

## The palisade enclosure at Hyllie, SW Scania

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Malmö Heritage carried out an archaeological excavation of the Middle Neolithic palisade enclosure at Hyllie in Malmö in 2001–2002, including the remaining parts of the enclosure that had not been investigated previously and some areas outside the palisades. This made it the most extensively excavated palisade enclosure in Scandinavia so far. The radiocarbon results and finds in post-holes and a few other related features place the enclosure within the Battle Axe Culture. Flakes from the production of square-sectioned axes/chisels were found in post-holes and pits, together with flake scrapers, bones of both domestic and wild animals and pottery. The finds will make an important contribution to our understanding of activities linked to the palisade enclosure. General questions concerning the chronology, economy, social structure and ritual tradition of the Battle Axe Culture can also be discussed in the light of the palisade enclosure and its finds, and also the classical archaeological problem of the Middle Neolithic A – Middle Neolithic B transition.

*Keywords:* palisade enclosure, flint axe manufacturing, Battle Axe Culture, MN A–MN B transition

### Introduction

The palisade enclosure at Hyllie was excavated in 2001–2002 (Fig. 1), in the course of the large-scale archaeological investigations preceding the construction of the City Tunnel in Malmö, south-west Scania, an infrastructural project intended to expand the railway network between Malmö and Copenhagen. The archaeological investigations were carried out by Malmö Heritage within a project called the City Tunnel Project, the general goals and methods of which are presented in the publication *“Citytunneln och spåren i landskapet”* (Lindhé et al. 2001). The archaeological remains investigated within the project ranged from the Mesolithic to the Middle Ages.

This article will present a brief general description of the Middle Neolithic B (MN B) palisade enclosure and the related features and finds. The final section will also briefly touch upon the cultural implications and significance of the archaeological material. The results presented here are to be considered preliminary, and the remarks made in the last section should be seen as starting points for further discussion on problems



Figure 1. Map of south Scandinavia with sites mentioned in the text: A. Hyllie, B. Bunkeflo, C. Dösjebro, D. Helgeshøj, E. Vasagård and F. Rispebjerg.

