

RESEARCH PROJECT SEGMENT

*State:* Alaska

*Project No.:* F-9-4                      *Name:* Sport Fish Investigations of Alaska.

*Study No.:* G-1                      *Study Title:* Inventory and Cataloging.

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

*Period Covered:* July 1, 1971 to June 30, 1972.

ABSTRACT

Thirty lakes were surveyed to determine species, size, and abundance of fish present and/or current effects of land use developments, angling pressure, and success of previous stockings.

The size and age of steelhead, Salmo gairdneri, from the Situk River was determined from samples taken during the spring and fall runs. Ages ranged from three to nine years, with many of the sampled steelhead spawning for the second or third time.

## RECOMMENDATIONS

1. The Peterson Lake system near Juneau should be investigated to determine if the lake can be treated with rotenone without harming fish residing in Peterson Creek. Methods of detoxification with potassium permanganate should be researched.
2. Rehabilitate Glory Lake near Juneau and stock with Arctic grayling.
3. Determine if cutthroat trout in Thayer Lake on Admiralty Island are utilizing kokanee as forage fish.
4. Spurt Lake near Petersburg should be stocked with an additional 20,000 rainbow in 1972.
5. Punkie, Whitesox, and Sun Dial lakes in the Ketchikan area should be stocked with Arctic grayling in 1972.
6. Continue monitoring fish populations in previously stocked lakes throughout southeast Alaska.

## OBJECTIVES

1. To complete surveys on all major waters of southeast Alaska and publish the results in a manner which will aid the recreational angler. Physical and biological characteristics of existing and potential recreational fishery waters will be determined.
2. To determine the degree of success obtained from past fishery restoration measures.
3. To research methods which will enhance anadromous and resident fish stocks.
4. To evaluate multiple-use development projects (public and private) and their effects on the area's streams, lakes, and saltwater for the proper protection of the sport fish resources.
5. To determine locations suitable to public access improvement through road locations, parking areas, trail improvement, boat moorages, and streamside easements, etc., on public and private lands.

## TECHNIQUES USED

Data from prior studies were used to direct some phases of these investigations.

Population sampling, water chemistry determinations, and accumulating related biological and physical survey data were accomplished by standard techniques described by Andrews, et al. (1966).

Multiple-use activities affecting the sport fish stocks and biological environment were monitored and recommendations made to various agencies as warranted.

Variable mesh monofilament gill nets, fyke nets, and rod and reel were used to sample fish species. Nets were fished varying periods of time based on lake size, population density, and fish species present at the time of survey. These methods provided fish for biological analysis and for determinations as to the availability of fish populations for recreational angling.

Complete files of field data obtained during the 1970-71 field season are maintained in the Juneau, Sitka, Petersburg, and Ketchikan Sport Fish Division field offices.

## FINDINGS

### Upper Southeast Alaska

The upper Southeast area consists of approximately 30,000 square-miles which encompasses the communities of Juneau, Sitka, Wrangell, Petersburg, Haines, Skagway, and Yakutat.

#### Lake Investigations:

In cooperation with the U. S. Forest Service, a complex of eight lakes and gravel pits, collectively known as Mendenhall Ponds, was intensively surveyed, mapped, and sampled in anticipation of a proposed recreational development. In preparation for experimental rehabilitation of the area after establishing water level controls, volumetric surveys were conducted (Table 1).

TABLE I Area, Volume, and Depth of Mendenhall Ponds, Juneau.

<u>Pond</u>	<u>Surface Area (Acres)</u>	<u>Volume (Acre-Feet)</u>	<u>Maximum Depth (ft)</u>
Glacier	5.5	59.5	26
Moraine	4.3	40.0	15
Norton	4.7	20.3	10
Dredge	7.8	37.7	16
Cashew	1.7	5.0	7*
Louie	1.7	6.5	6*
Crystal	5.4	5.5	6*
Moose	<u>9.5</u>	<u>18.5</u>	6*
TOTAL	40.6	193.0	

\*Future plans include dredging these ponds to 10 feet.

