PRZEMKÓW LANDSCAPE PARK – KEY ISSUES IN WETLANDS RESTORATION AND MANAGEMENT

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Abstract: The abandonment of agriculture in many districts of Poland brought about environmental changes to those areas. The valley of Szprotawa river near the city of Przemków in south-western Poland used to be a very large drainage system. Nowadays advanced plant succession is being observed on the grounds of the valley of Szprotawa and the whole system has been out of operation for more than 50 years. Various parts of the system are drained or flooded due to breakdowns in hydraulic structures. At present a research has been started to identify the most urgent needs of nature conservation of the wetlands close to Przemków. It is believed to work out sustainable ecological and water management solutions in the near future, and also lay much stress on the protection of the Przemków wetlands environment, which is very valuable, but irreversibly changed to some extent.

INTRODUCTION

The main goal of this paper is to present essential problems related with protection and revitalization of the Przemków swamps, which are situated in the Szprotawa valley. That area constitutes the largest uniform wetland complex in the south – western Poland with many unique natural values. The Przemków marshes, which at present are at various stages of plant succession, require proper maintenance. On one hand it should aim at introducing right meadow and grazing management, however, on the other hand, protection measures should be put into action in order to cease harmful environmental changes taking place on the area of the swamps.

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Appropriate identification of main threats to environmental protection of the Przemków wetlands in the Szprotawa basin is necessary to estimate the possibilities of their future revitalization.

LOCATION AND PHYSIOGRAPHICAL CHARACTERIZATION

The Przemków swamps, covering the area of about 3100 hectares, are located in the Lower Silesia in the valley of Szprotawa river, which is the right-side tributary of Bobr river. In physiographic respect that territory is part of the macroregion of the Slasko-Luzycka Lowland. It creates a wide syncline, which is limited by Dalkowskie Hills on the north and Chocianowskie Hills on the south.

Referring to the administration, the terrain of described wetland complex belongs to two voivodeships: lubuskie (the area about 1500 hectares) and dolnoslaskie (the surface around 1600 hectares). Part of the wetlands in dolnoslaskie voivodeship is situated within the boundaries of Przemków Landscape Park.

CHARACTERIZATION OF NATURAL CONDITIONS

The Przemków swamps make a unique, extremely differentiated and interrelated complex of marshes, which promotes them to a high rank among other wetlands and determines its unusual environmental values (Wołejko & Stańko, 2000). Ornithological reserve of Przemków Ponds,located next to the wetlands, covers the area of 1046 hectares and it is the second largest system of fishing ponds in the Silesia. The reserve is placed on the European and the Polish list of birds' refuges as one out of 126 places in Poland (Grimmet & Jones, 1989). It is also put in the order of areas of particular importance to waterfowl. The Przemków swamps, together with the reserve, are a hatching site for about 48 species of waterfowl. They are also a place for rest and a feeding ground for around 51 species of migratory birds. Among the birds that can be found in the Przemków wetlands there are 14 species threatened with extinction on a European scale, such as bittern (*Bottaurus stellaris)*, black stork (*Ciconia nigra*),white stork (*Ciconia ciconia*), honey buzzard (*Pernis apivorus*), black kite (*Milvus migrans*), marsh harrier (*Circus aeruginosus*), Montagu's harrier (*Circus pygargus*), black grouse (*Tetrao tetrix*), little crake (*Porzana parva*), crane (*Grus grus*), black-tailed godwit (*Limosa limosa*), short-eared owl (*Asio flammeus*), barred warbler (*Sylvia nisoria*) and red-backed shrike (*Lanius collurio*). Three species of birds: ferruginous duck (*Aythya nyroca*), corncrake (*Crex crex*) and white-tailed eagle (*Haliaetus ailbicilla*) are in danger of extinction on a world's scale. The Przemków marshes are estimated to have the largest concentration of corncrake, crane and snipe breeding pairs in the Silesia, (Cieślak *et al.*, 1991). The main habitats, which appear on the terrain of that swamps, are represented by wet rushes and meadows with willow shrubs, small areas of fens, shallow eutrophic reservoirs (the fishing ponds), alder swamps, riverine forests and osier beds. There are also characteristic plant species in the valley of Szprotawa near Przemków such as February daphne (*Daphne mezereum*), common honeysuckle (*Lonicera periclymenum*), club-moss

(*Lycopodium*), common sundew (*Drosera rotundifolia*), superb pink (*Dianthus superbus*), marsh orchid (*Dactylorhiza majalis*), twayblade (*Listera ovata*) and butterfly orchid (*Platanthera bifolia*),

HYDROLOGICAL CONDITIONS

The Przemków wetlands are alimented by Szprotawa river water, rainfall water and ground water. In the past the tributaries of Szprotawa river joined together on the area of the marshes. When their waters had risen the flat bed of the Szprotawska Plain became flooded, which caused the formation of fluviogenic wetlands on the greatest area of the Przemków. The ground water alimentation was probably most significant in the marginal parts of the marshes built of alluvial forms, which had high water permeability, (Wołejko & Stańko, 2000). In the central part of the wetlands the ground waters were very likely to flow out to the surface of the land under hydrostatic pressure where there was no isolation of low water permeability layers.

