

Conference “Wetlands in Agricultural Landscapes: Present State and Perspectives in Europe”, České Budějovice, 11-16 October 2015

Conclusions and Recommendations

Wetlands are amongst the most threatened habitats on Earth; in some areas where data exists up to 80 % of wetlands have been lost since 1700. The key driver in the loss and degradation of wetlands has been agriculture¹, although indirect drivers have been population growth and economic development. The pressure on wetlands, and consequent loss in area and quality, has been most severe in countries with a long history of highly-intense agriculture, which is the case for most European countries. This process of degradation and loss may be further intensified by ongoing climate change.

At the same time, however, many floodplain wetlands worldwide still remain important sources for fisheries as well as crop production, especially in small-scale farming and subsistence. Moreover, many traditional farming practices take place in human-made wetlands such as wet meadows, rice paddies and fish ponds.

Recognizing the valuable functions and ecosystem services of wetlands on the one hand, and the important role of agriculture in food production and landscape formation on the other, the Conference was actuated in order to evaluate the potential for integrating wetlands into the intensively-managed landscapes of Europe. Over 170 participants from 20 countries attended, including both wetland and agriculture scientists, as well as nature conservation and agriculture managers.

The Conference discussed six key topics and concluded:

1. Water and Climate: Understanding and managing the water cycle is the key towards securing sustainable landscape management. Research shows that wetlands and natural vegetation cover ameliorate the climate, enhance water retention in the landscape and regulate river flows. Water also controls the dissolution and transport of dissolved and particulate materials. Destruction of natural vegetation cover and the introduction of human-induced drainage systems have resulted in an accelerated water runoff and accompanying high material losses from catchments to the sea. A number of landscape restoration projects have demonstrated that the retention of rain water and support of permanent vegetation have resulted in the fast recovery of large areas in less than ten years. To regain sustainability of agricultural areas, we urgently need:

- to restore natural vegetation, including wetlands, leading to a better climate reflected in lower temperature amplitudes (cooling through evapotranspiration and warming through water condensation);
- to augment the accumulation of soil organic matter (through higher soil water levels); and
- to reduce losses of soluble materials (keeping them bound in organic matter and soil).

¹ The Millennium Ecosystem Assessment, 2005

2. Biodiversity: Global, regional and local investigations have shown the importance of agricultural practices being employed for the management of biodiversity in wetlands. Several examples of good practice - showing the good levels of understanding of how we should manage and form new wetlands in agricultural landscapes in order to maintain and promote biodiversity - were presented. These presentations demonstrated that:

- Some traditional land use practices, including the management of wetlands for rice, salt or fish production, can support wetland biodiversity.
- Restoration of wet meadows, and their return to traditional agricultural use, has proved successful in restoring the populations of many endangered species.
- Wetlands occurring on arable land are important for the reproduction of populations of endangered plant and animal (especially bird) species; to maintain suitable habitats for different species, various levels of disturbance are sometimes required.
- In a number of cases, certain changes in agricultural practices may have a positive impact on biodiversity, while also being profitable for the farmers, e.g., winter flooding of rice fields. Such adjustments of mutual benefit should be further investigated and promoted.

3. Wetland restoration and creation: The Conference concluded that the science and skills to restore wetlands are already available. Based on the broad experience with wetland restoration the following recommendations are given:

- Clear objectives and goals for wetland restoration need to be agreed, and success criteria identified, prior to any restoration activities taking place (success criteria must be expressed as measurable indicators).
- As baseline conditions have mostly changed, wetland restoration should aim at rehabilitating acceptable habitat conditions rather than aiming to restore a former 'original' state.
- When designing any restoration project, the available technical solutions, nature's self-regeneration capacities, and the available financial means, should all be considered.
- In order to evaluate the success of any restoration project, a well-designed monitoring programme (prior and post restoration), including its cost, has to be included in the costs of the restoration project.
- As ecological interfaces are by far the most important hotspots for processes and for biodiversity, restoration activities should aim to enlarge interfaces (e.g., between land and water).
- Wetlands in agricultural land may be compared to oases in a desert and as such require a high conservation and restoration priority.
- When restoring/creating wetlands we must be aware of potential risks, such as: increased predation on migrating salmon smolt in meadow-lakes created on streams, or release of phosphorus from anoxic layer of flooded phosphorus-rich agricultural soils.

