INTERTIDAL ARCHAEOLOGICAL SURVEY AND ESTUARINE WETLANDS IN NORTH MUNSTER, IRELAND

by Aidan O' Sullivan

Introduction

The Discovery Programme is probably the most important recent development in Irish archaeology, through which substantial government funding has been provided to establish a number of innovative archaeological research projects. The North Munster Project is one of four projects currently investigating the enigmatic later prehistoric period in Ireland (the Late Bronze Age and Iron Age, *c.* 1200 BC-400 AD). The study area of the North Munster Project can be defined as the drainage basin of the lower river basin and estuary of the River Shannon in south-west Ireland, including the modern counties of Clare, Limerick, south-west Tipperary and north Kerry (Grogan 1992).

The archaeological justification for selecting this region for particular attention is the apparent exclusive concentration there of several types of Late Bronze Age metalwork (i.e. gold gorgets, lock-rings, boxes and bowls), as well as the presence of some of the largest hoards of Dowris-phase metalwork in Ireland (including the enormous gold hoard from Mooghaun Lake, Co. Clare and extensive deposits of bronze and gold artefacts at the Bog of Cullen, Co. Tipperary and Askeaton, Co. Limerick). It has been previously suggested that this concentration of metalwork represents the emergence of a wealthy, politically powerful regional grouping or territory in North Munster, which was part of a wider Atlantic coast trading network (Eogan 1974, 1993; O'Carroll 1994).

On the other hand, it is possible to view the archaeological analysis of the production and distribution of this metalwork as just one aspect of a wider investigation of later prehistoric society within a selected regional study area. Thus the broad strategy of landscape archaeological research developed by the North Munster Project incorporates several themes and employs a range of archaeological techniques. In terms of settlement archaeology, this involves the survey and excavation of a range of Late Bronze Age sites, including substantial hillforts, linear earthworks, hilltop enclosures, small stone enclosures with field-systems, lake crannógs, *fulachta fiadh* (burnt mounds of stone with boiling troughs, typically dated to between 1600-900 BC). The funerary record, although elusive, is primarily being investigated through the spatial analysis of known later Bronze Age barrow cemeteries that cluster on river floodplains (Grogan *et al.* 1993; Grogan and Condit 1994a and b; Daly and Grogan 1993). G.I.S. technology is being utilised to integrate the various physical layers of information (topography, soils, geology, drainage, etc.) with the distribution and context of various archaeological sites and artefacts (Condit *et al.* 1994).

This research is being linked to on-going archaeological prospection in selected peatlands, lakeshores, river floodplains and estuarine wetlands. A palynological programme has also been initiated, integrating the location of a number of settlement sites with pollen cores. The North Munster regional topography is dominated in particular by its major estuaries, namely the Shannon and the Fergus, but also those of the Rivers Cashen, Deel and the Maigue (Figure 65). Despite the complete absence of any tradition for intertidal archaeological research in Ireland, we were well aware from the published literature from the Humber, Essex, Solent and Severn estuaries that investigations in coastal wetlands

