GORAD Y GYT FISH WEIR AND OYSTER BEDS

ARCHAEOLOGICAL RECORDING AND WATCHING BRIEF

Report No. 254

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Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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prepared for Dwr Cymru Welsh Water

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1. INTRODUCTION

Welsh Water have constructed a new sewage outfall into the Menai Straits below Gorad Road in Bangor. This work involved the disturbance of the remains of oyster beds and a fish weir known as Gorad y Gyt. Gwynedd Archaeological Planning Service recommended a programme of archaeological work involving a desktop study, survey and watching brief, and prepared a brief for the work.

Gwynedd Archaeological Trust (Contracts Section) were contracted to carry out the archaeological work, which was to be undertaken in the following stages.

a) A desktop study of readily available literature, archives and map evidence.

b) Survey the oyster beds and fish trap in advance of the works on the outfall.

c) Conduct a watching brief during the clearance of the working corridor and excavation of the pipe trench in order to detect and record any buried features.

d) Report on the work carried out, and include an assessment of the importance of the archaeology recorded.

2. METHODOLOGY

A desk top study and archive search of all relevant literature was carried out using records at the University of Wales Bangor, and the Caernarfon Record Office. Ordnance survey maps and the tithe map was examined; no relevant estate maps were found. The Penrhyn manuscripts at Bangor were found to contain relevant information.

The fish weir and oyster beds were surveyed using a total station. The total station survey was then checked against recent aerial photographs as some large scale features were difficult to see on the ground. In addition to this detailed hand drawn plans were made at 1:20 of the wattle fencing. A photographic record was also kept, using both colour slides and monochrome prints.

An archaeological watching brief was carried out during the construction of the outfall. The contractors cleared all surface stone from a 50m wide corridor through the north-eastern side of the oyster beds. A 9m wide and approximately 2m deep pipe trench was then cut through the centre of this. A watching brief was conducted during both of the above operations. All features that were disturbed or uncovered were recorded. It was not possible to draw the revealed sections because the excavations for the pipe trenches were in excess of two metres deep and the edges were very unstable so access was not possible. Some photographic recording was possible and written records were kept. A total station survey was carried out showing the edges of the pipe trench, the clearance corridor and the new features revealed.

The fieldwork was carried out between 27 October and 10 December 1996.

3. ARCHAEOLOGICAL BACKGROUND

3.1 General

A fish weir is one of the simplest and least labour intensive devices for catching fish. The basic principal is quite simple; a permanent barrier or partial enclosure is constructed across an area or route commonly used by fish. This must be positioned in such a way that the fish are deflected into an area from which they cannot escape. Various designs have been employed in rivers, estuaries and the intertidal zone; the majority are based on a V shaped enclosure often with a small weir or gate at the apex. Tidal fish weirs have the open end of the V facing towards the high water mark although they are often angled towards the ebb flow. Although at first sight it appears that the weir is angled in order to take advantage of the current the behavioural characteristics of the fish play a large role in the siting and design of the structure. In his *'An Account of the fishing Gear of England and Wales'* F.M. Davies notes that some species of fish move towards the shore with the flood tide and then follow

the ebb tide down and along the shore. The most basic fish weir takes account of this and has one arm at approximately 90° to the shore with the outer arm running roughly parallel to the ebb tide and hence close to parallel with the shore. The outer arm usually has a hooked or inturning end. The fish will therefore come up against the arm running from the shore at ebb tide and head for deeper water at which point they will hopefully be trapped behind the inturning outer arm by the falling water levels. The walls of the weirs may be constructed from stone, or stakes with wattle woven between them or a combination of the two. The fish weir also tends to trap sediment in the seaward end which can be colonised by marine worms which also attract feeding fish (Jones 1983).

The earliest evidence discovered to date for the use of fish weirs is a row of wooden stakes and wattle excavated in a river bed at New Ferry, Lough Beg, Northern Ireland. This structure was dated to before 1000 BC. River weirs have the same V shaped layout and again rely on the behaviour of fish, the open end may face either upstream or downstream to catch migrating salmon or eels. Norman and Saxon weirs of a similar design have been found in Nottinghamshire (Salisbury 1991). The design of present-day eel weirs on the river Bann in Eire appear to be almost unchanged from that of the prehistoric example.

Fish weirs sited in the intertidal zone are known in many areas of the British Isles. Simple V shaped weirs have been in use within living memory in North Wales and on the Isle of Skye. The Welsh name for a shore sited fish weir is gorad or goret and literary references can be traced back as far as the 6th century *'Hanes Taliesin'* where it is stated *'Ac yn yr amser hwnnw yr oed Gored Wyddno yn a traeth rhwng Dyfi and Aberystwyth'* (the Gored Wyddno was located on the beach between the Dyfi and Aberystwyth). The remains of a large number of fish weirs can be seen on the coast of Gwynedd, most notably in the Menai Straits. The majority of these are visible as dark weed covered walls and have fuelled several myths of drowned cities (Jones 1983).

