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STATE OF ALASKA

William A. Egan, Governor

ANNUAL REPORT OF PROGRESS, 1963 - 1964

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-5

SPORT FISH INVESTIGATIONS OF ALASKA

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INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-5, "Sport Fish Investigations of Alaska."

The project is composed of 25 separate studies designed to evaluate the various aspects of the State's recreational fishery resources. Of these, eight jobs are designed to continue the cataloging and inventory of the numerous State waters in an attempt to prepare an index of the recreational waters. Four jobs are designed for specific sport fishery creel census while the remainder of the jobs are more specific in nature. These include independent studies on king salmon, silver salmon, grayling, Dolly Varden, a statewide access evaluation program, egg take program and a residual toxaphene study. The information gathered from the combined studies will provide the necessary background data for a better understanding of local management problems and assist in the development of future investigational studies.

The subject matter contained within these reports is often fragmentary in nature. The findings may not be conclusive and the interpretations contained therein are subject to re-evaluation as the work progresses.

Volume No. 5 Report No. 6-F

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska

Project No: F-5-R-5 Title: Egg Take Investigations in Cook Inlet Drainage and Prince William Sound.

Job No: 6-F

Period Covered: July 1, 1963 to June 30, 1964.

Abstract:

An experimental rainbow trout egg take was conducted at the Seven Lakes Basin area on the East Fork of the Moose River in the Kenai National Moose Range. Fish were captured by seining at three barriers from May 10 to June 6. An estimated 83,800 eggs were taken from 82 females on May 27 and 30.

A silver salmon egg take was again conducted at Swanson River on the Kenai National Moose Range. The weir was operated from August 25 to October 27. A total of 1,198 silver salmon was enumerated with 56 per cent of these captured by seining below the weir. An estimated 970,000 eggs were taken from 308 females. An additional 76,500 eggs were taken from 19 females at Bear Creek, near Seward.

Recommendations:

It is recommended that the rainbow trout egg take in the Seven Lakes Basin area be eliminated. Angler pressure on these stocks can be expected to increase considerably because of improved access to this area.

It is recommended that the investigation for sources of silver salmon eggs be continued. The Swanson River weir should be in place for the silver salmon egg take operation by mid-August.

Objectives:

To locate and establish sources for procuring silver salmon, rainbow-steelhead and cutthroat from Cook Inlet and

Prince William Sound Drainages.

Techniques Used:

To facilitate the capture of rainbow trout, barriers two feet high of various lengths with 3/4-inch wire mesh stretched across 1 x 4-inch frames were placed at three sites on the East Fork of the Moose River. The barriers were used to block rainbow trout spawning migrations until the fish could be seined and placed in live boxes. Seining was done every two or three days. The barriers were established at the following locations:

Barrier 1, the inlet of Watson Lake (A-4)
Barrier 2, the inlet of A-5
Barrier 3, the outlet of Peterson Lake (A-6)

A map of the general area is presented in Figure 1 and the location of each barrier is shown in Figure 2.

The Swanson River was again selected for the silver salmon egg take (Figure 1). A "V" shaped weir with panels constructed of slats was used to capture fish. A detailed description of the weir and its construction has been presented by Lawler (1962). An attendant, billeted in a house trailer 300 yards from the weir, checked it daily from August 20 to October 27.

Standard methods of taking eggs were employed for both rainbow trout and silver salmon. The dry method of fertilization was used. The eggs were transported by motor vehicle, in five-gallon cream cans, to the Fire Lake Hatchery near Anchorage for incubation.

Findings:

Rainbow trout

The experimental rainbow trout egg take operation was located at the Seven Lakes Basin area on the East Fork of the Moose River in the Kenai National Moose Range. This area was chosen because it was readily accessible from the Sterling Highway and rainbow trout were abundant (Haley, 1961).

Barriers 1 and 2 were set in place on May 10 and Barrier 3 on May 17. Rainbows were first captured at Barriers 1 and 2 on May 12 and at Barrier 3 on May 18. Fyke nets were placed at the outlet of Peterson Lake (A-6) and at the outlet of A-5 from May 14 through May 17, but were removed because they inflicted a heavy mortality on downstream migrant silver salmon.

