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STATE OF ALASKA

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Alaska Department of Fish and Game

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Sport Fish Division

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ANNUAL REPORT OF PROGRESS, 1961-1962

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-3

SPORT FISH INVESTIGATIONS OF ALASKA

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## INTRODUCTION

This report of progress consists of the job completion reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-3, "Sport Fish Investigations of Alaska."

The current project is composed of twenty separate studies and was designed to evaluate the various aspects of the State's recreational fishery resources. The information gathered will provide the necessary background data for better management practices and for the development of future studies. During the current segment, continued emphasis was placed on the overall inventory and cataloging of accessible waters, evaluation of catch data, and investigations on various species of fish.

As a result of several problems of immediate concern, several new studies were instigated during the report year. Data accumulated from these studies has helped solve some problems in projects already in progress.

The population of Alaska is increasing rapidly and this is being reflected in the ever increasing number of "No Trespassing" signs put up by individuals in the vicinity of population centers. Fortunately, much of Alaska's fishery waters are still in the public domain. The division's program of acquiring access to fishing waters continued at a much faster pace since being instigated in 1959. Emphasis is being placed on this job and the successful continuation of this activity will forstall many 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.

JOB COMPLETION REPORT  
RESEARCH PROJECT SEGMENT

State: ALASKA

Project No: F-5-R-3

Name: Sport Fish Investigations  
of Alaska

Job No: 8-B

Title: Population Studies of King  
Salmon in the Upper Cook  
Inlet Drainage

Period Covered: June 1, 1961 to February 1, 1962

Abstract:

A survey was made of the Susitna River Drainage to determine the distribution, timing and abundance of king salmon.

The first fish were seen on May 17, 1961, in Alexander Creek. A high count of 170 spawning king salmon was made in Willow Creek on July 6. Aerial counts were made on eleven streams. Creel census information was obtained from thirteen streams with a recorded sport catch of 423 king salmon; of these, 262 were taken from Sheep Creek. The catch per hour in Sheep Creek was 0.3 king salmon.

Recommendations:

The aerial counts of salmon should be continued on the Talachulitna River, Sheep Creek, Chunilna River and Lake Creek. A continued search should be made for counting weir sites. The areas used by sport anglers should be further defined and additional creel census data collected in 1962. An effort should be made to obtain lengths, weights and scales from commercially caught salmon delivered to Cook Inlet canneries.

The following streams can be deleted from the survey list: Fish Creek (Croto Slough), Sevenmile Creek, Eightmile Creek, Lane Creek and McKenzie Creek. They have been surveyed and found too small to be of value.

It is recommended that sport fishing for king salmon be closed soon after July 4. At that time they are on the spawning grounds.

#### Objectives:

To determine the distribution, numbers, seasonal timing and age and growth of king salmon in Cook Inlet drainages.

To determine the present sport fish catch of king salmon and evaluate the expansion or trend of the angling pressure and its impact on the king salmon stocks.

To determine and recommend management requirements.

#### Techniques Used:

A two-man crew surveyed the area by airplane, boat and on foot. Records were made of fish species observed by location, and, when possible, their abundance. Air charter services and individual fishermen were contacted and requested to record sport fishing effort and success. Project personnel checked creels at every opportunity. Aerial surveys were made to observe the distribution and numbers of king salmon on the spawning grounds. Several streams were surveyed on foot to obtain sex ratio and length frequency information. Species composition data was obtained by angling.

To determine numbers of salmon, two methods were tried. Observations were made from a slow-flying plane and by walking the stream banks. Neither method was completely satisfactory but the aerial counting was the quickest and cheapest. Streams of the Susitna drainage may be arbitrarily classified according to color as: (1) clear, (2) brown, (3) milky, and (4) muddy. The

clear streams are best surveyed by plane, while the others need different methods for enumerating the fish. The data obtained demonstrate that most fish were seen in late June and early July.

