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FEDERAL AID IN FISH RESTORATION
AND
ANADROMOUS FISH STUDIES

RECREATIONAL FISHERIES MAINTENANCE AND ENHANCEMENT

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RESEARCH PROJECT SEGMENT

State: Alaska

Name: Sport Fish
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Project: F-10-1

Study No.: S

Study Title: ANADROMOUS SALMON
STUDIES

Job No: 1-3

Job Title: ENHANCEMENT OF THE
RECREATIONAL FISHING
OPPORTUNITIES:
Juneau Area

Cooperator: Mike Bethers

Period Covered: July 1, 1985 to June 30, 1986

ABSTRACT

An assessment of Juneau's habitat has been completed (Bethers and Munk 1986), and it describes attributes of streams that are accessible by the Juneau road system. Some of these attributes are (1) species of fish present, (2) fish stocking history, (3) escapement data, (4) stream habitats, (5) land-use effects, (6) habitat enhancement management opportunities, and (7) land ownership. This document also contains maps and recommended strategies for each stream.

Investigations at Auke Lake showed that 36 percent cutthroat trout emigrating from Auke Lake from 1983 through 1985 were from two hatchery-reared experimental lots that had been released into the lake in 1983. Ten percent of the cutthroat trout released into Auke Lake as 2-year olds were recovered, compared to only 1.7 percent for fish released into the lake at 1 year of age.

Harvest studies were conducted at Montana Creek and at Salmon Creek and Sheep Creek Hatchery Special Harvest Areas. The results of these studies are presented in Mecum (1986). A total of 2,698 coho salmon were counted in 15 Juneau area streams in 1985. Record high-peak counts were observed in three local streams, and the 1985 record high was 16 percent higher than the 1981-1984 average of 2,277 fish.

KEY WORDS

Habitat, Auke Creek weir, escapement, enhancement, Juneau, southeast Alaska, coho salmon, *Oncorhynchus kisutch* (Walbaum), cutthroat trout, *Salmo clarki* (Richardson).

BACKGROUND

Recreational angling opportunities and productive fish habitat in the Juneau area have become threatened through population growth and associated urban and industrial development. Twelve streams have been closed to angling to protect small fish populations in accessible locations. A relatively restrictive set of fishing regulations have been applied to waters crossed by the Juneau road system to protect readily accessible fish stocks and to spread the catch among more anglers.

The Juneau Roadside Enhancement Project was initiated in 1981 to relieve some of the fishing pressure by experimentally enhancing existing fisheries, developing new fisheries, and protecting existing fish habitat. The project's most direct benefit to local sport fisheries has been the experimental introduction of land-locked coho salmon in Twin Lakes. These waters have been stocked annually since 1982 and have provided a major roadside angling opportunity.

Initial cutthroat trout enhancement efforts at Auke Lake show that the number of those available to the sport fisheries can be increased through release of hatchery-reared fry into the lake. Initial releases of anadromous coho smolts were made at Dredge Lake in 1985, using fish reared at Snettisham Hatchery; and two broods of local steelhead are currently being reared at Snettisham Hatchery for reintroduction into Juneau area streams.

Table 1 lists the common name, scientific name, and abbreviation of each species of fish mentioned in this report.

Table 1. List of Common Names, Scientific Names, and Abbreviations.

Common Name	Scientific Name and Author	Abbreviation
Chinook salmon	<i>Oncorhynchus tshawytscha</i> (Walbaum)	KS
Chum salmon	<i>Oncorhynchus keta</i> (Walbaum)	CS
Coho salmon	<i>Oncorhynchus kisutch</i> (Walbaum)	SS
Cutthroat trout	<i>Salmo clarki</i> (Richardson)	CT
Dolly Varden	<i>Salvelinus malma</i> (Walbaum)	DV
Pink salmon	<i>Oncorhynchus gorbuscha</i> (Walbaum)	PS
Rainbow trout	<i>Salmo gairdneri</i> (Richardson)	RT
Sockeye salmon	<i>Oncorhynchus nerka</i> (Walbaum)	RS
Steelhead trout	<i>Salmo gairdneri</i> (Richardson)	SH

RECOMMENDATIONS

Management

1. Continue the evaluation of experimental lots of cutthroat trout released into Auke Lake in 1983.
2. Continue to conduct coho salmon spawning and escapement surveys on Juneau area systems. Escapement surveys should also be conducted on major pink and chum salmon streams on the Juneau roadside.

