LIFE+ 07 NAT/EE/000120

“Saving life in meanders and oxbow lakes of River Emajõgi on Alam-Pedja NATURA 2000 area”

HAPPYFISH

After-LIFE Conservation Plan

Tartu 2012

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1. BACKGROUND INFORMATION

The present paper was written by Wildlife Estonia, and it forms an independent part of the final report of the project Saving life in meanders and oxbow lakes of River Emajõgi on Alam-Pedja NATURA 2000 area, also known as Happyfish (hereafter the project) financed by LIFE+ program of European Union and Environmental Investment Centre. This plan describes the results of the project and makes some suggestions about organizing the protection of watercourses and flood plain water-bodies together with their biota in the protected area/Natura 2000 site of Alam-Pedja, thus guaranteeing the sustainability of the results obtained through this project. The data collected and analyses carried out during this project could be used for writing management plans, but also for writing activity plans for protecting endangered species.

2. PROPERTIES

FORMATION AND STATUS OF THE PROTECTED AREA

Alam-Pedja Nature Reserve was founded in 1994, confirmed by the government regulation (RT I 1994, 15, 250). Since the year of its formation the territory of this nature reserve has grown from 26,00 hectares to 34,220 hectares.

The first Protection Rules for Alam-Pedja Nature Reserve were authorized by the regulation of the government of the Republic of Estonia No 92/1995 (RT I 1995, 30, 381). Last amendments to the valid rules were made on May 18, 2007 with the regulation No 153 (RT I 2007, 28, 273).

Management plan for Alam-Pedja Nature Reserve

Alam-Pedja Nature Reserve is rich in species and habitats, therefore it is protected under several major international agreements: It is a wetland of international importance protected by Ramsar Convention (17.06.1977), a Special Protected Area and special Area of Conservation in Natura 2000 network, and a bird area of international importance in IBA (BirdLife).

AIM OF PROTECTION

The value of Alam-Pedja Nature Reserve lays in its mosaic landscape of bogs, forests, flooded meadows and rivers, which form one complex unit. This protected area with its vast territory and small human impact is good habitat for many rare and protected species. The network of rivers running through the landscape connects two big lakes and as such is unique not only in Estonia, but also in the whole Europe.

According to protection rules of Alam-Pedja Nature reserve (RT I 2007, 38, 273), the main purpose of this reserve is to protect natural variety of ecosystems on a large territory, guarantee natural development of forest and bog communities, and to preserve meadow communities and the habitats of protected species. In addition to the aims written down in the protection rules, Alam-Pedja Nature Reserve also recognizes preserving our cultural heritage, propagating environmental education, and carrying out monitoring tasks and scientific projects among its functions.

The Natura 2000 site of Alam-Pedja

Natura 2000 site of Alam-Pedja has been founded in order to protect the habitat types listed in Annex 1 and habitats of species listed in Annex 2 of the Habitats Directive. The habitat types protected are: rivers and streams (3260), dry heaths (4030), species-rich grasslands on non-calcareous soils (*6270), flood plains (6450), wooded meadows (*6530), raised bogs (*7110), degraded raised bogs capable of regeneration (7120), transition mires and quaking bogs (7140), species-rich mires (7230), old natural forests (*9010), old deciduous forests (*9020), spruce forests rich in grasses (9050), swamping forests and swamp deciduous forests (*9080), transition mire woodlands and bog woodlands(*91D0), swamp forests on flood plains (*91E0), deciduous riverside forests (91F0). The species whose habitats are protected are: otter (*Lutra lutra*), pond bat (*Myotis dasycneme*), asp (*Aspius aspius*), spined loach (*Cobitis taenia*), European bullhead (*Cottus gobio*), weatherfish (*Misgurnus fossilis*), large copper (*Lycaena dispar*), thick-shelled river mussel (*Unio crassus*), lady's slipper orchid (*Cypripedium calceolus*), fen orchid (*Liparis loeselii*), marsh saxifrage (*Saxifraga hirculus*).

During the fieldworks carried out within the framework of this project, also several species listed in Annex 2 of Habitats Directive were recorded, such as yellow-spotted whiteface (*Leucorrhinia pectoralis*), water beetles *Dytiscus latissimus* and *Graphoderus bilineatus*, and scarce heath (*Coenonympha hero*). The majority of these protected species are connected to wet habitats.

