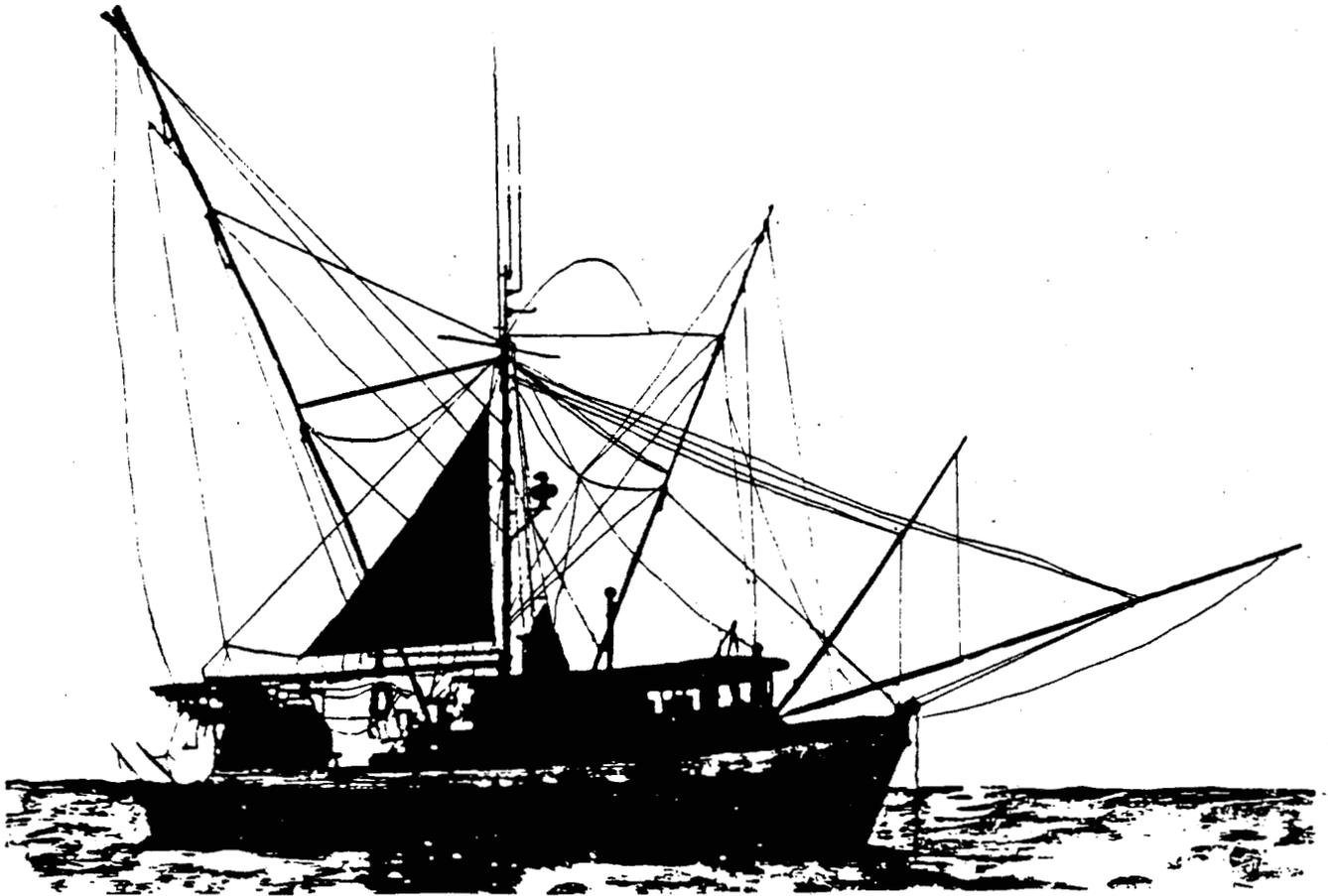


**REPORT TO THE BOARD OF FISHERIES  
1987 REGION I FINFISH FISHERIES**

**REGIONAL INFORMATION REPORT NO. 1J88-5**



**PREPARED BY:**

**ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF COMMERCIAL FISHERIES  
JUNEAU, ALASKA**

**FEBRUARY 1988**

REPORT TO THE BOARD OF FISHERIES  
1987 REGION I FINFISH FISHERIES

By  
Region I Staff

Regional Information Report<sup>1</sup> No. 1J88-5

Alaska Department of Fish and Game  
Division of Commercial Fisheries  
Juneau, Alaska

February 1988

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<sup>1</sup> The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate needs for up-to-date information, reports in this series may contain preliminary data.

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REPORT TO THE BOARD OF FISHERIES  
INTRODUCTION TO 1987 FINFISH FISHERIES

By  
Region I Staff

Southeast Region  
Alaska Department of Fish and Game  
Division of Commercial Fisheries

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## INTRODUCTION

This report describes the commercial and subsistence finfish fisheries that occurred during 1987 within the Southeast Region (Region I) of the Commercial Fisheries Division, Alaska Department of Fish and Game. The purpose of this report is to provide the Alaska Board of Fisheries with a review of the 1987 Region I finfish fisheries. A discussion of how the 1987 season progressed in each fishery is included. The 1987 preliminary finfish landings are presented and compared to historical production from the region.

Southeast Alaska commercial finfish fisheries are primarily targeted on salmon, however, substantial fisheries exist for herring and various groundfish species. The report consists of five sections, each covering distinct fisheries. These being 1) Southeast net, 2) Yakutat set net, 3) troll, 4) bottomfish, and 5) herring fisheries. Since the salmon fisheries are considered in three separate reports, an overview of the total salmon fishery is presented in this section.

### Description of the Southeast Region

The Southeast Region consists of waters of Alaska between Cape Suckling on the north and Dixon Entrance on the south (see Figure 1). The region is divided into two herring and salmon net registration areas. Area A, the Southeastern Alaska area, extends from Dixon Entrance to Cape Fairweather; Area D, the Yakutat area, extends from Cape Fairweather to Cape Suckling. The region is further divided into five management areas with area offices located at Ketchikan, Petersburg, Sitka, Juneau and Haines. In addition to these, an office is maintained in Wrangell for the Petersburg Management Area and the Juneau Management Area has an office in Yakutat.

For purposes of catch reporting the Southeastern Region is divided into a series of districts and subdistricts.

### Fisheries Management Organization

Management of the Region I commercial and subsistence finfish fisheries is accomplished through a combination of specific area management biologists and overall regional management biologists. There are five area management biologists in Region I corresponding to the five area management offices. Each of the area biologists is primarily responsible for the management of the commercial salmon net, herring and subsistence fisheries in their respective management areas. Management of the groundfish and salmon troll fisheries is accomplished by overall regional management biologists. Because of the movement of fish and fishermen between the various management areas, a closely coordinated regional management approach is needed for all fisheries.

### SALMON FISHERIES

Commercial utilization of the Southeastern Alaska salmon resources began in the late 1870's. Until the early 1900's red salmon were the primary species harvested. Pink salmon began to dominate the catch in the early 1900's and, in recent years, pinks have annually comprised 75-90% of the total Southeastern Alaska salmon catch. The relative order of production (by numbers of fish) from highest to lowest is usually pink, chum, coho, sockeye and king salmon.

The Southeast salmon harvests peaked in the late 1930's and early 1940's and declined to historic low levels in the 1950's and early 1960's. During the mid to late 1960's improved catches occurred, but in the early

1970's another decline in the production was experienced. The recent trend has been for increased production levels. The consecutive 30-year, high annual total commercial harvest of salmon occurred in Southeast Alaska from 1915 through 1944, when the average annual harvest was approximately 39 million fish. The most recent 5-year average harvest (1983-87) is approximately 40 million salmon.

### Fishery Characteristics

Salmon are commercially harvested in the Southeastern area (Area A) with purse seines, drift gill nets and floating fish traps, in the Yakutat area (Area D) with set nets and in both areas with hand and power troll gear. The salmon net fisheries are confined to State waters, however, the troll fishery operates in both State waters and waters of the Exclusive Economic Zone (EEZ). The floating fish traps are restricted to the Annette Islands Fishery Reserve established by Presidential Proclamation in 1916.

Southeast Alaska salmon fisheries are extremely complex due to the mixed stock and mixed species nature of the returns and the existence of several distinct gear groups harvesting the same stocks of salmon. The Southeast Region contains over 2,000 salmon streams with various productivity levels, and it is difficult to apply stock specific fisheries management according to the run strength of individual returns. Additionally, some salmon harvested in the Region originate from other states and Canada. Often a fishery targeting on a specific salmon species incurs major incidental catches of other species.

### Fishery Participation

Preliminary Commercial Fisheries Entry Commission information shows that 411 purse seine, 482 drift gill net, 160 set gill net, 944 power troll,

and 1,682 hand troll permits were renewed and could have fished in 1987 (see Table 1). A total of 2,603 permits including 385 purse seine, 468 drift gillnet, 155 set gillnet, 830 power troll and 765 hand troll reported salmon landings. A total of four fish traps are authorized on the Annette Island Reserve.

### 1987 Salmon Harvest

The 1987 Southeastern Alaska region's commercial harvest by all gear types including hatchery cost recovery totaled approximately 16.2 million fish (see Tables 2 and 3). It was the lowest salmon harvest recorded in the region since 1979. The harvest was considerable below the expected pre-season take of approximately 34 million fish, primarily due to a failure of the pink salmon run. A majority of the harvest was a result of natural salmon returns. Preliminary estimates indicate that salmon returns from Alaskan hatcheries contributed approximately 2.5 million fish to the harvest, predominantly pink and chum salmon.

The harvest of approximately 10.3 million pink salmon accounted for 65% of the 1987 salmon catch. Region-wide sockeye salmon landings of about 1.4 million fish were above the average reported since 1960. The commercial take of approximately 2.7 million chum salmon marked a decrease over recent levels. Region-wide coho salmon landings of about 1.5 million fish were considerable below the record harvest of 1986 and the lowest in the region since 1981. The 1987 commercial catch of chinook salmon was approximately 261,000 fish including those fish caught in the winter troll fishery from October 1, 1986 through April 14, 1987. The terminal catch of all species of hatchery produced salmon for private cost recovery totaled approximately 1.6 million fish.

## Harvest by Gear Type

The 1987 salmon catch by gear type and species is shown in Tables 4-9. Troll gear accounted for 92% of the region's landings of chinook salmon and 68% of the coho salmon harvest. Purse seine fisheries took 69% of the pink, 46% of the chum, and 23% of the region's sockeye salmon harvest. Drift gill net accounted for 57% of the sockeye, 31% of the chum and 15% of the pink salmon harvest. The set gill net landings of sockeye and coho salmon represented 19% and 8% of the regional harvest of these species, respectively. The trap catch of pink salmon was 1% of the Region 1 pink salmon landings.

## GROUND FISH FISHERIES

The harvest of groundfish in State managed fisheries totaled approximately 9 million pounds round weight during 1987 a 19% increase over the 1986 catch level. The landing of all major groups except blackcod was higher than recent years. The inside water blackcod fishing season was short and intensive, extending for five days in the southern area and one day in the northern area. A total closure of the demersal shelf rockfish fishery occurred for the first time, when established harvest limits were obtained.

## HERRING FISHERIES

The 1986/87 season herring catch totaled approximately 8,366 tons. This included a catch of approximately 2,347 tons of winter bait herring and 5,957 tons of sac roe herring. The catch in the winter bait fish was

considerably below the recent 10-year average take with the harvest in the sac roe fishery was the lowest since 1979.

