

A Detailed Record of Vegetation History in the East of England

Diss Mere is a small eutrophic lake (area approximately 3 hectares) situated in the centre of the small market town of Diss, in Norfolk - one of the most important arable farming areas of England. The lake has featured strongly in the life and industry of the town since its foundation.

A sequence of 17 m of sediments, retrieved from the centre of the Mere, and analysed for their pollen (Peglar *et al.*, 1989), and diatom and pigment (Fritz, 1989) content, have shown that sedimentation began during the Devensian late-glacial period, with *Betula* woodland covering the landscape.

At the beginning of the Holocene this was replaced mainly by *Corylus avellana* woods. As deciduous tree species migrated into the area, a mosaic of mixed deciduous woodland developed containing *Tilia*, *Ulmus*, *Quercus*, *Corylus avellana*, and *Fraxinus excelsior*, with *Alnus glutinosa* on the moister ground fringing the lake.

Soon after the establishment of this mixed deciduous forest, there is evidence of disturbance within the Diss Mere catchment (an area of approximately 1.5 km²). A sharp decline in *Ulmus* at approximately 5000 years B.P. was followed by an expansion of *Taxus baccata*, a light-demanding species, suggesting some opening of the woodland.

At approximately 3500 years B.P. (Bronze Age) there was a sharp decline in *Tilia* correlated with evidence for the local cultivation of cereals.

The clearance of much of the forest (at about 2500 years B.P.), and the further development of both arable and pastoral farming in the area during the Iron Age, is shown by a drop in tree and shrub pollen from 90 to 30 % of the total pollen, with a concomitant increase in the pollen of herbs.

A picture of the variety of agricultural practices and industry developed in the area over the past 2000 years, is given by the very rich pollen spectra

obtained, a total of almost 200 different pollen taxa being differentiated. New crops introduced are represented by the pollen taxa *Secale cereale*, *Cannabis sativa*, *Linum bienne*/*L.usitatissimum*, and *Fagopyrum esculentum*.

Analyses of the most recent sediments show the development of parkland and gardens around the lake, with the planting of many exotic (e.g. *Castanea*, *Aesculus*, *Platanus*) and native trees (e.g. *Populus*, *Fagus*, *Carpinus*, *Salix*).

3 m of the sequence from Diss Mere (from approximately 5500 to 2500 years B.P.) consist of laminated sediments. Biological and chemical analyses of individual light and dark laminae prove the annual nature of the couplets (Peglar *et al.*, 1983). Dark laminae contain higher percentages of the pollen of early-flowering trees and shrubs and of chrysophycean cysts, and contain organic material with iron sulphides and some silica. Light laminae have higher percentages of late-flowering plants, and consist primarily of calcium carbonate. Thus a couplet consisting of one light layer formed in the late spring/early summer, and one dark layer formed in late summer/autumn/winter/early spring, was formed each year.

These annual laminae cover the period of the « elm decline ». In order to examine this event in detail, 252 of the couplets have been individually analysed to give both percentage and annual pollen influx data. The results of this research will be published elsewhere (Peglar, forthcoming).

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