

For spring Chinook, using the last 20 years seemed like a good comparison due to catches before 2000 being very low and not really comparable.

For coho, I had the last 30 years handy so I used it since 2018 was 2nd worst.

For fall Chinook, I used the last 17 years from 2002 onward. We started having better catches in 2002; prior to 2002 fall Chinook catches ranged mostly from a few hundred to around 3,000 (except in 1989 where it was around 6,000).

Select Area Spring Chinook (2019 compared to the last 20 years 2000-2019).

--2019 catch of 3,134 was 2nd worst out of the last 20 years, since 2000.

(The worst year for Select Area Spring Chinook was 2005 at 2,549).

--2019 was 27% of the recent 5-yr (2014-18) average of 11,484.

--2019 was 27% of the recent 10-yr (2009-18) average of 11,577.

Select Area Coho (2018 compared to the last 30 years 1989-2018).

--2018 catch of 12,111 was 2nd worst out of the last 30 years, since 1989.

(The worst year for Select Area coho was 2007 at 10,496).

--2018 was 19% of the recent 5-yr (2013-17) average of 62,204.

--2018 was 21% of the recent 10-yr (2008-17) average of 56,644.

Select Area Fall Chinook (2018 as compared to the last 17 years 2002-18).

2018 catch of 6,604 was 3rd worst out of the last 17 years, 2002-18 (behind 2006=4,389 & 2007=4,532)

(In other words, 2018 was 15th best out of the last 17 years from 2002-18.)

2018 was 36% of the recent 5-yr (2013-17) average of 18,195.

2018 was 36% of the recent 10-yr (2008-17) average of 18,424.

TABLE 6.—Average annual catch by species and gear, 1927 to 1934, inclusive

Gear	Blueback, average annual catch		Chinook, average annual catch		Chum, average annual catch		Silver, average annual catch		Steelhead, average annual catch		Average annual total catch	
	Pounds	Per-cent	Pounds	Per-cent	Pounds	Per-cent	Pounds	Per-cent	Pounds	Per-cent	Pounds	Per-cent
Traps.....	68,819	16.6	2,684,196	15.2	544,650	28.4	886,459	57.6	976,677	34.9	5,160,801	21.1
Selnes.....	62,937	15.2	2,842,829	16.1	65,944	3.2	80,324	5.2	607,895	24.9	3,740,929	15.3
Drift gill nets...	182,173	44.1	11,293,326	64.0	1,420,736	68.8	559,522	36.3	908,048	32.5	14,363,805	58.7
Set gill nets.....	14,331	3.5	157,608	.9	25,880	1.3	9,812	.6	110,933	4.0	318,014	1.3
Wheels ¹	64,932	15.7	324,473	1.8	700	0	392	0	34,064	1.2	424,651	1.7
Dip nets.....	20,116	4.9	368,973	2.0	6,516	.3	4,461	.3	70,105	2.5	400,170	1.9
Total.....	413,308	100.0	17,660,805	100.0	2,084,516	100.0	1,640,970	100.0	2,797,773	100.0	24,477,370	100.0

¹ Fish wheels were outlawed in Oregon during the fishing season of 1927.

TRAPS

During the development of the fisheries of the Columbia there have been two different varieties of gear commonly designated as traps. The first of these to appear on the river was the slat, or wooden trap, and the second the modern pile-and-webbing trap, or pound net. Although the wooden trap was the first of these two types of gear on the river, it was entirely supplanted by the pile-and-webbing trap at an early date. Since these two varieties of gear are very similar in plan of construction and theory of fishing, and the pile-and-web trap superseded the wooden structure in the Columbia River fisheries, it appears advantageous to discuss these two varieties of gear in close relation to each other.