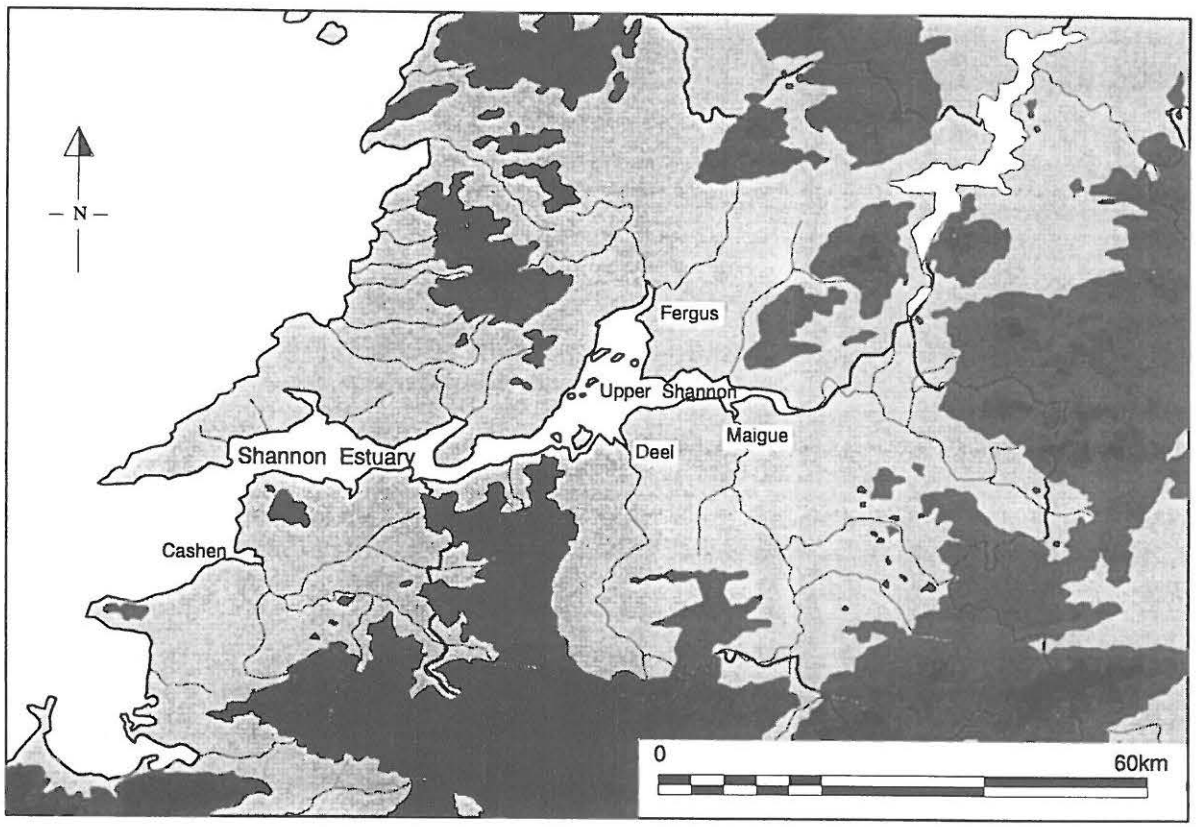

Figure 65. North Munster Region, South-West Ireland

had the potential to produce structures and artefacts dating to the later prehistoric period.

Intertidal surveys in North Munster

Thus it was that in the summer of 1992, while employed as a wood specialist on the Caldicot Castle Lake excavations, I had myself introduced to the muddy world of Severn intertidal archaeology by Derek Upton. Valuable advice and encouragement was also given by Dr. Martin Bell, Rick Turner, Nigel Nayling, Dr. Bryony Coles and Edward V. Wright. On my return to Ireland, our own intertidal surveys in North Munster were deliberately extensive, involving the gridded walking of large areas of mudflats to isolate exposures of archaeology. They typically included a small team of three archaeologists, with site recording by measured notes, plans and photographs with wood sampling for dating purposes. Vital support, in terms of a sponsored dating programme has been provided by Dr. Jan Lanting of the Dept. of Archaeology, Rijksuniversiteit, Groningen, Holland.

This initial prospection has just been completed, with confirmation that there is indeed great potential for intertidal archaeological survey in Ireland. This successful introduction of a hitherto untried technique in itself will be a important contribution to Irish archaeology. Three brief field seasons (between 1992-1994, a total of *c.*10 weeks fieldwork) have been carried out (in tandem with other archaeological

surveys). A chronology of intertidal archaeological sites has now been established through radiocarbon dating of selected samples. Many of these structures are obviously related to earlier, lower sea-levels with subsequent inundation leading to their preservation in the anaerobic conditions of intertidal clays and peats.

A range of environmental and archaeological evidence is now known to include Neolithic submerged forests and animal bone, Middle Bronze Age wooden and stone structures, bone and artefacts, a Late Bronze Age causeway, an Early Christian fishweir, several Medieval fishweirs and a large number of post-medieval or as yet undated fishweirs, spreads of occupation debris, dug-out and plank-built boats and post alignments (O' Sullivan 1993, 1994; Grogan *et al.* 1993). Our intention now is to concentrate in several key study areas where a programme of integrated paleoenvironmental and archaeological investigations will be undertaken. The purpose of this article is to briefly present only some of the results of our initial prospection to the community of archaeologists active around the Severn Estuary Levels. It needs to be emphasised, however, that the interpretations offered here may well be altered by more detailed investigations.

Early Neolithic submerged forests

The key to understanding the nature of the archaeology is the establishment of a dated sequence of post-glacial relative sea-level change. The discovery and recording of submerged forests at various points in the lower Shannon Estuary will contribute to the understanding of this sea-level rise. Submerged forests have been found in peat banks at Rinevalla Bay, Co. Clare and in exposed peat on a sandy shore at Bunaclugga Bay, Co. Kerry. At Poulnasharry Bay, Co. Clare a broad inlet of gravels and mudflats, to the west of the Shannon Estuary, has proven to have extensive deposits of submerged peat and tree-stumps. At the base of the saltmarsh cliff, a layer of Scots pine (*Pinus sylvestris*) trunks and root stumps is covered by successive layers of *Phragmites* and *Sphagnum* peat and ultimately sealed by estuarine clays, recording the range of successive environments. A sample submitted from the root stump of one pine trunk provided a radiocarbon date of 4960 ± 35 BP (Cal. 3930-3692 BC, GrN-20145. Radiocarbon calibration throughout follows Stuiver and Pearson (1986)).

