

Danish Plough-Marks from the Neolithic and Bronze Age

by HENRIK THRANE

INTRODUCTION

Our knowledge of Prehistoric agriculture and the study of it is not only a fairly recent affair (Hatt 1937); it has concentrated very unevenly on the various aspects. Iron Age field systems have remained a classic in Danish research (Hatt 1949; Nielsen 1970, 1984, 1986; Sørensen 1982; Lerche 1984 for the earliest survey). Agricultural tools have become another Danish speciality (Steensberg 1943; Glob 1951) with the “International Secretariat for Research on the History of Agricultural Implements” placed at the National Museum as focusing point. Crops have been studied with varying intensity (Hatt 1939; Helbæk 1954; Jørgensen 1977). Apart from Celtic fields, the fields themselves and traces of soil treatment have received less than due attention in spite of a growing body of information and the potentials of this source.¹

The interpretation of certain soilmarks as furrows left by the share of the ancient plough type called the “ard” (Glob 1951; Bentzien 1969) still widely used over the world, was made in the late 1930'es. Priority seems to fall to A.E. van Giffen (1940), who in 1937 made the first identification. In Denmark the cultural geographer Gudmund Hatt who contributed so much to Danish archaeology (Hansen 1984) excavated some fine specimens during 1939 and 1940 in Western Jutland (Hatt 1941). Hatt himself published Gustav Rosenberg's excavation from 1908 at Vesterlund in Central Jutland (Hatt 1941, 161ff; cf. Thrane 1968), but actually meticulous excavators such as Vilhelm Boye and Georg L.F. Sarauw had made similar observations in 1874 near Næstved on South Sealand and 1897 in Store Vildmose in North Jutland. The interpretation of the humus-filled grooves in the subsoil has remained unchallenged and forms the basis of present analyses. Experiments (Hansen 1969) and ethnographical observations (Lerche & Steensberg 1983; Hagen 1985) have confirmed the interpretation. The present habit of excavating

barrows and other monuments completely before their destruction has led to a great increase in the number of observations after World War II.

The time lag between discovery and interpretation illustrates the first immediate problem about the ardfurrows, that of recognizing them for what they are. Archaeological observation is only possible thanks to the fact that humus was carried by the plough into the light, yellow subsoil. Cleaning a surface at the right level will only be possible in a very shallow zone where the overlying humus loses its fringe of root-holes, animal burrowings and water-transported material and changes into uncontaminated subsoil. Ideal conditions will normally prevail only for very few centimetres (2–4). It is therefore essential to find this level and to clean a sufficiently large area to establish whether the furrows form part of a regular system or may be disregarded as accidental. At a time when mechanized excavation prevails it is very important to keep this in mind. Various kinds



Fig. 1. Plough-marks under passage grave at Rosenfelt Mølle near Vordingborg, South Sealand. C. L. Vebæk excav. et phot.



Fig. 2. Plough-marks under Bronze Age barrow (Montelius per. II) at Melby, North Sealand (Aner & Kersten 1973 nr. 243 I) taken from turret for vertical photography, H. Thrane excav. et phot.

of photographic tricks may improve the possibilities of observations under less ideal conditions (Kossack *et al.* 1975, 289, Taf. 126).

Although Gudmund Hatt (1941) observed the ard-furrows as a by-product of his settlement excavations in the 1930'es, plough marks under barrows have become far more common. This is no doubt due to the fact that the narrow and shallow ard furrows will only remain reasonably intact when preserved by comparatively thick layers of soil. Otherwise the natural precipitation will wash out the humus components during the centuries and make the observation impossible. This process may remove the humus components nearly totally (e.g. Lindebjerg, Liversage 1981). Indications that ploughing had taken place may still exist in the shape of potsherds or flints standing on edge in the sides of the furrows. Observations of this kind need a painstaking cleaning of unpromising surfaces. Podsoils and iron pan layers are other hazards and even within the same mound conditions may vary considerably (Thrane 1984a, 4off).

It would be interesting to know how fast this washing-out process destroys the ard-furrows in various soils, it might even throw light upon the dating of such furrows which are not stratigraphically squeezed in between two datable horizons.

DOCUMENTATION, DATING, AND INTERPRETATION

When plough-furrows have been observed, the next problem is to document their existence. There is no standard procedure for this, but in Denmark photographs of the cleaned surface or part of it are normally taken. Full coverage by vertical photography using turrets or other such means are, however, rarely used (Nielsen 1970) (Fig. 2). Normally the main furrows will be drawn rather schematically (Fig. 3). As most plough-furrows are nowadays excavated during rescue excavations of barrows and the like, this is hardly surprising since a full, naturalistic drawing of ard furrows with observations of bisections etc. is a very time consuming affair, normally far outside the budget.

Descriptions and measurements of widths, distances between furrows, cross-sections through individual furrows etc. seem normally to be regarded as extravagances. Most excavators probably regard the ard-furrows as rather a nuisance anyhow. As the observed bits are normally no more than fragments of the original pattern this is perhaps to be expected.

The attitude may also have been influenced by the difficulties of dating the furrows exactly. Normally the furrows under barrows and dolmens can be given a reasonably narrow terminus ante quem, i.e. the date of

the construction of the covering barrow or rather its primary burial. (Too often the only dating graves are secondary ones – which of course does not improve the chance of dating the ploughing). As mentioned above, it remains unknown how long it takes for ard furrows to be washed out when only covered by an average topsoil (10–20 cm., S. Nielsen 1980; 1984). It will normally remain unknown how much time elapsed between the actual ploughing and the construction of the sheltering mound. The only way of narrowing this gap is to date an over-ploughed construction to a time shortly before the construction of the covering mound. This is very rarely the case, however (e.g. Asingh 1987 (this volume)). Even if the number of cases where the furrows have ploughed through underlying layers or constructions is nicely increasing, they still constitute a minority. More often than not the underlying layers are so much earlier than the mound on top of the plough furrows, that the date cannot contribute much to the dating of the ploughsoils. Thus we are left with dates for the ploughsoils such as “before period II of the Early Bronze Age”, “earlier than Late Neolithic”, “earlier than Funnel-beaker ENC” etc. The occurrence of potsherds or other datable finds in the ard furrows is normally no great help. They only indicate *termini post quos*, coming from deposits which had been ploughed out. To prove that a settlement or other deposit had been ploughed out immediately after surrender would need some extremely lucky circumstances. This will remain a major disadvantage in the study and the use of the ploughsoils as long as independent means of dating them remain unknown. Theoretically a situation where a burnt surface with charcoal had been ploughed through should give a *terminus ad quem* for the ploughing – provided that an immediate connection between the burning and the ploughing may be assumed, i.e. clearing a surface for ploughing by burning it. Even here the date depends upon a functional interpretation of the ploughed-out upper layer.

