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STATE OF ALASKA
Walter J. Hickel, Governor

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FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-9

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME
Augie Reetz, Commissioner

Alex H. McRea, Director
Division of Sport Fish

Louis S. Bandirola, Coordinator

INTRODUCTION

This report of progress consists of findings and work accomplished under the State of Alaska Federal Aid in Fish Restoration Project F-5-R-9, "Sport Fish Investigations of Alaska."

The project during this reporting period was composed of 21 separate studies. Of these, seven jobs continued the inventorying and cataloging of the numerous waters, providing a comprehensive index of the State's recreational waters. Nine jobs accomplished special studies involving Dolly Varden, grayling, silver salmon, king salmon and sheefish, among others. The remaining five jobs are designed to accomplish creel census, migration, access and silver salmon egg-take studies. The egg-take study, Job 7-F, was inactive because egg-takes were accomplished under other projects.

Special reports on specific phases of the Dolly Varden Life History Study have been published in the Department's Research Report series.

The information gathered from all of these studies provides the background necessary for better management and assists in development of future investigational studies.

The subject matter contained within these reports is often fragmentary in nature. The findings may not be conclusive and the interpretations contained therein are subject to re-evaluation as the work progresses.

RESEARCH PROJECT SEGMENT

STATE: ALASKA

Name: Sport Fish Investigations of Alaska.

Project No: F-5-R-9

Job No: 14-A

Title: Inventory and Cataloging of Sport Fish and Sport Fish Waters of the Copper River and Prince William Sound Drainages, and the Upper Susitna River.

Period Covered: March 16, 1967 to March 15, 1968.

ABSTRACT

Fourteen lakes were surveyed to determine their present and future sport fishery potentials.

Eight lakes were test netted to determine the success of experimental fish stocking.

The West Fork of the Gulkana River received partial survey.

An egg take conducted at Tolsona Lake produced 700,000 grayling, Thymallus arcticus, eggs for experimental hatching, rearing and stocking.

Dissolved oxygen determinations were conducted on nine lakes during the winter. Five lakes, not previously checked, had oxygen in concentrations suitable for overwintering of sport fish.

Commercial fishing for whitefish, Coregonus clupeaformis (Mitchell), was monitored to determine total catch and the incidental catch of other species of fish.

Limited creel census was conducted at Valdez. Silver salmon, Oncorhynchus kisutch (Walbaum), were caught by sports anglers at a rate of one per hour.

Assistance was provided access biologists in selecting and assessing sites for withdrawal during the course of field investigations.

A record 1,320 salmon subsistence fishing permits were issued for the Copper River and the total catch was an estimated 30,307 fish.

OBJECTIVES

1. To assess and record the environmental characteristics of the existing and potential recreational fishing waters of the job area and, where practicable, obtain estimates of the sport fish harvest and angler participation rates.

2. To determine the current status and public availability of the recreational fishing waters within the job area. To assist as required in the investigation of public access studies and make recommendations for segregation of recreational fishing access sites.

3. To evaluate multiple water use, development projects (public and private) and the effects on the area's streams and lakes for the proper protection of the resource.

4. To locate sport fish egg sources and to make egg takes as required for experimental hatching and stocking.

5. To evaluate application of sport fish restoration and stocking measures and to formulate recommendations for the management of area waters and direct the course of future studies.

TECHNIQUES USED

Fish populations were sampled with 125 x 6-foot variable mesh (3/4 to 2-inch bar measure) nylon, sinker type, gill nets.

All fish were measured to fork length in millimeters.

A Hach, Model OX-2-P, kit was used for determining dissolved oxygen.

RECOMMENDATIONS

1. It is recommended that the present job objectives be continued with expansion of cataloging and inventory surveys of remote fly-in waters within the job area.

2. An intensive program should be pursued to locate an economical and feasible silver salmon egg taking site within the Prince William Sound area.

3. Whitefish age and growth studies should be continued in Crosswind Lake, Susitna Lake, and Lake Louise.

4. It is recommended that studies be expanded to determine sport fishing participation and harvest rates within the area.

5. The program of winter dissolved oxygen determinations in selected lakes should be continued to determine minimum requirements for game fish species.

6. Effort should be directed toward increasing the recreational use of fisheries during the winter months through a concerted educational and informational effort.

7. It is recommended that stocking of salmonids be discontinued in Tolsona, Moose, Caribou, and Burnt Lakes.

FINDINGS

Population Sampling

Gill net sampling was conducted on 22 lakes to determine population composition and results of experimental stocking, Tables 1 and 2.

In Junction and Pippin Lakes it was found that grayling, Thymallus arcticus, stocked in 1966 had reached a maximum fork length of 211 mm and averaged 188 mm. These lakes had no other fish in them prior to stocking.

