LAYMAN'S REPORT

The project WETMAN footsteps

The WETMAN project clearly showed the great impact that networking between partners and other stakeholders has on successful project implementation. Well-organised and well-managed networking elicits a positive response from stakeholders. Participants simply feel as though they are a part of the story. This makes the story richer, giving it a soul besides the results administratively noted with indicators. Although it is difficult to measure the soul, it can be said that there is plenty of it in the project. In addition to excellent results, this gives the final outcome another dimension ensuring that the project will live on after its completion. Indeed, the excellent team that implemented the project was successful. Our wetlands have been improved and stakeholders will continue to look after them, also with their soul.

Darij Krajčič, PhD, Director of the IRSNC

The objective of the WETMAN project was to restore and improve conditions on wetlands. Ambitious goals were set and numerous actions were organised. We made it with the help of the excellent team of colleagues from the Institute of the Republic of Slovenia for Nature Conservation, partner organisations, contractors, local residents and others who added their piece to the puzzle. We reached the goals planned and even exceeded our expectations in many areas. A big thank you to everyone. Special thanks are due to project funders – the European Commission, the Ministry of the Environment and Spatial Planning, the Municipalities of Črnomelj, Zreče, Slovenska Bistrica, Lovrenc na Pohorju, Slovenj Gradec and the City Municipality of Maribor.

Nika Debeljak Šabec, PhD, Project Manager

ABOUT THE PROJECT

The objective of the project **Conservation and Management of Freshwater Wetlands in Slovenia** project, shortly termed **WETMAN**, was to restore and improve conditions on six Slovenian wetlands, also designated as Natura 2000 sites. Activities were carried out on the Pohorje bogs, Zelenci, Mura oxbow lakes near Petišovci, Planik, Vrhe and karst ponds in the Bela krajina region near Vinica.

The implementation of numerous planned project activities and several additional activities introduced during project duration contributed to the conservation of wetlands in Slovenia and their sustainable management.

The project was implemented by the Institute of the Republic of Slovenia for Nature Conservation, together with the following partners: Slovenia Forest Service, Institute for Water of the Republic of Slovenia, Fisheries Research Institute of Slovenia, Ruše Municipality, Kranjska Gora Municipality and Radio and Television of Slovenia.

The project lasted from 1 February 2011 to 1 February 2015; its total value was € 2,144,376 and it was co-funded by the European Union LIFE+ Nature financial mechanism (50%). The Ministry of the Environment and Spatial Planning (26%), the Municipalities of Slovenska Bistrica, Zreče, Črnomelj, Slovenj Gradec, Lovrenc na Pohorju and the City Municipality of Maribor also contributed to the project implementation as co-financiers.

ABOUT WETLANDS

Wetlands are natural areas that are regularly inundated with surface or subterranean water to the extent that enables the development of plants and animals requiring wet or occasionally wet habitats for growth and reproduction.

Natura 2000
is a European network of nature protection areas with the aim of conserving biodiversity for future generations, particularly those animal and plant species and their habitats that are rare or already endangered in Europe.

Wetlands cover almost two percent of Slovenia's surface area. Our largest and best known wetlands are the Ljubljana Marshes, Cerknica Lake, the Sečovlje Saltworks, Zelenci, the Pohorje and Pokljuka bogs, oxbow lakes and groves along the Mura River, the Krakovo Forest, the Dobrava Forest and Jovsi along the Sotla River as well as the Škocjan Caves.

Most wetlands in Slovenia are small, which makes them all the more vulnerable. While wetlands are one of the most endangered habitats in the world and in Slovenia, they are also providers of ecosystem, culture, tourism and aesthetic services. Wetlands are natural water reservoirs and prevent floods, acting as natural sponges and preventing large water fluctuations; they have a beneficial impact on the surrounding microclimate and purify water. Being the habitat of rare and endangered plant and animal species, wetlands are also nature's classrooms.

WHY IS THERE A NEED TO RESTORE WETLANDS

In the past, numerous wet meadows and wet forests were drained in order to intensify agricultural production and improve forestry. The significance of wetlands and necessity of their conservation has only been recognised recently as their areas are already considerably smaller. Experts estimate that 50 to 90% of European wetlands have been destroyed in the last hundred years. In Slovenia, we lost more than 100.000 hectares of wetlands in the period from 1772 to 1990 (Beltram, 1996).[1]

1 Beltram, G., 1996, The Conservation and Management of Wetlands in Slovenia, Ph.D. Thesis in Human Ecology, Vrie Universiteit, Brussels, 328 p.