The date of the burial in relation to the preceding ploughing (or use of the field) may be controlled in such instances where a. no vegetation-layer covered the old ground surface, b. the stones of the barrow constructions had sunk into the humus layer, because this was soft (not compressed by a long period of fallow) (Myhre 1977).

The problem of dating the ploughsystems exactly influences the interpretation of them significantly.

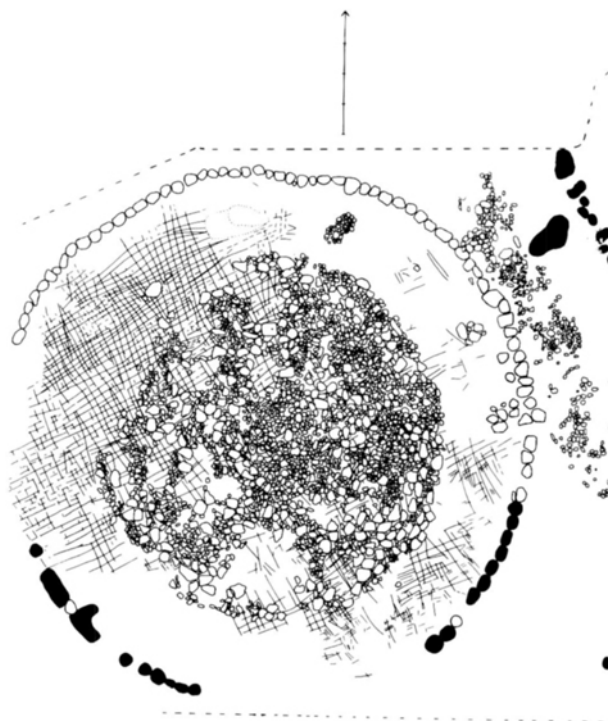


Fig. 3. Plough-marks under Bronze Age type barrow at Åbenrågården, Skiveholme parish, Central Jutland, N. H. Andersen excav.

The interpretation of the ard-furrows has been debated on and off over the last thirty years. Johannes Pätzold (1960) saw the plough-marks underneath the Bronze Age barrows as part of the burial ritual,² while most later writers have assumed a practical function of these furrows as well as for the furrows in Celtic fields or on settlements.

Here we may single out a special group of ard-furrows namely those encircling barrows. Furrows number from one to six and form quite neat circles (Wiell 1976). They cannot be traces of ploughing around the mound after its construction (similar to ploughing round the stone heap under the Vesterlund mound (Thrane 1968, fig. 15), but must be seen as elements of the construction ritual. The perimeter stones of the barrows in some cases cover the furrows. These circular furrows belong to the Late Neolithic and Early Bronze Age periods and are thus partly contemporary with the otherwise unique furrows demarcating flat-grave cemeteries on Bornholm (Klindt-Jensen 1964; Aner & Kersten 1978 nr. 2530). In this case it would seem foolish not to admit a close functional connection between the ploughing and the burial action. The association with the description in

