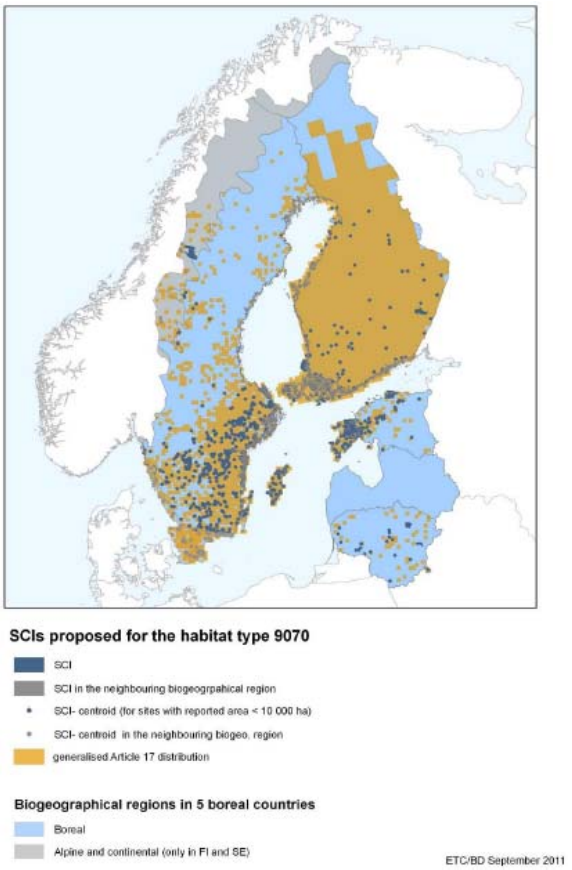
HIS for habitat type 6530 prepared by BCE

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

Habitat type 9070 Fennoscandian wooded pastures

1 Description



A vegetation complex in which the tree layer varies from sparse forest to small copses of trees and shrub and patches of open grassland. These habitats have a representative mosaic of copses of trees (usually deciduous trees) and grassland with a long continuity of grazing. The tree layer consists either of deciduous broad-leaved species such as *Quercus robur*, *Fraxinus excelsior*, *Tilia cordata*, *Betula* spp., *Alnus incana* or conifers (*Picea abies*, *Pinus sylvestris*). Particularly in Sweden there are pastures with old, large oaks. A rich assemblage of threatened lichens, fungi, and invertebrates are associated with the bark and dead or decaying wood. The type also includes (particularly in Finland) deciduous forests established after slash-and-burn cultivation, that was a characteristic feature of the former land use in Finland In Finland scattered in the whole of the country, mostly in Southern and Central Finland; very rare or extinct in northern boreal zone. In Sweden scattered over the whole country. Regional variation is considerable. Wooded pastures are usually dominated by birch, pine, alder (*Alnus incana*) or spruce (spruce-dominated are often degraded types); in hemiboreal zone there are also subtypes dominated by e.g. *Quercus*, *Fraxinus* and *Corylus*. During recent decades the tree layer of wooded pastures has in many cases become thicker and the typical structure has then been obscured. In wooded pastures vegetation is dominated by grassland species with elements of grassland vegetation.

In the Boreal region 665 Natura 2000 sites were designated. Estimated surface is 14 471 ha.

The conservation status of this habitat type is assessed as ‘unfavourable – bad’. Only range is assessed as ‘favourable’. However, the situation of the 9070 habitat type is bad only in Estonia and Finland, the rest of boreal Member States are assessed as ‘favourable’ in all categories.

In Estonia about ¾ of the semi-natural habitats are situated within the Natura 2000 network. In Finland the situation is different: valuable grasslands and wooded pastures are mainly situated outside the Natura 2000 network. There is no available data in Sweden, just an estimation that most likely significantly lower proportion of the habitat is situated in protected areas than in case of the 6210 habitat (in Sweden this data shall be available soon).

2 Associated species

There are four associated species proposed for this habitat. Two of them are assessed as ‘favourable’: *Dichelyma capillaceum* and *Ranunculus lapponicus*. *Bryhnia novae-angliae* is assessed as ‘unfavourable-bad’ and *Herzogiella turfacea* as ‘ufavourable’.

Sweden suggested adding two other vascular plant species to the list of benefiting species, as well as species associated to old deciduous trees growing in a semi-open landscape (*Osmoderma eremita, Lucanus cervus, Anthrenocernes stellae, Cerambyx cerdo*) and *Barbastella barbastellus* and *Sylvia nisoria*. Sweden

recommends to aim discussion at regeneration of suitable trees, the present very fragmented occurrence of suitable habitats, issues related to old old situated in unmanaged formed pastures and the effect on species, when the CAP rules are applied in a way that either leads to substantial cutting of trees and bushes, or abandonment (when the landowner no longer received support for management of pastures with "too many trees").

In Sweden several nationally important species with Species Action Programmes (SAPs) are associated with the habitat. SAPs have been developed for several butterflies, for mushrooms in natural grasslands, for Osmoderma eremita, and for several other species associated to oak, to mention some. A "biotope" SAP has been developed for veteran trees in the cultural landscape.

Benefiting species	**Species with conflict of managements**
Bryhnia novae-angliae	
Dichelyma capillaceum	
Herzogiella turfacea	
Ranunculus lapponicus	
Pulsatilla vulgaris ssp. gotlandica (SE)	
Pulsatilla patens (SE)	
Osmoderma eremita(SE)	
Lucanus cervus(SE)	
Anthrenocernes stellae(SE)	
Cerambyx cerdo(SE)	
Barbastella barbastellus(SE)	
Lanius collurio(SE)	
Euphydryas maturna (BCE)	
Euphydrias aurinia (BCE)	
Coenonympha hero (BCE)	
Lopinga achine (BCE)	
Parnassius mnemosyne (BCE)	
Lycaena helle (BCE)	
Lycaena dispar (BCE)	
Hamearis lucina (BCE)	
Zygaena osterodensis (BCE)	
Zygaena viciae (BCE)	
Strymon w-album (BCE)	
Dendrocopos medius (BL)	
Coracias garrulus (BL)	
Dendrocopos leucotos (BL)	
Lanius collurio (BL)	

Butterfly Conservation Europe pointed out the following associated species benefiting from management of this habitat type*: Euphydryas maturna*, *E. aurinia*, *Coenonympha hero*, *Lopinga achine*, *Parnassius mnemosyne*, *Lycaena helle*, *L. dispar*. They also reminded there could be a potential conflict with forest moth species (however, according to them the risk of such a conflict is not very big with respect to the area of forests as the whole), and that there are also other relevant species: *Hamearis lucina, Zygaena osterodensis, Z. viciae, Strymon w-album, ilicis.*

Birdlife International recommended adding the following species to the list: *Dendrocopos medius* (especially important in Lithuania), *Coracias garrulus* (Finland, Lithuania), *Dendrocopos leucotos* (Finland, Latvia, Estonia, Lithuania) and *Lanius collurio* (Finland).

3 Main pressures and threats

The main pressure of this habitat is a general forestry managementand afforestation. It is followed by

abandonment with overgrowth, or unsuitable management: overgrazing, cultivation, stock feeding. Among other pressures there are urbanized areas, drainage and modification of hydrographic functioning.

Sweden pointed out negative role of national rules of CAP, which get into conflict with the habitat needs and lead to unfavourable and stereotype management of many grasslands.

Fragmentation of the habitat type is also caused by abandonment of traditional management practices. It leads to loss of functional connectivity and small isolated areas are also more difficult for providing suitable management efficiently.

4 Main conservation requirements

The active management consists of ways of mowing and grazing in a sufficient way and intensity, simulating traditional ways of management, accompanied by restoration of abandoned grasslands through removal of trees and shruband burning, on the contrary avoiding coppicing. This requires efficient rules of agricultural policy, facilitating management of remaining valuable grasslands, often small areas in agricultural landscape – a functional green infrastructure and landscape structures.

Finland pointed out that grasslands and wooded pastures in general need active management actions rather than strict conservation.

Butterfly conservation Europe formulated the following recommendations on the management:

Do's

- Maintain open woodland habitat, preferably by coppicing.
- Cut part of the ash trees when they reach a height of 5 meters to allow younger saplings to proliferate.
- Maintain wide and diverse woodland edges and preserve wide open corridors along forest roads.
- Protect or re-create natural fringe vegetation around clearings and meadows.
- Keep flower rich meadows near larval habitats with late season hay-cutting.
- Manage habitats across the whole landscape scale with mosaics of woodlands, clearing and low intensity managed meadows.
- Continue traditional low-intensity management.
- Maintain semi-open woodland by keeping a mosaic of woodland and meadows.
- Create woodland gaps e.g. by coppicing.
- Maintain wide and diverse woodland edges and preserve wide open corridors along forest roads.
- Restore overgrown localities.

Don'ts

- Do not remove all decidious-trees.
- Do not let the forest grow to closed canopy stage.
- Do not mow road edge vegetation mechanically from mid May to mid August.
- Do not replace deciduous forest with conifer trees.

Dead trees should not be removed as they are important to such species as *Lucanus cervus*, *Cerambyx cerdo* or *Osmoderma eremita*.

The passive measures are restrictive: preventing afforestation and other alterations of grasslands, preventing unregulated developments,improving effectiveness of existing financial tools and developing new ones.

Cross-sectoral cooperation between forestry and agriculture is crucial. The forests could probably be managed in a way that better preserves the grassland-values that has developed there by thousands of years of traditional management, e.g. more grazing animals and more open forests in regions where grassland

species still are relatively widespread.

There are identified gaps in knowledge in monitoring and in compiling the available data into a common data system. There is a lack of information on some species, especially invertebrates, and their needs. It is necessary to improve knowledge on how effectively to maintain the relatively small areas of the habitat in the landscape.

Birdlife International point out the following management requirements for the proposed associated species: For *Dendrocopos medius* and *Dendrocopos leucotos* preservation of deciduous old growth, - the presence of a sufficient proportion of broad-leaved stands and wet forests with deadwood, protection of the age diversity of trees, big deciduous trees and dead trees, avoid extensive clearcuts and avoid cuts in general during spring and summer. For *Coracius garrulous* preservation of mosaic open and riverine forest and open spaces, improvement of habitat richness in Coleoptera-species (e.g. by burning). And for *Lanius collurio* preservation of open areas with shrubs, scrubs, hedgerows.

5 Conservation targets

There are differences among MS concerning setting conservation targets at both national and regional level. In some MS the targets are defined relatively in detail in national action plans (EE, FI), in other MS there are only general biodiversity strategies like in Sweden (report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007 and the Swedish environmental Objectives, setting general national targets for the areal and qualities of semi-natural pastures and mowed hay-meadows).

Guidelines and manuals are prepared by all three MS. In Estonia there are management/restoration guidelines prepared for habitat types 6530/9070. In Finland there are guidelines for the management of wooded meadows and wooded pastures. And Sweden has guidelines prepared on national level for all these habitats. Guidelines are usually prepared for groups of habitat types like semi-natural grasslands.

Management plans are prepared in all the MS. They are prepared for 2/3 SCIs designated for semi-natural habitats in Estonia. In Finland there are “General management plans for Natura 2000 sites” prepared that cover all Natura 2000 sites, and in addition more detailed plans cover large number of smaller sites. All remarkable 9170 sites have detailed management plans.

In general the target is to get the conservation status of the habitat type to a more favourable level, by organizing and securing appropriate management for known valuable sites. This requires field research and monitoring and a thorough assessment of the status. Currently, there is a need to improve the quality and intensity of management actions of this habitat in Natura 2000 sites. The managed areas need supplementary actions to improve the habitat quality. Inventories, management planning, practical management and monitoring need more resources.

Sweden provided the following summary of conservation targets that can be used for all grasslands in monitoring of protected areas (this is a list of targets that can can be used in all or most grassland habitats – depending of the qualities on a certain site and on whether they are arelevant for a certain habitat.)

Area:

1 The habitat should have a certain area (stable or indreasing)

Structures and functions:

2 The habitat should have a certain (specified within limits) coverage of trees and bushes

3 The habitat should not have any encroachment of vegetation de to lack of mangament

4 The habitat should have a certain (specified) amount of old and/or hollow trees

5 The habitat should have a certain (specified) amount of pollarded trees

6 The habitat should have a certain (specified) maximum height of the grass vegetation at the end of the grazing period

7 The habitat should have a certain (specified minimum) lengt of "blue border"

8 The habitat should be effected by prescribed burnings (only valid for calluna heathlands, 4030)

9 The habitat should have a certain (specified) amount of bare soil and/or open sand

Typical species:

10 The habitat should have a certain (specified) amount of typical species of vascular plants and/or mosses and lichens.

11 The habitat should have a certain (specified) amount of epiphytic lichens

12 The habitat should have a certain (specified) amount of typical bird species

13 The habitat should have a certain (specified) amount of dung-living beetles

14 The habitat should have a certain (specified) amount of typical butterfly species

15 The habitat should have a certain (specified) amount of bumblebees.

In the management plans, targets are formulated for area, for structures and functions and for typical species. This should be done in all plans, for the habitats found on the site, but it is common that the targets for structures, functions and typical species are only based on approximations, since no monitoring or surveillance had been started at the sites when the targets were formulated.

No targets have been formulated at regional or national level for specific habitats.

In Estonia the national conservation targets for semi-natural habitats are worked out for Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area under optimal management shall be increased to 1650 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

The 9070 habitat type requires mowing, grazing (by cows, sheep or horses) and mainly, with respect to the current state of the habitat, intensive restoration management of mowing, grazing and cutting shrub, keeping the tree cover semiopen with a traditional variety of different tree and bush species, including old and decaying ones.In some protected areas slash and burn followed by grazing is also conducted.

Currently, there is a total of app. 30 000 ha traditionally managed grasslands and wooded pastures in Finland. Totally, the estimated area for these habitats is around 40,000 ha, the goal for 2020 is 60,000 ha. Nearly 80% of the state owned areas and 76% of private owned areas are managed. The valuable grasslands and wooded pastures are mainly situated outside conservation areas and Natura 2000 sites, and are privately owned. Even though the total managed area is relatively large, there are problems with the management quality; such as too small grazing pressure and lack of or inadequate restoration clearings. Only a small part of the total managed area is under optimal management. In Finland, as most of the habitat areas are situated outside Natura 2000, cooperation among different operators is essential. About 50% of the habitat type is under optimal management in Estonia. In this country 167 ha of the 9070 habitat type are in restoration in 2011. In Sweden there is no statistics of how much of the grassland habitats that are under optimal

management, but it is likely that a majority are not managed optimally. Reasons of the overall current situation are the same like for other grassland habitats: socio-economic development and structural changes in agriculture and land use.

Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011. In the meantime there is an auxiliary benchmark used: achieving the optimal bush coverage of the habitat type. In Finland and Sweden there is assessment in place (in Finland the Assessment of threatened habitat types in Finland and in Sweden both local and national monitoring being developed).

In Finland there have been several projects like Natureship Interreg project, Niitty LIFE and newly (started this year) Metsähallitus LIFE with focus on active restoration actions in species rich habitats (such as 6530). In Sweden many actions have been performed to restore wooded pastures that have been abandoned during the 20th century. Good exampes are found in oak pastures in Östergötland county, some of them have been performed within the LIFE project for Hermit beetle. On the islands in the archipelago in Sörmland county some large restarations have been done in coniferous wooded pastures, and in several other counties good examples canbe found of restored and well managed wooded pastures.

A special kind of wooded pasture is found around the summer farms in the Swedish mountains. Few of these traditional pastures remain today, but they were important in historic times and can hive high nature values.

Butterfly Conservation Europe (BCE) network facilitates exchanges of experience.

There are good practice recommendations in Do‘s and Don'ts for management of Habitat Directive butterflies, prepared by Butterfly Conservation Europe.

In Estonia, there is a positive example of NGO activities thanks the organization Estonian Seminatural Community Conservation Association.

Examples of good practice:

Finland

METSO-program: wooded pastures can get financing from The Forest Biodiversity Programme METSO 2008–2016, which aims to halt the ongoing decline in the biodiversity of forest habitats and species.Within the programme there are several actions undertaken to improve the situation of wooded pastures, including restoration and management measures within many protected areas. There is also a project running concerning wooded pastures, focusing on privately owned areas and co-operation with local forestry authorities. http://www.ymparisto.fi/default.asp?node=25815&lan=fi

Laidunpankki: webpages where animal owners and pastures lacking grazing can meet.

Life to Koli

Within the project management plans semi-natural grasslands including also some sites to be managed through slash and burning followed by grazing. Management actions were conducted on both slash-and burn sites with subsequent grazing, and plain grazing/mowing.(http://www.metla.fi/hanke/8025/index.htm).

HÄÄVI – Härkää sarvista : project of promoting grazing as a maintenance and management method for biodiversity and landscape. Within the project both site-specific and regional management plans were made and the management of 82 sites through grazing was assured at least for the next five years, through the EU agri-environmental scheme. The project operated mostly outside conservation areas, although some objects within Natura-sites were included. (http://www.ymparisto.fi/default.asp?contentid=386122&lan=FI

7 Main constraints and actual needs

The basic need is maintaining traditional management activities (the main constraint is the abandonment of the pastures because of the lack of grazing animals). As socio-economic conditions and rural life have changed substantially (the main current constraint for all grassland habitats), it is not possible without providing sufficient financial funds and finding the most efficient way to support restoration and maintenance of this habitat type areas. It is evident that agri-environmental schemes play dominant role. These schemes should be revised to become more effective, more targeted, more motivating (adequate payments per hectare) and provide a long-term stability for farmers. Estonia pointed out that one-year project based approach when restoring the areas does not provide stability and good perspective to farmers. For Finland more funding for managing authorities and developing financial system for non-farmers are also important elements, as well as a better cooperation between different authorities and connection to local people and regional cooperation networks on different organizational levels (change of information). Sweden declared necessity of increasing general standards of conservation requirements for grasslands in general, as most areas in Natura 2000 sites are managed in the same way as areas outside Natura 2000. The main problem for the habitat in Sweden is abandonment, and this is accentuated by the present application of CAP rules. In some cases, too massive cutting of trres has also been a result of the CAP rules. Forestry is rarely a problem for the wooded pastures, since they are not included in the “managed” forests for most farms, but considered pastures. If they are abandoned, they however turn inte forests, and eventually there can be a conflict with forestry then.

Sometimes the newly restored wooded pastures have more features of the commercial forests than traditional pastures (and thus eg lack the variety of species and age classes in their tree and bush layers). In such cases the management regime must change properly and the growing and cutting of trees must follow the target of developing a valuable pasture, not a continuance of a commercial forest.

The protection of some of the Natura 2000 sites are due to be implemented through agreements with the landowners instead of strict conservation. In these cases, for example in Rekijokilaakso, there is pressure from the landowners to use the wooded pastures as forestry land and conduct for example clear cuttings, rather than managing it as a grazing area. Outside the Natura 2000 sites there are similar problems and the only way to address the conflicts are through voluntary, advisory measures and improving the farmer´s situation in different ways.

Except lack of financial sources and inefficient financing in general there is lack of advice services for potential managers. And finally there is still better knowledge needed on ways of management as well as conservation needs of the target habitats and species. This knowledge needs a better interconnection with agricultural policy measures and with advisory system to farmers, as well as a better understanding and will to change current practices.

Butterfly Conservation Europe also pointed out one important legislative requirement: legalization of grazing in woodland.

The main conflicting activity is forestry. In Sweden the situation is even more complicated by the fact that in this MS, after 3 years of abandonment grassland is automatically transformed into forest land.

Dominance of private property is typical for all MS; the biggest proportion of state owned land is in Estonia (about one third).

In Lithuania the main conflicts with forestry are: that these areas are often (re)planted with forest trees; and that very often the land of these habitats is treated as forest land leading to obstacles for their proper management.

8 Recommendations

Most of the topics mentioned by the Member States have to do with finding way how to maintain the habitat type areas under a suitable management, to avoid abandonment. It is therefore recommended to aim the future discussion at the following topics:

- Firstly it seems there should be a coordinated effort to suggest changes in common agricultural policy implementation – definition what are the main problems and how they could be challenged in favour of biodiversity.
- Secondly, a topic interconnected with the previous one, and that is financing sustainable use of this habitat type areas. There are also other tools than CAP payments, some Member States mentioned for example need for discussion on the ecosystem services.
- Thirdly, also based to the topics mentioned by the Member States, it is recommended to prepare a manual on best management practices including less typical management practices like burning. The manual shall also contain instructions how to reconcile various conservation needs in one area so that conflicts among various groups of plants and animals are prevented.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 9070 prepared by FI

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by SE

HIS for habitat type 9070 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

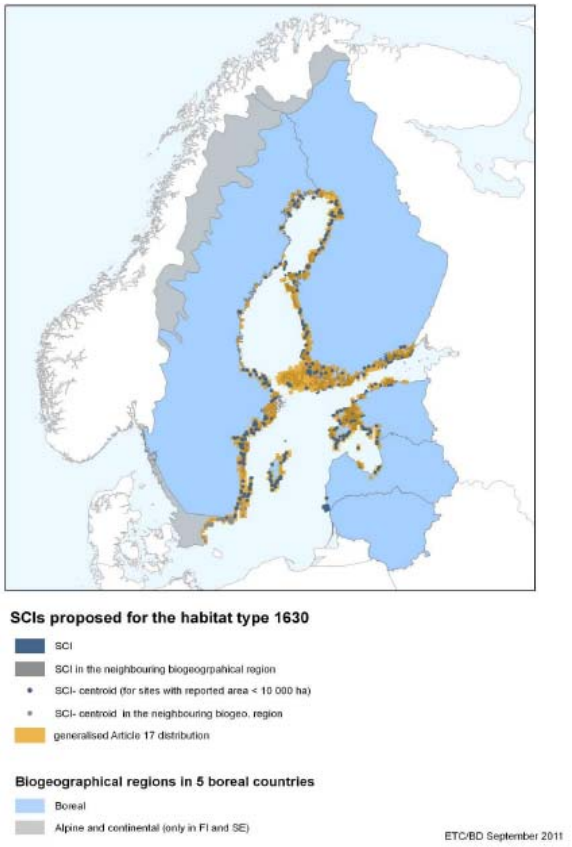
Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

Habitat type 1630 Boreal Baltic coastal meadows

1 Description

Coastal meadows along the Baltic coast on land formed by land upheaval and influenced by the brackish waters of the Baltic Sea. Traditionally managed by grazing or mowing but now often abandoned. They are widespread along the shores of the Baltic in both the Boreal and Continental regions. The main features that separate the Baltic coastal meadows from the Atlantic salt marshes are their lower salinity levels and the very limited impact of the tide, but otherwise, many of the management recommendations are relevant to both habitat types.



In the Boreal region 278 sites were designated for the habitat type and estimated surface is 17,348 ha. The largest portion, 12,102 ha is located in Estonia (Natura 2000 network database, EC, 2006). The surface was estimated on the basis of the habitat cover indicated for each protected site and should be considered only as indicative habitat surface included in Natura 2000.

The conservation status of this habitat type was assessed as 'unfavourable-bad' for the Boreal region due to inappropriate land use, particularly the abandonment of traditional agricultural use, which led to a loss of habitat area. More than 75% of the habitat's known distribution is included in SCIs. The area of the habitat type covered by Natura 2000 differs in individual Member States. In Estonia most sites with the habitat's presence are included in Natura 2000 while in Finland many coastal meadows, especially smaller or more overgrown areas are not included in SCIs. Their status could be improved by proper management. In Latvia the habitat type is extremely rare. According to the latest estimations it covers less than 1,000 ha. Sweden lacks the information on the habitat's conservation status in their country.

2 Associated species

The species benefiting from the conservation of this habitat type or those likely to be in a conflict with habitat's management are listed in the following table.

Benefiting species	**Species with conflict of managements**
Botrychium simplex	*Calidris alpina schinzii*
Branta leucopsis	*Alisma wahlenbergii*
Recurvirostra avosetta	*Anser erythropus* ?
Calidris alpina schinzii	*Circus aeruginosus*?
Philomachus pugnax	
Anser erythropus (BL)	
Circus aeruginosus (BL)	
Galinago media (BL)	
Phalaropus lobatus (BL)	
Sterna albifrons (BL)	

Conservation status of *Botrychium simplex* was reported as 'unfavourable-bad' for the Boreal region. From country reports only Sweden assessed its country population's status as 'favourable'. Latvia did not consider

Bothrychium simplex as species benefiting from the habitat's conservation as the species has not been found in this habitat type in Latvia.

Concerning species whose management requirements are likely to be in conflict with the management of habitat type Finland and Estonia pointed out a need to harmonize timing of management actions with breeding period of ground-nesting birds. The example of *Calidris alpinaschnizii* has been mentioned. The agricultural supplementary support contracts often demand to start grazing very early in June when nesting is still going on and farmers are not willing to protect the nesting site with fences considering such measure too expensive and time consuming. Reed bed species may also suffer from the management of meadows and therefore it is required to find a balance between the reed bed management and reed bed species protection. Among plants *Alisma wahlenbergii* might also suffer from intensive grazing, although due to lack of scientific information no such influence has been proven so far.

Other characteristic species for the habitat type are *Parnassius apollo, P. mnemosyne, Melitaea diamina* and *Lopinga achine*.

Except the bird species mentioned by the MS as benefiting from the habitat conservation, the BirdLife International proposes other 5 bird species (see table above) to be included on the list. This includes also globally threatened *Anser erythropus*, which according to its European Species Action Plan requires to preserve ecotone scrub-open spaces, which may be in a conflict with the management requirements of the habitat type or some associated species. There is also group of reed bed breeding species, which reguire higher vegetation with less management, such as *Circus aeruginosus*. On the other hand BirdLife proposes to exclude Branta leucopsis from the list of benefiting species as this species is not threatened, non-native species and therefore not a priority.

3 Main pressures and threats

Member States mentioned several pressures on the habitat type such as land abandonment, lack of grazing, eutrophication/water pollution, industrialisation, urbanisation, recreation, owergrowing, hydro-technical constructions, invasive species and occasional burning. In general, land abandonment or the lack of active management (grazing) was identified as the most significant threat in all Member States. Reduction or cessation of grazing on historically heavily grazed coastal meadows results in a densely overgrown, species-poor sward unsuitable for the grazing ducks and geese that often occur on the habitat in considerable numbers, neither for waders representing the breeding bird fauna of these habitats. Meadows have overgrown with shrubs, trees and reeds, the species richness declines and the vegetation structure is simplified. The expansion of reeds is significant and results in decline of rare, threatened and typical species for the habitat type.

Eutrophication is caused by air nitrogen deposition and runoff from neighbouring intensive agricultural lands leads to expansion of reeds, nitrophilous species and weeds. Effects are largely strengthened by land abandonment. Hydrological constructions on the sea coast cause changes in inundation of brackish water, process of erosion and sedimentation. Burning and recreation are impacts of minor importance that occur only locally. Waste dumping, bonfires and trampling are followed by expansion of weeds and invasive species.

4 Main conservation requirements

Several conservation requirements were reported by Member States. Most of them indicated a need for applying active management of sites by mowing and grazing and active restoration of sites by removal of shrubs, trees, cutting and burning of reeds. Baltic coastal meadows are situated within a zone which is regularly inundated with brackish water and where the vegetation should be kept low by regular grazing or natural abrasion by waves and ice. Traditional grazing has historically enabled development of a typical flora. It is necessary to avoid intensive grazing leading to overgrazing.Grazing under site specific guidelines is required. Cattle are preferable for grazing on the habitat type and it is required to be introduced after the breading season of birds. It is also recommended not to provide additional food supply to the animals in order not to increase soil nutrients. In general, it is recommended to graze in cycles over different parts of the habitat.

More effective management methods and machines are required to be used to prevent spreading and growing of reed beds. Monitoring of habitat status and management used is important to review the management methods used and apply adaptive management planning. Member States consider very important to cooperate actively with landowners and other stakeholders in order to find mutual interests in habitat management and to avoid abandonment and free development on sites.

Other conservation requirements include minimizing shore constructions and oil spills, control of drainage, effective water protection measures in the catchment area and control of invasive species. It is required to increase knowledge of visitors coming to these areas for recreation and leisure according to best available practices and traditions.

In general, it is important to review current management methods used as there are often gaps of knowledge. Today's management methods differ from traditional ones and it may have negative effect on the habitat type. There are gaps in knowledge concerning the management needs of less known species (e.g. invertebrates) and species inventories are needed. Better scientific knowledge on the genetics and population biology of the threatened species is needed (there is an ongoing research at Oulu University in Finland).

5 Conservation targets

Setting of conservation targets is dealt at different levels in each Member State. In Latvia the conservation targets were not set for the habitat type, however general targets as non-binding recommendations for conservation of semi-natural habitats are stated in the national biodiversity programme. In Finland conservation targets are described in the "Management of agricultural heritage habitats in Finland, Heritage Landscapes Working Group report". In Sweden the conservation targets have been set by the report of Swedish Species Information Centre. The most common conservation targets include promoting cultural values and typical flora by means of regular grazing, preventing natural pastures from overgrowing, protecting water sources, etc.

National guidelines for management and restoration of the habitat type do not exist in Latvia. In Finland and Estonia a number of particular restoration and management guidelines have been prepared in the framework of different projects. A set of guidelines has been published by the government, focused on farmers and local authorities with the aim to explain values of semi-natural habitats, the need and methods of management, planning and financing. In Sweden the restoration and management guidelines are part of manuals for monitoring of the Natura 2000 habitat types status. These manuals define ecological conditions of the habitat types in order to reach favourable conservation status.

In all Member States concerned management plans have been elaborated for all sites. In Latvia, the most common proposed management actions are mowing, grazing / establishment of pastures with shelters for cattle, removal of reed, shrubs and trees. In Finland, more detailed plans have been prepared for all national parks and wilderness areas. In addition, more detailed plans cover large number of smaller sites. Over 70% of the coastal meadow sites in the Natura 2000 are managed on the basis of the management plan. Existence of the management plan is a pre-condition for applying for the financial support in the framework of agri-environmental schemes. In Sweden the content and quality of the management plans vary. The main conservation objectives and actions identified in the plans include continuation of grazing to preserve characteristic species composition, promoting flooding of meadows, preventing installation of dikes against the flood water, etc.

In Estonia the national conservation targets for semi-natural habitats are worked out for Estonian Nature Conservation Strategy until 2020. According to the draft of this document the area under optimal management shall be increased to 10 800 ha by 2020.

In Lithuania no targets have been determined yet.

6 Management measures

Management measures applied in Member states for this habitat type include mainly grazing, mowing, clearing of shrubs and reed encroachment. In Finland these management measures are applied on 90% of

managed meadows with help of agricultural supplementary support. It is estimated, that 65% of the total habitat type area is managed, mostly within Natura 2000 sites. Management activities are not optimal in some cases. Traditional management activities as grazing and mowing are effective, but might be too monotonous. Management is often not adjusted to the specific conditions and species present on the individual sites. According to the results of monitoring of vegetation and coastal meadow birds in Finland, status of the habitat type was evaluated at the national level, revealing that grasslands and pastures are the most endangered habitat group. The latest Red List of Finnish species published in 2010 reveals the continuing decrease of grassland species stocks. However, management measures are essential and contribute to improvement of the area and status of grasslands significantly. It is expected that by 2020 newly established meadows will have rather typical vegetation.

In Latvia, the common land use on the habitat's sites was livestock grazing and hay-making in the past. The grasslands were actively managed until 1990s. Decline of livestock numbers and change of rural lifestyle in the 1990s led to abandonment of the former pastures and hay-making sites. The widespread way of living as practised until the 1990s with each household having a couple of cows or other animals in has vanished. Presently, some Natura 2000 sites are managed by grazing, e.g. heck cattle and Konik horses are introduced and grazed in the fenced grazing area. Locally also mowing was established as the initiative of the municipality, however meadows become largely abandoned during last years. There are several sites where mowing and grazing ceased due to lack of funding and the areas become abandoned. However, the total proportion of habitat type under management has increased since 2003 due to re-establishment of grazing in some sites. Within Natura 2000 monitoring programme a surveillance in randomly selected transects (not in all Natura 2000 sites with the coastal meadows habitat present) is carried out using methods harmonized throughout the country. There are currently habitat maps for most of the Natura 2000 sites available and the habitat cover will be monitored continuously in the forthcoming years.

There are currently two management measures in place for semi-natural habitat management in Estonia. For restoring the areas Estonian Environmental Investment Centre (EIC) provides up to 2 year project based opportunity to apply for support. These projects are mainly managed and carried out by Environmental Board (EB). Main activities supported are removing the bush coverage, reed and trees and building fences for livestock. NGOs and EB can also apply support to buy livestock and mowing machinery from the European Regional Development Fund and from the EIC. EB has applied for this support and created a system of giving livestock and machinery out for the farmers to use with no fee. After 5 years farmer has to return same age and same sex animals to the EB but can keep all the descendants of the original animals. For managing the restored areas farmers can use the Estonian Rural Development Plan (RDP) agri-environemental measures. RDP are managed in cooperation with payment agency and Environmental Board. Main requirements for receiving the support payments are: proof of legal use of the land where semi-natural area is situated and that the area is carried into Estonian Environmental Registry (situated on Natura 2000 area). Main differences with regular RDP subsidies are the later mowing date and more environmentally friendly techniques like not mowing from the edges towards the centre as it traps birds in the middle of the field where they would perish when mowing the last strip of hay. A top-up system for the main management scheme is planned for the next RDP period on coastal meadows in Estonia to improve the situation of the species on that habitat type.

In Sweden habitats are managed/restored mainly according to the Swedish application of CAP. Grazing is the most common management measure applied on this habitat type. Local management plans are developed to support local initiatives of NGOs mostly. Many restoration projects have delivered successful results.

In Finland, most of the larger coastal meadows are managed according to management plans or contracts made with the farmers following the EU agrienvironmental scheme. In those plans and contracts the environmental authority requires the coastal meadow to be divided into several sections, which are grazed at different times of summer, in order to secure the nesting of the rare and endangered birds. In the areas with most intense and growing grazing pressure, the local authorities also make sure that sufficient proportion of the reedbed is left to grow in order to secure the habitats for the reed fauna also.

In Finland the international cooperation with Estonia has developed. Latvia organized international scientific conferences. In Sweden there were events organised on the national level to share information.

The county administrations officers meet regularly.

Grazing and/or mowing of coastal meadows is suitable for most of the coastal meadow birds. However some species require specific grazing/mowing regime, e.g. waders (*Calidris alpina schinzii, Philomachus pugnax, Recurvirostra avosetta, Gallinago media*) require short vegetation (not higher than 10 cm) at the beginning of the breeding season and as they avoid ecotone habitats they require larger blocks of open landscape (at least 200 m wide) with no woods or shrubs. On the other hand the globally threatened Lesser White-Fronted Geese (*Anser erythropus*) reguires preservation of scrub-meadow ecotones. For bird species prefereing open landscape removal of artificial constructions from the shoreline, which prevent migration such as poles, towers, wires and wind turbines is necessary.