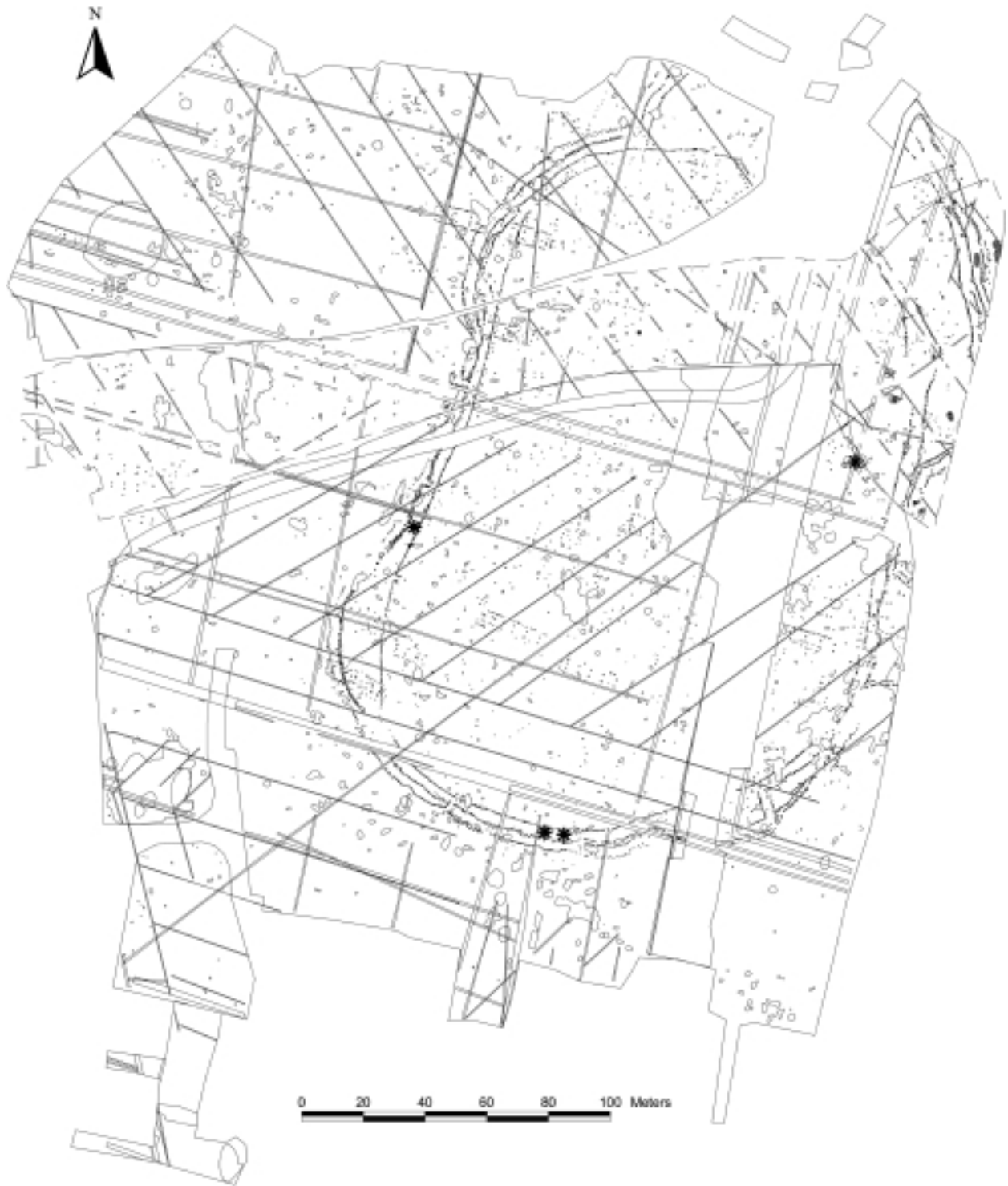


Figure 2. General plan of part of the excavated area with all features included. Broken lines indicate the area excavated in 1989. The locations of the features described in the article are also indicated (black symbols).

concerning such matters as the function and social context of the palisade enclosure. A site report on the excavation will be published, with descriptions and basic interpretations of the archaeological remains (Brink & Hydén, in press). Further analyses of the palisade enclosure, along with an assessment of the remains from this period in the Malmö area, will be made in order to discuss the enclosure in a local context (Brink, in prep.).

The excavated area was about 7.9 hectares. Apart from the palisade enclosure, settlement remains from the Early and Middle Neolithic (EN–MN A) Funnel Beaker Culture, the Late Neolithic (LN) and the Early Iron Age were also investigated at the site. The Funnel Beaker Culture was represented by a number of pits and a few occupation deposits, the LN by house remains and the Early Iron Age by long-houses, pits and wells.

The palisade enclosure was discovered and partly investigated by Malmö Heritage in 1989 (Fig. 2). This investigation has not yet been reported on in full, but the palisade enclosure has been described and discussed in a number of articles (Almqvist & Svensson 1990; Svensson 1991, 2002). It was the first palisade enclosure from the MN B to be discovered in Scandinavia. A radiocarbon date and finds from the post-holes placed it within the Battle Axe Culture (see below). A site report has been published on the test excavation preceding the main excavation of 2001–2002 (Brink 2002), the findings of which generally supported earlier conclusions on the dating and basic character of the site.

### The palisade enclosure

The palisade enclosure was built in a rather undramatic hummocky landscape about 4 km from the present coastline. It was situated on the western slope of a low hill, with wetlands close to its western and southern parts, while the eastern and northern parts were facing higher ground. The height difference within the enclosure did not exceed 3 m. The palisades enclosed an area of about 4 hectares and consisted of three to five rows of posts. The enclosure was oval in shape and measured approximately 250 × 160 m (Fig. 2). The large inner area measured about 220 × 140 m. Modern activities have had their impact on the enclosure (as can be seen in Fig. 2), mostly in the northern and eastern parts, where it had been interrupted by modern roads and large trenches. Large Iron Age pits and smaller drainage ditches have also had an effect on its preservation, making it harder to assess the number of entrances and their character and various other de-

