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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, 1960-1961

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-2

SPORT FISH INVESTIGATIONS OF ALASKA

Alex H. McRea, Coordinator, Juneau
Robert T. Baade, Fishery Biologist, Ketchikan
Gary L. Finger, Fishery Biologist, Juneau
Jean R. Dunn, Fishery Biologist, Seward
Edward J. Cramer, Fishery Biologist, Anchorage
Rupert E. Andrews, Fishery Biologist, Palmer
George L. Van Wyhe, Fishery Biologist, Glennallen
Roger J. Reed, Fishery Biologist, Fairbanks

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-2, "Sport Fish Investigations of Alaska".

The current Project is composed of eighteen separate studies and were designed to evaluate the various aspects of the State's recreational fisheries resources. The information gathered will provide the necessary background data for the development of future programs. During the current segment continued emphasis was placed on overall inventorying of accessible waters and the evaluation of general catch data.

Several problems of immediate concern appeared sufficiently defined to warrant independent studies. As a result, two independent creel censuses, one experimental silver salmon egg take and a Resurrection Bay area silver salmon population study were instigated. Data accumulated from prior jobs dealing with the Arctic grayling has resulted in the formulation of three separate investigations during the current segment.

The rapid expansion of Alaska's population is being reflected in the ever increasing numbers of "No Trespassing" signs encountered in the vicinity of population centers. Fortunately, much of Alaska's fishing waters are still in the public domain. An aggressive program of acquiring access to fishing waters, instigated in 1959, was continued during the present segment. Increased emphasis is being placed on this job and the successful continuation of this activity, now and in the immediate future, will forestall many of the serious recreational use problems currently facing other states.

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 PROJECTS
COMPLETION OF 1960 - 1961 SEGMENT

State: ALASKA

Project No: F-5-R-2 Name: Sport Fish Investigations
of Alaska

Job No: 1-A Title: Inventory and Cataloging
of the Sport Fish and
Sport Fish Waters in
Southeast Alaska

Period Covered: July 1, 1960 to April 15, 1961.

Abstract:

The inventory and cataloging of sport fish and sport fish waters in Southeast Alaska was continued for the second year. Standard lake and stream surveys were conducted on 29 previously unsurveyed lakes. Sixteen of the lakes showed promise for management and were more fully evaluated.

The investigation of possible steelhead and silver salmon brood stock sources were pursued. Seven stream systems were investigated. Seining of ripe steelheads from several of the streams proved impractical.

Recommendations for continuing the inventory and cataloging investigations, the reconnaissance of egg-taking sources, and stocking are given.

Objectives:

To investigate the extent, the potential and the 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.

Techniques:

The procedure followed was a continuation of the program set forth in the preceding report. A considerable amount of data, furnished from previous Fish and Wildlife Service surveys, remains to be processed.

Standard lake and stream surveys were continued using sampling gill nets, hook and line, seining, etc., to establish the presence, or absence, of fish species; food organisms and other pertinent data. The size of the area precludes particularly extensive survey work on any one lake or stream except on those "problem waters" usually near population centers.

A specific effort was made to examine previously planted lakes, and lakes presumed to be barren of fish by reason of impassible barriers to migrating salmonoids in their outlet drainages. The altitude of these waters ranges from 600 feet to 3,000 feet above sea level and most are reached, at present, only by plane. Test-netting was also done in other waters to establish the species composition of the fish population.

The first species on which an egg-take was attempted was steelhead. The method of capture was by seining. Two seines were used, one set below the fish and the other above. The upper net was then moved down to the lower net, trapping the fish between them. No egg-taking was attempted on silver salmon, dolly varden or rainbow trout although information was gathered on where abundant concentrations of these species occur.

Findings:

Investigation of 29 previously unsurveyed lakes was conducted throughout the district. Several lakes which were reported to be barren proved to contain trout or chars. Also, several supposedly barren lakes which were previously planted with rainbow trout were found to have resident populations of less desirable species. In most of these instances the resident fish defeated the attempt to establish a population of rainbow trout or grayling. Several barren lakes were found to be unproductive due to glacial turbidity. With lakes above 2,500 feet elevation it is doubtful if the ice-free period is long enough to permit a temperature range acceptable to desirable sport fish.

The waters listed below were added to the general inventory and cataloging information recorded on the Department's Standard Lake and Stream Survey forms. They are listed in the order of their geographic location from north to south.