Middle Neolithic red deer bone

The upper Fergus Estuary in particular has been the subject of detailed attention, with several prehistoric and medieval sites found in close proximity on a narrow eroding shoreline. One of the first discoveries here, was a spread of animal bone eroding out of blue-grey estuarine clays. These were identified (by Vincent Butler) as being from a single, adult red deer (*Cervus elaphus* L.), including the left mandible, femur, tibia and metatarsal as well as three articulated vertebrae. A sample provided a date of 4245 ± 40 BP (Cal. 2921-2701 BC, GrN-20140). However, until recently this could only be interpreted as a natural spread of Neolithic animal bone. In the area of this bone, we recently found a small lithic scatter, comprising several heavily patinated flint flakes and flint core, which may yet indicate this site is the location of a short-stay hunting encampment.

Middle Bronze Age occupation complex

Potentially the most important discoveries have been recently made on the mudflats of the Upper Shannon estuary. This complex is located on a stretch of shoreline around a rocky island known as Carrigdirty Rock, 1.5km east of the mouth of the River Maigue, Co. Limerick (Figure 66).

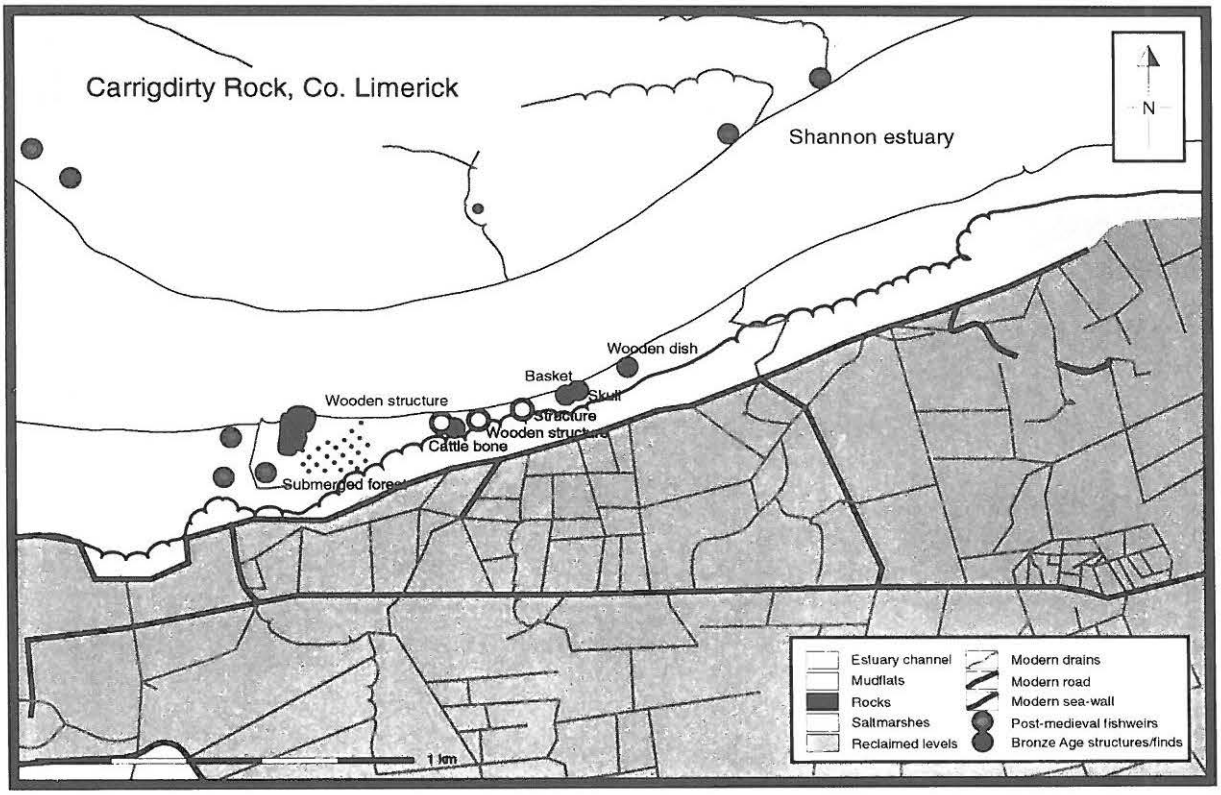

Figure 66. Carrigdirty Rock, Co. Limerick, Ireland

These estuarine clay and organic peat deposits contain a number of wooden structures, artefacts and spreads of human and animal bone. The most visible features in this exposed peat are the scattered tree stumps and roots of a submerged ancient woodland. The peat itself is poorly humified and appears to be rich in plant remains such as *Phragmites* rhizomes. This possibly suggests that it was laid down in fen carr and sedge fen conditions formed in the nutrient-rich, freshwater present behind the more saline marshes and tidal flats of an earlier estuary coastline.