There is also group of species which prefer higher vegetation on coastal meadows, such as reed beds, e.g. *Circus aeruginosus*, for these species the mowing regime need to maintain some portion of their breeding habitat. Restriction of human disturbance seems to be an important conservation measure for the coastal birds, too.

Whilst there is no specific (shared) system in place for scientific assessment of effectiveness of management, different national monitoring systems are in place to assess the situation of the habitats and species over time. Thus, the specific system for scientific assessment of effectiveness of management is currently being worked out in Estonia. The first stage for the plan was finished in 2011.

Examples of good practice:

Estonia

Väinamere project: This project included also the importance of local lifestyle into the restoration and management of the semi-natural habitat. Example farm was created where many different traditional activities (meat producing, handicraft) and also new activities (tourism) are carried out and project areas are still managed even when the original project is finished by now.**LIFE00 NAT/EE/007083 Boreal Baltic Coastal Meadow Preservation in Estonia:**

The objective of the project was to improve the management of coastal meadows in Estonia. For that management agreements were made with local landowners, the cattle and sheep were purchased in order to secure satisfactory number of grazing animals. An important aspect of the project was the restoration/creation of 64 freshwater ponds for the natterjack toad (*Bufo calamita*), listed on Annex IV of the Habitats Directive. This species has suffered badly from habitat loss, such as destruction or overgrowth of spawning ponds, over large parts of Europe. In order to reduce the risk of inbreeding and to secure the genetic constitution of the target species, tadpoles were to be re-introduced at 10 sites and reserve populations established at another six sites.

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.createPage&s_ref=LIFE00%20NAT/EE/007083&area=1&yr=2000&n_proj_id=1720&cfid=16586&cftoken=2e4adf8baa61f2ac-360A2F1D-DAE5-7FE0-A7720CC7129F3210&mode=print&menu=false

In the frame of this project a publication “Coastal meadow management. Best Practice Guidelines” was published (http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=Coastal_Meadow_Preservation_in_Estonia.pdf).

LIFE project Restoration of habitats of endangered species in Silma Nature Reserve

The project planned to work on three sites: Silma Nature Reserve and the two island reserves Osmussaare Landscape Reserve and Vormsi Landscape Reserve. Together these contain a significant share of the coastal meadow habitat in Estonia. Livestock and machinery would be purchased to help farmers re-instate appropriate levels of mowing and grazing, which would be funded through an annual management fee (co-financing contribution from the Ministry of the Environment). The project planned to work on three sites: Silma Nature Reserve and the two island reserves Osmussaare Landscape Reserve and Vormsi Landscape Reserve. Together these contain a significant share of the coastal meadow habitat in Estonia.

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.createPage&s_ref=LIFE0

3%20NAT%2FEE%2F000181&area=1&yr=2003&n_proj_id=2490&cfid=615886&cftoken=9524bd1657ba64b1-4296ACA0-D094-91A4-87343BEAAEFE045A&mode=print&menu=false')#PD

Latvia - Vītiņu Meadows

At Vītiņu Meadows in Latvia regular management targeted at the restoration of grassland habitats including coastal meadows by year-round grazing was successfully introduced. The grazing area was established in the cooperation of a local municipality and the NGO focusing on the introduction of large herbivores used for natural grazing in several other sites in Europe. The municipality started with grazing of cattle followed by horses' grazing. As a result of non-intensive grazing, species-rich vegetation has recovered. The cattle opened the reed growths and created many such openings in the previously dense reed zone along the shoreline of the lake. Consequently, this attracted waders that look for food in the soft bare soil. After the horses have been introduced, the layers of old grass were disappearing, giving place to many less-competitive plant species.

Sweden - Ängsö Nationalpark

In Sweden, the Ängsö Nationalpark established in 1909 is the best example of Baltic coastal meadows protection.

Finland - Lintulahdet-Life (2003-2007)

Within the project a total of 12 sites were restored and managed, many of them including coastal meadows. The sites were all important sites for migratory birds, but the management also improved the situation for other groups of species. Different management techniques were used and extensive monitoring was conducted.

7 Main constraints and actual needs

In general, change in people's lifestyles in coastal areas, absence of livestock and no need for pastures and hay meadows represent the most significant constraints. The lack of regular funding and personnel for implementation of grazing management was also identified as constraints by all Member States. Managing authorities lack funding and it has been considered that the agri-environmental schemes are not effective enough. Also relationships between land owners and site managers are not at appropriate level. Lack of knowledge on the sites' values was also mentioned among constraints, which includes specifically the insufficient inventories and common data systems.

In order to ensure that Natura 2000 sites contribute to achieving favourable conservation status of this habitat type Member States provided several proposals. Member States considered necessary to provide more funding and resources for monitoring, inventories, management planning, site management and restoration activities. Regional management plans for the habitat type should follow the basic habitat requirements and sites/populations connectivity. It is required to strengthen co-operation between different authorities and the outreach towards the local people. Regional co-operation networks on different levels would provide sufficient tools for information exchange. Development of innovative and cost effective management methods and the use of new-design machinery are vital.

In all countries most sites are in the private ownership and have been historically used for grazing and other agricultural use. In Latvia the sites of the habitat type are becoming completely abandoned. In some areas, grazing areas have been established and activities are focused on conservation of the habitats. In Sweden tourism and outdoor recreation including marinas are developing. The main stakeholders include the local governments, leisure enterprises, landowners, farmers, bird watchers and nature conservation NGOs.

8 Recommendations

Most of the topics mentioned by the Member States concerned difficulties with the land abandonment of areas previously managed by traditional management measures. Member States often found lack of regular funding and agri-environmental schemes have been considered not effective enough. Focusing discussion on financing mechanisms available for suitable management practices is recommended.

Member States are also interested to focus discussion on various topics such as:

- maintaining biodiversity in agricultural landscapes,
- harmonizing habitat classification of grasslands and wooded pastures,
- presentation of best management practices,
- removal of invasive species,
- solvingconflicts between land owners and site managers.

Documents used:

HIS for habitat type 1630 prepared by EE

HIS for habitat type 1630 prepared by FI

HIS for habitat type 1630 prepared by LV

HIS for habitat type 1630 prepared by SE

HIS for habitat type 1630 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Doody J.P. 2008. Management of Natura 2000 habitats. 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). European Commission

3. Wetlands

Five specific habitat types were selected from 17 habitats present in Boreal region - Active raised bogs (7110), Degraded raised bogs still capable of natural regeneration (7120), Fennoscandian mineral-rich springs and springfens (7160), Alkaline fens (7230) and Bog woodland (91D0). Also other endangered habitat types were taken seriously for the selection, mainly *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caenuleae*) (6410).

Thirteen forest habitats occur in all 5 Member States of the Boreal biogeographical region.

None habitat type is in favourable conservation.

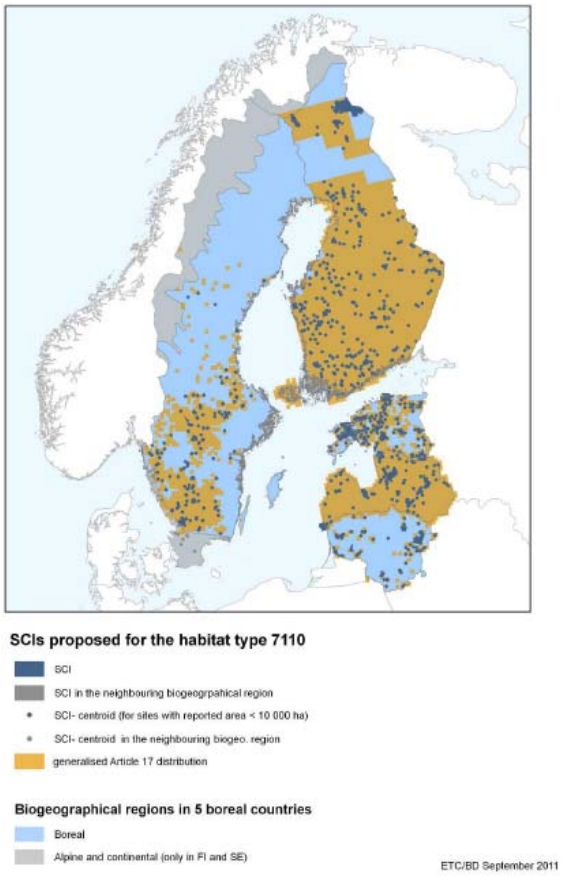
The wetland habitats and associated species in the Boreal region are influenced mainly by modification of hydrographic functioning and drainage and also by pollution and general forestry management.

Tab. 2: Number of Natura 2000 sites and their area for habitat types selected in 5 Member States

Code		**Estonia**	**Finland**		**Latvia**	**Lithuania**	**Sweden**		
		Boreal	Alpine	Boreal	Boreal	Boreal	Alpine	Boreal	Continental
7110	Number of sites	96	1	276	91	44		149	12
	Habitat area (ha)	130323,0	0,0	99213,2	72349,3	12323,8		36550,9	701,9
7120	Number of sites	24		31	64	18		10	8
	Habitat area (ha)	2117,4		3629,3	23265,6	3561,2		789,0	319,2
7160	Number of sites	50	4	272	43	26	20	80	4
	Habitat area (ha)	537,2	0,0	1225,7	120,0	521,4	2141,1	1161,1	4,9
7230	Number of sites	127	7	304	24	43	38	379	46
	Habitat area (ha)	23081,3	58,9	11133,0	1208,5	1364,0	7024,4	12581,1	143,3
91D0	Number of sites	149	14	870	167	86	37	604	32
	Habitat area (ha)	40568,5	44947,2	167386,5	34319,8	25446,7	43396,8	46110,1	903,8

Habitat type 7110*Active raised bogs

1 Description



Raised bogs are formed by bog mosses (*Sphagnum* spp.) and what concerns both the water and the nutrient supply they are dependent on rainfall. Therefore the raised bogs are naturally nutrient-poor. Growth of *Sphagnum* mosses often forms a dome with an internal water table higher than the surrounding water table. This typically few meters high dome – the raised bog – is wholly rain-fed and usually surrounded by other wetland or fen vegetation at the edges or along streams, where ground water can percolate into the wetland. The habitat is widely distributed across northern Europe, particularly in the Atlantic, Boreal and Continental regions. Active raised bogs are those with active (on-going) peat formation.

The conservation status of this habitat type was assessed as 'unfavourable-inadequate' for the Boreal region. Only range was considered to be 'favourable' in all Boreal countries. In Finland, the overall conservation status was assessed as 'unfavourable-bad'. Estonia noted that the conservation status is deteriorating. Up to 75% of the habitat area is included in the SCIs. The habitat type is present in all Boreal countries.

The area of the habitat type covered by Natura 2000 differs in individual Member States. In Estonia, the raised bogs of total surface of 138,731 ha correspond to the habitat type 7110 and 80% of this area is part of Natura 2000. Nevertheless, 13,139 ha of excellent or good value raised bogs are located outside SCIs and there is need to include some of those sites within Natura 2000 network.

In Finland the total area of habitat type was estimated to 150,000 ha. A considerable part of the habitat type is located outside Natura 2000 sites. The ditches located outside Natura 2000 sites especially on their borders often prevent successful restoration of mires and associated habitat types in the Natura 2000 sites.

In Latvia the total area of the habitat was estimated to 165,000 ha. Data on the habitat distribution and cover were clarified within the national monitoring programme and in the framework of site management plans.

Lithuania and Sweden lack information on the situation in the country.

2 Associated species

The list of species benefiting from the conservation of the habitat type is included in the following table. None of the Member States have reported any species the management requirements of which are likely to be in a conflict with management of the habitat type. However, some conflict may occur with management focussed on raising water levels very significantly for bird diversity.

According to reports of Member States the following bird species have been proposed to be added to the list of species benefiting from the conservation of habitat type: *Cygnus cygnus* (EE), *Podiceps auritus* (EE), *Aquila chrysaëtos* (EE, LV), *Falco columbarius* (EE), *Lanius collurio* (EE), *Circaetus gallicus* (LV), *Circus pygargus* (LV), *Circus aeruginosus* (LV), *Pandion haliaetus* (LV), *Numenius phaeopus* (LV),

Numenius arquata (LV). In addition, BirdLife International identified another bird species – *Gavia stellata* being associated with the 7110 habitat type.

In relation to associated species Sweden also mentioned that in their country *Philomachus pugnax* is connected rather to the habitat type 7140 than to active raised bogs and *Asio flammeus* has its range in Sweden situated more north than is the range of active raised bogs.

Other characteristic species for the habitat type are *Colias palaeno, Coenonympha tullia, Boloria freija, B. frigga, B aquilonaris, Erebia embla, Oeneis jutta, Pyrgus centaure*. Furthermore *Erebia disa, Oeneis norna, Lasionycta scraelingia, Xestia gelida, Xestia borealis are important and typical species* of the Northern/arctic bogs.

Benefiting species	**Species with conflict of managements**
Circus cyaneus	
Tetrao tetrix tetrix	
Grus grus	
Pluvialis apricaria	
Philomachus pugnax	
Tringa glareola	
Asio flammeus	
Cygnus cygnus (EE)	
Podiceps auritus (EE)	
Aquila chrysaëtos (EE, LV)	
Falco columbarius (EE)	
Lanius collurio (EE)	
Circaetus gallicus (LV)	
Circus pygargus (LV)	
Circus aeruginosus (LV)	
Pandion haliaëtus (LV)	
Numenius phaeopus (LV)	
Numenius arquata (LV)	
Gavia stellata (BL)	

3 Main pressures and threats

A variety of threats and pressures to the habitat type has been reported by Member states, but as the most significant the drainage, peat extraction, pollution/eutrophicationand overgrowth were mentioned. Peat extraction was reported as a threat and pressure in all boreal countries. Drainage for forestry and for peat extraction is one of the main factors that negatively affects raised bogs, related species and limits the development of mires. The drainage of peat bogs is often driven by forestry. Forestry affects the raised bogs by logging in the near surroundings as well as logging on forested “islands” within the bogs itself. Forest roads going across or situated in the vicinity of the bogs often have the same effect as drainage ditches. The pressure of creating new ditches has ceased as a consequence of regulations, but clearing of old ditches and of the streams maintains the effect of the drainage.

Peat extraction causes pressure by opening new horticultural peat mining sites in non-protected valuable intact raised bogs and in some areas the influence of protected active raised bogs by neighbouring peat mining area exists. In some countries peat extraction is ongoing close to the borders of Natura 2000 sites (LV). In Sweden, peat extraction is a strong pressure locally but does not affect large part of the bogs.

Air pollution was also mentioned as a threat that causes eutrophication due to increase of nutrients in precipitation. Outdoor sports, leisure activities, trampling and pollution made of household garbage have been also observed in some places. Those activities may result in disturbance to wildlife and cause dispersal of breeding birds from optimal habitats to lower quality habitats.

4 Main conservation requirements

Most Member Statesindicated the necessity to keep optimal hydrological regime of the raised bogs. In order to achieve that, restoration of hydrological regime within the bogs and connected areas near the bog is needed. In some cases revision of protected areas borders is necessary in order to enable implementation of the hydrological restorations. Intensive land use in the past caused fragmentation and isolation of the remaining active raised bogs. It is important to keep mosaic bog landscapes rather than huge monotonous bogs.In order to improve the connectivity and conservation status of the habitat, it is essential to prevent destruction of raised bogs outside the Natura 2000 network. Different kinds of measures can be used, e.g. designation of new conservation areas, restoration, land use planning and other management practicessuch as removal of trees and bushes. Land use activities that cause destruction of bogs should be allocated to already drained peatlands. The role of regional land use planning should be strengthened to improve the co-ordination between different land use needs on peatlands. Possibilities to safeguard bog habitats outside conservation areas through national legislation should also be carefully examined.

Undisturbed water regime is an important requirement of species associated with peat bogs as well, such as birds, butterflies, etc. Restoring natural water dynamics, e.g. by filling in ditches on margins or core areas of the focal sites can improve habitats for e.g. *Grus grus*, *Tetrao tetrix tetrix*, *Tringa glareola*, *Philomachus pugnax* and *Pluvialis apricaria*.In case of Finland, there are plenty of drained or partially drained raised bogs, many of them are still active in spite of partial drainage. However, peat bogs and characteristic species including Lepidoptera, especially outside the Natura 2000 sites are very threatened and need protection and sustainable management. Some bird species associated with peat bogs require specific consevation measures. The breeding success of *Gavia stellata* can be improved by artificial nesting sites (small islands), which decreases predation. Islands are good for the species as long as the mosses dominate it. For *Pandion haliaëtus*, Aquila chrysaëtos and other species nesting on trees in petlands it is necessary to protect their existing and potential nest trees. This need to be respected by forestry operations and conservation management as well.On the other hand, *Pluvialis apricaria* and *Tringa glareola* prefer open landscape with less wood and removal of trees from its core breeding areas to create openness seems to be the right measure. Some species require other specific measures, such as predator control is necessary for Tetrao tetrix.

Among the other conservation requirements, it is also required to develop tourism infrastructure in some sites in order to mitigate negative impacts on the habitat caused by visitors. Passive management (non-intervention) was also mentioned among possible management approaches. In Estonia the raised bogs are protected mainly on the basis of passive (non-intervention) management. According to inventory there are still more than hundred active raised bogs of excellent or good natural conditions that are located outside of SCIs. Those sites require to be designated as protected areas with implementation of passive management measures.

According to report from Lithuania, conservation needs are not well known. Exact management activities can be determined only after finalisation of detailed habitat inventory and elaboration of indicators for favourable conservation status.

Sweden deemed general environmental consideration as insufficient. Various operators, mainly forestry, should show greater consideration for the function and value of wetlands in general. Long term protection is needed to be secured for the most valuable raised bogs.

5 Conservation targets

In most countries (EE, LV, LT) conservation targets for the habitat type have not been set at the national

level, however general targets and objectives have been set in the framework of other documents, e.g. National Biodiversity Programme (LV), the Basis of Protection and Sustainable Use of Estonian Peatlands (EE) that contain recommendations for site management. In Finland the proposed National Peatland Strategy includes a mire conservation program and a proposal to protect all peatlands of natural state. In Sweden there is a plan for protection of the most valuable wetlands and a strategy for conservation, restoration and management of wetlands.

Management and restoration guidelines on the national level are not in place in case of Latvia and Lithuania. In Latvia management recommendations are prepared within several site management plans for Natura 2000 sites. In Estonia the guidelines for restoration of the damaged peatlands were developed by scientists and consulted with stakeholders. The document forms a base for restoration activities in degraded peatlands including 7110 habitat type. In Finland management guidelines for forestry have been elaborated by private and state forestry institutions. In case of Sweden guidelines prepared for each habitat can be considered as synthesis of scientific information and practical experience, though the scientific basis is rather weak.

In all Member Statesmanagement plans for sites are being elaborated. In Estonia, 11 site management plans for sites designated for protection of active raised bogs have been approved. Most common actions include restoration of natural hydrology of mire complexes, construction of educational facilities and nature trails and monitoring. In Latvia site management plans have been elaborated and approved for more than 20 Natura 2000 sites which were established with many qualifying features including active raised bog habitat. The site management plans include recommendations but are not legally binding. The main objectives of the management plans are to maintain the area with complex of natural mires, freshwater and forest habitats suitable also for protection of associated species with minimal anthropogenic influence, to avert degradation of mire habitats and promote their restoration, including hydrological regime restoration in the areas influenced by drainage. Both Finland and Sweden have developed management plans for all Natura 2000 sites containing 7110 habitat type. However, most plans need to be now revised in Sweden. The most frequent management objective is application of passive management (non-intervention).

6 Management measures

Main conservation measures suggested for management of raised bog habitats by Member Statesinclude passive management (non-intervention) and active restoration of the optimal hydrological regime. According to Member Statesreports, raised bogs with natural hydrological status most often do not need special active management. However, open areas in raised bogs have decreased the last decades.

Finland mentioned number of restoration activities in mires. Several LIFE projects focused on restoration of active raised bogs have been implemented. Apart from that, Metsähallitus, the biggest operator in the field of mire restoration in Finland restores annually more than 1,000 ha of peatlands in state owned conservation areas, most of which are included in the Natura 2000 network. The general goals of restoration are raising the water table level in the mires and achieving a natural-like spread of water in the mire. Smaller scale restoration activities are also performed by other institutions such as Forestry Centres in the framework of different projects. In addition, Metsähallitus has restored a significant area of altered mires, mainly inside but also outside Natura 2000 sites, that have not been classified as ‘active raised bog’ habitat type before restoration and thus the aim of restoration activities were to restore the altered ecosystem to an ‘active raised bog’. In case of some countries (SE) management of raised bogs is not a priority, but restoration of degraded raised bogs (7120) within Natura 2000 sites is prioritized.

A considerable experience in bog restoration has been accumulated in past ten years also in Latvia. Previous experience in bog restoration has been used for planning of the restoration in other areas. Actions are targeted at restoration of optimal hydrological regime in degraded raised bogs. In 2010-2011,

management plans were elaborated for 6 Natura 2000 sites.

In some countries the main conservation activities are inventories (EE, SE). Several large countrywide inventory projects have been carried out in Estonia in the last decade of the 20th century. Results of inventories were largely used in the process of Natura 2000 network establishment. Inventory of Estonian mires was completed by the project "Estonian Mires Inventory completion for maintaining biodiversity" held in 2009-2010. In Sweden the National wetland inventory surveyed the wetlands of Sweden below the alpine region. The most valuable wetlands, including raised bogs, were identified and the national Mire Protection Plan was adopted. So far not many raised bogs have been the subject for restoration, but within the Life project "Life to ad(d)mire" 2010-2015, 35 Natura 2000 mires and wetlands will be restored, some of them are of the habitat type 7110.

Monitoring of results is a significant part of restoration works. In Finland qualitative monitoring is being done in every restored site in one- and ten-year period after restoration. In Sweden there is also a national remote sensing monitoring program for wetlands ongoing. Moreover the Swedish EPA is working on a program to complement the monitoring needs for biogeographical evaluation of conservation status. However, the effects of restoration will be monitored locally and will therefore deliver data on measurable improvements, if the measures are successful.

All Member Statesreported that the cooperation and exchange of experience of experts concerning bog conservation and restoration, mostly executed in the framework of LIFE projects takes place. Joint activities include sharing scientific and practical restoration expertise, study tours for management of habitats, field courses for university student and regular study trips of university students to national parks.

In Finlandthe new peatland restoration guide book (to be published 2012) will build upon twenty years of experience. Understanding of peatland structure and function is fundamental for ecologically wise restoration and this is the focus of the first part of the guide book. Especially hydrology and the characteristics and accumulation of the surface peat layer are described in detail, but also the special characteristics of different peatland habitat types. The restoration techniques have evolved from hand-made dams to ditch-filling by excavators. The guide book will give clear instructions to planning and implementing the broad range of measures related to the restoration of peatlands. The impact of restoration on the quality of runoff water is an important factor that has to be considered already in the planning phase. A large group of experts have shared their knowledge of different mire species groups and their requirements for restoration practices and these texts are included as infoboxes. A collection of good practice case studies from large-scale mire complexes with raised bogs and aapamires to small scale rich fens and ground-water influenced spruce mires are also an important part of the guide book.

Examples of good practice:

Projects in Estonia and Latvia

Several projects have been mentioned as examples of good practice e.g. LIFE Co-op project 2004-2005 implemented in cooperation of 9 partners from Estonia and Latvia "Dissemination of ecological knowledge and practical experiences for sound planning and management in raised bogs and sea dunes" , "Mire habitat restoration planning" funded by INTERREG III A 2006-2007 in Estonia.

In Latvia several LIFE projects have been also carried out, e.g. "Management of Lubāns wetland complex", "Implementation of Mire Habitat Management Plan for Latvia".

Finland

The major threats for peatland habitats in Finland are drainage for forestry, agriculture and peat extraction.

In Finland 12 LIFE Nature projects have targeted Active raised bogs (7110) and/or Degraded raised bogs

still capable of natural regeneration (7120) during 1996-2011. An estimated total area of about 1300 ha of these habitat types has been restored in eight of these projects so far. In addition, several projects have included land purchase for conservation purposes.

The ongoing Boreal Peatland LIFE (LIFE 08 NAT/FIN/000596) utilizes the best practice methods to restore a total area of about 4300 ha of peatlands during 2010-2014. A considerable part of this area has been classified as Active raised bogs or Degraded raised bogs still capable of natural regeneration. The best practise methods include careful restoration planning, filling in the ditches by excavators, building different kinds of dams to direct water flow, removing trees when necessary and monitoring the results of restoration. So far more than 300 ha of these habitat types have been restored in the project.

Other large scale LIFE projects that have utilized best practice methods in restoration of Active raised bogs or Degraded raised bogs still capable of natural regeneration include Karelian mires and virgin forests – pearls in the chain of geohistory (LIFE03NAT/FIN/0036) and Restoration of active raised bogs, aapamires and bog woodland in Natura 2000 sites (LIFE96NAT/FIN/3025).

7 Main constraints and actual needs

Various constraints were identified by Member States. The most significant are the lack of funds for protection of raised bogs, lack of experts on management implementation and monitoring. Raised bogs are usually not in a strong conflict with land use, e.g. forestry is not normally practiced on bogs. However, resistance/conflicts with stakeholders exist where the forestry is located in the vicinity of the bog. In case of Latvia, conflicts with stakeholders, e.g. owners of private and state forests neighbouring the bog restoration sites and also with the local inhabitants were mentioned as a constraint.

According to reports from the Member States, the most common need is to maintain or restore the optimal hydrological regime of bogs and the connected areas in their surroundings. The previous experiences in restoration of bogs should be used in further planning of restoration measures. In case of Latvia, it has been estimated that about one half of the degraded bogs still need active management. In most of the habitat sites the optimal management is non-intervention, therefore, the current management is considered to be appropriate and sufficient. The results of the national inventory in Sweden have shown that around 70% of the raised bogs were negatively affected locally while 10% were generally affected. The most valuable/the least affected bogs are designated as Natura 2000 sites, thus the proportion of sites in need of management/ restoration is difficult to estimate.

In most Member Statesthe most significant stakeholders are private and state forestry companies. If sufficient consideration is taken in the vicinity of raised bogs, current land use may be compatible with the conservation needs. In case of Sweden interest of forestry is not focused on an active raised bogs, but parts of raised bogs affected by drainage and degraded raised bogs may be used for forestry. In Latvia the main economic activity on the raised bogs is the peat extraction, which is mostly carried out outside the Natura 2000 sites. Other activities mentioned include picking of wild berries and hunting. However, as the majority of the habitat cover is located within Natura 2000 sites, the main landuse purpose is nature protection applying the non-intervention management regime.

8 Recommendations

The most common needs of the Member states are to maintain or restore the optimal hydrological regime of the bogs and application of passive management (non-intervention). It is recommended the Member States shall discuss the issues of restoration of natural hydrology in mire-dominated landscape, share experience in

application of cost-effective measures of restoration and efficiency of management methods. As the main threats to the habitat type in all MS include forestry and peat extraction it is recommended the Member States shall discuss the effective measures to avoid/minimise negative effects of both land use types.

Member States mentioned lack of funding for protection of raised bogs and lack of expertise on restoration and management. It is recommended to focus discussion on possible financial mechanisms for the protection of habitat type and also a need to enhance exchange of information and expertise among the Member States in the Boreal region.

Documents used:

HIS for habitat types 1630, 6210, 6530, 6270, 6450, 6510 and 9070 prepared by EE

HIS for habitat type 7110 prepared by EE

HIS for habitat type 7110 prepared by FI

HIS for habitat type 7110 prepared by LV

HIS for habitat type 7110 prepared by LT

HIS for habitat type 7110 prepared by SE

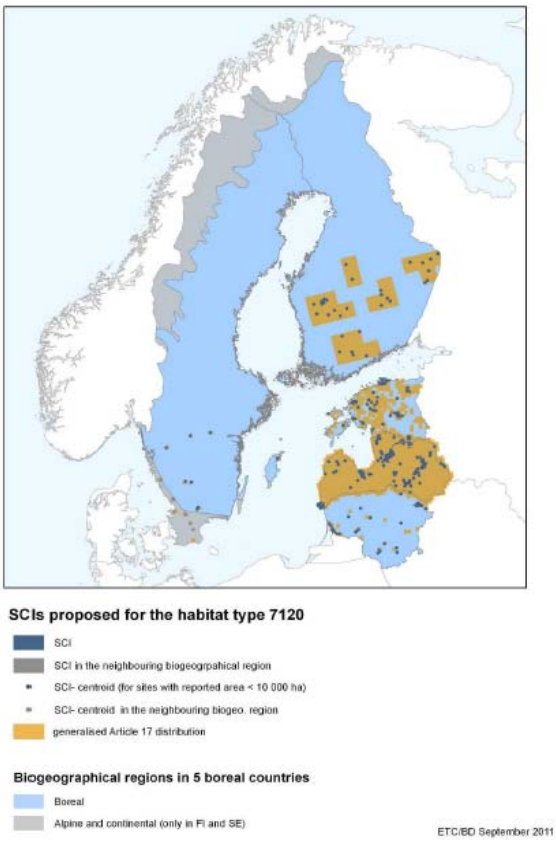
HIS for habitat type 7110 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Habitat type 7120 Degraded raised bogs still capable of natural regeneration

1 Description



The habitat includes degraded forms of the habitat 7110* Active raised bogs where the restoration to an active, peat-forming bog is still considered feasible. The main conservation objective for this habitat type is to reduce its area by active restoration enabling regeneration of 7110 habitat type rather than maintaining or increasing the area of 7120 habitat type. The usual methods used for assessment of the conservation status are therefore not suitable for this habitat type.

The conservation status of this habitat type was assessed as ‘unfavourable-inadequate' in the Boreal region. On country level only Latvia considers the habitat’s conservation status as ‘favourable‘, Estonia assessed the conservation status of the habitat type as ‘unfavourable-inadequate', while Lithuania and Sweden assessed it as ‘unfavourable-bad'. There are no data reported by Finland in the Article 17. Concerning the contribution of Natura 2000 to achieving the favourable conservation status of this habitat type it is less than 50% of its currently known distribution which is included in the SCIs in the Boreal region.

The area of the habitat type and the proportion included in the Nature 2000 differs in individual Member states, but in all countries the area covered by 7120 habitat type is smaller than that of the 7110 habitat type.

In Finland the area of the habitat type in Natura 2000 network is estimated to 3,600 ha(there is no estimate for the total area since the distinction from type 7110 is not clear). A considerable part of the habitat type is located outside Natura 2000 sites. The drainage ditches outside Natura 2000 sites especially on border areas often prevent successful restoration of mires and associated habitat types in the Natura 2000 sites and thus prevent improving the conservation status of 7120 and 7110 habitat type respectively. In Latvia the total area of the habitat is estimated to 60,000 ha. Data on the habitat distribution and cover are being clarified within the national monitoring programme and in the framework of site management plans elaboration. In Sweden the most valuable/the least affected bogs are designated as Natura 2000 sites.

2 Associated species

None Habitats Directive Annex II/IV species is considered to be associated with this habitat type. In the country Habitats Information Sheets (questionnaires) provided by Member Statesfor this exercise no additional species was identified to be added to the list of species benefiting from conservation of the habitat type. In addition there are 3 Birds Directive Annex I species identified as benefitting from the conservation of this habitat type:

As for Latvia, *Circus cyaneus* is not considered to be a species benefiting from the management or conservation of the habitat type.

Benefiting species	Species with conflict of managements
Circus cyaneus	
Tringa glareola	
Asio flammeus	
Grus grus (BL)	
Pluvialis apricaria (BL)	
Tetrao tetrix (BL)	

In addition, BirdLife International had identified another three bird species being associated with this habitat type: *Grus grus, Pluvialis apricaria* and *Tetrao tetrix*. However, *Grus grus* is considered to be a priority for conservation as it is not threatened at the European level or globally, but faces various threats locally.

None of the Member Stateshave reported any species whose management requirements would be likely in a conflict with the management of the habitat type;however conflict may occur with management focused on raising water levels very significantly for the bird diversity.

Other characteristic species for the habitat type are *Colias palaeno, Coenonympha tullia, Boloria freija, B. frigga, B aquilonaris, Erebia embla, Oeneis jutta, Pyrgus centaure*. Furthermore *Erebia disa, Oeneis norna, Lasionycta scraelingia, Xestia gelida, Xestia borealis* are important and typical species of the Northern/arctic bogs.

3 Main pressures and threats

The most frequently mentioned threats and pressures to the habitat type include peat extraction, drainage,modification of hydrological functions, acidification, fertilisation and overgrowth.

Drainage due to forestry and peat extraction are the main factors that negatively affect raised bogs, related species and limit development of mires as their development is only possible under the conditions of excessive water. In Latvia use of peat in agriculture and industry had increased heavily in the second half of 20th century. This had driven intensive drainage of peat bogs. Large parts of the country were exploited for peat extraction and the drainage ditches established affect mire habitats till today. Presently the peat extraction is ongoing close to the borders of some Natura 2000 sites. In case of Sweden peat extraction represents locally a strong pressure but it does not affect large bog areas.

Encroachment of bushes and trees was also mentioned as a threat in some countries (LT, LV) as well as fires that affect drained peatlands including degraded raised bogs and threaten also neighbouring forest areas. Fires cause changes in vegetation structure. After burning the open degraded bog habitats often turn into densely overgrown secondary forests.

Other human-induced pressures, such as trampling caused by site visitors, picking of wild berries threaten the sites locally.

4 Main conservation requirements

Main conservation requirement for the raised bogs of 7110 habitat type is to keep the habitat in natural conditions mostly by implementing none-intervention management. In case of the 7120 habitat type which in fact represents influenced or damaged parts of the raised bogs (habitat type 7110) active restoration measures are needed. In most of the countries the main objective is to implement restoration activities on the 7120 habitat type to the extent which enables its reclassification into habitat type 7110* Active raised bogs. This requires mostly restoration or at least partial, local improvement of the hydrological regime on sites. It is also important to avoid peat extraction on sites.Restoring natural water dynamics, e.g. by filling in ditches on margins or core areas of the focal sites can improve habitats for number of species associated with peat bogs, e.g. birds, *Grus grus, Tetrao tetrix, Tringa glareola* and *Pluvialis apricaria*. Removal of

wood encroachment which opens the peatland landscape and usually follows the water regime restoration favours most of the associated species as well, e.g. *Tringa glareola*, However for some species an extra measures, such as predator control is necessary, such as *Tetrao tetrix*.

