

66. Ålyst: a settlement complex with hut structures from the Early Mesolithic on Bornholm, Denmark

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The preliminary results from the excavation campaign of the Maglemose settlement complex at Ålyst, Bornholm are presented. The large-scale rescue excavation has revealed a settlement complex with at least 26 flint concentrations and at least two huts. The main lithic production in the concentrations is for blanks, in order to produce microliths. These flint concentrations have been interpreted as short-term transit, hunting and fishing camps. The remains of two huts have also been excavated on Ålyst, indicating another aspect of the internal settlement pattern of the site. Activity zones with larger pits or dumping areas have been observed around the huts. Inside the huts, the northern part is interpreted as a large activity zone with pits, hearths and a flint concentration. The southern part is void of finds and internal features. The lithic material shows a high degree of tool diversity compared to the lithic artefacts from the other flint concentrations on the site. It is argued that Ålyst must be interpreted as a complicated diachronic complex. In the present state of analysis, the settlement complex at Ålyst is best regarded as a location extensively visited during the early Mesolithic, probably by small groups of recurring hunter-gatherers.

Keywords: Early Mesolithic, Maglemose, Denmark, Bornholm, dwellings, large-scale excavation, settlement, lithic diversity, Mesolithic features.

Introduction

Since 1998, the Museum of Bornholm has been conducting large-scale salvage excavations on an Early Mesolithic site situated approximately 7km north of Rønne on the western

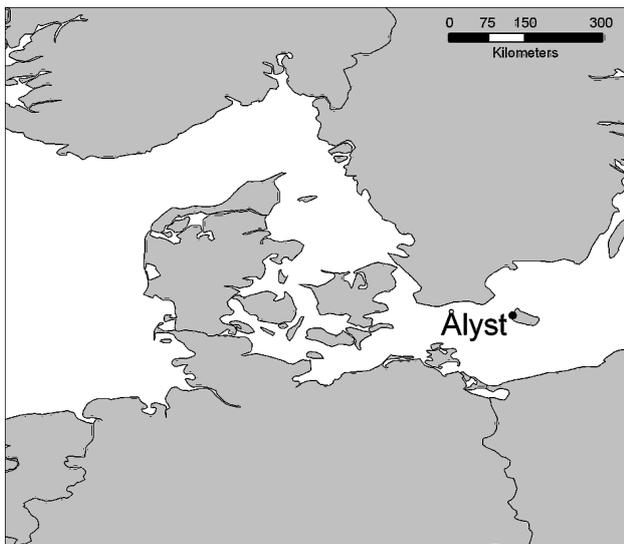


Figure 66.1. Location of Bornholm and the site of Ålyst in the Baltic Sea.

side of the island of Bornholm, Denmark (Figure 66.1). The site will be completely destroyed in the near future as a result of gravel extraction. As excavations, as well as investigations on the already rescued material, are still in progress, the final results are not yet available. Hence, the results presented in this paper must be regarded as preliminary and subject to later modifications.

Present day Bornholm is an island in the Baltic Sea, but that has not always been the case. In Preboreal times, approximately 9500–8200 cal BC, Bornholm was a peninsula connected to Rügen in Germany, but during the transition of the Preboreal-Boreal period, about 8200 cal BC, the peninsula was transformed into an island. This situation has provided us with a unique opportunity to study the settlement pattern of a Mesolithic group (Casati and Sørensen, this volume; Sørensen 2004). This paper presents a small part of these settlement aspects.

General situation

The Mesolithic research situation on Bornholm reflects an increased focus on the investigations of Maglemose settlements, but most of these are still based on surface collections (Casati, Sørensen and Vennersdorf 2004, 113 ff.; Nielsen 2001, 85 ff.). Unfortunately, the preservation

of organic material is poor on Maglemose sites as they are usually located on Late Glacial shoreline deposits, i.e. on sandy soil. Some of the settlements are placed close to the mouths of larger streams, or on sandy soil alongside streams and near a spring. The Maglemose settlement complex at Ålyst is one of these sites. It was situated on the Bagge Å (stream), at a point where the Muleby and Samsings streams join the Bagge, inland and approximately 1–3 km from the present-day shoreline of the Baltic Sea.