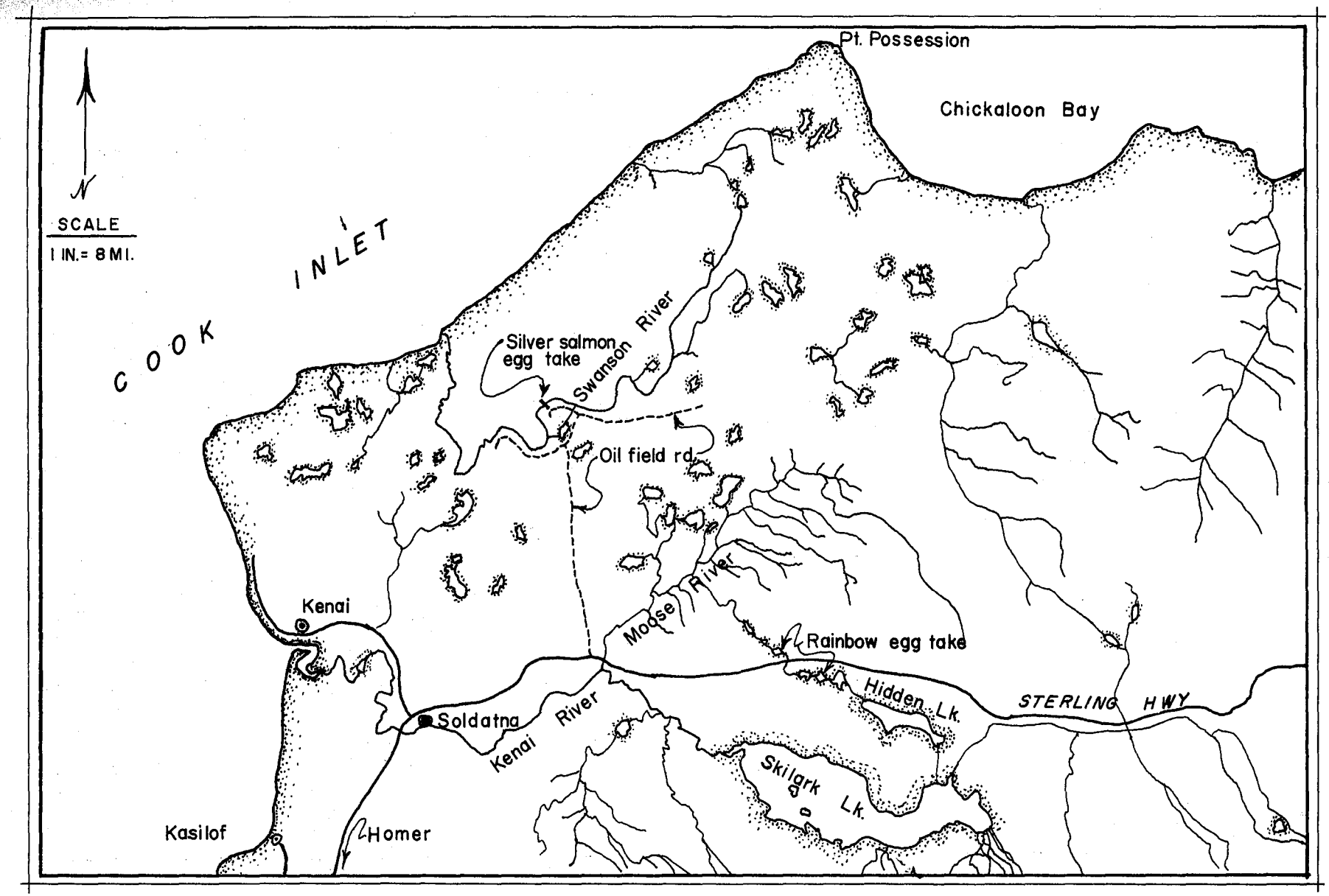

Figure 1. Egg take sites for 1963 on northwestern Kenai Peninsula.