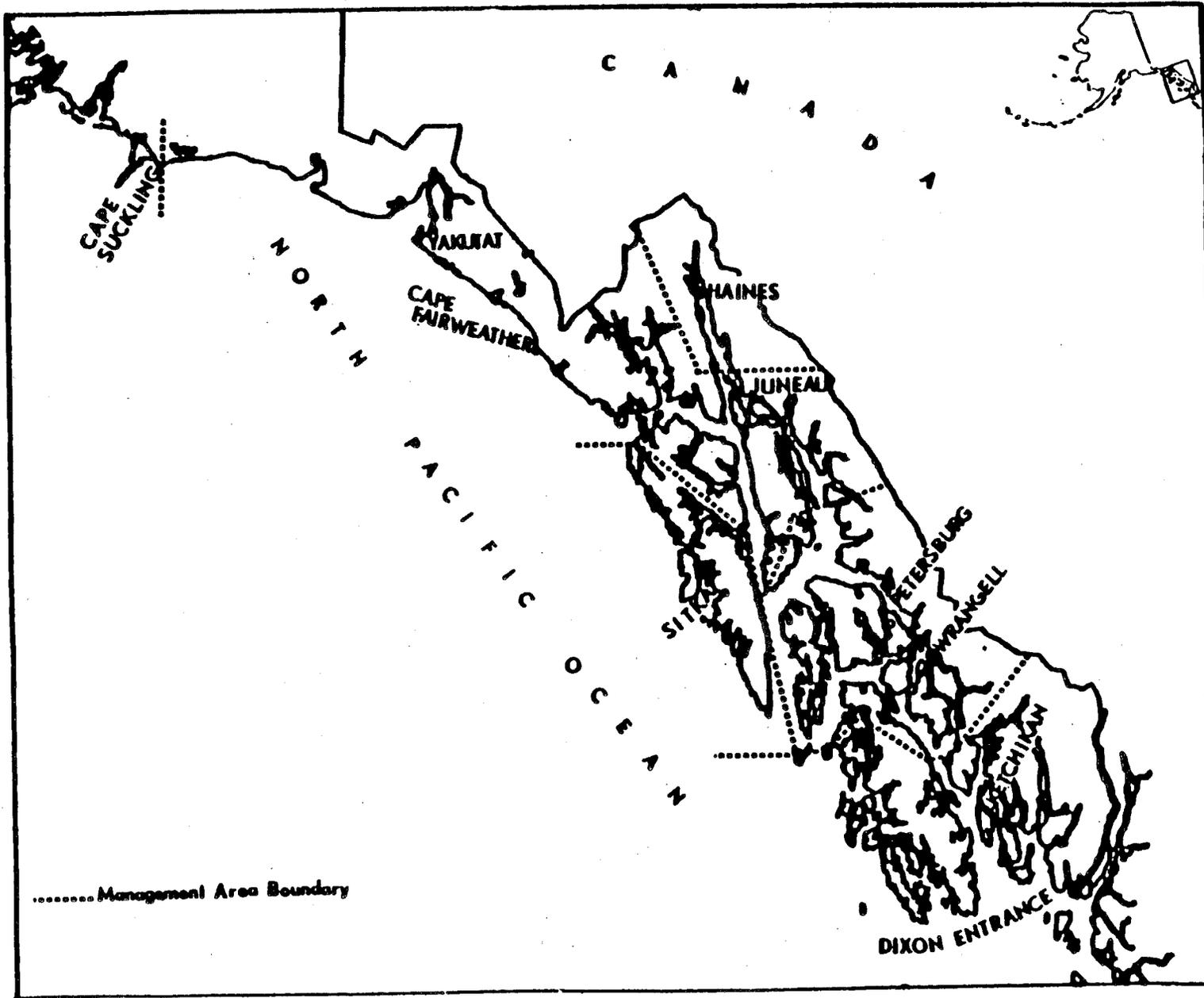


FIGURE 1. Map of Region I. (Southeastern Alaska-Yakutat) Showing Management Area Boundaries.

Table 1. Number of limited entry and interior use permits issued and fished of the Southeast Alaska and Yakutat salmon fisheries, 1975-1987 (ADF&G 1/10/88).

Number of Permits

Year	Purse Seine		Drift Gillnet		Set Gillnet		Hand Troll		Power Troll	
	Issued	Fished	Issued	Fished	Issued	Fished	Issued	Fished	Issued	Fished
1975	444	293	497	457	215	141	2,087	1,092	1,044	758
1976	416	282	483	442	159	133	2,082	1,235	976	746
1977	414	326	474	446	159	143	2,951	1,834	968	758
1978	420	379	490	485	164	155	3,921	2,624	976	823
1979	418	319	491	459	167	155	3,700	2,204	978	829
1980	417	333	489	450	167	158	2,436	1,667	974	849
1981	418	364	487	454	167	158	2,048	1,147	970	800
1982	421	373	485	444	164	147	1,908	1,067	968	814
1983	421	340	480	438	165	145	2,150	951	968	826
1984	422	386	481	445	164	140	2,147	859	963	801
1985	420	366	484	452	164	148	2,031	892	962	833
1986	415	372	488	463	163	156	1,783	795	953	824
Average 1975- 1986	421	344	486	453	168	148	2,437	1,364	975	805
PRELIMINARY 1987	411	385	482	468	160	155	1,682	765	944	830

Table 2. Southeast Alaska Region annual total commercial salmon catches in numbers by species, 1960-1987 (ADF&G 1/10/88).

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	301,344	533,118	681,604	2,712,146	932,430	5,160,642
1961	220,397	682,292	833,609	11,459,298	2,447,384	15,642,980
1962	196,650	727,437	1,156,277	11,255,790	1,837,010	15,173,164
1963	257,706	675,750	1,265,328	19,115,942	1,472,131	22,786,857
1964	357,139	919,124	1,586,258	18,580,259	1,927,834	23,370,614
1965	337,109	1,076,998	1,543,807	10,879,097	1,466,256	15,303,267
1966	308,042	1,046,075	1,218,827	20,350,917	3,227,402	26,151,263
1967	300,938	966,398	864,250	3,109,343	1,806,940	7,047,869
1968	331,511	826,195	1,539,686	25,077,871	2,636,207	30,411,470
1969	314,238	806,129	597,240	4,868,797	559,123	7,145,527
1970	322,348	664,093	759,489	10,651,997	2,442,987	14,840,914
1971	333,901	621,735	914,106	9,344,611	1,945,006	13,159,359
1972	286,735	913,690	1,508,936	12,398,846	2,940,728	18,048,935
1973	343,834	1,011,595	835,837	6,455,488	1,832,215	10,478,969
1974	344,371	687,302	1,276,529	4,889,856	1,775,279	8,973,337
1975	300,707	247,891	427,357	4,026,520	690,438	5,692,913
1976	241,762	597,125	823,667	5,329,598	1,078,147	8,070,299
1977	285,178	1,085,239	1,035,543	13,843,520	750,630	17,000,110
1978	401,424	788,319	1,712,416	21,243,375	868,963	25,014,497
1979	367,620	1,073,885	1,284,635	10,977,908	888,276	14,592,324
1980	323,296	1,120,416	1,136,685	14,478,306	1,651,407	18,710,110
1981	271,858	1,079,478	1,406,414	18,965,178	849,776	22,572,704
1982	300,431	1,493,335	2,130,763	24,248,666	1,351,567	29,524,762
1983	292,444	1,568,868	1,989,112	37,511,248	1,195,604	42,557,276
1984	270,414	1,220,033	1,897,650	24,702,626	4,063,698	32,154,421
1985	257,970	1,862,769	2,580,598	52,062,739	3,267,427	60,031,503
1986	264,812	1,441,443	3,398,935	46,191,804	3,359,811	54,656,805
Average 1960 to 1986	301,266	953,212	1,348,354	16,471,546	1,824,618	20,898,996
1987 PRELIMINARY	262,369	1,376,033	1,541,574	10,250,431	2,716,957	16,147,364

Table 3. Southeast Alaska region commercial salmon catches in numbers by gear and fishery, 1987 (ADF&G 1/10/88).

Fishery	----- Numbers of Salmon -----					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Total Seine	6,295	311,308	131,498	7,086,037	1,252,978	8,788,116
Southern	4,606	234,219	102,966	3,200,751	419,124	3,961,666
Northern	1,689	77,089	28,532	3,885,286	833,854	4,826,450
Drift Gillnet	8,941	783,389	189,108	1,577,243	834,384	3,393,065
Set Gillnet	2,072	259,013	124,873	13,036	15,013	414,007
Total Troll	242,414	9,786	1,041,151	487,007	12,843	1,793,201
Hand Troll	29,204	2,134	183,233	135,109	3018	352,698
Power Troll	213,210	7,652	857,918	351,898	9825	1,440,503
Trap	0	6,098	734	83,087	937	90,856
Hatchery Cost Recovery	2,376	1,122	52,234	946,598	593,704	1,596,034
Miscellaneous	271	5,317	1,976	57,423	7,098	72,085
Region Totals	262,369	1,376,033	1,541,574	10,250,431	2,716,957	16,147,364

Table 4. Southeast Alaska region annual commercial total salmon catches by gear in numbers and (percent), 1960 to 1987 (ADF&G 1/10/88).

Year	Seine	Drift Gillnet	Set Gillnet	Troll	Trap & Misc.	Private Hatchery	Total
1960	3,789,373(73%)	432,438 (8%)	177,916 (3%)	707,570(14%)	53,345 (1%)	0 (0%)	5,160,642(100%)
1961	13,779,073(88%)	766,804 (5%)	288,253 (2%)	627,467 (4%)	181,383 (1%)	0 (0%)	15,642,980(100%)
1962	12,394,256(82%)	1,010,200 (7%)	274,139 (2%)	896,277 (6%)	598,292 (4%)	0 (0%)	15,173,164(100%)
1963	20,123,579(88%)	1,232,700 (5%)	283,814 (1%)	1,051,912 (5%)	94,852 (0%)	0 (0%)	22,786,857(100%)
1964	20,066,975(86%)	1,431,389 (6%)	302,962 (1%)	1,188,373 (5%)	380,915 (2%)	0 (0%)	23,370,614(100%)
1965	12,491,186(82%)	1,426,018 (9%)	252,443 (2%)	1,094,147 (7%)	39,473 (0%)	0 (0%)	15,303,267(100%)
1966	22,710,676(87%)	1,658,535 (6%)	257,968 (1%)	880,209 (3%)	643,875 (2%)	0 (0%)	26,151,263(100%)
1967	5,151,489(73%)	880,264(12%)	222,423 (3%)	782,935(11%)	10,758 (0%)	0 (0%)	7,047,869(100%)
1968	27,324,284(90%)	1,433,156 (5%)	189,474 (1%)	1,213,591 (4%)	250,965 (1%)	0 (0%)	30,411,470(100%)
1969	5,100,506(71%)	1,018,730(14%)	230,493 (3%)	764,932(11%)	30,866 (0%)	0 (0%)	7,145,527(100%)
1970	12,174,408(82%)	1,756,875(12%)	154,837 (1%)	646,033 (4%)	108,761 (1%)	0 (0%)	14,840,914(100%)
1971	10,495,932(80%)	1,593,806(12%)	253,530 (2%)	815,810 (6%)	281 (0%)	0 (0%)	13,159,359(100%)
1972	14,271,468(79%)	1,937,570(11%)	190,757 (1%)	1,213,718 (7%)	435,422 (2%)	0 (0%)	18,048,935(100%)
1973	7,316,094(70%)	1,926,658(18%)	198,351 (2%)	994,200 (9%)	43,666 (0%)	0 (0%)	10,478,969(100%)
1974	5,583,200(62%)	1,569,982(17%)	170,616 (2%)	1,444,016(16%)	205,523 (2%)	0 (0%)	8,973,337(100%)
1975	3,926,380(69%)	867,832(15%)	196,691 (3%)	582,276(10%)	117,034 (2%)	2,700 (0%)	5,692,913(100%)
1976	5,025,146(62%)	1,373,943(17%)	219,987 (3%)	955,305(12%)	494,052 (6%)	1,866 (0%)	8,070,299(100%)
1977	12,437,911(73%)	2,611,944(15%)	364,310 (2%)	1,077,270 (6%)	416,216 (2%)	92,459 (1%)	17,000,110(100%)
1978	20,107,854(80%)	1,757,927 (7%)	307,849 (1%)	2,122,965 (8%)	717,901 (3%)	0 (0%)	25,014,497(100%)
1979	10,025,866(69%)	1,966,257(13%)	424,693 (3%)	1,917,987(13%)	222,073 (2%)	35,448 (0%)	14,592,324(100%)
1980	14,075,848(75%)	2,426,454(13%)	443,749 (2%)	1,291,613 (7%)	472,446 (3%)	0 (0%)	18,710,110(100%)
1981	17,729,234(79%)	2,353,827(10%)	428,265 (2%)	1,708,060 (8%)	215,569 (1%)	37,749 (1%)	22,572,704(100%)
1982	24,281,349(82%)	2,215,198 (8%)	379,009 (1%)	2,082,882 (7%)	556,054 (2%)	20,270 (0%)	29,524,762(100%)
1983	36,451,803(86%)	2,785,297 (7%)	271,607 (1%)	2,079,340 (5%)	826,053 (2%)	143,178 (0%)	42,557,276(100%)
1984	24,872,998(77%)	3,638,078(11%)	337,963 (1%)	1,978,731 (6%)	694,309 (2%)	652,340 (2%)	32,154,421(100%)
1985	50,822,034(85%)	4,708,584 (8%)	468,138 (1%)	2,851,514 (5%)	574,591 (1%)	636,643 (1%)	60,031,503(100%)
1986	47,067,289(86%)	3,850,768 (7%)	263,772 (0%)	2,606,491 (5%)	500,619 (1%)	367,868 (1%)	54,656,805(100%)
Average 1960 to 1986	17,022,082(78%)	1,875,231(10%)	279,778 (2%)	1,317,616 (8%)	329,085 (2%)	77,427 (0%)	20,898,996(100%)
Preliminary 1987	8,788,116(54%)	3,393,065(21%)	414,007 (3%)	1,793,201(11%)	162,941 (1%)	1,596,034(10%)	16,147,364(100%)

Table 5. Southeast Alaska region annual commercial chinook salmon catches by gear in numbers and (percent), 1960 to 1987 (ADF&G 1/10/88).

