

Pilis Biosphere Reserve

Management plan



Esztergom-Visegrád
2015.

Contents

1. UNESCO MAB Programme.....	3
1.1 UNESCO Man and Biosphere Programme.....	3
1.2. BIOSPHERE RESERVES IN HUNGARY.....	3
2. The Pilis Biosphere Reserve.....	5
2.1. LOCATION MAP	5
2.2. LEGAL STATUS	5
2.3. MAIN ASSETS AND CHARACTERISTICS OF THE PBR.....	6
2.4. ZONATION	6
2.4.1. Core zone.....	7
2.4.2. Buffer zone	7
2.4.2. Transition Zone.....	7
2.5. MAIN STAKEHOLDERS AND OWNERSHIP IN THE REGION.....	8
2.5.1. Inhabitants and settlements	9
2.5.2. NGO's.....	9
3. Management Concept	15
3.1. VISION OF THE MANAGEMENT CONCEPT	15
3.2. MANAGEMENT OBJECTIVES OF THE PILIS BIOSPHERE RESERVE.....	16
3.2.1. Objectives of conservation	16
3.2.2. Strategies.....	16
3.2.3. Sustainable development – land use.....	17
3.2.4. Education, display and research.....	18
3.2.5. Tourism.....	18
3.3. COOPERATION IN THE BIOSPHERE RESERVE.....	19
3.4 FUTURE PLANS.....	20

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

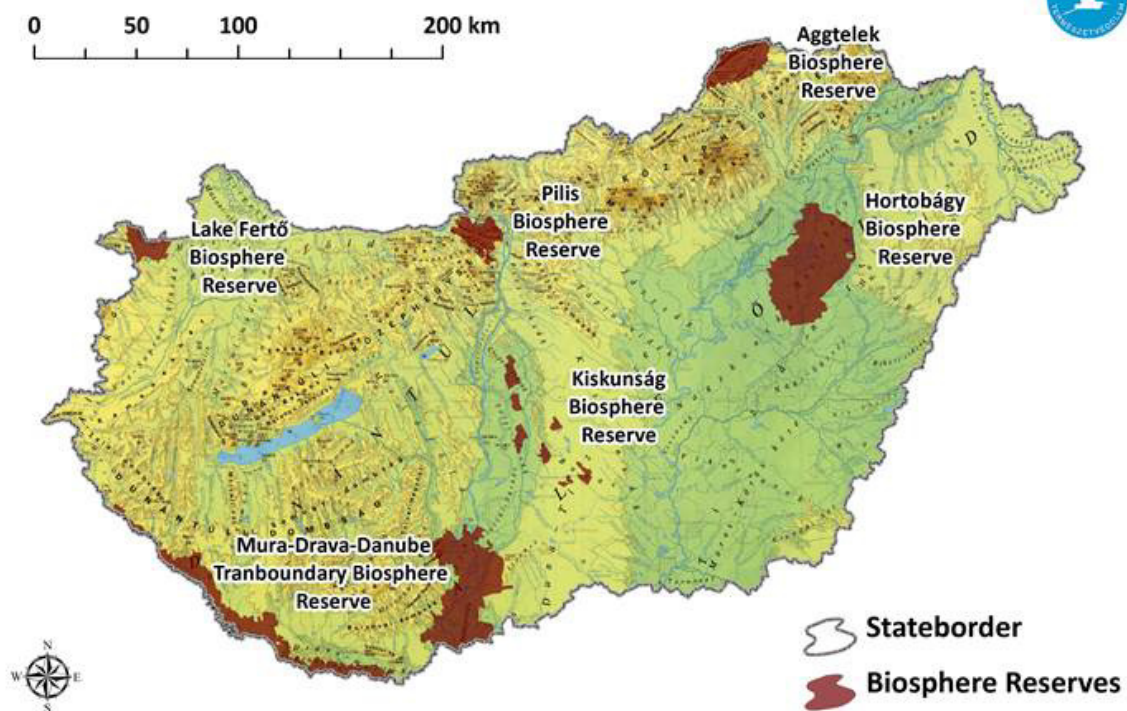
Hungary as a UNESCO member state joined the MAB program in the 1970s as one of the first countries. Five biosphere reserves were designated by the UNESCO until 1980, whereby the emphasis of the original nomination was to place international focus on the protection and scientific research of ecosystems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

