Lake Fertő Biosphere Reserve

Management Plan

Sarród

2015.

Contents

Introduction

Based on the 2013 report and UNESCO's recommendations, it has become obvious that the Lake Fertő BR lacks an important and effective management tool, namely a dedicated biosphere reserve management plan since its establishment in 1979. While there are other management plans in effect for the BR, and in many ways they are in line with the BR management efforts, they do not cover the whole area (missing parts of the transitional zone), and definitely their focus is different to some extent. The advantage of the situation is, however, that harmonization with these different management documents could be achieved, and the overlapping themes and tasks gain even more importance.

The Lake Fertő BR is a first generation biosphere reserve, and the notion and practices of biosphere reserves have changed to some extent during the nearly 40 years of its designation. The management of the BR has been diligent to adopt these changes, but this important link has been missing. Thus it is also a tool to implement the *Seville Strategy* and the *Statutory Framework of the World Network of Biosphere Reserves* on local level.

The results of the document elaboration process and the major conclusion are that the sustainable development approach and stakeholder involvement are the greatest challenges in the BR, and definitely something to reinforce in the period of 2015-2025, and the planned management actions try to address these issues.

1. UNESCO MAB Programme

1.1. UNESCO MAN AND BIOSPHERE PROGRAMME

Launched in 1971, UNESCO's Man and the Biosphere Program (MAB) is an Intergovernmental Scientific Program that aims to establish a scientific basis for the improvement of relationships between people and their environment. The MAB Program develops the basis within the natural and social sciences for the rational and sustainable use and conservation of the resources of the biosphere and for the improvement of the overall relationship between people and their environment. It predicts the consequences of today's actions on tomorrow's world and thereby increases people's ability to efficiently manage natural resources for the well-being of both human populations and the environment.

By focusing on sites internationally recognized within the World Network of Biosphere Reserves, the MAB Program strives to:

- identify and assess the changes in the biosphere resulting from human and natural activities and the effects of these changes on humans and the environment, in particular in the context of climate change;
- study and compare the dynamic interrelationships between natural/near-natural ecosystems and socio-economic processes, in particular in the context of accelerated loss of biological and cultural diversity with unexpected consequences that impact the ability of ecosystems to continue to provide services critical for human well-being;
- ensure basic human welfare and a liveable environment in the context of rapid urbanization and energy consumption as drivers of environmental change;
- promote the exchange and transfer of knowledge on environmental problems and solutions, and to foster environmental education for sustainable development.

1.2. BIOSPHERE RESERVES IN HUNGARY

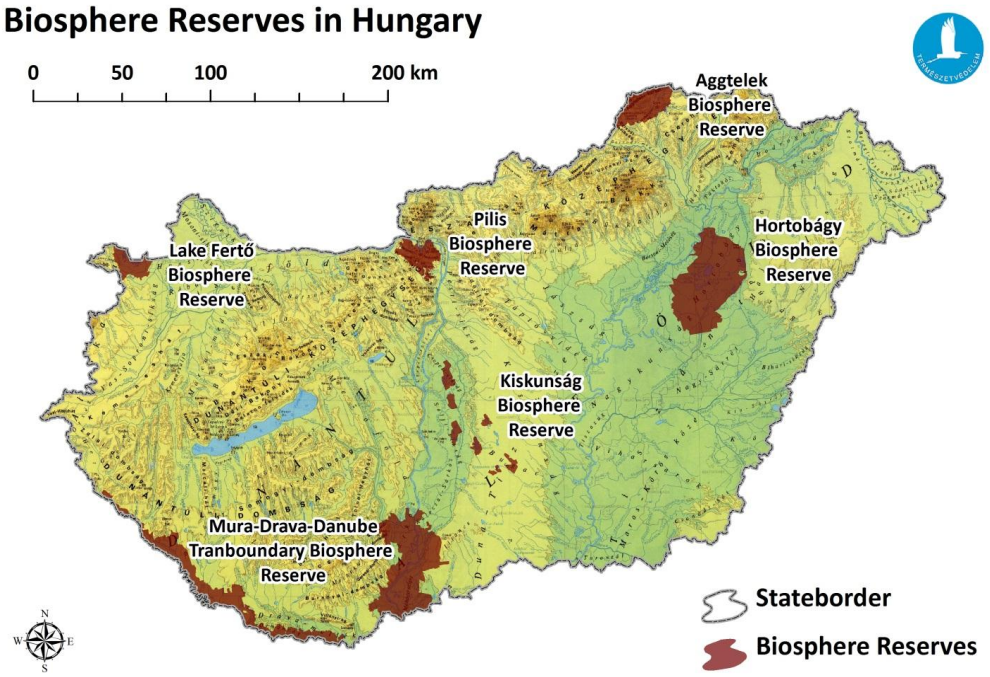
Hungary as a UNESCO member state joined the MAB program in the 1970s as one of the first countries. Five biosphere reserves were designated by the UNESCO until 1980, whereby the emphasis of the original nomination was to place international focus on the protection and scientific research of ecosystems that have a high natural value partly due to the extensive,

long-lasting interactions between man and nature, in other words “Man and Biosphere”. The sixth biosphere reserve (Mura-Drava-Danube Biosphere Reserve) was established in 2012.