Year	Seine	Drift Gillnet	Set Gillnet	Troll	Trap & Misc.	Private Hatchery	Total
1960	6,509 (2%)	11,523 (4%)	908 (0%)	282,404 (94%)	0 (0%)	0 (0%)	301,344 (100%)
1961	4,134 (2%)	9,440 (4%)	2,534 (1%)	204,289 (93%)	0 (0%)	0 (0%)	220,397 (100%)
1962	10,145 (5%)	10,161 (5%)	2,717 (1%)	173,597 (88%)	0 (0%)	0 (0%)	196,650 (100%)
1963	6,659 (3%)	6,427 (2%)	941 (0%)	243,679 (95%)	0 (0%)	0 (0%)	257,706 (100%)
1964	16,819 (5%)	9,371 (3%)	1,488 (0%)	329,461 (92%)	0 (0%)	0 (0%)	357,139 (100%)
1965	14,992 (4%)	11,892 (4%)	1,323 (0%)	308,902 (92%)	0 (0%)	0 (0%)	337,109 (100%)
1966	11,877 (4%)	12,527 (4%)	1,555 (1%)	282,083 (92%)	0 (0%)	0 (0%)	308,042 (100%)
1967	9,054 (3%)	16,464 (5%)	742 (0%)	274,678 (91%)	0 (0%)	0 (0%)	300,938 (100%)
1968	13,335 (4%)	12,902 (4%)	697 (0%)	304,455 (92%)	122 (0%)	0 (0%)	331,511 (100%)
1969	6,776 (2%)	15,407 (5%)	1,887 (1%)	290,168 (92%)	0 (0%)	0 (0%)	314,238 (100%)
1970	5,959 (2%)	9,460 (3%)	2,272 (1%)	304,602 (94%)	0 (0%)	0 (0%)	322,348 (100%)
1971	4,799 (1%)	15,718 (5%)	1,945 (1%)	311,439 (93%)	0 (0%)	0 (0%)	333,901 (100%)
1972	16,800 (6%)	25,142 (9%)	2,376 (1%)	242,282 (84%)	135 (0%)	0 (0%)	286,735 (100%)
1973	8,751 (3%)	24,471 (7%)	2,733 (1%)	307,807 (90%)	25 (0%)	0 (0%)	343,834 (100%)
1974	6,759 (2%)	15,590 (5%)	2,214 (1%)	319,793 (93%)	15 (0%)	0 (0%)	344,371 (100%)
1975	2,056 (1%)	9,082 (3%)	2,224 (1%)	287,342 (96%)	3 (0%)	0 (0%)	300,707 (100%)
1976	1,426 (1%)	7,222 (3%)	1,830 (1%)	231,239 (96%)	45 (0%)	0 (0%)	241,762 (100%)
1977	5,243 (2%)	5,600 (2%)	2,549 (1%)	271,735 (95%)	51 (0%)	0 (0%)	285,178 (100%)
1978	13,998 (3%)	8,302 (2%)	3,057 (1%)	375,433 (94%)	135 (0%)	0 (0%)	401,424 (100%)
1979	10,079 (3%)	13,828 (4%)	4,299 (1%)	338,319 (92%)	250 (0%)	0 (0%)	367,620 (100%)
1980	12,507 (4%)	5,642 (2%)	2,800 (1%)	301,597 (93%)	139 (0%)	0 (0%)	323,296 (100%)
1981	10,268 (4%)	6,494 (2%)	2,069 (1%)	252,193 (93%)	86 (0%)	0 (0%)	271,858 (100%)
1982	31,375 (10%)	16,252 (5%)	1,456 (0%)	249,873 (83%)	553 (0%)	0 (0%)	300,431 (100%)
1983	13,581 (5%)	4,885 (2%)	976 (0%)	272,802 (93%)	194 (0%)	0 (0%)	292,444 (100%)
1984	20,769 (8%)	10,424 (4%)	1,062 (0%)	235,623 (87%)	182 (0%)	937 (0%)	270,414 (100%)
1985	23,147 (10%)	10,701 (4%)	1,231 (1%)	218,759 (84%)	366 (0%)	2,658 (1%)	257,970 (100%)
1986	13,311 (5%)	8,560 (3%)	1,425 (1%)	239,210 (90%)	0 (0%)	1,093 (0%)	264,812 (100%)
Average 1960 to 1986	11,153 (4%)	11,611 (4%)	1,901 (1%)	276,065 (92%)	85 (0%)	174 (0%)	301,266 (100%)
Preliminary 1987	6,295 (2%)	8,941 (3%)	2,072 (1%)	242,414 (92%)	271 (0%)	2,376 (1%)	262,369 (100%)

Table 6. Southeast Alaska region annual commercial sockeye salmon catches by gear in numbers and (percent), 1960 to 1987 (ADF&G 1/10/88).

Year	Seine	Drift Gillnet	Set Gillnet	Troll	Trap & Misc.	Private Hatchery	Total
1960	358,697(67%)	127,058(24%)	44,671 (8%)	939 (0%)	1,753 (0%)	0 (0%)	533,118(100%)
1961	418,952(61%)	169,724(25%)	82,403(12%)	1,264 (0%)	9,949 (1%)	0 (0%)	682,292(100%)
1962	411,748(57%)	233,082(32%)	73,937(10%)	1,181 (0%)	7,489 (1%)	0 (0%)	727,437(100%)
1963	422,633(63%)	194,420(29%)	52,517 (8%)	2,014 (0%)	4,166 (1%)	0 (0%)	675,750(100%)
1964	570,666(62%)	246,250(27%)	90,175(10%)	1,004 (0%)	11,029 (1%)	0 (0%)	919,124(100%)
1965	672,015(62%)	279,349(26%)	120,417(11%)	1,872 (0%)	3,345 (0%)	0 (0%)	1,076,998(100%)
1966	480,519(46%)	334,702(32%)	185,360(18%)	679 (0%)	44,815 (4%)	0 (0%)	1,046,075(100%)
1967	600,628(62%)	274,038(28%)	88,431 (9%)	157 (0%)	3,144 (0%)	0 (0%)	966,398(100%)
1968	494,998(60%)	245,875(30%)	80,776(10%)	574 (0%)	3,972 (0%)	0 (0%)	826,195(100%)
1969	338,233(42%)	348,343(43%)	117,725(15%)	858 (0%)	970 (0%)	0 (0%)	806,129(100%)
1970	307,821(46%)	240,700(36%)	112,169(17%)	477 (0%)	2,926 (0%)	0 (0%)	664,093(100%)
1971	162,823(26%)	328,774(53%)	129,206(21%)	932 (0%)	0 (0%)	0 (0%)	621,735(100%)
1972	323,965(35%)	449,019(49%)	131,484(14%)	1,083 (0%)	8,139 (1%)	0 (0%)	913,690(100%)
1973	348,679(34%)	532,164(53%)	128,412(13%)	1,222 (0%)	1,118 (0%)	0 (0%)	1,011,595(100%)
1974	235,934(34%)	363,731(53%)	82,413(12%)	2,609 (0%)	2,615 (0%)	0 (0%)	687,302(100%)
1975	61,878(25%)	108,334(44%)	73,260(30%)	1,098 (0%)	3,321 (1%)	0 (0%)	247,891(100%)
1976	135,823(23%)	322,984(54%)	130,176(22%)	1,266 (0%)	6,876 (1%)	0 (0%)	597,125(100%)
1977	329,396(30%)	550,360(51%)	185,391(17%)	5,783 (1%)	14,309 (1%)	0 (0%)	1,085,239(100%)
1978	274,238(35%)	374,424(47%)	130,681(17%)	2,804 (0%)	6,172 (1%)	0 (0%)	788,319(100%)
1979	397,448(37%)	488,394(45%)	165,069(15%)	7,018 (1%)	15,956 (1%)	0 (0%)	1,073,885(100%)
1980	527,310(47%)	422,425(38%)	159,152(14%)	2,866 (0%)	8,663 (1%)	0 (0%)	1,120,416(100%)
1981	444,699(41%)	466,090(43%)	149,573(14%)	7,470 (1%)	11,645 (1%)	1 (0%)	1,079,478(100%)
1982	463,236(31%)	790,775(53%)	212,368(14%)	2,339 (0%)	24,616 (2%)	1 (0%)	1,493,335(100%)
1983	794,300(51%)	607,986(39%)	152,541(10%)	7,968 (1%)	6,072 (0%)	1 (0%)	1,568,868(100%)
1984	470,165(39%)	616,836(51%)	102,545 (8%)	10,538 (1%)	19,942 (2%)	7 (0%)	1,220,033(100%)
1985	720,992(39%)	882,011(47%)	234,886(13%)	7,755 (0%)	17,107 (1%)	18 (0%)	1,862,769(100%)
1986	591,883(41%)	686,464(48%)	150,619(10%)	6,890 (0%)	5,581 (0%)	6 (0%)	1,441,443(100%)
Average 1960 to 1986	420,729(44%)	395,715(41%)	124,680(14%)	2,987 (0%)	9,100 (1%)	1 (0%)	953,212(100%)
Preliminary 1987	311,308(23%)	783,389(57%)	259,013(19%)	9,786 (1%)	11,415 (1%)	1,122 (0%)	1,376,033(100%)

Table 7. Southeast Alaska region annual commercial coho salmon catches by gear in numbers and (percent), 1960 to 1987 (ADF&G 1/10/88).

Year	Seine	Drift Gillnet	Set Gillnet	Troll	Trap & Misc.	Private Hatchery	Total
1960	125,871(18%)	37,986 (6%)	119,149(17%)	396,211(58%)	2,387 (0%)	0 (0%)	681,604(100%)
1961	246,524(30%)	52,743 (6%)	128,670(15%)	399,932(48%)	5,740 (1%)	0 (0%)	833,609(100%)
1962	239,382(21%)	98,404 (9%)	170,776(15%)	643,740(56%)	3,975 (0%)	0 (0%)	1,156,277(100%)
1963	316,491(25%)	112,776 (9%)	141,365(11%)	693,050(55%)	1,646 (0%)	0 (0%)	1,265,328(100%)
1964	506,505(32%)	172,411(11%)	169,780(11%)	730,766(46%)	6,796 (0%)	0 (0%)	1,586,258(100%)
1965	557,005(36%)	166,452(11%)	122,207 (8%)	695,887(45%)	2,256 (0%)	0 (0%)	1,543,807(100%)
1966	452,057(37%)	155,922(13%)	66,252 (5%)	528,621(43%)	15,975 (1%)	0 (0%)	1,218,827(100%)
1967	188,965(22%)	134,029(16%)	97,211(11%)	443,677(51%)	368 (0%)	0 (0%)	864,250(100%)
1968	463,553(30%)	202,965(13%)	92,005 (6%)	779,500(51%)	1,663 (0%)	0 (0%)	1,539,686(100%)
1969	110,415(18%)	65,704(11%)	32,262 (5%)	388,459(65%)	400 (0%)	0 (0%)	597,240(100%)
1970	295,683(39%)	163,901(22%)	29,748 (4%)	267,647(35%)	2,510 (0%)	0 (0%)	759,489(100%)
1971	326,264(36%)	159,143(17%)	37,420 (4%)	391,279(43%)	0 (0%)	0 (0%)	914,106(100%)
1972	391,204(26%)	275,393(18%)	45,704 (3%)	791,947(52%)	4,688 (0%)	0 (0%)	1,508,936(100%)
1973	129,593(16%)	124,349(15%)	41,213 (5%)	540,125(65%)	557 (0%)	0 (0%)	835,837(100%)
1974	166,687(13%)	186,532(15%)	77,556 (6%)	844,748(66%)	1,006 (0%)	0 (0%)	1,276,529(100%)
1975	70,201(16%)	102,321(24%)	37,403 (9%)	214,170(50%)	562 (0%)	2,700 (1%)	427,357(100%)
1976	87,604(11%)	156,469(19%)	51,743 (6%)	524,762(64%)	1,223 (0%)	1,866 (0%)	823,667(100%)
1977	160,519(16%)	182,090(18%)	92,214 (9%)	506,887(49%)	93,833 (9%)	0 (0%)	1,035,543(100%)
1978	245,074(14%)	223,321(13%)	137,408 (8%)	1,100,902(64%)	5,711 (0%)	0 (0%)	1,712,416(100%)
1979	176,593(14%)	83,048 (6%)	95,873 (7%)	918,845(72%)	4,383 (0%)	5,893 (0%)	1,284,635(100%)
1980	194,250(17%)	112,609(10%)	119,648(11%)	707,360(62%)	2,818 (0%)	0 (0%)	1,136,685(100%)
1981	286,010(20%)	118,868 (8%)	132,127 (9%)	862,177(61%)	2,229 (0%)	5,003 (0%)	1,406,414(100%)
1982	449,459(21%)	201,468 (9%)	148,994 (7%)	1,321,546(62%)	7,146 (0%)	2,150 (0%)	2,130,763(100%)
1983	399,279(20%)	218,109(11%)	81,517 (4%)	1,279,518(64%)	6,469 (0%)	4,220 (0%)	1,989,112(100%)
1984	370,098(20%)	199,308(11%)	182,256(10%)	1,131,936(60%)	7,216 (0%)	6,836 (0%)	1,897,650(100%)
1985	431,791(17%)	332,818(13%)	203,193 (8%)	1,603,110(62%)	7,031 (0%)	2,655 (0%)	2,580,598(100%)
1986	588,683(17%)	448,768(13%)	87,871 (3%)	2,127,068(63%)	2,746 (0%)	143,799 (4%)	3,398,935(100%)
Average 1960 to 1986	295,399(22%)	166,219(13%)	101,539 (8%)	771,625(56%)	7,086 (1%)	6,486 (0%)	1,348,354(100%)
Preliminary 1987	131,498 (9%)	189,108(12%)	124,873 (8%)	1,041,151(68%)	2,710 (0%)	52,234 (3%)	1,541,574(100%)

Table 8. Southeast Alaska region annual commercial pink salmon catches by gear in numbers and (percent), 1960 to 1987 (ADF&G 1/10/88).

