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WETLAND RESTORATION PROGRAMS IN THE PRUT RIVER BASIN

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Abstract

The paper presents some aspects concerning two ecological rehabilitation projects that were partly implemented by WWF International – Danube Carpathian Programme within the Lower Prut River Basin region, in the period of years 2003-2006: Elan/Prut River Basin in Romania, respectively "Lower Prut" Scientific Reserve, in Moldova.
The Prut River is one of the main tributaries of Danube River and it forms the border between Romania and Moldova, in South-Eastern part of Europe. The Lower Prut floodplain in Moldova, with a total surface of 19,125 ha, contains about 6,114 ha of wetland habitats which are officially designated under the Ramsar Convention as being a Wetland of International Importance. The floodplain has also a regional importance due to presence of an impressive list of rare and threatened species of flora and fauna, including herons, egrets, cormorants, storks, swans and the globally threatened White pelican, as well as for flood control, nutrients and sediment mitigation and groundwater recharge. The site contains the largest natural lakes in Moldova, Beleu and Manta, which are unique ecosystems, described by some scientists as being part of the last natural floodplains in the Lower Danube River.
Being aware by the global importance of these wetlands, the Moldavian Government has created in 1991 the Lower Prut Scientific Reserve, located at the lower stretch of the river to its confluence with the Danube. The Reserve, with a total surface of 1,691 ha, is covered by about two thirds by lake and one third is represented by alluvial forests (mainly willows). The main purpose of creating the Reserve was to protect the valuable ecosystems mentioned above. The Reserve is also an important component of the biggest freshwater programme in the region, called Lower Danube Green Corridor (LDGC). The LDGC declaration, signed in 2000 in Bucharest, between Romania, Bulgaria, Ukraine and Moldova, aims to help creation an integrated ecological network of healthy, restored and protected wetlands, of about 900,000 ha along the Lower Danube River and to promote sustainable socio-economic development in the area.

Key words**:** *wetlands, ecological restoration, biodiversity, soil erosion, water pollution*

INTRODUCTION

Today, the Lower Danube floodplain is facing serious problems due to the regulation of the Prut River upstream, nutrient pollution and eutrophication, as well as pressures from local resource overuse and poaching. Actually, there is there even a social issue and contradiction with the status of the reserve for the local people, including also the Reserve's staff, for which the reserve represents very often a source for their needs. Instead being under the coordination of the Ministry of Environment in Moldova, like it was ideally, the Lower Prut Scientific Reserve is managed by MOLDSILVA – a state agency for forestry. Among others specific daily issues, Moldsilva coordinates all the scientific reserves in the country.

Now, the reserve is severe affected by different problems, such as: illegal tree cuts, fishing and livestock grazing, these being mainly produced by the local people. There is strong link between land and water management and ecosystems protection. Soil erosion occurred on the surrounding hills along the entire left side of the Lower Prut River represents also a big threat to the reserve, contributing to the siltation of the lake. Obviously, this process leads to a continuously decrease of the water level in the lake, being more visible and loss-making during the dry seasons, leading sometimes to the eutrophication. But, in addition to that, the most important threat of the Reserve is represented by oil exploitation next to, or, even within the reserve territory. There are there over 40 previously unused oil exploitation drills, which have been reactivated since year 2000. Unfortunately, the owner of

the oil exploitation, which is a foreign company, does not entirely comply with the basic environmental requirements.

The UNDP/GEF Danube Regional Project has identified wetland restoration as one potential method for reducing pollution in the Danube River by nutrients and toxic substances. Restoration of large areas of wetlands is also one of the three targets of the WWF Living Waters Programme and is a key area of work for the WWF Danube-Carpathian Programme. This project is aiming to demonstrate how national, regional and local policies, plans and strategies can be amended to facilitate large-scale wetland restoration, and contribute to successful implementation of the EU Water Framework Directive, within a major river basin.