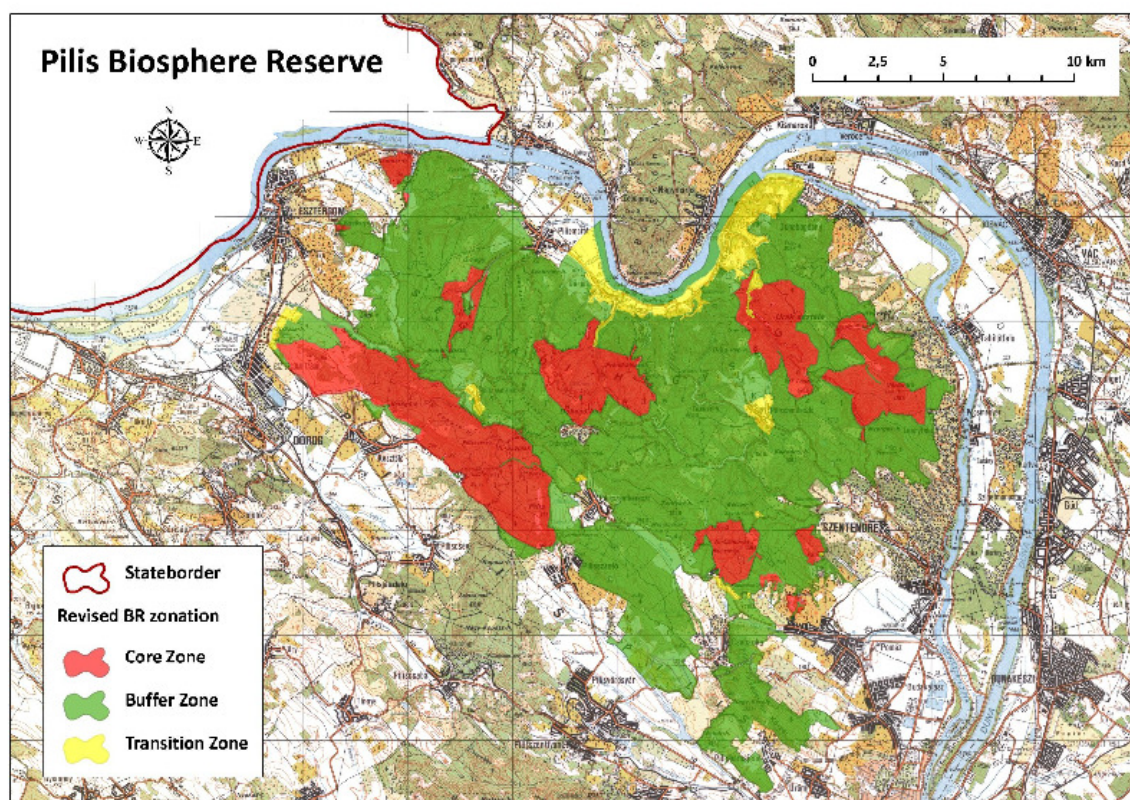
The “first generation” biosphere reserves were established with the main objective to protect the natural values of the protected areas and with a lower level of interaction with local communities than is general nowadays in new biosphere reserves situated outside the legally protected areas. Following 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.

Biosphere Reserves in Hungary



2. The Pilis Biosphere Reserve

2.1. LOCATION MAP



Northwest from Budapest, forced by the andesite block of Börzsöny and Visegrád Hills the Danube flows in a narrow, meandering valley – almost like a U-turn, called the 'Danube Bend'. Due to the area's abundant natural assets and the remarkable possibilities for environmental education it was recognized as part of the International Network of Biosphere Reserves by UNESCO in 1980.

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.

2.3. MAIN ASSETS AND CHARACTERISTICS OF THE PBR

The unique feature of this biosphere reserve is its variability. The range of hills, cut across by valleys due to tectonic forces and erosion, is made up of more than ten types of rock, involving Dachstein Limestone, Andesite tuff, etc. On this variable surface, according to the relief and aspect, several plant and animal communities have formed.

Habitats within the territory of the PBR:

Forests of ravines, mixed forests of slopes and screes (Tilio-Acerion forests of slopes screes and ravines), closed thermophilous *Quercus pubescens* forests (Pannonian woods with *Q. pubescens* s.l.), riverine ash-alder forests (Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*), *Quercus pubescens* scrubs, continental deciduous steppe thickets (Subcontinental peri-Pannonic scrub), calcareous open rocky grasslands (Rupicolous pannonic grasslands - *Stipo-Festucetalia pallentis*), slope steppes on stony soils (Sub-pannonic steppic).

Unique plant species:

Gentiana pneumonanthe, *Gentianella ciliata*, *Iris* spp., *Orchideaceae*, *Amygdalus nana*, *Helleborus purpurascens*, *Hepatica nobilis*, *Digitalis lanata*, *Phlomis tuberosa*, *Dictamnus albus*, *Campanula macrostachya*, *Pyrus nivalis*, *P. magyarica*, *Ferula sadleriana*, *Daana cornubiensis*, *Sesleria sadleriana*.