Fish populations of these ponds were observed to vary according to fish access and pond depth in conjunction with winter severity. Past plants of brook trout, Salvelinus fontinalis; Arctic grayling, Thymallus arcticus; sockeye salmon, Oncorhynchus nerka; and rainbow trout, Salmo gairdneri, have resulted in a remnant population of rainbow trout, in addition to the naturally occurring coho salmon, O. kisutch; cutthroat trout, S. clarki; Dolly Varden, S. malma, and numerous stickleback, Gasterosteus aculeatus. With limited funds for the project, dredging of shallower lakes will not be completed in the initial development. Only the four deepest ponds may be planted in 1973, although experimental planting of some of the shallow ponds may be appropriate.

In cooperation with the Commercial Fisheries Division and the U. S. Forest Service, Green Pond and Situk Pond, two gravel pits of about two surface acres near Yakutat, were examined for fish rearing potential. Volumetric surveys were conducted to determine the feasibility of chemical rehabilitation.

Both ponds are provided with outlet control structures and have been informally planted with "salvage" fish stranded by low water levels in locations around Yakutat. Opened screens and flooding have also allowed local fish to establish residence in these ponds. Virtually all rearing species are present.

The basic objection to stocking these ponds at the present time is the lack of local stocks in hatchery production. Existing stocks of king, O. tshawytscha, and coho salmon and rainbow trout in the Situk River should not be forced to undergo gene pool dilution. No further action is anticipated until the Petersburg hatchery becomes operational and eggs can be obtained from the Situk River.

Flooding in at least one and possibly both of these ponds is probable. It has been estimated that floods of five-year frequency will bypass control structures and contamination with predators and competitors or escape of stocked fish is anticipated. The Alaska Department of Fish and Game has only summer employees in Yakutat. Winter maintenance and protection would be a definite problem.

To improve this situation, the Department has participated in designing a subsequent gravel pit near Ahrnklin River which will not be subject to flooding and which will have an inlet by-pass control. Lack of personnel for routine maintenance will again limit the effectiveness of this 10-acre installation. This pond will be planted with local stocks if available.

Several lakes stocked in past years were evaluated. Auke Lake near Juneau had been stocked at an unknown date with brook trout, grayling, rainbow trout, and rumored king salmon, none of which survived.

The brook trout population established in the Salmon Creek Reservoir continued to meet demands of local winter ice fishermen. While all fish examined were less than 12 inches (304.8 mm) rumors of large fish create some interest, and the general availability, in conjunction with a 30-fish bag limit supplements normal enthusiasm. The four-mile hike through snow demands enthusiasm and some anglers invest in aircraft or helicopter transportation.

Examination of the Petersen Lake population indicated rehabilitation failure and reinfestation with Dolly Varden. Virtually all small fish taken by gill netting were Dolly Varden, but this may be the result of different life histories rather than a definite indication of dominance of this species over the planted steelhead stock. When justified by improved rehabilitation techniques, this project should be repeated because of the great potential of the system.

Glory Lake, near Taku Inlet, also failed the rehabilitation and planting effort. A dense population of small Dolly Varden was found and apparently planted grayling had not survived in competition with Dolly Varden.

The kokanee population established in Thayer Lake by transplanting adults from Distin Lake was examined and found to have survived with some increase over previous years. The purpose of this transplant was to establish the kokanee as forage for the cutthroat population. If subsequent observation of the cutthroat population reveals an increase in fish size, the transplanting of kokanee will be attempted in other systems not having a forage species.

The Turner Lake kokanee population was sampled and estimated to be adequate for donor stock for local adult transplants, with readily available fish approaching nine inches (228.6 mm) at maturity so that they also have potential as sport fish in addition to their function as forage.

Kutiaku Lake on Kuiu Island at 56°37'N Lat. by 135°8'W Long. was surveyed. This clear water lake is at the head of Pillar Bay on northwest Kuiu Island at an elevation of 10 feet and is fed by streams originating in snow fields. It is rather small for aircraft access but is easily reached via a 1/4-mile trail from Pillar Bay. Test netting confirmed the presence of an excellent population of cutthroat trout. This system also contains good runs of red and coho salmon and a suspected run of steelhead. Kutiaku Lake presently receives light angling pressure due to lack of a shelter cabin and its distance from population centers.

