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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 the Sport Fish and
Sport Fish Waters in
Upper Southeast Alaska

Job No: 3-A

Period Covered: July 1, 1962 to April 15, 1963

Abstract:

Inventory and cataloging of the waters of Upper Southeast Alaska was undertaken in 1961 (Volume 3, Report No. 3-A, Dingle-Johnson Report, 1961-62). This report is a continuation of that operation. The area covered is Juneau, Sitka and Petersburg-Wrangell.

Standard survey techniques were used in evaluating waters readily available or heavily utilized by sport anglers of this area. A total of 20 waters were visited during the period covered by this report. Eight of these waters are considered in detail and recommendations are presented for their management.

Recommendations:

Glacier and Moraine Ponds

As these ponds are readily available to sport fishermen of the Juneau-Douglas area, it is felt they should be placed under direct management. This management should consist of:

- (1) Construction of an artificial barrier at the outlet of Moraine Pond.
- (2) Rehabilitation of both ponds using rotenone as the toxicant.
- (3) Subsequent stocking with arctic grayling after detoxification.

These measures will accomplish the blocking of further fish migrations, the removal of undesirable species and the introduction of a new sport fish to the area.

Mendenhall Park Pond

This small pond is capable of furnishing only a limited amount of angling. The recommendations concerning the pond are:

- (1) Install a block to fish passage around the culvert intake.
- (2) Intensively net the pond to reduce or eliminate the existing fish population.
- (3) Stock with a desirable species.

Peterson Lake

This lake should continue to receive annual plantings of steelhead fry. The lake should be checked annually to determine fry survival and growth. An attempt should be made to determine the timing and extent of seaward migrations of these fish.

Biorka Island Pond

Although this pond does not present ideal rearing conditions, a planting of rainbow or cutthroat trout is recommended. If the initial stocking is successful, subsequent annual plantings are recommended. It is hoped residents of the island will be able to enjoy freshwater sport fishing as a result of the stocking.

Green Lake

Green Lake is in a position to provide excellent eastern brook trout angling. A boat has been placed on the lake for public use. Information of the lake has been presented via new releases and television appearances. It is recommended that no further management other than public information be undertaken.

Swan Lake

This lake also has an excellent sport fish population and has been promoted in conjunction with Green Lake. The city of Sitka is presently engaged in an urban renewal project which may result in dredging of Swan Lake. It is recommended no direct management be undertaken until the city has completed its renewal project and the lake resurveyed.

Twin Lake

Twin Lake does not lend itself to management as it becomes dry at low water periods. It does require further publicity concerning its Rocky Mountain whitefish population. Sportsmen were unaware of their existance in the area and consequently are unfamiliar with angling techniques required to take these fish. News releases are recommended to alleviate this situation.

It is further recommended that Cataloging and Inventory be continued through the 1963-64 season, with increased emphasis placed on investigations for suitable egg-take sites on steelhead and cutthroat trout.

Objectives:

To conduct lake, stream and marine surveys and evaluate the extent, the potential and the current use of the waters readily available to the area's anglers.

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

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

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

Introduction:

Upper southeast Alaska is an area composed of a narrow strip of continental North America, nine major islands and numerous smaller islands. The human population is presently congregated around seven major towns and several smaller villages. The only towns possessing an appreciable road system are Haines and Juneau.

Sport fishing in the area is primarily conducted on waters reached by either boat or aircraft. With these as the means of transportation, angling pressure is primarily restricted to waters located in close proximity to population centers. Surveys conducted under this project were limited to such waters.

The present field office was established in Wrangell in June, 1962. A considerable effort was expended by the biologist acquainting himself with the fishery of that area.

During the year a total of 20 various waters were visited, 13 in the Wrangell-Petersburg area, four in the Sitka area and three in the Juneau area. Management recommendations are submitted for eight of these waters.

Techniques Used:

Background information from prior studies conducted by the Alaska Department of Fish and Game and other

agencies were utilized in determining the course and extent of the surveys.

Four major criteria were used in selecting waters to be surveyed. These criteria were:

- (1) Finish incomplete surveys on waters presently under direct management measures.
- (2) Conduct surveys on waters that are now, or soon will be, subjected to appreciable angling intensities.
- (3) Survey waters that appear to hold a potential for providing recreational fishing.
- (4) Evaluate accessibility and accommodations available at the waters within the study area.

Species distribution and estimates of their comparative numbers were determined through the use of 125 foot variable mesh gill nets.

Age determination was made from scale analysis of collected fish.

Food habits were determined by stomach examination of collected fish.

Chemical data was recorded through the use of a Hach electrical colorimeter.

Spawning and rearing area was determined by visual observation.