Unique animal species:

Austroptamobius torrentium, *Calopteryx virgo*, *Mantis religiosa*, *Stenobothrus eurasius*, *Saga pedo*, *Lucanus cervus*, *Dorcus parallelepipedus*, *Synodendron cylindricum*, *Megopis scabricornis*, *Morimus funereus*, *Rosalia alpina*, *Cerambyx cerdo*, *Zerynthia polyxena*, *Parnassius mnemosyne*, *Papilio machaon*, *Maculinea alcon*, *Jolana jolas*, *Vanessa atalanta*, *Arctia festiva*, *Phoxinus phoxinus*, *Noemaceilus barbatulus*, *Barbus carpathicus*, *Rana dalmatina*, *Rana temporaria*, *Ablepharus kitaibelii*, *Coronella austriaca*, *Pernis apivorus*, *Asio otus*, *Lullula arborea*, *Motacilla cinerea*, *Certhia familiaris*, *C. brachydactyla*, *Accipiter gentilis*, *Alcedo atthis*, *Falco subbuteo*, *F. cherrug*, *F. peregrinus*, *Corvus corax*, *Milvus migrans*, *Monticola saxatilis*, *Emberiza hortulana*, *Hieraëtus pennatus*, *Cinclus cinclus*, *Chiroptera*, *Mustela eversmanni*, *Martes martes*, *Felis sylvestris*, *Lynx lynx*.

2.4. ZONATION

The zonation system which had been designed in general for the biosphere reserves could not been realized completely in the case of the PBR, due to the developmental specialties. The core zones assigned in the PBR are not always surrounded by a buffer zone, because designation a buffer zone around these core zones would have been caused the territorial reduction of the core zone itself. The core zones were designated only on strictly protected areas.

2.4.1. Core zone

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).

On one part of the core zone the main goal - as basic activity - is conservation, and here the silvicultural use is only for the preservation of the natural wealth. There are no settlements inside the zone. Almost the whole core zone is state-owned forest. Besides this there are few hiking trails leading through these areas.

2.4.2. Buffer zone

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. They also have an important connectivity function in a larger spatial context as they connect biodiversity components within core areas with those in transition areas.

These areas are also covered by state-owned forests. Forestry is controlled and supervised. Conservation is the main objective during forest management planning. The goal of the BR's buffer zone, in particular, to preserve the core zone and mitigate the effects coming from outside, although the buffer zone is also very valuable itself. Because the management is done mainly with conservation purposes, all activities may strengthen the conservation function of the core zone. Its functions are research and preservation with professional and educational purposes. Specialized active nature management and research are supported. Here we can find 5 settlements, which are surrounded by the buffer zone. The area is a very important target to make excursions from the capital. Many tourists, hikers come here for recreation every day, but especially on the weekends.

2.4.2. Transition Zone

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.

The extension of the transition zone is under planning. On these areas the goal is to achieve a land and landscape usage that guarantees the conservation of the natural assets and provides the benefit of the land users at the same time.

In this zone the main land use is forestry, but viticulture, fruit production, grazing and plant cultivation are also important activities. Hunting and silviculture are the first to be

mentioned among the historical land uses. Throughout this hilly region there was a vast hunting ground reserved for royalties and later for the State. The Catholic Church owned forests here in the past too. Viticulture and wine-growing is the second to be mentioned, which had flourished from medieval times till the turn of this century (in that time Szentendre –Buda wine-growing region was well known and appreciated in Europe). Then there was a major set-back caused by a pest. It played an important role in this region from the beginning of this century to World War II. After the war II fruit-production was finished. Secondary steppes were formed at the place of abandoned orchards, and small gardens and holiday camps were established in the 1960s and 1970s at the place of steppes.

Four settlements are completely situated inside the zone.

The BR is one of the most visited tourist destinations (besides Lake Balaton and Budapest) in Hungary, so tourism is a major type of land use.

At the moment the extension (proportion) of the transition zone within the PBR is relatively small, but the zone is under revision and due to the negotiations that were launched to convince the local governments to join the PBR with the settlements' whole (or at least part of their) administrative area – this process would hopefully cause the expansion of the transition zone and the involved municipalities hopefully will enjoy the benefits of their PBR status.

The most frequented tourist regions where this type of activity is concentrated are not part of the PBR at the moment, but their involvement is planned.

