

Archaeological evidence for fish-traps

Archaeological surveys throughout the British Isles have revealed the remains of numerous fish-traps. They have usually been located as a result of detailed coastal or intertidal surveys. Follow-up work has been undertaken at a number of sites, mainly concentrating on obtaining a detailed plan of the site and, where possible, a date. Many surviving fish-traps have elements that remain submerged at all times (except possibly at the lowest Spring tides) and it is not unusual to locate timbers surviving under water during the surveys. Some of these pieces of wood have been radiocarbon dated and the results are presented below.

Prehistoric fish-traps

Archaeological evidence indicates that the earliest fish-traps date back to the Mesolithic (Pederson (1995)). A Neolithic eel trap made of woven dogwood was recovered from a wetland excavation at Bergschenhoek, Holland (O'Sullivan 1994, p. 12) and one of the fish-traps located during the survey at Wootton Quarr, Isle of Wight was radiocarbon-dated to the same period (English Heritage 1996).

A possible Bronze Age fish-trap was found during the Shannon coastal survey (O'Sullivan 2001). It comprised of two rows of posts supporting wattle fences. Also in Ireland, rows of wooden stakes joined by wattling found in an ancient river bed at New Ferry, Lough Begg (Mitchel 1965, p. 1) have been dated to 1000 BC.

Early Medieval fish-traps

The Shannon survey (O'Sullivan 2001) also revealed ten medieval fish-traps forming five discrete groups and dating from the fifth to the thirteenth century AD. A post and wattle fence was located eroding out of the clay on the Fergus Estuary, Co. Clare (O'Sullivan 1994). It consisted of a line of sharpened round-wood posts with stout rods woven between them to form a barrier and was radiocarbon dated to 534 - 646 AD.

A trap on the river Trent at Colwick, Nottinghamshire was dated to the 8th - 9th centuries by the excavators (Losco-Bradley and Salisbury 1988, pp. 329 - 338). This Saxon trap was formed of a double row of posts with wattle hurdles between them. The posts survived to a length of 1.4m, of which 1m was hammered into the riverbed. Two of the posts were oak and the majority of the other timbers were holly. The hurdles were made of hazel and comprised vertical 'sails' between which were woven horizontal 'rods'.

A survey of the Blackwater Estuary, Essex (Dix and Bull 2000) revealed numerous wooden fish-traps preserved due to submersion in the tidal waters. At one site in Collins Creek, over 20,000 stakes were located. The stakes were thought to have originally been up to 3 metres in length, although most survived to less than a metre. Radiocarbon dating placed the construction of these traps to the Saxon period. At the nearby site of Sales Point, a large, roughly rectangular fish weir measured over three hundred metres in length and was probably designed to catch fish on both the flood and ebb tides. The trap was C14 dated to the Middle Saxon period (late - 7th to the 9th centuries AD).

The most extensive structure revealed during the Wootton Quarr survey (English Heritage 1996) was a post alignment at the low water mark that extended over 1.25 km. It was thought to be a fish-trap and was C14 dated to the seventh - eighth centuries AD.

Twenty fish-traps were located on the foreshore of Strangford Lough (McErlean *et al* 2002), of which thirteen were constructed of stone and seven of wood. The wooden traps were C14 dated and ranged from the seventh to the thirteenth centuries AD, allowing a typological development to be proposed. A timber from one of the stone traps was C14 dated and was found to post-date the wooden structure. The excavators saw the stone traps as a later development.

Medieval fish-traps

Numerous medieval fish-traps have been surveyed and radiocarbon dated, and off Sudbrooke Point in the Severn Estuary, lines of stakes were C14 dated to the ninth to eleventh centuries.

A 'V' shaped fish weir located during the Wootton Quarr survey was C14 dated to the tenth century AD (English Heritage 1996). It was made of hurdle fences strengthened with limestone blocks and braced with wooden posts on both the inside and outside of the wall. At the apex of the weir was a circular pound, 3.5m in diameter.

Gravel extraction led to the discovery of a Norman fish-trap at Colwick, Nottinghamshire (Losco-Bradley and Salisbury 1988, p. 338 - 344). The structure was C14 dated to the late eleventh century and comprised a post alignment, originally 100m in length, which had been partially destroyed by quarrying. Wattle hurdles, surviving up to 0.65m high, stood against the posts and were held in place at the base with a packing of clay and brushwood. The alignment ran parallel to the riverbank and several shorter lines of posts came out from the bank to meet it at an angle, forming several 'V' shaped traps.