Large-scale excavations of Late Palaeolithic/Early Mesolithic sites in central parts of western Europe previously showed tendencies indicating extensive activity areas at these settlements, as seen for example at Niederbieber (Bulus 1992), Rekem (De Bie and Caspar 2000), and Verrebroek 'Dok' (Crombré 1998, 19 ff.). The site at Ålyst was known to contain material from the Maglemose period, scattered over a widespread area, as recorded in surveys by the amateur archaeologist, Holger Kapel, conducted in the 1940s (Becker 1952, 144 ff., fig. 22, n. 9; Nielsen 2001, 85 ff.). In the light of this, it was decided to employ an excavation method at Ålyst that would enable us quickly to excavate a larger area than is usual at a Danish Mesolithic site (Casati and Sørensen 2006, 241 f.).

Excavation

The excavation began with the removal of the topsoil with a mechanical digger, down to the top of a layer deriving from the Bronze Age; this layer concealed the underlying Maglemose layer. We proceeded to a third layer that was a combination of the other two, caused by animal intrusions. In this manner, an area of about 20,000 m² was uncovered and approximately 10,000 m² have been excavated in full

units of 1 m² (Figure 66.2). The Bronze Age layer, the Maglemose layer, and the underlying third layer were all sieved. In this way it was possible to locate both visible and latent structures in the Maglemose layer.

So far the excavation method has provided us with a unique picture of a settlement site, with at least 26 flint concentrations and traces of two hut structures. We are well aware that the reconstruction of the internal organisation of the site can only be achieved by analysing the spatial distribution of the recovered eco- and artefacts. The information presented, relating to the spatial distribution of the finds, is solely based on field-observations and not as yet on detailed spatial studies. Likewise, the functional variability of the concentrations is still to be determined. The majority of the concentrations vary in extent from 3 × 3 m to 5 × 7 m. Most are discrete and only a few overlap. All of the excavated concentrations consist mainly of stone artefacts (predominantly of local, nodular flint) that were collected on the island. The main lithic products from the concentrations are blades – i.e. blanks for producing microliths. There is a distinct lack of other lithic tool types in these concentrations. The lack of tool diversity in the flint concentrations could be an indication of a short-term settlement strategy. Unfortunately, because of the poor organic preservation, it is impossible to determine whether the site was occupied within the same season throughout the whole Early Mesolithic, nor can we decide whether it always had the same function within the settlement system. The site could, for example, have been used at a given moment as a hunting camp, while at other times functioning as a base camp. There are indications that these flint concentrations are seasonal settlements, because, once a year, from October to November, trout swim upstream in

