Master Plan for North Livonia

Wetland Protection and Rural Development in the
Transboundary Area of Latvia and Estonia

February 2006

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General legends of the maps in this report

Preface

The underlying report summarizes the outcomes of the PIN/Matra project "Integrated Wetland and Forest Management in the Transborder Area of North Livonia (Estonia-Latvia)" funded by the Dutch Ministry of Agriculture, Nature and Food Quality and the Dutch Ministry of Foreign Affairs.

The State Nature Conservation Centre, Pärnu – Viljandi Region (formerly Nigula State Nature Reserve Administration (Estonia) and the North Vidzeme Biosphere Reserve Administration (Latvia) were the local project partners responsible for the project implementation locally, while Wageningen International (formerly IAC, The Netherlands) was the Project Holder responsible for the overall project implementation process.

The Transboundary Steering Committee with representatives from the two Ministries of Environment and local and regional administrations and interest groups supervised the project implementation.

The Project Management Team with representatives of Wageningen International and the two local project implementation organisations was responsible for the guidance of the Local Project Manager and the work groups.

The following workgroups including a total of 80 experts from the two countries and assisted by Dutch and Danish advisors have carried out the required inventories and produced recommendations for the Master Plan for each of their sectors:

- Hydrology Group, headed by Dr. Elve Lode
- Game Management Group, headed by Jānis Ozoliņš
- GIS Group, headed by Tiina Dishlis
- Forestry Group, headed by Janis Rozitis
- Ecology Group, headed by Mārtiņš Lūkins
- Estonian Native Cow Group, headed by Käde Kalamees
- Nature Management Group headed by Agu Leivits.

The final Technical Reports of the workgroups can be found on the CD included in this Master Plan.

The Project Management Team wishes to thank all those who contributed to the success of the project including the representatives of the Ministries of Environment of Latvia and Estonia for allocating co-funding and for showing their commitment to the implementation and follow up of the project.

The Project Management Team hopes that this Master Plan will contribute to further strengthening the ties between Latvia and Estonia in the field of nature conservation and that it will contribute to the sustainable development of the transboundary area of North Livonia.

Kilingi Nomme, February 2006

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From Estonia: Urmas Aava, Olav Etverk, Käde Kalamees, Tarmo Kulu, Väino Lill, Marju Paas, Ado Seimoja, Kalle Song, Indrek Talts, Alvar Vallau, Enn Vilbaste, Hanno Zingel.







Abbreviations

BD	The Birds Directive (European Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds)
CH	Cultural Heritage
DK	Denmark
EE	Estonia
ENCBS	Estonian Native Cattle Breed Society
EU	European Union
GIS	Geographical Information System
HD	The Habitats Directive (European Council Directive 92/43/EEC of 21 May 1992 on the Conservation of habitats and wild animals and plants)
IAC	International Agricultural Centre, The Netherlands (new name is Wageningen International)
IBA	Important Bird Areas in Europe
JSC LVM	Joint Stock Company "Latvijas Valsts Mezi"
LPM	Local Project Manager
LV	Latvia
MR	Micro Reserves
NL	The Netherlands
NNRA	Nigula Nature Reserve Administration, Estonia
NR	Nature Reserve
NVBR	North Vidzeme Biosphere Reserve, Latvia
PEEN	Pan-European Ecological Network
PIN/Matra	Dutch funding programme under the Ministry of Foreign Affairs and the Ministry of Agriculture, Nature and Food Quality
PIO	Project Implementation Organizations
pSCI	potential Site of Community Importance
SCI	Site of Community Importance
SFS	State Forest Service
SPA	Special Protected Area
SPNT	Specially Protected Nature Territory
MP	Management Plan
TPA	Temporary Protected Area
WFD	The European Water Framework Directive
WKH	Woodland Key Habitat
WWF	World Wide Fund for Nature







Executive Summary

The project "Integrated Wetland and Forest Management in the Transborder Area of North Livonia (Estonia-Latvia)" funded by the PIN/Matra programme under the Dutch Ministries of Agriculture, Nature and Food Quality and Foreign Affairs was implemented by Wageningen International (formerly IAC) from 2002-2006. The State Nature Conservation Centre, Pärnu – Viljandi Region (EE), and North Vidzeme Biosphere Reserve Administration (LV) were the Local Project Partners. The overall project objective was to support the protection and management of the biodiversity and to integrate biodiversity protection into socio-economic development in a transboundary context.

The project resulted in the underlying Transboundary Master Plan presenting an analysis of main issues related to transboundary biodiversity management and providing directions for tuned development and management of the transboundary area.

The Master Plan contains recommendations for

1) Protected areas management,
2) Water management and hydrology,
3) Forestry,
4) Eco-tourism,
5) Cultural Heritage,
6) Game management and hunting,
7) Agriculture,
8) The Estonian Native Cattle,
9) Nature management plans for N-2000 sites,
10) Designation of a transboundary Ramsar site.

The recommendations are based on the technical reports produced during the project by 80 different experts, working in 7 work groups. The Master Plan aims to provide direction to the development of future projects for harmonised nature management, physical planning and rural development. The target group includes local municipalities, national and regional authorities, water managers, state forest managers and local interest organisations.

One of the most tangible outputs of the project is the creation of a transboundary GIS database with digital




maps holding all relevant information about the topics mentioned above. This GIS is an indispensable tool for future cross border co-operation.
The project provided insight in the hydrological system of the transboundary area and lead to the conclusion that in many cases borders of protected areas do not follow the borders of hydrological catchments. It is therefore recommended to adjust the borders of protected areas so they will coincide with the borders of hydrological units or catchments. It is strongly recommended to prohibit the maintenance or restoration of drainage systems in the direct vicinity of protected areas. More detailed investigations on the possibilities for restoring the natural water regime for the protected areas are needed.
An important prerequisite for the long-term biodiversity conservation is the continuation of traditional agriculture of the semi-natural habitats. Long-term agreements with farmers are important to sustain the management of these habitats.
The project area is rich with forests. Some forests are intensively managed and others strictly protected. Many forests with high biodiversity values located on the Latvian side are often insufficiently protected. The optimal way to protect these valuable forests is to designate them as strictly protected area and to include them in the existing system of protected areas.
The Master Plan promotes the co-ordination of issuing hunting permits, exchange of information about differences on hunting seasons and game species and exchange of monitoring and field research data.
The project strengthened transboundary co-operation in the field of tourism and a good base for further development of tourism harmonized with the protection of nature, cultural and historical values was laid. Stronger co-operation between municipalities in the field of tourism across the border is another important spin-off of the project.
The Project Steering Committee agreed to support the designation of the three Ramsar sites Nigula NR (EE), Sookuninga NR (EE) and Ziemelu Purvi (LV) as one Transboundary Ramsar site and the procedure to achieve this was set in move. This Master plan holds management objectives and presents an overview of measures to ensure the long-term protection of the Transboundary Ramsar Site and other areas valuable for nature conservation.
Draft nature management plans were developed simultaneously for two Natura 2000 sites (pSCIs) on both sides of the border (Ziemelu Purvis (LV) and Sookuninga NR (EE)) in order to secure favourable conservation status for the Natura 2000 habitat types and species. The tuned setting of objectives and design of management activities for two sites separated by a country border is unique in the implementation of Natura 2000.
To sustain the transboundary co-operation on management and development of North Livonia the Joint Transboundary Commission on Nature Conservation between Estonia and Latvia was established during the last Project Steering Committee meeting.

Last but not least the project supported the Estonian Native Cow Society to safe the Estonian Native Cow from extinction and re-introduced the cow to small farm households to maintain the semi natural grasslands designated as N-2000 site. The Estonian Native Cow appeared to be a useful “manager” of semi-natural meadows.

1 Background Information

1.1 Introduction to the Master Plan

This Transboundary Master Plan, which has no legally binding status, presents an integrated vision for sustainable development of North Livonia including recommendations for strengthening the ecological and hydrological integrity of the transboundary wetland complex, for sustainable use of water resources and for sustainable development of agriculture and forestry.
It is a strategic document holding recommendations for physical planning, regional development planning (including tourism), planning of infrastructure, investment plans and policy development. The Master Plan presents an overview of current situation, highlights problems and offers recommendations for future development.

The overall objective of the Transboundary Master Plan is:
Maintaining and strengthening ecological integrity of the transboundary area - integrating socio-economic development and biodiversity conservation.
To meet the overall objective, the Master Plan has the following more specific objectives:

- Improved protection of valuable areas by combining the borders of protected areas with hydrological and ecological borders.
- Improved conditions for the protection of the biodiversity of wetland complexes, specifically open mires and mire edges, through restoration activities.
- Coordinate surveys, research and monitoring.
- Improved protection of habitats and species outside of protected areas in the internationally important transboundary migration corridor (PEEN core area).
- Development of sustainable tourism.
- Introduction of sustainable agriculture and forestry and support the management of semi-natural grasslands.
- Increased awareness of local people about the natural values of North Livonia.

1.2 North Livonia

The name Livonia is not shown on any map produced nowadays. Long ago, the Livonians lived on a strip of the shore up to a hundred kilometres wide from the Daugava River to the present Estonian frontier.
The northern part (North Livonia) of this ancient land along the eastern coast of the Livonian Bay has always been a contact point between three nations (Latvia, Estonia and Livonia) and three cultures.
Livonia has always been an area with specific borderland characteristics like bootlegging, smuggling, occupation wars and partisan resistance.
The term Livonia has been used for various geographical areas. Figure 2 shows the ancient area of Livonian settlements.
The order of the Brothers of the Sword conquered the area of Latvians, Livonians and Estonians after which

Figure 1. Location of the project area.

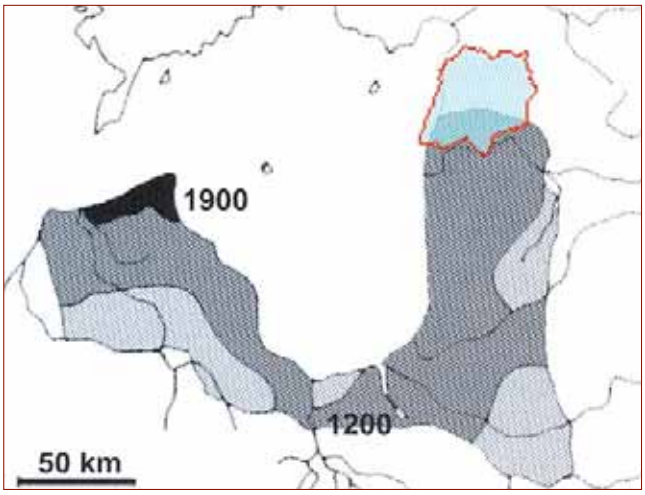


Figure 2. Territory of Livonia through 800 years. Light grey: territories where Livonian language was in use in 1200. Dark grey: Livonian territories in 1200. Black: Livonian territories in 1900 (Wiiki, 2005). The red line marks the project area.

Figure 3. Livonia as part of the Russian Empire in 1917.

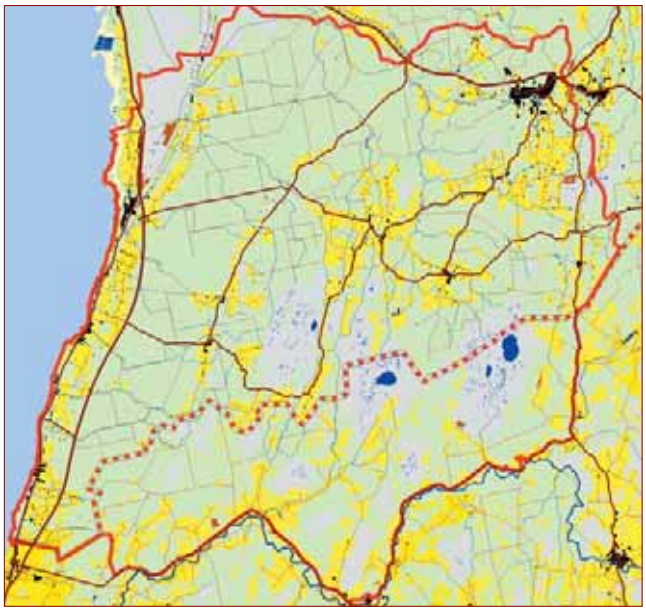
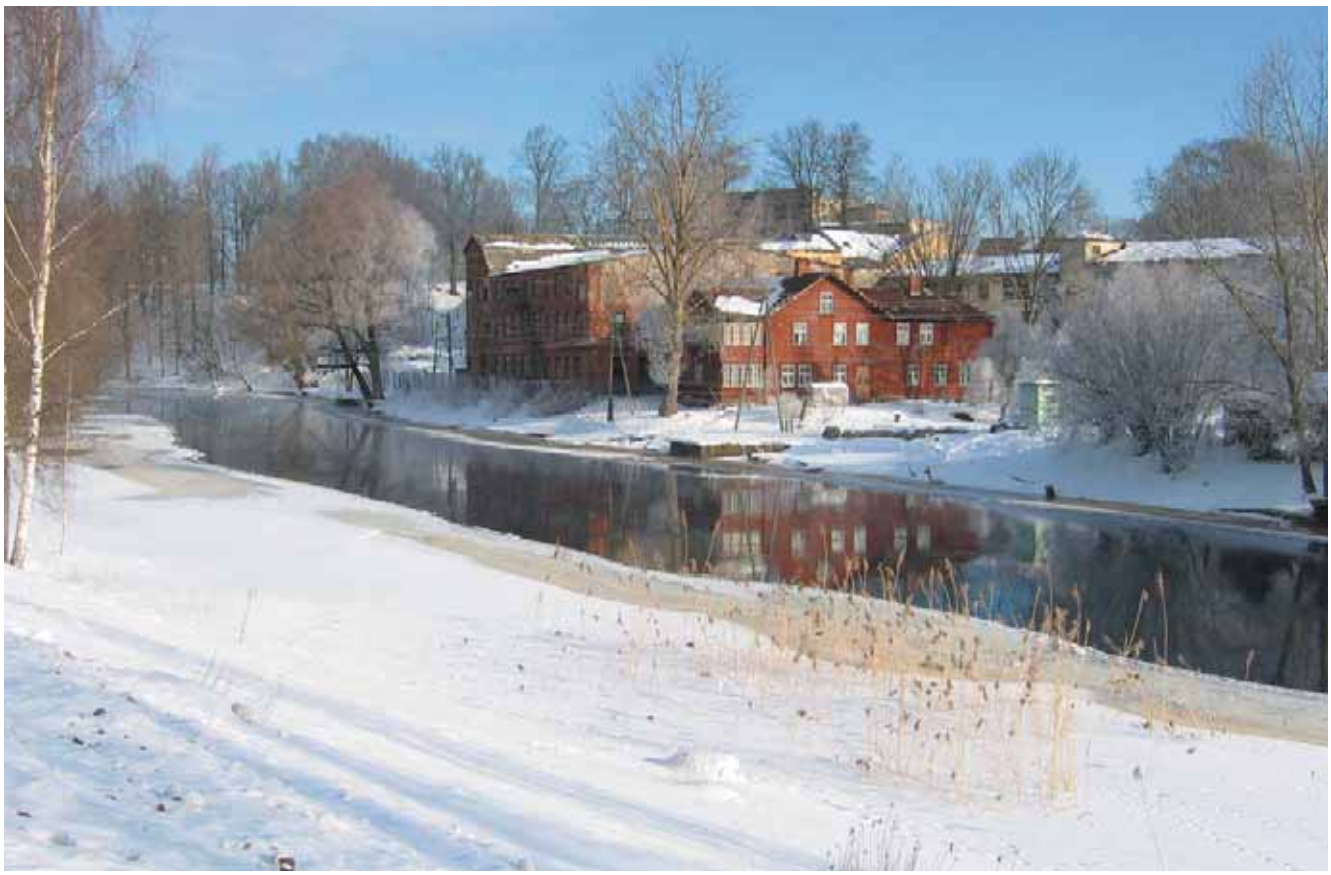


Figure 4. The project area, marked by the red line. The dotted red line marks the border between Estonia and Latvia.

they named the territory Livonia.
Figure 3 shows the Livonian province under the Russian Empire in the 18th century.
The first written notes about settlements in Livonia date back to the 16th century and referred to a port in the mouth of the Häädemeeste River. The plague during the North War (1700-1721) destroyed 2/3 of the population. Immigrants formed new settlements and the population started to grow. The fields were not favourable for agriculture, but the sea and the forest supported the livelihoods. Especially at the coastline the shipbuilding developed very quickly with supplies of the high forest pines from the neighbouring forests.
Today, the Livonian language, which is related to the Estonian and Finish language, has nearly become extinct. It is however possible to find remnants of the ancient and original Livonian culture even today.
The area of North Livonia is located in Pärnu County (SW Estonia) and Valmiera and Limbazi Counties (NW Latvia). The area stretches from the coastal municipalities of Ainazi (LV, Limbazi County) and Häädemeeste (EST, Pärnu County) to include Saarde (EST, Pärnu County); Staicele (LV, Limbazi County) and Mazsalaca (LV, Valmiera County) municipalities along the Latvian-Estonian border.
North Livonia includes the North Vidzeme Biosphere Reserve administrated by the NVBR administration in Latvia and the Nigula, Sookuninga and Laulaste Nature Reserves administrated by the State Nature Conservation Centre, Pärnu – Viljandi Region in Estonia.
After Latvia and Estonia gained freedom in 1990, the rural areas of North Livonia were abandoned at a high pace. This process however seems to have stabilized and the downward trend has levelled out.
Today, the North Livonian region is sparsely inhabited. Most of the inhabitants have jobs in the local municipalities, forestry, schools, agriculture and fishery. More and more people work within the tourism business. The population density is highest at the coastline with popular holiday destinations like Häädemeeste in Estonia and



Salacgriva and Ainazi in Latvia. Kabli and Treimani in Estonia are villages on the coastline offering tourist facilities. Inland, the two bigger towns are Kilingi-Nõmme and Mazsalaca. Rozeni, Massiaru, Staicele, Laiksaare, Tali, Veelikse, Jäärja and Ramata are smaller villages in the area.

The Via Baltica is the main transportation route with Ikla/Ainazi as an important border crossing point. After joining the European Union, also the other border points Mõisaküla/Ipiki and Jäärja/Ramata are more used. The main roads in North Livonia are in good conditions, while many of the local countryside roads are in need of improvements.

1.3 Physical Information

The climate in the region of North Livonia is a transition from the maritime to the continental. The Baltic Sea has a strong influence on the climate. The yearly average inland temperature is 5-6 degree, where the temperature at the coastline is 1½-2 degrees higher. The average precipitation is 700-750 mm (mainly from April to October) and the evaporation is 420 mm per year. The wind direction is mainly from southeast, but in the warm seasons the west or northwest winds are more dominant. The duration of snow cover has changed considerably in recent times: 30 years ago the average period with snow cover was about 100 days per year, while today the average is approximately 70 days per year (Jaagus 1999).

