

Volume 9



1967-1968

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STATE OF ALASKA  
 Walter J. Hickel, Governor

ANNUAL REPORT OF PROGRESS, 1967 - 1968

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-9

SPORT FISH INVESTIGATIONS OF ALASKA

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## INTRODUCTION

This report of progress consists of findings and work accomplished under the State of Alaska Federal Aid in Fish Restoration Project F-5-R-9, "Sport Fish Investigations of Alaska."

The project during this reporting period was composed of 21 separate studies. Of these, seven jobs continued the inventorying and cataloging of the numerous waters, providing a comprehensive index of the State's recreational waters. Nine jobs accomplished special studies involving Dolly Varden, grayling, silver salmon, king salmon and sheefish, among others. The remaining five jobs are designed to accomplish creel census, migration, access and silver salmon egg-take studies. The egg-take study, Job 7-F, was inactive because egg-takes were accomplished under other projects.

Special reports on specific phases of the Dolly Varden Life History Study have been published in the Department's Research Report series.

The information gathered from all of these studies provides the background necessary for better management and assists in 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.

## RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.

Project No.: F-5-R-9 Title: Creel Census of the Sport Fish and Sport Fish Waters of the Cook Inlet Drainage.

Job No.: 11-D

Period Covered: May 1, 1967 to September 30, 1967.

## ABSTRACT

A voluntary creel census was administered by military Conservation Unit personnel on the experimental "put-and-take" rainbow trout, Salmo gairdneri, fishery at Otter Lake, Ft. Richardson.

Four hundred ninety-five anglers caught 2,803 trout averaging 27.5 cm in length and 5.7 fish per trip. Based on completed census returns, anglers experienced a success rate of 1.8 trout per angler hour. As the census "index" is unknown, these totals and catch rates must be considered minimal for the fishery.

It appeared that fewer weekday fishermen caught a greater number and larger fish than weekend anglers during June and July. Weekday fishermen averaged slightly larger (1.0 cm) and 1.3 more trout per day than weekend anglers. July fishermen caught 0.4 more fish per angling day than June anglers. There was an average of 6.2 more fishermen per day in June than in July.

No other sport fish waters were censused due to the lack of an incumbent biologist assigned to the Palmer area.

## RECOMMENDATIONS

1. That the study be continued with the present objectives.
2. That the voluntary creel census be replaced with a statistical sampling design to estimate:
  - a. Total anglers and total effort expended.
  - b. Total harvest and catch rate.

## OBJECTIVES

To investigate and evaluate the sport fish harvest, fish population trends, changes in size composition and species composition in the recreational waters of the area.

## TECHNIQUES USED

Rainbow trout fingerlings raised at the Fire Lake Hatchery in 1966 were transferred to the Ft. Richardson power plant cooling pond where the fish continued their accelerated growth due to constant, optimum water temperature and balanced hatchery diet. Technical supervision of the experiment was provided by a Sport Fish Division biologist.

A total of 15,840 rainbow trout ranging in length from 25.4 to 26.7 cm was stocked periodically from June 5 to July 5, 1967, in Otter Lake. The trout were stocked for harvest by both military and civilian anglers. Public access to Otter Lake, located on the military reservation, was granted civilians obtaining permission from the Commanding Officer, Ft. Richardson.

A voluntary creel census administered by Ft. Richardson Conservation Unit personnel was conducted on the experimental "put-and-take" fishery. Creel census report forms were made available to anglers for recording sport fish harvest data. Creel census reports were collected at the end of the season, and the information obtained was compiled and analyzed.

## FINDINGS

Table 1 presents the 1967 stocking record for Otter Lake. The rainbows, stocked during the peak of angling activity (June 5 to July 5), varied from 2.45 to 2.18 per pound when planted. According to Tunison (1945), these fish would range from 25.4 to 26.7 cm in length.

Results of the voluntary creel census are summarized in Tables 2, 3, and 4. Table 2 compares complete and incomplete data (lacking date or hours fished, or both) and presents their respective totals. It is noted that complete data comprised 49 percent of the total which may be considered successful for a voluntary creel census. The slight differences in mean length and catch rate between both sets of data do not indicate a significant deviation since variations within either set are large. Therefore, it can be summarized that 495 anglers caught 2,803 trout averaging 27.5 cm in length and 5.7 fish per trip. Fish per angler hour averaged 1.8 for completed creel census returns. As the reported creel census "index" of the total effort is unknown, the foregoing totals and catch rates must be considered minimal for the fishery. A size composition table or graph could not be presented here as data were inadequate. Catches were frequently recorded as "10 rainbows, 6 - 15 inches," and so on, making assignment of individual sizes impossible.