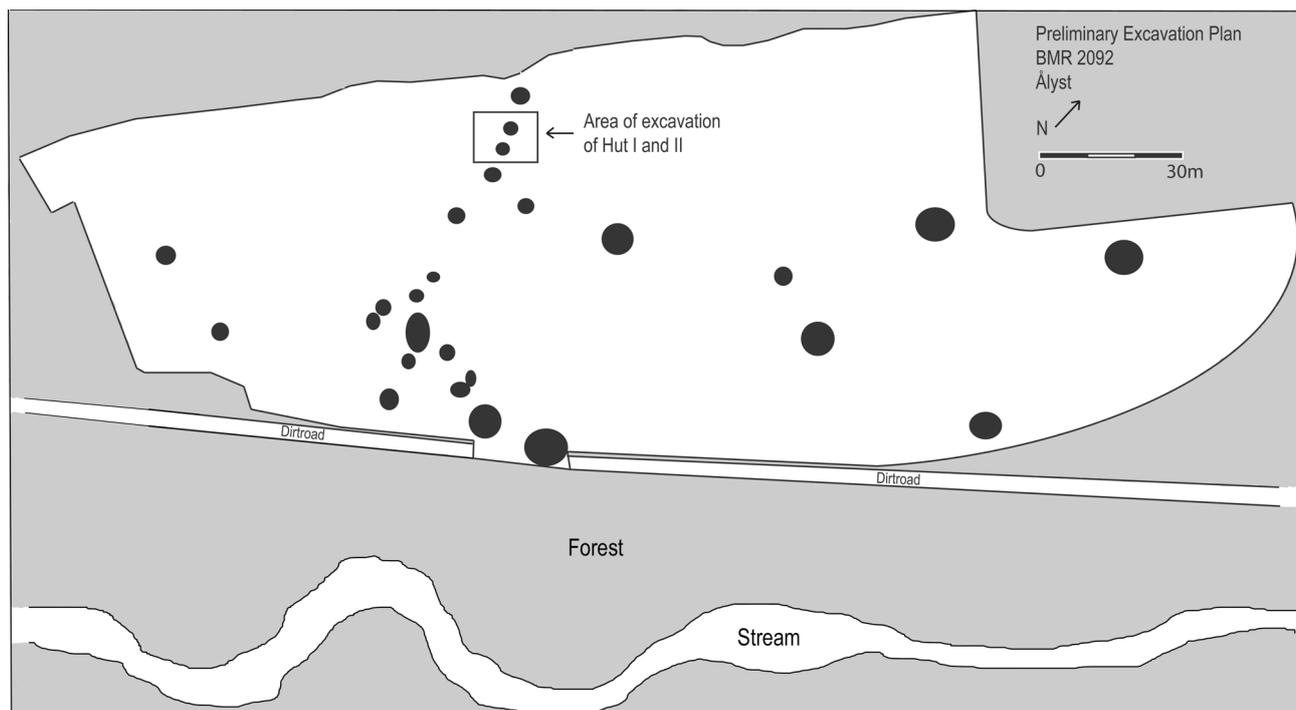


Figure 66.2. Schematic and preliminary excavation plan of the Ålyst site. Black dots indicate the concentrations.

the nearby Bagge Å to spawn. At this time local hazelnuts (*Corylus*) are also ripe and ready to be eaten. The numerous burnt hazelnut shells found in the flint concentrations add weight to the interpretation of seasonal activity in the late fall. Another motive for a returning settlement pattern at this particular spot could be the many topographical advantages for hunting; three streams run together in this region, and thus there are widespread wetlands in the area. This situation creates several forced passages, where hunting for game would be possible and favourable. All things considered, this is an ideal landscape for hunting, fishing and gathering.

On the other hand, other finds from Ålyst seem to substantiate that there was also a longer-term settlement strategy in operation. During excavations in 2002, it became clear that some of the structural evidence, in the northern part of the excavation area, represented the remains of two oval-shaped huts. These included visible features such as fireplaces, pits, postholes, and a high degree of lithic tool diversity (Figure 66.3).

Hut I

Hut I, which was partly excavated in full units of 1m², and partly in units of 0.25m², was orientated north–south and measured roughly 7 × 4m, with an interpreted entrance area towards the east. The interpretation of the place of entrance is substantiated by the lack of postholes and the fact that no lithics were found directly outside the entrance area. The 12 postholes constituting the hut's structural remains had the same morphology. They were diffuse and their colours were dark-brown, or grey, with a diameter and depth of 20–30cm. Furthermore, the postholes contained cuts for the posts and faint traces of them. Similar faint traces were observed previously at sites such as Svanemosen 28 (Grøn 1995, 75), Storlyckan (Larsson and Molin 2000, 10), and Årup (Nilsson and Hanlon 2006). Wooden poles with dimensions corresponding to these features are known from Mesolithic hut structures at Ulkestrup Lyng I and II (Andersen *et al.* 1982, 14 ff.) and Nivå 10 (Jensen 2001, 121). The backfill of the postholes at Ålyst revealed traces of human activity, providing finds such as lithic material, burnt hazelnut shells, small bits of charcoal, hammerstones, anvil stones and grinding stones; one of the features (A106) also revealed a small cache of nodular flint (Figure 66.4). This flint cache was a crucial find for the interpretation of the structure. A similar, but larger, flint cache on Bornholm was found during excavation of the Mesolithic site of Nørre Sandegård V. During its excavation, Becker noticed that the flints were located in a faint, greyish feature (Becker 1952, 111). These finds are undoubtedly Mesolithic, as the local raw material of nodular flint on Bornholm in general is ascribed to the Mesolithic. During other periods of prehistory, the population primarily made use of imported flint. The appearance of this particular feature was thus a guide to the morphology of other Mesolithic features during excavations on the site. This interpretation is supported by the first accelerator mass spectrometer (AMS) radiocarbon

