Nova Scotia

Department of Education

Nova Scotia Museum Complex

Curatorial Report Number 73

The Woven Weirs of Minas

By Joleen Gordon
Research Associate,
Fisheries Museum of the Atlantic
January, 1993

Nova Scotia Museum
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Nova Scotia Museum *Curatorial Reports*

The Curatorial Reports of the Nova Scotia Museum Complex make technical information on Museum programs, procedures and research, accessible to specialist audiences.

This report contains the preliminary results of an ongoing research program of the Museum. It may be cited in publications, but its manuscript status should be clearly indicated.

Frontispiece : "Cape Blomidon Minas Basin", showing weir fisherman by Frederick B. Schell from Picturesque Canada, *published 1884, Nova Scotia Museum*

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Introduction

In Nova Scotia each spring, the mixed hard and softwood forests of Colchester and Cumberland Counties become an active foraging ground for the men who cut the hundreds of trees—spruce, fir, birch, cherry, maple and alder—needed to build their fence-like fish traps, or weirs often pronounced "wares", on the expansive intertidal flats of the upper reaches of the Bay of Fundy.

Although this study focuses primarily on the present-day woven fish weirs at Economy and Five Islands, within living memory the fishermen in this area of the province have made several different styles of fish traps. Crescent and V-shaped woven fences, some constructed completely with trees, others with a combination of trees along the bottom and commercial netting on top, were found along the shores of Economy, Carrs Brook and Five Islands. Towards the mouth of the bay, off the communities of Parrsboro, Port Greville, Spencer's Island and Partridge Island, another type of trap had wide-meshed gill-netting strung between tall poles erected on wooden troughs set in the rocky shoreline. These are no longer being constructed. Figure 1 shows the locations of these fish weirs.

Weir fishing was a familiar sight in other areas of the Bay of Fundy. At Minudie, gill-nets were strung on tall poles set on the intertidal mudflats. The fish, caught 10 to 12 feet in the air, were harvested by men using ladders from horse-drawn wagons (Figure 2). Will R. Bird wrote a vivid description of this unusual method of fishing (Appendix 3), Lillian Arseneau wrote of childhood summertime picnics on the nearby Elysian Fields (Appendix 4), and Gilbert Seaman (1820-1895) made reference to them in his diary (Appendix 5).
At Amethyst Cove near Blomidon, nets were strung on a tall wooden framework set into the rocky shore much like the earlier weirs on the Parrsboro shore (Figure 3). At Hall's Harbour in the late 1940s-early 1950s, there was a spectacular wooden trussed salmon trap erected on the intertidal shoreline and covered with net (Figure 4). The fishermen of Harbourville built a brush weir in the late 1880s (Figure 5). Sandy Cove had several beautiful double-curved netted weirs, one with a single brush leader set in deep water off the government wharf (Figure 6), and another with two brush leaders set farther offshore (Figure 7). These deep-water weirs had to be tended by men in boats who gathered the fish by pursing a seine-net set within the weir (Figure 8).

Most of the weirs today in this area are netted constructions set in deep water off the town of Digby, near Rattling Beach, and in the upper reaches of St. Mary's Bay. A few are closer to shore, such as the combined netted and brush weir at Port Royal near The Habitation and the netted weir at Harbourville. The location, number and type of weirs varies each year depending on the fishermen and the fishing industry.

Ernest Wentworth and Richard Wilbur reviewed the history of weir fishing at the mouth of the bay in the Passamaquoddy-Grand Manan area of New Brunswick in their book Silver harvest. A few brush weirs were made in this area. More common were, and still are, the circular netted traps for herring constructed offshore in deep water and tended by fishermen in boats.

With the inshore method of weir fishing, the traps are completely covered by the salt water during the tidal cycle. When the tide goes out, the weirs are completely exposed. Some weirs have more water in the V, or bend, of the trap at low tide than others. They are known as 'wet' and 'dry' weirs respectively. The pool of water in the wet weir is created not only by the position of the weir in relation to freshwater stream runoff but also by the topography of the site. Caught in the flow of the receding water, the fish are held in the V of the trap where they are retrieved by hand or by dip-nets. In the gill-net traps, the fish were often left hanging high in the netting, caught by their gills, and had to be reached with a ladder. Before the days of trucks and all-terrain vehicles (ATVs), men tended both types of traps either by foot or with a horse and wagon.

For many centuries, fishermen around the world have been using 'brush'—either stalks of locally gathered plant material or long lengths of trees complete with branches—to make traps. Andres von Brandt and James Hornell have extensively reviewed this method of fishing in their respective books, Fish catching methods of the world and Fishing in many waters. They have shown that weir construction varies around the world. Temporary structures may consist of carefully plaited mats, strong bamboo walls or thick hedges made of brushwood, while the more permanent barriers are made of earth and stone. The shape of the fence varies from a straight line set across a channel, to a simple curve or an almost enclosed circle. In his paper "Fish weirs and traps", the historian J. Geraint Jenkins reported that the most common type of weir developed for the coastline fishery in the United Kingdom was a simple V-shaped barrier, set with the apex of the trap pointed in the direction of the ebb tide so that the fish were concentrated toward the centre of the trap on the falling tide. According to von Brandt, these "home-made wooden fences are no longer being widely

used" (von Brandt, 1984:157). They are being replaced, worldwide, by the more easily handled commercial netting.

In this study, I have worked with two men who continue to weave brush weirs in Nova Scotia. James Webb of Economy is a commercial fisherman who builds the sole all-woven weir not only along this shore but in the entire province. Gerald Lewis of Five Islands is a retired fisherman who continues to build his woven/netted weir off this mystical string of islands each summer, both as a source of food for himself and his neighbours and as a tourist attraction.

This is their story, along with the fascinating history of the brush weir fishery in Nova Scotia. I spent three years (1987-1989) following them with my camera and tape recorder as they constructed their weirs, fished their catches and watched the winter storms and heavy ice conditions in Cobequid Bay claim their work, 'grounding out' the sites so they might build anew the following spring. Their story is one of resourcefulness and economic necessity.

All measurements in this text are in feet and inches, in keeping with the language of the fishermen.

History of Brush Weirs in Nova Scotia

For as long as people can remember, men have been building woven brush fish weirs along the Colchester/Cumberland County shoreline from Portaupique to Parrsboro. No one knows exactly when the first weir was constructed or by whom. Some people say the Micmac showed the first white settlers this ingenious way of catching fish. J.S. Erskine reported that in the time period 14,000 BC to 1500 AD, the Micmac "came to the seashore where they fished in the shallows with brush-weirs and nets". They were also known to have laid stones across a stream in the form of a V to catch eels. Remains of stone eel weirs can be seen today in some rivers and streams in southwestern Nova Scotia.

Others say the Acadians brought the knowledge of weaving brush traps from their coastal homeland of France. In her study of the Mont Saint-Michel intertidal fishery on the northern coast of France, Claudine Legendre reported that fishermen here have been constructing brush-woven fence-like fish traps since the 10th century. Two styles of these traps, or 'parc de filets', are illustrated in Diderot's Encyclopedia; one is a woven enclosure, and the other a woven V-shaped fence with a 'sac ou sond' attached to the V (Figures 9 and 10). F. Carré, Maître de conférences of the Université de Paris (Sorbonne), said, "The parc is based on the principle of catching, to keep fish at low tide. In the past the parcs were made of wood and bushes, now they are made of nets attached to stakes" (personal communication, 1989).

He was uncertain about the introduction of the woven weirs by the Acadian French settlers to Eastern Canada. It is interesting to note that although the present-day Mont Saint-Michel traps are permanent constructions, 10 to 12 feet high, unlike the smaller, seasonal traps in Nova Scotia, their size is similar to the weirs which were woven fifty or so years ago in the Five Islands area of Nova Scotia. Gerald Lewis remembers brush weirs with 16-foot stakes. It is possible the early settlers from the coastal areas of France introduced this method of fishing to this area of Nova Scotia, so similar to their homeland with extensive intertidal mudflats. It is also possible that over the years the height of the traps was reduced due to the lack of materials and to the amount of labour needed to re-build the trap each year because of the heavy winter ice conditions in the Bay of Fundy.

Cartographic evidence from the mid-1700s shows Acadian settlement along the Economy shoreline where the weirs are presently located. On the "Carte de l'Acadie" drawn by J.-N. Bellin in 1744, three "habitations" are depicted near "Grosse Isle", presumably Five Islands. The map, now in the collection

of the National Archives of Canada (NMC 19267), has been reproduced in Dunn, 1990. Another map, "A draught of the upper part of the Bay of Fundy taken 1748... by Charles Morris", has depicted the village of "Conomie" with several dwellings (Figure 11). Margaret Coleman has researched the communities along this shore. She found that the present site of Economy was the original Acadian village of Vil Conomie (Coleman, 1967). In a later document, she recorded that "Moses de la Dernier recalled in 1791 that the Acadians ate a deal of fish, especially in the time of lent, mostly shad which they caught by means of a hedge made on the large mudd and tide flats crossing some small creek at about half tide. The shad in this part were very fat and excellent good they usually ate them raw when pickled" (Coleman, 1968).

Two seventeenth-century prints from North America show both Indians and Europeans using woven fencing. The Iroquois in what is now upper New York State were depicted in battle with Samuel de Champlain in 1613 using a round woven enclosure (Figure 12) which looks very similar to an expanded version of the eighteenth-century French 'gabion' used in warfare. Illustrated in Diderot, these columnar structures were made of branches woven on stakes set in the ground in a circle and then filled with rocks and debris. They formed both the foundation for ramparts and the protection ahead of trench building. In the later print, dated 1698, European fishermen are depicted in a vignette on the Nicolas de Fer map using a woven enclosure for their operations in the cod fishery (Figure 13).

Although not described from the viewpoint of construction, a type of fencing was used by the Beothuck Indians of Newfoundland to hunt deer. In the "Narrative of Lieut. Buchan's Journey up the Exploits River in Search of the Red Indians, in the winter of 1810-1811", he noted that at Rushy Pond Marsh "trees leading from the river to the marsh were marked, and in some places fence-work thrown up; the bushes in a particular line of direction through a long extent of the marsh... so placed as to direct the deer down to the river" (Howley, 1974:74). He also noticed that at Badger Bay the fencing was very extensive, "From this brook upwards, as also on the opposite side of the river, are fences of several miles, and one likewise extended in a westerly direction". (Ibid:75)

Champlain depicted the Huron Indians using an elaborate non-woven fence trap for deer hunting. The animals were driven into this enclosure where they were at the hunter's mercy (Figure 14).

The earliest illustration of a woven fish weir in Nova Scotia is a wonderful drawing by J. Bernard Gilpin, about 1850 (Figure 15). Gilpin was a medical

doctor with a practice first in Halifax, 1846-1886, then at Annapolis Royal. His drawing clearly illustrates the upright stakes set in a semi-circular framework extending out from the shoreline and woven with bushy horizontal wefts filling the spaces between the stakes. In the distance, he has depicted two possible weirs in deeper water.

Another image, sketched in 1881 by Stephen Parrish of Philadelphia on one of his summer trips to Nova Scotia, shows the circular pattern of stakes of a brush woven fish trap set in the waters off the shores of Goat Island in the Annapolis Bay (Figure 16). At the turn of the century, this area of the bay near Port Royal had quite a few fish weirs (personal communication, Joyce Chown).

Although there are few illustrations of woven fencing or fish weirs from Atlantic Canada, there are several written descriptions of their use.

Marc Lescarbot, describing the voyages of Samuel de Champlain, wrote of the Micmac in the early seventeenth century building "a hurdle, or weir, across the brook, which they place almost erect, propped up by wooden bars, like buttresses, and leave a space therein for the fish to pass, which find themselves caught at the fall of the tide in such numbers that the savages allow them to rot". (Lescarbot, 1607/1968:236-237)

Nicolas Denys mentioned their use of river weirs, possibly for catching gaspereau:

> At the narrowest place of the rivers, where there is the least water, they make a fence of wood clear across the river to hinder the passage of fish. In the middle of it they leave an opening in which they place a bag-net like those used in France, so arranged that it is inevitable the fish should run into them. These bag-nets, which are larger than ours, they raise two or three times a day, and they always find fish therein. It is in spring that the fish ascend, and in the autumn they descend and return to the sea. At that time, they placed the opening of their bag-net in the other direction. (Denys, 1672/1908:437)

The reference to the use of bag-nets being similar to those used by the French may be an indication that the Micmac were shown the French method of fishing with the woven fence and 'sac ou sond' illustrated in Figure 10. This method of fishing would have been very easy to construct given the abundance of woodland material. Indeed, Denys recorded, at the beginning of the seventeenth century, that at the mouth of the Saint John River in New Brunswick:

> Charles de la Tour... had a weir built in which they [the French] caught a great number of those Gaspereaux which were salted down for winter. Sometimes there was caught so great a quantity that he was obliged to break the weir and throw them into the sea, as otherwise they would have befouled the weir which would thus have been ruined. (Ibid. 1672/1908:113)

Sieur de Dièreville, writing in 1699 of the customs of the settlers in Acadia, describes in some detail their use of weirs in fishing:

> During the seasons when the Fish are running, for one does not have them all the time, quantities are caught in the Fish-weirs, and from them the Settlers derive a great aid to existence. This is how a Fish-weir is made: stakes are driven, side by side, at the mouth of Streams and Rivers into which the Sea rises; the Fish pass over it at high Tide on their way to fatten on the ooze of the Marshes; when the Sea has run quite far out and the fish begin to lack water, they follow the ebb, or reflux, and being no longer able to pass over the stakes, because the water is too low, they are arrested and can be taken. (Dièreville, 1933:113-114)

The footnotes mention these weirs were called "negeagans", a word of Micmac origin. Webster also reported Rand spelled the word as "nesakun", while Poirier gave the spelling as "nijagan" and Knox reported "ni-jagon". The word has long been in use by the Acadians (Ibid. 1933:113).

Dièreville also gave a lengthy description of the fishing season of a typical fish weir with the types of fish being caught, while Webster footnoted the French and English names for these fishes.

In his travels to Port Royal in 1687-1688, Gargas also mentions the early settlers' use of fish weirs, which he calls "niraguans":

> To catch the fish they make "niraguans" which are weirs 6 feet high at the mouths of certain brooks which empty into the river. The high tide flowing over these brings the fish, which are left high and dry on the inner side of the weir when the tide has gone out. (Morse, 1935:180)

Over the years, this method of fishing developed into a major industry for fishermen living in the upper reaches of the Bay of Fundy. The main fish caught in these traps always has been shad, Alosa sapidissima (Wilson, 1811), a large anadromous clupeid, 40-50 cm in length and 1-2 kg in weight at

maturity. Moving north to south annually with a range of Labrador to Florida, shad migrate following an ocean isotherm of 7-17°C, returning to their natal rivers to spawn (Dadswell, in Gordon and Dadswell, 1984:578).