The habitats of the type 'Rivers and streams' (3260) cover 485 hectares (1.4 per cent of the total area). We may say that in general the watercourses are in good condition. The situation is bad only in the lower course of River Laeva, where the water is guided out of its natural riverbed and flows into River Emajõgi through a man-made canal. 5.2 km long stretch of this natural riverbed of this river (nowadays called Brook Karisto) is partially preserved. In order to restore the natural state of the river and secure the integrity of the network of rivers, it is necessary to channel the waters back into their natural riverbed and restore the connection with River Emajõgi.

One important element in the ecosystem of Alam-Pedja is its system of oxbow lakes (consists of 55 lakes). However, one thing deteriorating the health of these lakes is their total separation from the river by sediment walls forming at their connecting point. During the projects financed by the project Happyfish and the Cohesion Fund of European Union, 18 major connections were re-opened (10 of these within the project Happyfish). But in Alam-Pedja, there are still some bodies of water with so narrow connections to the River Emajõgi that during dry periods the connection is lost (such as 1 km long lake of Albri, and the brook of Soova/Teilma with the natural bed 1.2 km long). To preserve good health of the fish, migration obstruction should be removed also from the connecting points of these lakes. Restoring natural bed of River Ilmatsalu is needed for maintaining the good ecological state of this river.

Especially important and many-sided in preserving the biological diversity is the role of the flooded meadows (habitat type 6450), which cover 3,835 ha (11.2 per cent) of the protected area. The flooded meadows of Alam-Pedja are among the most outstanding ones in Estonia, but also in the whole boreal region of Europe. Protecting flood meadows means taking care of them – mowing or grazing, but also restoring the meadows, if necessary, and fighting against shrubs and tussocks. We maintain or restore almost 1,500 hectares of flooded meadows at present.

Flood plain is a habitat where three biotopes – forest, meadow and water – meet, and their existence and health influence many organisms as well as various ecological (and social) processes. Flooded meadows – they are both a meadow and a wetland – play important functional role in the ecosystem and species diversity. Flooded meadows for a complex and integrated ecosystem with the following functions: flood regulation (rivers flowing in their natural, undredged and uncorrected bed without dams function as hydrological flood buffer and alleviate fluctuations in water level for the lands downstream); regulating biogeochemical cycle and hydrologic cycle; bioproductivity function – historically the most important one, since the hay collected from flood plains have been used as fodder for centuries, but today there are alternative possibilities in bioenergetics; habitat for plant and animal species – nesting, feeding and resting grounds for birds, habitats for various mammals and invertebrates; important spawning ground for fish; social and cultural functions, but also scientific and educational importance.

3. PROTECTION VALUES

TABLE 1. SUMMARIZED VALUES

Value	Aim of protection	Risk factors	Actions	Anticipated results
3.1. Rivers, habitat type 3260				
Rivers in good health, in their natural riverbed, without migration obstacles	Maintain good natural state, no migration obstacles	Migration obstacles of human origin	Proceeding with the planned activities according to the protection principles for Natura sites. Operational monitoring, visits to the site. Proceeding the infringements. Restoring natural state of the lower courses of Laeva and Ilmatsalu rivers and the brook of Teilma.	Open stretches with no migration obstacles have preserved. The stretches damaged by human activities have been restored. System for collecting, storing and using information about environment protection created and implemented.
		Beaver dams		
		Changing the bed, digging ditches		
		Amelioration, sediments freed and moving		
3.2 Oxbow lakes, habitat type 3260				
Oxbow lakes in good states, connected to the river	Maintain good natural state, no migration obstacles	Thick layer on sediments in connecting points, separation from River Emajõgi	Removing the sediments from the connecting point of Albri lake. Monitoring sediment formation processes	Open oxbow lakes with no migration obstacles have preserved or have been restored. System for collecting, storing and using information about environment protection created and implemented.
3.3. Flood plains, habitat type 6450				
Well-managed flood plaisn, active spawning ground	Spawning grounds preserved	Overgrowing with shrubs, turfing, decreasing of the spawning area	Regular mowing	Wide spawning areas around the oxbow lakes
3.4. Species				
Asp (*Aspius aspius*)	Preserving and increasing its viable population in nature	Migration obstacles	Removing migration obstacles, building passes for the fish, prohibiting construction of new obstacles	Viable natural population of asp, limited angling allowed in River Emajõgi
		Insufficient spawning grounds	Creating artificial spawning grounds	
			Artificial propagation and reintroduction of asp	
		Illegal fishing	Better monitoring, communication	

