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Place, memory and identity among estuarine fishing communities: interpreting the archaeology of early medieval fish weirs

Aidan O'Sullivan

Abstract

Recent coastal archaeological surveys in Britain and Ireland have produced an array of evidence for the construction and use of wooden and stone fish weirs throughout the Middle Ages. These fish weirs, with their wooden fences, basket traps and other features, vary in location, size, date and complexity. Regional and local traditions are discussed and it is suggested that fish weirs provide interesting insights into the labour and practices of medieval fishing communities, particularly in terms of cultural continuity and social identity.

Keywords

Medieval; fish weirs; estuarine archaeology; Britain; Ireland; landscape; memory; social identity.

Introduction

Recent years have seen an explosion of interest in the archaeology of ancient coastal fish weirs around the world. They have been the subject of investigations in Canada (e.g. Moss and Erlandson 1998), the north-west coast of North America (e.g. Bryam 1998; Betts 1998; Tveskov and Erlandson 2003), Australia (e.g. Dortch 1997) and New Zealand (Barr 1998). In Europe, Mesolithic and Neolithic fish traps have been recorded in The Netherlands (Louwe Kooijmans 1987) and Denmark (Pedersen 1995; 1997). Recent coastal archaeological surveys around Britain and Ireland (Fig. 1) have also led to the survey, excavation and detailed analysis of fish weirs, ranging in date from prehistory to the post-medieval period (Fulford et al. 1997: 143–5). The earliest known are some Neolithic and Bronze Age wooden structures potentially associated with fishing activities at Wootton-Quarr, on the Isle of Wight (Loader et al. 1997) and on the Welsh shore of the Severn estuary (Bell et al. 2000: 307, 310).

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Figure 1 Location map of medieval fish weirs recorded in intertidal archaeological surveys around Britain and Ireland. Recent projects have investigated their form, technology and chronology on the Shannon estuary, Rep. of Ireland, Strangford Lough, Northern Ireland, the Severn estuary, Wales, and the Blackwater Estuary and the Solent Estuary (The Isle of Wight), England, among other places.

However, most projects have tended to focus on wooden fishing structures dating to the Middle Ages, and, while these have been recorded in riverine gravels, such as along the River Trent, Nottinghamshire (e.g. Salisbury 1988, 1991), perhaps the most spectacular discoveries have been made in coastal waters, in inlets, bays and particularly estuarine mudflats. Medieval fish weirs have now been recorded in England on the Blackwater estuary, Essex (Strachan 1998a, 1998b), on the Thames estuary (Milne et al. 1997), on the Isle of Wight in the Solent estuary (Loader et al. 1997) and in Wales, both on its north-west coast (Jones 1983; Bannerman and Jones 1999) and on the Welsh shore of the Severn estuary (e.g. Godbold and Turner 1994; Nayling 1997; Turner 2002). Medieval stone-walled fish weirs are also known from the coast of Scotland (Bathgate 1949). Impressive medieval fish weirs have also been recorded in Ireland, on the Shannon estuary, Republic of Ireland (O'Sullivan 2001; O'Sullivan and Daly 1999), and on Strangford Lough, Northern Ireland (e.g. O'Sullivan et al. 1997; McErlean and O'Sullivan 2002).

Medieval fish weirs were artificial barriers of stone or wood built in rivers or estuaries to deflect fish into an opening where they could be trapped in nets or baskets (Salisbury 1991: 76). In coastal and estuarine waters, fish tend to move up the shore with the flooding tide and drift back down with the ebbing tide, being attracted by feeding in the shallow water and by the nutrients in freshwater streams and rivers moving into the estuary. Thence, it is possible to trap them by erecting fish weirs across these routes, with ebb-weirs catching fish moving down with the ebbing tide and flood-weirs catching fish moving up the shore with the flooding tide. Upon encountering these barriers, the fish would tend to move along the fences into the trapping mechanism, from where they could be removed later. The fish weirs typically consisted of two (or more) converging vertical fences or walls, thus forming a large V-shaped structure. At the apex or 'eye' of the two fences there would be a woven wicker basket supported on a framework, a net or a rectangular or curvilinear enclosures of wooden posts or nets. However, medieval fish weirs vary significantly in location, form, size and style of trapping mechanism, depending on the relative size of the catch intended, the foreshore topography and current conditions and the customs and practices of local fishermen. Indeed, it is now clear that there is significant local and regional variation in the use of fish weirs around medieval Britain and Ireland.

In interpreting this evidence for medieval fishing practices on estuaries, archaeologists are hampered by the fact that they have little or no personal experience of how to build, repair and use fish weirs in chilly estuarine waters. Indeed, by and large, these are methods and practices that have died out in this part of the world, so in virtually all archaeological interpretations extensive use is made of recent ethnological studies and the recorded memories of local fishermen. Particularly influential are the descriptions of the nineteenth- and early twentieth-century estuarine fishing traditions of Ireland, England and Wales (e.g. Jenkins 1974a, 1974b; Went 1946, 1964). These books and papers, often written at a time of the death of 'traditional ways of life', are usually elegiac in tone, bemoaning the passing of seemingly long-lived, local economies in the face of modern globalization and technological change. This use of ethnological literature has had its impact on archaeological scholarship. For example, struck by the formal similarities between ancient and modern structures, archaeologists have tended also to write about 'long-term continuities in economic practices' and the 'innate conservatism of fishing communities'. Furthermore, archaeologists, presented with the evidence of medieval wooden structures literally in the middle of nowhere, have tended to turn first to contemporary documentary sources to try to reconstruct who owned and used these places. Unfortunately, as these texts virtually always emphasize the powerful and wealthy in medieval society (whether they be secular or ecclesiastical authorities), archaeologists go right to the top of the social hierarchy, simply state who the likely original owners were and ignore the muddy labourers who did the work.