In Estonia the 7120 habitat type has no significant conservation value, since the area of 7110 habitat type is relatively large in the country. The importance of 7120 habitat type increases in cases when there is a need to increase the area of a natural bog of 7110 habitat type or secure its buffer zone. In Latvia, there is a good experience in restoring degraded raised bogs, however the long-term monitoring of the restoration effectiveness is not available yet. In Finland number of drained or partially drained raised bogs is still active, however part of them were classified as the habitat type 7120. Active management of raised bogs is implemented in order to restore Natura 2000 areas. Outside the Natura 2000 network conservation activities focus on improving the state of partially drained, but still active raised bogs. According to report from Lithuania, conservation needs are not well known and management activities will be determined after detailed habitat inventory is completed and indicators for favourable conservation status elaborated.

5 Conservation targets

In Latvia and Lithuania the conservation targets for the habitat type were not set at the national level, however general targets and objectives were set by other documents, e.g. National Biodiversity Programme (LV). In Latvia the targets are defined on the local scale within nature management plans. The documents contain recommendations for site management but are not legally binding. In Finland the National Peatland Strategy was developed that includes mire conservation program and the proposal to protect all natural peatlands. In Sweden a strategy for conservation, restoration and management of wetlands has been developed and in Estonia development plan covering all peatlands is under preparation.

Management and restoration guidelines at the national level are not available in Latvia, Lithuania and Estonia. However, in Latvia management guidelines are prepared within several site management plans for Natura 2000 sites. In Estonia the specific guidelines for management were not developed as it is considered that the habitat types 7110 and 7120 do not need constant recurring management. According to this concept, restoration activities should be based on local conditions and general guidelines would be of little use. Restoration specialists are familiar with different types of restoration techniques used in northern Europe and Canada. In Finland management guidelines for forestry were elaborated by private and state forestry institutions. In case of Sweden guidelines prepared for each habitat can be considered as a synthesis of scientific knowledge and practical experience, though the scientific basis is considered rather weak.

In all Member Statesmanagement plans for sites are being elaborated. In Latvia site management plans have been elaborated and approved for more than 20 Natura 2000 sites established according to many qualifying features including degraded raised bog habitats. The site management plans include recommendations but are not legally binding. The main management objectives of these plans are to maintain the area with complex of natural mires, freshwater and forest habitats suitable also for protection of associated species with minimal anthropogenic influence, to avert degradation of mire habitats and promote their restoration, including restoration of hydrological regime to the extent of enabling development of active raised bog habitats. Both Finland and Sweden had developed management plans for all Natura 2000 sites. However, most plans need to be now revised in Sweden. The most common objective is restoration of hydrology and removal of invading trees.

6 Management measures

Main conservation measures suggested for management of raised bog habitats by Member states include passive management (non-intervention) and active restoration of the optimal hydrological regime. As it is

already stated earlier, the main management objective which determines the management measures needed is to restore altered mire habitat to an active raised bog.

Finland mentioned number of restoration activities implemented in mires. Several LIFE projects focused on restoration of active raised bogs and degraded raised bogs have been implemented. The main goals of restoration activities include raising of the water table in mires and achieving natural-like water flow in the mire. In case of Sweden, restoration of degraded raised bog habitats within Natura 2000 sites has higher priority than management of active raised bogs.

A considerable experience in bog restoration has been accumulated in past ten years in Latvia as well. Actions have targeted mostly at restoration of optimal hydrological regime in degraded raised bogs. In 2010-2011, management plans for 6 Natura 2000 sites were elaborated.

Inventories and monitoring were also considered by Member states as significant components of conservation and restoration measures. Some examples of inventories and monitoring activities are similar to those described in chapter case of habitat 7110 Active raised bogs since the two habitats often occur in a couple.

Member states reported that the cooperation and exchange of experience of experts concerning bog conservation and restoration mostly executed in the framework of LIFE and other projects takes place. Joint activities include sharing of scientific and practical restoration expertise, cooperation among NGOs, study tours on the management of habitats, field courses for university students, study trips for students to national parks promoting the exchange of experience and future collaboration. In addition, Estonia and Latvia are developing transboundary cooperation within framework of Ramsar site Northern Livonia which represents large area with raised bogs.

In Finland the new peatland restoration guide book (to be published 2012) will build upon twenty years of experience. Understanding of peatland structure and function is fundamental for ecologically wise restoration and this is the focus of the first part of the guide book. Especially hydrology and the characteristics and accumulation of the surface peat layer are described in detail, but also the special characteristics of different peatland habitat types. The restoration techniques have evolved from hand-made dams to ditch-filling by excavators. The guide book will give clear instructions to planning and implementing the broad range of measures related to the restoration of peatlands. The impact of restoration on the quality of runoff water is an important factor that has to be considered already in the planning phase. A large group of experts have shared their knowledge of different mire species groups and their requirements for restoration practices and these texts are included as infoboxes. A collection of good practice case studies from large-scale mire complexes with raised bogs and aapamires to small scale rich fens and ground-water influenced spruce mires are also an important part of the guide book.

Examples of good practice:

LIFE+ projects

Several LIFE projects have been mentioned as examples of good practice e.g. in Latvia “Management of Lubāns wetland complex”. Restoration of degraded raised bog habitats will be carried out in Kemeri National park in the framework of the new LIFE+ funded project.

Finland

The major threats for peatland habitats in Finland are drainage for forestry, agriculture and peat extraction.

In Finland 12 LIFE Nature projects have targeted Active raised bogs (7110) and/or Degraded raised bogs still capable of natural regeneration (7120) during 1996-2011. An estimated total area of about 1300 ha of these habitat types has been restored in eight of these projects so far. In addition, several of the projects

have included land purchase for conservation purposes.

The ongoing Boreal Peatland LIFE (LIFE 08 NAT/FIN/000596) utilizes the best practice methods to restore a total area of about 4300 ha of peatlands during 2010-2014. A considerable part of this area has been classified as Active raised bogs or Degraded raised bogs still capable of natural regeneration. The best practise methods include careful restoration planning, filling in the ditches by excavators, building different kinds of dams to direct water flow, removing trees when necessary and monitoring the results of restoration. So far more than 300 ha of these habitat types have been restored in the project.

Other large scale LIFE projects that have utilized best practice methods in restoration of Active raised bogs or Degraded raised bogs still capable of natural regeneration include Karelian mires and virgin forests – pearls in the chain of geohistory (LIFE03NAT/FIN/0036) and Restoration of active raised bogs, aapamires and bog woodland in Natura 2000 sites (LIFE96NAT/FIN/3025).

7 Main constraints and actual needs

The constraints to conservation of this habitat type identified by Member Statesare identical to those described for 7110 habitat type. The most significant constraints include lack of funding for protection of sites, lack of experts for implementation of management and monitoring. Raised bogs are usually not in a strong conflict with other land use such as forestry, as the forestry is not being usually practiced on bogs. However, resistance/conflicts with stakeholders exist in cases where the forestry is practiced in the direct vicinity of the bog and it need to take bog conservation into consideration. In case of Latvia, conflicts with stakeholders, e.g. owners of private and state forests neighbour to the bog restoration sites and also with the local inhabitants were mentioned as a constraint.

According to the reports from Member States, the most common needs are to maintain or restore optimal hydrological regime of bogs and connected areas in their surroundings. As mentioned by Latvia, to eliminate influence of drainage by damming of ditches is needed. Other actual needs in the sites of the degraded bog habitat type include cutting of trees and shrubs and monitoring of dams. It has also been proposed to implement compensatory measures in order to restore the bogs deteriorated by peat extraction in areas neighbouring to Natura 2000 sites.

In most of the Member Statesthe situation is similar to the habitat type 7110. The most significant stakeholders are private and state forestry and peat extraction companies. Other activities with significant impacts on habitat include wild berry picking, hiking, tourism in general and hunting.

8 Recommendations

It is recommended to discuss the habitat type 7120 jointly with the 7110 as most of the topics overlap. Estonia, Finland and Sweden even have prepared one HIS for both habitat types.

In addition, Member States are interested to focus discussion on restoration of natural hydrology in mire-dominated landscape, cost-effective and efficient restoration methods and finding tools for exchange of experience and expertise. As most threats to the habitat type in all Member States are related to forestry and peat extraction it is recommended the Member States shall discuss the possible management measures to avoid negative effects of such land use. The discussion may include issues of stakeholder involvement and incentives.

Documents used:

HIS for habitat type 7120 prepared by EE

HIS for habitat type 7120 prepared by FI

HIS for habitat type 7120 prepared by LV

HIS for habitat type 7120 prepared by LT

HIS for habitat type 7120 prepared by SE

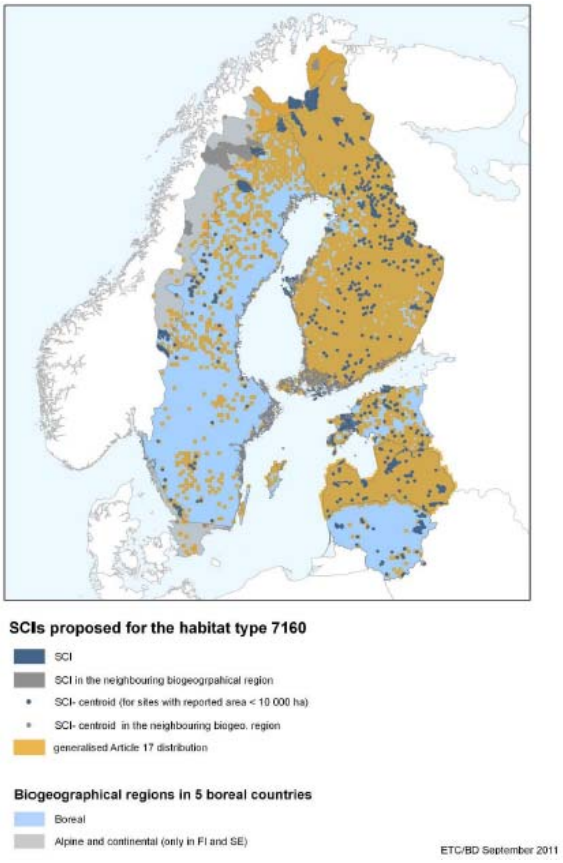
HIS for habitat type 7120 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Habitat type 7160 Fennoscandian mineral-rich springs and spring fens

1 Description



Springs and associated fens typical for the Boreal region, also found in the adjacent Alpine and Continental regions in Finland and Sweden. These springs often flow even when the surrounding area is frozen and snowy. The habitat hosts many invertebrate species which only occur here and it is rich in flora.

The conservation status of this habitat type distributed mainly in the Boreal region was assessed as 'unfavourable-bad'. According to report of Finland, it is mainly due to its 'structure and function' criteria. In spite of this, the conservation status of the habitat is improving. Up to 75% of the known distribution of this habitat type is included in the SCIs. A significant portion of the total habitat area is located in Sweden where its area is estimated to 3,000 ha. In other Member states the total area of the habitat type is below 1,000 ha. In Estonia it is estimated that 50% of known habitat distribution is included in current SCIs. In Latvia, the total area in the country is 250 ha. Information on area covered by Natura 2000 will be clarified by habitat mapping and during elaboration of the management plans. The information from other Member states is not available.

2 Associated species

Based on reports from Finland and Sweden there are 2 Annex II/IV species associated with this habitat type: *Bryhnia novae-angliae* and *Lycaena helle*. Their conservation status was assessed as unfavourable bad (U2). Other Member states sharing the Boreal region did not reported occurrence of these species as associated to the 7160 habitat type. Another species – *Ligularia sibirica* – has been proposed by Lithuania to be added to the list of species benefiting from conservation of the habitat type, a point supported by Estonia.

In Finland, *Bryhnia novae-angliae* and *Ligularia sibirica* (both also absent from Estonia) do not occur and *Lycaenahelle* is not a spring habitat species, so none of the suggested species is relevant for Finland. Instead we suggest the addition of the species*Saxifraga hirculus* which is known to 90endit from the right kind of restoration management.

None of the Member states have reported any species the management requirements of which are likely to be in a conflict with the management of the habitat type. However as part of the threats to the habitat type Lithuania mentioned conflicts with the beaver population at some sites.

Benefiting species	**Species with conflict of managements**
Bryhnia novae-angliae	*Castor fiber* (LT)
Lycaena helle	
Ligularia sibirica(LT)	
Saxifraga hirculus (FI)	
Euphydryas aurinia (BCE)	

3 Main pressures and threats

A variety of threats and pressures to this habitat type have been reported by Member States. Most countries mentioned inappropriate forestry practices, changes to the water regime, peat extraction and pollution/eutrophication. In many countries destruction of habitat is caused by inappropriate forest management which still affects the habitat nowadays. Clear-cuts cause negative changes in light conditions and overgrowing of spring fens with tall herbs and shrubs. Drainage and use of peatlands often mean dramatic changes to the hydrology of mires and bogs. Spring habitats located in or near the peat extraction areas are usually destroyed.

In some countries wild animals impose specific pressure on the habitat type. In Lithuania beaver has a significant impact on number of sites causing flooding of spring fens and/or their transformation into reed beds. Other species that cause disturbance and temporary degradation of spring fens are wild boars which use to wallow and make a mud baths in the springs. Locally also artificial adjustment of springs occurs, including enlargement /excavation of spring source and its concreting. On frequently visited sites trampling and garbage deposition cause pressure on the habitats.

4 Main conservation requirements

The most frequent requirement for conservation management of this habitat type mentioned by the Member Statesis the necessity to keep optimal hydrological regime of the springs and areas that are hydrologically connected to them. Cautious restoration of springs and spring fens avoiding further damage to maintained populations of habitat-dependent species could increase conservation value of disturbed habitats. However, it is possible mainly in areas where the natural habitats still occur. It is also necessary to avoid overgrowth and remove dense bush vegetation. In areas that are mostly mowed, the rotation mowing is recommended. It is also necessary to prevent hibernation nests from being damaged by mowing. In areas that are grazed it is important to monitor density of the stock to avoid overgrazing. The habitats shall be managed across the whole landscape scale, especially where habitats are fragmented.

In Finland open natural springs are usually protected as hydrological formations by the Water Act and immediate surroundings of natural and near-natural springs and spring fens by the Forest Act. However, exceptional licenses for e.g. groundwater pumping are often granted which cause problems to achieve a favourable conservation status of the habitat. A vast majority (>90% south of the polar circle) of boreal springs and spring fens in Finland are disturbed and therefore not under the protection. The conservation of all the remaining natural or near-natural boreal springs and spring fens and control over actions affecting them should be strengthened considerably also outside the conservation areas. As Latvia pointed out the establishment of buffers zones in forest habitats is also required. On visited sites where the pressure of tourism is significant it is required to control activities of tourists in order to prevent negative impact of trampling and garbage.

Sweden calls for better planning, training, advisory services and revisions of forestry legislation on environmental consideration.

In someMember Statesconservation needs are not well known (LT). Exact management activities can be determined only when detailed habitat inventory is finalised and indicators for favourable conservation status are elaborated.

5 Conservation targets

Conservation targets and objectives for the habitat type at the national level have been set in the framework of various documents in Estonia and Sweden. However, in Estonia "The basis of Protection as the Sustainable Use of Estonian Peatlands" has not been approved yet. The purpose of the document is to create principles and consensual basis for activities of different interest groups, in order to guarantee protection and sustainable use of Estonian peatlands in the next twenty years. In Sweden several documents, e.g. Plan for Protection of the Most Valuable Wetlands and Strategy for Conservation, Restoration and Management of Wetlands have been developed. In Finland, Latvia and Lithuania the conservation targets and objective have not been set at the national level.

Management and restoration guidelines on the national level do not exist in most Member Statesas well. In Latvia some guidelines are a part of site management plans for Natura 2000 sites, but are not legally binding. In Finland management guidelines have been elaborated by private and state forestry institutions. In case of Sweden management guidelines have been developed for each habitat type.

In Estonia 7 Natura 2000 sites designated for habitat type 7160 have a site management plan in place. Plans describe the target area of the habitat type in the protected area and the main activities needed to maintain or restore the habitat. In Finland General management plans for Natura 2000 sites cover all sites. More detailed plans have been prepared for all national parks and wilderness areas. In Latvia there are no sites designated for this particular habitat type only. In most of the Natura 2000 sites that include 7160 habitat type the management plans have been elaborated. The main objective of these management plans is to preserve the diversity and functions of the habitats. In addition, detailed plans cover also large number of smaller sites. In Lithuania 10 Natura 2000 sites have a management plan. Main objectives include increasing the area of the habitat with its characteristic functions. In Sweden all Natura 2000 sites have site management plans, however most plans need to be revised. The most common objective is passive management.

No detailed national level targets and objectives are set for the conservation of springs and springfens in Finland. However the need for protection of springs have been recognized e.g. in the national legislation. Limnocrene springs, which are in natural state, have been protected by the Water Act. The Forest Act on the other hand protects the immediate surroundings of natural and near-natural springs from damages caused by forestry practices.

Spring protection will be further intensified along with the renewed Water Act coming to force in the beginning of 2012. Also the compilation of a national restoration plan for the springs and brooks will be started in 2012.

6 Management measures

The most frequently mentioned management measures across different Member Statesrelate to limiting the activities of forestry in direct vicinity of the spring sites and control of tourism activities on sites.

Concrete measures reported by the Member Statesinclude restricting economic activities, e.g. forest use in the vicinity of springs (e.g. at least 20-40 m), keeping the dead wood in the spring surroundings, removing trees, shrubs and undergrowth from the spring sites, reducing visitors' impacts on fragile and sensitive sites and building plank-ways and barriers in order to limit human pressure caused by trampling. Management plans for wetlands often foresee building of nature trails and watchtowers that are important for raising public awareness on wetland habitats and their values. Restoration and management activities were implemented within several LIFE projects. Activities were undertaken on several hundreds of ha in protected areas and smaller localities outside them.

Actual management of the habitat type differs in Member Statesand it is not always optimal. In Estonia the most sites are in excellent or good conditions, although many sites are encroached by bushes and trees and Sphagnum patches are expanding. This indicates decreasing of the groundwater supply.

In Finland there is a clear difference between the north-boreal zone and the other parts of the country. In the northern part of the country the large springs and spring mires still exist there associated with the hills and glacifluvial formations. The old drainage ditches do not provide significant pressure on the habitat. The hydrology of sites is mostly in natural state. However, in the southern and central parts of the country springs and spring fens are not in favourable conditions. Most of the sites have been drained for forestry or used for water supply. The remaining sites are not linked and most of them were threatened by groundwater extraction. Restoration of spring-mires can be successful only if the groundwater table is not lowered by extraction.

In Latvia the most of the sites have none or passive management (non-intervention management). Not all sites require active management, the preserving optimal hydrological regime and limiting direct human influence, e.g. trampling, is important.

In Lithuania management of the habitat is not optimal according to expert judgement. The system of scientific assessment of the conservation status at national level has not been introduced yet. Evaluation on local level is usually implemented during preparation of management plans.

In Sweden mineral rich springs and spring fens within larger wetlands and wetland complexes have been subject to national inventory studies and are included in the national Mire Protection Plan. However, only the springs within protected areas are under optimal management.

There were no initiatives to network with experts from other countries and exchange information on projects focused on conservation of this habitat type. It is considered, that most of the Member Statesare not very much experienced in management of this habitat type. None of the Member Statesreported on examples of good practice.

Examples of good practice:

Finland

Fennoscandian mineral-rich springs and spring fens often occur within or adjacent to other peatland habitat types and have usually been restored as part of restoration of other peatland habitats, such as Alkaline fens.

One example of good spring restoration practice is restoration of springs in Talaskangas Natura area (FI 1200 901). Talaskangas is a large drumlin composed of sandy glacial till. The groundwater, which infiltrates to the soil on the forested hill discharges to the aapa-mires and brooks lying beneath it. Altogether there are twelve quite small springs lying on the edge of the mires 50 – 100 meters from each other. Nine of these springs had been affected by old ditches dug for forestry about 50 years ago. In 2009 and 2010 Metsähallitus started to restorate these little springs. The work had to be done very carefully, because the groundwater discharge and the spring-mosses relying on it were shifted in many cases to the ditches. In the beginning the protecting dams were done by hand above the observed points with groundwater discharge to the ditches. Their objective was to prevent the straight access of surface water. After that the below-lying ditches were reworked to resemble original spring-brooks. This was done by pushing stones and building little wooden thresholds to the channels. These raise the water table about 10-15 cm. The work was done by hand and the sping-mosses were replanted, if needed. The work seems to have been successful and in the following years the work is meant to be continued in order to raise the water a little more.

Another example of spring restoration management practice (although site represents types7210 and 7230):

Saarikkolammensuo alkaline fen (part of Tervaruukinsalo Natura 2000-siten FI0500023) was ditched for forestry purposes in 1970s by a private landowner. Despite the drainage, the conservational values persisted and in 1990s, the State purchased the fen in order to establish a nature conservation area. In 2000-2001,

activities were done by Metsähallitus to restore the hydrology of the fen and, in addition to that, to restore several calcareous springs, which occurred in the ditches. The restoration activities included harvesting the dense growth of trees and by filling in the ditches. The ditch sections with spring water discharge were not filled in. The hydrology of the fen has recovered on average well. In the springs, the restoration caused a rather strong temporary change in the water quality and the case emphasized that restoration of springs has to be gradual and careful. Monitoring results indicate e.g. that the abundance of both vascular plants and bryophytes typical to alkaline fens has increased. Furthermore, in the springs, *Palustriella decipiens* and *Bryum weigelii* are more abundant and *Trichocolea tomentella* is thriving. The number of fertile *Cladium mariscus* was higher in 2011 than known ever since the 1940's.

Good practices for spring restoration are still under development in Finland. Spring restoration activities have been undertaken in several hundred springs mainly on private owned land. However, there are still lack of research and monitoring concerning the effects of restoration and best practices. The restoration of degraded springs is challenging and restoration activities can also form a risk for the conservation status of the populations of habitat-dependent species. Finnish Environment Institute has started a research project as part of the national METSO-programme (The Forest Biodiversity Programme for Southern Finland) the main objective of which is to evaluate the effects of the so far undertaken spring restoration activities and methods and of the effects of restoration on the biodiversity of springs.

Estonia

The assessment of the state of mineral-rich springs and springfens is as one of the aims of the ongoing project „Tufa-forming springs and spring fens in Estonia" developed by the Institute of Ecology at the Tallinn University. Many of the new 7160 sites, not recognised earlier, are in good state and need conservation.

7 Main constraints and actual needs

Member States identified several constraints that need to be addressed. Most of them relate to tourism activities on sites. Active management of springs includes building of tourism infrastructure and limiting the human pressure. Most commonly non-intervention management regime is applied. The tourism development plans should be in line with the nature conservation principles, thus information boards and signs limiting tourism activities and related negative impacts need to be introduced. In many cases the springs of historical importance are well known and therefore it is not possible to close them for tourists. In such cases cooperation with tourism managers and local municipalities is highly required in order to ensure appropriate management measures. Other problem mentioned is the interest of peat industry to extract peat resources in a very close vicinity of the sites. Springs are often affected by lowering the groundwater table far outside the Natura 2000 site boundaries. Lack of scientific knowledge concerning favourable conservation status was also considered as a constraint. And, as Sweden pointed out the lack of funds is an obstacle for effective protection of sites.

In order to ensure that Natura 2000 sites contribute to achieving the favourable conservation status of the habitat type Member States provided several proposal what needs to be done. The key issues include elaboration of the management plans and establishment of experimental management along with the monitoring, gaining experience in choosing the best practice management/restoration methods. The hydrological regime of springs needs to be kept in natural (appropriate) state and the areas around the springs hydrologically connected. In order to mitigate anthropogenic pressures specific infrastructure for tourists needs to be established on sites when needed. It has been proposed to remove invasive alien species and highly competitive woody species from the sites. In Finland there is a need to restore spring fens in Natura 2000 areas in the central and southern part of the country. The problem is that comprehensive

mapping of springs of conservation value has not been implemented there. Only few of the most valuable spring sites are included in Natura 2000. Less than 5% of springs and spring fens in the southern and central Finland are included in Natura 2000. In its Article 17 report Estonia stated that the status of habitattype 7160 is 'inadequate and deteriorating'; because many sites of this habitat type are suffering from the indirect effects ofdrainage and need management plans.. In case of Lithuania the substantial part of the habitats require improvement of the management.

Most of Member Statesaddressed forestry activities as the most significant economic activities on the habitat type followed by tourism. In Estonia and Latvia the sites of the habitat type are mostly in public ownership and are managed by state forestry companies and environmental protection agencies. Smaller territories are in private or municipal ownership. The main economic activity outside Natura 2000 includes forestry, peat industry and groundwater extraction. In Finland and Sweden the main stakeholders are private forest owners and forest companies. Information from Lithuania is lacking.

8 Recommendations

Conflicts between the forest use and nature conservation seem to be crucial for the habitat type. It is recommended the Member States shall focus the discussion at the workshop on the issues of integrated nature conservation goals in forestry sector and measures to avoid negative effects of forestry (or forestry practices, e.g. clearcuts). The Member States may also discuss possible management measures targeted to solve conflicts with species management, such as the beaver or game.

In some Member States management guidelines for the habitat type have not been developed and most of the countries did not provide examples of good practice. It is recommended to enhance cooperation between Member States with the aim to share information and experience on practical examples of good practice.

Documents used:

HIS for habitat type 7160 prepared by EE

HIS for habitat type 7160 prepared by FI

HIS for habitat type 7160 prepared by LV

HIS for habitat type 7160 prepared by LT

HIS for habitat type 7160 prepared by SE

HIS for habitat type 7160 prepared by BCE

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

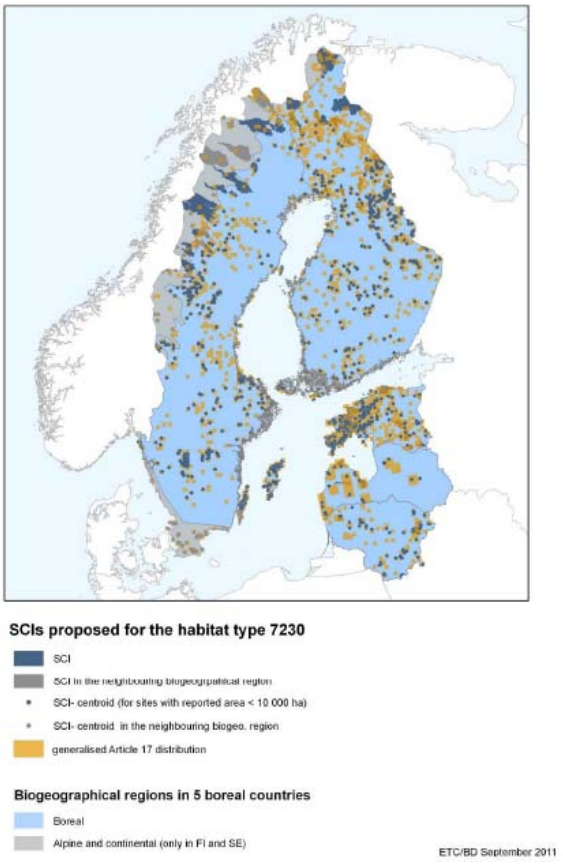
Habitat type 7230 Alkaline fens

1 Description

Alkaline fens are mires occupied by peat-forming small sedge and brown moss communities developed on soils permanently waterlogged by calcareous water supply, and with minimal water level fluctuation. The presence of highly mineralised calcareous ground water/springs sometimes leads to formation of calcic concretions or tufa. The alkaline fens are generally species-rich both in terms of mosses and flowering plant species. The largest surface area of alkaline fens (more than 60%) designated as Natura 2000 is located in the Boreal and in Continental biogeographical regions.

In the Boreal region 832 Natura 2000 sites were designated. Estimated surface is 46,291 ha (Natura 2000 Network database, EC, 2006).

The estimated surface was calculated according to information in the Natura 2000 database and is based on the estimated habitat cover indicated for each proposed Site of Community Importance and should be therefore considered only as indicative habitat surface covered by Natura 2000.



In the Boreal region the conservation status of this habitat type is assessed as unfavourable-inadequate. Less than 50% of the habitat type's known distribution is currently included in SCIs.

A significant portion of alkaline fens included in the Natura 2000 are located in Estonia, 65% of the total habitat area in the country.

The total area of alkaline fens in Finland is estimated to 69,800 ha and about 65% of the habitat type is included in the Natura 2000 network.

In Latvia, the total estimated habitat's area in the country is 1,500 ha and almost 80% of the area is covered by Natura 2000.

In Lithuania the estimated surface of the habitat type located in Natura 2000 is 1,058 ha, representing a total of 45% of the total area of habitat type in the country.

In Sweden the total area of the habitat type is up to 150,000 ha from which 10% approximately is covered by Natura 2000 sites.

LT: Please provide information on the area of the habitat type covered in Natura 2000 in your country.

2 Associated species

The list of species benefiting from the conservation of the habitat type as well as those (likely) to be in a conflict with the habitat management is included in the following table.

Benefiting species	**Species with conflict of managements**

Drepanocladus vernicosus	*Cladium mariscus* (LV)
Liparis loeselii	*Castor fiber*
Rhinanthus oesilensis	
Vertigo angustior	
Vertigo genesii	
Vertigo geyeri	
Saxifraga hirculus (FI)	
Cypripedium calceolus (FI)	
Haematocaulis lapponicus (FI)	
Meesia longiseta (FI)	
Euphydryas aurinia (BCE)	
Circus pygargus (BL)	
Philomachus pugnax (BL)	
Tringa glareola (BL)	

Three of the identified species regarded as associated to alkaline fens were reported as being in unfavourable-bad conservation status on the Boreal region level. The conservation status assessment on country level differs from species to species and also across countries. In Estonia the status of associated species was mostly reported as favourable, while in Finland as unfavourable-inadequate or unfavourable-bad. In Lithuania only status of *Vertigo genesii* was reported as favourable, other species were reported as unfavourable-inadequate or unfavourable-bad. In Latvia conservation status of all species associated to alkaline fens was reported as favourable, but on the contrary in Sweden, the conservation status of all species was reported as unfavourable-bad.

According to the report of Sweden *Rhinanthus oesilensis* is not present in the country.

Concerning species with management requirements in likely conflicts with the management of the habitat type except the *Cladium mariscus* Latvia had identified as part of threats the activities of beaver. Therefore we propose beaver to be added to the list of 'conflicting' species.

Other characteristic species for the habitat type is *Coenonympha tullia*.

BirdLife International had identified another 3 bird species to be associated with alkaline fens: *Circus pygargus, Philomachus pugnax and Tringa glareola*. From the three species mentioned *Circus pygargus* requires delayed mowing; therefore in some cases it may represent a conflicting element in relation to habitat management requirements.

3 Main pressures and threats

The most frequently reported pressures and threats to alkaline fens in the Boreal region include land abandonment, drainage for agricultural and forestry purposes, pollution/eutrophication and nitrogen depositionand overgrowth.

Formerly a large proportion of rich fens were actively used and managed by traditional agricultural practices, e.g. hay-making. Abandonment of the land was mentioned as the most negative impact of the habitat type. It has resulted in overgrowing with shrubs, trees, formation of dense reed stands, decline of herbaceous species and moss richness and local extinction of specialist species.

Hydrological changes, mostly drainage of mires and lowering of water table cause consequent changes in the vegetation structure. Nitrogen deposition and eutrophication contribute to the negative effects of ceased management and changed hydrology of the sites.

In addition, Latvia mentioned specific threats as the impact of beavers causing overflow or transformation into reed beds and wild boars causing damage to orchids.

4 Main conservation requirements

The structure and functions of fen habitat sites often deteriorated because of the hydrological changes induced by land use. It is required to keep the hydrological regime favourable for alkaline fen habitat and associated species and also to keep connected the hydrologically related areas in the fen sites' surroundings.

In many sites the fen vegetation has overgrown with bushes and trees due to lack of management. In most cases these areas were grazed or used for hay-making in the past. Active management is urgently needed to preserve the natural values of such sites and would mainly include removal of trees, shrubs and tall herb vegetation. Most sites require not only on-off restoration measures but also establishment of recurring management, i.e. traditional hay-making or grazing.In areas that are mostly mowed, the rotation mowing is recommended. It is also necessary to prevent hibernation nests from being damaged by mowing. In areas that are grazed it is important to monitor density of the stock to avoid overgrazing. The habitats shall be managed across the whole landscape scale, especially where habitats are fragmented.

Except hydrological restoration and recurring conservation management from which most of the associated species would benefit (e.g. *Philomachus pugnax* and *Tringa glareola*) other species require specific measures such as predator control or adaptation of rerurring habitat management applied (e.g. *Circus pygargus* requires delayed mowing).

Some Member Statesconsider that there is a lack of knowledge concerning the conservation needs of the habitat type (LT). The exact management activities are planned to be determined when detailed habitat inventory is finalised and indicators for favourable conservation status are elaborated.

5 Conservation targets

In Latvia conservation targets and objectives have been set at the national level, but the general management recommendations are not legally binding. In Estonia the general principles for national conservation targets and objectives have been prepared, but not adopted yet. In Finland, small-scaled alkaline fens on forest land are protected by Forestry Act.

Guidelines for restoration of alkaline fens are available in Finland being developed by private and state institutions. In Estonia, Latvia and Lithuania no management/restoration guidelines have been prepared yet. In Latvia restoration guidelines are defined also within management plans for several Natura 2000 sites.

In Estonia 19 Natura 2000 sites designated for the alkaline fens habitat type have a site management plan in place. Plans describe a target area of the habitat and main activities necessary to restore or maintain the habitat. In Finland general management plans for Natura 2000 sites cover all Natura 2000 sites. More detailed plans have been prepared for all national parks and wilderness areas. In addition, detailed plans cover also a large number of smaller sites. In Latvia nature protection plans have been developed and adopted for Natura 2000 sites with many qualifying features, including alkaline fens. Some Natura 2000 sites are designed exclusively for this particular habitat type. The main management objectives include maintaining functions of the habitat and keeping localities of calciphilous plant species in alkaline fens. In Lithuania the management plans were elaborated for 17 Natura 2000 sites. Main objectives are to increase area of the habitat with characteristic features. Among the proposed actions, removal of shrubs and trees is the most important.

6 Management measures

The most significant and most frequently used management measures identified by the Member states include removal of trees and shrubs, mowing, small-scale traditional hay-making, preventing water

pollution and flood management. Some countries mentioned also some specific management measures such as removal of beaver dams (LV).

In Estonia the most important sites of the habitat type which are part of the larger sites are still in rather good status, but the encroachment with bushes and trees is progressively expanding in many sites. . Management measures are based on the results of the national inventory project that finished in 2010 and provided good basis for further elaboration of scientifically assessed management measures. Assessment of the management activities is based on the monitoring of sites.