3.2 History of Gorad y Gyt

The earliest record found which mentions Gorad y Gyt is a Penrhyn rental of 1552; it is also mentioned in rentals dated 1560, 1565 and 1610 (Penrhyn Mss 1612-1615 and 1631). In addition, the site is mentioned in the records of a dispute between Hugh Lloyd and Hugh Bishop of Bangor about the Porthesgob ferry across the Menai Straits in 1588. One witness stated that '... the other syde the circuit and Compasse of Porthescob is from the said porthescobbe vnto a place called goret kytte' (H R Davies 1942).

It seems that the weir went out of use during the 18th century. The following is stated in the Williams manuscript in Fentons 'Tours in Wales' (1804-13).

> 'There stood about 80 years ago a fish Weir upon the entrance into the Menai North of Bangor, at the place called Garth. Some of the remaining stumps of the stakes are still visible in the sands. It was called Goredgit, and the place where it stood is still called so.'

However, in the early 19th century it is possible an attempt was made to re-work the weir, as a manuscript dated 1840 contains the information "the present weir called Goret Gyt [was] re-erected about 35 years ago" (Penrhyn Mss 810). To what extent the weir was re-erected is not known, but in 1852 the site was leased to Messrs. Daniel and Jonathan Russell in order to construct oyster beds (Davis 1942). The wooden stakes were removed and stone walls were constructed forming a number of rectangular enclosures in order to protect the oysters. One side of the oyster beds utilised the inner arm of the Gorad running out from the shore, but the outer arm of the weir was overlain by the remainder of the beds. The new oyster beds were however seen as a menace to shipping and criminal proceedings were taken against Jonathan Russell in 1854 after a Memorial was sent to the Admiralty by the owners and masters of the coasting schooners which used the mud flats to anchor on. Russell was however acquitted. The Admiralty pressed for a new trial and although this does not appear to have occurred the Russells had abandoned the oyster beds by 1854, and there is no evidence for activity on the site after this date.

4. RESULTS OF THE SURVEY AND WATCHING BRIEF

4.1 The fish weir

The fish weir is both typically situated, in an area where there is a large expanse of ground left uncovered at low water, and typically shaped. It has a long inner arm which runs outwards at right angles to the shore, and a hooked outer arm which forms the classic "V" shape with the open end of the "V" facing the ebb tide. The inner arm now forms the west wall of the oyster beds, and the outer arm underlies the beds (see fig. 2).

Close examination of this inner wall suggests that the majority of the surviving stone is that of the fish weir. There is no differentiation between facing and core and there are a number of *in situ* wooden stakes and some wattle embedded in the shore end of the wall.

The outer, hooked, arm of the weir is easily visible from the air and could be seen to run back from the north end of the inner wall at a relatively acute angle of 60° for 175m. This wall also curved, and was visible as concentrations of stone within the silty 'bays' of the oyster beds. This arm was cut through by the pipe trench, when it was seen to reach a depth of no more than 0.3m. No facing stones were visible in the section, and it would appear that the majority of the stone had been removed, probably for constructing the oyster beds.

A collection of stone at the apex of the "V" may mark the site of a trap, but no specific feature could be could be traced.

The wooden stakes and wattle in the inner wall were examined and planned by hand (fig. 3). The stakes were of oak and varied between 0.06 and 0.16m in diameter. The majority were round section timber although a significant number consisted of larger timber that had been split into four. The wattle was typically 2.5 to 3cm in cross section and appeared to be hazel or willow. A 16m length of this fencing was identified, consisting of in excess of 60 stakes. Wattle was only visible for 3.5m of this and could clearly be seen to have been woven around the uprights. A quantity of well preserved *Juncus spp.* reeds could also be seen to be entangled within the wattle. It was not possible to determine whether this had merely washed into the fence or had been deliberately incorporated. The good organic preservation was a result of the anaerobic mud present in this location. It therefore appears that the timbers have been uncovered by an ongoing process of erosion. A sample of the wattle was sent for radio-carbon dating. The radio-carbon date, when calibrated, dated the timber with 95.4% confidence from either the period between 1680 to 1740, or the period between 1800 to 1940 (Beta-106685, 10 +/- 60BP). There is no evidence for the use of wattle fencing on the remainder of the oyster beds, so it is probable that it belongs the period when it was operating as a fish weir. It is most likely, therefore, to date from the last re-building which took place around 1800.