While medieval fish weirs are indeed fascinating in terms of their technology and their role in control and exploitation of estuarine resources, they are equally interesting in the way that they reveal estuarine landscapes to be storehouses of cultural values and traditions. I shall explore how medieval fish weirs could be interpreted as the expression through material culture of the identities of local fishing communities. These people, through their daily work and practice within estuarine environments, their knowledge and understanding of place and their perception of the past, could have used these structures

to construct, negotiate and even resist changing social identities within the worlds in which they lived. In this paper, first, the archaeological evidence for medieval fish weirs will be briefly reviewed. Second, the social and economic role of fish in medieval society will be explained. Finally, medieval fish weirs will be interpreted in terms of place, memory and social identity.

Blackwater estuary, England

Among the most impressive fish weirs known from Britain are those from the Blackwater estuary, Essex, in south-east England. Originally discovered by local archaeologists, they have proven extraordinarily difficult to record (being located at just below mean low water, and are frequently exposed only during good weather over a few days of the year). Subsequent sea-level rise has placed structures that were originally at the limit of mudflats actually below water today. Aerial photography, geophysical and GPS surveys and small-scale excavations have revealed much, but not all, of their construction and chronology (Clarke 1993; Gilman 1998; Strachan 1997, 1998a, 1998b; Hall and Clarke 2000). The fish weirs are widely distributed along the length of the estuary, with a major complex on an isolated mud-bank at Collins Creek (at its mid-point), as well as individual examples at West Mersea, East Mersea, The Naas, Pewett Island and Sales Point – all out towards the mouth of the estuary.

The Blackwater estuary fish weirs are unusually large, often enclosing wide areas of the foreshore. Most are V-shaped ebb weirs with fences up to 100–300m in length (e.g. West Mersea, East Mersea, The Naas) located at the end of tidal channels. Other linear structures run parallel to the low water mark with shorter fences running out from them at angles to also make a V-shape. A jumble of fences at the 'eye' of the structures often indicates their re-building and occasional re-orientation. These wooden fences were constructed of rows of upright oak, alder, birch and willow posts between which there may have been laid either bundles of hazel roundwood or vertical post-and-wattle panels of willow, oak, birch and hazel. Horizontal post-and-wattle panels were occasionally pinned onto the mudflats beside the fences to enable people to walk to various parts of the site. The individual trap mechanisms included elongated rectangular 'pounds' at the 'eye' of fences where fish would have been enclosed, while small post settings are also found at the 'eye', indicating the use of baskets or nets. In terms of chronology, a sequence of radiocarbon dates indicates that they date to the Anglo-Saxon period, typically between *c.* AD 650 and 800, although there was clearly also activity in the ninth and tenth centuries AD.

Interestingly, there is plenty of evidence for multiple sequences of re-building on the Blackwater, potentially over several centuries. At Collins Creek, there is a complex of at least five fish weirs that had been built and used on an isolated mud-bank, itself dissected by low-water creeks (Fig. 2). These were mostly V-shaped ebb weirs, of single or multiple rows of deeply set roundwood posts, 10–15cm in diameter, spaced at intervals of 30–50cm. They essentially enclose a vast area up to 3km by 700m. However, these were not all contemporary, as statistical analyses of the seemingly closely spaced radiocarbon dates indicates construction, 'piece-meal repair, minor modification and radical alteration' from the mid-seventh century to the beginning of the tenth century AD (Hall and Clarke 2000:

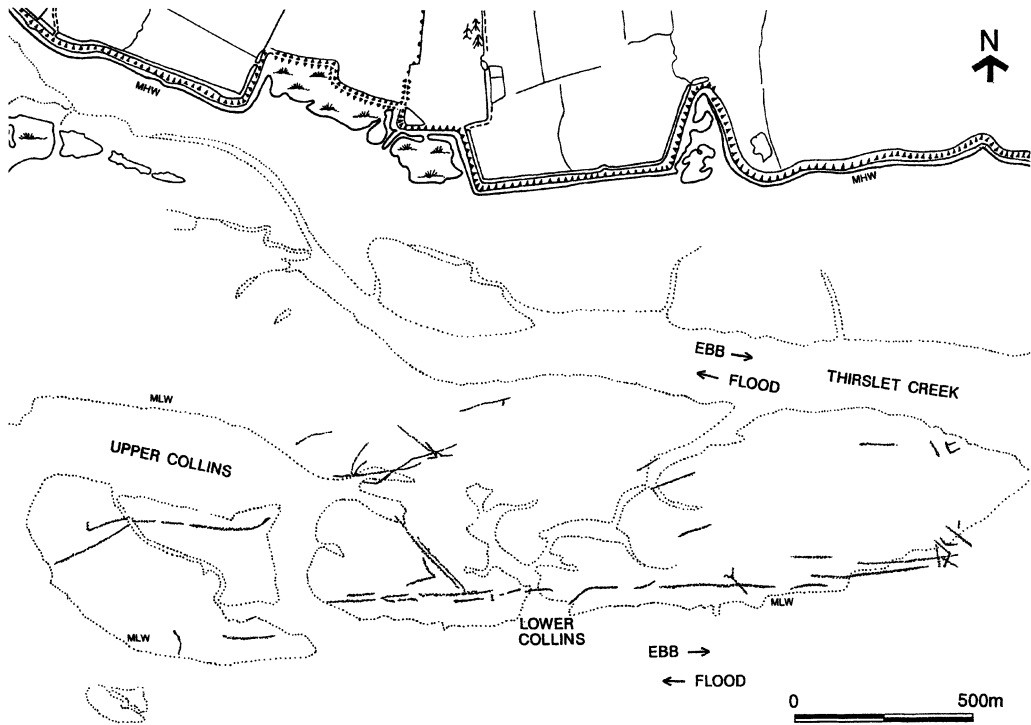


Figure 2 Plan of Anglo-Saxon wooden fish-weir complex at Collins Creek, on the Blackwater estuary, England. At least five V-shaped ebb-weirs were used here from the mid-seventh to the early tenth century AD, with archaeological evidence for ‘piecemeal repair, minor modifications and radical alteration’ (after Strachan 1998b: fig. 12).