Alecks Lake on Kuiu Island at 56°37'N Lat. by 134°8'W Long. was also surveyed. This lake, located in Tebenkof Bay, Kuiu Island, lies at an elevation of 45 feet. Alecks Lake drains a large muskeg area and the water is dark brown in color. Fish species captured included cutthroat trout, Dolly Varden, rainbow-steelhead trout, and red and coho salmon. The large average size of the cutthroat (28.9 cm) and their abundance renders Alecks Lake the best recreational lake on northwest Kuiu Island. This lake is only lightly fished due to a lack of a shelter cabin and skiff.

Sarkar Lake, located on the west coast of Prince of Wales Island, was resurveyed in 1971. The Sarkar Lake system was surveyed for potential coho salmon egg-take sites. Two small inlets were mapped and found suitable. A weir and holding facilities were subsequently constructed on the primary inlet.

#### Fish Stockings:

Seven lakes were stocked with rainbow trout in 1971. These were DeBoer at Thomas Bay (5,000); Goat near the Stikine River (9,800); Spurt at Thomas Bay (19,900); Biorka (1,100) and Swan Lake (8,800) near Sitka, and QT (1,000) and Marshall Pond (1,000) near Juneau.

#### Situk River Steelhead Investigations:

Biological information was collected from 134 steelhead sampled during the sport fish creel census from May through June, 1971. An additional 66 samples were collected from the fall run in October and November. The data collected included sex, length, weight, and a scale for age determination.

Weight-length relationships by sex and season for the Situk River steelhead is presented in Table 2. Average weight of females from the spring and fall samples in 1971 were similar to the 1970 average. However, the average weight of males in the 1971 spring sample was greater than those recorded in 1970 (McHugh, et al., 1970). The 1971 overall spring and fall average for both sexes was 10.4 pounds (4.7 kg) which was nearly a pound greater than recorded in 1970.

TABLE 2 Weight-Length by Sex and Season, Situk River Steelhead, 1971.

Season	No. in Sample	Length (cm)		Weight (kg)	
		Range	Avg.	Range	Avg.
Spring - Female	92	58.4 - 90.2	72.8	2.2 - 8.6	4.9
Male	42	53.9 - 91.4	73.4	2.3 - 8.4	5.4
Fall - Female	34	58.9 - 87.1	71.4	2.5 - 7.9	4.3
Male	32	56.1 - 87.6	70.8	1.8 - 8.2	4.3

Total age of the Situk River steelhead was obtained from 105 fish sampled during the spring run and 54 fish sampled from the fall run. Scale examination from the spring sample revealed the run contained steelhead of 11 age classes with individual fish ranging in age from 4 - 9 years (Table 3). The fall sample contained steelhead in eight age classes with ages ranging from 3 - 8 years (Table 3).

TABLE 3 Age Classes of Situk River Steelhead, 1971.

	Age Class	Combined		Female		Male	
		No. SH	% Total	No.	% Total	No.	% Total
Spring Run:	2.2	9	7.6	3	3.7	6	16.2
	2.3	18	15.3	13	16.0	5	13.5
	2.4	6	5.1	4	4.9	2	5.4
	2.5	5	4.2	5	6.2	0	0.0
	3.2	12	10.2	5	6.2	7	18.9
	3.3	58	49.2	41	50.6	17	46.0
	3.4	2	1.7	2	2.5	0	0.0
	3.5	5	4.2	5	6.2	0	0.0
	3.6	1	0.8	1	1.2	0	0.0
	4.2	1	0.8	1	1.2	0	0.0
	4.3	1	0.8	1	1.2	0	0.0
TOTAL		118	99.9	81	99.9	37	100.0
Fall Run:	2.1	12	22.2	3	11.5	9	32.1
	2.2	17	31.5	10	38.5	7	25.0
	2.3	3	5.6	3	11.5	0	0.0
	2.4	3	5.6	1	3.8	2	7.1
	2.6	1	1.9	1	3.8	0	0.0
	3.1	8	14.8	3	11.5	5	17.9
	3.2	9	16.7	4	15.4	5	17.9
	3.3	1	1.9	1	3.8	0	0.0
TOTAL		54	100.2	26	99.8	28	100.0

Age class 3.3 dominated both males and females in the spring run with 49.2% of the total. Age class 2.2 was the most abundant for both sexes in the fall run with 31.2% of the total. A breakdown by sex for both the spring and fall run indicated younger age classes were predominantly males, with females dominating the older age classes. This may be due in part to the ability of the female steelhead to survive the initial spawning run in greater numbers than males. The age of maturity of spring and fall run steelhead appears to differ significantly. The majority of the spring run steelhead mature in their fifth and sixth year of life while the fall run steelhead mature as 4 and 5 year olds (Table 4).

