

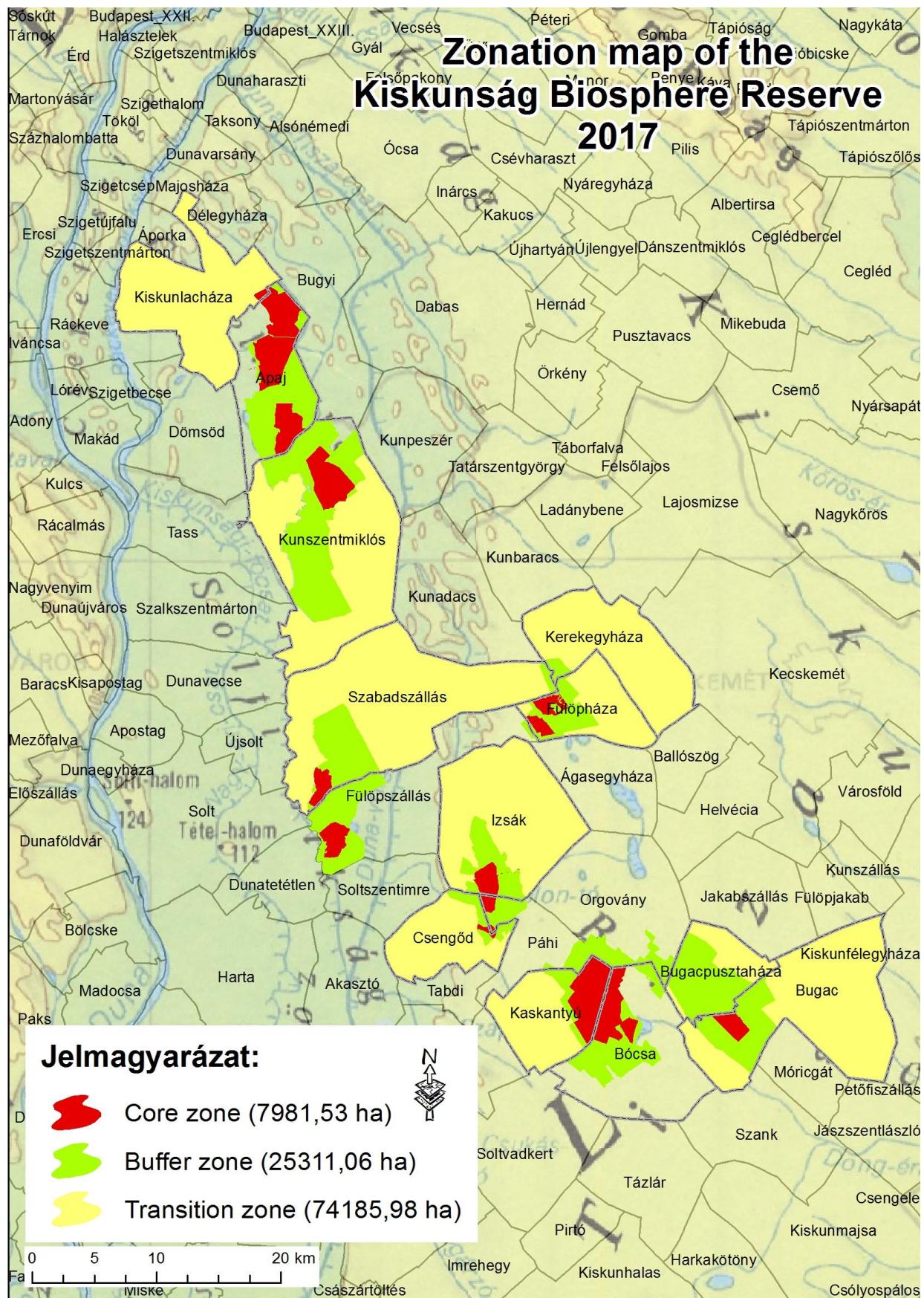


## Follow-up Progress Report

# KISKUNSÁG BIOSPHERE RESERVE

KECSKEMÉT  
2017

# Zonation map of the Kiskunság Biosphere Reserve 2017



# Kiskunság Biosphere Reserve



## GENERAL INFORMATION

One of Hungary's most characteristic geological areas is the Danube-Tisza Interfluve region (Kiskunság) where the Biosphere Reserve is located. The Kiskunság Biosphere Reserve (KBR) is of priority importance with regard to conservation of biological diversity in the Pannonian Biogeographical Region. The current core and buffer zones of the KBR had been designated as a national park in 1975; three sites of the Biosphere Reserve were listed as wetlands of international importance in 1979, 1997 and 2006, respectively; and comprises a number of Natura 2000 sites under the EU Birds Directive and the Habitats Directive since 2004. Kolon-tó at Izsák is a Biogenetic Reserve since 1995.