In an historical review of the shad fishery in the area, Harry E. Nelson related how the fishery developed into a New England industry in the spring of 1840 with the arrival of Mr. Tristram Halliday:

> Mr. Halliday was a Scotsman by birth who had his early experience as a fisherman in Scotland, then along the north eastern coast of the United States before entering the fishery in the upper reaches of the Bay of Fundy. His schooner arrived carrying fishing boats, drift nets and men to operate them, but probably more significant than Mr. Halliday's knowledge and equipment was his agreement with a Boston fish firm to buy large quantities of shad. Initially Mr. Halliday built a shore-based headquarter in Economy Point, put in a weir, and by late June his men were in the bay with their boats and drift nets. This was the first time the local fishermen had seen drift nets being used and there was considerable apprehension concerning how this operation might affect their weir fishery. However, when Mr. Halliday demonstrated that nets, with a suitable mesh-size, provided the large shad required for the lucrative Boston market, they accepted both him and his method of using boats and drift nets. (Nelson, 1988:3)

When M.H. Perley visited the area in 1850, he noted:

> On the northern shore of the Basin of Minas, the shad fishery begins at Harrington River... and extends along the shore to Portaupique, a distance of 21 miles. The fishery is carried on by both weirs and drifting; in the whole area there are about 20 brush weirs. Between Graham's Head and Economy Point, the flats for about four miles were observed to have almost an unbroken continuance of these weirs, crescent shaped, the ends of the weirs almost touching one another. (Perley, 1852:175)

He reported that the quantity of shad taken during the season in this district by both drift-nets and by the weirs was about 1000 barrels. The fish were of "good quality" and sold to the "eminent fish merchants" of Boston. Dadswell described the industry between 1870 and 1900 as "the most valuable fishery in the Bay of Fundy" with annual landings being two-thirds of the total Canadian landings (Ibid.:581).

Nelson gave a detailed record of the West Colchester shad fishery production for 1860 from the Nova Scotia Census of 1861, and for 1870 from the Census of Canada (Nelson, 1988:11-17). These figures give a picture of the fishery at its height, each barrel containing 200 lbs:

1860	Total shad catch	Five Islands/Economy	1,441 bbl
		Lower Londonderry	1,438 bbl
		Upper Londonderry	616 bbl
	Total		3,495 bbl
1870	Total shad catch	Five Islands/ Economy	1,990 bbl
	Number of boats	31	
	Fathoms of net	12,358	
	Number of weirs	31	
1870	Total shad catch	Lower Londonderry	1,449 bbl
	Number of boats	40	
	Fathoms of net	15,580	
	Number of weirs	13	
1870	Total shad catch	Upper Londonderry	380 bbl
	Number of boats	21	
	Fathoms of net	6,540	
	Number of weirs	0	

Shad production in West Colchester over five decades

1870-1880	32,350 bbl
1881-1890	16,255 bbl
1891-1900	10,410 bbl
1901-1910	2,675 bbl
1911-1921	1,780 bbl

(Nelson, 1988:11-17)

In 1981, The Cobequid Outlook published an article, contributed by Garfield Perry, which had been written by Margaret J. Beattie of her own recollections, along with those of older residents, of weir fishing at the turn of the century (Appendix Two). In this area, there were both 'outside' and 'inside' weirs, depending on whether they were set seaward or landward of the Channel, the bed of the Economy River:

> Mr. Edwin S. Ellis said the biggest year for shad was 1868, or thereabouts. He could not remember the largest catches taken, but as a rule, it could not have been more than 2000 for a weir. Men drove one-horse carts. There were usually two partners for a weir. The outside weir owners had to hurry to get their first load across the Channel, and dump it on the Flats inside, and hurry back for a second load, which was hauled to the beach and dumped, then back to pick up the first load before the tide reached it. This made two loads for each horse and cart. Each partner took his own horse and cart.
>
> After the fish were salted down in the puncheons the necessary time, they were packed in barrels, 200 pounds to a barrel. They were shipped, usually to Boston, in the small sailing vessels of the time, and loads of flour and staples were brought back on the return trip.... After that time, the shad fishery of the Bay failed, so that only one or two of the inside weirs were put in during the later part of the 1890s. (Beattie, 1981:3)

There were several weirs in the Lower Economy area in the late 1800s. One of the best known was the Long Green Weir. According to Beattie, this weir was still being 'put in', but not with the long wings which gave it its name. Kay Thompson gave a description of building the Long Green Weir in the 1800s:

> Constructing a weir was no easy task. The men would go to the woods during the winter months and cut stakes, which were six to ten feet long. As soon as the ice left the Bay in the spring these stakes were hauled by horse and wagon out to the mudflats, a distance of three-quarters of a mile or more. Holes were made in the mud with a crowbar and stakes were driven in by the men using heavy mauls. There was a distance of three feet between each stake. Some weirs required six or eight hundred stakes. When this was completed some spruce trees were intertwined at the bottom, while the top was intertwined with small birch trees. (Thompson, 1983:1)

However, by 1908, the shad fishery was "languishing". In a letter to the Hon. W.S. Fielding in Ottawa, Mr. S.F. Morrison of Folly Village wrote:

> Shad fishing in the Bay of Fundy and its tributary bays has been engaged with more or less success for upwards of seventy years. The shad's natural element seems to be the salt and muddy waters of the bays and rivers. It is found in clear and fresh water only as it ascends

> the Rivers at spawning season. Years ago, it was taken in large quantities in nets and weirs in the Bay, affording food and profitable employment for our people. These fish were pickled and shipped in barrels to the United States market. The industry has gone down to such an extent that about all the shad now caught are sold fresh for local consumption. (Morrison, 1908, in Nelson, 1988:5)

Ellsworth Lewis, a native of Upper Economy who later became Nova Scotia's Deputy Minister of Agriculture, also wrote of the decline in the shad fishery:

> About 1840, shad fishing became an important industry along the shores of the Cobequid Bay.... Nearly every farmer now had his shad boat and for a period shad fishing was a more important industry than farming. Weirs were put in the flats and for a considerable period, money was made catching and exporting shad.
>
> One weir known as Rock Weir caught as many as three thousand shad at a single tide. The chief market was in the cities of the New England states and to some extent in the Southern States as well. The fish were packed in barrels and consequently barrel making became an important industry and coopers were kept busy. It might be interesting to note that for some unaccountable reason the shad suddenly left the Bay around 1900. There have been several theories advanced as to why the sudden clearing out but none seem totally satisfactory. (Lewis, 1924, in Nelson, 1988:5)

In examining the decline of this industry, Dadswell explained that shad are caught mostly in three areas: the spring commercial fishery in or near the estuaries of the natal rivers, primarily the Delaware and the Connecticut Rivers; the sport fishery in the upper reaches of these same rivers; and the summer commercial fishery in the upper reaches of the Bay of Fundy (Dadswell, in Gordon and Dadswell, 1984:578). He feels the main reasons for the dramatic decline in catches around 1900 were "the damming of natal rivers, pollution, climatic variation and over-exploitation" (Ibid.:581). Later, in the 1980s, extensive restoration programs in the United States, some specifically for shad, increased populations significantly such that catch-rates increased five-fold. Although the local fishermen noticed the increase in the shad population, Dadswell reported that "the total shad landings from the upper Bay of Fundy do not reflect this fact because of poor local markets and therefore minimal fishing effort" (Ibid.:581).

Despite the lower numbers of fish, some men continued to put in weirs for their own use. Anthropologists Wilson and Ruth Wallis found the Micmac using a brush weir when they visited the Maritime area in 1954:

> A weir made of brush, "lokaskadeg'an",... was used in the Richibuctou River and at Eel Ground, N.B. In constructing this weir, which was from fifty to a hundred feet in length, the first step was to drive vertical sticks, about three feet apart, into the mud. They were then interwoven by a man who stood in the water. The intertwining was done at the surface, and the branches were pushed down, layer by layer, until the work was completed. Usually two or three men, working together, built a weir. It belonged to those who had cooperated in its construction, and they shared equally in the catch, irrespective of who attended it. The ice destroyed it in the winter and it was rebuilt every spring before the big run of fish. A great many fish, especially trout, bass and salmon were taken in these waters. (Wallis and Wallis, 1955:28)

As with all weirs, the fishermen must buy a licence from the Federal Department of Fisheries and Oceans. The licence gives permission to build a weir on a specific recognized site. In fishing season, the men must tend their weirs on every low tide, regardless of the time of day or night. The weirs are checked by the federal fisheries officers to insure these regulations are upheld. If a fisherman fails to tend his weir two tides in a row, he may lose his licence. Although no new licences are being issued, current ones may be passed on from one fisherman to another. As James Webb told me:

> The weir fishermen, now they're just about getting done. I don't know, I think you'll see it phase right out along this shore because the younger generation is just not interested in it. Too much work in it and you're tied down seven days a week, twice a day. Every 12 hours you gotta go out.

Remarkably, the construction of these weirs has not changed dramatically in the intervening centuries since they were first seen in Nova Scotia by Marc Lescarbot.

The James Webb Weir at Economy, Nova Scotia

James Webb builds his weir off Economy Point at the end of Cove Road, on what is known as the John Taylor site (Figure 17). He has been weir fishing here since 1975. James' father, John Webb, was a weir fisherman in the Five Islands area and as James said, "I just learned from my father, watching him and what he done. That's where I got my experience." I have known the Webb family since the early 1980s. We worked together on this manuscript in 1987-90.

The Webb weir is the only weir completely woven with brush on the Cobequid Bay mudflats. It is set 300 feet out from the beach-head. The exact position of the weir has changed slightly over the years. Lines of ice-worn posts on the flats bear silent witness to the traps of previous years (Figure 18). The men tell me that some of these posts are hundreds of years old. The position of the weir is determined by the ever-changing tidal currents in the bay, the location of the local freshwater stream and the fishing experience of previous years.

To reach the weir site from shore, the men drive as far as they can in their truck over a 'road' which has been built up over the years with the addition of gravel and rocks. James has marked the road with stakes to which he has nailed pieces of light-reflective car licence plates:

> This way, if it's a really foggy night, the headlights of my truck will pick them up and show me the right way to go. That's why I do that. Tourists will come along, leave that road, drive off it and I'll say to them, don't go over there because it's too soft, and they'll say to me, oh well that looks good to me, so I let them go and, of course, they end up getting towed out of there. We had two tourists right here last summer, here in Economy Cove, cost them a hundred dollars apiece to get towed off the mudflats. Well, if they'd followed my road, you can drive right out there with a truck. I have the road all picked out and staked so I don't get stuck, because I'm out there all hours of the night, alone, and I don't really appreciate walking clear home. It does happen, now and again. And it's a bad place to be getting stuck. There's an awful lot of water out there. Once your vehicle stays in the salt one tide, that's it, it ruins it. I lost one. That salt, I don't know what's in it, but it ain't no good for a vehicle.

From the end of this road, they proceed to the weir either by foot or an all-terrain vehicle (ATV).

The Webb weir is set in a north-south direction with the V, or bend in the middle of the trap, pointing seaward, and the east and west wings stretching in either direction towards the shoreline. The west wing of the Webb trap is called the fishing wing:

> That's the wing that's supposed to do the fishing when the tide is going back out. And the east wing, you make longer because it's close to the channel.

When the tide is falling, the channel at the end of the east wing holds the fish. As the tide drops, the current guides the fish towards the west wing. Eventually, the tide drops to a level where the fish can no longer escape by swimming around the wings of the trap which has become exposed to the air. The fish are caught. The weir retains some water in the V of the trap at low tide, even on the low spring tides. The fish are scooped out of the water either by hand or with dip-nets, and dumped in buckets or large plastic pans.

James works with his sons, Steven and Todd, and his son-in-law, Jeff. Work begins in late winter, sometime in February or March depending on the weather. The men need a heavy snow cover in the woods so they can haul out the brush with their snowmobiles and ATVs. In 1987, approximately 700 spruce and birch stakes were cut, either 8 or 10 feet long; 900 softwood 'spears' of spruce and fir; and 1600 to 1800 spears of birch, cherry and alder. A spear is a complete 10- to 12-foot tree, minus the roots. The exact numbers vary from year to year; see Appendix One for more information.

All this material is gathered on the beach-head each spring. The 50 stakes on either side of the V are 10-foot long birch trees, while the rest of the stakes are a mixture of 8-foot long spruce, maple and birch trees. Each stake is sharpened at the top end of the tree.

As soon as the ice is out of the bay, usually in April, the men begin building their weir on a low tide. James likes to get his weir built before the clam season opens in mid-May. This usually means the men are working in windy weather with freezing rain or snow. The stakes are loaded onto the truck at the beach-head, carried to the end of the road on the flats, then transferred to the ATV to transport them to the weir site. Before the days of the ATV, they would have carried the stakes by horse and cart or by hand. On the flats, the men have to work quickly, for they have 2 to 2 1/2 hours at the most before the tide comes in again.

Starting at the V of the trap, the 10-foot birch stakes are pounded 4 1/2 feet into the mud. The rest of the 8-foot stakes in each wing are pounded 3 feet

into the mud. The V-stakes are longer and therefore larger, because this part of the trap must bear the weight of the outgoing tide and the resultant catch. The men are very careful about how far they pound the stakes into the mud of the sloping beach. In order to retain the fish, the height of all the posts of the weir must be level with the surface of receding water, or else the fish could escape around the ends of the weir or over the top:

> As the tide drops, your tide's gonna drop to the weir always the same level, the whole ways around it. So, you gotta have the same length to the way the land is running. There could be a lotta problems if you don't watch what you are doing.

This is a tricky judgement, and one that is eyeballed by the fishermen rather than plotted out on paper. It is a magical sight, on a falling tide, to watch the weir suddenly appear in its entirety from beneath the water!

Stake-pounding may take a week of work and involves all four men. One man, usually James, plunges the crowbar deep into the mud determining the position of the stake (Figure 19). He never uses the same holes as the previous year because the constant movement of the huge chunks of ice back and forth over the mud surface during the winter loosens these poles making the ground unstable. James usually chooses a spot a little to the right or the left of the stakes two to three years old, where the ground is firmer. His son Todd shoves the sharpened stake into this hole as far as he can manage. The two other men, Steven and Jeff, work as a team pounding the stakes, switching positions with each other every once in awhile to spell each other's energy. One man stands on the mudflat holding the stake steady while the other stands on a bench 3 feet high by 6 feet long and pounds the stake into the mud with an 18-pound maul (Figures 20 and 21):

> When it's windy, it's bad out there on the bench. You're swinging this 16- to 18-pound maul over your head and the wind is blowing 30 miles an hour. It can be a bit shaky up there. Sometimes my wife holds the stakes while I pound them. Well, she must pray I don't miss! Because 18 pounds on top of your head as hard as you can swing, you can go into the ground too!