Test netting results in Moose Lake indicated a decline in grayling numbers from 3.6 fish per net hour in 1966 to 2.4 in 1967. The decline in Tolsona Lake grayling was even more defined with 4.27 fish per net hour in 1966 and 0.14 in 1967. There was no evidence of a winter kill in either lake during 1966-1967 or indication that they might have migrated upstream or downstream. Downstream migration is virtually impossible because of a screened control structure at the outlet. The difference in catch per net hour from 1966 to 1967 may be a reflection of the obvious discrepancies in gill netting technique and accuracy, and not necessarily an indication that there has been a significant drop in the grayling population.

Silver salmon, Oncorhynchus kisutch, however, have shown little change in these two lakes during the past three years and remain relatively low.

TABLE 1. Test Net Summaries, Managed Lakes, 1967.

Lake	Location	No. of Fish	Species*	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Pippin	R1E, T2S, S11E1/2	28	GR	158 - 211	188	1.60	100
Mirror	R8W, T3N, S23	2	GR	192 -212	202	.11	100
Burnt	R6W, T4N, S19SW1/4	1	GR		227	.03	50
		1	WF		277	.03	50
Moose	R5W, T4N, S13 & 14	97	LNS	230 - 397	309	2.40	54
		74	GR	138 - 365	273	1.90	43
		5	BB	302 - 400	369	.25	2
		2	SS	182 - 191	186	.05	1
Tolsona	R5W, T4N, S24	45	LNS			1.20	68
		17	SS	147 - 359	207	.47	25
		5	GR	176 - 318	239	.14	7
Caribou	R1W, T5N, S21N1/2	13	GR	217 - 384	259	.58	100
Dick	R1W, T13N, S31	9	GR	219 - 415	319	.36	100
Junction	R6W, T4N, S33	16	GR	182 - 210	190	.90	100

* GR - Grayling WF - Whitefish
SS - Silver Salmon LNS - Longnose Sucker
BB - Burbot

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

TABLE 2. Test Net Summaries, New Lakes, 1967.

Name	Location	No. of Fish	Species*	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Minnesota	R5W, T9N, S9 & 10	24	WF			.48	80
		6	LT	500 - 704	610	.12	20
Ohio	R5W, T9N, S7	12	LNS			.60	48
		6	WF			.30	24
		4	LT	330 - 660	510	.20	16
		3	GR			.15	12
Indiana	R6W, T9N, S11 & 12	13	LNS			.60	46
		12	WF			.55	43
		3	LT	510 - 600	553	.18	11
Michigan	R9N, T5W, S5 & 6	4	WF			.18	50
		3	GR			.14	40
		1	LT		460	.05	10
Wisconsin	R5W, T9N, S SE1/4 5	19	WF	186 - 315	257	.86	63
		8	LT	325 - 760	538	.40	27
		2	LNS			.10	7
		1	GR		237	.05	3
Deep	R4W, T8N, S7, 8 & 18	35	WF			1.70	71
		14	LT	536 - 721	647	.60	29
Crystal (McCarthy)	R11E, T6S, S1N1/2	1	DV		355	.07	100
Lou's Lake	R9E, T4S, S4NW1/4	18	GR	160 - 185	175	.90	78
		5	SS	305 - 380	330	.25	22
Sculpin Lake	R7E, T4S, S16		No Fish				
Strelna Lake	R7E, T4S, S7		No Fish				
Mystery	R15E, T6S, S30S1/2	49	LNS	210 - 470	320	1.5	100

TABLE 2 (Cont.) - Test Net Summaries, New Lakes, 1967.

Name	Location	No. of Fish	Species*	Length Range (mm)	Mean Length (mm)	Frequency**	Percent Composition
Ruth	R11E, T6S, S9N1/2		No Fish				
Sawmill	R11E, T6S, S10N1/2		No Fish				
Nick's	R5W, T4N, S11	7	GR	197 - 222	209	.30	64
		2	LNS	182 - 195	188	.10	18
		2	BB	213 - 302	257	.10	18

* GR - Grayling
LT - Lake Trout
DV - Dolly Varden
SS - Silver Salmon
BB - Burbot
WF - Whitefish
LNS - Longnose Sucker

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

Limited creel census indicates the return to the creel is not commensurate with the numbers being stocked annually.

Caribou Lake (Lake Louise road) and Dick Lake were test netted to determine the success of silver salmon and rainbow trout, Salmo gairdneri (Richardson), stocked two years previously. The netting produced only grayling. These lakes will be checked again in 1968 and, if results are similar, stocking of these species will be discontinued.

Crater Lake (Lake Louise road) was test netted in 1966 to check on an original stocking of rainbow trout made in 1965. At this time the trout had attained an average length of 246 mm. No gill netting was done during 1967, but creel census revealed that these rainbow trout had attained a fork length of 308 mm and were in excellent condition. This small, 13-acre lake received considerable pressure from anglers due to its close proximity to the road.