Date of designation:

Aggtelek Biosphere Reserve	**1979**
Lake Fertő Biosphere Reserve	**1979**
Hortobágy Biosphere Reserve	**1979**
Kiskunság Biosphere Reserve	**1979**
Pilis Biosphere Reserve	**1980**
Mura-Drava-Danube Transboundary Biosphere Reserve	***2012***

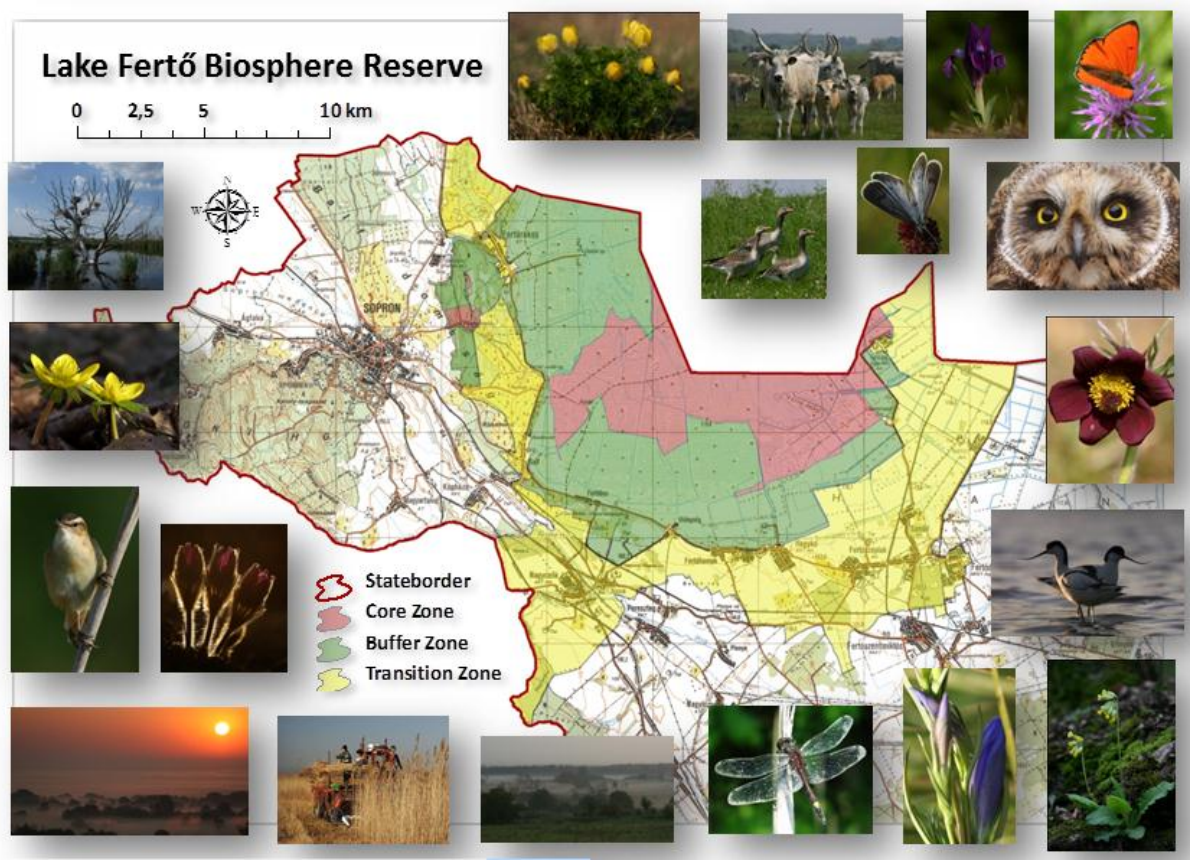
The “first generation” biosphere reserves were established with the main objective to protect the natural values of the protected areas and with a lower level of interaction with local communities than is general nowadays in new biosphere reserves situated outside the legally protected areas. Following the Madrid Action Plan and Seville Strategy of the UNESCO it has been a challenge to review the management, but this revision has led to the establishment of a new zonation system, assignment of new functions to certain zones and a renewal and increase of interactions between biosphere reserves and local people. Strengthening the involvement of local communities and other stakeholders is an essential role of biosphere reserves.



2. The Lake Fertő Biosphere Reserve

The Lake Fertő Biosphere Reserve is situated in the North-Western part of Hungary, at the Hungarian-Austrian border.

2.1. LOCATION MAP



2.2. LEGAL STATUS

The designation and protection of biosphere reserves has been integrated into the Hungarian law. In Hungary, the minister responsible for nature conservation can classify an area as a biosphere reserve (Act LIII. of 1996 on Nature Conservation). The law also provides that areas with high nature values within the biosphere reserves must be designated as core areas, and in addition, core areas are strictly protected.

The relevant national park directorates are responsible for the management tasks of the biosphere reserves, and nature conservation authoritative tasks are carried out by the regional nature conservation authority.

The main responsible organization of the MAB program in Hungary is the MAB National Committee, which holds its meetings once or twice a year. The Committee consists of 24 members, including the representatives of the Ministry of Agriculture (which is responsible for technical supervision of the MAB Programme), and the Hungarian UNESCO National Commission, academic researchers, organic farmers, tourism entrepreneur, ecotourism expert, NGO representative, leaders and managers of each biosphere reserve as well. The required management activities of the biosphere reserves are carried out by the related national park directorates by involving the local stakeholders.

The core zone and the buffer zone of the FBR is within the Fertő - Hanság National Park, it means the legal status is protected site or strictly protected site by law. The transition zone is not protected, but it overlaps with the Fertő - Neusiedlersee Cultural Landscape (World Heritage site). See details: http://www.vilagorokseg.hu/fertoneusiedlersee-cultural-landscape. The designation of the Fertő High Natural Value area is now under process and it will offer specific support for the agricultural land users to apply nature-friendly programmes, cultivation methods, etc. The border of the Fertő HNV and the Fertő-Neusiedlersee Cultural Landscape (in the Hungarian part) is the same.

