VEGETATION CHANGE AND HUMAN IMPACT, AS REFLECTED IN LITORINA SEA LAGOONAL DEPOSITS NEAR THE PRIEDAINE ARCHAEOLOGICAL SITE AT THE HEAD OF THE GULF OF RIGA (PLANT MACROREMAINS, POLLEN AND WOODEN ARTEFACTS)

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INTRODUCTION

The first archaeological excavations were carried out by archaeologist Valdis Bērziņš in 2007 at the margin of Slēperu Mire (Priedaine, Jūrmala City) (Fig.1, 6, 7), where local people have been found stone axe on 1975. Excavation at the Priedaine was continued during 2008 and large number finds about ancient fishermen's activities, which lived there before 5000 years (the Neolithic Age) was found (Fig.2-5).

Fragments of fishing gear and tools have been found, as well as remains of ancient inhabitant food fish scales and nutshells. Comb and pit type ceramics (Fig.2) obtained at the excavations have been provisional dated to 3000 BC.

Investigations of geological, paleogeographical and paleoenvironmental conditions promoting inhabitancy and preservation at Priedaine have been carried out in 2008 conducted by G. Eberhards (2008) (Fig. 8, 9).

Fig. 1. Study area in Latvia

Fig. 2. Finds of ceramics, amber and flint

Fig. 13. Seeds of Priedaine site (core 20)

Fig. 3. Excavation area, at the foot of a linear dune

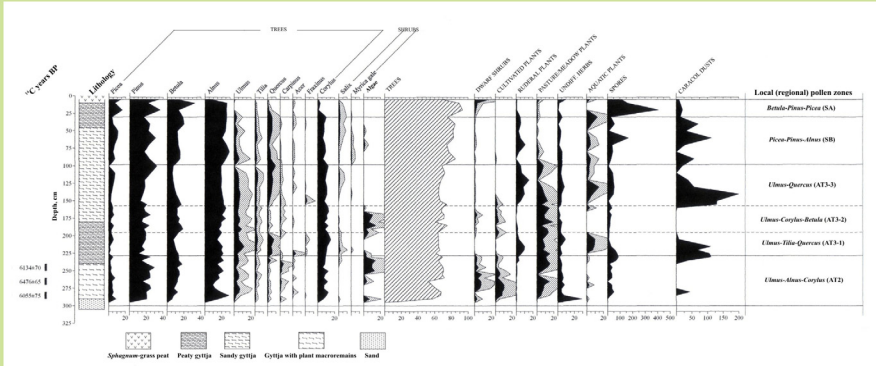

Fig. 10. Pollen diagram of Priedaine site

Ruderal and cultivated land herb pollen indicates human presence and activities in the area since the time when organic sediment began to accumulate. Accumulation was especially intensive during AT2 and AT3, subsequently decreasing (Fig. 11,12).

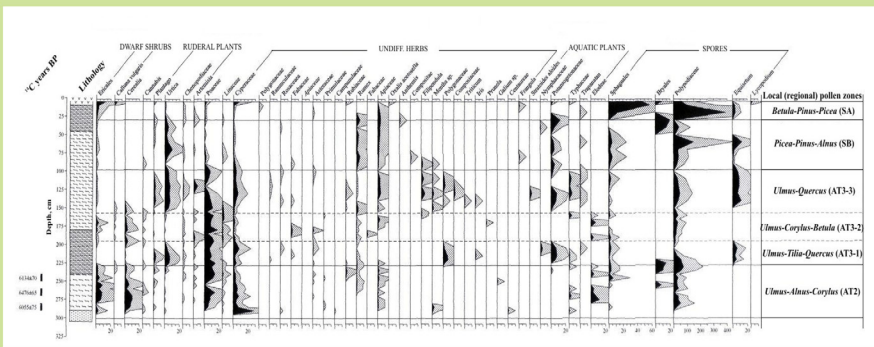

Fig. 11. Herbs pollen diagram of Priedaine site

Data of plant macroremain analysis demonstrates aquatic plant presence in whole section (2.9 - 0.17m). Four macroremain complexes are divided (Fig. 12).

Ia - dominance of terrestrial plants, depth interval of zone corresponds to AT2 pollen zone in diagram.

