

# 10 Where are Yorkshire's 'Terps'?

## Wetland exploitation in the early medieval period

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### **Introduction**

Where are the terps in Yorkshire, or for that matter where is any other evidence of exploitation of the wetlands in the early medieval period? Archaeological evidence remains largely elusive for the period between the early fifth and the late ninth century. Among the very few sites in wetland landscapes dated to this period are the settlement of York and the middle Anglo-Saxon bridge at Skerne in the Hull valley. Sites from the free-draining soils adjacent to wetlands are more frequent, and include a monastery (Beverley), settlements (e.g. Nafferton and North Frodingham), cemeteries (e.g. Hornsea, Burton Pidsea, Hessle, North Frodingham, Swine and Stamford Bridge) and various isolated finds (recently summarised in Van de Noort and Davies 1993).

The archaeology from wetlands elsewhere in the North Sea basin provides us with very different pictures of the importance of these landscapes in the early medieval period. Ample evidence exists for the widespread exploitation of, and settlement in, the lowlands of Holland, Frisia and the East Anglian Fens, displaying a perception of wetlands as attractive and exploitable landscapes.

In view of this contrast, a debate on Yorkshire's wetlands in the early medieval period seems justified. This paper sets out the general development of wetlands in the North Sea basin, particularly in relation to sea-level change, and discusses the exploitable potential of wetlands. Secondly, it examines the extent of the wetlands in Yorkshire. Thirdly, it discusses the wetlands of Holland, Frisia and the East Anglian Fens in the early medieval period, before discussing the issue of the general absence of wetland occupation and exploitation in early medieval Yorkshire.

Discoveries, analyses and re-assessments forming part of the Humber Wetlands Survey, the English Heritage-commissioned study of the wetlands in the Humber basin lowlands, have changed our understanding of wetlands and their past exploitation in Yorkshire. To date (spring 1997), survey has been completed in Holderness in the East Riding (Van de Noort and Ellis (eds) 1995) and the

Humberhead Levels largely in the West Riding (Van de Noort and Ellis (eds) 1997). Research will be undertaken at a later date in the southern Vale of York and the Hull valley (e.g. Van de Noort and Etté 1995).

### **Wetland development and exploitation**

Prior to the systematic construction of dikes and attempts at drainage from the tenth century AD onwards, wetlands in the lowlands of the North Sea basin were extensive in all areas below c. 5 m above Ordnance Datum (OD; (Fig. 10.1)). They developed during the Holocene in response to sea-level change. Sea-level change takes place in a continuing cycle of transgressions (base level rise) and regressions (base level fall), the net result of which has been a rising mean high-water mark of about 18 m below OD in the early post-glacial to around OD in the middle Bronze Age, c. 1500 cal BC (Gaunt and Tooley 1974; Everard 1980).

Since the middle Bronze Age, a series of well attested transgression-regression cycles have taken place in the North Sea basin; in Continental contexts these transgressions have been named Dunkirk 0–IIIb. The Dunkirk Ib transgression is dated to the later Iron Age, and was followed by three centuries of regression. The commencement of the Dunkirk II transgression is dated to the later Roman or early post-Roman period, and ended c. 700 AD (Hageman 1969; Jelgersma and Van Regteren Altena 1969). In other words, the Continental lowlands adjacent to the North Sea basin experienced increased marine activity from c. 350 AD to c. 700 AD. It is assumed that a similar development took place along England's east coast, although evidence to date from this area is less informative of the scale and impact of this transgression.

As far as wetland development is concerned, during transgression phases estuarine creek systems typically extend landwards and tidal flat areas are enlarged. In the final stage of a transgression period, widespread sedimentation takes place, silting up creeks and allowing for the development of saltmarshes on tidal flats. This sedimentation creates run-off problems for rivers in

