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STATE OF ALASKA

William A. Egan, Governor



ANNUAL REPORT OF PROGRESS, 1962 - 1963

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-4

SPORT FISH INVESTIGATIONS OF ALASKA

Alaska Department of Fish and Game

Walter Kirkness, Commissioner

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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-4, "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. While some studies are of a more general nature and deal with gross investigational projects, others have been developed to evaluate specific problem areas. These include studies of king salmon, silver salmon, grayling and State Access requirements. The information gathered will provide the necessary background data for a better understanding of local management problems and development of future investigational studies.

The assembled progress reports may be considered fragmentary in many respects due to the continuing nature of the respective studies. The interpretations contained therein, therefore, are subject to re-evaluation as work progresses and additional information is acquired.

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations of Alaska.

Project No: F-5-R-4 Title: Inventory and Cataloging of Sport Fish and Sport Fish Waters of the Copper River and Prince William Sound Drainages, Tyone River and Susitna River Drainage Above Oshetna (Water Adjacent to Denali Highway).

Job No: 11-A

Period Covered: May 1, 1962 - April 1, 1963.

Abstract:

The inventory and cataloging activities were conducted primarily in the Cordova area and adjacent to the Denali Highway system. A total of 23 lakes were surveyed. Standard survey techniques were utilized, including experimental gill netting, to determine the resident as well as anadromous fishes present.

An experimental grayling egg take was undertaken in May and June of 1962, with approximately 500,000 eggs taken and delivered to the Fire Lake Hatchery for incubation.

Five lakes were test netted to evaluate success of previous hatchery plants and to obtain population data.

The waters surveyed and the results of test netting are tabulated in Table 2. Complete survey information on each body of water is available at the Glennallen Field Office or the Division Office in Juneau.

Recommendations for management practices are included for the area as well as proposals for future investigations.

Recommendations:

Based on available data, it is recommended that:

1. The grayling egg take be continued in order to gather more information on the spawning migration and to locate a permanent egg-taking station.
2. Experimental stocking of rainbow trout and silver salmon be continued in small roadside lakes to obtain information on the factors influencing the survival of hatchery stocked fish and to determine the most desirable stocking rates.
3. The inventory and cataloging program be continued and emphasis be placed on popular fly-in lakes and the Gulkana River.
4. A creel census program be instigated on the sport fishery in the Valdez Arm, in conjunction with the Military Recreation camp.
5. It is recommended that the gear tag requirements be carried over into the 1963 Subsistence Regulation, with a stipulation that only one gear tag may be attached to a unit of gear at any time.
6. It is recommended that the Tonsina River, which supports mainly a king salmon run, be closed to all subsistence fishing.

Objectives:

To evaluate the extent, the potential and the current use of waters available to the area's anglers.

To investigate the sources for providing a supply of trout, char, salmon and grayling eggs for experimental hatching and rearing.

To investigate the feasibility of and formulate plans for experimental rehabilitation.

To determine the relative need for future management investigations and to direct the course of such studies.

To provide recommendations for management practices.

Techniques Used:

The Sport Fishery in the Copper River drainage consists primarily of Grayling - Thymallus arcticus (Cope) Lake Trout - Salvelinus namaycush (Walbaum) and Rainbow Trout - Salmo gairdneri (Richardson).

Active field work on Job 11-A commenced on May 1, 1962. At this time areas were investigated for possible grayling egg take sites.

Standard lake surveys were conducted from June 15, 1962 until September 15, 1962. During this period survey efforts were concentrated on lakes in the Cordova and Denali Highway area having a sport fishery at present or believed to have a sport fish potential in the near future. Since information of importance to the Commercial Fisheries Division was being obtained on the utilization of salmon stocks by subsistence and sport fishermen, they supplied a two man crew to check the subsistence fishery and conduct spawning ground counts.

Standard survey methods were employed to gather physical data, which included such characteristics as depth and bottom types of lake and tributary streams. Graduated mesh gill nets were used to determine the resident and anadromous fishes present and to collect age and growth data.

Lakes were assessed for potential sport fish value. Recreation and public use sites were noted and the information was forwarded to the access biologist for processing. Some lakes not adjacent to the road system were surveyed by float plane or back-pack trip to evaluate the potential sport fishery available to the anglers and the amount of spawning and rearing area.

Indian fishwheels along the Copper River were repeatedly contacted for information concerning species composition in the different tributaries, time and intensity of runs, and to substantiate records kept by the operators of the fishwheels.

Aerial counts of salmon were made on major salmon spawning areas to obtain data on size and timing of salmon runs.

Findings:

Experimental Grayling Egg Take

Although hampered by high water and late breakup, the grayling egg take was considered a success, as enough eggs were obtained to meet most of the demand for the experimental stocking program. A total of approximately 529,000 grayling eggs were taken during the latter part of May and June.

