

STATE OF ALASKA

Jay S. Hammond, Governor



Annual Performance Report for

INVENTORY AND CATALOGING OF SPORT
FISH AND SPORT FISH WATERS OF THE
COPPER RIVER, PRINCE WILLIAM
SOUND, AND THE UPPER SUSITNA
RIVER DRAINAGES

by

Fred T. Williams
Wilson D. Potterville

ALASKA DEPARTMENT OF FISH AND GAME
Ronald O. Skoog, Commissioner

SPORT FISH DIVISION
Rupert E. Andrews, Director

Section C

Job No. G-I-E (continued)	Page No.
Trout Surveys	5
Naknek River Varden Study	5
Catalog and Inventory Surveys Outside Mulchatna Drainage	5
Rainbow Trout Tag Recoveries	11
Ugashik Grayling Tag Recovery	12
Catalog and Inventory Surveys in Mulchatna Drainage	12
Stuyahok River	12
Koktuli River	20
Chilchitna River Drainage	21
Chilikadrotna River	22
Discussion	23

Job No. G-I-F

Inventory and Cataloging of Sport Fish and Sport Fish Waters of the Copper River, Prince William Sound, and the Upper Susitna River Drainage

Fred Williams
Wilson Potterville

Abstract	25
Background	26
Recommendations	26
Objectives	27
Techniques Used	27
Findings	28
Results	28
Population Sampling, Managed Lakes	28
Population Sampling, New Lakes	32
Susitna River Studies	32
Gulkana River Creel Census	37
Chinook Salmon Escapement	37
Port Valdez Stream Surveys	37
Poplar Grove Creek Grayling	44
Habitat Protection Investigations	44
Discussion	44
Literature Cited	45

Job No. G-I-H

Inventory and Cataloging of Sport Fish and Sport Fish Waters of the Lower Susitna River and Central Cook Inlet Drainages

Stanley Kubik
Roger Wadman

Abstract	47
Background	48
Recommendations	48

RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations
of Alaska.

Project No.: F-9-10

Study No.: G-I Study Title: INVENTORY AND CATALOGING

Job No.: G-I-F Job Title: Inventory and Cataloging
of Sport Fish and Sport
Fish Waters of the Copper
River, Prince William Sound,
and the Upper Susitna
River Drainages.

Period Covered: July 1, 1977 to June 30, 1978.

ABSTRACT

Test netting was conducted on 23 managed lakes to determine survival and condition of experimentally stocked fish and the status of native fish stocks. Ten lakes, previously unsurveyed, were sampled with gill nets for fish population analysis.

The biological and physical characteristics of five lakes and 14 streams in the Upper Susitna River drainage were studied. These investigations were initiated because of the proposed construction of two hydroelectric dams on the Susitna River.

A creel census of sport fishermen on the Gulkana River revealed that 3,906 anglers fished 17,735 hours and caught 332 chinook salmon, Oncorhynchus tshawytscha (Walbaum), and 998 sockeye, O. nerka (Walbaum). There was a 43% increase in the number of anglers and a 12% increase in the number of chinook salmon caught in 1977 over that of 1976.

Nine hundred twenty-four chinook salmon were counted in the Gulkana River during aerial escapement surveys. This is slightly below the six-year average of 1,036.

During salmon escapement surveys conducted in 1977 on streams tributary to Valdez Bay, 51,021 pink salmon, O. gorbuscha (Walbaum), and 2,886 coho salmon, O. kisutch (Walbaum), were enumerated.

In 1977 a total of 1,129 Arctic grayling, Thymallus arcticus (Pallas), were tagged at Poplar Grove Creek. One hundred and thirty-six of these fish were subsequently caught by anglers at a location two miles upstream where the Richardson Highway intersects Poplar Grove Creek. Only one tagged grayling was reported caught in the Gulkana River.

BACKGROUND

The Glennallen area is typical of many within the state in that recreational angling opportunity is provided by a number of anadromous species and also by indigenous and stocked lake and stream dwelling fishes.

The stream dwelling species most often taken by sport anglers are Arctic grayling, chinook and sockeye salmon.

The principal lake dwelling species caught by recreational anglers in the Glennallen area are the indigenous species, burbot, Lota lota (Linnaeus), lake trout, Salvelinus namaycush (Walbaum), and Arctic grayling; and the introduced species, coho salmon and rainbow trout, Salmo gairdneri Richardson.

The Cordova area is primarily commercial fishing oriented. Access to this area is only by boat or aircraft. Sport fishing effort in salt water is light and primarily for coho salmon, chinook salmon, and Halibut, Hippoglossus stenoleysis Schmidt. Fresh water angling is directed toward coho salmon, cutthroat trout, S. clarkii clarkii Richardson, Dolly Varden, Salvelinus malma (Walbaum), and stocked grayling. A significant increase in sport fishing effort is not anticipated until access to and within the area improves.