MATERIAL AND METHOD

Being a transboundary river between Romania and Moldova, the Prut River is one of the most important rivers from hydrological, ecological and socio-economic point of view. As a whole, the Prut River catchment is also very important from biodiversity point of view, especially because a number of 225 bird species have been identified here. It represents also a very important fly route of migration for many bird species. Inside this basin have been identified three Important Bird Areas (IBA), among them being also situated the lower part of the Elan River catchment. In this IBA a number of 123 bird species have been recorded, out of which 79 species are nesting here and 99 bird species are used to be a criteria for the identification of the IBA.

The Elan River (which confluence is situated at some 120 km upstream of the confluence of Prut River with the Danube River) is one of the largest tributaries of the Prut, having a length of 73 km and a watershed of 606 km^2 (see the map attached). The multi-annually average discharge of Elan River is about 0.45 cm/sec and the maximum discharge, of 16.1 cm/sec – that was recorded on August 16, 2002.

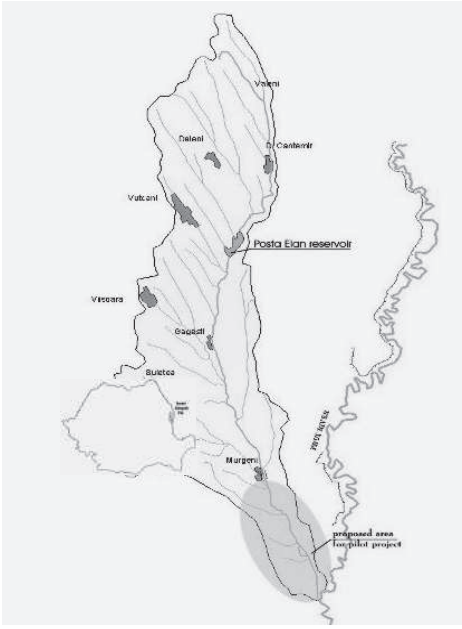

Fig. 1. Location of Elan/Prut River Project - RO

Lower part of the Elan River floodplain (between Murgeni Locality and the confluence with the Prut River), having a surface of about 170 km^2, looks like a delta, especially during the spring time and the wet seasons, being less affected by human influence. A large number of migrating water birds use the area for resting and feeding. During the summer seasons the water table become lower, but many lower spots still remain wet over the summer time.

The floodplain in this area is often flooded both by the Elan River and by the backwater coming from the Prut River (when the discharges on Prut are high), [1].

A special quality of this area is the quietness and openness of large parts of the floodplains and the absence of roads and buildings. This is a quality that is becoming very scarce in Europe and is worth conserving in some places.

The Moldavian Lower Prut River is located in the South-Western part of Moldova, between the localities Cantemir and Giurgiulesti, having a length of 147 km (see the map attached), a total surface of 19,125 ha of floodplain, out of which some 6,114 ha represent wetlands of International importance.

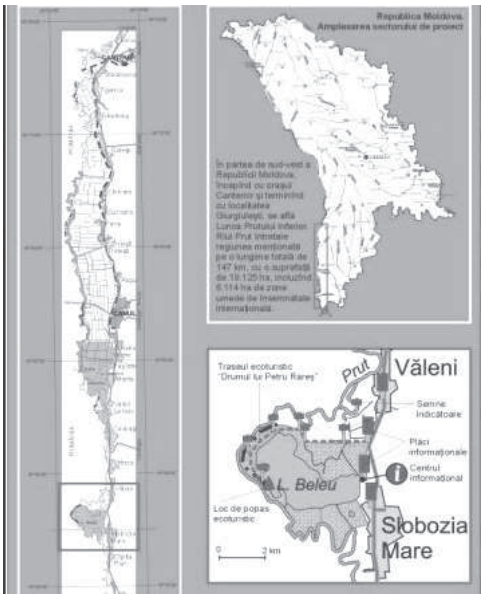

Fig. 2. Location of Lower Prut Scientific Reserve Project - MD

The Lower Prut floodplain is of regional importance for groundwater recharge, flood control, nutrient and sediment trapping, and it does support an imposing list of rare and threatened species of wetland flora and fauna. There are included here species like herons, egrets, cormorants, storks, swans and the globally threatened White pelican.

