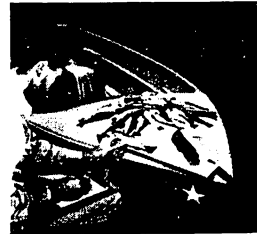
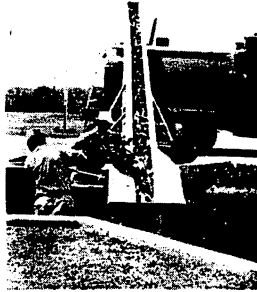
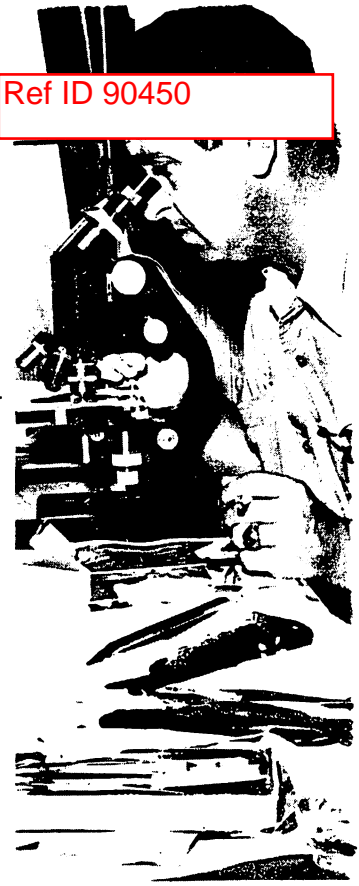


Ref ID 90450



REF 90450

# SHASTA RIVER KING SALMON COUNT, 1957

MILLARD COOTS  
Region I, Inland Fisheries



# SHASTA RIVER KING SALMON COUNT, 1957 <sup>1/</sup>

MILLARD COOTS  
Region 1, Inland Fisheries  
California Department of Fish and Game

## INTRODUCTION

The installations of the new Shasta River fish counting racks were completed during the summer of 1957. The counting station is located about 150 yards upstream from the mouth of the river. This site provides an almost complete count of adult king salmon, Oncorhynchus tshawytscha, entering the Shasta River from the Klamath River.

Since 1930, annual counts of king salmon have been made on the Shasta River (Table 1). During the period 1938 through 1955, the fish were counted at an old steelhead egg-collecting station approximately six and one-half miles upstream from the mouth. Obviously, the counts at this locality furnished only a partial count of the kings that entered the river. Field observations of spawning activities in recent years have indicated that the majority of the fish spawned below this location. The floods of December, 1955, seriously damaged this installation, and it was abandoned. No king salmon counts were made in 1956. Between 1930 and 1937, annual king salmon counts were made at a weir near the mouth of the river.

## THE COUNT

Adult king salmon were observed rolling in the Klamath River at the mouth of the Shasta River on September 1. They began moving upstream and were counted from September 10 until the racks were removed on October 31. The total count was 2,234 fish, consisting of 453 grilse, 751 males, and 1,030 females. In addition, 310 adult silver salmon, Oncorhynchus kisutch, and 808 adult steelhead, salmo gairdnerii gairdnerii, were counted upstream during this period. The counts by weekly periods are shown in Table 2.

The fish counters were Mr. Robert McFadden and the writer. The racks were removed by Yreka Screen Shop personnel on October 31.

## DISCUSSION

The 1957 king salmon spawning migration into the Shasta River was probably one of the smallest escapements in recent years. Field observations of spawning activity indicated that some of the extensive spawning riffles were comparatively lightly utilized. Only a few spawners were noted in the vicinity of Big Springs, approximately 21 miles upstream from the mouth.

Diversion dams in Shasta Valley were inspected and salmon were observed successfully passing them. In the past, some of these dams have hindered or effectively blocked upstream migration.