Mirror and Burnt Lakes received experimental stockings of rainbow trout and silver salmon in 1965 and 1966. Test netting in 1967 in both lakes produced no evidence that these plantings were successful. Mirror Lake had produced limited rainbow trout fishing in the past. In 1958 test netting produced trout up to 479 mm in fork length.

Fly-In Lake Surveys

Minnesota Lakes:

This large lake system is part of the West Fork of the Gulkana River drainage. A preliminary survey of the area, made in 1966, revealed there were over 900 lakes and ponds in an area of 150 square miles (Williams, 1966). These lakes vary in surface area from 1 acre to 800 acres. It is estimated that at least 25 percent of these waters will support fish life.

Surveys were conducted on five of these lakes, all interconnected and negotiable by canoe. These lakes are all less than 30 feet deep with the exception of Minnesota Lake which has a maximum depth of 60 feet. Species of fish present include lake trout, Salvelinus namaycush (Walbaum); whitefish, Coregonus sp.; grayling; burbot, Lota lota; and suckers, Catostomus sp. Test netting indicated that whitefish were the most numerous, followed by suckers and lake trout (Table 2). At the time of this survey many of the grayling were in the small tributaries of the system.

The outlet of Wisconsin Lake, which drains all five lakes, had large numbers of whitefish and grayling. At the time of the survey, June 24, the volume of flow was 24 cfs. Spawning conditions are excellent for grayling.

Minnesota Lake is a clear lake with visibility of at least 20 feet. This is in sharp contrast to the other four where visibility was limited to less than six feet. Minnesota Lake has several large shoal areas ranging from 2 to 15 feet deep. These shoals are covered with large rocks which appear to be very suitable for lake trout spawning. The presence of large numbers of forage fish also enhances this water as a lake trout fishery. Michigan, Ohio, Wisconsin and Indiana Lakes are all relatively shallow and have muck-type bottoms with only a few rocky areas. The streams connecting these lakes are short and have no permanent barriers to inter-lake movement of fish. Exploitation of these lakes by anglers is very light.

Deep Lake is located midway between the Minnesota Lakes and Crosswind Lake. This lake has an estimated surface area of 750 acres. Limited soundings indicated that most of the lake is less than 30 feet deep. Test netting produced lake trout that ranged from 536 to 721 mm and averaged 647 mm. Deep Lake is part of the Dog Creek system which drains Crosswind Lake and others into the West Fork of the Gulkana River. At the time of the survey a heavy plankton bloom reduced visibility to almost zero. Fishing pressure on this lake and the Minnesota group is almost nonexistent, even though they are only 20 to 25 minutes flying time from the road system.

McCarthy-Chitina Area:

Present Alaska Department of Highway construction plans call for a bridge across the Copper River at Chitina. This bridge would connect the old McCarthy-Chitina railroad grade to the Alaska highway system and allow automobile access into part of the Chitina River Valley. In order to prepare for the obvious influx of sportsmen, a survey of the streams and lakes in this area was initiated.

During 1967, seven lakes and four streams were investigated. Six of the lakes are within one mile of the road while the seventh, Mystery Lake, is 15 minutes flying time from the road. With the exception of Lou's Lake and Crystal Lake, no game fish species were found in the lakes checked.

Lou's Lake, located one mile from Chokosna, supports grayling and landlocked silver salmon. The lake is 12 acres in size with a maximum depth of 17 feet. Both inlet and outlet are intermittent and were not running at the time of the survey.

The origin of silver salmon in this lake is not known but stories of the area tell of "salmon" being present as long as 40 years ago. The silver salmon taken while test netting ranged in length from 305 mm to 380 mm and averaged 175 mm. Numerous small fish were seen and, although not identified, presumed to be either grayling or salmon.

Crystal Lake, the origin of Crystal Creek, is 40 acres in size. Only one fish, a 355 mm Dolly Varden, Salvelinus malma (Walbaum), was taken with the gill net. However, lacking a boat, the net was set by swimming out into the lake and towing it into position. This net set was not as desirable as it could have been and the data is therefore considered incomplete.

Sculpin and Strelna Lakes are located less than 1/2-mile from the road system and only a short distance from the Strelna station. Both lakes are over 150 acres in area and have depths exceeding 50 feet. The only fish noted were sculpins, Cottus cognatus (Richardson), and overnight gill net sets produced nothing (Table 2). The lakes have only intermittent inlets and outlets.

Mystery Lake, located 12 miles east of McCarthy, can be reached only by aircraft. The lake is approximately 300 acres in area and the majority of it is over 25 feet in depth. The inlet is intermittent and the outlet, which is less than one cfs, drains into the Nizina River and hence into the Chitina River. Overnight gill net sets produced only longnose suckers. Because of its relative inaccessibility, no management plans are recommended for this lake.

Ruth Lake, 5 1/2 miles west of Long Lake, is adjacent to the road system. This lake is 15 acres in size and has a maximum depth of 22 feet.