Most of the recreational angling opportunities in the Valdez area are provided by anadromous species, including pink salmon, chum salmon, coho salmon, and bottom fish. All freshwater drainages into Valdez Arm are closed to salmon fishing, but Dolly Varden are taken in fair numbers.

Since the completion of the Trans-Alaska pipeline, there has been a substantial decrease in the human population. However, the numbers of people permanently retained for maintenance of the pipeline brings the population above pre-pipeline levels. The fish stocks are generally in good condition, and there appears to be no need for more restrictive angling regulations at the present.

Activities reported in the following text are directed toward the research and management needs of these species and toward the attainment of desirable levels of angler utilization.

RECOMMENDATIONS

1. The study of anadromous fish stocks in the Upper Copper River drainage and Prince William Sound should be continued to determine timing and magnitude of runs.
2. Monitoring of seismic activities, road and bridge construction, pipeline maintenance, and other land uses should be continued to afford maximum protection to the fishery resource and habitat.

3. Continued evaluation should be made of experimental fish stocking to determine the species of fish best suited for individual lakes and to compare the survival and growth of various races of rainbow trout and coho salmon.
4. Cataloging and inventory surveys should be continued on a limited basis as required to increase our knowledge of the fisheries resources in the area and provide more fishing opportunities for the angler.
5. Investigations of grayling in the Gulkana River should be initiated to determine age-length composition of sport caught fish.
6. Investigations of the Robe Lake system should continue as required to determine the feasibility of proposed rehabilitation and/or enhancement programs.

OBJECTIVES

1. To determine stocking measures and formulate recommendations for the management of area waters, and direct the course of future studies.
2. To determine the magnitude of various fish stocks and develop plans for their enhancement.
3. To determine the environmental characteristics of the existing and potential recreational fishing waters of the job area and, where practical, obtain estimates of the sport fish harvest and angler participation rates.
4. To determine the effects of proposed construction programs on fisheries and fisheries environments.

TECHNIQUES USED

Standard techniques described by Williams (1971) were used in lake and stream surveys and for collection of fish samples. Each test netting was conducted for a minimum of 16 hours, including an overnight period. Salmon enumerations were made from aircraft and on foot. All measurements of fish length were from snout to fork of tail.

The Gulkana River was divided into three sections for purposes of creel census, based on accessibility. These sections were (1) lower, from the mouth upstream for a distance of two miles, (2) middle, in the vicinity of the Richardson Highway bridge, and (3) upper, from the mouth of Sourdough Creek upstream to the West Fork of the Gulkana River.

During the creel census on the Gulkana River the fishing day was determined to be between the hours of 8 a.m. and midnight, and was further divided

into four separate four-hour periods. Weekends and holidays were each censused during two randomly chosen four-hour periods. Two randomly chosen weekdays per week were each censused during one randomly selected four-hour period. This creel census schedule was applied to all three sections.

During studies of tributaries to the Susitna River a Gurley water meter was used to determine flows. Determinations of fish species was made by use of seines and rod and reel.

The abundance of natural fish foods in the stream was determined by visual examination of rocks and other materials found in the stream which might harbor invertebrates. The streams were assigned relative abundance values of Food Grade 1 (exceptional richness), Food Grade 2 (average abundance), or Food Grade 3 (poor in food).

Stream velocities were described as sluggish, rapid, or torrential. Sluggish flows are less than one-half foot per second, rapid flows are more than one-half foot per second and where there is a regular succession of pools and riffles. Streams having torrential flows are those with steep gradients with few, if any, pools.

The percentage of the stream that was considered pools was determined by visual observations and was considered typical only for the section surveyed.

FINDINGS

Results

Population Sampling, Managed Lakes:

Test netting was conducted on 23 managed lakes in the upper Susitna River and Copper River drainages during 1977 and the results shown in Tables 1 and 2. The following are lakes where netting yielded evidence that significant changes had occurred in the various fish populations.

Prior to test netting in 1977 the last time Arizona Lake was stocked with Arctic grayling, Thymallus arcticus (Pallas), was in 1974. Test netting caught grayling ranging in fork length from 107 mm to 355 mm and averaging 252 mm. The presence of Age I+ fish in the sample demonstrates that natural reproduction is occurring even with the absence of any inlets or outlets. The net frequency of 4.5 fish per net hour is the second highest since test netting first began in 1969 (Williams, 1970) and indicates that natural reproduction is maintaining a healthy population of grayling.

The five Fog Lakes in the Susitna River drainage were test netted in 1977, the first time since 1961 (Table 1). Thirty Dolly Varden, Salvelinus malma (Walbaum), were netted from Fog Lake #4. These fish ranged in fork length from 130 to 315 mm and averaged 194 mm. The net frequency range was 0.63 fish per hour. In 1961, 96 Dolly Varden netted in this

Table 1. Gill Net Summary, Previously Surveyed Lakes, Susitna River Drainage, 1977.