North Livonia is located in a gently rolling moraine plain with small hills and low laying river valleys. Bogs are stretching widely over the transboundary area and form a 20 km wide wetland zone.

The less fertile soils with paludified sod-podzolic and histosoils soils dominate in the western part of the area and the sod-podzoilic soils dominate in the eastern part. The high percentage of sod-podzolic and paludified sod-podzolic soils make the area unsuitable for agricultural use. The percentage of acid soils is considerably higher than usually in Southern Estonia and in Northern Latvia. The altitude of the project area is 40-60 m above sea level.

The surface waters include the Salaca River, the upper course of the Reiu River (73 km) and the Ura River (46 km). A system of drainage ditches is debouching to the rivers and gathering water from the bogs. The Järve Lake is located in the Nigula bog, the Soka Lake in the Tõrga-Kodaja bog, and the Lielezers Lake and Mazezers Lake in the Rongu-Ollu bog. The project area is covered with a dense net of watercourses (4.8 km/km^2).

1.4 Biological Information

North Livonia is located in the hemi-boreal zone. The land cover classification according to the Corine Land Cover system 2000 is presented in Table 1. The forest habitats together with transitional woodlands cover 68% of the project area. Mixed forests (23%) are the most widespread land cover type in the region. The deciduous and broad-leaved forests (13%) are growing on rich soils and the coniferous forests (19%) on poor soils. The

Table 1. CORINE Land Cover data 2000 for the North Livonia project area.

Code	Corine Land Cover class (level 3)	Estonia		Latvia		North Livonia	
		Area ha	%	Area ha	%	Area ha	%
112	Discontinuous urban fabric	497	0.6%	94	0.3%	591	0.5%
121	Industrial or commercial units	141	0.2%	3	0.0%	144	0.1%
211	Non-irrigated arable land	9,357	11.3%	3,623	11.8%	12,98	11.4%
242	Complex cultivation patterns	1,417	1.7%	266	0.9%	1,683	1.5%
243	Agricultural land with significant areas of natural vegetation	7,382	8.9%	990	3.2%	8,372	7.4%
231	Pastures	2,072	2.5%	408	1.3%	2,480	2.2%
321	Natural grasslands	615	0.7%	0	0.0%	615	0.5%
311	Broad-leaved forest	9,385	11.3%	5,390	17.5%	14,775	13.0%
312	Coniferous forest	16,650	20.1%	4,815	15.7%	21,465	18.9%
313	Mixed forest	20,622	24.9%	6,333	20.6%	26,955	23.7%
324	Transitional woodland/shrub	10,180	12.3%	4,142	13.5%	14,322	12.6%
411	Inland marshes	349	0.4%	0	0.0%	349	0.3%
412	Peat bogs	4,131	5.0%	4,398	14.3%	8,529	7.5%
512	Water bodies	22	0.0%	293	1.0%	315	0.3%
Total		**82,820**	**100%**	**30,755**	**100%**	**113,575**	**100%**
Total by habitat groups:							
	Artificial landscapes	638	0.8%	97	0.3%	735	0.6%
	Agricultural landscapes	18,156	21.9%	4,879	15.9%	23,035	20.3%
	Grasslands	2,687	3.2%	408	1.3%	3,095	2.7%
	Forest	46,657	56.3%	16,538	53.8%	63,195	55.6%
	Transitional woodlands/schrub	10,180	12.3%	4,142	13.5%	14,322	12.6%
	Wetlands	4,502	5.4%	4,691	15.3%	9,193	8.1%
Total		**82,820**	**100%**	**30,755**	**100%**	**113,575**	**100%**

largest part of the forested area is managed as production forest, where drainage is used to intensify the production. Small alder swamp forest patches, typical for the region before the forest drainage in the 1960-70ties, are still found. Also broad-leaved forest stands and spruce forest stands have been more abundant in the eastern part of project area on the drumlins which today are mainly exploited for agricultural purposes.

Agricultural lands (20%) are located mainly on the hilly areas on the drier and richer soils and surrounded by wet lowlands. The poor paludified grassland patches (2-3%) are located mainly in the surroundings of the mires, which cover more than 8% of the project area. Natural open plateau-like raised bogs are the main mire type in the region.

Species typical for natural landscapes are relatively common in region. Unlike other parts of Estonia here species with southern (hemi-boreal) distribution occur and compared with Latvia more northern (boreal) species can be found in North Livonia.

The landscape consists of a mosaic of wetlands, forests and agricultural land with few humane settlements

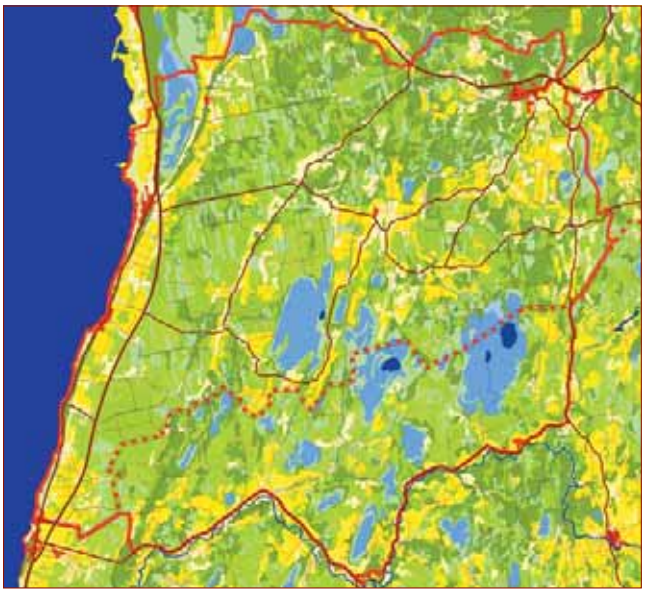


Figure 5. CORINE Land Cover classes of North Livonia project area (CORINE Land Cover 2000 data).

which offers valuable habitats for large mammals including carnivores like brown bear, grey wolf and lynx. The dense net of watercourses offers a favourable habitat for

Table 2. Areas with international protection in North Livonia (113,575 ha).

Type of protected territory	Estonia		Latvia		North Livonia	
	Area [ha]	%	Area [ha]	%	Area [ha]	%
Natura 2000 Bird Areas (SPA)	23,572	28.5	5,889	19.1	29,461	25.9
Natura 2000 Habitat Sites (pSCI)	14,950	18.1	6,751	21.9	21,701	19.1
Ramsar Sites	12,267	14.8	5,318	17.3	17.585	15.5
Important Bird Areas (IBA)	28,518	34.0	6,791	22.1	34,950	30.8

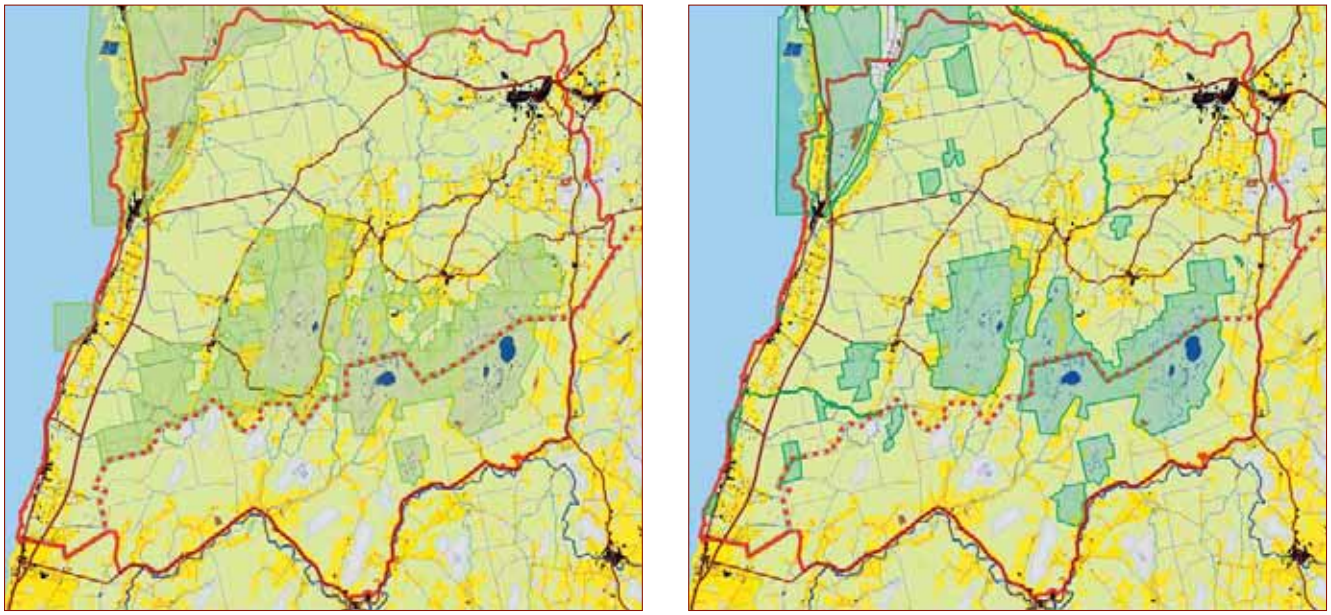


Figure 6. The Natura 2000 sites (green shading). Left: SPAs designated according to EU Birds Directive. Right: pSCIs designated according to the EU Habitats Directive.

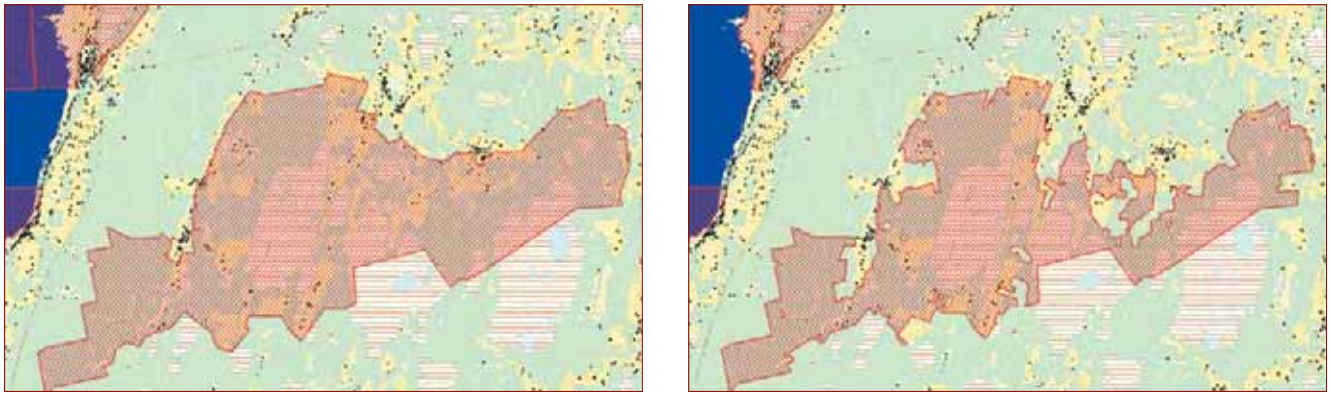


Figure 7. IBA and SPA "Põhja-Liivimaaa". Left: Designated IBA on the base of C level criteria (23,457 ha, border length 110 km). Right: Designated SPA after public hearing in May 2004 (18,870 ha, border length 201 km).

aquatic mammals (beavers, otters, polecat). The pine martin is abundant in the forests and in some of the old-growth forest fragments the very rare and endangered flying squirrel can be found.

The project area is an important breeding site for several rare and vulnerable bird species typical for old-growth forests like black stork, goshawk, capercaillie, ural owl, pygmy owl, woodpeckers (white-backed, three-toed, grey-headed) and red-breasted flycatcher. Large raptors such as the golden eagle and spotted eagle are good indicators of valuable semi-open landscapes. Arctic species (black-throated diver, willow grouse, golden plover, wood sandpiper, whimbrel) find their breeding places in the large bogs, while the white stork and corncrake are numerous in the meadows. Traditional agricultural crop fields are important staging places for migratory water birds, such as the tundra and whooper swans, bean and white-fronted geese and cranes. The small permanent and temporary water bodies are favourite spooning sites for species like common toad, grass frog, moor frog and pool frog. The area is also rich with different invertebrate species including notable butterflies, moths and dragonflies.

Table 3. Protected territories of the project area (113,575 ha).

Type of protected territory	Estonia		Latvia		North Livonia	
	Area [ha]	%	Area [ha]	%	Area [ha]	%
Nature reserves (NR, SPNT)	16,840	20.3	6,751	21.9	23,591	20.8
Buffer zone of Biosphere Reserve (BZ)	-	-	24,004	78.0	24,004	21.1
Areas with temporary protection (TPA)	9,316	11.2	-	-	9,316	8.2
Species protection sites (MR)	778	0,9	760	2.5	1,869	1.6
Woodland Key Habitats (WKH)	331	0,4				

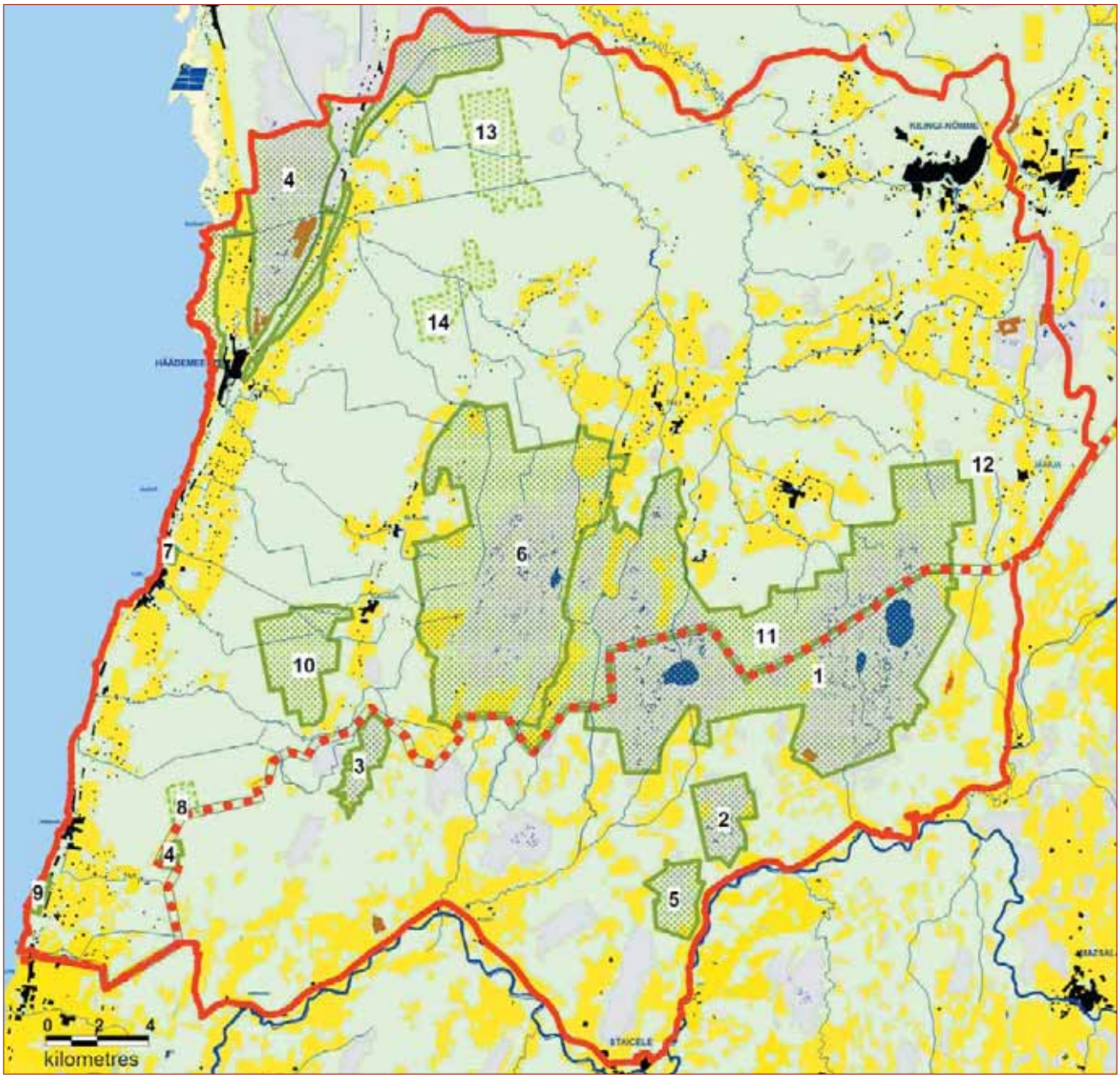


Figure 8. Protected areas: 1) Ziemelu purvi SPNT, 2) Pirtzmeze SPNT, 3) Kalna SPNT, 4) SPNT, 5) SPNT, 6) Nigula NR, 7) Kabli NR, 8) Kivikupitsa NR, 9) Metsepole NR, 10) Laulaste NR, 11) Sookuninga NR, 12) Järveotsa NR, 13) NR, 14) Laiksaare NR, 15) Luitemaa NR. (Nr. 8, 12, 13 and 14 is currently being designated as NR)

1.5 Protection status of the biodiversity in the project area

Nigula State Nature Reserve with an area of 2,730 ha was established 50 years ago (1957). Today, the project area has a complicated network of different types of protected territories established according to Estonian and Latvian nature legislations developed during recent decades. The network of protected areas was shaped by the international nature protection obligations (IBA, Natura 2000, MAB, Ramsar Convention) and by national

nature conservation programs (Forest Conservation Areas Network, Woodland Key Habitats).
The wetland complex on both sides of the border is of substantial hydrological, biological and ecological importance. This wetland complex consists of the Nigula, Sookuninga and Ziemelu Purvi Nature Reserves. These areas are designated as IBAs and Natura 2000 sites (pSCIs), and as International important core area in Pan European Ecological Network (PEEN). Since 1997, the Nigula Nature Reserve (Estonia) is designated as a Ramsar area (No. 910) and since 2003, the Ziemelu purvi (Latvia) is a Ramsar site (No. 1385). The Sookuninga (Estonia) will be a Ramsar site from 2006 onward. These three areas together will form one Transboundary Ramsar site. The elaboration process of two parallel Nature Management Plans for Sookuninga and Ziemelu Purvi is described in section 3, while recommendations for the management and the designation of the three Ramsar Sites as a Transboundary Ramsar site is presented in section 4.
According to the first European IBA inventory published in 1989, Nigula Nature Reserve (4,880 ha) and Ollu-Rongu and Soka-Kodaja bogs were identified as IBA sites based on a proposal submitted by the former Soviet Union (Grimmet & Jones 1989). According to the first national IBA inventories made in Estonia (Kalamees 2000) and Latvia (Racinskis & Stīpniece 2000), Nigula, Kodaja & Rongu bogs (EE031) with a total area of 8,850 ha on the Estonian side, together with the Kapzemes, Ollu and Pirtsmeza bogs (LV036) with a total area of 11,000 ha, were included into the BirdLife International database (Heat & Evans 2000). According to national inventories made in Estonia (Kuus, Kalamees 2003) and Latvia (Racinskis 2004) during 2001-2004 for identifying IBAs of European importance the Nigula, Kodaja & Rongu bogs (EE031) were expanded almost three times the original size and together with a new site named Põhja-Liivimaa designated as IBA.
After public hearings carried out during the Natura 2000 designation process in 2004, the Estonian Goverment decided to designate 82% (18,870 ha) of the proposed IBA as a Special Protection Area (SPA) under the Birds Directive. Although the most valuable parts of the IBA are designated as the SPA and are under protection, the border of the SPA is now almost twice as long as when the whole area had been designated, which might cause management problems in the future.
On the Estonian side, currently six nature reserves are protected covering 16,850 ha which is equal to 20,3% of the Estonian part of the project area. The protection rules for four additional new nature reserves covering 1,430 ha are prepared according to Estonian legislation, but not yet approved. The process for approval of the protection rules for the Natura 2000 pSCIs under temporary protection and the elaboration of management plans for all protected areas including existing reserves is currently ongoing. The temporary legal protection of the Natura 2000 sites is based on an act, which is valid up to May 2007. The management plans are expected to be prepared and approved one by one before May 2007 when the new protection rules will enter into force. The lacking clarity and understanding about which actions are permitted and which not could cause damage to the sites The Ministry of Environment is already facing problems with approving management plans for existing protected areas, although some plans have been developed some years ago and are in need of revisions.
On the Latvian side currently five nature reserves (SPNT) with relatively strict protection are designated as Natura 2000 pSCIs covering 6,751 ha equal to 20,8% of the Latvian part of the project area. The remaining part of the project area on the Latvian side lies within the buffer zone of the Biosphere Reserve. The bulk of the protected areas within the project area in Latvia are made up of peatlands, which form 56.3% of the SPNTs together with other non-forest wetlands (e.g. lakes). Forests cover 21.6% and transitional woodlands or scrubs form further 21.3% of the protected area surface. The habitat composition of SPNTs and Natura 2000 sites on the Latvian side of project area is significantly biased towards wetland habitat types, leaving proportionally large forest areas outside the protected area network. Besides the existing protected nature territory network, there are more than 750 ha of designated Woodland Key Habitats (WKH) and forest Micro-Reserves (MR) that have been identified at the stand level. These two groups of the small protected forest stands overlap partially with the Natura 2000 site network.