TABLE 4 Age Classes of Initial Spawning Steelhead, Situk River, 1971.

Age Class	Spring Run		Fall Run	
	No.	% Total	No.	% Total
2.1	0	0.0	12	32.4
2.2	8	11.3	12	32.4
2.3	14	19.7	0	0.0
2.4	1	1.4	0	0.0
3.1	0	0.0	7	18.9
3.2	11	15.5	6	16.2
3.3	35	49.3	0	0.0
4.2	1	1.4	0	0.0
4.3	1	1.4	0	0.0
TOTAL	71	100.0	37	99.9

Samples collected in 1970 followed nearly the same pattern with fall run fish maturing at a younger age (McHugh, et al., 1970). Spring and fall run steelhead in the Situk River also differ significantly for age at smolt migration. Spring run fish migrated to saltwater predominantly as 3 check smolts (67.6%) whereas fall run steelhead are comprised of predominately 2 check smolts (64.8%).

High incidence of repeat spawners in the Situk River noted in 1970 was again noted in the 1971 sample. After examination of the 1970 data, it was thought the Situk River was unique in containing a high percent of repeat spawners. Current life history research on the steelhead run in Petersburg Creek revealed that its steelhead run also contains a high percent of repeat spawners (Jones, 1972). Petersburg Creek and the Situk River differ greatly with respect to topography, run timing and run magnitude. Both systems are relatively unexploited by sport fishermen which may account for the high number of repeat spawners in their respective populations.

A total of 105 steelhead scales from the spring run in the Situk River were read for total age. Of this number, 34 or 32.4% showed one or more spawning checks. This percent is similar to that found in 1970 when 38% of the spring run were repeat spawners (McHugh, et al., 1970). Eight or 8% of the total run showed 2 or more spawning checks, and one steelhead (0.9%) showed 3 spawning checks.

The fall run of Situk River steelhead was sampled and 54 scales were read for total age. Of these 16 or 30% of the sample showed one or more spawning checks. Five or 9% of the total run showed 2 or more spawning checks and one steelhead (2% of total run) was spawning for the fifth time.

Age class 3.3 was the most numerous in the spring sample of repeat spawners and age classes 2.3, 2.4, and 3.2 in the fall sample (Table 5). Examination of the repeat spawners by sex showed that females outnumbered males 3 to 1 in the spring sample and 2 to 1 in the fall sample.

TABLE 5 Age Classes of Repeat Spawners, Situk River, 1971.

	Age Class	Combined		Female		Male	
		No. SH	% Total	No.	% Total	No.	% Total
Spring Run:	2.3	3	7.9	1	3.6	2	20.0
	2.4	5	13.2	4	14.3	1	10.0
	2.5	5	13.2	5	17.9	0	0.0
	3.3	17	44.7	10	35.7	7	70.0
	3.4	2	5.3	2	7.1	0	0.0
	3.5	5	13.2	5	17.9	0	0.0
	3.6	1	2.6	1	3.6	0	0.0
	TOTAL	38	100.1	28	100.1	10	100.0
Fall Run:	2.2	5	31.3	4	36.4	1	20.0
	2.3	3	18.7	3	27.3	0	0.0
	2.4	3	18.7	1	9.1	2	40.0
	2.6	1	6.3	1	9.1	0	0.0
	3.2	3	18.7	1	9.1	2	40.0
	3.3	1	6.3	1	9.1	0	0.0
	TOTAL	16	100.0	11	100.1	5	100.0

The reputation of the Situk River as a trophy steelhead stream stems almost entirely from the presence of the high numbers of repeat spawners in the run. These fish average almost 12 pounds (5.4 kg) with individual fish exceeding 19 pounds (8.6 kg). Repeat spawners from the spring and fall runs differ only slightly in size with males slightly larger than females (Table 6).

TABLE 6 Length-Weight for Initial and Repeat Spawners by Sex, Situk River, 1971.

