Fig. 1: how a Saxon fish trap might have appeared (© Essex County Council)

The river and the fish: a preliminary evaluation of the archaeology of early medieval fish traps in the Thames

Paul Clabburn

"Sex and fish traps? What's that about? I don't get it."

"Saxon", I enunciated carefully. "Saxon fish traps. Early medieval.[1] They're in the Thames." My questioner still didn't get it and she wasn't alone. With all the glamour that London's archaeology offers, why was I obsessed with rotting stumps of wood in a river? Put like that, of course, you may feel she had a point.

But for a volunteer with the Thames Discovery Programme, the community archaeology project hosted by Museum of London Archaeology, these structures offer much more – a glimpse into everyday life in a time frequently characterised by that most evocative of misnomers, 'Dark Ages'.

The archaeological evidence for such traps has only emerged to any significant extent in the past three decades. Today there are a number of sites along the river which, with varying degrees of probability, can claim to be the site of an early medieval trap.

The structures were used to catch freshwater and migratory species, the source of fish in the diet for the majority of the early medieval period in England.[2] Although there are, of course, many ways to fish, London's traps appear to support the assertion that from its earliest days its inhabitants derived much of their fish for food from the tidal river.[3] But how many survive and what, if anything, might the archaeological record they leave behind suggest about the people that built them and the times they lived in? From such thoughts came the idea of surveying the whole length of the Thames to see what remained and where.

The river

Hooke suggests[4] that rivers were the lifelines of early and high medieval England. They provided food and water as well as trade and transport routes. Today, the non-tidal Thames runs from its source in Gloucestershire to Teddington in the London Borough of Richmond upon Thames, a distance of some 150 miles. The tidal section runs from Teddington to Southend in Essex, a further 62 miles. The seaward extent of the tidal estuary can be debated in administrative or geographical terms, but this survey drew an arbitrary north-south line across the river from Canvey Island on the Essex coast to due north of St Mary Hoo on the Kent coast. It set the western extent of the non-tidal river at Thames Head in Gloucestershire.

The Thames is a river of contrasts, with large areas of mud flats and salt

marsh around the estuary, meadows and farmland up-river and the conurbation of Greater London in-between.[5] Obviously, much about the river has changed. In appearance, the pattern of environmental evidence[6] is of a drop in river levels from the end of the first century AD, picking up again in the post-Roman period and then dropping again in the Saxo-Norman period. This has been followed by a continued rise since about AD 1181, exacerbated by human activity including the construction of revetments and embankments.

The Thames traps may give a clue to river levels because the early and middle Saxon fish traps are often found at a relatively low level on the foreshore, well below Ordnance Datum.[7] Further, the existence of barrier traps, generally thought to exist when water flow was in only one direction, may be an indication of how far the tidal head reached in the Thames in the Early Saxon period.[8]

The 21st-century river flows through London in a much deeper and narrower channel than it would have done in the early medieval period. To understand the world of *Lundenwic*'s traps, a broader and shallower tidal river should perhaps be imagined.

It is also worth considering the discussions provoked by the use of fish traps in the Severn estuary in Gloucestershire. That river system is often treated as having two parts, the inland river and the wider estuary, but it has been argued[9] that there is a third part, the length of transition from the one to the other, which combines some characteristics of both. The resulting regime differs from that in the further upstream and further downstream reaches and must have influenced the design of traps in the respective lengths.

Such a distinction might usefully be applied to the Thames. If the wider estuary can be assumed to fall between Kent and Essex, while the riverine Thames is to the west of Teddington Lock, then the transition, the tidal Thames, flows mainly through Greater London. It is this length of river which contains the majority of recorded early medieval fish traps.

The Traps

For a site to be included in the survey it had to be:

- within the River Thames or its immediate area, and within the defined geographical area
- dated to the early medieval period using stratigraphic, radiocarbon or dendrochronological analysis
- identified as a probable fish trap by a recognised archaeologist.

It is surprising, given the number of sites investigated, the length of the river and the number of fisheries referred to in surviving documentary sources, that only ten traps met the criteria (see Table).

There is no archaeological record of early medieval traps in the approximately 150-mile stretch of the non-tidal Thames to the west of the Shepperton site. To the east, despite the extensive coastal remains at Blackwater, nothing meets the qualifying criteria on the Essex side of the estuary while there is only one qualifying site in Kent. Instead, there is a distinct weighting of recorded archaeology towards the Greater London area and an apparent bias towards the survival of early and middle Saxon structures throughout.

Salisbury's contention, having investigated early medieval traps in Nottinghamshire, that "… the small number of excavated examples gives a poor reflection of their importance in the local economy"[10] would appear to be equally true of the Thames.

'Trapping' means that a fish enters a catching chamber from which escape is difficult or impossible.[11] Although a broad definition, it is useful when 'fish trap' and 'fish weir' are frequently used confusingly and interchangeably.