Research

1. Continue to participate in experimental enhancement of cutthroat trout at Auke Lake, utilizing the Auke Creek Hatchery.
2. Determine the feasibility and methods for estimating the population of cutthroat trout in Auke Lake and the number of resident and anadromous cutthroat trout using the lake.

OBJECTIVES

1. To complete the Juneau Habitat Assessment document, which describes which species of fish are present, stream habitat analysis, maps, land-use information, habitat enhancement opportunities, and recommended management strategies for approximately 60 streams along the Juneau roadside.
2. To determine the number of wild and hatchery-produced cutthroat trout emigrating from Auke Lake.
3. To determine the recreational fishing effort and harvest of (1) Dolly Varden char in Montana Creek from July 1 through October 30, 1985, (2) pink salmon at Sheep Creek from July 1 through August 30, 1985, and (3) pink, chum, and coho salmon at Salmon Creek from July 15 through October 30, 1985 (Mecum 1986).
4. To estimate the coho salmon escapements in Steep, Peterson, Montana/McGinnis, Jordan, and Switzer Creek.

TECHNIQUES USED

Habitat Assessment

Bethers and Munk (1986) have assembled information on 75 streams and lakes; it is a document that will be distributed to local resource and governmental agencies, the public, local advisory committees, and other interested parties.

Information contained in this document was taken from both field surveys and a literature search of the Division of Sport Fish's regional and area files. Historical, biological, and land-use data were taken from area and regional files. Salmon escapement counts were taken from the Sport Fish and Commercial Fisheries salmon escapement files.

Stream survey data were obtained by walking the drainages; making visual observations regarding habitat types, flood plain location, fish species, habitat modifications, and fish barriers; and trapping minnows with Gee minnow traps. Traps were baited with salmon egg clusters and set in locations representative of the typical habitat type in that portion of the stream appearing to contain fish. Traps were set for approximately 2 hours, the species and numbers of fish caught per trap recorded, and fish released at the trap sites. In some small streams, only visual observations of fish were made. Photographs of the drainages were taken to show the representative habitat types. Field data were recorded in "Rite in the Rain" notebooks.

Maps were drawn of each drainage to show the general habitat types, stream substrate, cover types, spawning and rearing areas, and areas impacted by land-use. Basic maps were traced from the best available map of each drainage; USGS quadrangle, property plat maps, and aerial photographs were used. In instances where maps of a particular drainage were not available, they were drawn by hand. Data collected during this study was kept on file in the Sport Fish area management office.

Information on individual streams, which is provided by Bethers and Munk (1986), was assembled according to the following outline:

- Stream/Lake Name
- Anadromous Stream Catalog Number

- 1. Description
 - a) Drainage Location
 - b) Saltwater Entry
 - c) Drainage Area
 - d) Stream Length and Width
 - e) Gradient
 - f) Water Color
 - g) Character--meanders, etc.

- 2. Fish Species Present
 - a) Present
 - b) Historical
 - c) Stocked

- 3. Fish Habitat
 - a) Spawning
 - b) Rearing
 - c) Cover Types
 - d) Barriers

4. Public Use
5. Land Ownership
6. Land Uses Impacting System
 - a) Residential
 - b) Industrial
 - c) Water
 - d) Gravel
 - e) Roads
 - f) Logging
 - g) Other Impacts
 - h) Etc.
7. Conclusion
8. Recommendations
 - a) For Habitat Maintenance
 - b) For Improvement
 - c) Opportunities for Mitigation
 - d) Needed Research
9. Appendix
 - a) Map of System
 - b) Trap Data/Escapement Counts

Chapter 1 (Auke Creek) of Bethers and Munk (1986) is provided in Appendix A, and the entire document is available upon request.

Auke Lake Cutthroat Trout

The Auke Creek weir is located approximately 300 feet above tidewater and is operated by the National Marine Fisheries Service from approximately 15 April to 15 June to catch and sample emigrating fry and smolts and mid-June through 30 October to catch and sample in-migrating adult salmon. The juvenile fish weir has panels of perforated aluminum plate (2.5-mm holes, 2-mm spacing). Emigrant fish pass through "V" notches incorporated into the weir and into a chute that ultimately leads to a series of graders where fish are automatically sorted by size.