2.5. MAIN STAKEHOLDERS AND OWNERSHIP IN THE REGION

The main forest manager and land user, the **Pilisi Parkerdő Zrt.** (Pilis Park Forestry Company) was established in 1969. The Visegrad-based company manages 22500 hectares of state-owned forest land in the PBR's area. Two significant parts of their work are sustainable forest maintenance and wildlife management. Due to the special role the forests around Budapest play in public welfare, the company is the only park forestry in the country. It was principally established to serve social and public welfare interests right from the beginning, when its predecessor was founded in 1969 as Pilisi Állami Parkerdőgazdaság (Pilis State Park Forestry), The state company was changed to Pilis Park Forestry Company Limited by Shares in 1994 as successor of which was founded in 1969. Apart from the traditional forest management and game management, the company deals with forest management services for private and community forest, commercial and real estate rental activities. In accordance with its role in public welfare it provides diverse cultural programmes along with accommodation and camping opportunities for the public.

As the relevant national park directorate (according to the Hungarian legal regulation) **Duna-Ipoly National Park Directorate** is responsible for the nature protection management tasks of the Pilis Biosphere Reserve.

The cooperation between these two main organizations was recorded in a **Cooperation Agreement** on the 18th of June 2013.

2.5.1. Inhabitants and settlements

The BR is very sparsely populated. The core and the buffer zones have no human inhabitants, approx. 2000 people live the transition zone permanently (approx. 3000 people seasonally). The BR is situated in the administrative area of the following 17 settlements:

Budakalász
Csobánka
Dömös
Dunabogdány
Esztergom
Keszthely
Leányfalu
Pilisborosjenő
Pilismarót
Pilisszántó
Pilisszentkereszt
Pilisszentlászló
Pomáz
Szentendre
Tahitótfalu
Visegrád

The capital city of Hungary, Budapest, is in fact, outside the BR, but it has a significant influence on it.

The PBR constantly cooperates with the municipalities during spatial planning processes.

The discussions with the stakeholders for public consultation have started for years. In 2015, in accordance with the recommendations of the UNESCO, negotiations were launched to convince the local governments to join the PBR with the settlements' whole administrative area – this process would hopefully cause the expansion of the transition zone and the involved municipalities hopefully will enjoy the benefits of their PBR status. This is a step-by-step partnership building procedure with the municipalities, which has already started but it foreseeably needs a long time to give the results of the mutually beneficial cooperation with the municipalities, the engagement with the stakeholders.

Forcing the partnership with the local farmers is also very important - among other reasons, because the modification (extension) of the transition zone would affect privately owned areas.

2.5.2. NGO's

There is a diversity of NGO's with different profiles. The financial sources and the members' capacity limit the activity and pro-active manner of NGO's. The smaller ones mainly provide a valuable contribution to grass-roots data collection initiatives on environmental and nature conservation issues. Bigger ones are able to launch full-sized research and/or development projects.

The PBR has good relations with the **local non-governmental nature conservation societies** as well (Magyar Madártani és Természetvédelmi Egyesület Helyi Csoportja, Pilisi

Természetvédelmi Egyesület, Csobánkai Értéktőrző és Községépítő Egyesület, Mackó-barlang Környezetvédő és Természetjáró Egyesület Csobánka, Erdei Iskola Alapítvány, Szentendre, Élő Táj egyesület, Szentendre). The PBR also cooperates with the Pilis-Dunakanyar Regional Association (Pilis-Dunakanyar Többcélú Kistérségi Társulás). The above mentioned institutions organize together 10-15 programs per year with the cooperation of the PBR.

2.5.3 Research and education institutions, public involvement

Forest schools and education centers in the PBR

Kököröcsin Forest School

The „Kököröcsin” (the pasque flower) education center (forest school), operated by the Duna-Ipoly National Park Directorate, is situated North from the city of Esztergom, on PBR territory. The surroundings of the forest school – formerly a military shooting range, until 1990 – are under national protection thanks to its remarkable natural assets. Besides showcasing the protected territory, the forest school is the center of the area’s environmental education activities. The staff of the forest school offer programs to school classes or tourist groups, such as birding, guided walks on the nature trail, hidrobiological assays, medical plants and their therapeutical effects, team buildings.

On the nature trail, next to the center, guided tours are available. The center is one of the scenes of the bianually organized accredited teacher training in environmental studies, and they also have an educational summer camp for children. The visitor center collaborates closely with the Danube Museum in Esztergom. This collaboration involves continuous information sharing, combined distribution of publications, teacher training, and shared organization of events such as the World Water Day, World Environmental Protection Day, and Day of Trees and Birds. The education center also takes part in the training of ELTE (Eötvös Lóránt Science University) students majoring in Geography or Environmental Studies.

On the guided tours the number of the visitors shows an increasing trend from year to year.

The forest school had 650 visitors in 2013 and 1740 visitors in 2014.

Mogyoróhegyi „Madas László” Forest School

The all-year long open forest school is operated by the PPZrt. (Pilis Park Forestry Company) offers accomodation for 12 persons in forest log cabins, and professional guided tours of various lengths. Yearly an average of 6200 children and their educators take part in the 1100 forest schools programs.