The water is clear and 75 percent of the lake has a thick growth of submergent vegetation. Dissolved oxygen determinations taken during 1967-1968 indicate this lake is borderline.

Moose Lake is located 10 miles west of Long Lake, adjacent to the road system. It has an area of 100 acres and a maximum depth of 15 feet. The water is murky and there is very little vegetation. Lack of time prevented test netting of this lake. Winter oxygen determinations indicated that a sport fishery could be established in this lake but production would be poor.

Biological surveys of these lakes indicate sport fisheries could be established. However, stocking recommendations will be withheld until construction of the Copper River Bridge at Chitina becomes a reality.

Four streams crossing the McCarthy-Chitina road systems were checked.

Strelna Creek, crossing the road at the old Strelna maintenance camp, is small -- less than 10 cfs, but apparently fluctuates at least 3 feet during some spring run-offs. Pools represented only 10 percent of the total stream

area checked. The food grade was poor and the stream was badly scoured. A solitary seven-inch Dolly Varden was observed.

Crystal Creek, the outlet of Crystal Lake, is a small stream which had a flow of less than eight cfs in July. This stream has numerous beaver dams along its upper course. The lower four miles of stream drop quite rapidly and terminate at the Lakina River. This stream reputedly had a good Dolly Varden population. In conversation with a resident adjacent to the stream, he said that several fishing trips had produced no fish and that he had not observed any fish in the stream.

The Lakina River drains a large area to the north of the Chitina River, including Long Lake. At the time of the survey this stream was very silty and observations were limited. The stream fluctuates several feet each spring and channel changes are annual. Pools and cover are very limited. There is an annual spawning migration of red and silver salmon into Long Lake, which is closely followed by Dolly Varden. There is no sport fishery in the main Lakina River.

Chokosna Creek is a small, clear, scoured stream which originates from snow melt and runoff. Fluctuation is moderate to heavy during the spring. Game fish are limited to a few small Dolly Varden. Since Lou's Lake does drain into this stream there may be grayling present although none were seen.

Gulkana River System

West Fork Gulkana River:

A float trip was made on a portion of the West Fork of the Gulkana River. The area was described by Williams (1967) and the present survey is a continuation of this prior investigation.

The trip originated at an unnamed lake near the headwaters of the South Branch of the West Fork and covered an estimated 125 miles of stream. Overnight gill net sets were made at three locations. The first set, made just below the outlet of the lake, produced grayling, whitefish and longnose suckers. The second overnight set was made 15 miles below the junction of the South Branch and the main West Fork of the Gulkana River. This sampling took grayling, whitefish, red salmon, and longnose suckers. The third gill net set was made five miles upstream from the mouth of Dog Creek and produced no fish.

The lower reaches of the West Fork have poor fish habitat and angling success is poor. The stream is partially silty most of the time due to numerous exposed mudbanks which dot the river margins. The upper section is clear and the stream banks are stable. The area drained by the West Fork is typical tundra and swamp with a few low hills and scattered patches of black spruce, alder and aspen.

The final destination of the red salmon taken in the gill nets is not known, but presumably they go up the main West Fork and then into Keg Creek. There are numerous lakes in this drainage but red salmon have been found only in the main stream and Keg Creek.

Grayling Egg Take Studies

During the course of grayling investigations on Tolsona and Moose Lakes (Job 14-B, Project No. F-5-R-9) an egg take was made to secure eggs for experimental hatching, rearing, and stocking.

Bessie Creek was again chosen as the site for trapping grayling. On May 14, the lower section of the creek became ice free and grayling began moving into the area. A heavier-than-usual ice deposit at the trap site made weir installation difficult and an unknown number of grayling escaped upstream by going under the ice.

During the 5 days of trapping, 671 grayling were caught. This is a sizeable decrease from 1965 when an estimated 3,000 fish went up the stream, and 1966 when the run tallied 2,654 grayling. It has been noted in the past that the greatest number of grayling go upstream during the first and second evenings and it was during these periods that ice conditions made complete trapping impossible.

Two hundred seventy-two female grayling were spawned for a total egg take of 700,000. Many females spawned in 1967 were not as ripe as desired and therefore a large percentage of the eggs were left in the fish (Table 3).

TABLE 3. A Comparison of Grayling Trapping and Egg Taking at Bessie Creek From 1965 Through 1967.

Year	Eggs Per Female	FL Range of Males in mm	Av. FL of Males in mm	FL Range of Females in mm	Av. FL of Females in mm	Total Run
1965	4,269		312		312	3,000
1966	3,735	229-376	279	216-351	302	2,645
1967	2,574**	215-356	301	211-322	273	671*

* Because of severe ice conditions an unknown number of grayling escaped the trap by going under the ice.

