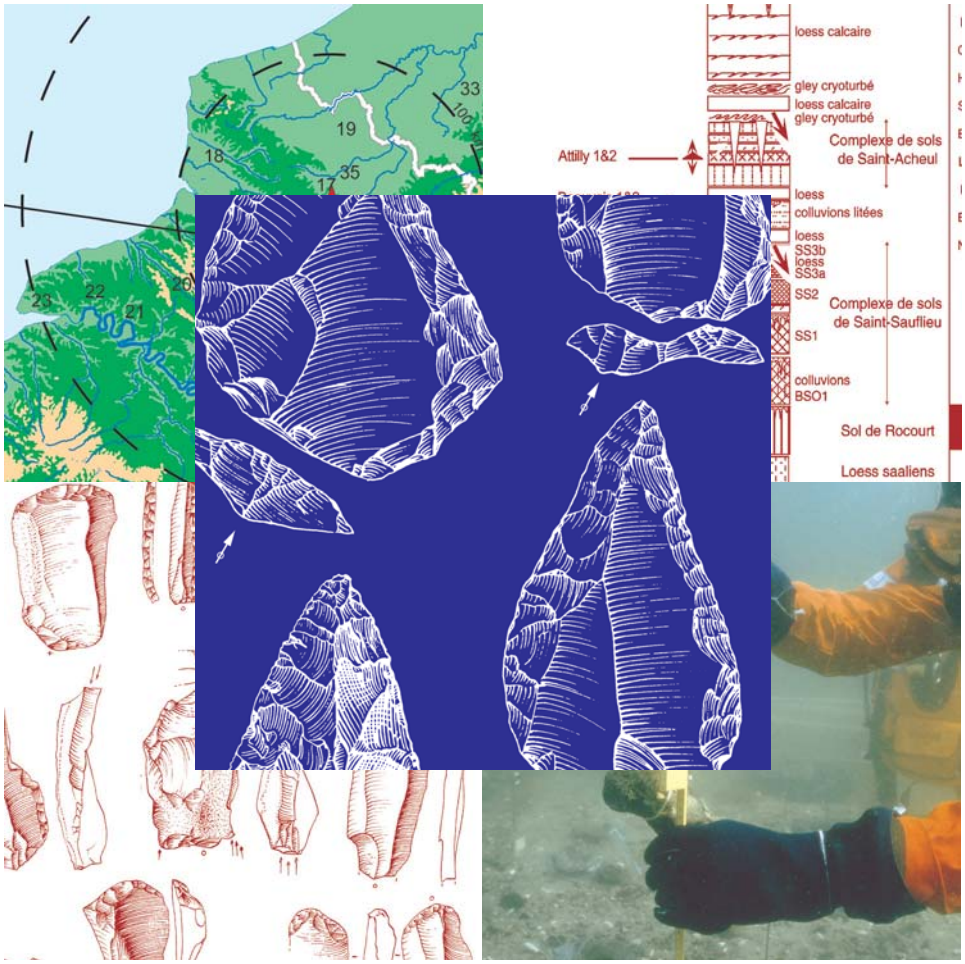

Liège 26 2006

NOTAE PRAEHISTORICAE

Liège - 16.12.2006
Groupe de Contact FNRS
« Préhistoire »
« Prehistorie »
Contactgroep

organisation / organisatie

Marcel Otte
Université de Liège
Service de Préhistoire
Place du XX Août 7, Bât A1
BE - 4000 Liège

Marcel.Otte@ulg.ac.be

&

Dominique Bonjean
Kévin Di Modica
asbl Archéologie Andennaise
339d, rue Fond des Vaux
BE - 5300 Sclayn (Andenne)

Scladina@swing.be
www.Scladina.be

coordination / coördinatie

Philippe Crombé
Marc De Bie
Ivan Jadin
Marcel Otte
Michel Toussaint
Philip Van Peer

D / 2006 / 7181 / 1

Notae Praehistoricae 26-2006 : 177-184

Does the future of investigations in Mesolithic and Neolithic peat bog settlements lie under water?

Ole GRØN

Abstract

The paper focuses on investigation of Mesolithic and Neolithic sites in well-preserved submerged Stone Age landscapes as a possible alternative to the well-preserved peat bog sites that earlier, before the peat bogs were damaged by industrial peat exploitation and agricultural drainage, yielded sites with impressive preservation of organic materials. The Mesolithic dwelling and boat grave from Møllegabet are presented as examples of the possible quality of the finds from the submerged areas.

Keywords: Mesolithic, Neolithisation, Maritime archaeology, Dwellings, Burials, Landscapes.

