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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: Inventory and Cataloging of the Sport Fish and Sport Fish Waters in the Cook Inlet Drainage.
Job No.: 11-A

Period Covered: July 1, 1967 to April 1, 1968.

ABSTRACT

This job project was active from July 1, 1967 through October 31, 1967. All investigational work was terminated with the resignation of the incumbent biologist.

Eight "fly-in" lakes, located within the Nancy Lake State Recreation area, received preliminary biological surveys.

Kelly and Twelve-Mile Lakes were test-netted and found to be nearly devoid of their former rainbow trout populations.

Recommendations for future investigations are presented.

RECOMMENDATIONS

That current objectives be continued with particular emphasis on completing biological surveys of Nancy Lake State Recreation area waters and initiating surveys on waters draining into the west side of Susitna River (access via new Fairbanks-Anchorage Highway and Petersville Road).

That major accessible stream systems of the area that are utilized by spawning silver salmon be systematically surveyed to enumerate total spawning escapement and to establish index areas.

That Matanuska Valley-Anchorage area lakes be test-netted to evaluate existing fisheries and population trends to determine management needs for these waters.

That a grayling fishery be established in Twelve-Mile Lake to meet increased angler demand.

OBJECTIVES

To assess the environmental characteristics of the existing and potential fishery waters of the job area and, where practicable, obtain estimates of existing or potential angler use and sport fish harvest.

To evaluate application of fishery restoration measures and availability of sport fish egg sources.

To evaluate multiple water use development projects (public and private) and their effects on the area's streams and lakes for the proper protection of the sport fish resources.

To investigate, evaluate and develop plans for the enhancement of anadromous fish stocks.

TECHNIQUES USED

Two to three 125-foot, variable mesh (1/2 - 2 inch bar mesh) "sinker" gillnets were set for approximately 24 hours in each lake. Net catches were processed individually.

Fish were weighed and measured from tip of snout to fork of tail (fork length). Sex, reproductive maturity, parasites, and general condition of game fish were noted. Scale samples of game fish were collected for subsequent age analysis by standard procedures. All biological data were recorded and filed in the Palmer and Anchorage Sport Fish offices.

FINDINGS

Eight "fly-in" lakes in the Nancy Lake State Recreation area received preliminary surveys to assess environmental characteristics, shoreline development, accessibility, and resident fish populations (Table 1). It was necessary to utilize a basic minimum of lightweight, portable survey and camping equipment as the surveys entailed portaging from lake to lake.

Detailed information concerning the physical and biological data recorded from these lakes is available in the lake and stream inventory files at the Palmer and Anchorage Sport Fish offices.

Two lakes (Kelly and Twelve-Mile), not included in the Nancy Lake classification, were test-netted to investigate previously established game-fish populations.

TABLE 1 - Lakes in the Nancy Lake Recreational Area Receiving Preliminary Surveys, 1967.

<u>Name of Lake</u>	<u>Location</u>	<u>Accessibility</u>	<u>Acres*</u>	<u>Maximum Observed Depth</u>
Charr	T18N, R4W, S18-19	Airplane**	40	21'
Chaldoceran #1	T19N, R5W, S36	Airplane***	16	35'
Chaldoceran #2	T19N, R5W, S36	Airplane***	45	51'
Little Frazer	T18N, R4W, S17-18	Airplane**	20	64'
Milo #2	T18N, R4W, S7	Airplane	60	35'
Milo #3	T18N, R4W, S7	Airplane	65	40'
Milo #4	T18N, R4W, S7	Airplane	20	32'
Owl	T18N, R4W, S19	Airplane**	60	20'

*Acreages determined by map grid from U.S.G.S. quadrangle map Tyonek C-1 (after Cramer, 1966).

**Also marginal drive-in access via difficult Lynx Lake trail, then portage from Lynx Lake.

***Drive-in access may be possible if cat-trail connects with Rainbow Lake Road.

Test net summaries are presented in Table 2. Char and Milo #2 Lakes appear to have abundant populations of rainbow trout, Salmo gairdneri (Richardson), particularly in the younger age groups (Table 3). It is noted that only one of the lakes surveyed within the Nancy Lake classification, Owl Lake, was found to support the undesirable longnose sucker, Catostomus catostomus (Forster).

TABLE 2 - Test Net Summaries, 1967.

Lake	No. of Fish	Species*	Length Range	Av. Length (cm)	Frequency**	% Comp.
Charr	21	RB	9.9-41.9	23.4	.43	100
Chaldoceran #1	7	RB	23.1-35.6	29.0	.18	100
Chaldoceran #2	1	RB	36.8	-	.03	100
Little Frazer	1	RB	59.7	-	.04	100
Milo #2	29	RB	9.6-44.2	22.6	.66	100
Milo #3	6	RB	21.6-49.3	37.1	.17	100
Milo #4	9	RB	13.7-58.4	32.8	.25	100
Owl	10	RB	12.0-28.2	19.3	.22	50
	10	LNS	-	-	.22	50
Kelly	1	RB	40.7	-	.01	1
	67	LNS	10.1-45.7	19.3	.93	99
Twelve Mile	No fish taken					

*RB - Rainbow Trout
LNS - Longnose Sucker

**Fish per net-hour (daylight hours included).

Table 3 summarizes average length per age group of rainbow trout test-netted in the ten Matanuska-Susitna area lakes. It is recognized that few trout comprised each lake's sample, so that only one fish in some instances represents an age group from a particular population. The information presented should be regarded and used on that basis only.