James decides exactly how much each stake should be pounded into the ground. Any that are too high are levelled off with the chainsaw (Figure 22):

> I do all the measuring of the stakes. It don't matter how much help I have hired, I do all the measuring. I'm 5'8" and when I reach up with my arm, I touch the remainder of 7 feet. I hold my hand to the top of

the stake, that's 7 feet. And actually when I get out to the wings, I want it down to 5 feet and that will take me right underneath my chin and I can look right along the top of every stake. So, whoever is doing the pounding, he has to pound to what I say!

On one low tide, the men can pound between twenty-five and thirty stakes (Figure 23).

When the stakes are all pounded, they are woven with the softwood brush spears (Figures 24-26). Because the V of the trap catches and holds the fish, while the wings guide the fish towards the centre, the central area is woven with two layers of very bushy and branching spruce trees, while the wings are woven with a single layer of the less bushy fir trees. The spears must be straight:

> It's no good to get them crooked because they won't stay in the weir. When you get them weaved, there isn't any pressure on them. It will go where it wants to go. The straighter the brush, the more tension it will take. The idea of using the spruce right down close to the ground is that spruce is stronger than fir. Fir is too brittle and it breaks bringing it around the stakes. Spruce won't do that, it will bend.

The men work on the landward side of the line of stakes. Beginning at the V, each stake is woven consecutively. A 12-foot spruce spear is laid with the tip on the outside of the centre stake, then woven in and out between the next two stakes, bringing the butt inside (landward) of the fourth stake (Figure 27). In this movement, the spear is on an upward angle from tip on the mud to butt held against the stake. It takes the two men standing on the spear to bring it down flush with the mud surface (Figure 28). If the butts were placed on the outer, or seaward, side of the stakes, the outgoing tide would pull the weir apart:

> You have to have all the butts heading towards each wing, tips towards the V. When you put a brush at every stake, it brings it up even the whole way along. You don't have big high spots. It ties it all in good and tight.

This is very messy work with the bushy trees splashing the muddy water everywhere! The men try to weave an equal number of spears in each wing on each low tide before the tide returns (Figure 29):

> That softwood brush is hard to weave in because it's so bushy and you gotta get it in so tight; you gotta just jump on it right into the ground.

When a single layer of spruce in the V and fir in the wings has been completely woven (Figure 30), approximately 68 stakes in the east wing and 54 stakes in the west wing are 'double-speared', that is woven again, the rest of the stakes in the outer wings being woven with a single layer. This is done to insure the central area of the trap is woven tightly to hold the fish.

It is a beautiful sight to see the bushy greenery of the spruce and the fir trees snaking their way across the mudflat, in and out between the crescent line of regularly spaced vertical stakes of shimmering white- and yellow-barked birch and rugged spruce (Figure 31)

The next stage is the hardwood spear weaving (Figures 32, 33). Again, work is begun at the centre stake of the V (Figures 34, 35). The 100 stakes on either side of this stake are woven with three or four layers of long 12-foot birch trees which are strong, bendable and very branchy (Figures 36, 37). The next 100 stakes in each wing have a double layer of birch, cherry and the not-so-bushy alder trees, while the rest of each wing is woven completely with two layers of alder:

> We use birch in the V. Birch, you can bend it and it won't break, but when you start using maple or real big alder, they are too brittle and they'll break. But that small alder on the wings is OK. Small alders, there's lots of bend to them. You can bend them double.

Rather than netting, James Webb prefers to use brush for making his trap:

> Once the fish touches the brush, it will back right away from it, it won't go out, it won't try to fight its way through. If the brush has lots of bushes on it, it makes it all the better because the fish, they just keep swimming around, around and around in there. Then, when I go to tend it, everything is right in the V because that's the last place the tide leaves it.

The woven spears in the central part of the trap lie horizontally between the stakes (Figure 38), while in the outer wings they are on an angle with the top of the tree upward. The purpose of this part of the trap is to guide the fish to the centre, not to hold any weight. Therefore, the weaving is not tramped to the ground as in the more central area. The spears at the very end of each wing are woven with the trees reversed, so the bushy part of the tree is outermost (Figure 39). This makes the trap look better, the ends of the fence look more squared-off. Along the length of the trap, if a certain tree is not particularly bushy, another is added to fill in that sparse area (Figure 40).

Although the men are very conscious that their trap should "look good", the primary function is that it catch fish:

> I like to see my weir look neat. We have a lot of tourists and it is a big tourist attraction.

Sometimes, the men have to fill rocks in areas where tidal and stream currents wash out holes under the brush (Figure 41).

The final part of the weir construction is the bracing (Figure 42). The Webb weir is close to the strong currents of the tidal channel which often rocks the woven fencing. To prevent any loosening in the soft ground, James anchors about a dozen or so equally spaced V-stakes with short lengths of plain clothesline wire from the tops of the stakes to smaller sticks pounded on a 45° angle in the ground to seaward of the trap:

> You don't put anything inside because it gets in your way. The older people told me about it, so I tried it and it worked good. I've been using guidelines for about 12 years now.

To sum up the process of construction in the words of James Webb:

> In each stage of the work everything you do, you do it altogether. So, you pound all your stakes in the ground first, put all the softwood brush in the ground next. Then you start with the hardwood brush. You put one spear of brush the whole ways around the weir, then you come back to the V and start again. Keep going that way until you build it right up to the top. You don't build in one place and leave it. Storm comes through and it will tear it all out and you will have to start again. I've had my weir all in by the end of April and in just one tide lost three-quarters of it. All my west wing was gone. Five years ago, that would be in 1982, I lost all of the west wing and half of the east wing, just due to one heavy storm. Then, you go back into the woods and re-cut all over again.

The Webb weir is a 'shad weir', meaning their largest catch is shad. The shad runs are in July and in the fall, with the larger catches in the summertime. At this time, the heaviest catches are made on a low tide soon after a new moon in the hours between 11 pm and 1 am. The run usually lasts for a week or two (Figures 43 and 44). The smaller shad are sold locally to lobstermen for bait, while the larger fish are sold by the roadside, to local retailers and hauled by road to buyers in New Brunswick. The other fish caught in this weir include gaspereau (alewives or kayaks), bass, flounder,

mackerel, sturgeon and cod. James caught a whale one summer by mistake; it took one complete wing out of his weir!

The Webb family are busy all summer tending their weir and clamming:

> In May, the first fish swims in. These are codfish. As the water begins to warm up, the flounder are in season. They are here for about a month. The sturgeon run is next, followed by the gaspereau and then the shad, followed by mackerel. Our weir is mostly known for shad. We usually catch between 1 and 3 thousand in a season. In the fall you catch a few bass and maybe some cod. By November, the tides are so rough and the wind is so strong it pulls the stakes and brush down the bay—the end of fishing for that year!

The Gerald Lewis Weir at Five Islands, Nova Scotia

The Lewis weir is the only 'wet' weir in the Five Islands area, meaning there is usually a large pond of water left in the trap, even at low tide. It is built on a site which has been used for more than one hundred years. The site has the reputation for being an excellent fishing spot because the V, or bend, of the trap catches the fresh water stream, while the falling tide divides inland of the weir with the salt water separating equally between the two wings. This means the weight of the falling water is equally divided between the two wings.

The weir is a combination of woven brush along the bottom and commercially made netting strung along the landward side of a meandering row of birch and spruce stakes.

The shape of the Lewis weir is unlike the V-shape of the Webb weir. Due to the physical conditions of the water currents and the combination of mud and sandy bottom in the bay, the Lewis weir is an undulating crescent with a very long east wing (Figure 45).

Gerald Lewis has been weir fishing in Five Islands for 25 to 30 years. According to James Webb, Gerald has the largest weir on the shore: "I don't know of any weir that's any bigger. I think Gerald has from ten hundred to eleven hundred stakes, and that's long." Gerald's first memories of weir fishing are of his grandfather holding his hand and walking together out to a weir, which he pronounces "ware", when he was about 5 or 6 years old. He began weir fishing with Harry Davis when he was 15 or 16 years old.

> When I was a kid, I wanted a weir. I heard lots of talk about them and well, Dad was always putting in one. You'd see them hauling stakes and brush. Guess it was in my blood! I started going out and helping Harry Davis. He wanted me to go help him, so I did.

With his horse and wagon, Davis tended the weir previously owned by Ike Former. "Everybody tended with a horse. Worked in the woods in the winter and at the weirs in summer. At one time, there were a lot of horses out there."

After working some years with Davis, Gerald went into the weir fishing business with his brother Keith. The two men sold their fish locally, Gerald from his wagon, while Keith peddled from his truck. "We used to put two loads of bait on the Advocate wharf every day, one at night and one in the morning: herring, scrod, shad for lobster bait."

Even though Gerald has now retired from the commercial fishery, he is still discovering something new each year about weir fishing—the placement of the weir on the flats, the use of the nets and ropes, and the movement of the fish themselves. "As the old feller always said, 'Experience is the best way of learning'; we get smarter every year!"

Although the weir is in the same area of the bay, Gerald has moved it 25 to 30 feet inland from the Davis position. "They used to build them out so far—too far." The construction and height of the weirs has also changed. "Years ago it was all brush, 16 feet high. When I was out with Harry, we used to have a long pole with a hook on the end of it, you know, to put the brush over the top stakes because you couldn't reach it!" This style of weir sounds very similar to the one mentioned earlier being constructed in France today (Legendre, 1984).

Gerald puts his weir in alone, although neighbours are there to help him with the heavy work when he needs assistance. His companion is Peter, a large black horse, sure of foot, who resolutely plods down the sloping gravel beach and across the watery flats to the weir site on every low tide, regardless of day or night (Figure 46). Gerald has been working with Peter for about five years; his previous horse was named Tom. Tom and Gerald worked together for about twenty years. He was very fond of Tom; man and horse were one. As Terrence Honey described the relationship in 1984, "Tom has reached retirement age, 23 years, and Gerald has tried four or five new horses but none have suited and all have been sent back. The impression is strong that the horse has not been invented that will fill Tom's shoes." Gerald still speaks fondly of Tom, while regaling the listener with stories of the horses he has had to put up with since Tom's retirement. Tom did not have to be tied at the weir site; he stood waiting patiently until his master had finished fishing. Not so with the new horses. One day, Gerald looked back while fishing only to discover the horse was heading home to the barn on his own. He still talks about the long walk home that day (Figure 47).

Fishing with a horse necessitates some equestrian equipment, shoes and harness, which is unfamiliar to most fishermen. "There's a feller up here that makes the shoes and I have a neighbour put them on for me. I shoe my horse once a month—every four weeks. You'd be lucky to get five weeks from a pair of shoes at any time of the year." Gerald has the harness and collars made at the Sackville Harness Shop in New Brunswick. "They call them long straw collars. I think they're the only ones making collars. The collar maker, Jack MacKenzie, died a few years ago; a young feller makes them now."

Like James Webb, Gerald Lewis cuts all his material, or 'yards it out' in the late spring. "I try to get my weir in at the end of June." He piles the stakes neatly beside his home, with all the 7-, 8-, and 9-foot stakes each in their own pile, all with their tops sharpened and with their length marked on the squared off butts.

In the bend of the trap, the 13-foot hardwood birch and maple stakes, set at 3-foot intervals, alternate in height—short, tall, short, tall—while in the wings the 7- to 9-foot stakes are pounded to the same height. In the initial stage of building his weir, Gerald works from the wagon. He drives the horse and wagon parallel to the landward side of the weir. Standing on the wagon, he drops a crowbar into the sandy mud to open up a hole for the stake. The sharpened end of the stake is dropped into the hole and then he pounds the flat butt in place with a 15-pound maul (Figure 48). Because he works alone, he has invented a gadget which holds the stake in place while he is pounding. This gadget is a piece of wood about 1 1/2 feet long and 4 inches wide with a loop of galvanized metal nailed to one end. He puts the loop over the stake and lays the wooden board flat on the wagon. Standing on this board, the metal loop holds the stake steady against the side of the wagon while he pounds the stake in place (Figure 49).

Once all the stakes are pounded, they are woven with the spruce spears, 10 to 12 feet long. They are woven in the same way as in the Webb weir, beginning at the centre stake in the V and working out each wing, with the top of the spear placed to seaward of the stake, and then woven between the next two stakes, and the butt brought to landward of the fourth stake and then tramped to the ground. A single tier of spruce and fir brush is woven the complete length of the trap.

In the V of the Lewis weir, approximately 60 stakes are covered on the landward side with commercially made netting. First, a polypropylene rope is strung along the tops of the shorter stakes, while another rope is strung along the tops of the higher stakes. Gerald has found that these ropes give stability to the stakes and prevent the nets from snagging on the stakes. The net is then strung, being tied at the bottom of each stake, with excess netting folded over the top of the stakes (Figure 50). He uses a nylon net with a mesh size of 1 7/8 inch. "I've got one that I've been using for 30 years." Each year, he discovers a new way of fastening the net and ropes; as he says, he is "always learning".

The two wings are not covered with netting; they are woven with 10- to 12-foot alder spears, complete with leaves. As with the softwood spears, he lays

the top of the tree towards the centre of the V, but to seaward of the first stake, weaving it between the next two stakes and bringing the butt to the landward side of the fourth stake (Figure 51). In the wings, these hardwood spears are not pushed to the ground, but woven loosely on the diagonal. Depending on how bushy the trees are, Gerald may put in two layers, or 'tiers', of brush to fill the length of stakes. The main objective of this part of the trap is not to catch the fish, but to guide the fish towards the V of the trap (Figures 52 and 53).

Gerald fishes his weir either with a dip-net (Figure 54), or with two people using a 4-foot high by 10- to 20-foot long seine-net strung between two 5-foot posts (Figure 55). One person holds one of the 5-foot posts stationary, while the other person walks around in a circle in the pond with the other post, thus encircling the fish.

By late October and early November the winter storms begin to stir up the water, making fishing unsuitable. About that time, Gerald takes down his nets, leaving the winter ice to claim the posts and the weaving. The mudflats are then clear for a new weir the next spring.

Over the years, Gerald has had many experiences on the weir site, both during the day and at night:

> I'll tell you a story. The first time I went out there at night alone, the horse was acting kind of strange. We stopped at the weir at 4 o'clock in the morning; it was dark. And I said, "Oh, come on now, there's nothing here but a bunch of gulls. You'll be all right, you've seen them before." I got down and tied him, but he was still uneasy. So, I go in and prowl around and I hit this thing. It was big, and I said, "Geez, it must be a sturgeon." When I got to the other side, I heard a big splash and the horse jumped. I hollered to him and shone the light and caught these two eyes looking right at me! It was a seal! Oh, a horse is the greatest thing in the world out there at night. They hear everything and they let you know when something's not right.