The Biosphere Reserve area can be sorted into the following three types of landscapes:

*1. The Danube-Valley-alkaline plains and sodic pans on the area formally flooded by the Danube River.*

This is the second largest alkaline plain of Hungary. The formal Danube flood plain is lowland; it lies 90-100 meters above the sea level. Salinisation accelerated after the area had been drained. On these saline territories evolved the so-called alkaline steppes. Alkaline grasslands, pastures, salt and loess ridges form the geological surface and the landscape. Its vegetation consists mainly of halophilic or salt tolerating species, like the *pygmy iris* and *green-winged orchid*. An outstanding value of the fauna is the *great bustard*, which has its strongest population in Hungary. Other typical species are the

*redfooted falcon*, the *stone-curlew*, the *black-tailed godwit* and the *common redshank*. Significant area restoration has been completed at the time of the natural rehabilitation of the former fish ponds. During this process permanent and temporary waters have been created. These places provide habitat for several nesting and migrating birds as well as for amphibians. The traditional animal husbandry plays a crucial role in the maintenance of native grasslands. Tourists can visit the gene bank farm of the ancient Hungarian domestic animals at Apajpuszta, where *grey cattle*, *racka* and *cigája sheep* as well as *mangalica pigs* are bred. Another attraction for tourists is the Local History Museum in Kunszentmiklós, where folklore and natural values of the puszta are displayed.

On areas with a similar geological origin with the alkaline lowlands but at lower elevations sodic pans and alkaline marshes have evolved. Prior to major river regulations the Danube river watered these areas every year, but nowadays the only water source is precipitation. These temporary pans usually dry out by the end of the summer. The high salt content of these wetlands allowed the evolution of a micro-flora and -fauna unique to Central Europe, which forms the base of the so-called sodic breeding bird community. The typical species of this community are the *avocet*, the *black-winged stilt* and the *Kentish plover*. The saline marshes give home to the *great bittern*, the *greylag goose*, the *marsh harrier* as well as to several species of reed-dwelling passerines. The ponds in spring and in autumn serve as roosts and feeding grounds for thousands of migrating waterbirds as well. The lakes are surrounded by alkaline grasslands. Grazing has taken place on the various types of sodic grasslands for centuries, but some of them are mown. *Hungarian grey cattle*, *Hungarian pied cattle*, and flocks of sheep are at home here. Extensive animal husbandry has not changed the species richness on sodic grasslands, and has contributed to maintaining biodiversity.

## 2. The Danube-Tisza interfluvial sand dunes formed by the wind, grasslands on sand remnant forests

The largest and the most diverse territory of the biosphere reserve consists of sand puszta, sand dune forests, alkaline puszta and remnant parts of the formal sodic pans, marshes, fens, fen-meadows and wet grasslands. The diverse surfaces of the sand dunes are rich in lime, and give home to valuable vegetation. Typical species are the *hairy flax*, *sand saffron*, *yellow dwarf iris*, *red helleborine*, *long-lasting pink* and the *wolf peas* (*Astragalus dasyanthus*). The insect world is very rich in special species like the predatory *bush cricket* and other grasshopper species. The most famous part, Bugac, is internationally well known as it has been a tourist destination already since the 1930s. Here stands a museum, which has connecting open-air buildings and shows the traditions of the life of the shepherds. The animal husbandry traditions on the puszta serve the maintenance of the gene-bank of the ancient domestic breeds as well as the needs of tourism.

## 3. Parallel with the line of intersection of the Danube-Tisza Interfluve and the Danube-valley—within a few kilometres of width, but over a length of 130 kilometres—there is a system of marshland and bogs. The northern part of this is known as Turjánvidék, the southern as Órjeg.

In the postglacial branch of Danube—which was a lake with open surface—is today a swamp, a reed country with willow marshes and tussock meadows (Kolon-tó).

The area is surrounded by fen and gallery forests, fen meadows, and swamp meadows and on the western side sand dunes. On our way from the north towards the south we can see a continuous reedbed. Its greatest value is the nesting spoonbill population and all species of the herons found in Hungary. Beside the rich birdlife we can also find rare fish species like the *European mud-minnow* and the *weather-loach*, among the reptiles the *European pond turtle*, the *grass snake* and the *dice snake*, or with luck we can glance the *European otter*. Rare species of the flora is the *white water-lily* and the *greater bladderwort*. In the southern part of the area on the swamp meadows we can find nine species of orchids. The most common species are the *military orchid* and the *loose-flowered orchid*. The remnant oak-ash-elm gallery forests remind us the ancient landscape of the Danube-Tisza Interfluve region. Within the Biosphere Reserve a Bird Monitoring and Ringing Centre has been operated by the local bird protection society. This place provides a good opportunity to visitors (more than 1000 people/year) to learn not only about scientific research but the general issues of nature conservation as well.

On these areas the main task of the Biosphere Reserve is to protect and preserve the most typical features of the landscape with its important natural treasures, geographical formations, waters, flora and fauna, as well as to conduct scientific research. At the same time the biosphere reserve thrives to maintain the typical lifestyle of the scattered farmsteads, the traditional animal husbandry of the grasslands and to preserve the ancient Hungarian domestic animal breeding by maintaining gene bank herds. Scattered farms are characteristic settlement types of the Kiskunság region and the transitional zone as well, whose historical roots go back to centuries. In their original form, scattered farms developed as a settlement form for agriculture—first with animal husbandry and, later, cultivation through plant production. The scattered farms themselves represent special values together with the traditional farming activities including the farming methods maintaining the genome of the primordial Hungarian domestic animals. The milieu of the scattered farms does not only make the landscape unique but has a significant role in the conservation of the natural values, the functioning of the economy and the retention of the local community as well.