Year	Seine	Drift Gillnet	Set Gillnet	Troll	Trap & Misc.	Private Hatchery	Total
1960	2,572,279(95%)	55,984 (2%)	12,911 (0%)	25,563 (1%)	45,409 (2%)	0 (0%)	2,712,146(100%)
1961	10,936,344(95%)	282,997 (2%)	63,608 (1%)	19,303 (0%)	157,046 (1%)	0 (0%)	11,459,298(100%)
1962	10,139,595(90%)	435,132 (4%)	26,063 (0%)	75,083 (1%)	579,917 (5%)	0 (0%)	11,255,790(100%)
1963	18,189,644(95%)	653,826 (3%)	78,697 (0%)	106,939 (1%)	86,836 (0%)	0 (0%)	19,115,942(100%)
1964	17,310,850(93%)	753,312 (4%)	40,038 (0%)	124,566 (1%)	351,493 (2%)	0 (0%)	18,580,259(100%)
1965	10,061,603(92%)	698,339 (6%)	4,402 (0%)	81,127 (1%)	33,626 (0%)	0 (0%)	10,879,097(100%)
1966	18,919,555(93%)	790,314 (4%)	1,405 (0%)	63,623 (0%)	576,020 (3%)	0 (0%)	20,350,917(100%)
1967	2,807,783(90%)	205,683 (7%)	31,580 (1%)	57,372 (2%)	6,925 (0%)	0 (0%)	3,109,343(100%)
1968	24,099,793(96%)	607,653 (2%)	2,130 (0%)	126,271 (1%)	242,024 (1%)	0 (0%)	25,077,871(100%)
1969	4,312,402(89%)	379,738 (8%)	63,692 (1%)	83,727 (2%)	29,238 (1%)	0 (0%)	4,868,797(100%)
1970	9,628,111(90%)	848,376 (8%)	3,555 (0%)	70,072 (1%)	101,883 (1%)	0 (0%)	10,651,997(100%)
1971	8,505,647(91%)	654,434 (7%)	79,973 (1%)	104,557 (1%)	0 (0%)	0 (0%)	9,344,611(100%)
1972	11,370,064(92%)	443,866 (4%)	2,903 (0%)	166,771 (1%)	415,242 (3%)	0 (0%)	12,398,846(100%)
1973	5,609,519(87%)	652,692(10%)	16,998 (0%)	134,586 (2%)	41,693 (1%)	0 (0%)	6,455,488(100%)
1974	4,174,219(85%)	339,292 (7%)	4,248 (0%)	263,044 (5%)	109,053 (2%)	0 (0%)	4,889,856(100%)
1975	3,410,938(85%)	350,440 (9%)	80,043 (2%)	76,882 (2%)	108,217 (3%)	0 (0%)	4,026,520(100%)
1976	4,287,516(80%)	384,003 (7%)	28,492 (1%)	193,786 (4%)	435,801 (8%)	0 (0%)	5,329,598(100%)
1977	11,600,431(84%)	1,500,378(11%)	75,504 (1%)	281,244 (2%)	293,504 (2%)	92,459 (1%)	13,843,520(100%)
1978	19,044,766(90%)	846,559 (4%)	30,522 (0%)	617,633 (3%)	703,895 (3%)	0 (0%)	21,243,375(100%)
1979	9,000,060(82%)	968,154 (9%)	152,053 (1%)	629,144 (6%)	198,942 (2%)	29,555 (0%)	10,977,908(100%)
1980	12,314,942(85%)	1,297,098 (9%)	141,998 (1%)	267,589 (2%)	456,679 (3%)	0 (0%)	14,478,306(100%)
1981	16,453,340(87%)	1,468,673 (8%)	133,863 (1%)	577,256 (3%)	199,302 (1%)	132,744 (1%)	18,965,178(100%)
1982	22,475,115(93%)	731,314 (3%)	9,886 (0%)	503,425 (2%)	521,580 (2%)	7,346 (0%)	24,248,666(100%)
1983	34,634,877(92%)	1,420,575 (4%)	25,378 (0%)	498,503 (1%)	811,227 (2%)	120,688 (0%)	37,511,248(100%)
1984	21,572,952(87%)	1,708,234 (7%)	19,870 (0%)	572,599 (2%)	657,615 (3%)	171,356 (1%)	24,702,626(100%)
1985	47,786,490(92%)	2,278,565 (4%)	16,362 (0%)	968,958 (2%)	541,415 (1%)	470,949 (1%)	52,062,739(100%)
1986	43,659,255(95%)	1,794,754 (4%)	7,248 (0%)	181,929 (0%)	487,440 (1%)	61,178 (0%)	46,191,804(100%)
Average 1960 to 1986	14,995,485(90%)	835,199 (6%)	42,719 (0%)	254,502 (2%)	303,408 (2%)	40,232 (0%)	16,471,546(100%)
Preliminary 1987	7,086,037(69%)	1,577,243(15%)	13,036 (0%)	487,007 (5%)	140,510 (1%)	946,598 (9%)	10,250,431(100%)

Table 9. Southeast Alaska region annual commercial chum salmon catches by gear in numbers and (percent), 1960 to 1987 (ADF&G 1/10/88).

Year	Seine	Drift Gillnet	Set Gillnet	Troll	Trap & Misc.	Private Hatchery	Total
1960	726,017(78%)	199,887(21%)	277 (0%)	2,453 (0%)	3,796 (0%)	0 (0%)	932,430(100%)
1961	2,173,119(89%)	251,900(10%)	11,038 (0%)	2,679 (0%)	8,648 (0%)	0 (0%)	2,447,384(100%)
1962	1,593,386(87%)	233,421(13%)	616 (0%)	2,676 (0%)	6,911 (0%)	0 (0%)	1,837,010(100%)
1963	1,188,152(81%)	265,251(18%)	10,294 (1%)	6,230 (0%)	2,204 (0%)	0 (0%)	1,472,131(100%)
1964	1,662,135(86%)	250,045(13%)	1,481 (0%)	2,576 (0%)	11,597 (1%)	0 (0%)	1,927,834(100%)
1965	1,185,571(81%)	269,986(18%)	4,094 (0%)	6,359 (0%)	246 (0%)	0 (0%)	1,466,256(100%)
1966	2,846,668(88%)	365,070(11%)	3,396 (0%)	5,203 (0%)	7,065 (0%)	0 (0%)	3,227,402(100%)
1967	1,545,059(86%)	250,050(14%)	4,459 (0%)	7,051 (0%)	321 (0%)	0 (0%)	1,806,940(100%)
1968	2,252,605(85%)	363,761(14%)	13,866 (1%)	2,791 (0%)	3,184 (0%)	0 (0%)	2,636,207(100%)
1969	332,680(60%)	209,538(37%)	14,927 (3%)	1,720 (0%)	258 (0%)	0 (0%)	559,123(100%)
1970	1,936,834(79%)	494,438(20%)	7,093 (0%)	3,235 (0%)	1,387 (0%)	0 (0%)	2,442,987(100%)
1971	1,496,399(77%)	435,737(22%)	4,986 (0%)	7,603 (0%)	281 (0%)	0 (0%)	1,945,006(100%)
1972	2,169,435(74%)	744,150(25%)	8,290 (0%)	11,635 (0%)	7,218 (0%)	0 (0%)	2,940,728(100%)
1973	1,219,552(67%)	592,982(32%)	8,995 (0%)	10,460 (1%)	226 (0%)	0 (0%)	1,832,215(100%)
1974	999,601(56%)	664,837(37%)	4,185 (0%)	13,822 (1%)	92,834 (5%)	0 (0%)	1,775,279(100%)
1975	381,307(55%)	297,655(43%)	3,761 (1%)	2,784 (0%)	4,931 (1%)	0 (0%)	690,438(100%)
1976	512,777(48%)	503,265(47%)	7,746 (1%)	4,252 (0%)	50,107 (5%)	0 (0%)	1,078,147(100%)
1977	342,322(46%)	373,516(50%)	8,652 (1%)	11,621 (2%)	14,519 (2%)	0 (0%)	750,630(100%)
1978	529,779(61%)	305,321(35%)	6,181 (1%)	26,193 (3%)	1,489 (0%)	0 (0%)	868,963(100%)
1979	441,686(50%)	412,833(46%)	7,399 (1%)	24,661 (3%)	1,697 (0%)	0 (0%)	888,276(100%)
1980	1,026,839(62%)	588,680(36%)	20,151 (1%)	12,201 (1%)	3,536 (0%)	0 (0%)	1,651,407(100%)
1981	534,917(63%)	293,702(35%)	10,633 (1%)	8,964 (1%)	1,559 (0%)	1 (0%)	849,776(100%)
1982	862,164(64%)	475,389(35%)	6,305 (0%)	5,699 (0%)	1,237 (0%)	773 (0%)	1,351,567(100%)
1983	609,764(51%)	533,742(45%)	11,195 (1%)	20,549 (2%)	2,085 (0%)	18,269 (2%)	1,195,604(100%)
1984	2,439,016(60%)	1,103,276(27%)	32,230 (1%)	28,035 (1%)	7,937 (0%)	453,204(11%)	4,063,698(100%)
1985	1,859,613(57%)	1,204,489(37%)	12,466 (0%)	52,932 (2%)	7,564 (0%)	130,363 (4%)	3,267,427(100%)
1986	2,214,155(66%)	912,222(27%)	16,609 (0%)	51,394 (2%)	3,639 (0%)	161,792 (5%)	3,359,811(100%)
Average 1960 to 1986	1,299,317(69%)	466,487(29%)	8,938 (1%)	12,436 (1%)	9,129 (1%)	28,311 (1%)	1,824,618(100%)
Preliminary 1987	1,252,978(46%)	834,384(31%)	15,013 (1%)	12,843 (0%)	8,035 (0%)	593,704(22%)	2,716,957(100%)

REPORT TO THE BOARD OF FISHERIES  
1987 SOUTHEAST ALASKA SALMON NET FISHERIES

By  
Region I Staff

Southeast Region  
Alaska Department of Fish and Game  
Division of Commercial Fisheries

February 1988

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## ABSTRACT

The Southeast Alaska purse seine fishery harvested approximately 8.8 million salmon, accounting for 54% of the total region I commercial salmon harvests. The harvest was the lowest since 1976 and was considerably below pre-season expectations. This was due to a failure of middle and late run pink salmon returns primarily in the southern fishery districts. The purse seine take of chinook, sockeye, pink, and chum salmon was considerably below recent year levels due to reduced fishing opportunities as a result of poor return of pink salmon. The purse seine catch in the northern districts exceeded the catch in the southern districts, due to better than expected returns of early run pink salmon to portions of the northern areas. However, most middle and late returns of pink salmon were considerably below forecasted levels in the northern districts.

The Southeast Alaska commercial take of salmon by drift gill net gear totaled approximately 3.4 million salmon, representing 21% of the total regional salmon harvest. The catch was down from the catch levels experienced by drift gill net gear since 1984, however, it was well above the catch in any year prior to then. Despite the good overall harvest level, the strength of the salmon returns were not uniform to all drift gill net areas. Over half of the drift gill net catch of sockeye salmon was accounted for by the record harvest experienced in the Lynn Canal fishery in District 15. The catches of sockeye salmon in other gill-netting areas were generally near or below average. Poor returns were apparent to Stikine River. Overall landing of pink salmon were below recent year drift gill net year levels, however, near the long term average harvest. The drift gill net catch of coho salmon was near average. The catches of fall chum salmon were above average. The catches of fall chum salmon were above averages in Districts 11 and 15.

## INTRODUCTION

This report describes the salmon commercial (except troll gear), subsistence and personal use fisheries that occurred during 1987 within the Southeastern Alaska portion of Region 1 of the Commercial Fisheries Division, Alaska Department of Fish and Game. The Region 1 troll and set gill net fisheries are described in separate reports. The purpose of this report is to provide the Alaska Board of Fisheries with a review of the 1987 Southeast Alaska net and other miscellaneous salmon fisheries. A discussion of how the 1987 season progressed in each fishery is included. The 1987 preliminary landings are presented and compared to historical production for the region.

### SALMON PURSE SEINE FISHERY

The purse seine fishery occurs in the Southeastern Alaska portion of the Region and is primarily dependent on pink salmon stocks. Southeastern Alaska pink salmon stocks show distinct separation between the northern and southern portions of the area. For the purposes of forecasting, catch tabulation and management, Districts 1 through 8 are grouped in the southern unit and Districts 9 through 16 in the northern unit (see Figure 1).

Management of the purse seine fishery is based primarily on inseason assessments of pink salmon spawning escapements. Most spawning escapement information is obtained from aerial surveys to sanctuary areas and streams. Fishery performance data is used to gauge the general availability and run strength of the incoming salmon returns.

Overall purse seine landings totaled approximately 8.8 million salmon during the 1987 season (see Tables 1 and 2). It was the lowest catch for

purse seine gear since the 1976 season. The primary reason for the low catches was the failure of the southern Southeast Alaska middle and late run pink salmon returns. The purse seine landings of chinook, sockeye, coho, and chum salmon were below average due to the lack of fishing opportunities necessitated for pink salmon conservation.

