



## Survey of the Ecosystem Services of Old-Drava and the expected impacts of the habitat restoration on Ecosystem Services – Summary

Compiled in the 'Transboundary cooperation for revitalization of riverine habitat complex in Drava region within Natura 2000 sites' project financed by the LIFE+ Nature program

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### [A brief overview of the research](#)

The assessment of the ecosystem services of Old-Drava was the part of the 'Transboundary cooperation for revitalization of riverine habitat complex in Drava region within Natura 2000 sites' project (code of the project: 'LIFE13 NAT/HU/000388 LIFE Old-Drava'). The main aim of the research is to find out which ecosystem services of Old-Drava play a key role for locals' lives.

The field works of the EU-funded Hungarian-Croatian project, aiming at the restoration of the Old-Drava habitat was composed of improving the water supply of the oxbow, angling facilities and the nature conservation status of the gallery forest. In the lower part of Old-Drava, a bottom weir supplemented by a sluice is built. This could provide up to 100-120 cm higher water level during the dry summer seasons, when the low water level is a problem. (Improving water supply with water pumping and large-scale dredging proved to be unsubstantiated and unsustainable for water retention; so these alternatives were rejected during the planning.) In the project the ruined angling platforms are demolished and new ones are built on specific locations. Plants that are now rare in the softwood forests are planted to increase biodiversity. Biomonitoring surveys, implementing in long-term and the promotion of natural values are also part of the project.

From the beginning of the 2000s the concept of ecosystem services has been published in the professional literature, stating that people benefit from ecosystems through their functions. The Millennium Ecosystem Assessment (MEA) document distinguishes four categories of ecosystem services: (1) provisioning services (usually tangible, everyday goods such as fish, game); (2) cultural services (spiritual, recreational, heritage goods e.g. tourism); (3) regulating services (providing regulation of ecosystem services, e.g. water regulation); (4) supporting services (necessary for the production of ecosystem services, e.g. nutrient cycling). This research was based on this concept.



### Applied methodology

It is worth using focus group methodology (Vicsek, 2006), if

- we want to examine in what the participants of the survey about the ecosystem;
- the questions and answers for why and how are interesting;
- we want to reveal new aspects and views;
- our goal is to understand complex opinions and motivations and to recognize deeper mechanisms and
- the expressions of the interviewees are important.

In this research, the main goal is to get to know and explore how the people who live or work near the Old-Drava think about the opportunities provided by that and about its ecosystem services, which meant certainly new knowledge. A method of the focus group discussion was chosen for the study, because such research has never been in the area before. There was very little prior information on the issues mentioned above. This focus group process is capable of effectively expanding the attitudes, opinions and desires by using group dynamics.

Three focus group discussions were held in Drávaszentes belonging to Barcs County in Hungary and one of them in Križnica on the Croatian side. Local inhabitants took part in one of the Hungarian focus groups and also in the Croatian one. Domestic experts of the field were involved in the other two Hungarian focus groups. Local people attended a wide range of meetings, including fishermen, entrepreneurs, hunters, civil servants, teachers, and representatives of NGO-s, both active and retired people. Experts are partly involved in ecological and other researches in the area and they are also participants in the project.

During the residential survey experiences about Old-Drava from the past and the current role of the oxbow were examined. We also wanted to know how they see the future of Old-Drava in the light of the project's results and what proposals they have in addition to the project elements implemented now.

In the focus groups of experts the discussion was based on the ecosystem service concept developed by MEA (2005). We have previously collected with the help of WWF staff what kind of ecosystem services may be presented in the area. Then we discussed all of its items, providing the opportunity to clarify the ecosystem services and to evaluate their significance.



## The results of the research

Conclusions based on the experience and stories related to the area are as follows:

The Hungarian focus group said about the past that 50-70 years ago local people lived together with water. They had an enormous amount of economic activities connected to oxbow and floodplain, such as fishing, floodplain pasturage, floodplain orchard, floodplain piggery and masting, hunting (mainly ducks), small apiary, iron processing, formerly charring and potash cooking? (its result was the obliteration of the forest.) Much earlier local people were also suppliers of fish, crab and grey cattle to the royal house. The oxbow was used to water animals, to douse but also to drink water ("it was so pure to be drinkable"). The area was suitable for the collection of various herbs (horsetail and elderberry). The area around oxbow has been regularly inundated before the river regulation that is why very fertile soils have evolved. If we look at the relatively close past, it turns out that angling/fishing has always played a major role in the lives of locals, as they could catch many fish species like tench, white bream, carpgrass carp and pike. They went to the oxbow's riverbank with their family where they spent a lot of time. Fishermen connected the fish to the farewell which has been a tradition for a long time. In Péterhida the tradition was steaking the fish on stem. On the oxbow the boat mooring (boat hiring) and bathing was also typical. It was a folk tradition to collect the mullet with net, water caltrop, which served as basis of flour, baked or made bread from it. We could find live settlement here at that time.

The Croatians revealed fishing among the old activities. On the Croatian side there were 20-30 kilos of pikes and 60-70 kilos of catfish in the water. The locals were co-operating with the fishing co-ops and the fishing served as a base for their living. Thus it can be said that the population of the area lived together with water on both sides.

Formerly the green floods during spring were typical on the oxbow, which provided a high water level and refreshed the water of the oxbow. There are more symbols in the area: "The pier of uncle Lajos, uncle Géza" or the trees with huge diameters.

According to Hungarian population the reconstructions and river regulations began in the 1960s had a significant impact on Old-Drava. The land of the area became arable which were less suitable for this cultivation. They artificially cut a runoff at the Black-stream (Fekete-árok), which was unprofessional; therefore the water flows out of the oxbow. After the regulations the water regime changed, but the water of the oxbow was used for irrigation. The construction of the Croatian hydroelectric power stations upstream from the oxbow on river Drava had also serious pressure on the status of the river and these all unfavourably affected also the Old-Drava.

