

## Part 5

# THE SPORT FISHERY FOR SALMON ON PUGET SOUND

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## History and Fishing Methods

The sport of fishing for salmon has a background on Puget Sound at least as long as Washington's statehood. Collins (1892) referred to trolling for salmon as a recreation, saying, "In autumn, when salmon are most numerous in the Sound, Seattle Bay is literally covered with pleasure boats for days in succession."

Gear employed by early-day sport fishermen was simple compared to the elaborate rods, reels, and lures used by modern anglers. A well-equipped sport fisherman in the early 1900's needed only a cotton line attached to a short steel leader with a single-hook brass spoon as a lure. The steel leader was often omitted and the brass spoon and hook were usually home made. Steel leaders were not rust proof and Cobb (1911) reported that unless precaution was taken to carefully dry and oil them after fishing they could not be used more than a couple of days. Pole fishing was not common; the line was held in the hand or spooled on a home-fabricated wooden reel, known as a hand gurdy. A lead sinker was usually attached at the junction of the leader and line. Pioneer plumbing shops on Puget Sound did a brisk business in sinkers molded from lead pipe.

By 1915 many anglers were using the now conventional rod and reel, and the old method of hand-line fishing was being frowned upon as unsportsmanlike. In 1916 the Seattle Rod and Gun Club decided to encourage the use of light tackle, and for this purpose stipulated the kind of gear its members were required to use to win silver and gold award buttons for their catches. The general trend to light tackle has continued, and today many anglers are landing 20- to 40-pound chinook salmon using only 12-pound test line with 6-pound test leaders.

## Trolling

Trolling is still the most popular method of sport fishing. Current day trollers have more elaborate gear than did their predecessors, but the basic method of fishing has remained unchanged. In place of oars, fishermen use outboard motors to pull their lures through the water. The standard practice is to throttle the motor to a rather slow speed and trail from 60 to 100 feet of line. A large variety of lures are used. Spoons, both single and multiple,

are still very popular and a wide selection of types are sold by sporting goods dealers. Colored plugs which imitate natural bait have proved to be a very effective lure for large fish and are used extensively. Fast trolling with coho flies is a newly developed technique for the taking of silver salmon.

Probably the most widely-used trolling lure is the herring dodger. Actually, the dodger is not a lure in itself. It is an attractor and also adds action to the bait, which is trailed two or three feet behind the dodger. A similar attractor lure, known as the flasher and rudder, was popular prior to the introduction of the dodger in the early 1930's. The dodger has been used with practically every type of lure dragged behind it.

Sinkers or leads used by troll fishermen range from one-half ounce to one pound, depending upon the fishing area, magnitude of the tide, time of day, type of lure, and the species of salmon being sought. The leads are usually of the slip type and are attached two to six feet in front of the lure. Little or no weight is used when trolling coho flies.

### Spinning

Spinning for salmon originated many years ago in Elliott bay, but this technique of fishing did not become popular until recent years. Nearly all spinners use very light tackle which appeals to those anglers desiring the ultimate in sport. A light and limber rod  $7\frac{1}{2}$  to 9 feet long and a fast-retrieving type of reel without a star drag generally are used, with 10- to 15-pound test clear nylon line. At the terminus of the line a crescent-shaped sinker is attached, followed by a 6-foot nylon leader and finally a single or double hook. If a double hook is used, the upper hook is tied from two to three inches above the lower. Often a sliding tie is used so the hook can be adjusted to the size of the bait. Swivels are attached to both ends of the sinker to help avoid tangling.

Spinning is usually done from an anchored boat in 60 to 125 feet of water; however, in recent years many fishermen have been spinning from boats that are not anchored but are allowed to drift freely with the tide. Whether the boat is stationary or drifting, the fishing method is identical. The lure is a fresh or frozen herring, either cut or whole. Whole candlefish are also widely used. The bait is cast 20 to 50 feet from the boat and is allowed to sink a few feet above the bottom. The current works the bait as it is slowly retrieved by intermittently stripping a few feet of the line through the guides of the pole. Some fishermen prefer to retrieve the bait directly with the reel.

Cutting bait for spinning is in itself an art. There are essentially two types of cut bait, the "cut spinner" and the "plug-cut" herring. The cut-spinner is actually a triangular fillet cut from a large herring (Figure 1). A properly cut-spinner has the leading edge cut forward at a 45° angle. The spinner should also be tapered, thick at the head and thin at the tail. A plug-cut herring is merely a herring with the head cut off at an angle and the viscera removed.

