Protection of wetlands as an element of water management in rural areas

Waldemar Mioduszewski, Monika Hardej

Institute for Land Reclamation and Grassland Farming, IMUZ
Falenty, Poland

- Actions associated with the protection and restitution of wetlands undertaken in recent years

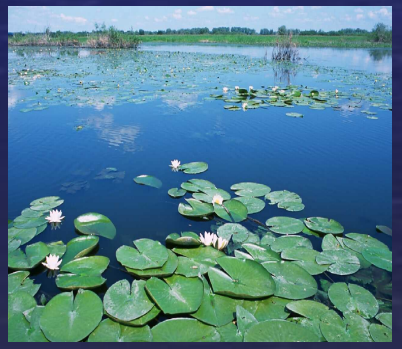
- Legal, organizational and financial mechanisms determining maintenance of wetlands

Wetlands are unique environments for their high biodiversity…








…but also precious for water resources

Wetlands, especially peatlands, play an exceptional role in water management in Poland. There are 35 mld m^3 of water stored in peatlands! It is more than the total capacity of our lakes…

Role of wetlands in the structure of water balance

Protection and restoration of wetlands may to a great extent improve water balance structure, especially in small catchments.

- Wetlands in the catchment limit the flood discharge by retaining a great volume of water on the surface
- In many cases they regulate water flow to the river from mineral aquifers increasing low discharge
- Wetlands may be a limiting factor of negative effects of droughts and floods
- Wetlands may improve water quality to a considerable extent
- Wetlands are also consumers (water users)

Water-related ecosystems – present status and threats

- Wetland areas occupy 4 345 400 ha i.e. c. 14% of the country area
- 15% of the total wetland area (both natural and transformed) is covered by forests and shrub communities
- The remaining area is occupied mainly by grasslands and also by croplands
- Over 80% of wetlands, including hydrogenic forest sites, have been drained in order to intensify forest and agriculture production
- Present area of peatlands is by 20% smaller than in the XIX century due to development of agriculture and settlements
- Extensive wetland areas are located in the north-east part of Poland

Small-scale retention programme

Utilisation of peatlands

Land use	Area [thous. ha]	Percent
Natural peatlands	12.0	8.8
Meadow utilisation	960.0	70.7
Forests	120.0	8.8
Former peatlands (with surroundings)	150.0	11.0
Protected peatlands	6.1	0.4
Exploited peatlands (peat digging)	2.5	0.2
Total	1358.6	100

Legal acts and grounds for the protection of wetlands

- Water Framework Directive /2000/
- Bird Directive /1979/
- Habitat Directive /1992/
- Water Act of 2002
- NATURA 2000
- Environmental Protection Act /2001/
- Nature Protection Act /2004/
- Plans of rural development
- Agri-environmental programmes

Small-scale retention programme

To improve water relations in rural areas the Minister of Agriculture in cooperation with the Minister of Environment established in 1995 a programme for the development of small retention

- reconstruction, modernisation and construction of hydraulic structures (weirs) in the existing drainage systems: use water for agricultural irrigation, slow down the outflow of surface waters, protect peat soils
- improvement and modernisation of draining-irrigating systems to implement the results of ecological surveys in order to preserve biological equilibrium of these biotopes
- construction of water structures on streams to elevate ground water level in the surrounding
- retention of spring, snow-melt and rain waters in ponds, water holes and terrain depressions

Small-scale retention programme

Implementation of the small-scale retention programme
(mean annual values from 1997-2003)

Item	Number of objects		Capacity (retention)		Investment costs	
	pieces	%	mln m^3	%	mln EURO	%
Lake water lifting	30	7.4	11.0	62.3	0.52	3.8
Dam reservoirs	84	20.7	3.3	18.9	7.42	54.8
Fishponds	107	26.5	2.2	12.7	1.35	10.0
Weirs on rivers and channels	110	27.5	0.7	4.2	3.45	25.4
Weirs on small streams and draining ditches	53	13.1	0.1	0.4	0.17	1.3
Other	21	5.1	0.2	1.5	0.62	4.7
Total	**405**	**100**	**17.5**	**100**	**13.53**	**100**

Legal protection of wetlands

- 23 national parks
- Landscape parks
- Nature reserves
- NATURA 2000 sites – 11% of country

Habitat types in national parks in Poland

Habitat	Area [ha]	%
forests	190 730	60,7
agricultural lands	43 823	13,9
waters	22 749	7,2
lands of ecological use (wetlands)	37 927	12,1
other	19 298	6,1
Total	314 527	100

Biebrza National Park

was established in 1993. It is the largest national park in Poland. Out of 59 223 ha total area of the park 15547 ha are covered by forests, 18182 ha by croplands and famous Biebrza Swamps - most valuable natural ecosystems - occupy 25494 ha.

The park situated in the Biebrza river valley is important from the hydrologic standpoint. Wide (up to 15 km) flat river valley is covered with organic formations and has great retention capacity estimated at several million m3 and an ability to reduce flood waves.

Narew National Park

was established in 1996. It encompasses wet valley of the Narew between Suraż and Rzędziany of a total area of 7350 ha.

Hydrogenic sites, mainly open meadows and anastomosing river which occupy over 90% of the park are the main objects of protection.

Warta River-Mouth National Park

established in 2001 covers an area of 8038 ha.

Extensively used meadows and pastures on organic grounds occupy over 90% of the park.

The park situated at the outlet of the Warta to the Odra is flooded in spring every year.

Other national parks with vast wetland areas

- Kampinos National Park – 1377 ha
- Polesie National Park – 1613 ha
- Slowinski National Park – 2427 ha

The role of NGOs

- Many non-governmental organisations focus their activity on the protection of wetland flora and fauna which means the protection and restoration of wetland areas.
- NGOs are the only institutions that undertake works on the restitution of destroyed (degraded) hydrogenic sites.
- There are no private investors interested in wetland protection. Aims undertaken by private persons are restricted to the construction of fishponds, small water power plants and small recreational or ornamental water bodies. These actions do not always bring ecological or hydrological benefits.

Education, science, information

Education and information are the basic factors which might contribute to the improvement of the ecological status of wetlands.

- Education - carried out mainly by national parks and NGOs
- Subject of various scientific research carried out by numerous university centres
- Information – actions raising farmers ecological awareness needed!!!

Conclusions

- The actions for protecting wetlands are dispersed and not directly focused on preserving water resources
- The importance of wetlands as water suppliers is commonly acknowledged though there are difficulties in the quantitative evaluation of the effects of wetlands on surface and ground water resources
- National parks and the legal system of nature protection are very important for preserving wetland areas
- Broad action to disseminate the idea of the protection and restoration of wetlands with particular reference to legal and economic instruments as stimulators for the creation and restitution of small wetlands in agricultural landscape
- The creation of large number of wetlands providing appropriate water management in rural areas would improve water quality and enlarge water resources available to agriculture and other users

Thank you for your attention!