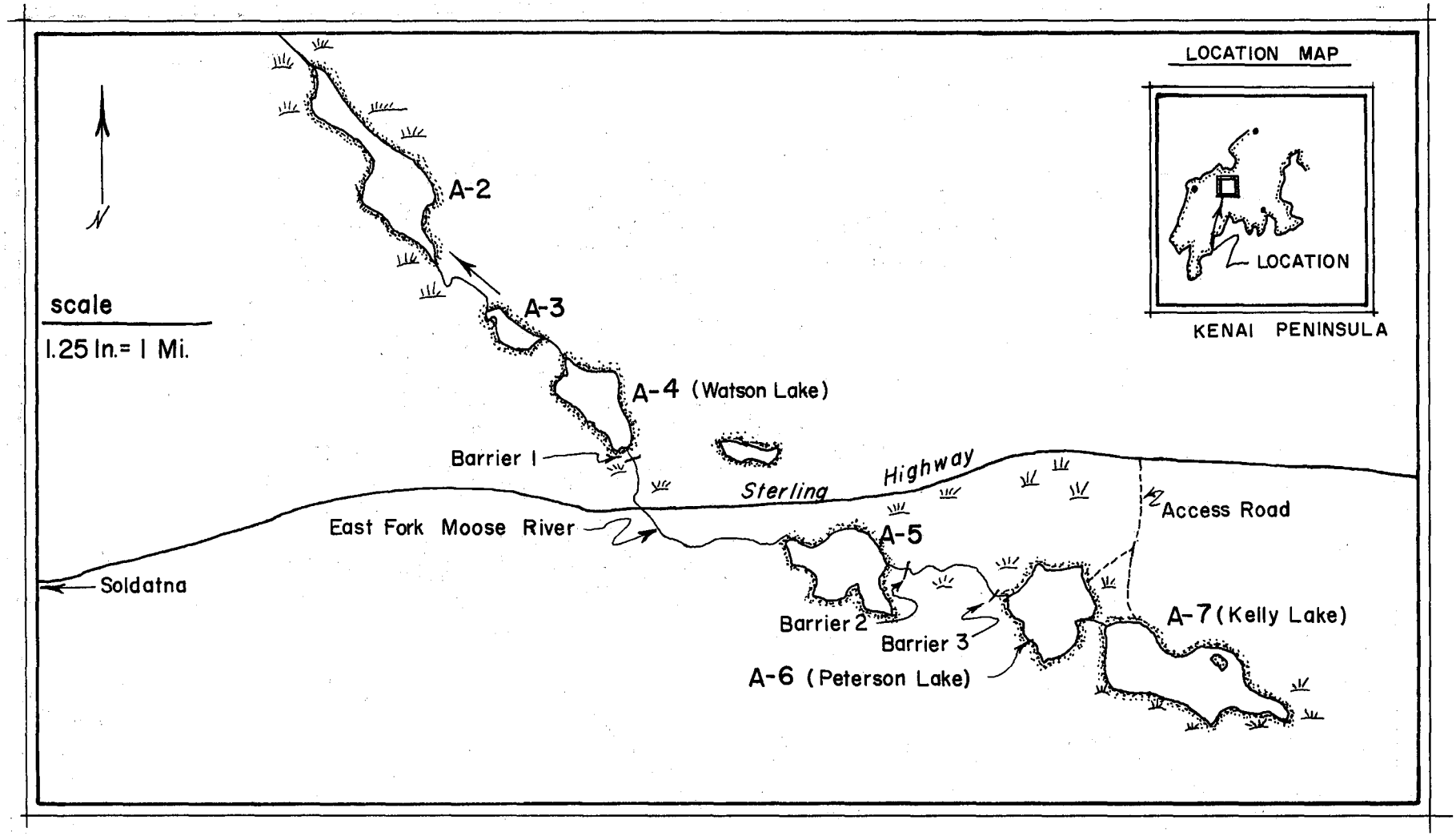

Figure 2. Area of rainbow trout trap site.

Approximately 83,800 eggs were spawned from 82 females giving an average of 1,022 eggs per female. Spawning was accomplished on May 27 and 30 when water temperatures were between 50° and 55° F. The fork length of the spawned females ranged from 12.0 to 19.5 inches with a mean of 15.2. The length frequency distribution of these fish is presented in Figure 3. Scale samples were collected and will be analyzed at a later date. Although no data was collected on sex ratios on the spawning grounds, there appeared to be a large number of females in proportion to males. It was impossible to determine the total number of trout captured because of frequent pilfering. The egg take was terminated on June 6 and 25 ripe females were released.