2.3. MAIN ASSETS AND CHARACTERISTICS OF THE BR

The Fertő Biosphere Reserve (FBR) was designated mainly for the conservational purpose in 1979.

Fertő Biosphere Reserve is famous for the Lake Fertő itself, as the westernmost piece of the West-Asian shallow, alkaline, semi-static water bodies with a huge reed belt, full of nesting and migrating water birds and shorebirds. The wetlands around the lake have reasonable natural values too, including good stands of rare Orchid species, some threatened butterflies, Amphibians and Reptiles. The hills around the lake are populated by xerotherm forested vegetation and steppe slopes on Leitha lime stone. Traditional grape cultivation is typical on the slopes having specific local brand of wine sorts.

From the point of natural values and habitat types, the Lake Fertő is the westernmost piece of the shallow alkaline steppe lake series of West-Asia with semi-static water balance (in average once in a hundred years it has dried up). The most characteristic vegetation type within the lake bed is the large, more or less continuous reed belt, with some inner lakes filled with submerged vegetation. Around the lake there are alkaline grasslands, some stands of alkaline fens with Cladium mariscus, peatlands with Sanguisorba officinalis, hay meadows, pastures and forests with alder, willow and poplar stands. On higher elevations altitude, there are dry grasslands on calcarous slopes (Leitha-limestone), xerotherm woodlands (mixed oak forests containing a few Quercus pubescens as well as Quercus petraea, Quercus cerris, etc.), arable lands and vineyards.

The area is famous for its waterbird and shorebird fauna (it is listed in the Ramsar Convention too), with a nesting colony of great egret and reasonable number of grayleg gee. The site is an important resting and feeding point for migratory birds too. The fish fauna is rather diverse, despite the fact that it was used for commercial fishing in the previous time and some alien species were introduced. The herpetofauna is very abundant and that is why a specific tunnel system had to be built to save frogs and reptiles when cross the roads around the lake. Small mammals (including a good population of ground squirrel, important food base for raptor birds), bats (breeding colonies at the buildings, church and old-growth forest stands) and game are diverse too. The butterfly, moth and dragonfly fauna has some rarities and threatened species, including Maculinea butterflies, Large copper and so on.
Botanical values are mainly related to the alkaline steppe vegetation (Aster tripolium ssp. Pannonicus, Suaeda pannonica, etc.), marshlands (Orchis palustris, Ophris sphegodes), and the xeroterm limestone slopes (Pulsatilla grandis, Cypripedium calceolus).

Setting up the FBR far preceded the establishment of the Lake Fertő National Park (later extended to: Fertő-Hanság National Park /FHNP/ covering the whole Fertő-Hanság wetland) and served as the main issue of nature conservation near and behind the iron curtain. The area behind the iron curtain was a nearly abandoned territory, a noman's land between Hungary and Austria. It was completely intact for nearly 40 years entering only by border guard troops and very few civilians with specific licences to do works with reed

management, some fishing, hunting and exceptionally birdwatching, studying. Outstanding natural values, mainly nesting and migrant bird fauna developed on the undisturbed, huge reed habitats. After the time of change (1990) the iron curtain has been removed and new system, organization, staff took over the responsibility of preserving the site.

The inner sites of Lake Fertő, through the wide (locally up to several km-s) reed belt can't be accessed easily: there is no route, path, navigation facility, channels, so the intact, undisturbed state of the great egret and heron nesting colonies can be achieved with alternative attractions: guided tours to the less sensitive but wild enough sites and easily accessible habitat restoration sites with touristic facilities.

Typical traditional forms of land use in the area are related to reed use (reed harvesting), and grazing on the wet meadows.

The biosphere reserve is situated at the state border, but on the other side –as a complement to the Hungarian area – in Austria there is a biosphere reserve also, the Neusiedler See Biosphere Reserve. The cooperation between the two areas works very well since a long time.

2.4. ZONATION

The zonation (which was established in 2012) was reviewed in 2014, following the recommendations of the International Co-ordinating Council (ICC) of the Man and the Biosphere (MAB) Programme.

The core zone and the buffer zone of the FBR are situated within the Fertő - Hanság National Park so the core area (=strictly protected area) and the buffer zone are under the highest national level of nature protection. The designated Ramsar site is fitted to the so called "theoretical shoreline" of the lake (physical shore does not exist in practical meaning, as the Southern part of the lake looks like an extreme wide littoral zone without sharp shoreline) which has legal consequences only. The Fertő Lake as a Natura 2000 site incorporates the protected area fully and to some extent goes beyond.

The transition zone is not a protected area, but partly overlaps with the Fertő - Neusiedlersee Cultural Landscape (World Heritage) site. This zone is not under legal protection, these are settlements within the zone, and the local population is involved in the conservational and development issues.

The concept of the transition zone is rather new, seems to be working, but the proposed Fertő ESA (1998, 2003) now High Nature Value (HNV) farming area should be taken into practice so that the environmental and ecological issues could be incorporated more effectively into the local farming activities. Under the New Hungarian Rural Development Programme zonal target programs are specifically delineated. "High Nature Value Areas" are designated to support farmers to environmentally friendly farming practices in creating and sustaining, which is particularly important condition for the continuation of the agricultural use of wildlife, landscape and historical values of the built and long-term preservation. This is a voluntary agreement, and farmers can get non-refundable payment for fulfilling the criteria. The new and actualized proposal for the Fertő HNV site has been completed in coherence with the Fertő BR concepts and it was accepted by the authorities. The program is expected to open in the autumn of 2015.