A 'V' shaped trap located on the beach at Whitepool Point, Camarthen Bay was dated to the thirteenth century (James and James 2003), as was a structure on the Deel Estuary, Co. Limerick (O'Sullivan, 1995). The Irish structure was constructed of closely-spaced wooden stakes with wattle woven between them (rather than using prefabricated wattle hurdles).

Later and Post Medieval fish-traps

A post from a trap at Deganwy, on the east shore of Colwyn Bay, was radiocarbon dated to AD 1460cal (Bannerman and Jones 1999, p. 73). A line of stakes at the Burry Inlet, Llanelli has been dated the seventeenth to nineteenth centuries (James and James 2003).

Two dates have been obtained for fish-traps in Scotland; both obtained by Hale (forthcoming p. 12) from the Moray Firth. A trap at Dingwall was built of alder stakes supporting wattle walls and was radiocarbon dated to 1667 - 1881 (sigma 1). An alder post taken from a trap at Corgrain Point was dated to 1530 - 1790 (sigma 1). Hale (forthcoming, p. 4) suggests that both dates relate to the last phase of construction of these traps.

Types of fish caught in traps

The trapping of fish is indiscriminate and a single trap can take many different species of fish. A trap will work whether it is tended or not, the fisherman's main effort being expended in maintaining the trap and removing the fish rather than doing anything to affect whether fish enter the trap or not. Abandoned traps will continue to trap fish unless totally removed, and Bathgate (1949) noted that a partially destroyed yair on Lochbroom continued to capture sea-trout and salmon.

Targeting species

The positioning of a trap in certain places resulted in a greater likelihood of target species of fish being caught, and the builders of traps used local knowledge to position their traps. Two of the most important fish that Scottish fishermen aimed to trap were the herring and the salmon. Both of these fish came close to the shore at certain times of year, although the movement of salmon was the more predictable. Many fishermen built traps in places where it was known that these fish would pass.

Herring

Herrings shoal in large numbers and migrate around the coast of Britain, visiting certain areas at about the same time each year. By following these shoals, huge numbers of fish could be caught, and its pursuit led to a dramatic, but short-lived, expansion of the Scottish fishing fleet. However, it was not until the second half of the eighteenth century that this fleet started to develop, and as late as 1767, Caithness fishermen caught herrings on iron hooks to use as bait for the more important white fish (Anson 1950 p. 3).

Before the development of the fleet, the herring industry was coastal and depended upon the herring chasing plankton within a narrowly defined area of water. This meant that the industry was unreliable as the fish didn't always come close to the shore. When they did, the results were dramatic and Parish records for Prestonpans of 1695 state that shoals of herring came so close to the coast that local people caught them in buckets (Anson 1930, p. 71).

Fish-traps could catch vast numbers of herring and a trap at Gorad Rhos Fynach, is reported to have taken 35,000 fish on a single tide (Momber 1991). A yair on Lochbroom was said to have trapped so many herring that even after all the people in the district had been supplied with fish, more than one thousand baskets of fish were left within the trap to rot (Bathgate 1949, p. 99).

Once captured, herrings decayed quickly, and those not sold fresh needed to be preserved rapidly. The intermittent arrival of the herring and the reliance upon small boats and coastal fisheries meant that there was no development of curing facilities on the east coast of Scotland until the late eighteenth century. This meant that the arrival of the herring could lead to a glut in the market, as all the fish captured had to be consumed immediately (Gray 1978, p 26). It was the dramatic arrivals of herring in the Firth of Forth at the turn of the nineteenth century, (starting in 1794 and returning each year thereafter until 1805) that led to the development of a large number of curing yards on the Forth. Over one hundred yards were set up around Burntisland alone (Gray 1978, p. 27).

The development of the herring fleet led to the use of larger boats. This meant that it became possible to process fish on board and allowed more flexibility in chasing the fish (Gray 1978, p. 21). The fishing industry rapidly expanded and the use of boats led to a reduction in the importance of fish-traps for catching herring.

Salmon

Salmon have a complex life cycle and seven distinct phases have been identified. They are born in fresh water and go to the sea as a smolt. They develop into salmon in the North Sea and return to spawn in their place of birth by following the coast until they reach their natal river. It is this migration that fishermen have exploited, taking fish as they journey either to or from their breeding grounds. Their passage meant that they could be caught in certain rivers, estuaries or on the coast.