tails of the construction. A total of 3229 post-holes have been attributed to the enclosure, 862 of which were documented in 1989 (Svensson 1991:97). Of the 2367 post-holes documented in the recent investigation, 1362 (58%) were excavated. In complex parts of the enclosure, i.e. at entrances and where deposits of flint were found, all the post-holes were excavated, while in the less complicated parts with low numbers of finds only every second post-hole was examined. This has given a detailed picture of the construction and of the general distribution of finds in the post-holes, although some individual finds may have been missed. There were quite large differences in size between the post-holes, which were c. 0.20–0.60 m in width and c. 0.02–0.60 m in depth (measured after removal of the topsoil). The palisade was built using round posts c. 0.10–0.40 m in diameter, as judged from the post-marks, the distance between them generally varying between c. 0.20 m and 0.40 m, although with larger distances in some parts of the enclosure (see Fig. 3, for example). It seems as if the posts were placed in individual holes, although remains of a few ditches were documented in the inner row in the north-western part of the enclosure (Fig. 3). This may indicate that the digging of the individual post-holes was preceded by the digging of ditches, at least in some parts of the enclosure. If this is the case, the ditches have not been deep enough to survive modern cultivation and removal of the topsoil. The posts generally seem not to have been sharpened before placement in the post-holes. The heavy clayey till that predominates on the hill would have made it hard to drive the posts into the ground, but examples of sharpened posts that had been partly driven in were found in the lower-lying, more sandy south-western parts of the enclosure. Supporting stones were found in some post-holes, although not regularly, nor in large quantities.

The post-holes of the inner row were generally smaller, with an increase in size in the outer rows. This indicates a lower inner palisade, and a higher, more sturdy outer one. The palisades were probably at least 1.5–2 m high (see Svensson 2002:46 for a discussion on this). The inner row of posts was basically the only row that was in a constant position in relation to the other rows all the way around the enclosure (Fig. 2), whereas the other rows showed a more complicated pattern in places, with branching and a shift of position within the structure (Figs. 2 & 3). The inner row can be interpreted as the “foundation” row in this respect, outlining the general plan of the structure and forming the basis for the construction of its more complex parts. This interpretation is merely hypothetical,



Figure 3. The north-western part of the palisade enclosure (filled features), illustrating the complexity of the rows of posts. The entrance to the north-east part of the enclosure is indicated (black arrow).



Figure 4. The south-east entrance to the palisade enclosure (filled features). Note the small gap in the inner row, possibly indicating a narrow entrance.

of course, and cannot be proved archaeologically. It does lead, however, to the general question of the relative chronology of the individual rows of posts. As noted by Svensson (1991:102), there is no stratigraphic evidence such as overlapping rows to suggest the presence of different phases. The rows also gave a general impression of “fluidity” in the relationship between them, in details such as shifts in their relative positions and in the lay-out of the entrances (see below). All of these features, in combination with the lack of overlapping, indicate one homogeneous structure.

A total of four large entrances have been found, one of which was discovered in 1989 (Svensson 1991:97–98; 2002:37). Two of them were situated only about 35 m apart in the western part of the enclosure, and the other two in the south-western and south-eastern parts (Figs. 2 & 4). This means that they were all directed towards the wetlands to the west and south of the enclosure. The entrances seem to differ in one respect. One of the western entrances and the entrance in the south-west clearly led through all of the post rows, straight into the enclosure, whereas the other two entrances led through the outer and middle rows but direct access seems to have been blocked by the inner row, forcing the user to turn either to the right or to the left to find a way through the inner row. There were