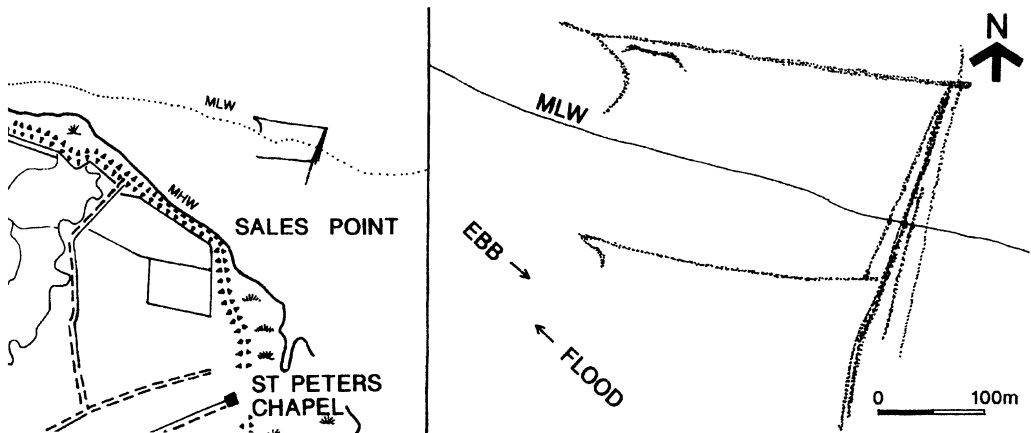


Figure 3 Plan of Anglo-Saxon fish weirs at Sales Point, at the mouth of the Blackwater estuary, England, adjacent to the seventh-century Chapel of St Peter-on-the-Wall. A number of fish weirs (catching fish on both the ebb and the flood tide) were built at least four times, ranging in date from c. AD 650 to c. AD 900. A deposit of fish bone at the north-east end indicates that the catch was filleted out on the mudflats (after Strachan 1998b: fig. 14).

fig. 9). At Sales Point, at the mouth of the estuary, a large (340m by 290m), unusual rectangular fish weir (Fig. 3), which may have caught fish on both ebbing and flooding tides, seems to have been re-built up to four times (with radiocarbon dates ranging from c. AD 650 to c. 900). At this site, there was also unique evidence that particularly large fish (possibly cod or bass) were being processed and filleted out on the mudflats, before they were transported back to the land. The evidence consisted of a thick (15cm in depth) deposit of fish bone and shell fragments spread over an area of 6m by 4m (Strachan 1998b), next to a 'pound' at the north-east end.

The ownership, use and management of the Blackwater fish weirs remain poorly understood. It has been suggested that their large size and their use of huge amounts of underwood (up to 10,000 poles being extant in the Collins Creek structures), as well as the constant labour needed to repair them and collect their harvests of fish, mean that they must have been controlled by monastic populations. Recent studies have suggested links with both small Anglo-Saxon churches (the Sales Point fish weir is 1.2km from a church known as St. Peters-on-the-Wall, built on the ruins of a Saxon shore fort), while scholars have also drawn attention to the probable existence of an important monastery at a place known as Ynchester (Bradwell) at the mouth of the estuary. There are also numerous references to fisheries on the Blackwater in the Domesday Book, but this document compiled in 1086 is of course significantly later in date. Indeed, this raises the question of why none have yet been dated to the eleventh century AD.

Severn estuary, Wales

Some of the best evidence for ancient fish weirs has been recorded around the Welsh coastline. As traditional fishing practices survived longer there than in most regions, most of these, particularly those on the Dee and Clwyd (in north-east Wales), on the Menai Straits (between the mainland and Anglesey) and in the Llyn Peninsula and Cardigan Bay (in the south west), have been assumed to date to the medieval or post-medieval period (Turner 2002). However, in recent years, a remarkable multidisciplinary programme of archaeological research, intertidal survey and excavation at a number of locations on the Welsh shore of the Severn estuary has produced over thirty medieval wooden fish traps, baskets and post-and-wattle fences. In particular, two intensive intertidal archaeological surveys have been carried out at Sudbrook Point (Godbold and Turner 1994), and in the vicinity of Magor Pill (Nayling 1997) and Redwick (Allen and Bell 1999) and these have revealed an interesting and distinctive sequence of development.

Recent archaeological studies of these medieval fisheries have attempted to explore their relationships with local nineteenth- and twentieth-century traditions. These more recent fisheries were also highly distinctive, and seemingly unique to the Severn estuary (with its extraordinarily high tidal range and strong currents). Two basic types were used in recent times. 'Putts' involved the use of massive, wide-mouthed, closely woven, three-piece baskets that were slightly elevated and arrayed in single rows above the mudflats. These were oriented to harvest virtually all fish (down to shrimp size) from the ebbing tide. In the eighteenth century, smaller, open-work baskets known as 'putchers' began to be used to catch salmon specifically. Rows upon rows of these cone-shaped,

willow baskets (on some sites, over 2000 baskets were used) were laid on a stout rectangular framework built across the main tidal flow of the river, often running down the foreshore for hundreds of metres. They were highly effective and were latterly regarded as injurious to fish stocks (Jenkins 1974b: 44–64). One of the last of these ‘putcher ranks’ only recently fell into abandonment at Goldcliff, on the upper part of the estuary.

The earliest fish trap known on the Severn estuary is a small Late Bronze Age fence-like structure associated with a possible circular basket in an ancient palaeochannel at Cold Harbour Pill (Bell *et al.* 2000: 306–7). In the early Middle Ages, there are documentary references in local Saxon charters referring to *cytweras* (‘basket weirs’, probably woven traps) and *haecweras* (‘hackle weirs’, possibly hedge weirs or fences of brushwood) (Turner 2002). Saxon era wooden structures have also been excavated at Redwick, Gwent, dated to the fifth and sixth centuries AD (Allen and Bell 1999). However, most of the Severn estuary fisheries have been dated to between the twelfth and the fourteenth centuries AD.