1.6 Main factors influencing the biodiversity values in North Livonia

Many factors influence the landscape and biodiversity values of North Livonia. The main factors and processes identified during the project posing a negative impact on the protection of the landscape and biodiversity of

Table 4. Main factors influencing biodiversity.

Lack of ecological and/or hydrological integrity	
1	Different nature protection legislations and management regimes in Estonia and Latvia
2	Delineation of borders of protected areas not based on natural ecological borders, but a result of political compromise
3	Significant parts of the biologically valuable areas located outside of strictly protected zones (core areas) in Latvia
4	Boundary of the designated Natura sites in Estonia is long causing potential management problems due to large number of landowners
5	Borders of protected areas are not coinciding with borders of hydrological units. Sensitive parts of hydrological unit are partly outside of protected areas and consequently there is no mechanism to secure protecting hydrology
6	Insufficient protection of hydrological units is causing loss of certain habitats due to drainage and consequent overgrowth of open mires with trees (pine, birch invasion to open bog area), which decrease of the quality of edge habitats
7	Mire edges have been traditionally managed by mowing and/or grazing. Because these activities almost ceased during recent decades the semi-natural habitats and their specific landscape and biodiversity are disappearing
8	Lack of coordinated transboundary planning of infrastructure, rural development and development of tourism
9	Lack of knowledge and experiences for ecological restoration of mire and wet forest landscapes
10	Research and monitoring activities carried out by use of different methodologies in Estonia and Latvia and exchange of data through for instance a common database is not always happening
Insufficient conservation of habitat quality outside of the protected areas	
11	Drained production forests dominate outside protected areas and valuable forest key habitats or elements are reduced to small enclaves
12	Increased economical pressure to harvest forest products causes the loss and fragmentation of old growth forest habitats
13	Increased possibilities to maintain/restore forest drainage system (as with the EU funds for restoration of forest melioration systems) will negatively influence habitat composition, e.g. loss of species adapted to oligothrophic conditions due to eutrophication in drained forest
14	Insufficient monitoring of illegal activities (Lack of financial resources, Lack of administrative resources)
15	Cessation of traditional agriculture (moving/grazing) and abandonment of agricultural land, especially of the least economic valuable land areas which holds significantly valuable semi-natural habitat types, that needs management
16	Financial support system favours intensification of agricultural land use (cleaning of existing draining system, removing of stone heaps), which conflicts with nature friendly farming
17	Support scheme for maintaining semi-natural habitats is less beneficial than the support farmers can get for intensifying agriculture
18	Current scheme for maintaining traditional agricultural landscapes (semi-natural meadows) is not enough to secure biodiversity on the long term (contracts are only for one season, which is not enough to secure the long-term existence of semi-natural habitat types)
19	Small scale farms are no longer economically viable and bigger farms need bigger parcels and areas to make farming economically viable
20	Reforestation on land with traditional agricultural landscapes is supported by financial incentives for land owners and destroys the habitats
21	Traditional farming is dying out, no active use of alternative income generating activities by local people.
22	Different funding schemes for agriculture and for nature conservation conflict (intensification versus traditional extensive agriculture)
Unsustainable use and/or management of natural resources	
23	Local people see biodiversity conservation as a threat to their livelihoods instead of as an opportunity.
24	Hunting is a part of local lifestyle leaving little opportunities for developing hunting tourism
25	Local population decreases because of lack of employment possibilities and economic prospects
26	Administrative reforms causing obscurities about responsibilities and tasks of the institutions involved and confusion for the local inhabitants.

North Livonia are presented in the Table 4. In section 2-5 of this Master Plan the factors listed in Table 4 will be analysed and recommendations on how to reverse the negative trends in biodiversity will be given.

2. Management and Development of North Livonia

2.1 Protected areas management

Protected areas are cornerstones in nature conservation policies and an important tool to maintain biodiversity. The main objective of the ecology working group was to identify and propose core areas (strictly protected areas) and ecological corridors primarily for protection of forest and wetland species and their habitats. The size of the territory and the limited resources available for this work led to selection of a few indicator bird species. These were selected because they are important according to national and international legislation and because they are conservation dependent. They are assumed to be 'umbrella species' whose conservation needs have significant spatial and functional overlap with other valuable protected species and habitats. Selection of the indicator species was based on the existing knowledge of the area's bird fauna and species along with their main associated habitats typical for this biogeographical region.

A characteristic feature for the project area is the high percentage of areas with restrictions for land uses at different levels, i.e. more than half of the

Selected indicator species

White-backed woodpecker *Dendrocopos leucotos* and three-toed woodpecker *Picoides tridactylus* depend on deciduous and mixed forest types, the latter species having preference for spruce dominated forest habitats.

Capercaillie *Tetrao urogallus* apparently extends south as a continuum from a larger metapopulation in Estonia, and this species can serve as an indicator of mature pine forest stands (bog woodlands, western taiga) to some extent associated with peripheries of raised bogs.

Golden plover *Pluvialis apricaria* and wood sandpiper *Tringa glareola* are wading birds breeding largely on open mire habitats and may serve as good indicators of natural bog ecosystems.

Corncrake *Crex crex* is a meadow bird inhabiting various grasslands and depending their management.

Table 5. Zoning of territory according to legal protection (113,575 ha).

Type of protected territory	Estonia		Latvia		North Livonia	
	Area [ha]	%	Area [ha]	%	Area [ha]	%
Zones with strict protection	15,120	18.3	7,511	24.4	22,631	19.9
Zones with limited management	15,228	18.4	23,062	75.6	38,290	33.7
Total protected area	**30,348**	**36.7**	**30,573**	**100**	**60,721**	**53.6**
Total area without protection	**52,854**	**63,3**	**0**	**0**	**52,854**	**46.4**

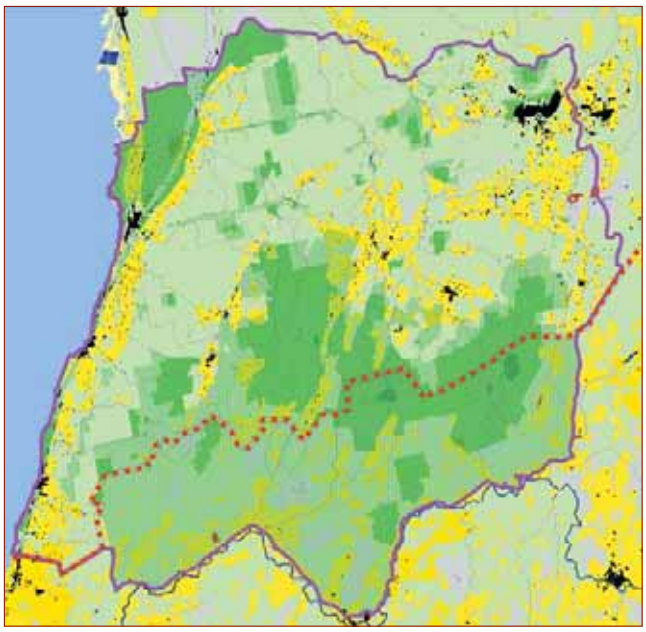


Figure 9. Zoning of protected territories: Dark green: strictly protected zones, light green: limited management zones.

area is protected on the base of nature conservation and forest legislations. Nature conservation is the primary management goal (strict zones) on 20% of project area.

General findings

On the Latvian side of the project area the relatively high protected area coverage includes predominantly wetland habitats (3,803 ha; 81% of the wetland surface is strictly protected), while forests are proportionally under-represented in the network with about 10% of the forest stands strictly protected. In other words, the habitat composition of strictly protected areas and Natura 2000 sites in the project area is biased towards wetland habitat types, leaving large forest areas outside the protected area network. Boundaries of the existing strictly protected areas are inadequate in a number of places where they exclude important parts of the natural habitats of the same type and quality as within the protected sites. The majority of the unlogical boundaries from a biodiversity point of view occur at the Ziemeļu bog and Pirtsmeza bog areas. These two protected areas partially overlap with the IBA 'Ziemeļu bogs'. This IBA can be regarded as insufficiently designated. The biological justification of the required adjustment of the site boundaries was approved for this area during the national Natura 2000 designation process (2000-2004), but the proposal was not fully implemented. As a consequence the quality and integrity of the complex is now threatened by commercial forestry. Securing management within the "white patches" located outside of SPNTs on Latvian side compliant with nature protection objectives needs to be secured.

Although the Latvian part of the project area is for the main part designated as "limited management zone" in the NVBR no specific land-use or management restrictions apply here. Currently the lack of integrated planning of forestry and nature conservation leads to conflicts between maintenance of biodiversity and the use of resources. A more cross-sectoral planning is needed to improve the current land use planning and management system. A cross-sectoral planning will need to harmonise the need for forest production and conservation of ecosystems. Above all, dialogue and persistent communication between various stakeholders needs to be started. Farmland occupies approx. 5,287 ha on the Latvian side of the project are (17%), of which 39 ha are covered by biologically valuable grasslands and further 340 ha by potential biologically valuable grasslands. Both groups of the identified grasslands comprise 7,2% of the total farmland coverage. Management under the existing Rural Development Agri-environment schemes are considered sufficient to meet the conservation needs of these habitats.

Recommendations:

- Increase the surface of the pSCI to the size of the IBA 'Ziemeļu bogs' to secure the conservation status of the ecological and hydrological integrity of the transboundary wetland complex.
- Assess the population parameters for a number of indicator or typical species of forest habitat types found in the area. The concept of 'umbrella species' using habitat suitability models is recommended as a usefull tool.
- Tune the network of Woodland key habitats (WKH) on both sides of the border. In order to harmonize relative proportion and total area of WKHs, the forest habitat types distribution pattern in the area should be used as a baseline. By doing so it will be possible to achieve conservation of the valuable vascular plants, lichens, mosses and fungi species. The area of the WKH in various cases needs to be increased to reach optimal areas for the given WKH type. Micro-reserves and buffer zones could serve as supplementary areas when planning the WKH network.
- Assess the quality and amount of retained trees and strive to increase this number. Evaluate the implementation of other measures for conservation in logging areas.
- Incorporate higher standards of conservation measures into the commercial forestry in management practices. Especially preservation of dead wood and less intensive logging will assist solving conflicts with habitat requirements for endangered species.
- Implement natural regeneration after clear felling operations. An artificial regeneration using spruce on forest areas where formerly various trees' species were growing needs to be avoided where possible.

- Perform inventory and designate special management areas of Capercaillie playing grounds in order to incorporate management measures for the species.
- Consider unprotected bog areas as particularly valuable also in cases when there is no legal NRs established. Inventories show that considerable biodiversity is found also outside the protected zones.

2.2 Hydrology and water management

One of the major issues addressed during the preparation of the transboundary Master plan was research to gain insight in the hydrology of the area as a base for tuned water management on both sides of the border. Co-operation on water management is essential when it comes to securing the ecological integrity of the area as both the water quantity and the water quality are conditional for the protection of wetland habitats and species. Monitoring data show a slow but steady degradation of the quality of mire ecosystems due to increased water deficit. The main reasons for the water deficit are 1) drainage of the mire lagg areas and the dense net of roads with drainage ditches, 2) expansion of the forest growth toward the mire centre area and 3) climate change.

Net of watercourses

The project area is covered with a dense net of watercourses and a comparably dense net of roads. The total length of the watercourses in the area is about 5,500 km (based on digital available data) and the net density is 4.8 km/km^2. The density of watercourses on the Estonian side is double the density on the Latvian side. The net of watercourses inside the core mire landscapes is insignificant in comparison with that outside the mire landscapes.
The ditches alongside roads, agricultural lands or forests located adjacent to the mire complexes are the overriding cause for the drainage of the mire lagg zone.

Forest encroachment

Although the classified 'forest' area according to official statistics is not large compared to the total area of the mire landscapes, there is quite extensive tree coverage with different densities in these areas. Because of the impact of trees on the quality of the mires there is a need for further investigations of the forest and tree coverage on the mire areas to classify the tree or forest growth according to the type of impact of the tree growth – i.e. drained or natural forest growth.
The GIS based analysis showed that dense tree coverage on the bogs mostly occur close to the bog borders, surroundings of the fluvial watercourses or on areas inundated by up-welling groundwater. More insight is required in the effect of the drainage activities on the water levels of the mire complexes. Drainage of forests causes lowering of the local groundwater level and lowers the water pressure under the mire complexes. The forest encroachment that occurs as a result of the lower ground water table causes secondary drainage of the mires and fuels the pace of mire deterioration. Also the impact of forest management on the water quality of surface waters is relevant to monitor.

Hydrological sensitive zones

The investigations revealed that the core mires are located on the water partition between the inland and coastal watercourses. To optimise the retention of water in the core areas there is a need to create Hydrological Protection Zones.
Inside this zone increased drainage should not be allowed without analyses of the impact on the hydrology of the mires. This is in conformity with article 6 of the Habitats Directive which does not allow for activities which are detrimental to the habitats and species listed under the Birds and Habitats Directive. To decrease the water losses of the mires it is recommended to dam man made ditches bordering the mires and to cut trees on the mires.

Figure 10. Net of watercourses within the project area.

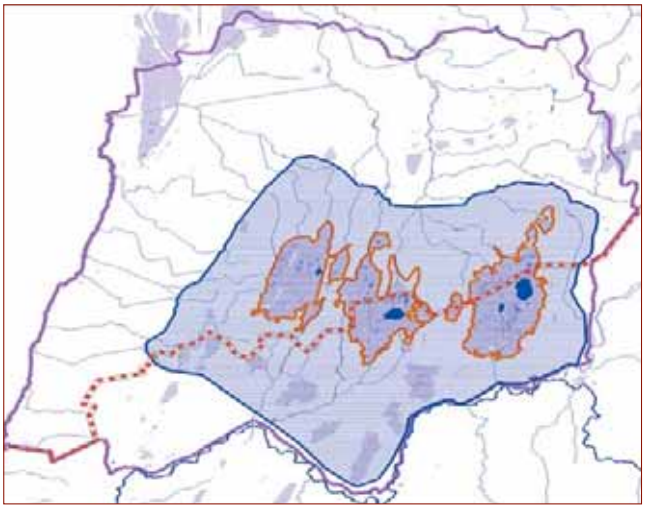


Figure 11. Hydrological sensitive area.

Mire restoration projects

During the project, several locations have been identified where there is a need for improvement of the water conditions on the bog landscapes though small-scale restoration projects (see Figure 12).

Urissaare bog

The ditch on the Urissaare bog is functioning as a remarkable surface water transporter 'out' of the bog. Currently the main disturbances are notable on subsidence of the natural bog surface levels, i.e. acrotelm layer of the bog. Therefore damming of the ditch is important. The maximum water level should not exceed the current surface level on the surface subsided area close to the ditch to avoid the inundation of the mire. Due to a peat layer of up to 4 m on the area of the ditch location dams should be built deep into the peat in order to to avoid the water leakage around the constructed dam, which could result in peat erosion by the moving water inside the peat layer.

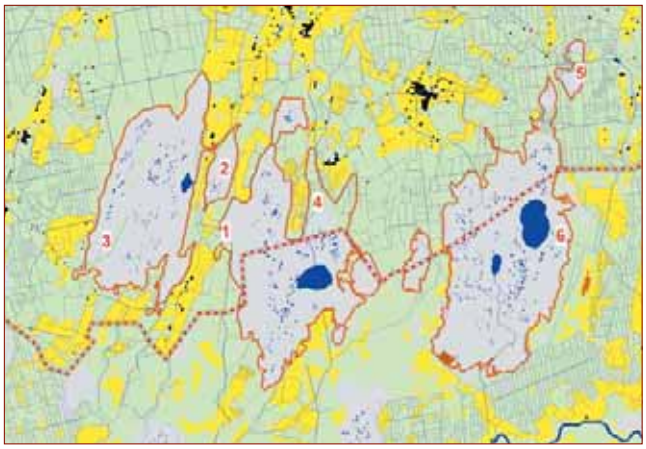


Figure 12. Potential restoration site: 1) Raessaare Lagg area, 2) Ruunasoo, 3) Urissaare Bog, 4) Reiu overflooded meadow, and 5) Sookuninga Bog, Ezergravis Stream.

Tõrga-Kodaja bog

Preliminary study of the old cranberry plantation on the lagg area of the Tõrga-Kodaja bog shows that there could be two main reasons for intensive forest growth on the area: 1) Low groundwater levels during the Summer period, and 2) comparably nutrient rich inundation with the water from the main ditch at least during the Autumn period.