Name	Location	Number of fish	Species*	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Clarence	T.30N,R.9E,sec.19,20	25	LT	212-720	425	.81	44
		7	WF	300-460	400	.23	12
		25	GR	172-410	278	.81	44
Fog Lake							
1	T.31N,R.5E,sec.9	21	DV	185-375	271	.50	100
2	T.31N,R.5E,sec.8	26	DV	137-368	201	.59	100
3	T.31N,R.5E,sec.15	12	DV	135-285	196	.26	100
4	T.31N,R.5E,sec.13	30	DV	130-315	194	.63	100
5	T.31N,R.6E,sec.7	0	--	--	--	--	--
George	T.6N,R.7W,sec.20,29	1	GR	280	280	.05	100
Lake							
Louise	T.32N,R.6E,sec.7	95	WF	115-420	294	1.10	92
		5	LT	415-610	498	.06	5
		3	BB	240-650	503	.07	3
Lake							
Louise	T.32N,R.6E,sec.7	97	WF			1.08	92
		9	LT	490-810	617	.10	8

* Species

GR - Grayling
 LT - Lake Trout
 WF - Whitefish
 DV - Dolly Varden
 BB - Burbot

** Frequency is number of fish per net hour.

Table 2. Gill Net Summary, Previously Surveyed Lakes, Copper River Drainage, 1977.

Name	Location	Number of fish	Species	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Arizona	T.8N,R.7W,sec.11	108	GR	107-355	252	4.50	100
Cabin	T.15S,R.1W,sec.31,32	2	CT	320	320	.08	67
		1	DV	320	320	.04	33
Caribou	T.5N,R.7W,sec.16	2	GR	100-120	115	.05	100
Dick	T.13N,R.1W,sec.31	13	GR	215-400	273	.56	100
Little Echo	T.16S,R.2W,sec.13	5	GR	260-325	284	.26	100
Elbow	T.5N,R.7W,sec.22	4	GR		130	.20	100
Gergie	T.3N,R.7W,sec.14	16	GR	100-400	335	.35	37
		27	SK	230-550	372	.59	63
Jan South	T.6N,R.6W,sec.20,21	2	SS	81-250	166	.09	100
Kay	T.4N,R.6W,sec.22	3	GR	240-250	247	.14	100
Kettle	T.9N,R.11E,sec.18	0	--	--	--	--	--
Meiers	T.12N,R.1W,sec.18	13	GR	112-342	237	.60	100
Pipeline	T.16S,R1E,sec.33	1	CT	280	280	.33	100

Table 2. (Cont.) Gill Net Summary, Previously Surveyed Lakes, Copper River Drainage, 1977.

Name	Location	Number of fish	Species	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Tolsona	T.4N,R.5W,sec.24	88	GR	140-400	237	4.00	49
		88	SK	180-485	246	4.00	49
		1	BB	410	410	.05	2
22 Mile	T.16S,R.1E,sec.28,33	17	DV	170-290	245	.43	39
		27	CT	170-280	216	.68	61
Bob's	T.5N,R.7W,sec.18	8	SK	210-450	388	.17	15
		46	WF	110-275	210	.96	85

* Species

GR - Grayling

SS - Coho salmon

DV - Dolly Varden

CT - Cutthroat

SK - Sucker, Catostomus catostomus (Forster)

** Frequency is number of fish per net hour.

lake had a fork length range of 185 mm to 452 mm and averaged 302 mm (Andrews, 1961). The catch rate in 1961 was 2.09 fish per net hour.

Test netting of the other Fog Lakes showed similar results. In 1961 Fog Lakes #1, #2, and #3 produced net frequencies of 1.22, 1.22, and 0.58 fish per hour compared to 0.50, 0.59, and 0.26 in 1977.

Fog Lake #5 has a maximum depth of six feet and no fish were taken with nets in 1961 and 1977. These lakes are in a remote area and accessible only by airplane, so fishing pressure is not a factor in this apparent reduction in numbers and size of Dolly Varden.

South Jan Lake was test netted in 1977 and only two coho salmon, Oncorhynchus kisutch (Walbaum), were taken, although the lake was stocked with 25,000 fingerlings in 1976. Prior to test netting large numbers of small coho salmon were observed in shallow water. The net frequency of 0.09 fish was the lowest since testing began in 1968.

During 1977 test netting in Tolsona Lake, grayling were caught at a rate of 4.0 fish per net hour. This is the highest catch rate since 1966 when it was 4.3 (Williams, 1967).

Population Sampling New Lakes:

In 1977, 10 previously unsurveyed lakes were investigated. Each year these surveys are conducted on a limited number of lakes to expand our knowledge of fisheries in the area and provide information concerning new fisheries to the angler. Biological and physical data are presented in Tables 3, 4, and 5.

Susitna River Studies:

In 1977 investigations of the fisheries resources in the Susitna River drainage were initiated. These investigations were designed to collect biological data from selected streams and lakes in the drainage that may be affected by dam construction and impoundment. These studies were prompted by tentative plans to construct two hydroelectric dams on the river. Five previously unsurveyed lakes in the Susitna River drainage were test netted and other biological and physical data were collected. Results of test netting are presented in Table 4 and physical and biological data are shown in Table 5.