** Fish not ripe; large percentage of eggs retained.

Grayling were also trapped at Our Creek, inlet to Moose Lake. The fish were enumerated and samples of fork lengths and scales were taken. A total of 2,257 grayling was counted through the trap. Trapping at Our Creek began on May 9, five days earlier than Bessie Creek, and discontinued on May 20 although there were still a few fish moving upstream.

The eggs taken during this operation were transported to the Fire Lake Hatchery.

Silver Salmon

During September, 1967, efforts were made to secure silver salmon for egg taking purposes. Milton Creek in Simpson Bay, Prince William Sound, was selected as a test site. This stream drains three small lakes located approximately three-quarters of a mile from the ocean. During the stay in the area Milton Creek fluctuated almost two feet because of heavy rains.

Early in September, silver salmon were concentrated in the estuarine area at the mouth of Milton Creek. Numbers of fish were estimated to be between 200 and 500. A check made one week later revealed that the fish were no longer there and had presumably gone up the creek and into the first lake. This was evidenced by sightings of several silver salmon moving upstream between the ocean and the lake.

After two weeks, 50 salmon were counted in the stream about 100 yards below the lake. These fish were spawning. However, the number of salmon was insufficient for an experimental egg take. Seining of these fish was difficult due to submerged debris and old beaver dams.

Nakaka Creek, Irish Cove, and Hell's Hole were also checked from the air and no concentrations of salmon were noted. The commercial fish biologist for Prince William Sound reported seeing no concentrations of silver salmon during an extensive boat trip made through the Sound during September.

Winter Oxygen Determinations

Dissolved oxygen studies were made on various lakes in the study area. Seven of these were made on lakes previously unchecked (Table 4).

Moose and Tolsona Lakes show a decline through the winter to dangerous levels for the overwintering of salmonoids. This may be partially responsible for the poor return of rainbow trout and silver salmon stocked in these lakes, although no evidence of winter kill has yet been found.

It is interesting to note that Scoter Lake has relatively little dissolved oxygen by March, yet supports a good population of grayling (Williams, 1966). This lake is typical of many in this area, demonstrating the ability of the grayling to exist under adverse winter conditions.

From the evidence of winter oxygen determinations and other biological findings, it is apparent that the establishment of a grayling sport fishery in the lakes in the McCarthy-Chitina area (with the exception of Ruth) has definite possibilities.

Commercial Whitefish Operations

During the fall and winter months three commercial fishermen operated at Tyone, Louise, and Crosswind Lakes taking whitefish.

One fisherman operating in Tyone Lake was allowed by special permit to use a trap. Although Tyone Lake contains large numbers of whitefish, he was unsuccessful in capturing them. The reasons for this lack of success appeared to be poor trap construction, with no wings, and poor location of the trap.

At Lake Louise the commercial fishing was hampered by cold weather and poor knowledge of the lake. In 3 days of operation the take of whitefish amounted to 15 fish.

The commercial whitefish operation at Crosswind Lake was more successful. During two weeks in December, fishermen took 1,588 lake whitefish totaling 1,732 pounds. Other fish taken included 1 burbot and 11 lake trout. The fisherman reported selling his catch for $0.45 per pound. A later venture at Crosswind Lake conducted in February and March proved less successful. After 3 weeks of gill netting the total catch was 890 fish.

One hundred of these whitefish were measured and scale samples taken. The fish ranged in fork length from 305 mm to 450 mm and averaged 350 mm. This compares to an average size of 353 mm for whitefish taken in Crosswind Lake by a commercial fisherman in February, 1965. Test netting during the same period caught 94 whitefish that averaged 330 mm fork length.

The present rate of exploitation has a minimal effect on whitefish populations in Crosswind Lake. It is doubtful if total annual harvest will increase materially for several years because of a limited market and high transportation costs.

Creel Census

With the exception of Valdez Bay, creel census was limited to spot checks along the Alaska Highway System and was conducted in conjunction with lake and stream survey work.

Creel census in Valdez Bay was limited to the period when the annual silver salmon derby was being conducted during July and August. The creel census taker was stationed at the docks and attempted to contact every boat that returned from fishing. This census was conducted on Saturday and Sunday of three successive weekends.

During the censused weekends, 181 anglers in 65 boats were checked. The anglers caught silver salmon at a rate of slightly over one per hour and averaged 1.7 fish each. This compares to a catch rate of 0.4 fish per hour in 1966.

TABLE 4. Dissolved Oxygen Determinations Taken During Winter 1967 - 1968.