2.4.1. Core zone

Area (strictly protected): 4.109 ha

The role of the core area is to protect biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research and other low-impact uses (such as education). In addition to its conservation function, the core area contributes to a range of ecosystem services. Employment opportunities can also complement conservation goals (e.g. environmental education, research, environmental rehabilitation and conservation measures, recreation and eco-tourism).

2.4.2. Buffer zone

Area (protected – strictly protected): 8.533 ha

The buffer zone surrounds or adjoins the core areas, and is used for cooperative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism, and applied and basic research. It also has an important connectivity function in a larger spatial context as it connects biodiversity components within core areas with those in transition areas.

2.4.3. Transitional Zone

Area : 10.411 ha

Transition area with a central function in sustainable development which may contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources.

2.5. MAIN STAKEHOLDERS AND OWNERSHIP IN THE REGION

2.5.1. Ownership

The strictly protected area (the core area) and some parts of the protected area within the lake bed and around it are state owned territory, managed by the Water Management Directorate and the FHNPD. The lands on the transition zone have mixed ownership

structure, mainly private, or municipally owned, but there are firms, factories, and the state too among the owners.

2.5.2. Inhabitants and settlements

Within the biosphere reserve we can find 12 settlements with about 79 000 inhabitants.

Settlement	Inhabitants	Agricultural land users	Land users whole
Fertőboz	303	8	10
Fertőd	3320	111	123
Fertőhomok	670	51	53
Fertőrákos	2247	126	135
Fertőszentmiklós	3870	263	281
Fertőszéplak	1266	52	55
Hegykő	1576	79	79
Hidegség	385	42	42
Nagycenk	1975	85	100
Pereszteg	1442	137	141
Sarród	1048	29	30
Sopron	61249	791	806

Data source: Central Statistics Office (2010-14)

The main land use types are arable land use (40%), forestry (39%), grassland (13%), reed (4,5%), and vineyard (2%).

Land use types of the agricultural lands

Settlement	Arable l	garden	vineyard	orchard	grassland	forest	reed	fishpond	Sum
Fertőboz	1,53	0,15	3,69	0,04	-	-	-	-	5,41
Fertőd	3487,91	1,86	29,39	46,66	350,78	61,82	1	-	3979,42
Fertőhomok	112,06	1,87	4,67	5,38	0,11	6,88	-	-	130,97
Fertőrákos	358	3,06	77,48	1,54	23,88	13,66	-	-	477,62
Fertőszentmiklós	1149,15	7,61	121,08	28,06	225,69	140,18	-	-	1671,77
Fertőszéplak	602,77	1,48	12,91	13,54	33,11	12,94	-	-	676,75
Hegykő	1770,95	2,51	9,98	0,72	25,33	6,01	-	0,3	1815,8
Hidegség	26,81	1,42	6,67	53,69	393,38	130,22	-	-	612,19
Nagycenk	1406,16	2,95	67,31	2,57	39,05	172,86	-	-	1690,9
Pereszteg	4584,59	5,14	1,88	4,28	12,36	152,84	-	-	4761,09
Sarród	2445,78	0,6	1,08	20,30	4009,89	1136,98	2176	411	10201,63
Sopron	2999,41	9,63	745,14	109,94	896,49	17009,5	0,18	-	21770,29
All	*18945,12*	*38,28*	*1081,28*	*286,72*	*6010,07*	*18843,89*	*2176,18*	*411,03*	*47792,54*
%	39,64	0,08	2,26	0,59	12,57	39,43	4,5	0,86	100
Source: KSH (2010.)									

2.5.3. Cooperation with local governments, authorities, municipalities

Local and higher levels of authorities safeguard legal activities in the BR. Nature conservation, agriculture and building authorities are the most important authorities. While the building authority belongs to the local municipality level controlled by higher offices, the others are located in county-level office at Győr.

There are 12 municipalities in the area of the BR, the information flow is active between the BR management and local governments.

The BR management supports some activities for attracting tourism, which can somehow be connected to nature conservation and sustainable development (village days, nature conservation camps etc.) by providing equipment, printed materials or specialists (lectures, field programs).

2.5.4. Nature conservation organisations (state)

The only one state related nature conservation organization in the Győr-Moson-Sopron county is the Fertő-Hanság National Park Directorate which is responsible for the management of the FBR.

Beside the nation-wide cooperation of FBR, it has continuous professional collaboration with other BR managing organizations in Hungary, further national park directorates and the Ministry of Agriculture.

The area on both sides of the state border is truly linked in nature and in history, and there is an effective, fluent co-operation between the Lake Fertő and the Neusiedler See BR.

2.5.5. Tourism

The Fertő-Hanság National Park offers many kinds of free time activities, for example astronomical telescope show, mushroom tour, bird-watching tour, canoeing etc. Besides nature-based tourism, there are many events and attractions of the region: “Grey Cattle bulls fair and Festival”, “Sedge and cattail Festival”, “Bicycle Day” etc.

The most important cooperation partner:

- Magyar Turizmus Zrt. / Hungarian Tourism Ltd.