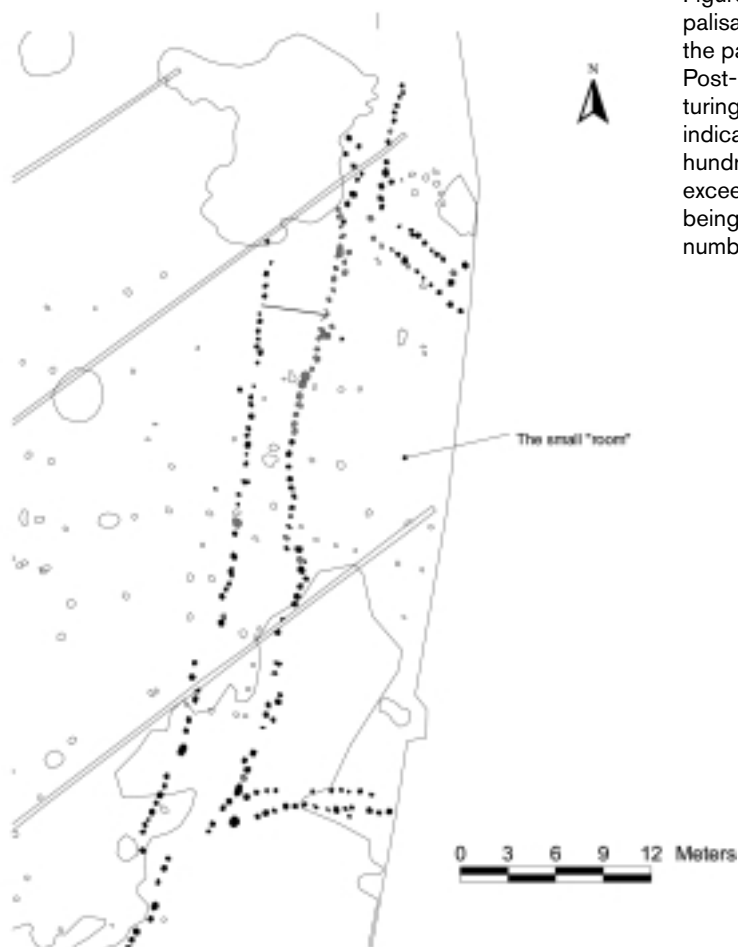


Figure 5. The small “room” in the eastern part of the palisade enclosure. All the post-holes attributed to the palisade enclosure are indicated (filled features). Post-holes partly filled with flakes from the manufacturing of square-sectioned flint axes/chisels are also indicated (in grey). Several post-holes contained hundreds of flints, and in one case the number exceeded 3,000, partly a consequence of the flints being burnt before deposition, resulting in a large number of splinters. Note the entrance (black arrow).

similar details in the inner row of posts in front of both entrances, however, indicating small gaps, 0.5–0.6 m wide. These may have functioned as narrow openings, thus complicating the interpretation of the entrances as not leading straight through the palisades (Fig. 4). As mentioned above, it was possible to turn either to the right or to the left (at all four entrances) in order to gain access to the areas between the inner and middle rows of posts, but access to the areas between the outer and middle rows seems to have been blocked, at least at three of the entrances. In addition to the large entrances, there were a few smaller ones leading through the inner row and also from the inside leading through the inner and middle rows into separate “rooms” in the north-eastern and eastern parts of the enclosure (Figs. 3 & 5). Apart from this, there were a number of gaps in the rows of posts in different parts of the enclosure, which may have functioned as openings, making it possible to gain access to parts of the enclosure via a more complicated route.

Species analyses of charcoal from the post-holes has

shown that the wood originated to a large extent from young stems of oak (*Quercus* sp.) and ash (*Fraxinus excelsior*). Other species are also represented, but the evidence suggests that the enclosure was built mainly of these two. This confirms the results of the test excavation (Brink 2002:63). When discernible, charcoal and soot was generally present in both the post-mark and the surrounding filling, although often with a concentration in the post-mark itself. Small fragments of burnt clay could also be seen in some post-holes, possibly indicating that the palisades were at least in part burnt down. This was the case with the palisade enclosure of the early Battle Axe Culture at Dösjebro, also in south-west Scania (Svensson 2002:34), and such an interpretation is also supported by the fact that a large number of the post-holes contained more than one species of wood, probably as a result of a mixture of charcoal from different posts finding its way into the post-holes after burning of the palisades.

So far two radiocarbon dates obtained from charcoal from post-holes are available: 4050±90 BP (Lu-

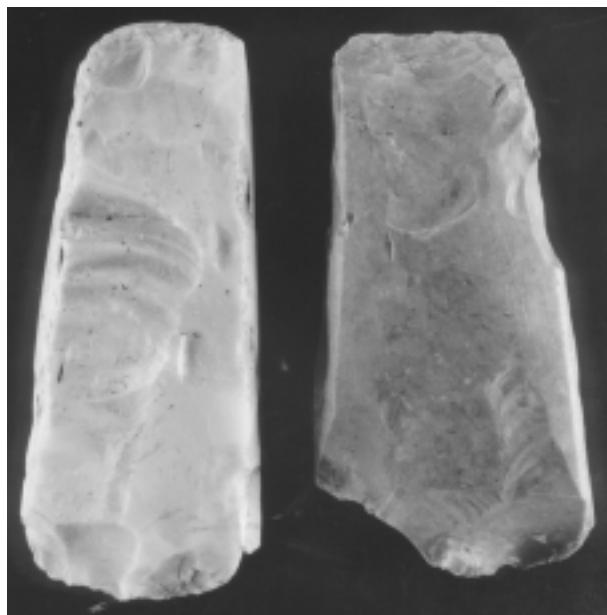


Figure 6. Flint axes found in an entrance post-hole (left) and in one of the pits. Photo: Andreas Nilsson /Malmö Museer. Scale c. 1:5.