dates we obtained from the site. Our dating strategy is based on single-entity dating of charred hazelnut shells. A charred hazelnut shell from the feature containing the flint cache is dated to 8925±65 BP (8280–7910 cal BC; AAR-9876; Bronk Ramsey 2005).

A generally accepted method for locating the former positions of hearths on Mesolithic sites is to plot the burnt arte- and ecofacts, assuming that the squares with the highest density coincide with the centre of former hearths. There was no visible hearth in Hut I, but by plotting the burnt lithic material and charred hazelnut shells, a latent hearth appeared in the north-western part of the hut. Here we located a flint concentration (approximately 4m²) containing 2050 pieces of flint. The concentration contained debitage and different tool types, such as microliths together with knives, scrapers, burins, and greenstone axes. The larger artefacts (hammerstones, anvil stones, cores, etc.) created a wall effect, respecting the outlines of the postholes (Figure 66.4). The southern part of the hut was almost void of finds. Within the structure there were some small, light-brown, greyish-black pits, approximately 30–40cm in diameter and depth. These contained charred hazelnut shells, burnt bones and lithic artefacts, which typologically date the pits to the Maglemose culture. Outside the hut, some larger pits were excavated, approximately 1–2m wide and 40–50cm in depth (Figure 66.3). These pits are likely to have been in use at the same time as the hut. This hypothesis will be challenged by future refitting analysis of the lithic material from inside the hut and from the pits, as well as from the AMS radiocarbon dates currently being processed.

Hut II

In an area just south-east of Hut I, we excavated another hut structure (Figure 66.3). Hut II, which, for several reasons, was excavated in full 1m² units, had an oval appearance. It was orientated north-south and measured 7 × 4m, with a darker coloured area of approximately 2m² towards the east. This darker coloured area, which was slightly depressed, contained fragmented lithic material, as well as small pieces of charcoal and burnt hazelnut shells; it is interpreted as the entrance area. The 16 postholes were less distinct than those of Hut I, and all had a similar appearance. They were dark- and light-brown, with a diameter of approximately 20–30cm and with a depth of 10–30cm. The southern part of the structure was not as well preserved as the northern part. The backfill of the postholes contained the same type of material as Hut I, i.e. charcoal, burnt hazelnuts, and lithics, although some of the postholes contained larger stones, which have been interpreted as packing. Inside the hut there was a larger flint concentration (approximately 4 × 5m and with 1000 pieces of flint) with various lithic tool types, including microliths, knives, scrapers, splintered pieces, and burins. The main concentration of lithics and tools lay in the northern part of the hut, although some lithics were found outside (Figure 66.5). This distribution was influenced by a large pit and two tree falls, which were noticed when most of the Maglemose layer had been



Figure 66.3. Excavation plan of Huts I and II.

excavated. These features contained a large amount of lithic material, and disrupted the real picture of the flint concentration. The southern part of the hut was almost void of finds, which, as with Hut I, could be interpreted as a cleared area where the inhabitants might have slept. The larger objects, such as hammer stones, anvil stones and flint cores, again display a wall effect, respecting the outlines of the hut created by the postholes.

A visible hearth was excavated in the centre of the hut (A270). It consisted of 20 fire-cracked stones, located in a compact stone layer. The backfill was dark brown at the centre and black and sooty at the border. In the lower level of the stone packing, a hammerstone, a lanceolate with lateral retouch, burnt flint, and charred hazelnut shells were observed. At the bottom level of the hearth, a red sandy layer was recorded: this was probably the result of the intense heat of the fire. This hearth differed from the pits and hearths of the Bronze Age layer, which were deeper, larger, and contained bigger fire-cracked stones, together with dumps of ceramics. The Bronze Age fireplaces also have a higher stratigraphic position and their fire-cracked stones are often placed in a circle. The hearth in Hut II was thus presumed to be of Maglemose date. The AMS radiocarbon sample from this hearth supports this assumption, showing 8870 ± 65 BP, (8870 ± 65 BP; $8240-7780$ cal BC; AAR-9881; Bronk Ramsey 2005).