For an initial egg take, 366 grayling were taken on hook and line using barbless hooks. These fish were taken from Poplar Grove Creek, Mile 134 Richardson Highway, on May 22 and 23, 1962. Water temperatures during this period ranged from a high of 43° F. and a low of 37° F.

On May 27, 1962, a total of 169 females and 167 males were spawned and approximately 319,000 eggs taken, which were immediately flown to the Fire Lake Hatchery. Thirty-four of the fish in the holding pens were not of a suitable degree of ripeness and were released. Only one mortality occurred in the holding pens indicating a high degree of hardness in grayling spawners.

Operations of the weir on Mud Creek, a tributary to the Gulkana River above Paxson Lake, commenced on June 4 and ended on June 18, 1962. During this period, extremely high water made operation of the weir difficult because of ice blockage and debris coming down stream. Temperatures and the number of fish entering the spawning area are presented in Table 1. A total of 221 males and 102 females were taken during the 15 days this weir was in operation.

Table 1. Water temperatur and number of grayling caught at Mud Creek Weir in 1962.

Date	<u>Water Temperature</u>		<u>Grayling Captured</u>	
	<u>Max.</u>	<u>Min.</u>	<u>Male</u>	<u>Female</u>
6-3-62	34	33		
6-4-62	35	33	2	
6-5-62	37	33	6	
6-6-62	40	34	3	
6-7-62	38	34	4	
6-8-62	41	34	3	
6-9-62	39	35	4	5
6-10-62	42	34	13	2
6-11-62	41	35	14	9
6-12-62	40	39	37	14
6-13-62	39	35	22	9
6-14-62	39	34	18	3
6-15-62	44	39	21	15
6-16-62	44	41	27	17
6-17-62	47	40	29	18
6-18-62	47	41	<u>12</u>	<u>15</u>
			TOTAL	221
				102

Grayling utilized for spawning purposes from Mud Creek were larger in size than those taken from Poplar Grove Creek. Total length of the females ranged from 14.9 inches to 17.6 inches with an average length of 16.5 inches. Males ranged from 14.6 inches to 18.4 inches. A total of 210,000 eggs were taken from 37 spawners, averaging approximately 5,600 eggs per fish.

All eggs taken were handled in the manner described in 1961 - 1962 Progress Report Volume 3 Report No. 11-A, Dingell, Johnson Report.

Evaluation of Hatchery Plants

An experimental stocking of grayling fry was undertaken in 1961 to obtain information on the potential use of hatchery fry of this species.

Grayling fry plants during 1961 proved highly successful in two of the three experimental plantings. Three barren lakes were chosen for their similar limnological characteristics which are representative of other waters of the area. These lakes, Dick, Pippin and Mission were stocked during the month of June with fry from the Fire Lake Hatchery.

Dick Lake contains 40 surface acres with a maximum depth of 32 feet. This lake was stocked with 25,000 fry representing 625 to the surface acre. Test netting in July, 13 months after planting showed that the fish had attained an average size of 6.7 inches in total length.

Pippin Lake which contains 160 surface acres, and a maximum depth of 14 feet, was stocked with 15,000 grayling fry in 1961. This represents 94 fish to the surface acre. Test netting in June caught fish that had attained an average size of 8.0 inches.

The amount of dissolved oxygen dropped to 0.3 ppm in February of this year without detrimental results, indicating a high tolerance of grayling for low dissolved oxygen.

Mission Lake, of 3 surface acres, was stocked with 2,000 grayling fry in 1961. High water washed out the dam, resulting in a loss of all fish.

Subsistence Fishery

Subsistence fishing on the Upper Copper River increased from 321 permits in 1961 to 448 permits in 1962. The total number of fish taken by actual return counts increased from 15,991 in 1961 to 16,273 in 1962. Although a total of 127 more permits were issued in 1962, only slightly over 1,000 more fish were taken for subsistence purposes.

It is felt that the new gear tag requirements instigated in 1962 has helped considerably to control the subsistence fishery and to make it more enforceable than in previous years. A gear tag was issued with each permit, and it was stipulated that this tag be attached to the gear while the gear was in use by the permittee. Further stipulations on the use of gear have been outlined in the recommendations for the 1963 season.

An increase from 19 fishwheels operating throughout the summer of 1961 to a total of 29 that operated in the area during 1962 is attributed to the fact that the Chitina Road was under construction, and considerable trouble was experienced by people trying to reach the only dip-netting site along the entire Copper River. It is felt with a great degree of certainty that had the road been passable throughout the summer, the total catch of red salmon would have been increased by approximately 5 per cent.

Extremely high water during the month of July hampered the efficiency of the fishwheels.