The project dealt with the following pressures on wetlands:

INTRODUCTION OF ALIEN SPECIES

In the past, alien species were introduced into karst ponds, brooks, oxbows lakes and other water surfaces. Indigenous species are now under threat as they have to compete for food and habitat with alien species.

CHANGES IN WETLAND HYDROLOGY AND CONSEQUENT EXTENSIVE OVERGROWTH

Numerous wetlands were attempted to be drained in the past. Due to changes in the water system, these wetlands began to be overgrown or used as dumping grounds.

HABITAT DESTRUCTION AND ANIMAL DISTURBANCE

Increased interest in leisure outdoor activities also increases the impact of man on natural environments. Many wetlands are seen as interesting tourist spots. However, mass visits destroy plants and habitats, and disturb animals during nesting, feeding or breeding.

LOW LEVEL OF AWARENESS ABOUT THE IMPORTANCE OF CONSERVATION

The low level of awareness about the importance of wetlands also contributes to a negative attitude towards wetlands. People are unaware of their ecological importance and services that they provide. On the other hand, activities in the nature are on the rise and people's presence in nature is evident throughout the year.

PROJECT PURPOSE AND OBJECTIVES

Six pilot project areas represent different types of wetlands (raised bogs, transition mires and fens, oxbow lakes, karst ponds, wet and floodplain meadows), which were not properly maintained in the past.

Project objectives are aimed at improving and establishing a favourable conservation status of eight European endangered species and seven habitat types present in the pilot areas of the project.

The WETMAN project was divided into several activity sets, namely: revitalisation of hydrological conditions in pilot areas, selective removal of extensive overgrowth, decreasing the presence of invasive species and prevention of further destruction of pilot areas and their sustainable management.

PROJECT ACTIVITIES AND RESULTS

EXPANSIVE POHORJE BOGS

The Pohorje is a mountain range in north-eastern Slovenia, characterised by forests. Due to predominantly silicate impervious ground, water often stagnates, resulting in typical peat bogs with small lakes and bog woodland, surrounded in places by peat spruce forests. Slovenian raised bogs and transition mires are located on the southern border of the European bog area. The Pohorje bog ecosystems are amongst the largest wetlands of this type in the country. They represent a specific habitat upon which numerous plant and animal species are dependent, and are, moreover, recognised as touristically interesting sites. In the past, expansive Pohorje bogs were drained by constructing drainage ditches in order to facilitate forestry and agriculture.

The purpose of the project was to improve the habitat of the capercaillie *(Tetrao urogallus)* and black grouse *(Tetrao tetrix)* as well as the following habitat types: active raised bogs, transition mires, bog woodland and natural dystrophic lakes. The project area comprises several bog complexes: the interconnected greater area of Lovrenška jezera bogs (89 ha), Ribniško jezero bog (9.3 ha), the area between Črno jezero (68 ha) in the south and the bogs of Klopni vrh (93.9 ha) in the north.

The project contributed to improving the water regime in the bogs of Klopni vrh, Javorski vrh and Lovrenc Lakes through the construction of 112 wooden dams on drainage ditches. 17 dams were built on Javorski vrh, 90 on the bogs of Klopni vrh and 5 in the Lovrenška jezera bogs. The work was arduous since the entire construction material had to be carried physically. The improved hydrology of the bogs will significantly slow down overgrowth in the area, if not stop it.

The groundwater level is monitored with piezometers on 20 measuring sites. Monitoring will continue also after the project's end.

This will improve the status of active bogs and transition mires as well as the habitats of birds like the black grouse and capercaillie. Six watering holes were dug on Klopni vrh and Javorski vrh. The groundwater level is being monitored every two weeks in all five areas.

We selectively removed overgrowth on already overgrown areas and structured the forest edge by preserving individual habitat structures. Overgrowth was removed in the total area of about 11 ha. Volunteers participated in less demanding works.

The Pohorje bogs are visited by many people every year. In order to monitor the number of visitors, infrared sensors for monitoring visits were installed in the areas of Lovrenška barja bogs, Ribniško jezero bog and Črno jezero. Lovrenška barja bogs are visited the most – more than 30,000 visitors per year, with the largest amount of visitors in the summer months.