1. Introduction

A serious archaeological problem is that the peat bogs that formerly provided Mesolithic and Neolithic settlement finds with a degree of preservation that allowed detailed observation of dwelling construction, economy and a series of other cultural aspects are deteriorating (e.g. Andersen *et al.,* 1982; Bokelmann, 1971, 1981; Grøn, 2003; Larsson, 1975; Troels-Smith, 1960). The last century's industrial peat exploitation and agricultural drainage has reduced the preservation in these basins to such a degree that we may have witnessed one of the largest cultural heritage disasters ever (Andersen, 1978).

Since the problems in focus in the study of the important Mesolithic-Neolithic transition are becoming

Fig. 1 — Corner of the floor of the Maglemose dwelling Ulkestrup I.

more and more detailed and dependent on the correlation of patterns of artefact and waste distributions and the settlement's physical constructions (floorings of bark, twigs, branches, remains of stakes, etc.), as well as numerous types of analysis from well-understood and well-documented contexts, access to sites with optimal preservation that at the same time represent as wide a spectre of site types as possible is essential for further development.

The submerged and well-preserved Mesolithic and Neolithic landscapes can in this development be seen as our last resort, even though they obviously represent only suited research areas in quite restricted zones. Erosion due to the currents and metre-thick layers of sediments in addition to the damaging wave-action of the changing sea level make investigation in large parts of the present sea-floor hardly profitable (Grøn, 1995). Therefore mapping and registration of the sites in the well-preserved areas and the develop-ment of appropriate management strategies is an important asset for the very near future.

The immediate impression is that a mapping and investigation of submerged sites is difficult and expensive. With the methodological developments going on at the moment, this issue appears much more differentiated, because water and water-saturated sediments allow short-cuts that are not possible on land (Grøn & Skaarup, 2004). From a cost-benefit point of view this should clearly be profitable.

The following is a short presentation of a) the Mesolithic dwelling floor and the boat grave excavated at a depth of 4.5 m in central Danish waters and b) the submerged Strynø Basin as an introduction to the type of submerged Cultural Heritage potential we are dealing with.