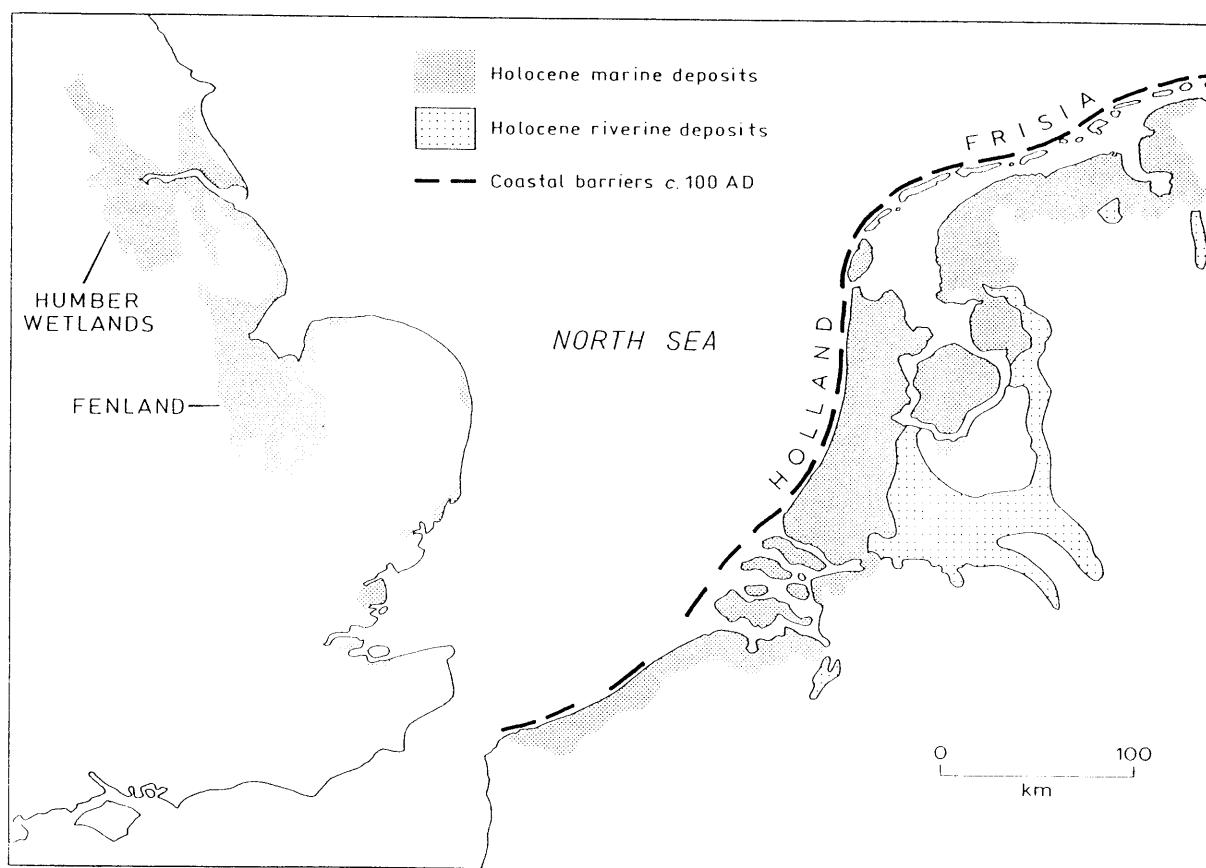


Fig. 10.1: The main wetland regions in the North Sea basin

lowlands, and the reduced flow discharge results in the development of widespread floodplain mires, either through paludification (i.e. the saturation of soils through water level rise) or actual flooding. During regression periods, wetland vegetation develops, resulting initially in widespread peat formation, often followed by auto-genic terrestrialisation, a term which covers the evolution of mudflats, via saltmarshes, reedswamp, sedge fen and carrland to deciduous woodland (e.g. Louwe Kooijmans 1980; Waller 1994; Shennan in Waller 1994, 35–38).

Although the mean high-water mark from c. 1500 cal BC until the tenth century AD continued to reflect the individual transgressions and regressions, no net sea-level rise or fall appears to have taken place, and the effect of the continued build-up of sediments was largely counteracted by the compaction of earlier peat deposits (Gaunt and Tooley 1974). During this time, however, beach and coastal barriers formed during one transgression phase influenced the wetland development of successive transgression and regression phases, for example when dune systems were not breached or overtopped in a transgression period, or alternatively during regression phases when run-off from lowlands behind coastal barriers was impeded by these barriers (cf. Louwe Kooijmans 1980). This allowed for great diversity in

wetland development in the North Sea basin. From the tenth century AD onwards in the Low Countries and the East Anglian Fens, and from not later than the eleventh centuries in Yorkshire, large-scale man-made embankments greatly altered the effects of the transgression-regression cycle on wetland development.

The term 'wetland' has thus far been used for a variety of landscapes, including raised mires, river floodplains and estuaries. The primary or biological productivity, natural vegetation and hydrology of these landscapes varies greatly, and the exploitable resource of different wetlands is determined by these factors. For example, the primary productivity of raised mires ('bog') in temperate Europe may be as little as 200 g carbon/m<sup>2</sup>/year, which is less than, say, temperate grassland (in the order of 260 g carbon/m<sup>2</sup>/year), temperate cultivated land (in modern conditions estimated at 300 g carbon/m<sup>2</sup>/year) and temperate deciduous woodland (in the order of 540 g carbon/m<sup>2</sup>/year). On the other hand, the primary productivity of lotic (i.e. river plus river floodplain) ecosystems, can be in the order of 1000 g carbon/m<sup>2</sup>/year and higher, and of estuarine ecosystems as much as 1800 g carbon/m<sup>2</sup>/year (Leith 1975; Williams 1990; Wetzel and Ward 1996; see also Dinnin and Van de Noort 1997).