#### Findings:

The Susitna River drains an area from the Alaska Range on the west, to Mt. McKinley National Park on the north and the Talkeetna Mountains and some flat terrain on the east (Figure 1). Many of the tributary rivers are glacier fed, causing the Susitna River to be extremely muddy. For the purposes of this study, no tributaries were investigated above Devil's Canyon which is located about 2-1/2 air miles above the mouth of Portage Creek. Previous studies by the U. S. Fish and Wildlife Service indicate practically no salmon are found above this point.

No previous studies have been conducted on king salmon stocks in the Susitna River drainage. The only catch information available is the number of king salmon packed in canneries in the Cook Inlet area. These records show a sharp decline in king salmon stocks (Table I) over the past eleven years.

There has been considerable controversy concerning the cause of the decline in king salmon stocks. Excessive harvest by sport anglers, commercial fishing and recent land practices have been blamed. At this time it might be well to explain the areas of sport fishing. Cook Inlet is extremely turbid and provides no sport fishing in salt water. Further, the tides are exceptionally high (as much as 35 feet) and the currents are swift. All sport fishing is limited to the tributary streams that are least turbid.

It is somewhat difficult to present the past salmon management practices in Cook Inlet. For purposes of comparison and clarity, only that portion of Cook Inlet north of Boulder Point is presented and discussed. Review of the commercial fishing regulations, since 1954, indicates only small changes in king salmon management (Table II).