Thanks to volunteers, who stepped up our activities with their work, the length of built paths now considerably exceeds the plan. Participants included individuals, Slovenian Armed Forces, mountaineering clubs, tourism associations, fire service, mountain hut keepers, cross-association mountaineering councils, municipality representatives and project partners. In total, 2900 effective volunteering (working) hours were delivered. Moreover, 2264 pieces of timber, 147 m^3 of sawn wood or 250 m^3 of logs were used to restore and upgrade paths, which is equivalent to 12 large logging trucks. The average weight of each piece of timber was 40 kg.

The restoration and extension of new wooden footpaths will contribute to decreasing the impact of tourism on sensitive bog areas. In total, more than 2000 metres of wooden footpaths have been restored or extended (Ribniško jezero bog – 175 m; Lovrenška barja bogs – 664 m; Črno jezero – 864 m; Ostruščica bog – 180 m). Platforms with wooden railings, which can function as benches, were constructed, allowing hikers to take a short break and serving as nature's classrooms.

An interpretative path was built along the path to Črno jezero. This has given the Pohorje area a coherent set of quality tourism and experience paths on wetlands. Project funds were used to renovate the lookout tower on Lovrenška barja bogs. Moreover, signs were renovated in the area and a pasture fence was put up, preventing grazing on the Ostruščica bogs near Rogla.

ZELENCI

Zelenci is a wetland near Podkoren in the Gorenjska region, also known as the source of the Sava Dolinka River. The unique features of this wetland are the complexity and picturesqueness of landscape, as headwaters, small lakes with bubbling underwater springs, watering holes and a meandering streambed, as well as a transition mire and fen, are all located in a small area. This is the habitat of many rare and endangered plant and animal species. The area is threatened by gravel deposition caused by torrential streams. In order to reduce gravel aggradation in the middle part of Zelenci – Jezerca, a gravel barrier was built on the Čošelnov graben stream.

Within the Wetman project, a gravel barrier was built on the Čošelnov graben stream, which outflows directly into so-called watering holes and a small lake in Zelenci. The reservoir's capacity is 220 m^3.

Overgrowth is a natural process in Zelenci. For decades and centuries, the locals were stopping the process with regular mowing and felling, which is no longer the case today. Within the project, almost 2 ha of overgrowth were removed in selected areas. Furthermore, as Zelenci are a tourist site of interest in the Gorenjska region, we made new information boards that present interesting facts and distinctive features of the area. In addition to information boards, we also put up signs marking the boundaries of the nature reserve and several direction boards along the circular footpath. Two wooden benches were renovated along the cycling route and footpath.

The plan's contents take into account the starting points and guidelines from a series of workshops organised with the aim of involving owners and the public.

Within the project, the Zelenci Management Plan was devised. The plan is a core document for further development and management of the area until 2030. Observing the vision and strategic goals, operational goals and measures – activities for achieving the objectives set – were specified. The plan was confirmed by the Municipality Board of the Kranjska Gora Municipality.

VRHE

In the vicinity of the settlement of Vrhe near Slovenj Gradec, there are several smaller marshy areas (6.3 ha) in the forest by the Selčnica Brook headwaters. A larger part of the area is covered by a swamp forest, while water stagnation led to the development of alkaline fens on smaller clearings. A rare Fen orchid *(Liparis loeselii)* can be found here, as well as the marsh helleborine *(Epipactis palustris),* the variegated horsetail *(Equisetum variegatum),* the broad-leaved cotton grass *(Eriophorum latifolium)* and several sedge species.

A logging trail was constructed through the area in the past, changing its hydrology. They used to graze horses here, but as the grazing stopped, the area became overgrown. Therefore, we teamed up with the area's owner and carried out key activities to preserve the favourable status of Fen orchid.

Hydrological conditions in the area were improved by revitalising the water regime with the construction of a dam with a channel for a wide distribution of water, which will re-enable the spreading of water into the area. A gravel barrier was set up on two water culverts on the forest road above the area in order to prevent deposition of material in the wetland. Overgrown areas (0.8 ha) were cleared, thus increasing the non-forest bog land.

Many nature conservation activities and nature field days were organised in collaboration with the Slovenia Forest Service and the Slovenj Gradec Grammar School, the Slovenj Gradec School Centre and others.

PLANIK – wet meadows near Dobeno

Planik is a marshy karst depression with a subterranean stream called the Ručigaj Brook at the foot of the Dobeno Hill near Mengeš. Its size is 19 ha. At the head of the valley, water gathers in a wetland, a fen, the habitat of Fen orchid *(Liparis loeselii),* an orchid species of European-wide importance. The wetland is surrounded by extensive wet meadows and a forest.