Recent surveys have also revealed that there may have been an evolution of different styles or types of fish trap on the Severn estuary even across this period. At Sudbrook Point, off Caldicot on the north shore of the Severn estuary, an intensive survey was carried out in advance of a bridge-building project and sixteen sites associated with fishing activity were found (Godbold and Turner 1994). The sites included V-shaped post settings, individual woven baskets and horizontal hurdle panels that may have been the remains of vertical fences or were trackways. Site 4 was one of the clearest of the post settings and consisted of five small V-shaped structures arranged in a line, with their wider mouths facing upstream into the ebbing tide. In front of these were two fences that appeared to be oriented to guide fish towards the traps. This and other similar post-setting structures produced calibrated radiocarbon dates between the late thirteenth and fourteenth centuries AD. Intact baskets were also found buried elsewhere in the sediments. A particularly dramatic example was context 238, a large conical basket (1.5m in width at its widest end), measuring 2.2m in length, probably dating from the eleventh to twelfth century AD (Godbold and Turner 1994: 33–4). Turner (2002: 103) has recently suggested that these V-shaped post settings are ‘cytweras’ in which woven ‘putts’ were mounted and that context 238 represents the ‘kipe’, the front of the three stages of basketwork. A slightly different structure was found at Site 5, a gently curving double row of stakes 70m in length with the possible location of traps marked by more massive posts. Dendrochronologically dated to 1203–4, it is regarded by Turner (2002: 103) as a ‘haecwera’ or hedge weir with one or two traps set in its densely woven fence. These various fish weirs have also been linked with references in documentary sources, where weirs were being granted to the Bishops of Llandaff (Godbold and Turner 1994: 48), and, again, it seems possible that these were owned by ecclesiastical authorities.

At Magor Pill, also on the north shore of the Severn estuary, it has been possible to date this sequence of fish-trap development more closely. An innovative survey was carried out by Nigel Nayling (1997, 1999) whereby seventeen wooden fish traps were surveyed and dated by dendrochronology, partly to establish the date of the documented retreat of the sea-bank in the locality. The earliest traps, used in the early to mid-twelfth century, were relatively small, V-shaped structures, of two converging fences of densely packed round-wood posts. These fences, typically no more than 15–16m in length, probably served as

'leaders' to guide fish into a single basket or tapering net (evidenced by split timber post settings at the apex). Although some were isolated, others were used as groups. At Magor Pill, group 1, five of these were found together in a rough line, separated at intervals over a 100m stretch (Nayling 1999: fig. 2). Dendrochronological dates indicate that some were in use about AD 1120, while a second phase of activity occurred around AD 1150, almost thirty years later (Nayling 1997). This may indicate a period of abandonment or alternatively repair of a much dilapidated structure (Fig. 4). A different type of trap began to be used at Magor Pill after about AD 1170. These were straight, linear ranks of vertical posts, making structures up to 40m in length by 3.5m in width. At intervals of c.2.7m along these linear barriers were post settings, each being V-shaped in plan and measuring c.1.5m in width at the mouth by 2.5m in length. The presence of baskets in the muds at these locations suggests they held baskets up in the water. Nayling (1999: 112) interprets these linear structures as the precursors of the 'putt' weirs that were used in the modern period, suggesting also that this distinctive style of weir, used on the Severn estuary until recently, was also present in the medieval period (Plate 1).

Strangford Lough, Northern Ireland

The Strangford Lough fish weirs are located around the shores of this sea lough, but are mostly concentrated in Grey Abbey Bay and around Chapel Island in the north-east part of the Lough. At least fifteen wooden and stone-built fish traps have been recorded and the wooden traps in particular have been radiocarbon dated to between the eighth and thirteenth centuries AD (O'Sullivan et al. 1997; McErlean and O'Sullivan 2002). Strangford Lough would have had a range of fish species, including salmon, sea trout, plaice, flounder, mackerel, cod, grey mullet and skate with large numbers of eels in the abundant kelp growth. The Strangford Lough fish traps were ebb-weirs, intended to catch fish drifting down with the falling tide. They usually have two long stone walls or wooden fences which converged in a V-shape to a point on the lower foreshore. This means that at every low tide they were exposed for about two to three hours, and, while they enclosed a large area of foreshore, their owners and users had sufficient time to remove the fish and repair the structures.

The Strangford Lough wooden fish traps have fences measuring between 40m and 200m in length and are more or less V-shaped in plan. The fences were made both of single lines of posts and complex arrangements of paired posts thus creating an inner and outer fence. Post-and-wattle panels could have been carried out to the traps and slotted between these paired uprights and pinned in position using bracing props and horizontal pegs. Wooden fish traps at Cunningburn and Gregstown, near Newtownards, also had stone walls along the base of the fence to protect them from erosion and undercutting. At the 'eye' of the converging fences, baskets or nets were probably hung on rectangular structures. The wooden fences would have deteriorated quickly and needed periodic repair. It is obvious that a significant amount of labour was required for their construction. Thousands of hazel, ash and oak poles and rods would have been felled, trimmed and hauled out from the neighbouring woodlands.

