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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 5 Report No. 4-D

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.

Project No: F-5-R-5 Title: Creel Census of the Sport Fishes in the Bristol Bay Drainage.

Job No: 4-D

Period Covered: July 16, 1963 to April 15, 1964.

Abstract:

Voluntary creel census reports were obtained from the military recreation camps on the Naknek River, from the Northern Consolidated Airlines' "Angler's Paradise" camp at Kulik River, and from John Pearson's Wilderness Camps. Information from one of the military facilities was too sparse to be of value. No reports were received from NCA's Brooks River Camp.

The creel census information obtained from the Naknek River fishery is incomplete and only the reports for the military recreational camps located at Naknek Lake and the rapids in the Naknek River can be compared with similar information available from previous years. The catch per hour figure for rainbow trout continued to decline markedly. Catching of red salmon has risen rapidly into a position of increased prominence. The king salmon catch remains steady. Increased census effort is recommended.

Fishing success at Kulik River, as reported by NCA's Kulik Camp, was good during the portion of the season covered by the reports received. Other locations reached by aircraft from this camp showed some decrease in catch per hour from that reported for 1961.

Fishing effort by guests of John Pearson's Wilderness Camps was centered primarily on the Agulowak and Agulukpak Rivers, though other locations were also utilized. Success was generally excellent.

Recommendations:

The Naknek River sport fishery should be censused by the personal canvass method to ascertain the reliability of the voluntary military reports and the portion of the total Naknek River effort supplied by military personnel fishing from the three recreational camps. An accurate record should be obtained to identify effort directed toward individual species throughout the entire season and thus permit better definition of the problem of apparent reduced availability of rainbow trout.

Voluntary census information received from other sources should be supplemented by frequent interviews of fishermen by Department personnel to secure information on length of fish taken and to verify the voluntary reports.

Accurate census reports must be obtained for the Brooks River fishery.

A census should be conducted on the Kvichak River at Igiugig and on the Newhalen River to ascertain catch composition, total catch, and fishing pressure at these locations.

Objectives:

1. To investigate and measure the sport fish population trends in the major recreational fishing waters of the Bristol Bay Drainage.

2. To determine the expansion of angling pressures and their impact on the sport fish resources of the area.

3. To provide recommendations for the future investigations and management of the waters.

Techniques Used:

Voluntary creel census reports were received from military recreational camps on the Naknek River. Information omitted on some forms regarding hours fished has been estimated from averages. Spot checks were made of catch success and compliance with the military census requirements. Aerial counts of effort in the Naknek River downstream from King Salmon were made between June 24 and July 10.

Department creel census books were distributed to John Pearson's Wilderness Camps and to the NCA "Angler's Paradise" camps at Kulik and Brooks Rivers.

Data have been tabulated to allow comparison, insofar as possible, with corresponding figures listed in preceding studies. Information from the Wood River area, received from John Pearson's camps, is reported for the first time.

Findings:

Effort from sources in addition to those listed is increasing in prominence. The figures on total catch and effort from the following summaries cannot be considered comprehensive for any of the waters concerned. Significant pressures were also exerted on other waters where no system for obtaining information has yet been instituted.

A. NAKNEK RIVER MILITARY FISHING CAMPS

In addition to the usual period of camp operation from late May to mid-September, fishermen from the King Salmon Air Forse Base participated in a winter fishery for rainbow trout (*Salmo gairdneri*), but no catch information is available.

Few fishermen using the Base Dock site filled out census forms. Interviews revealed that neither the anglers nor supervisory personnel were well oriented regarding the creel census program. It was not possible to obtain an estimate of the season's catch at this site by instituting a program of interviews after the date when the aforementioned situation was discovered.

Fishing effort at the Base Dock is thought to have been at the maximum permitted by available facilities during the peak period of king salmon (*Onchorhynchus tschawytscha*) availability. Several aerial counts of boats on the Naknek River below King Salmon between the dates of June 24 and July 3 revealed a minimum of 15 boats (with the exception of one instance when no boats were present) fishing in the mouth of King Salmon Creek. These incidental surveys ranged from 8 a.m. to 8 p.m. Dock rules require a minimum of two men per boat, with use not to exceed four hours by each group. These facts do not, by themselves, permit a reliable estimate of the king salmon catch at this site, but it can

readily be seen that the amount of effort expended may well have been far in excess of reported totals for previous years.