Fresh salmon was a valuable fish commanding a high price and the traditional method of catching them was by net and coble (Robertson 1998, p. 26). One end of weighted net was paid out from a boat (the coble) whilst the other end was held on the shore. The net extended all the way to the riverbed and the boat made a semi-circular passage through the water before returning to the shore, capturing fish as it did so. The net and coble was most efficient in the upper reaches of rivers, where the water was calmer and the riverbed quite flat. Some fish-traps were also used, and Bathgate (1949, p. 101) noted that 2,560 salmon were taken at one time from a cruive pool near Thurso. However, it was the adoption of stake nets at the beginning of the nineteenth century that revolutionised salmon fishing. Vast numbers of fish could be captured, and 7,000 salmon were said to have been caught with a single stake net in the parish of Forgan in Fife (Statistical Account 1845, vol. 9, p. 510). Another account stated that there was a huge decline in numbers of fish caught after the suppression of stake nets on the Tay, with 20,000 to 30,000 fish captured annually before the ban and only 3,000 fish after (Statistical Account 1845, vol. 9 p. 589).

Other fish caught in traps

The types of fish caught in traps partly depended upon the type of trap. One argument used in favour of stake nets was that the net size used had a large mesh-size, allowing smaller fish to pass through it. Other traps were less discriminate, taking any fish that passed into them. Not all traps kept detailed records about the types of fish they caught, but accounts from around the British Isles give an indication of some of the species caught.

Trout were recorded as being taken in many traps and huge numbers were caught in fish-traps in Kilburnie, Ayrshire, (Statistical Account 1845, vol. 5 p. 696), and:

...one individual caught, by means of a stake-bag-net, no fewer than 150 stones.

Sprats were caught in the Tay Estuary from December to February (Anson 1930, p. 108), and in the Forth. The Statistical Account for Dalmeny, Linlithgow (1845, vol. 2 p. 92) mentioned a fish resembling a sprat, known locally as a *garvey*, that appeared sporadically near Queensferry. It could not be relied upon to arrive in great numbers, but in certain years, huge shoals were caught at the coast:

...so as to glut the Edinburgh and Glasgow markets and the intermediate towns and country, and afford a surplus, which has been several times used by our farmers as a cheap and rich manure.

The Statistical Account for Kincardine, Ross and Cromarty (1791-99, vol. 3 p. 508) recorded that the most important fish caught in a local yair were salmon, but that it also trapped:

...small fish ... of several kinds, some of which have no names, but such as the natives invent for them.

The fish caught included whitebait, sturgeon, prawns, small rock cod, ware cod, gurnet, turbot, padles and flounders. The same account also noted that in 1783, whitebait were trapped in the yair:

...in such astonishing quantities, as to contribute very much to the support of those who fished the yair, as well as of many families from the neighbouring county and estates, who were invited to share the bounties of providence in that season of distress.

Sturgeon were reported as being trapped by a stake net at Portgordon, in Banff (Statistical Account 1845, vol. 13 p. 250).

Spirling (smelt) were caught in Scotland at a different time of year to salmon (Robertson 1998, p. 115) and the Statistical Account for Flisk, Fife (1845, vol. 9 p. 605) recorded two stations for the capture of this fish, one at Flisk Point, the other at Kincase.

Many of the traps set on Welsh beaches were intended to trap flat fish such as flounder (Jones 1983, p. 34). A local Moray fisherman told Hooper (2001, p. 8) that the stone-built fish-traps set on the beach at the south end of Ardersier Bay (FTS 108-111, below) were for flounders and other flat fish.

A 'V' shaped weir in Dundalk Bay, Co. Louth (Went 1964, p. 204) was constructed with stake and wattle walls. It was built before 1756 and an enquiry of 1864 described it as taking salmon and flat fish.

The Buttermilk Weir in Co. Wexford was still in use in the twentieth century and records indicate that it trapped large numbers of herring, salmon, cod and ling (O'Sullivan 1994, p. 12).

Traps located in Strangford Lough, Northern Ireland were recorded as having caught salmon, sea trout, flounders, plaice, mackerel, cod, grey mullet and skate (McErlean, McConkey and Forsythe 2002).