Retired from fishing now, Gerald has been working closely with fisheries scientists at the St. Andrews Biological Station, New Brunswick. From 1982 to 1985, he assisted on a joint project with them and the East Carolina State University in migration studies of anadromous fish, including shad. Fish in his weir were caught, tagged and then released. Tag-returns showed that the fish migrated from the Cobequid Bay area to rivers and inlets down the Atlantic Coast as far as northern Florida.

Summary

The woven fish weirs of Cobequid Bay have a special place in the history of Nova Scotia. Probably introduced to the native peoples by the first Acadian settlers, this method of fishing was an important source of food to many communities along the Economy-Parrsboro shore. Fishermen have continued over the years to construct these woven fences on the intertidal mud flats of the upper reaches of the Bay of Fundy, pounding the tall stakes deep into the ground and interweaving them with trunks of long tapering soft- and hardwood trees. In the mid 1800s, weir fishing along this shore was part of a large international shad-fishing industry. Today, there are only a handful of fishermen who continue this way of fishing, making a few concessions to modern technology by the use of trucks and all-terrain vehicles, although there remains one fisherman who continues to rely on his equestrian partner to tend their weir (Figure 56).

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APPENDIX ONE

Description of the Webb Weir, 1987

	West wing	East wing	Total number of trees/ type of trees
<u>V of the trap</u>			
Stakes	100	100	200 birch, maple
Bottom: double speared	200	200	400 spruce
Top: 3-4 spears	300-400	300-400	600-800 birch, cherry
<u>Middle area of trap</u>			
Stakes	100	100	200 maple, fir
Bottom: single speared	100	100	200 fir, spruce
Top: double speared	200	200	400 birch, cherry alder
<u>Outer wings of trap</u>			
Stakes	110	190	300 spruce, maple
Bottom: single speared	110	190	300 fir
Top: double speared	220	380	600 alder

The 700 stakes of birch, maple, fir and spruce were set 3 feet apart, making a line 2100 feet long, around which were woven approximately 900 12-foot softwood trees of fir and spruce on the bottom of the trap near the mud, and 1600 to 1800 10- to 12-foot birch, cherry and alder trees woven on the top.

Description of the Webb Weir, 1988

	West wing	East wing	Total number of trees/ type of trees
<u>V of the trap</u>			
Stakes	100	100	200 birch, maple
Bottom: double speared	200	200	400 spruce
Top: 3 to 4 layers	300-400	300-400	600-800 birch, cherry
<u>Middle area of trap</u>			
Stakes	100	100	200 maple, fir
Bottom: single speared	100	100	200 fir, spruce
Top: double speared	200	200	400 birch, cherry, alder
<u>Outer wings of the trap</u>			
Stakes	132	198	330 Red Spruce, maple
Bottom: single speared	132	198	330 fir
Top: double speared	264	396	660 alder

For a total of 730 stakes of birch, maple and fir, set 3 feet apart on the mud surface making a line 2190 feet long, they were interwoven with 930 12-foot softwood trees of spruce and fir, and 1660 to 1860 12-foot hardwood trees of birch, cherry and maple.

APPENDIX TWO

Weirs, Economy Point Down

by Margaret J. Beattie

This account of weir fishing in the early 1900s along the Economy shore was written by Margaret J. Beattie and contributed by Garfield Perry to the United Church bulletin, The Cobequid Outlook (vol. 5, no. 4, 30 April 1981). While the names of the people and weirs might be unknown to most readers, for the weir fishermen along this shore this piece of writing holds many memories.

> The Economy River runs down the west side of Economy Point. It passes out into the open bay below the Brick Kilns. In locating weirs it was always called 'the river'. 'The Channel' so called, was the bed of the Brook just below the John A.P. McLellan house. It runs out across the flats to the 'Bar', outside of all the so called 'Inside Weirs', and into low water mark back of the Long Green.
>
> Carr's Brook runs across the Flats into the Channel, but does not use a permanent bed, changing its course from time to time. There were five Point Weirs, and the road to them went out to the Point through the Thomas Cove. They were: the Grab-all owned by J. Durning and Issac Reid; the Rock Weir by David Moore, George Moore and John Moore; the Squaw owned by George Moore and Wallace Morrison (this weir was just off Economy Point on the Ledges). There was also one called the Thomas Weir, owned by a family of that name. Another was owned by Samuel Durning, Robert Moore and James Durning. The Nest, owned by Deacon James Hill (two thirds) and William Marsh (one third), was out very near the Brick Kilns, and just below the Point Weirs. It was reached from the Economy side, using the road out to the Flats at the Wild Marsh. The Win the Day was across the river, and was owned by George Alexander Fulton, James Beattie and James Reid. George Beattie inherited his father's share (one half). This weir was also tended by the Wild Marsh Road. The Ellis Weir owned by George Ellis and Thomas McLellan was next below the Win the Day, but on this side of the river which ran just back of it. Next below was the Cheverie, owned by Deacon James Hill and William Beattie, said to be the first weir across the Channel. It was so far out the people asked them if they were building a weir in Cheverie (across the bay). Thus, the name "Cheverie".

Next came the McCabe weir owned by John McCabe, Robbie Thompson and William M. Marsh, down by the upper end of the Chimney Rock Ledges. The Alliance owned by Samuel McLellan, Woodbury Moore and Caleb McLellan was just across the Channel about half a mile inside the McCabe weir, but farther down, so was near low water, and could not be tended in low tides. It was across the channel from the Long Green. The 'Inside Weirs' were between the shore and the channel. The 'Grizzle Barrow' was nearest shore. It was about opposite where Jim Chisholm now lives (property now owned by James and Irene Webb). It was built over the channel with a wing stretching out on either side of the brook. It was owned by George Marsh, Tommy Marsh and some others of the family and was a good fish weir. The 'Union' owned by John A.P. McLellan, was also built with the Channel running through the Bend, but was farther out than the Grizzle Barrow. Next came the 'Simpson Weir', inside the channel, which passed behind the rest of the inside weirs. This weir went with the Simpson Grant, and when Samuel Beattie bought the grant he got the weir. It was later sold by him, and the Beatties bought, or took up claims in the Outside Weirs. The 'Little Weir' owned by David Beattie and John Taylor, was in between the Simpson weir and the Long Green. The 'Long Green' was owned by Fred Parker, Charles McLellan, and Wilson Marsh. This was always a good weir and is still put in by people here, but not with the long wings which gave it the name. Next below the Long Green was the 'Cameron Weir' owned by Henry Moore, Charles Faulkner, and George Cameron. Later, another weir was put in by Jonathan Corbett (who then lived at the top of the long hill), and Jotham Faulkner. It was below the Long Green and inside of the Alliance, farthest west of any of the weirs. It was said never to have caught a fish. It was put in two years, I think. The big year for fish was 1868, or thereabouts. Mr Edwin S. Ellis said that year was called the year of the biggest catch of shad. He could not remember the largest record taken, but as a rule, it could not be more than 2000 for a weir. Men drove one-horse carts. There were usually two partners for a weir. The Outside Weir owners had to hurry to get their first load across the Channel, and dump it on the Flats inside, and hurry back for a second load, which was hauled to the beach and dumped, then back to pick up the first load before the tide reached it. This made two loads for each horse and cart. Each partner took his own horse and cart. Mr. Ellis, whose father had two thirds of a weir, and had eleven puncheons in his barn, could remember when they hauled about a thousand shad a day (two tides)

for perhaps two weeks. Someone else said during the biggest runs, men could salt a puncheon full every day for days at a time.

There was also a weir at the Upper Cove called the Halliday Weir, and the beach was called the Halliday Beach. Men from St. John, named Halliday, came up there with a big boat, and fished from there, and put in a weir. They were the first men to fish from boats and drift nets in this bay. George Beattie said his father, James Beattie, told him the first years his father (Samuel Beattie) owned the Simpson Weir (which went with the Simpson Grant when Samuel bought it) that they caught plenty of shad in it. Why it was sold, and shares bought in the Outside Weirs, Cheverie and Win the Day, George did not know.

At first the shad were sold in St. John at a low price, later the Boston market took them. James Beattie became fish inspector and at first he used a branding iron and burned the words 'Mess Shad' and the owner's name on the head of the barrel. Some of these old branding irons were in George's possession at the time of his father's death. Later, men had their names put in a piece of tin or metal, and then inked them in the barrels. (James Beattie owned half the Win the Day). Noble Simpson said he remembers seeing 300 codfish caught in the Alliance in one tide in broad daylight. There were seven cartloads. He also saw 300 dogfish caught at one time in the Cheverie. When he and Franklin Beattie had a cart loaded, Frank took the lines off old Smiler, the mare, and started her. Smiler steered herself home while Frank and Noble stayed and tied all the dogfish they could catch to the weir, before the tide drove them out. (Dogfish were very destructive to other fish).

The Squaw weir was so named when some Indians were camping at the Cove. One night a squaw was going out to get some fish, and got a ride in Wallace Morrison's cart. When they reached the weir, she was sound asleep, as a joke Wallace pulled out a pin in the front of the cart and dumped her out on the wet sand.

After the fish were salted down in puncheons the necessary time, they were weighed and packed in barrels, 200 lb to a barrel by the inspector. This was an art in itself. Mr Woodbury Moore was an expert and a busy man in fishing season.

They were shipped, usually to Boston, in the small sailing vessels of the time, and loads of flour and other staples were brought back on the return trip.

After a time, shad fishing in the bay failed, so that only one or two of the Inside weirs were put in during the latter part of the 1890s. One or two boats still went out during the shad season, but the catch was small.

Considering that the only lights they had in those days were kerosene oil and tallow candles, it is a wonder men did not get lost on the flats at night tide run-off. I cannot recall any stories except one, and that was in a funny way.

In the last days when a few men still went out, one dark, foggy night McNutt Yuill went to the Cameron Weir, or perhaps the Long Green, and lost his bearings coming back and began to shout. Franklin Beattie awoke and jumped out of bed, went to the front door and shouted, "Where are you?" "What's the matter?" Mack's voice came across the flats, "I'm lost". "Lost nothing!", answered Frank. "Follow you nose and you'll run into the bank." Which Mack did. (Later, John Beattie reminded me it was a Sunday night.)

APPENDIX THREE

Gill-Net Weir Fishing in Minudie

by Will R. Bird

The gill-netted weirs on the Minudie shoreline captured the imagination of photographer and writer alike. The sight of the sunlit nets billowing in the wind, with the seagulls swooping over head trying to get the fish caught high in the nets, while the men rode their horse-drawn wagon over the shimmering mudflats inspired many an eloquent verse. Several photographers, including Richard Harrington, captured several images on film which they both published and deposited in public collections.

Will R. Bird saw the shad gill-net weirs at Minudie in his travels throughout Nova Scotia, and he felt they belonged to a Ripley's 'Believe it or not'. He wrote an account in This is Nova Scotia published by Ryerson, Toronto, in 1950. We reprint it here with the permission of McGraw-Hill Ryerson Limited:

> Today just one group engages in this fishery but in bygone years several families of Minudie caught fat silver-blue shad in the muddy waters of Cumberland Basin. The shad average two and one-half pounds in weight and have firm white flesh which is delicious when either fried or baked, and is so fat that the frying pan needs no additional grease. The season lasts from mid-May until September—a time of hard, unremitting toil, of little sleep; of ever-present danger. The nets are cleared twice a day at low tide, regardless of whether it be noon or night, and the men work on the hour as the tide comes in swiftly, rising twenty-eight feet or more in six hours. The fishermen go out in rain and in fog, in bitter winds and blazing sun.
>
> They use their own time table and start work with a heavy meal in Edmund Brine's house—cold pork and boiled potatoes and plenty of strong tea and cookies. Then the two horses are hitched to a box waggon containing the stakes, mallets, guy ropes and nets, and off they go on a six-mile drive that takes them to their 'camp', weather-beaten shacks that huddle behind a dike which keeps the Basin water from the marsh. There the horses are turned loose to graze while the men splice new guy ropes to replace the frayed ones and another snack is had before the horses are hitched again and a ladder added to the waggon's gear. Then over the dike they go and meet the wind

bringing in mist or heat and no time is lost as they drive over the red mud flats using a curving line of stakes which mark the three-mile route from shore. The first distance is sticky mud that clings to boots and hoofs like glue but further on there is hard bottom usually covered with an inch of water. The stakes, two feet high and about fifteen feet apart are followed easily no matter the fog or mist that may roll in.

Soon the long line of nets is seen, the nets bellied out in the breeze, with gulls screaming around them, trying to tear at the trapped fish with their beaks. Often, too, there are crows trying to rob the fisherman. Then it can be seen that the silvery specks in the nets are shad, caught fast by their gills. Birch posts that hold the nets are twelve feet high and so the ladder must be used to reach the top fish. The nets are twenty-three yards in length and often the wind has some down in a tangle so that the men must work fast to make repairs. When a new post is set there is no digging. It is set upright and rocked back and forth so that it settles quickly into the sand and is supported by guy ropes. The shad that are badly torn are tossed to the gulls, but there are usually one hundred and fifty undamaged fish. The round trips make thirty-six miles a day and when the men get home they have to split and salt the fish and pack them into puncheons which hold about four hundred fish, worth around one hundred dollars (Bird, 1956:7-9).

APPENDIX FOUR

The Fish Camps of Minudie

by Lillian Arseneau

These are the reminiscences of the fish camps of Minudie in 1925 written by Lillian Arseneau in the spring of 1992. Lillian was the former curator of the Amos Seaman School Museum in Minudie. She is describing a photograph of the fish camps near Minudie in which there are two rows of wooden sheds separated by a wagon-width lane; two visible sheds on the left and five sheds on the right. The roofs are very steeply pitched and some of the sheds have a chimney poking through the roof-line. Three wagons off to one side are complete with ladders, baskets and barrels.