There are a number of interesting structures on top of this exposed peat. One is a group of vertical roundwood posts, which forms a sub-circular arc up to five metres in diameter. The alder-wood posts used are well preserved with bark attached and clear toolmarks showing the use a narrow metal axe with a tightly curved edge. Soft, modern silts cover this entire shoreline like a thick soup, making details difficult to make out. A sample of wood from the first post structure submitted for radiocarbon dating provided a date of 3330± 25 BP (Cal. 1687-1527 BC, GrN-20976), in the Middle Bronze Age. A second structure to the west is represented by a similar cluster of vertical posts, a spread of limestone slabs and mandible, tibia and femur bones from cattle (*Bos taurus* L.) aged between two and four years old (V. Butler, pers. comm.). To the east is a third spread of stone slabs and wood.

Further to the east along this shoreline, but in the context of blue-grey estuarine clays (rich in remains of ancient reeds, leaves, driftwood, hazelnuts and stray pieces of worked

wood) a number of other finds have been made. A single piece of skull bone, identified as the frontal-parietal fragment of a human cranium from an individual aged between 20-30 years, was recovered near a piece of intricate basketry. This artefact was made of tightly woven reeds or some other vegetal material and possibly represents the rim of a basket container (a potentially unique find in Irish prehistory). Another artefact found in these clays is a large piece of an carved alder-wood trough (similar in form to a Late Bronze Age example from Caldicot, Gwent; N. Nayling pers. comm.). The toolmarks indicate the use of a narrow-bladed gouge. The estuarine levels further inland were also the location of metalwork finds in peatland. A hoard of Later Bronze Age bronze horns was found in a bog at Carrigogunnel, Co. Limerick, a findspot now pinpointed by reference to seventeenth-century maps to about 2 km south-east of Carrigdirty Rock.

The structures could be interpreted as possible simple huts or shelters erected in an area of prehistoric sedge fen or alder carr. The cattle bone may be one key to interpreting the activities at the site. The small jawbone of a young calf (under six months of age) was found within the first structure. Historically, calves were typically born in spring or early summer. Thus the presence of an immature calf in the marshes during the summer months could be an indication of seasonal pasturage. The inhabitents were clearly making use of the local wetlands raw materials, alder-wood for structures and wooden containers and rushes for basketry.

At this preliminary stage, it seems these structures are comparable with the intertidal later Bronze Age occupations at Chapeltump and Cold Harbour, Gwent (Whittle 1989), possible wooden structures at Stone Point, Essex (Hazzledine Warren *et al.* 1936) and the more complex Iron Age settlements at Goldcliff (Bell 1993a, 1993b). A possible ethnological parallel for this occupation complex may be the limited transhumance activities described in early medieval (*c.* sixth-twelfth century AD) Irish historical texts. This was the practice of the '*buaile*' or '*áirge*' which continued to be a social and economic feature (known as booleying) of Irish agriculture until recent times. The early medieval Irish did not save hay. Instead, to provide cattle-fodder for the winter, an area of grassland at the permanent settlement was set aside for winter pasture only. This winter grassland was enclosed by fences to preserve it and the prevention of trespasses into the winter grass-field was a feature of early Irish law. The cattle herd was then driven to nearby summer pastures by a few herders from May to November (Lucas 1989).

Although these temporary summer pastures were typically found on mountain slopes, in lowland regions (such as the lowlands of north Limerick) wet or scrubby land was used. Small huts of turf or stone were constructed as simple shelters for the young herders. A further interesting point in relation to such watery places is that in hot summer weather, cattle often prefer to stand in water, swishing their tails at flies and chewing the cud. For this reason the '*gelastar*', or cooling pond was a feature which increased the value of agricultural land in early medieval Ireland. Although it would be unwise to draw an exact parallel between the early medieval agricultural economy and prehistoric practices (e.g. Evans 1987), the faunal assemblages from two Irish Late Bronze Age settlement sites (Haughey's Fort, Co. Armagh and Ballyveelish, Co. Tipperary) do seem to indicate the increasing importance of cattle within a mixed agricultural system (Cooney and Grogan 1994).

On the other hand, at this early stage of our understanding of this site, it would be important not to commit ourselves to this simple, functional interpretation. The discovery of a

human cranium fragment may be highly important. There is emerging evidence that deliberate ritual deposits of human skull fragments were placed beside wetland habitations in later prehistoric Ireland (Cooney and Grogan 1994, 146-148). Fragments of human skulls apparently so deposited have been found at crannógs at Ballinderry, Co. Westmeath (Hencken 1942, 17), Lagore, Co. Meath (Hencken 1950, 199), Moynagh Lough, Co. Meath (J. Bradley pers. comm.) and in a Late Bronze Age constructed, embanked pool at The Kings Stables, near the hillfort of Haughey's Fort, Co. Armagh (Lynn 1977). Crucially, it is only cut or broken fragments of skulls that seem to be the focus of this practice. It is also possibly interesting that the only Irish Middle Bronze Age burial with inhumed remains, at Adamstown, Co. Limerick, produced only a human male jawbone (E. Grogan, pers. comm.). It is interesting that two finds of human cranium were found 700 m from the Iron Age structures at Goldcliff, on the Severn Estuary, one find was stratified and came from Neolithic/Bronze Age peats (Bell 1993b, 88).