3189, 2860–2460 cal BC, 1 $\sigma$ ), and 4230 $\pm$ 65 BP (Ua-17346, 2920–2680 cal BC, 1 $\sigma$ ) (Svensson 1991:102; Brink 2002:59). These place the palisade enclosure within the MN A–MN B transition, corresponding to the late Funnel Beaker Culture and the early Battle Axe Culture of south Scandinavia. The latter date, together with the find material described below, suggests that the enclosure should be attributed to the early Battle Axe Culture.

Finds in the post-holes were scarce, generally consisting only of small amounts of burnt and unburnt flint, small potsherds and some fragments of bone. Most of them cannot be interpreted as the result of deliberate deposition. There are some exceptions, however. During the investigation in 1989 a secondarily worked, thick-bladed, hollow-ground, polished flint axe of Malmer's type 1 (Malmer 1962:400–403) was found in one of the post-holes of the entrance (Fig. 6). This type of axe is a common artefact of the Battle Axe Culture. This specimen had been deposited with the edge facing downwards and shows signs of usage in the form of coarse flake scars extending from the edge towards the neck and crush marks on the secondarily worked edge (Högberg, pers. comm.). Two flake scrapers and a retouched blade were found in other post-holes, possibly the result of deliberate deposition, and a few potsherds attributed to the later part of the Battle Axe Culture were also found (Svensson 1991:99–102; 2002:37). Another flake scraper, which can also be in-

terpreted as a deliberate deposition, was found in a post-hole at the south-western entrance. Apart from these few finds, large amounts of flint had been deliberately deposited in the fillings of the post-holes surrounding the entrance to a small "room" in the eastern part of the enclosure when erecting the posts (Fig. 5). The material consists of both burnt and unburnt flints, including flakes originating from the production of square-sectioned axes or chisels. Polished fragments from the edges of hollow-ground axes could indicate that this was the type of axe manufactured. The concentration of flakes from axe/chisel production in this part of the enclosure could indicate that this was the main place where such work was done, although flints of this kind were also found in large pits situated in other parts of the enclosure (see below). No flakes from the initial stages of axe/chisel production were to be found in the post-holes, however, indicating that the initial shaping was done elsewhere, possibly at the sources of the raw material on the coast a few kilometres away (see Högberg 2002:139–142).

As mentioned above, there were large amounts of burnt flint in the post-holes containing flakes from axe production, and investigation of the topsoil over parts of the palisade enclosure revealed large amounts of burnt flint as compared with other sites investigated within the City Tunnel Project (Högberg, pers. comm.). There are of course source-critical problems concerning the dating of the topsoil finds to be evaluated before interpreting the burnt flint as a result of activities within the enclosure, but comparable finds, in some cases including tools such as axes and chisels, have been found at a number of enclosed sites representing both the late Funnel Beaker Culture and the Battle Axe Culture (Nielsen 2001:80–82; Kaul et al. 2002:126–135; Svensson 2002:36; Giersing 2000; Giersing, in press). Burnt flint has also been found in large quantities at other types of Neolithic site (see, for example, Larsson 2000), showing that the burning of flint was an important part of Neolithic ritual activities.

### Individual features

Apart from the post-holes, only four additional features can be chronologically connected with the enclosure (Fig. 2), but further analyses may alter this situation. Three pits, each c. 3 m wide and c. 1 m deep, were found between the inner and middle rows of post-holes, two adjacent to each other at the southernmost end of the enclosure and the third in the western part. A fourth pit, basically an irregular oval c. 6  $\times$  4 m wide and c. 0.15–0.80 m deep, was found on the in-



Figure 7. The antler pickaxe and antler punch found in pits related to the palisade enclosure. Photo: Andreas Nilsson / Malmö Museer. Scale c. 2:1.