> This is a picture of the fish camps where our parents took my brother and I to spend a Sunday; the men would be out at the camp at noon. We drove about six miles with a horse and wagon to the farthest end of the Elysian Fields, or the big marsh as it is called. At this time, my grandfather Sandy Burke and uncle Lorong Brine were among the main fishermen (about 1925). Other families and friends of the same fishermen would all go on the same Sunday. The women would take food for their families, fry fresh salmon and shad, just out of the water, and cook potatoes also. It was just like a big family picnic we all looked forward to a couple of times a year during the fishing time, and then men sure enjoyed it as they had to cook for themselves on there, and take food from home to do for several days. I remember the mothers picking the bones out of the shad for the smaller children, while us older ones had to do our own. The salmon was great when we could have some, not as many bones; but special orders came for them so they weren't as plentiful as shad.
>
> After dinner us older children were given a mug to go and pick wild strawberries on the ditch bank in the long hay. I remember parting the long grass and finding beautiful big red berries that grew in the shade as they had time to grow and ripen before the hot sun made them soft, as it did in the upper pasture sometimes.
>
> The older children had to care for the smaller ones as there was such a temptation to explore the different places like the horse barn shown at the left in the picture. There also was a post (not shown) at the left of the barn where a light was put on for night time. Also, you can see

the dykes behind the camps. All the fish was unloaded and cleaned behind them (next to the tide). They had splitting tables, made of boards, and barrels and tubs etc., out there to put the fish in after cleaned and washed well in the clean salt water, and brought back to the salting sheds, where they were packed in week ends and days no one went out. They sold at 25 cents each. The tide kept the cleaning grounds clean by washing away the debris as it came in and went out again, twice a day. The men cut ice on the ponds in the winter and covered it with sawdust for insulation, so it didn't stick together or melt. There is a small ice-house in the picture also.

At the end of the day, when our mothers gathered us children up for the drive home we weren't very presentable with marsh mud and fish scales and berries all eaten. Many of my friends and relatives are living today who went on these unique picnics, but the parents are gone. Some of the other fishermen at the time were Philip Burke, Lorong Burke, Fred and Philip Burbine.

Some men fish today in the same waters but with drift-nets and boats.

The four wheel carts were used to haul the fish barrels to the homeland, the two wheel carts used to go on the flats to collect the fish, and a driving wagon was used for quicker trips home or to the store for supplies. The bags drying on the back of the wagon contained 140 pounds of salt each for the fish.

APPENDIX FIVE

Gilbert Seaman Diary, excerpts

Gilbert Seaman (1820-1895) was the son of Amos Peck 'King' Seaman and Jane Seaman. He kept a diary at his home in Minudie during the ten year period 1875-1885, in which he chronicled almost daily the events of the community. References to shad fishing are scarce, despite his comment on the fishery in his Minudie essay.

June 1875, Saturday 26 Large hauls of shad today at the marsh fisheries. C. Finney had 112 shad in 8 netts.

August 1875, Monday 2 Charles Downey, son of Joshua Downey, aged 15 years drowned on the fish nets at the Big Pasture, having overslept himself until the tide had surrounded the nets. He went out in a small punt to get the fish and the boat swamped.

November 1875, Thursday 4 Shipped butter and shad to St. John for Schr. Mount Whatley - Capt. Downey.

June 1877, Tuesday 12 W.A. Downey put in his shad stakes.

April 1878, Tuesday 23 People getting in their Gaspereaux nets.

March 1882, Thursday 16 Dennis Burk went to the station with shad and hides.

May 1883, Thursday 3 The first Gaspereaux caught last night in the nett on the shore, only one.

August 1884, Saturday 2 Charles R. Wood as deputy sheriff made a levy on Ferdinand Brian's half interest in 10 shad netts, braces and stakes at the suit of Gilbert Seaman, also of 7 shad.

August 1884, Monday 11 Sheriff McLean over and sold execution 5 netts to G. Seaman at 5 cents each and 35 shad to McLean at 6 cents each.

In his essay on Minudie, he writes:

> I remember a few years since, we had one of the finest fisheries for shad and salmon, expecting large quantities, but of late years there is such an out put of sawdust from the Saw Mills into our rivers, that this once valuable fishery is about to be destroyed.

Afterwords

There, by the starlit fences,
The wanderer halts and hears
My soul that lingers sighing
About the glimmering weirs.
Housman, "A Shropshire Lad"

I have known Gerald Lewis and James Webb and his family for about ten years. In that time, they shared their way of life with me and many of my friends whom I have brought to their weirs. I thank them both for their hospitality and their gentle patience with our endless questions.

The sight of a city-girl standing for hours with her camera at the ready on the mudflats in early April amid swirling snowflakes and spring rain made me an easy target for teasing, especially when I lost my balance and fell into that undescribably sticky mud! I gave James something to talk about for a long time! The fact that I would travel two hours from the city to the weir site, take a few rolls of film on the low tide, and then drive all the way back to the city in the same day completely baffled Gerald!

In return, they gave me some wonderful memories. Early one sparkling June morning as Gerald and I wended our way over the mud flats behind Peter, we were greeted at the weir by a huge bald eagle sitting atop one of the stakes waiting patiently for his share of the fish-catch. It was a breath-taking sight as the massive bird took flight!

One July night, between midnight and two in the morning, my husband, Don, and I went fishing with the Webb family. The night air was warm and still. The reflected moonlight glistened on the moist mudflats. The sky was clear and full of stars. There were a few inches of water left at the weir site in which hundreds of shimmering silvery-sided shad were stranded. As we walked on the flats, they jumped and flipped, spraying water everywhere! James laughed as I caught the hang of snatching the shad behind their gills with my thumb; heck with a dip-net!

I would also like to thank the other fishermen with whom I spoke, Daryll Pettis of Parrsboro and Mel Whilliger of Moose River, who used to build netted weirs near Partridge Island.

I would like to thank my friend Joyce Chown who accompanied me on many wonderful weir trips and who encouraged me to write this book.

I wish to thank the Board of the Lunenburg Marine Museum Society and the staff of the Fisheries Museum of the Atlantic of the Nova Scotia Museum Complex (NSMC) for their support of this study. I also want to acknowledge the assistance of many people who aided me in my research: Ron Merrick and Roger Lloyd of Education Media Services for their assistance with my photography; the staff of the Nova Scotia Museum, in particular Scott Robson with editing this manuscript; Mary Blackford of the Maritime Museum of the Atlantic (NSMC); Karen Smith, Head of Special Services of the Dalhousie University Library, Halifax; Laurie Glenn of the Cumberland County Museum, Amherst; Frances Langille and Helen Gill of the Colchester Historical Museum, Truro; Lillian Arseneau, former curator of the Amos Seaman School Museum, Minudie; Garfield Perry, Springhill; Norman Creighton, Hantsport; Harry Thurston, Southampton; Tim Randall, Halifax; F. Carré of the Université de Paris (Sorbonne) and Yves Monbet of l'Institut français de recherche pour l'exploitation de la mer, France; Andres von Brandt of Wiesbaden, West Germany; Vernon Nuttall, Donald Aldous, Mike Dadswell and Donald Gordon of the Federal Department of Fisheries and Oceans; D.A. MacLean of the Nova Scotia Department of Fisheries; and Ed Dahl, early cartography specialist with the National Archives of Canada, Ottawa.

I thank the following institutions for the use of their photographs: Old Court House Museum, Kentville; Ottawa House Museum, Parrsboro; the Nova Scotia Museum; the Public Archives of Nova Scotia; the Nova Scotia Department of Tourism and Culture; the Nova Scotia Information Service and the National Archives of Canada; for non-photographic images, Special Collections, Dalhousie University Library; and the Nova Scotia Museum.

I also acknowledge permission from McGraw-Hill Ryerson to reprint both the excerpt on weir fishing from Off Trail in Nova Scotia and the photograph of Minudie from This is Nova Scotia, and permission from the United Church of Canada to reprint the article on weir fishing from their newsletter, The Cobequid Outlook.

Joleen Gordon
Dartmouth, Nova Scotia

Illustrations

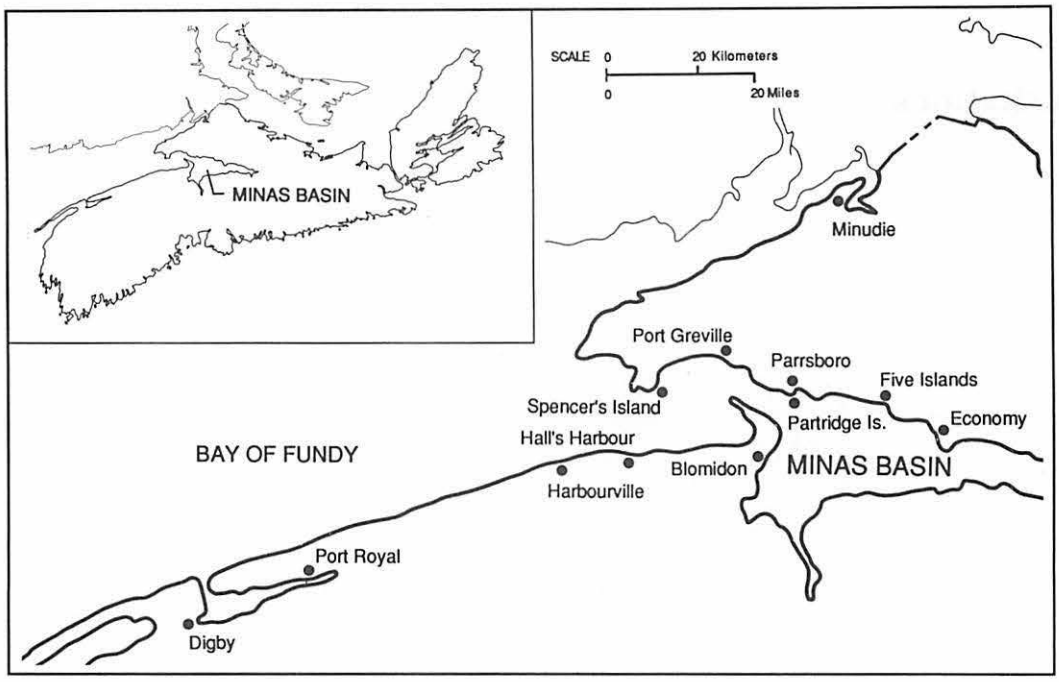
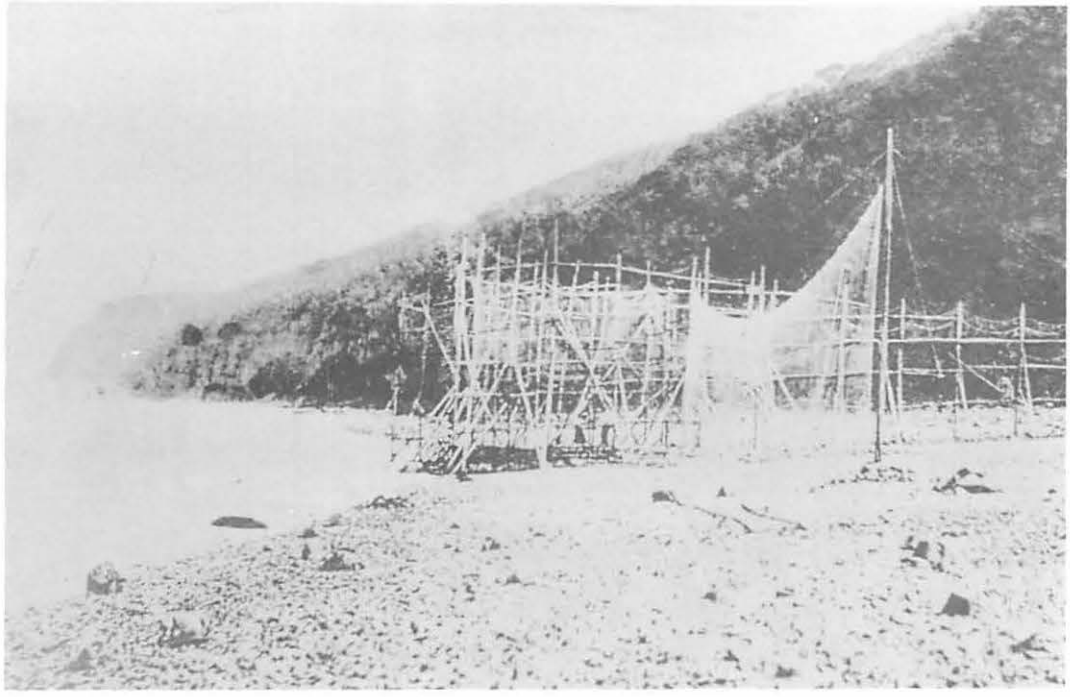


Figure 1 Map of Nova Scotia showing locations of weir sites mentioned in the text

Figure 2. Fishermen tending an all-netted weir at Minudie, near Amherst. Photograph by Will R. Bird, used with permission of McGraw-Hill Ryerson, Toronto.



Fi gure 3. An all-netted weir strung on wooden bracing set on the rocky shore of Amethyst Cove near Blomidon, no date. Ottawa House Museum, Parrsboro.

Figure 4. Men tending the large salmon traps at Hall's Harbour, late 1940's- early 1950's. Nova Scotia Information Service

Figure 5. A brush weir at Harbourville photographed by Rens Spaans, 1887-'88. Old Court House Museum, Kentville.