In July of 1977 a 10-day float trip was made down the Susitna River from the Denali Highway bridge to a point approximately 10 miles upstream from Devils Canyon. During this trip selected tributaries were surveyed and physical and biological data were gathered. This information is presented in Table 6. Species of fish collected during these investigations include grayling, longnose suckers, Catostomus catostomus, (Forster), whitefish, Coregonus sp., and sculpin, Cottus sp.

Most of the streams surveyed had velocities ranging from rapid to torrential and appeared to fluctuate considerably. Grayling were caught readily by rod and reel in most of the streams. However, because of the

Table 3. Gill Net Summary Previously Unsurveyed Lakes, Copper River Drainage, 1977.

Name	Location	Number of fish	Species*	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
North Jan	T.6N,R.6W,sec.17,20	2	SS	430-570	500	.02	100
Squirrel Creek Gravel Pit	T.2S,R.1E,sec.26	0	0	0	0	0	0
Ruddy	T.16S,R.2E,sec.27	0	0	0	0	0	0
Loop Trail	T.16S,R.1E,sec.28	0	0	0	0	0	0

* SS - Coho

** Frequency is the number of fish per net hour.

Table 4. Gill Net Summary, Previously Unsurveyed Lakes, Susitna River Drainage, 1977.

Name	Location	Number of fish	Species*	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Connor	T.6N,R.7W,sec.28	1	GR	325	325	.04	100
Tsusena Butte	T.33N,R.5E,sec.21	9	GR	280-330	304	.20	23
		8	LT	375-763	488	.18	21
		22	WF	254-470	327	.50	56
Pistol	T.32N,R.6E,sec.7	0	--	--	--	--	--
Big	T.22S,R.3,4W,sec.25 18,19,30	19	LT	360-860	473	.37	63
			WF	210-395	313	.22	37
Deadman	T.22S,R.4W,sec.13,14	6	LT	220-870	553	.11	7
		76	WF	140-480	261	1.39	87
		5	GR	220-330	285	.09	67
Watana	T.30N,R.7W,sec.36	28	LT	265-610	375	.51	43
		37	GR	155-347	287	.68	57

* Species
 GR - Grayling
 LT - Lake trout
 WF - Whitefish

** Frequency is number of fish per net hour.

Table 5. Physical and Biological Data from Previously Unsurveyed Lakes in the Copper River and Susitna River Drainages, 1977.

Lake	Surface Area Acres	Maximum Depth (ft)	Percent of Shoal Area	Fish Species* Present	Location by Bay or Drainage
Squirrel Creek Gravel Pit	9	7	100	None	Tonsina River Copper River
Ruddy	5	9	100	None	Copper River
Loop Trail	1	14	100	None	Alagnik Slough Gulf of Alaska
North Jan	58	31	40	SS	Tolsona Creek Tazlina River Copper River
Conner	18	13	100	GR	Lake Louise Susitna River
Tsusena Butte	190	110	10	WF, GR, LT	Deadman Creek Susitna River
Pistol	205		80	None	Unnamed Susitna River
Big	1,080	80	15	WF, LT	Watana Creek Susitna River
Deadman	380	70	20	WF, GR, LT	Deadman Creek Susitna River
Watana	300	30	85	LT, WF	Unnamed Susitna River

* SS - Coho salmon, GR - Grayling, WF - Whitefish, LT - Lake trout

Table 6. Physical and Biological Data from Selected Tributaries to the Susitna River.

Stream	Estimated Flow in CFS	Water Color	Food Grade	Bottom Type	Fish Observed*	Velocity	Percent Pools
Coal	100	Brown	2	Mud, fine gravel, detritus	SK, WF	Sluggish	75
Oshetna	675	Cloudy	2	Rubble, boulders	GR	Rapid	5
Goose	80			Rubble, boulders, gravel			
Jay	75	Clear	2	Boulders, rubble, gravel	GR, SK, WF	Rapid to torrential	10
Kosina	220	Clear	2	Boulders, gravel, rubble	GR	Rapid to torrential	20
6-2R	9	Clear	2	Sand, gravel	WF, Sc	Rapid	50
Watana	315	Clear	3	Gravel, sand, rubble	GR	Rapid	5
Deadman	900	Clear	2	Boulders	GR	Torrential	5
Tsusena	600	Clear	2	Boulders, rubble	GR	Rapid to torrential	5
Fog	240	Clear	2	Rubble, sand	GR	Rapid	15

GR = Grayling, SK = Suckers, Sc = Sculpin, WF = Whitefish

physical nature of these streams it is felt that the grayling populations were delicate and could not withstand extensive fishing pressure. Extreme spring runoff probably has a detrimental effect on egg and fry survival. Observations of some of the stream banks showed as much as four feet of fluctuation. Also, in most streams checked, pools comprised less than 50% of the water course.