	<u>Body of Water</u>	<u>Location</u>	<u>Nearest Community</u>
1.	Goat Lake	Skagway R.	Skagway
2.	Black Lake	Skagway R.	Skagway
3.	Chilkoot Lake	Lutak Inlet	Haines
4.	Mosquito Lake	Klukwan	Haines
5.	Unnamed (Marmot L.)	Berners Bay	Juneau
6.	Unnamed(Crevise Cr.L*)	Berners Bay	Juneau
7.	Young's Lake	Admiralty Cove	Juneau
8.	Unnamed(Glory Lake*)	Norris Glacier	Juneau
9.	Slide Lake	Seymour Canal	Juneau
10.	Upper Sweetheart Lake	Port Snettisham	Juneau
11.	Swan Lake	Sitka	Sitka
12.	Unnamed (DeBoer*)	Thomas Bay	Petersburg
13.	Unnamed (Lower Spurt Point Lake*)	Thomas Bay	Petersburg
14.	Swan Lake	Thomas Bay	Petersburg
15.	Petersburg Lake	Lindenburg Penin- sula	Petersburg
16.	Kah Sheets Lake	Kah Sheets Bay	Petersburg
17.	Pat's Lake	Zimovia Strait	Wrangell
18.	Kunk Lake	Zimovia Strait	Wrangell
19.	Claude Lake	Bell Island Narrows	Ketchikan
20.	Le Duc Lake	Chickamin R.	Hyder
21.	McDonald Lake	Yes Bay	Ketchikan
22.	Patching Lake	Naha River	Ketchikan
23.	Heckman Lake	Naha River	Ketchikan
24.	Unnamed(Amber L.*)	Manzanita Bay	Ketchikan
25.	Big Lake	Thorne Arm	Ketchikan
26.	Unnamed(Notch Mountain Lake*)	Thorne Arm	Ketchikan
27.	Wilson Lake	Sweators Bay	Ketchikan
28.	Unnamed(Moira Lake*)	Aiken Cove	Ketchikan
29.	Clover Lake	Clover Bay	Ketchikan

*Arbitrary names; there are none on the U.S.G.S. Topographical Maps

Sixteen lakes were gill netted in contemplation of further management work. Comparatively intense attention was given these waters which resulted in useful data not always paralleling the initial evaluation. These waters will be discussed individually.

(1) Goat Lake:

This lake is located on the mainland 6.5 miles northeast of Skagway at an elevation of 2,915 feet above sea level. The inlets to the lake enter through talus slopes on the eastern shore. The outlet drops 2,825 feet in 1-1/8 miles and is impassable to upstream fish migrations. The lake lies above timber line and is deep, cold and partially turbid. The shore is composed of bedrock and slide-rock. No food organisms were observed.

Local residents claim the lake to be barren although it was planted with 750 eastern brook trout in 1932. Two graduated mesh gill nets were set in the lake on September 28, 1960; no fish were taken. It is recommended that this lake be subjected to further study to determine if it will support game fish.

(5) Unnamed Lake (Marmot Lake*):

This lake lies above the confluences of the Lace and Antler rivers in Berners Bay at an elevation of 3,160 feet above sea level. It is approximately 650 surface acres in size. The lake appears quite deep although the water is glacial and the limit of visibility is 15-24 inches below the surface. There is ample room to land a plane. Two gill nets failed to take fish in five days of fishing. (September 28 to October 3, 1960). It appears unlikely that fish would survive in this lake.

(6) Unnamed Lake (Crevice Creek Lake*):

This body of water lies east of Berners Bay and south of the south fork of the Antler River at an elevation of 1,950 feet. The outlet consists of a series of falls, impassable to fish. At the lake the outlet disappears behind a huge bedrock slab and emerges below in a series of falls. There is good spawning gravel in the inlet stream which originates from a small lake in a cirque above. Two gill nets were set in this lake on September 28, 1960, over smooth bottom at the head of the lake. They were recovered on October 3 void of fish. Food organisms appeared adequate and the lake was liberally populated with copepods. This lake should support a desirable fish population and an experimental plant of rainbow trout or grayling is recommended.

(8) Unnamed Lake (Glory Lake*):

This body of water lies south of Norris Glacier off Taku Inlet near Juneau. It is 1-3/8 miles long by 1/4 mile wide, and lies at an elevation of approximately 360 feet above sea level; it appears quite deep. The lake is of the glacial remnant type. The surrounding mountains rise to 4,000 feet. Two gill net sets, September 24 and 27, 1960, accounted for 14 dolly vardens 6-8 inches in length. There are shoal areas on both ends of the lake. This lake appears to be capable of supporting a rainbow trout or grayling population if the dolly varden are removed. It is felt that rehabilitation and subsequent restocking of this lake would attract sport anglers.