Inside Hut II, five small pits were found. These pits were quite homogeneous and had a dark- to light-grey fill. They could be typologically dated to the Maglemose culture by their contents, which comprised lithic material, charcoal, burnt hazelnut shells, and some fire-cracked stones. Three of the pits were located around the fireplace (A270). These pits might be indicative of food preparation around the hearth, or they might represent the remains of former fireplaces in the hut, subsequently reused as pits. Outside Hut II there were some larger pits, approximately 1–2m wide and 40–50cm deep, with a dark- to light-greyish filling (Figure 66.3). These pits could also be typologically dated, as they contained lithics from the Maglemose culture. Furthermore, we found burnt hazelnut shells, burnt bones,

and fire-cracked stones in the pits. At present we are unable to determine whether these pits are synchronic with the hut; it is possible that they reflect several different habitations in the area, thus disturbing the original picture of activity zones in the hut and its dumping areas. Future AMS radiocarbon dates, as well as thorough refitting analyses of the lithic material and fire-cracked stones, should clarify the relationships between the postholes, pits, fireplaces, and presumed structures in and outside the hut.

Comparison

The two huts show remarkable similarities in orientation, size, entrance area, fireplaces and pits, as well as in the combination of lithic tool types: knives, a few scrapers, and several hammer and anvil stones are most abundant in both. However differences are seen with respect to the microliths. Lanceolates with lateral retouch and triangular microliths dominate in Hut I, while the microlith inventory from Hut II was confined to lanceolates with lateral retouch. This raises the question of the flint concentrations in the two huts: are they at all contemporary with the huts? To prove this hypothesis it is necessary to undertake extensive refitting between the flint concentrations, postholes and the pits, both inside and outside of the huts.

As the colour of the postholes in the two huts varies, we initially interpreted the huts to be diachronic, but in the light of the available radiocarbon dates we have to acknowledge the possibility that the huts were indeed synchronic – future work is required to shed light on this topic. It may also be noticed that interpretations of the fireplaces in the huts vary from a presumed fireplace (based on concentrations of burnt flint and hazelnut shells) in Hut I, to an obvious fireplace (with no concentrations of burnt flint or hazelnut shells) in Hut II. In both huts we found that the small pits inside the huts were all concentrated around the fireplace, possibly indicating a food preparation area. Both huts appear to have had a main activity zone in the northern part, whereas the southern part is void of finds: this could indicate a sleeping area for one to two families.

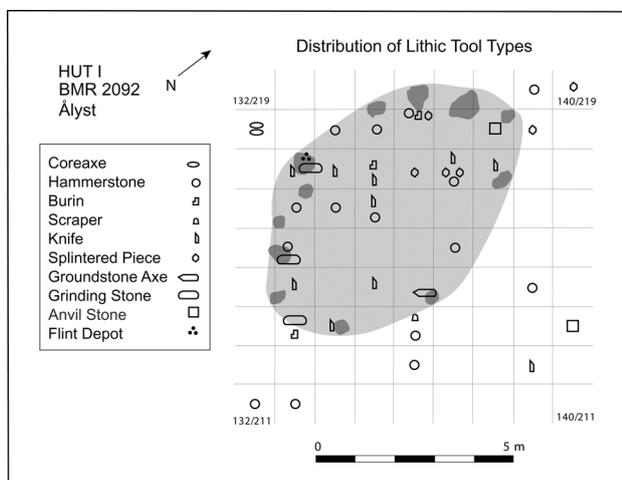


Figure 66.4. Distribution of lithic tool types in Hut I.