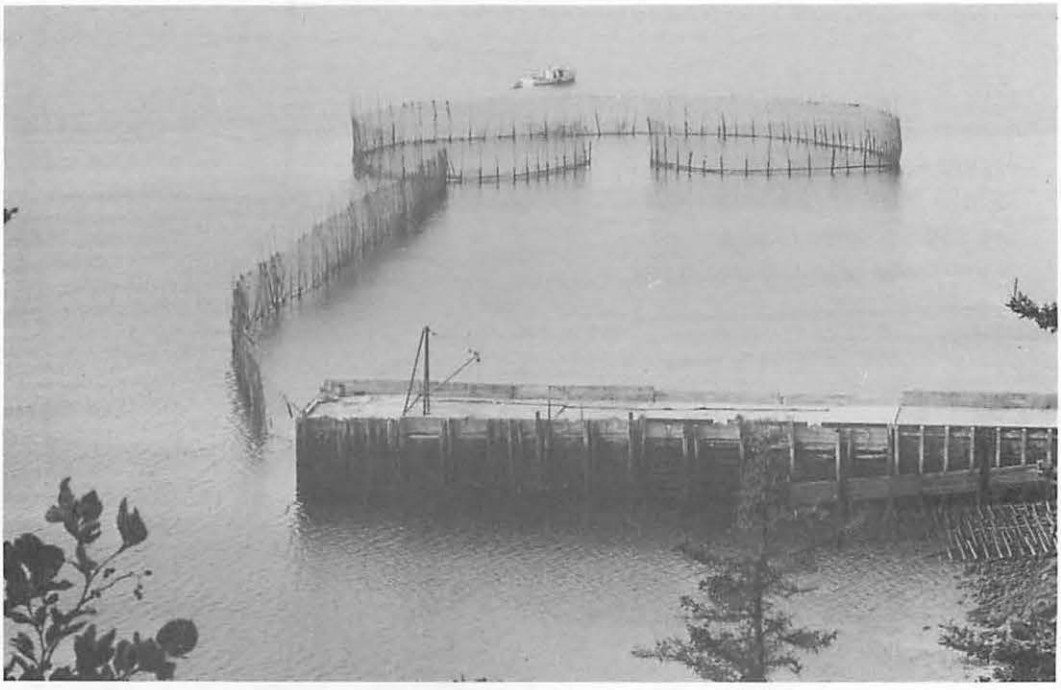


Figure 6. A netted double-curved weir set near the government wharf at Sandy Cove near Digby, 1973. Nova Scotia Information Service

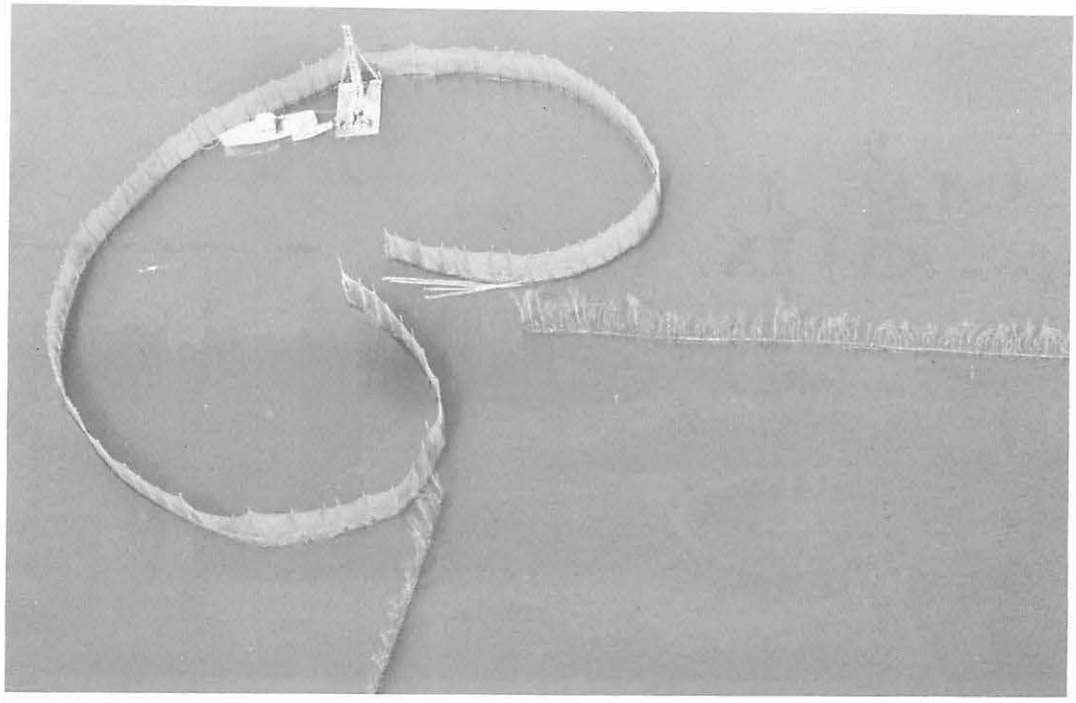


Figure 7. Aerial photograph of another netted double-curved weir at Sandy Cove near Digby, 1971. This weir has two leaders of brush stakes. Nova Scotia Information Service.

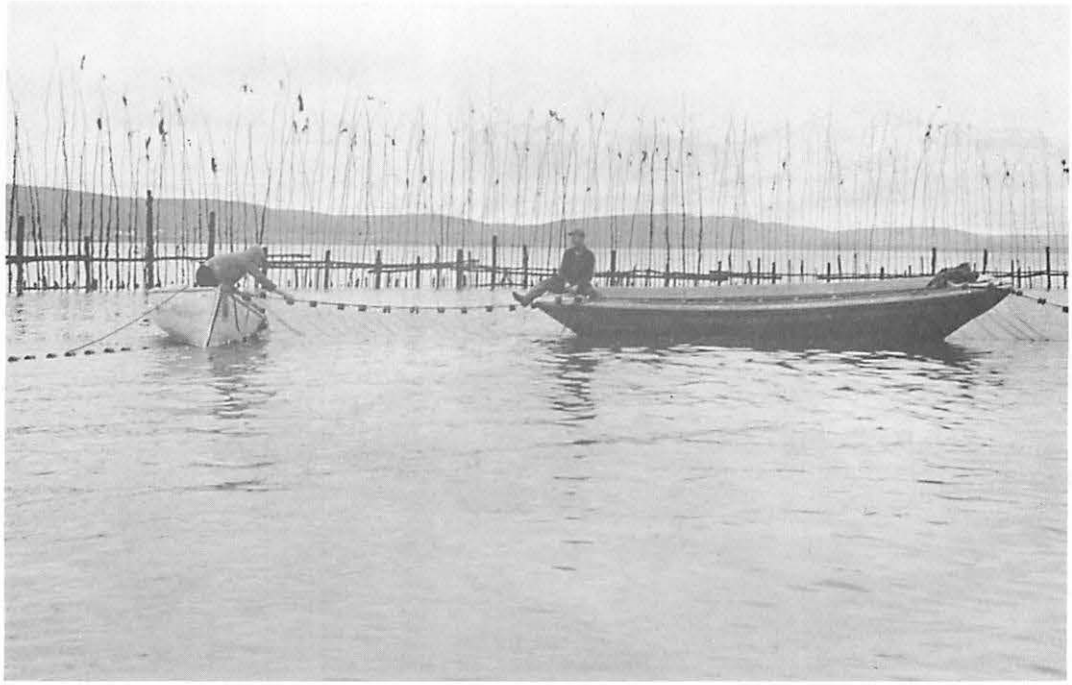


Figure 8. Fishermen tending one of the deep-water weirs in Annapolis Basin, 1950s, photograph by E.G.L. Wetmore. Nova Scotia Museum.

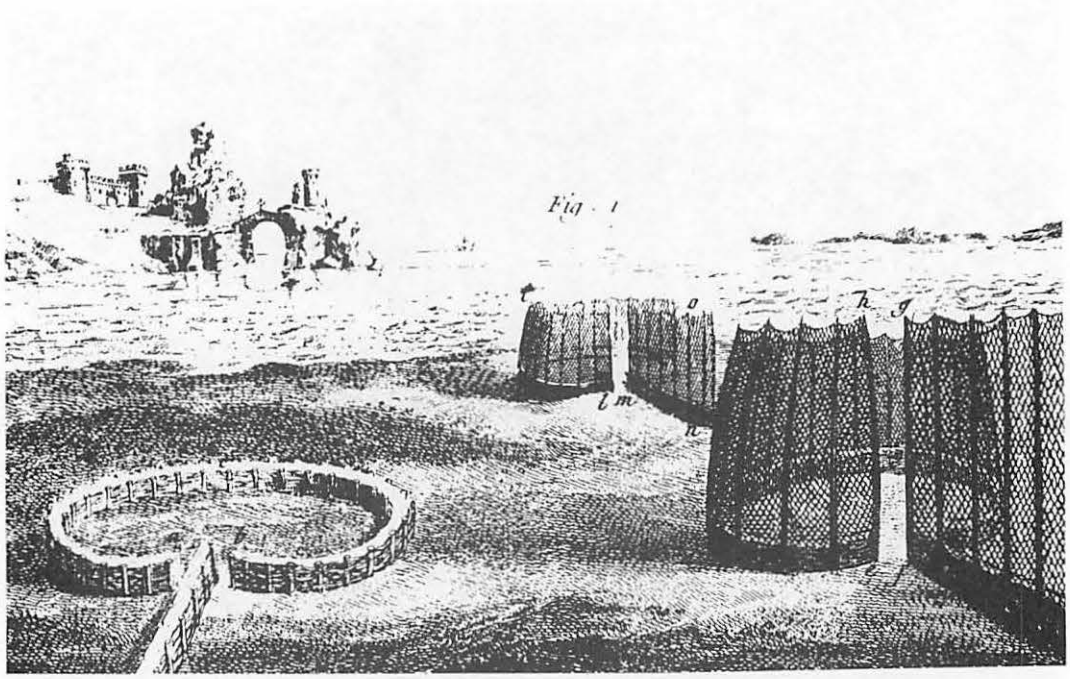


Figure 9. The 'parc du bois'. Denis Diderot, Receuil de planches, sur les sciences, les arts libéraux et les arts méchaniques, avec leur explication, *1762/1969, plate 7, figure 1.*

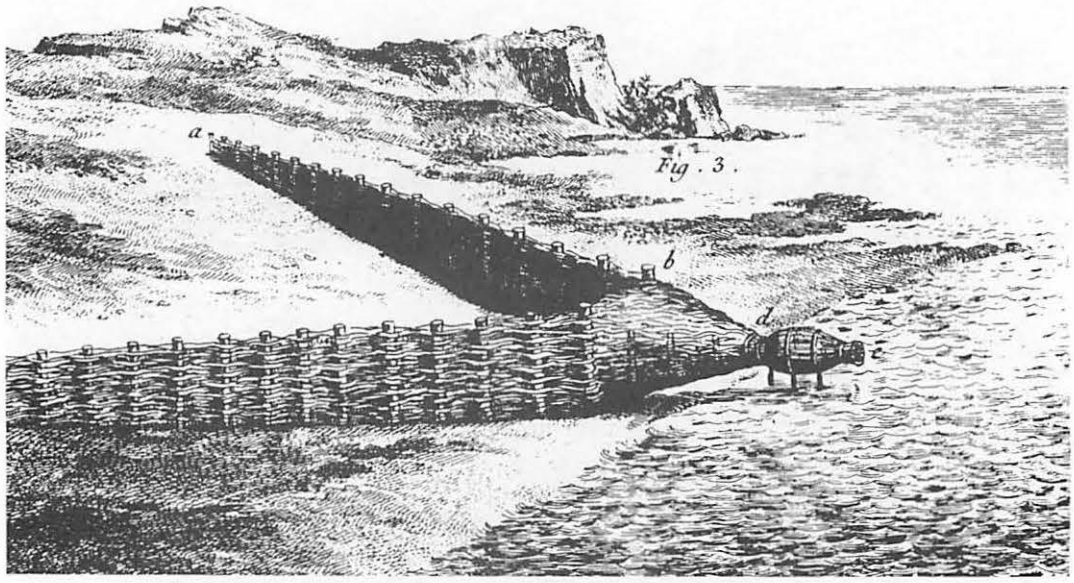


Figure 10. The 'bouchot' with a 'sac ou sond' at the V of the trap. Denis Diderot, Receuil de planches, sur les sciences, les arts libéraux et les arts méchaniques, avec leur explication, *1762/1969, plate 7, figure 3.*

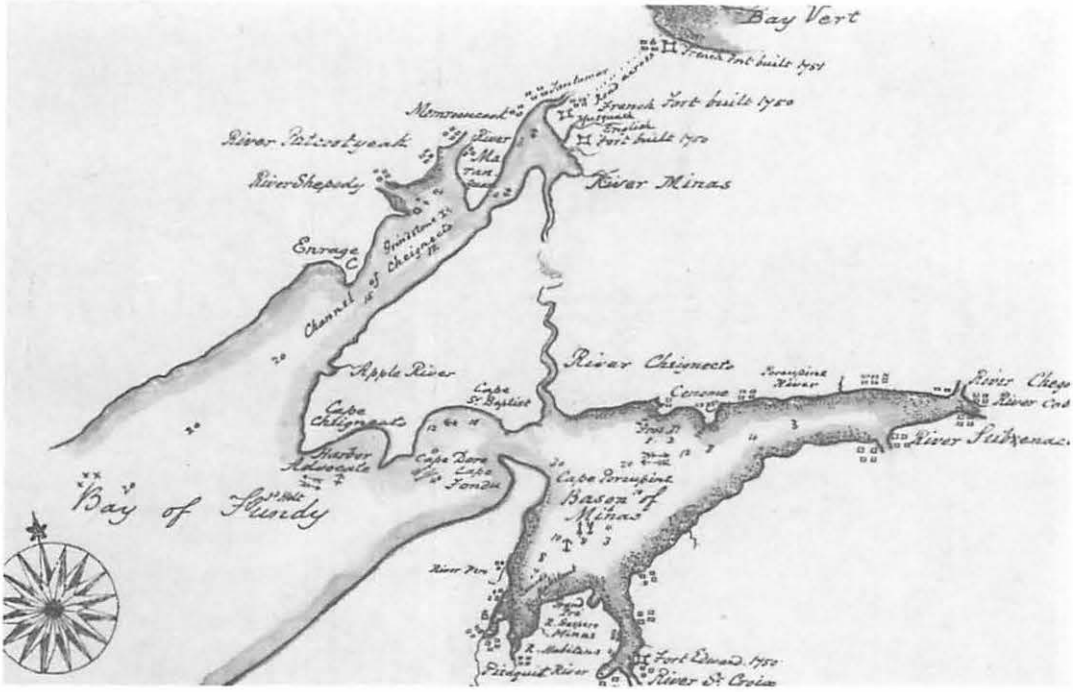


Figure 11. A draught of the upper part of the Bay of Fundy taken in 1748 by order of the Hon. Paul Mascarene Esqr. Lieut. Governor and Commander in Chief of his Majesty's Province of Nova Scotia... by Charles Morris. Original map in Public Record Office, London, CO 700 Nova Scotia no. 17; reproduced from a transcript c.1900. National Archives of Canada, NMC

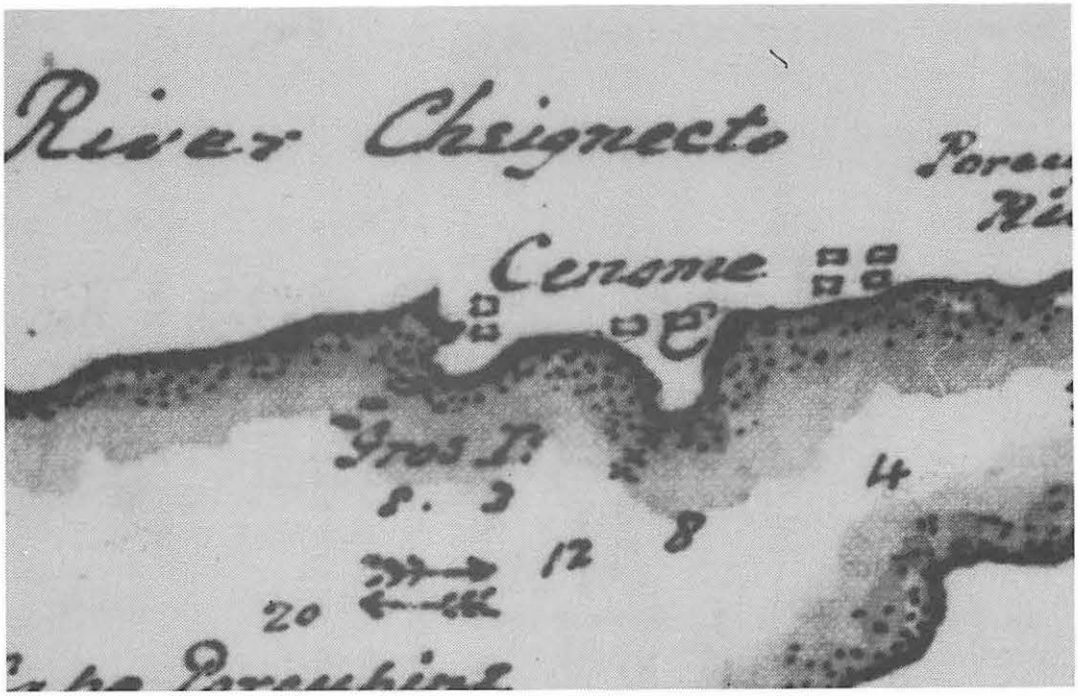


Figure 11 detail. The number of houses at Conomie/Economy.