(9) Slide Lake:

This body of water lies on Admiralty Island, 2-1/2 miles west of Swan Cove. It is a wedge-shaped lake 1-1/2 miles long and 1/4 mile wide at the base. Its elevation is 510 feet. The water is clear and deep. The outlet is impassible to migrating fish. There is a comparatively large drainage area above the lake. The inlet is subject to divarication from beaver activity. It appears relatively fertile by visual inspection. Two experimental gill net sets between September 24 and 27, 1960, accounted for 160 resident dolly varden ranging in size from six to 26 inches. There was no visible evidence that the grayling, introduced here on the premise that the lake was barren, had survived. Future management recommended is rehabilitation and subsequent restocking with a desirable sport fish species.

(10) Upper Sweetheart Lake:

This lake is located, above Lower Sweetheart Lake, north of Tracy Arm of Holkham Bay. The lake is above timberline at an elevation of 1,865 feet. There are shoals in the upper end of the lake and rocky reefs along both sides and the outlet. It is 1-1/4 miles long and the water is clear. No fish were taken in two nets set for three days (September 24-27, 1960). Food production appeared fair by visual inspection and the lake will support fish. Possibly this lake should be held for a trial stocking with Arctic grayling.

(12) Unnamed Lake (DeBoer Lake*):

This lake lies to the north of Thomas Bay near Petersburg at an estimated elevation (plane altimeter) of 1,500

feet. There is no published large scale map of the area so that all figures on it are estimates. The water is clear; the lake is deep and is of glacial origin in a high cirque. It is 1-1/4 miles long and 1/4 mile wide. There is a good gravel bottom stream at the head of the lake but the water temperature may be too low to attract spawning fish. The sides of the lake are very precipitious making shore angling impossible. There is no gravel in the outlet and the lake breaks immediately over a 200-foot falls. The lake was judged to be barren and planted with rainbow trout by the Fish and Wildlife Service in 1955. Two gill nets were set off the shoal drop-off at the head of the lake. One net was unsuccessful, the other held four adult rainbows 15 to 15-3/4 inches. No other age class of fish was taken indicating little or no spawning success. A fishery may be maintained by periodic introductions of rainbows.

(13) Unnamed Lake (Lower Spurt Point Lake*):

This lake is located on the mainland above Spurt Point in Thomas Bay. The lake lies at an approximate elevation of 700 feet (plane altimeter). The surface area is approximately 750 acres; the lake is two miles long. There are impassable falls in the outlet immediately below the lake. The shorelines are gravel beaches with considerable stretches of bedrock. The surrounding area is timber and muskeg which stains the water a characteristic brown. The lake has many islands and reefs at the south end where it appears an outlet once flowed. The inlet is a permanent stream with good accessible spawning gravels. The water exchange at normal lake levels is seven to nine c.f.s. Rainbow trout were planted in this lake in the form of eyed eggs by the Fish and Wildlife Service in 1954 in the belief that the lake was barren. Two gill nets were set in the lake on August 29, 1960, off the inlet gravel bar and retrieved the next day. One mature dolly varden 8-1/2 inches long was taken, possibly explaining the failure of the eyed egg plant. If local pressure warrants, this lake may be rehabilitated and a more acceptable sport fish stocked.

(14) Swan Lake:

This body of water lies on the mainland east of the south end of Thomas Bay. Petersburg is its closest community. The lake lies at an elevation of 1,514 feet and is above timberline. The lake is of glacial origin and has steep banks. Glacial (milky) water colors portions of the lake at times.

Water depths run to several hundred feet. Its area is approximately 1,500 surface acres. Falls in the outlet deny access to returning fish. It is questionable as to whether the inlet streams are warm enough for spawning. Rainbow trout were introduced by the Fish and Wildlife Service and the Alaska Department of Fish and Game. Two nets were set off the inlet. One net took seven fish, the other, set too deep, contained no fish. The catch indicated two year classes but none had spawned. Size ranges were 11-1/2 to 13 inches and 9-1/2 inches respectively. This lake will support fish at an acceptable growth rate.