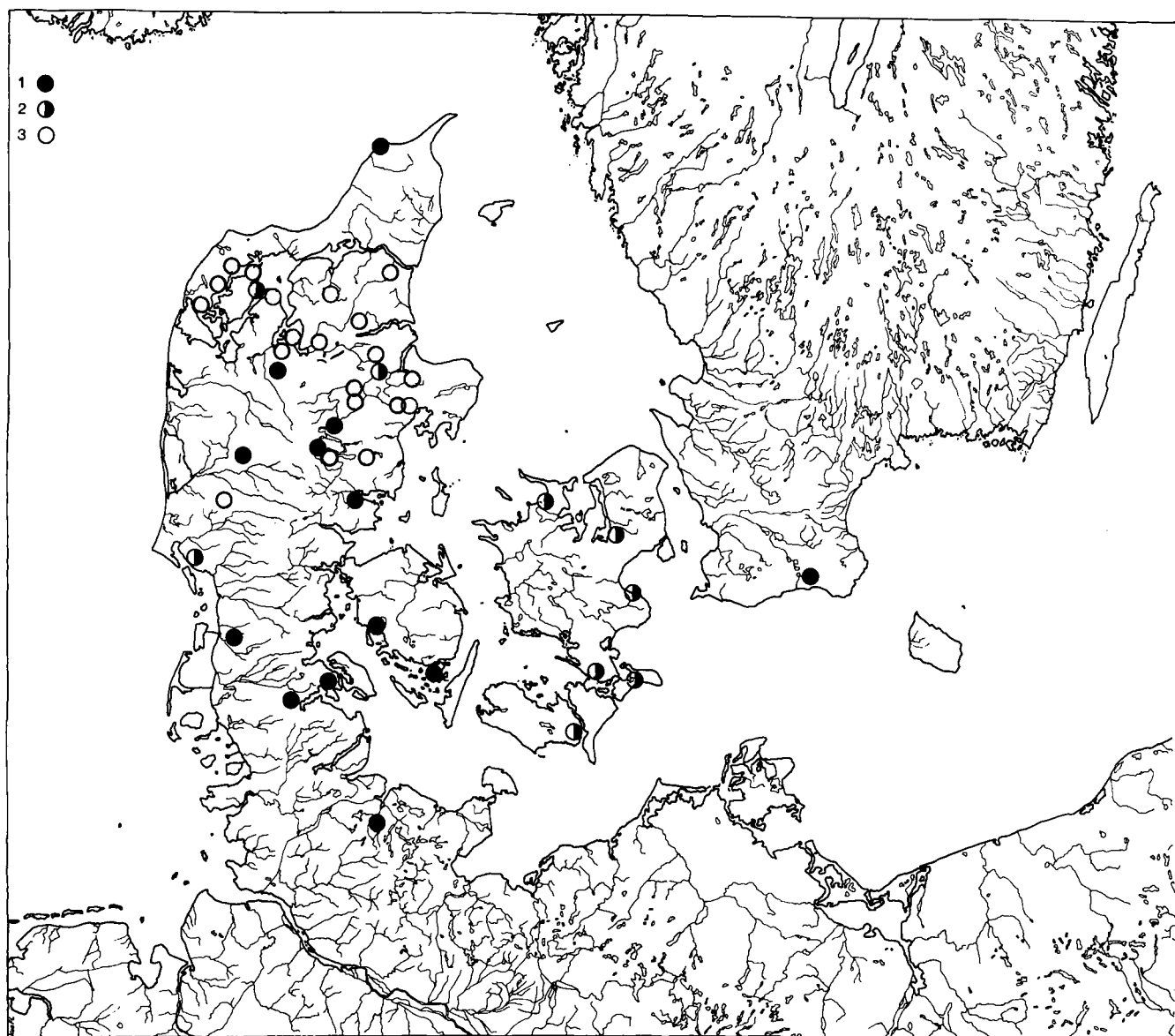


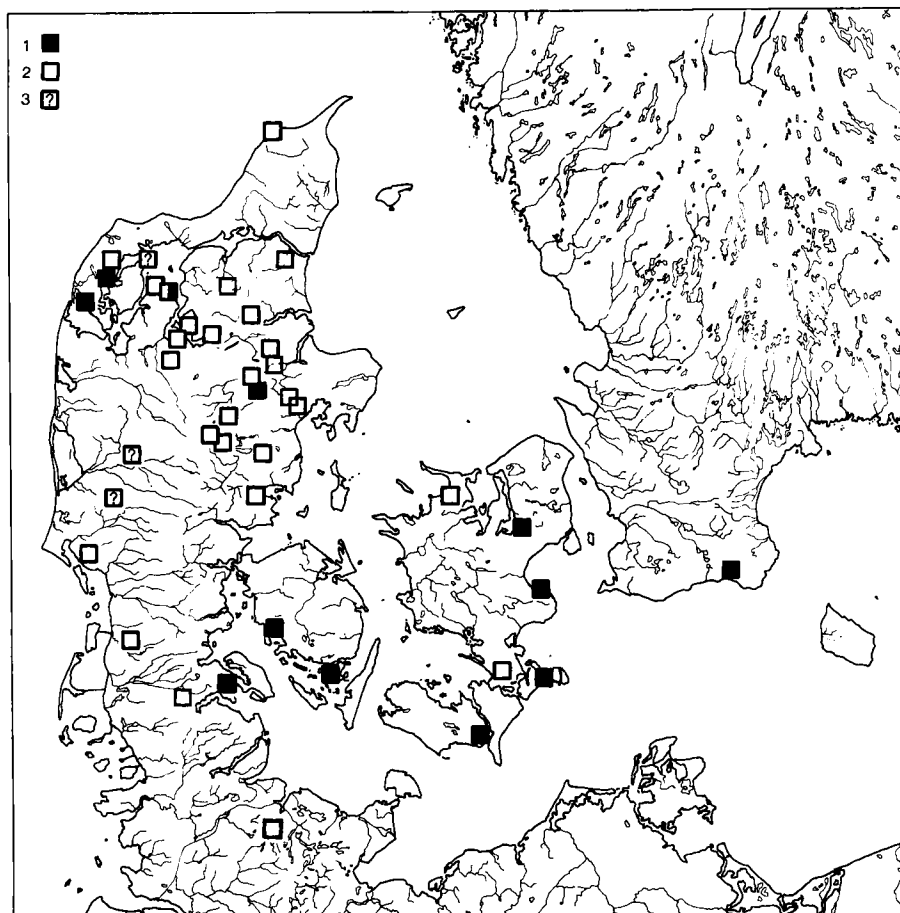
Fig. 4. Distribution of plough-marks dated to Neolithic periods by overlying structures: 1. Early Neolithic C/Middle Neolithic Ia, 2. Middle Neolithic Ib-IV. 3. Single Grave Culture plus one Middle Neolithic V case.

the 23rd song of the Iliad provides yet another example of the internationalism of Bronze Age cultural ideas. What the exact idea behind the circular ploughing was, may be debated. Although it seems quite a practical idea to encircle the area under question, a purely practical explanation is hardly sufficient, and the association of ploughing as part of the annual fertilization ritual with the burial ritual does not seem strange in the Nordic Bronze Age which had other close links between bu-

rial equipment and symbols of the fertility gods (e.g. Late Bronze Age razors). The circular ploughing does not, however, throw any light on the criss-cross furrows which after all constitute the vast majority of plough-marks. For these independent interpretations must be made.

It has been suggested that the criss-cross ploughing was intended to loosen the soil so that turves for the mound building could be dug out easier than from an

Fig. 5. Distribution of plough-marks as Fig. 4. showing the nature of the subsoil: 1. Heavy (clay), 2. Light, (sandy or gravelly). 3. Character of subsoil unknown.



unprepared field (Friis discussed by Nielsen 1971). This does not explain the occurrence of a criss-cross ploughing underneath the barrows themselves. – Recently Randsborg and Nyboe (1986, 170) in their study of grave orientation during the Bronze Age found that “one of the directions of ploughing is always parallel to alignment of the grave, so we must assume that ceremonies began with a ritual ploughing”. This is indeed true in several cases, but certainly not always. Nor was the ground underneath the barrows always ploughed. Ignoring the fact that plough-furrows may have been overlooked in many cases, several mounds have been so thoroughly examined that plough-marks should have been observed – had they been present.

A crucial problem of the interpretation of the ard-furrows is why any furrows at all have remained visible? If a field was ploughed continuously over a number of years, a palimpsest of ard-furrows, so close that in the end it would be impossible to distinguish individual

ploughing or furrows, would seem the logical result (Reynolds 1981, 95f). Conversely the preservation of the furrows would seem to indicate that the fields had been ploughed only once. If this was a general rule, there might have been a closer connection between ploughing and moundbuilding than otherwise suggested (apart from the purely ritual interpretation). The fact is that intact criss-cross furrowsystems or large parts thereof are known from the majority of ard-furrow occurrences. In most cases there are indications of additional furrows, which do not comply with the two main directions of the criss-cross ploughing from one cultivation. The odd stray furrows could be explained away as bits of extra work where the coverage or the breaking up of the soil was not good enough, but when the spare furrows clearly constitute part of another criss-cross system, the conclusion must be that the same plot had been ploughed regularly on at least two occasions (two seasons). As mentioned above (p 112) it

needs a great deal of work to distinguish the optimal level for recording the furrows. This becomes even more true when two different systems have to be distinguished from another within a very shallow zone. It has been possible in some cases (e.g. Thrane 1982, fig. 4, supplementing Thrane 1967, fig. 10). In some of these instances the latest ploughing is the one for which Randsborg and Nyboe's observations fit (e.g. fig. 2). As here at Melby there is no reason to assume that the earlier ploughing had anything to do with the Bronze Age barrow constructed after the later ploughing. If a burial connection were to be sought for the first ploughing, it would have to be connected with some of the other mounds in the same (modern) field. If that were so, we are talking about cultivation of large fields of several hundred square meters and have to look for a more complex set of explanations for the apparently ritual ploughing. There may have been rules that farmers had to be buried on their own soil or that the fresher the tilling of the soil the better.