side of the enclosure. The lack of layers indicative of erosion indicates that the pits were filled shortly after being dug. Three of them contained relatively large quantities of deposited finds, whilst one only contained small amounts. The finds were spread through the entire filling, although with a clear concentration in the bottom layers. The deposited material consists of flint flakes and waste, flint scrapers and a thick-bladed, hollow-ground, polished flint axe of Malmer's type 1 (Malmer 1962:400–403) (Fig. 6), animal bones and potsherds. Stone artefacts (other than flint), such as hammer stones and parts of grinding stones, were also found, indicating that the polishing of axes and/or chisels occurred within the enclosure. Several of the flint flakes are waste material from the manufacturing of square-sectioned axes. The hollow-ground axe has been secondarily worked, as was the case with the one found in a post-hole at one of the entrances. This axe shows no signs of usage after being re-worked, however, but instead this secondary working can be interpreted as an act of deliberate destruction before depos-



Figure 8. The bone pendant/needle from one of the pits. Scale c. 2.5:1. Photo: Andreas Nilsson / Malmö Museer.

iting it at the bottom of the pit. This probably took place close to the pit immediately before the axe was deposited there, as indicated by a find of a polished flake that can still be refitted onto the edge of the axe.

The animal bones have not yet been fully analysed, but a preliminary analysis shows the presence of both domestic and wild species, such as dog (*Canis familiaris*), cattle (*Bos taurus*), sheep (*Ovis aries*), pig (*Sus scrofa domesticus*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wolf (*Canis lupus*), fox (*Vulpes vulpes*), seal (Phocidae) and different types of salt water fish, mainly cod (*Gadus morhua*) (Jonsson, pers. comm.). Parts of an antler pickaxe were found in one of the pits, as was an antler punch used for flint knapping (Fig. 7).

An interesting and unusual object found in one of the pits was a small staff-shaped bone pendant or needle 4.3 cm long and 0.4 cm thick (Fig. 8). To the author's knowledge only six pendants of this kind have been found before, all in a single grave in the parish of Köpinge in Scania, dated to period 3–4 of the Battle

Axe Culture (Malmer 1962:299, 301 Fig. 73:1). None of these was complete. Malmer interprets them as ornaments, although he does not rule out the possibility that they were in fact needles. Since all of the six pendants from the grave are broken off at the ends, it is not possible to support an interpretation as needles. The specimen described here is complete, however, and has a pointed end. This suggests that it might indeed have been a needle, although this cannot be taken as conclusive.

The pottery, which was mainly concentrated in the pit on the inside of the enclosure (Fig. 2), is in a very fragmented state and is therefore hard to assess in detail according to Malmer's typological classification of Battle Axe Culture pottery (Malmer 1962). Different types of vessels are represented among the sherds, which are from both decorated and undecorated vessels. Decoration appears on different types of vessels, even though the finer sherds show more variation in both decoration technique and composition. The decoration consists of simple stamp impressions in horizontal and vertical rows below the rim and on the belly, cord impressions in horizontal lines below the rim and horizontal lines and angular bands made with a very fine whipped cord below the rim and on the belly. It thus seems to correspond to Malmer's main groups A–C and to groups F–J, indicating a wide chronological span. The pottery will need further analyses before any definite conclusions on its typological attribution and dating can be reached. There is evidently a need for some discussion regarding the chronological relevance of Malmer's typology, however.

### Concluding remarks

The function of the chronologically and geographically widespread enclosed monuments of the European Neolithic has been discussed for a long time. In Scandinavia the discussion has focused mainly on the causewayed enclosures of the middle and late Funnel Beaker Culture, since they were the first Neolithic monuments of this kind to be discovered. Various suggested functions, e.g. as settlements, market places, central assembly places and cemeteries, have been discussed and evaluated by Andersen (1997). The discovery of the palisade enclosure at Hyllie in 1989 widened our knowledge of the enclosure tradition to include the Battle Axe Culture as well. This gives a more complex picture of the cultural framework within which this phenomenon occurred in the Neolithic of southern Scandinavia. Research into these palisade enclosures has focused on their multifunctional character,

although especially stressing the economic, social and ritual importance of the production, distribution and use of flint axes (Svensson 2002:46–50; see also Andersson 2003).