Value	**Aim of protection**	**Risk factors**	**Actions**	**Anticipated results**
Weatherfish (*Misgurnus fossilis*)	Preserving and increasing its viable population in nature	Lack of suitable habitats	Maintaining the flood plain, removing migration obstacles, eliminating and avoiding the influence of amelioration	Viable natural population
Bullhead (*Cottus gobio*)	Preserving and increasing its viable population in nature	Lack of suitable habitats	Protecting the natural habitats and maintaining their good health, building artificial rapids	
Spined loach (*Cobitis taenia*)	Preserving and increasing its viable population in nature	Lack of suitable habitats	Protecting the natural habitats and maintaining their good health	

4. PLANNED MANAGEMENT ACTIVITIES

Action plan in Table 2 covers the activities needed for sustainability of the project results, but also the activities that should be carried out additionally, whenever some new possibilities arise, to further increase the value of this Nature 2000 site.

The activities are prioritized according to their key role in fulfilling the protection aims of this protected area and the availability of financing.

First priority (I) is given to activities directly needed for fulfilling the aims set by the protection rules, and obligatory activities provided by legislation. Second priority (II) is given to activities needed for developing and introducing the protected area; these activities should be carried out, if possible. Third priority (III) is given to activities supporting indirectly the aims set by protection rules.

Extremely important is planning and carrying out the activities helping to fulfill the aims set for Natura sites and nature reserves. It is important to protect what we have, and to try and find possibilities for further improving its ecological status.

To increase the significance and health of the protected area, and to increase the species diversity in this area, it is necessary to solve the problem of restoring the original state of the lower courses of the rivers Laeva and Ilmatsalu and the brook of Teilma, whose health is poor at the moment. The lower course of River Laeva (downstream from Laeva-Palupõhja road) is flowing in an artificial canal. Natural course (today known as the brook of Kaaristo) is partially preserved, so that it would be possible to restore about 5 km of it and create about 50 hectares of good river habitats, thus improving significantly the migration routes for many fish, but also their resting and reproduction grounds. The lower course of River Ilmatsalu has also been directed into an artificial canal, and flows into an oxbow lake with the same name.

Sediments collecting into the connection points are the reason behind the poor health of Albri oxbow lake and the brook of Teilma/Soova. Removing the obstacles would help to increase the number of water-bodies in good health and thus guarantee the significance of the protected area.

In order to guarantee good health of the fish fauna, regular management of the meadows is necessary, but also some restoring of the meadows. Within the framework of seminatural communities' management plan, regular maintenance needed for fish protection must continue, and restoration the meadows through cleaning away the overgrowth must also continue. Together with restoring the natural state of River Laeva, also the shrubs hindering mowing must be removed. In order to guarantee sustainable management of flood plains, the whole chain of processing, transporting and using the meadow vegetation must be solved. We need to prepare and implement project to find technological solutions for different end-users in order to use this hay, mainly for energy production or in livestock farming. Essential infrastructure (access roads, constructions) must be built and equipment obtained for managing the flood plains at appropriate times and with minimal inference from weather conditions. The project should cover different interested parties, both from private sector and from public sector. The maintenance of the flood plain would have positive impact also on bird-life, several protected species included.

Since River Emajõgi, especially the stretch flowing through Alam-Pedja Nature Reserve, is popular fishing location, possible risk factors include failure to comply with fishing rules and illegal fishing. Due to large territory and large number of visitors, having permanent staff at the location is absolutely necessary. Having people familiar with local affairs and provided with appropriate equipment would significantly reduce the possibilities of visitors' knowingly or unknowingly not complying with the regulations.

In order to avoid possible harmful interferences, it is necessary to continue with communication directed to all interested parties. All the media channels should be used to explain Fishing Rules as well as the rules and regulations concerning visiting the protected areas.

In order to protect and strengthen the populations of the protected species (and through them also other species), it is important to maintain good health of their habitats. Most important task is to avoid deteriorating of the ecological status of water-bodies, especially by building obstacles and redesigning the water courses. Therefore, complex monitoring through public monitoring project is needed. The impact of ash reintroduction to the population must be assessed. After restoring the natural state of River Laeva there will be need to introduce ashes into this river to improve the health of the local population. The habitats that would be created through restoring the river of Laeva would help to strengthen also the populations of bullhead, spined loach and weatherfish, while removing migration obstacles would support the growth of many species and strengthen their populations.