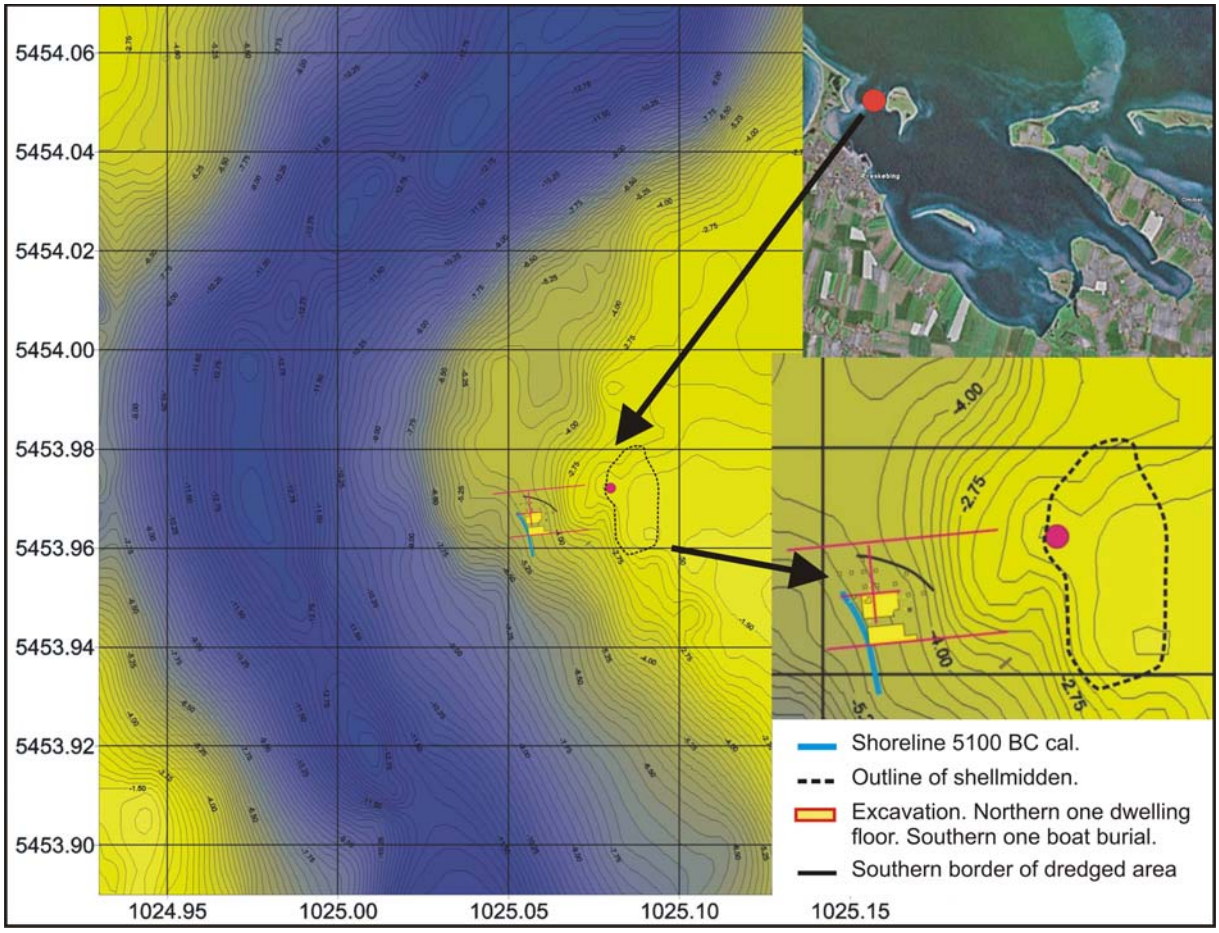

Fig. 2 — The site Møllegabet is located at the former mouth of an inlet. The excavated early Ertebølle dwelling and the boat grave (Møllegabet II) had been related to a sea-level around -4.75 m and the later Ertebølle shell midden (Møllegabet I) had been related to one around -2.5 m. The preserved settlement surface at the plateau with the dwelling and the boat grave was damaged in the 1920s by dredging. The black line north of the two features excavated shows the northern limit of the preserved cultural layer. The figure includes a satellite image (copyright Google Earth).

2. *Møllegabet II*

The submerged Ertebølle site Møllegabet consists of a settlement phase from the Early Ertebølle Culture related to a sea-level around -4.75 m as well as a later Ertebølle-phase with a 10 x 60 m large shell midden related to a sea-level around -2.5 m. As long as the basin to the east of the site, due to a lower sea-level, was closed by a low land-barrier, the site held a key position at the narrow channel leading to the inlet behind it, allowing optimal exploitation of the resources passing in and out. Larger sea mammals such as seal and porpoise played an important economic role (Skaarup, 1983; Skaarup & Grøn, 2004: 1-8; fig. 2).

A couple of human skeletons had already been found on the site during dredging in the 1920s. The find in 1990 of a boat grave with the scattered remains of a young man with a healed-up axe scar in his skull (fig. 3) interrupted the planned investigation of a well preserved settlement surface found in 1998. It is likely that the worn out and partly burnt dug-out of lime tree that had been used for the burial had been supported by the stakes found around it in shallow water (Skaarup & Grøn, 2004: 1, 34-40).

Three pieces of antler, three flat stones organized so that they looked like stepping stones crossing the old shore line with groups of thin stakes standing on each side of them, a small bow (for a drill or a toy), a couple of paddles, leister prongs, a small concentration of core axes, etc., indicated the context of the burial, which would most likely have been in a visually dominating position for travellers sailing into or out from the inlet (Skaarup & Grøn, 2004: 5, 34-40).

In 2002 the investigation of the settlement surface was resumed. During a short visit in the summer with a group of Danish sports divers a structure believed to be a dwelling floor was registered a few metres north of the boat burial. The feature was protected on a preliminary basis and shortly after, in the autumn of 2002, a systematic test excavation was carried out that made it clear that the feature measured approximately 6 by 4 m and contained what looked convincingly like a floor of bark, a small hearth, Ertebølle arrow points, bone, etc.

The excavation of the feature in 2003 proved it to be in a much better condition than we had dared to hope for. This became clear only during the following analysis of the data, because the visibility was in periods quite restricted during the excavation. The dwelling was constructed over an approximately 5 by 3 m large and 20 cm deep dwelling pit. In the northern half of the dwelling pit an earth-built platform had been constructed, covered by bark pieces. A number of the wall stakes following the edge of the dwelling pit and two inner stakes following the platform front and apparently related to the two inner hearths were found. One of the inner stakes and one of the wall stakes produced the datings: 5260-5070 BC cal. (K 6681) and 5250-5070 BC cal. (K 6682), which must be said to be a nice match and shows that the boat-grave is several hundred years later than the dwelling. The dwelling was dug into an earlier settlement