Records of the type of fish caught from the trap named Ynys Gorad Coch, Caernarfonshire, over a 42 year period indicate that herring was the predominant species trapped (Senogles 1969). The trap was no longer functioning when divers visited the site, but they reported that sea trout, pollock, coal fish, cod, mullet, whiting, bass and conger eels were within it at high tide. They noted that no herring were present, but the date of the dives was not recorded, so it is unsure whether the absence of herring was due to any other factor other than the dives not taking place at the right time of year.

James and James (2003) noted that in one bumper catch at one of the Carmarthenshire traps, eleven different species were collected. In general, the main fish caught in the winter at this trap were white fish (herring, whiting and Dover Sole) together with spats.

Factors influencing the design of fish-traps

Environmental factors

Fish-traps can vary from small frameworks of brushwood that exploit natural features to large and elaborate arrays of posts and walls. Twelve miles of shore trap were noted near Llanon, Cardigan Bay (Lewis 1924) and over 65,000 stakes were recorded at the Boylston Street fish weir in Boston, USA, enclosing an area of over 2 acres (Banks 1990). Bathgate (1949) noted that the smaller Scottish yairs were intended to catch fish for family groups; some of the enormous traps were for fishing on a commercial scale or for the supply of religious houses.

The form that a fish trap took was due to a number of factors including the direction of the run of the fish; local topography; the availability of building materials; and the skill of the builder. The walls of many traps were not regular, their shape depended upon the contours of the ground upon which they were built.

The most important factor was locating water that had the environmental conditions to attract fish. It is fruitless to fish in a location where there are no fish to catch. Although Bathgate (1949) made the point that fish were more common in the past, meaning there was more of a chance to catch them employing '*primitive means*', there have always been some areas more conducive for fishing than others. Observation of these has led to the accumulation of local knowledge of good fishing spots, invaluable to any fisherman.

The siting of many yairs and nets was influenced by the migrations of salmon and herring. Observation of places where these fish were found in shallow water determined sites for traps, and often, several traps would be found on a spit or promontory whilst no traps would be found on the coast nearby. A good example of this is the large number of traps on Chanonry Point depicted on a chart of 1860 (RHP 634).

Local topography was also of importance and larger-scale fishing operations needed natural features upon which processing could take place. Fish become rotten very quickly and there was a need for either a market close by, or a place to preserve the catch. This could include flat beaches for drying fish, space to store barrels and good access to allow the catch to be taken away.

Access to a market could do away with the need for processing. The heyday of a trap in use South Wales from the nineteenth century until recently (James and James 2003) was between the 1880s and the First World War. Rail transport had allowed both access to new markets (such as Bristol) and had brought in tourists, creating a new local demand.

The proximity of a local market or places to undertake processing was not so important for smaller scale fishing, undertaken to supplement a family's diet. Such fishing was usually undertaken on a part-time basis, and was often opportunistic, for example when shoals of fish came close to the shore. Many traps built to supply such local demand would have been small and Bathgate (1949) noted that there were many such irregularly-shaped traps located in the Dornoch, Beaully and Cromarty Firths.

Traps needed to be constructed where there was an adequate tidal range to allow the fish to enter the trap on the flood tide but get stranded on the ebb (Bannerman and Jones 1999, p. 72). To help overcome the problem in areas with a large tidal range, some beach traps were arranged in two bands along the coast, one to cover spring tides, the other for neaps.

Another solution was to construct massive walls to trap the fish behind. The beach *goradau* of North Wales operated in areas of considerable tidal range, from 5m in south Gwynedd to 9m in the Menai Straits. A 6m - 7m range was usual and the tallest surviving stone walls of a *gorad* still stand to a height of 3m. During its working life, posts and nets would have extended the height considerably.

Traps located in estuaries often didn't need to be so large, and there are numerous fish weirs on the gently shelving mudflats of the Bristol Channel. They continued to be used until the end of the twentieth century at Porlock Bay, Blue Anchor Bay, and Bridgewater Bay (Aston and Dennison, 1988). Some of the best preserved of these traps are at Minehead and these have been scheduled.

Utilising natural features benefited the trap builder and the Salmon Scar weir (James and James 2003) was positioned to make best use of a hollow in the sandbanks. It enclosed an area of 2 hectares and had a maximum length of 270m. No walls were constructed in areas where the natural scar was at its highest, but at the seaward end approaching the cage, low stone banks with timber uprights supporting nets were built.

River weirs were normally sited on shallow gravelly sites or riffles found along the channel, as this made the traps easier to build and manage (Pannett 1988, p. 378).