Table 3 compares weekday and weekend harvest results for June and July, and indicates that weekday fishermen averaged slightly larger (1.0 cm) fish and 1.3 more trout per outing than did weekend anglers. This follows the popularized notion that fewer fishermen during the week, without undue competition or commotion, can catch more and larger fish than their weekend counterparts.

Table 4 presents weekday and weekend catch statistics for June and July. Overall, there were 3.3 more weekend anglers per day than weekday fishermen and 6.2 more anglers per day on Otter Lake in June than in July. Catch rates from Table 3 are included in Table 4 for comparison. Generally, anglers had somewhat better luck in July by catching 0.4 more trout per day than June fishermen. By including the undated data in both months' tallies, it is shown that all anglers averaged 5.9 trout per fishing trip.

TABLE 1 - Otter Lake Stocking Record, 1967.

<u>Rainbow Trout</u>				
<u>Date</u>	<u>Fish Per Lb.</u>	<u>Approx. Length (cm)*</u>	<u>Total Weight (lb)</u>	<u>Number of Fish</u>
6/5	2.41	25.4	276	665
"	2.41	25.4	410	1,000
"	2.33	26.1	410	955
"	2.33	26.1	410	955
6/6	2.45	25.4	410	1,004
"	2.25	26.3	410	922
"	2.25	26.3	311	700
"	2.25	26.3	411	925
"	2.25	26.3	426	958
"	2.25	26.3	427	961
6/21	2.18	26.7	400	840
6/30	2.18	26.7	427	896
7/3	2.18	26.7	988	2,075
7/4	2.18	26.7	789	1,657
7/5	<u>2.18</u>	<u>26.7</u>	<u>177</u>	<u>372</u>
Totals	2.25	26.3	7,092	15,840

\*After Tunison (1945). Converted from Inches

TABLE 2 - Comparison of Complete and Incomplete Creel Census Data, Otter Lake, 1967.

<u>Complete<sup>1/</sup> Data (May - Sept.)</u>						
<u>Month</u>	<u>Anglers</u>	<u>RB</u>	<u>Av. Length (cm)</u>	<u>Time Fished</u>	<u>Angler/hr</u>	<u>RB/Angler</u>
May	4	13	27.5	14.0	1.4	3.3
June	167	942	27.5	473.0	2.0	5.6
July	65	367	28.2	245.0	1.5	5.7
Aug.	2	2	31.3	11.3	0.2	1.0
Sept.	<u>4</u>	<u>3</u>	<u>26.2</u>	<u>6.3</u>	<u>0.5</u>	<u>0.8</u>
Totals	242 <sup>4/</sup>	1,327	28.0 <sup>2/</sup>	749.6	1.8 <sup>3/</sup>	5.5
<u>Incomplete Data (May-Sept.)</u>						
May	1	10	28.5	-	-	10.0
June	146	872	27.5	-	-	6.0
July	103	592	26.2	-	-	5.7
Aug.	1	1	34.2	-	-	1.0
Sept.	<u>2</u>	<u>1</u>	<u>22.9</u>	<u>-</u>	<u>-</u>	<u>0.5</u>
Totals	253	1,476	27.0 <sup>2/</sup>			5.8
<u>All Data Combined</u>						
	495	2,803	27.5			5.7

<sup>1/</sup>Recorded total hours fished. <sup>2/</sup>Total length (cm)/number of fish/season.  
<sup>3/</sup>Number of fish/total hours fished/season. <sup>4/</sup>49 percent of census.

TABLE 3 - Comparison of Weekday and Weekend Harvest Results for June and July, Otter Lake, 1967.