At Chapel Island, a large wooden fish trap has provided a radiocarbon date of AD

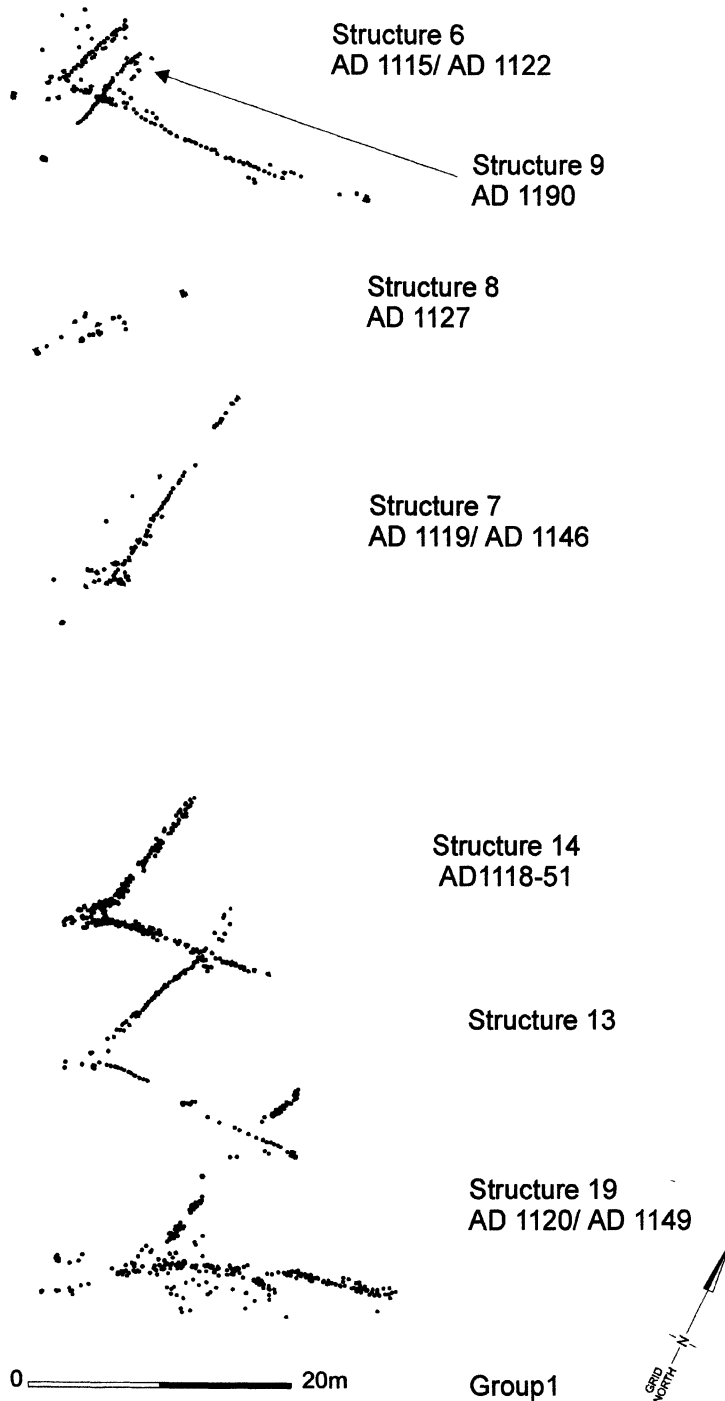


Figure 4 Plan of wooden fish weirs at Magor Pill group 1, on the Welsh shore of the upper Severn Estuary, dated to the early twelfth century AD. These small, V-shaped structures probably guided fish into small baskets. Dendrochronological studies indicate two different phases of activity, at c. AD 1115–1120 and AD 1190 (after Nayling 1999: fig. 2).



Plate 1 Photograph of massive, woven wicker fish traps known as 'putts' in use on the Severn Estuary in the 1970s. Recent research on the intertidal zone on the Severn estuary indicates that this distinctive style of weir was used there as early as the Middle Ages (photograph: Dr Chris Salisbury).

711–889. It has a lower, 'flood fence' 147m in length running parallel to the shore and a second, shorter fence running up towards the island. Archaeological excavations suggest that it was the subject of frequent repairs or that there was an attempt to make the fences 'fish-tight' through the use of hundreds of closely spaced posts. Interestingly, there is archaeological evidence for settlement on the island, including a possible church structure within a promontory enclosure defined by a substantial bank and ditch. Traces of stone field-walls can also be seen on the nearby slopes. The Chapel Island fish traps may have been linked to the regionally significant early medieval monastic centre of Nendrum, Co. Down, which is located on an island across the lough.

In Grey Abbey Bay, 1.5km to the east, three wooden traps and four stone traps have been recorded. At South Island, a large V-shaped wooden trap crosses a tidal channel. This structure measures over 100m in length, was constructed of at least 500 posts and has a rectangular structure and possible basket at the eye. It has provided two separate radiocarbon dates of AD 1023–1161 and AD 1250–1273. Similar V-shaped wooden traps found elsewhere in the bay have produced radiocarbon dates of AD 1037–1188 and AD 1046–1218 cal. The traps may have used nets, baskets or rectangular pounds, post-and-wattle enclosures inside which the fish remained until removed. The Strangford Lough fish traps were clearly in use in the bay throughout the Middle Ages. Some of the large wooden and stone fish traps may have been the property of the Cistercian community of Grey Abbey, which was founded in AD 1193. It is known that the early Cistercian communities were determinedly self-sufficient and the use of fisheries in the bay probably intensified after their arrival.

The Strangford Lough stone-built fish traps are broadly similar in size, form and orientation. They typically measure between 50m and 300m in length, 1.1m in width and probably stood between 0.5m and 1m high. Fish could have swum over them on a flooding tide but would be trapped behind the wall during the last hours of the ebbing tide. The stone fish traps are variously V-shaped, sickle-shaped and tick-shaped in plan, mainly depending on the nature of the local foreshore. Large numbers of heavy beach boulders would have been collected from the foreshore for their construction. The stone-built fish traps would have needed repair after winter storms, no doubt a difficult task with barnacles on the rocks and only several hours available for work. The massive physical scale and form of the Strangford Lough fish traps probably indicates a local response to the broad, sandy beaches of the lough, although it is also clear that these were intended to harvest literally all of the fish out of this part of the lough.

Shannon estuary, Republic of Ireland

On the Shannon estuary, in south-west Ireland, archaeological surveys have revealed evidence for several medieval wooden fish traps, dated to between the fifth and the thirteenth century AD (O'Sullivan 2001: 135–91). The Shannon estuary fish weirs tend to be small, V-shaped post-and-wattle structures (with fences 20–30m in length) with basket traps, hidden away within the narrow, deep creeks that dissect the estuary's vast expanses of soft, impenetrable muds. Despite being relatively small, they would undoubtedly have been effective, as even a small barrier in these creeks could have sieved the water of all fish moving around with the tides. They were oriented to catch fish on the flooding or ebbing tide and could in season have taken large catches of salmon, sea trout, lampreys, shad, flounder and eels (the latter in October–November).