In Finland restoration activities were undertaken on several hundreds of ha in protected areas and also smaller localities outside them. However, not all restoration activities were successful. Altogether 6 LIFE projects focused on restoration of alkaline fens were implemented. There is a significant difference in management of north-boreal zone and other parts of the country. In the northern part of the country large coherent rich fen sites are located and the hydrology of these sites is in natural conditions. The southern part of the country is threatened by negative impacts of forestry and agriculture. The remaining sites of the habitat type represent small fragments, which are often not inter-connected and their management is not optimal. There is some good experience concerning restoration of calcareous fen sites and also of the groundwater-fed sites where groundwater discharge is taking place in the same volume as formerly. Each of mire restored was subject to qualitative general monitoring in a period of one and ten years after restoration. For quantitative assessment of restoration results a permanent network has been established that monitors the effects of restoration measures on hydrology, vegetation and fauna of the habitats.

In Latvia the most frequently used measures of active management include removal of shrubs, trees and beaver dams. Selective removal of shrubs and trees and mowing was carried out also in Kemeri National park. However, most of the sites are not managed actively and actions are focused on preservation of the hydrological regime.

In Lithuania the management of the habitat is not optimal. System of scientific assessment of the conservation status at the national level has not been introduced yet.

In Sweden alkaline fens have a relatively high priority within national nature protection activities. In 2006 the action plan was adopted and its activities include inventory studies, restoration activities and management. Presently, the LIFE project “Life to ad(d)mire” 2010-2015 is ongoing, in the framework of which 35 Natura 2000 mires and wetlands will be restored, some of the habitat type 7230. Moreover the project will study the effects of restoration activities. The results will be of great importance for future restoration and management activities. In the very south of Sweden (Skåne county) only 18% of the alkaline fens are under optimal management. In the north of Sweden most of the area of habitat type is under optimal management. The management measures that were carried out on sites are considered successful.

There have been no initiatives so far to work with experts from other countries or to provide information exchange on alkaline fens conservation projects except the exchange of scientific expertise on the restoration practices made between Sweden and Finland.

Member states are interested in discussion and cooperation on topics related to restoration of alkaline fens on former agriculturally used peatlands, different management methods and their efficiency.

Examples of good practice:

Estonia

The project “Rehabilitation and restoration of species-rich fens” developed by the Institute of Ecology of the Tallinn University.A great many alkaline fen sites have been under minimum management regimes in thelong-term as purely ditched grasslands; as a result they are now encroached by bushes or dominated by high Molinia tussocks. Certain techniques are under consideration to rehabilitate some 7230 sites.

Finland

The area and the state of alkaline fens has decreased by forestry drainage, clearing of agricultural land and peat extraction. Nowadays also mining and reservoirs for power generation threaten the state of alkaline fens.

There are 6 Life-projects which include the management of alkaline fens:

“Protection of aapa-mires in Lapland and Ostrobothnia” (LIFE97NAT/FIN/4095, 1997-2002). In this project 180 ha alkaline fens was restored by filling ditches in Natura 2000-areas in Southern Lapland.

“Conservation of *Cypripedium calceolus* and *Saxifraga hirculus* in Northern Finland” (LIFE00NAT/FIN/7059, 2000-2005). In this project 100 ha alkaline fens was restored by filling ditches and mowed to improve the state of *Saxifraga hirculus* and *Cypripedium calceolus*. Suitable habitat management and restoration methods and forestry practices were developed. Publicity and training materials were also prepared for foresters and landowners about the two plants and their conservation.

“Herb-Rich Forests, Forests of *Dencrocopos leucotos* and Western Taigas in North Karelia” (LIFE00NAT/FIN/7062, 2001-2005). 4 ha alkaline fens was restored by filling ditches.

“Karelian mires and virgin forests - pearls in the chain of geohistory” (LIFE03NAT/FIN/0036, 2002-2007). 48 ha alkaline fens was restored. The restoration of mires aims at restoring their natural hydrology by removing trees that have grown in them after they were drained by ditches, as well as by blocking or damming the ditches.

“Promotion of public awareness and protection of aapa mires in Lapland” (LIFE06NAT/FIN/0128, 2006-2010). 13 ha alkaline fens was restored by filling and damming ditches in Luiron suot Natura 2000-area.

“Restoring the Natura 2000 network of Boreal Peatland Ecosystems "Boreal Peatland Life" (LIFE08NAT/FIN/0596, 2010-2014). There will be also restoring of alkaline fens in this Life-project.

During the LIFE project “Conservation of *Cypripedium calceolus* and *Saxifraga hirculus*in Northern Finland” 167 hectares, mainly alkaline fens, were restored and 5,5 hectares mowed and cleared on 23 Natura 2000 –areas. The aim was to restore the original hydrological conditions of drained growing sites. Filling in the ditches entirely with an excavator was found out to be the most efficient method. Dams made of timber were constructed at the ends of the backfilled ditch sections. The restoration measures of the project were successful, and even if changes in the vegetation after the restoration are slow it can be assumed that the flora will change towards that of an alkaline fen in the natural state.

At alkaline fens with marsh saxifrage, bushes and trees were cleared and space was freed up for the saxifrage by scythes, mowing machines and brush saws. It was assumed that with boosted competitiveness, the saxifrage would be able to spread out over a much larger area than the existing populations. Mowing was carried out in late June when the flower stems of saxifrage have not yet emerged. Measures accomplished seemed to benefit *Saxifraga*.

More information:

http://www.metsa.fi/sivustot/metsa/en/Projects/LifeNatureProjects/SaxifragaLife/Sivut/SaxifragaLifeProject.aspx

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=1706

7 Main constraints and actual needs

Several constraints were identified by Member States, mostly lack of regular funding for implementation of management measures. Other constraint mentioned by Member Statesis the lack of scientific knowledge on conservation status of habitat. The countrywide assessments are needed to understand, which sites require active or passive management measures. Conflict with management of the habitat 7210 was also mentioned. *Cladium mariscus*, the key species of the habitat 7210, as a highly competitive species can expand on the expense of alkaline fens, which leads to significant changes in vegetation structure and species compositions. Latvia mentioned that one of the problems in their country is the fact that alkaline fens are not eligible for agri-environmental subsidies and the landowners are not interested in management of habitats.

Most of the Member Statesconsidered that management measures are needed to be implemented outside the Natura 2000 sites as well where conservation status is expected to be less favourable. It is proposed to compensate neighbouring land owners in case the restoration activities affect land outside the conservation area. Exact information on the size of habitat type located outside the Natura 2000 sites is not available in most Member States.

Areas of habitat type that are covered by Natura 2000 are mostly owned and managed by nature protection authorities and only small territories are in private ownership. The sites where the habitat was drained are often used for agricultural and forestry purposes. Some areas have important recreational function.

8 Recommendations

Most of the topics mentioned by Member States relate to land abandonment and lack of active management. According the reports from Member States lack of funding for sustainable use of sites is an obstacle which consequently causes lack of active management.

It is recommended to aim the discussion on the issues of financing of management actions. In addition, Member States are interested in discussion and strengthening cooperation concerning restoration of various types of alkaline fens, management methods and their efficiency. Finland mentioned interest to enhance cooperation with Sweden, especially in the areas with special types of alkaline fens that do not exist in other localities.

Documents used:

HIS for habitat type 7230 prepared by EE

HIS for habitat type 7230 prepared by FI

HIS for habitat type 7230 prepared by LV

HIS for habitat type 7230 prepared by LT

HIS for habitat type 7230 prepared by SE

HIS for habitat type 7230 prepared by BCE

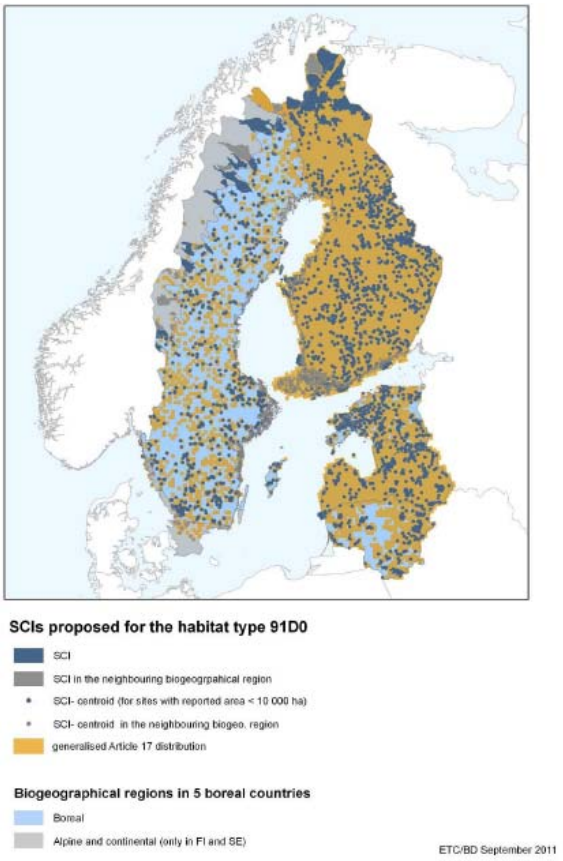
Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Šefferova Stanova V., Šeffer J. & Janak M. 2008. Management of Natura 2000 habitats. 7230 Alkaline fens

Habitat type 91D0 Bog woodland

1 Description



The habitat type is represented by coniferous and broad-leaved forests on peaty soils where the water level is permanently high and the groundwater is very poor in nutrients. Downy birch (*Betula pubescens*), alder buckthorn (*Frangula alnus*), pines (*Pinus sylvestris*, *P. rotundata*) or spruce (*Picea abies*) form the tree layer which is often low with many stunted trees while *Vaccinium* spp., bogmosses (*Sphagnum* spp.) and sedges (*Carex* spp.) form the undergrowth. This habitat is often found in association with bog habitats such as the active raised bogs 7110*and in Finland even more often in association with aapa mires (7310).

The conservation status of this habitat type was assessed as 'unfavourable-inadequate' in the Boreal region. Only range was considered to be 'favourable' in all Boreal countries. In Latvia, Lithuania and Sweden the overall conservation status was assessed as 'favourable' and in Estonia and Finland as 'unfavourable-inadequate'. The habitat type is present in all countries of the Boreal biogeographical region. Less than 50% of the habitat area is included in the SCIs.

The area of the habitat type covered by Natura 2000 is different in Member states. In Estonia most of the areas of the habitat type are included in Natura 2000. In Finland the total surface area of habitat type is estimated to 810,000 ha and a considerable part of the habitat type is located outside Natura 2000 areas. The total habitat cover in Latvia is estimated to 200,000 ha and it represents one of the most widespread habitats of EU importance in the country. The exact data on the proportion of the habitat within and outside Natura 2000 network is not known in Latvia, Lithuania and Sweden.

2 Associated species

No species of the Habitats Directive Annex II and IV are indicated to be associated with this habitat type, however according to the report of Finland the following species of the Annex II have been proposed to be added to the list of species benefiting from the conservation of the habitat type: the vascular plant species *Ranunculus lapponicus* and mosses *Herzogiella turfacea* and *Cephalozia macounii* as they represent typical species of spruce mires and can therefore benefit from the restoration activities.

Latvia proposed the following species of the Birds Directive Annex I to be added on the list of benefiting species: *Tetrao tetrix tetrix, Caprimulgus europaeus, Ciconia nigra, Aegolius funereus, Glaucidium passerinum* and *Grus grus*.In addition to that BirdLife International proposed another two bird species as associated with this habitat type: *Bubo bubo* and *Strix nebulosa*, although occurrence of the latter in this particular habitat type is marginal. Similarly *Picoides tridactylus* is mostly associated with 9150 habitat type than with the 91D0 Bog woodland.

None of the Member Stateshave reported any species the management requirements of which are likely to

be in a conflict with management of the habitat type.

Other characteristic species include *Colias palaeno, Coenonympha tullia, Boloria freija, B. frigga, B aquilonaris, Erebia embla, Oeneis jutta, Pyrgus centaure*. *Erebia embla* is the only butterfly species of bog woodland specifically. *Erebia disa, Oeneis norna, Lasionycta scraelingia, Xestia gelida, Xestia borealis* are all typical species for this habitat in the Northern/arctic bogs.

Benefiting species	**Species with conflict of managements**
Tetrao urogallus	
Picoides tridactylus	
Ranunculus lapponicus (FI)	
Herzogiella turfacea (FI)	
Cephalozia macounii (FI)	
Tetrao tetrix tetrix (LV)	
Caprimulgus europaeus (LV)	
Ciconia nigra (LV)	
Aegolius funereus (LV)	
Glaucidium passerinum (LV)	
Grus grus (LV)	
Bubo bubo (BL)	
Strix nebulosa (BL)	

3 Main pressures and threats

Among the threats and pressures on the habitat type the Member Statesmentioned most frequently the forestry management, drainage, modification of hydrological functioningand fertilization.

The threats related to (inadequate) forestry management include logging and clear-cut management, which causes destruction of habitats and changed environmental conditions typical for bog woodlands, extinction of characteristic species and typical species communities accordingly.

Drainage causes gradual structural changes in the forest, degradation of typical species assemblages, extinction of typical species communities, etc. According to the reports from Estonia and Latvia, the drainage ditches established in the 20th century still have negative impacts on mire habitats in numerous sites.

Impacts of recreation, outdoor activities and tourism include damages caused by terrain vehicles, although mentioned as a threat of minor importance which occurs locally. Climate change was also mentioned as a pressure as environmental conditions are getting less favourable for the boreal species.

4 Main conservation requirements

Member Statesconsider the active management often not necessary for this habitat type and they indicated the necessity of passive management (no intervention), including predominantly protection of sites from negative impacts of forestry and exploitation, however in some cases it is necessary to remove trees and shrubs. The importance of hydrological regime restoration both inside and outside the sites was emphasised. It is important to keep mosaic structure of bog landscapes. Grazing may be needed on some sites.

Main conservation requirements of species associated with this habitat type are mostly in line with the habitat conservation needs and include restoration of water regime, application of no-intervention regime, mainly in relation to forestry practices, etc. However some species may require specific measures such as predator control (*Tetrao urogallus, Tetrao tetrix tetrix*), protection of nesting sites, local application of forest fires (*Picoides tridactylus, Tetrao urogallus*) etc. support of local population by reintroduction (*Tetrao urogallus, Bubo bubo*), etc.

Conservation needs of the wetland forests are well understood in Estonia. The inventory of wetland forests located outside the conservation areas demonstrated that certain valuable sites located close to protected areas should be included into protected sites, too.

Finland mentioned that majority of bog woodlands were drained for forestry in the past and there are also other reasons for the habitat deterioration, e.g. groundwater extraction, peat extraction. Although the drainage of pristine mires for forestry has almost ended, the maintenance of old ditches still affects the hydrology of mires. These negative effects of forestry should be minimized further on by legislation and forest management practices. Threatened and rare bog woodland subtypes should be excluded from ditch maintenance and supplementary ditching.

According to the report from Lithuania, conservation needs are not well known in the country. Exact management activities are to be determined only when detailed habitat inventory is finalised and indicators for favourable conservation status elaborated.

In Sweden it has been considered that the larger proportion of the area of the habitat type needs passive management. Active management is needed on sites where restoration measures need to be implemented.

5 Conservation targets

In most Boreal countries (EE, LV, LT) conservation targets for the habitat type have not been set at the national level, however general targets and objectives have been set in the framework of other documents, e.g. National Biodiversity Programme (LV) or the Basis of Protection and Sustainable Use of Estonian Peatlands (EE) that contain recommendations for site management. In Finland the proposed National Peatland Strategy includes a mire conservation program and a proposal to protect all peatlands of natural state. In Sweden several documents, e.g. Strategy for Protection of Forests, Plan for Protection of the Most Valuable Wetlands and Strategy for Protection of the Most Valuable Rivers have been developed.

Management and restoration guidelines on the national level do not exist in Estonia, Latvia and Lithuania. In Finland management guidelines for forestry have been elaborated by private and state forestry institutions. In case of Sweden management guidelines have been developed for each habitat type.

Management plans for Natura 2000 sites are being elaborated in all Member States. In Estonia, 22 sites have a site management plan. Plans describe a target area of the habitat and main activities necessary to restore or maintain the area. They include recommendations but are not legally binding. The main objectives are to maintain the area with complex of natural mires, freshwater and forest habitats suitable also for protection of associated species with minimal anthropogenic influence, to avert degradation of mire habitats and favour their restoration, particularly their hydrological regime. In Lithuania, 13 sites have a management plan. Main objectives are to restore typical structure of the habitat or increase area of the habitat with characteristic features present. Actions that dominate include preventing forest cutting in areas with typical structure and restoration of water level. In Finland and Sweden general management plans have been developed for all Natura 2000 sitesand in Finland detailed management plans are made especially for Southern state-owned areas with most urgent restoration needs.

6 Management measures

Restoration of hydrological regime (filling up drainage ditches, re-establishing the natural water variation in rivers) and prevention of forest cutting represent the most common management activities in bog woodlands of Boreal region. For example in Sweden, in places with an escalating invasion of spruce, manual cutting of spruce was carried out.

Finland mentioned number of restoration activities in mires. About 90% of all restored mires and bogs in the country can be considered as wooded. In total about 7,500 hectares of bog woodland forest has been restored. There are also 8,000 hectares of restored wooded peatlands, which partly can be classified as

91D0 habitat type in the future. Bog woodlands are considered non-problematic for restoration, however problems may occur on some spruce mires when the old trees die out too quickly. Many LIFE projects had included bog woodland restoration. Several hundreds of ha of bog woodlands is being restored annually by Metsähallitus. The restoration methods adopted found to be effective in general and are developed in the course of restoration activities (e.g. new types of dams). The new methods are adopted as far as they prove to be efficient and feasible.

In Latvia numerous Natura 2000 sites have been designed for the protection of the habitat type and it also occurs in some large Natura 2000 sites, e.g. Kemeri National Park, Slitere National Park where the habitat covers relatively large areas. Non-intervention regime or restoration of the optimal hydrological regime for raised bogs is usually carried out having a positive effect on the marginal areas covered by bog woodlands. Restoration of hydrological regime of raised bogs have been carried out within several LIFE projects.

In Lithuania management of the habitat is not optimal. System of scientific assessment of the conservation status at national level has not been introduced yet.

In Sweden the most frequent management measure is the restoration of hydrological regime. There is also a need to extend the area and protection of the sites of smaller size in order to ensure the conservation status by minimizing edge effects or effects from activities outside the site.

Member states reported that the cooperation and exchange of experiences is mostly going on in the framework of LIFE projects. The joint activities include sharing the scientific and practical restoration expertise, study tours on the management of habitats, seminars and field excursions and regular study trips of university students to national parks.

The project “Favourable Conservation Status of Boreal Forests – Experience Exchange among Baltic and Nordic Experts” brought together forest experts from six countries sharing the boreal region of Europe – Estonia, Latvia, Lithuania, Finland, Sweden and Norway in order to find a common understanding on favourable conservation status of boreal forest habitats and to develop indicators for assessing the conservation status of forest habitats.

Examples of good practice:

Estonia

In Estonia the project “Inventory of Estonian peatlands, Stage I. Peatland forests outside protected areas” (2008 – 2010) was implemented by The Institute of Ecology at the Tallinn University. The main aim of the project was to select peatland forest sites outside protected areas but having high or good conservational value.

Latvia

In Latvia several LIFE projects have been carried out, e.g. “Management of Lubāns wetland complex”, “Implementation of Mire Habitat Management Plan for Latvia”.

Finland

In Finland several LIFE projects have included restoration of bog woodland to improve ecological quality of the habitat type in conservation areas. In addition, several spruce mire patches have been restored in commercial forests adjacent to conservation areas. Main method of restoration is filling in the ditches by excavator. Peat dams are used to direct water to natural routes. In mires with steep slope, eroded ditches or vast amounts of running water dams are strengthened with trunks and filter fabric.

7 Main constraints and actual needs

The most frequently mentioned constraints relate to conflicts with economic activities, lack of funds for nature protection activities and lack of scientific knowledge. Latvia, Sweden and Finland found substantial conflicts with other land use or economic activities. Restoration works are often carried out close to the boundaries or outside Natura 2000 sites. Difficulties in communication and cooperation with stakeholders are a significant constraint in solving conflicts between nature conservation and economic activities. In Estonia the lack of funding for protection is considered to be a significant problem .In case of Lithuania lack of scientific knowledge on favourable conservation status has been mentioned.

Member Statesidentified several needs that are required in order to ensure that the Natura 2000 sites contribute to achieving the favourable conservation status of the habitat type. In general Member Statesfound necessary to continue with management/conservation activities, while stabilizing or restoration of hydrological regime of bog woodlands is considered as a priority. Estonia pointed out that more specific inventory aimed to assessing the conservation status of habitat status resulting in the proposal of management requirements should be accomplished. Lithuania mentioned that the improvements in management of the sites in their country are needed. And Sweden find important to extend the area and protection of the sites of smaller size in order to ensure the conservation status by minimizing edge effects or effects from activities carried out outside the site.

As mentioned by most Member States, about 50% of the habitat type is owned by state. The areas owned by private owners are mostly used for forestry purposes. In Estonia mainly drained wetland forests of minor conservation value are used for commercial activities. In Finland the forest management guidelines for the habitat type exist and are followed by the private forest owners and state forestry as well. In Latvia bog woodlands are often used for recreational purposes, hiking, and hunting. In Lithuania main use of forests is timber production. Some areas have also an important recreational function (berry picking). In Sweden forestry measures are often not compatible with the conservation needs.

8 Recommendations

Most of the topics mentioned by the Member Statesrelate to conflicts with economic activities, mostly between forest use and nature conservation, since restoration works are often carried out close to the boundaries of Natura 2000 sites. It is recommended the Member Statesshall discuss the issues of integrated nature conservation goals in forestry sector on the workshop.

Experience with restoration activities are of different levels in individual Member States. It is recommended that the platform to promote exchange of information and experience on practical restoration shall be established and cooperation between Boreal countries on bilateral and multilateral levels shall be enhances.

Documents used:

HIS for habitat type 91D0 prepared by EE

HIS for habitat type 91D0 prepared by FI

HIS for habitat type 91D0 prepared by LV

HIS for habitat type 91D0 prepared by LT

HIS for habitat type 91D0 prepared by SE

HIS for habitat type 91D0 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

4. Forests

Five specific habitat types were selected from 19 habitats present in Boreal region - Western taiga (9010), Fennoscandian herb-rich forests with *Picea abies* (9050), Coniferous forests on , or connected to, glaciofluvial eskers (9060), Fennoscandian deciduous swamp woods (9080) and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*. *Alnion incanae*.*Salicion albae*) (91E0).For the purpose of the seminar Fennoscandian wooded pastures (9070) are ranked among grasslands and Bog woodland (91D0) among the wetlands.

Also other endangered habitat types were taken seriously for the selection, mainly Fennoscandian hemiboreal natural old braod-leaved deciduous forests (*Quercus, Tilia, Acer, Fraxinus* or *Ulmus*) rich in epiphytes (9020).

Nineforest habitats occur in all 5 Member States of the Boreal biogeographical region.

None habitat type is in favourable conservation.

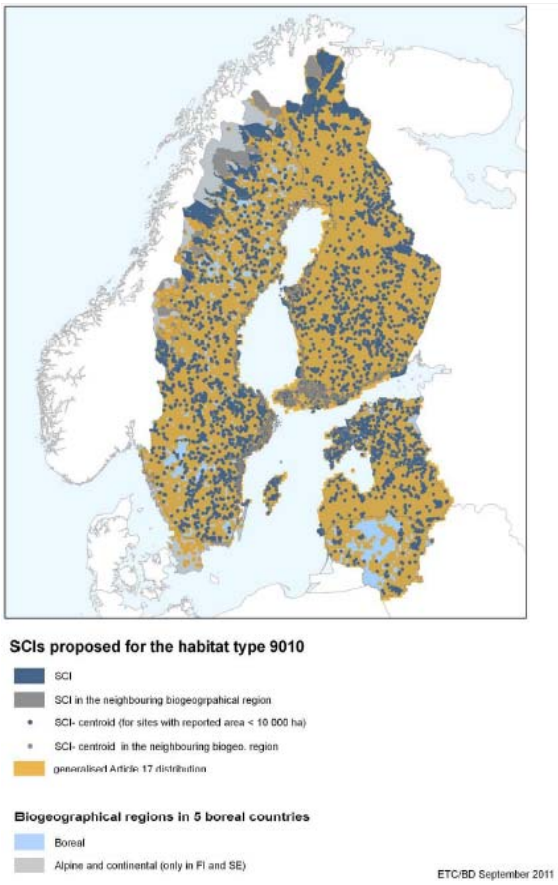
The forest habitats and associated species in the Boreal region are influenced mainly by general forestry management.

Tab. 3: Number of Natura 2000 sites and their area for habitat types selected in 5 Member States

Code		**Estonia**	**Finland**		**Latvia**	**Lithuania**	**Sweden**		
		Boreal	Alpine	Boreal	Boreal	Boreal	Alpine	Boreal	Continental
9010	Number of sites	263	14	966	127	65	82	1383	5
	Habitat area (ha)	59517,1	252385,1	813530,8	11106,8	10745,4	825762,5	861859,4	60,2
9050	Number of sites	144	7	480		54	44	397	
	Habitat area (ha)	8100,9	676,8	8928,9		2589,2	25485,3	29056,1	
9060	Number of sites	35	1	145	11	7	2	57	
	Habitat area (ha)	3200,48	1782,78	36390,31	1638,33	390,63	5482,33	6170,66	
9080	Number of sites	213	1	130	88	79	1	352	72
	Habitat area (ha)	36817,6	0,0	927,1	6255,9	8975,8	1,0	3323,9	382,5
91E0	Number of sites	22	10	70	46	45	11	163	91
	Habitat area (ha)	3333,7	1127,0	15110,5	2690,6	3044,4	4324,8	7613,9	810,1

Habitat type 9010 Western Taiga

1 Description



Western Taiga includes a wide range of forests types, mainly coniferous, pine or spruce forests, but also mixed and deciduous forest of the boreal zone of Eurasia. Within the EU their occurrence is restricted to northern Europe where they are potentially the most common forest habitat type; the larger sites occur in the northern part of the Boreal region. Their conservation status in the Boreal region is 'unfavourable-bad' U2, the range being the only favourable parameter. On the Member States level, the habitat status is favourable in Latvia, unfavourable-inadequate in Finland, unfavourable-bad in Estonia, Lithuania and Sweden. The area of the habitat has been decreasing and the structural features of the habitat are negatively affected by forestry management and in development of road infrastructure in some countries. **In Latvia, 9010 Western Taiga includes also habitat type 9050 Fennoscandian herb-rich forests with *Picea abies*.**

The percentage of the habitat in Natura 2000 is 50-75 of its total area, specifically 60% in Estonia, 64% in Finland (9,000/ 14,000 km^2) and 52% in Sweden [Sweden comments: The text indicates that 52% of the habitat occurs within Natura 2000-sites. This is true for the sum of all three biogeographic regions, but not for boreal region. We hope to be able to provide figures for the boreal region before the WS] (10,384/19,750 km^2). The proportion is unknown in Latvia (area in Natura 2000 is 1,730 ha) and Lithuania. Nevertheless, management methods are needed also outside Natura 2000 as the total amount of the habitat is decreasing and the connectivity of the sites is getting poorer. It is also foreseeable that small and isolated fragments outside protected areas will be destroyed by forestry.

2 Associated species

The species list is influenced by the fact that in Latvia habitat type 9050 is included in 9010. It has not been deemed reasonable to try to decide at this point which species to omit from this list and add to the list of habitat type 9050.

Finland proposes to omit *Calamagrostis chalybaea*, *Cynodontium suecicum*, *Aquila clanga*, *Aquila pomarina*, *Ciconia nigra*; and add *Aegolius funereus*, *Tarsiger cyanurus*, *Oxyporus mannerheimii*, *Xestia brunneoptica* and *Lopinga achine*.

In several studies concerning the diversity of western taiga, the use of indicator species has proved to be useful. Such successful lists have been composed and commonly used for birds and dead-wood fungi. Saproxylic species are considered as particularly good indicators of the biodiversity.

Indicator bird species for western taiga (the list includes also species listed in Birds Directive): *Accipiter gentilis*, *Aegolius funereus*, *Aquila chrysatëos*, *Bombycilla garrulus*, *Certhia familiaris*, *Dendrocopos leucotos*, *Dendrocopos minor*, *Dryocopus martius*, *Ficedula parva*, *Glaucidium passerinum*, *Parus cinctus*, *Parus cristatus*, *Perisoreus infaustus*, *Phylloscopus trochiloides*, *Picoides tridactylus*, *Picus canus*, *Pinicola enucleator*, *Strix nebulosa*, *Strix uralensis*, *Tarsiger cyanurus*, *Tetrao urogallus*, *Troglodytes troglodytes* and *Turdus viscivorus*.

Fungal indicator species for western taiga are *Amylocystis lapponica*, *Amyloporia crassa*, *Anomoporia bombycina*, *Anomoporia kamtschatica*, *Antrodia albobrunnea*, *Antrodia infirma*, *Antrodia primaeva*, *Antrodia pulvinascens*, *Antrodiella citrinella*, *Asterodon ferruginosus*, *Chaetodermella luna*, *Crustodermadryinum*, *Cystostereum murraii*, *Dichomitus squalens*, *Diplomitoporus crustulinus*, *Fomitopsis rosea*, *Gloeophyllum protractum*, *Gloeoporus taxicola*, *Gloiodon strigosus*, *Hyphodontia curvispora*, *Irpicodon pendulus*, *Junghuhnia collabens*, *Junghuhnia luteoalba*, *Laurilia sulcata*, *Lepiota lignicola*, *Leptoporus mollis*, *Odonticium romellii*, *Oligoporus sericeomollis*, *Onnia leporina*, *Perenniporia subacida*, *Phaeolus schweinitzii*, *Phellinus chrysoloma*, *Phellinus ferrugineofuscus*, *Phellinus lundellii*, *Phellinus nigrolimitatus*, *Phellinus pini*, *Phellinus viticola*, *Phlebia centrifuga*, *Phlebia cornea*, *Phlebia cretacea*, *Phlebia serialis*, *Postia guttulata*, *Postia hibernica*, *Postia lateritia*, *Postia leucomallella*, *Postia placenta*, *Pseudomerulius aureus*, *Pycnoporellus fulgens*, *Sistotremastrum suecicum*, *Skeletocutis jelicii*, *Skeletocutis lenis*, *Skeletocutis odora*, *Skeletocutis stellae*, *Sparassis crispa* and *Tyromyces canadensis*.

Benefiting species	**Species with conflict of managements**
Cucujus cinnaberinus	*Pteromys volans* (LV)
Buxbaumia viridis	*Tetrao urogallus* (LV)
Boros schneideri	
Pteromys volans	
Phryganophilus ruficollis	
Stephanopachys linearis	
Pytho kolwensis	
Xyletinus tremulicola	
Aradus angularis	
Xestia borealis	
Cephalozia macounii	
Agathidium pulchellum	
Stephanopachys substriatus	
Cynodontium suecicum (?)	
Corticaria planula	
Rangifer tarandus fennicus	
Calamagrostis chalybaea (?)	
Diplazium sibiricum (?)	
Ciconia nigra	
Aquila pomarina	
Aquila clanga (?)	
Aquila chrysaëtos	
Bonasa bonasia	
Tetrao tetrix tetrix (?)	
Tetrao urogallus	
Surnia ulula (?)	
Glaucidium passerinum	
Strix nebulosa (?)	
Strix uralensis	
Picus canus	
Dryocopus martius	
Dendrocopos leucotos (?)	
Picoides tridactylus	
Ficedula parva	
Aegolius funereus (FI, LV)	
Tarsiger cyanurus (FI)	
Oxyporus mannerheimii (FI)	
Xestia brunneoptica (FI)	
Lopinga achine (FI)	
Pulsatilla patens (LV)	
Dianthus arenaria (LV)	
Bubo bubo (BL)	
Caprimulgus europaeus (BL)	
Haliaeetus albicilla (BL)	
Pernis apivorus (BL)	

Latvia proposes to omit*Tetrao tetrix tetrix*, *Dendrocopos leucotos*, *Strix nebulosa*, *Surnia ulula* and*Aquila clanga*; and add*Aegolius funereus*, *Pulsatilla patens*and *Dianthus arenaria*.

Rare and nationally protected species characteristic to Western taiga only are:

- Vascular plants: *Diphasium tristachyum* and*Listera cordata*;
- lichens & fungi: *Lecanactis abietina*, *Arthonia leucopellea*, *Asterodon ferruginosus*, *Gloeoporus taxicola*, *Phellinus pini* and*Pycnoporellus fulgens*;
- mosses: *Anastrophyllum hellerianum*;
- invertebrates: *Nothorina punctata*, *Ergates faber*, *Chalcophora mariana*, *Tragosoma depsarium*, *Peltis grossa*and *Ceruchus chrysomelinus*
- molluscs: *Clausilia cruciata*;
- birds: *Columba oenas*.

These species can be protected within microreserves, a nationally defined small-size protected area, thus ensuring simultaneous protection for the Western taiga habitat.

Estonia and Lithuania propose no changes to the list.

Sweden proposes no changes to the list. All forest dwelling species in annex II and IV will benefit from passive and/or active management of the forest sites. In the short run fire is deleterious for all species (except larger vertebrates) in an area, but necessary in the long term for many species and habitats. Wise fire strategies have to be adopted to balance this conflict.

BirdLife would add to the list *Bubo bubo, Caprimulgus europaeus, Haliaeetus albicilla* and *Pernis apivorus.*

Other characteristic species include *Xestia sincera*, *X. rhaetica/fennica*, *X. distensa, Victrix umovii, Thera serraria* and *Alcis jubata*.

Of the associated (umbrella) species *Buxbaumia viridis*, *Rangifer tarandus fennicus*, *Calamagrostis chalybaea* and *Diplazium sibiricum* have a favourable status at biogeographical level; *Boros schneideri, Pteromys volans, Phryganophilus ruficollis, Stephanopachys linearis, Xestia borealis, Agathidium pulchellum* and *Cynodontium suecicum* are unfavourable-inadequate; *Pytho kolwensis, Xyletinus tremulicola, Aradus angularis, Cephalozia macounii* and *Stephanopachys substriatus* are unfavourable-bad; and the conservation status of *Cucujus cinnaberinus*is unknown.

3 Main pressures and threats

The main pressures are forestry and its associated activities, such as (approximately ranked in order of importance); clear cutting; thinning; removal of undergrowth; removal of dead wood; forest road building; fertilizing. Minor pressures are drainage; exploitation for other purposes; recreation.

The main threats are forestry, urbanisation, communication networks and shortage of natural disturbances, especially forest fires.

The main pressures outside protected areas are forestry and its associated activities, such as clear cutting; thinning; removal of undergrowth; removal of dead wood; forest road building; fertilizing. Minor pressures are drainage; exploitation for other purposes; recreation.

Pressures other than forestry arecommunication networks and shortage of natural disturbances, especially forest fires.