On the lower stretch of the river to its confluence with the Danube River, the Lower Prut Scientific Reserve (1,691 ha) has been designated for the protection of some of the last natural floodplains in Moldova's Lower Danube Region. The Reserve is included on the Ramsar List of Wetlands of International Importance, the only one which was designated in June 2000, and it is a valuable component of the Lower Danube Green Corridor (LDGC) in Moldova. Today, the Reserve is facing serious problems due to the regulation of the Prut River upstream, over fishing, nutrient pollution and eutrofication, as well as pressures from local resource overuse and poaching. Fish harvests have been decreasing markedly in recent years, forests are generally seen to be deteriorating, and quite a few adverse conservation factors have been listed as requiring attention.

The designation of a UNESCO Biosphere Reserve is planned over a larger area than the currently site. Its establishment and the strengthening of the management of the reserve would be in line with the agreement signed between Moldova, Romania and Ukraine for the establishment of a trilateral Biosphere Reserve, including the already existing Biosphere Reserves in the Danube Delta of Ukraine and Romania (having a total area of 46,672 ha), which is an important component of the Lower Danube Green Corridor Project.

A number of three pilot areas have been selected in the Danube River Watershed, based upon the criteria listed below, and they were proposed to the UNDP/GEF project team for their agreement. The procedure for selecting the pilot sites involved establishment of a guiding principle, agreement of site selection criteria and consultation with UNDP/GEF Danube Regional Project team [1].

The main guiding principle for the project sites projects selection was that the pilot area has to ideally constitute a relatively representative sample of the Danube river basin in terms of geographical, habitat type, and upland/lowland diversity and variation.

The specific site selection criteria were as follows:

1. Is the area *typical* of the ecosystems, and/or socio-economic threats and pressures, prevailing in this part of the Danube River basin?
2. Is there an *accessible base of information,* (e.g. previous land-use or management studies, water management information, biological surveys, or regional/rural development assessments, on the area?
3. Are there *active, credible stakeholders* working on land-use issues in the area?
4. Are new or strengthened plans for wetland restoration arising from the pilot project likely to find support not only from local stakeholders but also from local/regional/ national *governmental agencies and authorities*?
5. Will the selection of the area contribute to the body of knowledge on *nutrient reduction and/or pollution control and/or flood control?*

6. Does the area support *multiple uses or benefits* in the form of socio-economic opportunities and other environmental goods and services?
7. Is the area of *significant value for biodiversity,* nature conservation, and wetland management?
8. Will the selection of the area for pilot studies contribute to the body of knowledge relevant for implementing the *Water Framework Directive*?
9. Are there *significant threats or land-use pressures* on the wetland/floodplain resources?

Based on the above mentioned questionnaire, there were evaluated about ten project proposal sites along the Danube River Basin, and in the end only three sites were selected for the implementation, one of them being Elan/Prut River Basin in Romania.

As mentioned before, the main objective of the UNDP/GEF-DRP 1.4 was consisting in providing technical to the countries from the Danube River Watershed in order to implement the new EU policies and strategies for a better utilization of the lands and wetland restoration, in close connection to the implementation of the Water Framework Directive (WFD).

The analysis of the major causes/pressures of the wetlands reducing and/or degradation as well as their impact on environment, mainly on the Danube River, was carefully performed by the project team using the DPSIR conceptual model. It is about the Driving Forces-Pressures-State-Impact-Responses Model.

RESULTS AND DISCUSSIONS

The two projects were partly implemented by WWF -DCP in the period of years 2003-2006.