Fishing effort on rainbow trout in the Seven Lakes Basin area can be expected to increase considerably in the future because three new campgrounds and several fishing trails were constructed by the Fish and Wildlife Service during 1963.

Silver Salmon

The Swanson River weir was installed on August 25 and dismantled on October 27 due to icing conditions. The first silver salmon was taken on August 30 with a total of 1,198 enumerated during the period of weir operation. The sex ratio of males to females was 0.9:1. The trap was successful in capturing only 44 per cent of the total (Table 1) because of insufficient water passing through it. It was therefore necessary to capture most of the fish by seining below the weir where they were concentrated. A total of 924 fish was held in live boxes for spawning. An unknown number of these fish were stolen from the live boxes by a black bear and the public. The holding mortality was estimated at 27 per cent.

The first silver salmon were spawned on September 26 and the last on October 19. A total of 308 females was spawned yielding 970,000 eggs with an average of 3,149 eggs per female. This is similar to the 1962 average of 3,154 eggs per female. Water temperatures were recorded daily and are presented in Table 2. Spawning occurred when water temperatures were from 37.5 to 46.0° F.

On October 16 a total of 19 female silver salmon was spawned at Bear Creek (Logan, 1963). These fish yielded 76,498 eggs averaging 4,026 eggs per female. The Swanson River and Bear Creek egg takes yielded 1,046,581 eggs.