Accredited professional training program for educators

The 60 hours (6 days) long accredited professional training program for educators (mainly school teachers) called „implementation of environmental education under field conditions” is organized every second year by the Duna-Ipoly National Park Directorate, using the potentials (protected areas and education centers) of the Directorate and the PBR. During the programme, regardless to their previous educations, the educators could gain basic, useful knowledge about nature, about the most typical plant- and animal species, the most common habitats, the region’s geology and of course about the Directorate’s nature conservation activities.

Development of the key tourist destinations

Since 2010 numerous projects have been implemented to improve the possibilities of the tourism, especially the hiking in the PBR: lookout towers, different kind of accommodations, forest schools and ecotourism centers, nature trails, forest excursion destinations and resting places have been built.

Dömösi Zöld Forgatag

The all-day-long free family day titled Dömösi Zöld Forgatag (in English: green whirlabout, hustle and bustle in the village of Dömös) is organized every year. The goal of the event is to represent the natural and cultural assets of the region. The participants could attend in guided tours, in wild animal shows, in bird ringings and other programs for adults and children. The visitors can taste and purchase the products of the local farmers and manufacturers.

Cave tourism

In the area of the PBR around 400 caves can be found.

Given their geology, the Pilis Mountains are rich in caves (in Hungarian: barlang). These range from simple, short, "dwelling-size" halls (which also served as home for the ancient man) to complex cave systems, parts of which haven't been fully explored yet. The caves and sinkholes are to be found all across the hills; the richest area seems to be the Pilis-tető mountain. Here a couple of long caves - previously believed to be separate - have recently been proven to be connected (with gas-tracing method), but not all of the connections have been explored yet.

The Pilis Mountains were built from Triassic carbonates and are attached to the Szentendre-Visegrádi andesite mountain in the North-East. Within them 150 caves are known today, all of them shorter than 500 m.

The longer and hardly accessible caves feature very nice stalagmites and stalactites. These are closed for protection of both the caves and people (there are dangerous passages). Some, however, can be safely and legally visited under the supervision of professional guides. Other caves (dwellings), or their easily accessible parts, can be visited freely.

Hungary's third longest and fourth deepest cave known is in the PBR and it is the Leány-Legény-Ariadne (Girl, Lad, and Ariadne) cave system, opening at the foot of the escarpment of the Csévi cliffs. It is 14800 meters long and 204 meters deep. According to the archaeological finds, the Legény cave section's wide entrance gave shelter to several prehistoric groups of people from the Neolithic age. Its chambers are connected by shafts and narrow passages into a maze. Its formations suggest that the original thermal water cave also functioned as a karstic spring cave at a time.

The most famous cave of the region is the Sátorkőpusztai Cave which opens near the mining town of Dorog. Discovered by quarrying in 1946, it is a typical cave of purely thermal water origin. A bizarre chain of spherical cavities constitutes the 354 m long cave as if we were inside a bunch of grapes. When it was discovered, its walls were covered by a fusion of popcorn-calcites, aragonite needles, and, mainly in the lower great hall, thick gypsum accumulations. Unfortunately, by today several lootings have left the cave almost empty (ravaged). The cave is strictly protected since 1982. Its entrance is closed.

Its 200 meters long upper section is accessible for the adventure tourism.

Tours are organised for small groups guided by a specialized guide in this relatively undisturbed cave - qualified as protected natural asset, for the purpose of seeking adventure and active relaxation. The provision of the conditions of the visit does not require any transformation of the nature, only a safe walking path (step, ladder, handrail) is installed. The caving tour with crawling and climbing requires physical ability to perform movements, physical endurance and basic caving equipment (lighting, helmet, wetsuit). Special clothing is needed.

Operation of a Sylvan Community Center at Visegrád

PBR's other significant education center is the Visegrád Sylvan Community Center under the management of Pilisi Parkerdő Zrt. The house and the camping site next to it serve the cause of environmental education. The center provides educational activities appropriately adjusted to the age level of the participants. The center has environment related activities for all age groups.

Operation of educational nature trails

There are 19 educational trails in the PBR (at Esztergom 1, at Pilismarót 1, at Dömös 1, at Pilisszentkereszt 1, at Dobogókő 1, at Csobánka 2, at Pilisborosjenő 1, at Szentendre 9). The main aim of educational trails is to show the most representative protected species of the local flora and fauna. One out of the 19 educational trail is maintained by the Duna-Ipoly National Park Directorate, 2 are maintained by local governments, 1 by private constitution and 12 by non-governmental organizations (NGOs). In each case grants were awarded for the set up of the educational trails and the management of Duna-Ipoly National Park Directorate was responsible for the professional execution.