WOODEN TRAPS

The typical wooden trap consisted of a lead constructed of piling and slats or pickets, resembling a fence, which was usually built from the river bank to a point some 200 to 600 feet from the shore. On the offshore end of the lead the portion of the trap which actually caught the fish was also made entirely of wooden slats and piling and was built with the wall of the trap farthest from shore projecting downstream from the lead and hooking in toward the shore in order to intercept fish which might follow the lead to the end and endeavor to go around it. The remainder of this part of the trap consisted of two arrow-shaped "hearts" which finally led, by means of a funnel-shaped passage, into the "crib" or enclosure where the fish were impounded. These traps were built to catch fish which approached from a downstream direction only and their efficiency depended on the fact that salmon, when making their upstream migration, will persevere in attempts to continue in that direction even when confronted by apparently impassable obstacles. The hearts and pot of such a trap were built on shore and floated out to the proper position at the end of the lead where they were ballasted with stone and sunk to the bottom.

This type of gear was considered by early observers to be a modification of the pole-and-brush weirs which were used by the Indians before the arrival of the white men. The first two traps constructed in 1853 by Hodgkins and Sanders, near Oak Point, were quickly destroyed by freshets but a successful one was built in 1854. Wooden traps were in use in significant numbers soon after the beginning of the salmon-canning industry, about 1868 or 1870, and for a time they were of some importance in the fishery. But their place was soon taken by the modern pile-and-web structures so that by 1889 all of the wooden traps were concentrated in an area

between a point 15 miles above Astoria, Oreg. and the lower end of Sauvies Island, a distance of some 40 or 50 miles, and by about 1894 the wooden traps had disappeared entirely from the river.

MODERN TRAPS

The general plan or layout of a modern trap,⁴ which is shown in figure 11, is very similar to that of the wooden traps. This gear consists of a lead which may be from 300 to 600 feet in length and which terminates in a heart from which the fish are lead into the pot and then into the spiller, a small enclosure, from which the salmon

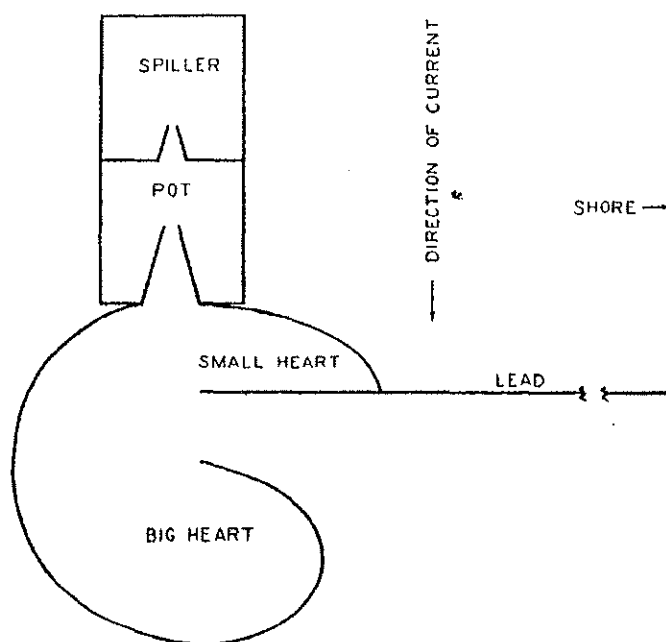


FIGURE 11.—Columbia River fish trap. This style of trap is typical of the middle river. Some traps used on the lower river have a heart, pot, and spiller on both sides of the lead.

are brailled or gaffed into the boats receiving them. The pot is merely a small compartment connected with the heart from which the fish can pass through a tunnel into the spiller. A few traps have two spillers, one at either end of the pot. The lead is constructed of tarred cotton webbing supported by piling driven into the river bottom. The heart and spiller are constructed in the same manner and of the same materials.

In the early days of the fishery, from about 1885 to 1890, galvanized wire netting was sometimes used instead of the tarred net webbing. The wire netting, however, is used very little in the Columbia at present because it corrodes in the brackish water in the lower river and the fishermen believe that the salmon do not lead or follow it as well as tarred webbing. Also, in about 1890, some of the traps above Baker Bay had leads made of wooden slats. This type of construction is no longer found in the present traps. At the beginning of the trap fishery most of the piling was hand driven and much of it was removed for the winter after the end of the fishing season.