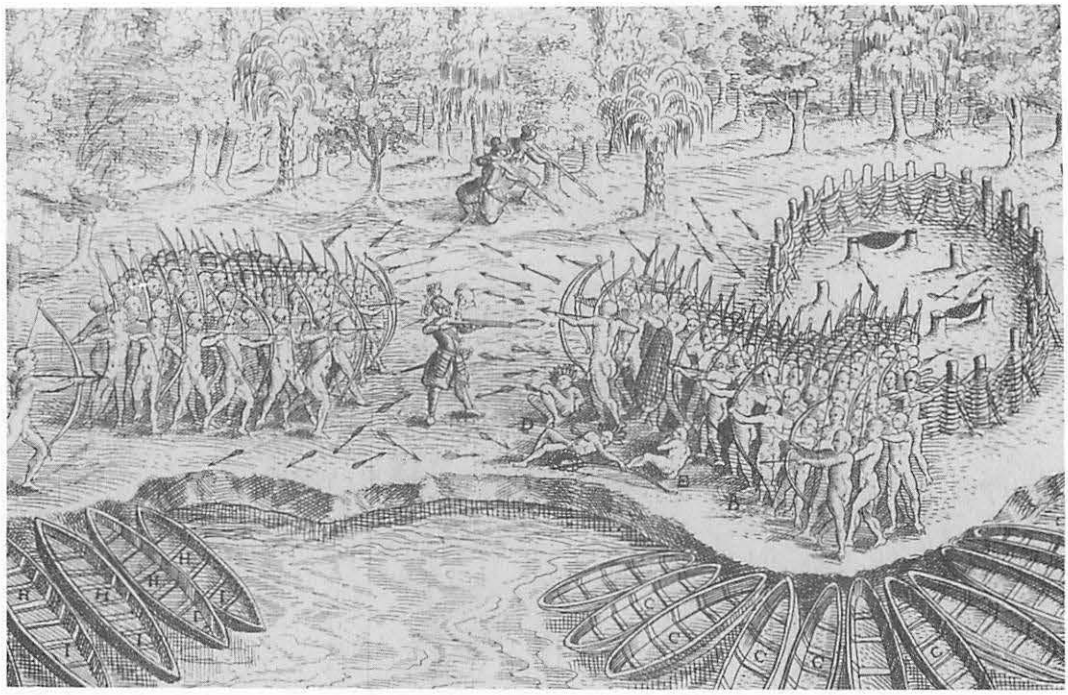


Figure 12. A brush-woven enclosure used in the early 1600s by the Iroquois in their battle with Champlain. The scene, entitled "Deffaite des Yroquois au lac de Champlain", is taken from Samuel de Champlain's book, Les voyages du Sieur de Champlain; *Paris: Jean Berjon, 1613, p. 232. National Archives of Canada, NMC C-5750.*

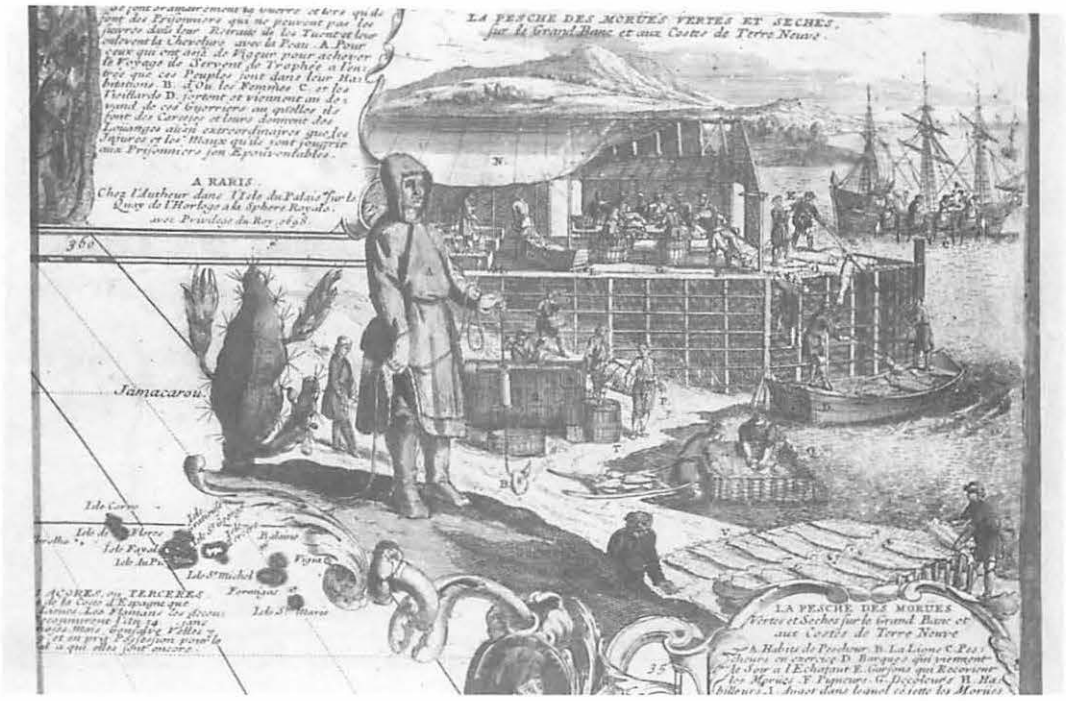


Figure 13. A brush-woven enclosure used in the Newfoundland fishery for cleaning the cod. La pesche des morues...; *vignette taken from Nicolas de Fer's Map of North and South America; Paris: Chez l'auteur, 1698. National Archives of Canada, NMC 26825.*

Figure 13 detail. The structure of the woven enclosure.

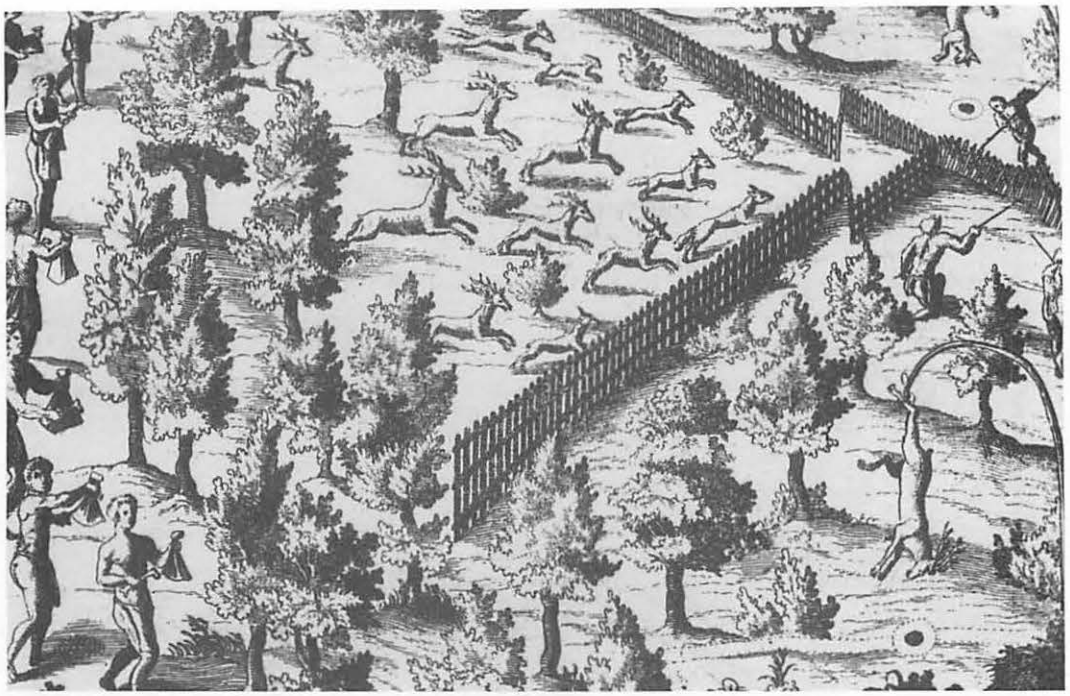


Figure 14. Huron deer hunt, after a drawing by Samuel de Champlain (1567?-1635), in Samuel de Champlain Les voyages de la Nouvelle France occidentale, dicte Canada...; *Paris: Pierre Le-Mur, 1632, p. 265. National Archives of Canada, NMC C-113066.*

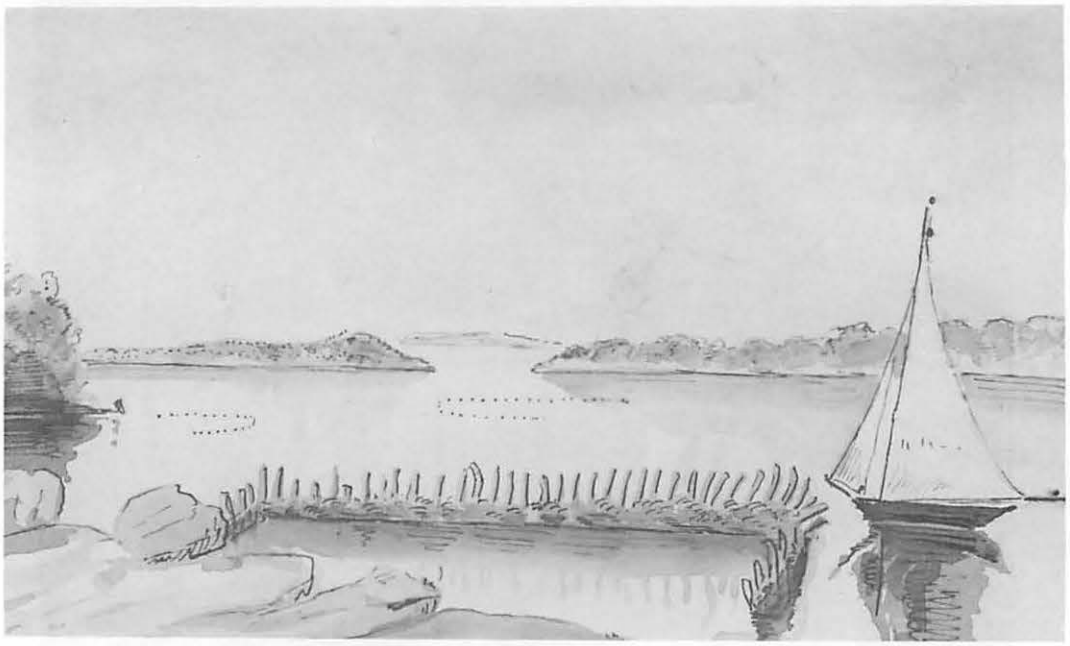


Figure 15. "Fish Weir, Annapolis Basin", drawn by J. Bernard Gilpin, MD, possibly about 1850. Nova Scotia Museum, P44.45.

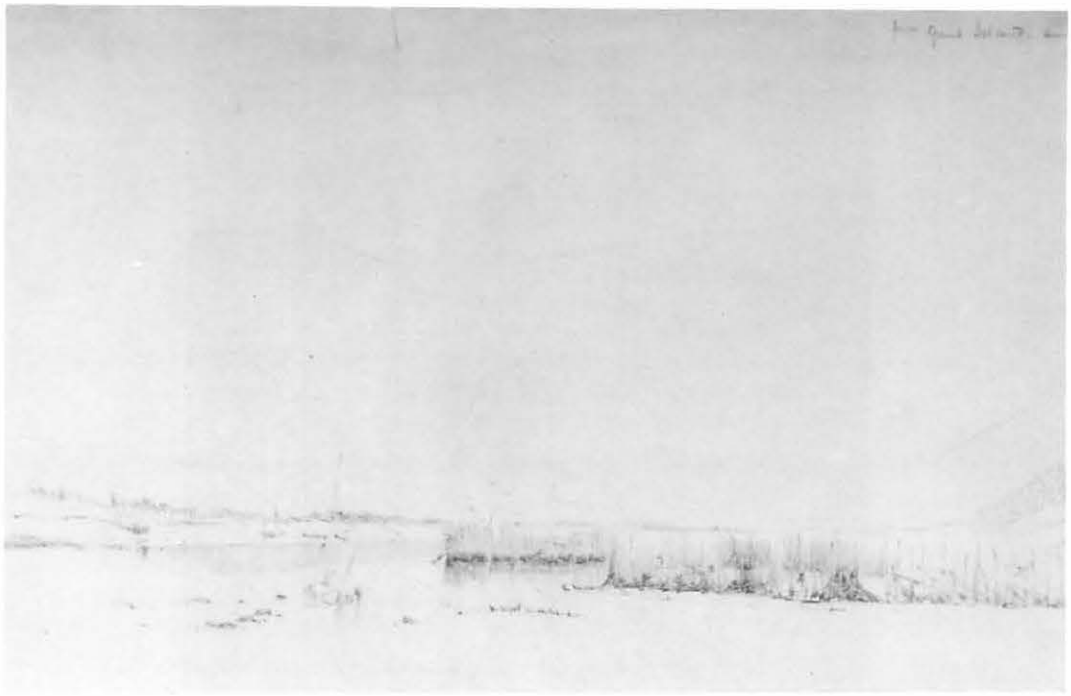


Figure 16. "From Goat Island - Annapolis", showing a fish weir; pencil sketch (incomplete) by Stephen Parrish, 1881. Special Collections, Killam Library, Dalhousie University, Halifax.