Both spawning grounds restored through the project Happyfish are constantly checked from the viewpoint of their management. The restored spawning grounds of Verevi-Samblasaare has two potential managers – nature protection organization Kotkas and private limited company Ranna Farm, the latter having provided sustainable management for the area between Lake Võrtsjärv and the main ditch of Verevi for several years already, using the hay (silage) collected for forage. In case of the restored spawning grounds of Soova, no institution have expressed their wish to manage it, while the nature protection development plan for Estonia up to year 2020 anticipates doubling of the managed seminatural plant communities (from 23,000 hectares to 45,000 hectares) within the next 8 years. A workgroup consisting of land management specialists and experts has compiled a list of areas they would like to include into list of managed lands, and the restored area of Soova is included.

The sediment mounds formed during the project Happyfish became extremely valuable studying and monitoring objects for the botanists of Tartu University who have studied vegetation dynamics and the impact of flood plain management there since the year 2000. The activities carried out within this project have thus created a site for scientific experiments on formation of flood plain vegetation and its changes, what species arrive through which routes, what is the role of floods in plant dissemination compared to plants that live nearby. As the vegetation formation processes are slow, the research will continue there for at least two more years. And the information obtained is undoubtedly interesting for the whole Europe, because flood plains with almost natural water budget, relatively uninfluenced by agriculture are extremely rare in Europe.

TABLE 2. PLAN OF ACTIONS

No	Activities	Activity type	Performers	Priority	Period 2013-2020 or specific	Possible sources of financing	Estimated costs
1. Inventories, monitorings, research							
1.1	Researches (conservation research, incl. studying the strain by visitors)	Inventories, monitoring, research	EB, EEIC	II	Constant	SF, EIC	2500 annually
1.2	National monitoring, water biota	Inventories, monitoring, research	EEIC, competent representatives of public and 3rd sector	I	According to monitoring plan	SF, EIC	According the management plans 1)
1.3	National monitoring, quality of water, hydromorphology	Inventories, monitoring, research	EEIC, competent representatives of public and 3rd sector	I	According to monitoring plan	SF, EIC	2000 annually
1.4	Monitoring the results of asp reintroduction, evaluating the health of asp population	Inventories, monitoring, research	EEIC, competent representatives of public and 3rd sector	II	2013-2015	SF, EIC	5000
1.5	Monitoring the impact of opening the connection to oxbow lakes (monitoring the works done, evaluating the appropriateness of the measures)	Inventories, monitoring, research	EEIC, competent representatives of public and 3rd sector	II	2013-2015	SF, EIC, CF	15 000 2)
1.6	Monitoring the impact of restoring River Laeva	Inventories, monitoring, research	Competent 3rd sector undertaker	II	After articles 2.3 and 2.4 are realized	SF, EIC	6 000 3)
1.7	Monitoring the impact of restoring the spawning grounds	Inventories, monitoring, research	Competent 3rd sector undertaker	II	After articles 2.3 and 2.4 are realized	SF, EIC	4 000 3)

2. Maintenance, restoring and management activities							
2.1	Preserving good health of the habitats for fish fauna, incl. protected species; opening the connection to oxbow lake Albri	Natural species, A-P Natura 2000 site	Project-based, competent private or 3rd sector company	II	Project-based	EIC, LIFE+, Interreg, SA, EFF	35 000
2.2	Preserving good health of the habitats for fish fauna, incl. protected species; opening the connection for the brook of Teilma	Natural species, A-P Natura 2000 site	Project-based, competent private or 3rd sector company	II	Project-based	EIC, LIFE+, Interreg, SA, EFF	20 000
2.3	Preserving good health of the habitats for fish fauna, incl. protected species, restoring the natural course of River Ilmatsalu	Natural species, A-P Natura 2000 site	Project-based, competent private or 3rd sector company	II	Project-based	EIC, LIFE+, Interreg, EFF, CF	110 000
2.4	Preserving good health of the habitats for fish fauna, incl. protected species, restoring the natural course of Laeva river, removing migration obstacles	Natural species, A-P Natura 2000 site	Project-based, competent private or 3rd sector company	I	Project-based	LIFE+, EIC, SA, EFF, CF	143000 3)
2.5	Restoration the habitats for fish fauna, incl. protected species spined loach and weatherfish, restoring spawning grounds in the lower course of River Laeva	Natural species	Project-based, competent private or 3rd sector company	I	Project-based, together with 2.3	LIFE+, EIC, SA, EFF	13 000 3)
2.6	Maintaining the habitats for fish fauna, incl. protected species weatherfish and spined loach, maintaining the spawning grounds on the meadows surrounding the oxbow lakes	Natural species	EB, EARIB, SFMC, competent 3rd sector institution	I	Project-based, together with 2.3	EIC, LIFE+, Interreg, EAFRD, SA, EFF	2000 annually
2.7	Restoring spawning grounds (incl. for protected species ash and bullhead) in River Laeva	Natural species	Project-based, competent private or 3rd sector company	I	Project-based, together with 2.3	LIFE+, EIC, Interreg, SA	26200 3)