## ZONATION DEVELOPMENT

Based on the 2013 report and UNESCO's recommendations in 2014–15 a new zonation was established. The new zonation follows the recommendations of the MAB International Coordinating Council for Biosphere Reserves, which met in Jönköping 2014. The main concept was to enlarge the area of the buffer zones, and involves new areas into the transitional zone for connecting the previously disjunct patches of the biosphere reserve in order to unite the different clusters into one entity to fulfil the criteria of the Statutory Framework. Although the full KBR still consists of two disconnected areas, the next steps have been taken in order to supplement the zonation: consultations with Fülöpszállás and Orgovány are ongoing to reach full connectivity. Recently, in 2017 the buffer zone is not surrounded by the transitional zone at every place, but at that points, outside of the core zone and buffer zone there are rarely inhabited, mainly agricultural lands, so the natural values are not at risk.

## **CORE ZONE**

*Size: 8342 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).*

The 7/2007. (III. 22.) KvVM ministerial decree defined the core area of KBR by land registry numbers. Basically the core zone includes natural and semi-natural systems (dry and wet grasslands, wetlands and forests) with a minimal human impact. These are parts of the EU Natura 2000 ecological network as well. Many parts of the core area are designated both as Special Protection Areas (under the Birds Directive) and as Special Areas of Conservation (under the Habitats Directive) of the EU Natura 2000 ecological network. Some parts of the core and the buffer zones are wetlands of international importance listed by the Ramsar Convention since 1979. There are no settlements inside the zone. The whole core zone is state-owned. According to the Hungarian Act on Nature Conservation the core zone is strictly protected area, so the main aspects of the management focus on conservation activities. Uses or activities in the core zone are biological inventories, long-term biological monitoring, conservation management practices, controlled hunting and some agricultural (grazing) and forestry activities, wildlife watching.

There are no inhabitants in the biosphere reserve's core area.

## **BUFFER ZONE**

*Size: 33650 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, 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.*

Similarly to the core zone, the buffer zone of KBR is also defined by the 7/2007. (III. 22.) KvVM ministerial decree. The entire zone is part of the Natura 2000 ecological network. It includes grasslands, salt affected wetlands, sodic pans and forests. Inside the zone human activity is permitted. The buffer zone is to mitigate the outer impacts affecting the core zone. Some parts of the buffer zones are wetlands of international importance listed by the Ramsar Convention since 1979.

These areas are used extensively by different agricultural activities (grazing, mowing) and forestry in accordance with the conservation management strategy, controlled hunting, research, environmental education and some tourism (hiking, wildlife viewing), but where needed spatial, temporal and technological restrictions apply. Habitat restoration projects are in progress or have been completed recently to improve ecological conditions and conservation status (establishing open water surfaces

in the Kolon-tó which were characteristic of the area before drainage canals were built e.g.). To maintain grasslands and to prevent the natural expansion of reed, extensive grazing by traditional animal breeds and mowing are also frequent. The most important impact is disturbance by agriculture which is in some places the main activity in the buffer zone.

The population of the buffer zones is very low, a few shepherds and farmers live in scattered farmhouses (max: 500 people).

## TRANSITION ZONE

Size: 74185 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, companies and other stakeholders work together to manage and sustainably develop the area's resources.*

By taking into consideration of the Seville Strategy and the recommendations of the International Advisory Committee for Biosphere Reserves the possible future of KBR was analysed and it was concluded that its operation needs fundamental reforms. After careful preparative work, which included the distribution of written information on the bioshpere reserve as well as personal visits to various mayors, a seminar was organised as the first step of the process for a more active involvement of local municipalities in the activities of KBR. Stakeholder municipalities were approached the following way: they were contacted in writing first and also visited in person, and where required a briefing was given during the meeting session of the elected assembly of the municipal representatives in order to provide information on KBR. The seminar was held on June 27, 2016 where mayors and interested members of the assembly of the representatives of all those municipalties were invited where part of the core zone or the buffer zone of KBR lays within the town's zone of jurisdiction. Presentations were given on the structure of UN, UNESCO, MAB, the National committees of UNESCO, and the national MAB Committee, on the activity and development plans of the national park as well as a review on the potentials of ecotourism for municipalities. An ***Agreement for the operation of the Forum for the Kiskunság Biosphere*** (See in Annex 1.) was opened for signature to all invited municipalities. It has been signed during the meeting on July 27, 2016 by the mayors of the following towns: Bugac, Bugacpusztaháza, Csengőd, Fülöpháza, Izsák, Kaskantyú, Kunszentmiklós, Szabadszállás. Kerekegyháza and Kiskunlacháza signed the agreement consecutively. Orgovány has not signed the agreement yet but it was represented as observer on both meetings of the forum in 2016. Fülöpháza expressed its interest to sign the agreement in 2017.

**Non-core or non-buffer zones of signatory towns form the transition zone of KBR on a voluntary basis.** Membership is still open to those municipalities with biosphere reserve areas that have not signed the agreement yet.



*Sinature of the Agreement for the operation of the Forum for the Kiskunság Biosphere in 2016*

Later steps of the reform shall be governed by the Forum for the Kiskunság Biosphere, which shall gather for a meeting at regular intervals.