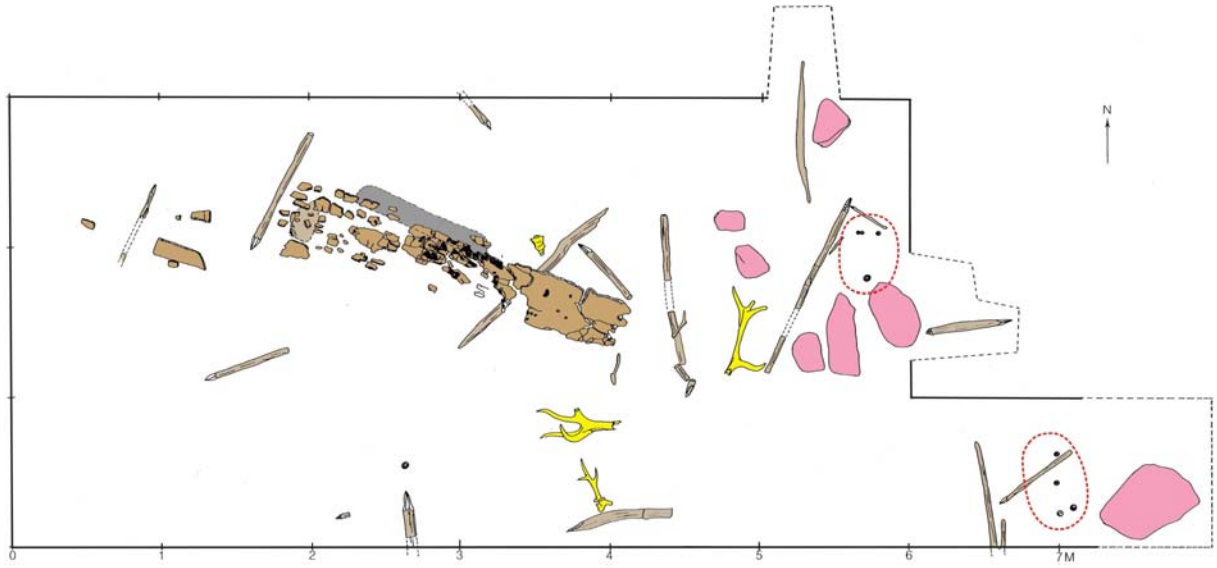

Fig. 3 — The boat grave from Møllegabet II dated to 4900-4730 BC cal. (K 5640) with the skeletal remains of a young man dated to 5230-4960 BC cal. (K 6040) due to the effect of marine food.