In terms of exploitable resources this means, for example, that the agricultural capability of wet meadowland, as part of a lotic ecosystem, can be up to four times that of 'dryland' pasture, three times that of terrestrial cultivated land and double that of deciduous woodland. Saltmarshes are readily exploited as grazing land for cattle and sheep, although pigs are usually not at home in this wetland landscape (Clason 1977). Opportunities to exploit these wetland ecosystems further has been highlighted by experimental research on saltmarsh in the Netherlands, where it was found that incidental flooding of fields with salt water was not detrimental to certain arable crops (Van Zeist *et al.* 1976; Bottema *et al.* 1980). Nevertheless, this does not mean that all wetlands are readily exploited for agricultural production, but rather that they are potentially exploitable, often after natural modifications in, or artificial management of, the local hydrology.

The primary productivity of ecosystems, measured by plant or algae growth, is partly linked to the amount of nutrients made available to the primary producers, usually in soluble form. The high productivity of wetlands, including wet meadowland, is furthermore increased through the relatively high temperature of wetland ecosystems during the winter months, which extends the growth period and limits the duration of dormancy to two or three winter months only.

Oligotrophic (i.e. nutrient-poor) ecosystems, including many peatlands, have a relatively low primary productivity, which can often be attributed to the ombrotrophic (or rain-fed) character of the mire, and is partly the result of the incomplete organic decomposition of plant remains, which is itself the reason for peat formation. The primary productivity of oligotrophic ecosystems can nevertheless be increased by burning or drainage of the upper layers, both of which result in decomposition and the release of nutrients (Besteman 1990). Furthermore, where mires have been flooded, and where nutrient-rich minerogenic alluvium is deposited on top of peat bogs, opportunities for both arable and pasture-dominated agricultural activities are plentiful.

Apart from agricultural exploitation, early medieval wetlands may have provided important additional resources of fish, shellfish, and waterfowl, their abundance mainly dependent on the primary productivity (e.g. Prummel 1983). In addition, the importance of salt production in coastal and estuarine areas is well attested (e.g. Besteman 1974; Adshead 1992), while access to rivers became increasingly important from the later seventh century onwards, with the development of North Sea trade reflected in the development of inter-regional trading ports such as Dorestad (Van Es and Verwers 1980; Van Es 1990).

### *Yorkshire's wetlands*

In view of this potential, the dearth of archaeological evidence for the exploitation of Yorkshire's wetlands in the early medieval period is surprising. Much of Yorkshire in this period could be classified as wetlands. (Fig. 10.2) provides a provisional map of the areas where the different types of wetlands could be encountered in the early medieval period. The wetlands and their value for exploitation will now be discussed, starting with the Holderness plain and moving westwards to the Hull valley, Vale of York and the Humberhead Levels respectively.

### *Holderness*

In the lower Humber estuary, in southern Holderness to the east of the river Hull, intertidal saltmarsh may have been extensive in the early medieval period, and towards the tenth century saltmarsh communities may have provided valuable grazing land (Sheppard 1966). No archaeological evidence exists for this area, however; erosion following a shift in the main channel in the estuary, the possible destruction of Spurn Point's predecessor and increased storminess resulted in the wholesale destruction of the area in the thirteenth to fifteenth centuries (de Boer 1963).

Further northwards, behind the ridge of Devensian till and Kelsey Hill Beds on which settlements including Hedon, Keyingham, Patrington and Kilnsea can be found, extensive carrlands existed in inlets such as the Keyingham Drain (including Roos Carr), the Winestead Drain and low-lying areas near Hedon and Kilnsea. Partly on the basis of historical evidence, it has been argued that these inlets were prone to flooding until the seventeenth century (Dinnin and Lillie 1995), but this would have made for highly productive pasture lands. Such a situation may have prevailed in the Anglo-Saxon period, although stratigraphic evidence is absent following post-medieval desiccation and soil wastage.