The question of the original height of the stone walls should be addressed. Fish weirs can be of wattle fencing, wattle fencing on top of a stone wall, or fully stone built. Comparison with other sites would suggest that the inner wall at Gorad y Gyt is presently at its maximum height, and this is confirmed by the presence of the wattle on the top of the wall. The wattle fence is likely to have stood some 2m high. The outer arm is now visible only as a spread of stone lying on the surface, and it likely that this has been robbed of stone to build the oyster beds, and that it originally stood some 0.3m high surmounted by a wattle fence. It is possible that the present stone structure was preceded by a weir of wood only, but only excavation across the inner wall would confirm this.

4.2 The oyster beds

The remains of the oyster beds formed the most obvious visible feature on the site. A plan of the layout is shown in fig. 2. The site is defined by a collection of low walls which formed a rectangular enclosure with dimensions of 220m x 120m. This was internally subdivided into bays by one longitudinal and three lateral walls. The inner end of the beds was partially obscured by dumped stone and the outer end was poorly defined and somewhat eroded.

The central wall running from the shore was the most well defined, and was 3.4m wide with a typical height of 0.2m. It was faced with on both sides with stones up to 0.5m in length. The wall core consisted of small stones, the majority of the walls had been colonised by *Ascophyllum nodosum* which had cemented the core together in many places. The north-eastern wall was visible as a spread bank of stone typically 10m across. The walls running across the structure were typically 3.0 to 3.2m across with variable definition, the second lateral wall from the shore was only visible as a linear concentration of seaweed.

A number of the walls were cut through during the digging of the pipe trench: this showed that the walls were surface features, extending less than 0.5m down into the silt. Below this was at least 2m of clean silt or silty clay. Only one course of facing stones sitting on natural silt could be seen in the sections, which was through the central longitudinal wall of the oyster beds. Elsewhere concentrations of stone in the upper 0.5m of the silt marked the lateral walls.

4.3 Stake rows

Three rows of stakes north of the oyster beds became visible following the digging of the pipe trench (see fig. 2 for location). One was just inside and running parallel to the north-western wall of the oyster beds. The two remaining rows were parallel to this and were situated 6m and 18m beyond the oyster beds. A sample of 15 stakes was recovered and these were examined by M.P. Denne of the Biocomposites Centre, UWB. She reported that the following six species of wood were present.

Salix spp (willow)

Alnus spp (alder)
Quercus (oak)
Betula (birch)
Fraxinus (ash)
Acer spp (sycamore or field maple, almost certainly sycamore)

This species list corresponds to the present day mix of trees growing on the shores of the Menai Straits and it is likely that the wood was taken from there. It seems unlikely that the stakes are associated with the fish weir as they respect the orientation of the oyster beds and the main channel of the Menai Straits. The presence of sycamore also suggests a later date as this species did not begin to become naturalised until the end of the 18th century and was probably not common until later in the 19th century. There appears to have been no species selection, birch in particular would not be expected to survive for long in marine conditions. This is in marked contrast to the exclusively oak stakes of the fish weir. It can be concluded that these rows of stakes date from either the 19th or 20th century. Their position suggests a connection with the oyster beds but it is possible that they post date this and may be the result of more recent opportunistic fishing.

5. SUMMARY AND CONCLUSIONS

An archaeological survey and watching brief were carried out during the construction of a pipeline which cut through a fish weir of 16th to 19th century date, and oyster beds of mid-19th century date.

The survey, aided by the use of aerial photographs, revealed the plan of the fish weir, or gorad, underlying the walls of the oyster beds. Within the weir wall were remains of wooden fencing, which were radio-carbon dated to c. 1800, the last phase of use of the site as a fish weir.

There were formerly a large number of fish weirs around the North Wales coast, and particularly within the Menai Straits (Jones 1983 and Richards 1974). Many of these are still clearly visible as stone walls, and a number still retain the remains of wattle fencing as revealed at Gorad y Gyt. In addition, it appears likely that there may be timber fish traps preserved in the inter-tidal muds around the coast. Recent work in South Wales has led to the discovery of large numbers of fish traps of all sorts, and one was discovered in North Wales in 1988, which was dated to about 1570 AD (GAT 1988). Recording work carried out at the Rhos Fynach weir at Rhos on Sea also led to the discovery of timbers which dated from between 1500 and 1660 (Flook 1995).

Much research work still needs to be done on the economic importance of fisheries during different periods, and on the development of fish traps from early times to the present. In addition, there has been little work carried out on the cataloguing and assessment of the remains, and a full list of fish weirs around the North Wales coastline has yet to be compiled. It is therefore difficult to assess the importance of this site in regional and national terms. However, the regular mention of fish weirs in medieval and later documents suggests that they played an important role in the local economy from at least the 12th century through to the 19th century, and the quantity of physical remains still visible around the coast confirm this importance. Therefore the remains at Gorad y Gyt should be seen as of regional (i.e. county) importance, whilst some of the better preserved weirs will be of national importance.

