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3.5 Wooden eel weirs – a technology that lasted 7000 years

Stationary fishing structures of recent times

About as far back in time as written sources go, eel weirs made of stakes and withies along the coasts of Denmark are referred to. The population here was often one of fishing farmers who switched their activities, according to season, between the land and the fishing grounds. It was mostly eels that were caught in stationary wooden traps. This fishing principally took place from the end of August to November. The catches were famously greatest on the nights when the moon was waning. The eel weirs were placed where mature silver eels passed in great numbers on their migration towards the spawning grounds in the Atlantic. The Storebælt, with its bays, creeks and fjords, including the coast around the Halsskov peninsula, was particularly rich as the eels from the whole of the Baltic had to pass here. Good fishing places were often the subject of conflicts and law suits concerning fishing rights, which is a major reason why the eel weirs are mentioned in the written sources (Møller 1953).

Along open and exposed coasts there was a significant development in the construction of the eel weirs, and at the end of the 19th century large, technically complex structures were built in these places. In the more sheltered inner waters simpler structures survived, namely the eel weirs fixed to the bottom, which had their roots back in the Stone Age.

The basic structure of these eel weirs was a row of stakes that were fixed to the sea-bed, to which a panel of withies was attached (fig. 1). These panels were made on land. They were of various heights, following the depth of water, and were held firmly on to the stakes by twisted withies. The row of stakes and the withies led to a wing which led in turn to the trap itself, known as the pot, at the end of the structure.

Both the more complex structures and the fixed eel weirs ran from the land into 2–3m of water. It was important that the panels reached right to the bottom and fitted one another so that the eels should not escape beneath or through the joins. The panels had to be as smoothly woven as possible so as not to catch seaweed which would divert the eels or make the weirs so heavy that they could not withstand the pressure of current and wind (Højrup 1955). The panels stopped below the surface of the water because the weed had to be able to float over them. Thus only the stakes and sometimes bridges revealed where the raps were.

At some places in Denmark the eel weirs were furnished with bridges so that the fishermen could go out and check the pot without getting wet feet. Where there were no bridges they sailed out to collect the catch (Leth 1897).

Eel weirs could be closely spaced. Usually they caught only on one side and it was on this side that the wing leading the eels into the trap was placed (Hildebrandt 1894; Leth 1897; Housted 1980).

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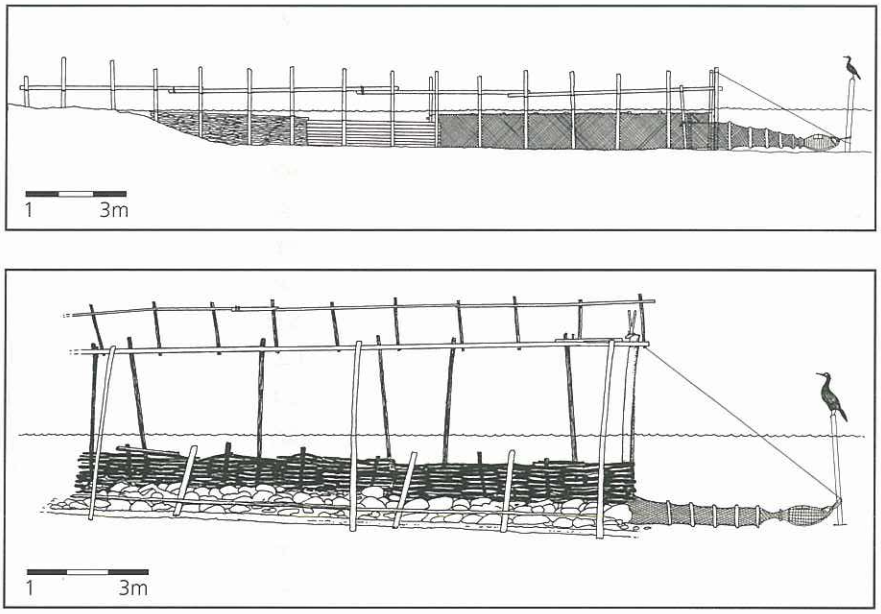

Fig. 1. Stake-built eel weir (above) and caisson-like eel weir (below). Examples of the two main types that were used for catching eels in Danish waters in the last century. The stake-built eel weirs had a stake-built frame that was driven into the sea-bed. They were placed in sheltered inshore waters. The drawing shows which materials were used for the panels over time. The earliest examples, of woven branches, are found closest to land. These were superseded by boards and later by nets.