Late Bronze Age wooden jetty/causeway

A second important later prehistoric intertidal site discovered recently is located at the top of the Fergus Estuary, adjacent to the townland of Islandmacgrath, Co. Clare (Figures 67 and 68). The site is situated on a narrow, steeply sloping shoreline of blue-grey estuarine clays. It comprises a complex linear wooden structure, measuring over thirty-five metres in length and at least two metres in width. It was constructed of multiple parallel rows of closely spaced stout roundwood posts with interwoven wattle. Between these lines of posts were laid horizontal panels of hurdlework, pinned to the clays with sharpened pegs. The single find from this site, the function of which was unclear, was a length of twisted wooden rope, possibly made of a narrow willow branch. The linear wooden structure weaves slightly along the shore, presenting an irregular plan with slight 'bays'. A sample of narrow hazel rod provided a radiocarbon date of 2540 ± 20 BP (Cal. 799-602 BC, GrN-20974).

This radiocarbon date would place the structure in the crucial transitional period between the Irish Late Bronze Age and the early Iron Age. The structure was clearly intended both to provide a stable surface on the mudflats and to create a waterfront structure by the channel. It could be interpreted as either a 'hard' for beaching boats, or as a complex wooden jetty or causeway providing access to the lower part of the shore. The possible activities of trading vessels in the upper Fergus Estuary may be indicated by two separate discoveries of a Late Bronze Age gold dress-fastener and a Late Bronze Age gold bracelet from the nearby saltmarshes. It is also possible that deliberate deposits of metalwork were made in coastal wetlands. It is interesting to reflect that the occasional deposition or possible loss of high-status metalwork in such locations seems also to have been a feature of the Irish Iron Age. The Broighter, Co. Derry gold hoard of first century AD date for example, including a model gold boat, collars and chain, was apparently found in reclaimed coastal claylands (Warner 1982).

It is possible to trace several archaeological parallels for this site in Britain. At North Ferriby, on the Humber Estuary, a smaller, decidedly less complex, wooden structure was dated to between 1590-1200 BC, contemporary with the well-known plank-built boats. This structure has been interpreted as a possible boat platform (Wright 1990). Recent excavations in a former tidal creek at Caldicot, South Wales have revealed similar Later Bronze Age wooden structures, associated with such finds