TABLES 1 and 2 list reported catches during 1963 for the Rapids and Lake Camps. Census data for the entire river cannot be combined due to lack of information from the Base Dock. The format employed is similar to that used by Andrews (1961) in order to allow ready comparison. Steelhead and rainbow are combined. Weights are not included due to an obvious lack of reliability in reporting. It is not known whether this deficiency also extends to reported lengths.

Mean length of rainbow trout was 17.5 inches at the Lake Camp and 14.6 inches at the Rapids Camp. Variation in the reported mean lengths from year to year does not appear to follow any pattern.

The reports of Allin (1959) and Andrews (1961) list creel census summaries individually for the Lake and Rapids Camps for the years 1957 and 1960. Comparison with the 1963 information makes possible a review of trends during the past seven year period. TABLES 3 and 4 list the outstanding points derived from these data.

At the Lake Camp, where rainbow trout is the species in primary demand, a drop is noted between the years 1957 and 1960 in the per cent of the total bag comprised of these fish. This now has apparently leveled off and is remaining steady. The catch per hour has meanwhile continued to decline steadily and is now only half of what it was in 1957. Total catch per hour of all species has also declined at a similar pace in spite of a noteworthy and continuing rise in the utilization of red salmon (O. nerka) for sport purposes.

The fall in the relative standing of rainbow trout in the Rapids Camp catch has been even more pronounced than at the Lake Camp. This species, which led in availability only seven years ago, has now plummeted to a poor third. The obvious shift of effort toward king and red salmon is no doubt accountable to some extent for this change. It can also be postulated conversely that the tremendous reduction in the rate of catch for rainbow may have occasioned much of the shift of emphasis toward species which were obviously not in great demand only a few years ago.

TABLE 1. Angling Pressure and Composition of Sport Fish Catch at Lake Camp Military Recreation Site on the Naknek River, 1963.

Fishing Periods	5/26 6/8	6/9 6/22	6/23 7/6	7/7 7/20	7/21 8/3	8/4 8/17	8/18 8/31	9/1 9/14	9/15 9/28	Total
Number of Anglers	114	40	35	9	1	-	1	-	10	210
Hours Fished	736	296	220	47	5	-	4.5	-	46	1,354.5
Catch Composition:										
Rainbow Trout	250	99	77	10	0	0	0	0	31	467
Grayling	7	14	15	4	0	0	0	0	0	40
Lake Trout	8	15	6	0	0	0	0	0	0	29
Dolly Varden	2	0	0	0	0	0	0	0	6	8
King Salmon	0	0	0	0	0	0	0	0	0	0
Silver Salmon	0	0	0	0	0	0	3	0	0	3
Red Salmon	0	0	96	45	3	0	0	0	0	144
Chum Salmon	0	0	0	0	0	0	0	0	0	0
Northern Pike	1	0	0	0	0	0	0	0	0	1
Whitefish	0	2	0	0	0	0	0	0	0	2
TOTAL	268	130	194	59	3	-	3	-	37	694
Catch Per Hour	0.36	0.44	0.88	1.25	0.60	-	0.66	-	0.80	0.51

TABLE 2. Angling Pressure and Composition of Sport Fish Catch at Rapids Camp Military Recreation Site on the Naknek River, 1963.

Fishing Periods	5/26 6/8	6/9 6/22	6/23 7/6	7/7 7/20	7/21 8/3	8/4 8/17	8/18 8/31	Total
Number of Anglers	73	106	141	100	43	2	1	466
Hours Fished	410	674	962	645	254	15	3	2,963
Catch Composition:								
Rainbow Trout	67	47	30	7	68	0	0	219
Grayling	10	65	10	0	2	0	0	87
Lake Trout	1	0	4	0	0	0	0	5
Dolly Varden	13	0	2	1	0	0	0	16
King Salmon	32	76	297	172	2	2	0	581
Silver Salmon	0	0	0	0	0	0	1	1
Red Salmon	0	1	57	216	193	0	0	467
Pink Salmon	0	0	0	1	0	0	0	1
Northern Pike	2	4	0	4	0	0	0	10
TOTAL	123	193	390	401	265	2	1	1,387
Catch Per Hour	0.30	0.29	0.41	0.62	1.04	0.13	0.33	0.47

TABLE 3. Percentage Composition of Reported Catches at the Lake and Rapids Military Recreation Camps on the Naknek River, 1957, 1960 and 1963.