### Non-Retention of Chinook Salmon

For the second consecutive season Alaska Board of Fisheries regulations specified a seasonal purse seine catch quota of 11,400 chinook salmon, 28 inches or larger (the legal size limit for the troll fishery). The board took this action to ensure that all user groups shared in the reduced chinook salmon harvest levels specified by the U.S./Canada Pacific Salmon Treaty. The board also adopted regulations prohibiting seiners from selling, but not possession of, chinook salmon within a size range of greater than 21 inches and less than 28 inches. Chinook salmon less than 21 inches (approximately 5 pounds or less) could be sold, however, they would not count against the catch limit.

As recommended by the board, the pre-season management approach to maintain the catch limit was non-retention of large chinook salmon, early in the seining season and again later in the season depending on when the catch limit was obtained. The early season non-retention period was designed to allow for release of chinook salmon at a time when the catch rate of other salmon was relatively low, thus making it more effective. During 1987, the early season non-retention extended through August 1 and included eight open days of seining. The early season non-retention was not required at the Hidden Falls and Neets Bay terminal fishing areas. There returning Alaskan hatchery produced chinook salmon, which do not count against the overall catch limit, were anticipated to contribute a portion of the chinook salmon catch. Additionally, a very intensive fishery was anticipated for the Hidden Falls terminal area, making it difficult to effectively release fish.

The chinook salmon seine retention period extended from August 2 through the remainder of the seining season, including the fall fishing periods. The seine fishery catch of chinook salmon totaled approximately 6,300 fish. Of this total, approximately 4,500 were reported as being in a size range of 28 inches or larger, the size specified to be counted against the 11,400 catch limit. The primary reason the seine catch of chinook salmon was well below the specified quota was the lack of fishing opportunities due to the failure of the pink salmon returns. Preliminary information indicates that approximately 300 Alaskan hatchery produced chinook salmon (28 inches or larger) were harvested by seine gear in 1987.

#### Northern Southeastern Purse Seine Fishery

The 1987 pre-season forecast indicated that approximately 5.1 million pink salmon would be available for harvest in the northern fishing districts. An uneven distribution of the return was anticipated with most of the harvest occurring from middle and late run pink salmon returning to Districts 9 and 13.

The northern districts' overall pink salmon return was close to the forecasted level, however the distribution was not as expected. Early run returns to the inside districts were better than expected while middle and late run returns were considerably below forecasted levels. The 1987 northern Southeastern Alaska pink salmon harvest by all gear types totaled approximately 5.6 million fish, the purse seine fishery accounting for approximately 68% percent of the harvest (see Tables 2 and 5).

The 1987 northern seining season began with a 15-hour open period, on June 28, for harvesting the good anticipated summer chum salmon returns to Port Frederick, Tenakee Inlet and at the Hidden Falls Hatchery. The Hidden Falls Hatchery fishery is discussed later in the hatchery section of this report. Landings of chum salmon, during this initial period, were poor in all areas. As the season developed it became apparent the returns

of summer chum salmon were late to all areas. Additional natural summer chum salmon seining occurred during July in Port Frederick, Kelp Bay and portions of Sections 13-A and 13-B, along the outer coastal portions of Baranof and Chichagof Islands.

The pink salmon seining season began on July 5, with a 15-hour open period along the Whitestone Harbor shore in District 14 (in the Icy Strait-northern Chatham Strait migration corridor) and Tenakee Inlet in District 12. The early opening of the highly mixed stock Whitestone Harbor shore fishery was prompted by the good showings of pink salmon in northern Stephens Passage and the high abundance of pink salmon observed moving along the northern portions of the Hawk Inlet shore. Seine harvest opportunities were not considered available for these fish along the Hawk Inlet shore or in northern Stephens Passage. Existing regulations actually prohibit seining along the Hawk Inlet Shore, north of Point Marsden, until August 1. Additionally, seining along the Whitestone Harbor shore was believed to provide better access to upper Stephens Passage pink salmon as opposed to seining along the Admiralty Island shore south of Point Marsden. Approximately 100 boats participated in the Whitestone Shore fishery and high landings of pink salmon were reported.

It quickly became apparent that early run pink salmon returns were not developing equally well in all major areas. Additional mixed stock seining in the Icy Strait-northern Chatham Strait migration corridor was more limited. To continue harvesting the good pink salmon returns entering northern Stephens Passage, weekly seining periods were maintained, through July, along the Admiralty Island shoreline south of Point Marsden to Point Hepburn, a distance of approximately eight nautical miles. Early run seining was allowed in more terminal areas depending on observed local run strength.

Three open seining periods, along the Chilkat Peninsula shoreline in the vicinity of Point Howard, were allowed to provide harvest opportunities for local pink salmon stocks returning to southern Lynn Canal. This area

is actually north of Point Marsden in District 12, however, it is on the western shoreline. In discussions with the board, the staff discussed the possibility of seining in the vicinity of Point Howard for harvesting local pink salmon runs. Fishing efforts were relatively low. Interviews with seiners and reported landings on fish tickets indicated the harvest consisted primarily of pink salmon with low incidental catches of sockeye salmon.

After August 1, as allowed by regulation, seining was permitted along the Hawk Inlet shore north of Point Marsden as middle run returns of pink salmon to Stephens Passage also returned in good strength. This consisted of two periods in early August. Beginning in mid-August, the incoming pink salmon run dramatically decreased and only one additional seining period was allowed in northern Chatham Strait. The total seasonal catch of pink salmon from the Icy Strait-northern Chatham Strait area totaled approximately 1.8 million pink salmon.

In addition to upper Stephens Passage, good early and middle run pink salmon returns developed lower Stephens Passage and Frederick Sound in District 10, Seymour Canal in District 11, and along the Admiralty Island shoreline of District 9 in Frederick Sound. Seymour Canal was open to seining for two fifteen-hour periods in early July. Limited seining efforts and catch occurred in Seymour Canal. Since these stocks contributed to fisheries in District 10, particularly along the Big Bend shoreline, no seining was allowed in Seymour Canal after mid-July. Productive seining for early and middle run pink salmon occurred in District 10 and the adjoining waters along the Admiralty Island shoreline in District 9 from mid-July to early August. The combined catches from these areas totaled approximately 1.2 million pink salmon.

Pink salmon seining in areas other than the Icy Strait-northern Chatham Strait and Stephens Passage-Frederick Sound area was generally non productive. Major portions of the outer coastal portion of District 13, where strong returns were expected, were open beginning in mid-July to

assess the return strength. These fisheries produced poor landings. Returns of pink salmon to the outer coastal portion of District 13 represented the poorest odd year pink salmon run in recent years. Pink salmon directed seining was limited to two open periods in the lower Chatham Strait portion of District 9, where strong late returns were also anticipated. Limited seining in Idaho Inlet in District 14, Peril Strait in District 13 and along the Basket Bay shoreline in District 12 was also non-productive. No pink salmon directed seining was allowed in the northern districts after August 22.

#### Northern Southeastern Alaska Fall Chum Salmon Fishery

Purse seine fisheries for harvesting fall chum salmon were conducted in Excursion Inlet, Port Camden, Tebenkof Bay, Salisbury Sound and Nakwasina Sound. Landings of fall chum salmon totaled approximately 155,000 fish. The first fall periods began on August 22 and weekly periods continued in some areas until September 24. The fisheries in Port Camden (September 4), Tebenkof Bay (September 4), and Salisbury Sound (August 24, September 4 and 10) produced relatively low landing of fall chum salmon. The most productive fisheries occurred in Nakwasina Sound ( August 24 and September 4, 10, 17, 20, and 24) and Excursion Inlet ( August 22, and September 10,17, and 24). The fishery at Excursion Inlet was, as in recent years, restricted to north of Excursion Point to minimize the catch of salmon bound for northern Southeastern Alaska drift gill net fisheries in Districts 11 and 15.

#### Northern Southeastern Alaska Pink Salmon Spawning Escapements

The overall 1987 northern districts pink salmon spawning escapement index totaled approximately 4.2 million fish (Table 4). This compares to the established escapement goal of 4.8 million fish. The distribution of the escapement was uneven. Overall spawning escapements were well below goal

levels in Districts 13 and 14 and at or near goal levels in Districts 9 through 12.

### Southern Southeastern Alaska Purse Seine Fishery

A harvest of approximately 21 million pink salmon was anticipated for the southern fishing districts in 1987. Pink salmon returns to Districts 1, 2, and 3 were expected to be good while below average runs were expected for Districts 5, 6 and 7. The 1987 pink salmon returns developed considerable below expectations, the total catch by all gear of approximately 4.6 fish was dramatically below the large returns of recent years. The catch of approximately 3.2 million pink salmon by seine gear was the lowest in the southern districts since 1975. The southern districts purse seine landings are shown in Tables 2 and 5.

### District 4: Noyes Island Purse Seine Fishery

The Alaska Board of Fisheries adopted regulations (5 AAC 33.361) for the department to manage the District 4 salmon purse seine fishery according to the provisions of the treaty between the United States of America and the Government of Canada concerning Pacific salmon. Under the terms of that treaty, the District 4 purse seine fishery is to be managed, from 1985 through 1988, in a manner that will result in a maximum four-year total harvest of 480,000 sockeye salmon before statistical week 31 (before July 26 in 1987). This represents an average annual harvest of 120,000 sockeye salmon during the specified period.

The management approach to maintain the harvest at 120,000 sockeye salmon was to limit fishing time based on anticipated fishing effort and availability of sockeye salmon. Seining was limited to five fishing periods, of 15-hour duration each, prior to statistical week 31. The catch of sockeye salmon during this period totaled approximately 72,000 fish, and was the lowest of any year since ratification of the treaty.

Relatively low fishing effort, as many fishermen elected to fish in the northern districts, and a low early season availability of fish contributed to lower than expected catches of sockeye salmon. The season catch of sockeye salmon totaled approximately 171,00 fish, 58% of which were taken during the pink salmon directed fishing after statistical week 31.

After July 26, District 4 fishing time was based on the size of the pink salmon returns to the inside fishing districts and the need to harvest a portion of these returns in the district. As weak pink salmon runs developed, both fishing time and salmon landing were low. A total of only 11 days of seining, including six after the sockeye salmon management period, were allowed in District 4 during 1987 compared to an average of 21 days over the past ten years. No seining occurred in the district after August 22. The seasonal catch of pink salmon totaled approximately 1.7 million salmon, which represented slightly over half of the total southern Southeast Alaska purse seine catch of this species. Landings of other salmon species were correspondingly low.

#### Southern Southeastern Alaska Inside Water Summer Purse Seine Fishery

The southern Southeastern Alaska inside water pink salmon seining season was very limited due to the failure of the pink salmon runs. The season extended from early July through August, however, only ten days of summer pink salmon seining, in limited areas, was allowed. No pink salmon directed seining was allowed in Districts 5, 6 or 7.

The pre-season management plan for the inside fishing districts specified a conservative management approach as an uneven distribution of the return was anticipated. The initial seining periods, from early to mid-July, were limited to the southeastern portion of Section 1-F to target the harvest on early run pink salmon returns to District 1, which developed better than expected. This was done to minimize harvesting of returns

into northern Clarence Strait, Earnest Sound, west Behm Canal, Cholmondeley Sound and Kasaan Bay until run strength could be assessed.

By late July, the weakness of the middle and late pink salmon returns became apparent. After two limited fishing periods in portions of Districts of 1 and 2 during early August, the seining season was closed for a 12 day period. During the closure considerable test fishing was conducted to evaluate the strength of the incoming run. By late August it became apparent late run pink salmon returns to the southernmost portions of Districts 2 and 3, southern Prince of Wales Island, were of sufficient strength to allow some limited seining. However, after two 15-hour seining periods in this area, no more summer pink salmon fishing season was allowed.

An extremely dry summer season resulted in critically low stream flow conditions during August. Significant losses of unspawned pink salmon occurred in some areas, particularly along the outer coastal portions of District 3 on Prince of Wales Island. The situation was most critical in the southern fishing districts, however, portions of the northern areas were also impacted. The problem first became apparent and was most severe in streams with lack of cover due to recent logging, however, eventually fish losses were noted in some unlogged streams with limited drainage basins. The good late August and early September rainfall came just in time to prevent more serious problems. Additionally the low stream flows during July and August held many salmon out in salt water estuary areas.

#### Southern Southeastern Alaska Fall Chum Salmon Fishery

Purse seine fisheries for fall chum salmon occurred in several terminal hatchery areas ( Neets Bay, Nakat Inlet, Earl West Cove, and Klawock Inlet which are discussed below in the hatchery section of this report) and in Districts 2, 3, and 5 for harvesting natural chum salmon stocks. The catch in the non-terminal hatchery fisheries totaled approximately 132,000 fish.

The season began with a 15-hour open period in District 5 to assess the fall chum salmon return strength to Affleck Canal. Landings of chum salmon were low and no additional fall fishing was allowed in District 5. The opening of the fall seining season in other areas was delayed until September 10 to allow additional time for late run pink salmon to enter sanctuary areas.

The waters of Cordova Bay, in the southern portion of District 3, were open for two fall seining periods on September 10-11 and 17. This is the first time in recent year that distinct fall chum salmon seining has been allowed in Cordova Bay. These fall chum salmon returns are usually adequately harvested during intensive late season purse seine fisheries in Districts 2, 3 and 4. As late season seining for pink salmon was limited, it was felt that specific fall chum salmon harvest opportunities could be allowed. The total catch of fall chum salmon in Cordova Bay totaled approximately 19,000 fish.