⁴ Although the modern Columbia River traps were originally designed as direct copies of the pound nets of the Great Lakes and are technically a form of pound net at the present time, they are designated as traps in this publication because that is the term commonly used for this type of gear on the Pacific coast from Oregon to Alaska.

The piling is now all driven by power operated piledrivers and it is left in continuously. Larger piling and sturdier construction is used in the modern traps than in those built during earlier years.

In May 1879, Mr. O. P. Graham, formerly of Green Bay, Wis., built the first modern trap to be used in the Columbia River. This gear was similar to the pound nets in use on the Great Lakes at that time and from all reports was extremely successful in taking salmon. Therefore, this type of gear increased rapidly in numbers and many fishermen left the Great Lakes and came to the Columbia to take part in this new fishery. By 1885 there were 105 traps in operation on the Columbia and within the next year this number was increased to 154. During the year 1889 there were 121 modern traps in Baker Bay, and all of the wooden traps were concentrated in the section of the river between a point some 15 miles above Astoria, Oreg., and the lower end of Sauvies Island. By about 1894 the modern traps had completely replaced the wooden traps and that form of gear dropped out of the Columbia River fishery entirely. During the fishing season of 1934 there were 238 traps operated on the river. However, in 1935 a law went into effect which prohibited the use of this gear in the State of Washington. Since 211 of the traps operated on the river were on the Washington side, and only 27 were in Oregon, it is evident that this law sharply curtailed the number of units of this type of gear operated.

TABLE 7.—*Salmon and steelhead catch of the traps, by species, on Columbia River, 1889-92, 1895, 1899, 1904, 1909, 1915, and 1925 to 1934, inclusive*¹

Year	Blueback		Chinook		Chum		Silver		Steelhead		Total Pounds
	Pounds	Per- cent	Pounds	Per- cent	Pounds	Per- cent	Pounds	Per- cent	Pounds	Per- cent	
1889	287,555	7.1	3,177,500	78.1					604,145	14.8	4,069,200
1890	463,950	8.0	4,386,125	75.9					630,120	16.1	5,779,195
1891	376,780	5.8	5,090,175	78.9					955,204	15.3	6,461,219
1892	1,454,120	16.4	5,537,975	62.3					1,899,590	21.3	8,898,685
1895	206,822	2.4	5,594,902	50.4	920,550	8.3	3,015,472	27.1	1,312,475	11.8	11,118,221
1899	499,522	7.7	2,717,674	41.6	759,026	11.6	2,046,030	31.3	508,928	7.8	6,531,180
1904	147,070	1.0	3,283,522	36.6	2,035,760	22.7	2,700,807	31.1	717,827	8.0	8,981,030
1909	141,265	3.2	1,198,363	27.2	931,564	21.2	1,602,581	36.4	527,071	12.0	4,400,864
1915	105,817	1.2	5,991,400	63.0	634,424	7.0	1,463,901	16.2	1,133,146	12.6	9,023,748
1925 ²	25,115	.5	2,898,369	56.0	542,331	10.8	1,002,200	20.0	638,060	12.7	5,010,976
1926	130,447	1.8	3,976,357	55.1	276,886	3.8	1,410,113	19.6	1,410,150	19.7	7,218,953
1927	46,725	.7	3,206,639	50.4	1,192,306	18.8	970,601	15.3	638,568	14.8	6,553,839
1928	42,973	.8	2,514,071	45.4	1,240,334	22.4	838,644	15.2	690,841	16.2	5,532,863
1929	114,563	2.1	2,411,363	45.0	328,381	6.1	1,417,470	26.5	1,036,061	20.3	5,357,847
1930	105,739	1.8	2,639,565	45.2	400,371	7.0	1,323,830	22.7	1,357,005	23.3	5,836,111
1931	60,759	1.1	2,713,748	50.8	428,921	8.0	860,541	16.1	1,278,800	24.0	5,342,769
1932	82,102	2.1	2,306,001	60.7	347,238	8.8	418,564	10.6	704,724	17.8	3,848,740
1933	41,290	1.0	2,653,104	60.0	157,046	4.7	553,683	13.8	584,418	14.5	4,010,531
1934	50,400	1.1	2,939,900	60.1	223,660	4.6	708,400	14.5	666,400	10.7	4,894,764
Total	4,447,014	3.7	64,938,013	54.7	10,463,728	8.8	20,434,845	17.2	18,487,004	15.6	118,770,690

¹ Data for the wooden silt traps is available for the years 1880-02, but is not included with the data for modern traps.