Date	Lake	Ice Depth	Snow Depth	Depth of Sample	PPM Oxygen	Depth of Lake	Fish Present*
Glennallen Area:							
1/13/67	Tolsona	22"	12"	7'	9.0	14'	GR, LNS, BB, SS
4/11/67	"	40"	0"	7'	4.0		
4/13/67	"	38"	0"	7'	4.0		
1/30/67	Moose	23"	12"	6'	7.5	30'	GR, LNS, BB, SS
1/30/67	"	23"	12"	10'	3.0		
4/13/67	"	38"	10"	7'	4.0		
4/13/67	"	38"	10"	7'	5.0		
4/11/67	Scoter	32"	10"	7'	1.0	18'	GR
Chitina-McCarthy Area:							
3/12/68	Sawmill	36"	0"	6'	3.0	10'	None
3/12/68	Ruth	36"	0"	9'	.5	22'	None
3/12/68	"	36"	0"	19'	.0		
3/11/68	Sculpin	39"	1"	6'	8.0	40'	Cot
3/11/68	"	39"	1"	8'	8.0		
3/11/68	Strelna	39"	1"	15'	9.0	60'	Cot
3/11/68	"	39"	1"	24'	9.0		
3/11/68	Moose	37"	0"	6'	7.0	15'	Unknown
3/12/68	Lou's	31"	1"	8'	6.0	17'	GR, SS
3/12/68	"	31"	1"	14'	2.0		

* GR - Grayling
LNS - Longnose Sucker
BB - Burbot
SS - Silver Salmon
Cot - Cottids

While fishing success was very good in 1967 the hours fished per angler were low. This was due to the "almost constant" rains during the peak of the run. Even when silver salmon were being caught only two miles from the docks, anglers averaged only 1.6 hours of effort.

As in 1966, the creel census data from the U. S. Army Recreation Camp was misplaced by their personnel and never reached the offices of the Department of Fish and Game.

Access

Recommendations were made to the access biologist to obtain public access to Sculpin, Van, Strelna, and Moose Lakes in the McCarthy area. Summer surveys and late winter oxygen determinations indicated that these waters are capable of supporting sport fish populations.

The scheduled construction of a bridge across the Copper River will open this area to limited automobile traffic and to more exploitation by the public in the way of land acquisition.

During the course of regular field operations assistance was given to access personnel in locating trails and roads leading to various fisheries in the area.

Road Construction

A survey of stream and road conditions was made along the Gulkana River between Paxson Lake and Summit Lake on the Richardson Highway. Reconstruction of this section of highway required the temporary diversion of four sections of the Gulkana River. The inspection trip revealed that the stream was well established back in its original channel. No areas of erosion were seen and rip-rapping had been installed in all areas of potential erosion.

Erosion and silt deposition at Mankomen Lake was investigated. There is evidence of silt deposition in the northeast corner of the lake and at the mouth of the outlet. The erosion and resulting silt are apparently a result of road construction. A road was built about 1963, linking a dirt airstrip near the northeast corner of the lake with a "fly-in" campground, located near the northwest corner of Mankomen Lake built by the United States Bureau of Land Management. The Bureau of Land Management is aware of the situation but did not have adequate funds to remedy the situation at this time. The road serves no useful purpose and the campground receives very little use. This campground can serve fly-in groups only as it is located 25 air miles from the nearest road system.

The silt deposition in Mankomen Lake has done little damage to fish habitat. However, because of the nature of uncorrected erosion, it could develop into a serious situation and valuable fish habitat could be damaged or destroyed. Mankomen Lake has a permanent population of grayling, whitefish and lake trout. There is also a well established king salmon spawning run in the outlet and in the lake itself. A few red salmon utilize this area, also.

Subsistence Fishing

The number of subsistence permits issued for salmon fishing in the Upper Copper River again increased in 1967. The average catch per permit in 1967 was 23.0 (Table 5). The total estimated catch of 30,307 is the highest ever computed since 1960 when records were first kept.

The percent of red and king salmon in the catch has remained almost constant through the period 1962 through 1967. It should be noted that the percent of catch records returned in 1967 was the lowest recorded. This will be remedied somewhat by a recent regulation which requires a permittee to return his catch record before he can receive a new permit for the next year.

TABLE 5. Number of Subsistence Permits and Reported Catch in the Upper Copper River, 1962 through 1967.

	1962	1963	1964	1965	1966	1967
No. of permits issued	448	624	994	1,125	1,271	1,320
No. of catch records returned*	420	344	682	729	797	656
Percent of catch records returned	93.8	55.1	68.6	64.8	62.7	49.7
No. of salmon recorded on catch records	16,273	15,743	12,743	13,452	17,576	15,070
Average no. of salmon taken per permit	38.7	45.8	18.7	18.5	22.0	23.0
Percent of red salmon in catch	93	93	94	95	96	96
Percent of king salmon in catch	5	3	5.5	4.7	3	2.8
Percent of silver salmon in catch	2	4	0.5	0.4	0	0
Percent of other fish in catch**	0	0	0	0	1	1.3
Estimated total salmon catch	17,332	25,580	18,550	20,625	27,901	30,307

* Unused permits are not used in computing the average and estimated total catch.

