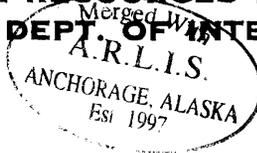


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STATE OF ALASKA

William A. Egan, Governor

Alaska Department of Fish and Game

C. L. Anderson, Commissioner

Sport Fish Division

E. S. Marvich, Director

ANNUAL REPORT OF PROGRESS, 1959-1960

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-1

SPORT FISH INVESTIGATIONS OF ALASKA

**ARLIS**

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## Introduction

This report of progress consists of the Job Completion Reports from the State of Alaska's Federal Aid in Fish Restoration Project F-5-R-1.

In 1959 the Alaska Department of Fish and Game, as an agency of the new state, became eligible for participation in the program. Prior to this time the Federal Aid in Fish Restoration activity in Alaska had been a function of the Fish and Wildlife Service. During territorial status the federally conducted operation was appreciably less than the program now possible as a state.

The new state program under the Dingell-Johnson Act was activated July 1, 1959. Eleven separate studies made up the "Sport Fish Investigations of Alaska" project. Eight of the eleven were designed to reconnoiter the state's recreational fisheries resource and to provide background for the development of specific investigations as the need became apparent. Three problems of immediate concern appeared sufficiently defined and full scale investigations were mounted to explore their management implications. These included studies of Arctic grayling, Southeastern king salmon and recreational fishing access.

All of the investigations pose problems unique to Alaska in some respects and all provide ample scope for original work in the fisheries field. The recreational fishing access study is an example. Most of Alaska's fishing waters are still in the public domain and unfettered by private holdings-- a unique situation. Successful prosecution of this activity now and in the immediate future can forestall many of the serious recreational use problems currently facing other states.

The various studies were staffed as personnel were recruited. Field work began as the supplies and equipment were procured. Initial progress was slowed somewhat by this and the necessary period of personnel indoctrination. A "cutoff" date for each job from one to three months before July, 1960 shortened the period covered. As a result, these first reports encompass an effective working period of considerably less than one year.

The enclosed progress reports are fragmentary in many respects and the interpretations contained therein are subject to re-evaluation as the work progresses.

ANNUAL REPORT OF PROGRESS  
INVESTIGATIONS PROJECT  
COMPLETION OF 1959-1960 SEGMENT

State: ALASKA

Project No.: F-5-R-1

Name: Sport Fish Investigations  
of Alaska

Job No.: 1-B

Title: Inventory and Cataloging  
of Sport Fish and Sport  
Fish Waters on the Kenai  
Peninsula and the Prince  
William Sound Drainages

Period Covered: August 20, 1959 to April 30, 1960.

Abstract:

Initial activities under Job 1-B were principally orientation and familiarization with the waters of the Kenai Peninsula. Surveys were initiated on a number of waters including Bear Lake near Seward, a possible contributor to the Salmon Creek silver salmon runs. Standard methods, including populations sampling, were utilized. The work, except for reconnaissance, was confined to the eastern side of the peninsula and to waters adjacent to the Sterling Highway. Indications of a terminal dolly varden population were found in Bear Lake.

Objectives:

To evaluate the extent, the potential and current use of the waters readily available to the area's anglers. To determine the relative need for further management investigations and to direct the course of such studies.

Introduction:

Field work under Job 1-B commenced on August 20, 1959, when the writer arrived in Seward to establish an office. Due to the late date of arrival, little detailed field work was accomplished. Primary effort was directed toward becoming familiar with the fishing waters on the Kenai Peninsula and areas of sport fishing pressure. Actual

inventory work was largely confined to the eastern side of the Kenai Peninsula during the fall season, while winter lake work was extended to lakes adjacent to the Sterling Highway.

Techniques:

Inventory work was initiated on Bear Lake and Upper Summit Lake during September and October. Experimental gill net sets were made to determine species composition and to collect age and growth data.

Physical inspection of each lake was undertaken. Tributary streams were examined for possible barriers to anadromous fish or to spawning migrations. Soundings were made to determine maximum depths and contour intervals.