There are numerous ways to hook the bait. Many fishermen use only one hook when fishing for chinooks and two when angling for silvers. The silver generally strikes more readily on a faster rotating bait.

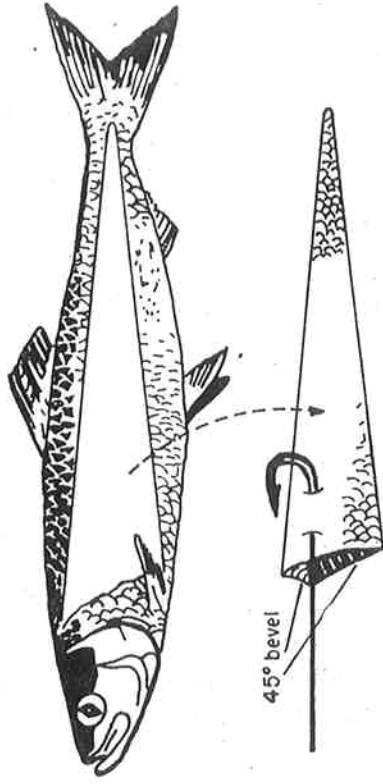
### Moocking

The gear and bait used in moocking are essentially the same as that employed in spinning. Techniques of fishing are also similar, but moocking is always conducted from an unanchored boat. In lieu of stripping the line, bait action is obtained by slowly moving the boat with stops now and then to let

*Thirty-four*

Figures 1, 2, 3

## TYPES OF HERRING BAIT USED IN PUGET SOUND SPORT SALMON FISHING



CUT SPINNER



WHOLE HERRING



PLUG CUT

the bait sink deeper. In Puget Sound, most moochers use row boats but in the Strait of Juan de Fuca motor mooching is popular. The weight of the sinkers used varies with the depth of the water, but many successful moochers prefer to fish deep and occasionally bump the bottom.

### Intensity of the Fishery

In the collection and analysis of statistical research data, the fishery is divided into 19 areas. For the sake of clarity the following discussion will refer to only two composite areas, the inside or Puget Sound fishery and the outside or Strait of Juan de Fuca fishery. The inside fishery includes all fishing areas from Olympia north to Bellingham, including the San Juan Islands and Hood Canal. The outside fishery consolidates all areas to the west of Port Discovery: Dungeness, Port Angeles, Sekiu, and Neah Bay. In these two general fishing areas, there are 150 boathouses and fishing resorts having more than 4,000 rental boats. There are also large numbers of residents who own their own boats and fish throughout the year. About 15,000 outboard boats and private cruisers are registered with the Coast Guard and many of them are used for salmon fishing.

Until the late 1930's the saltwater sport fishery was still minor in size. By 1939 it was rapidly becoming one of the major fisheries of the state. At that time the Department of Fisheries initiated a system of monthly boathouse reports which listed a daily record of boat rentals and catches. From these reports, combined with field observations, the first actual statistics of sport fishing intensity and catch were calculated. The program was expanded in 1940 and 1941, but the manpower shortage during the war forced its abandonment. It was established again in 1946 and has been continued to the present day with the exception of 1948, when it was temporarily stopped because of lack of funds. In 1950 and 1951, in addition to catch statistics, special emphasis was directed to the collection of data to determine size and age composition of the catch. Data recorded for this study was taken randomly each month of the year and in all areas.

The sport fishery has experienced a tremendous increase in fishing effort in recent years. In 1939 there were 231,000 fishermen trips (Table 1), while in 1951 there were over 609,000, an increase of more than 375,000 fishermen trips per year in 12 years.

Table 1  
PUGET SOUND SPORT CATCH OF SALMON

YEAR	Number of Fishermen Trips	Chinook	Silver	Pink (Humpy)
1939	231,000	87,089	155,374	10,108
1940	260,000	88,801	128,611	39
1941	271,000	81,285	187,782	12,826
1946	316,000	60,988	107,154	.....
1947	343,000	82,374	120,113	19,152
1949	531,344	92,544	214,809	88,090
1950	536,848	98,135	198,480	41
1951	609,489	131,732	208,554	28,027

Prior to World War II the fishery in the Strait of Juan de Fuca was of minor importance. Since 1947 this area has become increasingly popular with sport anglers, and in 1951 nearly 89,000 fisherman days were recorded.