Due to water use for irrigation purposes, the flow at the mouth of the river was low during the early part of September. Maximum water temperatures, over 70 degrees Fahrenheit, prevailed generally. On September 27, along with the first heavy fall rains of the season and general cessation of irrigation activities, the bulk of the king salmon run entered the river. Over one-half of the entire run was counted upstream during the five-day period September 27 through October 1. Figures 1, 2, and

---

<sup>1/</sup> Submitted May 4, 1958.

TABLE 1

Shasta River King Salmon Counts

Year	Number of fish	Year	Number of fish
1930*	19,338	1944	11,498
1931*	81,844	1945	18,191
1932*	34,689	1946	7,590
1933*	11,570	1947	341
1934*	48,668	1948	37
1935	74,537	1949	193
1936*	46,115	1950	248
1937*	33,255	1951	2,024
1938	9,090	1952	1,666
1939	28,167	1953	1,605
1940	55,155	1954	2,625
1941	13,252	1955	1,817
1942	11,425	1956	No count
1943	10,022	1957*	2,234

\* During these years, the counts were made near the mouth of the river. The remaining counts were made six and one-half miles upstream from the mouth of the river.

Figure 1.

Shasta River  
Daily Flows,  
1957

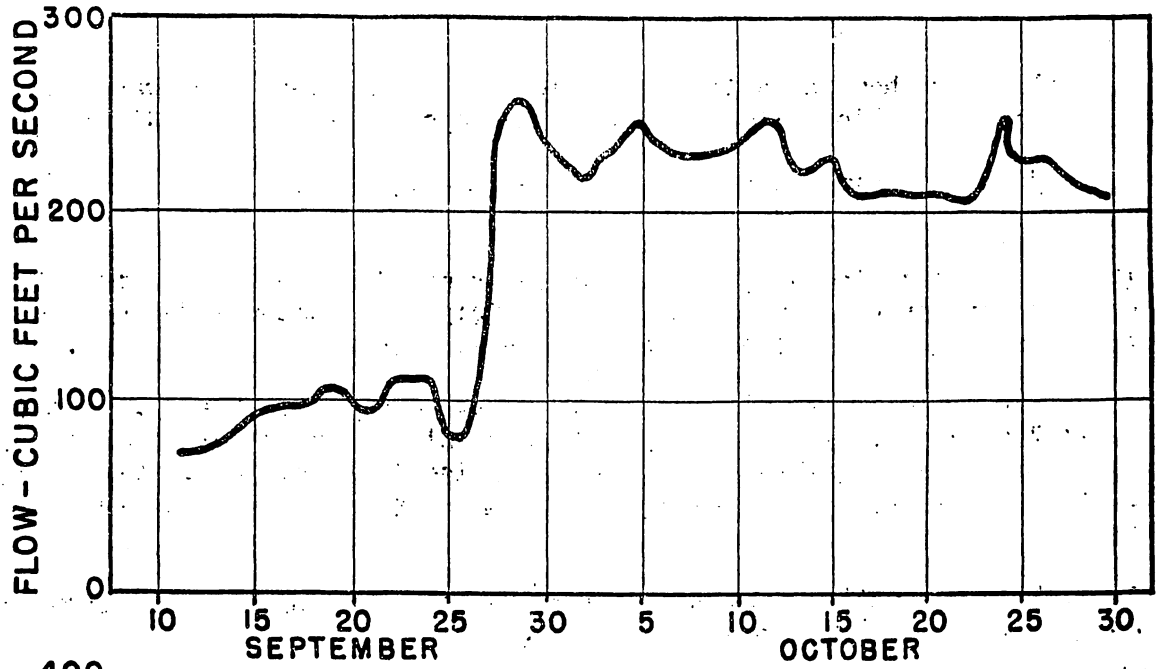


Figure 2.