Recent work by the Humber Wetlands Survey in the Keyingham Drain area established exploitation of this inlet in the area around Halsham from the late Mesolithic period onwards, coinciding with large-scale wetland development here following estuarine incursions (Dinnin and Lillie 1995; Head *et al.* 1995; Taylor 1995). One site studied in the Keyingham Drain during the survey was a multi-period earthwork at West Halsham ('Halsham-24' in Head *et al.* 1995), which was ploughed up in 1997 (Fig. 10.3). The site comprised three elements: a multi-vallate rectangular ditch enclosing an area of c. 7 ha; a large semi-circular ditch enclosing an area of c. 4 ha, which is within the area enclosed by the multivallate ditch; and a twelfth-century church with earthworks representing house platforms, presumably belonging to the historically recorded late thirteenth-century manor house. Although the site is partly situated on a till outcrop,

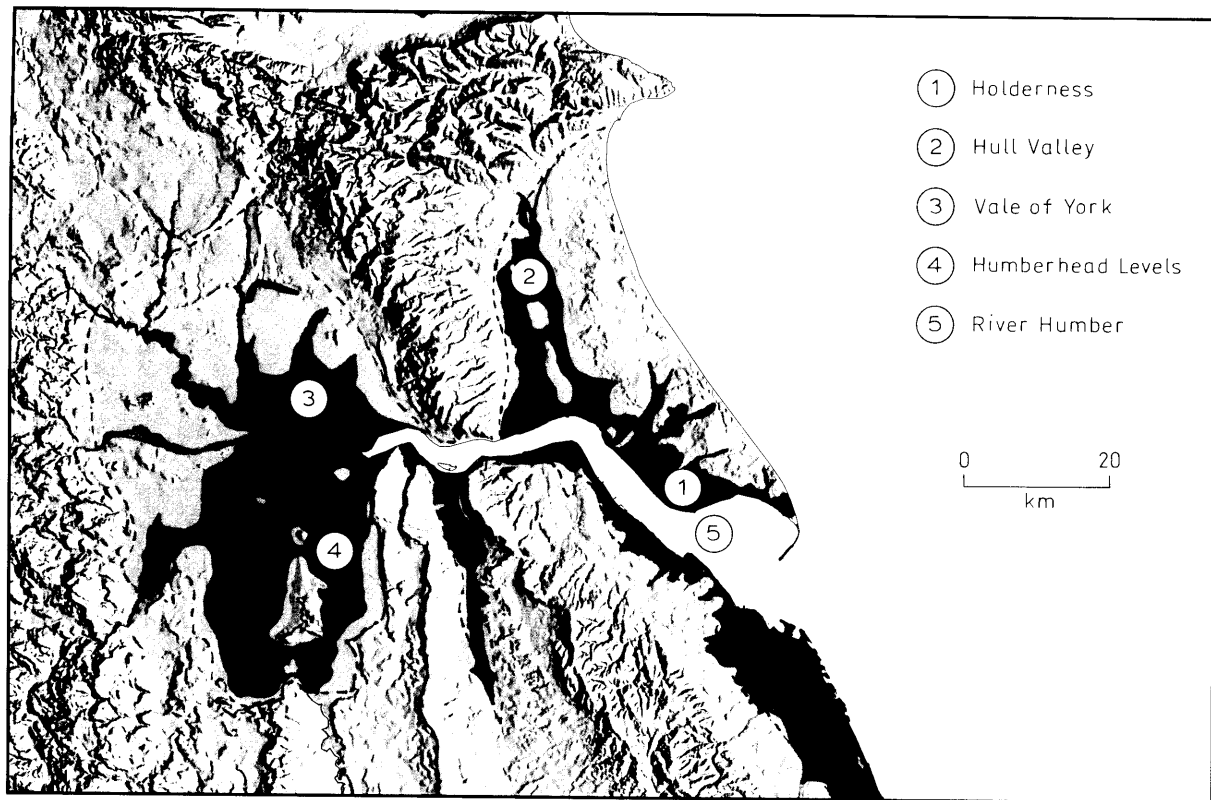


Fig. 10.2: Digital Terrain Model of the wetlands of Yorkshire. Solid black shows areas that would have been susceptible to regular flooding in the period AD 450–900; the interrupted line defines the study areas of the Humber Wetlands Survey.

it must have been surrounded on three sides by wetlands. The dating of the site remains incomplete, although the multivallate ditch must post-date the deposition of alluvial sediments of Iron Age date, and association with a nearby Roman *tumulus* seems likely. Fieldwalking on a small part of the area enclosed by the semi-circular ditch resulted in the retrieval of twenty-eight sherds of pottery; fourteen of these can be dated to some time in the early medieval, Saxo-Norman or medieval periods, along with a possible fragment of Charnwood pottery of middle Anglo-Saxon date. Despite the scanty evidence surrounding the date of occupation, the earthworks at West Halsham represent the only site of probable early medieval date in southern Holderness which can be linked to the wetlands, either exploiting them as grazing land or utilising them for enhanced protection.