Gulkana River Creel Census:

A creel census of recreational salmon fishermen was again conducted on the Gulkana River (Figure 1). The estimated effort and harvest is presented and compared to 1976 data in Table 7. There was a 43% increase in the number of anglers from 1976 to 1977 but only a 12% increase in the number of chinook salmon, *O. tshawytscha* (Walbaum), caught. There was a 41% increase in the catch of sockeye salmon, *O. nerka*, (Walbaum) from 1976 to 1977. The extremely low catch of chinook salmon (four) from the lower section was due primarily to muddy water conditions at the time the salmon were in that portion of the river. In 1977, 71% of the total chinook salmon were caught in the upper section compared to 55% in 1976 and 86% in 1975. The number of anglers increased in the upper area 82% from 1976 to 1977, the number of anglers in the middle section increased by 58%, and in the lower section there was an 12% decrease in anglers.

There were 44% more chinook salmon caught during 1977 in the upper section than in 1976. There was a 31% increase in the middle section and a 93% decrease in the chinook salmon catch in the lower section. Chinook salmon caught from the Gulkana River by sport fishermen ranged in fork length from 667 to 1,200 mm and averaged 988 mm. In addition to the salmon catch, 104 rainbow trout, *Salmo gairdneri* (Richardson), and 2,970 grayling were taken. Most of these fish were taken from the upper area. A comparison of length data on chinook salmon since 1973 is presented in Table 8 and shows insignificant differences.

The residency of anglers checked on the Gulkana River is shown in Table 9 and compared to data from 1975 and 1976. As can be seen in this table, there was a decrease in the percentage of anglers from Fairbanks and Anchorage. It is possible that Anchorage anglers are seeking fishing areas not as congested as in the Kenai Peninsula and Anchorage areas.

Chinook Salmon Escapement:

Chinook salmon aerial escapement surveys were conducted on selected streams in the upper Copper River drainage in 1977. Counts made from 1972 through 1977 are shown in Table 10. The Gulkana River is the only chinook salmon stream in the area that receives an appreciable amount of sport fishing pressure and the escapement count of 924 for that system is considered adequate to maintain the resource in a healthy condition.

Port Valdez Stream Surveys:

Adult salmon counts in the Valdez area were continued in 1977 (Table 11). The location of the streams surveyed are shown in Figure 2. A total

Figure 1 . Gulkana River Creel Census Areas.