(19) Claude Lake:

This lake is on Revillagigedo Island opposite and south of Anchor Pass. It is a mile long and over 1/4 mile wide near the outlet. A series of impassable falls drop from the lake outlet to Cow Creek - a stream distance of one mile with a 570 foot drop off. The inlet stream is several miles long and has numerous beaver dams. The lake is clear, and lies at an elevation of 587 feet above sea level. Shoal areas are present near the inlet and outlet ends. The remaining shoreline is steep. Eastern brook trout were planted in the lake in 1931 by the U. S. Fish and Wildlife Service. A gill net was set in this lake on September 7, 1960, and retrieved September 12. Seven brook trout, all adults, were taken. Size ranged from 6-1/4 to 8-1/2 inches in length. There is no immediate management demand for the rehabilitation of this lake.

(20) LeDuc Lake:

This lake of approximately 325 surface acres lies on the mainland and is tributary to the Le Duc River near its confluence with the Chickamin River, Behm Canal. It lies above timberline at an elevation of 1,384 feet. The water is clear and depths run to well over 100 feet. The outlet has impassable falls. The inlet, at the head of the lake, has a normal water exchange of approximately seven cubic feet per second. The inlet has good spawning gravels but may be too cold to induce spawning. The lake shore, at the head, is very steep. The lake was planted with rainbow trout by the Fish and Wildlife Service in 1955. A net was set off the shoal drop-off at the head of the lake on September 1, 1960, and retrieved next day. It held three rainbow trout 15-1/2 to 16 inches in length. All

were adult fish in fine shape. Subsequent work is needed to determine the extent of natural reproduction, if any.

(24) Unnamed Lake (Amber Lake*):

This body of water is on Revillagigedo Island between Manzanita and Grace lakes and drains into Manzanita Bay. The lake is 1-1/4 miles long and 1/4 mile wide at its greatest width. It lies at an elevation of 640 feet above sea level. Its surface area is approximately 180 acres. There are impassable falls in the outlet. There is good spawning gravel in the outlet and the inlet. The water exchange rate at normal flow is five c.f.s. The lake is in a timbered and muskeg area and the periphery is sloping gravel or slide-rock. Two gill nets were set in this lake on September 1. They were retrieved next day and contained no fish. The lake appears reasonably fertile and will support a game fish population.

(25) Big Lake:

This lake is on Revillagigedo Island in the Fish Creek drainage at the head of Thorne Arm. It is the second lake above the beach with a 60 foot falls between it and Low Lake. It lies at an elevation of 291 feet above sea level and is approximately 250 acres in size. There are a number of tributary lakes and only a riffle separates the nearest from Big Lake at normal water levels. The lake shores are mostly sand and gravel with some slide and bedrock stretches. There are numerous islands in the lake. The water depths are in excess of 100 feet and the water is clear though slightly tea-colored. The normal water exchange rate is approximately 65 c.f.s. Two gill nets were set in this lake on September 7, 1960, and retrieved on September 12. One net was set across the bay from the inlet and one net at the outlet. The outlet net caught twelve cutthroat 9 to 17-1/2 inches and 24 dolly varden 6-3/4 to 11-1/2 inches in length. At the inlet, 11 cutthroat 9 to 15-1/4 inches and 53 dolly varden 7-1/4 to 11-1/2 inches in length were taken. Dolly varden are known to be in the other lakes of the system. No additional management is necessary on this lake at present.

(26) Unnamed Lake (Notch Mountain Lake*):

This lake is on the southern edge of Notch Mountain between Thorne Arm and Point Alava on Revillagigedo Island. It is a long narrow hook-shaped body of water. It is of

approximately 100 surface acres and lies at an elevation of 1,050 feet. There are bedrock reefs and islands in the lake. The shoreline is sand and gravel with much bedrock in evidence. The lake is over 100 feet deep and the water is brown with muskeg stain. The drainage area is relatively small and at times little or no water comes over the bedrock dike crossing the outlet. There are impassable falls in the outlet. Two gill nets were set in this lake on September 12, 1960; they were retrieved on September 16 (four days) and contained no fish. The lake appears relatively fertile and should support game fish when introduced.