The surface runoff from the northern side of the valley of Szprotawa, particularly in the region of Dalkowskie hills, used to contribute to the alimentation of the marshes. From the south the swamps were alimented by the surface runoff from moreinal Przemkowska Upland — the northern fragment of Chocianowskie hills.

Contemporary hydrological system of the Przemków wetlands has been changed by the human activity.

HISTORY OF THE WETLAND COMPLEX

The valley of Szprotawa river is cut across by a complicated land reclamation system, consisting of irrigation and drainage channels, which was constructed around 1920. It enabled to transform the peatlands into productive grasslands and agricultural fields. When the system had been built it was divided into 4 polders: polder I covering 110 hectares, polder II using a total area of 520 hectares, polder III with the area around 1200 hectares and polder IV of the surface around 1200 hectares (Figure 1). All the polders used to be cultivated until 1939. Since 1950 there has been no agricultural activities or reconstruction on the polders in Przemków. These meadows on account of resigning from mowing and fertilizing have gradually been subject to overgrowing with willow shrubs, to changes in plant communities and to secondary swamp formation.

Moreover, there were almost 700 hectares of meadows left beside the polders, covered by the most wet and swampy complexes. It was resolved not to do land reclamation works on those areas because they used to be described as highly environmentally valuable. From year 1965 to 1975 those unique marshes were destroyed due to the building of the complex of the fish ponds on their surface.

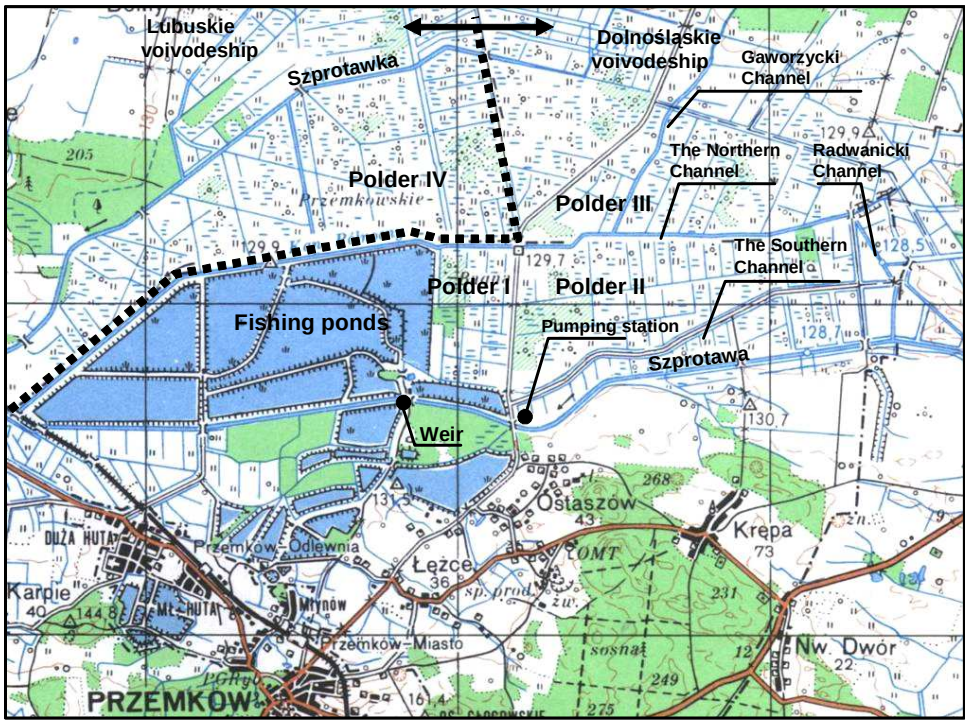

Figure 1. The map of the Przemków Polders

In 1993 the Voivode of Legnica initiated the development of environmental protection on part of the polders. Przemków Landscape Park was founded in 1997 by order of Legnica Voivode. It covers the area of 22 338 hectares and with buffer zone — 37 804 hectares. The main goal of the landscape park creation is to preserve unique and valuable swamps near Przemków.