Ib - *Ruppia maritima* presence among aquatic plants (beginning and middle part of AT3). Well preserved seeds of aquatic plant Widgeon Grass (*Ruppia maritima*) (Fig.13) occur in almost whole interval 2.9 1.4 m. Plant is distributed in salty sea water in depth to 1.4 m. In Latvia it usually grows together with Soft Hornwort or Tropical Hornwort (*Ceratophyllum submersum*) and Horned Pondweed (*Zannichellia palustris*) in the protected area of Randu meadows located at Vidzeme coastal area of the Gulf of Riga. Seeds of these plants occur as well in this depth interval (*Ceratophyllum submersum* up to 1.6 m). *Ruppia maritima* and *Ceratophyllum submersum* haven't been found above depth 1.4 m. This fact probably indicates that sea water didn't flow into lagoon anymore during next phase of lagoon development and water became less salty and unsuitable for growing of these plants.

Ic - aquatic plants *Nymphaea alba, Zannichellia palustris, Najas marina, N. flexilis* and increase of mire plant remains (end of AT3, SB).

II - dominance of terrestrial plant remains (end of SB, SA). Sharp decrease of aquatic plant species and plant remains as well increase of mire, wet meadow and other terrestrial plants can be observed in the upper part of section (0.6 0.17 m). That point on rapid paludification of area and overgrowing of water basin. Only two aquatic plant remains have been found in depth interval 0.45 0.17 m, but above this interval just mire plants.