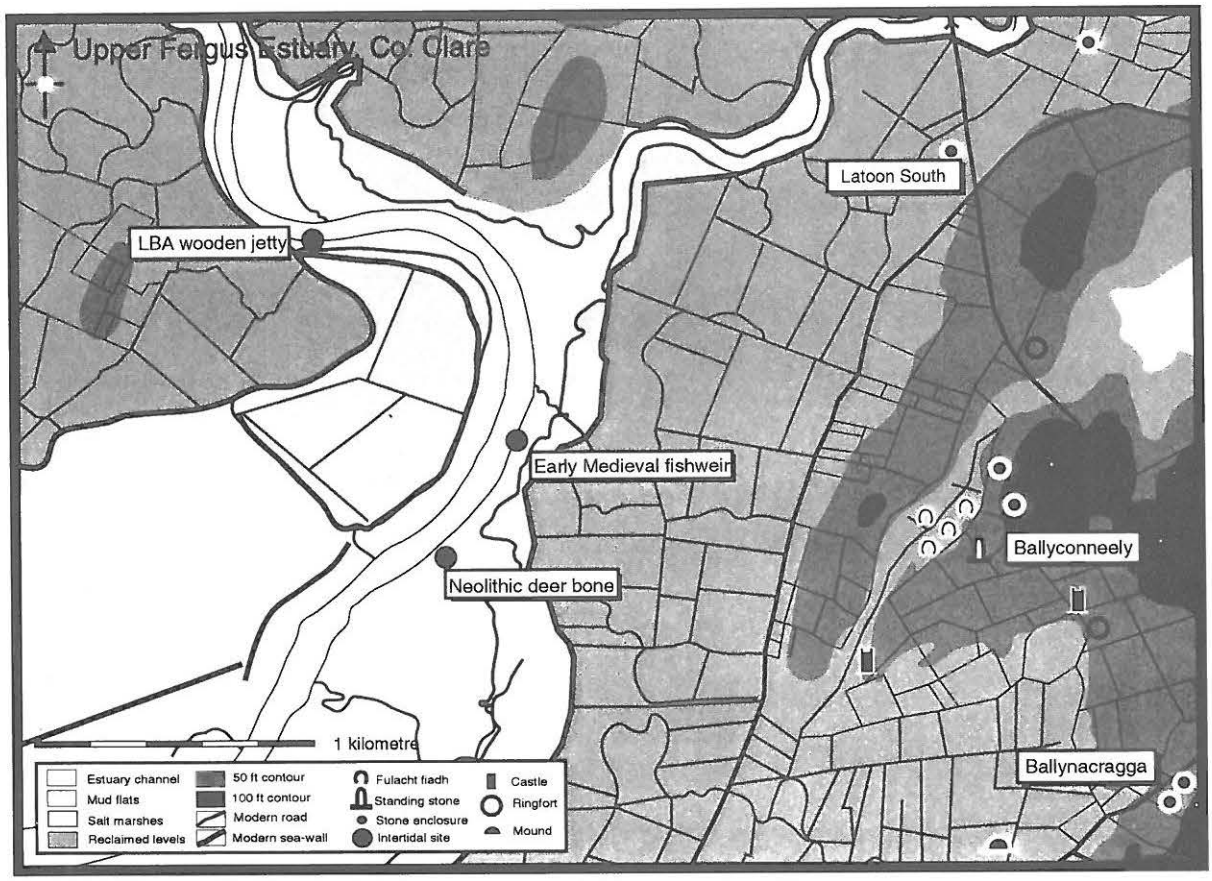

Figure 67. Upper Fergus Estuary, Co. Clare, Ireland

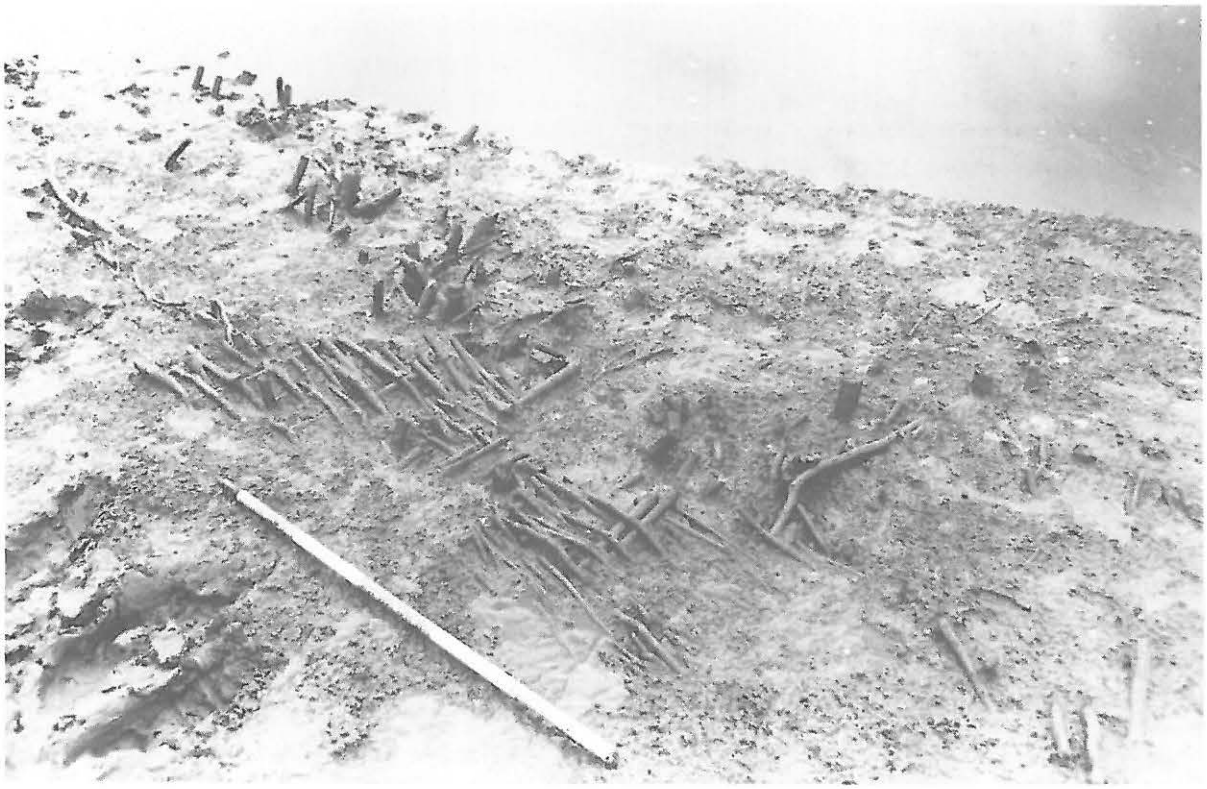

Figure 68. Late Bronze Age jetty/causeway at Islandmacgrath, Upper Fergus Estuary, Co. Clare, Ireland

as a plank-built boat, wooden artifacts, pottery, metalwork and animal bone (Nayling 1993b; pers. comm.). The excavations at Runnymede Bridge, on the tidal part of the Thames, revealed more substantial wooden waterfront structures dated to the Late Bronze Age. These appear to be broadly similar in plan and methods of construction to the Fergus Estuary post structure (Needham 1991). At Goldcliff, on the Severn Estuary, post alignments of uncertain function are associated with substantial Iron Age houses which had been located in episodically flooding marshes (Bell 1993a). In the context of boats, it is slightly unnerving to recall that willow ties similar to the single example found with the Fergus Estuary post structure were used to stitch together the planks of the Brigg 'raft', a flat-bottomed vessel from the River Ancholme dated to c.800 BC (McGrail 1981). Further archaeological investigations are intended at the Fergus Estuary site.