Within the framework of the Forum a **20% discount of national park programs** will be given to schools of the biosphere reserve, participation in the nature conservation environmental education of local schools, pro bono provision of temporary exhibition materials in the topic of environmental education, technical—and depending on available sources—**financial help for constructing educational trails, signposting the KBR**, help to develop the style and face of the municipality, give **an opportunity for consultation** with the experts of the national park directorate about ecological farming, nature conservation projects, etc. A **bioshpere reserve prize** will be awarded at first time by the directorate in 2017 in cooperation with the established forum and the mayors of the involved municipalities. The prize will be given to a farmer of the KBR who achieves excellence in the field of ecological farming or ecological landscape use. Municipalities shall support with their own tools the activity of the directorate in the preservation of nature values, awareness raising in environmental or nature conservation issues, distribution of methods of eco- and nature friendly farming.

To form a link to higher fora (the National MAB Committee, the UNESCO MAB Secretariate, the EUROMAB meetings) and to make proposals, recommendations to decision makers as well as to invite members of the KBR Forum at least once a year for an assembly an Advisory Body of five people will be responsible, which consists of representatives of the municipalities, the MAB National Committee and the Kiskunság National Park Directorate.

The transition zone surrounds and connects the previous two types of zones (core zone and buffer zone). It mainly includes manmade landscapes (e.g. villages, towns, scattered farms, agricultural areas, arable lands, areas of touristic relevance). In contrast to the biosphere reserve's core and buffer zones, which are mainly state owned, in the transition zone private ownership of land prevails. The majority of the inhabitants (some 50 000 people) of KBR live in the transition zone. The most extensive form of use of the area is agriculture. Some areas of the biosphere reserve are to promote extensive management of the meadows and arable land in the frame of an agricultural scheme. Parts of the core and buffer zones and the whole transition zone are within the agri-environmental program and designated as High Nature Value areas according to EU regulations. The local farmers have the opportunity to apply for payments if their farming activities are carried out in a predefined environment and nature friendly way.

Land use is sustainable and is in compliance with the requirements for a transition zone. In addition, there is a high number of contracts serving the purpose to improve the ecological, economic and social situation in the area. Perspectives for the future are being created via sustainable regional development, revitalization of rural areas and protection of local residents' living standards.

The development processes are under the control of the respective environmental authorities and the authorities responsible for regional and local developments, and national monuments. The local population of the settlements in the zone is involved in the conservational and development issues. The area is getting more and more popular among visitors, especially during the vegetation season.

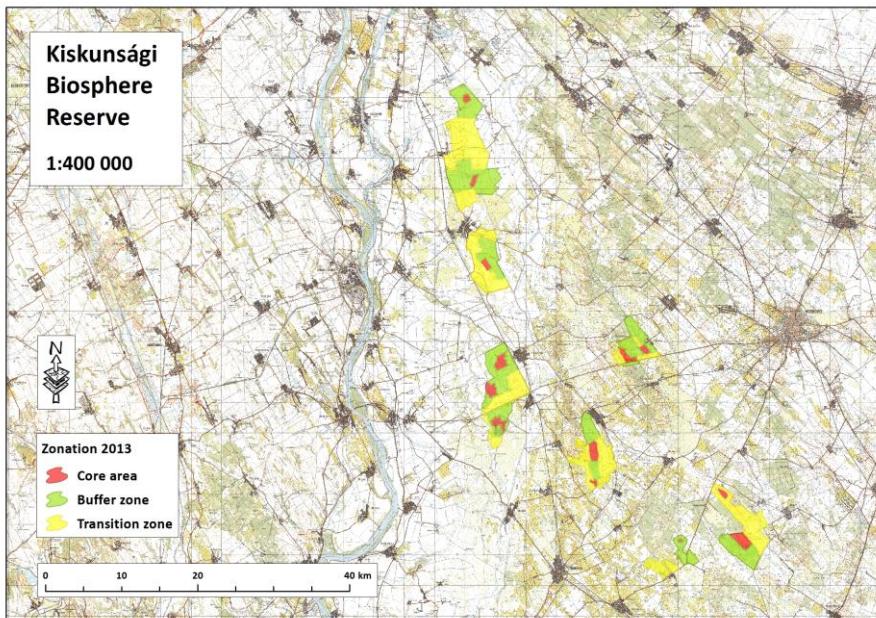
## **Progress on the implementation of the Seville Strategy**