Little mention has been made of the oyster beds in terms of usage and importance. There are certainly the remains of oyster beds on the Anglesey side of the Straits by Brynsiencyn, some of which are still in use, but the date of origin of these is not known. As with weirs, the lack of research into the importance and development of oyster farming makes it difficult to assess the importance of the remains.

At Gorad y Gyt, the east side of the outer wall of the weir and the oyster beds which fell within the clearance corridor for the pipe trench have been largely destroyed and are no longer visible. The west side of the gorad with the wattle and stake fence, and the west half of the oyster beds remain *in situ*. The two areas of most potential which remain are the inner wall of the weir, which may contain evidence of its former history in the form of early timbers, and the apex of the inner wall, where there may be remnants of a fish trap.

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Fig. 1 Location Plan

(OS 1:10,000 1989)

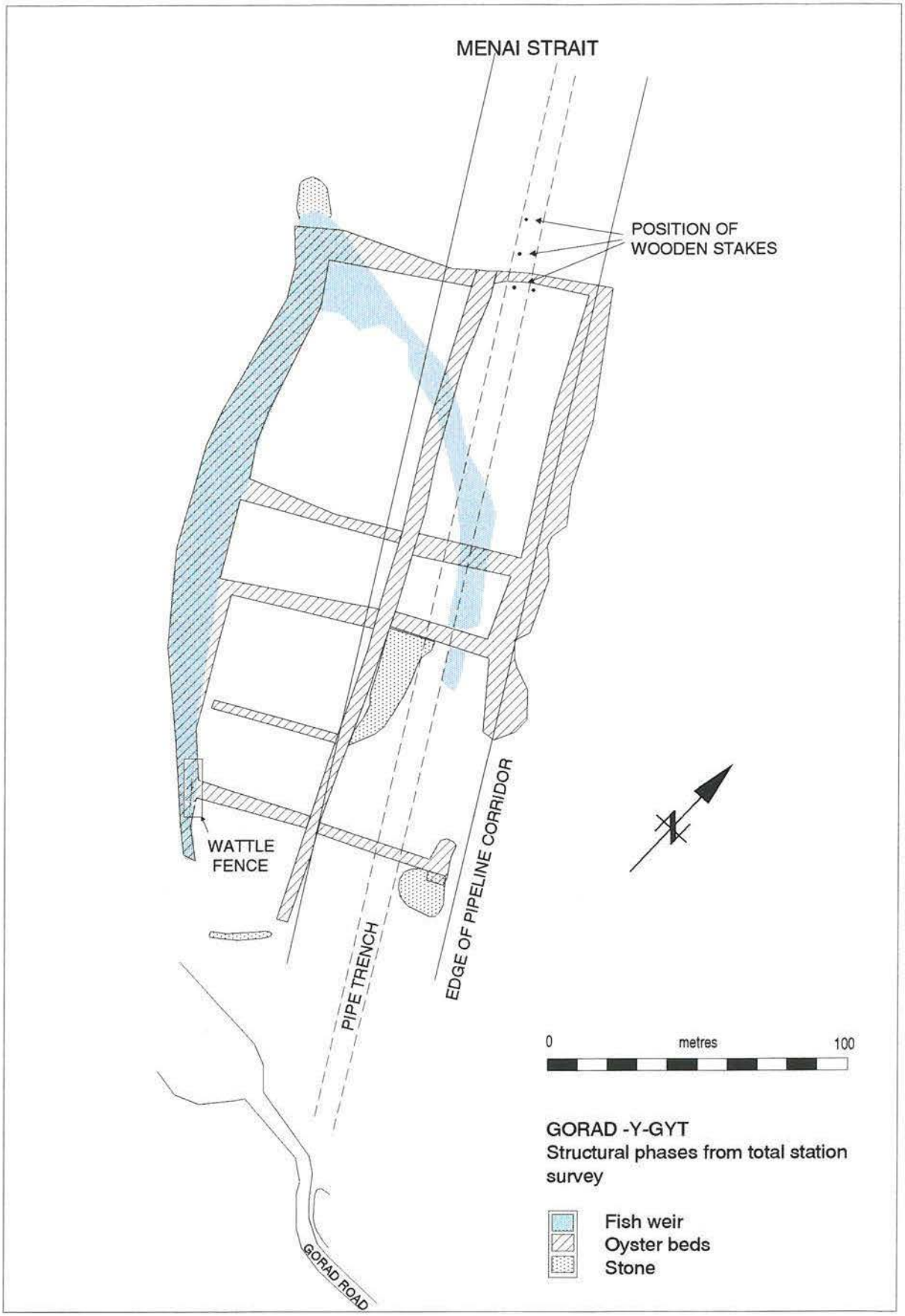

Fig. 2 Total station plan of Gorad-y-Gyt

Fig. 3 Plan of the wooden stake and wattle fence on the south-western arm of Gorad-y-Gyt

Aerial photograph of fish wier and oyster beds
(Courtesy of Welsh Water)

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