Daily King  
Salmon Count,  
Shasta River,  
1957

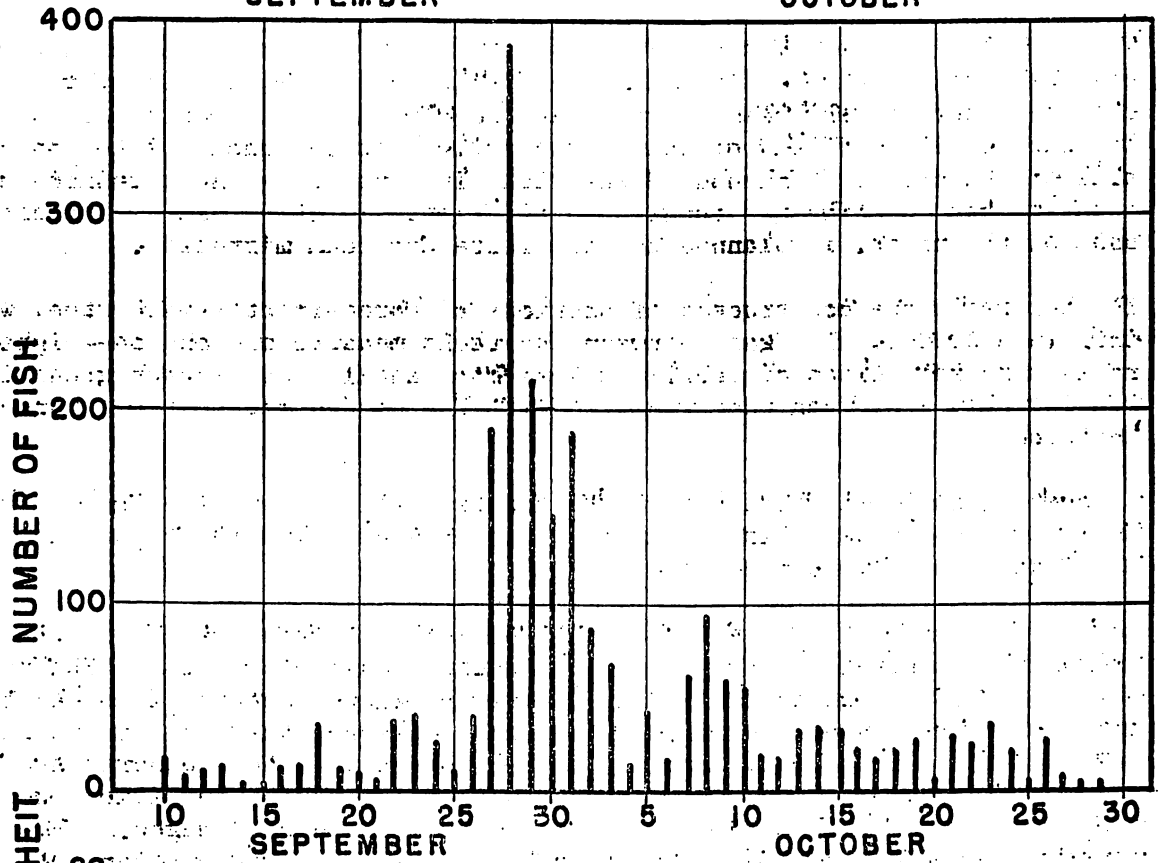
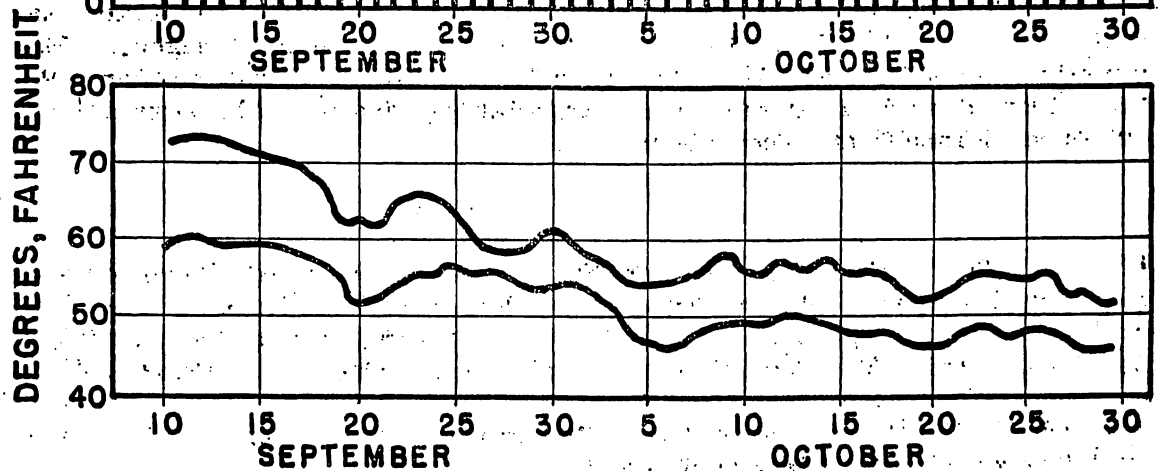