** Includes grayling, burbot, suckers, and Dolly Varden.

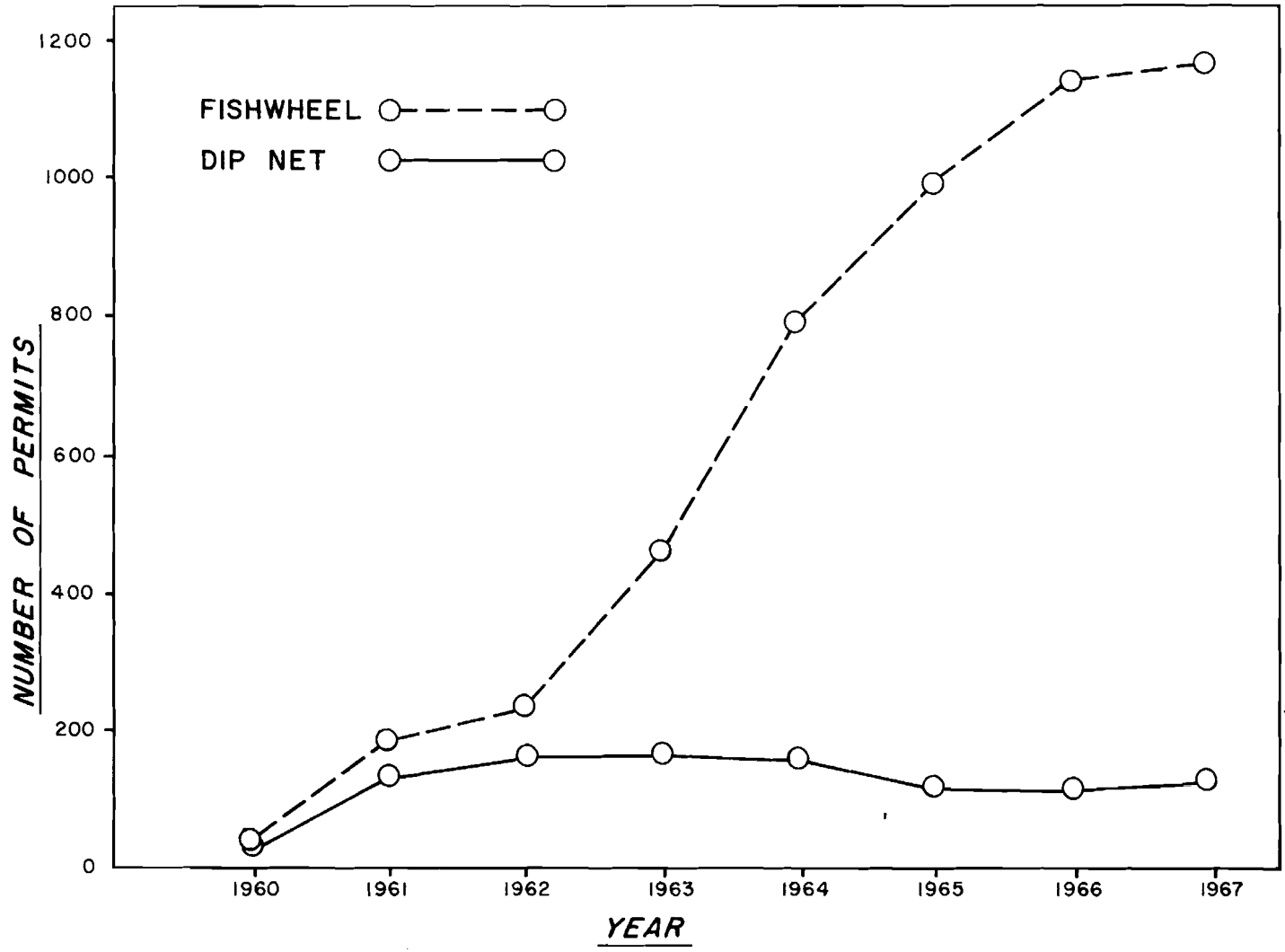

FIGURE 1. SUBSISTENCE PERMITS, UPPER COPPER RIVER.