Char and Milo #2 Lakes both indicated having abundant young and expanding trout populations. At least one-third of their respective samples were represented in the younger age groups, I and II (Table 3). Milo #4 and Owl Lakes also suggest young trout populations, with the majority of their sampled trout in the I, II, and III age classes. Milo #4 Lake may be the most productive of these waters as all age groups represented in its population sample showed substantial growth over those of the other lakes. Chaldoceran #1 and Milo #3 Lakes may hold a mature or static population of rainbow trout since no fish in age groups I and II were taken, though rainbows in the older age classes were represented (Table 3). Chaldoceran #2 and Little Frazer Lakes may contain old and declining trout populations as only two old fish appeared in these samples (Table 3). Further population sampling is necessary to confirm or alter the foregoing indications.

Kelly and Twelve-Mile Lakes, located near Willow township, were test-netted and found to be nearly devoid of their former stocked rainbow trout populations.

TABLE 3 - Average Length by Age Groups of Rainbow Trout Sampled in Matanuska-Susitna Area Lakes, 1967.

<u>Lake Name</u>	<u>Survey Date</u>	<u>Number</u> <u>RB</u>	<u>Age Group*</u>	<u>Av. Length</u> <u>(cm)</u>
Charr	8/25/67	7	I	10.8
		-	II	--
		4	III	21.5
		3	IV	25.9
		4	V	33.2
		<u>3</u>	VI	<u>40.0</u>
		Totals	21	
Chaldoceran #1	7/14/67	3	III	24.4
		2	IV	29.5
		<u>2</u>	V	<u>35.0</u>
		Totals	7	
Chaldoceran #2	7/14/67	1	VI	36.8
Kelly	7/6/67	1	V	40.7
Little Frazer	8/24/67	1	VIII	59.7
Milo #2	10/6/67	5	I	11.3
		9	II	12.8
		4	III	24.3
		6	IV	32.4
		3	V	36.7
		<u>2</u>	VI	<u>43.0</u>
		Totals	29	
Milo #3	10/6/67	1	III	21.6
		-	IV	---
		2	V	31.8
		<u>3</u>	VI	<u>45.6</u>
		Totals	6	
Milo #4	10/7/67	2	I	14.1
		2	II	18.9
		1	III	33.0
		-	IV	--
		2	V	42.0
		1	VI	53.3
		<u>1</u>	VII	<u>58.4</u>
		Totals	9	
Owl	8/29/67	3	I	12.1
		3	II	16.8
		1	III	24.2
		<u>3</u>	IV	<u>27.5</u>
		Totals	10	
Twelve-Mile	7/6/67	--	--	----

*Designates Number of Annuli Formed as of Survey Date.

Kelly Lake was rehabilitated in 1960 and stocked with rainbow trout fingerlings in 1961, 1962 and 1964. One rainbow and 67 longnose suckers were caught in 75 net-hours, indicating that very few trout remain and the lake has been heavily reinfested with suckers. The inlet culvert was inspected and the screen barrier found inoperative, allowing access to undesirable fish species. The screen should be repaired or replaced prior to any future management.

Twelve-Mile Lake was stocked with rainbow fingerlings in 1960; silver salmon, Oncorhynchus kisutch (Walbaum), in 1961; and rainbow in 1962. No fish were taken in 72 net-hours, which suggests that none or very few still survive. There are no spawning areas for salmonids in this lake. A local resident reported large trout were caught from Twelve-Mile Lake in 1964 and 1965, but fishing has been poor since then. Twelve-Mile Lake is typically alpine in character and relatively shallow (observed maximum depth 14 feet). Prior experience indicates that grayling, Thymallus arcticus (Pallas), may be better suited for this environment. It is recommended that grayling be stocked in Twelve-Mile Lake to provide a sport fishery for the increased angler demand along the Willow Creek-Hatcher Pass road. At present, there is only a sparse, stunted Dolly Varden fishery throughout upper Willow Creek which parallels this scenic route.

Field work was limited during this report period due to the resignation of the incumbent fishery biologist on October 31, 1967.

LITERATURE CITED

Cramer, E.J. August 24, 1966. Departmental Memo. Nancy Lake State Recreation Area, (01512).

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Date: April 30, 1968

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Even with the Most Modern Equipment, Biologists often have to Resort to Age-Old Methods.