

THE IMPORTANCE OF WETLANDS IN THE BASIN MANAGEMENT

ZNACZENIE TERENÓW PODMOKŁYCH W GOSPODAROWANIU WODĄ W ZLEWNIACH

Jozef Stred'anský, Lenka Grešová, Anna Stred'anská

Slovak University of Agriculture in Nitra

Abstract. The importance and the need for wetlands protection results from their multi-functionality and values, which are related with hydrology water quality, food web and plants and wild animals' biotope function. Conservation and rational utilization of wetlands and their sustainable development profit securing, which they provide within water, carbon holding, food, energy, biology diversity is the most heavy commitment of Ramsar Convention. The paper shows the importance, tasks and aims within the fulfilment of this commitment in Slovak Republic.

Streszczenie. Znaczenie i potrzeba ochrony mokradeł wynika z ich wielofunkcyjności i wartości, które są związane z jakością wody, siecią pokarmową oraz funkcjami biotopu roślin i dzikich zwierząt. Zachowanie i racjonalne użytkowanie terenów podmokłych oraz ich zrównoważony rozwój, a także zabezpieczenie zysków, których źródłem są woda, węgiel, żywność, energia, wreszcie różnorodność biologiczna to najbardziej znaczące zobowiązania Konwencji Ramsarskiej. W publikacji przedstawiono znaczenie, zadania i cele w ramach realizacji tego zobowiązania w Republice Słowackiej.

Key words: wetlands, wetlands categories, wetlands management

Słowa kluczowe: tereny podmokłe, kategorie terenów podmokłych, zarządzanie terenami podmokłymi

INTRODUCTION

According the Ramsar Convention about wetlands having international importance mainly as a biotopes of water birds, the wetlands are considered the areas with swamps,

Corresponding author – Adres do korespondencji: prof. ing. Jozef Stred'anský, DrSc., Faculty of Horticulture and Landscape Engineering, Department of Landscape Planning and Ground Design, Slovak University of Agriculture in Nitra, Hospodárska 7, 949 76 Nitra, Slovak Republic, e-mail: jozef.stredansky@uniag.sk,

low moors, natural waters or artificial, stable or temporary, dead waters or flowing waters, fresh, brackish or salt water including sea water, which depth is not more than 6 meters after low tide. Law no. 543/2002 about nature and landscape protection defines wetland as an area with swamps, low moors, wet meadow, natural fresh water or natural dead water including water stream and water area with ponds and water reservoirs. In our conditions the wetlands represent the transition area between terrestrial and water ecosystems, where the ground-water table is usually near the topsoil or with shoal water. They appear in various landscape types and may include shoal (up to 2 meters depth) or temporary dead waters. Their substratum, soil and biota have adapted to floods or underflooding by high ground-water level [Kadlečík and Slobodník 1999]. According Saxa [2006] there are 24 types of wetlands and fluvial biotopes of European importance, which are being announced as Natura 2000, and which are the subject of interest of many EU directions: Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, Council directive 79/409/EEC on the conservation of wild birds including Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy. Their common aim is conservation and improvement of their conditions and environmental quality. Worldwidely it was happening (last century), mainly in Europe elimination of existing wetlands. The reason of those activities was the transformation of wetlands into productive fields for agriculture. Degradation and disappearance of wetlands are faster than with other ecosystems and this tendency accelerates because of extensive changes in landscape management, drainages and infrastructure development [Janák et al. 2006]. The serious fact their degradation is the traditional farming recession. Beside the law protection it is necessary to ensure their well management and to stop the ingrowth and rare species decreasing [Noskovič et al. 2011]. Our republic as the contract party of Ramsar Convention has presently elaborated updated Program of wetlands concern for the years 2008–2014 [Aktualizovaný Program...], which is elaborated for specific tasks in action planes for two periods: 2008–2011 and 2012–2014 and has to provide sustainable development of wetlands of all categories (international importance, as well Ramsars, national, regional and local).

MATERIAL AND METHODS

As the material for the paper we used factual data about the importance and application of wetlands potential for sustainable development of watershed management in Slovak republic. From the used literature sources the issue was valued according these indicators:

- a) categories, number and acreage of wetlands in Slovak republic,
- b) function and importance of wetlands for basin management,
- c) obligations, aims and tasks resulting from international and national documents.