The retained water should be collected from the surface water transported away from the bog area *via* small ditches perpendicular to the main ditch. The water flow in the main ditch should be kept free to get as little nutrient rich water as possible standing on the restoration area. At the same time cutting of trees on the area should take place. Clearing the area from tree growth could increase the nutrient concentrations in downstream watercourses. Therefore the water quality monitoring should be carried out during the first three years at least after the restoration management has started. Furthermore a few sediment ponds could be created downstream the watercourses. The best water quality

sampling periods seems to be the first wet periods after the dry summer periods, preferably at the end of the vegetation period in autumn, and at the beginning of the spring flooding periods after the winter season. Parallel with the water quality sampling the discharge measurements on the main ditch should be carried out. The height of the retained surface water level regulated by the dams should stay close to the surface around the year and influence of the beaver damming inundation in the main ditch should be avoided.

Ezergrāvis Stream

Hydrological functioning of the Ezergrāvis Stream on the Rongu-Ollu bog seems to be caused by intensive erosion of the stream deep into the bog massif. Due to the tracks caused by lake/mire visitors there was intensive peat erosion on the right shore area of the stream compared with the left shore area. Therefore it is suggested to build a cascade of water retaining dams in the stream to decrease the fluvial peat erosion. The water depth for the total length of the stream should be about 1 m. Parallel with the stream damming, a walking trail for the visitors on the stream shore line could be built to avoid damages of the soft mire surface in areas with increased groundwater levels caused by the stream water damming.

Recommendations

- Monitor ground water levels in the forest areas close to the mires and water levels in the mires.
- Introduce monitoring of ecological and chemical status for the surface waters in the frame of the WFD in the area for the design of mire protection and management measures and coordinate this with relevant water authorities.
- Coordinate with the authorities responsible for the implementation of the EU-WFD on the delineation of water bodies and setting references and a typology for water bodies.
- Obtain more detailed data of surface water level on the mires and adjacent areas.
- Because of uncertainties in different forest databases, it is recommended to monitor tree coverage on the mire areas adapted to the specifics of the mire landscapes. It is also recommended to classify the tree or forest growth according to the type of impact of the tree growth on the area, i.e. drained or natural forest growth.
- Investigate the expansion of the 'secondary' drainage effect, caused by the tree growth on the mire areas as a result of the drainage on the border areas. The methodology used in the Technical Report on Hydrology should be completed with corrected data of tree coverage and 'tree growth water budget' investigations on the mire landscapes.

2.3 Forestry

The project activities included field inventories of forested areas to identify forests valuable for nature conservation, the elaboration of recommendations for improving the protection status of these forests and training of private forest owners in sustainable forestry practices. Promotion of the introduction of FSC standards was included in the training activities. Because unsustainable forestry activities were indicated as a major problem on the Latvian side, the forestry activities were mainly carried out on the Latvian side of the project area.

Forests with some kind of protection status cover more than 10,000 ha (43.8% of the total forested area). The forest zoning of the project area includes three different zones: strict protection zones (core areas), zones with restricted management and neutral zones. All designated Natura 2000 sites are included in the core areas and the borders of the core areas coincide with the borders of the Natura 2000 sites. The total core area is more than 6,300 ha (27.5% of forest lands). The proposed zone with restricted management covers an additional 3,737 ha (16.3% of all forest lands), and the neutral zone applies to the remaining part of the forests.

The Latvian legislation requires the elaboration of a Management Plan and Individual rules for protection and management of each nature reserve and Natura 2000 site. At the moment these documents are not elaborated for the Specially Protected Nature Territories (SPNT) in the project area except for Ziemeļu bogs for which a management plan is currently being elaborated (see section 3).

General findings

Based on biological, spatial and statistical analyses of the forests and its protection status, the forest group came to the following conclusions.

It is impossible to determine whether the existing Natura 2000 sites ensure favourable conservation status for the Natura 2000 species found in the forests. This particularly refers to dispersal species which are widespread in Latvia and which require the protection of habitats across the country. Thus the answer to the question whether it would be necessary to increase the percentage of Natura 2000 sites in the North Livonia can only be given if there would be state-defined quantitative criteria for defining and assessing favourable conservation status species based on for instance the population survival requirements. The same counts for the forest habitat types for which the pSCIs have been designated. Conservation of priority forest habitat types requires that borders of SPTNs/Natura 2000 sites would coincide with the actual distribution of the relevant forest habitat types. In the case of North Livonia borders of NATURA 2000 sites unfortunately cut through the for-

est habitat types leaving parts of these forest habitats outside the Natura 2000 sites.
The inventory of Woodland Key Habitats (WKH) was completed for the state forests of the project area, identifying more than 280 ha of forest stands complying with the criteria. Yet the question whether they will perform the function attributed to them on the long run, i.e. protection of the species endangered by intensive forest management activities, cannot be answered unequivocally as many factors have to be taken into account.
The description of forest stands in different landscape units and their management methods is summarised in Annex 7 *Forest Management Guidelines for North Livonia Project Territory (Latvia).*
Despite the fact that forests cover about 70% of the total area of project territory, they form less than half of the total area of SPNT. Besides, forests cover only 20% of the nature reserves of Zieme|vidzeme Biosphere Reserve.
The swampy forest habitat types dominate within the Natura 2000 sites, Micro-reserves (MR) and WKH.
Forest stands which cover larger areas belong to coppiced medium-aged and maturing forest stand group.
A large part (about 50%) of all protected forests are located within stands which exceed at least one age-class over the minimum state-determined felling age for final felling. Taking into account that the composition of species gradually changes in maturing forest stands, it is important to protect forest stands at various stages of succession.

On the Estonian side of the project area the proposed strictly protected (core areas) forests cover 8167 ha (15% of the forest area) and protected forests with limited management (restricted management) cover additionally 12,380 ha (23% of the forest area) and most of them are already legally protected on base of the Nature Conservation Law and/or Forest Act. The main forest biodiversity area of the whole project area is a large near natural non-fragmented forest massive (>1000 ha) of northern part of Nigula nature reserve, which is protected already since 1957. Forest areas outside of existing or already proposed conservation areas have been degraded by extensive drainage carried out during the 1960-70ties and extensive logging during 1940-1950ties and 1990ties and very few valuable forest areas suitable for conservation exist outside of existing protected areas. Even the quality of recently established special forest conservation network areas is not sufficient and ecological restoration measures will be important tool for restoration naturalness of forests in existing protected areas. In highly fragmented commercial forest landscape both large and small (e.g. WKH) forest reserves are needed to protect biodiversity, unfortunately protection status of WKHs is not sufficient and in the newly established forest rich

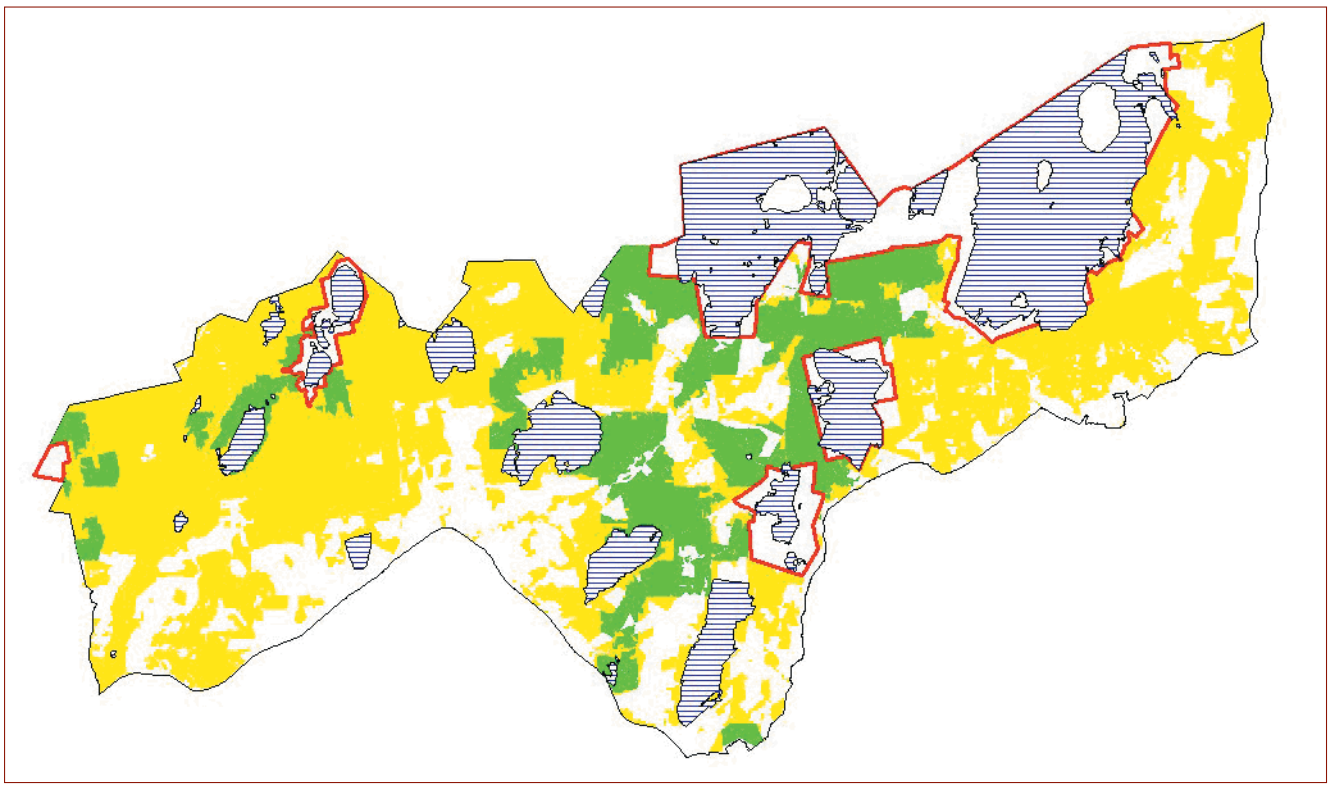


Figure 13. Forest zoning of the Latvian project area. Green: valuable forests stands, yellow: "neutral forest zone", red lines: border of Natura 2000 pSCIs.

Nature Conservation Region in South-West Estonia a special large scale project will be needed to improve conservation of existing small valuable forest fragments near future.

Recommendations:

- The proposals for zoning of the project area are considered to be a blueprint for development of the area on a landscape scale focusing on the problems of forest conservation.
- The analysis stresses to look at the Natura 2000 sites as a functional network and to ensure appropriate management of forest areas that are situated between SPNTs. Proposals for zoning of the whole area should be reflected in sectoral and physical plans.
- The analysis and conclusions of the research carried out during the implementation of the project are advised to be used in landscape ecological planning of NVBR and potential improvement of NVBR zoning.
- The evaluation of the management guidelines have revealed 1) gaps in the proportion of represented ecosystem types in the network of SPNT, 2) shortcomings in delineation of each SPNT and 3) problems with respect to the conservation of woodland key habitats.
- The landscape perspective should be taken into account when elaborating management plans and rules for SPNTs. This implies that areas proposed as zones with restricted management are important areas to support SPNT network. For example the analysis revealed that forest habitats between Limšānu and Pirtsmeza Nature Reserves are an important ecological corridor. This should be taken into account when planning forest management measures. Long-term forest investments like road construction and ditching should be avoided to limit ecological fragmentation and habitats' alteration.
- The delineation of the Natura 2000 sites does not to coincide with the borders of forest habitat types. The borders of the SPNTs cut through the ecosystems represented in the area in particular for bog areas. There are two options to solve this problem: 1) harmonise the borders of the Natura 2000 sites with the borders of the forest habitat types or 2) incorporate adequate protection measures into the forest management. Because designation and/or extension of existing SPNTs are unlikely to happen, adjustment of forest management to the requirements of nature protection is a more realistic option.
- Ecologically based forest management planning of sites adjacent to SPNTs requires stand level information of the forest stands inside of the protected area. When the forest stands hold similar forest types, species composition and age classes, this should be reflected in forest management. Such identified areas could compensate the loss of conservation values inside the SPNT.
- Analysis of the designated WKH parameters show that the surface is small and that the conservation goals for the WKHs can hardly be achieved, especially the conservation goals of the WKHs located in wet deciduous forest types. To support achieving conser-

vation goals WKH sites should be form a functional network The two major challenges for maintaining and protecting the values of the WKHs on stand level are to increase the area of small or unfavourable designated WKHs' sites, and to increase the proportion of WKH area at landscape scale.

- The NVBR should propose to change the status of the forests of JSC Latvijas Valsts Mezi to High Conservation Values Forests (HCVF). As these forests are FSC certified, it is necessity to elaborate special management plan for HCVF and this will require more detailed analysis of specific stands and elaboration of adequate management models.
- The training program elaborated in the frame of the project has been implemented (demonstration objects, seminars, study trips, informative materials) but the NVBR and the State Forest Service should continue to implement the training program. The training activities have been carried out in close co-operation with these two organisations. Pasaules Dabas Fond (formerly WWF Latvia) plans to use the demonstration objects established during the implementation of the project as a place to organize study trips and hold seminars to train forest owners and foresters.
- The main principle for management of forest of strictly protected core areas (rezervats, special management zone) must be the preservation of the forests in natural state. In the core areas natural processes are allowed without human interference, so that natural changes (including natural disturbances) which occur within ecosystems can take place. Restoration of specific habitats for old-growth forest species and natural hydrology of forest landscape is the most important management activity in core areas, especially in large but poor-quality reserves.
- Close-to-nature approaches in commercial forests will always stay important for biodiversity conservation. There are opinions that in Estonia the quality of commercial forests may be critical during the next decades until sufficient amounts of specific habitats for old-growth species have developed or restored in the reserves. Meso-filter approach is a potential tool for the protection of specific microhabitats (snags, large old trees, tree cavities etc) for preserving old-growth structural elements in commercial forests.

2.4 Eco-tourism

Instead of restricting economic development in the project area, the unique landscape and biodiversity of North Livonia is an asset for developing sustainable development through amongst others the promotion of sustainable tourism. This chapter presents an overview of the facilities and attraction points that are available for tourism and presents recommendations for further development of tourism harmonised with the sustainable use of the biodiversity.

General findings

There are several reasons for people to visit North Livonia like internationally highly appreciated nature values. Nigula and Sookuninga (EE) and Ziemelu Purvi (LV) are designated as Natura 2000 sites and Ramsar sites, Luitemaa and Laulaste (EE) are nature reserves while the coastal part of the area has a long tradition for beach recreation. The sandstone banks have contributed to the popularity of the Salace River (LV) for boating and fishing.

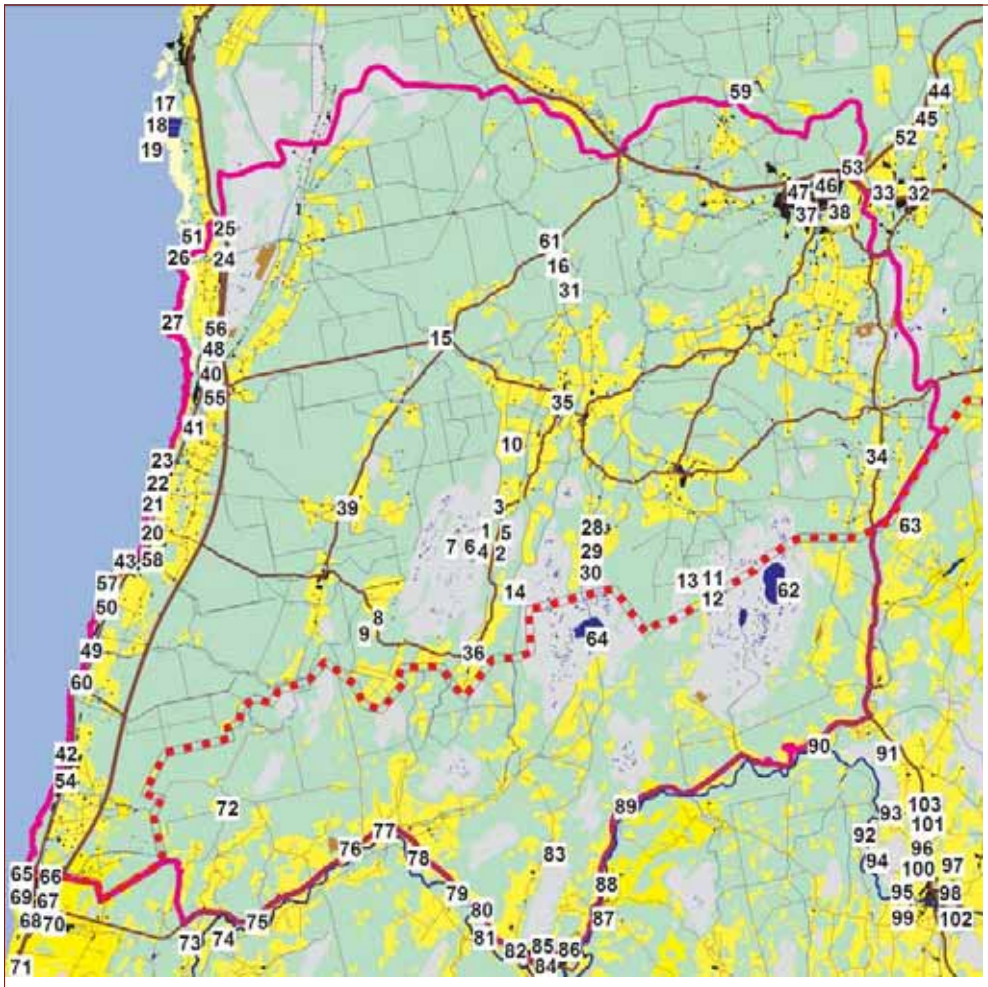
The forested areas of the Estonian side of North Livonia is part of the Pärnu-Ikla recreation area (managed by State Forest Management Centre, Estonia) which includes Kabli Nature Centre, Kabli Bird station, several watching towers and hiking trails in the semi-natural meadow, forests and bogs.

Nigula Nature Reserve is a popular destination for nature-oriented visitors because of its long history of scientific researches and trainings held in the Nigula bog. The wooden hiking trail (7 km) in the Nigula bog with watching towers and the Tornimäe tower on the top of dunes with the wooded trail in Tolkuse bog offer a good overview over the bog landscape and are excellent locations for bird watching. These objects can serve as a basis for attracting nature-interested tourists to the area and promoting nature- or eco-tourism.

The Via Baltica is the main transportation road and Ikla/Ainazi is an important border point between Estonia and Latvia. After joining European Union the use of other border points like Mõisaküla/Ipiki and Jäärja/Ramata has increased. The main road system in North Livonia is in a good condition, while the smaller local roads are in need of restoration.