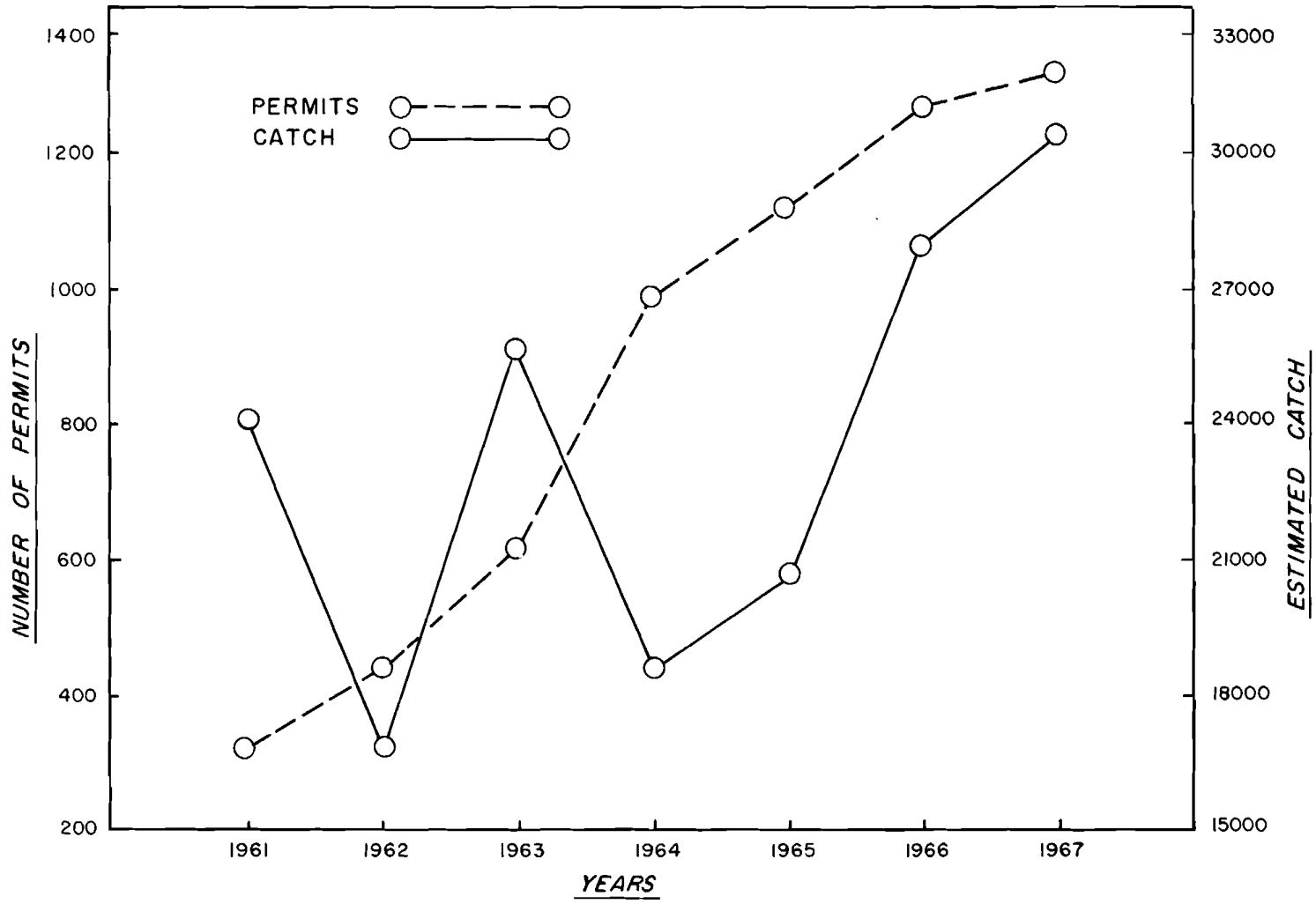

FIGURE 2. SUBSISTENCE FISHING, UPPER COPPER RIVER, NUMBER OF PERMITS ISSUED AND ESTIMATED TOTAL CATCH FROM 1961 THROUGH 1967.

The method of catching salmon has changed considerably since 1960. As illustrated in Figure 1, the number of fish wheel permits has remained essentially the same since 1961, whereas dip net permit numbers have shown a rapid climb. The nature of the river, its banks and the lack of access roads, limits the number of fish wheel sites. Dip netters in their search for more fishing areas have extended their activities to an area from one mile above Chitina to a point four miles below the townsite. Although the total catch of salmon by subsistence fishermen has varied throughout the years, a steady increase is apparent for the last three years (Figure 2).

The number of fish wheels operated on the upper Copper River has remained fairly constant, ranging from 29 to 33. However, during 1967 there were 44 operating. A few of these were located in new locations but in most cases the increase was made possible by crowding of fish wheels in old locations. One fish wheel has even been mounted on a river boat so that it can be moved easily up and down the river. The efficiency of this wheel is not known.

LITERATURE CITED

Williams, Fred T. 1966. Inventory and Cataloging of Sport Fish and Sport Fish Waters of the Copper River and Prince William Sound Drainage, and the Upper Susitna River. Alaska Department of Fish and Game Annual Report of Progress. 1965-1966. Vol. 7:185-213.

_____. 1967. Inventory and Cataloging of Sport Fish and Sport Fish Waters of the Copper River and Prince William Sound Drainage, and the Upper Susitna River. Alaska Department of Fish and Game Annual Report of Progress. 1966-1967. Vol. 8:217-230

Prepared by:

Fred T. Williams
Fishery Biologist

Date: April 1, 1968

Approved by:

s/ Louis S. Bandirola
D-J Coordinator

s/ Alex H. McRea, Director
Sport Fish Division