The investigations into the palisade enclosure at Hyllie have contributed to the general discussion and interpretation of the enclosure phenomenon in south Scandinavia. The radiocarbon dates, combined with finds, place it within the early Battle Axe Culture, as is also the case with two other palisade enclosures in south-west Scania, Bunkeflo and Dösjebro (Jonsson 1995; Andersson et al. 1999; Svensson 2002). There are three sites with palisade enclosures, Helgeshøj on Zealand, Vasagård and Rispebjerg on Bornholm, all attributed to the late Funnel Beaker Culture by virtue of their radiocarbon dates and characteristic MN AV material (Giersing, in press; Nielsen 2001:78–82; Kaul et al. 2002:124–126, 129–131) (Fig. 1), and there are also a number of sites on Zealand and in Scania with probable palisade enclosures, although their character and dating are not as well-known as in the former cases (see Svensson 2002 for a discussion and evaluation of all the palisade enclosures of the late Funnel Beaker Culture and the Battle Axe Culture found to date). Radiocarbon dates place the palisade enclosures mentioned above at the MN A – MN B transition, indicating a close chronological connection between these sites (Jonsson 1995:16; Andersson et al. 1999:11; Heinemeier et al. 1996:324–325; Giersing, in press). The palisade enclosures thus give us valuable information on the classical problem of this transitional phase, that is the cultural transition from the Funnel Beaker Culture to the Battle Axe Culture in southern Scandinavia. They also represent both continuity and change in relation to the enclosed sites of the late EN and early MN Funnel Beaker Culture. Although palisade enclosures were part of a long Neolithic tradition of enclosing larger areas with ditches and/or palisades, those of the late Funnel Beaker Culture and early Battle Axe Culture differ from the earlier causewayed enclosures of the Sarup type in some respects. This can be seen in the presence of human bones at causewayed enclosures, for example (Andersen 1997:87, 307–309), something which has not been found in post-holes or features directly related to the palisade enclosures of the late MN A and early MN B.

As mentioned above, general discussions on the function(s) of the palisade enclosures have focused on the production, distribution and ritual use of flint axes. This can generally be seen as a common trait uniting these sites. There is a need for a local perspective, however, in view of the rather large architectural differ-



ences between the structures. A close connection in terms of basic construction can be seen between the enclosures at Hyllie and Bunkeflo, the latter being situated c. 4 km west of the former and close to the present coastline. Although only minor parts of the Bunkeflo enclosure have been investigated, it seems that it similarly consisted of three to five rows of posts forming an oval (Jonsson 1995). These sites seem to represent a local tradition of enclosure building, although it cannot be established whether they are contemporary, or if one succeeded the other. They nevertheless present some clear architectural differences relative to other, basically contemporary sites such as Dösjebro (see Andersson et al. 1999, Figs. 4 & 5).

The finds from the palisade enclosure at Hyllie have essentially increased the volume of material attributable to the Battle Axe Culture in southern Scandinavia, both quantitatively and qualitatively. The new evidence clearly shows the wide range of resources used during this period, and will contribute to discussions concerning the chronology, economy and ritual traditions of the culture, amongst other things. The Scanian Battle Axe Culture can be characterised archaeologically as primarily a "grave culture", since it is most clearly represented by graves. There are few known settlements, and they often contain only a few finds. Structures such as pits, occupation deposits and building remains are scarce, something which has led several scholars to suggest that the Battle Axe Culture was a mobile culture with an economy primarily based on animal husbandry (see, for example, Larsson 1989:73, 1992:153; Andersson 2003:260, 320). The specific problem of the economic and social structure of the Battle Axe Culture will not be evaluated here, but the variety of animal species from features connected with the palisade enclosure suggests that it could be discussed further. Archaeological investigations in the Malmö area during the last decade have yielded a number of remains that have been radiocarbon dated to the MN B. These dates can in some respects be considered random, however, as in most cases they are not the result of an active search for Battle Axe Culture remains. The structures and features that were dated will need further assessment before any conclusions can be drawn on their character, or their possible relationship to the palisade enclosures at Hyllie and Bunkeflo.

### Postscript

Some additional radiocarbon dates have been received since this paper was written in the spring of 2003, including two new dates from post-holes in the palisade

enclosure: 4210±50 BP (Ua-21305, 2890–2690 cal BC, 1σ) and 4410±55 BP (Ua-21283, 3260–2910 cal BC, 1σ). The first corresponds to those presented in this paper, while the second places the enclosure in the MN A. The pit on the inside of the palisade enclosure where most of the pottery was found (as well as the antler punch and the grinding stone parts mentioned in the paper), was dated to 3605±45 BP (Ua-21280, 2030–1880 cal BC, 1σ). This places it in the LN, which contradicts the MN B date based on the find material. Further analyses will therefore be needed before any conclusions can be drawn on the dating of the pit and its relation to the palisade enclosure.

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*English language revision by Malcolm Hicks*

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