If we compare the plough-marks found under Stone Age monuments, under Bronze Age barrows or connected with Bronze or Iron Age settlements, they all seem to fall within the same category as regards size, shape, systematics etc. Basing the interpretation upon the actual plough-marks from the fields themselves (Nielsen 1970, 1986), there can be no doubt that the plough-marks under Stone and Bronze Age burial monuments belong to the same category. A priori I therefore regard all criss-cross ploughings as indications of practical agriculture. This does not mean that ploughing was not associated with a series of ritual and magic beliefs and rites, but it gives us the right to use the plough-marks unreservedly in our study of prehistoric agriculture.

FIELD SHAPES AND PREHISTORIC AGRICULTURE

Sometimes the patches observed under the later monuments preserve edges or even corners of fields. This at least seems the most probable interpretation now that we have the detailed observation from Store Vildmose (Nielsen 1970, 1987). The close similarity of the parallel ploughing along the edges and the curves at the corners of the Store Vildmose fields to the traces under the Bronze Age barrows is convincing enough (Aner & Kersten 1978 nr. 2238 og 2251; Thrane 1984a).

The areas occupied by criss-cross ploughing are

quite often around >400 m² (e.g. Aner & Kersten 1978 nr. 2238, 2242, 2251, 2362), the largest so far being the area under the long dolmen at Søndervrå (Kunwald 1958) covering around 1000 m², apparently of Early Bronze Age date. For a comparison the Bronze Age fields in Næsbyholm Storskov are quite small – around 300 m² (Nielsen 1984, 152f). Northwest German fields have sizes of 1575 and 1750 m² (Reichmann 1982) while Dutch fields may be as large as 2500 or 6400 m² (Müller-Wille 1979, 226); from Britain we know sizes of 1600 m² (Coles 1982 fig. 6,4 and 6,9) or 900 m² (Fowler 1981, 158) or 3500 m² (ibid). That individual field sizes should vary that much is hardly surprising in view of the different dates, soils and cultural background.

For a generation of Danish archaeologists it was the accepted truth that ard ploughing belong to the Bronze and Iron Ages (Brøndsted 1959–60), that all dated ard parts were Iron Age (Glob 1951), while only rock carvings and ard furrows under the mounds were evidence of Bronze Age ploughing. The first indication of an even earlier use of the plough was the system observed under the Single Grave barrow at Aldrupgårde (Kjærum 1954). (the pattern inside a passage-grave chamber on the island of Møn remains enigmatic and is disregarded here (Ørsnes 1957)). The dolmens at Steneng in Southwest Jutland gave the first indication that plough-marks could occur under megalithic tombs (Voss excav.; Nielsen 1981, 27; Thrane 1982 fig. 5). This turns out to be the case more and more frequently.

So far none of the plough-marks have been published in detail and we are lucky to have drawings etc. in recent publications of megalithic tombs (Skaarup 1982; Ebbesen & Brinch Petersen 1974; Jacobsson 1986).

We are somewhat better off regarding the Bronze Age finds as the great catalogue by Aner & Kersten (1973ff) is now publishing them by dozens.

So far I am aware of 39 sites with ard-furrows dated by the covering mounds to Danish Neolithic (Fig. 4–5). None of these have been examined as intensively as some of the British occurrences (Fowler and Evans 1967; Fowler 1981, 162), which is regrettable in view of the amount of information inherent in the humus soils and in the barrows themselves (cf Nielsen 1980; Dalsgaard og Nørnberg 1982). The material is illustrated here very summarily (Figs. 4–6) mainly to indicate the chronological, chorological and soil-type distributions.

A preliminary list of observations of ard-furrows from Denmark shows a considerable chronological and geo-