Findings:

Table 1 lists the waters surveyed under this project. The waters which received incomplete surveys were visited so as to determine their exact location, size, species, composition and angling pressure. Waters,

TABLE 1

Waters Investigated During the 1962 Field Season

Name	Location	Survey	Outlet Flow	Species Present	Angler Utilization
Glacier Pond	Juneau	Complete	5 cfs ¹	Ct, DV, Rb, SS ²	Moderate
Mendenhall Park Pond	Juneau	Complete	5 cfs	DV	Light
Moraine Pond	Juneau	Complete	5 cfs	Ct, DV, Rb, SS	Moderate
Peterson Lake	Juneau	Incomplete	65 cfs	Sh	Moderate
Biorka Island Pond	Sitka	Complete	5 cfs	None	None
Green Lake	Sitka	Complete	293 cfs	EBT	Light
Indian River	Sitka	Incomplete	150 cfs	SS, PS, DV, Ct	Light
Swan Lake	Sitka	Complete	5 cfs	Ct, DV, SS	Moderate
Anan Creek	Wrangell	Incomplete	610 cfs	Sh, Ct, DV, SS, CS, PS, KS	Moderate
Andrews Creek	Wrangell	Incomplete	125 cfs	Sh, Ct, DV, SS, CS, PS, KS	Moderate-Heavy
Big Headed Tom Creek	Wrangell	Incomplete	200 cfs	DV, Ct, CS, PS, SS	Light
Crittenden Creek	Wrangell	Incomplete	66 cfs	Sh, DV, Ct, PS, CS, SS	Moderate
Eagle River	Wrangell	Incomplete	200 cfs	Sh, DV, Ct, PS, CS, SS, KS	Light
Harding River	Wrangell	Incomplete	1,100 cfs	Sh, DV, Ct, PS, CS, SS, KS	Light
Kunk Lake	Wrangell	Incomplete	38 cfs	Sh, Ct, DV, PS, CS	Heavy
North Arm Creek	Wrangell	Incomplete	50 cfs	Ct, DV, PS, CS, SS	Heavy
Pats Creek	Wrangell	Incomplete	50 cfs	Ct, DV, PS, SS	Heavy
Shakes Creek	Wrangell	Incomplete	105 cfs	Sh, Ct, DV, PS, SS	Heavy
Twin Lake	Wrangell	Complete	10 cfs	Ct, DV, Wf	Heavy
Virginia Lake	Wrangell	Incomplete	441 cfs	Ct, DV, RS	Heavy

1. Flow is given in cubic feet per second

2. Species listed are: Ct=Cutthroat; DV=Dolly Varden; Sh=Steelhead; Rb=Rainbow; KS=King Salmon; SS=Silver Salmon; CS=Chum Salmon; PS=Pink Salmon; RS=Red Salmon; Wf=Whitefish

which received a complete survey, were subjected to test-netting with captured fish receiving full examination, chemical and temperature investigation and spawning area observation. The waters which received a complete investigation are discussed in detail below by area.

JUNEAU AREA

Glacier and Moraine Ponds

These two ponds are considered together as they adjoin each other and are interconnected by a small creek. They lie in glacial pot holes on the fore-plain of Mendenhall Glacier in the Tongass National Forest. Glacier Pond is 5.5 acres in size and has a maximum depth of 25 feet. Moraine Pond is 4.3 acres in size and has a maximum depth of 14 feet. Both ponds were rehabilitated in June of 1956. At this time artificial barriers were installed to prevent reinfestation by undesirable species. After detoxification, plants of rainbow trout were made in each pond.

The current survey revealed one barrier to be missing and the other nonfunctional. Test netting employing one 125 foot variable mesh gill net, for a 24 hour period, was conducted in each lake and the results are given in Table 2.

TABLE 2. Test Netting Results, Glacier and Moraine Ponds

July 10-11, 1962

Species	Fork Length	Weight	Sex	Age	Stomach Contents
Moraine Pond					
Rainbow	16.0 in.	2.0 lbs.	female	4	sticklebacks
Glacier Pond					
Rainbow	18.1 in.	1 lb. 10 oz.	female	4	snails
Cutthroat	11.7 in.	7 oz.	female	2	unid.
Dolly Varden	9.4 in.	5 oz.	female	-	Odonata larva
Dolly Varden	9.0 in.	4 oz.	male	-	Odonata larva

Mendenhall Park Pond

This body of water is located in the new public camping area adjacent to Mendenhall River. The pond is approximately three acres in size and has a maximum depth of eight feet. The pond drains through a culvert directly into Mendenhall River. During periods of high water, Mendenhall River will back into the pond turning its waters glacial.

One test net was set in the pond for 24 hours on July 10-11, 1962. At this time the pond was slightly glacial and exhibited a constant temperature of 62 degrees Fahrenheit. The pH was found to be 6.6. Two Dolly Varden were recovered from the net. One was a 12.0 inch male that weighed 8.9 ounces. This fish was found to have been feeding on finger-nail clams. The other was a 11.25 inch female that weighed 7.8 ounces. It's stomach was empty.