Figure 3.

Shasta River  
Maximum and  
Minimum Water  
Temperatures,  
1957



3 graphically show the daily river flows, salmon counts, and water temperatures during the 1957 king salmon spawning migration up the Shasta River.

A total of 136 salmon carcasses was examined from the Shasta River (Figure 4). No unspawned fish were noted.

The present location of the counting racks provides an almost complete count of the king salmon entering the Shasta River. Only four salmon redds were observed in the 150-yard section of stream between the racks and the Klamath River.

The first adult steelhead was counted upstream on September 23. The total count, until October 31, was 808 fish. Although only a portion of the fall run was counted, it is believed that this run was an exceptionally large one. Likewise, steelhead anglers in the upper Klamath River had one of the best seasons in recent years during the fall of 1957.

Also, 310 adult silver salmon migrated upstream during the last eight days of fish counting. No silver grilse were noted.

The counting gate was installed over a slot in the concrete apron adjacent to the east bank of the river. The purpose of this depression was to provide an adequate flow of water for upstream migrants at the counting gate during periods of extremely low water. The majority of the salmon arrived at the racks on the opposite or west side of the river. Some nudged the racks in a not-too-gentle fashion until the counting gate opening was found. An additional counting gate, adjacent to the west bank of the river, is planned to facilitate upstream migration.

The new racks are constructed of sections of three-fourths-inch steel water pipe one inch in diameter. The gaps between the racks measure one and one-eighth inches. The racks were kept clean of debris such as moss and leaves without great difficulty, considerably less than that required with the wooden racks at the former upstream location.

A counting house was placed over the counting gate to provide shelter for the enumerators. It was constructed of exterior grade plywood and was easily assembled or disassembled by turnbuckles.

Whether the racks are capable of being used for counting the later runs of silver salmon and steelhead is not known. Although a major part of the Shasta River run-off is stored in Dwinnell Reservoir during the winter months, flooding conditions below are always a possibility. The racks, walkway, and guard rails can be quickly removed with a high-line. However, the bipod-shaped rack supports are bolted to the concrete apron. Removing the rack supports during flood conditions would likely be a physical impossibility and, if left in, they would be damaged. Some studies are contemplated concerning the head of water developed by the presence of the racks in the river at various flows. This information should be of some value if similar racks are planned at other locations.

#### SUMMARY

The 1957 Shasta River king salmon count was made at a new location approximately 150 yards upstream from the confluence with the Klamath River. During the period September 10 through October 30, 2,234 adult king salmon, consisting of 453 grilse, 751 males, and 1,030 females were counted upstream. In addition, 310 adult silver salmon and 808 adult steelhead were also counted during this period. It is believed that the 1957 king salmon spawning migration into the Shasta River was one of the smallest escapements in recent years.