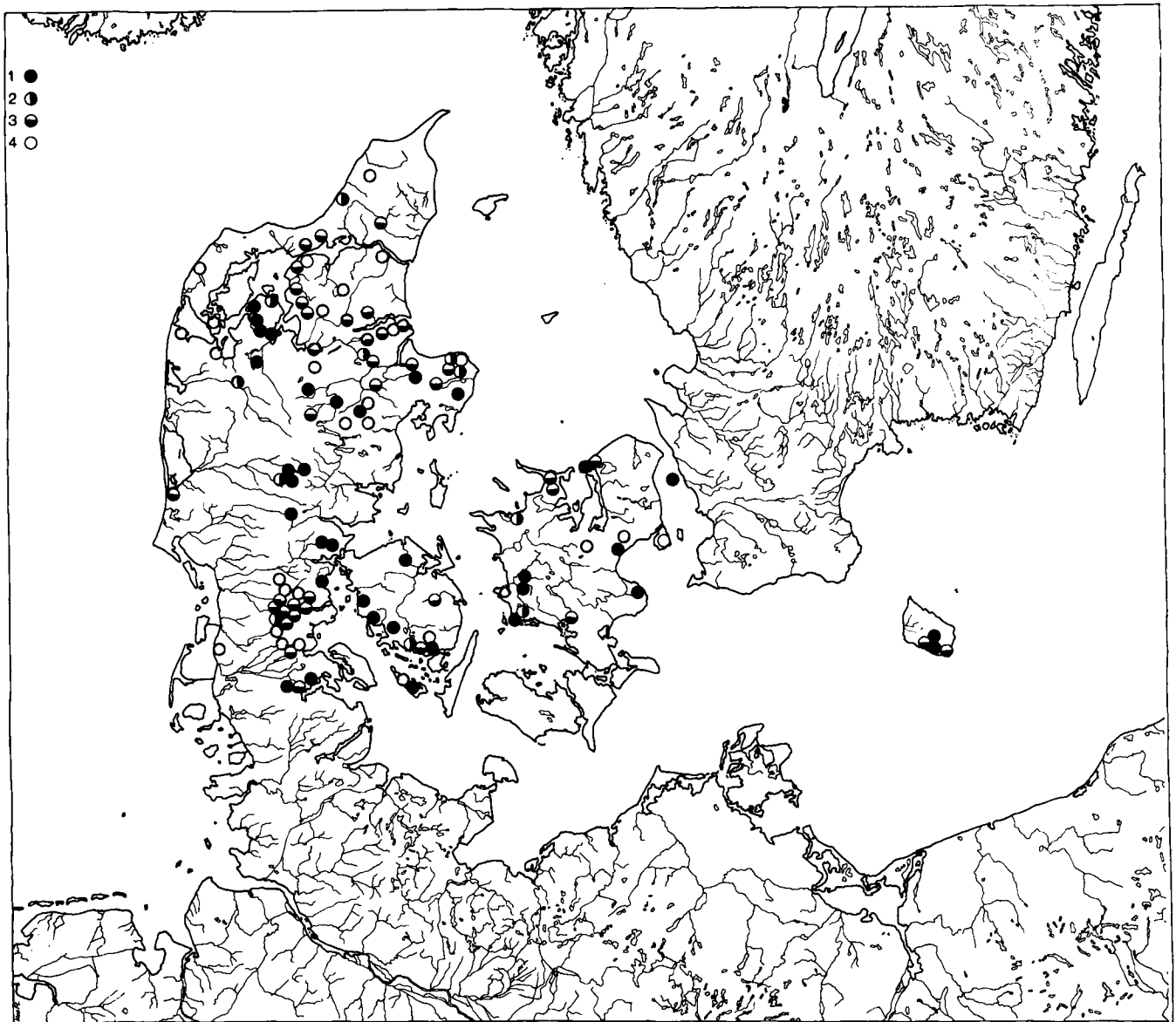


Fig. 6. Distribution of plough-marks from the period between the Bell-Beaker horizon (incl.) and 500 B.C. sub-soil signatures: 1. Clay, 2. Sandy clay/clayey sand, 3. Sand-gravel, 4. Unknown.

graphical range. The earliest known occurrences have for some years remained those found under megalithic long barrows (Thrane 1982). Later periods are all represented, the latest (so far?) being furrows from excavations in medieval cities (Madsen 1980; Noe 1976). Ard-furrows have been observed in Norway (Farbregd 1981), Sweden (Broadbent 1985), Poland, Germany (Gringmuth-Dallmer 1983; Zimmermann 1984), the Netherlands, Switzerland (Zindel & Defuns 1980), Great Britain (Fowler 1981; Lamb & Rees 1981), Italy

(Forni 1980), India (Shinde 1987) and no doubt many other countries, so that we may regard the phenomenon as equally widespread as the ards themselves have been up to our present time (Hagen 1985).

The maps of ard-furrows do not indicate much about the genuine distribution of the agriculture of Prehistoric times. The distribution depends nearly one hundred percent on recent excavation activity and the interest in digging dolmens and barrows, which are the potential ard-furrow sources. What we see on the maps are reflec-

tions of the existence of these mounds and of the modern excavation activities.

The observation of plough-marks during the period between the date of the construction of the dolmens (and passage graves) and the Late Neolithic mounds largely becomes a local affair as mounds of the intervening (Single Grave) period are only excavated in Jutland (rare exceptions like Emmelev, Funen, have not given plough-marks).

Such factors as the fitness of the humus layer, the subsoil, the time interval between the actual ploughing and the covering of the ploughed area, the nature of the covering layer (turf or otherwise) are still little studied. As they must influence the preservation of the plough-mark, they should be given greater attention, if research into the plough-marks is to develop further.

It is interesting to note that heavy soils were ploughed right from the beginning. No matter whether one adheres to the ritual line or the practical interpretation it remains a fact that these soils were ploughed with ard (on the assumption that the basic interpretation is correct).

If clay soils could be ploughed once, they could be ploughed several times (and sometimes we have proof that they were, e.g. Lusehøj (Thrane 1984a)). This contradicts one of the old truisms of agricultural history, i.e. that primitive agriculture had to stick to the light soil. This dogma has played a vital role in the history of settlement during the Iron Age and for the discussion of the relevance of Bronze Age barrows to the knowledge of settlement patterns (Mathiassen 1948; Jankuhn 1952).

It is not a matter of looking at soil maps and deciding that an area is composed of heavy or light soil. At least on the Danish Isles the moraine left a landscape more like a patchwork quilt than a uniform carpet. It was nearly always possible to find a piece of land of a different quality if one wanted a special soil – for a settlement site or whatever purpose.

The introduction of ploughing into South Scandinavia is a rather crucial point in Danish Agriculture. In spite of recent early dates for the actual ards (Vebbestrup 910 B.C., Hvorslev 1490 B.C., Tauber 1971), the ards themselves cannot contribute much. The ard-marks under long dolmens remain the earliest evidence available. Thus we have a number of dates in Early Neolithic C (Thrane 1982) for this type of agriculture.

In view of the number of unchambered longbarrow

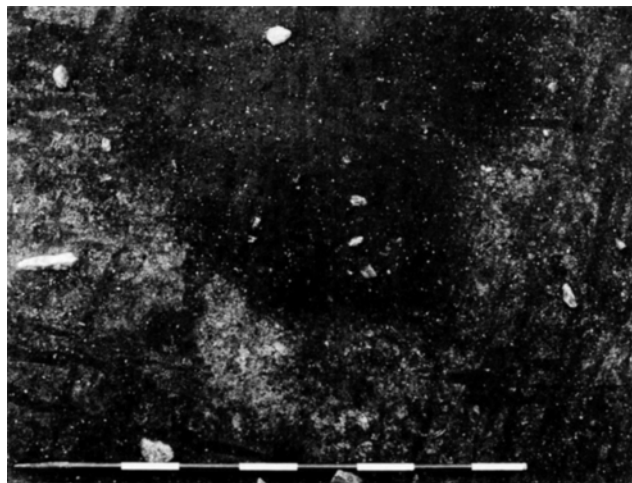


Fig. 7. Details showing ard-furrows cutting through earlier furrows and through earlier pit, Lusehøj, Voldtofte. Fyns Stiftsmuseum phot.

excavations during the last decades it is worth noting that none of these have produced ard-marks. These barrows are the earliest theoretical sources. Before them there were no earthworks able to preserve ardmarks, so we would have to rely on accidental preservation by sanddunes covering fields (so far not available so early). – We need more evidence if we are to decide that the introduction of the ox-drawn plough took place during or shortly before ENC. However, a date around this time could fit with the idea of a secondary Neolithic “revolution” (Sherratt 1981) characterized by oxen as draught animals (cf. the Bytyn oxen model, Piggott 1983, fig. 12 and ox-carts *ibid.* 35f.). A full plough-based agriculture presupposes a period of domestication producing a sufficient number of suitable animals for the purpose, but how long this may have taken is a matter of speculation.

Recent excavations indicate that shifting agriculture was systematic (Becker 1973; Draiby 1985; Thrane 1984a), although the evidence does not indicate the character of the system. The ploughing over of settlements or the placing of settlements on ploughed areas seems just as typical as the placing of burial monuments on ploughed surfaces. Even barrows were occasionally ploughed over (Single Grave mound at Hammel in East Jutland covered by Roman Iron Age enlargement excavated by Søren H. Andersen).