### **Management plan**

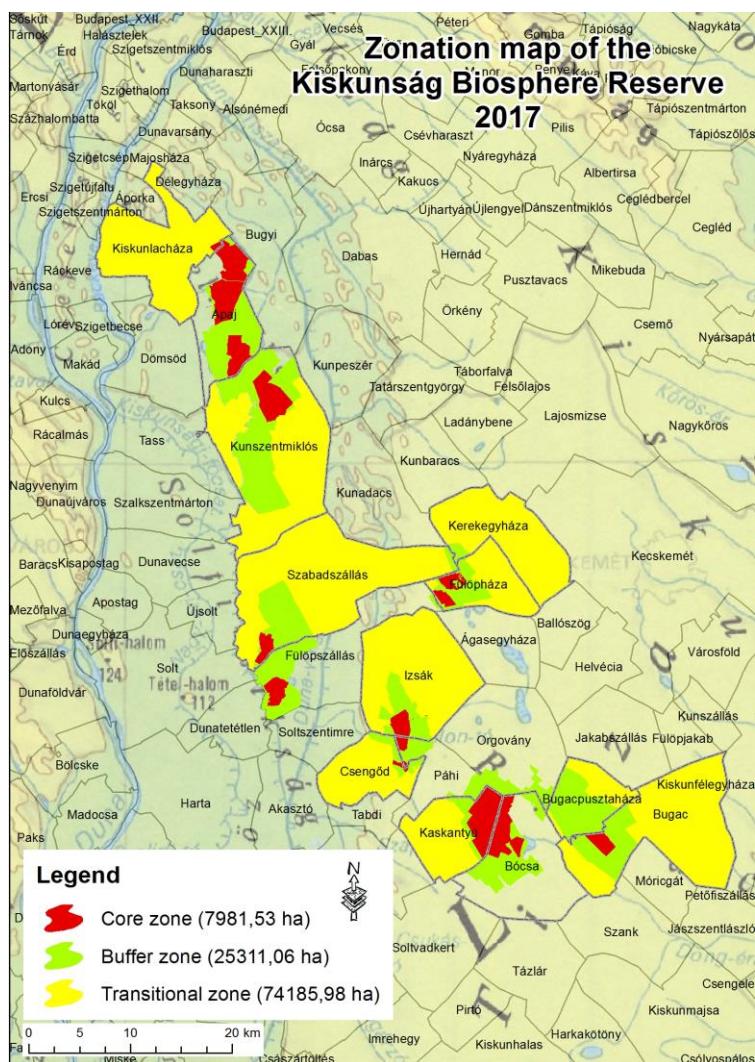
Based on the 2013 report and UNESCO's recommendations, it has become obvious that the Kiskunság BR lacks an important and effective management tool, namely a dedicated biosphere reserve management plan since its establishment in 1979. While there are other management plans in effect for the BR, and in many ways they are in line with the BR management efforts, they do not cover the whole area (parts of the transitional zone are missing), 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 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. The planned management actions try to address these issues.

### **Development of the zonation**

Based on the 2013 report and UNESCO's recommendations in 2014–15 a new zonation was established. The new zonation follows the recommendations of the MAB International Coordinating Council for Biosphere Reserves



Former zonation of the Kiskunság Biosphere Reserve (2013.)



Actual zonation of the Kiskunság Biosphere Reserve (2017)

## **Forum for the Kiskunság Biosphere**

The forum was formed between eight signatory municipalities, the Kiskunság National Park Directorate and the MAB National Committee on July 27, 2016 (two further municipalities joined the agreement consecutively). The second meeting took place on December 20, 2016 where planned activities of 2017 were agreed upon. These include establishment of KBR prize to be awarded to a person or firm for ecologically friendly farming practices as well as the preparation of a book on KBR.

Further municipalities expressed their interest in signing the agreement, forecasting a full connectivity of KBR soon.

## **Cooperation with other biosphere reserves**

Beside the nation-wide cooperation of KBR, it has continuous professional collaboration with the other BR managing organizations in Hungary, especially the neighbouring Hortobágy National park Directorate (administrative body of the Hortobágy Biosphere Reserve) and the Duna-Ipoly National Park Directorate (one of the administrative bodies of the Pilis Biosphere Reserve). A representative of KBR participated on the first meeting of the Forum for the Pilis Biosphere Reserve and a speaker was invited from the PBR on the first meeting of the Forum for the Kiskunság Biosphere Reserve. A study tour was organised to the Fertő lake BR by national park experts recently to see local practices of nature friendly agriculture.

KBR has not signed a bilateral agreement with other BRs outside Hungary, but there is regular cooperation with various Biosphere Reserve staff (Germany, Rhön Biosphere Reserves), national parks and protected areas in Kazakhstan, Serbia, England, Ireland, etc.

### **A) Conservation Function**

The biosphere reserve's size, along with the important fact that the reserve's core areas and buffer zones as well have been legally protected and set aside as a national park, enable the fulfilment of the protection function very effectively. Protection measures are implemented to a high level in the buffer zone as well. A range of agreements, contractual arrangements and cooperation additionally help to ensure that development is sustainable.

In the biosphere reserve's core area and buffer zone the natural development prevails. Conservation aspects play an especially strong role in the core area, while in the buffer zone the primary focus is on sustainable uses. In the transition area, more intensive uses, including traditional uses, take place. Here as well, development is now largely sustainable.

The national park directorate has a responsibility as a state nature conservation manager with sovereign competence. Volunteer cooperation is strongly promoted and welcomed, and it is becoming increasingly important as a management mechanism. The biosphere reserve's development and logistical functions extend far beyond the boundaries of the biosphere reserve itself, thanks to the governmental agri-environmental scheme "High Nature Value Area". The region's sustainable development is promoted via voluntary agreements, cooperation, applications for joint projects, support programs.

Nowadays the removal of aggressively spreading invasive plant species (*Asclepias syriaca*, *Amorpha fruticosa*, *Solidago spp.*, etc.) is a major challenge. The management of invasive species is a very complex and complicated task among conservation activities. The biggest problem is caused by the aggressive alien species, the milkweed (*Asclepias syriaca*), which spreads mainly on sandy soil on abandoned ploughfields, forest plantations and overgrazed grasslands especially in the surroundings of farms and settlements. The effective removal requires permanent management. The applied technologies are regular mowing and watchful application of herbicides. This management is implemented on 100-300 hectares every year. According to the experiences, which are consistent with other observations collected from international and national publications, the exclusively applicable technology is the use of chemicals. For maintaining the actual supportable conditions further continuous management is needed.