Of the forestry activities clearcutting is causing destruction of smaller sites and fragmentation of larger ones, thus influencing negatively both the quantity and the quality of the habitat and the species requiring undisturbed conditions. Thinning and removal of undergrowth are not so drastic in their effects; nevertheless, they influence species structure, damage the terrain and cause disturbance to the species. Removal of dead wood is detrimental to a number of insects and birds associated to the habitat. All Member States have reported that for the majority of the associated species forestry is both a pressure and a threat.

Urbanisation causes fragmentation of the habitat, pollution (eutrophication), disturbance to and degradation of the sites (e.g. recreation with its constructions). It is also - directly and indirectly - responsible for the expansion of communication networks that cause fragmentation of the habitat and disturbance to the species.

Shortage of natural disturbances, especially of forest fires, leads to the dominance of secondary species (especially spruce), densification of forests leading to changed light conditions (affecting for example insects), thicker humus layers (affecting for example soil dwelling fungi) and changed species composition. Disturbance regimes are also crucial for creating ecological structures (fire killed trees, trees with fire scars, flooded tree bases, etc), structures that a high number of forest dwelling organisms depend on. Fire is an important factor in Western taiga regeneration.

4 Main conservation requirements

The main requirement in the long run is the protection of the habitat type from forestry and exploitation. The need of protection is well known. The standard management measure of western taiga is passive management that supports the natural forest dynamics. It is recommendable and sufficient when the forests are in good condition.

Protected areas should have a more even distribution in the region than is now the case. Natural disturbances (e.g. forest fires) should be allowed and/or simulated.

For most of the forest habitat types belonging to western taiga, decrease of the amount of dead wood (CWD, coarse woody debris) is one of the major threats, often the most important one; and, similarly, changes in the forest age structure (e.g. decrease of old forests, and old, large trees; and, on the other hand, paucity of naturally regenerated young forests) is a shared and often the second most important threat for the existence of these habitat types. For these, active restoration measures are needed; to maintain the species communities' characteristic of western taiga forests, the connectivity of forest areas should be improved with careful planning of the restoration measures.

In Estonia, passive protection which supports the natural forest dynamics is the most appropriate protection regime; the alteration of natural water regime, forestry and any kind of economic activities need to be excluded. Some active conservation measures for diversification of age structure, creating deadwood and for restoring the natural water regime might be suggested to restore and/or increase the habitat-specific biodiversity. Burning of forest as conservation measure is not practised, mainly because of its non-acceptance in public. However, the forest burnings happen accidentally, either in protected areas or outside. Those areas have been included to special monitoring program.

Protected areas are biogeographically unevenly distributed in Finland. Ecological representativeness of protected areas is skewed towards unproductive soils: In southern and northern Finland 1.9 and 9.2% respectively of forest land; 11.9 and 41.6% of scrub land, and 31.4 and 49.1% of waste land are strictly protected.

Boreal forests is the most common and widespread forest habitat in Latvia, but only areas of woodland key habitats (WKH) and potential WKH are recognized as habitat 9010*. WKHs are sites where red-listed, rare or specialist species occur or are likely to occur. This habitat is not protected in national legislation. It is

necessary to change the legal status of this habitat in the national legislation and to prepare and implement a habitat protection plan. Consolidation of habitat fragments is a necessary activity targeted at improving the connectivity of the habitat sites at regional level. It requires non-intervention attitude also to those disturbed forest that are situated between biologically valuable habitats, to provide formation of continuous areas of target habitat.

In Lithuania, the conservation requirements are not well known.

The main requirement in Sweden is long run protection of forests from forestry and exploitation, through nature reserves or other means. The need of protection is well known. A large portion of the habitat area should probably be managed passively, other areas need active management. The optimal proportion of these two strategies is a question of debate. - The importance of fire is well known, though there is still much to learn how to arrange fires for optimal results. The main problem is when it is not possible to arrange fires, but still desired. There is a significant lack of knowledge what methods are the best to use to simulate a fire regime.

BirdLife has prepared a detailed list of management requirements for individual species (see ´Proposed conservation measures for birds in the different habitats´).

5 Conservation targets

The answers of Member States on conservation targets are fairly vague and in many cases it is not possible to define whether targets, guidelines, etc. are official or recommendations. When the Member States mention national targets (EE, FI, LV) they are on very general level.

According to the answers guidelines for the habitat type exist in EE, FI, LV and SE. In that sense management guidelines exist also in Lithuania that the project “Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts” has prepared guidelines for the management of individual forest types (http://www.bef.lt/download_file.php?id=61) in Boreal region. The Estonia and Lithuania answers do not define whether these are adopted by the countries.

In all countries there are management plans for sites that include also this habitat type; more are under preparation. The main targets are to maintain the diversity of the habitat, including species and structural diversity as a complex; to restore typical structure of the habitat or increase habitat area. Not all management plans are specific in describing management methods for 9010.

In Estonia the process of preparing the management plans for Natura 2000 sites is currently in work. Thus, **all SCIs with forest habitats are foreseen to have management plans by the beginning of the 2014**. By 2011 the numbers of SCIs with management plans adopted are following: 9010 – 53, 9050 – 29, 9060 – 6, 9080 -33, 91D0 – 30, 91E0 – 13. Amount of management plans for this habitat not given in Finland, "General management plans for Natura 2000 sites" cover all Natura 2000 sites. More detailed plans have been prepared for all national parks (ca 1,000,000 ha) and wilderness areas (ca 1,500,000 ha). In addition more detailed plans cover large number of smaller sites.

More than 10 nature protection plans for sites including Western taiga exist in Latvia. There are 12 sites with a management plan in Lithuania and almost all sites have management plans in Sweden.

6 Management measures

Passive management is the most common management method. The majority of the habitat in every country is under passive management; it is especially appropriate when the forest already has enough of natural forest elements or can be expected to develop them in a reasonable time span.

In Estonia, active restoration measures, for example selective cutting for desirable habitat type may be suggested in site management plans but the passive and strict protection through natural recovery of structure is the most common and the most appropriate protection measure for increasing the habitat quality.This is achieved by applying the forest habitats and some buffer areas to the strict protection zone and prohibiting the unfavourable activities. Some active measures might be needed for species protection purposes.

In Finland, the three most common restoration measures used in conifer-dominated heath forests are creating dead wood by killing and damaging living trees, opening small canopy gaps to favour deciduous trees and to diversify the tree structure, and prescribed restoration burning. Of these, burning is the most effective way to restore and increase the biodiversity of boreal heath forests. Fire creates specific habitat substrates for fire-dependent species, increases the amount of dead wood, affects the wood quality of living trees, diversifies forest structure (tree species, age structure, spatial distribution) and initiates natural forest succession. Compared to other restoration measures prescribed burning is expensive and technically demanding but a successful burn is much more effective than the other measures in restoring natural forest elements. A network of Fire Continuity Areas has been established. The network has 52 landscape-level areas including protected and commercial forests and covers the whole country. The aim is to burn forest stands within each of the areas in every 3-5 years. Restoration measures simulating natural disturbances caused by strong winds, flooding, heavy snowing, fungal pathogens and insect pests are also ecologically sound. Altogether, c. 16,000 ha mainly young former commercial forests have been restored, mostly in southern Finland where the area of high-conservation-value forests is small; a target of 13,000 ha of restored heath forest in southern Finland in 2009-2016 has been set. Restoration measures, however, have little influence on the conservation status of the western taiga habitat type.

Forestry legislation in Finland allows financing (KEMERA) for the maintaining of valuable features inside forestry areas. Also, METSO-programme can be applied to serve similar needs. At the moment most of the management activities are carried out at state owned, protected forests; a total of 4,957 ha of boreal forests have been restorated on 32 sites.

Currently the conservation of the habitat is ensured more or less in protected areas in Latvia, i.e. Natura 2000 sites where logging is prohibited or limited. Species protection plans have been developed for species dwelling in Western taiga; these protection plans include recommendations for habitat management. According to the information provided in numerous site management plans based on field survey data, the conservation status in many Natura 2000 sites is not good. In order to ensure proper management of the habitat, imitations of natural disturbances (e.g. forest fires) should be applied in many sites. Lack of precise data does not allow estimating the extent of proper management (active or passive) in Western taiga habitats outside Natura 2000 network.

Main management activities in Lithuania are to prevent forest cuttings in habitat sites with good structure. In some sites with untypical habitat structure there are small-scale cuttings planned in order to increase age diversity of stands. According to experts management of the habitat is not optimal.

Passive/non-intervention management is the main management regime in Sweden for the habitat type 9010. Re-introduction of natural fire regimes have been undertaken in several sites in Sweden (approx 1,300 ha have been burned in prescribed fires) and a few hundreds of hectares have been burned in wild-fires (management of natural fires). Activities to promote more prescribed burning are going on and targets will be set; A significant increase in area affected by forest fires is needed to reach FCS. Prescribed burning is both used to maintain and restore fire prone ecosystems. It is important in the short term for fire depending species, but assessing the effects in long (>100 years) or even medium term (50 years) is difficult. It is still unclear how much has to be burnt every year to preserve biodiversity, and how much can be preserved without any fire. It is difficult to say what optimal management is since the habitats can be considered to be dynamic systems with disturbances, followed by succession. The relevant scale is the whole landscape, at

least in the long run. In the short term about 3/4of the area is probably under optimal management. Restoration of sites with "non-habitat" forests to reach habitat quality by heterogenization of even-aged stands and creation of structures (e.g. coarse woody debris) has been made in a few sites and the future role of this type of restoration is intensely discussed.

Boreal region countries share their knowledge and consult each other frequently. Meetings and seminars have been arranged annually, on e.g. such topics as conservation status assessment and monitoring. Several international projects on the theme of habitat conservation have been carried out.

Examples of good practice:

Estonia

LIFE-project Protection of priority forest habitat types in Estonia considered such aspects like increasing the biodiversity in mostly monoculture forests in Natura 2000 sites. http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=1977.

The system of monitoring the forest habitats is reconstructed – new methods have been introduced in 2009 to provide the information about the habitats' status both in Natura network and outside. Data collected during the monitoring will be used to provide the Article 17 report.

A good achievement is the manual for HD Annex I forest habitats' inventorying. This manual presumably helps to get more homogeneous field data via decreasing the level of subjectivism arising from different experience of the experts. Several trainings of forest habitats' interpretation, inventorying and conservation for different stakeholders like nature conservation officers and forest experts is also worth to mention.

Finland

EU Life project "Restoration of forests and Forest-Covered Mires 2002-2007" included restoration of 4,957 ha of forests in 32 Natura 2000 sites.

Latvia

Within the LIFE-Nature project Protection and management of the Northern Gauja Valley in Natura 2000 site Ziemelgauja LV0600700 management of forests for biological diversity (removal of understory in old growth pine forests and in two *Tetrao uragallus* lek sites) were carried out. http://www.zgauja.lv/pasakumi.

In military polygon and Natura 2000 site Adaži LV0600800 within the LIFE-Nature funded project LIFE06 NAT/LV/000110 Restoration of Biological Diversity in Military Training Area and Natura 2000 site "Adaži" 247 ha of habitats 9010*, 91D0*, 9080* and 91E0* were managed by military personnel providing direct nature conservation benefits and at the same time – positive example to other military training areas in Latvia and European Union.

Some experience in private forest management is provided also by DEMO FARM project Development of Latvian-Estonian network for demonstration of environmentally friendly farming practices. The Project created network of demonstration farms in order to improve environmental education facilities and support environmentally friendly entrepreneurship. Some demonstration farms forests are Western taiga. The project aims to ensure nature conservation and obtain economical benefits in the same time, educating the land owners on alternative, sustainable and nature-friendly uses of nature resources.

Lithuania

The above mentioned project "Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts".

Sweden

Eldskäl ("Reasons for fire") – a project with the aims to develop an ecological strategy for fire prone habitats in south eastern boreal zone; information and communication between stakeholders; guidelines for prescribed fires; a learning organisation. http://www.lansstyrelsen.se/ostergotland/Sv/djur-och-natur/skyddad-natur/projekt/Pages/eldskal.aspx

7 Main constraints and actual needs

The main constraint is the lack of funding for restoration, monitoring and compensations for the loss of income; the last one causes conflicts with the landowners. There are also administrative/legislative constraints (Natura 2000 sites often overlap existing nature reserves and nature reserve regulations can be in conflict with the needs of management of Natura habitats); lack of knowledge, both of the capacity of the management bodies and of the restoration ecology; lack of common view between authorities on the need of different management and restoration efforts; lack of area. There is a conflict between conservation and the industrial forestry, about the remaining unprotected old forests that still haven't been clearcut.

According to Finland and Sweden, the emphasis in restoration measures should be shifted towards more burning. In short and medium term an increase in fire influence will lead to higher degree of naturalness, creation of ecological structures crucial for reaching FCS and habitat for fire-dependant species. There is a need to extend the area of the smallest sites, to ensure the conservation status by minimizing edge effects.

In Sweden, lack of common view between authorities on the need of different management and restoration efforts; lack of funds; lack of knowledge, both 1). The capacity of the management bodies, and; 2). the knowledge in restoration ecology has greatly improved, but still much more knowledge is needed, especially on long term effects; conflict with water power interests (the relevant legislation is an obstacle to conservation); the protection from deleterious activities outside the sites is still weak; administrative/legislative constraints (Natura 2000 sites often overlap existing nature reserves and nature reserve regulations can be in conflict with the needs of management of Natura habitats); insufficient total area of the habitat type.

In Estonia, adequate funding for compensations is needed as well as management plans for all sites. More strict protection for some sites is foreseen.As forests with high nature value tend to occur as fragmented and isolated patches, the landscape scale aspects should be payed more attention on when planning the protection zones in Natura sites.

Change of habitat status in legislation is needed in Latvia. Coordinated protection of the habitat type in collaboration with largest State forest owner. Training in the use of active management methods. There appears clear need for the use of fire in restoration projects. Educational campaigns for stakeholders and general public for understanding the importance of the management actions.

In Lithuania, they need better management.

Other activities: Forestry (landowners, State, forest industry, paper industry, sawmills, woodchip contractors), recreation/gathering/hunting (general public). In Estonia, 55% of the land uses are compatible with the conservation needs of the habitat type (40% of all forest land and 25% of forests in Natura 2000 are privately owned). About 50% of all forests are State-owned in Latvia and about 50% of the habitat type is privately owned in Lithuania.

8 Recommendations

It is recommended to aim the discussion on following issues:

- Methods and extent that the loss of income is compensated for private forest owners. Funds used for that (national, EU-support, etc)?
- Forest restoration – discussions and demonstrations of

restoration methods and experiences.

Documents used:

HIS Forests prepared by Anneli Palo, Meri**t** Otsus (EE)HIS for habitat type 9010 prepared by FI

HIS for habitat type 9010/9050 prepared by LV

HIS for habitat type 9010 prepared by LT

HIS Forests prepared by SE

HIS for habitat types 9010, 9050, 9060 prepared by SE

HIS for habitat type 9010 prepared by EHF

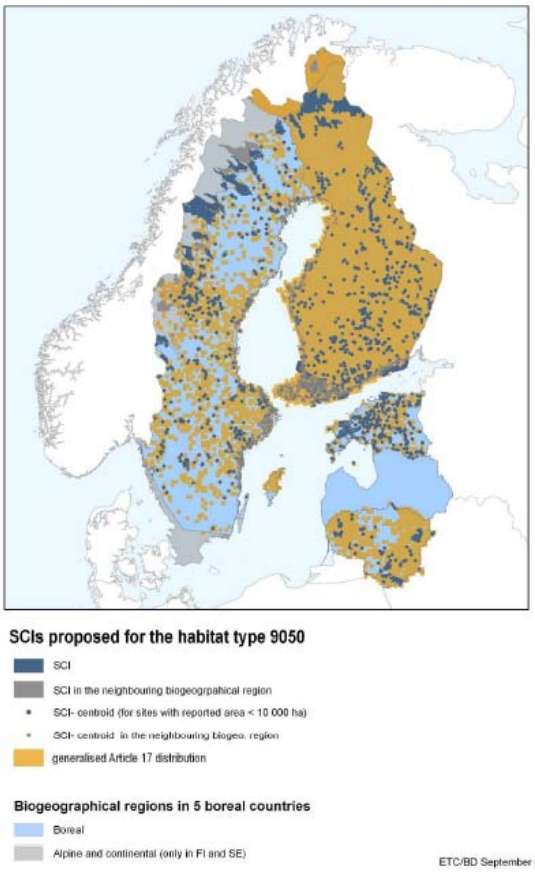
HIS for habitat type 9010 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Habitat type 9050 Fennoscandian herb-rich forests with *Picea abies*

1 Description



This habitat type replaces typical western taiga forest (habitat type 9010) on stands with fertile soils and favourable water regimes occurring mainly in depressions and lower part of slopes. Spruce (*Picea abies*) dominates the tree layer, but broad-leaved trees are a significant component. The undergrowth is composed mainly of tall herbs and ferns.

The conservation status in the Boreal region has been assessed as 'unfavourable bad', the range being the only favourable parameter; the area of the habitat is decreasing. The structure and functions of this habitat are sensitive to changes in the hydrological condition and are unfavourable in all countries within the Boreal region.

In Latvia, habitat type 9050 Fennoscandian herb-rich forests with *Picea abies*is included in 9010 Western Taiga. Thus there are no Latvian data for this specific habitat type.

Less than 50% of the habitat type is in Natura 2000, in Estonia it is 40%, 50% in Lithuania and 17% in Sweden. The majority of the boreal herb-rich forests is located outside Natura 2000 areas and other reserves (in Natura 2000 about 100 km^2) in Finland.

Thus the management of commercial forests has a great impact on the habitat, particularly on private lands. Management/restoration measures outside the Natura 2000 are needed to ensure connectivity of the habitat sites and adequate localities for the habitat-related specialist species.

2 Associated species

Estonia, Finland add*Buxbaumia viridis*. Finland deletes *Ranunculus lapponicus*, adds *Vertigo genesii*, *Vertigo geyeri*, *Vertigo angustior*, *Dicranum viride*, *Cucujus cinnaberinus*, *Oxyporus mannerheimii* and *Xyletinus tremulicola*. Sweden would delete *Cinna latifolia*.

BirdLife would add to the list *Aquila pomarina, Bonasa bonasia, Dendrocopos leucotos, Tetrao tetrix* and *Tetrao urogallus.*

Other relevant species include *Baptria tibiale*, *Xestia sincera*, *X rhaetica/fennica*, *X. distensa* and *Alcis jubata*.

Management activities that favour vegetation may be harmful for some insects and fungi. Removal of spruce is the most typical example.

Pytho kolwensis (FI, SE) has an overall status of 'unfavourable bad' (in Finland unfavourable inadequate); the status of*Calypso bulbosa*, *Cinna latifolia* and *Cypripedium calceolus* are 'unfavourable inadequate'; *Diplazium sibiricum* and *Ranunculus lapponicus* have a favourable conservation status.

Benefiting species	Species with conflict of managements
Cypripedium calceolus	
Cinna latifolia (?)	
Pytho kolwensis	
Calypso bulbosa	
Diplazium sibiricum	
Ranunculus lapponicus (?)	
Pernis apivorus	
Strix nebulosa	
Strix uralensis	
Picus canus	
Dryocopus martius	
Picoides tridactylus	
Ficedula parva	
Buxbaumia viridis (EE, FI)	
Vertigo genesii (FI)	
Vertigo geyeri (FI)	
Vertigo angustior (FI)	
Dicranum viride (FI)	
Cucujus cinnaberinus (FI)	
Oxyporus mannerheimii (FI)	
Xyletinus tremulicola (FI)	
Aquila pomarina (BL)	
Bonasia bonasia (BL)	
Dendrocopos leucotos (BL)	
Tetrao tetrix (BL)	
Tetrao urogallus (BL)	

3 Main pressures and threats

All Boreal Member States report general forestry management as the main pressure and threat for future; it includes e.g. clearcutting, thinning, forest road building, exploitation for other purposes, damages from terrain vehicles, fertilizing, draining. Forestry is also the main pressure/threat to the insect and plant species (6) associated to this habitat type. However, only *Pytho kolwensis* (dependent on dead wood) was assessed unfavourable-bad (U2). As the major part of the habitat is not protected the pressure and the threat that the commercial forestry presents is very serious for the future of the entire habitat.

The area of the habitat has been greatly diminished in the past; because of its fertility it has been turned into agricultural cultivation areas. This is still a pressure/threat for sites outside protected areas.

4 Main conservation requirements

As the area of 9050 is decreasing, it is important to try to stop the trend by protecting sites outside Natura 2000 and, when possible, to re-create the habitat type and restore sites in locations that would enhance connectivity. Recently, in some areas the herb-rich forests have somewhat increased because of aerial nitrogen deposition that increases nutrient levels in the soil. The quality of these “new” herb-rich forests is, however, poor compared to the original herb-rich forests.

Passive protection that supports the natural forest dynamics is the most common protection regime; the alteration of water regime, forestry and any kind of economic activities need to be excluded for that. - Some active conservation measures for diversification of age structure, creating deadwood and for restoring the natural water regime might be suggested to restore and/or increase the habitat-specific biodiversity. The landscape scale aspects should be paid more attention on when planning the protection zones in Natura sites. It is necessary to regulate forestry activities and inform the landowners better about the habitat.

Public knowledge about forest conservation aims and methods is insufficient. In Lithuania, the conservation needs are not well known.

Forestry management is the main reason for deterioration of the herb-rich forests. Silvicultural measures include e.g. changes in tree species composition, decreasing the amount of dead wood and drainage for forestry. Forestry favors spruce, and needle litter makes the soil more acidic. Spruce stands shade light demanding broadleaved trees and rich understorey vegetation. Nowadays one third of the herb-rich forests in Finland are dominated by conifers. Drainage has altered the quality of moist herb-rich forests, and ca. 30% of the habitat is ditched. Thin-peated rich spruce mires belonging to the 9050 have been altered by drainage for forestry: in southern Finland 87 % and in northern Finland about one third of the habitat is altered. The drainage of pristine mires for forestry has nowadays almost totally ended, but particularly the maintenance of old ditches can deteriorate mire margins as well as affect the hydrology of undrained habitats.

Recently there has been a change in forest management and safeguarding biodiversity in commercial forests has been taken into account better. Habitats of special importance are defined in the Forest Act. These habitats should be managed so that their characteristic features remain natural. Habitats of special importance include herb-rich forests and eutrophic paludal hardwood-spruce swamps belonging to 9050.

However, the negative effects of forestry on herb-rich forests should still be minimized. Developing the legislation (Forest Act, Nature Conservation Act) and forest management practices further is essential. That includes examining the possibilities to better safeguard the habitat through national legislation, e.g. developing the criteria for habitats of special importance in the Forest Act.

It is also essential to continue improving the state of herb-rich forests existing in conservation areas by restoration and management. A new Guide for forest habitat restoration and management has just been published (http://julkaisut.metsa.fi/julkaisut/pdf/luo/b157.pdf). It includes also the management and restoration of herb-rich forests and offers good practices for actions. It is also important to enhance restoration of the habitat type outside the Natura 2000 network.

Intensive land use causes fragmentation and isolation to the remaining herb-rich forests. In order to improve connectivity and conservation status of the habitat, all kind of conservation actions should be enhanced and draw attention to land use planning.

It is recommended to preserve old growth and forest of tall trees for majority of bird species, some require open forests (e.g. *Pernis apivorus*) or mosaic forest (old growth + open areas, e.g. *Strix nebulosa*). A local improvement of forest fires should be helpful for *Picoides tridactylus* conservation. *Tetrao tetrix* demands restoration of natural water dynamics, e.g. by filling ditches on margins or core areas of the focal sites, and also predator control. *Tetrao urogallus* demands also to restore water regimes in important moist areas (all drainages are harmful), to burn forests (at least on ground layer) and to prevent inland forest fragmentation; adjacent forest areas should be unfragmented as well.

5 Conservation targets

Targets: The answers are fairly vague and in many cases it is not possible to define whether targets, guidelines, etc. are official or recommendations/suggestions. When the Member States mention national targets (EE, FI, LV) they are on very general level, not for specific habitat types; to protect at least 10% of habitat types, to reach FCS.

According to the answers guidelines for the habitat type exist in EE, FI, (LV) and SE. In that sense management guidelines exist also in Lithuania that the project “Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts” has prepared guidelines for the management of individual forest types (http://www.bef.lt/download_file.php?id=61) in Boreal region. The LT

answers do not define whether these are adopted by the countries.

In Estonia the process of preparing the management plans for Natura 2000 sites is currently in work. Thus, **all SCIs with forest habitats are foreseen to have management plans by the beginning of the 2014**. By 2011 the numbers of SCIs with management plans adopted are following: 9010 – 53, 9050 – 29, 9060 – 6, 9080 -33, 91D0 – 30, 91E0 – 13.

In all countries there is a number of management plans for sites that include also this habitat type; and more are under preparation. The main targets are to maintain the diversity of the habitat, including species and structural diversity as a complex; to prevent forest cuttings in areas with typical structure or tree cutting where structure has to be improved; to restore typical structure of the habitat or increase habitat area. Not all management plans are specific in describing management methods for the habitat type. The plans are not very specific in Sweden when it comes to how the management should be performed – they focus more on threats, objectives etc.

6 Management measures

All countries agree that passive management is (from the area point of view) the main management measure for the habitat. There is some difference of opinion as to the amount and intensity of restoration measures.

In Estonia and Lithuania, the passive conservation measure is the widely accepted management regime; mainly it means designating the habitat and some buffer areas as a strict protection zone and prohibiting the unfavourable activities. Such buffer areas may be the forests which do not yet have enough of the habitat characteristics but can develop them when left undisturbed. Some active measures like selective cuttings might be needed for the habitat type or species protection purposes. In Estonia, significant improvements in habitat quality by 2020 are not a very realistic goal as improvement of forest habitat quality is ecologically long-term process. In Lithuania, according the expert judgement management of the habitat is not optimal.

In Finland, active management of the habitat was started in the 1980's, but the number and area managed remained small until the 2000's. Since 2003, c. 500-600 ha of herb-rich forests have been managed for biodiversity conservation. The main measure is the removal of coniferous trees, especially spruce (*Picea abies*) as conifers acidify the soil and replace the characteristic light and warmth demanding herb-rich forest species. The need for management is greatest in southern Finland, whereas in eastern and northern parts Finland only a small amount of activities are needed. Another important measure is removal of alien plant species (e.g. *Heracleum mandegazzianum*, *Lupinus polyphyllos*). Exotic tree species are removed from protected herb-rich forests. So far, only local case studies for monitoring the effects herb-rich forest management have been taking place. At the moment the management measures used in herb-rich forests in protected areas and the geographical extent of restoration are based on expert opinion, political decisions and restoration experiences. A new EU LIFE+ project "Improving the Conservation Status of Species-rich Habitats" started 1st Sep 2011. In the project, 451 ha (at 33 sites) of herb-rich forests will be restored. It is expected that as a result of the restoration measures c. 280 ha of the restored area will become Fennoscandian herb-rich forest (9050) by the end of the 5-year project. An estimation of the area of boreal herb-rich forests to be managed by 2020 is c. 800 ha.

In Sweden, it is difficult to say what optimal management is since the habitats can be considered to be dynamic systems with disturbances, followed by succession. The relevant scale is the whole landscape, at least in the long run. In some sites grazing is a relevant management measure.

Boreal region countries share their knowledge and consult each other frequently. Meetings and seminars have been arranged annually, on e.g. such topics as conservation status assessment and monitoring.

Examples of good practice:

Finland

Management of herb rich forests at Pirkanmaa (Lehtojen hoitohanke, Pirkanmaa). http://www.ymparisto.fi/default.asp?contentid=44156&lan=fi

Lithuania

The project "Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts". http://www.bef.lt/download_file.php?id=61

7 Main constraints and actual needs

The main constraint is the lack of funding for restoration, monitoring and compensations for the loss of income; the last one causes conflicts with the landowners. There are also administrative/legislative constraints (Natura 2000 sites often overlap existing nature reserves and nature reserve regulations can be in conflict with the needs of management of Natura habitats); lack of knowledge, both of the capacity of the management bodies and of the restoration ecology; lack of common view between authorities on the need of different management and restoration efforts; lack of area. There is a conflict between conservation and the industrial forestry, about the remaining unprotected old forests that still haven't been clearcut.

Adequate funding to overcome the constraints is needed. There is a need to extend the area of the smallest sites, to ensure the conservation status by minimizing edge effects.

In Sweden, lack of common view between authorities on the need of different management and restoration efforts; lack of funds; lack of knowledge, both 1). The capacity of the management bodies, and; 2). the knowledge in restoration ecology has greatly improved, but still much more knowledge is needed, especially on long term effects; conflict with water power interests (the relevant legislation is an obstacle to conservation); the protection from deleterious activities outside the sites is still weak; administrative/ legislative constraints (Natura 2000 sites often overlap existing nature reserves and nature reserve regulations can be in conflict with the needs of management of Natura habitats); insufficient total area of the habitat type.In Estonia, management plans are needed for all sites. More strict protection for some sites is foreseen. As forests with high nature value tend to occur as fragmented and isolated patches, the landscape scale aspects should be payed more attention on when planning the protection zones in Natura sites.

The estimate of the area of the habitat type requiring active management in Finnish Natura 2000 areas is ca. 1,000 ha.

In Lithuania, better management is needed.

Other activities: Forestry (landowners, State, forest industry, paper industry, sawmills, bio-fuel contractors), recreation/gathering/hunting (general public). In Estonia 40% of all forests and 25% of Natura 2000 forests are privately owned, 60% of the land uses are compatible with the conservation needs of the habitat type. About 50% of the habitat type is in private ownership in Lihtuania.

8 Recommendations

It is recommended to aim the discussion on following issues:

- Information exchange about the methods and extent that the loss of income is compensated for private forest owners. Funds used for that (national, EU-support, etc)?

- Forest restoration – discussions and demonstrations of restoration methods and experiences.

Documents used:

HIS Forests prepared by Anneli Palo, Meri**t** Otsus (EE)HIS for habitat type 9050 prepared by FI

HIS for habitat type 9050 prepared by LT

HIS Forests prepared by SE

HIS for habitat types 9010, 9050, 9060 prepared by SE

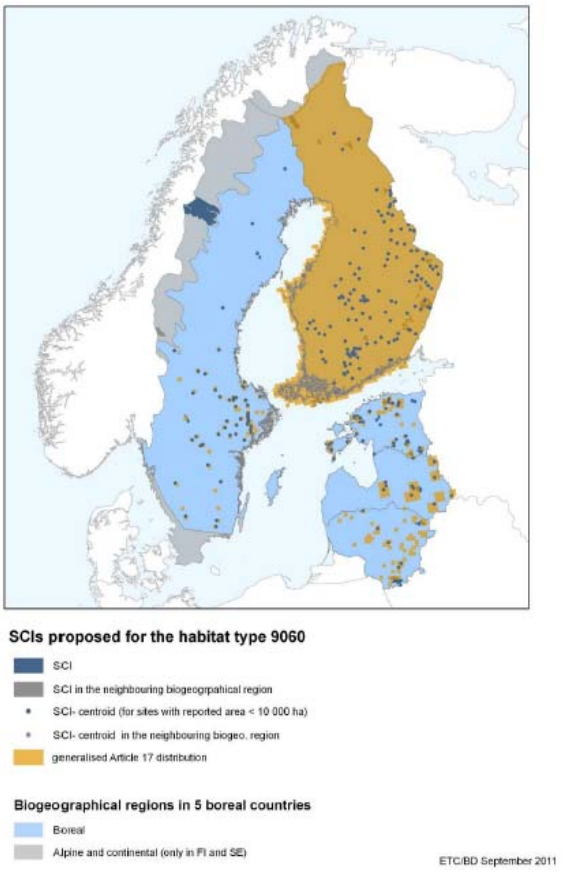
HIS for habitat type 9010 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Habitat type 9060 Coniferous forests on, or connected to, glaciofluvial eskers

1 Description



Eskers are glaciofluvial gravel and sand formations which consist of relatively well sorted sediments, often forming ridges over 20 meters high. In terms of ecological factors they are more variable than the surrounding forest on flatter ground. (geomorphological term: sandurs and deltas). Sun-exposed south- and south-west facing steep slopes and continuous disturbance are essential factors keeping up the good quality of habitats (incl. esker variants).

The habitat occurs only in the Boreal region. The Boreal conservation status is 'unfavourable bad ', the range being the only 'favourable' parameter. The area of habitat is decreasing in two countries and the structure and function of the habitat are not favourable in any of the five countries. The composition of the undergrowth, whose diversity is a typical feature of this habitat type, is sensitive to atmospheric pollution and eutrophication.

The coverage of the habitat type in Natura 2000 varies: ca. 1.6% (FI), 38% (SE), 90% (EE). No figures are cited from Latvia and Lithuania. There is a strong need to expand management measures into silviculturally managed eskers also outside Natura 2000. It is not possible to reach FCS with the present Natura 2000 coverage.

2 Associated species

Finland proposes to add *Glaucopsyche arion* and *Lycopodium* spp. (in FI *Diphasiastrum tristachyum*) and and Latvia to add *Dianthus arenarius, Thesium ebracteatum, Bonasa bonasia, Strix uralensis, Dryocopus martius* and *Aegolius funereus*. The original list did not contain any forest habitats and species from Swedish point of view. All forest dwelling species in annex II and IV will benefit from passive and/or active management of the forest sites.

Benefiting species	**Species with conflict of managements**
Pulsatilla patens	
Glaucopsyche arion (FI)	
Dianthus arenarius (LV)	
Thesium ebracteatum (LV)	
Bonasia bonasia (LV)	
Strix uralensis (LV)	
Dryocopus martius (LV)	
Aegolius funereus (LV, BL)	
Caprimulgus europaeus (BL)	
Lullula arborea (BL)	

The habitat is important for numerous rare plant and invertebrate species (according to Latvian proposal):

Arenaria procera, Dracocephalum ruyschiana, Lathyrus niger, Onobrychis arenaria, Pulmonaria angustifolia, Pulsatilla patens, Dianthus arenarius, Lycopodium spp., *Agrodiaetus damon, Grapholitica caeceana*. SE: *Stephanopachys substriatus, Stephanopachys linearis* (?)

BirdLife would add to the list *Caprimulgus europaeus* and *Lullula arborea*.

Other characteristic species include *Scolitantides vicrama, Glaucopsyche alexis, Hyponephele lycaon, Spaelotis suecica*. A very large number of Microlepidoptera feeding on *Thymus* and *Caryophyllaceae* plants.

Finland would like the above to read: characteristic species include butterflies *Scolitantides vicrama, Glaucopsyche alexis, Spaelotis suecica*. A very large number of Microlepidoptera live exclusively on *Thymusserpyllum* ssp. *serpyllum* Caryophyllaceaeplants. Birds *Caprimulgus europaeus*and *Lullula arborea*live in esker and dry heath forests in Finland.