### Analysis of the Sport Catch

#### Chinook Salmon

As the intensity of the sport fishery increased total salmon catches also rose. Sports anglers in 1951 boated approximately 132,000 chinooks, a total unprecedented in the entire history of the fishery. There was an anomaly in this rise: despite the increase in take, the catch per unit of effort fell. The shift is especially apparent over the long range. In a 12-year period the catch per unit of effort for chinooks decreased from .38 fish per fisherman trip in 1939 to .21 fish in 1951.

The anomaly is not inexplicable. Given stable fish populations any appreciable increase in the number of fishermen will change the division of catch towards a smaller percentage for each individual. In this case the increase in fishermen was not matched by a proportionate increase in numbers of fish, and the unit catch turned downward. The data does not, however, indicate an overall population decrease on Puget Sound.

Excluding the good chinook catches made in the Strait of Juan de Fuca, Puget Sound anglers averaged 0.16, 0.15, and 0.18 chinooks per trip in 1949, 1950, and 1951, respectively. Since the incidence of sport angling in the Strait was small prior to 1947, the overall catch per unit of effort from 1939 to 1947 would be comparable to the actual inside fishery of 1949, 1950, and 1951 (Table 2).

Table 2

#### SPORT CATCH OF SALMON PER FISHERMAN TRIP

YEAR	All Areas Chinook	Inside Puget Sound Chinook	Strait of Juan de Fuca Chinook	All Areas Silver
1939	.38	*	*	.67
1940	.34	*	*	.49
1941	.30	*	*	.69
1946	.19	*	*	.34
1947	.24	.23	.48	.35
1949	.17	.16	.41	.40
1950	.18	.15	.45	.37
1951	.21	.18	.44	.34

\* Area catch not segregated.

Thus, the inside Puget Sound catch per trip has actually declined from about 0.38 to 0.18 during the period 1939-1951.

#### Silver Salmon

The silver catch in the past three years has averaged more than 200,000 fish; again, however the catch per fisherman trip has been decreasing for the reasons cited in connection with the chinooks. Here the downward trend is in an opposite direction to the actual conditions of the stocks. Considering a 10-year period from 1941 to 1951, the catch per unit of effort dropped from 0.69 to 0.34 fish per trip. Silvers caught in the Strait of Juan de Fuca are usually large fish, but the catch per unit of effort closely parallels the inside fishery, so a reliable composite catch per fisherman trip for the two districts is depicted in Table 2.

## Pink and Chum Salmon

Pink salmon are caught in numbers only in the odd years. The catch of pinks has risen with the increase of fishing intensity, but the catch per unit of effort, with one exception, remained at approximately 0.05 fish per fisherman trip. In 1949 a phenomenal catch of 88,000 "humpies" was recorded. Nearly one-third of these fish were landed in the Tacoma area.

Each year sport anglers boat from 2,000 to 3,000 chum (dog) salmon. Chums do not bite readily on sport gear; however, in areas with large chum populations, such as Hood Canal, these fish are common in the sport catches.

## Length Frequencies

### Chinook Salmon

In 1951, 4,009 chinooks were measured to determine the length frequencies of the catches. These measurements were taken randomly in every month and in all areas. The original measurements were recorded in centimeters from the tip of the nose to the fork of the tail. Since fishermen measure to the tip of the tail, it was essential to convert the measurement to total length in inches. This was done for both chinook and silvers, using the formulae for the tail in the normal position calculated by Van Hyning (1951).

Little fishing is conducted in the strait from October through April, so no comparison with the inside fishery could be made during these months. Chinook length frequencies recorded in the strait from May through September showed a definite difference from those taken in the inside fishery. It is apparent that the outside fishery is predominantly catching larger and older chinook than the inside fishery (Figures 4 and 5).

From May through September the inside measurements show a dominant modal group from 16 to 20 inches progressively. A secondary modal group from 25 to 35 inches is present, although it is somewhat masked by the smaller dominant group. Length frequencies of the outside sport catch show nearly a complete absence of small fish with over 90 per cent of the fish exceeding 25 inches in total length.