The District 2 fishery, traditionally the most productive southern Southeast Alaska fall seining area, produced landings of approximately 109,000 chum salmon. The season began on September 10 and continued during various open periods through October 23. Initially the fishery was conducted in the waters of lower Clarence Strait. As the return began to build well in Cholmondeley Sound, the primary fall chum salmon producing area, the size of the open terminal area was increased and the fishery in Clarence Strait was limited to the immediate vicinity of the sound. By early October, when it became apparent that spawning needs were assured, a continuous fishing period, extending from October 4 through 23, was established.

#### Southern Southeastern Alaska Pink Salmon Spawning Escapements

The overall southern Southeastern Alaska pink salmon spawning escapement index for 1987 totaled approximately 5.4 million fish (see Table 6). It

was the lowest pink salmon spawning escapement index achieved since the 1979 season. The distribution of the spawning index to the various districts was uneven. Overall escapement goals were achieved in Districts 1 and 3, while spawning escapements were well below goal levels in all other districts.

## DRIFT GILL NET-FISHERIES

Southeast Alaska drift gill net fishing occurred in ten distinct areas during the 1987 season (see Figure 2). The fisheries in four of these areas, Neets Bay, Blind Slough, Earl West Cove and Nakat Inlet, were special hatchery area terminal openings and will be discussed later in the hatchery harvest section of the report. The drift gill net fleet moves between the areas. The salmon species, run timing, management problems and information used to manage the fisheries are quite variable among the areas and each will be discussed separately.

Drift gill net gear landings totaled approximately 3.4 million salmon during the 1987 season (see Table 7). This is down from the catch levels experienced by drift gill net gear since 1984, however, it was well above any year prior to then. Pink salmon comprised the greatest portion of the harvest with 46% followed by chum salmon (25%), sockeye salmon (23%), coho salmon (6%) and chinook salmon (less than 1%).

### Chinook Salmon Harvest

The Alaska Board of Fisheries specified a 1987 annual drift gill net catch quota of 7,600 chinook salmon. The board adopted this catch limit to ensure that all user groups shared in the reduced chinook salmon catch limit specified by the U.S./Canada Pacific Salmon Treaty. The board

indicated inseason management measures for maintaining the catch levels should be the continuation of early season area closures for the protection of mature spawning run fish and night time fishing restrictions to minimize the harvest in mature ("feeder") chinook salmon.

The 1987 drift gill net landings of chinook salmon totaled approximately 8,900 fish. Preliminary estimates indicate that approximately 2,000 of these chinook salmon were fish produced by Alaskan hatcheries. Early season area closures, adjacent to the Stikine River, Taku River and Chilkat River, were maintained, as in recent years, to minimize the incidental harvest of mature chinook salmon while harvesting sockeye salmon. Night time closures were implemented in the Taku/Snettisham gill net fishery during two weeks in early July and for one week in the Tree Point drift gill net fishery when high catches of chinook salmon were apparent. No other management measures were taken to minimize the incidental drift gill net take of chinook salmon.

#### District 1: Tree Point/Portland Canal Drift Gill Net Fishery

The Tree Point Portland Canal drift gill net fishery in District 1 targets on sockeye and summer chum salmon early, pink salmon during the middle and coho and fall chum late in the season. Seasonal salmon landings are shown in Table 8. Tree Point was managed during 1987 to comply with the Pink Salmon Management Plan (5 AAC 33.260), to minimize the interception of salmon destined for watersheds where weak returns were expected, and in accordance with the United States/Canada Pacific Salmon Treaty where an average annual harvest of 130,000 sockeye salmon is the goal.

Drift gill net fishing in District 1 opened by regulation on June 21 for a 4 day period. During this opening, and all subsequent openings, Portland Canal was closed north of the latitude of Akeku Point. Portland Canal was not opened in order to conserve chum salmon stocks returning to Tombstone River and Fish Creek. This conservative chum salmon management approach

was agreed to under the provisions of the U.S./Canada Pacific Salmon Treaty.

During the second fishing week a night time fishing restriction was employed to reduce the harvest of chinook salmon. A reduction of the fishing week from 4 days to 3 days was also necessary to conserve below average returns of sockeye and chum salmon. For the third week, in early July, a 2-day fishing period was established due to low escapements of sockeye salmon to the Canadian Nass River and the poor landing of natural stock chum salmon.

The Tree Point drift gill net fishery was managed according to the District 1 Pink Salmon Management Plan from July 12 through August 16. Due to the weak returns of pink salmon to District 1 the fishing time was less than the past several years. As late July and early August progressed it became apparent escapement goals for pink salmon were behind in areas such as Boca de Quadra, Behm Canal, and George and Carroll Inlets. Due to the problem with escapement levels no fishery occurred during the week of August 16. Through most of the season, however, the harvest of pink salmon at Tree Point did not reflect the poor returns being experienced in most portions of District 1. Above average catches of pink salmon were due partly to the large average weight of pink salmon (4 to 5 pounds), good pink returns to Portland Canal, and reduced purse seine time and effort. The total harvest of approximately 583,000 pink salmon is only 60,000 below the average over the years of 1980 through 1986.

Fall season management was initiated on August 23. An initial opening of 24 hours was allowed to judge the early strength of incoming chum and coho salmon runs. Although the regulatory power to restrict mesh size to 6 inches is not available for the Tree Point area, fishermen were requested to use fall gear in order to reduce the catch of pink salmon.

From the opening on August 23 through the closing of Tree Point, on September 22, the harvest of fall chum salmon remained at a high level,

while coho catches were generally average to slightly above average. Gear levels remained high during the final four weeks of the season due to the excellent catches and high prices of chum salmon.

As in the past several years, the harvest of chum salmon released at Nakat Inlet by the Southern Southeastern Regional Aquaculture Association (SSRAA) influenced inseason management. The preliminary results show that approximately 9,000 summer chum and 22,000 fall chum salmon from the Nakat Inlet releases were harvested at Tree Point. This is approximately 20% of the chum harvested at Tree Point. This was the first year of returning coho salmon to Nakat Inlet. Approximately 3,370 coho salmon destined for Nakat Inlet were harvested during the normal course of the fishery.

The sockeye harvest of approximately 108,000 sockeye was below the 130,000 agreed upon in the U.S./Canada Treaty. During the past three treaty years (1985, 86, and 87) the average annual harvest at Tree Point has been approximately 140,000 sockeye. This year's harvest is more a reflection of reduced fishing time rather than the availability of the resource. Hugh Smith Lake, in the immediate vicinity of the fishery experienced a good escapement of 33,000 sockeye. Except for 1982, this is the largest escapement in recent years.

#### Lower Clarence Strait Drift Gill Net Fishery

The Board established lower Clarence Strait a new fishing area effective for the 1984 season as a means to increase drift gill net pink salmon harvest opportunities. The fishing area encompasses portions of Districts 1 and 2 in southern Clarence Strait (see Figure 2).

The area was managed in accordance with the Lower Clarence Strait Pink Salmon Management Plan (5 AAC 33.362). This plan specifies the area to be open to gill net fishing only during August. The open area and time is

the same as that open for the adjacent purse seine fishery in the District 2 portions of the new area.

During the 1987 season, a total of three openings occurred south of the latitude of Scott Point for a total of 5 fishing days (87 hours). The purse seine and therefore the drift gill net fishery was limited due to the poor returns of pink salmon. No salmon harvest was reported from the Lower Clarence Strait drift gill net fishery in 1987, however, two boats were observed fishing the area. Historical salmon catches are shown in Table 9.

#### District 6 and 8: Prince of Wales and Stikine Drift Gill Net Fishery

The Prince of Wales and Stikine drift gill net fisheries occur in adjoining waters of Districts 6 and 8. The management of these fisheries is interrelated due to their close proximity and salmon migration patterns which result in major salmon stocks being subjected to each fishery. Management is based on sockeye salmon early, pink salmon in the middle and coho salmon at the end of the season. Seasonal landings are shown in Tables 10 and 11.

Management of both fisheries was influenced by the U.S./Canadian Pacific Salmon Treaty. The Treaty had specified formal sharing arrangements for the 1985 and 1986 season. For 1987 negotiations could not reach agreement on a sharing arrangement. However, the Alaskan fisheries were managed in concurrence with the provisions of the 1985 and 1986 sharing arrangement. This being to provide for spawning escapement needs plus an annual Canadian harvest of 35% of the total allowable catch of sockeye salmon originating in the Canadian portion of the Stikine River or 10,000 sockeye salmon, whichever is greater, and 2,000 coho salmon originating in the Canadian portion of the Stikine River. The Canadians managed their fishery consistent with their final position at the negotiations, which called for a higher Canadian harvest percentage.

During the 1987 season the District 6 drift gill net fishery was open for 20 days from June 21 to September 15. This is below the average fishing time allowed during the past 10 years of 30 days. Sections 6-A, 6-B, and 6-C were all open simultaneously each week throughout the season. Portions of District 8 were open for 13 days from June 21 to September 15. This also is below the 10 year average of 15 days.

During the 1987 season, the Districts 6 and 8 drift gill net fisheries harvested approximately 840 and 150 chinook respectively, both far below the recent 10 year averages. The majority of the chinook caught in District 8 are spawners bound for the Stikine River and Crystal Lake Hatchery and are harvested incidentally during the sockeye fishery. Area restrictions were implemented during the first two weeks of the sockeye season to keep the Stikine River chinook harvest to a minimum.

Preseason expectations were for a near average sockeye run to the Stikine River. The 1987 District 6 sockeye harvest of approximately 136,000 fish was approximately 40% above the 1960-1986 average and 11% above the recent 10 year average harvest. In contrast the District 8 sockeye harvest of under 2,000 fish was far below the 1960-1986 average and the recent 10 year harvest. During the first four weeks both districts were restricted to two-day fishery periods due to the high effort in District 6, the low catch per unit of effort, and the average forecasted return to the Stikine River. Sockeye catches in both districts were below average the first two weeks of the season. This was followed by above average sockeye catches for the next five weeks in District 6. District 8 remained below average through to the closure of the district. After the fourth week of fishing, all indicators for the Stikine River sockeye implied that a poor return was developing and all of District 8 was closed in spite of good signs of pink and chum runs into the Frederick Sound. The district remained closed until the end of August. The Sumner Strait section of District 6 remained open due to the low percent (1.3%) of Stikine River sockeye in the section during the fourth week. Preliminary scale analysis also indicated during any individual week the Stikine River proportion of the harvest in

District 6 never exceeded 7.9% of the catch and decreased to zero during the sixth week of the fishery. During the entire season, preliminary scale estimates indicate about 4,600 (3.4%) of the 137,000 sockeye harvested in District 6 and 8 were of Stikine River origin.

During the eighth week of the fishery (August 9), the management emphasis changed from sockeye to pink salmon. A below average return was forecasted for both areas and the initial open pink salmon period limited to one day in District 6 to minimize harvests while testing the strength of the return. Due to poor pink salmon catches and low escapements, both districts were closed during the next week. The majority of the pink salmon harvest in District 8 occurred in Frederick Sound during the sockeye salmon fishery. Pink salmon escapements in Frederick Sound were near average while escapement throughout the remainder of District 8 and District 6 fell far below established escapement goals.

The management emphasis for both districts changed from pink to coho salmon during the week beginning August 23. Prior to the directed coho fishery, coho catches in District 6 were about average each week and accounted for 71% of the total seasonal coho catch. During the first week of coho management (beginning August 23) the fishery was only open for one day in both districts to test the strength of the coho return. Additionally, a six inch minimum mesh size restriction was placed into effect by emergency order to minimize the incidental take of pink salmon. Effort was low in District 8 and weekly catch per unit of effort ranged from average to below average. The overall coho catch per unit of effort in District 6 was around average. The coho salmon fishery was restricted to three one-day fishing weeks and one two-day week. Both districts were closed for the season beginning the week of September 20 due to low wild stock coho catches. Preliminary inseason coded-wire tag information in District 6 estimated the hatchery coho contribution to be 17% of the total harvest. The total coho catch in District 6 of about 34,000 fish was 20% below the 1960-86 average and 40% below the recent 10 year average while the District 8 coho harvest was well below the long term and recent year average take.

The District 6 chum salmon harvest of approximately 42,000 fish was comparable to both the 1960-86 average and recent 10 year average. All of the chum salmon harvested in District 6 are caught incidentally while targeting on sockeye, pink and coho salmon. The District 8 chum salmon harvest of under 1,000 fish was well below average, due primarily to restrictions in the sockeye fishery causing low effort and the early closure of the district. The chum salmon harvest is incidental to the sockeye fishery and the majority of the harvest is in Frederick Sound.

#### District 11: Taku/Snettisham Drift Gill Net Fishery

The Taku/Snettisham gill net fishery targets on sockeye salmon early in the season, pink and sockeye salmon during the middle and fall chum and coho salmon late in the season. As was the case for the Stikine River, no formal U.S./Canada sharing agreement was in place for the 1987 season and the department managed the fishery consistent with the 1985 and 1986 agreement to provide for spawning escapement needs plus an annual Canadian harvest of 15% of the total allowable harvest of sockeye salmon originating in the Canadian portion of the Taku River. Total season salmon catches for the District 11 drift gill net fishery are shown in Table 12.