Caisson-like eel weirs were built on exposed coasts such as at Djursland, Røsnæs, Asnæs and Reersø. These consisted of joined vertical and horizontal panels that were built on land in 7– to 8m-long sections, floated out and weighted down with large stones to catch the fish. The drawing shows the section beside the trap.

Up to the middle of the 19th century these funnel-shaped traps were made of hemp or flax; they were then superseded by machine-spun cotton. In early accounts it transpires that up to about 1800 the traps were often made of plaited branches. The pot was at the end of the structure. It was an oblong container woven out of withies, for instance of willow (Møller 1953).

A 7000–year-old tradition

The excavations around Halsskov have now revealed that the simple fish traps that could be formed in the inshore waters of Denmark in the last century have a prehistory that runs back 7000 years. In recent times the structures were usually built of hazel, but alder, lime, birch and oak have also been used (Møller 1953; Hejgaard 1954). This range of material recurs in the prehistoric structures (section 3.6). In recent times the fishing farmers also had land with coppices where they produced the right materials (Petersen 1988). There is also much to indicate that the prehistoric fishermen managed woodlands to get the best materials (section 3.6).

On the Oleslyst traps in Halsskov the panels were attached to a single row of stakes that were stuck into the sea-bed. This structural principle is known from more recent examples, for instance at Fredericia (Housted 1980). On the Stone-age examples found outside Nekselø in Sejerø Bay, by contrast, the remains of the woven panels were clamped firmly between the stakes, which stood closely together in pairs (Fischer, Bartholin & Pedersen in prep.). This technique has been used to build fixed eel weirs in the archipelago of southern Fyn right down to the present century (Højrup 1955).

The prehistoric eel weirs found so far were very slender, and seem not to have had access bridges. The fishermen must have had to go out in boats when the traps were to be checked just as their successors did in various places in the last century. During the excavations around Halsskov the remains of various dug-out canoes of the Kongemose and Ertebølle Cultures were also found (section 5.2). There is thus no doubt that the population of this time was very familiar with navigation in the fjord and the Storebælt.

The wattled panel from Oleslyst was very similar to those that were used in historical times, by fishing farmers on Lyø for instance (Højrup 1955). In both cases the panels were 5.5m long and had sides as flat as possible. They were also woven from long hazel withies around vertical stakes that were placed at intervals of about 45cm. From the Stone Age there is a clear parallel to the historically known traps in the form of a slender funnel-shaped woven construction. An example of this was found at Gilleleje and dated to the Early Stone Age (Becker 1943).

The pots are perhaps the element in the eel weirs that has changed most from the Mesolithic to the present century. Nonetheless there is a distinct similarity form, the materials used, and the weaving technique between the pots from historical times and, for instance, the exceptionally well-preserved example from Margrethes Næs which, with an age of about 6500 years, is amongst the oldest examples known (section 3.8). If one looks at the differences between the Stone-age pots and those of the turn of the 20th. century one notes that some of the later examples were clearly larger than the earliest ones. Many of the late examples were also reinforced against wear on the underside. Finally 'modern' pots also had a shoot-lid so that the contents could easily be shaken out (fig. 2). Emptying the Stone-age pots would have been more laborious as the inner funnel had to be detached every time this was done.

By comparing the wooden fish traps from the Stone Age with those from the turn of the century we can thus see a number of technical improvements. But the basic principles and many details remained remarkably unchanged throughout this 7000-year period.

Fig. 2. This 2-year-old boy is standing beside a woven eel pot that was used for catching eels off Langeland up to around 1920. The pot is reinforced at the bottom and has a shoot-lid on top.