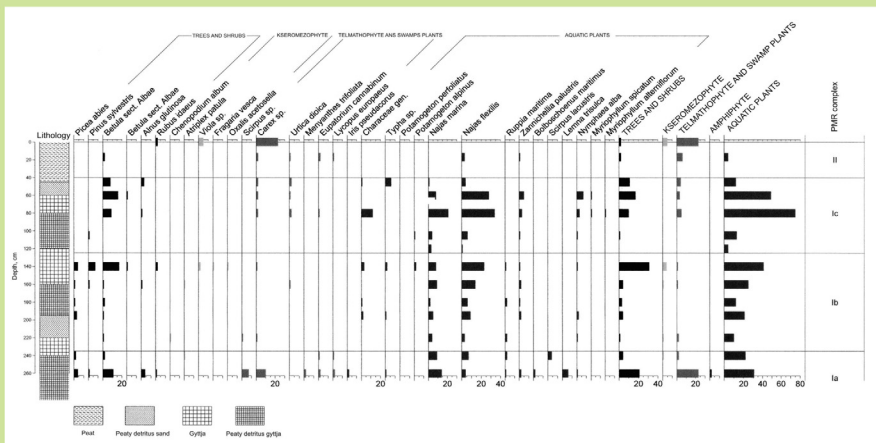

Fig. 12. Plant macrofossil diagram of Priedaine site

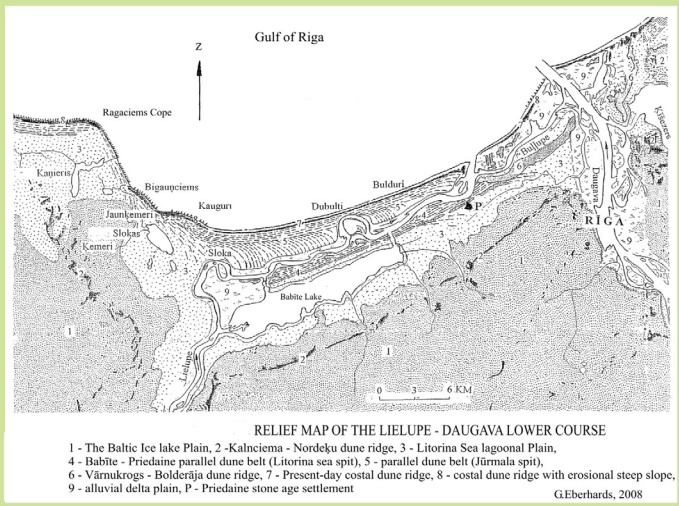

Fig. 6. Relief map of the Lielupe-Daugava lower course

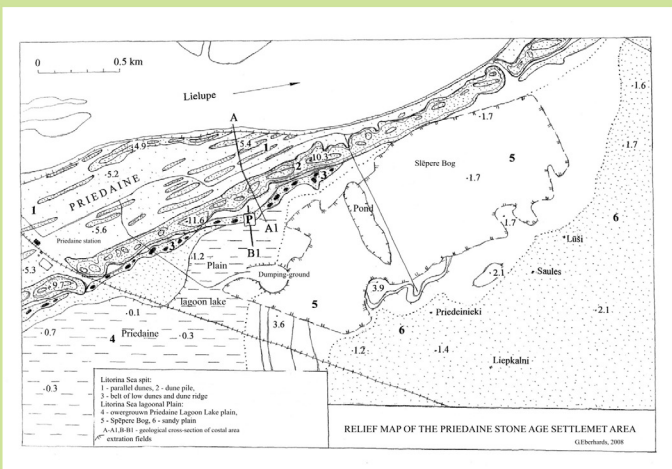

Fig.7. Relief map of the Priedaine stone age settlement area

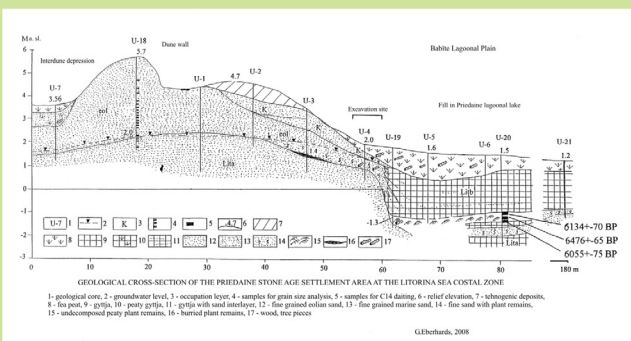

Fig. 8. Geological cross-section of the Priedaine area

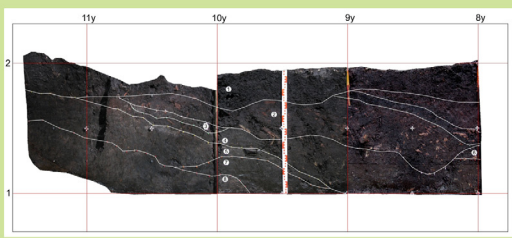

Fig. 4. Trench of the excavations, A section

Fig. 5. Wooden implements

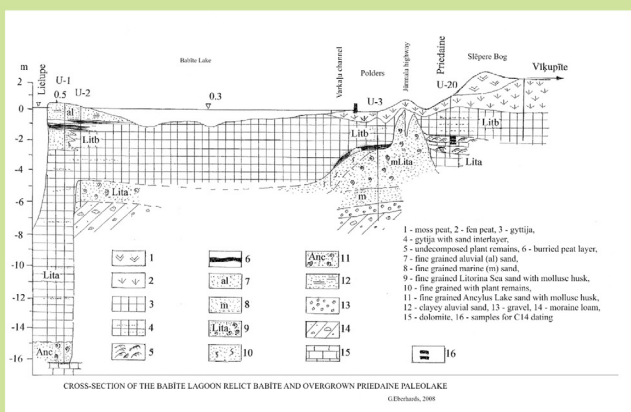

Fig. 9. Cross-section of the Babite lagoon

Fig. 14. Seeds from the excavation site:

A - *Corylus avellana*, B - *Trapa natans* (fragm.), C - *Rubus idaeus*, D - *Arctostaphylos uva-ursi*

The finds from the excavation area, at the foot of a linear dune, relate to the uppermost peat layer and an underlying layer of fine sand, rich in plant matter(Fig. 4). The archaeological material, dated to the Middle/Late Neolithic, includes large numbers of pine laths, in two cases bound with birch bark (probably waste from the making of fishing structures), as well as some unusual wooden implements (Fig. 5). Along the plant macroremains are remains of food plants (Fig. 14): *Corylus avellana* nuts, *Trapa natans* fruits, as well as seeds of *Rubus idaeus* and *Fragaria vesca*. The diversity and quantity of remains of other dryland plants (*Pinus, Picea, Arctostaphylos uva-ursi*), including ruderals (*Chenopodium album, Urtica dioica, Polygonum lapathifolium*), is much greater than in the core samples. Seeds of the aquatic plants *Caulinia flexilis*, *Najas Marina* and *Nymphaea alba* indicate a subaqueous depositional environment.