Inventory of tourist facilities

To get a clear image on what the area has to offer for tourists an inventory of tourist facilities has been car-



Main tourism attractions and facilities in North Livonia

1 Nigula exhibition pavilion
2 Nigula bog trail
3 Nigula Centre
4 Ruunasoo trail
5 Ruunasoo tower
6 Nigula I tower
7 Nigula II tower
8 Kaubaru tower-house
9 Kaubaru exhibition area
10 Pikksaare tower
11 Sandre tower
12 Sandre everymans house
13 Sandre trail
14 Raessaare restoration exhibiton site
15 Laiksaare nature trail
16 Nature trail of Rae lake
17 Pikla I tower
18 Pikla II tower
19 Pikla III tower
20 Kabli bird station
21 Kabli bird tower
22 Kabli nature trail
23 Kabli Nature Centre
24 Tolkuse nature trail
25 Tornimäe tower
26 Rannametsa rivers mouth tower
27 Häädemeeste coastal meadow tower
28 Reiu river foodplains trail
29 Reiu I tower
30 Reiu II tower
31 Rae lake tower
32 Voltveti manor house
33 Allikukivi manor house
34 Jäärja manor house
35 Tali manor house
36 Tuuliku management manor
37 St Katherine Church
38 St Nikolai Church
39 Urissaare Johannese Church
40 Häädemeeste Miikaeli Church
41 Häädemeeste Church
42 Treiman Lutheran Church
43 Markson museum
44 Aasa holiday house
45 Peebu camping cottage
46 Livoniamatkad holiday house
47 Kilingi-Villa guest house
48 Valge guest house
49 Lemmeranna Guest house
50 Lepanina hotel
51 Raiesmaa
52 Peebu floating sauna
53 Livoniamatkad travels
54 Treimani St Peetruse-Pauluse Church
55 Valge shop
56 Häädemeeste shop
57 Kabli shop
58 Kabli bakery
59 Sigaste minizoo
60 Lemme camping ground
61 Rae camping ground
62 access to lake
63 accommodation
64 access to lake
65 Ainazi north breakwater
66 Ainazi naval school
67 Ainazi church
68 Ainazi Fireman's museum
69 "Stone of rememberance "Balta saule"
70 Dio motel
71 Randu meadows and feral cattle
72 Ekaji secular oak-tree
73 Sarkanas klintis
74 Red cliffs
75 Selgas camping site
76 Vecvietas camping site
77 Mushroom farm
78 Rozeni visitors house
79 Mackalni visitors house
80 Kekari resting place
81 Viksni cave
82 Ozolini grand stone
83 Janisu-Dainas educational wetland trail
84 Stone sculptural open air exposition
85 Liv's museum "Pivalind"
86 Staicele church
87 Viki watermill
88 Viki manor
89 Ezi visitors house
90 Punmutes camping site
91 Stone of rememberance M. Peksena
92 Silmaci camping site
93 Silmaci cliffs
94 Skanaiskalns natural park
95 Devils cave cult place
96 Valtenbergi manor complex and park
97 Woodcut museum of V. Hirte
98 St Anna Lutheran church
99 Libiesi visitors house
100 Touth hostel
101 Hostel Miks
102 Liv castle mound and sacrificial cave
103 Ceipji sacrificial stone

Figure 14. Main tourism attractions and facilities in North Livonia.

ried out. This overview (see Figure 14) together with the overview of cultural historical elements (see Figure 16) offer a good base for the design and further development of the tourist infra structure.

Transboundary cycling route

One of the options to stimulate tourism is to design routes for specific groups of tourists like hikers, cyclists or car drivers. These routes should preferably allow the user to visit the most important sight seeing and tourist land marks the area has to offer while lodging and/or resting places are offered along the route. Surely facilities are not yet abundant and the infra structure needs further improvement but there is a keen interest to invest in the development of the tourist infra structure. The routes should be designed in a way that areas vulnerable from a nature conservation viewpoint are respected. In a joint workshop with the various experts working in the project a possible cross border cycling route was designed which takes the cyclist along points

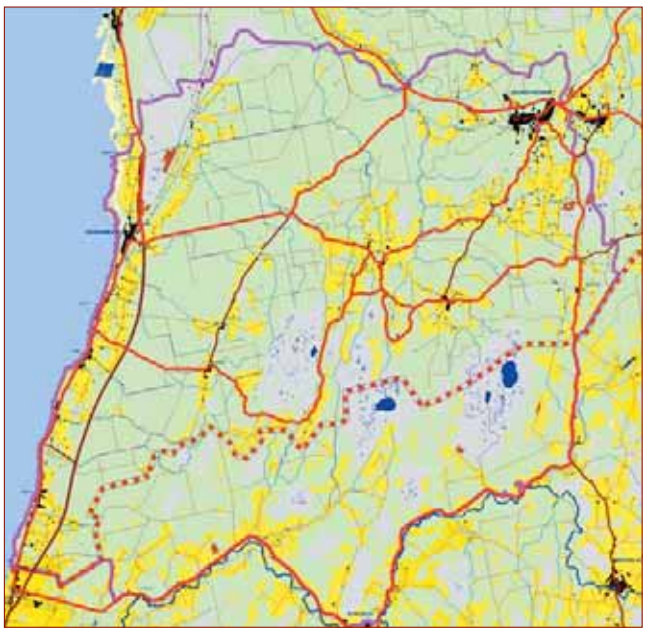


Figure 15. Proposed cycling routes in the area marked with red line.

of interest like watchtowers, nature reserves and cultural historical features. The route is presented here as an example of what could be done (see Figure 15). It is left to private initiative to decide whether it is worthwhile and beneficial to invest in the infra-structure like setting up sign posts or issuing a guide book and developing lodging facilities.

Recommendations

- The development of an information and route network should be done in collaboration between various governmental and non-governmental organisations, such as the state forest organisation, State Road Services, private entrepreneurs, environmental NGOs etc. The necessary investments include costs to establishing information buildings with the exhibition materials, setting up sign posts to guide visitors and the production of information materials.
- Transferring the versatile needs of tourists into practice requires serious planning taking into account existing objects and taking into account the needs and wishes of the potential users, e.g. handicapped people, cyclists etc. The bases for the planning of the tourist infrastructure like trails and facilities needs to be the carrying capacity of the landscape and the biodiversity values. The planning needs to start at landscape level considering the different distances different users can cover, considering the potential of the landscape and the access to the sights seeing points.
- In addition to the planning the real investments for establishing trails, towers, overnight shelters, signs and guides, the required information and promotion materials need to be produced in a co-ordinated way.
- It is necessary to design tourist routes that link North Livonia with other tourism areas in Estonia and Latvia and that avoid to harm the most sensitive areas.
- The investments to create possibilities for accommodation, food service and activities should be left to private entrepreneurs. The local and regional administrations should however facilitate the issuing of the required permits and smoothen the procedures to allow investors to make the investments provided they are in line with the zoning principles presented in this master plan.
- A thematical approach is proposed to provide information about the nature, culture, and history of the region. Guides should be trained to allow them to provide specific thematic tours in the area.
- The international and transboudary co-operation in North Livonia in the field of nature conservation is also relevant for the development of ecotourism in a transboundary context.
- Strong trademarks for nature tourism are already quite popular and the characteristics of the area are favorable for promoting cycling, hiking/backpacking, cross-country skiing, berry and mushroom picking. Such activities are extremely valuable in the context of ecotourism since they can give visitors positive first-hand experiences of nature that can lead to increased awareness and respect. Such activities should be planned and developed in ways that they do promote awareness and respect for nature and culture while limiting the negative impacts that such uses can cause to natural ecosystems. Revenues from equipment rental, guide services, information materials, etc. can also be used to help support conservation of the resources being used as well as local economies.
- Castle mounds, ancient settlements and sacred places reflect the prior inhabitance of the area by ancient Livonians and their predecessors. Coastal towns such as Ainazi and Kabli played important roles in the history of the area as ports and locations important to sailing, shipbuilding, and a naval school. Museums that memorialize some of this naval history are located in Ainazi, Salacgrīva and Kabli. Increasing awareness of local heritage, especially in an international context, can help to build cultural awareness and respect.
- The “Green Certificate” eco-label is a Latvian system for distinguishing accommodations that comply with strict criteria of environmental and service quality. While not currently used in Estonia, the establishment of this system may serve as a model for future developments in this area that can help promote environmentally-conscious activities and business practices and help intentional eco-tourists organize their visits.

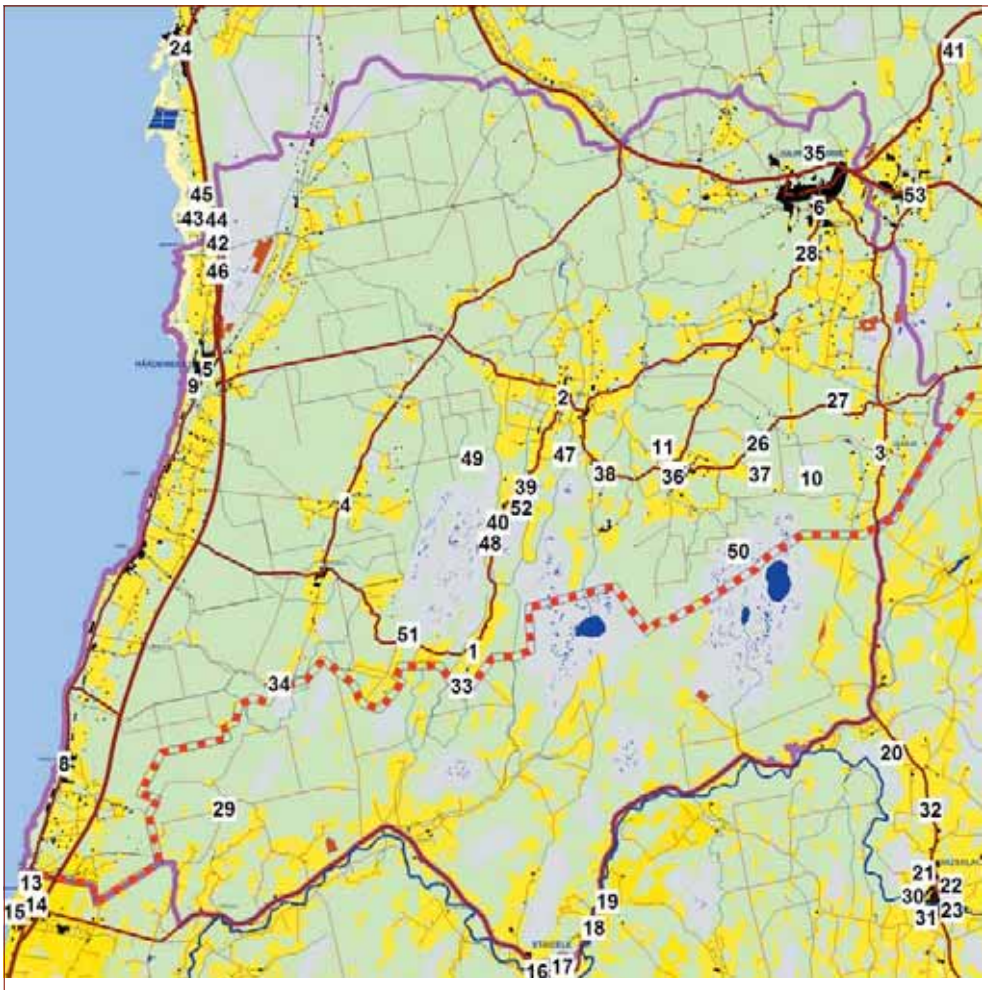
2.5 Cultural heritage

North Livonia has a long history of foreign occupation and suppression and little of what reminds to the Livonian culture can be found nowadays. The Livonian language is at the brink of extinction and many cultural historical features are in a bad state of maintenance. In the frame of this project an inventory of cultural and historical features has been carried out to help raising awareness about the Livonian culture and to support promoting the area for tourism.

General findings

Cultural heritage values are roughly divided into two parts, i.e. material and non-material cultural heritage. The material cultural heritage includes monuments, buildings, properties, while the non-material cultural heritage includes language, customs, traditions, knowledge, skills, legends, expressions etc. The sites of cultural and historical heritage identified during this project are shown on the overview map. The area borders with one of the biggest Stone Age settlement

systems in Northern Europe (Zvejnieki settlement and burial ground, Rinnu Hill settlement). For ancient dwellers, the Salaca River was one of the main routes to the sea and there are still possibilities to discover settlements in the forested tributaries and bog margins.



Cultural heritage sites in North Livonia

1 *Tuuliku additional estate*
2 *Tali Freyhoffi estate*
3 *Jäärja Saarahofi estate*
4 *St Johannes church*
5 *St Miikael Church*
6 *St Katariina church*
7 *Treimani church*
8 *Treimani church*
9 *Issandamuutumise church*
10 *Caprecaille hut*
11 *Emandamägi (Lady's hill)*
12 *Peedu burial ground*
13 *Ainazi naval school*
14 *Ainazi church*
15 *"Balta saule" memorial*
16 *Liv's museum "Pivalind"*
17 *Staicele church*
18 *Viki watermill*
19 *Viki manor*
20 *M. Peksena stone of remembrance*
21 *Valtenbergi manor complex*
22 *Woodcut museum of V. Hirte*
23 *St Anna church*
24 *Võiste church*
25 *Location of first chapel*
26 *Teo hill*
27 *Sookuninga stronghold*
28 *Swedish King's oak-tree*
29 *Ekaji secular oak-tree*
30 *Devils cave cult place*
31 *Liv castle mound and sacrifice*
32 *Ceipji sacrificial stone*
33 *Kabja stone*
34 *Kivikupitsa stronghold*
35 *Lõmsi stronghold*
36 *Offertory oak-tree*
37 *Pihlakse offertory stone*
38 *Uulota offertory stone*
39 *Peedu offertory yard*
40 *Järve offertory trees and stone*
41 *Jutuse Uku stone*
42 *Wargamägi hill*
43 *Tõotuse hill*
44 *Sõdamägi hill*
45 *Varsamägi hill*
46 *Laeva kaared*
47 *Partisan remebrance stone*
48 *Execution place*
49 *Partisan hide*
50 *Partisan hide*
51 *Partisan hide*
52 *Partisan hide*
53 *Voltvedi estate*

Figure 16. Cultural heritage areas.

Recommendations

- The protection of the cultural heritage of the areas has not received the attention it deserves because little is known still. Local enthusiasts have carried out some researches, but more needs to be done to gain insight in the history and to identify cultural historical features.
- Involve local museums in the investigations and improve funding of the museums through involving them in the various project opportunities.
- Promote exhibitions of specific cultural phenomena and enhance co-operation between local and national museums to find possibilities to exhibit collections.
- Improve the maintenance and accessibility of valuable places (offertory places, burials, abandoned farm places, stone walls etc.) through setting up sign posts and displaying information.
- Keep in mind area-specific architecture of buildings and lay out of settlements when planning new objects, and promote the traditional building style through different information channels (e.g. leaflets, courses conducted by specialists).
- Use bigger manors (Voltveti, Allikukivi, Jäärja, Tali, Waltenber) and churches to attract tourists; create possibilities for offering access to manors in public use (e.g. school, state forest district) for tourists and promote (seasonal) opening of churches; and put up sign posts to churches, manors and estates and display available information.
- Promote showing traditional farming and forestry activities like the harvesting of crops, processing of crops and local handcraft to attract tourists and to raise awareness on the cultural identity of the area. Promote the use of traditional breeds (e.g. Estonian Native Cow) and organise workshops and courses to promote local handicraft.
- Restore peat milling sheds, old barns and other specific buildings as lodging facilities.

2.6 Game management

The size of the natural areas, the absence of natural enemies and the interrelationship between natural areas and cultural and economic areas require management of some wildlife species in order to prevent

damage to economic interests and to prevent problems to traffic. The control of wildlife is organised through the issuing of permits to kill a certain amount of animals. This activity can be economically exploited provided that the issuing of permits is based on sound monitoring data and inspection is in place. In the frame of the project, investigations have been carried out in the project area to get an overview of the distribution and number of game species and the differences in hunting legislation and practices between Estonia and Latvia have been identified.

General findings

The River Salaca as a Southern borderline of the Project area is a core area for beavers and otters. Its tributaries host a few separated home ranges of otter (Birzaks et al. 1998) plus a considerable number of beaver families. The number and distribution of beavers need to be controlled to avoid damage to economic interests (forestry, agriculture). The three large carnivores, wolf, lynx and brown bear, are proposed to be flagship species for the ecological integrity of North Livonia because of their broad food niche, need of large individual territories, movements and dispersal routes across the border. Looking at the distribution maps of the large carnivores it becomes obvious that transboundary co-operation is important for the management of the vulnerable species of large carnivores and for the coordination with other interests.

Hunting

Hunting has always had a bigger influence on the distribution of large carnivores than the availability of suitable habitats. Contrary to humans, large carnivores do not take the presence of administrative borders into account. Because humans do, hunting actions across the border have been problematic. Consequently, the chance to survive was better for carnivores living next to a border and some animals might even adapt their behaviour to such circumstances. The distribution pattern of large carnivore populations seems to be well adapted to the pattern of administrative borders as is shown by Latvian and Estonian distribution maps of wolf (see e.g. www.vmd.gov.lv). Also today hunters are

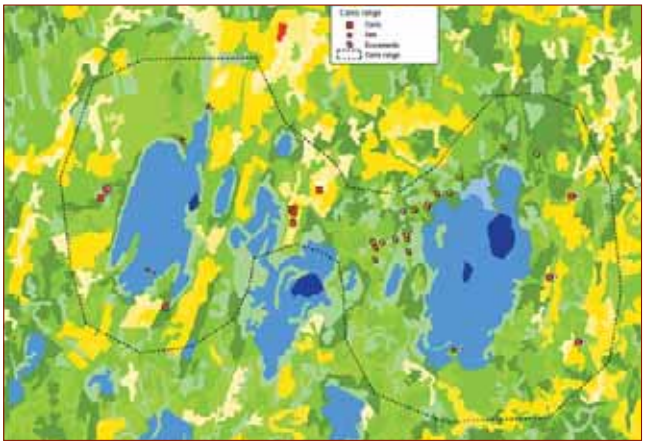


Figure 17. Distribution of wolf (Canis lupus) in North Livonia based on field data.

not allowed to cross the borders of their grounds or of local forestry districts and state frontiers without a formal coordination procedure.

Successful hunting of wolves and lynx often requires long persecution and the borders may contribute to saving them from being killed by uncontrolled hunting. Particularly wolves inhabit the border area and cross the border frequently. Tuning of the number of permits for shooting wolves and lynx and a prompt exchange of information on killed individuals is therefore necessary to avoid overexploitation of these populations. To sustain the population at the current viable level the annual quota should not exceed 30% of estimated population of wolves and 10% of lynx. Trend analysis of the considered species indicates an increase for almost all these species. The western part of North Livonia is however comparatively less inhabited by large game species than the central and eastern parts. This can possibly be attributed to the generally poorer habitats of the sandy soils of coastal area. It might also be caused by the location of migration and dispersal routes, which are more concentrated in the middle of project area because of the presence of large undisturbed areas. The large bogs in the core area are poor in terms of nutrition but they are relatively safe contrary to costal zone. The growth trends for most of the species are steeper in the eastern part of North Livonia with an exception for the number of red deer that increases in the western and northern part.

The investigations revealed no direct threats to any of the considered species. The application of enormous supplementary feeding for wild boar could even lead to the conflicts with other economic interests (damages to forestry, agriculture and livestock breeders).