The District 11 drift gill net fishery was opened from June 21 to September 28, with weekly fishing periods totaling 32.8 days. This is slightly below the average total fishing time allowed during the past 10 years.

The 1987 harvest of chinook salmon was approximately 2,100 fish. Although this is an average chinook salmon harvest for the last ten years, a larger than average proportion of this harvest was comprised of feeder fish. Consequently, night closures were imposed during the third and fourth weeks (early July), which reduced the take of feeder chinook salmon. In addition the fishing area above Jaw point was closed during the first two weeks of the season to protect Taku River chinook salmon spawners.

Based on the Canyon Island mark-recapture program, the total Taku River sockeye return for 1987 was approximately 139,000 fish, 37% below the preseason forecast of 221,000 fish. Out of this, the District 111 and Canadian inriver gill net fisheries harvested about 47,000 and 14,000 sockeye respectively, leaving a total escapement of 78,000 fish. This falls within the upper range of the overall desired escapement goal range of 70-80,000 sockeye. In addition to Taku River sockeye, the District 111 drift gill net fishery harvested approximately 27,000 sockeye of non-Taku River origin returning primarily to Speel and Crescent Lakes in Port Snettisham as determined by scale pattern analysis. This represents 36% of the total District 111 drift gill net catch, and more than doubles last years Port Snettisham sockeye stock contribution.

Fishing patterns in 1987 were similar to previous years, except a greater proportion of sockeye were intercepted in the outer portions of Taku Inlet and northern Stephen Passage fishing areas. Peak sockeye catches in Stephens Passage occurred in late July during the same weeks which had the highest Port Snettisham sockeye stock contributions. In an effort to protect the Port Snettisham sockeye stocks, additional fishing time allowed in early August was restricted within Taku Inlet, north of the latitude of a point approximately one mile south of Point Greely. This additional time was allowed as a result of a projected inriver escapement within the desired escapement goal, high sockeye catch per unit of effort, and relatively low effort levels.

Despite a total Port Snettisham closure from June 21 to August 17, the combined Speel Lake and Crescent Lake sockeye escapement of approximately 17,000 fish is only half of the 34,000 fish desired escapement goal (12,000 Speel plus 22,000 Crescent).

Pink salmon harvested in the District 11 fishery are taken primarily incidentally during the summer sockeye salmon season. The 1987 pink

salmon catch of approximately 358,000 fish was the highest ever reported and over twice the previous ten year average. During 1987, no directed special pink salmon fishing time was allowed in Section 11-B. However, Section 11-C, southern Stephens Passage, was open for three pink salmon directed fishing periods. The catch of pink salmon from Section 11-C accounted for less than 10 percent of the total district catch. Excellent pink salmon spawning escapements were obtained to streams within the gill net area. Preliminary estimates, based on tag and recovery studies, indicate a pink salmon spawning escapement of 800,000 to 1,000,000 for the Taku River, in excess of the current goal of 150,000 to 250,000 fish.

Distinct summer and chum salmon runs contribute to the District 11 drift gill net fishery. The harvest of summer chum salmon has historically been considered an incidental take while fishing for sockeye salmon. In recent years the catch of summer chum salmon has increased, as a result of production from the state operated hatchery in Port Snettisham. The 1987 harvest of summer chum catch through mid-August was approximately 57,000 fish. The summer chum salmon return developed late, as did most returns of summer chum salmon in Southeast Alaska. Initially it appeared as if the return of chum salmon to the Snettisham Hatchery was considerable below pre-season expectations. However, in late July, landings of the summer chum salmon dramatically improved. In late July a weekly fishing period was extended for 24 hours in the southern portion of Section 11-B to specifically harvest Snettisham Hatchery chum salmon.

The District 11 drift gill net fishery is managed as a primarily fall chum salmon beginning in late August. The harvest of approximately 65,000 fall chum salmon was the highest since the 1980 season. Over half of the catch, 57%, was taken in Stephens Passage and Port Snettisham, indicating that the primary strength of the fall chum salmon return was to Port Snettisham and not, as usual, to the Taku River drainage. Additional, test fishing indicated low availability of chum salmon in Taku Inlet. As a result, management measures were necessary to reduce the harvest of the Taku River fall chum salmon stock. Beginning with the second week of

September, weekly fishing periods were reduced to 24-hours and portions of Taku Inlet were closed. Fall chum salmon escapement surveys indicated excellent numbers of spawners in both the Taku River and Port Snettisham fall chum salmon index areas.

Coho salmon are harvested in District 11 throughout the season with the best catches during the late summer and fall periods. The 1987 coho harvest of approximately 35,000 fish was slightly below the recent ten year average harvest. The peak landing periods occurred during chum salmon directed fishing periods in late August. Spawning escapement surveys indicated average to above average escapements of coho salmon to the Taku River drainage.

#### District 15: Lynn Canal Drift Gill Net Fishery

The Lynn Canal drift gill net fishery occurs in the waters of District 15. It consists of Section 15-A, upper Lynn Canal, Section 15-C, lower Lynn Canal, and Section 15-B, Berners Bay. The fishery targets on sockeye salmon during the summer and chum and coho salmon during the fall season. The total 1987 harvest of approximately 1.0 million salmon in the Lynn Canal drift gill net fishery was the third best on record (see Table 13).

The summer fishery harvests primarily sockeye salmon returning to Chilkat Lake and Chilkoote Lake located in the northern portions of Lynn Canal. Inseason management is based on fishery performance, escapement enumeration and analysis of stock specific run timing models. A scale analysis program provides accurate weekly stock apportionment information to provide a basis for fishery performance and model analysis. Adult enumeration weirs provide spawning escapement information for both Chilkat and Chilkoote Lakes. The Chilkoote Lake weir is located very close to tide water and provides very timely information for inseason management. The Chilkat Lake weir does not provide timely escapement information, as it takes several weeks for sockeye salmon to pass from the fishery through the weir.

The Lynn Canal drift gill net district was initially opened on June 21, the third Sunday of June as specified by regulation. As in recent years, the initial open period was limited to the water of Lynn Canal south of Seduction Point. This was done to allow an assessment of incoming run strength while reducing the take of milling fish in northern Lynn Canal. Beginning with the second week, Chilkoot Inlet terminal fishing areas were open to allow more harvest opportunities for Chilkoot Lake stock, where good runs were apparent from the beginning of the season. As the season progressed, this area was increased to include, at first, portions of Lutak Inlet and, eventually, all of Lutak Inlet to the mouth of the Chilkoot River. Additionally, extended fishing periods were allowed in northern Chilkoot Inlet and Lutak Inlet in response to a very strong return of Chilkoot Lake sockeye salmon.

Drift gill netting in the southern portion of Section 15-A was more conservative. Due to conservation concerns for Chilkat Lake sockeye salmon returns, the fishery in the southern portion of Section 15-A was limited to south of the latitude of Seduction Point for the first three weeks of the season. Beginning with the second week of July this open area was further restricted to Talsani Island, closing the Seduction Point, a known Chilkat Lake sockeye salmon milling area for the remainder of the summer season. Additionally, Chilkat Inlet and the adjacent Mud Bay milling areas were closed for the entire sockeye salmon management period, which extended through August.

The total season take of approximately 416,000 sockeye salmon represented a recent year record for the fishery. Over 80 percent of the catch originated from the Chilkoot Lake system.

Sockeye escapements to Chilkoot Lake were very good while Chilkat Lake escapements were below desired levels. A total escapement of 95,000 sockeye entered Chilkoot Lake, exceeding the upper end of the 60-80,000 goal range. Chilkat lake sockeye escapement totaled approximately 50,000 spawners, well below the 70-90,000 desired goal.

Section 15-C, Lower Lynn Canal, and Section 15-B, Berners Bay, were opened in limited areas on June 28 in order to target good quality summer chum and pink salmon returning to Berners Bay systems. A one-day open period in Berners Bay resulted in poor catches and this section was not reopened for the remainder of the season. The initial two day open period in the lower portion of 15-C also resulted in poor chum and pink catches and these waters were not reopened until the third week in August in order to minimize the interception of Chilkat sockeye stocks. A portion of Section 15-C, within two nautical miles of the western shore of Lynn Canal, remained opened through the summer season in order to provide access to both pink and chum stocks in that area.

Fall chum salmon management was initiated during the first fishing week of September. In order to continue to protect Chilkat Lake sockeye stocks while allowing the harvest of early fall chum returns, a minimum mesh size restriction of six and one-quarter inches was put into effect during the first period in September throughout Lynn Canal, except in Lutak Inlet where Chilkoot sockeye were still available.

The total chum salmon harvest of approximately 393,000 fish was the third highest in the past ten years. Effort levels were very high due to a good price paid for chum salmon through the fall season. Effort peaked at 288 boats during the third week in September resulting in a chum harvest of 118,095 salmon during the two day period. Due to high effort levels and to assure good quality chum salmon, Chilkat Inlet was not opened inside of the Glacier Point marker throughout the fall season. Additionally, all of Chilkat Inlet remained closed except during the second and third weeks in September and the first week of October.

Section 15-C was opened during the third week in August for one day in a limited area within one nautical mile of the eastern shore south of the latitude of Point Bridget in order to assess the strength of the fall chum run while minimizing the harvest of Chilkat sockeye. Few sockeye were harvested in this opening and the entire section was opened during the

following week. Beginning on September 13 and throughout the remainder of the season, the section was closed north of the latitude of Point Bridget in order to reduce the harvest of coho salmon and to provide for coho escapement to Berners Bay. Peak effort in Section 15-C occurred during the second period in September.

A total coho harvest of 52,834 salmon were landed in Lynn Canal this season. This catch is well below the recent year average.

Lynn Canal was closed for the season following a one-day opening on October 11. Fair numbers of chum salmon were caught during the last opening, however, quality was poor and it was apparent that the end of the chum run was delayed from entering the terminal areas.

Escapement surveys of chum and coho spawning areas were hampered by bad weather and poor visibility. Peak spawning of early chum stocks was later than normal this season. However, good numbers of spawners were recorded in the Takhin River and Klehini River, particularly in the major tributaries and side channels. Water levels were at flood stage this fall, unlike the low water conditions experienced in recent years. Bank erosion and scouring of gravel beds was observed in some tributaries. It is not known how widespread these occurrences were.

Timing of Chilkat River mainstem chum spawning was also late. Good surveys were not possible due to adverse conditions, however, it appeared that good spawning escapement were obtained.

Coho spawning escapement levels were well below average at Chilkoot Lake. In the Chilkat Lake drainage coho escapement counts were below average, however, some late arriving fish were not included in the survey counts. The escapement of approximately 3,200 coho salmon to the Berners River system were below recent year levels.

## HATCHERY HARVEST

Both state and private hatcheries contributed to the 1987 commercial catch. This includes fish harvested in the general and terminal area common property fisheries as well as those fish harvested for hatchery cost recovery. Preliminary estimates indicate that approximately 2.5 million Alaska produced hatchery fish were harvested during the 1987 commercial fisheries (see Table 14). The hatchery contribution estimates are based on expansions of coded wire tag recovery information in the general common property fisheries and reported landings in terminal fishing areas. The hatchery contribution represents approximately 15% of the total commercial salmon harvest. Approximately 54% (1.3 million fish) were chum salmon, 30% (960,000) pink salmon, 7% (181,000) coho salmon and 1% (26,000) were chinook salmon. No sockeye salmon production from hatcheries is available to Southeast Alaska fisheries at this time.

### General Common Property Harvest

The harvest of hatchery produced salmon totaled approximately 278,000 fish during the general natural stock common property fisheries (not including fish harvested in special terminal common property fisheries discussed below). This is an incidental harvest while targeting on returns of natural produced salmon stocks. The harvest was distributed among the various commercial gear types as shown in Table 14.

Most of the harvest 55% was chum salmon, followed by coho salmon (38%) and chinook salmon (7%). An unknown number of hatchery produced pink salmon and fish from other untagged releases also contributed to the general common property fishery.

From a management standpoint, the availability of hatchery fish is of most concern in those mixed stock fisheries where fishery performance infor-

mation is relied upon for inseason management. During 1987, intensified monitoring for the presence of hatchery fish compared to natural stocks was continued for inseason management of the troll chinook salmon and the Districts 1, 6, and 11 drift gill net fisheries. In the drift gill net fisheries, the efforts were designed to remove the influence of the availability of hatchery fish when setting fishing time based on natural stock abundance.

### Common Property Terminal Harvesting

Common property fisheries were allowed for directed harvesting of hatchery returns in terminal areas adjacent to State operated facilities at Hidden Falls, Klawock Inlet and Crystal Lake; private operated facility at Neets Bay; and, the federally operated facility at Little Port Walter. These fisheries harvested approximately 577,000 salmon most of which were chum salmon (see Table 14). In addition to these, special contract cost recovery fisheries were authorized for Nakat Inlet and Earl Wess Cove by the Southern Southeastern Regional Aquaculture Association (SSRAA). The terminal fisheries with troll gear at Crystal Lake, Little Port Walter, Klawock Inlet, Neets Bay and Medvejie are discussed in the Troll Board Report. This section will concentrate on net fisheries.