Visitor centres and their programmes

The Fertő-lake has got specific visitors centre out at the field, close to the alkaline wetland restoration site. It has accomodation possibility for groups and other facilities to organize workshops, conferences and free time activities too. There are brosures, booklets, books about the area and other relevant nature conservation topics. An exhibition is open to visit installed with interactive screens.

Regular summer nature conservation camps, birdwatching events and other specific programmes are announced and some more are available on-demand.

Ecotourism

The most frequently used programmes are the guided canoe tours at the Fertő reed zone, birdwatching tours, and beginner ornithological training tours.

Regular programmes and events at the Lake Fertő

Summer nature schools for children of different ages are quite favourite programmes, usually more than 1000 participants a year.

Specific "Green Days" are visited by many tourists and visitors (World Wetland Day, Earth's Day, Day of Birds and Trees, etc.)

Special thematic tours for birdwatchers, bicycle tours and guided botanical tours are attended by a lot of people too.

Most recently the local folk art market in the Advent time with the "Open gates" cultural and social programmes has been launched.

The "Bull market" is a new social event, once a year offering suitable open market for handicraft, local products combined with folk music and other entertainments.

The headquarters of the FNPD frequently hosts exhibitions of local artists, photographers, painters and so on.

2.5.6. NGO's

The most active NGO's are in nature conservation:

- Magyar Madártani és Természetvédelmi Egyesület (MME)/Hungarian Ornithological and Nature Conservation Association
- Sopron Local Branch (http://mmesopron.freeweb.hu/)

- Kisalföld Local Branch (https://www.facebook.com/mmekisalfold?filter=1)

It is the biggest Hungarian conservational association, with a lot of local branches, dealing with bird, wildlife related issues and all aspects of nature conservation.

- Reflex Környezetvédő Egyesület/Reflex Environmental Protection Association: deals with environmental issues mainly around the town of Győr, but with an extension to the whole county (Győr-Moson-Sopron county, http://reflexegyesulet.hu/)
- Castanea Környezetvédelmi Egyesület/Castanea Environmental Protection Association: its activity concentrates on the vicinity of town Sopron (http://castanea.hu/)

2.5.7. Businesses, private sector

Mainly in the transitional zone there are some private firms. Individuals deal with agriculture, food production, smaller or bigger scale of different services related to tourism and marketing. Some wood factories are located near Sopron, and small and medium sized building companies too.

There are also some important stakeholders and major role players in local product making (sedge products, sunflower honey products, bio sour cabbage products, local grey cattle and deer meat products). Some of them provide tourism services and programmes also (for example the Sarród Country House).

Built on the foundations of the historic tradition of animal husbandry, the Fertő region – similarly to other regions- has got also quality level local products, like meat products, honey products, sedge products etc. Beside products another important role is the conservation of the ancient Hungarian animal breeds. Animals held in an environmentally friendly way in the open air are not only playing a primary role in the handling of grasslands by their grazing, but they also provide quality ingredients for special, local meat products. The product range includes salamis and sausages in a variety of flavours, made from Hungarian grey cattle and mangalica pig. Products made of wild boar and deer have also become available as a speciality.

2.5.8. Research and education institutions

The national park's staff is involved in the practical training of the high school education giving lectures, holding practices at the field and supervising thesis and dissertation works. The biosphere reserve receives students for internship and trained volunteers for some management and research activities. There are among others regular guest volunteers from the Butterfly Conservation (Dorset, UK)

There are conferences of different topics of conservation activity, some of them jointly with public bodies, such as the Hungarian Ornithological and Nature Conservation Society and also frequently hosting field trips of national and international meetings of biologists. On the other hand, the studies carried out at the Lake Fertő area are by local experts at different conferences, workshops here and elsewhere.

The most important and relevant high school in the region is the Nyugat-magyarországi Egyetem, (University of West Hungary).

In the main institution in Sopron (Sopron University) there are courses of forest engineer, environmental engineer and other related environmental courses. Another local university in Mosonmagyaróvár deals with agriculture.

There are secondary schools for forestry, environmental and agricultural issues.

The Dept. of Conservation & Ecology of the FHNPD is works in cooperation with the Sopron University as an Institute of Practical Nature Conservation, disseminating practical knowledge for the students and practitioners, offering themes for thesis of BSc, MSc and PhD works.

National Biodiversity Monitoring System (NBmR)

There are many research programmes in the BR. Several ones are included in the National Biodiversity Monitoring System. The HBMS has got standard methods to investigate the different habitats, communities and species. The main aims of the HBMS programmes are to follow the condition of protected and threatened natural values, to observe actual status of flagship species in different communities and to collect data on living resources of the country.

There is a good cooperation with scientists working in the area of the BR. Many different programmes have been carried out and many others are in process.

One of the most important programmes is related to the waterbird and shorebird monitoring programme which needs regular synchronous counting sessions carried out by the expert staff of the national park, the Game Management Institute of the West-Hungarian University, of the Sopron Branch of the Hungarian Ornithological and Nature Conservation Society and other experts. Wild goos nesting and migrant communities are in the centre of the interest too.

Another specific target group is the bird species involved in the countrywide programme of Rare and Colonial Nesting Bird Survey. In the Lake Fertő great egret, purple heron nesting colonies are the most important species of this survey.

Specific colourring marking and some radio-telemetry collaring are applied to investigate the migration routes of selected species of these groups listed above involving countrywide and international study programmes.

Special attention is directed to the highly threatened birds of prey species and owls. Artificial nest boxes, nests are erected on suitable sites (including high voltage electricity line pylons) in cooperation with the energy supplier companies.