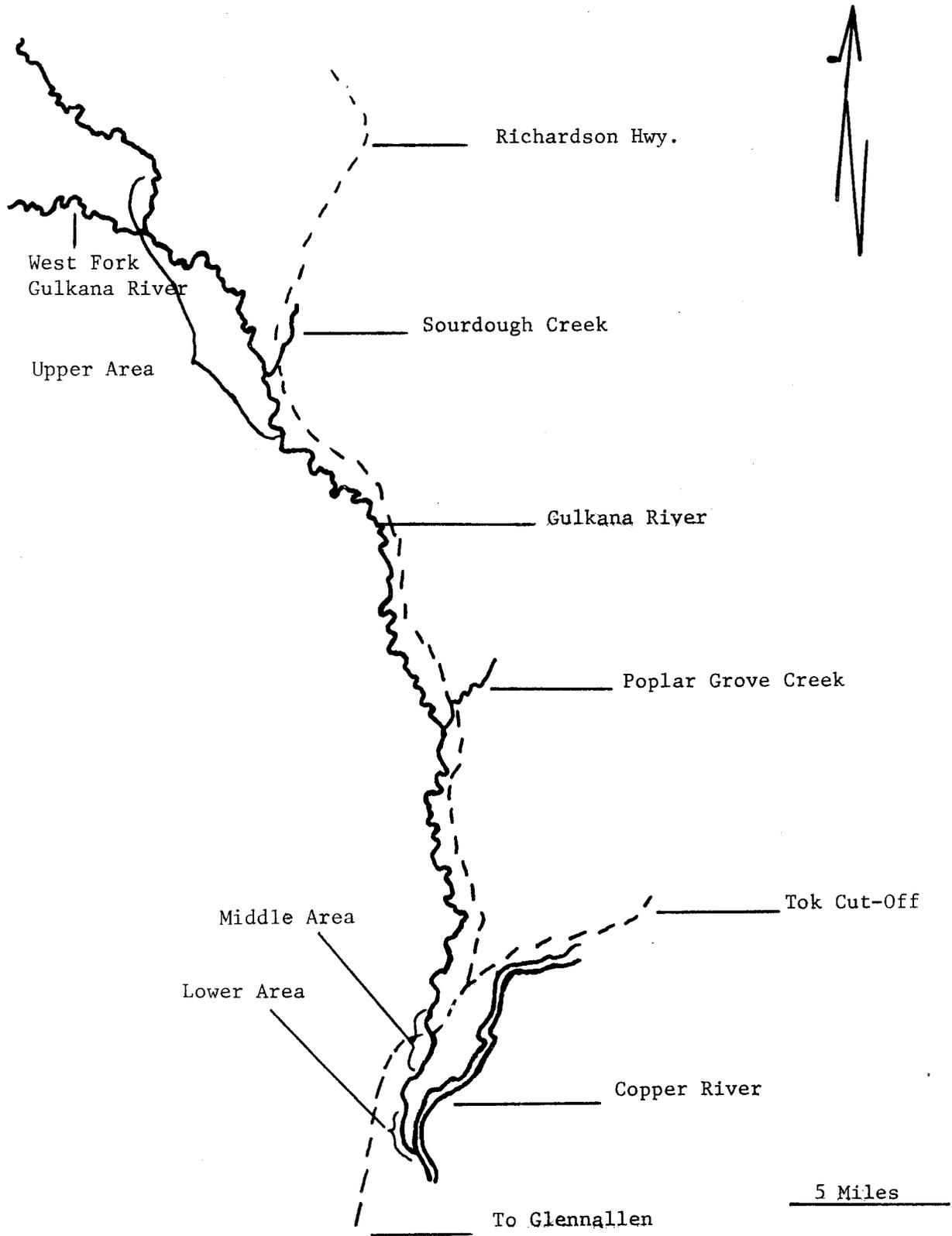


Table 7. Gulkana River Sport Harvest and Effort Estimates, 1976-1977.

	Lower Section		Middle Section		Upper Section		All Sections	
	1976	1977	1976	1977	1976	1977	1976	1977
No. of anglers	872	780	982	1,550	867	1,576	2,721	3,906
No. of hours	4,670	3,599	3,933	4,853	3,741	9,283	12,344	17,735
Hours per angler	5.36	4.61	4.01	3.13	4.31	5.89	4.54	4.54
Catch								
Chinook	62	4	70	92	164	236	296	332
Sockeye	252	224	138	236	317	538	707	998
Total salmon	314	228	208	328	481	774	1,003	1,330
Rainbow trout	10	0	0	10	60	94	70	104
Catch per angler								
Chinook	0.071	0.005	0.071	0.059	0.189	0.150	0.109	0.085
Sockeye	0.289	0.287	0.141	0.152	0.366	0.341	0.260	0.256
Total salmon	0.360	0.292	0.212	0.211	0.555	0.491	0.369	0.341
Catch per angler hour								
Chinook	0.013	0.001	0.018	0.019	0.044	0.025	0.024	0.019
Sockeye	0.054	0.062	0.035	0.049	0.085	0.058	0.057	0.056
Total salmon	0.067	0.063	0.053	0.068	0.129	0.083	0.081	0.075

Table 8. Lengths of Gulkana River Chinook Salmon, 1972-1977.

Year	1972	1973	1974	1975	1976	1977
Number of Fish	33	38	37	93	50	40
Length Range (mm)	770-1,160	665-1,210	650-1,222	724-1,219	673-1,240	667-1,200
Average Length (mm)	1,026	1,025	1,089	1,001	1,027	988

Table 9. Residency of Anglers Fishing the Gulkana River in 1975-77.

	1975	1976	1977
No. of Alaska Communities Represented	11	15	17
No. of Other States Represented	19	20	28
No. of Other Countries Represented	2	2	5
Percent of Anglers from Alaska	91	91	87
Percent of Anglers from Anchorage	55	37	33
Percent of Anglers from Fairbanks	21	32	20

Table 10. Chinook Salmon Aerial Surveys, Upper Copper River Tributaries, 1972-1977*.

Stream	1972	1973	1974	1975**	1976	1977
Gulkana River	1,207	1,060	1,293	740	994	924
East Fork Chistochina River	348	476	138	71	289	132
Mendeltna Creek	49	15	13	NC	35	73
Kaina Creek	89	172	55	NC	37	91
Grayling Creek	47	47	0	NC	17	NC

* The figures are actual counts and not estimates. These data are considered as minimum escapement figures.

** Counting conditions in 1975 were generally poor due to high, muddy water during most of the season.

NC No counts made.

Table 11. Port of Valdez Salmon Counts, 1971-1977.