The earliest known fish weir is a small post-and-wattle fence (*c.* 8m in length) on the Fergus estuary, Co. Clare (a tributary of the Shannon estuary), dated to between the fifth and the seventh century AD. This was probably part of a fish weir that would have been used by the inhabitants of early medieval ringforts (enclosed settlements) on the low hills adjacent to the estuary (O'Sullivan 1993–4). Early medieval fish weirs have also been located on the mudflats of the Deel estuary, Co. Limerick (which flows into the upper Shannon estuary). These were all small V-shaped structures (*c.* 20m in length), oriented to catch fish on a flooding tide. These weirs provide intriguing evidence for local continuity of size, form and location, as the three small wooden structures (Deel estuary 1–3) appear to have essentially replaced each other between the eleventh and the late twelfth century AD. They also appear to be associated with nearby lordly settlements on the neighbouring land, including medieval earthworks, churches and sites of castles at Ballynash, Court-brown and Ballysteen within a few hundred metres.

There is also good evidence for local continuity and re-investment of labour and resources in medieval fish weirs on the upper Shannon estuary. Perhaps the most impressive fish weirs are those at Bunratty, Co. Clare, dating from the eleventh to the thirteenth century AD. At Bunratty 4, a complex V-shaped structure had at least three phases of use at the site, with several post-and-wattle fences repaired over a period of time, probably twenty to thirty years. Bunratty 4 has been radiocarbon dated to AD 1018–1159, possibly indicating the presence of a Gaelic Irish settlement at Bunratty prior to the

Anglo-Norman invasion. A nearby fish weir at Bunratty 6 is easily the best-preserved and most complete fish trap yet known from medieval Ireland (Plate 2). It had spectacularly preserved remains of two V-shaped post-and-wattle fences (22m in length), braced with diagonally placed poles, all leading to a massive woven basket (4.2m in length) dated to AD 1164–1279. This basket was supported on a substantial rectangular framework. There is good evidence for the repair and re-building of the fence. The weir was probably constructed and used by the inhabitants of an Anglo-Norman borough at Bunratty, Co. Clare, one of the most important medieval settlements and ports in the region. By AD 1287, it is known to have had a substantial town population, a harbour, seigneurial castle, a parish church, markets, a watermill, a fishpond and a rabbit warren. Its manor probably encompassed the use of in-field arable fields closer to the town and out-field cattle pasture on the marshlands down towards the estuary.

It is interesting that fish weirs of broadly similar design were being constructed at Bunratty on the Shannon estuary between the eleventh and the thirteenth centuries (i.e. pre- and post-dating the Anglo-Norman colonization after AD 1169). It is probable that local Gaelic Irish lords and their tenants were exploiting the fisheries prior to the Anglo-Norman colonization, perhaps supplying both local settlements as well as the urban markets of the Hiberno-Norse town of Limerick further upstream. These local, Gaelic Irish fishermen probably continued to work the traps as tenants on the Anglo-Norman manors and estates in the thirteenth and fourteenth centuries, when the estuary's fisheries would also have been a closely guarded resource (Plate 3).



Plate 2 Photograph of medieval wooden fish weir at Bunratty 6, on the Shannon Estuary, Rep. of Ireland, radiocarbon dated to AD 1164–1279. This dramatically preserved site had a huge woven basket (4.2m in length), with post-and-wattle fences leading towards it, guiding fish into the trap as they descended with the ebbing tide (photograph: Aidan O'Sullivan).



Plate 3 Reconstruction painting of medieval wooden fish weir at Bunratty 6, on the Shannon Estuary, Republic of Ireland, with its post-and-wattle fences supported by diagonal braces, repaired on occasion with additional posts. At the end of the fences there was a substantial basket on a wooden platform. These structures would have been exposed to wind and wave, and would have required frequent repair. On the Shannon Estuary, and elsewhere, the archaeological evidence suggests that practical knowledge, daily life and an awareness of the past on the estuary mudflats were a powerful source of social identity, with economic practices bound up with cultural beliefs and social relationships (painting: Simon Dick).

Interpreting the work of medieval fishing communities

In the Middle Ages, fishing was an important source of food, livelihood and income in coastal and estuarine landscapes and the ownership, regulation and use of fisheries was often a significant aspect of local social and economic relationships. It is well known that fish and shellfish were of great importance in the medieval diet, as religious custom forbade meat consumption during the forty days of Lent, the forty days of Advent before Christmas, possibly the forty days after Pentecost, well as on holy days and the eves of Christian celebrations, a substantial proportion of the year (Dyer 1988; Barrett forthcoming). Both sea fish and freshwater fish were caught by boats, nets and traps for local consumption or were preserved or transported to settlements inland, occasionally across large distances. In aristocratic and ecclesiastical households, some species of fish were regarded as delicacies, while others were less favoured. In the early Middle Ages, it is

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 tenth and the eleventh centuries AD, the growth of urban populations, improved methods of preservation and the development of Atlantic sea fisheries would have led to fishing becoming a much more significant source of wealth and power. It is likely that by the twelfth to thirteenth century (if not earlier in many locations) most fisheries would have been taken into the hands of monastic houses, bishops and manorial lords (Hutchinson 1994: 129–45; Childs and Kowaleski 2000: 19–23; Aston 1988).

Nevertheless, it is worthwhile envisaging the use and management of medieval fish weirs as an activity in which all levels of society were actively involved, from lord to serf. Obviously, most of the work would have been done by the lower social classes, possibly even a distinctive social group dependent on fishing for their livelihood. The practical operation of a weir requires it to be checked twice a day during the season, so its operators would have needed to live nearby. It is possible that such fishermen, who may also have worked as agricultural labourers on local estates and manors, were descendants of particular families. However, while the upper echelons of society may not have been directly involved with daily fishing, they would have expected considerable income from the levies imposed on the catches. Thence, fishing provided food for rich and poor, an income for fishermen, shipowners and merchants, and taxes for church and lay authorities.

Fishing varied in scale and intensity around the coast, and this is evident too in the archaeology of the fish weirs. Indeed, these medieval fish weirs provide intriguing evidence for the emergence of distinctive regional traditions and styles around Britain and Ireland. Most were ebb-weirs, catching fish on a falling tide and were typically V-shaped stone or wooden structures with post-and-wattle fences and baskets of varying size and construction. However, it is also clear that there are significant local and regional differences in size, location, building materials and actual form. There are interesting variations in the character of the actual trap mechanism. Large and wide, woven 'putts' supported on ranks or post settings were used on the Severn estuary, while long, narrow baskets placed at the end of post-and-wattle fences were in use on the Shannon estuary. Woven 'kiddles', or nets and baskets, were used at the ends of the massive weirs on the Blackwater estuary, Essex, while the Strangford Lough fish traps have rectangular or box-like pounds, nets on post rows or even fish-tight fences (with the post-and-wattle woven so tightly that the fish were simply stranded on the beach).