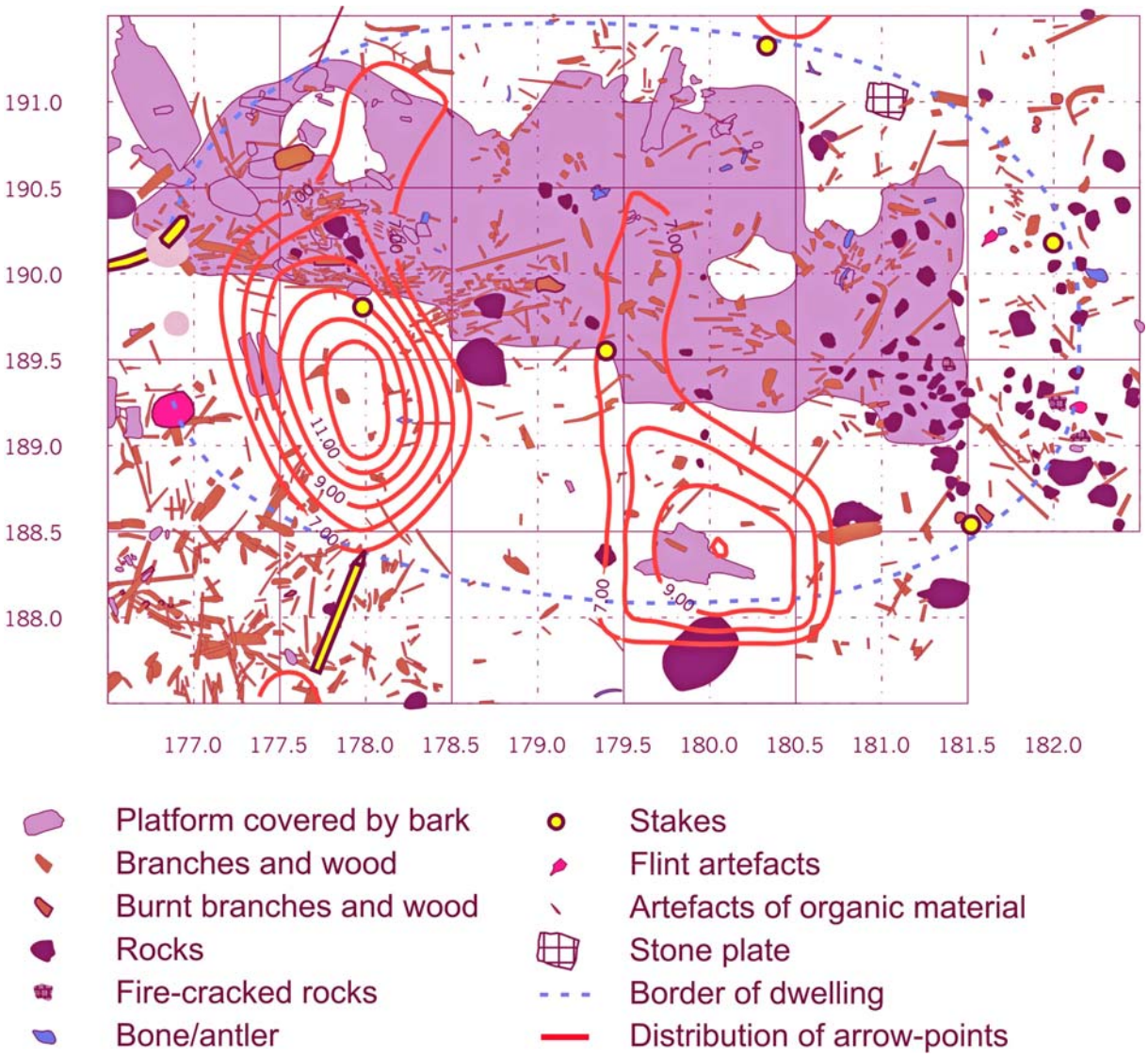

Fig. 4 — The Møllegabet II dwelling as excavated. The intensity curves show the characteristic distribution of the microliths in two concentrations that conjoined with the two flint-knapping areas. The northern part of the dwelling pit was taken up by an earth-built platform covered by a layer of bark pieces.

surface that included a small shell midden (Skaarup & Grøn, 2004: 41-74).

The floor in front of the platform originally consisted of a layer of twigs (many oak), approximately 20 cm thick, so that the difference between the height of the platform and that of the « floor » has been minimal. As examples of so thick floorings of twigs and branches are difficult to find in the ethnographic record, one may guess that the thickness can reflect that the floor was meant to be able to absorb large amounts of lithic waste, of which it actually contained 103 kg (Skaarup & Grøn, 2004: 41-74).

The excavation yielded furthermore 4,619 non-fish bones of, which only 111 could be identified to taxon due to their fragmentation, apparently reflecting « thorough processing » (Hodgets & Rowley-Conwy, 2004). Analysis of the 20,404 fish bones of which 97.9 % could be identified to species or genus suggests that the fish had been decapitated and gutted elsewhere (Cardell, 2004). A number of fruit stones (hawthorn and dogwood), as well as a significant amount of shells of hazelnut and acorns – as well as some intact specimens – were found in the floor (Mason, 2004).

It was important that the excavation followed an adapted land-excavation strategy with excavation in quarter-of-square-metre squares and 5 cm layers, as well as drawing of each layer at 1:10, levelling of all

Fig. 5 — Leveling under water during the excavation of the dwelling pit.

features of some importance and registration of a transverse section through the pit. This gave control of the data collected and allowed the elucidation of problems that had not been anticipated during the investigation (Skaarup & Grøn, 2004: 27-33).

The find of the dwelling was very important, because it helped to better understand features observed in a number of other Late Mesolithic dwellings and caused a revision of the understanding of the development of the dwelling's spatial organization through the Mesolithic (Grøn, 1999, 2003). It furthermore underlined the importance of well-preserved sites and the development of strategies for research in and management of this resource, where it exists.

3. *The Strynø Basin*

In 1999 Langelands Museum started investigating the submerged Stone Age landscape in a 15 by 15 km large lake basin that was flooded around 2500 BC (Grøn, 1990, 1995). It was obvious to start