Considering the actual situation the Hungarian inhabitants had rather negative experience. Water has disappeared, and locals have not been able to use the oxbow in their daily life any more. Due to the changes in the water regime the habitats along the oxbow have



significantly changed. The natural replenishment of the oxbow and the dense vegetation around it is a good sign of the water related habitats' biocapacity for spreading and growing, but the only remaining, almost unique activity of locals, the angling is significantly blocked due to the dense vegetation along it. Roads are not passable, nobody clears or mows them. They emphasized that the relationship with the Croatians are not so good. This bad relationship and its reasons were asked on the Croatian side focus group meeting the Croatian participants were aware of that and confirmed that there was much room for improvement in the compliance of the law. An expeditious sentence is: "the oxbow means nothing, only hope to the locals". But the locals want to do something: ten years ago a group of anglers joined together and approximately 50 people made a barrier with sandbags in the lower stretch of the oxbow. As a result of that the water level increased by 28 cm in two months. Another action was that they give kids a fishing license free of charge to encourage local young people to familiarize with the area.

The project gives a hope to local people, "the old beautiful memories could come back" – they said. Renovation of the part of the piers is not enough to make the recreational activities associated with oxbow more significant: for angling there should be fish and free water surface, which has already partly disappeared and is only on the lower stretches of the oxbow. About developing tourism both Hungarians' and Croatians' opinion is that they could only imagine ecotourism and sustainable tourism, which means few, environmental conscious visitors.

Other suggestions have also been revealed about the future: the excavation of the sediment from the oxbow would be the most important. Increasing the water level (by bottom weir), improving the road conditions (pebbly pedestrians only with one or two benches), but also creating an educational trail could be good opportunity according to the general opinion. An information book could help a lot both for locals and for people live far away to know the values of the oxbow and its surroundings. According to Hungarians there should be an intergovernmental agreement to prevent fish fauna and to limit the fish catch and a change of the behaviour of Croatians would also be necessary (because law compliance is a big gap). Monitoring of the area should be maintained in long-term. They feel that the dense aquatic vegetation limits people in using the oxbow's in their leisure time.

Based on the answers about the 4 types of ecosystem services the focal group discussions results are the following:

*Provisioning services:* game products, water for irrigation, fish and honey have some role. Local people's lives have been around the fish for a long time and also partly now. The fish could bring people back to the oxbow. Honey is less important, but the wildflowers and trees of the area also allow wandering apiary. Game has regional and national significance. Opinions on irrigation have been divided. Local population including the anglers complained that water extraction is still licensed. Conservationists also consider water retention as a



priority and reduce water abstraction. Although according to farmers (agricultural companies) the volume of extracted water is small compared to the average discharge of the oxbow and they would rather increase the irrigated crop lands' (e.g. sugar beet) size around the oxbow.

Among *cultural services* tourism development is important for local people. Experts and the population would expect for a few number, but really keen guests. They do not want to have mass tourists who would be burden within the area's carrying capacity. The landscape is considered to be unique, the river bank and the gallery forest along the oxbow are also beautiful even in today's neglected status. Angling is one of the most important ecosystem services. It has always played a major role for locals. It is a risk that fewer and fewer people will go down to the oxbow due to the dense vegetation, because they can fish only at the expense of heavy physical labour (by illegally pulling out tangle and mullet). The fish species that were common in the past are also represented now in smaller populations. People have great expectations on scientific research as the area has not been previously surveyed. Monitoring is considered as a necessary and long-term activity and its significance increases as a result of the project. In terms of arts as social benefit local painters were mentioned who could paint here beside Dráva and could sell their paintings. But photographers also come to the area. The importance of these activities could increase after the project, when the natural conditions are improved. The old giant trees are symbols of the region. These could be stops of the educational trail and such way more people would be aware of their uniqueness and significance. Birdwatching does not have any relevance currently, but the development of the area may increase its significance as many kinds of birds stop here for a while. Information about the Old-Drava's unique status has not previously been provided with any means, so the project is also important in this aspect. People are interested widely about the Old-Drava and a short brochure doesn't satisfy their interest, they want to know more about it (e.g. in a book). An educational trail along the Old-Drava was also planned earlier, but the idea was removed from the agenda because of the refugee crisis affecting also the border.

Due to the project many of *regulating services* are predicted to be increased, such as biodiversity of the oxbow (habitat for plant and animal species), self-supporting ability (oxbow is vulnerable but its ecological status can be stabilized, and it was also mentioned that it would be necessary to find the optimum between natural status and human usage). Water retention is one of the most important long-term goals and the project could produce results in this regard, since if there is water, the oxbow is more viable and the utilization opportunities improve. The oxbow certainly has water purification function, which may have importance, because pollutants can be washed in from arable fields of the surrounding areas. The Rinya-stream that flows into the oxbow may also cause pollution. Although little or no measurement has been made, as experience shows, oxbow is able to purify the pollutions. The status of the gallery forests could be improved if water supply is better. The



oxbow and the vegetation around it influence the microclimate; it makes the air more humid which is favoured by some of the agricultural crops. Old-Drava is an oasis for migrating birds. There is more information about fish species comparing to the amphibians if we consider the spawning sites and spawning capacity of the oxbow. But if there is shallow water bodies that can warm up easily and it would surely help the reproducing capacity of many water related species.

Old-Drava is also considered to be very valuable, because oxbows can't be formed any more along the Drava due to the river regulation and that's why it is a unique habitat.

All the *supporting services* are considered as a basic condition. Although, it has been highlighted that very good quality of soils are around the oxbow, since the floods reached many lands around it before the regulations.