Stream	#139 Sewage Lagoon	#137 Lowe River System	#137 Robe Lake System	#141 Loop Road I	#142 Loop Road II	#143 Siwash	#145 City Limits	#147 Mineral Creek System
<u>Pink Salmon</u>								
1971		13,490	4,500	875		13,040	690	1,320
1972		0	0	475		161	46	320
1973		6,549	15,000	7,000		26,770	1,700	2,235
1974		N/C	N/C	262		8	98	217
1975		15,387	2,461	5,537		33,113	1,262	947
1976		1	0	18		5	5	8
1977	1,418	1,441	330	18,718	4,101	22,120	2,714	179
<u>Chum Salmon</u>								
1971		411	P	N/C		120	2,660	1,778
1972		2,007	40	45		162	1,200	180
1973		1,063	125	N/C		232	1,812	7,111
1974		N/C	N/C	0		16	483	1,454
1975		N/C	N/C	N/C		N/C	N/C	N/C
1976		270	0	6		2	1,080	564
1977	0	0	0	0	0	0	0	0
<u>Coho Salmon</u>								
1971		193	9,690	N/R		57	N/R	300
1972		711	875	N/R		41	N/R	14
1973		67	4,000	N/R		6	N/R	20
1974		78	1,662	N/R		0	N/R	0
1975		1,506	1,533*	N/R		0	N/R	16
1976		1,310	1,049*	0		0	2	66
1977	0	1,363	1,522	N/R	0	N/R	N/R	1

P = Present, but not counted

N/C = No count taken

N/R = No run

* = 1975 and 1976 S.S. counts included Robe River.

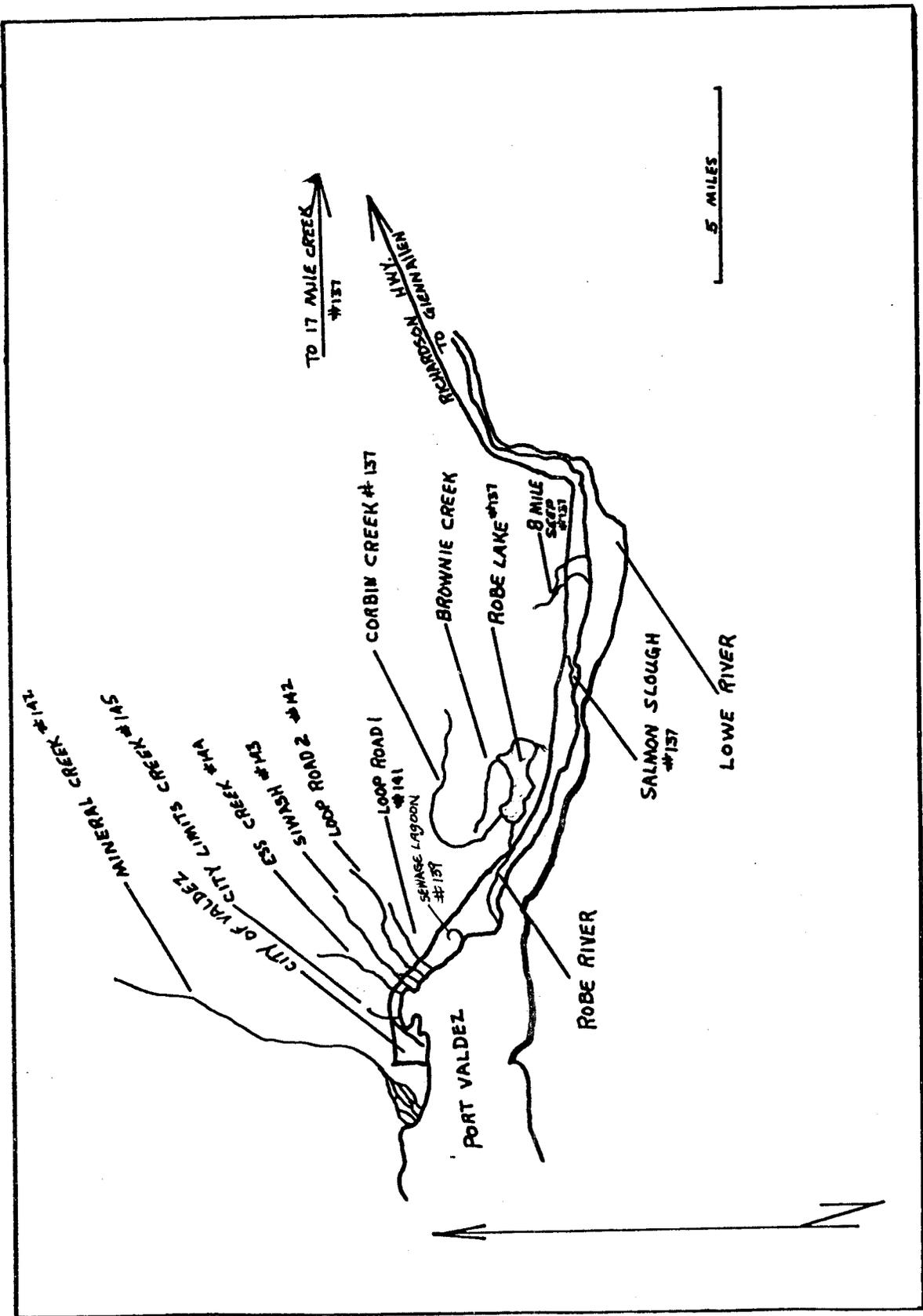


Figure 2. Salmon Spawning Streams in Upper Valdez Bay.

of 51,021 pink salmon, O. gorbuscha (Walbaum), were enumerated; however, the counts were not complete because high water prevented counting some sections of the streams. In 1977 the coho salmon count for the areas was 2,886 and almost half of these fish (1,270) were in Corbin Creek. A tributary to Robe Lake, Corbin Creek has consistently been the major coho spawning stream in the Valdez Bay area.