RESULTS AND DISCUSSION

Ad a) One of the main obligation of membership countries of Ramsar Convention is reporting the areas to Ramsar list of internationally important wetlands according the segment 2 of the Convention. On the present Slovak republic has in the Ramsar list toge-

ther 14 areas with the total acreage of 40697 ha. In the table 1 we show number and acreage of the wetlands in Slovakia according the single importance categories.

Table 1. The categorization of wetlands in Slovakia up to date 31.12.2010 [Durkošová and Kadlečík 2010]

Tabela 1. Kategorizacja terenów podmokłych na Słowacji, stan na dzień 31.12.2010 [Durkošová i Kadlečík 2010]

Wetland category Kategoria terenu podmokłego	Number Liczba	Acreage, ha Powierzchnia, ha
International – Międzynarodowe	22	
from this Ramsars* – w tym objęte konwencją Ramsar*	14	40 697
National – Narodowe	72	147 260
Regional – Regionalne	467	10 432
Local – Lokalne	1 050	4 550

* 4 areas international / 1007 ha – 4 obszary międzynarodowe / 1007 ha

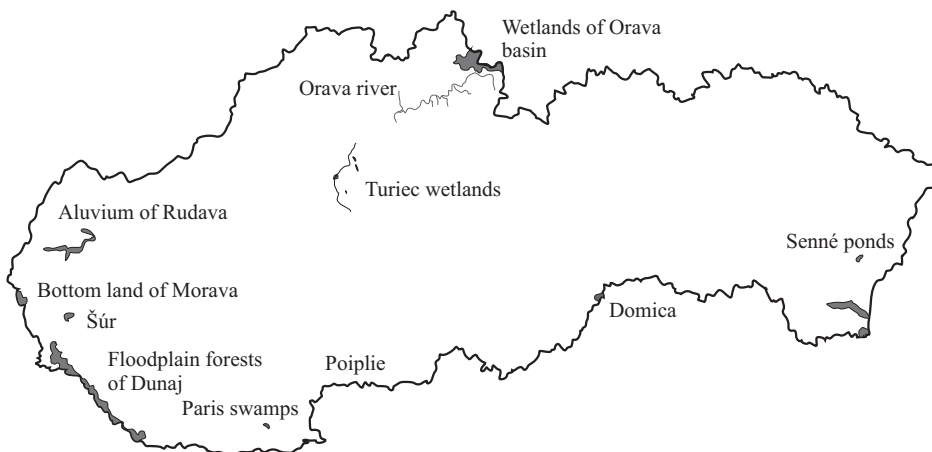


Fig. 1. Ramsars areas in Slovak republic [www.soprs.sk]

Rys. 1. Obszary Ramsars na Słowacji [www.soprs.sk]

Nationally important wetlands are important from the Slovak-wide (national) aspects. That are wetlands with the importance exceeding one district, region or geomorphology unit, areas typical for Slovakia from botanical, zoological, limnological or hydrological aspects, mainly natural or naturally oriented wetlands typical for larger biogeographic unit.

To the category of wetlands of regional importance belong the areas of various acreage with clear hydrological, biological and ecological influence of environment (minimum of couple villages). The localities with important protected species and endangered types of fauna and flora range among those localities as well. Regionally important are protected areas, areas not typical or in contrary typical for the certain region for e.g. district, region

and geomorphological unit. They include important locations and places for reproduction of wetland fauna. Among the wetlands of local importance range smaller localities influencing closest areas, where is concentrated occurrence of common fauna and flora species wetlands bounded. They include wetlands with local hydrological importance and localities with their ecostability function for e.g. hatching sites of amphibians, localities important for fish production and so on. For comparison we show amounts and acreage of Ramsars wetlands in neighbour states.

Table 2. Numbers of Ramsars wetlands in the neighbour states (Durkošová and Kadlečík 2010)
Tabela 2. Tereny podmokle obszarów Ramsar w liczbach w krajach ościennych (Durkošová i Kadlečík 2010)

State Państwo	Number of Ramsars wetlands Liczba obszarów Ramsar	Acreage, ha Powierzchnia, ha
Czech Republic Republika Czeska	12	54 681
Poland – Polska	13	145 075
Hungary – Węgry	28	235 430
Austria	19	119 662
Ukraine – Ukraina	33	744 651

Ad b) Among hydrological functions of wetlands, which have big importance for water sources management range – modified [Janák et al. 2006]:

- moderation of flooding waves,
- sanitary flow sustainment,
- stream-bank erosion prevention,
- water purification,
- pollutants trapping and transferring,
- water purity and temperature sustainment,
- filling up the volume of underground water,
- fish biotopes and other moisture loving organisms,
- moderation and adaptability to climatic changes,

Other economic advantages of wetlands in the landscape according Kadlečík and Slobodník (1999) are: selection for agriculture (sediments retention, nutrients, pollutants and so on), for forest management (wood production, wild animals and so on). Wetlands are important as an energy sources (sphagnum bog), infrastructure, recreation, tourism, cultural heritage and so on. Mentioned shows, that wetlands are functionally and ecologically important element of water environment and have high potential to contribute sustainable development of water management.

Ad c) Program of wetland concern is the basic strategic document to fulfil the obligation resulting from the Ramsar Convention, which has international importance mostly as a water birds biotopes. Slovakia after ratification the Ramsar Convention in 1990 has obligated to ensure sustainable development and wetlands concern, wetlands protection through the protection areas declaration, education support, research and wetland management and international cooperation in the wetland protection. The patronage over the Convention has Ministry of Environment, Slovak Republic. Its consultative body is Slovak Ramsar committee, which consists of non-governmental experts, scientific sphere

and protection practice. Program of wetland concern has to fulfil following priorities and aims up to year 2014 – modified:

1. Sustainable development of wetlands management:

- a) Wetlands database creation and ensure its regular updates. It is necessary to continue in mapping of wetlands species and biotopes and complete information about the most serious ecological risks and founded knowledge complete on State nature protection website.
- b) Elaborate, revalue, adjust and apply national strategies, law tools, or propose modifications in enactments. It is the integration of wetlands protection and sustainable development to Slovak legislation as well as the documents of territorial system of ecological stability (ÚSES). It is necessary to synchronize standards, methodologies and conceptions for stream-side vegetation in water stream management. It is necessary to update the hydroenergetic potential of water streams of Slovakia up to 2030 according the catchment management plans and Slovak Water Plan. Within these plans to elaborate the methodology of the protection and revitalization of water flows and wetlands and these involve in projects for realization.
- c) Increase the awareness about the wetlands, their importance for water sources creations, floods protection, to provide the yields in agriculture and about the national heritage protection. This action follows the communication improvement, education support and the edification for wetlands support by the public participation. It is necessary to publish information and propagandistic materials serving this purpose. It is necessary to build environmental education centres and information centres, which ensure the cooperation with public in the wetlands protection area. Within these aims it is important to prepare publications, methodologies, educational documentary movies and so on.
- d) Classify strategies focused on the protection and sustainable management of wetlands into following planned activities: territorial planning, underground water and flow basins management. It is necessary to integrate the protection and sustainable development and management of wetlands into various strategic and conceptual documents mainly in the biodiversity resort, territorial development, water management, climatic change problems, agriculture, infrastructure building, urbanization, tourism development,
- e) To identify the preferred wetlands, where revitalization would be profitable and which will provide long-term environmental, social or economical profit. Based on achieved results it is necessary to set the areas require revitalization and renaturation and elaborate necessary projects.
- f) Elaborate the rules and develop the activities for prevention and reduction the appearance of invasive species in wetlands ecosystems. To complete valid legislation with the invasive wood species and wild animals of wetlands and set the rules of their liquidation. We need to focus on Ramsars localities and wetlands biotopes at the Natura 2000 areas with the cooperation of owners, users of the fields and the managers of water flows.

2. The concern of international important wetlands†

- a) Within the suggestion of new areas it is important to include strategic scopes and directives for wetlands development of international importance and regularly update

with the available data. It is necessary to complete the database of wetlands, which fulfil the criteria to be registered in the list of international important wetlands. It is necessary to use available data from mapping and monitoring biota, water quality measurements and insert them into the database.

- b) To keep the ecological character of Ramsars localities and other areas with international importance. It is important to elaborate and realize the programs of existing Ramsar localities concern with the plans of ecological revitalization of protected areas, protected bird areas and with the basin management plans as well as with the program of wetlands species with the cooperation of owners, users. Elaborate the concern of other protected areas, mainly areas in Natura 2000.
- c) Monitoring of the conditions in Ramsar areas and report the Secretariat of Ramsar Convention all important changes in these areas.