4. Role of wetlands in the abatement of agricultural pollution: To date there is ample scientific evidence that wetlands can absorb and/or transform considerable amounts of chemical substances originating from either point or non-point sources. The conference concluded that:

- Created wetlands are a useful tool for retention of nutrients from agricultural runoff/drainage waters. They have proved to be useful even if they have been designed for another purpose such as conserving biodiversity.
- The efficiency of nutrient removal can be further increased by positioning the wetlands in carefully selected locations within land blocks or catchments, e.g., at the outlets of drainage systems.
- Wetlands can effectively retain pesticides. However, only limited information is available for full-scale, created or constructed wetlands because many pesticides have been monitored only once or their fate has been studied only under experimental conditions. More studies need to be carried out under field conditions.

5. Paludiculture: Paludiculture is the agri- or silvicultural use of re-wetted peatlands and other wetlands. The main reasons for paludiculture are the need to stop losses of organic matter from previously drained organic soils and/or the need to increase water-retention capacity in agricultural regions. The current knowledge and experience indicate that:

- Pilot studies show the applicability of economically-profitable paludicultural technologies, mainly focused on the production of energy crops or hay. Implementation of large-scale demonstration projects is necessary.
- There are several potential food, fodder and fibre crops suitable for paludiculture under various European climatic conditions but further research is needed in order to evaluate their breeding potential, develop suitable cultivation and harvesting technologies, and evaluate the market demand for (and profitability of) new wetland crops.
- Harvesting biomass from eutrophic rewetted peatlands and constructed wetlands provides, in addition to valuable raw materials, also filter services by recycling nutrients in the plant biomass and thus easing nutrient loads to ground and surface waters.
- Care must be taken in prioritizing between nature conservation and environmental management on the one hand, and paludiculture on the other. Paludiculture is suited for achieving sustainable management of water-logged or shallowly inundated agricultural land, not for ‘reclaiming’ pristine wetlands. Nevertheless, paludiculture can be connected with nature conservation in the framework of various agri-environmental schemes.

6. Legislation, financial incentives and involvement of stakeholders: Consideration of socio-economic aspects is a necessary pre-requisite for successful management of wetlands in agricultural landscapes. Based on the presentations and follow-up discussions, the following recommendations have been given:

- An holistic approach by both legislative and executive institutions is needed at both the European and national level.
- Supporting programmes of the European Union should be matched by and/or supplemented with national programmes.
- Funding should be allocated through programmes and projects with clear objectives and goals, and enable medium-term continuity (e.g., five years).
- Landowners and farmers are key stakeholder groups for integration of wetlands into agricultural landscapes. Involvement of other stakeholders (local populations, NGOs) can provide substantial support to the management of particular wetlands and their monitoring in relation to their interests.
- The Land Consolidation Act has been proved as an effective and useful tool for achieving dialogue-based positive results in optimizing land use.
- It is necessary to disseminate information about the role of wetlands in agricultural landscapes to farmers and other stakeholders.

General conclusions

The presentations clearly demonstrated that there is considerable scope for obtaining many mutual benefits from the use, restoration and creation of wetlands in intensively-managed agricultural landscapes.

Wetlands help fulfil the current needs of agriculture by enhancing water retention, abating agricultural pollution, and also by offering potential for innovative agricultural technologies. In addition, they support the diversity of species, habitats and landscapes, and provide opportunities for recreation and leisure time activities. The loss of these benefits through the destruction of wetlands can partly be compensated by wetland restoration. However, wetland restoration is expensive and can require decades to achieve the desired ecological status.