### Hull valley

The most recent study of the wetlands in the Hull valley is that by Sheppard (1966), who considered the floodplain to have been exploited extensively as meadowland in the later Anglo-Saxon period. The presence of a number of small Anglo-Saxon cemeteries at Hessle, North Frodingham and Swine, the settlement and possible royal vill at Driffield near the Hull headwaters, and the monastery at

Beverley suggests that the Hull valley was indeed of some importance. Most of these sites are situated just outside the wetlands themselves, suggesting that the importance of the Hull valley concerned the exploitation of the extensive carr and meadowland as pasture, rather than the use of the river itself for trade (cf. Van de Noort and Davies 1993).

Only one excavation of an Anglo-Saxon site in the Hull valley has taken place, namely at Skerne where the foundations of a bridge and adjoining gravel causeway were excavated in 1982 by the Humberside Archaeology Unit (Dent 1983; Fig. 10.4). Below the bridge, metal finds including a Viking sword and spearhead were found, together with many animal bones, none of which had butchery marks. These findings provide a rare insight into the perception of wetlands by the Vikings in England; the deposition has undoubtedly religious connotations, which can be linked to similar practices in peat deposits in Denmark (e.g. Crumlin-Pedersen and Rieck 1993). Ritual deposition often takes place in peripheral or liminal zones, which may have been viewed as 'wilderness' with little or no value for subsistence (cf. Cohen 1985).

Evidence from decades of intensive archaeological research in Kingston upon Hull suggests that this absence of Anglo-Saxon remains is real, rather than a consequence of subsequent burial by alluvial sediments or peat.



Fig. 10.3: The multivallate site at west Halsham, Holderness, before ploughing. Crown copyright/MOD

Summarising this evidence, Evans (1996) points to the presence of many Roman and thirteenth-century and later sites and finds within Kingston upon Hull, but the complete absence of material dated between the fifth and twelfth centuries.

#### *Vale of York*

The wetlands in the southern Vale of York (bounded by the river Aire in the south and York in the north) are predominantly associated with the floodplains of the rivers Aire, Ouse, Derwent and their tributaries although, in the area near the Humber estuary, extensive wetlands existed in the area around Holme-on-Spalding-Moor, in the watershed of the river Foulness (Millett and McGrail 1987). Furthermore, much of the southern Vale of York was prone to waterlogging due to inhibited natural drainage, leading to the development of surface water gley and groundwater gley soils.

In the Roman period, the Vale of York was extensively exploited, as illustrated by the many pottery kilns and settlements in and around Holme-on-Spalding-Moor (Halkon and Millett (eds) forthcoming). Not only were

the relatively free-draining soils of the Mercia Mudstone of importance, but much of the estuarine creek system known as Walling Fen appears to have been used and occupied. Nevertheless, Millett (forthcoming) describes the area around the river Foulness and Walling Fen as something of a 'backwater', an argument partly based on the absence of coins and imported pottery, while the production of coarse wares may have offered a 'cash-crop' for paying taxes. No evidence exists for continuing occupation or Anglo-Saxon exploitation in this well-researched area (Loveluck forthcoming).

The evidence of early medieval York apart, the wetland archaeology of the Vale of York as a whole consists mainly of sites and finds just above the floodplains of the rivers Ouse and Derwent, such as the small cemetery at Stamford Bridge in the Derwent valley. Churches with architectural elements of late Anglo-Saxon date include Copmanthorpe, Drax and Wheldrake, while stone crosses of this date are known from Holme-on-Spalding-Moor and Kirkby Wharf. Further afield, evidence from the edge of the Wolds in the Hayton area suggests continued occupation into the fifth and sixth centuries AD, studied within the framework of the Holme



Fig. 10.4: The excavation of Skerne bridge in 1982. © Copyright reserved, Humber Archaeological Partnership

project (Halkon and Millett (eds) forthcoming) It has been suggested that the margins of Walling Fen may have been used as 'water meadows' in a transhumance system (Loveluck forthcoming), but no evidence exists to support the idea. It remains to be seen whether the Humber Wetlands Survey will add anything further to our understanding of this area.

### *Humberhead Levels*

The wetlands in the Humberhead Levels (defined here as bounded by the river Aire in the north and the pre-1974 county boundary with Lincolnshire in the east) comprise the floodplains of the rivers Aire, Went, Don, Torne and Idle, and the raised mires now known as Thorne and Hatfield Moors. In the early medieval period, extensive floodplain mires existed in the upper reaches of these rivers, while further downstream, nearer their outflow in the rivers Trent or Ouse, deposition of non-organic clastic sediments appears to have been widespread (Dinnin 1997a; Lillie 1997). The latter area must have been well-suited for summer pasture.