Cutthroat trout emigrating from Auke Lake were captured at the Auke Creek weir from 15 April through 20 June 1985. Cutthroat were taken from the weir's holding box daily and examined for left and right ventral fin clips, which identified them as one of two experimental lots released into the lake in 1983. The numbers of unmarked cutthroat trout (assumed to be wild stock) were also recorded. Data on the two lots of cutthroat trout released into Auke Lake in 1983 are presented in Table 2.

Table 2. Auke Lake Cutthroat Trout Release Data, 1983.

	Lot 1	Lot 2
Date of Release	04/26/83	08/03/83
Number Released	1,256	4,078
Fin Mark	Right Ventral	Left Ventral
Brood	1981	1982
Avg. Fork Length	126 mm	97 mm

Sexually mature cutthroat trout were retained for spawning in a 6-ft. diameter fiberglass Swedish pond inside the hatchery. To induce sexual maturity, Gonadotropin hormone was injected into the muscle tissue directly behind the dorsal fin of the male cutthroat; the dosage was 1 ml/kg of fish.

Cutthroat trout eggs taken at Auke Creek Hatchery were incubated in Heath incubators. Fry were reared in 6-ft-diameter Swedish Ponds and fed Oregon Moist Pellet. Feed rations were based on the fish's acceptance of food, which was related to water temperature in the hatchery that ranged from 8°C to 10°C during the summer months. A maximum of 5% of the weight of fish in a tank was fed daily. During the winter months, water temperature ranged from 1°C to 3°C, and from 1% to 3% of the fish weight was fed daily.

Harvest Studies

Methods used in conducting creel surveys at Montana Creek and at Salmon Creek and Sheep Creek Hatchery Special Harvest Areas are presented in Mecum (1986).

Salmon Escapement Surveys

Salmon escapement surveys were conducted by foot and fixed-wing aircraft in 1985.

Foot surveys were conducted by walking along or wading in the stream and counting fish. Efforts were made to drive fish from cover and under banks.

Piper "PA-12" aircraft were used in aerial surveys. The flights were conducted at 50-60 mph and an altitude of 500 feet over the stream being surveyed. Likely looking fish-holding areas were circled several times to ensure an accurate count. Attempts were made to survey each system at least three times so that the peak-escapement count could be determined. In all surveying methods, fish were counted by personnel wearing "polaroid" glasses, and fish were tallied on hand counters. Table 3 lists the Juneau area coho streams that are surveyed annually and the survey methods that were used on each system.

Table 3. List of Juneau Area Coho Streams That Are Surveyed Annually and the Survey Method Used on Each System.

STREAM	AREA	METHOD
*Steep Creek	Mendenhall Lake up to falls	Foot
*Peterson Creek (25 mi.)	Glacier Hwy. up to falls	Foot
*Jordan Creek	entire stream	Foot
*Montana/McGinnis Creeks	upstream from Back Lp. Bridge	Foot
*Switzer Creek	upstream from Egan Drive	Foot
*Peterson Creek (O.P.)	entire stream	Foot
Cowee/Davies Creeks	entire stream	Aerial
Vanderbuilt Creek	entire stream	Foot
Lemon Creek	1st clearwater tributary	Foot
Windfall Lake Inlet	entire stream	Aerial
^{1/} Salmon Creek	entire stream	Foot
Mendenhall Ponds	entire system	Foot
Fish Creek	entire system	Foot
*Auke Creek	(operated by National Marine Fisheries Service Weir)	
Hilda Creek	lower ¼ mi.	Foot
Hilda Creek	entire system	Aerial

* Index streams are considered to be representative examples of stream types in the Juneau area. These streams are given top priority in achieving multiple surveys and establishing peak escapement counts.

^{1/} Salmon Creek was not surveyed in 1985 as all returning coho were from smolt released by Salmon Creek Hatchery.