Pulsatilla patens (II, IV) has the general status 'unfavourable-inadequate', in Finland 'unfavourable-bad'. The range of this species is favourable in all countries.

3 Main pressures and threats

The habitat type has always been utilised for gravel extraction, which has resulted into the decreasing of its area and deterioration of its quality.

The most serious present pressure/threat is the lack of natural disturbances, especially forest fires and windfell areas. The habitat is also sensitive to pollution (eutrophication). Gravel extraction is still a pressure, especially in sites outside Natura 2000. Commercial forestry remains a pressure. The habitat type is very popular for recreational uses; especially sites near urbanised areas suffer from it. Large ungulates (moose, deer) can hinder the regeneration of pine and deciduous trees by grazing.

Forest fires used to be the natural regeneration way of this habitat type. They maintain open, sandy areas, diverse tree and canopy structure and species composition typical for esker slopes. Efficient fire fighting methods have reduced the burned areas in eskers to a minimum. Fires are extinguished quickly and the effectively and the burning area is limited by roads and fire protection belts. The lack of forest fires is the main natural reason for the degradation of the habitat. It affects to the homogenization of ground layer vegetation and adds the amount of organic litter in forests. Light-demanding species suffer from the lack of sun-exposure and the species depending on fire/light conditions will vanish. Nitrogen fallout further strengthens the negative process as it induces changes in vegetation, as well as the expansion of highly competitive grasses, weedy and invasive alien species.

Gravel extraction both inside the site and in its vicinity causes - when intensive - the destruction of the site; even when not so intensive it will result in the deteriorisation of the site - e.g. erosion; changes in vegetation (negative effect on *Pulsatilla patens*); because of the roads necessary to the extraction, there will be an easier access to the sites sensitive to disturbances.

Commercial forestry has utilised the esker forests as any heath forests, which has resulted in paucity of dead wood. Silvicultural methods have favoured even-aged pine dominated monocultures and clearcuts made with light machines. Esker forests are left uncut for landscape ecological (scenery/visionary) purposes. Furthermore, the dominance of graminoid grass species in clear-cut areas and the shade caused by dense tree sapling phase affect negatively the typical, poorly-competitive esker vegetation. Forestry is the most important pressure/threat to *Pulsatilla patens*. Reforestation using Picea abies has also had a negative effect.

4 Main conservation requirements

For sites in favourable condition passive management that supports the natural forest dynamics is the most appropriate protection regime; forestry, gravel extraction, the alteration of water regime, and any other disturbing activity affecting the site need to be excluded. Natural disturbances should be allowed.

Even in many protected eskers the quality of the habitat type has degraded. In the Finnish Red List, there are112 species of esker forests, most of them insects. Sixteen species of esker forests are already extinct and several species may face extinction in near future because of the poor quality of the habitat type. - There is an urgent need to restore and actively manage the habitat type. Actions should be directed to those sites where typical esker vegetation still exists, or close to such sites, so that the species would be able to disperse to larger areas. The network of suitable habitat patches should be created in eskers in silviculturally managed forests around NATURA-areas to connect the protected habitats to those created thru silvicultural methods in private owned lands.Controlled burning should be used everywhere where it is technically possible to start the natural processes of regeneration. The use of fire both in silviculture and ecolocical restoration in protected areas is common andused extensively in Finland and Sweden; in the Baltic countries hardly at all. There is a significant lack of knowledge as to what methods could be used to simulate a fire regime. Altogether the current level of management activities is too low. The public knowledge about forest conservation and its methods should be increased.

Gaps in knowledge in Estonia: as 9060 forests might have developed under different human impacts (cutting, grazing, mowing), their conservation requirements are not well understood.

Aegolius funereus needs to prevent inland forest fragmentation (adjacent forest areas should be unfragmented as well) and also black woodpecker (*Dryocopus martius*) should be protected as its old nesting holes are used by this species. *Caprimulgus europaeus* demands to preserve scattered forests and lands with shrubs and open peatlands. *Lullula arborea* take advantage of protection of small open areas.

5 Conservation targets

When the Member States mention national targets (EE, FI, LV) they are on very general level, not for specific habitat types; to protect at least 10% of habitat type, to reach FCS.

According to the answers guidelines for the habitat type exist in EE, FI, LV and SE. In Finland there are new guides for managing sun-exposed eskers forests both in silviculturally managed (Harjumetsien paahdeympäristöt)http://www.ymparisto.fi/default.asp?contentid=332739&lan=fi and in protected areas (Metsien ennallistamisen ja luonnonhoidon opas) http://www.ymparisto.fi/default.asp?contentid=332739&lan=fi . The possibilities of creating a network of sun-exposed esker forest habitats is recently studied in FEI (Harjumetsien paahde-elinympäristöverkostot) http://www.ymparisto.fi/default.asp?node=20890&lan=fi). Large forest companies have also been active and interested in Finland to combine commercial forestry with effective sun-exposed habitat management f.e. UPM-Kymmene. http://www.upm.com/EN/MEDIA/All-news/Pages/UPM-participates-in-the-recovery-of-sun-exposed-habitats-001-to-10-helmi-2011-19-03.aspx. In that sense management guidelines exist also in Lithuania that the project “Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts” has prepared guidelines for the management of individual forest types (http://www.bef.lt/download_file.php?id=61) in Boreal region. The EE and LT answers do not define whether these are adopted by the countries.

In all countries there are management plans for sites that include also this habitat type; more are under preparation. The main targets are to maintain the diversity of the habitat, including species and structural diversity as a complex; to restore typical structure of the habitat or increase habitat area. Not all management plans are specific in describing management methods for the habitat type.

In Estonia the process of preparing the management plans for Natura 2000 sites is currently in work. Thus, **all SCIs with forest habitats are foreseen to have management plans by the beginning of the 2014**. By 2011 the number of SCIs with management plans adopted are following: 9010 – 53, 9050 – 29, 9060 – 6,

9080 -33, 91D0 – 30, 91E0 – 13.

Amount of management plans for this habitat is not given for Finland, "General management plans for Natura 2000 sites" cover all Natura 2000 sites. More detailed plans have been prepared for all national parks (ca 1,000,000 ha) and wilderness areas (ca 1,500,000 ha). In addition more detailed plans cover large number of smaller sites.

Nature management plans are elaborated for 10 Natura 2000 sites in Latvia including this habitat. Six of them are designated particularly for 9060.

In Lithuania, 3 sites have management plans. Main objectives are to restore typical structure of the habitat or to increase habitat area.

Almost all sites have management plans in Sweden. The most common objective is passive management. Other objectives are the introduction of forest fires and combating invasion of spruce and exotic species.

6 Management measures

The general trend is that Finland and Sweden are increasing the use of more active restoration methods while for the Baltic States passive management is the prevalent one.

The passive conservation measure is the widely accepted management regime in Estonia. Some active measures might be needed for species protection purposes, e.g. light conditions for *Pulsatilla patens* or selective cutting for desirable habitat type. Such site-specific conservation requirements and respective management are considered in the Natura 2000 sites' management plans.

In Finland, during 2003-2010, a total of 2-300 ha (rough estimate) of esker forests have been managed for biodiversity conservation which is clearly not enough. Management measures include removal of shading trees, opening of ground vegetation, exposing of mineral soil and burning of esker forests. Methods of combining silvicultural cutting with effective esker habitat management is also developed. Monitoring of the effects of management actions is currently done in several locations (Komio, Rokua, Lintharju, Örö, Taipalsaari and Hämeenkangas). Monitoring includes vascular plants and several groups of insects. So far, only short-term results from Hämeenkangas are available.

Mostly passive management is typical in Latvia; removal of spruce and shrubs have been carried out in some sites (varying degree of intensity, depending on features of site), to maintain the light conditions and species structure. Most of the habitat sites could be under optimal management (passive non-interference approach).

Also in Lithuania, mostly passive management is used; restoration by removal of trees. According experts, management of the habitats is not optimal.

MOVED TO: 9010Boreal countries share their knowledge and consult each other frequently; meetings and seminars are carried out annually. No mention of international cooperation concentrating on this habitat type; the project “Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts” has prepared guidelines for the management of individual forest types.

The most representative sites of 9060 are included to Natura 2000 areas in Finland. For this reason main management activities will be concentrated inside the network. Methods of preserving esker forests and their unique species should be crucially needed in eskers and in compensatory areas near and around protected reserves. The main aim is to connect the protected areas to the best sun-exposed eskers outside protection. Problems of managing NATURA 2000 areas (excluding protected areas) as a whole in Finland are rather quirky/difficult. Finishing quickly the management plans for NATURA 2000 areas help to prioritize the management activities to crucial points of protection for species and habitats.

Examples of good practice:

Finland

Successful management measures have been carried out in Rokua, Maakylä-Räyskälä (Komio) and Hämeenkangas (Jämijärvi).

Latvia

Collaboration in management of the habitat with the State Stock Company Latvian State Forests (Natura 2000 sites Driksnas sils LV0303700, Numernes valnis LV0303000, Laukezers LV0304000).

ONLY IN: 9010

7 Main constraints and actual needs

The main constraint is the lack of funding for restoration, monitoring and compensations for private the loss

of income; the last one causes conflicts with the landowners. There are also administrative/legislative constraints (Natura 2000 sites often overlap existing nature reserves and nature reserve regulations can be in conflict with the needs of management of Natura habitats); lack of knowledge, both of the capacity of the management bodies and of the restoration ecology; lack of common view between authorities on the need of different management and restoration efforts; lack of area. There is a conflict between conservation and the industrial forestry, about the remaining unprotected old forests that still haven't been clearcut. Political decisions could solve this conflict but such haven't been made and meanwhile these forests are clearfelled.

The most urgent needs are those of adequate funding and of relevant, reliable data about the management methods and especially their long-term effects. There is a need to extend the area of the smallest sites, to ensure the conservation status by minimizing edge effects.

There is a general agreement with the forestry practitioners, large forest companies and nature administrators that both the conservation and management of sun-exposed esker forest management can be cost- effectively combined in Finland. For private forest owners there should be compensatory funding for higher management costs in biodiversity esker management and leaving dead wood on sun-exposed sites. Political decisions should be made to solve this dilemma.

The most urgent needs are adequate funding for restoration and getting reliable data of the experimental management methods and especially their effects of species and habitats in long-term. There is a need to extend the area of managed sun-exposed sites from the small patches to larger connective habitat network to ensure the conservation status by minimizing edge effects.

In Estonia, there is a need of management plans for the sites.

In Latvia, in some sites planning of road network and pathways in order to diminish the chaotic human pressure and eradication of invasive alien plants. Information to general public about the necessity of management actions is essential.

Lithuania needs better management of the habitat.

Other activities affecting the habitat include gravel extraction (private sector), forestry (both private owners and State), grazing (landowners), recreation & gathering (general public). In Estonia, 94% of the land uses are compatible with the conservation needs of the habitat type. In Lithuania, approximately 50% of the habitat is in private ownership.

There is clear need to decrease the negative impact of eutrophication in Finland. Active managements are required to keep ground vegetation open enough for the typical species of the habitat. Combining management and experimental studies/monitoring of sites should be widened to private-owned eskers in the large scale. The possibilities of introducing locally extinct species back to its original restored habitats should be studied. The long-term value of the compensatory habitats (airfields, army areas, abandoned gravel pits) for engendered species should be evaluated with the restoring of esker forests.

8 Recommendations

It is recommended to aim the discussion on following issues:

- How and to what extent the loss of income is compensated for private forest owners in other countries. What funds are used for that (national, EU-support, etc)?
- Sharing experience if any guidelines are prepared for 9060 conservation, particularly about the management measures.
- Imitation of forest fires (controlled burning), methods and results.
- Forest restoration – discussions and demonstrations of restoration of non-habitat to reach favourable habitat conditions.

Documents used:

HIS Forests prepared by Anneli Palo, Meri**t** Otsus (EE)HIS for habitat type 9060 prepared by FI

HIS for habitat type 9060 prepared by LV

HIS for habitat type 9060 prepared by LT

HIS Forests prepared by SE

HIS for habitat types 9010, 9050, 9060 prepared by SE

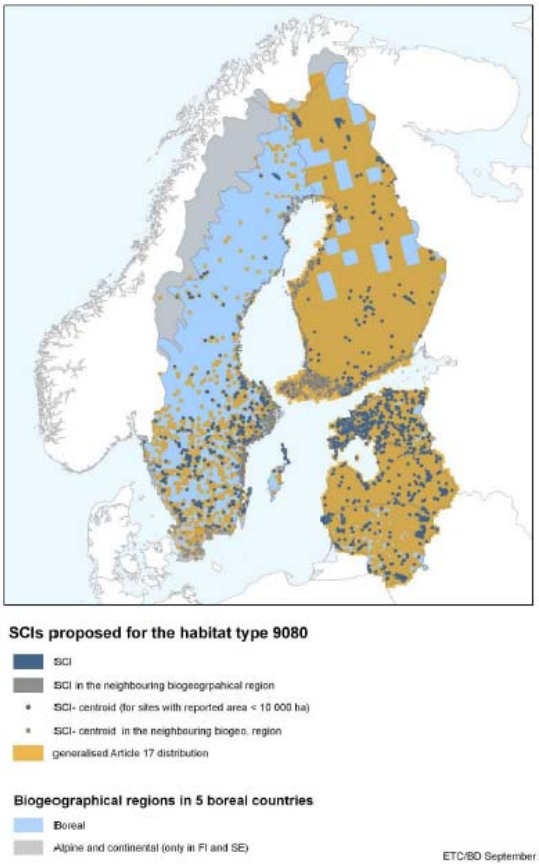
HIS for habitat type 9010 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Habitat type 9080 Fennoscandian deciduous swamp woods

1 Description



Wooded swamps are forests under permanent influence of surface water. Although peat formation occurs, it is very weak. The canopy is usually dominated by ash (*Fraxinus excelsior*) - absent from the northern part, i.e. almost all of Finland and most of Sweden - and black alder (*Alnus glutinosa*); grey alder (*Alnus incana*), silver birch (*Betula pubescens*) and willows (*Salix* spp.) are also common. The character of the undergrowth is determined by the water level. This habitat is mainly preserved along with other forest types as a complex.

The Boreal conservation status is 'unfavourable-bad', with the range being the only favourable parameter; there are differences on Member States level, the situation in Latvia, Lithuania and Sweden being more favourable. In the Continental region the habitat area is lower than favourable. The habitat's structures and functions are sensitive to the changes of water level and any human activity modifying the water regime represents a serious threat.

According to the ETC statistics, less than 50% of the habitat in The Boreal region is in Natura 2000. Estonia estimates the total coverage of the habitat to be 450 km^2; about 80% is in Natura 2000. In Latvia the total area of the habitat is 225 km^2; it is excluded from intensive forestry activities even outside protected areas and there is no urgent need for restoration outside Natura 2000. Lithuania and Sweden expressed a general need for measures also outside Natura 2000. In Sweden the total amount of the habitat type is 430 km^2; 37 km^2 is in Natura 2000.

2 Associated species

Very scant information by the Member States. Estonia, Lithuania and Sweden propose no changes. Finland would omit *Ranunculus lapponicus* as its main habitat is not 9080. Latvia would omit *Dichelyma capillaceum*, *Herzogiella turfacea*, *Bryhnia novae-angliae* and *Ranunculus lapponicus*, and add *Aquila clanga*. Sweden says that the attached list did not contain any forest habitats and species.

Benefiting species	**Species with conflict of managements**
Dichelyma capillaceum	
Herzogiella turfacea	
Bryhnia novae-angliae	
Ranunculus lapponicus	
Dendrocopos leucotos	
Ficedula parva	
Aquila clanga (LV)	
Aquila pomarina (BL)	
Ciconia nigra (BL)	
Strix uralensis (BL)	

BirdLife would add to the list *Aquila pomarina*, *Ciconia nigra* and *Strix uralensis*.

Other relevant species include *Carterocephalus palaemon*, *E. capitata*, *E reticulata* and a number of microlepidoptera feeding for instance on *Carophyllaceae*, *Eupatorium*, *Inula*, and *Impatiens noli-tangere*.

The given list includes no species with overall conservation status described in the Pre-scoping document from all five countries. *Bryhnia novae-angliae* (only SE) is unfavourable-bad; *Dichelyma capillaceum* unfavourable-inadequate (EE, FI), favourable (SE); *Herzogiella turfacea* unfavourable-inadequate (FI), favourable (SE); and *Ranunculus lapponicus* favourable (FI, SE).

Latvia mentions rare and protected species characteristic to bog woodland only: Mosses and lichens – *Cetrelia* spp., *Leptogium* spp., *Arthonia spadicea*, *Lejeunea cavifolia*, *Jurgenmannia leiantha*, *Geocalyx graveolens* and *Trichocolea tometella*.

3 Main pressures and threats

Drainage and forestry management are responsible for the unfavourable-bad assessment of the structures and functions for a major proportion of the habitat area; they are mentioned by all Member States. These pressures apply to most of the associated species as well. The other pressures/threats include fragmentation, anthropogenic pressure (e.g. urban areas), unnatural flooding, lack of natural disturbances, etc.

Commercial forestry: extensiveclear-cutting and other intensive forestry activities in the particular habitat and its surroundings result in changes in thehydrological regime and deterioration of the habitatquality. The forest structures and features essential for many species are most commonly found in places where the forest has continuously existed for hundreds of years and where no or only insignificant management measures have been carried out.

Drainage: Drainage can be a part of the forestry activities but it has also been carried out for agricultural reasons, construction works, etc. Draining both in the site and outside of the actual site causes habitat deterioration, changes in vegetation, forest structure (the regulation of the water table and the lack of inundation lead to thickening of stands and invasion of spruce); in cases of intensive drainage the habitat can be completely destroyed. The most extensive draining has happened during the last decades of the last century; e.g. in Estonia more than 85% of the habitat type were then turned into commercial forests.

4 Main conservation requirements

The main conservation requirements are passive management for the sites in good state including their protection from outside activities that affect the site negatively; restoration of hydrological entities of mires and watercourses in the sites that have been tampered with. Hydrologically connected areas around the habitat sites shall not be changed or hydrological regime must be restored ensuring optimal conditions for the habitat. For habitat conservation it is often necessary to keep and save buffer zone to reduce edge effect and to keep stable microclimate as well as to restore sites in locations enhancing connectivity. - From the ecological point of view, there is a need of revising water regulation policies and changing regulation patterns in order to mitigate the negative effects on alluvial habitat types. (FI) Protection of Fennoscandian deciduous swamp woods should also be taken into account in the implementation of Water Framework Directive (RBMPs; River Basin Management Plans) and Floods Directive. Development of forest management practices is also essential for improving the state of swamp woods.

Gaps in knowledge: Locations and area not well known, habitat inventories need to be continued (FI); limited experience of restoration (FI). The state of the protected sites not well known; a possible need to

add valuable sites to adjacent protected areas (EE). Conservation requirements not well known (LT).

From the point of view of *Lepidoptera*: Stop large scale logging around protected areas, small patches of good habitat has been shown not to be enough to maintain the fauna. Keep the habitat mosaic, the sun needs to reach the ground in the more open spots.

Bird species prefer to preserve old growth or protect mosaic habitat forests and open spaces (e.g. *Aquila pomarina*). *Ciconia nigra* benefit also from:

- restoration of natural flooding dynamics of streams and rivers inside or adjacent to the focal habitat.
- stoping any forestry activities during the breeding season at least on a 0.5 km radius around nests.
- limits in using of pesticides in agriculture.
- protection of nest areas. Avoid cutings in the spring and the summer. Preserve big trees (potential nest trees) in forestry operations. Avoid human disturbance (tourism) in extensive natural areas. Maintain waterbodies, remove shrubs near small rivers.
- building artifical nests.

5 Conservation targets

General principles of national peatland conservation targets in draft form in Estonia; the purpose of this document is to form on consensual basis the principles and activities of different interest groups, which would guarantee the protection and sustainable use of peatlands for the next twenty years (EE). The proposed National peatland strategy includes a mire conservation program and a proposal to protect all natural state peatlands (FI). National conservation recommendations for forests (LV), no national/regional targets (LT, SE). The proposed targets seem to be for habitat groups rather than individual habitats.

According to the answers, (FI) management guidelines exist for both private and State forests, restoration guidelines for State forests being prepared; (LV) monitoring methods approved, guidelines for forest management exist, guidelines for State-owned Swamp Forests currently being prepared; (SE) guidelines for all habitat types. The project "Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts" has prepared guidelines for the management of individual forest types; in this sense guidelines exist also for Lithuania who answered there are no guidelines. The answers do not define whether these are adopted by the countries.

In Estonia, 30 sites with a management plan; plan describes the target area of the habitat on the protected area, main activities necessary to restore or maintain the area.Note also that in Estonia the process of preparing the management plans for Natura 2000 sites is currently in work. Thus, **all SCIs with forest habitats are foreseen to have management plans by the beginning of the 2014**. By 2011 the numbers of SCIs with management plans adopted are following: 9010 – 53, 9050 – 29, 9060 – 6, 9080 -33, 91D0 – 30, 91E0 – 13.

General management plans for Natura 2000 sites cover all Natura 2000 sites in Finland. More detailed plans have been prepared for all national parks (ca 1,000,000 ha) and wilderness areas (ca 1,500,000 ha). In addition detailed plans cover also a large number of smaller sites.

Nature management plans are elaborated in Latvia for all national parks and majority of Natura 2000 sites designed for habitat 9080*. The main conservation objectives and actions for 9080 are to conserve habitat on existing areas and quality, as well as not to interfere with natural processes.

In Lithuania, 18 sites for habitat 9080 have management plan. Main objectives are to restore typical structure of the habitat or to increase habitat area. Main actions – tree cutting.

All sites (almost) have management plans in Sweden, but the plans are not very specific when it comes to

how the management should be performed – they focus more on threats, objectives etc.

6 Management measures

In Estonia,active restoration measures, for example restoring the natural water regimefor desirable habitat type, may be suggested in site management plans but the passive and strict protection through natural recovery of structure is the most common and the most appropriate protection measure for increasing the habitat quality.This is achieved by applying the forest habitats and some buffer areas to the strict protection zone and prohibiting the unfavourable activities.

Restoration activities have been carried out in only a few small sites in Finland. The accurate area is difficult to determine because the habitat type is traditionally classified as part of luxuriant spruce mires. Restoration of this habitat may demand restoration of wider water systems. The extent of the habitat in Finland is poorly known; the sites are small and scattered.

As this habitat type in many cases has been managed as part of nature complex, several site management plans have been adopted to protect this forest type in Latvia. The habitat type is in the list of nationally protected habitats, for which microreserves can be established; this ensures a possibility to include the habitat sites in small-size protected areas with no forestry activities. Currently the State Stock Company Latvian State Forests conducts two projects – Swamp Forests, 9080 and Biologically Valuable Forests. During these projects the monitoring and management system for state forests will be established, as well as guidelines for management and habitat quality evaluating will be prepared. Nearly adequate management and legal framework for protection of the habitat type is provided for forests on protected nature territories but there is lack of information about habitat 9080* abundance on privately owned forests outside protected areas. In some sites, active management (restoration of optimal hydrological regime) is needed.

In Lithuania, main management activities are keeping or restore typical structure of the habitat, mostly by cutting trees. According to expert valuation, management of the habitats is not optimal.

The most common activity in Sweden is restoration of the hydrological regime, for example by filling up ditches or by reintroduction of natural water variation in rivers; future restoration is promoted. In places with an escalating invasion of spruce following a lack of inundation, manual cutting of spruce is sometimes carried out. The importance of restoration by heterogenization and creation of substrates in areas of lower “quality” vs. non-intervention management is intensely discussed in Sweden (not stated in the information whether measures have been carried out in 9080).

Seminars and field excursions have been arranged with boreal countries on the topics conservation status assessment and monitoring. No systematic cooperation. Elaboration of methodology for woodland key habitats in Latvia: Ek et al. (2002) – collaboration in elaboration of methods for recognition of natural and/or biologically valuable woodland habitats.

National legislation in Finland (KEMERA) and forest biodiversity programme (METSO) provide potential financing tools for the protection of small 9080 sites outside Natura 2000 network and also allow the financing of restoration managements.

Examples of good practice:

Estonia

The Institute of Ecology at the Tallinn University managed the project “Inventory of Estonian peatlands, Stage I. Peatland forests outside protected areas” (2008 – 2010) ordered by the Ministry of Environment and financed by Estonian Environmental Fund. The main aim of the project was to select peatland forest

sites outside protected areas but having high or good conservational value. (http://www.envir.ee/orb.aw/class=file/action=preview/id=1124270/Soometsade+inventuur+2009.pdf).

The LIFE project for Natura 2000 site Adaži LV0600800 have been conducted - LIFE06 NAT/LV/000110 Restoration of Biological Diversity in Military Training Area and Natura 2000 site "Adazi" , where 247 ha of habitats 9010*, 91D0*, 9080* and 91E0* and 306 ha of habitats 7110* and 7120 are being maintained by military personnel.

Currently the State Stock Company Latvian State Forests conducts two projects – Swamp Forests, 9080* and Biologically Valuable Forests. During these projects the monitoring and management system for state forests will be established, as well as guidelines for management and habitat quality evaluating will be prepared.

Lithuania

The project "Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts".

7 Main constraints and actual needs

There is lack of funds in Estonia.

The protected areas in Finland are small and the ditches situated outside the boundaries are affecting the sites; restoration and management are restricted. Sites near groundwater springs or near watercourses can be affected by many large-scale changes in the water tables. It is difficult to restore the groundwater table to the original level.

In Latvia, there is noticeable resistance of stakeholders, e.g. owners of private forests concerning the restoration of forest habitats. Explanatory work and compensations for loss of wood resources might help to diminish the misunderstandings and conflicts.

The biggest problems in Lithuania are lack of knowledge and conflicts with stakeholders.

MOVED TO: 9010, 9050, 91EONeeds: (EE) A specific inventory aimed to assess the status and propose management requirements for the habitat types on the protected areas should be accomplished. Expert assessments state that more than 50% of the habitat type 9080 need more management/restoration activities. (FI) The best practices on restoration should be studied further (LV) Since large areas of the habitat type occur outside Natura 2000 network, it is necessary to make coordinated protection of the habitat in collaboration with largest state forest manager by implementing a sustainable forest policy. The habitat areas outside protected areas must be mapped and precise cover of habitat on the country-scale defined. On State owned forests the habitat should be used mainly for nature conservation purposes. The forestry activities must be limited, and non-interference should be the main management method. Hydrological regime must be restored, where necessary. Buffer zone around habitat in which forestry activities must be limited. The mechanism for compensations must be renewed as fast as economical situation allows; explanatory work to inform about importance of the habitat at the European Union and national level. (LT) According experts opinion a substantial part of the habitat area needs better management. (SE) Need to extend the area or protection of the smallest sites, to ensure the conservation status by minimizing edge effects or effects from activities outside the site. Increased hydrological restoration at drained sites. All sites with negative impact of past draining should be restored.

Interactions with other activities: (EE) More than 50% of the habitat type is in private ownership; mainly the drained swamp forests with minor conservation value are used for commercial purposes. 55% of the land uses are compatible with the conservation needs of the habitat type. (FI) Most of the habitat type is State owned in Northern Finland and privately owned in Southern Finland. Water regulation, flood

prevention and different construction measures of waterways can affect the habitat from a distance. (LV) The State Stock Company Latvian State Forests manages almost half of the forests in the territory of Latvia and Natura 2000 sites. Some territories in Natura 2000 sites are owned by the Ministry of Environmental Protection and Regional Development. The rest belongs to private land owners or municipalities. As large proportion of habitat area is located in the Natura 2000 sites, the main land use purpose is nature protection, while outside Natura 2000 sites habitat is used for Natura 2000 and hunting. Conflict with stakeholders will appear if commercial forest management will not be allowed. There are some nature trails in Natura 2000 sites (LT) Approximately 50 percent of forests are privately owned. Main use of forests is timber production. (SE) Interaction with land-use and other economical activities is mainly in areas outside the Natura-network. To a minor extent, the habitat is used for cattle grazing, which usually, but not always, can be combined with the conservation objectives.

8 Recommendations

Forest restoration – discussions and demonstrations of restoration of non-habitat to reach favourable habitat conditions; management methods and their efficiency.

The land upheaval coast of Gulf of Bothnia in Finland and Sweden has very special deciduous swamp woods, which do not exist anywhere else. Very few of them are in natural state and protected. Their situation both in Finland and Sweden should be studied.

Documents used:

HIS Forests prepared by Anneli Palo, Meri**t** Otsus (EE)HIS for habitat type 9080 prepared by FI

HIS for habitat type 9080 prepared by LV

HIS for habitat type 9080 prepared by LT

HIS Forests prepared by SE

HIS for habitat types 9080, 91E0 prepared by SE

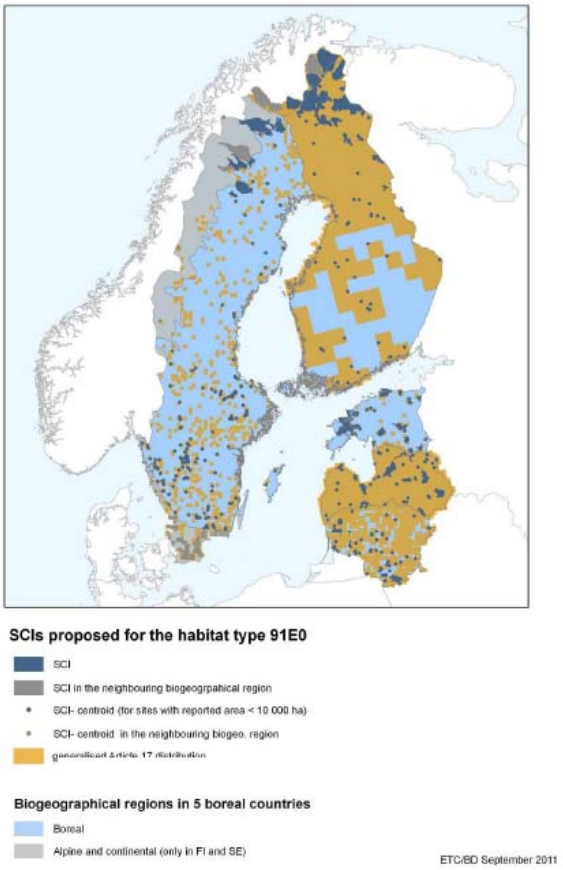
HIS for habitat type 9010 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Habitat type 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*

1 Description



This varied habitat type includes riparian ash (*Fraxinus excelsior*) - absent from the northern part of the region, i.e. almost all of Finland and most of Sweden - and alder (*Alnus glutinosa*) forests and willow (*Salix alba*, *S. fragilis*) galleries along lowland and hill water courses 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 nutrient-rich soils. The habitat type is relatively widespread, but occurs as fragmentary stands where the hydrologic regime is favourable. Especially in lowland areas it is seriously threatened due to management of water levels and regulation of water courses. In the Boreal region, the status of the habitat was mostly „unfavourable-inadequate" (range being the only favourable parameter); only Finland assessed it as „unfavourable-bad".

According to ETC statistics, less than 50% of the habitat type is in Natura 2000; the reported percentages (2) are higher; Estonia 90%, Sweden 60%. As the habitat type occurs in small and isolated fragments in all its range, it is generally (EE, LV, LT, SE) deemed necessary to have management measures also for sites outside Natura 2000; it is not possible to reach FCS with only Natura 2000 sites - it might be difficult to reach it even with such measures. No actual management measures outside Natura 2000 are reported.

2 Associated species

Species associated to alluvial forests, *Cucujus cinnaberinus* (larvae live in old aspens) occurs in all 5 Boreal Member States though not necessarily in all of them in alluvial forests - and its conservation status is not well known. The status of *Cucujus cinnaberinus* was unfavourable-inadequate in EE, unfavourable-bad in FI, SE and unknown in LV, LT. *Dichelyma capillaceum* was unfavourable-inadequate in EE, FI, favourable in SE. *Herzogiella turfacea* was unfavourable-inadequate in FI, favourable in SE. *Scapania massolongi* was unfavourable-bad in SE; *Xyletinus tremulicola* unfavourable-inadequate in FI, unfavourable-bad in SE.

The Member States information is fairly scant. No Member State mentioned species with conflict of management (except Sweden in general terms; see below). Estonia, Lithuania: no changes to the list. Finland agrees to the list in principle; the known localities of *Cucujus cinnaberinus* (2) and *Xyletinus tremulicola* (about 10) are not in 91E0. It is possible, though, that the species would benefit from conservation actions. The same applies to *Scapania massalongi* (1). *Herzogiella turfacea* mainly occurs in Fennoscandian deciduous swamp woods (9080) in Finland. Latvia proposes to omit *Dichelyma capillaceum*, *Xyletinus tremulicolia*, *Herzogiella turfacea*. The moss species *Myrinia pulvinata* is dependent on continuous flooding and sediment accumulation in Finland. The species is in the 2010 Red List of Finnish Species as near threatened.

BirdLife would add to the list *Aquila pomarina, Ciconia nigra* and *Picus canus*.

Other relevant species include *Euphydryas maturna*, *Lopinga achine*, *Coenonnympha hero*, *Lycaena dispar*, (*P. mnemosyne*?), *Cartorocephalus palaemon*, *C. silvicola*, *Heteropterus morpheus*, *Argynnis laodice* and *Paradiarsia punicea*.

Benefiting species	**Species with conflict of managements**
Moehringia laterifolia (FI)	
Cucujus cinnaberinus	
Xyletinus tremulicola	
Dichelyma capillaceum	
Scapania massalongi	
Herzogiella turfacea	
Dendrocopos leucotos	
Picus canus (LV)	
Aquila clanga (LV)	
Strix aluco (LV)	
Cinna latifolia (SE)	
Aquila pomarina (BL)	
Ciconia nigra (BL)	
Picus canus (BL)	

3 Main pressures and threats

All Member States indicate general forestry management and the former/present/future hydrological activities influencing the sites as main pressures and threats both to the habitat and, of the species. Additional threats are fragmentation and lack of connectivity, lack of natural disturbances, hydropower stations (change of water regime), invasive alien species, beaver activities (change of water regime), construction (roads, houses), fertilizing, air-borne pollution and ash die-back.

It does not become clear from the information whether any logging activities are nowadays carried out inside Natura 2000 sites. It seems that at least selective cutting and removal of dead trees is allowed in some Member States. Even milder activities cause damage to the site as the species composition and the water regime is affected by them. Forestry also affects negatively *Cucujus cinnaberinus*, *Xyletinus tremulicolia*, *Herzogiella turfacea*, *Scapania massolongi* and potentially *Dendrocopos leucotos*. As the sites are small, changes even outside them may cause grave deterioration and/or decline of the habitat; the habitat type should have an adequate buffer zone around it.