Recent systematic survey of parts of all the floodplains

of the Humberhead Levels has resulted in the discovery of a substantial number of Roman sites, predominantly of the third to early fourth centuries AD. Such sites have been found both on mire floodplains, for example on the Idle floodplain between Bawtry and Scaftworth, and on the floodplains where clastic sedimentation dominates, for example at Sandtoft and Crowle on the floodplain of the river Don. These sites all contained pottery, suggesting some kind of settlement (Head *et al.* 1997). A larger Roman site of similar date was discovered during the Humber Wetlands Survey at Trent Falls, where the rivers Ouse, Trent and Don form the river Humber. It suggests the planned exploitation of the wetlands of the Humberhead Levels, presumably dominated by cereal production or stockbreeding.

Not a single find from the Humberhead Levels, however, could be dated to the period after the fourth century AD. This may be due to the overall dearth of early medieval finds from the area west of the river Trent, or to the effects of the late Roman or early post-Roman marine transgression (Dunkirk II in a Continental context) which would have made the area wetter. Alternatively, there is evidence for substantial overbank flooding and



alluvial accretion derived from soil erosion triggered by extensive arable farming in the Roman period (Buckland and Sadler 1985). The palynological record from Thorne and Hatfield Moors and from the Idle floodplain at Scaftworth also indicate a distinctive period of woodland regeneration in the early post-Roman period (Gilbertson and Blackham 1985; Smith 1985; Van de Noort *et al.* 1997). In all, there is ample evidence to suggest abandonment of the wetlands in the Humberhead Levels during the fifth and sixth centuries. Archaeological and historical information on settlements remains confined to the higher or free-draining soils of Sherwood Sandstone to the west or Mercia Mudstone to the east. Utilisation of, and settlement in, the wetlands does not apparently occur on any large scale before the eleventh century when, under the influence of monastic institutions, river embankments and drainage ditches were constructed (cf. Beresford 1986, Dinnin 1997b). Sparse finds from the Isle of Axholme may indicate some role for the easternmost wetlands, most probably as summer pasture lands.

In short, the early medieval evidence of the exploitation of Yorkshire's wetlands is largely absent. The location of some middle and late Anglo-Saxon settlements, churches and cemeteries suggests the use of floodplains for pasture, but apart from this the wetlands appear to have been perceived as 'wilderness' until their improvement at a later date.

### *A North Sea perspective*

Archaeological evidence for the early medieval exploitation of wetlands elsewhere in the North Sea basin is much more extensive. The main aspects of the evidence are outlined here for three regions: Holland, Frisia and the East Anglian Fens.

#### *Holland*

Holland is defined here as the present Netherlands provinces of North Holland and South Holland, which were inhabited by 'Westfrisians' for much of the period under consideration. The Holland wetlands in the early medieval period comprised extensive peatlands, predominantly oligotrophic 'Holland' peat, and more sparing clay deposits of Dunkirk transgressions which developed behind Older Dunes and beach barriers (Besteman 1990; Bult and Hallewas 1990). The archaeological evidence for Holland shows extensive occupation in the Roman period. Although this was largely concentrated on the free-draining Older Dunes, it is becoming increasingly clear that the mires and claylands to the east of the coastal zone formed an essential part of the rural economy in Roman times (e.g. Bult 1983; J. Bloemers, pers comm).

The immediate post-Roman period appears to be one of widespread abandonment, with very few sites and finds dated to the fifth and sixth centuries AD. Those that are

known are all located on the free-draining Older Dunes or pre-Holocene outcrops. From the seventh century onwards, however, the wetlands of Holland are more intensively used, with occupation initially adjacent to rivers on marine and fluvial clay deposits, but later on the oligotrophic peatlands as well (Besteman 1990, Bult and Hallewas 1990).

Besteman (1990) has argued that this 'colonisation' of Holland's wetlands followed in part the submission of the Frisians to the Frankish élite in the early eighth century, although the earliest settlements on peat bogs may have been as early as 700 AD, just pre-dating the Frankish presence in the area. Holland participated in the general prosperity and demographic growth of the Carolingian empire which is reflected in settlement distributions for this period. Numerous settlements are thought to have been founded on peat and saltmarshes. Although palynological evidence for cereal production is present for this period, it was undoubtedly stockbreeding which predominated, largely based on cattle but with a significant sheep/goat element present throughout the region. Additionally, archaeological evidence is present for salt production, fishing and some hunting of wildfowl at a number of excavated sites.