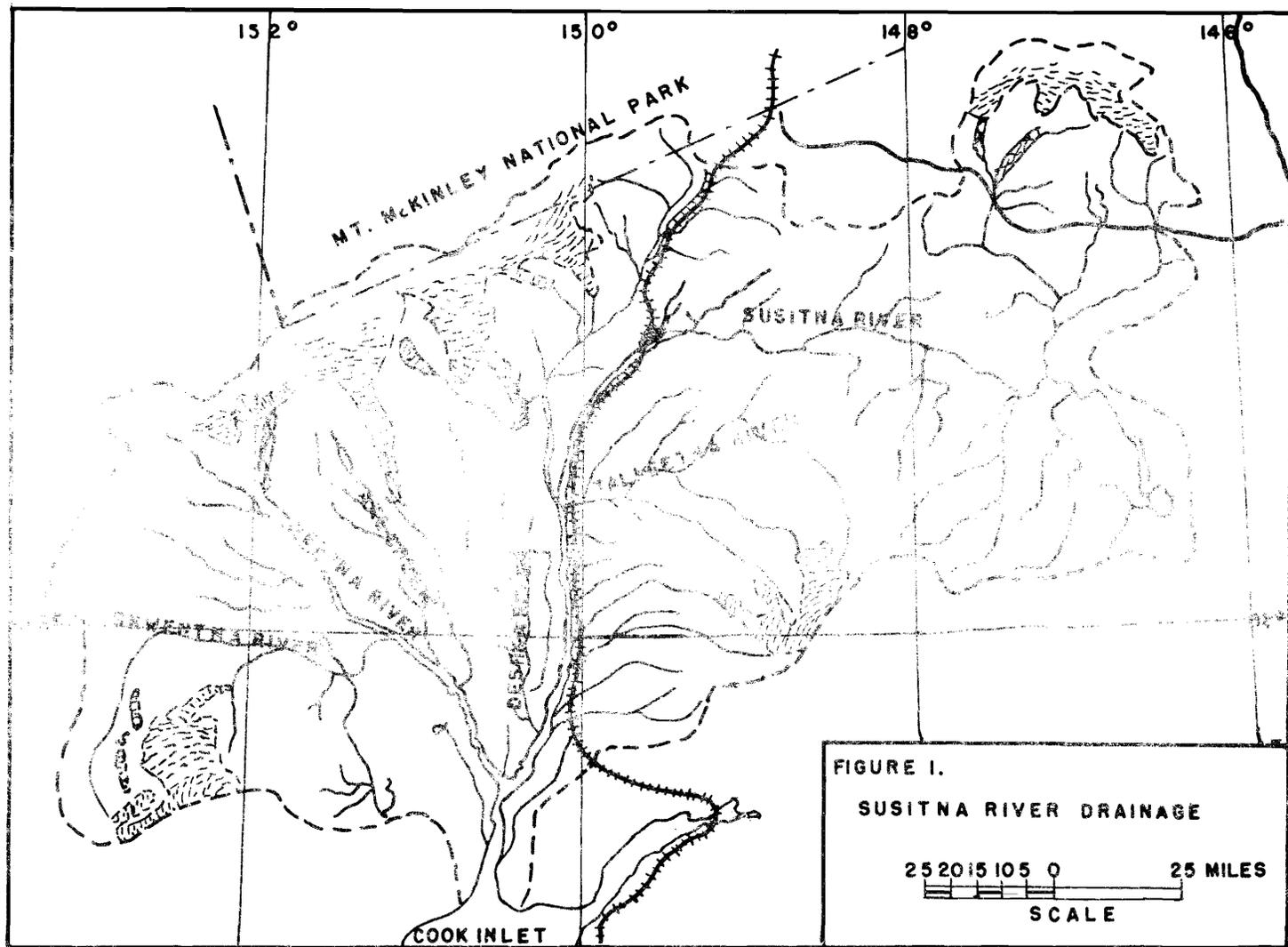


FIGURE I.  
SUSITNA RIVER DRAINAGE

25 20 15 10 5 0 25 MILES  
SCALE

TABLE I.

Number of King Salmon Packed in Cook Inlet from 1950 to 1961

Year	Number of King Salmon
1950	136,988*
1951	239,892
1952	91,724
1953	115,808
1954	95,980
1955	60,136
1956	67,980
1957	50,196
1958	26,404
1959	28,228
1960	27,744
1961	22,178

TABLE II.

Opening Dates, Weekly Closed Periods and Type of Gear  
Used in Cook Inlet North of Boulder Point Prior to  
July 1 for the years 1954-1962.

YEAR	OPENING DATE	WEEKLY CLOSED PERIOD	GEAR
1954	May 25	5 days	Gill nets only until June 25
1955	May 25	5 days	Gill nets only until June 25
1956	May 25	5 days	Gill nets only until June 25
1957	May 27	5 days	Gill nets only until June 24
1958	May 27	5 days	Gill nets only until June 24
1959	May 25	5 days	Gill nets only until June 30
1960	May 23	5 days	Gill nets only until June 29
1961	June 8	5 days	Set nets only until closed by field announcement.
1962	June 7	5 days	Set nets only until closed by field announcement.

In 1961 and 1962 the commercial season opened two weeks later than in previous years in an effort to obtain more escapement. Commercial fishing gear used during the period 1954 through 1960 was limited to gill nets from opening day through June. After this date all gear types were permitted including beach seines and traps. Gear for the 1961 season was limited to set gill nets. The number of days commercial fishing was allowed for the time under discussion was two 24-hour periods each week.

Sport Fishing regulations were reviewed, starting with the year 1953-54. During the period 1953-59 salmon were not classified as a game fish and sport fishing in fresh water was regulated under the "personal-use" fishing regulations. This fishery is defined as fish caught for individual or family subsistence. The seasons and limits are presented in Table III. July 1 is arbitrarily used as the closing date since the majority of king salmon were in fresh water by this time.

It might be pointed out that the Susitna River drainage is only a part of the total spawning area for the Cook Inlet king salmon.

Although salmon were not classed as sport fish, anglers did fish for them and had to comply with the "personal-use" regulations. Since 1960 salmon have been included in the sport fish regulations. For 1960 and 1961 the daily bag and possession limit on king salmon was 10 fish, of which not more than two could be over 16 inches in length. There was a May 7 opening date. In 1961 the king salmon season was closed by emergency regulation on July 25.

Although the opening date for king salmon sport fishing was May 7, fish were not observed in the streams until May 17, (Table IV.).

No king salmon were seen in the following streams: Fish Creek (vicinity of Flathorn Lake), Fish Creek (Croto Slough). Moose Creek (vicinity of Peters Creek), Kahiltna River, Fish Creek (tributary to Yentna River between Donkey Creek and Lake Creek). Sevenmile Creek (drains Sevenmile Lake), Shell Creek, and Eightmile Creek (drains Eightmile Lake).