The roots of the word 'weir' lie in the Anglo-Saxon *wera*, which can be translated to mean a fixed structure with which to trap fish. Typically they consisted of V-shaped fences or 'hedges' with wattling forming the two sides or wings of the V (*haccwer*, meaning hedge weir). These converged to a narrow gap where a net, small enclosure or wicker basket (*cytwer* – basket weir) was set to trap the fish (Fig. 1).[12] There were different forms of such structures, and their type and location was partly related to the nature of the river bed and flow of the river as well as to the intended catch.[13] The Thames examples, for instance, may have been supported by diagonal bracing posts to help withstand the force of the tide.[14a]

The river also contains 'barrier' weirs, a line of posts joining a fixed point, such as the river bank or a Thames island (also known as an eyot). This type of structure is usually found where the water flows in one direction,[14b] although it is also possible that what survives is a single surviving arm of a V-shaped trap, for example those found at Chelsea and Putney.[15] A distinguishing characteristic of both types of trap is that they were fixed

Site	site code	dating (AD)	wood	form
Shepperton, Surrey	SMR: 1273	i) 410–650 ii) 250–690	oak?	V-shaped or barrier
Isleworth	MoL: FHL04/A113	i) 660–880 ii) 660–890	oak	barrier
Hammersmith	MoL: FHM04	490–591	oak	barrier
Barn Elms 1	MoL: FHL04/A113	i) 430–670 ii) 560–810	oak	barrier
Barn Elms 2	MoL: FRM 21	i) 660–890 ii) 670–950	oak	V-shaped
Putney	MoL FWW04	i) 410–620 ii) 420–640	oak and elm	V-shaped
Chelsea 1	MoL: FKN01	660–890	oak	V-shaped
Chelsea 2	MoL: FKN01	640–880	unknown	V-shaped
Nine Elms	Mol: FWW17	550–670	oak	barrier
Northfleet, Kent	Kent HER: TQ67SW298	Mid–Late Saxon	oak	basket

Table 1: list of known fish traps in the study area. Wood described as construction material has been sampled but does not necessarily represent the whole structure

engines, i.e. they did not require weights.[16]

In contrast, *cytweras,* basket weirs, which are also referred to in Saxon land charters,[17] were pegged or weighted down but did not use a barrier. There is a possible Thames example at Northfleet, Kent.[18]

With all the Thames sites, there are difficulties inherent in interpretation of form and function, relating to the extent and condition of the surviving remains and difficulty of access to the sites. There does not appear to be an obvious pattern of development to suggest that V-shaped traps evolved from barrier weirs. Two of the earliest Thames examples, Shepperton (Fig. 2)[19] and Putney, could be V-shaped while the Middle Saxon traps at Chelsea could be barriers.[20] More likely, the ability to construct either V-shaped or barrier weirs pre-dates the Early Saxon period and the choice of what to build was dictated by local resources, topography, tidal head and feasibly choice of prey.

Rowbotham[21] deserves consideration in relation to whether a trap is being used as a barrier or a V-shape. He points out that on non-tidal reaches, a practical plan would be to construct hurdles in a line running diagonally across the river at an angle to the bank, so that the wattle work and bank together formed the sides of a funnel. In such a case the trapping point would be at or close to the bank and accessible either directly from the bank or from a small staging. Thus the fishery could be worked at most levels of the river.

Such an approach could apply to the possible barrier traps at, for example, Chelsea 2 and Barn Elms 1. The latter may have stretched across to a now vanished eyot to catch eels swimming downstream.[22] Applying Rowbotham's hypothesis, it is also conceivable that it could have been positioned to create an apex towards the western bank, thus catching migratory young eel, elvers, vast numbers of which swam up the Thames in a spring 'reverse migration'.[23]

Why Early and Middle Saxon sites predominate in the surviving archaeology is unclear. Looking at a similar pattern on the east coast, Murphy notes that the evidence suggests an intense phase of activity in the seventh to ninth centuries and reduced activity after that date.[24] He thought possible explanations included:

- The traps were so effective that they depleted estuarine fish-stocks to below economic levels.
- If the traps were under monastic control and direction then the economic and social disruption related to the ninth-century Anglo-Scandinavian conflicts might have reduced levels of construction in the east.
- New sources of supply – deep sea marine fishing – might have reduced the profitability of estuarine fish traps.

These hypotheses can be set alongside the impact of the three "... most important potential confounding variables ..."[25] – the impact of technological innovation, environmental change and Christian fasting practices – when attempting to explain the paucity of Late Saxon traps in the Thames.

Resource exploitation 1 – the wood

The regularity of the sizes and shapes of the usually roundwood material used in the piles and upright stakes that are employed in the tidal Thames traps suggests that the timber was taken from managed, rather than wild, woodland.[26] With the exception of a single sample of elm from the Early Saxon Putney site, oak appears to have been the favoured timber from the identified samples. It would be consistent with the thought that oak was an important source of building material at the time; many examples from excavated Saxo-Norman waterfront structures were primarily

Fig. 2: the Shepperton fish trap showing stake Rows 1 and 2 from the south with wattle on Row 1 to the left. The end of Row 3 can be seen top right (photo by David Bird)

constructed of oak.[27]

No constituent part of the wattle from the riverine/tidal Thames sites has been identified. The Shepperton sample was used only for dating[28] while the wattle found at Putney has not been analysed.[29]

Resource exploitation 2 – the fish

It is stating the obvious to say that people must have built traps in places where they thought fish could be caught. Siting the structures would have depended on local knowledge.

