

# **The History and Development of the Nagy-Mohos Fen at Kálósemjén (NE Hungary)**

## **Man induced fen formation and the „archaic fen” concept**

Protection and management of fens nowadays is of overriding importance in nature conservation as they provide refuge to a number of protected and extremely rare species. In the northeastern part of Hungary several fens have survived in a more or less original condition. In the present paper we describe the history and development of the area.

Abiotic components of the palaeoecosystem were described by the methods of geochemistry, sedimentology and isotope geochemistry, whereas to investigate biotic conditions palynological and malacological approaches were used. Multivariate statistical analysis was applied to determine successive stages of fen development. The following major steps characterize fen formation.

1. Aeolic sediment accumulation, quicksand movement formed the bed in the Boreal period.

2. Semi-static wetland phase, 8010±100 B. P., periodical water inundation.

3. Pond phase: duration several thousand years, aquatic sedimentation. The dominance of *Quercus* pollen and aquatic Mollusca species are typical, aerobic pond conditions are indicated by accumulation of iron, manganese and phosphate.

4. Eutrophic pond conditions: started at 280±40 B. P., deforestation, nutrient input to the pond increased, biomass production and sediment accumulation hastened. The *Quercus* pollen ratio decreases and the cultivated Gramineae ratio increases, beyond aquatic Mollusca species terrestrial species appear. In this layer the chlorophyll content (SPDU) shows a maximum.

5. Fen phase: anaerobic milieu developed, intensive peat formation took place, floating marsh partially anchored to the pond bottom, the extent of open water decreased. The *Pinus* pollen dominates (because of pin-forest plantation on the surrounding hills), aquatic and terrestrial Mollusca species are present together, the accumulation of iron, manganese and phosphate is low.

Our results suggest that fen development on small, shallow ponds may not require thousands of years; instead, it takes place in a strikingly short time. Here it accelerated because of human activity and appears to terminate for the same reason (i. e. anthropogenic effects). Fen formation and destruction had been very fast even before human interference, resulting in a constant turnover of development and degradation.

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