TABLE III.

Personal-Use Fishing Regulations on Salmon  
in Cook Inlet North of Boulder Point  
for the Years 1954 Through 1962 (Prior to July 1).

YEAR	SALT WATER	FRESH WATER
1954	No limit, set nets, seasons & areas same as commercial.	2 salmon daily by hook & line.
1955	No limit, set nets, seasons & areas same as commercial.	2 salmon daily by hook & line.
1956	No limit, set nets, seasons & areas same as commercial.	2 salmon daily by hook & line.
1957	No limit, set nets, seasons & areas same as commercial.	10 salmon, of which 2 could not be over 16 inches.
1958	No limit, set nets, seasons & areas same as commercial.	10 salmon, of which 2 could not be over 16 inches.
1959	No limit, set nets, seasons & areas same as commercial.	2 over 16", 10 under 16", many streams closed to salmon fishing.
1960	No limit, set nets, seasons & areas same as commercial.	None allowed.
1961	No limit, set nets, seasons & areas same as commercial.	None allowed.
1962	No limit, set nets, seasons & areas same as commercial	None allowed.

Many of the streams are fed directly by glaciers and are probably not utilized for spawning. However, salmon do travel in these silt-laden streams to spawn in clear tributaries.

TABLE IV.

Some Physical Characteristics of Streams  
in Which King Salmon Were Found and Earliest Dates  
Fish Were Observed in 1961.

Name of Stream	Water Color	Gradient	Approx. Length of Stream	Date First Kings Observed
Alexander Creek	Brown	Low	17 miles	May 17
Lake Creek	Clear	High	47 miles	June 8
Talachulitna River	Clear	Moderate	31 miles	June 17
Deshka River	Brown	Low	56 miles	May 29
Willow Creek	Clear	Moderate	14 miles	June 7
Little Willow Creek	Clear	Low	22 miles	June 7
Sheep Creek	Clear	Moderate	34 miles	June 19
Montana Creek	Clear	Moderate	22 miles	June 6
Chunilna Creek	Clear	High	26 miles	June 14

An attempt was made to install a counting weir at the mouth of the Deshka River but high water washed out the racks and the attempt was abandoned.

Creel census was taken at every opportunity by the survey crew and other members of the Department. Creel census records were obtained from a military fishing camp on Sheep Creek. Fish Creek, Little Susitna River, Little Willow Creek and Willow Creek are accessible by road. Sheep Creek and Montana Creek are accessible by railroad while the other streams are accessible only by airplane.

Most of the king salmon caught were at places readily accessible by plane or railroad (Table V).

King salmon are distributed throughout the Susitna Basin. The areas where they are sought by anglers are small and scattered. At the present time it is difficult to accept any theory that indicates sport fishing has depleted the king salmon stocks in this system. In places where streams are comparatively accessible to anglers, major portions have been closed to salmon fishing; such as in Willow Creek, Little Willow Creek, and Montana Creek.

Time and manpower did not permit the sampling of salmon delivered to canneries.

The small boat used in this project prevented the transportation of fish sampling devices that could be used in the streams. Only eleven dead fish were found during the survey period.

When weather permitted, aerial surveys were made of the clear streams. A summary of the counts is presented in Table VI. Using the highest count for each stream, the total number of king salmon seen was 1,225.

Other fishes found in the drainage are presented in Table VII.

The whitefish were not identified to species. Both the common whitefish and the round whitefish occur in the drainage.

Literature cited:

- 1957 Anon. Progress Report 1956 Field Investigations Devil's Canyon Damsite, Susitna River Basin, U.S. Fish and Wildlife Service, July 1957.

TABLE V. Summary of Creel Census Data of the Various Streams During 1961.