The forceful spreading of Tree-of-heaven (*Ailanthus altissima*) causes problems especially on sandy areas. As part of habitat rehabilitation works graniferous individuals were eliminated first then almost all stems were removed on the most vulnerable sandy areas.

Another conservation activity is the replacement of non-native tree species (conifers, black locust tree) to native species (e.g. white poplar). The coverage of non-native trees was very high even in the territory of the BR. It is a long process to completely eliminate these alien plantations from the BR. Depending on the available financial resources of the Directorate 5-25 ha of alien plantation has been replaced by native forest annually.

There was a large scale habitat restoration project on the alkaline grassland of the Upper Kiskunság area. The main goal of the project was to eliminate channels (28 km) and to remove sluices, and as a result recreation of temporary waters in the alkaline grassland.

An important project was the restriction of illegal traffic in BR core zone. There is a network of dirt roads and tracks in BR for agricultural and forestry purposes. The easy accessibility of these roads has given rise to frequent illegal deposition of waste material, damaging of habitats by off-road vehicles and bikes and recreational activities causing harm to the environment. As part of the project the roads of the core zones were secured by more than 50 strategically placed gates.

## B) Development Function

### Population living in the BR

In Bács-Kiskun County the population density is 63.1 inhabitants per km<sup>2</sup>. It is relatively low when compared to the national average (Hungary 108.5 inhabitants/km<sup>2</sup>). The biosphere reserve's core area is not inhabited by anyone and the population of the buffer zones is also very low, a few shepherds and farmers live in scattered farmhouses (max: 500 people). A little more than 50,000 people live in the transitional zone. The two largest municipalities are Kiskunlacháza (8988 inhabitants) and Kunszentmiklós (8515 inhabitants).

## **Sustainable development**

The majority of the Biosphere Reserve area is a Less Favorable Area for intensive agricultural perspectives due to its poor soil conditions. There is a high diversity of large-scale and semi-subsistence farms in the region. Traditionally, the area used to be a grazing land with cattle, sheep and horses, but from the 1950s the population of grazing animals started to decrease, which led to inappropriate use of lands, which finally caused the serious degradation of grasslands.

A wide range of interactions with surrounding areas takes place, with the result that the biosphere reserve's socio-economic impacts reach far beyond its boundaries and, thus, can contribute to integrated management for the region. In short, within the core areas and buffer zones of a biosphere reserve designated as a national park, the biosphere reserve's protective functions receive special attention, while in the transition area and the large surrounding areas a special emphasis is put on people and on the sustainable development of their region.

One such action of cooperation relates to sustainable agriculture in the buffer and transition zones where there are a number of governmental schemes available for giving financial support, advice and assistance to individual farmers, directed mainly to individual farm conditions. The biosphere reserve has contributed mainly by hosting community meetings and exhibitions or events that help to promote sustainable land use or farming practices.

In the Biosphere Reserve and the neighboring areas, 4 different types of payments are available for local farmers, and 2 of these support directly nature conservation aims.

These payments are:

1. *Measures targeting the sustainable use of agricultural land*
2. *Payments to farmers in areas with handicaps, other than mountain areas*
3. *Natura 2000 payments on agricultural areas*
4. *Agri- environmental payments*

The first two are connected with the sustainable use of agricultural land via supporting the traditional way of farming, including the maintenance of grasslands and indirectly supporting the transformation of the production structure to the one based on livestock.

As the second measure supports farming in areas with handicaps, this payment is available only in areas with special conditions, and the generally poor quality of soil and the high natural value within the Biosphere Reserve definitely fulfils the criteria of these special conditions.

The last two measures directly target nature conservation aims with special requirements and as a consequence access to these payments is limited.

The Natura 2000 payments are directly connected to Natura 2000 sites: the farmers claiming support for Natura 2000 grassland areas obtain it if they meet the requirements of the scheme according to the Hungarian government decree No. 269/2007. (X.18.).

Above all, the highest payments can be reached by joining the agri-environmental scheme, which opportunity is available for 25 areas in Hungary. The scheme in general supports the protection of soil, the surface- and groundwater, the reduction of air pollution and is in line with genetic and nature conservation principles. These payments

encourage agricultural producers to adopt farming and production methods, which are compatible with the sustainable use of environment, landscape, natural resources and with the preservation of genetic resources.

This measure can be divided into 4 sub-measures on the basis of agricultural land use: arable plant production, grassland management, plantation farming (fruit and grape production) and wetland management. Within the Biosphere Reserve there are two special areas nominated as Areas with High Natural Value (HNV); the Dunavölgyi-sík (Plain of Danube-Valley) and the Homokhátság, where the so-called zonal nature conservation schemes are defined, and the zonal specifications, according to the ministerial decree FM 61/2009. (V.14.) can be applied and integrated into everyday farming.