	No. of Fish	Length (cm)		Weight (kg)	
		Range	Avg	Range	Avg
Spring Run:					
Initial Spawners - Female	48	58.4 - 82.2	71.2	2.2 - 6.3	4.4
- Male	24	53.9 - 91.4	73.9	2.3 - 8.4	5.3
Repeat Spawners - Female	26	62.2 - 89.6	76.6	2.9 - 7.5	5.3
- Male	8	72.4 - 87.0	76.8	5.2 - 7.2	5.7
Fall Run:					
Initial Spawners - Female	15	58.9 - 78.2	68.8	2.5 - 5.7	3.9
- Male	23	56.1 - 82.5	69.3	1.8 - 7.0	3.9
Repeat Spawners - Female	11	65.5 - 87.1	74.4	3.6 - 7.9	5.0
- Male	5	65.5 - 87.6	77.7	3.4 - 8.2	5.7

#### Saltwater Creel Census - Petersburg Area:

A creel census program to assess sport fish harvest in the intertidal area of three Petersburg area streams was initiated in 1966 and has continued on an annual basis through 1971. The design of the Petersburg area census differs from the other southeast Alaska census programs in that anglers in the Petersburg area fish the intertidal area of three streams instead of the saltwater bays and channels. The Petersburg area census was conducted on two randomly selected week days and only one weekend day. Census programs in the remainder of Southeast Alaska encompassed both weekend days each weekly period. Census was conducted via skiff at Petersburg Creek and in Wrangell Narrows and via vehicle from the Mitkof Highway at Falls Creek and Blind Slough.

Petersburg Creek is located on Kupreanof Island 1/2-mile across Wrangell Narrows from the town of Petersburg. The census program was restricted to the saltwater intertidal portion of the creek as this area is the most popular and productive fishing area. Fishing success on Petersburg Creek varies with tide level, with the best fishing in the upper area at high tide and again just before the low tide in Wrangell Narrows. The census, initiated the second week in August, was conducted twice daily, once during high tide in the upper intertidal area and again at low tide near the creek mouth on Wrangell Narrows. Fishing effort on steelhead, red salmon, pink salmon, cutthroat trout, and Dolly Varden occurs before August, but the major effort is during the coho salmon run in August and September.

Fisherman success on Petersburg Creek was fair for salmon and good for cutthroat trout and Dolly Varden during August. Salmon catches increased in September with a peak during mid-month (Table 7).

TABLE 7 Petersburg Creek Creel Census Summaries by Bi-Weekly Periods, 1971.

Bi-Weekly Period	Angler Trips	Angler Hours	Fish Caught*				
			SS	PS	CS	CT	DV
8/9 - 8/22	25	53	6	16	--	12**	51
8/23- 9/5	71	187	53	3	1	17	48
9/6 - 9/19	85	202	71	--	--	14	23
9/20-10/3	<u>17</u>	<u>39</u>	<u>6</u>	<u>--</u>	<u>--</u>	<u>--</u>	<u>3</u>
TOTAL	198	481	136	19	1	43	125

\*SS - Silver salmon                      PS - Pink salmon  
 CS - Chum salmon                      CT - Cutthroat trout  
 DV - Dolly Varden

\*\*Includes two cutthroat marked at the Petersburg Creek weir.

Falls Creek crosses the Mitkof Highway at Mile 9. The area covered in the census begins 300 feet below the fish ladder on Falls Creek and extends onto the tide flats. In this intertidal area, fishing success varies with tide level with the greatest success occurring from two hours before to two hours after high tide for those anglers fishing from shore. Boat fishermen are most successful just before to just after low water in Wrangell Narrows.

Falls Creek receives an early run of coho and pink salmon with fish present below the falls from late July through August. The salmon run in Falls Creek was poor (Table 8). Unlike Petersburg Creek and Blind Slough, very few anadromous Dolly Varden and cutthroat are present in the intertidal area of Falls Creek. Most anglers bypassed Falls Creek in 1971 for more productive fishing at Petersburg Creek and Blind Slough.

TABLE 8 Falls Creek Creel Census Summaries by Bi-Weekly Periods, 1971.