Location	Lake Camp			Rapids Camp		
Year	1957	1960	1963	1957	1960	1963
Percent of Total:						
Rainbow Trout	83.24	69.23	67.29	58.00	28.69	15.85
Red Salmon	.45	8.90	20.75	.85	.30	33.81
Grayling	7.12	10.89	5.76	15.80	7.23	6.29
King Salmon	1.53	2.38	-	9.40	48.69	41.63
Dolly Varden	4.90	2.14	1.16	11.20	2.12	1.15
Other*	2.76	6.46	5.04	4.75	12.97	1.27

* Includes lake trout, pike, silver salmon, chum salmon, pink salmon and whitefish.

TABLE 4. Fishing Success for Individual Major Species at the Lake and Rapids Military Recreation Camps on the Naknek River, 1957, 1960 and 1963.

Location	Lake Camp			Rapids Camp		
Year	1957	1960	1963	1957	1960	1963
Hours Fished	2297.0	1902.0	1354.5	2977.0	3486.0	2963.0
Total Catch, All Species	1755	1258	694	2000	1645	1381
Catch Per Hour	0.76	0.66	0.51	0.67	0.47	0.47
Total Catch, Rainbow Trout	1461	871	467	1160	472	219
Catch Per Hour	0.64	0.46	0.34	0.39	0.14	0.07
Total Catch, Red Salmon	8	112	144	17	5	467
Catch Per Hour	0.003	0.06	0.11	0.005	0.001	0.16
Total Catch, Grayling	125	137	40	316	119	87
Catch Per Hour	0.05	0.07	0.03	0.11	0.03	0.03
Total Catch, King Salmon	27	30	0	188	801	581
Catch Per Hour	0.011	0.015	0	0.06	0.23	0.20
Total Catch, Dolly Varden	86	27	8	224	35	16
Catch Per Hour	0.04	0.01	0.005	0.07	0.01	0.005

Angling success for king salmon gives evidence of the steadiness expected of a fully developed fishery on a relatively constant stock. Commercial effort on king salmon in the Naknek-Kvichak District has been largely incidental to the commercial fishery for red salmon in recent years and no great demands are thought to have been made on the total stock. Since sport utilization apparently first reached present proportions in 1958 (Allin, 1959), no effects of possible over-exploitation could be anticipated prior to 1964, when a five-year period would have elapsed.

The greatly-inflated take of red salmon by the sport fishery, which now numbers hundreds of fish annually in contrast to the dozen or so formerly taken, is not a reflection of increased availability. Reported escapement (rounded off) past the Naknek River counting station for the years in question is as follows: 1957, 634,000 fish; 1960, 828,000 fish; 1963, 905,000 fish. Virtually all red salmon taken in the sport fishery are snagged while passing the bank in concentrations during the spawning migration between the dates of June 25 and July 25.

It is of interest to note that, while fishing success for grayling (Thymallus arcticus) has displayed no regular pattern of reduction, Dolly Varden (Salvelinus malma) have declined steadily in both availability and relative percentage of the total bag.

Dotson (1963) concluded from a study of 1960-1962 data that the reduction of angling success on the Naknek River may explain a similar decline of angling pressure. This present study continues to bear out this conclusion for the military effort at the Lake and Rapids Camps. This cannot be said with respect to the king salmon fishery from the Base Dock nor for the total nonmilitary effort, however, without further observation to ascertain whether the census reports received to date have given an accurate picture of this portion of the fishery.

B. NORTHERN CONSOLIDATED AIRLINES "ANGLER'S PARADISE" CAMPS:

Creel census books were distributed in midseason to the Kulik and Brooks Camps of the NCA operation. No reports were received from the Brooks River Camp. Completed forms were received from the Kulik River Camp for the period from

August 1 to September 19. Fly-in effort at other locations commonly utilized from the Kulik base was also included. The Battle, Nonvianuk, and Grosvenor camps were not operated independently during the above period, although guests were quartered at the Grosvenor site earlier in the season.

