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### **The restoration of cutover bogs in Northern Poland.**

Peatlands in Poland cover about 4% of the country area. The most wide-spread are fens which build up over 93% of the total area of Polish mires. Bogs are far less abundant. This type of peatlands is relatively frequent in the young, postglacial landscape of northern part of the country (Pomerania region).

Contemporary over 80% of Polish peatlands area is subjected to human impact. After drainage fens are used as extensive meadows and pastures whereas bogs are under forestry management or are used for peat mining.

In the beginning of XX<sup>th</sup> century peat was extracted manually for heating purposes. After II World War large peat mines were established in Northern Poland to extract *Sphagnum* peat for horticulture. Nowadays there are 28 big peat works which explore area of 1200 ha using milling method. Their activity is terminated when the mining license expires. According to the law regulations cutover areas have to be restored. There are no elaborated methods of successful restoration of peat forming ecosystems in Poland. In most of cases explored mires are afforested or abandoned for spontaneous regeneration of plant cover. Disturbed hydrological regime, moorshing process and wind spreading of upper soil layer cause that none of this practices give satisfying results. The abandoned cutover areas remain bare even for dozens of years.

In 2006 experimental works leading to development of effective methods of vacuum extracted bogs restoration were initiated in Pomerania (Project "The conservation of baltic bogs in Pomerania", financially supported by LIFE-Nature, GEF and EkoFundusz).

General project objectives are: (i) preventing of further degradation of peat deposits (ii) defining of the most suitable conditions for the regeneration of bog plant species (iii) evaluation of the efficiency of *Sphagnum* species regeneration.

The experiment, conducted in Czarne Bagno bog (about 100 km NW from Gdansk) comprises several stages: (1) the regulation and monitoring of hydrological conditions – establishment of water rising dams and the measurements of ground water table in permanent points, (2) the preparation of experimental plot (0,5 ha): removing of moorsh layer of 10, 30 and 50 cm of thickness, filling up drainage ditches with removed material, spreading of the hydrogel in order to improve moisture condition of soil, (3) spreading of 8 *Sphagnum* species diaspores (*Sphagnum rubellum*, *S. russowii*, *S. capillifolium*, *S. cuspidatum*, *S. fallax*, *S. magellanicum*, *S. palustre*, *S. fuscum*) (a) in a large scale in order to evaluate the optimal amount of diaspores needed for effective recolonisation and (b) in small experimental plots in order to analyse species reaction for transplantation taking into account their biomass production and efficiency of vegetative reproduction, (4) covering plots with straw or fabric used in horticulture.

*Sphagnum* diaspores survival and abiotic conditions in experimental plots are being monitored. The early results of the research will be obtainable after 2007 vegetational season. The rest of exploited area in Czarne Bagno bog (9 ha), as well as in neighbouring bog in Słowiński National Park will be joined into restoration experiment this year.