

Paludiculture, or wetland agriculture

Paludiculture is the sustainable use of wetlands. It is an alternative to traditional forms of land use that involve drainage, which contributes, among others, to the loss of natural habitats and species diversity and causes globally significant greenhouse gas emissions (carbon dioxide and nitrous oxide) and pollution of water with nutrients (nitrogen and phosphorus).

The role of paludiculture is important in the restoration of peatlands that are degraded over decades of drainage and/or peat extraction. For such peatlands to be used for paludiculture purposes, natural water levels must be restored. This entails numerous benefits, resulting from the ecosystem services of the restored habitats. Paludiculture is a solution to the conflict between the need to keep peatlands wet and the desire to use them economically!



Paludiculture – what does it look like in practice?

Paludiculture is peatland management with high water tables aiming at biomass production. Most of all it includes crop fields established on degraded peatlands that have been rewetted. The plants grown are usually native species, adapted to the difficult conditions of high or changing water tables, which are harvested and used in various branches of the economy.

For example, common reed can be used as construction material for houses (roofing, thermal and acoustic insulation). Another marsh plant that provides high-quality material for insulating buildings is cattail, which, unlike styrofoam, is flame-retardant. Cattail biomass can be used to make eco-dishes and its young shoots are used in food preparation. Also *Sphagnum* mosses can be grown, yielding material for production of horticultural soil, which in future might be a sustainable alternative to peat.



Project DESIRE – promotion of paludiculture in the Neman catchment

The project DESIRE helps to restore drained peatlands at pilot sites and provides tools for wider uptake of such measures in the Neman catchment area. The primary purpose of restoration of wetlands is to preserve the ecosystem services that they provide – in case of DESIRE, the main goal is to recover their nutrient filtration capacity in order to improve the water quality in the catchment and in the Baltic Sea. But other peatland functions are also benefiting from the project actions – one of them is the possibility of sustainable biomass production for economic purposes. Besides economic aspects, the harvesting of biomass in paludiculture helps removing nutrients (including agricultural pollutants) from peatlands, which prevents them from getting into river waters. Activities like preparing paludiculture strategies for the Neman catchment area or providing local feasibility studies on biomass production, together with information and education activities will help to widely promote paludiculture as a solution bringing benefits for both the environment and local societies.

In addition, paludiculture can include for example forest plantations of moisture-loving trees that are source of wood, such as alder. Biomass from several marsh plants can be used as biofuel, to obtain heating energy through combustion or biogas production (e.g. reed). As a positive side effect, harvesting of paludiculture plants removes nutrients from the eutrophic soils, which enhances the filter function of peatlands! Wetlands provide many ingredients for medicines or cosmetics. Re-wetted areas can also be used for hay making or as pastures, e.g. for the domestic water buffalo. This is a cattle originating from Asia and south Europe that is very well adapted to grazing on wet meadows or peatlands and producing high-quality milk and meat.



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The project is implemented in the period of January 2019 – June 2021 (30 months) by eight partners and nine accompanying institutions from five countries – Germany, Poland, Lithuania, Russia and Belarus. The leader of the project is the University of Greifswald. The main goal of the DESIRE project is to support wetland management to improve water quality in the Neman River basin (and thus the Baltic Sea) and to restore other ecosystem functions of peatlands. The project is co-financed by the European Union under the European Regional Development Fund and the Baltic Sea Conservation Foundation.

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PALUDICULTURE

What is agriculture on wetlands and what benefits does it bring?

Development of sustainable (adaptive) peatland management by restoration and paludiculture for nutrient retention and other ecosystem services in the Neman River catchment.

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DESIRE – for nature, for climate, for people