The amount of fish taken by the local population during the past season was lower than in previous years, due to the high amount of construction work and consequently available jobs for the local people.

Table 2. Test Netting Summaries, 1962

NAME (Cordova Area)	NUMBER OF FISH	SPECIES	LENGTH RANGE	LENGTH MEAN	FREQUENCY 1/	% COMPO- SITION
✓Beaver Lake	12	CT	7.6 - 13.2	9.95	.545	86
	2	Sculpin	5.0 - 5.4	5.2	.090	14
✓Cabin Lake	8	CT	7.5 - 10.5	8.5	.170	50
	1	DV	8.2		.021	6
	7	Sculpin	5.0 - 6.5	5.6	.148	44
✓Corser Lake	5	CT	7.0 - 12.0	9.9	.333	83
	1	DV	11.5		.066	16
446 ✓Crater Lake	1	RB	9.3		.055	100
✓Hartney Lake	13	CT	9.0 - 16.5	15.2	.541	50
	13	DV	7.0 - 18.2	12.3	.541	50

1/ Number of fish per hour in 125' experimental gill net.

GR. Grayling	LT. Lake Trout	DV. Dolly Varden
RS. Red Salmon	SS. Silver Salmon	CT. Cutthroat
LWF. Lake White Fish	RWF. Round White Fish	LNS. Long Nose Sucker

Table 2. (Cont.)

NAME (Cordova Area)	NUMBER OF FISH	SPECIES	LENGTH RANGE	LENGTH MEAN	FREQUENCY <u>1/</u>	% COMPO- SITION
22 Mile Lake	4	CT	7.5 - 13.0	11.0	.173	21
	15	DV	7.8 - 17.5	10.5	.652	79
✓ Scout Lake	12	RB	6.6 - 11.8	8.9	.521	100
Slate Lake	9	CT	6.3 - 14.5	11.5	.391	69
	4	Sculpin	5.0 - 5.6	5.3	.173	31
✓ Pipeline Lake	10	CT	6.5 - 11.7	9.3	.666	63
	6	DV	11.2 - 15.0	13.0	.400	37
<u>(Denali Highway Area)</u>						
✓ 10.0 Mile Lake	28	LWF	6.9 - 17.0	13.4	1.473	93
	2	GR	9.2 - 13.5	11.3	.105	7
16.8 Mile Lake	17	LT	10.0 - 16.3	13.7	.944	71
	7	GR	12.2 - 14.5	13.4	.388	29
18.3 Mile Lake	12	GR	7.2 - 13.0	9.8	.800	93
	1	LC	10.7		.066	7

Table 2. (Cont.)

NAME (Denali Highway Area)	NUMBER OF FISH	SPECIES	LENGTH RANGE	LENGTH MEAN	FREQUENCY <u>1</u> /	% COMPO- SITION
✓50.0 Mile Lake	36	LWF	8.2 - 14.4	9.6	1.636	54
	10	RWF	8.1 - 12.5	9.8	.454	15
	21	LNS	12.3 - 14.9	14.0	.954	31

✓72.8 Mile Lake	12	GR	7.8 - 14.8	11.7	.500	100

✓North Twin	32	GR	7.2 - 13.0	10.2	1.066	67
	16	RWF	8.1 - 12.5	9.8	.533	33

448 ✓South Twin Lake	14	GR	6.9 - 12.6	9.2	.548	59
	12	RWF	7.6 - 11.9	8.5	.387	41

Pippin Lake	9	GR	6.6 - 8.4	7.6	.375	100

Dick Lake	3	GR	6.5 - 7.1	6.7	.107	100

Gergie Lake	3	GR	7.1 - 13.0	10.0	.136	33
	3	LNS	10.0	19.0	.136	33
	3	RB	8.2 - 8.9	8.6	.136	33

Table 3. Salmon subsistence Permits Issued by the Glennallen Office for Upper Copper River in 1962.

Species	Number Permits Requested		Reported Salmon Taken		Calculated Salmon Taken		Ave.No. Salmon Per Returned Permit	
	1962	1961	1962	1961	1962	1961	1962	1961
Reds	37,305	40,520	14,956	14,977	15,948	24,075	35.00	.75
Kings	8,335	5,753	859	393	896	632	2.00	1.97
Silver	5,048	1,598	337	367	358	591	0.79	1.84
Chums	172	0	50	131	54	212	0.12	.66
Pinks	0	0	71	123	76	199	0.16	.62
Total	50,860	47,871	16,273	15,991	17,332	25,709	38.68	80.09

449

Total Number of Permits Issued	<u>1962</u>	<u>1961</u>
	448	321
Total Number of Returns Received	420 or 94%	200 or 62%
Average Number of Salmon Requested	114	149
Average Number of Salmon Taken	38.68	80.09

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Date: May 15, 1963.

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