Building material

Traps were made of stone, wood or a combination of the two. Stone traps were stronger, and often better suited to withstand the strength of the waves, wind and tide when located on exposed beaches. A huge amount of labour went into their construction and upkeep and Lewis (1924) described the hard work that went into rebuilding the stone walls of the Aber-Arth goredi after a storm. Stone traps were built of locally available material, and many traps were built with rough walls made of uncoursed beach boulders. This meant that although stronger than a wooden trap, they were still liable to collapse. In some area, the local stone was more suitable for the construction of large traps, and the jointing of the limestone outcrops on Anglesey is such that when quarried, blocks of stone are produced that are virtually dressed. This made the construction of stone traps much easier and enabled many of the huge traps found around the North Wales coast to be constructed. Another advantage of a stone trap was that animals colonised the interstices of the building blocks. They acted as bait and attracted fish to feed within the trap upon the flood tide.

Went (1964) described two functioning stone traps in Doonbey, Co. Clare. The traps were sited on a flat beach and one had a wall over 350m long, the other over 600m. It would have taken a considerable effort to build these traps and it would have been much easier to construct them of wood rather than stone. When questioned on their choice of building material, the owners stated that the reason stone was used was twofold. Firstly, there was a local scarcity of timber, but stone was plentiful. Secondly, the traps were built on a natural outcrop of rock, meaning that wood could not be driven into the foreshore.

That it was not always possible to construct wooden traps is also demonstrated in the Statistical Account for Inverkeilor, Forfar (1845, vol. 11 p. 242), which noted that fishing was carried out in the sea:

...by a suspension net, as the rocky shore will not admit of stakes.

Hale (forthcoming) noted that fish-traps located during the CZA survey of the Moray Firth were mainly concentrated in more sheltered areas, and that none were found on exposed coasts. He suggested that this might have been due to portable fishing engines being employed.

Wooden traps employed vertical posts upon which nets or wattle-work was supported. The posts could have been driven in using elaborate rams with pulleys and weights, or more likely, with a section of tree trunk with projecting handles for use by two men, called a *mall* or *mell* in some areas (Losco-Bradley and Salisbury, 1988 p. 346). Many wooden traps employed wattle fences to form a leader that channelled fish into the trap. The wattle-work was often made of willow and was either woven around the upright stakes *in situ* or was pre-prepared as hurdles that were slotted into place. The use of hurdles was especially useful for the lower reaches of the trap, as they were faster to fit and allowed more work to be done on the trap at low tide.

The upkeep of an eel trap at Toone on the Ban is recorded by Mitchel (1965). He noted that the wattle hurdles were taken out to the trap on a boat and slotted into place between the posts. As great pressure was exerted on the hurdles, they needed shoring with diagonal posts. This method of shoring was also noted on a nineteenth century trap on the Severn (Waters 1949, p. 89) and at a weir unchanged from the seventeenth century to the present day in Cork (Went 1969, p. 259).

The human factor

The design of individual traps was very much influenced by the builder of the trap. Some people were more skilled or had more time to spend on the design than others. Traps were also subject to continual modification as elements were replaced. James and James (2003) noted that the design of the weirs within their study area was highly variable. Some had significant stone-embankments with interior training walls leading to cages. They noted that even individual weirs employed different types of walling in their construction, and that only one of the fifteen or so weirs that they recorded employed just one form of walling. This variation in design was also noted at the traps related to the Cistercian Order in Cardigan Bay. Again, no uniform style was employed; the monks used different construction designs for the individual fish-traps.

Traps needed to be tended on every tide in order to remove the catch. There was also a need to thwart seals and poachers who might otherwise take trapped fish. Many traps were sited below dwellings; the people who worked the traps living in the house that overlooked them. This gave easy access at all times of the day and night and allowed the trap keeper to guard against unwanted visitors.

In addition to removing the catch, annual repairs to the walls and woodwork were needed. The owner or leaseholder of a trap usually undertook its upkeep. The Statistical Account for *Kincardine, Ross and Cromarty* (1791-99, vol. 3 p. 508) however recorded that tenants were obliged to repair a local *yair* annually. The landlord provided wood to enable the repairs and allowed the tenants to keep the small fish trapped in it, he retaining the salmon.