FINDINGS

Auke Lake Cutthroat Trout

Evaluation of two lots of cutthroat trout released into Auke Lake in 1983 continued through 1985, and sufficient data were gathered to compare the two lots. Release data and recovery data collected at the Auke Creek weir for these two lots are presented in Table 4. Data on the numbers of hatchery-produced and wild cutthroat are presented in Table 5.

After 3 years of evaluation, 10% of the hatchery-reared cutthroat released into Auke Lake as 2-year olds were recovered as outmigrants at the Auke Creek weir, compared to 1.7% for fish released as 1-year olds.

In 1983, 77 fish released as 2-year olds emigrated, compared to none of the fish released as 1-year olds; some of the 2-year olds were actually smolts when released into Auke Lake.

The recovery rates for fish released as 2-year olds were consistently higher during the year of release and at 1 and 2 years after release than for fish released as 1-year olds. Either the survival of the 1-year olds in Auke Lake was very low, or these fish will be recovered as emigrants at Auke Creek weir in coming years. Attempts should be made to determine the remaining number of cutthroat from these lots that are still residing in Auke Lake.

Table 5 shows that hatchery-reared cutthroat trout released into the lake have accounted for at least 33% of the total outmigration. This clearly demonstrates the effect that releasing hatchery-reared fry could have on the lake's cutthroat trout population and, subsequently, on the number of fish potentially available for the sport fisheries. A question that remains unanswered is whether the cutthroat trout that are caught in the weir are just dropping down into the lake outlet to spawn or truly anadromous. A method to identify whether the cutthroat are resident or anadromous should be devised; then only fish known to be resident stock would be used for enhancement purposes.

In 1985, 31 sexually mature cutthroat trout captured at the Auke Creek weir were retained for spawning. Sixteen females were artificially spawned, yielding 4,400 eggs. During summer 1986, approximately 4,000 fry were rearing in Auke Creek Hatchery. Two of the females spawned in 1985 had been released into the lake as 2-year olds in 1983; trout required 4 years to achieve sexual maturity.

Coho Escapement Counts

Coho salmon escapement surveys were conducted on 14 streams in the Juneau area in 1985. Auke Creek coho salmon were enumerated at the Auke Creek weir. The total of 2,698 coho spawners counted in Juneau area streams in 1985 was the highest number counted since comparable surveys began in 1981 (approximately 16% higher than the 1981-1984 average escapement of 2,277). Survey dates in 1985 and peak counts for local streams are presented in Table 6. Comparable coho salmon escapement data for Juneau area streams are presented in Table 7.

Table 4. Release and Return Data for Two Experimental Lots of Cutthroat Trout Released into Auke Lake in 1983.

Release Data	Lot 1		Lot 2	
Stocking data	04/26/83		08/03/83	
Brood year	1981		1982	
Age when stocked	2 years		1 year	
Mean fork length	126 mm		97 mm	
Number per lot	1,256		4,078	
Fin mark	right ventral		left ventral	
Recovery Data ^{1/}	Lot 1		Lot 2	
	No. Fish	%	No. Fish	%
Year of release	77	6.1%	0	0.0%
Year after release	40	3.2%	64	1.6%
2 years after release	11	0.8%	38	0.1%
Accum. return to date	128	10.1%	101	1.7%

^{1/} Collected at Auke Creek Weir from cutthroat emigrating from Auke Lake.

Table 5. Auke Creek Weir Cutthroat Trout Outmigration Data, 1980-1985.

Year	Marked*		Total Marked(%)	Not** Marked(%)	Total
	RV	LV			
1980	...	...	0(00.0%)	85(100 %)	85
1981	...	...	0(00.0%)	157(100 %)	157
1982	...	...	0(00.0%)	157(100 %)	157
1983	77	0	77(33.8%)	151(66.2%)	228
1984	40	64	104(33.4%)	198(65.6%)	302
1985	11	38	49(43.8%)	63(56.2%)	112

* Hatchery reared cutthroat

** Wild stock cutthroat

Table 6. Coho Salmon Escapement Survey Dates and Counts for Juneau Area Streams, 1985.