Legislation

The differences between Latvian and Estonian legislation related to hunting have been identified. The main difference is that in Estonia hunting activities are more or less equal throughout the country and vary in relation to specific aims, while in Latvia everything depends on deci-

sions by the landowner who theoretically may either prohibit hunting or increase game density significantly for more convenient shooting. Game management planning has been applied in practise during 1980s in Latvia too, and was reintroduced in 1992 when new legislation on game management was approved. As to the restrictions and regulations related to hunting in North Livonia, it appeared that in general the requirements are stronger in the Estonian part than in the Latvian part. Since the national legislation is taken for granted the only way to harmonize the hunting practices across the state border in North Livonia would be elaboration of local regulations to approximate Estonian requirements with Latvian. This however requires intensive consultations and negotiations with the stakeholders because it might turn out that some rules are unacceptable to Latvian hunters, e.g. the short open season for wolves and full protection of capercaillie in Estonia.

Another way to improve the tuning of hunting practices is to coordinate the issuing of permits. Issuing of hunting permits is basically organized by national authorities but agreed joint principles for setting bag limits can be taken into account. In the past this happened for moose population management in Latvia and Estonia during the soviet era when both republics decided to reduce moose population because of heavily damaged spruce. In early 1990s the annual cull in both countries was nearly 50% of estimated population. Today with an increasing population, hunters in Latvia tend to harvest less proportion than their Estonian colleagues.

The monitoring of large mammals is currently more focussed on large carnivores which is required in Latvia by national legislation and decrees. Beside for large carnivores action plans for black grouse and capercaillie management are elaborated for Latvia. Their monitoring is related to a controlled harvesting to some extent. Black grouse and capercaillie are no game species for Estonia. Therefore a joint monitoring system might be problematic.

Recommendations

- Coordinate the issuing of hunting permits; exchange information on the permits issues. In Estonia, hunting council or advisory board (experts on game animals, hunters, county environmental representative) exists, which can work together with the Latvian State Forest Service. The hunters could impact decisions of this governmental institution by participation in the animal census. The Joint Transboundary Commission could promote this exchange of information and tuning of the issuing of permits.
- Exchange information about differences on hunting seasons and valuable hunting species in of North Livonia between Estonia and Latvia.
- Coordinate game species monitoring (and field research) in North Livonia and exchange monitoring data.
- Promote consolidation of small hunting grounds, particularly in Latvia.
- Secure more intensive control of illegal hunting.
- Promote tuning of Latvian and Estonian hunting regulations. Considering Estonian experience for determination of shorter open seasons for most of the game species, approximation and introduction of those rules for local management of the whole area of North Livonia is recommended.

2.7 Agriculture

Agriculture has added to the landscape and biodiversity of North Livonia by shaping (semi natural) habitats like pastures, hay-fields and semi-natural meadows. The survival of many plant and animal species depends on the existence of these semi-natural habitat types and the maintenance of these habitats requires continuation of extensive and often traditional forms of agriculture and farming.

Halting the loss of biodiversity therefore requires stopping abandonment of semi-natural habitats. This can only be stopped by creating economic prospects for the farms thus linking rural economic development with the protection and management of the landscape and biodiversity.

All farmers may apply for the following supports:

Direct supports:

- Single area payment
- Additional direct support

Rural development support:

- Less favoured area support
- Agri-environmental support
- Support for Environmentally-friendly production
- Support for Organic farming
- Support for Endangered breeds
- Support for management, restoration and establishment of stonewall
- Support for meeting EU requirements
- Support for semi-subsistence farming

Support managed by Estonian MoE:

- Support for management of semi-natural habitat

General findings

It should be kept in mind that both intensification of agriculture and land abandonment pose threats to nature protection objectives. Clearly some activities linked to agricultural use should be prohibited in some areas or linked to a permitting scheme in which the benefits for agriculture can be weighed against the disadvantages for nature. The activities related to agriculture were carried out in the Estonian part of the project area. A full overview of the study carried out on the farmers within the Estonian side of North Livonia and about the funding schemes available for farmers is added as Annex 4.

Recommendations

- Prohibit forestation of the fields or meadows in the Bird Conservation Area (SPA).
- Prohibit maintenance of the drainage system inside and surrounding the SPA.
- Regulate the use of pesticides and fertilizers in the sensitive areas.
- Promote actively the introduction of agri-environment financial schemes from state budget and EU Funds and agree on a contact point with one address where farmers can apply for support and can obtain assistance.
- Promote cattle and sheep breeding to help the management and restoration of semi-natural habitats.
- Propose the Ministry of Environment to consider providing support in the cases where there is a need for restoration of semi-natural habitats to support the increase of cattle breeding.
- Combine promotion of beef production with the promotion of organic agriculture.
- Promote vegetable production as one of the co-activities to help farms to continue agricultural activities. Offering tourists, e.g. through tourist farms or alike, organic vegetables might help to generate additional income for some farms. Especially foreign tourists with interest in nature are considered to be potential clients.
- Carry out more studies on additional opportunities and possible interests. Currently there is a shortage of organic vegetables. In addition the interest of schools could be promoted.
- Exploit the tourism opportunities to improve the economic situation in the countryside. It is rather surprising that there are no tourist farms in the area. Managed semi-natural habitats are an additional asset to attract tourists. Offering local (and organic if possible) food will also add value.

2.8. Estonian Native Cows

A significant part of the project has been devoted to support the protection of the endangered Estonian Native Cattle, which is on the FAO list of the endangered breeds and preservation of genetic resources. Another reason to support the survival of the Estonian

Native Cow is that this breed is well adapted to grazing in the wet and nutrient poor meadows of North Livonia. The Estonian Native Cattle Society, who has participated in the project, advises the owners of Estonian Native Cattle and promotes the Estonian Native Breed in newspapers, media and in exhibitions. Apart from direct (organizational) support to the Estonian Native Cow Society the project has supported elaboration of a breeding program and introduction of the Estonian Native Cow on farms. The project has also looked into the possibilities of increasing market opportunities for dairy products of the Estonian Native Cow. Due to the support provided through the project, the number of members of the Estonian Native Cow Society has significantly increased to a total of 196 members and, more importantly, the number of Estonian Native Cows has increased. The total number of milking cows is today 538 heads.

Recommendations

- Continue the co-operation between the managers of the protected areas and the Estonian Native Cow Society and increase the number of grazing animals to maintain the semi natural habitats.
- Exploit possibilities of allocating additional funds to the ongoing research about Estonian Native Cattle Breed and to print the final results of the research.
- Organise and carry out trainings for cattle owners annually, so that the new members who join the Society each year will be trained in the breeding and feeding peculiarities of the Estonian Native Cow breed.
- Motivate more landowners to breed the Estonian Native Cow. The study among Estonian landowners who are involved in agricultural activities revealed that there is an interest to have Estonian Native Cattle. Motivate also those farmers who already have cattle to increase their stock.
- Intensify the contact with Latvian Society “Zila Covs” and agree on a plan for future meetings. The Latvian Society is smaller and the exchange of the Estonian experiences to run the Society can be very useful.

3. Cross Border Management Planning for two Natura 2000 Sites

Two nature management plans were elaborated for two protected areas located on both sides of the border between Latvia and Estonia; Sookuninga, a Natura 2000 site (pSCI) and proposed Ramsar site on the Estonian side and Ziemelu Purvi, a Natura 2000 site (pSCI) and Ramsar site on the Latvian side. Sookuninga has qualified for designation as pSCI because of the presence of 12 HD Annex I habitat types, while the Ziemelu Purvi has been designated because of the presence of seven HD Annex I habitat types (see Figure 18).

According to the EU Habitats Directive, each Member State is obliged to secure favourable conservation status for each of the habitat types and species listed in the directive annexes. The favourable conservation status must be secured through appropriate management. The HD expresses that the conservation status is taken as favourable when a) its natural range and areas it covers within the range are stable or increasing, b) the specific structures and functions which are necessary for its long-term maintenance exist and are likely to continue to exist in a foreseeable future and c) the conservation status of its typical species is favourable. The two nature management plans focus on securing favourable conservation status for these prioritised Natura 2000 habitat types and species.

The combined area of Sookuninga and Ziemelu Purvi constitutes a coherent bog and mire complex.

Sookuninga and Ziemelu Purvi are protected according to their respective national legislation and therefore two separate nature management plan were prepared, each of them following national requirements and procedures. For a coherent bog area like the Sookuninga-Ziemelu Purvi it is important to harmonise the conservation objectives and actions and to avoid conflicts. Management actions to secure biodiversity on one side of the border should not negatively influence the biodiversity on the other side of the border.

As a start the differences and similarities between the

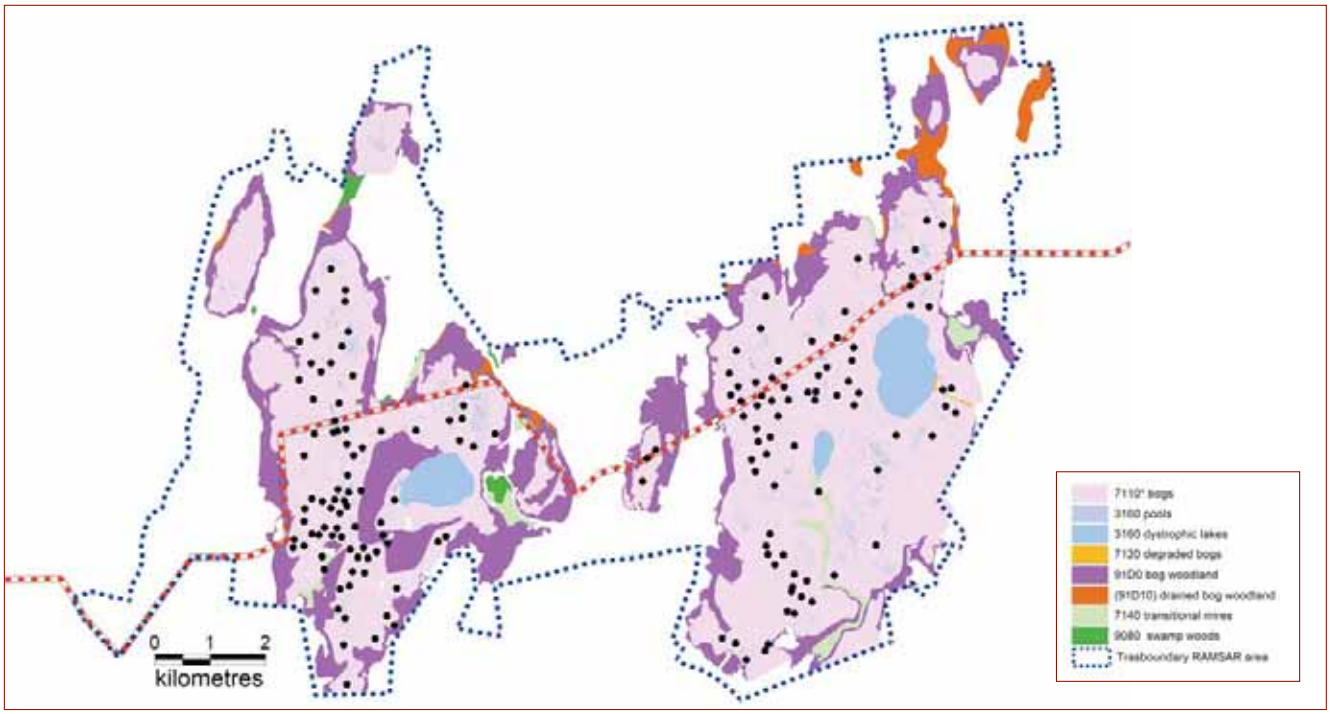


Figure 18. Complex of Natura 2000 habitat types in Sookuninga and Ziemelu Purvi (total area 11,170 ha): 7110: 4,449 ha incl.166 ha pools, 3160 (lakes): 285 ha, 7120: <20 ha, 7140: 126 ha, 9080: 34 ha, 91D0*: 1,649 ha, 91D0 drained: 172 ha. Black dots: Recorded distribution of Pluvialis apricaria.*

national management systems were identied. It showed that if a Nature Reserve is designated as pSCI in Estonia, it is by law obligatory to include conservation goals for the Natura 2000 species and habitat types for which the site has been designated in the management plan. While for a Nature Reserve in Latvia designated as pSCI it is not obligatory to include objectives based on Natura 2000 requirements. Knowing this the objectives of the Latvian management plan for Ziemelu Purvi were harmonised with the objectives of the management plan for Sookuninga (EE).

The differences in legislation are presented in Annex 18. The comparison is based on 1) Ministry of Environmental Protection and Regional Development Order No. 120 on the Recommendations for the Elaboration of Nature Protection Plans (04.07.2002) for Latvia, and on 2) Ministry of Environment' Guidelines for Management Plans (draft, April 2005) for Estonia. The main differences between the legal frames for nature management planning in the two countries are linked with differences in national nature protection traditions, zoning systems, procedures and public hearings. The main conclusion is that the structure of the management plans is in many ways similar and objectives, strategies and activities can therefore be harmonised to the extent needed for securing favourable conservation status of Natura 2000 habitat types and species.

3.1 History and biodiversity values of Sookuninga and Ziemelu Purvi

The Sookuninga Nature Reserve in Estonia

The valuable biodiversity of the mire complex was discovered more than 50 years ago during an expedition of scientists lead by professor Eerik Kumari. As result of this field survey, Nigula State Nature Reserve was established in 1957. A small local forest reserve, Rongu ancient forest, was established in 1964 by Pärnu Region authorities. The Rongu & Kodaja bogs together with Nigula form one wetland complex and was included on the list of valuable wetlands in 1970. The preliminary protection regime on the Estonian bogs (3,061 ha) entered into force in 1991. Kodaja, Rongu & Ruunasoo were established as nature reserves by Pärnu County. The Sookuninga Nature Reserve (3,847 ha) was established in 1999 as the main result of the transboundary nature conservation project "Protection of High Biodiversity through Latvian-Estonian Cross-border Protected Area", which was funded by Regional Environmental Centre. During 2004-2005, new protection rules for Sookuninga have been compiled taking into account Natura 2000 requirements. After adoption by the Estonian Government, Sookuninga Nature Reserve now covers a total of 5,869 ha. Since 1 May 2004, Sookuninga Nature Reserve is designated as a pSCI and forms part (31%) of a larger SPA (Põhja-Liivimaa). Until approval of the new protection rules the Natura 2000 areas are protected with temporal restrictions. The bog histosols with a peat layer exceeding 30 cm are covering 60% and fen histosols (fen peat) covering 7% of the Sookuninga nature reserve. The maximum depth of the peat layer reaches up to 7 meters in the Rongu bog zone. According to Estonian base maps, forest habitat types cover 53%, agricultural land covers 10% (cereal crop fields and grasslands) and mires cover 34%.

Active raised bog (7110*) covers 25% (1,484 ha) of Sookuninga Nature Reserve. The reserve includes six different raised bog massifs of which three (Tõrga/Kodaja, Sandre, Rongu) are divided by the border between Estonia and Latvia. The relatively small (100-200 ha) Ruunasoo, Rakste and Sookuninga bogs are located on the Estonian side of the border. Tõrga/Kodaja and Rongu are open raised bogs with numerous pools and hollow complexes. The representativeness of typical habitat

Table 6. Conservation objectives for Sookuninga and Ziemelu Purvi.

Conservation objectives	**Sookuninga**[1)]	**Ziemelu Purvi**[2)]
Protect ecological integrity of the mire ecosystem	The extensive mire area, it's surrounding habitats and habitats of protected species	The biodiversity of flora and vegetation of wetlands, lakes and forests as habitat for bird, mammal and invertebrate species
Protect BD Annex I species and migratory species (e.g. feeding, breeding and wintering habitats for the listed species)	*Anser albifrons*; *A. erythropus*; *Aquila pomarina*; *A. chrysaetus*; *Bonasa bonasia*; *Caprimulgus europaeus*; *Ciconia nigra*; *Circus pygargus*; *Crex crex*; *Cygnus cygnus*; *Dendrocopos leucotos*; *Ficedula parva*; *Glaucidium passerinum*; *Grus grus*; *Lanius collurio*; *Pernis apivorus*; *Picoides tridactylus*; *Picus canus*; *Pluvialis apricaria*; *Strix uralensis*; *Tetrao tetrix*; *T. urogallus*; *Tringa glareola*.	*Anser albifrons*; *A. erythropus*; *Aquila pomarina*; *A. chrysaetus*; *Bonasa bonasia*; *Caprimulgus europaeus*; *Circus pygargus*; *Crex crex*; *Cygnus cygnus*; *Dendrocopos leucotos*; *Ficedula parva*; *Glaucidium passerinum; Grus grus*; *Lanius collurio*; *Pernis apivorus; Picoides tridactylus*; *Picus canus*; *Pluvialis apricaria*; *Strix uralensis; Tetrao tetrix*; *T. urogallus*; *Tringa glareola*.
Protect HD Annex I habitats	Habitat types 3160, 3260, 6430, 6450, 6510, 6530*, 7110*, 7140, 7150, 9010*, 9020, 9050, 9080, 91D0*.	Habitat types 3160, 3260, 6430, 6510, 7110*, 7140, 7150, 9010*, 9080, 91D0*.
Protect HD Annex II species	*Lutra lutra; Myotis dascneme*	*Lutra lutra; Myotis dascneme*
Protect other values	Aesthetic landscape values (Matsi semi-natural meadow complex) Cultural historical values (Matsi semi-natural meadow complex; Cultural historical values in bogs; Cultural historical values in forests) Long-term ecological research (LTER) and monitoring sites (Ruunasoo bog LTER; Raessaare LTER)	Restore natural hydrological regime of Ziemelu Purvi Restore and improve management of priority habitats Reduce pressure from recreational activities (fishing, berry-picking) on habitats of Community importance and support sustainable use of recreational resources Strengthen co-operation among stakeholders involved in management of Natura 2000 site Ensure habitat protection-based waste management Limit presence of alien species hedgehog Mark borders of protected area and of zones in field Ensure regulation of visitors access to protected area

[1)]According to Estonian Protection Rules. [2)]According to Latvian legislation. [*)]indicate European priority types.

types and typical species for raised bog mosaics is high. The bog woodland habitat type (91D0*) covers 17% (1,000 ha) of the area and at least 20% of this area is influenced by direct drainage. Although forests occupy more than 50% of the reserve, they are rather fragmented and in a non-natural state and only the Bog woodland

Table 7. Overview of Natura 2000 habitat types in Sookuninga and Ziemelu Purvi.