The hydrological activities include modifying structures of inland water courses, management of water levels (causing e.g. lack of seasonal flooding), canalisation, drainage and removal of sediments. These measures have been carried out both in and outside of Natura sites; whether former or recent ones, they still interfere with the natural processes of the habitat type. The species most threatened by these is *Scapania massolongi*.

Foresty activities in Finland are not allowed at most oh the protected areas. Hydrology of sites must not be disturbed.

Forestry in Sweden is not allowed inside Natura 2000 site. New hydrological activities with negative effect on conservation status will not be allowed either. However, past and present hydrological activities (in place before designation of Natura2000) are greatly affecting the conservation status of the habitats, especially damming and regulation of rivers for hydroelecrical power buT also drainage activities.

In Lithuania, for the habitat 91E0, forestry activities are allowed in Natura 2000 sites.

EE, , LV: Please explain whether forestry and hydrological activities are allowed inside the Natura 2000 sites for this habitat type, or in the vicinity so that they affect the site negatively.

4 Main conservation requirements

The main conservation requirement is non-intervention in natural processes. Today many lakes are regulated and the majority of large watercourses have been exploited, primarily for the needs of hydropower production and flood protection. Thus the actions to improve the conservation status of alluvial forests are linked to water level management and hydraulic construction. FI: From the ecological point of view, there is a need of revising regulation policies and change the regulation patterns in order to mitigate the negative impacts to alluvial habitat types and species dependent on continuous flooding. Especially, even partial restoring of natural spring flood would benefit the habitat and its species. Protection of alluvial forests should be taken into account also in the implementation of Water Framework Directive (RBMPs; River Basin Management Plans) and Floods Directive.

There is an urgent need for restoration of alluvial forests. Restoration measures should include restoration of the natural or close-to-natural (optimal) hydrological regime, restoration of the species composition and eradication of invasive species. SE: Designation of additional sites to improve the connectivity, game management (moose and roe deer).

In general, the habitat type 91E0 is not sufficiently well known. There is a lack of knowledge on the exact occurrences of the habitat type as well as on the vegetation patterns and variation. No special alluvial vegetation types have been described. Also the total species composition living primarily in alluvial forests or species which tolerate flooding are not fully known. - More information is needed to stakeholders and general public about the habitat type and its requirements. This includes information about Woodland Key Habitats and their role in the protection of biodiversity.

From the point of view of *Lepidoptera*: Stop large scale logging around protected areas, small patches of good habitat has been shown not to be enough to maintain the fauna. Keep the habitat mosaic, the sun needs to reach the ground in the more open spots.

Recommended protection of bird species is similar to other forest habitat types.

5 Conservation targets

Targets: When the Member States mention national targets (EE, FI, LV, SE) they are on very general rather than habitat type level; to protect at least 10% of all forest habitat types, to reach FCS.

Management guidelines: The project “Favourable conservation status of Boreal forests – Experience exchange among Baltic and Nordic experts” has prepared guidelines for the management of individual forest types; in that sense guidelines do exist in all countries. http://www.bef.lt/download_file.php?id=61.http://www.bef.lt/download_file.php?id=61 The answers do not define whether these are adopted by the countries. According to the answers, management guidelines for the habitat type do exist in EE, LV and SE. The Swedish guidelines will be updated soon.

Management plans: In Estonia the process of preparing the management plans for Natura 2000 sites is currently in work. Thus, **all SCIs with forest habitats are foreseen to have management plans by the beginning of the 2014**. By 2011 the number of SCIs with management plans adopted are following: 9010 – 53, 9050 – 29, 9060 – 6, 9080 -33, 91D0 – 30, 91E0 – 13. In Finland, "General management plans for Natura 2000 sites" cover all Natura 2000 sites. More detailed plans have been prepared for all national parks (ca 1,000,000 ha) and wilderness areas (ca 1,500,000 ha). In addition, more detailed plans cover a large number of smaller sites. These plans may provide some benefit for some small sites. Large river systems with several hydroelectricity plants cannot be taken into account. - In Latvia, Nature protection plans are developed and approved for Natura 2000 sites, which are established with many qualifying features, including alluvial forests. The main conservation objectives are preservation of the diversity in the habitat complexes and non-interference in undisturbed/natural habitats (largely applicable to 91E0*). - In Lithuania, 11 sites have a management plan. Main objectives are to restore the typical structure of the habitat or to increase the habitat area. Main actions – tree cutting. - In Sweden, almost all sites have a

management plan but the plans are not very specific when it comes to how the management should be performed – they focus more on threats, objectives etc.

6 Management measures

Passive management is practiced in cases when interference in the site and its vicinity has been minimal and the site is in good condition. In practice this means strict protection of the habitat type and, most often, a buffer zone around the habitat.

SE Restoration of hydrology in sites affected by draining has been undertaken in several sites; future restoration is promoted. To re-create more natural flooding regimes needs interaction with hydroelectrical power companies and revision of local regulations. Strategies to solve conservations problems connected to flooding are underway. Flooding regimes in are not sufficient at the majority of the sites. In short term habitats for species dependent on flooding will be created, in medium term the re-introduction of the natural disturbance regime will have positive effects on species composition. Restoration of sites by e.g., regeneration of deciduous trees has been made in some areas; in places with an escalating invasion of spruce following a lack of inundation, manual cutting of spruce is sometimes carried out. Restoration of sites with "non-habitat" forests to reach habitat quality by heterogenization of even-aged stands and creation of structures (e.g. coarse woody debris) has been made in a few sites. All sites with negative impact of past draining should be restored. Effects are mainly on medium to long term.

In other countries active restoration methods have been rather experimental. Selective cutting has been used to restore the habitat type. Some activities are targeting the maintenance of the hydrological regime, e.g. removal of beaver dams and removal of dead wood from the streams avoiding blocking of the water flow.

Countries of Boreal region share their knowledge and consult each other frequently. Meetings and seminars are carried out ca once per year. However, the knowledge on restoration of 91E0 is still limited, and not much has been discussed on this topic.

At some sites there are needs for restoration in Finland. National legislation (KEMERA) and forest biodiversity programme (METSO) provide potential financing tools for the protection of small 9080 sites outside Natura 2000 network and also allow the financing of restoration managements. However, in most cases restoration of 91E0 is not easy to carry out.

Examples of good practice:

Finland

In future, the restored site at Nuuksio will provide valuable information on restoration methods.

7 Main constraints and actual needs

The main constraints are: lack of knowledge and mutual understanding between stakeholders, lack of funds - both for management and for compensations, conflicts with stakeholders; lack of area. The habitat type is generally not well known. As a result, the protection status of the habitat is not always sufficient to prevent undesirable actions affecting the habitat. The protection from deleterious activities outside the sites is still weak.

Mapping of the habitat must be completed in order to understand its exact distribution, cover, conservation status, threats and management actions needed. Habitat protection plan and guidelines for its management should be developed and implemented; the habitat type should have an adequate legal protection also

outside the protected areas. Management plans for all Natura 2000 territories where the habitat is present should be developed and implemented. There is probably a need to extend the area or protection of the smallest sites, to ensure the conservation status by minimizing edge effects or effects from activities outside the site. It is essential to have an exchange of knowledge between the countries. The restoration methods and ecology of the habitat type need to be studied more, including the long term effects of actions. Results from the comparisons of restoration methods should be exchanged between countries. Information campaigns aimed for stakeholders and general public should be carried out.

Interacting land uses include e.g. hydroelectric power production (electricity companies); forestry (landowners, forest industry); agriculture including cattle grazing (landowners); recreation.

In Sweden, lack of common view between authorities on the need of different management and restoration efforts; lack of funds; lack of knowledge, both 1). The capacity of the management bodies, and; 2). the knowledge in restoration ecology has greatly improved, but still much more knowledge is needed, especially on long term effects; conflict with water power interests (the relevant legislation is an obstacle to conservation); the protection from deleterious activities outside the sites is still weak; administrative/legislative constraints (Natura 2000 sites often overlap existing nature reserves and nature reserve regulations can be in conflict with the needs of management of Natura habitats); insufficient total area of the habitat type.

EE: 95% of the land uses are compatible with the conservation needs of the habitat type. LT: According experts opinion substantial part of the habitat area in our country need better management. The biggest problem is lack of knowledge and conflicts with stakeholders. Approximately 50 percent of forests are private owned. Main use of forests is timber production.

8 Recommendations

How and to what extent the loss of income is compensated for private forest owners in the countries. What funds are used for that (national, EU-support, etc)?

Forest restoration – discussions and demonstrations of restoration of non-habitat/degraded habitat to reach favourable habitat conditions. Methodology of restoration at 91E0 sites.

Vitality of *Fraxinus excelsior*

Beaver activities – positive and negative impacts on the habitat.

Documents used:

HIS Forests prepared by Anneli Palo, Meri**t** Otsus (EE)HIS for habitat type 91E0 prepared by FI

HIS for habitat type 91E0 prepared by LV

HIS for habitat type 91E0 prepared by LT

HIS Forests prepared by SE

HIS for habitat types 9080, 91E0 prepared by SE

HIS for habitat type 9010 prepared by BCE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

5. Coastal habitats

The only coastal habiatat selected, from 21 habitats present in Boreal region - Boreal Baltic coastal meadows (1630) is included under the Grasslands section as it is more logically considered with the other semi-natural habitats.

5 other endangered habitat types were considered for the selection - Coastal lagoons (1150), Embryonic shifting dunes (2110), Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120), Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130) and Decalcified fixed dunes with *Empetrum nigrum* (2140).

Seven coastal habitats occur in all 5 Member States of the Boreal biogeographical region.

Only 3 habitats are in favourable conservation status - Perennial vegetation of stony banks (1220), Vegetated sea cliffs of the Atlantic and Baltic coasts (1230) and Boreal Baltic islets and small islands (1620).

The coastal habitats and associated species in the Boreal region are influenced mainly by pollution, urbanisation and biocenotic evolution.

6. Freshwater habitats

Only one specific habitat type was selected from 11 habitats present in Boreal region - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (3260) which occur in all 5 Member States as other 4 habitat types. Three of them arealso endangered and were taken seriously for the selection - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea*(3130), Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. (3140) and Natural euthrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation (3150).

Only one habitat is in favourable conservation status - Alpine rivers and the herbaceous vegetation along their banks (3220).

Freshwater habitats and associated species in the Boreal region are influenced mainly by water pollution and also by modification of hydrographic functioning, drainage and biocenotic evolution

Tab. 5: Number of Natura 2000 sites and their area for habitat type selected in 5 Member States

Code		**Estonia**	**Finland**		**Latvia**	**Lithuania**	**Sweden**		
		Boreal	Alpine	Boreal	Boreal	Boreal	Alpine	Boreal	Continental
3260	Number of sites	91	6	472	31	24	11	157	27
	Habitat area (ha)	6345,9	32,5	6676,8	225,3	2923,7	1965,9	3573,3	308,7

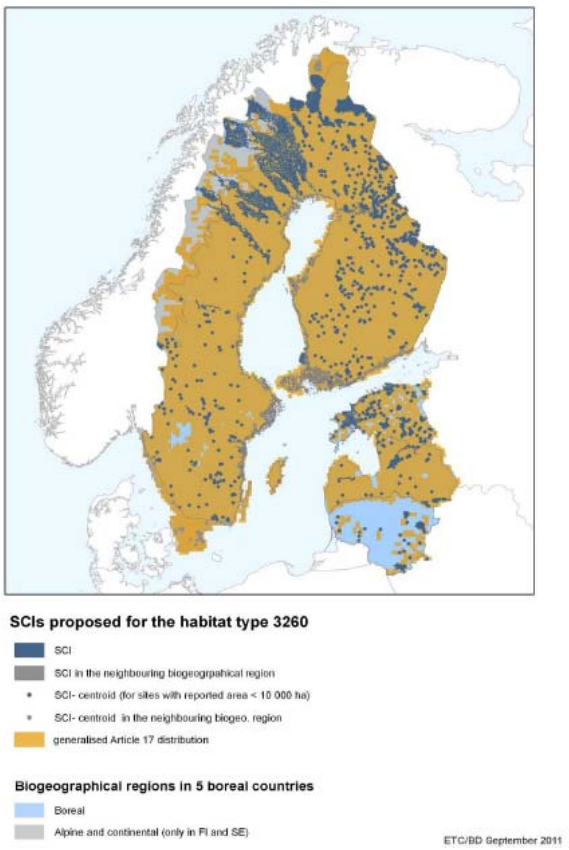
Habitat type 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

1 Description

Water courses of plain to montane levels, with submerged or floating vegetation of the *Ranunculionfluitantis* and *Callitricho-Batrachion* (low water level during summer) or aquatic mosses. The habitat is very widespread throughout Europe, although rare to the south.

The conservation status of this habitat type is assessed as 'unfavourable – bad'. The only parameter assessed as 'unfavourable' is range. It is noted as 'unfavourable' by Estonia and Latvia, and 'unfavourable-bad' by the rest of MS.

Area covered within Natura 2000 sites varies in different MS: in Finland this area is rather small, while is Latvia it is up to 80% (all the largest sites are included). Estonia provided information on semi-natural habitats as the whole (about 75% of them are situated within Natura 2000) and there is no available data in Lithuania and Sweden (in SE this data shall be available soon).



2 Associated species

Only *Luronium natans* is assessed as 'favourable'. *Lampetra fluvialis*, *Misgurnus fossilis* and *Unio crassus* are assessed as 'unfavourable' and *Margaritifera margaritifera* and *Persicaria foliosa* as 'unfavourable-bad'.

Nearly all MS suggested adding species to the submitted list.

Latvia suggested adding *Salmo salar* as a typical flag species for areas connected to the Atlantic. It also proposed *Castor fiber* and *Margaritifera margaritifera*as species with conflict of management. *Margaritifera margaritifera* as contradictory to the proper functioning of the habitat 3260 (Estonia disagrees and adds:*"Margaritifera margaritifera* is the species that clearly benefits from proper functioning of the natural river"),*Castor fiber* having both negative and positive synergy with this habitat type. Among other relevant species it wants to add *Salmo trutta*.

Sweden suggested excluding *Misgurnus fossilis* from the list as this species is not relevant for Swedish watercourses as it does not exist in Sweden, and *Luronium natans*, which is more connected to standing waters with natural dynamics of water levels. On the contrary it suggested adding two mosses *Hygrohypnum montanum* and *Dichelyma capillaceum* – both are relevant for the management or conservation of the 3260 habitat type.

Finland proposed *Lutra lutra*, *Ophiogomphus cecilia* and *Dichelyma capillaceum* for enlisting and adding *Margaritifera margaritifera* and *Unio crassus* among species with conflict of management (restoration and intensive management of stream sections might cause temporary disturbance to their populations).

Estonia proposed several fish, mammal, amphibian, invertebrate and bird species for adding to the list of

benefiting species, *Castor fiber* among species with conflict of managements and named *Lampetra planeri*, *Thymallus thymallus* and *Castor fiber* as other relevant species (EE has exceptions from annex II and IV).

Benefiting species	**Species with conflict of managements**
Lampetra fluviatilis	*Castor fiber* (EE, LV)
Luronium natans	*Margaritifera margaritifera* (FI, LV)
Margaritifera margaritifera	*Unio crassus* (FI)
Misgurnus fossilis	
Persicaria foliosa	
Unio crassus	
Salmo salar (EE, LV)	
Cobitis taenia (EE)	
Cottus gobio (EE)	
Aspius aspius (EE)	
Lutra lutra (EE, FI)	
Mustela lutreola (EE)	
Myotis dasycneme (EE)	
Triturus cristatus (EE)	
Lycaena dispar (EE)	
Ophiogomphus cecilia (EE, FI)	
Dytiscus latissimus (EE)	
Graphoderus bilineatus (EE)	
Leucorrhinia pectoralis (EE)	
Alcedo atthis (EE, BL)	
Botaurus stellaris (EE)	
Chlidonias niger (EE)	
Ciconia nigra (EE, BL)	
Circus aeruginosus (EE)	
Haliaeetus albicilla (EE)	
Sterna hirundo(EE)	
Lampetra planeri (EE)	
Thymallus thymallus (EE)	
Dichelyma capillaceum (FI)	
Salmo trutta (LV)	
Unio crassus (LV, EE)	

Birdlife International also recommened adding *Alcedo atthis* and *Ciconia nigra* to the list.

3 Main pressures and threats

The main pressure in general is modification of hydrografic functioning, taking form of damming, hydroelectric power stations, migration obstacles, drainage, dredging and straightening. The dominating pressure in forest landscape is general forestry management, while in agricultural landscape it is water pollution, eutrophication - leakage of sediments, fertilisers and pesticides, drainage and general watercourse management (vegetation, banks). Beaver activities represent a pressure due to strong increase in their numbers and decrease of human activities in landscape.

Damming changes fundamentally character of rivers: it creates limnic habitats of rivers instead of riverine ones, with impacts such as eutrophication, lowering of oxygen content etc. Also dredging and straightening cause direct destruction of the habitat. Forestry has negative impact in the form of destruction of habitats when logging and driving with heavy vehicles is done nearby the stream. Furthermore uncovered soils become sensitive to washout. Beaver activities cause bank paludification, erosion and hindering fish and invertebrate migration.

4 Main conservation requirements

River habitats are open systems in the sense of energy and matter flow. The main conservation requirements deal with provision and maintenance of appropriate structures and processes in the given habitat. Processes are related to the provision of balanced energy and matter flow allowing maintenance of undisturbed hydrological and morphometric features of the given habitat.

The main active management measures therefore have to concentrate on two levels. First level is the very water stream and its coastal protective belt, with measures like restoration of natural hydrology, restoration of dredged and straightened river parts, demolishing of most harmful dams etc. The second level contains the whole river catchments. Here defining and realization of suitable measures is more complicated and should be aimed at decrease of organic matter input on a catchment level.

Passive measures should concentrate not only on the legislative and administrative level, including measures like prohibition of damming of valuable rivers, or even better defining areas where damming is possible with limits or even prohibited, and concentrate especially on devices for hydropower production. The crucial thing that could bring a positive change is, in the first place, a better understanding and acceptance of natural oscillations in water levels and understanding of natural waters dynamics.

Finland declares that the most important step is changing some practices in forestry – all sites which are still at natural status should be saved according to water legislation. This same principle should be implemented to forest legislation.

As Estonia described, there is a strange dichotomy when the state supports both nature conservation and production of hydroenergy – and there is no harmony in balancing both areas of interests.

Finland also pointed out that the current way of protection leads rather to fragmentation than to networking, as conservation areas rarely include more than sections of streams. The protection is partly under the Water Act and partly under the Forest Act.

Birdlife International pointed out that for *Alcedo atthis* it is important to preserve river banks, clear, quiet and pure rivers: protect natural steep, rapid slopes on the banks of rivers, avoid dredging and daming up of breeding and feeding water bodies, diminish pollution likely to reach water bodies.

For *Ciconia nigra* it is important to preserve old forests and old trees with big branches, and river forests through the following measures:

- Restore natural flooding dynamics of streams and rivers inside or adjacent to the focal habitat.
- Stop any forestry activities during the breeding season at least on a 0.5 km radius around nests. Limit the use of pesticides in agriculture.
- Protect nest areas. Avoid cutings in the spring and the summer. Preserve big trees (potential nest trees) in forestry operations. Avoid human disturbance (tourism) in extensive natural areas. Maintain waterbodies, remove shrubs near small rivers.
- Artifical nests (this measure can be considered also for *Alcedo atthis* in case of severe threat.)

Scientifically assessed management measures are described in: Kuusemets, V.; Meier, K.; Luig, J. (2004). Jõgede kaldavööndite elupaikade ja nende kasutuse seosed taimede ja putukate mitmekesisusega. Ülo Mander, Ott Kurs (Toim.). Geograafilisi uurimusi aastatuhande vahetusel : üllitatud Tartu Ülikooli geograafia instituudi 85. aastapäevaks (357-365). Tartu: Tartu Ülikooli Kirjastus.

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5 Conservation targets

Conservation targets at national level are defined in a general way in most MS with some more specific steps to reach these targets. In Finland it is reaching favourable conservation status for the habitat, and the most important step is changing some practices in forestry, but specifically no national level targets and objectives have been set for the habitat type; the conservation will be intensified along with the renewed Water Act from the beginning of 2012, the compilation of a national restoration plan for the springs and brooks will be started in 2012. In Latvia there is National programme on Biological diversity and Environmental Policy Strategy. The first document declares a need for the conservation of “swiftly flowing river stretches”, and specific activities including assessment of biodiversity and possible losses in river stretches identified for possible construction of hydroelectric facilities or preparation a programme to diminish adverse beaver effects on flooded most valuable sections of the habitat. The second document sets a set of activities for general improvement of water quality and biodiversity. In Sweden the targets are set within the adopted strategy 16 environmental objectives and within report from 2007: Species and habitats of the Habitats Directive – the state of Sweden in 2007. In Lithuania there are no targets set, relevant strategic document are missing.

There are detailed management guidelines prepared in Sweden (both for valuable streams in general and for this habitat type in particular) and Finland (management of streams at rural areas, of ditched streams at rural areas, for management of stream habitats, for the recognition of small water bodies etc.). In Latvia the guidelines are incorporated into species protection plans, like for *Margaritifera margaritifera* or*Unio crassus*. In Estonia drafts of the guidelines were prepared by Environmental Protection Agency (in cooperation with Wildlife Estonia). There are no guidelines prepared in Lithuania.

Management plans are prepared by all MS. In Lithuania for 3 sites (main objectives are keeping favourable conditions of the habitat, main actions are establishment of buffer zone for additional protection and prevention of water pollution), in Estonia for 19 sites (describing the target area of the habitat on the protected area, main activities necessary to restore or maintain the area), in Latvia for 2 sites declared for this habitat type (main activities include destruction of beaver dams to decrease adverse effect of siltation to the population of the *Margarita margaritifera* and renewal of different age groups in the brown trout population, which host glochidia). In Finland "General management plans for cover all Natura 2000 sites. More detailed plans have been prepared for all national parks (ca 1,000,000 ha) and wilderness areas (ca 1,500,000 ha). In addition more detailed plans cover large number of smaller sites.

For Estonia, concrete conservation targets and objectives are not set at a national or regional level for 3260. Reaching the favourable conservation status for the habitat is an overall target. More specific targets are set in management plans. www.keskkonnaamet.ee/public/joelised_elupaigad/HAjoed_est.pdf;

www.narva.ee/files/2011_18.01_Narva_alamjooksu_hoiuala.pdf;

The physical environment: Lake Peipsi and its drainage basin (2006)

Stålnacke, P., Vandsemb, S., Nõges, T., Nõges, P., Mourad, D., Perk, M. Van Der

Piirimäe, K.; Pachel, K.; Reihan, A. (2010). Adaptation of a method for involving environmental aspects in spatial planning of river basin management – a case study of the Narva River basin. Estonian Journal of Ecology, 59(4), 302 - 320.

http://www.elfond.ee/images/stories/Elurikkad_ojad_eng_OK.pdf

By Nature Conservation Act, conservation objectives for Natura 2000 areas are designated taking into acount requirements of Habitats Directive 92/43/EEC to achieve or conserve the favourable conservation status of species and natural or seminatural habitats listed in Annex II or Annex I respectivelly. The objectives also consider the necessity of integrity of Natura 2000 network and the threat of deterioration of natural habitats.

By the Nature Conservation Act favourable status of natural habitat is attained if ecological structure and functions of habitats and areals of species remain unchanged or improve and broaden over time. Also the typical species of the natural habitats have to be in favourable status.

By Water Act there is fixed a waterfront protection zone which can range from 50m to 200m. In case of changing the natural state of hydrology or morphology of a lake or river (dredging, dumping waste or soil, building structures or dams, directing wastewater) a special permit from Environmental Board is needed.

6 Management measures

As Sweden informed, until the end of the 1990‘s management activities were dominated by improvement of water quality and measures to promote economically interesting fish populations. Currently the management measures consist mainly of activities for restoration of hydrological conditions like revitalization of rivers and meanders, restoration of water regime, restoration of spawning grounds, building fishpasses etc. Restoration activities should be and are taken primarily in Natura 2000, but also outside where condition of small watercourses is often bad. Secondly, there is awareness of importance to influence actively the whole catchments, because rivers are open ecosystems and intensity of sedimentation and eutrophication processes are depending upon human activities in the catchment, especially agriculture. Change of approach, based on motivation of landowners, is seen by the MS as crucial. Lithuania suggests establishment of buffer zone for additional protection and reduction of water pollution. In Sweden there is a specific large scale program for liming of streams hit by acidification for more than 20 years, nowadays most intensive in the south west part of the country where acidification is still a problem.

Conservation and restoration activities are also going on within the work with action plans for threatened species (described by Sweden and Latvia), e.g. for *Margaritifera margaritifera*.

In Finland the most valuable Natura 2000 sites are located in national parks. When the whole water body is covered by a protected area, it is usually at natural state. There is a large proportion of this habitat is a very good conditions (no need for restoration) in Northern Finland.

On the legislative and administrative level there is a crucial role of the Water Framework Directive and successive water management plans, with specific measures for complex catchments (fishpasses, river revitalizations, etc.).

It is only Finland who mentioned financing restoration activities from LIFE projects, as well as several LIFE projects concerning the freshwater pearl mussels (e.g. The Freshwater Pearl Mussel and its Habitats). Furthermore, in this MS these activities, including restoration of hydrological conditions in forest landscape, are financed by national programmes like METSO (The Forest Biodiversity Programme METSO 2008–2016).

Effectiveness of management measures is not very good. It is somewhat better at legislative level, but on practical level no Member States is satisfied, there are rather negative tendencies observed (e.g. dramatic changes observed by Finland in southern part of the country, especially outside protected areas). As Latvia described, the current level of the management activities concerning the habitat 3260 are insufficient regarding the total area coverage and distribution of the habitat 3260.

It seems that in majority of Member States there is missing data on proportion of the habitat type under optimal management and scientific assessment of effectiveness of management and restoration activities in general, but from the information provided by the MS it is obvious that the current level of the management activities concerning this habitat type are insufficient regarding the total area coverage and distribution of the habitat. The situation is worse outside Nature 2000 (Sweden even declared that “only habitat within protected areas is currently under optimal management”).

There are a number of examples of good practice. These examples are aimed at various types of projects

like river stream restoration, protection of the Freshwater Pearl Mussel and its habitats, protection and management of spawning areas and also citizens and communities involvement in water quality and aquatic biodiversity improvement.

Examples of good practice:

Estonia - Interreg III-A project

Organization of sustainable use of the fish resources of Lake Peipsi and its catchment area through protection and management of spawning areas, realized in 2005-2006, implemented by Wildlife Estonia.

The ongoing project *„Saving life in meanders and oxbow lakes of Emajõgi River on Alam-Pedja NATURA2000 area“* (2009-2012 LIFE07 NAT/EE/000120) has already showed some outstanding results. In 2011, the project gained Environmental Award prize of the year in Estonia. The project's main aim is to guarantee the habitat preservation and population stability of the European conservation priority fish species *Aspius aspius*, *Cobitis taenia*, *Misgurnus fossilis* and *Cottus gobio*. During the project, among other things, the spawning sites of these species will be restored in river Emajõgi, the oxbows will be cleaned from sediments and the floodplains cleaned from shrubs. In addition to the benefits for the fish species, the project outcomes have wider positive impact on nature conservation overall, as well as to anglers and to nature tourists.

Latvia

Community involvement in water quality and aquatic biodiversity improvement, as well Climate Change effect mitigation through innovative low cost method – Initiative “Place a Stone in a River”

Preliminary “River stretch survey matrix” was elaborated and spread to potential actors. Leaflet "Advice for stone placement in a stream and creation of riffle areas" elaborated and published. The given leaflet is intended as a tool in a step by step mood to clarify involved stakeholders (single people, farmers, activity groups, volunteers) how to use river as a purification phenomenon as well biodiversity pool, adding, repairing or improving their morphological features and biological capacity.

In approximately 30 areas low cost improvement of stream habitats is undertaken. New stone microhabitats installed and biodiversity of aquatic invertebrates as well fish stocks increased, proved by fish and aquatic invertebrate monitoring in the River Jaunupe. In several places prior to stone instalment excess weed and wooden debris was removed, as well terrestrial river belt managed and local landscape improved. Improved river stretches acts as natural water aeration units and purification systems. Theoretically, biologically treated and oxygen enriched waters entering the Baltic Sea finally can diminish total phosphorus and nitrate load to the sea thus lessening adverse effects of foreseen Climate Change induced raise of temperature and following increase of eutrophication processes.

Finland

The Finnish Environment institute (SYKE) started in 2009 a project PURO II ("The catchment area based improvement of the status of small rivers" /"Valuma-aluelähtöinen purojen tilan parantaminen" as a continuance for the previous projects 2004-2008 The main targets of the project are: 1. Deveopment of the cooperation between environment authorities and voluntary restoration partners; 2. Development and guidelining of the catchment area based inventories and planning of small rivers and 3. Awareness raising and capacity building for small river restoration.

In Puro II – project the cooperation is built in actual restoration work for the rivers Longinoja and Näsinoja in Helsinki. At the same time the project motivates local people to discover their nearby freshwater habitats and to learn about their biology and restoration with the help of increasing communication and interaction.

RESTORE LIFE+ project

The new RESTORE LIFE+ project (with the Finnish partner SYKE) is developing a network linking policy makers, river basin planners and a wide range of practitioners and experts across Europe to share information and good practice on river restoration activities. RESTORE is helping these sectors implement environmental directives by raising their awareness of effective river restoration. RESTORE is addressing the need to both understand and promote best practice in river restoration across Europe, and tackles the main problem affecting practitioners, not a lack of expertise; but a lack of opportunities for sharing best practice and knowledge. RESTORE will provide a platform for effective knowledge transfer and information sharing.

7 Main constraints and actual needs

The basic need is a good implementation of the Water Framework Directive through water management plans, as there is a general objective to get all rivers in good ecological status. Ongoing projects within Natura 2000 sites indicate a right direction. All activities shall be done in close coordination with protection and maintenance of other habitats, such as Hydrophiluous tall herb fringe communities of plains and montane to alpine levels (6510) and Lowland hay meadows (6510). There is also the intersectoral approach necessary – a good cooperation of nature conservation with forestry, agriculture, energy policy and land use in general necessary.

The main conflict is between nature conservation and energy policy. Nowadays support of so called green energy, strongly supported both politically and economically, together with potential incomes from hydroenergy created a situation when the nature conservation pulls the shorter end of the rope, is much weaker than the above described interests. Another constraint is a limited effort dedicated to areas outside Natura 2000, where, however, the conservation and restoration measures are urgently and massively needed too. There is also a problem with lack of funds and lack of understanding of interrelated processes in aquatic ecosystem and adjacent riparian areas. A passive conservation approach still prevails ‘soft management' approach.

The main interaction with other land use and economic activities is the conflict with producers of hydroenergy, as described in other part of this chapter. The second important interaction is with forestry (in Finland, for example, small running waters are usually located inside forest areas) and agriculture. Peat harvesting is a regionally important activity less important than forestry, but locally there can be a negative impact caused mainly by adding up to total load of suspended solid matter and nutrients in catchments. In Lithuania the main interaction is with recreational activities.

A question of property is also important for protection of this habitat type. In Estonia this habitat type is half-owned by state, half-owned privately. In Latvia part of the rivers belongs to the state (public rivers), while majority of small and medium scale rivers are owned by landowners through who’s property the given river flows, which can generate potential conflicts. In Finland, where the interaction with forestry is very important, more than 50% of forests are private. And also in Sweden the main stakeholders and landowners are private (forest owners, hydropower companies etc.). This is why the current land use is so often incompatible with conservation needs of the habitat type 3260.

Conflicts with forestry are rather unimportant in Estonia. Main concern is the draining for forestry purposes that causes additional sediments getting into rivers through draining ditches.There are a number of old forest drainage systems in Estonia which slightly influences the amount of sediments in natural rivers. The impact of this is not critical to the rivers and brooks. In case of reconstructing these old drainage channels or digging new ones the amount of sediments is temporarily much higher. Still, the forestry does not seem a factor influencing the quality of 3260 remarkably.

Nearly half of Estonian territory is covered by forest, the management and protection of forestecosystems is organised quite effectively (by National Forest Development Plan the area of protected forest should reach by 10 % in 2020). In case of conflict nature protection laws usually supersede the interest of forest management, so the state of rivers and brooks on forested areas closer to favourable than state of these rivers and brooks flowing in agricultural lands.

8 Recommendations

Definitely the most important topic for the workshop discussion has to be energy policy and its harmonization with nature conservation goals. With respect to a current support of renewable sources of energy and a strong support to increase a share of this energy there is a basic question of how to set the rules and financial support reasonably and with respect to other public interests and values.

Secondly, a discussion is recommended on measures and rules within the common agricultural policy for the programming period that would bring positive impacts to this habitat type (measures for water management plans implementation, agri-environmental measures rules for minimizing negative impacts to water flows etc.). The similar discussion would be useful on forestry management.