The shifting of fields may not just be result of the exhaustion of the fertility of the soil, although this would seem a likely explanation in some cases (e.g. Fragtrup (Draiby 1985)). This aspect has been given growing at-

tention lately. (Lüning 1980; Rowley-Conwy 1981) while other causes for the moving of fields may be envisaged (Carneiro 1960). A system with alternating crops and fallow may have existed quite early and a total view of the cultivated area may have included the incorporation of deserted settlement sites. This aspect certainly deserves further attention. – Scientific analyses of buried cultivated soils will no doubt be able to contribute new knowledge of this and other problems (cf. Dalsgaard and Nørnberg 1982; Liversage *et al.* 1987; Ashbee *et al.* 1979).

The balance between agriculture and pastoral production is another crucial point which has been discussed theoretically (Abel 1970; Poulsen 1980, 1983; Widgren 1979). It is important for the discussion of agricultural productivity (Nielsen 1980; 1984) which again is extremely relevant for our understanding of the role of agriculture in Prehistoric societies.

CONCLUSION

Problems which need to be examined during each excavation and during the continued study of Prehistoric plough-marks concern the ritual or practical interpretation.

The precise date of the furrows, the number of ploughings or at least the orientations of the furrows and the way the plough went – southwards, straight, tilted, lifted at obstacles, criss-cross or otherwise are all issues which must be decided in the field – in plano or in sectione. This is true also if we want to know the state of the field before ploughing – had the stones been removed? Stone holes may be just as visible as furrows – for the same reason. Were the mounds built on freshly tilled fields or at the end of the season after harvest? The surface of the buried ploughsoil may yield important clues but examination means painstaking work which may seem a waste of time. Are there chronological or chorological variations of the intensity of cultivation as indicated by the distance between individual furrows (the size of the squares between furrows)? Were light and heavy soils treated the same way?

If the study of ploughing is to go any further, we need a set of very detailed observations like the Store Vildmose case (Nielsen 1970; 1987) on a buried field under a Bronze Age or Neolithic barrow. This site would have to have good preservation facilities for pollen and pre-

ferably more than one criss-cross ploughing as well as good dating possibilities. The investigation would have to be planned as a close cooperation between scientist (palynologist and soil specialists) and archaeologists. If such a site is found, it should be reserved for this purpose.

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NOTES

1. This paper is a version of a MS written in 1984 for a volume of *Fundamenta* edited by H. Schwabedissen but not yet published. As it is not a general survey of the evidence or of the problems concerning Prehistoric Agriculture, several aspects have not been touched upon. Some I have gone into in ch. 8 of Thrane 1984a which is in Danish. A translation is contemplated.

I must express my gratitude to all those colleagues who have been bothered by my enquiries for many years but patiently filled out my questionnaires – and hope that they will continue to do so: Niels H. Andersen, Søren H. Andersen, Jens Henrik Bech, Niels Axel Boas, Palle Eriksen, Christian Fischer, Mette Iversen, Erik Johansen, Svend Nielsen, Per Noe, Jens-Aage Pedersen, Anne-Louise Haack Olsen, Hans Rostholm, John Simonsen, Jørgen Skaarup, Niels Sterum, Sven Thorsen, Olfert Voss, Stine Wiell.

With varying intensity and ardour material has been collected since 1966.

Plough and ard are here used as synonyms.

2. While this paper were being written Peter Rowley-Conwy has shown me his note 'The interpretation of ardmarks' in *Antiquity* 1987, where he pleads for the ritual interpretation of the ard-furrows. I remain unconvinced. The ensuing discussion in *Antiquity* cannot be included in this paper which was finished in spring 1987.

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Appendix

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LN	Late Neolithic Period (Dagger Period).
EBA I-III	Early Bronze Age; Montelius periods I-III.
LBA IV-VI	Late Bronze Age, Montelius periods IV-VI.
?	No date, presumably Bronze Age.
AK	Aner & Kersten 1973 ff.
AUD	<i>Arkæologiske udgravninger i Danmark</i> , København from 1986 (1988).

AS	<i>Antikvariske Studier</i> , København 1977 & ff.
BOM	<i>fra Bornholms Museum</i> , Rønne
FRAM	<i>Fra Ringkøbing Amts Museer</i> , Ringkøbing
FyMi	<i>Fynske Minder</i> , Odense
HOM	<i>Museet for Holbæk og Omegn, Årsberetning</i> , Holbæk
JdA	<i>Journal of Danish Archaeology</i>
Pätz.	Pätzold 1960.
SOM	<i>Årbog for Svendborg og Omegns Museum</i> , Svendborg