Weekday					
<u>Period</u>	<u>Anglers</u>	<u>RB</u>	<u>Av. Length (cm)</u>	<u>CPUE</u>	<u>Number RB/FM</u>
6/5-9	44 20	286 127	28.2 28.0	2.3 -	6.5 7.1
6/12-16	17 19	151 94	26.2 27.7	3.0 -	8.9 5.0
6/19-23	23 11	90 59	29.2 28.4	1.4 -	3.9 5.4
6/26-30	5 3	9 13	25.6 29.2	1.1 -	1.8 4.3
7/3-7	16 4	125 26	28.4 30.5	2.2 -	7.8 6.5
7/10-14	8 4	53 52	32.3 21.4	1.7 -	6.6 13.0
7/17-21	4 12	23 76	29.5 30.7	1.7 -	5.8 6.3
7/24-28	1 7	8 52	30.5 25.4	2.7 -	8.0 7.4
<u>Monthly Totals</u>					
6/5-30	142	829	28.0	-	5.8
7/3-28	56	415	28.2	-	7.4
<u>Grand Total*</u>	198	1,244	28.0	-	6.3
Weekend					
6/10-11	32 24	140 150	28.2 27.2	1.5 -	4.4 6.3
6/17-18	13 4	87 15	27.2 25.9	2.2 -	6.7 3.8
6/24-25	5 -	23 -	23.6 -	1.2 -	4.6 -
7/1-2	11 6	28 22	26.9 24.6	1.2 -	2.6 3.7
7/8-9	8 3	34 24	26.7 20.4	1.1 -	4.3 8.0
7/15-16	3 6	15 24	29.0 27.7	1.0 -	5.0 4.0
7/22-23	7 8	47 37	27.5 25.7	1.5 -	6.7 4.6

TABLE 3 (cont.) - Comparison of Weekday and Weekend Harvest Results for June and July, Otter Lake, 1967.

Weekend					
<u>Period</u>	<u>Anglers</u>	<u>RB</u>	<u>Av. Length (cm)</u>	<u>CPUE</u>	<u>Number RB/FM</u>
7/29-30	1	10	29.5	2.0	10.0
	2	3	27.2	-	1.5
6/10-7/2	95	465	27.2	-	4.9
7/8-30	38	194	26.4	-	5.1
<u>Monthly Totals</u>					
6/10-7/2	95	465	27.2	-	4.9
7/8-30	38	194	26.4	-	5.1
<u>Grand Total*</u>					
	133	659	27.0	-	5.0
COMBINED TOTAL:					
	331	1,903	27.6	-	5.8

\*Does not include undated data.

TABLE 4 - Harvest Rates of Weekday Anglers Versus Weekend Anglers During June and July, Otter Lake, 1967.\*

	<u>June</u>	<u>July</u>	<u>Total</u>
<u>Weekdays</u>	20	20	40
Anglers	142	56	198
Anglers/weekday	7.1	2.8	5.0
RB/angler	5.8	7.4	6.3
<u>Weekend Days</u>	8	8	16
Anglers	95	38	133
Anglers/weekend day	11.9	4.8	8.3
RB/angler	4.9	5.1	5.0
<u>No Date Recorded</u>			
Anglers	88	57	145
Percent of total anglers	27	38	31
Anglers/day	3.1	2.0	2.6
RB/angler	6.4	5.3	5.9
<u>Totals</u>			
Days	28	28	56
Anglers	325	151	476
Anglers/day	11.6	5.4	8.5
RB/angler	5.8	6.2	5.9

\*Undated Data Included.

The percentage of Otter Lake anglers who volunteered creel census information during the season is unknown, thereby negating any reliable estimate of total effort or harvest. This disadvantage and the lack of acquiring complete, accurate data point up the undesirable aspects of a voluntary type of creel census.

As expected, the greatest fishing effort occurred shortly after the fish were stocked. On June 5 and 6, 10,000 trout (63 percent) were stocked. From June 5 to June 11, a reported total of 120 anglers, or 51 percent of June's total fishermen, caught 703 trout. This is 54 percent of the reported total June harvest. It can be readily seen in Table 3 that fishing effort and catch diminished rapidly after the initial stockings. The following week's census showed less than half as much angling pressure and proportional harvest.

Though an "artificial" fishery such as Otter Lake's appears to be very successful in terms of angler use and high catch rates, it is only so on a short-term basis. Not only is it an expensive fishery to maintain in that it requires constant replenishment of catchable sized fish, but to many sport fishermen it is esthetically unappealing because the fishery offers only artificially raised trout.

In order to realize a high return of catchable sized trout, plantings have to be made frequently and "close to the rod," i.e., with advanced notice to anglers. The fishery does, however, help provide sport fishing within close access to the greater Anchorage metropolitan area and the large, concentrated military population where few sport fisheries are available.

This project was inactive on all other sport fish waters of the Cook Inlet drainage due to the lack of an incumbent biologist assigned to the Palmer Area.

#### LITERATURE CITED

Tunison, A.V. 1945. Trout Feeds and Feeding. In: Fish Cultural Manual. University Microfilms, Inc., Ann Arbor, Michigan, 1960, p. 171.

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Date: April 30, 1968

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