Bi-Weekly Period	Angler Trips	Angler Hours	Fish Caught*		
			SS	PS	DV
8/9 - 8/22	13	24	--	5	5
8/23- 9/5	20	51	5	1	--
9/6 - 9/19	0	--	--	--	--
9/20- 10/3	<u>0</u>	<u>--</u>	<u>--</u>	<u>--</u>	<u>--</u>
TOTAL	33	75	5	6	5

\*SS - Silver salmon                      PS - Pink salmon                      DV - Dolly Varden

Creel census at Falls Creek was conducted on the same random schedule as Petersburg Creek. Census was conducted twice daily, once by skiff at low water on Wrangell Narrows and again by vehicle at high tide adjacent to the Mitkof Highway. Most of the salmon had moved through the intertidal area of Falls Creek by the first of September and fishing effort was negligible by the end of the first week in September.

Blind Slough parallels the Mitkof Highway from Mile 13 to Mile 22 and is easily accessible. The most popular and productive areas of Blind Slough are the intertidal "rapids" area, reached by a 1/4-mile foot trail that leaves the Mitkof Highway at Mile 14, and the mouth area in Wrangell Narrows. Trout and salmon are present in this intertidal area at all tide levels and shore and boat fishermen follow the schools of fish as they move with the tide. Anadromous Dolly Varden and cutthroat trout are present in the intertidal area throughout most of the year but are most abundant during the fall coho salmon run. Blind Slough received a strong coho salmon run in 1971 that entered the fishery by mid-August and peaked in mid-September (Table 9).

TABLE 9 Blind Slough Creel Census Summaries by Bi-Weekly Periods, 1971.

<u>Bi-Weekly Period</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>Fish Caught*</u>		
			<u>SS</u>	<u>CT</u>	<u>DV</u>
8/9 - 8/22	16	24	7	3	3
8/23- 9/5	83	234	59	36	31
9/6 - 9/19	43	105	34	18	35
9/20-10/3	<u>20</u>	<u>41</u>	<u>15</u>	<u>6</u>	<u>--</u>
TOTAL	162	418	115	63	69

\*SS - Silver salmon                      CT - Cutthroat trout                      DV - Dolly Varden

Blind Slough was censused on the same schedule as the other Petersburg area streams with twice daily coverage on census days. Fishing effort was minimal in early August but increased as additional salmon became available in early September.

The censused saltwater harvest of coho, pink, and chum salmon, cutthroat trout and Dolly Varden for Petersburg Creek, Falls Creek, and Blind Slough was expanded to project the estimated total harvest (Table 10). The angler catch censused on the sample days was expanded using a factor of 3.95 for the month of August and 3.79 for September to project the expanded all season harvest. Data obtained on census days was applied to total days in each month with an estimated two-thirds of all anglers contacted on any given census day. Each stream was expanded separately to avoid bias due to sample size.

TABLE 10 Expanded All Season Sport Fish Harvest, Petersburg Area, 1971.

<u>Location</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>Fish Caught*</u>				
			<u>SS</u>	<u>PS</u>	<u>CS</u>	<u>CT</u>	<u>DV</u>
Petersburg Creek	760	1,856	521	74	4	167	487
Falls Creek	130	296	20	24	--	--	20
Blind Slough	<u>626</u>	<u>1,612</u>	<u>443</u>	<u>--</u>	<u>--</u>	<u>242</u>	<u>296</u>
TOTAL	1,516	3,754	984	98	4	409	803

\*SS - Silver salmon      PS - Pink Salmon      CS - Chum salmon  
 CT - Cutthroat trout      DV - Dolly Varden

Comparative annual expanded sport fish harvest for Petersburg Creek and Blind Slough for years 1966 through 1971 are presented in Table II. Falls Creek catch statistics prior to 1968 are incomplete and are deleted from the table.

TABLE II Comparative All Season Sport Fish Harvest, Petersburg Creek, Blind Slough, 1966-1971.