Some butterfly species having high priority at the hay meadows are investigated with capture-mark-recapture methods for acquiring data of population densities, tendencies, evaluate management techniques, and so on.

2.5.9. Public involvement

A fine example for the involvement of volunteers and local people is the Vadonleső (“Wildwatcher”/”NatureWacher”) Programme. This Internet based programme collects distribution data about 16 carefully selected (plant and animal) species of Hungary (e.g. hedgehog, pond terrpin, moles, squirrels, snowdrop), which are common and more or less easily detectable, but need protection or are endangered for some reason. The programme works since 2009, using GoogleMap based interface, in on-line mode. The program is very popular, in the region of the biosphere reserves (mainly in touristically popular regions) as well. The snowdrop is one of the first flowers which blossoms after winter, but it is really important not to mistake it for the spring snowflake. The NatureWatcher draws attention not to send data of plant in gardens as the program is intended out the natural distribution of the snowdrop.

3. Management Concept

3.1. VISION OF THE MANAGEMENT CONCEPT

The main aim of the management of the Lake Fertő BR is to utilize the potential of the natural values of the region in such a way that supports the local developments while conserving the natural and cultural heritage of the region for the future. It is important to make the local people proud of their natural and cultural environment and encourage them to share their values with visitors and guests.

3.2. MAIN OBJECTIVES OF THE LAKE FERTŐ BIOSPHERE RESERVE, ACCORDING TO THE TRIPLE FUNCTION

3.2.1. Conservation

3.2.1.1. Objectives for core zone

- The core zone is the most important area of nature conservation, scientific studies and landscape preservation. It is designated to supports the survival of the natural values, natural processes, species and communities.

3.2.1.2. Objectives for buffer zone

- The most important area for managing the habitats so that to sustain the natural values and use the land in an appropriate, sustainable way, explain the natural values for visitors, study and teach.

3.2.1.3. Objectives for transitional zone

- Conservation is still among the important objectives, but just as far as the local community agrees. (Cooperation, talks, dissemination of knowledge and environmental education has wide opportunities.)

- Habitat restoration on the area

While the Western part of the open water of the Hungarian part of the lake (Fertőrákos-bay) is open for public access, the rest of the reed belt and the small open waters within the reed zone are mainly closed areas or accessed only with professional guidance.

At the Eastern part of the lake outside the artificial dam built in the past century, there are alkaline meadows where habitat restoration program started more than 20 years ago. The small beds of some ten hectares are flooded alternatively in year's turns (to stop down reed expansion with grazing) to follow the natural processes of the dynamics of the shallow alkaline water bodies offering nesting and resting sites for great populations of shore- and waterbirds.

Now those areas with easy and safe public access are the most important eco-touristic attraction of the whole of the Fertő area without any risk of damage to the nesting colonies. Study trails, visitor centre and other facilities are grouped at those spots of the biosphere reserve.

- Saving and creating landscape values in the BR

The FBR is mainly a wetland type national park and BR, the most important natural values – including the landscape – are related to the water body and especially the huge reed zone. The mission of the FBR is to preserve it, through the legal protection and management, furthermore enhance it with site rehabilitation, habitat restoration, public involvement, etc. On the other hand there are other important ecological and landscape values related to the Fertő-basin, namely the grasslands around the lake and specific vineyards along the limestone hills right beside the Western part of the lake surrounded by xeroterm forests and slope steppes.

The grasslands owned by the FHNPD are grazed with Hungarian grey cattle herds or where short grassland formation is required for ground squirrel (Spermophillus citellus) colony, with racka sheep. In some wet places water buffalo is used to control reed expansion. The areas with easy and safe public access are the most important eco-touristic attraction of the whole of the Fertő.

3.2.2. Sustainable development

3.2.2.1. Objectives for core zone

Core zone is not the place for development in general, except for those which serve the conservational purposes.

3.2.2.2. Objectives for buffer zone

Developments can be accepted if they do not impact on the protected sites, species, communities on the spot or on a larger scale.

3.2.2.3. Objectives for transitional zone

This is the place for developments which do not have impact on the whole of the territory.

Contact with local organisations, local governments and inhabitants

- In order to make the nature conservation and related "green ideas" understood, agreed and accepted needs to find and take all available opportunities to communicate and cooperate with the local inhabitants, land owners, local governments, alliances of settlements and local enterprises to distribute ecological knowledge, management practices, and other related topics on different levels depending on the targeted groups. It means both opening the "Heron Castle" (headquarter of the FHNPD) for social and cultural events of local relevance, invite targeted groups to special "green" events, and find other ways of communication with local stakeholders personally.

- To support and participate in certain local initiatives for attracting tourism, which are connected to nature conservation, traditional life and sustainable development (village days, art camps, nature conservation camps) by providing equipment, printed materials or specialists (lectures, field programmes).

- There are organised specific courses for local people about management practices, active and conservation works. To learn about agri-environmental schemes, the main goals and problems of the EU CAP supporting system is a common interest among different groups of land users.

Sustainable social and economic activities

- One of the most closely related direct and indirect positive effects of the existence of a national park for the local population is regarded to be the nature related tourism.

- The guest houses, hostels, restaurants are in connection with the national park administration, the system of information exchange is under way. Agreement of offering "bio-food" from the national park stocks has got into practice (grey cattle) which means a special brand of dishes; further steps are planned for mutual benefits.

- To enhance the quality of information distributed among organized visitors, visitor groups of the protected sites, by organizing more local guide course.