Chemical analysis of lake waters were undertaken during the period of ice cover. Dissolved oxygen contents were determined using the unmodified Winkler method and pH was determined by use of a Hellige Comparator. Snow and ice cover depths were recorded.

Findings:

A. Bear Lake:

Bear Lake (T.1N R.1W Sec. 12 M.S.), a 350 acre (estimated) oligotrophic lake lies at mile 6, Seward-Anchorage Highway, and serves as a float plane base for the Seward area. It is the major red salmon spawning area in this drainage.

Due to the presence of spawning red salmon during August and September, gill netting was deferred until early October. Sixty hours of gill netting yielded 146 dolly varden. Mean length was 10.4 inches and the sizes ranged from 5.5 inches to 20.9 inches. Length-frequencies are indicated in Appendix A.

Scale samples were collected from 44 specimens.

Water samples were taken on December 28, 1959 and on January 25, 1960 for chemical analysis. Results are listed in Appendix B.

B. Upper Summit Lake:

Upper Summit Lake (T.7NR.1W Sec. 31M. SM) lies at mile 44 of the Seward-Anchorage Highway. The estimated size is 280 acres. Maximum depth is approximately 90 feet.

Forty hours of gill netting yielded 71 dolly varden. Mean length was 6.9 inches with a range of 5.0 inches to 9.7 inches. Length frequencies are illustrated in Appendix C.

Thirty scale samples were obtained but age analysis has not been completed.

Water samples were taken on January 6, 1960. Results are listed in Appendix D.

C. Other Lakes:

Inventory work was initiated on Grouse Lake, Lower Summit Lake, Jean Lake, Hidden Lake, Upper and Lower Alcatraz Lakes, Cooper Lake, Engineer Lake, Beluga Lake, China Poot Lake and Hazel Lake. This information is recorded on the Department's Standard Lake Survey form.

Chemical analysis of 22 lakes adjacent to the Sterling Highway was undertaken during December and January.

Recommendations:

Expand activities under Job 1-B in the 1960-1961 segment. Conduct detailed lake surveys with emphasis on lakes adjacent to the Sterling Highway between Cooper Landing and Ninilchik. Collect physical, chemical and biological data concerning lake productivity, species composition and abundance, and environmental conditions on all lakes to be investigated.

Conduct an inventory of the Resurrection Bay drainage in an effort to obtain data on the silver salmon stocks utilizing that drainage. Sample adult and juvenile stocks for collection of age-growth data and information as to magnitude of run. Conduct lake and stream surveys to obtain knowledge of spawning areas, timing of runs and magnitude of escapement.

Submitted by:

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Jean R. Dunn  
Research Biologist  
3 May 1960

Approved by:

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Alex H. McRea  
D-J Coordinator