The decline of fish-traps

There are many reasons why an individual fish-traps may have been abandoned. It may have been unproductive; been destroyed in a storm; or silted up. The owner may have changed business or the fish may have stopped visiting the area. Some traps went out of use because of economic factors. Not all traps were successful at catching fish. Some were placed in the wrong location whilst others were too expensive to maintain. James and James (2003) noted that a trap built in the nineteenth century next to a very productive trap was closed down again soon after its completion. The trap didn't catch enough fish, demonstrating that even in a very localised area, one trap could flourish while another lay empty.

There are other accounts of traps being closed down due to a lack of fish at Largo Bay, Fife (Stat. Acc. 1845, vol. 9 p. 441); at Brighthouse Bay, Kirkandrews and Knockbren in the parish of Borgue, Kircudbright (Stat. Acc. 1845, vol. 4 p. 52); and at Glenshiel, Ross and Cromarty (Stat. Acc. 1845 vol. 14 p. 206). The Account for Dingwall sought to blame the poor construction of a trap for its lack of fish:

There is also belonging to the town a yair fishing in the frith, which pays a trifling rent, but, owing to malconstruction or some other cause, it has been for a few years past very unproductive.

However, the main cause for the abandonment of many traps was legislation. The growing demands of navigation, conservation and sport fishing led to increased laws and the decline of many weirs (Pannett 1988, p. 382). New regulations dealt with many things, including where people could fish; the time of year they could fish; the types of net that could be used in traps; the types of fish caught and the types of engine used (Moorhouse 1988, p. 479).

Regulation of stake nets

The greatest impetus to the regulations was the introduction of stake nets at the end of the eighteenth century. These traps were intended to take salmon and were greatly despised as being too efficient by many people. The following account is based on the Tay, but is applicable to all major salmon rivers in Scotland.

As noted above, the traditional way of catching salmon was by net and coble. This form of fishing worked better in rivers than in estuaries or on the coast, as it relied on relatively deep water within a short distance of the shore and a bed which was smooth and free of holes and obstructions. Additionally, the method did not work well in a swell as the ground rope of the net was lifted from the bottom. The net and coble was well suited to the waters of the Upper Tay and the fishermen around Perth enjoyed the best catches of salmon. A comparison of fishing rentals from the estuary (Dundee eastwards) and the river (Perth to Dundee) illustrates this. Estuary rentals amounted to just £500 per annum; river rentals to £7,000. It wasn't that the estuarial proprietors weren't aware of the large numbers of fish that passed through their waters, it was that they hadn't devised an effective means of catching them.

The net and coble fishermen were subjected to regulation to protect salmon stocks, and a 'close time' that coincided with the breeding season was enforced. Additionally, a '*Saturday Slap*' (also known as the *Sunday Slap*) lasted from midnight Saturday to midnight Sunday, a period when fish weren't allowed to be trapped.

Stake nets were initially introduced to the Tay from the Solway in 1797 and proved successful immediately, capturing huge quantities of fish and alarming the fishermen and estate owners of the

Upper Tay. They successfully brought a court case against their use and the nets had to be removed again in 1805 (Robertson 1998, p. 59). The argument for the banning of stake nets was that they caused over-fishing and a decline in fish stocks.

Despite the initial ban, stake nets were soon reintroduced, leading to another court case (Atholl v Maule) in 1812. The verdict was again against the use of nets (Robertson 1998, p. 63), but it should be noted that the ban was widened to take in other types of trap. The ruling stated that the defendants had no right to:

...erect or use yairs, stake nets or other machinery of the same nature for the catching of salmon or other fishes.

Estuarial fishermen, having seen the huge profits that could be made, attempted to get around the ban by making slight modifications to their nets and, more importantly, changing the name. This forced new (and lengthy) court battles, during which time they continued to fish. They devised new fishing engines, such as the bag net, the pock net and the sole net. Another way around the ban was to catch the salmon before they ventured into the Firth, and stake nets were erected on the coast after 1821 (Robertson 1998, p. 65).

Arguments for and against fish-traps

The dispute between the traditional fishermen and the owners of stake nets led to the establishment of two Investigatory Select Committees to look at the problems associated with salmon fishing; one in 1824, the other in 1827. This was at a time when the life of the salmon was not fully understood, and both sides put arguments forth.

Supporters of the stake nets argued that the ground rope used by net and coble fishermen dragged on the river bed and caused damage to redds and salmon spawn. Another argument was that there was a distinction between salmon in fresh waters (which were returning to breed), and fish in estuaries and on the coast (which were merely 'loitering'). These estuarial fish were thought liable to be taken by seals and other predators and were therefore fair game for the stake net fishermen (Second Report on the Salmon Fisheries of the UK 1825, Appendix 3, p. 81).