The labour-extensive pastoral economy allowed for the development of the trading role of the Westfrisians, which existed before the incorporation of Frisia into the Carolingian empire, but then expanded rapidly from the early eighth century onwards (Slicher van Bath 1978). This gave rise to the trading settlements of Medemblik, Muiden, Witla, Vlaardingen, Maasland and Dorestad, the latter just outside Holland. It seems that the Westfrisians successfully developed a 'wetland economy', based on stockbreeding and trade.

The continued reclamation of the ombrotrophic mires continued during the ninth and tenth centuries, which is surprising as this period is generally perceived as one of economic decline following the division of the Carolingian empire. The most eloquent explanation for this phenomenon has been put forward by Besteman (1990), arguing that peatlands were seen as areas of wilderness. In theory, at least, the king was the landowner of areas of wilderness, but such lands were usurped and reclaimed by local élites and 'free' farmers, as the distant king was ineffective and could no longer rely on, and take revenue from, his subordinates.

#### *Frisia*

In Frisia, the northern part of the Netherlands, the clay deposits lacked a continuous coastal barrier such as that formed along the coast of Holland, but extensive tidal flats would have limited the occurrence of flooding by salt water (Louwe Kooijmans 1990). No doubt exists about the exploitable resource of these saltmarshes during regression periods, when the area appears to have been naturally well-drained and would have been suitable for

an economy dominated by stockbreeding. The settlements focused on drained ridges and creek levees, and on 'terps', i.e. artificially raised ground forming 'islands' at spring high tides (e.g. Van Giffen 1939; Halbertsma 1965–66; Klok 1979). The earliest terps are dated to the period around 400 BC (e.g. Ezinge, Tritsum and Hatsum), and the phasing of terp construction or raising correlates to periods of marine transgression (Waterbolk 1965–66; Louwe Kooijmans 1980). While the earliest terps were constructed during the Dunkirk Ib1 transgressive sub-phase, a second generation of terps was constructed around 200 BC, during the Dunkirk Ib2 transgressive sub-phase. In the Roman period, many terps are known to have been occupied, and the presence of Roman coins and Samian ware suggests close trading contacts with the Roman empire (Van Es 1965–66). Absence of archaeological evidence suggests, however, that by the third century AD most terps were deserted. This corresponds to the beginning of the marine transgression of Dunkirk II (e.g. Van Es 1968).

Exploitation of the Frisian wetlands, again focusing mainly on terps, began again in the early medieval period after c. 600 AD (e.g. Oostum, Westerwijtwerd, Marsum, Wiersum and Krassum), following the Dunkirk II transgression. Again dominated by stockbreeding, exploitation of the saltmarshes continued from the many terps. Indeed, Halbertsma (1965–66) has argued that the word 'terp' was initially used to describe the enclosure or fenced-in ground associated with cattle farming, rather than the elevated mounds currently associated with the word. The terps prospered, first within the Frisian kingdom and later as part of the Carolingian empire, while historical and archaeological evidence has highlighted the role of the Frisians in North Sea trade. From the tenth century onwards, the importance of the terps declined following large-scale embankments of the Frisian coastline.

### *East Anglian Fens*

The wetlands of the East Anglian Fens developed around the Wash as a consequence of marine transgressions during the Holocene (Waller 1994). Prior to drainage, the wetlands of the Fens were the most extensive in England, extending over c. 400,000 ha, of which c. 250,000 ha were surveyed during the Fenland Survey (Hall and Coles 1994). The archaeological evidence shows a high degree of Romano-British occupation of the region, with the claylands extensively exploited, as witnessed by roads (e.g. the Fen Causeway), canals (e.g. the Cambridgeshire Car Dyke), many rural settlements, a large stone building at Stonea Grange and an extensive salt industry (Potter and Jackson 1982; Lane 1993; Hall and Coles 1994).

Sites containing early Anglo-Saxon material exist in the East Anglian Fens, particularly in southern Lincolnshire (Hayes and Lane 1992). This material was encountered more often than not on sites with extensive

middle Anglo-Saxon settlement remains, and sites at Pinchbeck and Gosberton contained Roman material as well. Most interesting is the occurrence of settlements on low mounds, of presumably anthropogenic origin, for example at Pinchbeck, Gosberton and Quadring (Hayes and Lane 1992, Hall and Coles 1994). These sites include evidence for stockbreeding, and for wetland exploitation in the form of mussel shells, while the material culture includes pottery of middle Anglo-Saxon date. Although further research is evidently necessary, it is tempting to refer to such low mounds as 'terps'. Their vertical development was arrested by the construction of the Sea Bank, not later than the late Anglo-Saxon period, which provided continuous protection from further flooding.