ASSESSMENT OF WETLANDS LAND USE AND ESTIMATION OF ECOLOGICAL CONDITION

LAND USE

At present the polders in Przemków are a barren land. Only small parts of the meadows are devoted to horse, sheep and cow grazing as well as reed mowing in certain months of the year.

In the contemporary times the majority of water management facilities are out of order due to the abandonment of agriculture in the valley of Szprotawa close to Przemków. Existing hydraulic structures fall into 3 groups. First of them is composed of the weir across Szprotawa and the network of ditches, aqueducts and siphons, which secure the supply and the distribution of water to each fishing pond. The second unit includes pumping station Krępa – Ostaszów. The operation of this

water management facility resulted in a heavy drainage of meadows situated between Szprotawa river and the Southern Channel, having negative influence on hydrological conditions of the Przemków wetlands. The third set of hydraulic structures includes the Radwanicki Channel, the Northern Channel and Szprotawka river, which served an important function in providing water for the polders in Przemków in the past. At the present moment these canals have no practical use and their negative impact on the water regime of the Przemków swamps is not noticeable.

ECOLOGICAL CONDITION

Until 1980 polder I was covered by sedge meadows of high environmental value. Those habitats were deteriorated because of excessive drainage. That process resulted in bush and reed succession, which also took place on the half of polder II surface. The III polder, however, is dominated by willow shrubs and reed. Polder IV has most developed forest complexes, but similarly to polder III, the vegetation on the area of this polder is in an advanced stage of succession.
Special habitat conditions in the central part of barren lands contributed to the creation of molinia communities (*Molinietum coeruleae*).In the floristic respect it is the most valuable phytocenosis of the Przemków wetlands with numerous rare, protected and endangered plant species.

CONDITIONS OF PROPOSED PROTECTION MEASURES

The main purpose of the Przemków swamps protection is to conserve their natural values. First of all it is related with the preservation of unique habitats but also much care should be taken of endangered species of flora and fauna. Another aspect of protection deals with restoration of meadows moisture as well as with the maintenance of open areas and it also goes to regain the structure of ecosystems. Other activities, that would increase environmental values of those wetlands, should be taken into account as well (Guziak & Lubaczewska, 2001).
European network Natura 2000, created to keep up the biological biodiversity of the European Union countries through the protection of threatened habitats, generates opportunities for the conservation of the Przemków wetlands natural heritage.
The most important protection objective for polder I is to maintain proper nesting conditions for waterfowl. Any agrotechnical activities on that area will be strongly dependent on birds' breeding needs. Realization of this task requires conservation of habitats' biodiversity. Upper parts of the first polder will be devoted to horse, sheep and cattle grazing or they will be managed as extensive grasslands. In that part it is also planned to cease the succession of trees and shrubs. The management of the western part of polder II will be as well adequate to bird fauna demands. Eastern fragments of polder II will be maintained as extensive meadows. Their mowing is to be done once a year according to agro-environmental schemes, after 15th July for instance in August or September. It will be also vital to keep low vegetation on the grounds of polder II in order to secure fire protection of nearby

forests. There is a need to do floristic research on the area of polder III, which would identify plant communities left for the secondary succession. It is expected that other parts of this polder will be mowed with respect to bird fauna. Any action that will be taken within the limits of polder IV will be focused on the preservation of existing molinia meadows and forest lands. Planned conservation steps result from contemporary environmental directives and they are conditioned by Przemków Landscape Park material base too.

SUMMARY AND CONCLUSIONS

In order to preserve the natural values of the Przemków wetlands it is required to include environmental protection demands in management activities. Their combination with agriculture will be the basis of sustainable development of those marshes.Advanced changes in the environment of that part of Szprotawa valley suggest restoration of natural conditions on the area of the swamps. In order to make it possible it is necessary to identify ecological goals, based on plant ecology studies. Ecological goals will then be followed by principles for water management, which is a key discipline in proper maintenance of wetlands. Suggested water management plans should acknowledge the essential range of agrotechnical activities and they ought to be economically effective. The agriculture on selected fragments of the polders and keeping up of the fish ponds deal with fixed criteria of water management, but the supply of water for the protection and restoration of Przemków swamps is a much complicated matter demanding careful studies and analyses. The solution of this difficult problem involves taking right decisions concerning the division of water resources and the development of soil water conditions on particular parts of the polders.

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