Research

Continuous surveys of the area's condition and further surveys for the prioritized nature conservation tasks must be carried out by the national park directorate (who is responsible for the nature conservation management).

Researches about the area's natural assets can only be carried out with a detailed research plan. One copy of the documentation (with the results of the research) must be provided to the national park directorate.

Visitors' involvement to the research activities is planned, partly through interactive ways using mobile applications, partly on f.e. biodiversity days (many parts of the PBR are potential Bioblitz sites). From this aspect the role and the activities of the forest schools and the local educational institutions could be also very important.

Socio-economic research – monitoring the different stakeholders' benefits and the ways how these benefits can be improved.

Within the PBR, there are several research programs including the **National Biodiversity Monitoring System**. The NBMS has got standard methods to investigate the different parts of ecosystem, systematically. It follows the condition of protected and threatened natural values, observes the flagspecies of typical communities and living resources of Hungary, human activities and direct or indirect effects of environmental factors.

Beyond the systematic monitoring investigations, the PBR liaises with scientists working on the area of PBR, by the help of grants starts programs for status surveys. As a result of this work, there are habitat maps close to the two thirds of the area of PBR, or big amount of biotic data available by nowadays.

Biodiversity days have been organized between 10-12 June 2011 because of accentuation of biodiversity Esztergom region's mountain grasslands and forest margins together with importance of natural science investigations. On that weekend representatives of 15-20 natural sciences (zoologists, botanists and geologists) attended a predetermined investigation plot and with different methods tried to register as many species as possible. The location of this program changes every year, free for visitors, results are published in leaflets and there is media interest of this project. This project started by an NGO (Magyar Biodiverzitás Kutató Társaság Egyesület). This Association organized the program in Esztergom and the National Park Directorate gave some financial and professional support.

PBR is an important area of the study of the effects and the development of **sustainable forestry**. In Hungary there are two distinct methods for forest measurements: one measures from the point of view of nature conservation, which emphasizes the importance of the selection of habitats/ floral associations and preparation of lists of species living in the area. The other type of forestry data collection focuses on timber and fiber production and solely on the diversity and age distribution of woody plant species in the area. Both methods have the drawback to be based on polygon data collection and disregard important ecological factors, like microhabitats, damages caused by wild animals, fine scale leveling. A new, so called grid-system method is currently under development, which combines the requirements of both nature conservation and forest management. This new technique is

based on the measurement of all the quality and quantity traits of a forest on a simplified scale and their GIS analysis.

The newly developed methods for data collection of forest measurements started in 2012-13 financed by Bioregio SEE project, with meetings and debates with the interested organizations (forest managers, non-governmental organizations, researchers, education centers). The main goal was the examination of the relationship of environmental factors, natural forestry factors and that of forest utilization.

3. Management Concept

3.1. VISION OF THE MANAGEMENT CONCEPT

The management plan was designed to accomplish the following goals (taking into account, that negotiations were launched to modify (to expand) the transition zone):

- Motivating diverse stakeholders around a common vision for the biosphere reserve and the setting of clear objectives to achieve this vision,
- Providing strategic direction on the PBR's private sector's activities and how it should go about consolidating (stabilizing) and putting into use the biosphere reserve,
- Strengthening the engagement with the stakeholders (in particular with the private sector and the local municipalities)
- Strengthening the local communities' identity of the BR, appreciating its values and using its resources sustainably
- Ensuring that the PBR delivers socio economic benefits to local communities
- Introducing research programs, benchmarks for monitoring the performance of the PBR and the state of the environment, and the exchange of information.

3.2. MANAGEMENT OBJECTIVES OF THE PILIS BIOSPHERE RESERVE

Goals and associated management objectives:

- To raise general awareness of the PBR, build a broad based understanding of the Man and the Biosphere program
- To support environmentally sustainable (organizationally, financially and/or logistically) socio-economic and conservation initiatives in the biosphere that offer scope for wider replication
- To facilitate and co-ordinate biosphere level research and forward planning, and share the results with partners.