- The fishery right of the Hungarian part of the Fertő-lake was inherited by the FHNP. The reconstruction of the natural state of the fish community of the lake required serious efforts from the directorate, as in the past time non-indigenous fish species were introduced for economic purpose and it caused strong effects on the natural submerged vegetation of the lake. The rehabilitation of original fish fauna by spreading local fish brood through leasing the fishery to local traditional fishermen groups to pressure extensive fishing practices.

Enhancement of the traditional land use

- The area of FBR is basically wetland, reed bed, open water and the surrounding lowlands with some limestone hills. Main activity on the aquatic habitats are restricted to the extensive fishery with more or less traditional ways applied by local fishermen's groups. It is rather low intensity of exploitation.

- Another low scale utilization of the resources of the lake is the reed harvesting, management of the reed zone. It has inherited by the local firm derived from the previous state-owned reed company by privatization. Its exclusive right of reed harvesting has been brought to a legal trial by the land owners, there is no decision up to now. Other, smaller parts of the reed vegetation (out of the "theoretical shoreline" of the lake) are harvested by small local manufacturers which use the material for traditional way of halm.

- The grasslands around the lake were used traditionally for grazing and/or hay production. Recently the animal husbandry is not very profitable way of land use, prices of the products are pressed but the energy costs are extremely expensive, so the local people gave up milk-production and cattle husbandry in large scale. The cooperatives has stopped down to work any longer, infrastructure destroyed or became old. Nowadays hardly any cattle are kept in the villages for private use or milk-production, grazed areas and hay meadows started to be abandoned.

- The FHNP started to use Hungarian grey cattle and racka sheep for re-establish the traditional grasslands which remained in state property to keep the traditional landscape, rehabilitate grasslands and hay meadows at the Fertő area. It happened in parallel with the gene-reserving programme of the old house animal rasses, which do not need intensive husbandry. The Hungarian grey cattle is a rather robust, tolerant house animal against the climatic affects, it is not too selective to foraging, prefers fresh reed and utilize the lower quality grass of the alcaline, sodic soils too. The products of its meet is quite valuable, demanded, treated as bio-food. On the other hand the herds of grey cattle are – among others – touristic sensation as well.

- To increase the interest of breeding traditional extensive rasses of house animals (like grey cattle, racka sheep, water buffalo) among the local land owners and exchange of know-how

- Another traditional use of the limestone hills around the lake is the viticulture. There is a dedicated wine region around Sopron famous of mostly characteristic tannic red wines (Kékfrankos). The wineyards around the lake give a special landscape elements and the borderlands can be valuable habitats for plants, invertebrates and birds too. Viticulture is managed mostly by local vintners and smaller or bigger enterprises of local investors.

- The initiative of ESA (=environmetally sensitive areas) project at the beginning in Hungary (late nineties) incorporated the Fertő ÉTT area so that to decrease the nutrient load of the lake, decrease the intensity of land use, enhance the biodiversity of agrarian lands with preserving natural elements, borderlands, shrubberies, tree lines and groups within the cultivated lands through a suitable, acceptable competitive supporting system. The first plans has been prepared and handed in by 2003, but – because of lack of funds – it has not been taken into practice. The preparation was developed by the staff of the FHNP and by now (2015) a kick-off step is expected by advertising the applicable supports for specific programmes.

Professional dialogue in forest management and exploitation planning processes

- The focus of forestry has become oriented to better management practices such as selective timbering, selective cutting and removing of non-native species in the BR. These considerations are also applied during forest management which is carried out by the Directorate.

Validation of landscape protection in different level of plans.

- The conservation of the traditional structure of settlements and land use is a very important point of view, but it should be kept in mind the need of sustainable developing. In the process of making a plan, we are close connection with the local municipalities, stakeholders and planner offices. This help to find consensus among all the parties in many cases.

3.2.3. Research, display and education

- While research and education functions are related to all zones, the display activities should be concentrated in buffer and transitional zones.
- Research activity can be carried out in all areas of the BR (of course only environment friendly methods); but in case of tourism and education programmes it is more

favourable if these are generally localized to buffer and transitional zones. The main objectives of the education activities are the natural and cultural heritages, sustainable development and traditional land using. Very important aim is to create citizens who are aware of their responsibilities to future generations.

3.2.3.1. Objectives for core zone

Research and some habitat management which serve the conservational purposes are accepted and encouraged.

3.2.3.2. Objectives for buffer zone

Education, research and display are all accepted and encouraged in this zone.

3.2.3.3. Objectives for transitional zone

Education, research and display are all accepted and encouraged in this zone too, on demand.

3.3. SITUATION

There is a special biogeographical situation: the Fertő Lake is the last piece of the shallow (70-80 cm in average, 130-160 cm max.), alkaline, temporary wetland series from West-Asia to Central-Europe. It means, there are no more typical steppic like, quickly warming and unstable water balanced wetland toward West. Its area is relatively large (in European level) but the reed belt at the Hungarian part is outstanding. That is why the public access to the sites is not too easy or not relevant at all (for water sports, sport fishing, swimming, etc.)

The geopolitical situation of the area has several strong effects on the socio-economic developments of the region. The opportunities, natural and other values and the good connection to Austria make the area an excellent destination area for tourism.

On the other hand, the higher salaries in Austria are very attractive for local workers, people, so large amount of the (more or less qualified) labour supply is unavailable at home.

Some professions (e.g. traditional fishery) are out of use, because they are too hard and not profitable enough. Handicraft is declining too. Traditional reed roof building technologies are disappearing, close to extinction, which need serious support. The decline of the use of the reed as a material for the building industry, depress the reed market seriously.