Stream	Date	Live Fish	Dead Fish	Total Fish
Steep Creek	10/07	98	0	98
	10/15	158	19	177
	10/28	178	8	186
Peterson Creek (25 mi.)	10/07	224	15	239
	10/15	199	77	276
	10/28	15	11	26
Jordan Creek	10/15	70	2	72
	10/23	29	0	29
	11/05	17	4	21
Montana/McGinnis Creeks	10/08	810	0	810
	10/17	794	5	799
	10/30	308	26	334
Switzer Creek	10/09	25	1	26
	10/17	68	0	68
	10/29	113	9	122
Peterson Creek (O.P.)	10/07	144	0	144
	10/22	118	0	118
	11/01	18	1	19
Fish Creek	10/16	26	0	26
	10/28	31	0	31
Hilda Creek	10/30	0	0	0
	10/30	0	0	0
Cowee/Davies Creeks	10/07	19	0	19
Mendenhall Ponds	10/24	39	6	45
Vanderbuilt Creek	10/24	12	3	15
Lemon Creek	10/24	0	2	2
Windfall Lake Inlets	10/07	0	0	0
Auke Creek	10/29	0	0	0

Table 7. A Comparison of Coho Escapements in Juneau Area Streams, 1981-1985.

Stream Name and Stream Number	1981	1982	1983	1984	1981-1984 Avg./Stream	1985	Comment
*Steep Cr. 111-50-056	515 (10/20)	232 (10/21)	168 (10/21)	168 (10/19)	271	186 (10/28)	None
*Peterson Cr. (25 mi.) 111-50-010	183 (10/29)	320 (10/15)	219 (10/06)	189 (10/11)	228	276 (10/15)	None
*Jordan Creek 111-50-062	482 (10/20)	368 (10/12)	184 (10/22)	250 (10/26)	321	72 (10/15)	Record low count, probably due to winter freeze outs in '82 & '83.
*Montana/McGinnis Cr. 111-50-052	227 (10/27)	545 (10/27)	636 (10/10)	581 (10/29)	497	810 (10/08)	Record high count.
*Switzer Cr. 111-40-007	109 (10/21)	80 (10/20)	80 (10/26)	123 (11/01)	98	122 (10/29)	None
Peterson Cr. (O.P.) 111-50-075	19 (10/21)	2 (10/07)	95 (10/17)	50 (10/17)	42	144 (10/07)	Record high count.
Cowee/Davies Cr. 115-10-062&063	...	113 (10/21)	25 (10/13)	15 (10/28)	51	19 (10/07)	System not adequately surveyed, probably missed peak.
Vanderbilt Cr. 111-40-	11 (11/06)	33 (10/21)	11 (11/15)	49 (10/27)	26	25 (10/24)	None
Lemon Cr. 111-40-010	0	15 (10/20)	11 (10/28)	9 (10/16)	12	2 (10/24)	Probably missed peak count.
Windfall Lake Inlet	...	235 (11/01)	28 (11/01)	19 (10/28)	94	0 (10/07)	Missed peak count.
Salmon Cr. 111-40-015	12 (10/23)	5 (10/28)	2 (10/15)	...	6	...	Not counted because of hatchery fish return.
Mendenhall Ponds	...	83 (10/26)	16 (10/19)	0 (10/15)	33	45 (10/24)	None
Johnson Cr. 111-50-065	8 (10/02)	19 (10/25)	9 (12/21)	27 (10/11)	16	24 (10/25)	None
Fish Creek 111-50-069	2 (11/02)	1 (10/25)	7 (11/03)	50 (10/17)	15	31 (10/28)	None
Hilda Cr. 111-40-070	...	...	...	...	...	0 (10/03)	First year surveyed, missed peak count.
*Auke Cr. 11-50-042	678 Weir	458 Weir	694 Weir	636 Weir	617 Weir	942 Weir	Record high count.
Annual Total	2,246	2,509	2,185	2,166		2,698	

* Index Stream
0 None Seen
... No Survey

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APPENDIX

Chapter 1

Auke Creek (Also refer to Auke Lake)

Anadromous Stream Catalog Number: 111-50-10420

Location: Lat. 58°23' N, Long. 134°38' W (11.5 miles Glacier Highway)

Description:

Auke Creek flows about 0.3 miles from Auke Lake to saltwater in Auke Bay. The stream has a fairly steep gradient and the water is clear with a brownish tint. A small fish hatchery was built on the stream in 1954 by the Territorial Sportsmen Club. Since 1961, the stream has had a weir in place which is operated in conjunction with the hatchery (both are operated by the National Marine Fisheries Service). Fish stocks utilizing Auke Lake are enumerated at the Auke Creek weir.