Stream	Number Caught									Hours Fished	Catch of all fish per hr.	Catch of King Salmon per hr.
	Kings	Coho	Pink	Chum	RB*	Gr*	Wf*	DV*	Total			
Alexander Creek	15	201	3	7	133	23	26		408	558	.7	.03
Caswell Creek						1			1	4	.3	
Chuit River	13	18	2		24			14	71	54	1.3	.2
Clear Creek	4							1	5	4	1.3	1.0
Deshka River	91				147			1	239	316	.8	.3
Fish Creek					7				7	6	1.2	
Lake Creek	21				59	24	3		107	159	.7	.1
Little Susitna River		10						2	12	21	.6	
Little Willow Creek	8			2	8		1	4	23	217	.1	.03
Peters Creek						3			3	7	.4	
Sheep Creek	262	40		64	149	13	11	34	573	951	.06	.3
Talachulitna River					4	8			12	6	2.0	
Willow Creek	9				14		1		24	123	.2	.07
	423	269	5	73	545	72	42	46	1485	2426		

\*RB - Rainbow Trout  
Gr - Grayling

Wf - Whitefish - Species Unknown  
DV - Dolly Varden

TABLE VI.  
Aerial and Ground Counts of Spawning King Salmon in Some of  
the Tributaries of Susitna River in 1961.

Stream	Date	Observed	Number of Fish	
			Live	Dead
Birch Creek	June 27	Aerial	80	
Camp Creek	July 26	Aerial	86	
	July 29	Aerial	31	
	August 2	Ground	43	6(3♂, 3♀)
Caswell Creek	July 6	Aerial	6	
Chunilna River	July 14	Ground	300	
Deshka River	June 6	Ground	18	
	June 24	Ground	11	
	June 29	Ground	4	
Kashwitna River	July 25	Aerial	35	
Little Willow Creek	June 7	Aerial	7	
	June 26	Ground	4	
	June 27	Aerial	112	
	July 6	Aerial	55	
	July 9	Aerial	6	
	July 13	Aerial	12	
	July 25	Aerial	1	
	June 25	Ground	9	
Montana Creek	July 6	Aerial	15	
	July 13	Aerial	65	
	July 25	Aerial	9	
North Fork Kashwitna River	July 25	Aerial	35	
	July 31	Aerial	13	
Sheep Creek	June 27	Ground	56	4
	July 6	Aerial	70	
	July 13	Aerial	6	
	July 25	Aerial	11	
Sunflower Creek	July 24	Aerial	16	
Talachulitna River	June 27	Aerial	6	
	June 29	Aerial	32	
	July 3	Aerial	30	
	July 6	Aerial	25	
	August 16	Aerial	3	
Willow Creek	July 6	Aerial	170	
	July 9	Ground	66	
	July 13	Aerial	9	
	July 25	Aerial	56	
	August 13	Ground	2	
	August 14	Ground	2	1♀

Actual minimum of

1,025 King Salmon

TABLE VII.

Streams Surveyed for Various Species of  
Fish In The Susitna River Drainage.SPECIES PRESENT

Stream	-Kings	Coho	Pink	Red	Chum	Rb	Gr	DV	Wf	Remarks
Fish Creek of Flathorn Lake									X	
Alexander Cr.	X	X	X	X						
Fish Creek of Croto Slough										None observed
Moose Creek			X							
Kahiltna River										None observed
Lake Creek	X		X			X	X		X	
Fish Creek Above Lake Cr.										None observed
Sevenmile Cr.			X		X					
Shell Creek										None observed
Talachulitna River	X	X	X			X	X	X		
Eightmile Cr.										None observed
Thursday Creek										None observed
Friday Creek										None observed
Hiline Creek										None observed
Trinity Creek										None observed
Talachulitna Creek										None observed
Deshka River	X	X				X	X	X		
Little Willow Creek	X				X	X			X	
Kashwitna River	X									
Caswell Creek	X					X				
Sheep Creek	X	X			X	X	X	X	X	
Goose Creek										None observed
Montana Creek	X									
Sunshine Creek										None observed
Question Creek										None observed
Camp Creek	X					X	X	X		
Willow Creek	X									

Rb - Rainbow  
Gr - GraylingDV - Dolly Varden  
Wf - Whitefish

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