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Parish no.	Site	Parish and site no.	Earlier than	Later than	Year of observ.	Reference	Sub-soil
	Zealand						
1.02.01	Ballermosen 1	Dråby	EBaII		1955	AKIII	sand
1.05.09	Askebakken	Torup	EBA		1952	AKI 254	clay
1.05.05	Præstegårdsjord	Melby	EBaII	Neo	1967	AKI 243I	sand
2.03.11	Broderhøj	Tårnby	?				
2.02.13	Tostrup Vesterby	Torslunde	?	?	1987	AUD 1987 38	
2.02.13	Bondehøj	Torslunde	EBaIII	LN?	1985	AUD 1985 21	
2.04.05	Himmelev	Himmelev 53	TNC		1968	JDA 1	clay
2.05.05	Karlstrup	Karlstrup 4	LN	Neo	1965	AKI 518	clay
2.06.01	Grydehøj	Allerslev	Migr. per.			Pätz. 27	
3.04.01	Asnæs	Asnæs	MNIb		1980	HOM 1980	sand
3.04.05	Drosselholm	Højby 1	?		1986	HOM 1986	clay?
3.04.05	Drosselholm	Højby 71	?		1987		
3.04.05	Sekshøje	Højby 239	EBA		1970	HOA 1983	sand
3.04.12	Jyderup skov	Vig	LBA		1970	NMArb. 1975	sand
3.06.03		Bregninge 13	EBaII		1976	AS2	clay-sand
4.03.01	Nygård	Boeslunde	LN		1986	AUD 1986 71	
4.03.14	Hyllerup	Slagelse	EBaIII	EBA	1985	JdA 5	clay
4.03.15	Galgehøj	Slotsbjergby	LBaIV		1946	Pätz. 26	clay?
4.03.19	Rødhøj	Tårnbjerg	LBA	Neo	1948	Ard&Plov p. 81	
5.02.14	Rosenfelt	Vordingborg land 112	MNIv		1969		sand
5.05.11	Jordehøj	Stege Land 7	MN		1988		clay?
5.06.04	Strandfogedgård	Holtug	EBaII		1966	AKII 1357I	clay
5.06.08	Østerhoved	Magleby 68	EBA		1973		clay
5.06.08	Østerhoved	Magleby 33	EBaII				clay-sand
5.06.12	Fuglebæksbanke	Stræby	MNIb		1968	Årb 1973	clay
5.07.07	Ålestokhøj	Næstved Land 73	EBaIII?		1874		sand
	Bornholm						
6.02.03	Alhøj	Pedersker	EBaII		1958	AKIII 1465	clay
6.02.03	Store Loftsgård	Pedersker	EBaIII	LN	1957	AKIII 1477	sand
6.02.03	Billegravsgård	Pedersker	EBaIII	Neo	1957	AKIII 1466	clay
6.02.04	Jomfrugård	Poulsker	EBaII	LN	1958	AKIII 1482	sand
6.02.05	Runegård	Åker	LN		1985	BOM 1986	sand
6.02.05	Limensgård	Åker	?		1984		
7.06.08	Lølland Frejlev Funen	Frejlev 228	MN		1973		clay
8.02.04	Snave	Dreslette	TNC	Neo?	1976	FyMi 1982	clay
8.02.04	Brydegård	Dreslette	LBA		1974		clay
8.03.07	Kappendrup	Rolfsted	EBaII		1974		sand
8.05.07	Glavendrup	Skamby	EBaIII		1958	AKIII 1874	clay
8.02.05	Lusehøj	Flemløse	LBaIV	EBaIII	1973	Lusehøj	clay
9.04.14	Håstrup	Håstrup			1987	AUD 1988	clay
9.04.26	Hannemosehøj	V. Skjerninge	LBaVI		1981		sandy clay
9.05.04	Højensvej	Egense	EBaIII	EBA	1985	SOM 1985	
9.05.04	Egense	Egense	LBaVI		1972		clay
9.05.07	Capeshøj	Bjerreby 30	TNC/MNI		1977	AS4	clay
9.05.16	Holmebo	Ø.Skjerninge	LBaVI		1985		sand
9.06.14	Hudevad	Søllinge	EBaIII		1988		clayey sand
9.07.04	Lille Rise	Rise 26	LN/EBA		1976		clay
9.07.06	Vesterløkke	Tranderup 13	LN/EBA		1980		clay
	Jutland						
10.01.18	Sønder Vrå	Vrå	ENeo			Pätz 24	clay?
10.02.04	Nørrehede	Hallund 75	?		1966		sand
10.04.04	Grønhøj	Ingstrup 31	EBaII			Pätz 25	clayey sand
10.06.15	Hedelykke	Tornby 23	TNC		1967		sand

Parish no.	Site	Parish and site no.	Earlier than	Later than	Year of observ.	Reference	Sub-soil
10.07.02	Bejstrup	Bejstrup	LBAIV		1984	AUD 1984	sand
10.07.07	Kokkedalsmark	Torslev 19	EBAIL	EBA	1982		sand
11.01.13	Vibberstoft	Villerslev	SGK		1984	MIV 13	sand, clay
11.03.04	Dyrhøj Bakker	Nørhå 75	EBA		1961		
11.03.07	Højgård	Skjoldborg 54	SGK		1979		sand
11.04.07	Galtrup	Galtrup	EBAIL		1987	AUD 1987 159	
11.04.09	Skærbæk	Sejerslev 11	NMV		1959		
11.06.03	Oddersholt	Gettrup 84	SGK		1981		clay
11.06.07	Kildevænget	Hvidbjerg 35	ERAIL		1974		
12.01.03	Kongehøjgård	Gudum	?		1981		sand
12.01.05	Kirkelygård	Klarup 219	EBA		1970		
12.02.02	Lille Binderup	Binderup	EBA		1985		sand
12.02.12	Myrhøj	Strandby	EBA	LN		Kuml 1972	sand
12.04.03	Brohøjgård	Døstrup 53	SGK		1974		sand
12.02.04	Fragtrup	Farsø	LBAIV-V	LBAIV-V	1962	Årb 1981	sand
12.04.08	Lundgård	Rostrup 45	EBAIL		1957		sand
12.06.15	Brunmosegård	Åby	ERIA		1984	AUD 1984	
12.07.08	Vadgård Syd	Næsborg	EBAIL		1976		sand
12.07.08	Næsborg	Næsborg 34	EBAIL		1977		sand
12.07.05	Tollerup	Løgsted	ERIA		1987	AUD 1987	
12.18.11	Lynnerup II	Skivum	MN Ib		1986	AUD 1986	
12.08.61	Blære	Blære	SGK		1982		sand
12.07.08	Aggersund	Næsborg 20	LN		1974	KUML 1975	sand
13.01.03	Stoholm	Foldingbjerg	?	Neo	1987	AUD 1987, 219	
13.01.07	Snebæk	Kobberup	?	Neo?	1987	AUD 1987, 222	
13.01.07	Lærkenborg	Kobberup 106	SGK		1975	MIV 6	sand
13.01.16	Skibshøj	Vroue 125	EN		1977	SKALK 1977	
13.01.17	Sønderhald	Ørslev Kloster	SGK		1990	MIV 1	gravel
13.02.01	Toustrup	Durup 24	EBAIL		1987		clay
13.02.04	Dalgårde	Harre	LBAIV		1987	AUD 1987, 239	clay
13.02.11	Bodshøj	Åsted	MNI		1980		sand
13.03.04	Ø. Kejlstrup	Gødvad 7	EBAIL?	SGK	1971		
13.03.08	Tandskov	Serup	Neo		1984	AUD 1984	gravel
13.04.02	Vikærgård	Dølby	EBA?	LN?	1986	AUD 1986, 286	clay
13.04.05	Hvidbjerg	Hvidbjerg 40	EBAIL		1984	AUD 1984	sandy clay
13.04.06	Vestergård	Oddense 49	EBA		1985		clay
15.05.04	Sortehøj	Gullev 22	LN				clay
13.05.07	Aldrupgårde	Hvorslev	SGK			Kuml 1954	sand
13.05.09	Aprup	Sahl	SGK		1963	Kuml 1964	clay
13.06.09	Lille Mølle	Levring 24	?		1985		sand
13.06.11	Demstrup	Sjorslev	EBA?		1968		clay
13.06.13	Gråhøj	Vinderslev	EBAIL		1962		sand
13.08.01	Lille Asmild	Asmild	EBAIL		1969		?
13.08.08	Dalbæklund	Løvel	?	LBA	1967	MIV 1	sand
13.09.09	Sdr. Borup	Låstrup	SGK	Neo	1965		sand
13.09.15	Lerkenfeld	Vesterbølle 12	EBA?	Neo	1964	Kuml 1964	sand
13.11.01	Breum	Grinderslev	LBA	LN	1986	AUD 1986, 310	?
13.11.03	Jebjerg	Jebjerg	?		1987	AUD 1987, 263	?
13.11.05	Bostrup	Lyby 74	?		1987		sand
13.11.07	Lindum	Selde 51-53	EN?		1976	AS4	sand
13.12.02	Over Hornbæk	Hornbæk	NMIb	TNC	1984	AUD 1984	clay
13.12.07	Rejstrup	Sønderbæk 32	EBA?		1975	AS4	sand
14.01.04	Svapkær	Rimsø	LNA		1968		sand
14.01.06	Marshøj	Gjerrild	LN		1975		
14.01.07	Korup	Kold	EBA		1985	AUD 1985, 241	Sand
14.01.10	Egehøj	Hemmed	EBAIL		1969		sand
14.01.10	Hemmed	Hemmed	LNC		1987	AUD 1987, 273	sand