Poplar Grove Creek Grayling:

During 1973, 1974, and 1975 a total of 276, 317, and 528 grayling, respectively, were marked with Floy tags at Poplar Grove Creek, a tributary of the Gulkana River. Tag recoveries from grayling caught in Poplar Grove Creek demonstrate a migration into this stream during the spring, followed shortly by an outmigration after spawning. Movements of tagged grayling in the Gulkana River appear to be random and recoveries have been made from sport caught fish as much as 14 miles downstream and 79 miles upstream. Twelve grayling tagged in 1975 were captured at a weir in Poplar Grove Creek in 1977. These fish, ranging in fork length from 270 mm to 325 mm, had grown an average of 36 mm since they were tagged. The growth ranged from 18 mm to 59 mm. No fish tagged in 1973 and 1974 were taken at the weir or reported caught by anglers.

In 1977, 1,129 grayling were tagged at Poplar Grove Creek. Twelve percent (136) of these fish were caught by sport fishermen approximately two miles upstream from the tagging site at a point where the stream bisects the Richardson Highway. There was only one tagged grayling reported caught from the Gulkana River in 1977.

Habitat Protection Investigations:

Five highway construction related programs were reviewed. Other projects that were reviewed for potential damage to fisheries include seismic operations, telephone cable burial, sewage system, a proposed golf course, airport extension, sanitary land fills, and a proposed hydroelectric project. In addition, meetings were held with the United States Coast Guard and other environmentally related federal and state agencies to determine the sensitive areas and priorities for cleanup activities in the event of oil spills in Valdez Bay.

DISCUSSION

Test netting in Arizona Lake captured age I+ grayling, although the last time it was stocked was in 1974. These age I+ fish are the result of in-lake spawning since no inlets or outlets exist. This is an uncommon occurrence in this area.

Tentative plans to construct two hydroelectric dams on the upper Susitna River prompted field investigations of the fisheries resources of the area. Five previously unsurveyed lakes were test netted. Grayling, lake trout, and whitefish were caught. During July of 1977 a float trip was made down the Susitna River from the Denali Highway bridge to a

point approximately 10 miles upstream from Devils Canyon, a distance of about 114 river miles. Tributaries to the Susitna River were surveyed. Many of the tributaries had good grayling populations. Other species of fish encountered were whitefish, sculpins, and suckers.

Most of the streams surveyed had velocities ranging from rapid to torrential. There was evidence of substantial fluctuation. Most of these streams had low pool to riffle ratios and good habitat was limited. It appears that the grayling populations are delicate and probably couldn't withstand very much fishing pressure. Because these streams have very heavy spring flows the survival of grayling eggs in the gravel is probably low.

The number of anglers fishing the Gulkana River in 1977 increased from 2,721 in 1976 to 3,906, an increase of 43%. However, the number of chinook salmon taken, 332, was only a 12% increase over 1976.

Only four chinook salmon were caught in the lower section of the Gulkana River. The river was high and muddy and fly fishing was very ineffective. In addition, there were 11% fewer fishermen utilizing that area. There was an 82% increase in the number of anglers from 1976 to 1977 in the upper section and a 44% increase in the number of chinook salmon caught. There was considerable unintentional harassment of the salmon by large boats transporting fishermen up and down the river, some of which were using large inboard V-8 type engines. The increase in boat traffic is certain to have an adverse effect on fishing success because of the disturbance of the fish and fishermen.

During 1973, 1974, and 1975 a total of 1,121 Arctic grayling were tagged with Floy tags at Poplar Grove Creek, which is a small tributary of the Gulkana River. In 1977, 1,129 Arctic grayling were tagged at the same location. During an Arctic grayling swimming study conducted at Poplar Grove Creek during 1977, 12 fish tagged in 1975 were captured at the weir. Twelve percent (136) of those tagged in 1977 were caught in Poplar Grove Creek by anglers. No fish tagged in 1973 or 1974 were recovered. This would indicate a high mortality, naturally and/or by anglers.

LITERATURE CITED

- Andrews, Rupert E. 1961. Inventory, cataloging and population sampling of the sport fish and sport fish waters of the Cook Inlet drainage. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annual Report of Progress, 1961. (10-A).
- Williams, F.T. 1966-1976. Inventory and cataloging of sport fish and sport fish waters of the Copper River and Prince William Sound drainages and the Upper Susitna River. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annual Report of Progress, 1966-1976. (G-1-F).

Prepared by:

Approved by:

Fred T. Williams
Fishery Biologist

s/Rupert E. Andrews, Director
Sport Fish Division

Wilson D. Potterville
Fishery Biologist