(28) Unnamed Lake (Moirra Lake*):

This body of water is located on the southeast edge of Eudo Mountain on Prince of Wales Island. Its outlet flows northerly into Aiken Cove at the head of the north arm of Moirra Sound. The lake lies at an elevation of 1,119 feet. It is approximately one mile long and has an approximate surface area of 250 acres. The outlet contains impassable falls immediately below the lake. The inlets are intermittent. The water is clear and the normal exchange is four c.f.s. Depths run well over 100 feet. It was stocked with rainbow trout eyed eggs by the Fish and Wildlife Service in 1954. A net was set on September 14, 1960, and retrieved next day. No fish were taken. The lake appears to be able to support a game fish population. Additional work should be done on this lake to determine conclusively if the eyed egg plant was unsuccessful. A possible replant using fry may yield positive results.

(29) Clover Lake:

This body of water is located on Prince of Wales Island in the Clover Bay drainage. It is gourd-shaped with the inlets and outlet on the large end. It lies at an elevation of 1,388 feet and has a relatively small drainage area. The normal water exchange is less than five c.f.s. The water is brownish with muskeg stain. There are impassable falls in the outlet. The lake surface is approximately 180 acres. Depths run to over 100 feet. The shorelines are largely bedrock and talus with finer material on the inlet shores. The lake is well above timberline. This lake was planted by the Fish and Wildlife Service in 1956 with rainbow trout. A gill net was set in the lake on September 14, 1960, and retrieved the next day. One 15-3/4" rainbow trout was taken. Further

checking may show that the fish have been unable to spawn successfully in which case the lake may be restocked as the output declines.

Broodstock Investigation:

The investigation and evaluation of possible steelhead and silver salmon broodstock sources was pursued. Attempts were made to seine spawning steelhead in several streams. This however did not prove to be the most practical method.

A run was made to Naha River on May 5, 1960, to attempt to seine spawning steelhead. None were seen in areas where a net could be used. No fish were seen on the spawning gravels above the old Bear Observatory where numbers of steelhead normally spawn.

Fish Creek was checked on April 27, 1960, for spawning steelhead. Few fish were seen and these were widely scattered. Three fish, all males, were taken on sport gear. Fish seemed less numerous than usual for this location.

The two creeks in Coho Cove were checked on May 6, 1960. No spawning steelhead were observed.

Lucky Cove Creek was also checked on May 6, 1960. Four steelheads were seen at the falls located one mile upstream from the beach. No attempt was made to net these fish; a seine could not be used on the rough bottom. No further attempt to seine this area was made.

Snake Creek was not checked during the spring of 1960 but steelhead and silver salmon have been observed there in previous years. The facilities of the Fish and Wildlife Service have been turned over to the Alaska Department of Fish and Game for use in future work. It may be necessary to install a weir and operate at this site if plans for the spring of 1961 do not prove productive.

Due to insufficient time Porcupine Creek above Haines was not investigated.

Spit Point Creek on Carroll Inlet was checked on April 22, 1960; steelhead were seen. The presence of new redds indicated some spawning had obviously taken place. The

stream was visited again on April 25 and two groups of steelhead were netted. Thirteen of these fish were females of which two were green, ten were spent and one produced approximately 1,000 eggs. The remaining fish were all males.

Plans are presently being considered for a joint venture between a commercial fisheries and the Department for 1961. A permit fishery for the taking of dolly varden in the lower Chatham Strait area may be used to acquire sufficient steelhead to meet spawn requirements for experimental lake stocking. Tentative plans call for weirs to be placed in Pillar Bay, Tebenkof Bay (both on Kuiu Island) and Gut Bay on Baranof Island. The steelhead taken incidental to the dolly varden will be held until ripe, spawned, and the resulting eggs incubated at the Department's Deer Mountain Hatchery in Ketchikan.

Recommendations:

Continue the inventory and cataloging work through the succeeding job segment. Expand the information currently available on those waters supporting comparatively intensive fishing pressure, or with indications of suitability for practicable management measures. Comprehensive population sampling and physical surveys should be included on these waters.

Stock grayling in the following lakes as soon as a supply of these fish becomes available: Unnamed (Crevice Creek Lake) and Upper Sweetheart Lake.

Stock rainbow trout in the following lakes: Unnamed Lake (Amber Lake), Unnamed Lake (Notch Mountain Lake) and Unnamed Lake (Moir Lake).

Continue the reconnaissance of possible egg-taking sources for indigenous salmonoids with emphasis on steelhead and silver salmon. Check further on the Snake Creek site as to practicality for an operation of this sort.

Prepared by:

Approved by:

Robert T. Baade
Fishery Biologist
15 April 1961

Alex H. McRea
D-J Coordinator

E. S. Marvich, Director
Sport Fish Division