Code	Natura 2000 habitat types	SCI[1)]	Others[2)]	SCI[1)]	Others[2)]	1
7110*	Active raised bog* (with well defined complexes & structures of raised bog systems)	X		X		1
7120	Degraded raised bogs still capable of natural regeneration		X	X		2
7140	Transition mires and quaking bogs	X			X	L:1, E:2
7150	Depressions on peat substrates of *Rhynchosphorion*		X	X		2
3160	Natural dystrophic lakes and ponds		X	X		2
3260	Water courses of plain to montane levels with *Ranunculion fluitans* & *Callitricho-Batrachuion* vegetation	X			X	2
6430	Hydrophilous tall herb fringe communities of plains and of alpine to montane levels	X			X	E:2, L:3
6450	Northern boreal alluvial meadows	X				E:1
6510	Lowland hey meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	X			X	E:1, L:2
6530*	Fennoscandian wooded meadows*	X				E:1
9010*	Western taiga* (boreal forests)	X		X		1
9020*	Fennoscandian hemiboreal natural old broad-leaved deciduous forests (*Quercus, Tilia, Acer, Fraxinus, Ulmus*) rich in epiphytes*	X				E:1
9050	Fennoscandian herb-rich forests with *Picea abies*	X				3
9080	Fennoscandian deciduous swamp woods	X		X		1
91D0*	Bog woodland*	X		X		1

[1)] List of Natura 2000 habitat types for which the site has been designated as a pSCI, [2)] List of additional Natura 2000 habitat types, which are present in the area but not indicated as the reason for designation, [3)] for each habitat type, the priority in the management planning is indicated.

habitat type is regarded as having a favourable conservation status.

The Ziemelu Purvi in Latvia

The Ziemelu Purvi consists of three raised bog massifs: Kodu-Kapzemes Mire (1,925 ha), Kangaru Mire (430 ha), Ollu Mire (2,949 ha) together with a patch of forests, which links the three wetlands together. The total area of the whole protected area on the Latvian site covers 5,304 hectares. All three raised bog massifs are located on both sides of the border. The first ornithological investigations of the wetlands on the Latvian side were carried out in 1970. During these investigations, Kodu-Kapzemes Mire and Olla Mire were recognized as valuable wetlands and bird breeding and resting areas. Since 1977 wetlands have State protection status as two separate Bog Reserves in Latvia. Kodu-Kapzeme mire was recognized as valuable wetlands area while Ollu mire was only regarded as a cranberry reserve. In order to conserve integrity of the area and to strengthen the importance of the bird breeding/resting area the two separate bog reserves were merged in 1997 and designated as one of three core areas for the North Vidzeme Biosphere Reserve. Additionally, in 1989 this territory was included on the List of Important Bird Areas (IBAs) for Europe with the total area of 5,312 hectares. In 2002 Ziemelu Purvi was designated as a RAMSAR site. The territory holds 3,928 ha of active raised and transitional bogs (74.3%), 1,024 ha of forests (19.4%), 279 ha of lakes (5.3%), 30.4 ha of meadows (0.6%) and roads and ditches (0.1%). Kodu-Kapzemes Mire represents an open raised bog with a large bog lake in the middle of the mire, surrounded by bog pool labyrinth and hummock-hollow complex. Small minerogenic islands within the bog are covered with pine trees or broad leave tree species relatively untouched by forestry. Lake Soka (99.7 ha) is located within the wetland. The Ollu Mire is a typical open raised bog comprising two large bog lakes (161.6 and 22.7 ha respectively) and a hummock and hollow complex with a labyrinth of bog pools. The River Pigele springs from the Lake Mazezers and creates a distinctive area of transitional bog with high diversity of flora and fauna.
Using the HD habitat type definitions the active raised bog (7110*) covers 25% (1,484 ha) of the whole area. Representativeness of HD forest habitat types is rather modest with typical bog woodlands (91D0*) covering 119.4 ha of the area, Boreal forests (9010) covering 107.1 ha and alluvial forests (91E0*) covering 19.4 ha.

3.2 Harmonising Conservation Objectives for Sookuninga and Ziemelu Purvi

The overall objective agreed for Sookuninga and Ziemelu Purvi is: ***"Protection of ecological integrity of the mire ecosystem"***.

This overall objective is required to secure a common approach for management of the transborder area. This agreement on a common overall objective is made bearing in mind the overall objective of the EU Habitats Directive to secure favourable conservation status of the habitats and species for which the sites have been designated.
The conservation objectives are defined in more detail in the two individual Nature Management Plans so that they meet the legal frame of management planning for Estonia and Latvia respectively.

3.3 The Natura 2000 habitat types and species

The dominant Natura 2000 habitat type is active raised bog with well-defined complexes and structures of typical raised bog systems. The active raised bog complex consists of a mosaic of several different habitat types with a horizontal structure of hummocks, hollows, bare peat, pools and natural streams and with a vertical structure of scattered pine trees, scrub layer and small mineral islands with forest growth. For the combined area of Sookuninga and Ziemelu Purvi, a total of 15 Natura 2000 habitat types have been identified of which many of them occur in mosaic structure with the others. For instance the active raised bog (habitat type 7110) contains elements of degraded raised bogs (habitat type 7120) and depressions on peat substrate (habitat type 7150). Table 7 presents the habitat types that occur in the combined area, while Figure 18 shows how most of the habitat types are distributed in the combined area.
Of the 15 HD Annex I habitat types identified for Sookuninga, the site is designated as a pSCI because of 12 of these habitat types. Of the 11 habitat types identified in Ziemelu Purvi the area is designated as a pSCI because of seven of these habitat types. It was agreed to give priority in the management plans to habitat type 7110* while interpreting this habitat type broadly to include elements of the other identified bog and mire habitat types and to give priority to the habitat types 91D0*, 9080 and 9010*, since both Sookuninga and Ziemelu Purvi have been designated because of the presence of these types and since three of these are European priority habitat types. On the Estonian side the meadow habitats are more abundant and as such more important here than on the Latvian side and these habitat types have therefore been prioritised in the nature management plan for Sookuninga. In return, the part of the bog and mire complex located in Ziemelu Purvi holds the most characteristic features and the most valuable central parts of these habitats and has therefore high priority. On both sides of the border the surrounding forest habitat types are also valuable. Because they are rather fragmented they are also given high priority in the management plans to strive towards achieving favourable conservation status.
Sookuninga and Ziemelu Purvi also provide excellent

Table 8. Negative impacts identified for the main Natura 2000 habitat types.

		Sookuninga	Ziemelu Purvi
The mires and peatlands (7110*, 7140, 91D0*, 9080*)			
1	Drainage ditches	X	X
2	Overgrowing (climate change, surrounding drainage, atmospheric pollution)	X	X
3	Uncontrolled tourism, disturbance, trampling, trash/waste disposal	X	X
4	Lack of knowledge for appropriate management	X	X
5	Interrupted ecological integrity of mire landscape	X	X
The forests (9010*, 9020*)			
1	Drainage ditches	X	X
2	Monoculture plantations (spruce)	X	X
3	Unsustainable management	X	X
4	Uncontrolled tourism, disturbance, trampling, trash/waste disposal	X	X
5	Interrupted ecological integrity of forest landscape (fragmentations, plantations)	X	X
6	Alien species (*Heracleum sosnowskyi*)		X
The meadows (6430, 6450, 6510)			
1	Overgrowing	X	X
2	Lack of appropriate management	X	X
3	Redirected riverbed (6430, Reiu meadow)	X	
4	Uncontrolled tourism, disturbance, trampling, trash disposal	X	
5	Invasive species	X	
6	Alien species (*Heracleum sosnowskyi*)		X
7	Lack of infrastructure for meadow management (roads, barns, machineries)	X	
The water bodies (3160, 3260)			
1	Redirected riverbed (3260, Reiu river)	X	
2	Uncontrolled tourism, disturbance, trampling, trash/waste disposal, fishing	X	X

habitats for many species of European and national importance. A full inventory of species has not been carried out, but existing records have been digitized and if a species has been recorded on one side of the border, the likely presence of the species on the other side has been evaluated. A total of 60 Natura 2000 species and additional 11 species of national importance are recorded in the combined transborder area (22 HD species, 38 BD species, 3 species of additional Estonian importance and 8 species of additional Latvian importance). Sookuninga is designated for 14 species of the Natura 2000 species present, while Ziemelu Purvi is not designated because of any species. More details on the species are presented in Annex 17. It was agreed to prioritise 21 species and to focus the management activities on securing favourable conservation status for these species.

3.4 Identifying impacts and proposing management activities

In order to plan the management the current threats and negative impacts on each of the habitat types have been identified.

Based on the identified Natura 2000 habitat types and species, the agreed priorities to secure favourable conservation status and the identified threats and negative impacts, the following management activities are proposed for Sookuninga and Ziemelu Purvi respectively.

3.5 Recommendations for coordinated nature management

In general, exchange of knowledge and information on a day-to-day basis is a prerequisite for successful co-operation on management of the two sites. To secure favourable conservation status of the Natura 2000 habitat types and species for which the sites have been designated, the following coordinated actions are recommended:

- Coordinate management activities and needed adaptations through regular meetings.
- Develop common approach to and monitoring of Favourable Conservation Status of Natura 2000 habitat types and species, e.g. landscape scale criteria (presence, structure, coverage of habitats, coverage of degraded habitats) and biological indicator species (typical species for a habitat type and species indicating habitat deterioration).
- Update and maintain the common database and GIS with information on the conservation status of habitat types and species on the long-term.

Table 9. Proposed management activities for the main Natura 2000 habitat types.

		Sookuninga	Ziemelu Purvi
In general for all habitat types			
1	Marking of borders of zones in field	X	X
2	Regulation of visitors access (information boards, roads, paths, watch towers etc)	X	X
The mires and peatlands (7110*, 7140, 91D0*, 9080*)			
1	Restoration of mire edge habitats at Raessaare and Ruunasoo pilot sites	X	
2	Research & monitoring of influence of surrounding drainage to bog habitats (Ruunasoo as reference site)	X	
3	Inventory of degraded mire habitats and defining fine-scale restoration needs	X	
4	Reestablishment of hydrological balance of peatlands (reparations, technical plans, permissions; dams)	X	
5	Restoring of mire habitats (removing invasive vegetation; increasing species and habitat diversity)	X	
6	Monitoring effectiveness of management actions & evaluation (adaptation) incl. ID of management needs	X	X
7	Indicator-based monitoring of favourable conservation status of mire habitats/species	X	X
8	Damming of outflow from the Lakes Ramatas and Lielezers		X
9	Clearing of ditch edges for the maintenance of Capercaillee leks		X
The forests (9010*, 9020*)			
1	Revision and renewal of forestry management plans	X	X
2	Restoration of naturalness of forest habitats	X	X
3	Monitoring effectiveness of management actions & evaluation (adaptations), incl. ID of management needs	X	X
4	Indicator-based monitoring of favorable conservation status of forest habitats and species		X
The meadows (6430, 6450, 6510)			
1	Introduction of management of meadows (regular mowing/grazing, stepwise restoration of former meadows	X	X
2	Establishment of infrastructure for Matsi meadow management (improving roads, building hay barn, fences)	X	
3	Restoration of alluvial meadows (with evaluation of also water bodies)	X	
4	Monitoring effectiveness of management actions & evaluation (adaptation) incl. ID of management needs	X	X
5	Identified indicator-based monitoring of favorable conservation status of meadow habitats & species	X	X
6	Step-by-step restoration of former meadows in Vilklauzņi area and promotion of sustainable agriculture		X
7	Removing of alien species Sosnovski hedgehog (*Heracleum sosnowskyi*)		X
8	Clearing of bushes		X
The water bodies (3160, 3260)			
1	Restoration/naturalization of riverbed for Reiu river in Matsi meadow (research, feasibility study; EIA; technical plan; permissions; restoration works)	X	
2	Management of beaver dam disturbances		X
3	Monitoring of effectiveness of management activities, incl. ID of management needs		X
4	Indicator-based monitoring of favourable conservation status of water habitats/species		X

- Coordinate management actions for Natura 2000 habitat types based on identified threats and conservation needs for securing favourable conservation status of the mire, bog, forest, meadow and water habitat types.
- Coordinate management actions for Natura 2000 species based on identified threats and conservation needs for securing favourable conservation status of the prioritised species.
- Coordinate the public access management through tuning of zoning, marking of zone borders, information stands and road/trail management.
- Cooperate and coordinate forestry activities with foresters on both sides of the border in connection with the bog and mire complexes on the long-term.

More detailed information can be found in annex 18.

4. Sookuninga, Nigula and Ziemelu Purvi as Transboundary Ramsar Site

In December 2005 the Project Steering Committee agreed to send a request to the Ramsar Bureau to nominate Sookuninga together with the two existing Ramsar sites Nigula (EE) and Ziemelu Purvi (LV) as one transboundary Ramsar site. In January 2006 the government of Estonia approved the protection rules for Sookuninga as a first step for the designation of the area as a Ramsar site and for the inclusion of this site into the transboundary Ramsar site. The purpose of this chapter is to present recommendations for the designation and management of the transboundary Ramsar site in North Livonia based on lessons learned from European experience of transboundary working. The relationship between the Convention and requirements of the European Union through the Directives of the Commission is discussed, and some recommendations are made concerning the specific role of a transboundary management plan for the proposed bilateral Ramsar Sites.

The key driver for Contacting Parties to consider transboundary wetland designation is Article 5 of the Convention. It states that "The Contracting Parties shall consult each other about implementing obligations arising from the Convention especially in the case of wetlands extending over the territories of more than one Contracting Party or where the water system is shared by Contracting Parties. They shall at the same time endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna".

This emphasises the two key issues:

- Encouraging coordinated management of a whole wetland regardless of whether it is located over a national boundary, and secondly,
- The practical need to manage water resources in an integrated way – the IWRM concept.

Therefore all Contracting Parties need to objectively consider the need to work with their neighbours to achieve these goals. To assist them there are a number of guidance documents provided by the Convention, which are strongly recommended - the Management Handbooks for Wise Use, particularly

- Handbook 4 on River Basin Management,
- Handbook 5 on Participatory Management,
- Handbook 8 on Managing Wetlands,
- Handbook 9 on International Co-operation

The full report of Wetlands International (Taylor, 2006) holds a brief review of existing Transboundary designated Sites (see Annex 20).

According to the guidelines of the Convention a management plan balances the needs of the stakeholders and reflects the vision developed. The Ramsar Convention in its Management handbook (see: www.ramsar.org/lib/lib_handbooks_e08pre.doc) recommends a sequence of actions to arrive at a dynamic management plan. In summary this is called adaptive management.

4.1 Relation between Ramsar Convention and EU Directives on Nature and Water

While it is true that the motivation for transboundary co-operation may be the need to better manage a wetland system, the Ramsar management planning guidance does not provide guidance to harmonise management plans with those required by the European Union, especially obligations set by the EC Directives on Habitats (Directive 92/43/EEC) and Birds (Directive 79/409/EEC) and the Water Framework Directive (Directive 2000/60/EC). Each of these Directives has been created with a separate framework for implementation, and their relationship to wetlands is complex. The adoption of a management plan recognised by the Ramsar Convention is therefore no guarantee of a plan useful for EC acceptance.

The Natura 2000 network of sites (Special Protection Area – SPA and Special Area for Conservation – SAC) arising from the Birds Directive and the Habitats Directive respectively, arises from relatively old legislation that did not take into account transboundary issues, even though one of the clear purposes of the Birds Directive was to provide protection for sites with internationally significant numbers of migratory birds, often coinciding with wetlands. Nearly all of the early designated SPA sites in the "EU15" countries are wetlands, and a large proportion are also designated as Ramsar Sites.

Any international designation such as Ramsar, has always to be transposed into national law in each country individually, because the EU is not a party to the Ramsar Convention, due to the wording of the Convention admitting only individual countries that have designated at least one Site on accession. This

means that even if Ramsar designation overlaps with one of the Natura 2000 designations, the EU designation and its management planning documentation has to conform with the Directives concerned, because there is no harmonisation mechanism.

Over recent years there have been several attempts to include wetlands as a priority issue within EU legislation, starting with the 1995 Commission Communication to the Council and the European Parliament on the *Wise Use and Conservation of Wetlands,* and more recently the 2003 "Horizontal Guidance on the Role of Wetlands in the Water Framework Directive" (EC, 2003a). However, wetlands themselves are mostly considered as significant only within the wider context of sites supporting biodiversity or as part of inland and coastal waters systems, or as elements within river basins as defined by the Water Framework Directive. The position of the Ramsar Convention is that all wetlands within a Contracting Party's territory should be managed wisely, and the use of EU mechanisms to enable this is regarded as perfectly acceptable by the Ramsar Convention.

Therefore the role of EC guidance on implementation of the WFD with respect to wetlands is critically important to supplement the text of the WFD itself. The two most important documents to date are the 2003 Horizontal Guidance document and the 2003 guidance Document on Planning Processes (EC, 2003b).

Probably the most important practical question for site managers of wetlands and their catchments is what target to aim for when compiling information for development of a management plan. It makes sense to try to develop such tools to hit as many targets in common as possible. EU requirements for management plans are very prescriptive, however, Ramsar requirements are not. Therefore if a management plan is developed according to official EU guidance (e.g. WFD Horizontal Guidance series) in general it will almost certainly fulfil the expectations of the Ramsar Convention.

Water Bodies and their linkage to wetlands

Within a River Basin Management Plan, "*Member States shall ensure the establishment of a register or registers of all areas lying within each river basin district which have been designated as requiring special protection under specific Community legislation for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water. They shall ensure that the register is completed at the latest four years after the date of entry into force of this Directive.*" (WFD, 2000). The environmental objectives of the WFD are to be applied to, and monitored through, 'Water Bodies'. Therefore it is important to clearly identify all significant wetlands within the category of a Water Body or associated directly with such Water Bodies.

Extract from Horizontal Guidance on Water Bodies (EC, 2003c): *The "water body" should be a coherent subunit in the river basin (district) to which the environmental objectives of the directive must apply. Hence, the main purpose of identifying "water bodies" is to enable the status to be accurately described and compared to environmental objectives.*

The relationships between the various categories of Water Body recognised by the WFD guidance is shown in Figure 19.

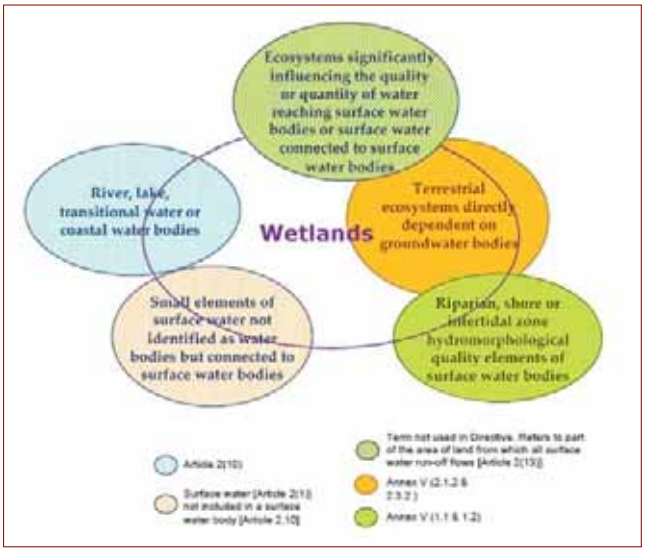


Figure 19, taken from EC Horizontal Guidance on Wetlands (EC, 2003a)

Regardless as to whether a particular wetland qualifies as a Water Body, if is already part of a designated Natura 2000 Site, then the whole Site is treated as a Water Body. But is the wetland is only partly contained in a Natura 2000 Site, the part outside would have to be separately identified as a Water Body. It is clear that all separately designated Natura 2000 wetland sites within a particular river basin will be explicitly included if they are correctly defined as "Water Bodies". Their management must also be coherently dealt with through the "Programme of Measures" (Article 11 of the WFD) which details what needs to be done to achieve the objectives of the WFD.