In the past, when the land was still used for agricultural purposes, several drainage channels were dug in Planik, changing hydrological conditions in the area.

The Fen orchid was endangered primarily due to changed hydrological conditions in the area; as agricultural use had been abandoned, the area was becoming overgrown with timber faster than usually. With the support of all owners in the area, key activities were carried out to preserve the favourable status of Fen orchid. Five wooden barriers were set up on two ares, thus slightly raising the water level on the wetland and improving hydrological conditions. Barriers were planned in a way that enables further raising of the ground water level should the current rise be insufficient. Three volunteering activities for clearing extensive overgrowth were carried out in the total area of 1.4 ha. The first activity was carried out with the help of the Mengeš Municipality, the Nigritella society and other volunteers, and the second with the help of nature conservation students from Biotechnical Centre Naklo. The activity was organised for the third time to remove the shrubbery that had grown from hives after two years and add a few new areas. One year prior to setting up barriers, we checked the groundwater level with piezometers every two weeks in order to monitor the changes in hydrological conditions in the wetland. Monitoring the status of the groundwater level will continue after the project's end.

THREE KARST PONDS IN THE BELA KRAJINA REGION
Gornji kal, Krivače, Kršeljivec

The Gornji kal project area includes three karst ponds with surrounding arable land, meadows and other areas in the size of 18.7 ha. In the past, almost every village in the Bela krajina region had a karst pond, used mainly for watering livestock and doing the laundry, while today their primary function is nature conservation. Their network enables preserving smaller water areas in the lower Karst region as the habitat of endangered plants and animals.

In 2011, the initial monitoring survey of the European pond turtle *(Emys orbicularis)* population indicated a high level of endangerment as only five adult specimens were observed in the area.

Overgrowth was removed in the area of all three karst ponds (2 ha). We enlarged the water area of the Krivače pond, created rugged, gentle banks and a sandy area where pond turtles can dig nests more easily (0.4 ha). The Kršeljivec pond was redeveloped with an island, peninsulas and rugged banks made more suitable for the needs of the pond turtles (1.3 ha). Today, this is one of the largest karst ponds in the Bela krajina region, which was drained and filled up with waste material in the past.

In the Gornji kal pilot area, the project goals were focused on improving the habitat of the pond turtles (Emys orbicularis), *our only indigenous turtle species.*

The Gornji kal area was also restructured. One half of the pond is now a quiet zone with newly developed banks and shallows (0.7 ha) aimed at the conservation of the turtles and other animals and plants, while the other half is designed sustainably, with tables and benches for visitors and docks for fishermen. Fishing is now restricted to the western part of the karst pond. Within the project, the Fisheries Research Institute of Slovenia and Črnomelj Fishing Society were involved in the target catch of alien fish species.

In order to enrich and rejuvenate the pond turtle population in the area, four female turtles with eggs and one male turtle were introduced into the area with the consent of the Slovenian Environment Agency.

MURA OXBOW LAKES NEAR PETIŠOVCI

Floodplain forests, parallel riverbeds and oxbow lakes as well as vast complexes of wet meadows are still preserved on the Mura River floodplain. The project aimed to slow down the process of degradation and overgrowing on three oxbow lakes, i.e. Nagy Parlag (10 ha), Muriša (17.4 ha) and Csiko Legelo (6.8 ha). Since oxbow lakes became overgrown in the past due to natural processes, typical habitat types started decreasing and the presence of species was changed. The purpose of the project was to prolong the lifespan of oxbow lakes (no longer related to the river dynamics) and improve the habitat of the target species: the European mudminnow *(Umbra krameri),* the large white-faced darter dragonfly *(Leucorrhinia pectoralis)* and the European pond turtle *(Emys orbicularis),* the amphibians Italian crested newt *(Triturus carnifex)* and European fire-bellied toad *(Bombina bombina),* and the habitat type Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation.

Extensive vegetation and silt were removed in the area of the Nagy Parlag and Csiko Legelo oxbow lakes and the lakes were deepened. At the end of the project, we also structured the waterside. In total, we deepened and established a new water area on 2.1 ha of oxbow lakes, removing around 30,000 m3 of material from both oxbow lakes. The dug-out material was used to ecologically rehabilitate the banks of the Lakoš gravel pit, where we established rugged riparian shallows (0.35 ha). Hydrological works prolonged the lifespan of oxbow lakes and improved the conditions in habitats of targeted endangered plant and animal species. The restored parts of oxbow lakes are similar to natural oxbow lakes in terms of their form and depth. The Fisheries Research Institute of Slovenia carried out fishing activities in the oxbow lakes, attempting to remove as large a number of alien fish species from the oxbow lakes as possible to decrease their pressure on indigenous species and habitats of the oxbow lakes.