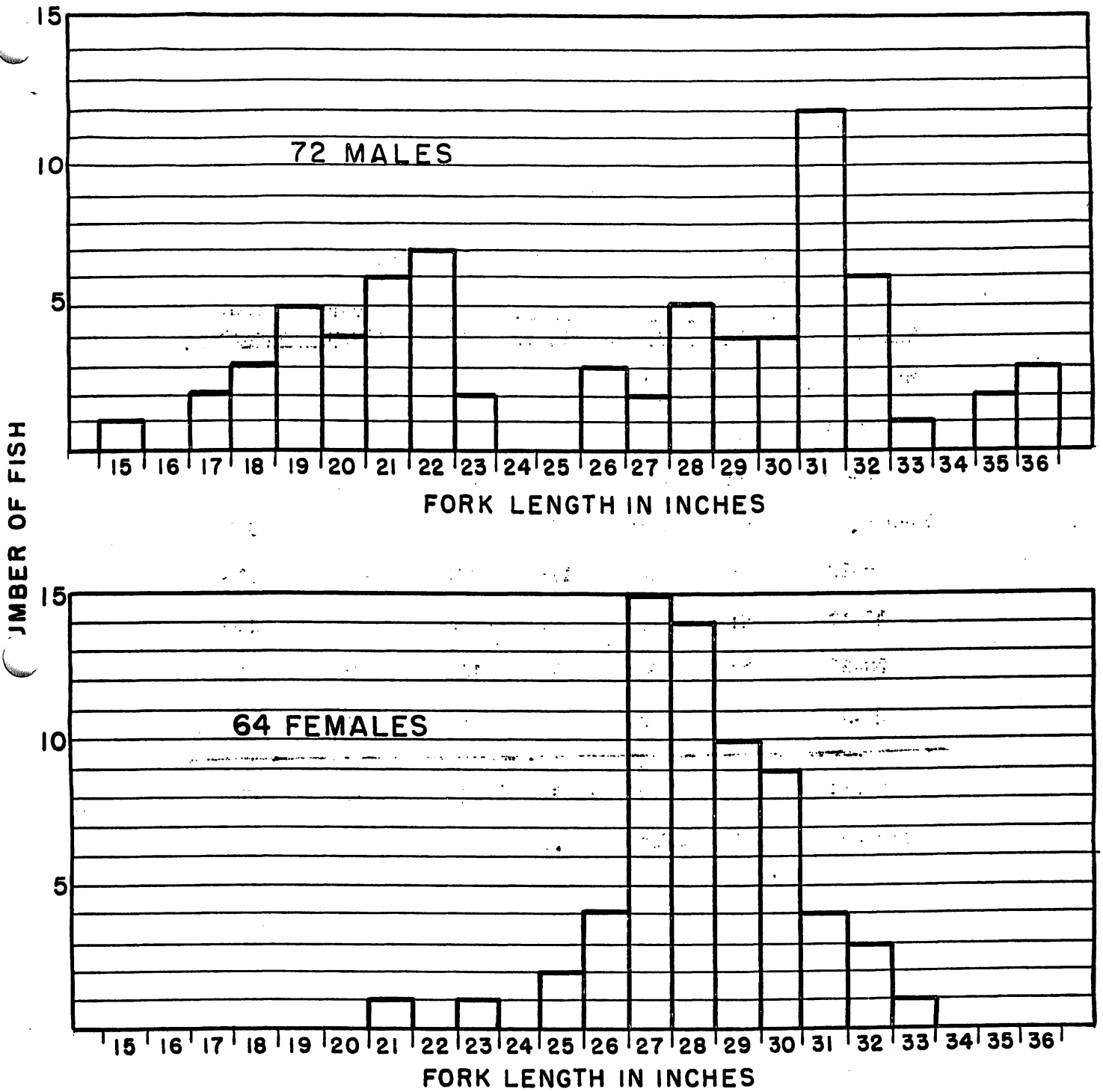


Figure 4. KING SALMON CARCASS LENGTHS, SHASTA RIVER, 1957

TABLE 2

Shasta River Weekly Fish Counts, 1957

Week	King salmon				Silver salmon	Adult steelhead
	Grilse	Males	Females	Total		
Sept. 8-14	23	11	19	53	-	-
15-21	21	28	43	92	-	-
22-28	92	227	357	676	-	7
29-Oct. 5	186	239	325	750	-	262
6-12	50	116	158	324	-	103
13-19	51	66	65	182	-	166
20-26	28	59	62	149	113	229
27-30	2	5	1	8	197	41
Total	453	751	1,030	2,234	310	808
Percent	20.3	33.6	46.1			