Documents used:

HIS for habitat type 3260 prepared by EE

HIS for habitat type 3260prepared by FI

HIS for habitat type 3260prepared by LV

HIS for habitat type 3260prepared by LT

HIS for habitat type 3260prepared by SE

Proposed conservation measures for birds in the different habitats prepared by BL

Pre-scoping document for the Pilot Natura 2000 Seminar at Boreal Region

Interpretation Manual of European Union Habitats

Annex I

List of typical (T-art) and characteristic species (K-art) for grasslands and coastal habitats(Sweden)

6210 typical (T-art) and characteristic species (K-art)

Scientific name	Svenskt namn	C-species	T-species	Grupp*	Region
plants					
Adonis vernalis	våradonis	K-art			
Anacamptis morio	göknycklar		T-art	2	B, K
Androsace septentrionalis	grusviva		T-art	1, 2	B
Anthyllis vulneraria	getväppling	K-art			
Arabis hirsuta	lundtrav	K-art	T-art	1, 2	B, K
Asperula tinctoria	färgmåra		T-art	1, 2	B, K
Astragalus alpinus	fjällvedel		T-art	1, 2	A, B, K
Bartia alpina	svarthö	K-art			
Bistorta vivipara	ormrot		T-art	1, 2	A, B
Botrychium lanceolatum	topplåsbräken		T-art	1	B
Botrychium lunaria	låsbräken		T-art	1	B, K
Botrychium matricariifolium	rutlåsbräken		T-art	1	B, K
Brachypodium pinnatum	backskafting	K-art			
Briza media	darrgräs	K-art			
Carex ornithopoda	fågelstarr	K-art			
Carlina vulgaris	spåtistel	K-art	T-art	1, 2	B, K
Centaurea scabiosa	väddklint	K-art			
Cirsium acaule	jordtistel		T-art	1, 2	B, K
Crepis praemorsa	klasefibbla		T-art	1, 2	B
Dactylorhiza viridis	grönkulla		T-art	2	A, B, K
Dracocephalum ruyschiana	drakblomma		T-art	1, 2	B
Drymocallis rupestris	trollsmultron		T-art	1, 2	B
Filipendula vulgaris	brudbröd	K-art			
Fragaria viridis	backsmultron	K-art	T-art	1, 2	B, K
Gentiana nivalis	fjällgentiana	K-art			
Gentianella amarella	ängsgentiana	K-art			
Gentianella campestris	fältgentiana		T-art	1, 2	B
Gymnadenia conopsea	brudsporre	K-art	T-art	2	A, B, K
Helianthemum nummularium	solvända	K-art	T-art	1, 2	B, K
Helictotrichon pratense	ängshavre	K-art	T-art	1, 2	B, K
Herminium monorchis	honungsblomster		T-art	2	B, K
Hypochoeris maculata	slåtterfibbla	K-art			
Leontodon hispidus	sommarfibbla	K-art	T-art	1, 2	B, K
Linum catharticum	vildlin		T-art	1, 2	B, K
Lotus corniculatus	käringtand		T-art	1, 2	A, B
Medicago sativa ssp. falcata	gullusern	K-art			
Orchis mascula	sankt pers nycklar	K-art	T-art	2	B, K
Orchis militaris	johannesnycklar	K-art	T-art	2	B, K
Orchis morio	göknycklar	K-art			
Orchis ustulata	krutbrännare	K-art			
Oxytropis campestris	fältvedel		T-art	1, 2	B, K
Phleum phleoides	flentimotej	K-art			
Plantago media	rödkämpar	K-art	T-art	1, 2	B, K
Poa alpina	fjällgröe		T-art	1, 2	A, B, K
Polygala amarella	rosettjungfrulin	K-art	T-art	1, 2	A, B, K
Polygala comosa	toppjungfrulin	K-art			
Polygala vulgaris	jungfrulin		T-art	1, 2	B, K
Potentilla crantzii	vårfingerört	K-art	T-art	1, 2	A, B, K
Potentilla heptaphylla	luddfingerört			1, 2	K
Potentilla sordida	backfingerört		T-art	1, 2	B, K
Potentilla tabernaemontani	småfingerört		T-art	1, 2	B, K
Pulmonaria angustifolia	smalbladig lungört		T-art	1, 2	B, K
Pulsatilla pratensis	fältsippa	K-art	T-art	1, 2	B, K
Ranunculus illyricus	ullranunkel		T-art	1, 2	B, K
Ranunculus polyanthemos	backsmörblomma	K-art			

Satureja acinos	harmynta		T-art	1, 2	B, K
Scabiosa columbaria	fältvädd	K-art	T-art	1, 2	B, K
Sedum rupestre	stor fetknopp		T-art	1, 2	B, K
Selaginella selaginoides	dvärglummer		T-art	1, 2	B, K
Taraxacum sect. Erythrosperma	sandmaskrosor		T-art	1, 2	B, K
Thalictrum alpinum	fjällruta		T-art	1, 2	B, K
Trifolium montanum	backklöver	K-art	T-art	1, 2	B, K
Veronica spicata	axveronika	K-art	T-art	1, 2	B, K
Butterflies					
Adscita statices	allmänn metallvingesvärmare		T-art	1, 2	B, K
Argynnis niobe	hedpärlemorfjäril		T-art	1, 2	B, K
Aricia artaxerxes	midsommarblåvinge		T-art	1, 2	A, B, K
Aricia eumedon	brun blåvinge		T-art	1, 2	B, K
Cupido minimus	mindre blåvinge		T-art	1, 2	B, K
Erynnis tages	skogsvisslare		T-art	1, 2	B, K
Hesperia comma	silversmygare		T-art	1, 2	B, K
Maculinea arion	svartfläckig blåvinge		T-art	1, 2	B, K
Maniola jurtina	slåttergräsfjäril		T-art	1, 2	B, K
Melitaea cinxia	ängsnätfjäril		T-art	1, 2	B, K
Polyommatus dorylas	väpplingblåvinge		T-art	1, 2	B, K
Pyrgus malvae	smultronvisslare		T-art	1, 2	B, K
Zygaena filipendulae	allmän bastardsvärmare		T-art	1, 2	B, K
Zygaena viciae	liten bastardsvärmare		T-art	1, 2	B, K

6270 typical (T-art) and characteristic species (K-art)

Vetenskapligt namn	Svenskt namn	K-art	T-art	Grupp	Region
Plants					
Ajuga pyramidalis	blåsuga	K-art	T-art		B, K
Alchemilla filicaulis	späd daggkåpa	K-art			
Alchemilla glaucescens	sammetsdaggkåpa	K-art			
Alchemilla glomerulans	källdaggkåpa	K-art			
Alchemilla murbeckiana	njurdaggkåpa	K-art			
Alchemilla plicata	trubbdaggkåpa	K-art			
Alchemilla vestita	vindaggkåpa	K-art			
Alchemilla wichurae	skårdaggkåpa	K-art			
Allium oleraceum	backlök	K-art			
Antennaria dioica	kattfot		T-art		B
Anthyllis vulneraria	getväppling	K-art			
Arabis hirsuta	lundtrav	K-art			
Arnica montana	slåttergubbe		T-art		B, K
Bistorta vivipara	ormrot	K-art	T-art		B, K
Botrychium lunaria	låsbräken	K-art	T-art		B, K
Botrychium multifidum	höstlåsbräken	K-art			
Briza media	darrgräs		T-art		B, K
Campanula persicifolia	stor blåklocka		T-art		B, K
Campanula rotundifolia	liten blåklocka	K-art	T-art		B
Carex caryophyllea	vårstarr	K-art			
Carex panicea	hirsstarr		T-art		B, K
Carex pilulifera	pillerstarr		T-art		B, K
Centaurea jacea	rödklint	K-art			
Crepis praemorsa	klasefibbla		T-art		B, K
Dactylorhiza sambucina	adam och eva		T-art		B, K
Danthonia decumbens	knägräs		T-art		B, K

Dianthus deltoides	backnejlika	K-art	T-art	B, K
Euphrasia nemorosa	grå ögontröst	K-art	T-art	B, K
Euphrasia stricta	ögontröst		T-art	B, K
Euphrasia stricta var brevipila	ögontröst	K-art		
Festuca ovina	fårsvingel			
Filipendula vulgaris	brudbröd		T-art	B, K
Galium boreale	vitmåra	K-art		
Galium verum	gulmåra	K-art		
Gentianella campestris	fältgentiana		T-art	B, K
Helianthemum nummularium	solvända		T-art	B, K
Helictotrichon pubescens	luddhavre	K-art		
Hypochoeris maculata	slåtterfibbla		T-art	B, K
Knautia arvensis	åkervädd	K-art		
Leontodon hispidus	sommarfibbla		T-art	B, K
Leucanthemum vulgare	prästkrage	K-art	T-art	B, K
Lychnis viscaria	tjärblomster	K-art		
Pedicularis sylvatica	granspira		T-art	B, K
Phleum alpinum	fjälltimotej		T-art	B
Phleum pratense ssp. serotinum	tjärblomster	K-art		
Pilosella lactucella	revfibbla	K-art	T-art	B, K
Pimpinella saxifraga	bockrot	K-art	T-art	B, K
Plantago lanceolata	svartkämpar		T-art	B
Plantago media	rödkämpar		T-art	B, K
Platanthera bifolia	nattviol	K-art	T-art	B, K
Polygala vulgaris	jungfrulin	K-art	T-art	B, K
Potentilla crantzii	vårfingerört		T-art	B, K
Potentilla erecta	blodrot	K-art		
Primula veris	gullviva	K-art	T-art	B, K
Pulsatilla vulgaris	backsippa		T-art	B, K
Ranunculus bulbosus	knölsmörblomma	K-art	T-art	B, K
Rhinanthus minor	ängsskallra	K-art	T-art	B, K
Rhinanthus serotinus	höskallra	K-art	T-art	B, K
Saxifraga granulata	mandelblom	K-art	T-art	B, K
Scorzonera humilis	svinrot		T-art	B, K
Succisa pratensis	ängsvädd	K-art	T-art	B, K
Thesium alpinum	spindelört		T-art	B, K
Thymus serpyllum	backtimjan	K-art	T-art	B, K
Fungi				
Entoloma griseocyaneum	stornopping	K-art		
Entoloma madidum	blårödling	K-art		
Hygrocybe punicea	scharlakansvaxskivling	K-art		
Microglossum olivaceum	olivjordtunga	K-art		
Beetles				
Aphodius borealis	nordlig dyngbagge		T-art	B, K
Aphodius erraticus	slät dyngbagge		T-art	B, K
Aphodius foetens	rödbukig dyngbagge		T-art	B, K
Aphodius granarius	jorddyngbagge		T-art	B, K
Aphodius ictericus	glansdyngbagge		T-art	B, K
Aphodius luridus	likdyngbagge		T-art	B

Aphodius porcus	snyltdyngbagge	T-art	B, K
Aphodius punctatosulcatus	mörk vårdyngbagge	T-art	B, K
Aphodius pusillus	smådyngbagge	T-art	B, K
Aphodius sordidus	heddyngbagge	T-art	B, K
Copris lunaris	månhornsbagge	T-art	B
Geotrupes spiniger	sandtordyvel	T-art	B, K
Geotrupes stercorarius	fälttordyvel	T-art	B, K
Geotrupes vernalis	vårtordyvel	T-art	B
Meloe proscarabaeus	svart majbagge	T-art	B, K
Onthophagus fracticornis	krokhorndyvel	T-art	B, K
Onthophagus nuchicornis	rakhorndyvel	T-art	B, K
Onthophagus similis	mindre horndyvel	T-art	B
Butterflies			
Adscita statices	allmän metallvingesvärmare	T-art	B, K
Argynnis adippe	skogspärlemorfjäril	T-art	B, K
Argynnis aglaja	ängspärlemorfjäril	T-art	B, K
Argynnis niobe	hedpärlemorfjäril	T-art	B, K
Aricia artaxerxes	midsommarblåvinge	T-art	B, K
Aricia eumedon	brun blåvinge	T-art	B, K
Aricia nicias	turkos blåvinge	T-art	B
Boloria euphrosyne	prydlig pärlemorfjäril	T-art	B, K
Boloria selene	brunfläckig pärlemorfjäril	T-art	B, K
Erynnis tages	skogsvisslare	T-art	B, K
Hesperia comma	silversmygare	T-art	B, K
Lycaena hippothoe	violettkantad guldvinge	T-art	B, K
Lycaena virgaureae	vitfläckig guldvinge	T-art	B
Maniola jurtina	slåttergräsfjäril	T-art	B, K
Melitaea cinxia	ängsnätfjäril	T-art	B, K
Polyommatus semiargus	ängsblåvinge	T-art	B, K
Pyrgus malvae	smultronvisslare	T-art	B, K
Zygaena lonicerae	bredbrämad bastardsvärmare	T-art	B, K
Zygaena minos	klubbsprötad bastardsvärmare	T-art	B, K
Zygaena osterodensis	smalsprötad bastardsvärmare	T-art	B, K
Zygaena viciae	liten bastardsvärmare	T-art	B, K
Zygaena filipendulae	allmän bastardsvärmare	T-art	B, K

6450 typical (T-art) and characteristic species (K-art)

Vetenskapligt namn	Svenskt namn	K-art	T-art	Grupp	Region
plants					
Bartsia alpina	svarthö		T-art		A, B
Calamagrostis canescens	grenrör	K-art			
Calamagrostis purpurea	brunrör	K-art			
Carex acuta	vasstarr	K-art			
Carex aquatilis	norrlandsstarr	K-art			
Carex canescens	gråstarr	K-art			
Carex heleonastes	myrstarr		T-art		A, B
Carex pallescens	blekstarr		T-art		A, B
Deschampsia cespitosa	tuvtåtel	K-art			

Elymus mutabilis	lappelm	K-art		
Equisetum fluviatile	sjöfräken	K-art	T-art	A, B
Festuca ovina	fårsvingel	K-art		
Galium boreale	vitmåra	K-art		
Galium uliginosum	sumpmåra		T-art	A, B
Molinia caerulea	blåtåtel	K-art		
Nardus stricta	stagg	K-art		
Parnassia palustris	slåtterblomma		T-art	A, B
Phalaris arundinacea	rörflen	K-art		
Pedicularis palustris	kärrspira		T-art	A, B
Pinguicula vulgaris	tätört		T-art	A, B
Salix triandra	mandelpil	K-art		
Solidago virgaurea	gullris	K-art		
Succisa pratensis	ängsvädd		T-art	A, B
Thalictrum simplex ssp. boreale	nordruta	K-art		
Trollius europaeus	smörbollar	K-art		
Veronica longifolia	strandveronika	K-art		
Viola palustris	kärrviol		T-art	A, B

6510 typical (T-art) and characteristic species (K-art)

Vetenskapligt namn	Svenskt namn	K-art	T-art	Region
plants				
Ajuga pyramidalis	blåsuga	K-art		
Antennaria dioica	kattfot		T-art	B, K
Anthoxanthum odoratum	vårbrodd	K-art		
Arnica montana	slåttergubbe		T-art	B, K
Astragalus alpinus	fjällvedel		T-art	B
Bistorta vivipara	ormrot	K-art	T-art	B, K
Botrychium lunaria	låsbräken		T-art	B, K
Briza media	darrgräs	K-art	T-art	B, K
Campanula persicifolia	stor blåklocka	K-art	T-art	B, K
Campanula rotundifolia	liten blåklocka		T-art	B
Carex capillaris	hårstarr		T-art	B, K
Carex caryophyllea	vårstarr	K-art		
Carex flava	knagglestarr		T-art	B, K
Carex hartmanii	hartmanstarr		T-art	B, K
Carex hostiana	ängsstarr		T-art	B, K
Carex montana	lundstarr		T-art	B, K
Carex ornithopoda	fågelstarr		T-art	B, K
Carex panicea	hirsstarr	K-art	T-art	B, K
Carex pilulifera	pillerstarr		T-art	B, K
Carex pulicaris	loppstarr	K-art	T-art	B, K
Centaurea jacea	rödklint	K-art		
Cirsium helenioides	brudborste	K-art	T-art	B, K
Crepis praemorsa	klasefibbla	K-art	T-art	B, K
Dactylorhiza incarnata	ängsnycklar		T-art	B, K
Dactylorhiza maculata ssp. fuchsii	skogsnycklar	K-art	T-art	B, K
Dactylorhiza maculata ssp. maculata	jungfru marie nycklar	K-art	T-art	B, K

Dactylorhiza sambucina	Adam och Eva	K-art		
Dianthus deltoides	backnejlika		T-art	B
Euphrasia stricta	vanlig ögontröst	K-art		
Euphrasia stricta var. tenuis	späd ögontröst		T-art	B, K
Gentianella amarella	ängsgentiana	K-art	T-art	B, K
Gentianella campestris	fältgentiana	K-art		
Gymnadenia conopsea	brudsporre	K-art	T-art	B, K
Hypochoeris maculata	slåtterfibbla	K-art	T-art	B, K
Leontodon hispidus	sommarfibbla	K-art	T-art	B, K
Leucanthemum vulgare	prästkrage	K-art	T-art	B, K
Linum catharticum	vildlin		T-art	B, K
Listera ovata	tvåblad	K-art		
Melampyrum cristatum	korskovall	K-art		
Ophrys insectifera	flugblomster	K-art		
Parnassia palustris	slåtterblomma		T-art	B, K
Plantago media	rödkämpar		T-art	B, K
Platanthera bifolia	nattviol	K-art	T-art	B, K
Platanthera chlorantha	grönvit nattviol		T-art	B, K
Polygala amarella	rosettjungfrulin	K-art	T-art	B, K
Polygala vulgaris	jungfrulin	K-art	T-art	B, K
Potentilla crantzii	vårfingerört	K-art	T-art	B, K
Potentilla tabernaemontani	småfingerört		T-art	B, K
Primula farinosa	majviva	K-art		
Primula veris	gullviva	K-art	T-art	B, K
Rhinanthus minor	ängsskallra	K-art	T-art	B, K
Rhinanthus serotinus	höskallra	K-art	T-art	B, K
Sanguisorba officinalis	bloptopp	K-art		
Saussurea alpina	fjällskära		T-art	B
Scorzonera humilis	svinrot	K-art	T-art	B, K
Selaginella selaginoides	dvärglummer		T-art	B, K
Serratula tinctoria	ängsskära	K-art	T-art	B, K
Succisa pratensis	ängsvädd	K-art	T-art	B, K
Thalictrum alpinum	fjällruta		T-art	B
Trifolium montanum	backkklöver	K-art		
Trollius europaeus	smörbollar		T-art	B, K
Butterflies				
Adscita statices	allmän metallvingesvärmare		T-art	B, K
Argynnis adippe	skogspärlemorfjäril		T-art	B, K
Argynnis aglaja	ängspärlemorfjäril		T-art	B, K
Aricia artaxerxes	midsommarblåvinge		T-art	B, K
Aricia eumedon	brun blåvinge		T-art	B, K
Aricia nicias	turkos blåvinge		T-art	B
Boloria euphrosyne	prydlig pärlemorfjäril		T-art	B, K
Boloria selene	brunfläckig pärlemorfjäril		T-art	B, K
Erynnis tages	skogsvisslare		T-art	B, K
Hamearis lucina	gullvivefjäril		T-art	B, K
Lycaena hippothoe	violettkantad guldvinge		T-art	B, K
Lycaena virgaureae	vitfläckig guldvinge		T-art	B

Maniola jurtina	slåttergräsfjäril	T-art	B, K
Melitaea athalia	skogsnätfjäril	T-art	B, K
Polyommatus semiargus	ängsblåvinge	T-art	B, K
Pyrgus malvae	smultronvisslare	T-art	B, K
Zygaena lonicerae	bredbrämad bastardsvärmare	T-art	B, K
Zygaena minos	klubbsprötad bastardsvärmare	T-art	B, K
Zygaena osterodensis	smalsprötad bastardsvärmare	T-art	B, K
Zygaena viciae	liten bastardsvärmare	T-art	B, K
Zygaena filipendulae	allmän bastardsvärmare	T-art	B, K

6530 typical (T-art) and characteristic species (K-art)

Vetenskapligt namn	Svenskt namn	K-art	T-art	Region
Plants				
Anemone nemorosa	vitsippa	K-art		
Antennaria dioica	kattfot		T-art	B, K
Anthoxanthum odoratum	vårbrodd	K-art		
Arnica montana	slåttergubbe		T-art	B, K
Astragalus alpinus	fjällvedel		T-art	B, K
Betula pendula	vårtbjörk	K-art		
Betula pubescens	glasbjörk	K-art		
Bistorta vivipara	ormrot		T-art	B, K
Botrychium lunaria	låsbräken		T-art	B
Botrychium matricariifolium	rutlåsbräken		T-art	B
Briza media	darrgräs (fertila)		T-art	B, K
Briza media	darrgräs	K-art		
Campanula rotundifolia	liten blåklocka		T-art	B, K
Carex capillaris	hårstarr		T-art	B, K
Carex flava	knagglestarr		T-art	B, K
Carex hartmanii	hartmanstarr		T-art	B, K
Carex hostiana	ängsstarr (fertila)		T-art	B, K
Carex montana	lundstarr		T-art	B, K
Carex ornithopoda	fågelstarr	K-art	T-art	B, K
Carex panicea	hirsstarr		T-art	B, K
Carex pulicaris	loppstarr (fertila)		T-art	B, K
Carpinus betulus	avenbok	K-art		
Cirsium helenioides	brudborste		T-art	B, K
Corylus avellana	hassel	K-art		
Cotoneaster scandinavicus	rött oxbär	K-art		
Crataegus laevigata	rundhagtorn	K-art		
Crataegus monogyna	trubbhagtorn	K-art		
Crataegus rhipidophylla	spetshagtorn	K-art		
Crepis praemorsa	klasefibbla		T-art	B, K
Cypripedium calceolus	guckusko	K-art		
Dactylorhiza maculata ssp. fuchsii	skogsnycklar	K-art	T-art	B
Dactylorhiza maculata ssp. maculata	jungfru marie nycklar		T-art	B, K
Dactylorhiza sambucina	Adam och Eva	K-art		
Dianthus deltoides (norr)	backnejlika		T-art	B
Euphrasia stricta var. tenuis	späd ögontröst		T-art	B, K

Festuca ovina	fårsvingel	K-art		
Fraxinus excelsior	ask	K-art		
Gentianella campestris	fältgentiana		T-art	B, K
Geranium sanguineum,	blodnäva	K-art		
Gymnadenia conopsea	brudsporre		T-art	B, K
Helianthemum nummularium	solvända	K-art	T-art	B, K
Hypochoeris maculata	slåtterfibbla		T-art	B, K
Leontodon hispidus	sommarfibbla	K-art	T-art	B, K
Leucanthemum vulgare	prästkrage		T-art	B, K
Linum catharticum	vildlin		T-art	B, K
Listera ovata	tvåblad	K-art		
Malus sylvestris	vildapel	K-art		
Nardus stricta	stagg		T-art	B, K
Orchis mascula	sankt pers nycklar	K-art	T-art	B, K
Parnassia palustris	slåtterblomma		T-art	B, K
Pilosella lactucella	revfibbla		T-art	B, K
Plantago lanceolata	svartkämpar	K-art		
Plantago media	rödkämpar		T-art	B, K
Platanthera bifolia	nattviol		T-art	B, K
Platanthera chlorantha	grönvit nattviol		T-art	B
Polygala amarella	rosettjungfrulin	K-art	T-art	B, K
Polygala vulgaris	jungfrulin	K-art	T-art	B, K
Potentilla crantzii	vårfingerört		T-art	B, K
Potentilla tabernaemontani	småfingerört		T-art	B, K
Primula veris	gullviva	K-art	T-art	B, K
Prunus spinosa	slån	K-art		
Quercus robur	ek	K-art		
Ranunculus ficaria	svalört	K-art		
Rhinanthus minor	ängsskallra		T-art	B
Rhinanthus serotinus	höskallra		T-art	B
Rosa canina	stenros	K-art		
Rosa dumalis	nyponros	K-art		
Rosa rubiginosa	äppelros	K-art		
Rosa villosa ssp. mollis	hartsros	K-art		
Saussurea alpina	fjällskära		T-art	B, K
Scorzonera humilis	svinrot	K-art	T-art	B, K
Selaginella selaginoides	dvärglummer		T-art	B, K
Serratula tinctoria	ängsskära		T-art	B
Sorbus hybrida	finnoxel	K-art		
Sorbus intermedia	oxel	K-art		
Succisa pratensis	ängsvädd		T-art	B, K
Thalictrum alpinum	fjällruta		T-art	B, K
Tilia cordata	lind	K-art		
Trifolium montanum	backklöver	K-art		
Trollius europaeus	smörbollar		T-art	B, K
Ulmus glabra	alm	K-art		
Ulmus minor	lundalm	K-art		
Mosses				
Orthotrichum stramineum	skogshättemossa	K-art		

Lichens				
Bacidia fraxinea	slät lönnlav	K-art		
Bacidia rubella	lönnlav	K-art		
Biatorella monasteriensis	klosterlav		T-art	B, K
Gyalecta flotowii	liten kraterlav		T-art	B, K
Gyalecta truncigena	mörk kraterlav		T-art	B, K
Gyalecta ulmi	almlav	K-art	T-art	B, K
Lobaria pulmonaria	lunglav	K-art	T-art	B, K
Lobaria scrobiculata	skrovellav		T-art	B, K
Pertusaria pertusa	porlav	K-art		
Schismatomma decolorans	grå skärelav		T-art	B, K
Sclerophora amabilis	sydlig blekspik		T-art	B, K
Sclerophora farinacea	brunskaftad blekspik		T-art	B, K
Sclerophora nivea	gulvit blekspik		T-art	B, K
Sclerophora peronella	liten blekspik		T-art	B, K
Butterflies				
Adscita statices	allmän metallvingesvärmare		T-art	B, K
Argynnis adippe	skogspärlemorfjäril		T-art	B, K
Argynnis aglaja	ängspärlemorfjäril		T-art	B, K
Aricia artaxerxes	midsommarblåvinge		T-art	B, K
Aricia eumedon	brun blåvinge		T-art	B, K
Aricia nicias	turkos blåvinge		T-art	B
Boloria euphrosyne	prydlig pärlemorfjäril		T-art	B, K
Boloria selene	brunfläckig pärlemorfjäril		T-art	B, K
Erynnis tages	skogsvisslare		T-art	B, K
Hamearis lucina	gullvivefjäril		T-art	B, K
Leptidea reali	ängsvitvinge		T-art	B, K
Leptidea sinapis	skogsvitvinge		T-art	B, K
Lycaena hippothoe	violettkantad guldvinge		T-art	B, K
Lycaena virgaureae	vitfläckig guldvinge		T-art	B
Maniola jurtina	slåttergräsfjäril		T-art	B, K
Melitaea athalia	skogsnätfjäril		T-art	B, K
Polyommatus semiargus	ängsblåvinge		T-art	B, K
Pyrgus malvae	smultronvisslare		T-art	B, K
Zygaena filipendulae	allmän bastardsvärmare		T-art	B, K
Zygaena lonicerae	bredbrämad bastardsvärmare		T-art	B, K
Zygaena minos	klubbsprötad bastardsvärmare		T-art	B, K
Zygaena osterodensis	smalsprötad bastardsvärmare		T-art	B, K
Zygaena viciae	liten bastardsvärmare		T-art	B, K

9070 typical (T-art) and characteristic species (K-art)

Vetenskapligt namn	Svenskt namn	K-art	T-art	Grupp	Region
Plants					
Agrostis capillaris	rödven	K-art			
Ajuga pyramidalis	blåsuga	K-art	T-art		A, B, K
Antennaria dioica	kattfot	K-art	T-art		A, B, K
Bistorta vivipara	ormrot		T-art		A, B, K
Botrychium lunaria	låsbräken		T-art		A, B, K

Campanula rotundifolia	liten blåklocka	K-art	T-art	A, B, K
Carex montana	lundstarr		T-art	B, K
Carex pilulifera	pillerstarr	K-art		
Dactylorhiza viridis	grönkulla	K-art	T-art	A, B, K
Danthonia decumbens	knägräs		T-art	B, K
Fragaria vesca	smultron	K-art		
Gentianella campestris	fältgentiana		T-art	A, B, K
Hypochoeris maculata	slåtterfibbla		T-art	A, B, K
Lathyrus linifolius	gökärt		T-art	B, K
Luzula campestris	knippfryle	K-art		
Melampyrum cristatum	korskovall		T-art	B, K
Moneses uniflora	ögonpyrola		T-art	A, B, K
Nardus stricta	stagg		T-art	A, B, K
Plantago media	rödkämpar		T-art	A, B, K
Primula veris	gullviva		T-art	B, K
Prunella vulgaris	brunört	K-art		
Pyrola media	klockpyrola		T-art	A, B, K
Succisa pratensis	ängsvädd	k-art	T-art	A, B, K
Serratula tinctoria	ängsskära		T-art	B, K
Veronica chamaedrys	teveronika	K-art		
Veronica officinalis	ärenpris	K-art		
Mosses				
Homalothecium sericeum	guldlockmossa	K-art		
Orthotrichum stramineum	skogshättemossa	K-art		
Lichens				
Alectoria sarmentosa	garnlav		T-art	B
Arthonia pruinata	matt pricklav		T-art	B, K
Bacidia fraxinea	slät lönnlav		T-art	B, K
Bacidia rubella	lönnlav		T-art	B, K
Calicium adspersum	gulpudrad spiklav		T-art	B, K
Calicium quercinum	ekspik		T-art	B, K
Chaenotheca phaeocephala	brun nållav		T-art	B, K
Cliostomum corrugatum	gul dropplav		T-art	B, K
Collema flaccidum	slanklav		T-art	B, K
Collema nigrescens	läderlappslav		T-art	B
Cyphelium inquinans	sotlav		T-art	B, K
Diplotomma alboatrum	vitskivlav	K-art		
Fuscopannaria mediterranea	olivbrun gytterlav		T-art	B, K
Gyalecta ulmi	almlav	K-art	T-art	B, K
Hypogymnia farinacea	grynig blåslav		T-art	B
Lecanactis abietina	gammelgranslav		T-art	B, K
Lecanographa amylacea	gammelekslav		T-art	B, K
Leptogium saturninum	skinnlav		T-art	B, K
Lobaria pulmonaria	lunglav	K-art	T-art	B, K
Lobaria scrobiculata	skrovellav		T-art	B, K
Lobaria virens	örtlav		T-art	B, K
Megalaria grossa	ädellav		T-art	B, K
Nephroma laevigatum	västlig njurlav		T-art	B, K
Nephroma parile	bårdlav		T-art	B, K

Nephroma resupinatum	luddlav		T-art	B, K
Parmeliella triptophylla	korallblylav		T-art	B, K
Peltigera collina	grynig filtlav		T-art	B, K
Pertusaria flavida	gul porlav		T-art	B, K
Pleurosticta acetabulum	kyrkogårdslav	K-art		
Ramalina farinacea	mjölig brosklav	K-art		
Ramalina fastigiata	rosettbrosklav	K-art		
Schismatomma decolorans	grå skärelav		T-art	B, K
Sclerophora coniophaea	rödbrun blekspik	K-art	T-art	B, K
Sclerophora nivea	gulvit blekspik		T-art	B, K
Sclerophora farinacea	brunskaftad blekspik		T-art	B, K
Sclerophora amabilis	sydlig blekspik		T-art	B, K
Sclerophora peronella	liten blekspik		T-art	B, K
Thelotrema lepadinum	havstulpanlav		T-art	B, K
Usnea filipendula	skägglav	K-art		
Usnea hirta	luddig skägglav	K-art		
Usnea subfloridana	kort skägglav	K-art		
Butterflies				
Melitaea athalia	skogsnätfjäril		T-art	B, K
Argynnis aglaja	ängspärlemorfjäril		T-art	B, K
Argynnis adippe	skogspärlemorfjäril		T-art	B, K
Zygaena osterodensis	smalsprötad bastardsvärmare		T-art	B, K
Zygaena viciae	liten bastardsvärmare		T-art	B, K
Zygaena filipendulae	allmän bastardsvärmare		T-art	B, K
Zygaena lonicerae	bredbrämad bastardsvärmare		T-art	B, K
Zygaena minos	klubbsprötad bastardsvärmare		T-art	B, K
Adscita statices	allmän metallvingesvärmare		T-art	B, K
Boloria euphrosyne	prydlig pärlemorfjäril		T-art	B, K
Boloria selene	brunfläckig pärlemorfjäril		T-art	B, K
Erynnis tages	skogsvisslare		T-art	B, K
Pyrgus malvae	smultronvisslare		T-art	B, K
Hamearis lucina	gullvivefjäril		T-art	B, K
Lycaena hippothoe	violettkantad guldvinge		T-art	B, K
Lycaena virgaureae	vitfläckig guldvinge		T-art	B
Polyommatus semiargus	ängsblåvinge		T-art	B, K
Maniola jurtina	slåttergräsfjäril		T-art	B, K
Aricia artaxerxes	midsommarblåvinge		T-art	B, K
Aricia eumedon	brun blåvinge		T-art	B, K
Aricia nicias	turkos blåvinge		T-art	B, K
Coenonympha hero	brun gräsfjäril		T-art	B, K
Leptidea sinapis	skogsvitvinge		T-art	B, K
Leptidea reali	ängsvitvinge		T-art	B, K

1630 typical (T-art) and characteristic species (K-art)

Vetenskapligt namn	Svenskt namn	K-art	T-art	Region
Plants				
Agrostis stolonifera	krypven	K-art		

Argentina anserina ssp. groenlandica	grönlandsgåsört	K-art	T-art	B
Armeria maritima	trift		T-art	B, K
Blysmus compressus	plattsäv		T-art	B, K
Blysmus rufus	rödsäv	K-art	T-art	B, K
Calamagrostis stricta	madrör	K-art		
Carex glareosa	klapperstarr	K-art		
Carex mackenziei	norskstarr	K-art		
Carex viridula var. pulchella	liten ärtstarr	K-art	T-art	B
Centaurium littorale	kustarun	K-art	T-art	B, K
Centaurium pulchellum	dvärgarun	K-art	T-art	B, K
Eleocharis uniglumis	agnsäv	K-art		
Euphrasia bottnica	strandögontröst	K-art	T-art	B
Euphrasia frigida var. baltica	klapperögontröst	K-art	T-art	B
Festuca rubra	rödsvingel	K-art		
Gentianella uliginosa	sumpgentiana		T-art	B, K
Glaux maritima	strandkrypa		T-art	B, K
Juncus arcticus ssp. balticus	östersjötåg	K-art		
Juncus gerardii	salttåg	K-art		
Lathyrus palustris	kärrvial		T-art	B
Odontites litoralis	strandrödtoppa	K-art	T-art	B, K
Ophioglossum vulgatum	ormtunga	K-art	T-art	B, K
Parnassia palustris	slåtterblomma	K-art	T-art	B, K
Plantago coronopus	strandkämpar		T-art	B, K
Plantago major ssp. intermedia	åkergroblad		T-art	B, K
Plantago maritima	gulkämpar	K-art	T-art	B, K
Primula nutans	strandviva		T-art	B
Puccinellia capillaris	saltgräs	K-art		
Puccinellia maritima	revigt saltgräs		T-art	B, K
Sagina maritima	strandnarv	K-art	T-art	B, K
Sagina nodosa	knutnarv	K-art		
Salicornia europaea	glasört	K-art		
Samolus valerandi	bunge	K-art	T-art	B, K
Schoenoplectus maritimus	havssäv	K-art		
Seriphidium maritimum ssp. humifusum	baltisk strandmalört		T-art	B, K
Spergularia salina	saltnarv	K-art	T-art	B, K
Suaeda maritima	saltört	K-art		
Taraxacum sect. Palustria	strandmaskrosor		T-art	B, K
Tetragonolobus maritimus	klöverärt		T-art	B, K
Trifolium fragiferum	smultronköver		T-art	B, K
Triglochin maritimum	havssälting	K-art	T-art	B, K
Triglochin palustris	kärrsälting		T-art	B, K
Birds				
Calidris alpina ssp. schinzii	sydlig kärrsnäppa		T-art	B, K
Calidris temminckii	mosnäppa		T-art	B
Charadrius hiaticula	större strandpipare		T-art	B, K
Haematopus ostralegus	strandskata		T-art	B, K
Limosa limosa	rödspov		T-art	B, K
Numenius arquata	storspov		T-art	B, K
Philomachus pugnax	brushane		T-art	B, K

Recurvirostra avosetta	skärfläcka		T-art	B, K
Sterna albifrons	småtärna		T-art	B, K
Tringa totanus	rödbena	K-art	T-art	B, K
Vanellus vanellus	tofsvipa		T-art	B, K