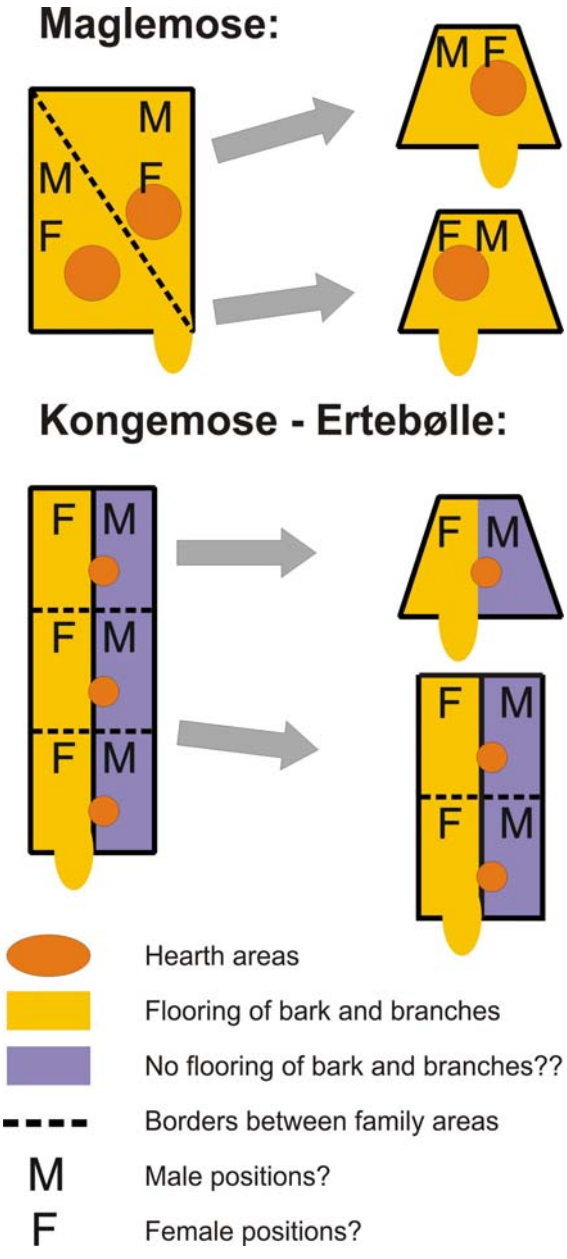

Fig. 6 — The model for the development of the organization of the dwelling space through the Mesolithic in southern Scandinavia.

seeing the preserved Mesolithic and Neolithic sites in their landscape context when tree trunks and stumps from the contemporaneous drowned landscapes were preserved in large areas due to the rapid sea-level rise in this area in the Late Mesolithic and Early Neolithic and the fact that both erosion and sedimentation was extremely limited in this basin (figs. 7 and 8).

Important factors were also that this extremely well-preserved cultural landscape was no deeper than maximum 7 m, which made diving very much less

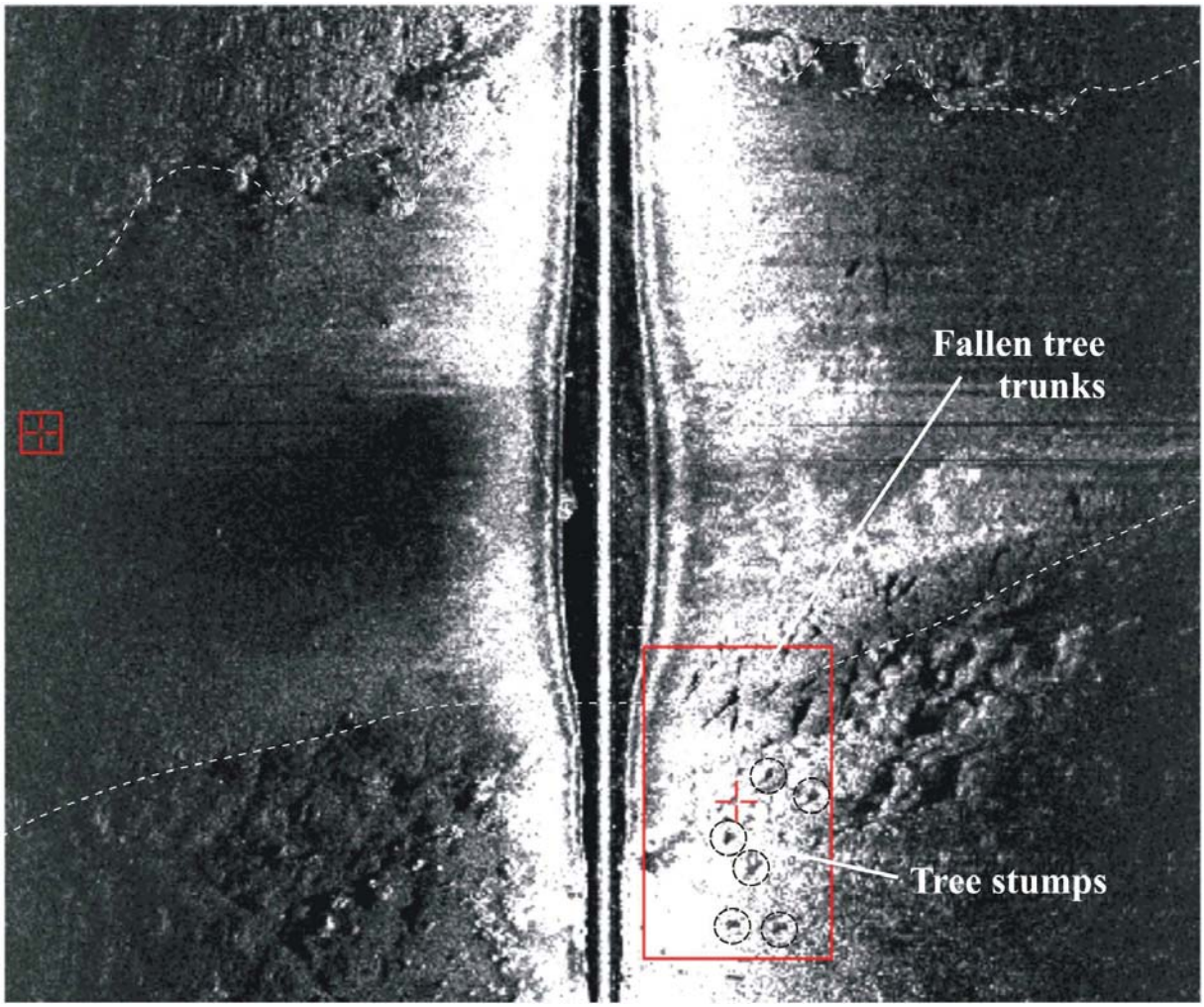

Fig. 7 — Side-scan recording showing tree stumps and trunks on the bottom on the sides of a small watercourse flooded approximately at the same time as the nearby excavated dwelling pit.