Peterson Lake

Peterson Lake is located approximately 25 miles northwest of Juneau, in the North Tongass National Forest. It is readily accessible by car and a three mile trail. The lake is not accessible to fish migrations because of impassible falls in the outlet system. Peterson Lake was rehabilitated in June of 1961 and, following detoxification, was planted with 14,300 steelhead type rainbow fry. It is believed these fish will migrate to sea and subsequently return to the lower portion of the outlet creek and provide recreational steelhead fishing for anglers of the Juneau-Douglas area. Due to the fresh-water and saltwater growth period involved, this fishery is not expected to be available until the spring of 1966.

The lake was sampled in July of 1962 using minnow traps to determine the survival and growth of the planted fish. Two minnow traps fished for 48 hours and captured three of the planted steelheads. They ranged in size from 2½ to 3 5/16 inches. No reinfestation was found or

observed. Though growth appears slow, it is felt the planting was successful.

This lake received an additional planting of 16,000 steelhead fry in 1962.

SITKA AREA

Biorka Island Pond

This five acre body of water lies on Biorka Island approximately 12 miles from Sitka. The island is a military installation housing a U.S. Coast Guard Loran station and a Federal Aviation Agency station. From 20 to 25 people are in residence here and have no fresh-water recreational fishing available.

A survey was conducted on June 21, 1962. The lake was found to be shallow and heavily weeded. A chemical check showed the lake to have a dissolved oxygen content of 6.3 parts per million and a pH of 6.2. Air and water temperature coincided at 64 degrees Fahrenheit. Observation of the shoreline, the inlet and the outlet failed to disclose any fish or spawning area. Two impassable falls were recorded in the outlet.

Green Lake

Green Lake is a 157 acre body of water that lies at the head of Silver Bay. It is easily reached by small boat and a one-half mile trail or by aircraft. The lake discharges into the Vodopad River which flows .35 miles through a series of cascades to saltwater. These cascades are an effective block to fish migrations.

The lake was surveyed on August 1-2, 1962. Two test nets were fished a total of 72 net hours. Eastern brook trout were the only fish captured or observed. A total of 31 trout were examined. The fork length of these fish ranged from 6 $\frac{1}{16}$ inches to 16 $\frac{3}{8}$ inches, with a mean size of 10 $\frac{1}{2}$ inches. The weight ranged from

weight from 1/2 ounce to 1 pound 6 ounces. Their mean length was 11.8 inches and mean weight was 10 ounces. The Dolly Varden averaged 8.75 inches and 3 ounces. The eastern brook trout was 10.5 inches and 8 ounces. The predominant food item was stickleback which were observed in large numbers in the shoal area.

Chemical investigation showed the dissolved oxygen concentration to be 6 parts per million at the surface, 2.2 parts per million at 6 feet, 1 p.p.m. at 8 feet and .5 p.p.m. at 11 feet. No fish appeared in nets set below 6 feet. A heavy concentration of organic matter and sewage on the lake bottom is believed responsible for the low oxygen readings. The pH was found to be 6.5. The temperature was found to remain constant at 64^o F. from the surface to 5 feet then it dropped evenly to 52.5^o F. to the bottom (11 foot depth).

PETERSBURG - WRANGELL

Twin Lakes

Twin Lakes lies on the north shore of the Stikine River approximately 12 miles east of salt water. All surrounding land is in the Tongass National Forest. This lake has a surface area of 25 acres. It is very shallow with a maximum depth of 4 feet at the time of survey. During extremely low water periods, the lake is known to go completely dry.

Sampling was accomplished through the use of two test nets for a period of 12 net hours. The results of the test netting are illustrated in the following table.

The cutthroat ranged in age from 1 to 4 years, the whitefish from 20 to 6 years and the suckers from 2 to 3 years. The cutthroat were found to be feeding heavily on tadpoles while the whitefish preferred caddis larva. Sex ratio of the whitefish was 21 males to 26 females, of the cutthroat 26 males to 25 females.

TABLE 4. Test Netting Results, Twin Lake

August 16-17, 1962

Species	Number	Size	Weight	Mean Size	Mean Weight
Cutthroat	51	4 1/8- 14 1/4 in.	1/4 oz.- 1 lb.	10 1/8 in.	6 oz.
Whitefish (Rocky Mountain)	53	6 1/4- 12 3/8 in.	1 1/2 oz.- 13 oz.	8 3/4 in.	4.4 oz.
Sucker	5	7 3/8- 10 1/4 in.	2 1/2 oz.- 7 oz.	8 7/16 in.	4.3 oz.

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