The schemes can be divided into the following three groups:

1. Arable farming for nature conservation
2. Grassland management for nature conservation
3. Conversion of arable lands into grasslands

These schemes, which are obtainable only on the special areas of High Natural Value, and which are strongly connected to the Biosphere Reserve support the conservation of endangered bird species directly or indirectly related to agrarian habitats, like the Great Bustard (*Otis tarda*), the Stone-curlew (*Burhinus oedicnemus*), the European Roller (*Coracias garrulus*), the Saker Falcon (*Falco cherrug*), the Montague's Harrier (*Circus pygargus*) or the Red-footed Falcon (*Falco vespertinus*). The regulation and the extra specifications improve the quality of environment and habitats in general as well.

The farmers that joined the special and optional programs have involved these extra payments, as kind of compensation for the requirements into their annual calculation, as in some cases it can reach up to 50% of their total budget. Although the agri-environmental scheme is not compulsory, participation is very high, especially on the Plain of Danube-Valley, where the positive attitude has already produced results in development of natural and semi-natural habitats, and species connected to agriculture.

## Tourism

The surroundings of KBR does not belong to the priority tourist destinations of Hungary but its favourable nature and cultural attractions serve a good basis for the development of tourism. In 2015 95,500 registered visitors attended the programs of KBR and another 1685 guestst stayed overnight in one of the facilities operated by the Kiskunság National Park Directorate. Two dozen education trails, two forest school facilities, two interpretation centres and two museum exhibitions await visitors with about 20 temporary exhibitions, six annually organised program days offer relaxation and entertainment to interested people every year.

Arboreta, park forests, zoos, agricultural and traditional landscapes, entertainment parks, angling ponds are available also in the region. Outdoor tourism is supported with marked trails. Those whoe are devoted to orientation running, marathon running, horseback riding are already returning guests to the region, bycicle tourism is already in

progress of development while opportunities are limited for aquatic tourism at the moment.

## **Local Products**

At the same time, for purposes of marketing the region to the world at large, especially with regard to tourism, it is important to concentrate on some unique features (e.g. inland shifting sand dunes; vast, “endless” grasslands, rich bird fauna). The biosphere reserve's explicit goals include protecting nature in order to promote tourism and enhance the region's image—to support sustainable development that can improve living and working conditions for the people living in the area. There is a relatively new project for certification of “National Park Products”. Packaging and labeling requirements and the definition of the relevant criteria of the products and services will be announced soon. It can be used for advertising the products of local inhabitants in the national park and biosphere reserve and the inhabitants of the surrounding areas as well, generating more income through the special status of the area. Typical products are different types of processed meat (grey cattle salami, ham, patée), handcrafted cheese, fruit jam, fruit syrup, honey, etc. These items are not only derived of raw material originating on national park terrain but some of them are organic products, too.

## **C) Research and educational functions**

### **RESEARCH**

There are two permanent stations for biological monitoring activity at the sand dune region of Bugac and Fülöpháza. These stations belong to the University of Szeged, and to the Institute of Ecology and Botany of the Hungarian Academy of Sciences (Vácrátót). Universities, museums and research centers which have had individual faculty members or graduate students conducting work in the KBR in recent years include: University of Szeged, University of Debrecen, Corvinus University of Budapest, Eötvös Lóránd University (Budapest), Hungarian Academy of Sciences Institute of Ecology and Botany (Vácrátót), University of West Hungary (Sopron), Móra Ferenc Museum (Szeged), Mátra Museum (Gyöngyös), Hungarian Natural History Museum, Hungarian Academy of Sciences Institute for Soil and Agricultural Chemistry, Hungarian Hydrological Society.

The most important topics are the followings:

- vegetation mapping,
- soil mapping,
- biological surveys,
- geological and geomorphologic studies,
- survey of wildlife population dynamics,
- inventories on numerous taxa of wildlife.

### **National Biodiversity Monitoring System**

The National Biodiversity Monitoring System (NBmR) has been developed as a very detailed monitoring system for the protected areas and Biosphere Reserves in

Hungary. Most of the research and monitoring activities within the KBR have been carried out by the guidelines and protocols of the NBmR.

The Hungarian Academy of Sciences (HAS) first drafted a biodiversity conservation strategy, which identified the achievable targets and stressed the importance of regular national monitoring. The Institute of Ecology and Botany of the HAS elaborated the theoretical basis of monitoring activities, and the Hungarian Natural History Museum collected the already existing scientific knowledge pertaining to biodiversity monitoring. The introduction of the National Biodiversity Monitoring System was initiated and organized by the Authority for Nature Conservation of the Ministry of Environment and Regional Policy in 1995 (now it is coordinated by the Department of Nature Conservation of the Ministry of Agriculture). To carry out this monumental project, the PHARE Program of the European Union contributed substantial financial assistance. This program enabled the creation of the program of a national monitoring network. A series of 11 manuals was published in Hungarian by the end of 1996. The monitoring is carried out in a network of 5 by 5 km sampling quadrates. Mapping in these quadrates at landscape level yields the framework within which the more detailed, community-oriented and repeated investigations can be carried out.

The first year in the operation of the system was 1997, when a Central Coordination Unit was formed, mainly to fulfil the project management duties by employing two experts. Since 1998 one full-time staff member in each of the ten national park directorates has been devoted to implement local tasks, to coordinate and supervise the monitoring activities within the area of jurisdiction of the given directorate.