Late Bronze Age settlement beside the marshes

The perception of the natural environment in many 'primitive' societies has more to do with a 'sense of place' in the landscape rather than the modern ecological zoning that we have constructed. Thus an individual bog, a lake or a river-crossing may be thought of as important, but a rigid distinction may not have been made between different types of natural landscape. This is potentially important, as archaeologists tend to separate their disciplines according to the type of landscapes that they work in (i.e. the concerns of wetlands archaeologists tend to halt at the dryland slope). The North Munster Project as a regional landscape project has been attempting to explore the activities of later prehistoric communities right across this wetlands-dryland divide.

The archaeological research strategy devised for investigating the North Munster region has led to the establishment of a number of smaller study areas which can be analysed in detail. The Mooghaun study area is situated in south-east Clare, with its western and southern limits dictated by the Fergus Estuary and the upper Shannon Estuary. The wooden structure described above is situated at the north-west corner of the Mooghaun study area. The estuary site is intervisible with the large trivallate hillfort at Mooghaun, Co. Clare (*c.* 4.5 km to ESE) which has already been the focus of archaeological excavations by the North Munster Project. These excavations have revealed massive stone ramparts constructed in the Late Bronze Age (Cal.1255-917 BC), as well as evidence for circular house sites, settlement debris such as coarse-ware pottery and animal bone, and industrial metal production (Grogan and Condit 1994b). The hillfort is also closely associated with the wetlands findspot of a large hoard of Late Bronze Age gold objects, discovered in the nineteenth-century beside Mooghaun lake 750m north-west of the hillfort.

Mooghaun hillfort is only the second dated hillfort in Ireland. Thus the origins and function of Irish hillforts remain a subject of much debate. However, if (like the wetlands gold and bronze hoards, for example) they represent the political centres or status symbols of certain individuals or 'tribes', then we might expect to also identify the wider settlement patterns of such a tiered social hierarchy. The North Munster Project has proposed just such a stratified model of settlement, on the basis of the region's hillforts, smaller hill-top enclosures and clusters of small stone enclosure complexes which appear to be of late prehistoric date.

Several possible Late Bronze Age domestic enclosures are situated on the low hills overlooking the Fergus Estuary levels and the site of the Late Bronze Age wooden causeway on the mudflats (Figure 67). At Ballyconneely and Ballynacragga, Co. Clare a series of

stone enclosures with associated field-systems, clusters of *fulachta fiadh* and standing stones may well represent the agricultural settlements of smaller family groupings. At Latoon South, a fragment of exotic pottery was recently recovered from a levelled stone enclosure. It has tentatively been identified as being of prehistoric east Mediterranean (Greek or Cypriot) origin. This is obviously an exciting find in the context of the possible estuarine boat jetty described above, which is situated 2 km to the west.

Similar enclosures to these, of proven Late Bronze Age date, were excavated to the south at Aughinish, Co. Limerick. These enclosures were sited on an low island in the Shannon estuary. The excavations revealed hut sites, coarse-ware pottery, saddle querns and metal artefacts. There were also apparently several rock-cut pits which had been filled with seashells, evidently the refuse from food gathering in the intertidal zone (Kelly 1974; Raftery 1976). Research is therefore producing a picture of Late Bronze Age communities active on the mudflats, marshlands and adjacent hinterland along the estuary coastline.

The stone enclosures seem to be placed at regular intervals along the edge of the marshes. It would be interesting to query whether these represent dryland communities who were controlling strips of coastal wetlands adjacent to wider territories. Bronze Age wooden trackway concentrations at Sharpham, Skinner's Wood, Meare Heath and Shapwick Heath in the Somerset Levels have been taken to represent just such separate, but contemporary, communities exploiting the resources of both wetlands and dryland slopes (Coles and Coles 1986, 131). Alternatively there may have been marshland communities who perceived themselves as being quite distinct from people further inland.

Tidal fishweirs in North Munster

The most common type of fishweir formerly used in Irish estuarine waters was known as a headweir. This was typically constructed of two long post-and-wattle fences or 'wings' which converge to a point in a V-shaped plan. The widest opening of these fences most commonly faced upstream or towards the shore, to funnel fish coming down on the ebbing tide into the 'eye' of the weir. At the 'eye' of the weir, fish were trapped in a 'coghill' net which was suspended from a raised platform. These nets were conical in shape being long composite mesh bags kept open by means of attachments to the uprights of the wooden platform. Although such nets were used in modern times, earlier traps may have been of woven basketry. The tradition of this type of fishing in Ireland unfortunately is more or less dead and there was also until recently no archaeological evidence for earlier Irish fishweirs. Large numbers of post-medieval wooden and stone fishweirs have been recorded on the tidal foreshore by the North Munster Project and to date four wooden structures have been radiocarbon dated to the Medieval period.