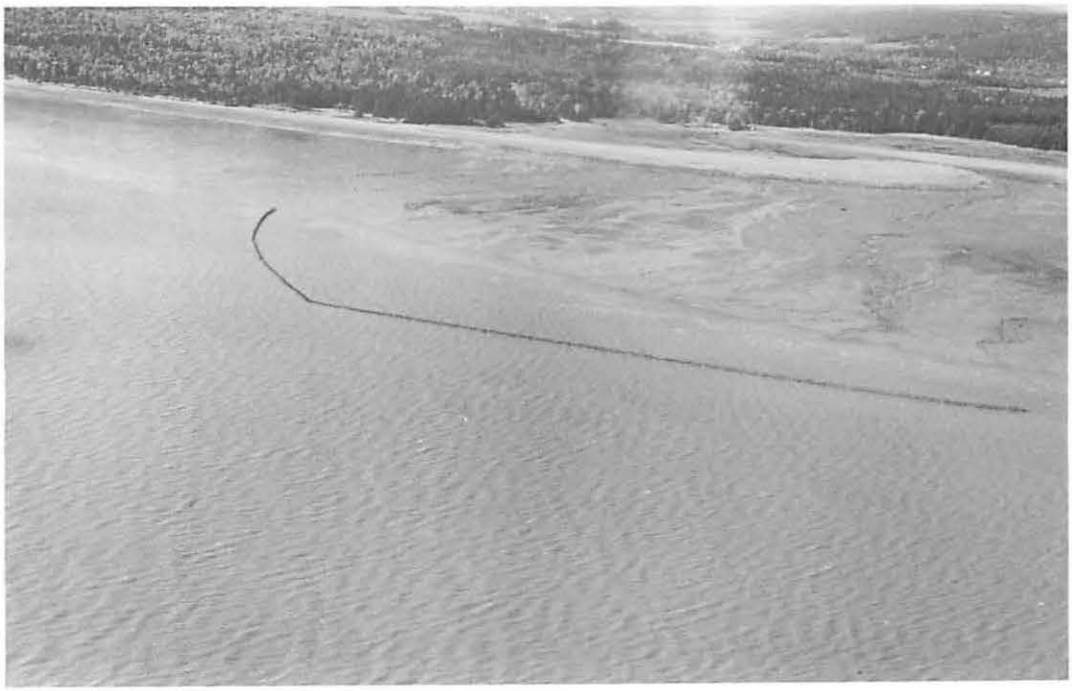


Figure 17. Aerial photograph of James Webb's weir at Economy Point, 1987.

Figure 18. The remains of the previous year's weir.

Figure 19. James Webb, on the left, plunging the crowbar into the ground to mark the position of the next stake, while his son Todd shoves a stake deep into the previous hole.

Figure 20. Pounding the stakes firmly into place; Steven swings the maul while Jeff holds the stake in place.

Figure 21. Detail of Figure 20.

Figure 22. James using a chainsaw to cut off tops which are too high.

Figure 23. The team of four men pounding the stakes for the weir.

Figure 24. Loading the softwood brush spears onto the truck at the beach-head.

Figure 25. At the end of the beach 'road', transferring the softwood spears from the truck to the ATV.

Figure 26. Softwood brush at the weir site.

Figure 27. Weaving a softwood spear in and out between four stakes.

Figure 28. Tramping the butt end of a softwood spear to the ground.

Figure 29. The day's work comes to an end as the tide returns!

Figure 30. The end of the east wing showing the single layer of softwood brush.

Figure 31. The softwood brush-weaving completed all along the weir.

Figure 32. Loading hardwood brush on the truck at the beach-head.

Figure 33 Transferring hardwood brush from the truck at the end of the beach 'road' onto the ATV.

Figure 34. With the butts pointing away from the centre V, hardwood spears are woven first along one wing, then the other. The centre stake is sixth from the left.

Figure 35. In the centre of the trap, the tops of brush in each wing face inwards towards the V. The centre stake is fourth from the right.

Figure 36. On the seaward side of the east wing of the trap, the tops of the brush face the central area of the trap.

Figure 37 On the landward side of the position in figure 25, showing the first layer of hardwood brush woven on an angle in between the stakes.

Figure 38. In the central part of each wing, the uppermost layer of hardwood brush is woven horizontally.

Figure 39. In each wing of the trap, the outermost spears lie far apart and on an upward angle. At the end of the weir, the last few spears are reversed to square off the end of the trap. In this photograph, the end of the west wing of the weir is on the far left.

Figure 40. The landward side of the V, showing the additional hardwood spear on the right used to fill in a space in the weaving. In the foreground are the V-stakes of an earlier weir.

Figure 41. Rocks are often used to fill holes between the bottom weaving and the ground.

Figure 42. The short stakes on the seaward side of the trap for the bracing lines.

Figure 43. Shad fishing with a dip-net on a midnight tide.

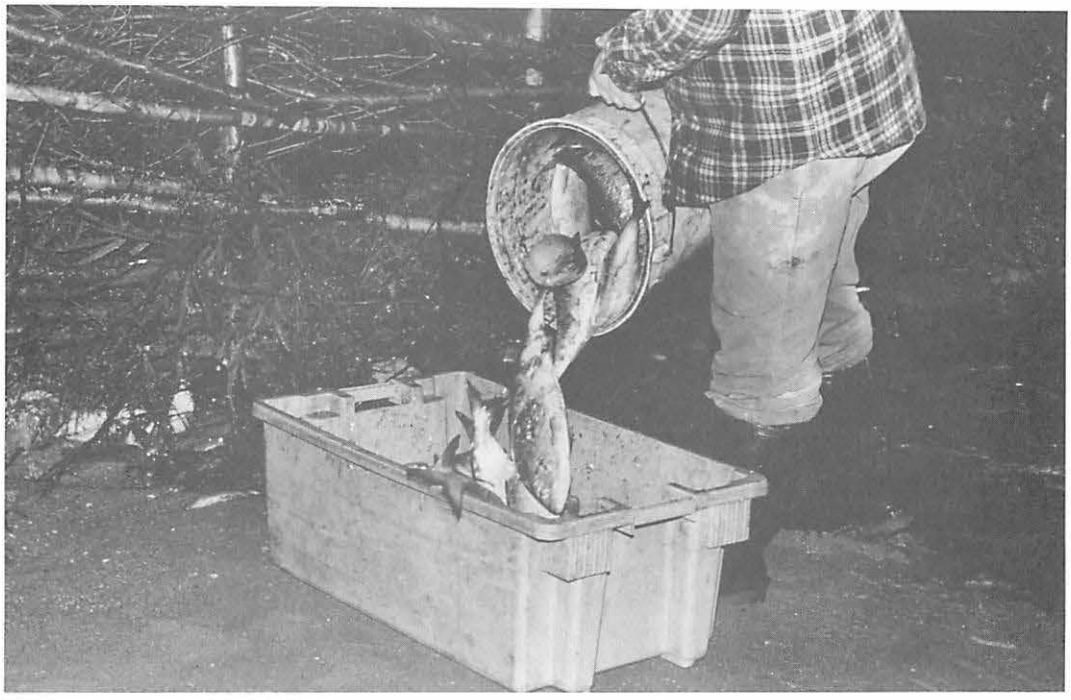


Figure 44. Shad fishing on a midnight tide.

Figure 45. Aerial photograph of Gerald Lewis's weir at Five Islands.

Figure 46. Gerald Lewis and his horse, Peter.

Figure 47. Tying Peter at the weir site.

Figure 48. Gerald pounding stakes from the flat-bed of his wagon.

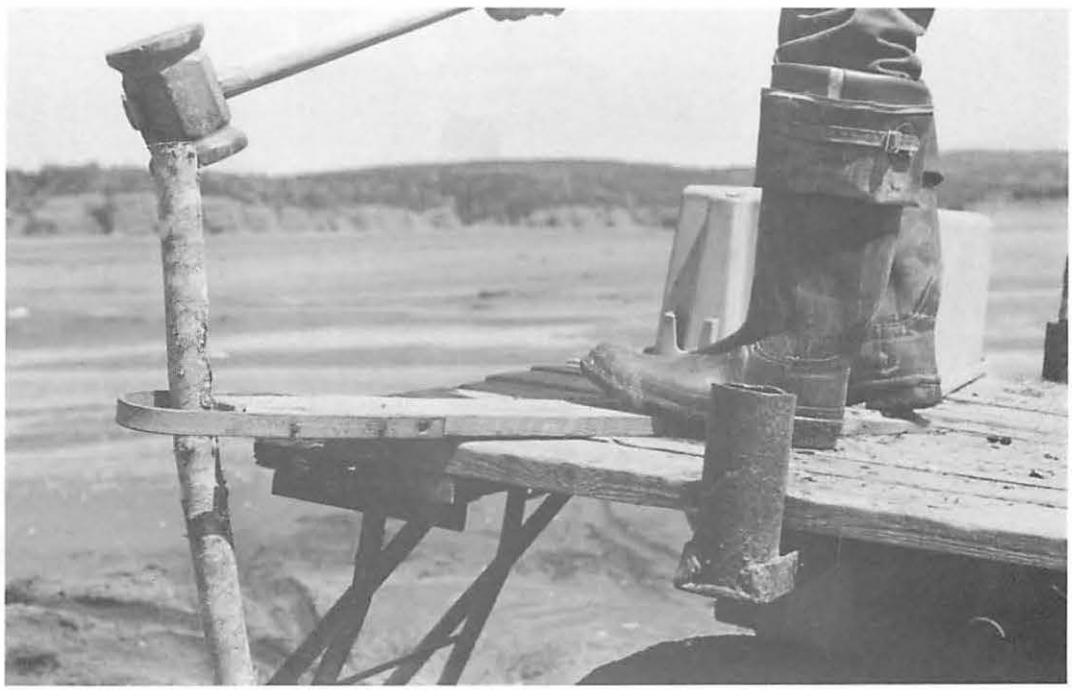


Figure 49. Gerald's gadget for holding the stakes in place while pounding.

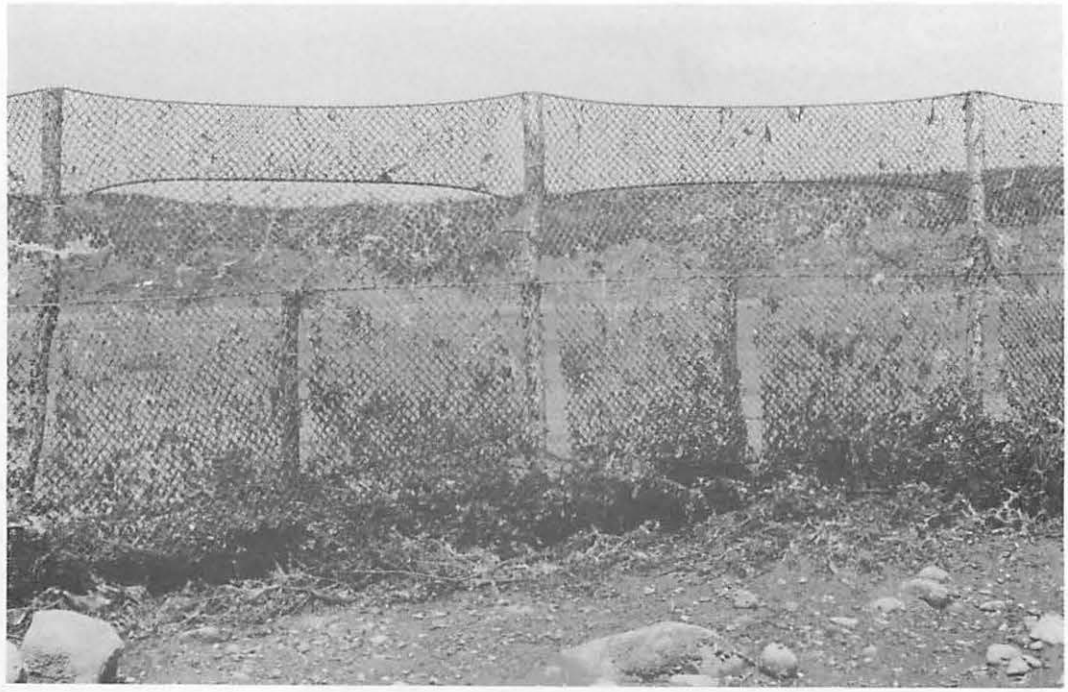


Figure 50. Commercial netting strung over the two tiers of stakes in the central area of the trap.

Figure 51. Weaving the hardwood brush in the east wing of the trap.

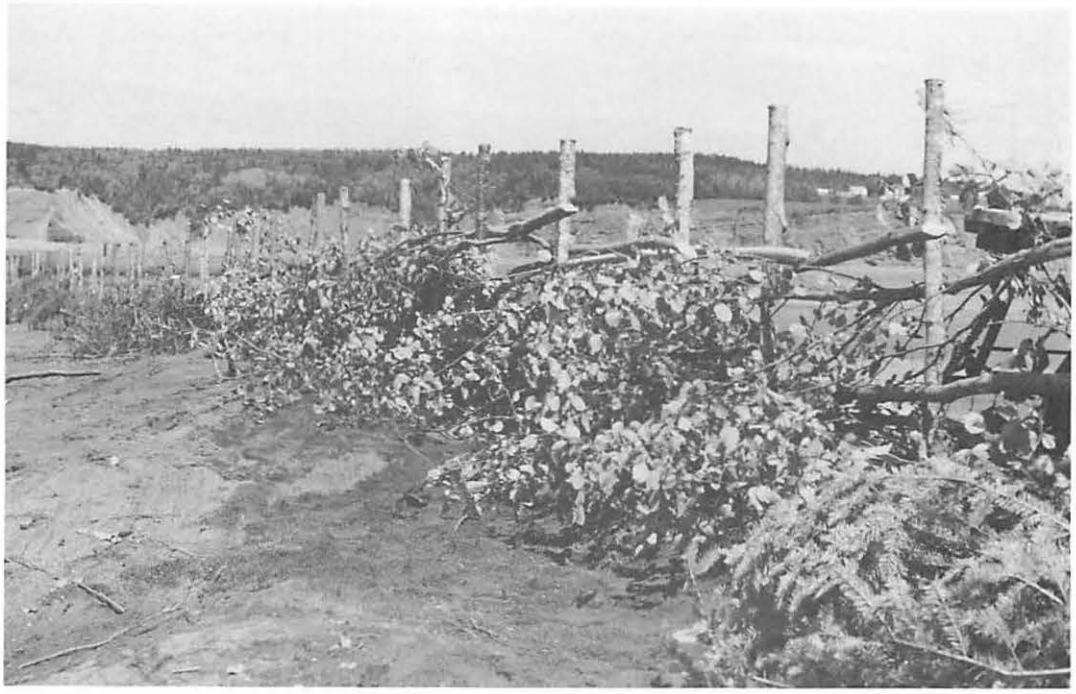


Figure 52. The loosely woven hardwood spears in the east wing of the trap which guides the fish towards the central V.

Figure 53. From the landward side of the trap, looking from the central pool towards the east wing.

Figure 54. Gerald fishing in the pool of his trap with a dip-net.

Figure 55. The pool in the trap with the seine-net on the ground ready for fishing, and the gulls awaiting the catch.

Figure 56. Peter returning home after a day's work.