The fish weirs also vary considerably in size and scale of construction. The Blackwater estuary and Strangford Lough fish weirs were often massively built (with post-and-wattle fences measuring up to 300m in length). They contrast greatly with the fish weirs found on the Shannon estuary and the Severn estuary traps, where smaller structures not much larger than 30–40m in length were used. Local knowledge of fish routes, tidal conditions and currents and the particular topography of the local foreshore and the range of building materials available probably influenced these variations. However, cultural and historical traditions and local social and economic factors must have been of even greater importance. For example, fish weirs associated with monastic sites and religious houses (e.g. on the Essex Blackwater estuary, or associated with the Cistercian Grey Abbey on Strangford Lough) are generally much larger than those associated with secular settlements (e.g. Shannon estuary, Severn estuary), indicating much more intensive coastal

exploitation by the former, whether for reasons of their large populations or of their growing involvement in a market economy.

There are also interesting chronological variations in the construction and use of medieval fish weirs (Table 1). Although they were undoubtedly used in earlier periods, there certainly seems to be an intense period in the use of fish weirs in the seventh and eighth century AD, particularly on the Blackwater estuary in Essex. There also appears to be a significant increase in activity in the late twelfth and thirteenth centuries AD, as can be seen on the Severn estuary, the Shannon estuary and on Strangford Lough. Thereafter, the use of fish weirs seems to have declined, perhaps in the face of an increasingly commercial sea-fishing industry in the north Atlantic, although there are of course plenty of historical references to weirs throughout the late Middle Ages. However, despite these changes, there is also a significant and striking degree of continuity of form within localities and regions, with occasional survivals into the modern era. For example, on the Severn estuary, archaeologists have recently excavated ancient (i.e. eleventh to twelfth century) traps that appear to be largely equivalent in style to the 'putt' structures that were used in the early twentieth century. However, it has to be recognized that, within these apparently seamless 'continuities', there are in fact huge disruptions and gaps, periods of hundreds of years when fish traps were seemingly abandoned in the Middle Ages, presumably for various social and economic reasons.

Social identity and medieval fishing communities

Who built, used and maintained these medieval weirs? By and large, there is little historical documentation on the people who operated them, as texts normally account for their ownership and incomes they provided for upper classes. Undoubtedly, there must be variation, both regionally and across time, and each site must be interpreted in terms of its local landscape. It is likely that the seventh- to eighth-century fish weirs on Strangford Lough were operated by the tenants (*manaig*) working on the local monastic estates, such as Nendrum on Mahee Island across the lough (McErlean and O'Sullivan 2002: 182–5). Similarly, the Anglo-Saxon fish weirs on the Blackwater estuary may have been worked by a social class known as the *geburas* (who provided food render and services) working on monastic estates (Reynolds 1999: 61). The tenth- and eleventh-century fish weirs on the Shannon estuary and Strangford Lough were probably controlled by local Gaelic lords and bishops and thence might have been worked by lower social classes of the unfree or the semi-free, or perhaps by an emerging social class known as the *bíatach*, a class of farmers who rendered tribute in food to their lord.

By the twelfth century, and after the Anglo-Norman colonization, it appears this social class had descended into vassalage, becoming the *betaghs* of the manorial estates. It is interesting then that, on the Shannon estuary, it is clear that precisely the same type of fish weirs were being used before and after the Anglo-Norman invasion and colonization of the late twelfth century. In other words, although the local Gaelic Irish lords had been displaced, it is likely that the lower social classes of the Gaelic population continued to work on lordly estates of new rulers. In fact, the fish weirs could be interpreted in terms of a continuity of cultural practice and traditions, despite significant social and ethnic

Table 1 Radiocarbon and dendrochronological dates of medieval fish weirs in Britain and Ireland

<i>Site name</i>	<i>Lab. no.</i>	<i>BP date</i>	<i>Cal. date (2 sigma)</i>
<i>Blackwater estuary, England</i>			
The Naas	UB 4177	1268±39	AD 664–862
The Naas	UB 4178	1227±24	AD 690–882
Collins Creek	UB 4139	1300±45	AD 650–810
Collins Creek	UB 4140	1286±45	AD 650–880
Collins Creek	UB 4141	1262±45	AD 660–890
Collins Creek	UB 3485	1364±48	AD 600–700
Collins Creek	UB 3486	1140±33	AD 780–990
Sales Point	UB 4113	1144±16	AD 873–957
Sales Point	UB 4114	1214±16	AD 772–881
Sales Point	UB 4115	1251±21	AD 682–800
Sales Point	UB 4116	1277±43	AD 659–860
<i>Severn estuary, Wales</i>			
Cold Harbour Pill	SWAN-241	2520±60	790–530 BC
Redwick	Beta 134642	1500±60	AD 425–655
Sudbrook Site 4	Beta-54825	620±60	AD 1270–1420
Sudbrook Site 6	Beta-54824	640±60	AD 1260–1410
Sudbrook Site 2	Beta-58426	620±50	AD 1270–1410
Sudbrook Site 12	Beta-4831	960±70	AD 960–1230
Sudbrook Site 12	GU-3238	1020±70	AD 890–1170
Sudbrook Site 8	Beta-54833	280±60	AD 1460–1955
Sudbrook Context 238	Beta-54832	960±60	AD 970–1220
Sudbrook Context 234	Beta-54830	590±70	AD 1270–1414
			<i>(Dendrochronology date)</i>
Sudbrook Site 5			AD 1203–1204
Magor Pill (Group 1, structure 6)			AD 1115/1122 (dendro)
Magor Pill (Group 1, structure 9)			AD 1190 (dendro)
Magor Pill (Group 1, structure 8)			AD 1127 (dendro)
Magor Pill (Group 1, structure 7)			AD 1119/1146 (dendro)
Magor Pill (Group 1, structure 14)			AD 1118–1151 (dendro)
Magor Pill (Group 1, structure 19)			AD 1120–1149 (dendro)
Magor Pill (structure 13)			after AD 1123 (dendro)
Magor Pill (structure 4)			AD 1242–1273 (dendro)
Magor Pill (structure 15)			after AD 1172 (dendro)
Magor Pill (structure 20)			AD 1189 (dendro)
<i>Strangford Lough, Northern Ireland</i>			
Chapel Island East	GnN-22592	1295±20	AD 685–773
Chapel Island East	UB-3034	1213±30	AD 711–889
Chapel Island West	GrN-22954	1145±20	AD 783–979
South Island	GrN-21906	940±20	AD 1023–1161
The Ragheries	GrN-21905	880±20	AD 1046–1218
Bootown	GrN-21908	900±20	AD 1037–1188
Cunningburn	GrN-22955	785±20	AD 1210–1278
Chapel Island West	GrN-22953	785±20	AD 1220–1279
South Island	GrN-21907	760±15	AD 1250–1273
<i>Shannon estuary, Rep. of Ireland</i>			
Fergus estuary east 2	GrN-20139	1495±35	AD 442–644
Bunratty 4	GrN-21933	960±20	AD 1018–1159
Bunratty 6	GrN-21934	820±35	AD 1164–1279
Deel estuary 1	GrN-21932	900±20	AD 1041–1208
Deel estuary 2	GrN-20975	740±50	AD 1262–1292
Deel estuary 3	GrN-21931	640±20	AD 1297–1392

