

Laminated Sediments in Studies of Pleistocene Interglacial and Interstadial Deposits

Results are presented of current investigations into the Pleistocene biostratigraphy of Sweden. Micro- and macrofossil analyses (pollen, diatoms, carpological remains : needles, leaves, fruits) have been carried out on till covered deposits including laminated sediments of interglacial or interstadial age. The interglacial sediments were disturbed and removed during ensuing glaciations and are now found in secondary positions.

The pollen flora identified in the laminated sediments at Öje, central Sweden, reflects a coniferous forest of larch, spruce and pine, probably of Holsteinian age. The macrofossils of coniferous trees include species which have not grown in Sweden during the Holocene, for example larch (*Larix* sp.), Serbian spruce (*Picea cf. omorica*), arolla pine (*Pinus cf. cembra*) and fir (*Abies* sp.). The laminated sediments were deposited in an oligotrophic-dystrophic lake with a low pH (around 5) as shown by the composition of the diatom flora (Robertsson, 1988 ; García Ambrosiani, 1991).

Lumps of redeposited laminated gyttja silt are found at Snickarekullen in southwest Sweden. The sediments are rich in freshwater diatoms and well preserved plant remains (Lind, 1983 ; Miller, 1983). The pollen spectra show that sediments from different parts of an interglacial (thought to be the Holsteinian) are represented.

A new project is in progress entitled « Palaeoenvironment during the Holsteinian interglacial in Sweden ». The investigations include macro- and microfossil analyses of the fine grained laminated sediments from Öje and Snickarekullen. Some of the most distinct laminae are being analysed in detail in order to ascertain whether seasonal variations are reflected in the fossil content (cf. Benda, 1974 ; Müller, 1974).

Interstadial laminated sediments from northernmost Sweden are described. These were deposited under arctic and subarctic conditions in basins of different origin (ice-walled lakes, kettle holes) and varying age

(Lagerbäck, 1988; Lagerbäck and Robertsson, 1988). The sediments are tentatively correlated with the Early Weichselian Brörup and Odderade interstadials. The tundra vegetation existing during these interstadials was dominated by shrubs and herbs. Periglacial processes took place, especially during the younger interstadial (the Tärendö Interstadial), and the climate was a continental one, as is seen from the presence of plant taxa such as *Artemisia* spp. and Chenopodiaceae. Birch was the only tree growing in the area and the distance to the nearest pine forest was probably great since the pollen values of *Pinus* are very low. The diatom floras reflect changes in water depth, pH and inwash of terrestrial material into the interstadial lakes. The waters were acid throughout most of the interstadials.

Ann-Marie ROBERTSSON
 Geological Survey of Sweden
 Box 670
 S - 751 28 UPPSALA
 Sweden

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