Fish Species Present:

Auke Creek has populations of coho, pink, chum, and sockeye salmon, cutthroat and rainbow trout, and Dolly Varden char. Data on fish runs for this system are presented in Tables 1.1 and 1.2. A history of stocking in the Auke Creek/Auke Lake system is presented in Table 1.3.

Fish Habitat:

Auke Creek is used primarily as a migration route to Auke Lake, however, the stream does provide good rearing and spawning habitat as well. This stream provides many pools with overhead vegetation, which provides good

Table 1.1. A Summary of Auke Lake Salmon Migrations.

Year	Pink Salmon		Coho Salmon		Sockeye Salmon		Chum Salmon	
	Juv.*	Adult	Juv.*	Adult	Juv.*	Adult	Juv.*	Adult
1961	-	-	-	-	90,000	-	-	-
1962	-	-	-	-	-	-	-	-
1963	-	-	-	-	29,052	6,391	-	-
1964	-	-	-	-	62,389	5,465	-	-
1965	-	-	-	-	-	6,889	-	-
1966	-	-	-	-	-	10,986	-	-
1967	-	3,761	-	390	-	5,909	-	78
1968	-	2,638	-	-	35,737	7,164	-	76
1969	-	-	-	-	24,947	6,131	-	-
1970	-	-	-	-	-	7,034	-	-
1971	-	2,090	-	916	-	7,673	-	10
1972	157,000	1,768	-	1,113	3,388	9,166	-	47
1973	74,000	4,948	-	637	-	8,259	-	27
1975	268,000	6,260	-	1,147	15,399	4,371	-	5
1976	107,595	2,525	-	460	51,972	6,153	-	16
1977	119,000	15,848	-	1,781	9,327	16,683	-	17
1978	129,194	18,410	-	1,026	7,855	3,177	-	17
1979	23,270	19,003	-	703	-	6,022	-	13
1980	74,047	20,187	9,951	938	25,299	4,564	0	118
1981	111,416	14,450	7,140	921	9,183	4,089	0	109
1982	118,399	10,653	6,607	939	1,719	1,334	0	251
1983	164,784	24,827	6,721	1,358	3,170	1,805	0	310
1984	169,552	5,271	7,036	966	20,251	975	0	1,927
1985	110,001	26,317	5,601	1,672	11,747	240	7,198	1,852

*Juveniles

Tag recovery information on Auke Lake Coho Salmon are presented in Tables 1.3, 1.4, and 1.5.

Table 1.2. A Summary of Dolly Varden and Cutthroat Trout Emigrants from Auke Lake.

Year	Outmigrants	
	# DV*	#CT*
1970	6,126	-
1980	3,057	85
1981	6,366	157
1982	3,789	157
1983	3,717	226
1984	4,512	302
1985	3,052	161

* Dolly Varden Char

** Cutthroat Trout

Table 1.3. A History of Fish Stocking in Auke Lake.

Date	Species	Number	Brood Source	Hatchery
1919	Pink Salmon	600,000	?	?
8/27/25	Cutthroat Trout	9,600	Lake Eva, WA	Lake Eva, WA
9/20/27	Eastern Brook	4,780	?	Yes Bay, AK
10/25/27	Eastern Brook	7,030		Yes Bay, AK
1928	Eastern Brook	14,400	?	?
9/15/31	Eastern Brook	1,050		Yes Bay, AK
1950	Grayling	125	McDonald Lk. BC	
8/13/54	Rainbow Trout	61,000	Kodiak, AK	Auke Cr. AK
8/18/56	Rainbow Trout	42,000	Kodiak, AK	Auke Cr. AK
5/22/74	Sockeye Salmon	40,000	Auke Lake, AK	Auke Cr. AK
5/22/74	Sockeye Salmon	20,000	Auke Lake, AK	Auke Cr. AK
6/06/75	Sockeye Salmon	54,000	Auke Lake, AK	Auke Cr. AK
11/79	Coho Salmon	2,500	Auke Lake, AK	Auke Cr. AK
4/26/83	Cutthroat Trout	1,256	Auke Lake, AK	Auke Cr. AK
8/3/83	Cutthroat Trout	4,078	Auke Lake, AK	Auke Cr. AK

cover. The upper section of the stream has been enhanced through channel stabilization and the placement of high quality spawning gravel. This section of the stream also provides excellent rearing area.