The Statistical Account for Balmerino, Fife (1845, vol. 9 p. 591) echoed this view, complaining that:

...the seals and grampuses have remained in undisturbed possession of the salt water fishing... and that ... the myriads of salmon which escape from the rivers and find their way to the sea...are totally lost, or only abandoned as a prey to the monsters of the deep.

A contrary argument stated that fishing engines took fish **in addition to**, rather than **instead of**, them being taken by predators (Second Report on the Salmon Fisheries of the UK 1825, Appendix 3 p. 23).

Many of the various Statistical Accounts (1845) from parishes where salmon fishing was once important were opposed to the nets on the grounds that the numbers of fish had declined since their introduction. Opponents included authors of Accounts for Knockando, Elgin (vol. 13 p. 66); Kirkpatrick-Durham, Kirkcudbright, (vol. 4 p. 257); Kilwinning, Ayrshire, (vol. 5 p. 815) and Lochmaben, Dumfries, (vol. 14 p. 381). The author of the account of Dalry, Ayrshire, (vol. 5 p. 214) also blamed the traps for the decline in the number of trout.

The biggest attack on the traps was made by the author of the Account for Drumoak, Aberdeenshire (vol. 12 p. 892) who complained that not only do the stake-nets take too many fish, but that:

...by infringing the Sunday's slap, the ascent of the fish to the upper spawning-ground is in a great degree prevented.

To show the extent of the decline, the author presented a table showing the number of salmon exported from Aberdeen each year for a six-year period (Table 1, below). The figures included fish caught by net and coble and by stake nets, as well as all the coastal fisheries, and do suggest an alarming decline in salmon exports.

Year	1834	1835	1836	1837	1838	1839
B. B.	10,372	7,981	7,757	5,234	4,270	3,894

Table 1 Decline in the amount of salmon exported from Aberdeen over a six-year period

The ban on fish-traps

The conclusion of the Select Committees was that salmon stocks were decreasing and they recommended a series of measures, including an extension of the annual and weekly close time and regulation of net sizes. However, the reports did not mention modes of fishing, beyond a hope that it would be taken up in future sessions of parliament, and this failure to resolve the split between upper-river and estuarial fishers led to Parliamentary infighting on the subject. The proposals of the two Committees were not taken up in the Salmon Fisheries (Scotland) Act 1828 (otherwise known as the Home Drummond Act), leaving the dispute over fishing methods unresolved. Despite this lack of national legislation, many local acts were enforced banning the use of fish-traps in many of the Firths and estuaries of Scotland. The bans often extended beyond stake nets to encompass all types of trap and they were banned from many estuaries and rivers in 1812 (Statistical Account 1845 vol. 9, p 520). Traps were completely excluded from the Cromarty Firth in the 1840's (Alston 1999, p. 74).

This banning of stake nets led to a few of the authors of Statistical Accounts to lament their suppression. These sentiments are notably expressed from parishes bordering the Tay (Ferry Port-on-Craig, vol. 9. p. 85; Forgan vol. 9 p. 510; Balmerino vol. 9 p. 589; and Flisk vol. 9 p. 605). They bemoan the loss of livelihood brought about by preventing fishing by traps within their parishes, the author of the Balmerino account complaining that:

...many of the individuals employed in that amphibious kind of occupation have betaken themselves entirely to the trade of weavers, none of them has, however, as yet risen to the dignity and professional importance of manufacturers.

It was not until the 1860s that national legislation was enacted, with a series of Salmon Fisheries Acts, both for the UK (1861 and 1865) and specifically for Scotland (Salmon Fisheries (Scotland) Act 1862 and 1868). The Acts followed on from another Committee set up in 1860 which recommended that all cruives and fixed engines on rivers or coasts be abolished, or at least, no new ones be allowed.

The Acts established new annual and weekly closed times (Ferrier 1969; Robertson 1998, p. 126) and sought to modify existing fish weirs in rivers and estuaries and forbid new ones (James and James). The legislation and subsequent Acts virtually ended the construction of fish-traps (Bannerman and Jones 1999, p. 79).

The Elgin Commission of 1900 looked into Salmon fishing in England, Scotland and Wales. Its recommendations included a reduction of net fishing in narrow waters and an increase in coastal

netting. No legislation followed on from the Commission Report, but it gave an indication of opinion at the end of the nineteenth century.