complicated than if the working depths had been below 10 m and, furthermore, that an intensive survey and investigation of the Neolithic sites in the surrounding land areas had already been carried out (Skaarup, 1985). The zone around the basin is probably one of the most dense concentrations of Funnel Beaker megaliths that exist, which must reflect that the basin has held a quite central position in the Neolithic (fig. 8).

About 60 cores have been taken and analysed to understand the formation and development of the lake basin, and a preliminary standard pollen diagram has been produced by Else Kolstrup. Intensive underwater surveys have been carried out with divers and with seismic sub-bottom profilers of increasing quality.

The Strynø basin today represents one of the most obvious areas for studying the transition from the Mesolithic to the Neolithic. A neighbouring basin may be equally interesting, but apart from these two, basins with such a degree of preservation are rare.

4. Perspectives

Apart from a strong representation of material from the Mesolithic-Neolithic transition, a small fraction of Late Palaeolithic finds derive from submerged positions in the Baltic. It would be surprising if systematic underwater surveys would not increase that material considerably.

In general, one should be very much aware of the sea-shores' position as highly productive areas. During the glaciations, the coasts will have represented warm zones with optimal living conditions compared to the cold inland areas, due to the fact that the sea

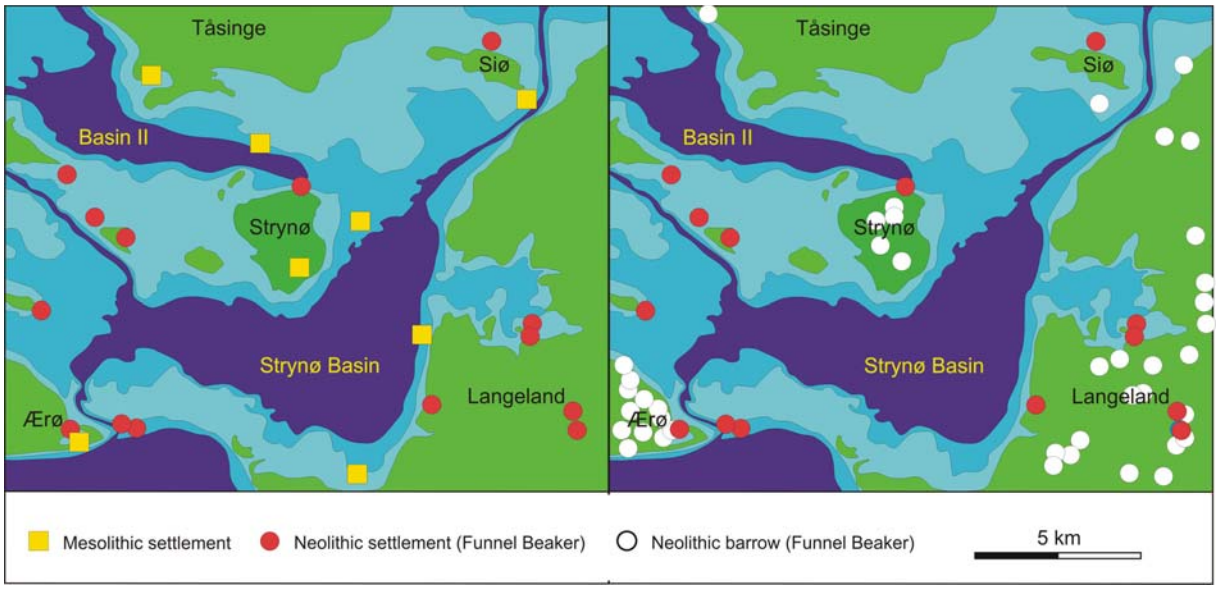

Fig. 8 — Map of known Mesolithic and Neolithic sites in and around the Strynø Basin.

water keeps the temperature close to zero Celcius. One can easily experience a temperature gradient of 20 to 30°C in the Arctic today in a narrow zone of a few kilometres from the shore. An implication of this is that settlements from, for instance, the last glaciation would be likely to appear in the coastal zones of areas that to a high degree today are submerged, where very little habitation activity should be expected in the colder inland areas.

It is obvious that we are at the beginning of a new development in Stone Age archaeology. One should not reject a priori the thought of Palaeolithic dwellings, settlements and landscapes preserved under water, even though the zones where this is the case should be expected to be quite restricted and covered by considerable amounts of sediment.