Early medieval fishweir

One of the first structures discovered during the survey was a small post-and-wattle fence adjacent to the townland of Ballygirreen on the upper Fergus Estuary, Co. Clare, dated to about the sixth-century AD. It is situated at extreme low water, on a narrow sloping shoreline, only visible for about an hour a day. The structure is a single, lightly built hurdle fence, at least eight metres in length running down the foreshore with its lower end permanently underwater. It comprises an alignment of narrow alder and hazel vertical posts with a series of interwoven willow and hazel rods (species identifications by Mary Deevy). At the upper end, the fence runs under the clays. A sample

provided a radiocarbon date of (GrN-20139) 1495 ± 35 BP (Cal. 447-637 AD). It has been interpreted as a wing or guiding fence of an early fishweir, designed to trap fish on the ebbing tide (O' Sullivan 1993, Figure 69;1994).

There is some documentary evidence for early medieval Irish fishweirs, much of it in fact dating to the centuries immediately after the construction of this structure (O'Sullivan, forthcoming). Early Irish annals, law-tracts and hagiographies all mention the construction, use and ownership of the *cora éisc* (*cora* denoting fence or wall, *éisc* denoting fish). The early Irish laws are particularly tantilising. One seventh-century law-tract dealing with the valuation of types of land, *cis lir fodla tire* ('how many types of land are there'), states that proximity to a river-mouth could increase the value of land by ten *séts*. The obvious benefit of such a location would be the access to water, salt and to fish stocks, while netting and angling could also have been fishing techniques. There is also an implication in the law-tract, *Coibnes Uisci Thairidne* (kinship of conducted water), that a fishweir could be erected in water adjacent to a neighbour's land. There might well have been more detailed legal guidelines on the ownership and use of estuarine waters outlined in the *Cáin Inbir* ('the law of the estuary'), which was part of a now lost law-tract *Muirbretha* ('sea-judgements').

The seventh-century wisdom-text *Audacht Morainn* states that among the attributes of a just king must be the abundance of fish swimming in his stream. Fish would have been one economic resource and there seems to have been an awareness that fish-stocks needed to be protected in early medieval Ireland (accentuated by the fact that the range of fish-species native to Ireland is quite limited). This protection seems to be defined in a fragment of eighth-century law-text preserved in O'Davorens Glossary (F. Kelly pers. comm.). This states *'Ní téchta ní bes (mo) no trian inn uisce do aire .i. do ime'*, which translates as 'It is not proper to (build) a weir, i.e. a fence, more than one third of the water'. This seems to indicate the legal enforcement of a gap in the fishweir, allowing at least a certain percentage of the fish-stocks to move unimpeded upriver.

Medieval fishweirs

A second complex of late-thirteenth century fishweirs which have been recently discovered is situated on the Deel Estuary, Co. Limerick, which flows into the southern side of the upper Shannon Estuary at about its mid-point. Intertidal surveys along the narrow channel lead to the identification of a cluster of post alignments. These have been planned and partially sampled, but more detailed investigations have yet to be undertaken. There are at least three linear wooden structures being eroded out of blue-grey estuarine clays, some of the posts only surviving as short stumps of sharpened ends. The largest structure comprises several converging lines of vertical post-and-wattle fences, the longest of which measures 25 m in length. Two further post alignments situated immediately to the south measure under 10 m in length (with the lower ends underwater), but are of similar construction. A sample from one of the wooden structures has provided a radiocarbon date of 740±15 BP (Cal. 1261-1278 AD, GrN-20975). The alignment and contruction of these fences seems to indicate that they were fishweirs designed to trap fish on the flooding tide.

It is also possible to identify the contemporary settlement responsible for their construction, the remains of a medieval castle or towerhouse are located in Ballynash, at the top of the foreshore 400m to the east. Fish seem to have been an important element in the medieval diet, at least for the upper classes of society. Fishbones from eel, cod, haddock, plaice and salmon/sea

trout have all been found in an Early Medieval coastal shell midden at Oughtymore, Co. Derry. Urban excavations at Barrack Street and French's Quay, Cork produced large amounts of thirteenth-century fish bone, amongst which were eel, herring, salmon, mullet and flatfish. These species could all have been taken in coastal fishweirs.

Conclusion

In November 1992 the writer presented the early results of the North Munster Project's first season at the Severn Estuary Levels Research Committee meeting at St. Fagans. The Chairman, Dr. Aldhouse-Green, declared his belief that the Shannon Estuary would in time produce comparable evidence to that from the Severn, at the time this seemed a fairly faint hope. Three years on from the first timorous steps into the mud, the Shannon intertidal surveys have introduced new techniques and types of evidence to Irish archaeology. The challenge facing the North Munster Project is to investigate further and interpret this evidence to appropriate standards.

Author's address:
Discovery Programme
13-15 Hatch Street Lower
Dublin 2
Republic of Ireland