Parish no.	Site	Parish and site no.	Earlier than	Later than	Year of observ.	Reference	Sub-soil
14.01.14	Rimsø	Rimsø	EBaII				clayey sand
14.02.06	Diverhøj	Homå 18	LNA & EBaII	LNA	1983	JdA 6	sandy clay
14.03.14	Lille Tvillinghøj	Ørum 7	EBaII		1967		sand
14.04.09	Vesterskovmark	Udbyneder	EBaIII		1971		sand
14.03.12	Dejrhøj	Ødum	SGK		1985	AUD 1985, 249	sandy clay
14.03.12	Kikhøj	Ødum	SGK		1986	AUD 1986	sandy clay
14.06.01	Asferg Nørremark	Asferg 32	SGK		1970		sand
14.06.06	Greneshøje	Kousted 23	EBA?		1980		sandy clay
14.06.10	Tørslev Sten	V. Tørslev	EBA		1984	AUD 1984	sand
14.07.08	Lindegård	Sem 19	LN	LNA	1984	AUD 1984	?
14.10.03	Kobbeltgård	Fausing 45	EBA?		1975		sand
14.10.07	Tvillingehøj	Fausing	SGK		1972		?
14.10.07	Bavnehøje	Koed	EBA?		1979		gravel
15.05.05	Åbenrågården	Skivholme	EBA?	EN A-B	1983	AUD 1985, 265	sandy clay
16.01.04	Grønhøje	Hammel 13	EBaIII	SGK			?
16.01.05	Singelsbjerg	Linå 138	SGK	ENC	1972	NMArbm. 1973	sand
16.05.02	Hanstedgård	Hansted	?		1987	AUD 1987, 349	?
16.05.03	Brørup Skovgård	Hylke 63	SGK		1968		sandy
16.05.09	Gedved	Tolstrup	LBA?		1986	AUD 1986, 398	?
16.06.06	Rosenlund	Them 351	SGK		1971		sand
16.06.06	Løvenholt	Them	ENC		1978	AS4	mixed
17.07.02	Trappendal	Hejls	EBaII		1975	JdA 2, AK IX, 4393	clay
17.02.04	Herslev	Herslev 3	?			AS4	clay
17.02.04	Herslev	Herslev 8			1986	AK IX, 4281	?
17.04.10	Præsthøj	Tyrsted 22	MNIa		1972		sand
17.08.13	Krudhøj	Thyregod 218	EBaIII		1969	AS1	clay
17.08.13	Neder Thyregodlund	Thyregod 98	EBA?		1978		clay
17.08.13	Neder Thyregodlund	Thyregod 97	?		1978		clay
17.08.16	Vesterlund	Vester	EBA	?	1908	Kuml 1967, AK IX, 4493	clay
17.09.02	Damhalehøj	Gadbjerg	EBaII	SGK	1962	Årb. 1967, AK IX, 4517	clay
18.02.09	Sevel	Sevel	EBaII		1947	Kuml 1952	clay
18.03.02	Bukkær	Assing 121	EN		1977		?
18.03.03	Jersild	Aulum	ERIA	BA	1982		mixed
18.03.13	Lustrup	Skarrild 41	SGK?		1977		?
18.03.13	Skarrild	Skarrild	SGK		1978	FRAM 1987	sand
18.04.04	Holmsbos Forstrand	Holmsland	?	LN?	1987	AUD 1987, 384	sand
18.05.05	Hillersborg	Gimsing	EBA		1985	AUD 1985, 320	clay
18.04.14	Langagergård	Torsted	TNC/MN I		1973	FRAM 1987	?
18.09.17	Højris	Hygum 62	LN		1976		?
19.05.06	Nygård	Guldager 219	MNI		1977		sand
19.07.08	Lille Dalgård	Vejen	EBaII?		1977	AK VIII 3982	sand
20.02.02	Jernhyt	Hammelev	LN		1982	AK VII 3241 I	gravel
20.02.03	Jegerup	Jegerup 36	EBA?		1945	AK VII 3432	?
20.02.03	Tingvad	Jegerup 28	EBA	SGK	1978		?
20.02.04	Arnitlund	Jegerup 57	EBA	?	1958	AK VII 3559	?
20.02.07	Lundingsminde	Oksenvad 107	EBaIII		1980		?
20.02.08	Skrydstrup	Skrydstrup 32	?		1944	AK VII 3522	sand
20.02.08	Skrydstrup	Skrydstrup 31	EBaII		1944	AK VII 3521	gravel
20.02.11	Billund	Vojens 68	EBaII		1978	AK VII 3590	sand
20.02.11	Vojens	Vojens 36	?		1953	AK VII 3597	sand
20.02.11	Billund	Vojens 67	EBA		1978	AK VII 3589	sand
20.02.11	Billund	Vojens 69	EBA		1977	AK VII 3591	clayey sand
20.02.11	Vojensgård	Vojens 13	LN		1957	AK VII 3602	?
21.02.03	Hjerpsted	Hjerpsted 49	EBaI		1974	Kuml 1975	clay
21.03.03	Steneng	Døstrup	MN I		1963	Skalk 1963	sand
22.01.02	Tovhøj	Bov 21	EBaIII?		1975	AK VI 2961	?
22.01.02	Frøslev	Bov 116	EBaIII		1975	AK VI 2965	sand

Parish no.	Site	Parish and site no.	Earlier than	Later than	Year of observ.	Reference	Sub-soil
22.01.02		Bov 46	ENC		1982		sand
22.01.06	Vilsbæk	Holbøl 2	EBAI		1975	AK VI 2988	?
22.02.02	Sdr. Ønslev	Hjordkær 14	EBAI		1975	AK VI 3025	sand
22.02.04	Søst	Rise 45	EBA		1975	AK VI 3068	clay
23.03.03	Nybøl Nor	Nybøl	ENC		1981		clay