3.2.1. Objectives of conservation

- Conservation of the main character, the landscape and the land use of the PBR, with such usage that is compatible with the objectives of the PBR
- Support the social function of the forested landscape (recreation, medical stay, hiking, demonstration of the conservation work, sport tourism)
- Maintenance of the area's historical and archeological values and the unique landscape values' surroundings
- preservation of the characteristic geological formations, the karstic areas, the karstic formations, caves and the natural landforms which are determining the character of the landscape
- preservation of the surface waters and their basins, paying particular attention to the mountain streams, springs and the natural or man-made lakes
- sustenance of the natural plant associations (phytocoenoses) and the semi-natural habitats
- protection of the protected and strictly protected plant and animal species,
- Preservation of the area's unique biocoenosis represented by the local protected and strictly protected species
- Supporting the conditions of further nature conservation researches

3.2.2. Strategies

- Preservation of the valuable biocoenoses of the forests, grasslands and aquatic habitats, sustenance and strengthening the population size and the number of specimens of the protected and strictly protected plant and animal species, with active conservation management and with maintaining and restoring the traditional land use
- In order to conserve the natural plant associations (phytocoenoses) and the semi-natural habitats it is important to enlarge their spatial extension, with reducing

simultaneously the territorial expansion of the artificial plantations and of the invasive or non-native species

- Enhancing the transition from intensive forest use to sustainable forest management, help the application of nature friendly technological solutions and enforce the acceptance of biodiversity aspects in forest use
- Conversion the forests composed by non-native species into forests with native species, suitable the habitat (growing site)
- Reducing the impact (disturbance) on the most vulnerable habitats (f.e. calcareous open rocky grasslands, scrubs and forests of ravines) by the limitation (restriction) / prohibition of the use or entry
- Maintain the species-rich grasslands with mowing and grazing, taking into account the reproductive needs of the protected plant species
- Initiate, organize and implement researches to establish and develop nature conservation management
- the unique landscape and archeological values are conserved altogether with their surroundings. For this purpose, throughout any of the construction activities' planning and construction procedure, preservation of the natural environment is fully considered.
- Conservation of the caves and their fauna, primarily with the regulation of the attendance and the cave tourism

3.2.3. Sustainable development – land use

The extension of the transition zone is under planning. On these areas the goal is to achieve a land and landscape usage that guarantees the conservation of the natural assets and provides the benefit of the land users at the same time.

The area of PBR is basically a low mountain deciduous forest, so grasslands and arable farming play just a secondary role compared to silviculture. Nevertheless the agricultural use is present on the mountain fields and on the small inclusions of grasslands, so there is a local possibility of introducing nature-friendly agricultural methods. In the north-western part of the PBR, on the periphery of Esztergom City, there is a state property grassland, where the present form of grassland farming is not sustainable. Long time habitat maintenance is not guaranteed because of the intensive shrub spreading and the very extensive mowing, which is not in connection with livestock farming. Thus, the Directorate cooperates with local farmers who would like to reintroduce sheep grazing, which would enhance the population of native Hungarian sheep breeds (for example: racka).

Selection forest plot due to sustainable forest management:

The Pilis Park Forestry (PPZrt.), the most important land user of PBR, designated 2,391 ha selection forest between 2007 and 2011. These forests are on the most valuable parts of the PBR and responsible for the permanent forest cover program. Selection forests are in larger blocks. In these blocks there are not only old trees and presently a huge amount of living stock, but also young stands. In these stands tending cuttings help the development of the stand structure of selection forest. The land user (PPZrt.) and the conservation manager (National Park Directorate) selected the forest blocks and the returning dates together. The land user does not make any felling during the vegetation period at the area of PBR. The

selected forest block is not only one of the first experimental plot in the PBR, but also in Hungary, where more sustainable silviculture is practised.

3.2.4. Education, display and research

While research functions are related to all zones, the education and 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 programs 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.

The buffer and the transition zones are and should be the area of on-site education programmes. Educational programs (at the educational centers and on community festivities as well) have to be continued and increased. Teachers are a special target group and play an important role in the dissemination of information and active involvement of children.

3.2.5. Tourism

Tourism is well managed and controlled in the area of the PBR, but it is planned to be improved on interactive ways f.e. mobile phone applications.

The estimated number of foreign and national visitors is around two million per year. There is no regular statistical study about the number of visitors. The estimations concern the Transition Area and the nature trail of BR.

- **One day tour** – the most significant type (estimated 8000-1500000 visitors)
- **Weekend recreation** (only in favorable season) – mainly in adjacent area of the BR but in the Transition Area it is also significant (est. 300000 visitors).
- **Hunting** – mainly for big game (wild boar, deer, mouflon) in both state-owned and private land.
- **Camping** – there are four campsites in the BR and additionally 20 at out of the border of the Transition Area.
- **Camping for EE** – there are about 20 places where nature conservation and environment protection is taught to 10-14 years-old children in a week long camp. One of the most important is Nature and Forest Protection Camping (Mogyoróhegy forest school in Visegrád) operated by the Pilis Park Forestry.
- **Horseriding** – it is not permitted in the Core Areas and Buffer Zones. It is organized and operated by privately owned clubs around the Transition Area. For the most time it is linked to other recreational activities (e.g.: one day tour, weekend camping etc.).