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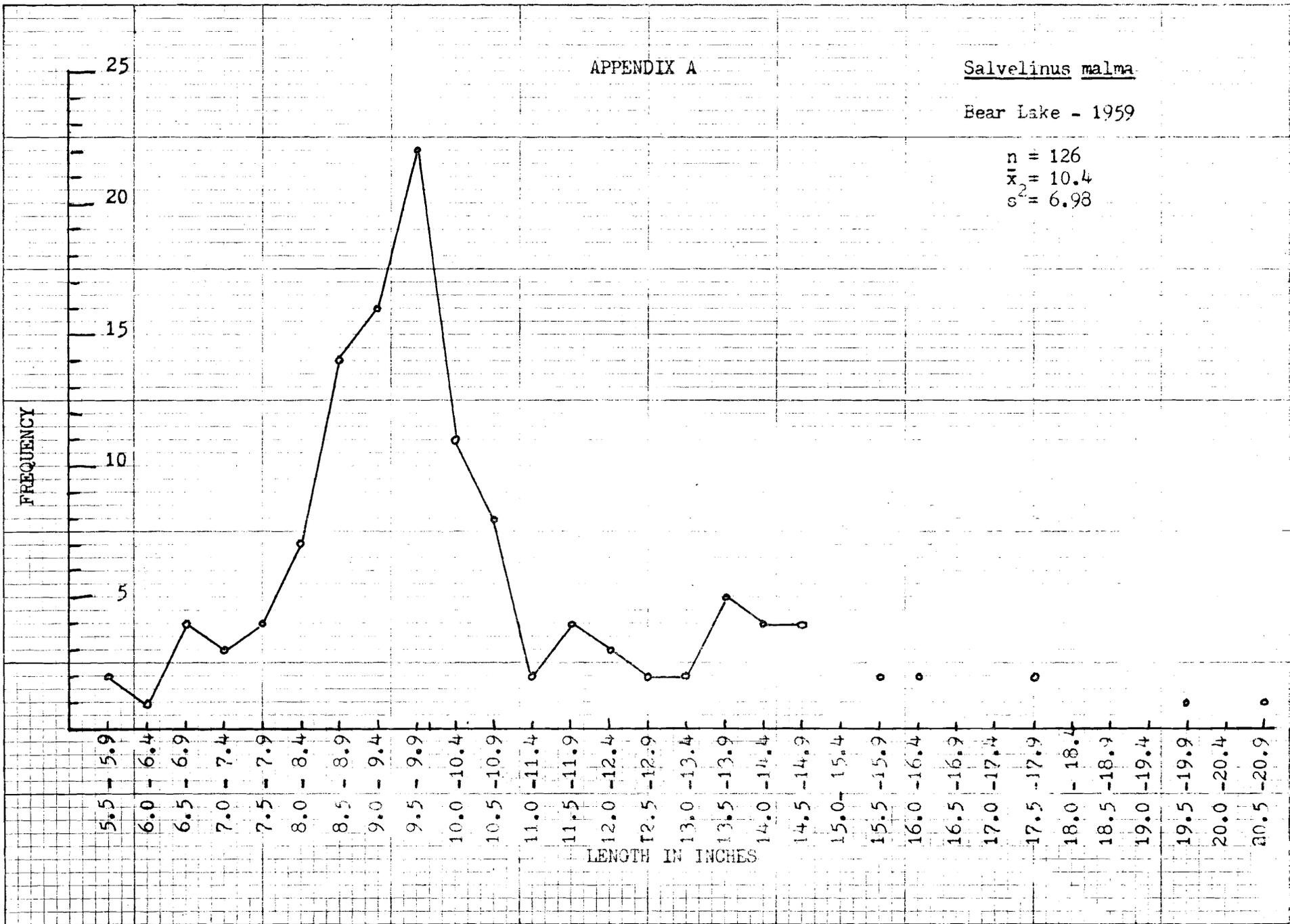
E.S. Marvich, Chief  
Sport Fish Division

APPENDIX A

Salvelinus malma

Bear Lake - 1959

n = 126  
 $\bar{x}$  = 10.4  
 $s^2$  = 6.98



Appendix B. Chemical Analysis of Bear Lake.

Station Number 1 - - 12/28/59

Ice Cover	28 inches
Snow Cover	31 inches
Sample Depths	50 feet; 86 feet
O <sub>2</sub>	7.8 ppm 4.9 ppm
pH	6.8 6.7
Air Temperature	5 <sup>o</sup> F

Station Number 1 - - 1/25/60

Ice Cover	32 inches
Snow Cover	22 inches
Sample Depth	50 feet; 86 feet
O <sub>2</sub>	8.9 ppm 6.1 ppm
pH	6.9 6.6
Air Temperature	3 <sup>o</sup> F