3. International cooperation development:

- a) To support the existing regional initiations within Ramsar Convention. It is necessary to ensure the cooperation related with accepted documents about international cooperation with neighbour states – Czech Republic, Poland, Hungary, Austria and Ukraine.
- b) To ensure effective coordination with other international and regional environmental conventions and agencies and exchange the scientific experiences and information. It is necessary to cooperate, coordinate and harmonize the wetlands concern and their sustainable development utilization with other internationally legal mechanisms and their national coordination bodies with regular communication and mutual representation of these bodies.

4. Capacities building for Convention implementation

- a) To support the active participation of local and regional municipalities, owners, users, private sectors and groups of interests to the protection and sustainable development utilization of wetlands. Managing seminars and conferences with the main topic of wetlands importance for the public. Use consulting offices of protected areas for this purpose. It is necessary to gain private sector to finance management actions and educational activities for wetlands protection.
- b) To identify the necessities of education in the organizations and individuals, connected with the protection and sustainable development management of wetlands and support the cooperation. It is important to provide trainings, courses, lectures for wetlands managers, state administration, expert community, for teachers of all school types, scientific and academic sectors.

European Parliament and Council of Europe approved Water Framework Directive (2000/60/EC) which defines the wetlands as the part of water management in river basin. Wetlands management may be understood as a part of basic actions to achieve the aims of Water Framework Directive. Revitalization and renaturation of wetlands are mentioned in the Directive as possible supplemental actions.

CONCLUSION

In Slovak Republic wetlands conservation (Ramsar including) is a difficult issue. It is a problem to save acreage and to fulfil their functions. It is a problem of all segments. That is why it is important to realize those actions:

- to realize Action plan up to year 2014 with the updated Program of wetlands concern in Slovakia;
- elaborate and realize consistently EIA (Environmental Impact Assessment) document connected with wetlands.

Within the wetlands revitalization (some of them already have been realized) we need to ensure

- conventional management of surroundings of wetlands by pastures and cattle-ranges;
- barrier elimination for fish;
- ecosystem services management, which has to be realized on the areas classified in Natura 2000.

REFERENCES

- Aktualizovaný Program starostlivosti o mokrade Slovenska na roky 2008–2014, <http://www.sopsr.sk/web/?cl=3403>.
- Akčný plán na roky 2012–2014 k aktualizovanému Programu starostlivosti o mokrade Slovenska na roky 2008 – 2014, <http://www.sopsr.sk/web/?cl=3403>.
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, www.europa.eu.int.
- Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, www.europa.eu.int.
- Durkošová, J., Kadlečík, J., 2010. 20. rokov implementácie Ramsarského dohovoru na Slovensku. *Enviromagazín*, mimoriadne číslo 2. Ministerstvo životného prostredia Slovenskej republiky a Slovenská agentúra životného prostredia Banská Bystrica, 6–7.
- Janák M. et al., 2006. Úloha mokradí v manažmente riečnych povodí. *Dunajské environmentálne fórum (DEF)*, Bratislava, pp. 4.
- Kadlečík J., Slobodník V., 1999. Príručka pre inventarizáciu, ochranu a starostlivosť o mokrade, 1. časť. SZOPK Prievidza: SAŽP-COPK Banská Bystrica, <http://www.sopsr.sk/publikacie/mokrade/>.
- Noskovič J. et al., 2011. Prírodná rezervácia aluvium Žitavy – kvalita vody. Monografia. SPU Nitra, 105 pp.
- Ramsar Convention Bureau, 1997. The Ramsar Convention Manual: A Guide to the Convention on Wetlands (Ramsar, Iran, 1971). 2nded. Ramsar Convention Bureau Gland (Switzerland), www.europa.eu.int.
- Saxa A., 2006. Mokradňové a riečne biotopy európskeho významu – NATURA 2000. [In:] Rámcová smernica o vode – stav implementácie v podmienkach SR. Zborník príspevkov z odborného seminára: Ministerstvo životného prostredia SR, Sekcia vôd, Bratislava, 97–99.
- Smernica Európskeho Parlamentu a Rady 2000/60/ES z 23. októbra 2000, ustanovujúca rámec pôsobnosti Spoločenstva v oblasti vodnej politiky, <http://www.vuvh.sk/download/VaV/Vyznamne%20dokumenty%20EU/RSV.pdf>.
- Zákon z 25. júna 2002 NR SR č. 543/2002 Z.z. o ochrane prírody a krajiny.

Accepted for print – Zaakceptowano do druku: 12.12.2013