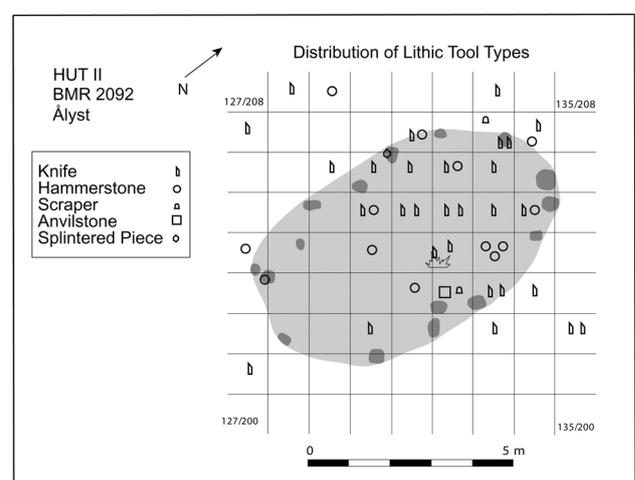


Figure 66.5. Distribution of lithic tool types in Hut II.

The artefact typology in the two huts clearly indicates that a broad spectrum of activities took place here, unlike in the other concentrations on the site, where the main products were blades for microlith manufacture. Apart from this, a most interesting observation concerning these two huts is that the southern end of the structures lacked lithic finds. Most previously published huts from the Maglemose period are based on studies of lithic material and subsequent observations of presumed structures, but they have rarely been combined with specific structures such as postholes. The excavation method applied at Ålyst, together with the state of preservation at the site, make it possible to combine postholes, flint concentrations, putative structures and pits in an interpretation which recognizes various areas of the huts, which, although they lack finds, are, nevertheless, part of the structure.

But is the picture we see at Ålyst unique and only valid for Bornholm? There are strong indications that this is not the case. At a site called Årup in eastern Scania, southern Sweden, a hut structure similar to the Ålyst huts was excavated in 2003 (Nilsson and Hanlon 2006). At the time of excavation they did not know of the structures at Ålyst. The Årup feature shows a remarkable similarity to those at Ålyst in terms of orientation, dimensions and so forth. Collaboration to conduct comparative analyses is planned for the near future.

Conclusions

Without the results of extensive refitting, microwear analysis, and AMS radiocarbon dating, a reliable interpretation of the intra-site variability and spatial patterning remains difficult. However it is beyond doubt that different factors, such as the range of activities performed, group size, duration of occupation, and frequency of reuse of the individual artefact loci, will have played a role in the formation of the site. In particular, group scale and duration of occupation have a certain effect on the size and artefact density of the units. It can be presupposed that artefact density and size will increase as the number of inhabitants and/or the length of time a place is occupied increases. However, the increase in density could be a sign of several repeated occupations on the same spot. Future refitting analyses and AMS radiocarbon dating will hopefully indicate if the concentrations are chronologically uniform, or represent different diachronic occupations.

Furthermore, we expect that the smallest artefact units excavated, i.e. small scatters of charred hazelnut shells and/or bone fragments, as well as the scattered lithics recovered in between the different concentrations, must be interpreted as the faint remains of peripheral activities.

All of this indicates that Ålyst, as a settlement, must be interpreted as a complicated diachronic complex. As well as a short-term, there was also a longer-term settlement strategy, with different needs and functions. Given the current level of our knowledge, the site at Ålyst can best be regarded as a location extensively visited during the early Mesolithic, probably by small groups of recurring hunter-gatherers.

With such a vast amount of material, more questions arise with each answer found. Future work will include further study of the finds revealed so far, and a project based on three-dimensional modelling is already in hand (Garhøj Larsen, this volume). Furthermore, AMS radiocarbon dating of the different flint concentrations, refitting analyses, and a thorough study of the flint concentrations are all planned. A detailed field survey along the nearby streams is currently underway to produce a detailed picture of the settlement pattern and raw material distribution. We also hope to make a wide-ranging study of post-excavation research and comparisons with other Maglemose sites in the Baltic region.