changes along the Shannon estuary (O'Sullivan 2001: 181). It also suggests that these were worked by fishing families who passed down lore of place and practice through the generations. This might even suggest a degree of resistance, the ability and will of local communities to continue customary practices in the face of change.

A sense of place

Estuaries are peculiar landscapes, a waterlogged space between sea and land, influenced by freshwater rivers and brackish tides. To live and work within them requires a distinctive local knowledge, an understanding of tides, currents, weather, channels and the movement of fish. It is important then in interpreting the archaeology of fish weirs to shift our perspective down onto the ground so to speak, to start thinking about how people's daily encounters with the hidden and intimate places of the estuary – the narrow creeks winding their way through the reeds, the windswept islands out on the mudflats – would have influenced how they thought about themselves and others. It is possible that local fishing communities working every day out on an estuary's creeks and channels would have experienced a sense of separateness or isolation from the broader social community. This might also have been seen by others as different, odd, living on the margins of the community. On the other hand, these same fishermen would also have actively used their experience and knowledge of hidden places, fishing pools and so on to create and sustain their own unique social and economic places within that broader community.

It is clear that medieval fishing communities had a practical and detailed knowledge of the local movement of fish within estuarine landscapes, and weirs were constructed in particular places to make use of this knowledge. Because the construction of a weir was often a significant investment in labour, raw materials and maintenance, the choice of location would have been intended to maximize the catch. Fish weirs were usually located on the lower foreshore, crossing creeks and channels (often freshwater streams, which would have been attractive to nutrient-seeking fish), and would have been available for inspection for a few hours either side of the low tides. This increased the size of the likely catch, while still allowing for some time to remove stranded fish and to repair structures after storms or the normal wear and tear of the tides.

A sense of time

An interesting aspect of the medieval fish weirs is this striking continuity of form across generations (i.e. over hundreds of years). This is evident in all regions. On the Blackwater estuary, there appears to be a sequence of fish-weir construction of similar character between the seventh and the tenth centuries AD. On Strangford Lough and on the Shannon estuary, essentially the same type or style of fish weir was built and used in both places between the eleventh and the thirteenth century. However, it is likely that each individual weir may not have lasted much more than twenty to thirty years before it was finally abandoned. There is a sense that local fishing communities were working within

local traditions, building and working in the manner of their ancestors. How was this knowledge handed down across time?

In fact, it is worth thinking about the ways that local fishermen living and working in estuarine landscapes might have understood time. On an estuary, people would have worked to the unique diurnal rhythms of the tides, the daily, monthly and seasonal cycles of low and high tides, of neaps and springs. They would also have marked time by the seasonal migratory movements of waders, ducks and geese, huge numbers of which over-winter on Britain and Ireland's estuarine mudflats. Local communities could also have watched for the seasonal movements of fish, the summer arrival of salmon, the autumn departure of eels. They would also have witnessed the seasonal changes in vegetation, cutting reeds for thatch and basketry in early summer. Indeed, if we think about how local fishing communities would have fished every low tide, including those night-time tides that are lit only by the full moon, then it is possible to understand how they could have begun to see themselves as a distinct social group, different from the labourers and farmers on the land.

When we think of the intimate knowledge that medieval fishermen had of the creeks and channels, we might also think of their sense of history and time, and how that might have influenced their traditions and practices. Interestingly, during archaeological surveys, medieval fish weirs of different date are frequently found beside each other. On the Shannon estuary, there is even a striking correlation between the location of medieval fish weirs and post-medieval structures, suggesting that in the eighteenth or nineteenth century local communities used their knowledge of them when they decided to build weirs on the mudflats. Similarly, on Strangford Lough, late medieval stone-walled fish weirs were constructed directly over wooden fish traps that pre-dated them by hundreds of years (and had been abandoned for generations). I would like to suggest that these are not accidental associations or merely evidence for 'continuity'. I believe that medieval fishing communities would actively have built their knowledge by their observation of ancient wooden structures in the mudflats. In a way, fishing communities would have been experts on the archaeology of the estuary (a knowledge that was entirely unique to them and unknown to others). They would have recognized (just as archaeologists do today) that some structures were strikingly ancient, soft, blackened posts emerging out of creeks and channels in places that had not been fished in living memory. They might have seen such structures, in a sense, as 'antiquities'. These ancient structures could even have served as a source of practical knowledge for local communities, after long periods of inactivity, reminding them of good fishing pools and of their use.

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