Catches made by Kulik Camp anglers at major sites are summarized in TABLE 5. The format employed by Stefanich (1962) is used to facilitate comparison. Since the 1963 data do not cover the entire season, exact comparison with the 1961 figures is not possible, but general trends are indicated. Rainbow trout was the primary species taken at all major sites, although the accuracy of reporting in regard to incidental species is suspect. Fishing success showed an increase over 1961 success of 63 per cent on the Kulik River, but decreased 23 per cent to 38 per cent at the outlets of Kukaklek and Nonvianuk Lakes and at the Funnel-Moraine Creek junction.

In addition to the locations listed in TABLE 5, anglers from Kulik Camp fished a total of nearly 300 hours at five other sites during the period covered by the reports received. While total fishing time is relatively low, an indication is obtained of the fishing success which may be expected. Lower Talaric Creek, in the Kvichak watershed, gave good success during September with a catch of 0.73 fish per hour. Dolly Varden and Arctic char (Salvelinus alpinus) predominated in catches from the Naknek watershed. At American River, the Coville-Grosvenor connection and the "Char Hole" (at the mouth of a small creek in Bay of Islands in Naknek Lake), the catch of all species approximated an average of one fish per hour. Idavain Lake produced 2.8 highly colored Dolly Varden per hour.

C. JOHN PEARSON'S WILDERNESS CAMPS:

The information from the Agulowak and Agulukpak Rivers is summarized in TABLE 6. Catches during occasional brief periods are from estimates supplied by Mr. Pearson. These have been carefully compared with both observed catches and recorded reports and were found to be reliable. Definitive data on size composition were not received.

Fishing success ranging from 3.54 to 6.95 fish per hour can only be described as excellent, but it should be kept in mind that most reports are from effort exerted during periods

TABLE 5. Summary of Catch by "Angler's Paradise" Camp Fishermen at Five Locations During the Period August 1 - September 19, 1963.

Location	Kulik	Kukaklek	Nonvianuk	Battle	Funnel
Number of Anglers	165	31	12	23	62
Hours Fished	1,199	231	90	178	409
Catch Per Hour	0.86	0.54	0.72	0.54	0.76
Total Fish Caught:	1,030	126	65	97	310
Rainbow Trout	937	105	63	85	213
Lake Trout	25	9	0	1	3
Grayling	4	7	0	4	25
Dolly Varden	0	0	0	0	0
Red Salmon	64	5	2	7	69
Fish Released:					
Rainbow Trout	803	78	54	75	165
Lake Trout	17	4	0	1	2
Grayling	2	1	0	3	18
Dolly Varden	0	0	0	0	0
Red Salmon	61	5	2	7	65
Fish Retained:					
Rainbow Trout	134	27	9	10	48
Lake Trout	8	5	0	0	1
Grayling	2	6	0	1	7
Dolly Varden	0	0	0	0	0
Red Salmon	3	0	0	0	4

TABLE 6. Summary of Catch at the Agulowak and Agulukpak Rivers by Anglers from Pearson's Wilderness Camps, 1963.

Location	Agulowak	Agulukpak
Number of Anglers	72	22
Hours Fished	430	149
Catch Per Hour	3.54	6.95
Total Fish Caught	1,523	1,035
Rainbow Trout	709	741
Grayling	277	228
Arctic Char	537	66
Fish Released		
Rainbow Trout	429	608
Grayling	217	132
Arctic Char	453	48
Fish Retained		
Rainbow Trout	280	133
Grayling	60	96
Arctic Char	84	18

of peak catchability. Grayling and Arctic char were usually taken incidental to the rainbow trout fishery. Effort directed specifically toward grayling and Arctic char would be far more productive than is indicated by TABLE 6.

Other sites in the Wood River system and in the Nushagak and Togiak drainages were also utilized to a lesser extent. King salmon were taken at Portage Creek on the Nushagak River during the last week in June. Rainbow trout were taken at the Tikchik Narrows and in the Nuyakuk River at the outlet of Tikchik Lake in July and August. Rainbow trout ranging up to eight pounds in weight were discovered to be available at the outlets of Gechiak and Pungokepuk Lakes in the Togiak watershed. Nowhere else, however, was fishing success equal to that experienced at the Agulowak and Agulukpak Rivers.

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