With the amounts of human and mammal bones that are turning up in the Dutch sector of the Channel Zone so far dated to the time intervals from 45-30 ky and 8-10 ky BP it would not be surprising if Mesolithic and Palaeolithic archaeology in Belgium in the not too distant future would gain access to sites with a degree of preservation difficult to imagine today (Glimmerveen *et al.*, 2004).

References

ANDERSEN K., 1978. Smuldbopladser i Åmosen. *Nationalmuseets Arbejdsmark* 1978: 103-109.

ANDERSEN K., JØRGENSEN S. & RICHTER J., 1982. *Maglemosehytterne ved Ulkestrup Lyng*. Det Kongelige Nordiske Oldskriftselskab, Copenhagen.

BOKELMANN K., 1971. Duvensee, ein Wohnplatz des Mesolithikums in Schleswig-Holstein, und die Duvenseegruppe . *Offa,* 28: 5-26.

BOKELMANN K., 1981. Duvensee, Wohnplatz 8. *Offa,* 38: 21-40.

CARDELL A., 2004. Fish Bones from the Late Atlantic Ertebølle Settlement of Møllegabet II, Ærø, Denmark. In: SKAARUP J. & GRØN O., *Møllegabet II. A submerged Mesolithic settlement in southern Denmark*. BAR International Series 1328, Oxford: 148-158.

GLIMMERVEEN J., MOL D., POST, K., REUMER J. W. F., VAN DER PLICHT H., DE VOS J., VAN GEL B., VAN REENEN G. & PALS J. P., 2004. The North Sea project: the first palaeontological, palynological, and archaeological results. In: FLEMMING N. (ed.), *Submarine prehistoric archaeology of the North Sea*, The Council for British Archaeology, York: 43-52.

GRØN O., 1990. Studies in Settlement Patterns and Submarine Bogs: Results and Strategy for Further Research. In: VERMEERSCH P. M. & P VAN PEER P. (eds), *Contributions to the Mesolithic in Europe. Papers Presented at the Fourth International Symposium « The Mesolithic in Europe », Leuven 1990*, Leuven University Press, Leuven: 81-86.

GRØN O., 1995. Research in Stone Age sites at Submerged Shore Zones. Strategies and Experiences. In: FISCHER A. (ed.), *Man & Sea in the Mesolithic. Coastal Settlement above and below present Sea Level*, Copenhagen: 403-408.

GRØN O., 1999. A Revision of the Model for Dwelling Organization in the Southern Scandinavian Mesolithic. In: THÉVENIN A. & BINTZ P. (eds), *L'Europe des derniers chasseurs. Épipaléolithique et Mésolithique. Peuplement et paléoenvironnement de l'Épipaléolithique et du Mésolithique*, Paris: 321-326.

GRØN O., 2003. Mesolithic dwelling places in south Scandinavia: their definitions and social interpretation. *Antiquity* vol. 77 (298/Dec. 2003): 685-708.

GRØN O. & SKAARUP J., 2004. Submerged Stone Age Coastal Zones in Denmark: investigation strategies and results. In: FLEMMING N. C. (ed.), *Submarine prehistoric archaeology of the North Sea. Research priorities and collaboration with industry*, CBA Research Report 141: 53-56.

HODGETS L. & ROWLEY-CONWY P., 2004. Mammal and Bird Remains from the Underwater Excavations at Møllegabet II. In: SKAARUP J. & GRØN O., *Møllegabet II. A submerged Mesolithic settlement in southern Denmark*, BAR International Series 1328, Oxford: 144-147.

LARSSON L., 1975. A Contribution to the Knowledge of Mesolithic Huts in Southern Scandinavia. *MLUHM* (= *Meddelande från Lunds Universitets Historiska Museum*) 1973-74: 5-28.

MASON S., 2004. Archaeobotanical Analysis – Møllegabet II. In: SKAARUP J. & GRØN O., *Møllegabet II. A submerged Mesolithic settlement in southern Denmark*. BAR International Series 1328, Oxford: 122-143.

SKAARUP J., 1983. Submarine stenalderbopladser i Det sydfynske øhav. In: *Antikvariske Studier 6. Fortidsminder og Bygningsbevaring*, Fredningsstyrelsen, Copenhagen: 137-161.

SKAARUP J. & GRØN O., 2004. *Møllegabet II. A submerged Mesolithic settlement in southern Denmark*. BAR International Series 1328, Oxford: 4-20.

TROELS-SMITH J., 1960. The Muldbjerg Dwelling Place: An Early Neolithic Archaeological Site in the Aamosen Bog, West Zealand, Denmark. *The Smithsonian Report for 1959*, Publication 4413, Washington: 577-601.

Ole Grøn
Institute of Archaeology
University College London
31-34, Gordon Square
WC1H 0PY London
England
olegron@btinternet.com