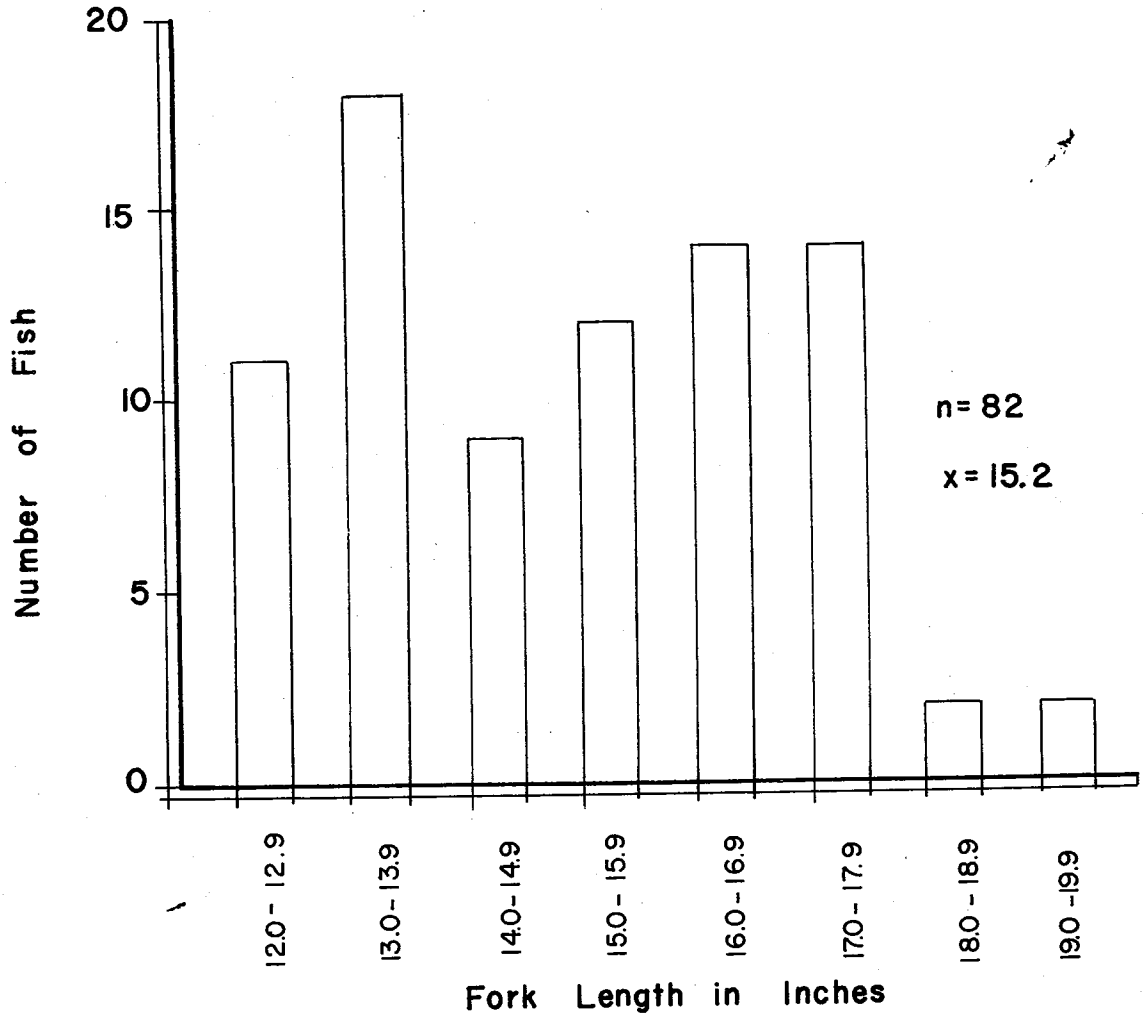

Figure 3. Length frequencies of mature female rainbow trout caught in East Fork of Moose River in 1963.

Table 1. Swanson River Silver Salmon Count, 1963.

	WEIR		SEINED		TOTALS		
DATE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	TOTAL
Aug. 29	-	-	-	-	-	-	-
30	3	-	-	-	3	-	3
31	8	-	-	-	8	-	8
Sept. 1	28	-	-	-	28	-	28
2	48	-	-	-	48	-	48
3	3	18	-	-	3	18	21
4	-	38	-	-	-	38	38
5	-	18	-	-	-	18	18
6	-	18	-	-	-	18	18
7	-	7	-	-	-	7	7
8	-	8	-	-	-	8	8
9	3	7	-	-	3	7	10
10	17	25	-	-	17	25	42
11	12	19	-	-	12	19	31
12	8	10	24	28	32	38	70
13	39	54	63	78	102	132	234
14	20	10	-	-	20	10	30
15	1	-	-	-	1	-	1
16	-	-	-	-	-	-	-
17	5	6	-	-	5	6	11
18	-	-	-	-	-	-	-
19	-	-	56	45	56	45	101
20	3	3	-	-	3	3	6
21	-	-	-	-	-	-	-
24	-	1	-	-	-	1	1
25	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-
28	1	1	39	49	40	50	90
29	15	9	57	72	72	81	153
30	-	1	33	46	33	47	80
Oct. 1	-	-	21	24	21	24	45
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	18	12	-	-	18	12	30
7	20	5	-	-	20	5	25
8	2	1	-	-	2	1	3
9	3	1	8	2	11	3	14
10	-	-	-	-	-	-	-
11	2	-	-	-	2	-	2
12	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	-	-	8	8	8	8	16
15	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-

Table 1 (Con't.) Swanson River Silver Salmon Count, 1963)

	WEIR		SEINED		TOTALS		
DATE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	TOTAL
Oct. 17	1	-	-	-	1	-	1
18	-	-	-	-	-	-	-
19	-	-	1	4	1	4	5
20	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-
TOTALS	260	272	310	356	570	628	1198

Table 2. Mean Daily Water Temperatures Recorded at Swanson River Weir in 1963.

DATE	TEMPERATURES (°F.)	DATE	TEMPERATURES (°F.)
Aug. 29	54.0	Sept. 28	-
30	54.5	29	45.5
31	54.5	30	45.0
Sept. 1	55.5	Oct. 1	44.5
2	56.0	2	44.0
3	57.0	3	42.0
4	56.0	4	40.5
5	59.0	5	39.5
6	58.0	6	42.5
7	-	7	43.0
8	-	8	43.5
9	-	9	41.0
10	56.5	10	40.0
11	55.5	11	37.5
12	55.0	12	36.0
13	51.0	13	35.5
14	52.0	14	38.0
15	50.5	15	38.0
16	50.0	16	39.0
17	49.5	17	38.0
18	50.0	18	37.0
19	49.5	19	37.5
20	50.0	20	37.0
21	-	21	35.5
22	-	22	34.5
23	-	23	35.0
24	46.5	24	34.0
25	46.0	25	33.5
26	46.0	26	32.0
27	-	27	32.0

Angler reports indicate there was considerable upstream migration of silver salmon prior to weir installation, indicating the Swanson River weir should be in place by the middle of August.

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