² Washington landings only.

From 1927 to 1934 the traps took an average of approximately 21 percent of the total catch of salmon and steelhead trout on the Columbia, so it is apparent that they were an important type of gear, being second only to drift gill nets in production during that period. By referring to table 7 it can be seen that from 1889 to 1934, during the years when the United States Bureau of Fisheries made canvasses of the Columbia River fisheries, the catches of the traps averaged 54.7 percent chinook salmon, 15.6 percent steelhead trout, 17.2 percent silver salmon, 8.8 percent chum salmon, and 3.7

percent blueback salmon. From 1927 to 1934, inclusive, the traps accounted for 15.2 percent of the chinook salmon catch, 34.9 percent of the steelhead trout catch, 16.6 percent of the blueback salmon, 57.6 percent of the silver salmon, and 26.4 percent of the chum salmon.

HAUL SEINES

Seines are, without doubt, one of the oldest types of gear employed in the Columbia River salmon fisheries. In a previous section on Indian fishing methods and gear, the use of seines by the original inhabitants before the appearance of white men was described, and it is evident that their use has continued without interruption from the Indian fishing through the intermediate period of the fishery and up to the present time. In the year 1934 there were 57 seines operated on the river. Of this total, 33 were on the Oregon side of the river and 24 on the Washington shore. A legislative (initiative petition) measure of the State of Washington, which became effective in 1935, prohibits the use of seines on that side of the river.

In common with other varieties of fishing apparatus, the seines have undergone a process of change tending toward greater size and efficiency as the fishery has become older. At the inception of the industry the seines were apparently quite small and hauled by hand, and were constructed so that the seine was deepest in the "bunt" or middle portion. In 1882 the seines were still only 50 to 70 fathoms long and deepest at the bunt. By 1888, however, their usual length had been increased to between 200 and 300 fathoms and they were being made with the offshore, or outer wings, the deepest part of the net. In 1908 some seines 400 fathoms or more long were in use and at present they range from 200 to 425 fathoms in length. The outer wing of the net is still the deepest part, with the beach end the shallowest. This type of seine has an advantage in that it permits the "lead" line of the offshore wing to remain on the bottom when it is swung out into deep water.

Most of the seines are now pulled by horses, sometimes two double teams on the beach, or tail end, and five on the offshore, or head end. The seines are laid out from skiffs towed by launches and the average size of the seine crews is 24 men.

A seine is an exceedingly simple piece of fishing apparatus. Essentially it consists of one curtain of webbing attached at its upper edge to a line provided with corks, called the cork line, which keeps that edge afloat at the surface, and to a weighted or lead line at its lower edge, which keeps the net extended and in contact with the stream bed. Lines are attached to both ends for use in pulling the net. It is fished by the process of leaving one end on shore while carrying the seine out in a skiff towed by a launch, from which it is thrown off or "laid out" with the current in a semicircle with the outer end finally being pulled back upon the shore. The entire net is then pulled up on the beach, dragging in whatever fish may have been encircled as the net was laid out.

As previously stated, a present-day seine may be from 200 to 425 fathoms long with the shore end 5 fathoms deep and the head end 7 fathoms deep. These are stretched depths as the net is fished, the actual depths being about one-third greater. The 6-, 7-, and 8-inch-mesh webbing is made of 18-ply cotton twine, the 5-inch mesh of 21-ply, and the 4-inch mesh of 30-ply thread. This may vary between different nets. The mesh used in the wings is usually 8 inches, stretched measure, with 4-inch mesh in the bunt and 5-, 6-, and 7-inch mesh between the wings and the bunt.