- **Rock climbing** – it is not significant because the suitable places are usually strictly protected areas (Core and Buffer Zones) for the conservation of rare geological formations, plants and animals.
- **Mountain biking** – it has become very popular in recent years. The impact has not been assessed yet, it mainly depends on the measure of land-using, but this activity is not a welcomed type of tourism from the point of view of nature conservation.
- **Para-gliding, hang-gliding** – they cause severe damage to Pilis-tető Core Area by trampling or the vegetation at set-off points and by disturbing animals.
- **Observation of plants and animals** – the activity is mainly organized, it happened in the nature conservation camps, on the permitted areas.
- **Fishing** – there are two lakes are in the Transition Area. Among them Kerektó connects to the Core Area, here it is important to supervise the fishing activity.

3.3. COOPERATION IN THE BIOSPHERE RESERVE

At the moment, 83% of PBR's territory is owned by the state and managed by Pilis Park Forestry (PPZrt). There is a good, continuous cooperation between PPZrt. and the National Park Directorate (conservation manager), since PP Zrt is the territory's largest land manager. The cooperation between these two main organizations was recorded in a **Cooperation Agreement** on the 18th of June 2013.

The PBR's conservation manager organization is usually involved in local spatial planning from the beginning inside the territory of the PBR. Its main role is to provide data, construct and supervise development plan of the area. With the aim of supporting the biodiversity of PBR, it also helps to strengthen the connection between the local people and the PBR as well as to improve sustainability.

The discussions with the stakeholders for public consultation have started for years. In 2015, in accordance with the recommendations of the UNESCO, negotiations were launched to convince the local municipalities to join the PBR with the settlements' whole (or at least part of their) administrative area – this process would hopefully cause the expansion of the transition zone and the involved municipalities hopefully will enjoy the benefits of their PBR status. This is a step-by-step partnership building procedure with the municipalities, which has already started but it foreseeably needs a long time to give the results of the mutually beneficial cooperation with the municipalities, the engagement with the stakeholders. By the close of the negotiations the PBR management will send the plan of the expansion to the UNESCO.

Forcing the civil partnership is also very important, initiatives to involve the civil individuals to cooperate in the maintenance and conservation work has already started. The number of the involved volunteers is the highest amongst the different regions of Hungary – the voluntary conservation work covers f.e. removal of invasive plant species, picking up trash from the protected areas.

Nowadays the management and the maintaining works on the protected areas are almost impossible without the voluntary work and help of the volunteers.

The PBR's management organizations and the main NGOs could also mobilize large number of volunteers; the goal is to synchronize their activity.

3.4 FUTURE PLANS

The management sets these over-arching **goals** for the PBR as follows:

- Motivating diverse stakeholders around a common vision for the biosphere reserve and the setting of clear objectives to achieve this vision,
- Providing strategic direction on the PBR's private sector's activities and how it should go about consolidating (stabilizing) and putting into use the biosphere reserve,
- To promote ecotourism opportunities,
- Strengthening the engagement with the stakeholders (in particular with the private sector and the local municipalities)
- Strengthening the local communities' identity of the BR, appreciating its values and using its resources sustainably
- Ensuring that the PBR delivers socio economic benefits to local communities
- To provide opportunities for ecological research and monitoring of environmental effects of human activities on ecosystems;
- To protect the BR's ecosystems that are representative of the area and to maintain biodiversity and ecological functioning in these ecosystems, that are influenced by;
- To protect depleted, endangered and endemic species and populations and to protect habitats which are important for the survival and revival of these species and populations.

The PBR'S short-term strategic target is to establish a management board, where the main stakeholders could be represented (Ministry of Agriculture, DINPD /national park directorate, conservation manager/, PPZrt /main land manager/, other stakeholders /f.e. municipalities/).

According to the expectations of the management organizations, another short-term target is the expansion of the PBR's territory, with the newly designated transition zone areas upon the hopefully successful agreements with the municipalities. The extension of the transition zone is under planning at the moment. On these areas the goal is to achieve a land and landscape usage that guarantees the conservation of the natural assets and provides benefits for the land users at the same time.

The plan is to strengthen this enlarged transition area with its central function in sustainable development which may contain a variety of agricultural activities and other uses 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.

The step-by-step partnership building procedure with the municipalities has already started in 2015, but it foreseeably needs a long time to give the results of the mutually beneficial cooperation. The current state of negotiations shows that five municipalities (Csobánka, Dunabogdány, Piliszentkereszt, Pilismarót and Piliszántó) have the intention to join the PBR

with their whole administrative area as transition zone, the other municipalities are considering the expansion only with some parts of their settlement's area at the moment.

Pilis Biosphere Reserve