As regard to Elan/Prut River Basin in Romania, to protect the existing wetlands and possibly to increase their surface in this area there were necessary to develop measures to preserve and to improve the conditions for nature that can be combined with human use. In this respect, the main objectives of this project were as follows:

- Setting up of a management plan for the whole area with the help of main stakeholders;
- Promoting of a wise and sustainable development of the area, and,
- Protecting of the wetlands along Elan River floodplain, mainly by using the erosion control measures on slopes in order to prevent the siltation of the reservoir (e.g. afforestation of degraded lands, terraces, shelterbelts etc).

Having in view the main functions of the floodplains, especially the biogeochemical, ecological and socio-economical ones, the project was contributing to the improving of water quality in the lower part of the Danube River. This aspect was achieved by reducing substantially the nutrient and toxic amounts from the agriculture and creating good conditions mainly for fisheries, hunting and exploitation of reed vegetation in the area.

As regard to the Lower Prut Scientific Reserve in Moldova, the main goals of the project was to stop the degradation of the Lower Prut ecosystems, to achieve their long-term preservation in harmony with national and international nature conservation legislation, as well as to extent the current Reserve area to the North along the Lower Prut River [2].

The specific project objectives are as follows:

- Baseline survey of the ecological state of the Lower Prut Scientific Reserve;
- Rebuilding of the former visitor/training centre within the Reserve;
- Establishment of a good management plan and capacities for the Lower Prut Scientific Reserve and later on for the entire Lower Prut Biosphere Reserve;
- Regulation the water level in the lake and reducing/stopping its siltation through building up upstream of a small dam equipped with some sluices, as inlets and outlets of the Beleu Lake within the Scientific Reserve;
- Measures for expanding to the North of already existing wetland protected areas, along the Lower Prut River, immediately upstream of the Scientific Reserve on a distance of about 20-25 km, which are

currently agricultural degraded lands or have a very low productivity;

- Preparation of the grounds for the establishment of the Lower Prut Biosphere Reserve over an area of 46,672 ha, as part of the national and the Pan-European ecological networks and the Lower Danube Green Corridor;
- Integration of priority measures for water quality management into the draft Management Plan for the Lower Prut Biosphere Reserve;
- Raising of local communities' awareness and contribution to the protection and sustainable management of natural resources within the biosphere reserve.

Fig. 3. Water pollution with crude oil as one of the main threats of the Lower Prut Scientific Reserve

Fig. 4. Soil erosion as one of the main threats of the Lower Prut Scientific Reserve

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- Establishment of a good management plan and capacities for the Lower Prut Scientific Reserve and later on for the entire Lower Prut Biosphere Reserve;
- Regulation the water level in the lake and reducing/stopping its siltation through building up upstream of a small dam equipped with some sluices, as inlets and outlets of the Beleu Lake within the Scientific Reserve;
- Measures for expanding to the North of the already existing wetland protected areas, along the Lower Prut River, upstream of the Reserve on a distance of about 20-25 km, which are currently agricultural degraded lands or have a very low productivity;
- Preparation of the grounds for the establishment of the Lower Prut Biosphere Reserve over an area of 46,672 ha, as part of the national and the Pan-European ecological networks and the Lower Danube Green Corridor.

CONCLUSIONS

The outputs and the key milestones delivered through these projects are as follows:

- Stop the degradation of natural habitats in the area of the proposed Lower Prut Biosphere Reserve;
- A new visitor/educational centre build up within the Scientific Reserve;
- Management Plan for the Lower Prut Scientific Reserve;
- Expanding to the North of already existing wetland protected areas, along the Lower Prut River;
- Strategy for addressing key threats for the Lower Prut Scientific Reserve developed, endorsed by the government and key measures implemented;
- Water quality management programme for the area, with pollution sources and measures for their reduction identified;
- Lower Prut Biosphere Reserve feasibility study and proposal with defined core, buffer zones and zones for sustainable economic activities.

ACKNOWLEDGEMENTS

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