The Fertő (and Hanság) region is famous of agricultural activity and productions. Since that time when the FHNPD reintroduced the Hungarian grey cattle to the region, private land

owners started to prefer this herds too. This ancient, extensive cattle type became widespread again and occurred in the local restaurants as healthy bio-food.

The cultivation of stone fruits and berries used to be widespread around the Fertő lake supported by the Institute of Plant Improvement which was working in Fertőd for ages, but after the collapse of the big farms owned by the government and socialist cooperatives it has declined.. The process heavily influenced the canned fruit factory too. Sugar factory in Petőháza was closed and the traditional sugar beet cultivation ceased. Now the grape cultivation and wine production is flowering along the limestone hills at the Western side of the lake making quality red wine bottled as Soproni Kékfrankos.

Several small-medium sized wood factories are settled around Sopron, as there is a traditional education of wood science at the Sopron University. Some of them manufacture windows, doors, furniture, and there are small carpenter and wright enterprises.

While some of the manufacturers seem to be decreasing, the hotels, hostels, guest houses, entertainer and catering trades are increasing, offering the services to the tourists. The renewed bicycle road network attracts the cyclists especially. Spa therapy and hydro-hotel in Balf and Hegykő extend the tourist season nearly all year.

The right of reed harvesting earlier was exclusively owned by one firm, now it belongs to the site managing bodies, which are the Water Management Directorate and FHNPD, so the harvesting activity became a mean of habitat management.

Commercial fishery was an important activity in the lake, some families were traditionally involved in this hard profession. Unfortunately nowadays there are only a few people who are still interested in it, while the sport fishing activity is growing heavily.

3.4. COOPERATION IN THE BIOSPHERE RESERVES

The cooperation with the local land owners is essential in order to sustain the typical landscape of the Fertő Lake. It is the most important thing through the educational activity to convince the next generation about the sustainability in all field of human activity, human life, and involve the whole families and raise the environmental awareness. The local developments should be attracted by possibilities of mutual the advantages of cooperation with the conservation bodies, greening the agricultural activities, produce healthy food in a nature friendly ways.
Local farmers and investors should be attracted by exclusive branding most efficiently.

3.5. FUTURE PLANS

In general:

Setting up a dedicated network of experts of the nature friend methods of agriculture is essential for supporting the local farmers in their work. Support for preparation of the applications for the agri-environmental funds is another important and urge service from the local experts of the conservational bodies. The network should grow to the platform for sharing ideas, discuss actual and conceptional issues and jointly find solutions for the problems.

Extending and improving the networking activity on higher scale, cooperation with other BR's of the region, especially with the Austrian partners. Exchange of know-hows, practical solutions to involve local people in the management will be within the focus of the cooperation.

Harmonizing management practices as far as possible, organize joint events to decrease the physical and psychical barrier effects of the borderline should be among the most important targets.

In communication:

Enhancement of the nature school, develop the nature trails, study sites, natural attractions and all means of the advertising of natural values is another important direction of the close future. The improvement of acceptance of the "green ideas" by the local people and visitors should be among the most important tasks of the staff of the local conservational bodies.

All fields of communication channels should be covered, especially the internet network. The most agile, active hotspots of the virtual world are the community sites, so the advantages of great and highly economic public access via Facebook, etc. should be used to dissolve information about natural values of FBR and make communication alive, continuously monitoring the public opinion of the conservational issues. Live cameras of secret events of the highly protected species, and simple things as well make more ready to understand the conservational purposes.

The conservational purposes can be achieved only one way: together with the local people. If they understood and agreed with the main ideas they can be accomplished together.

Conservation:

Rehabilitation of old, traditional, but abandoned pastures, removal of alien tree species is planned and started to accomplish, but extension to the whole of the lake basin is necessary and maintenance will be needed for longer period.

Reintroduction of some species which has been extinct earlier, including the small fish species European mudminnow (Umbra krameri), and butterfly species such as Maculinea sp. are planned after rehabilitation their habitats around the lake.

Bat species conservation programmes and actions are under development, covering the improvement of breeding sites for those species which utilize human settlements, churches, communal buildings, schools, etc. Improving the communications between local people, conservationists and local municipalities are essential, to accomplish such a projects affecting the methods of isolation systems of buildings, renovation of churches, applying specific, bat-friendly used lightning methods for monuments, public buildings, and so on.

Studies, experiments:

There are management practices to be applied after testing their efficiency, to control invasive species, manage sites properly for certain threatened species, and distribute the results among the land owners.

There are studies necessary to control and decrease nutrient load of the lake, control the expansion and local thinning process of the reed vegetation.

The ecological processes of the shallow alkaline water-bodies, and possible affects of the climate changes are important issues of the next studies.

Bird migration, changes in the routes, in the amount of wandering species, changing the behaviour should be monitored continuously applying modern methods, GPS tracking and radio telemetry as well as public involvement of the counting censuses.

APPENDIX I. – ABBREVIATIONS

BR – Biosphere Reserve

FBR – Lake Fertő Biosphere Reserve

FHNP – Fertő-Hanság National Park

FHNPD – Fertő-Hanság National Park Directorate

APPENDIX II. – PHOTO GALLERY OF THE BR'S MAIN ASSETS

View of the Fertő lake

Sedge Festival at Sarród

Local meet products

“Tradition and Nature” creative Camp at Sarród Country House

Sheep shearing