Elsewhere in the East Anglian Fens, sites of middle Anglo-Saxon date have been found in Norfolk's wetlands, usually situated on 'roddons', banks of sand or clay representing former water channels now lying above the level of the surrounding peat surface due to subsequent shrinkage of the peat on drying out. The archaeological evidence suggests that the sites specialised in pastoral exploitation of the drier saltmarshes, possibly organised in estates (Hall and Coles 1994).

### *Discussion*

From the above survey of the large wetland regions in the North Sea basin, it is evident that wetland exploitation in the early medieval period was widespread and clearly dominated by stockbreeding, although grazing of the saltmarshes was part of a more extensive 'wetland economy' which also included fishing, hunting, arable agriculture, salt-making and trade. It is also manifest that the apparent problems of settlement in wetlands were overcome, either by utilising natural higher grounds or by constructing mounds or terps. The question remains: why are there no early medieval terps in Yorkshire?

Although I cannot offer an unequivocal answer, various potentially valid arguments can be offered. On the one hand, reasons for wetland exploitation from elsewhere in the North Sea basin may be irrelevant. The exploitation of wilderness as a quest for freedom, or at least to avoid being taxed, as has been suggested for the peatland exploitation in Holland, may not have been an issue in the political climate of early medieval Yorkshire. Also, the region appears to have performed at best a secondary role in the long-distance trade of this period and the absence of large riverside settlements identifiable as ports-of-trade or wics may be a consequence of this marginal position.

On the other hand, we must consider the possibility of invisibility of sites of early medieval date. This may have been caused by erosion (e.g. in southern Holderness), subsequent sediment accretion (in the Hull valley and the Humberhead Levels), or may be culturally determined. For example, the highly visible cemeteries dominate the archaeological record of Yorkshire in this period, but



cemeteries are rarely sited on soils which are not free-draining, and may always have been at some distance from wetland settlements.

Among the natural environmental explanations must be counted the effect of the post-Roman marine transgression. Recent research in the Humber wetlands has identified various Roman period sites which were subsequently buried by up to 2 m of alluvial sediments (Van de Noort and Ellis (eds) forthcoming), although the date of this transgression remains ambiguous. Nevertheless, the existence of a marine transgression from the middle of the fourth century AD must be considered realistic, and such a transgression would have made the wetlands unexploitable for some time. For the Humberhead Levels, it has also been argued that over-exploitation of the region in the Roman period may have contributed greatly to erosion and degradation.

However, the most likely explanation of the dearth of archaeological remains in Yorkshire's wetlands is that stockbreeding practices were different from those of other areas. In Holland, Frisia and the East Anglian Fens, the settlements associated with stockbreeding were located within the wetlands, particularly the saltmarshes and extensive mires which provided the main source of fodder, suggesting a specialised pasture-dominated farming practice. In Yorkshire's wetlands, riverside meadowlands rather than saltmarshes and mires may have been considered the most productive type of wetland landscape, with the Holderness plain possibly the only exception.

Meadowland exploitation is likely to have been less specialised than saltmarsh exploitation, and to have formed part of mixed farming practice. The farms and settlements would therefore be situated near the arable fields, the 'in-field', on free-draining ground; these sites are archaeologically visible today. The riverside meadowlands would have been exploited as the 'out-field', leaving few if any archaeological remains.

Having said this, in view of the rate of discovery of new sites in the wetlands of the Humber basin, as part of the Humber Wetlands Survey or otherwise, it is not inconceivable that early medieval settlements and low terps simply await discovery or identification. Further archaeological research in the present villages in the lowlands of Yorkshire may also provide a fruitful avenue of study. It is possible that some villages developed from farms located on terps. The development of such early medieval terps, if they ever existed, would have been arrested by the construction of dikes and banks, following the East Anglian model described above, and they therefore may have escaped identification.

## Conclusion

In the early medieval period, a 'wetland economy' developed in many lowland landscapes in the North Sea basin, based mainly on stockbreeding. This labour-

extensive subsistence allowed for the development of trade, while fishing, hunting, arable agriculture and salt-making contributed to the perception of wetlands as attractive and exploitable landscapes. Settlements in wetlands commonly utilised adjacent higher ground, or artificial mounds or terps. Little evidence for wetland settlements has been found in Yorkshire, however; various explanations have been offered, but future discoveries may still change our understanding of the early medieval exploitation of Yorkshire's wetlands.

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