How far freshwater fish were able to swim downstream or saltwater and various migratory species upstream is a moot point. It generally depended on the salinity of the water, which cannot be ascertained with any certainty. But the fish bone evidence from sites along the Thames may help with inferences about which species it might have been possible to catch, although it cannot, of course, be stated that the fish were taken from the river.

A general dearth of fish bones in Early Saxon deposits[30] suggests that fish were not being consumed in any real quantity, were not preserved archaeologically or have not been recovered by excavators.[31a] Increased use of sieving in recent excavations has recovered low but significant numbers of fish bones to suggest that fish remains are present and may have been underestimated in the past.[31b] The survival of four, possibly five, radiocarbon-dated Early Saxon Thames traps, around half the surviving total, might also be seen as supporting the idea that fish were more prevalent in the Early Saxon diet than previously thought.

The general picture for the Middle Saxon period, even in an urban settlement such as *Lundenwic*, is still that of local fishing in the Thames with some inshore marine fishing in the estuary but no deep-sea fishing.[32]

By the Late Saxon period, the fisherman in *Aelfric's Colloquy* claims that he cannot catch as many fish as he can sell. He catches eel, pike, minnows, dace, trout, lamprey and "any other species that swim in the rivers, like sprats". He makes it clear that the market for fish is thriving but rarely fishes in the sea and when he does so he does not mention deep sea fish such as cod.[33]

Yet towards the end of the Late Saxon period a shift was apparent in London, arguably demonstrative of the so-called 'fish event horizon',[34] the large relative increase in catches of marine fish, such as herring and cod, notable for both the speed and scale of the change which is thought to have occurred within a few decades either side of AD 1000. A large sample of fish bones[35] recovered from the mid-11th-century ditch at the site at Dorter Undercroft, Westminster Abbey, for example, was dominated by herring (31%), smelt (17%), and plaice/flounder (15%). *Cyprinidae,* a family of fish which includes carp, tench and roach, was the most common freshwater grouping at eight per cent. Even allowing for variations in recovery, it is emblematic of a wider pattern of marine fish starting to feature in urban assemblages. The pattern is not repeated in rural settlements of the period,[36] particularly secular and religious elite sites, where consumption of fish increased but continued to focus on freshwater and migratory species.

Fig. 3: the fish trap at Isleworth, pictured in August 2013, looking down river (photo by the author)

The social context

It is difficult to establish from historical sources how far fish was eaten before the Conquest, not least because excavated remains of fish are identified to species defined by modern taxonomy, while historical records refer to fish in terminology which is often obsolete.[37]

But for much of the early medieval period it seems likely that fishing was a small-scale subsistence activity intended to produce food for the domestic table with the surplus sold in local markets. By the 10th and 11th centuries, the growth of urban populations, improved methods of preservation and the development of Atlantic sea fisheries led to fishing becoming a much more significant source of wealth and power.[38a] It is possible to conjecture that the latter, along with factors such as the development of fish ponds and the need for a navigable river, was ultimately a negative influence on the use of traps in the Thames.

While documentary sources account for the ownership of, and income from, fisheries – which may have included traps – they have less to say about the people whose labour might have been employed.[38b] The investment of time and materials to build and maintain small timber fish traps in the tidal Thames would not have been that great. Most construction materials were available locally and cheaply, specialist skills were not required and a small trap could have been built in a matter of days.[39] Much of the work would have been done by the lower social classes and, once built, the practical operation of a weir required it to be checked twice a day during the season, so its operators might be assumed to have lived nearby. Those higher up the social scale might not

have been directly involved with daily fishing, but they would have expected considerable income from the levies imposed on catches. Key to the method of trapping would have been a "… practical and detailed knowledge of the local movement of fish …",[40] which would have applied whether the section of river was riverine, tidal or estuarine.

Once trapped, the processing of any large catch would have required further infrastructure if the fish were to be taken to market or to be preserved for local use, using smoking, air-drying or salting.[41] There appears to be no evidence of processing at any of the sites along the Thames.

The importance of London's archaeological record

Jecock writes[42] that there "… is no single, up-to-date comprehensive work dealing with English fish weirs and fisheries" and that the most useful national overviews are more than 20 years old. Set against such a national context, the recording and publication of so much information on the Thames traps can be counted a success story.

The remains of the early medieval traps speak of far more than the sum of their surviving parts. They demonstrate people's ability to manage woodland, to understand the river and its fish and to work together. Moreover, the traps did not operate in isolation; they were part of a wider society and economy. They competed for resource. They required labour. Their economic and cultural value may well have changed dramatically during the period in question. They represent far more than rotting stumps of wood in the river. Go on, go down to the foreshore when the tide is low, take a look and imagine …

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