Minnow trap data collected at Auke Creek are summarized below:

July 16, 1970: 7 minnow traps averaged 64 rearing coho and one Dolly Varden per trap.

Data on contribution of Auke Lake coho salmon to fisheries in northern Southeast, Alaska are presented in Tables 1.4 and 1.5.

There are no natural barriers to fish passage on Auke Creek.

Public Use:

Auke Creek is closed to fishing, however, a major roadside fishery occurs in Auke Bay off the mouth of Auke Creek (averaging over 3,000 angler-hours annually). In 1983, 45 coho and 1,485 pink salmon were caught by sport anglers at the mouth of Auke Creek.

Land Ownership:

Auke Creek runs primarily through state property, except for a small parcel of private property adjacent to the stream mouth. Public access is available along the beach and via the fish hatchery driveway.

Table 1.4. Estimated Total Return, Harvest by Area, and Escapement of Coho Salmon to Auke Lake, 1978 and 1980-1983.

Area	1978	1980	1981	1982	1983	Avg.	Avg.% Total
Northern Outside 116, 157, 181, 183, 186, 189	-	30 (3.8%)	48 (5.4%)	19 (2.4%)	212 (19.1%)	57	5.6
Central Outside 113, 154	30 (1.9%)	7 (0.9%)	38 (4.3%)	24 (3.0%)	19 (1.7%)	28	2.9
Southern Outside 103, 104, 152	-	-	-	-	4 (0.4%)	1	0.1
Central Inter- mediate 112, 114	577 (36.5%)	16 (2.0%)	128 (14.6%)	262 (32.6%)	91 (8.2%)	215	18.8
Southern Inter- mediate 105, 109, 110	-	5 (0.7%)	-	23 (2.8%)	7 (0.6%)	7	0.9
Lynn Canal 115	30 (1.9%)	-	2 (0.2%)	7 (0.9%)	19 (1.7%)	12	0.9
Stephens Passage 111	261 (16.5%)	34 (4.2%)	17 (1.9%)	22 (2.7%)	65 (5.8%)	80	6.2
Northern British Columbia	-	-	5 (0.6%)	-	-	1	0.1
Total Catch	898 (56.8%)	94 (16.6%)	238 (27.0%)	357 (44.4%)	417 (37.5%)	401	35.5
Escapement	683 (43.2%)	698 (88.4%)	644 (73.0%)	447 (55.6%)	694 (62.5%)	633	64.5
Total Return	1,581 (100%)	790 (100%)	882 (100%)	804 (100%)	1,111 (100%)	1,034	100

Table 1.5. Estimated Harvest by Gear Type, Escapement, and Total Return of Coho Salmon Returning to Auke Lake, 1978, 1980, 1981, and 1983.

Year	Fishery Sample Size ¹	Troll	Purse Seine	Drift Gillnet	Sport	Total Catch	Escapement	Total Return
1978	32	778 (49.2%)	-	30 (1.9%)	90 (5.7%)	898 (56.8%)	683 (43.2%)	1,581 (100%)
1980	8	60 (7.6%)	-	17 (2.1%)	17 (2.1%)	94 (11.8%)	698 (88.2%)	792 (100%)
1981	35	215 (24.4%)	4 (0.5%)	2 (0.2%)	17 (1.9%)	238 (27.0%)	644 (73.0%)	882 (100%)
1982	28	231 (28.8%)	97 (12.0%)	23 (2.9%)	6 (0.7%)	357 (44.4%)	447 (55.6%)	804 (100%)
1983	90	323 (29.1%)	10 (0.9%)	25 (2.2%)	59 (5.3%)	417 (37.5%)	694 (62.5%)	1,111 (100%)
Average Number of Fish		322	22	19	38	401	633	1,034
Average % of Total		27.8	2.7	1.9	3.1	35.5	64.5	100

¹ Includes only expandable random recoveries.