In analyzing the inside chinook landings, it was noted that 50.8 per cent, or a calculated 46,817 fish, were under 20 inches in length.

### Length Distribution of Chinook Salmon in Relation to Age

Age determination by scale analysis of the chinook catch was conducted in 1950 and 1951. The analysis of the 1951 sample is not complete, but the results of the age readings of 1,980 scales taken in 1950 in the inside fishery are depicted in Figure 6.

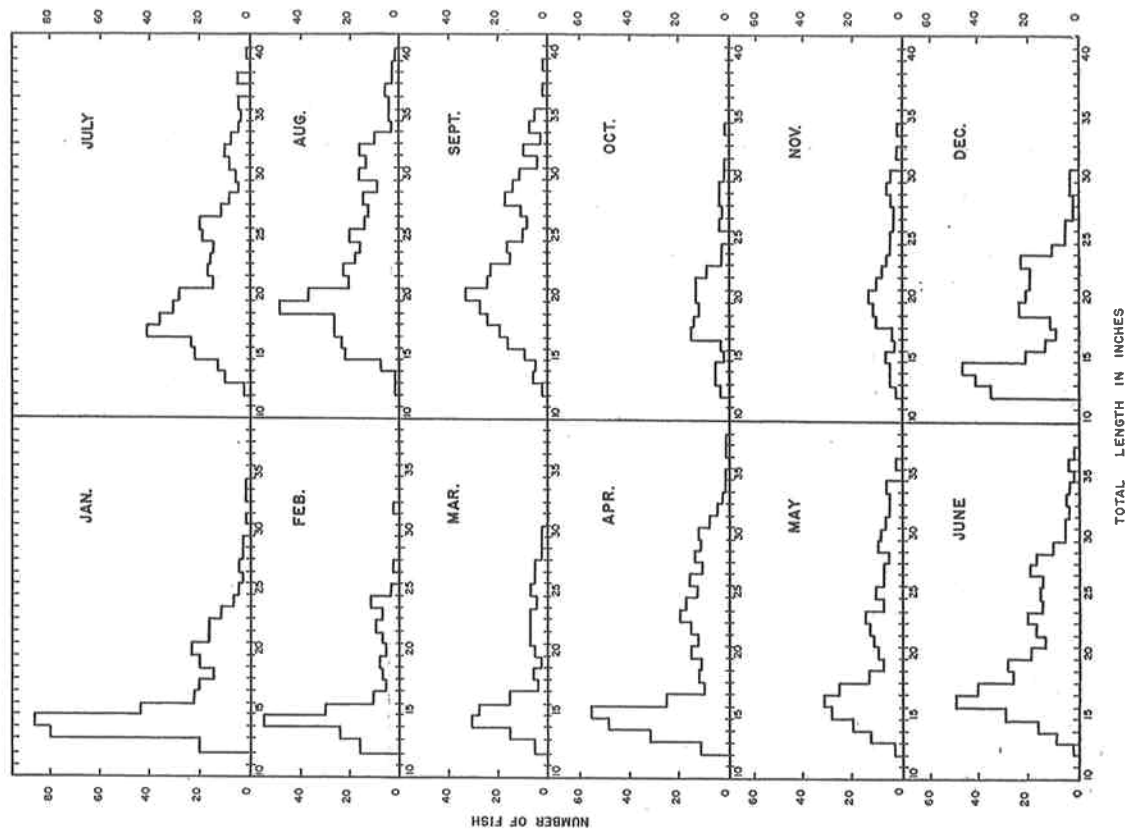
A random sample of scales was collected each month of the year and in all fishing areas. The number of scales examined represented 2.7 per cent of the total inside catch. Seasonal fluctuations in the fishery and the many ports of landing made it difficult to get a proportionate sample from each area. The samples ranged from 2.4 to 3.2 per cent of the total catch of each individual area and resulted in the unequal weighting of some areas. Since individual samples did not show a wide variation in size distribution, the weighting process should not have introduced any serious bias.

Two scales from each fish were mounted by the acetate impression method. They were examined with a projector, and three separate readings were recorded without reference to length or weight. Of the 2,048 scales examined

Thirty-eight

Figure 4

1951 LENGTH FREQUENCIES OF SPORT CAUGHT CHINOOK SALMON  
PUGET SOUND EXCLUSIVE OF STRAIT OF JUAN DE FUCA



Thirty-nine