To try to make sense of this complex interaction, Eurosite held a workshop in 2005 on the topic of "Integration of the Water Framework Directive and Natura 2000" (Eurosite, 2005) focusing upon wetlands, and there will be a follow-up workshop in 2006, which should help test in a site-based way how to develop an integrated hierarchy of plans and "measures".

The Working Group that developed the EC Horizontal Guidance on wetlands recommended selection of a few Pilot River Basins (PRBs) across Europe to test the guidance, including the investigation of links concerning reporting and monitoring for wetland management under both the WFD and the Ramsar Convention. This preliminary evaluation was due to be concluded in 2004, under the supervision of the EU Water Directors

Group. In the Pilot River Basin Outcome Report (Phase 1b), the results of testing WFD guidance documents was reported (EC, 2005a) and in general, PRBs plan to include in the Protected Areas Register the already protected wetlands according to international, national or local legislation. PRBs have not dealt in detail with the role of wetlands in the Programme of Measures (defined in each River Basin Management Plan) although they recognise its importance. However, this will likely be addressed in more detail during Phase 2 of PRB testing. Interestingly, in the case of wetlands connected through groundwater, from a study in the Shannon PRB it was concluded that: "*Co-operation between neighbouring river basins will be essential in developing programme of measures and river basin management plans, to ensure that such interconnected water bodies and associated ecosystems are adequately protected.*" - this is of great interest to authorities working to manage karstic areas with wetlands.

With regard to the two countries Latvia and Estonia;

- Latvia submitted the Daugava as one of the PRBs, but it was not selected in Phase 1 of the work which is reported in EC, 2005a. However, Latvia, through the Ministry of Environmental Protection and Regional development, has developed in consultation with Belarus and Russia, the Daugava River Basin Project (2000-2003), to develop a River Basin Management Plan in Latvia.
- Estonia has proposed two PRB Phase II projects to the EC, one on the Harju Pilot Area, the other the Pandivere Pilot Area. Neither are transboundary but one (Harju) is linked to Natura 2000 work. It would be useful if these nationally proposed projects built into their design greater reference to the wetland related guidance testing. For further details about the PRB Phase II proposals see EC, 2005b.

4.2 Ramsar and EU management planning

The Water Framework Directive is potentially a powerful tool to ensure the protection of wetlands within a river basin context, provided that they are registered as Water Bodies and their needs defined according to the WFD guidance documents. Nature 2000 is well recognised as a powerful tool also, and many Ramsar wetlands are already designated additionally as Natura 2000 Sites. The Ramsar best practice guidance contained in the Handbooks is useful, but does not really help to solve the special case of WFD and Natura 2000 interactions with Ramsar Sites. From the brief review of implementation of EC Directives on Natura 2000 and the WFD, it is therefore clear that much more work is required to obtain a smooth process to minimise the work required to develop a hierarchy of plans that will fit together to form an efficient regulatory and reporting package that will satisfy the EC and also the Ramsar Convention. This will not happen until the EU recognises Ramsar Sites as the legal equivalent of a Natura 2000 Site.

It is quite clear that Ramsar Sites are not referred to as International Sites by EC guidance that supports the WFD. That means that Ramsar Sites have no special status as protected areas within the meaning of the WFD. It also means that if management authorities choose to develop a management plan for the Ramsar Site, then it has no relevance to the requirements of the EU. If, however, management authorities have in any case to develop management plans for Natura 2000 Sites or for the WFD, these plans may also be useful to satisfy the Ramsar Convention, which is not prescriptive in the plans that apply to Ramsar Sites. It is therefore a good idea to ensure that all wetlands are as far as possible designated as Natura 2000 Sites, as it makes it much easier to define sensible protection boundaries around wetlands (i.e. include the wetland within a larger Natura 2000 Site area), and the whole Site would qualify as a Water Body. However, if the Ramsar Site is not a Natura 2000 Site, each wetland area within a Site has to be individually defined as a Water Body unit within a River Basin, any other non-Ramsar wetlands also have to be explicitly identified as Water Bodies.

The critical path analysis of the best way to satisfy both EC and Ramsar obligations is that if a Ramsar Site is already designated within a Natura 2000 Site, then first develop the obligatory Natura 2000 management plan, register the Site as a Water Body in the appropriate River Basin Register, together with any other wetlands that can be defined as Water Bodies, then assist the River Basin Authority to complete its WFD River Basin Management Plan. The resulting two families of documents can be referred to when describing management planning for the purpose of informing the Ramsar Convention (as described in the Ramsar Information Sheet, for each Ramsar Site).

Pilot River Basin Projects and Ramsar Sites – an opportunity

At a European level, there appears to be little or no information and experience available about how to develop WFD River Basin Management Plans that apply to basins with Ramsar Sites. The EC Horizontal Guidance (EC, 2003a) on the role of wetlands and the WFD is untested in that respect. There is an opportunity for a Pilot River Basin project to be formulated within which the North Livonia wetlands could be included. The Latvian/Estonian North Livonia transboundary Steering Committee could consider whether to approach the ministries currently implementing the Estonian PRB project, to learn more about the possibilities of becoming a demonstration site for the effective implementation of the WFD guidance relating to wetlands.

Figure 20. Location of the two exisitng Ramsar Sites Nigula (EE) and Ziemelu Purvi (LV) (Northern Bog) and the new site Sookuninga Bog (EE).

4.3 Potential transboundary designation shared by Latvia and Estonia

Building on several years of co-operation between Latvia and Estonia, where two existing Ramsar Sites, Northern Bogs, dating from October 2002 and Nigula Nature Reserve dating from June 1997 protect almost intact raised bogs and associated peatland, there is a well-developed proposal to join up the two separate designations by designating as an additional Site, the adjacent Sookuninga peatland, and at the same time declaring a common designation for the three areas. This would enable the celebration of the existing co-operation as well as making the combined new Site a management unit from a water management perspective.

Through this PIN-MATRA project, the baseline information for the designation process has been well developed, including the assembly of hydrological and landuse maps as well as the existing inventories used in the earlier designations. Following the baseline work, the key next step is a management plan that delivers against the shared vision for the area, and a clear mechanism to continue to coordinate and manage the actions of the two national sets of field agencies. The underlying Master Plan presents this joint vision on management and wise use of the transboundary wetland complex.

4.4 Suggested procedure for achieving a transboundary designation of a "North Livonia" Ramsar Site

The two existing designated Sites Northern Bogs (Ziemelu purvi) (nr. 1385) and Nigula Nature Reserve (nr. 910) either side of the Latvian/Estonian border are in close proximity. The adjacent Sookuninga bogs would effectively link the two existing Ramsar Sites together if designated as a Ramsar Site, and together all three Sites could form a bilaterally declared Ramsar Site called the "North Livonia" Ramsar Site.
If this path is chosen, the result would be two Sites in Estonia and one in Latvia, still retaining their assigned Site numbers, but the description for each Site would state that it belonged to the other two as a transboundary Site. Administratively, the most efficient path to achieve this transboundary designation is as follows:

1. Complete a Ramsar Information Sheet to the required standard for the proposed "Sookuninga bogs" Site, together with a map
2. The Estonian Administrative Authority (Nature Conservation Department, Ministry of the Environment), writes a letter to the Ramsar Secretary-General stating its intention to designate the new Site, and that it wishes the new Site and the existing Site (nr. 910) to be designated as a transboundary Site bilaterally designated together with Site nr. 1385 as proposed by the Latvian Administrative Authority.
3. The Latvian Administrative Authority (State Secretary, Ministry of the Environment) writes a letter to the Ramsar Secretary-General stating its intention to designate its existing Site (1385), as a transboundary Site bilaterally designated together with Site nr. 910 and the proposed "Sookuninga bogs" as proposed by the Estonian Administrative Authority.
4. Provided that the letters are written to the Ramsar Secretariat using the same text by both Administrative Authorities regarding the intention to bilaterally designate the "North Livonia" Ramsar Site, the Secretariat can simultaneously register the new "Sookuninga bogs" Site and include it in the three Site complex.

4.5 Recommendations

- It is recommended that the Transboundary Steering Committee or its successor the Joint Transboundary Committee considers whether to approach the ministries currently implementing the Estonian PRB project, to learn more about the possibilities of becoming a demonstration site for the effective implementation of the WFD guidance relating to wetlands.
- A representative of the management organisations in North Livonia should attend the forthcoming 2006 Eurosite workshop on Integration of the Water Framework Directive and Natura 2000, to share experiences. Further analysis of the regulatory and guidance background to the three EC Directives considered in this paper may help formulate a project to propose to the EC, to further explore the integrated management planning of wetlands.

5. Recommendations for the future transboundary co-operation

5.1 Importance of transboundary co-operation

The border between Latvia and Estonia may separate two different countries with different cultures and languages, it does not separate nature. Cross border co-operation to protect and manage nature is therefore a prerequisite for securing and maintaining the natural values and biodiversity of North Livonia.

The responsibility for co-operation across administrative borders (communities, regions etc.) within one nation is clearly in the hands of the national government. The responsibility for co-operation across national borders however is not clear, reason why various International Conventions promote cross border co-operation (e.g. Ramsar, CBD, Bonn Convention, AEWE Migratory Birds Agreement, and EU Birds and Habitats Directive).

In the case of North Livonia wetlands are the dominant habitat type. To protect and manage these wetlands, insight in the hydrology across the border is crucial as hydrological systems also do not take administrative borders into account.

According to Article 3 of the Agreement between the Ministry of Environmental Protection and Regional Development of the Republic of Latvia and the Ministry of Environment of the Republic of Estonia on Management of Nature Conservation in Transboundary Complex,

> **Transboundary Protected Area** is an area of land and/or sea that straddles one or more boundaries between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limits of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed co-operatively through legal or other effective means.
> *Sandwith et al.* 2001.

signed in January 2000, a Joint Commission on nature areas in cross-border context shall be established for the implementation of the provisions of this Agreement.

This PIN-Matra project has provided significant support to the implementation of the Agreement and strengthened the transboundary co-operation. Most tangible output adding to the success of the project is the agreement between the two countries to designate a transboundary Ramsar site on both sides of the border, the fifth of its kind in Europe. This Master plan includes recommendations for the protection and management of this transboundary Ramsar site consisting of the Nigula (EE), Sookuninga (EE) and Ziemelu Purvi (LV).

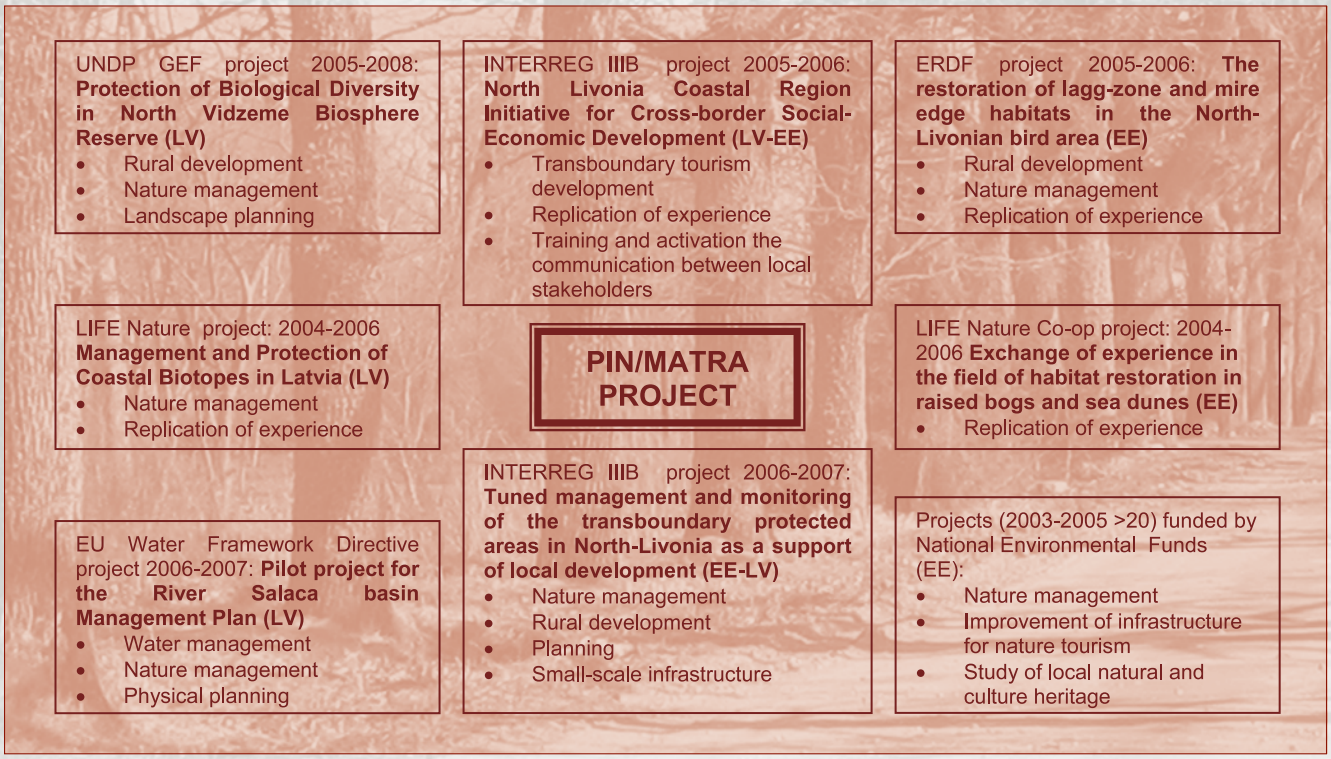


Figure 21. Spin-off effect of the PIN/MATRA project "Integrated Wetland and Forest Management in the Transborder Area of North Livonia (Estonia-Latvia)" to the project area (co-funding, new initiatives and follow-up project).

Another outcome of the project is that the Transboundary Steering Committee for the PIN-Matra project has paved the way for the establishment of the Joint Transboundary Commission foreseen in the agreement signed in 2000 between the two countries. This Joint Commission creates the required institutional and organisational structure needed to sustain and facilitate the transborder co-operation and for the tuning of activities in the future.
The first task of this Joint Committee is to make clear arrangements about tasks, responsibilities, activities and budget. At the final Steering Committee of the PIN/Matra project in February 2006 strong initiatives were taken towards making the agreement come to live and the meeting was at the same time the launching meeting for the Joint Commission foreseen in the 2000 Agreement.
Last but not least, the project has been the crystal point for various initiatives and projects to strengthen and further develop the transboundary co-operation. The results of the project go well beyond the outcomes presented in this Master Plan (see Figure 21).

5.2 Recommendations for the future transboundary co-operation

The existing agreement between the two governments as such is not sufficient and additional practical and administrative tools are needed to strengthen the co-operation in the field of nature protection and sustainable rural development. A number of options to be considered are mentioned below. Further investigations on the pros and cons are needed before coming to a conclusion about the best way to strengthen and sustain the existing co-operation.

- The designation of a bi-lateral national park is one option to further strengthen the transboundary co-operation. Advantages of the designation of National Parks are that they 1) have own management organisation, which can facilitate transboundary co-operation at the local level, 2) have visitor centres to simulate awareness raising and education, 3) aim to stimulate tourism, and 4) often offers extra financial possibilities and opportunities.
  The Latvian government is however not in favour of designating the area as a National Park. Also for Estonia, that already has designated 5 National Parks one of them located in the vicinity of North Livonia, the designation of new National Parks is not a priority.
- Another option is to extend the Biosphere Reserve on the Latvian side to the Estonian side and create a Bilateral Biosphere Reserve. The advantage of this option is that the Latvian side has already experience with the management of the Biosphere Reserve (North Vidzeme Biosphere Reserve) and that the extension of this model to the Estonian side seems to be an obvious one. The disadvantage of extending the Biosphere Reserve to the Estonian side is that a Biosphere Reserve does not provide extra protection, as Biosphere Reserves is not very well embedded in the Estonian legislation.
- The Transboundary co-operation was initiated to enhance the protection and management of biodiversity, but could be broadened to include also sustainable rural development to secure that nature management is fully integrated into other sectors as well. Important for transboundary co-operation are the development of eco-/nature-tourism, the development of infrastructure and the water management.
- It is strongly recommended that the Joint Transboundary Commission elaborates annual work plans and that a limited budget is allocated to organise meetings, to inform and involve local stakeholders and to appoint a secretary and chairman. It is suggested that the secretariat is the responsibility of the regional management organisation for nature conservation (in the case of Latvia the North Vidzeme Biosphere Reserve) and that the chairman is the responsible employee from the Ministry of Environment. Both the chairman and secretary can rotate on for instance a biannual base. At least the transborder secretariat should strive towards having a full-time employee.
- The information material about nature and cultural values of the North Livonia should be prepared in different languages (Latvian, Estonian, English, Russian) and distributed widely. The homepage of the PIN-Matra project www.north-livonia.org could be the opportunity for distributing information about events and news in the region on the long-term, so maintainance of the website is recommendable.

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Master Plan for North Livonia

Wetland Protection and Rural Development in the Transboundary Area of Latvia and Estonia

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This is the final report of the PIN/Matra project 2002/014 "Integrated Wetland and Forest Management in the Transborder Area of North Livonia (Estonia-Latvia)".

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Partners and collaborating institutes in this project:

- Alterra (NL) to for advice on the hydrological research activities.
- Bio/consult (DK) for guidance on harmonizing management planning with the requirements of Natura 2000 and the elaboration and tuning of two Natura 2000 management plans; one on each side of the border
- Wetlands International for advice on the designation and management of the transboundary Ramsar sites in North Livonia
- WWF Latvia for the forestry training activities and inventories on the biodiversity of forests on the Latvian side of the project area.
- Nigula Nature Reserve Administration / State Nature Conservation Centre, Pärnu - Viljandi Region ; Local Project Management
- North Vidzeme Biosphere Reserve Administration; Local Project Management.
- Department of Landscape Ecology, Institute of Ecology, Tallinn University for the hydrological research and advice wetland restoration activities
- Estonian Native Cattle Breed Society for implementing activities on the protection of Estonian Native Cattle
- Estonian Map Centre, Estonian Land Board, Estonian Boardeguard Board and General Staff of the Estonian Defence Forces for the help on creation of the trasboundary Geographical Information System
- Ministry of Environment of the Republic of Estonia for advice and financial support to related and follow-up projects

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