WETLANDS – NATURE'S CLASSROOM

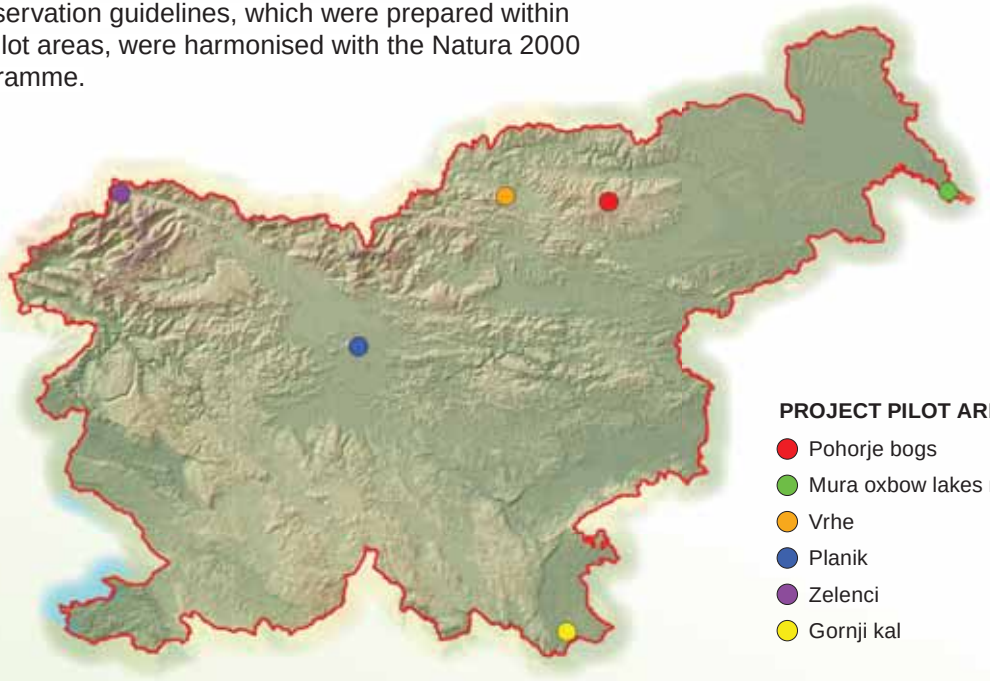
Since some pilot project areas were less known and the importance of the preserved wetlands undermined, promotional material was prepared (brochures, leaflets, postcards, posters). The www.wetman.si website was regularly updated with news about project events, activities and results. Many articles (more than 250) were written for national and local media, both in print and electronic. Professional content was prepared for information boards, which were put up in all pilot project areas.

A number of meetings with mayors, municipality authorities, local communities and other stakeholders were organised (more than 150 different events). Many meetings and presentations took place in all areas (more than 75 events). We also organised 60 nature field days and presentations for pupils (1100 children) or secondary school students (750 children). A thirty-minute documentary and three short spots were recorded in collaboration with the Radio and Television of Slovenia.

The sectoral minister gave a speech at the preview ceremony and more than 80,000 viewers watched the premiere on the first channel of the national television. The project was presented at six international conferences.

INTRODUCING NATURE CONSERVATION GUIDELINES INTO SECTORAL PLANS

In Slovenia, Natura 2000 is managed through sectoral planning. Regulations for the conservation of Natura 2000 species and habitat types are thus integrated into sectoral plans. Within the project, we actively participated in developing management plans for the forest management unit, hunting management plans and fishery management plans. We marked habitat trees with foresters and determined quiet zones with fishermen. The introduction of nature conservation contents in farming systems in protected areas was discussed with the agriculture sector. Nature conservation guidelines, which were prepared within the project for all pilot areas, were harmonised with the Natura 2000 Management Programme.



PROJECT PILOT AREAS

- Pohorje bogs
- Mura oxbow lakes near Petišovci
- Vrhe
- Planik
- Zelenci
- Gornji kal

Leading partner of the project:

Zavod Republike Slovenije za varstvo narave

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