References

- Andersen, K., Jørgensen, S. and Richter, J. 1982. *Maglemose hytterne ved Ulkestrup Lyng*. Nordiske Fortidsminder, Series B, vol. 7. København, Det Kongelige Nordiske Oldskriftselskab.
- Becker, C. J. 1952. Maglemosekultur på Bornholm, in *Årbøger for Nordisk Oldkyndighed og Historie 1951*, 96–177. København, Det Kongelige Nordiske Oldskriftselskab.
- Bolus, M. 1992. *Die Siedlungsbefunde des späteiszeitlichen Fundplatzes Niederbieber (Stadt Neuwied)*. Ausgrabungen 1981–1988. With contributions from G. Roth, S. Stephan and R. C. Rottländer. Monographien des Römisch-Germanischen Zentralmuseums 22. Mainz, Römisch-Germanisches Zentralmuseum.
- Bronk Ramsey, C. 2005. OxCal 3.10. WWW program and documentation available at <http://www.rlaha.ox.ac.uk/oxcal/oxcal.htm> (accessed 10/2007).
- Casati, C. and Sørensen, L. 2006. Ålyst – et boplads komplekset fra Maglemosekulturen på Bornholm. Foreløbige resultater baseret på ukonventionelle udgravningsmetoder, in B. V. Eriksen (ed.), *Stenalderstudier*, 241–75. Århus, Århus University Press.
- Casati, C., Sørensen, L. and Vennersdorf, M. 2004. Current research of the Early Mesolithic on Bornholm, Denmark, in T. Terberger and B. V. Eriksen (eds.), *Hunters in a changing world: Environment and Archaeology of the Pleistocene–Holocene Transition (ca 11000–9000 BC) in Northern Central Europe*. Workshop of the UISPP-Commission XXXII at Greifswald in September 2002, 113–32. Internationale Archäologie - Arbeitsgemeinschaft, Symposium, Tagung, Kongress 5. Rahden/Westphalia, Verlag Marie Leidorf.
- Crombé, P. 1998. *The Mesolithic in Northwestern Belgium. Recent excavations and surveys*. British Archaeological Reports, International Series S716. Oxford, John and Erica Hedges.
- De Bie, M. and Caspar, J. 2000. *Rekem. A Federmesser Camp on the Meuse River Bank*. Acta Archaeologica Lovaniensia Monographiae 10, 2 vol. Leuven, Leuven University Press.
- Grøn, O. 1995. *The Maglemose Culture. The reconstruction of the social organisation of a Mesolithic culture in Northern Europe*. British Archaeological Reports, International Series S616. Oxford, Tempvs Reparatum.
- Jensen, O. L. 2001. Kongemose- og Ertebøllekultur ved den fossile Nivåfjord, in O. Lass Jensen, S. A. Sørensen and K. Møller Hansen (eds.), *Danmarks Jægerstenalder – status og perspektiver*, 115–29. Hørsholm, Hørsholm Egns Museum.
- Larsson, M. and Molin, F. 2000. A New World: Cultural Links and Spatial Disposition – The Early Mesolithic Landscape in

- Östergötland on the Basis of the Storlyckan Investigations. *Lund Archaeological Review* 6, 7–22.
- Nielsen, F. O. S. 2001. Nyt om Maglemosekultur på Bornholm, in O. Lass Jensen, S. A. Sørensen and K. Møller Hansen (eds.), *Danmarks Jægerstenalder – status og perspektiver*, 85–99. Hørsholm, Hørsholm Egns Museum.
- Nilsson, B. and Hanlon C. 2006. Life and work during 5,000 years, in P. Karsten and B. Nilsson (eds.), *In the Wake of a Woman. The Pioneering of North-eastern Scania, Sweden, 10,000–5000 BC. The Årup Settlements*, 57–178. Arkeologiska Undersökningar, Skrifter 63. Stockholm, Riksantikvarieämbetet.
- Sørensen, L. 2004. Coastal Research Potential in the Early Mesolithic on Bornholm, in A. Beck, H. N. Frederiksen, L. Harvig, C. Juel, K. Langsted, T. Rasmussen and G. B. Ravnholt (eds.), *Kontaktstencil 44*, 9–26. Copenhagen, University of Copenhagen.