APPENDIX C

Salvelinus malma

Upper Summit Lake - 1959

$n = 71$   
 $\bar{x} = 6.9$   
 $s^2 = 0.931$

FREQUENCY

20  
15  
10  
5  
0

5.0 - 5.4

5.5 - 5.9

6.0 - 6.4

6.5 - 6.9

7.0 - 7.4

7.5 - 7.9

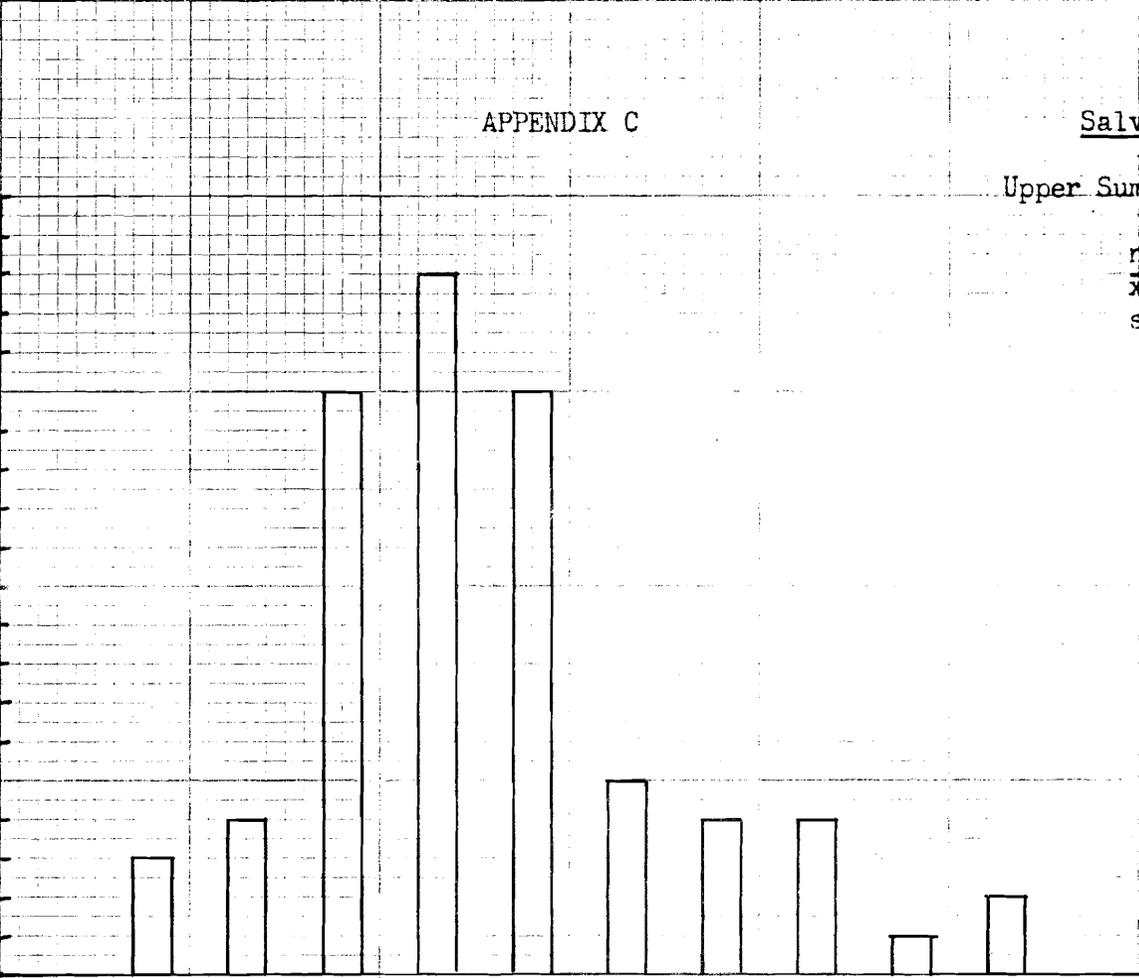
8.0 - 8.4

8.5 - 8.9

9.0 - 9.4

9.5 - 9.9

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Appendix D. Chemical Analysis of Upper Summit Lake.

Station Number 1 - - 1/6/60

Ice Cover	14 inches
Snow Cover	19 inches
Sample Depth	38 feet
O <sub>2</sub>	7.8 ppm
pH	7.25
Air Temperature	10 <sup>o</sup> F