2.8	Restoring the habitat (flooded meadows)	Plant communities at A-P Natura 2000 site	EB, EARIB, SFMC, competent 3rd sector institution	I	Permanently, according to national plan	LIFE+, EIC, Interreg, EAFRD, SA	5000 3)
2.9	Maintaining the habitat (flooded meadows)	Plant communities at A-P Natura 2000 site	EB, EARIB, SFMC, competent 3rd sector institution	I	Permanently, according to national plan	LIFE+, EIC, Interreg, , EAFRD, SA	170 000 annually, totally 1360000
3. Environmental education and recreational activities, public information							
3.1	Regulating the impact of visitors	Environmental education and recreational activities	Manager of the protected area	I	Permanently, according to the results of 1.1	EIC, SF	3000 annually
3.2	Maintaining footpaths and rest areas (incl. constructing and eliminating camping areas, changing the course of the footpaths)			I	Permanently, according to the results of 1.1	EIC, SF, LIFE+, Interreg, SA	2000 annually
3.3	Putting up or taking down and maintaining the information boards			I	Permanently	EIC, SF, LIFE+, Interreg	1000 annually
3.4	Maintaining the information boards			I	Permanently	EIC, SF, LIFE+, Interreg	1000 annually
3.5	Informative publications, informing the public			III	According to the need to guarantee their availability at the recreation centers	EIC, SF, LIFE+, Interreg	25000
3.6	Reviving traditional fishing methods. Building fishgarths	Environmental education and recreational activities	EB, PRIA, SFMC, competent 3rd sector institution	III	Project-based	EIC, SF, SA	20000
3.7	Shooting a film about historical fishing methods and equipment	Environmental education and recreational activities	EB, PRIA, SFMC, competent 3rd sector institution	III	Project-based	EIC, SF, LIFE+, Interreg	120000

4. Plans, projects, rules							
4.1	Updating management plan	Plans, projects, rules	Manager of the protected area	I	According to timetable	EIC	15000
4.2	Changing protection procedure	Plans, projects, rules	Manager of the protected area	I	According to timetable and results of 1.1-1.8	EIC	10000
5. Other							
5.1	Guaranteeing sustainability of flood plain management through creating integrated structures. Project for purchasing maintenance equipment, adding value to plant mass (energy production, animal husbandry, etc), building different structures.	Plant communities and species at A-P Natura 2000 site	Project-based	II	Project-based	EIC, SA, EAFRD	950000
5.2	Improving everyday supervision, hiring permanent staff to the protected area.	Plant communities and species at A-P Natura 2000 site	Manager of the protected area	I	Permanently	SF, EIC	4000

1) Wildlife Estonia has a contract with the Estonian Environmenta Board for preparing the protection management plans of the protected fish species asp, grayling, spined loach, bullhead and weathe loach. Management plans will be approved by the Environmental Board for a period of 10 years.
2) Wildlife Estonia has a contract for implementing the the work
3) Wildlife Estonia has presented a proposal for the 2012 LIFE+ call

Performers: EEIC- Estonian Environment Information Centre, EB- Environmental Board, EARIB- Estonian Agricultural Registers and Information Board, EIC- Environmental Investment Centre, SFMC- State Forest Management Centre

Sources of financing: CF- Cohesion Fund, SA- structural aid by European Union, EAFRD- European Agricultural Fund for Rural Development, LIFE+- Financial Instrument for the Environment, OF- own funds, SF- state budget funds, EIC- Environmental Investment Centre, Interreg- program to stimulate cooperation between regions in EU, EFF- European Fisheries Fund

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Maintenance Plan for Flood Plains. Environmental Board, written by Jaak-Albert Metsoja, 2011. In writing the chapter on flooded meadows, also the experts from Wildlife Estonia participated and the knowledge obtained through Happyfish project was used. (In Estonian.)
http://www.keskkonnaamet.ee/public/PLK/Lisa_4_Luhtade_hoolduskava_2011.pdf

Estonian Nature Protection Development Plan up to year 2020 (in Estonian)
(http://www.envir.ee/orb.aw/class=file/action=preview/id=1186984/LAK_lop.pdf)