Development and coordination of the national programs are provided by the Central Coordination Unit, while local tasks are coordinated regionally by each national park directorate. Guidance is also provided by an independent Advisory Committee comprising acknowledged experts of different taxa/disciplines. The service also welcomes the contribution of institutes, universities or non-governmental organizations that can assist the Central Coordination Unit or the regional teams. Those tasks that do not require expert input may be carried out by volunteers from nature conservation societies or schools. The service also plays an important role in raising the awareness of the general public. Sampling has been running with an increasing number of components in 10 projects since 1998.

### **Migratory bird survey and other research programs**

In the Kiskunság Biosphere Reserve there is a Bird Monitoring and Ringing Centre at Kolon-tó. It was established by the Kiskunság Bird Protection Society together with the Directorate of the Kiskunság National Park 10 years ago. It has been producing long term data about breeding and migratory reed-dwelling bird populations.

A fine example for the involvement of volunteers and local people is the Vadonleső ("Nature-watcher") Programme. This Internet based programme collects distribution data about carefully selected 16 (plant and animal) species of Hungary (e.g. hedgehog, bog turtle, moles, squirrels, snowdrop), which are common and more or less easily detectable, but need protection or 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. Small lakes and drains are the last refugees of the European pond turtle in this area. This is the only native turtle species of Hungary. Escape or release of invasive alien turtle species derived from America cause serious threat to this species. Reports of observation of the pond turtle individuals are very important data for official nature conservation bodies.

## EDUCATION

### Training and public awareness programs

Environmental education and tuition are core activities of the staff of the national park, which has a unit designated for these tasks. They have outreach programs to local schools. Two live-in forest schools await school groups during summertime. One of them (*Kontyvirág Erdei iskola*) has been renewed and expanded recently from EU cohesion funds while the other one (*Naprózsa Erdei Iskola*) will be renovated and expanded in the near future.

Municipalities in the transition zone have been offered help in nature conservation education by the national park directorate and temporary exhibitions organised by the national park directorate are also offered for use free of charge to local communities in the transition zone.

### *House of Nature*

The Biosphere Reserve has a visitor center in the city of Kecskemét, called House of Nature. Dioramas depict a picture of the flora and fauna as well as the protected habitats of the BR such as natural forests in flooded areas and alkaline lakes. Another exhibition displays traditional jobs of the Kiskunság region that used to be really distinctive, such as furrier, fisher, quarryman, miller, dyer, etc. Lectures on conservation are held according to a timetable. Groups are welcome by prior arrangements. Trips are organized for groups on the basis of dates chosen in advance. Individual visitors can come on most weekends (it means more than forty times a year). Visitors are able to gain information about those parts of the National Park and Biosphere Reserve which are open for tourists. Brochures, postcards and books are also available.

- The exhibition of the building introduces the Hungarian nature conservation and natural values of the land between the Danube and Tisza Rivers.
- It serves as an information center that expands the social basis of nature conservation by giving programs, lectures, and issuing publications.
- Environmental education for young children and students to enhance classroom environmental science curriculum, and the dissemination of scientific knowledge to students, teachers, and researchers.
- A starting point and information center for tourists visiting the Kiskunság National Park and Biosphere Reserve.
- The House serves as a place for conferences and seminars.
- In the House, there is a library of nature conservation documents and relevant data on the region between the Danube and Tisza rivers including photos, films, video tapes, scientific papers, technical books, maps, etc.

- a ‘Green Point’ information service outlet on nature conservation regulations and actions.

### ***The Field Study Center at Fülöpháza***

This study center is the core of the environmental education program of the Kiskunság BR. It provides an area for the park to be used as an educational tool for students of all ages, and also a place from which scientific research can be conducted. The center receives groups of students from primary and secondary schools from throughout the area, as well as university classes that would like to conduct week long field studies in the park. The center has also been used as the venue of a training camp for teachers wishing to learn more about outdoor environmental education techniques.

### ***Bird Monitoring Center in Izsák***

The Bird monitoring observatory, located at the Lake Kolon part of the BR, is run by KNPD and the Kiskunság Bird Protection Society. Alongside with the ongoing bird research, there are several field study programs, night tours, summer camps and exhibitory bird ringing for the visitors. The most important target group is the population of Izsák and the neighboring settlements. “Kolon café” program series are also organized by the Society, where nature protection, environmental and ecological issues are discussed.

### **Public relations, information service, social connections**

Many different events have been organised annually in the biosphere reserve (Great Bustard Festival, “Moving Sand” Half Marathon, Shepherds Festival, Shepherds Dog Festival, Earth Day, Day of Birds and Trees, 50 guided tours pro year). These events are not only places for recreation, but potential places for communication with local people. The participants of these programs exceed 30.000 visitors annually.

An elaborated environmental education programme is available for children and youth of the age group between 3–18 years. Field study and internship, as well as thesis opportunities for college and university students are available also. In the education programmes teachers of local educational institutions are actively involved. Year by year more than 2500 children are involved in these activities.

In accordance with the preliminary discussions, and within the framework of collaboration with the relevant municipalities signposts are planned to be erected in the centres of the stakeholder towns to advertise the KBR. The official logo applied on these signposts will follow the recommendations of the UNESCO (2016).

### **Training programs for specialists:**

Ad hoc training courses are organized at a regular basis for specialists from other Hungarian biosphere reserves with particular attention to problems like the management of burnt areas, or recently rehabilitated areas.