	<u>Year</u>	<u>No. Anglers</u>	<u>Angler Hours</u>	<u>Fish Caught*</u>				
				<u>SS</u>	<u>PS</u>	<u>CS</u>	<u>CT</u>	<u>DV</u>
Petersburg Cr.	1966	369	765	118	224	7	33	145
	1967	198	396	81	--	--	99	72
	1968	570	1,581	541	53	--	58	185
	1969	461	1,549	330	94	--	233	296
	1970	567	1,379	315	9	--	9	44
	1971	760	1,856	521	74	4	167	487
Blind Slough	1966	465	441	349	--	--	76	251
	1967	365	862	212	--	--	32	176
	1968	343	1,063	358	--	--	158	109
	1969	379	1,324	356	--	104	203	225
	1970	480	1,493	314	4	8	69	133
	1971	626	1,612	443	--	--	242	296

\*SS - Silver salmon      PS - Pink salmon      CS - Chum salmon  
 CT - Cutthroat trout      DV - Dolly Varden

## Lower Southeast Alaska

The physical and chemical characteristics of Ketchikan area waters have been reported previously (McHugh, et al., 1971). There has been little change from the conditions reported in this report.

Fishing pressure has changed little from previous years. Notable, however, was the advent of cold weather of sufficient severity to repel stream and lake anglers in early December, stream temperatures falling to the mid-thirties, and low flows resulting in a shortened fall steelhead fishery. Normally, fishing should have been productive for an additional two to three weeks. Low stream flows and temperatures with considerable snow made the winter more severe than expected.

### Lakes Investigated:

Table 12 shows waters investigated in the Ketchikan district in 1971. Waters of easy aircraft access have been previously inventoried and those remaining unknown require the use of relatively high performance aircraft or helicopters. One fixed wing plane of this capability was available in Ketchikan which limited the number of waters checked. Because of the cost, a helicopter is seldom used.

TABLE 12 Lakes Inventoried in the Ketchikan Area, 1971.

<u>Lake</u>	<u>Surface Acres</u>	<u>Elevation (Ft.)</u>	<u>Depth (Ft.)</u>	<u>Watershed Acreage</u>	<u>Air Miles from Ketchikan</u>	<u>Fish Species Present*</u>
Porky	102	506	100+	1,619	36	CT
Sun Dial	294	1,890	100+	1,875	40	None
Venison	160	870	100+	1,216	28	RT
Herman	98	1,135	100+	4,141	50	None
Grant	134	1,107	100+	1,459	50	None
Minnie	269	1,863	100+	6,157	59	GR
Upper Lake Cr.	64	250	100+	2,784	63	CT (rumored)
Manzoni	430	1,348	100+	2,196	40	GR
Walker	384	1,011	100+	8,230	50	RT
Upper Gilbert	134	885	100+	2,670	44	None
Lower Gilbert	152	404	100+	6,099	45	DV & Kok

\*CT - Cutthroat trout

RT - Rainbow trout

GR - Arctic Grayling

DV - Dolly Varden

Kok - Kokanee

### Rehabilitation:

No waters other than those previously reported are potentially ready for rehabilitation.

### Stocking:

Waters scheduled for stocking in 1971 were devoid of fish and listed below. However, the severe winter on the grayling brood stock lakes produced a winter-kill and this part of the stocking schedule was not completed.

<u>Lake</u>	<u>Rainbow Fry</u>	<u>Grayling</u>
Rock	2,500	--
Humpy	2,500	--
Blue	2,500	--
Punkie	--	0
Whitesox	--	0
Sun Dial	--	0

### Egg Take Sites:

A weir and trap were installed in the major inlet of Sarkar Lake (Prince of Wales Island) and subsequently confirmed a source of silver and sockeye salmon. However, better holding facilities will have to be devised to preclude excessive mortality.

None of the lakes investigated in the 1971 season are utilized by anadromous fish. All are isolated by impassable falls.

### Access:

Access to sport fishing areas in the Ketchikan district continues to present only a physical problem. With the exception of the Ketchikan Township withdrawal, all lands are in the Tongass National Forest. There are few connecting trails and the road system is very limited (about 35 miles end to end). A number of lakes have trails from the salt water along the outlet streams. Float plane use is the accepted mode of travel to most lakes and those too small to safely land a plane on receive minimal angling.

A spur road from the Ward Lake road system to Harriet Hunt Lake was opened during the summer and fishing pressure increased on the rainbow trout population. The Forest Service improved the trail from Manzanita Bay to Ward Lake. However, this three-mile trail is not likely to become popular until more work is done on it.

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