Three terminal hatchery areas supported purse seine fisheries in 1987 - Hidden Falls, Neets Bay, and Klawock Inlet. The harvest in these seine fisheries totaled approximately 576,00 salmon, a vast majority of which were chum salmon. The best fishing occurred at Hidden Falls, where approximately 410,000 chum salmon were harvested during seven open seining periods between June 28 and August 10. Up to 225 boats fished during one of the open periods. The run developed later than normal and after a slow start, including not fishing one seine period in early July, good landings occurred in mid to late July. However, both the harvest and total return were below pre-season expectations. A barrier net was used, for the first time, to collect brood stock at Hidden Falls. Chum salmon were captured

by purse seine and placed behind the net prior to open periods. The operational costs for the net came from the sale of salmon caught for cost recovery in the terminal area. Approximately 29,000 chum salmon were sold for cost recovery.

The fishery at Klawock Inlet represented the second consecutive season a directed seine fishery has been authorized for harvesting fish returning to that facility. The area was open for five seining periods from September 4 through 24. Landing of chum salmon totaled approximately 45,000 fish. In addition, about 7,300 coho salmon, mostly of Klawock Lake hatchery origin, were also taken. The terminal area seine fishery at Neets Bay was managed according to the management plan adopted by the Board. The plan specified seine, gill net and troll fishing time according to a formula by time period. The area was opened for seining on July 6 for harvesting chinook salmon and September 20 and October 1 and 28 for harvesting fall chum and coho salmon. Landings totaled approximately 74,000 fish, most of which were chum salmon.

Common property fisheries with drift gill net gear were authorized in the Neets Bay and Crystal Lake terminal fishing areas. As with the seine fishery, the Neets Bay drift gill net fishery was managed according to board approval management plan. The area was opened for five fishing periods: July 2 for harvesting chinook salmon and September 3, 17 and 28 and October 1 for harvesting coho and chum salmon. Salmon catches totaled approximately 33,000 fish, including 292 chinook, 1,463 coho, and 30,934 chum salmon.

The Crystal Lake terminal fishing area was opened in two areas. The Blind Slough portion of District 8 was open for six fishing periods, from June 7 through July 23 for harvesting chinook salmon. Low fishing efforts were reported and the reported catch of chinook salmon was only 52 fish. Portions of Wrangell Narrows, in District 6, were open for harvesting chinook salmon during three periods in late July ( 12, 15, and 17 ) and three periods in late August ( 17, 24, and 31 ) for harvesting coho

salmon. The chinook salmon season was authorized when it became apparent that hatchery brood stock needs were being obtained. Both fishing effort and reported catches were low. The coho salmon fishery produced a harvest of approximately 2,600 fish. All fishing was limited to the hours of day light to minimize conflicts between fishing vessels and other vessels transitting Wrangell Narrows.

#### Cost Recovery Harvesting

Harvesting of salmon for cost recovery was reported at 18 different locations during 1987. Salmon landings totaled approximately 1.6 million fish and consisted predominantly of pink (933,000), chum (598,000), and coho (52,000) salmon (see Table 14). The cost recovery included the sale of salmon from the state operated Hidden Falls hatchery intended to pay for the cost of a barrier net used to accumulate chum salmon brood stock. Special contract cost recovery fisheries were authorized at the Nakat Inlet and Earl Wess Cove SSRAA's release sites. The SSRAA established a rotational harvest schedule and allowed permit holders to fish for a fixed percentage of their catch. These fisheries accounted for a harvest of approximately 13,000 salmon.

#### CANADIAN TRANSBOUNDARY RIVER FISHERIES

Gill net fisheries again occurred in the Canadian portions of the Taku River and Stikine River during the 1987 season. Seasonal salmon landings totaled approximately 20,000 fish for the Stikine fishery and 28,000 fish for the Taku River fishery (see Tables 15 and 16).

The Canadians have had a low level subsistence fishery on the upper Stikine River for many years. In 1979 they initiated directed commercial

fisheries on both the Stikine and Taku Rivers. The Stikine River fishery had been a predominately set gill net operation until 1986 when a drift gill net fishery developed while in the Taku River both set gill net and drift gill net fisheries have occurred in the past. These fisheries are primarily conducted in the main stems of the rivers and fishermen fish out of outboard skiffs. Both fisheries were included as part of the U.S./-Canada Pacific Salmon Treaty. As indicated earlier, in this report, no formal sharing arrangements were in effect for salmon entering the Stikine River and Taku River during the 1987 season. The Alaska drift gill net fisheries in Districts 6, 8, and 11 were managed for maintaining the 1985 and 1986 sharing agreement. The Canadian fisheries on the Taku River and Stikine River were managed for a larger Canadian share consistent with their final negotiating position.

The Canadian Stikine River commercial fishery extended from the June 21 through the week beginning September 20. Fishing efforts were generally between 14-16 unit each week. Of the total estimated harvest of Stikine River sockeye (excluding test fishery catches and based upon preliminary analysis of scale patterns) Canadians harvested 9,615 or 68% of the harvest. The 1985 and 1986 agreed to sockeye harvest level for the Canadians was 35% of the total allowable catch. The coho harvest of 5,731 was below the average but considerably above the 2,000 limit agreed to in 1985 and 1986. Chinook catches totaled 2,645, the second highest on record.

The 1987 Canadian Taku River fishery was opened from June 29 to September 24, fishing time totaled 26.2 days. A special coho and chum salmon test fishery was also conducted by a Canadian fisherman during closed periods between July 27 and October 16. The number of fishermen in the in-river fishery ranged from 5 to 13 persons each week. The Canadian harvest of 13,554 sockeye represented 22% of the estimated return of Taku River sockeye stocks. The Alaskan catch of 47,338 sockeye represented 78% of the Taku River sockeye return. In addition to the commercial harvest of

Canadian and Alaskan test fisheries caught 238 and 909 sockeye respectively. Taku River origin sockeye in the Alaskan fishery was determined by in-season scale pattern analysis which may be revised when 1987 escapement scales are utilized to update the classification models. Incidental Canadian harvest of chinook was 233 during the 1987 season, which was below the 1979-1986 average of 322. Chinook harvest was minimized by the restricted mesh size and limited fishing time early in the season. The Canadian Taku River harvest of 5,599 coho exceeded the 1979-1986 average of 4,560. the Canadian fishery extended further into the fall season than during the 1985 and 1986 treaty agreement, where a 2,000 coho harvest level was in effect. Alaskan and Canadian test fisheries accounted for an additional 542 and 815 cohos respectively. The in-river fall chum harvest was also above 1985 and 1986 levels due to the extended fishing into the 1987 fall season. The Canadian harvest of 2,270 chums was below the 1979-1986 average of 5,583. Alaskan and Canadian test fisheries harvested 1,598 and 733 chums respectively.

#### ANNETTE ISLAND FISHERIES

The Annette Island fishery Reserve established by Presidential Proclamation in 1916, provides for an exclusive fishery zone for the Metlakatla Indian Community out to 3,000 feet from the shoreline of Annette Island near Ketchikan. The Bureau of Indian Affairs has the authority to determine fishery openings in the Annette Island Reserve.

Salmon are harvested by floating fish traps, purse seine, drift gillnet and troll gear types. The trap catch totaled approximately 91,000 salmon most of which were pink salmon. Salmon landings totaled approximately 382,00 fish in the gill net fishery and 56,000 fish in the seine fishery. Total season salmon landings in the Annette Island fisheries are shown in Tables 17, 18 and 19.

## SUBSISTENCE SALMON FISHERY

The magnitude of the Southeast Region salmon subsistence fishery is small when compared to overall salmon catches. Based on preliminary catch information the reported 1987 subsistence salmon harvest was approximately 36,000 salmon shown in Tables 20 and 21.

By regulation the subsistence harvesting of king and coho salmon is not allowed in the Southeastern Alaska portion of the region, except for coho and king salmon in the Chilkat River adjacent to the Klukwan Reserve and for coho salmon in the Salt Lake in Kootznahoo Inlet near Angoon. All five species of salmon can be taken in the Yakutat area. Sockeye salmon dominate the subsistence harvest within the region due to the demand for this preferred species despite the generally higher availability of pink and chum salmon in most areas.

The subsistence utilization of salmon has not been a major issue in the management of the Southeast Alaska salmon resource. The fishery is currently being managed almost entirely under the subsistence salmon permit system. The provisions of each permit are generally formulated on historical practices in each management area, according to the availability of the specific salmon stock being harvested. No emergency orders were issued for the Southeast Alaska subsistence salmon fishery during the 1987 season.

A new permit system was utilized in the Juneau management area in 1987. Subsistence fishermen were provided one general permit for the season. The permit was valid for all species and open areas listed on it. Species possession limits were similar to past permit limits, although the fishermen were able to take additional fish on other dates without permit renewal. Fishermen were required to record their daily catch on the permit and return it at the seasons end.

The new system reduced the office work load where many second permits were issued to individuals in the past. The return rate for permits was not as good as anticipated, however, the information on returned permits was believed to be more accurate. The system will be continued.

#### PERSONAL USE FISHERY

Existing regulation authorize the department to establish terminal personal use fisheries for harvesting salmon surplus to hatchery brood stock needs. During 1987, personal use fisheries were authorized at state operated hatcheries at Ketchikan Creek, Klawock Inlet and Crystal lake and at the privately operated facility at Sheep Creek. Participation of these fisheries was generally low, and although specific harvest information was not obtained it was small. An improved catch reporting system is being planned for future years to better document specific personal use fishery landings.

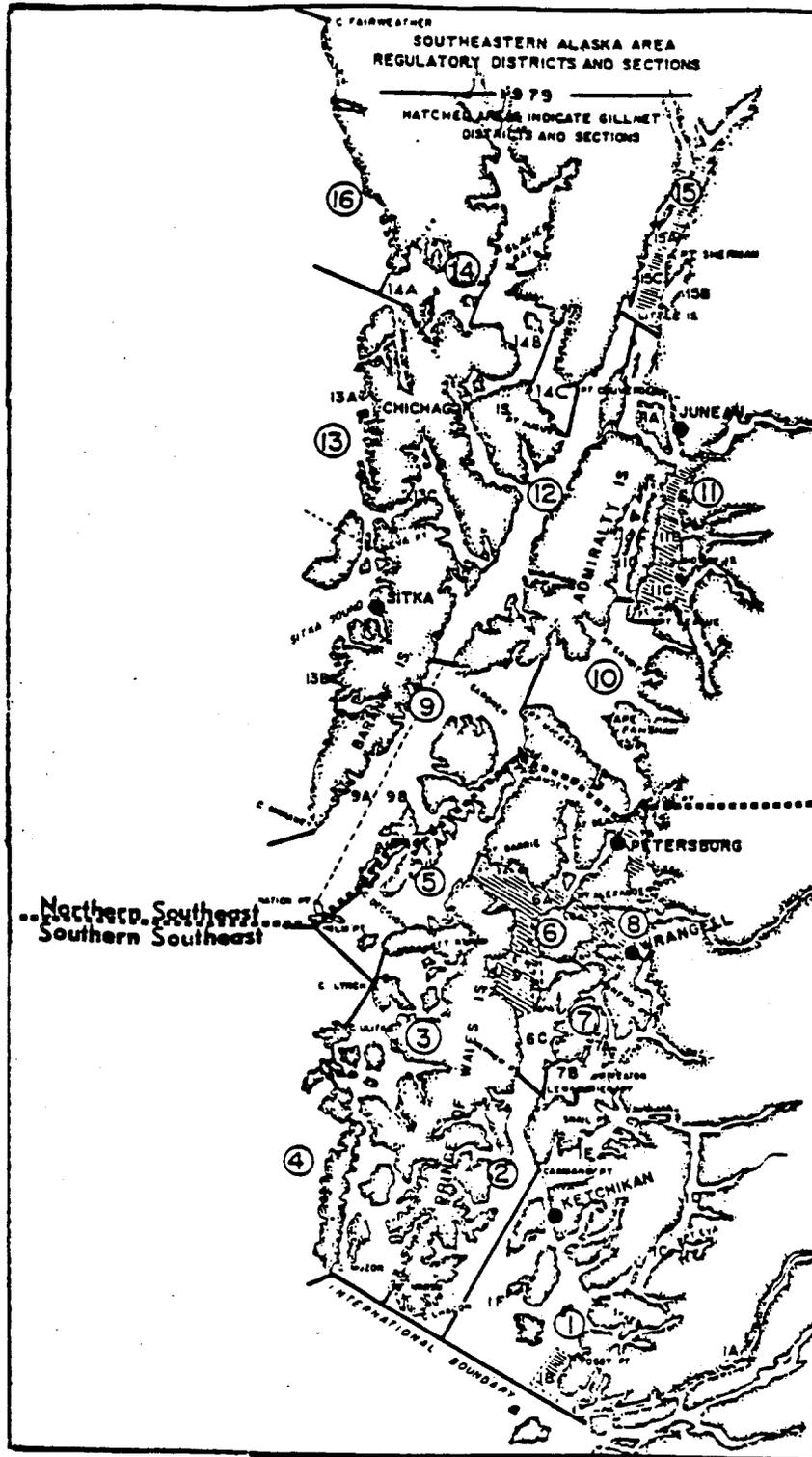
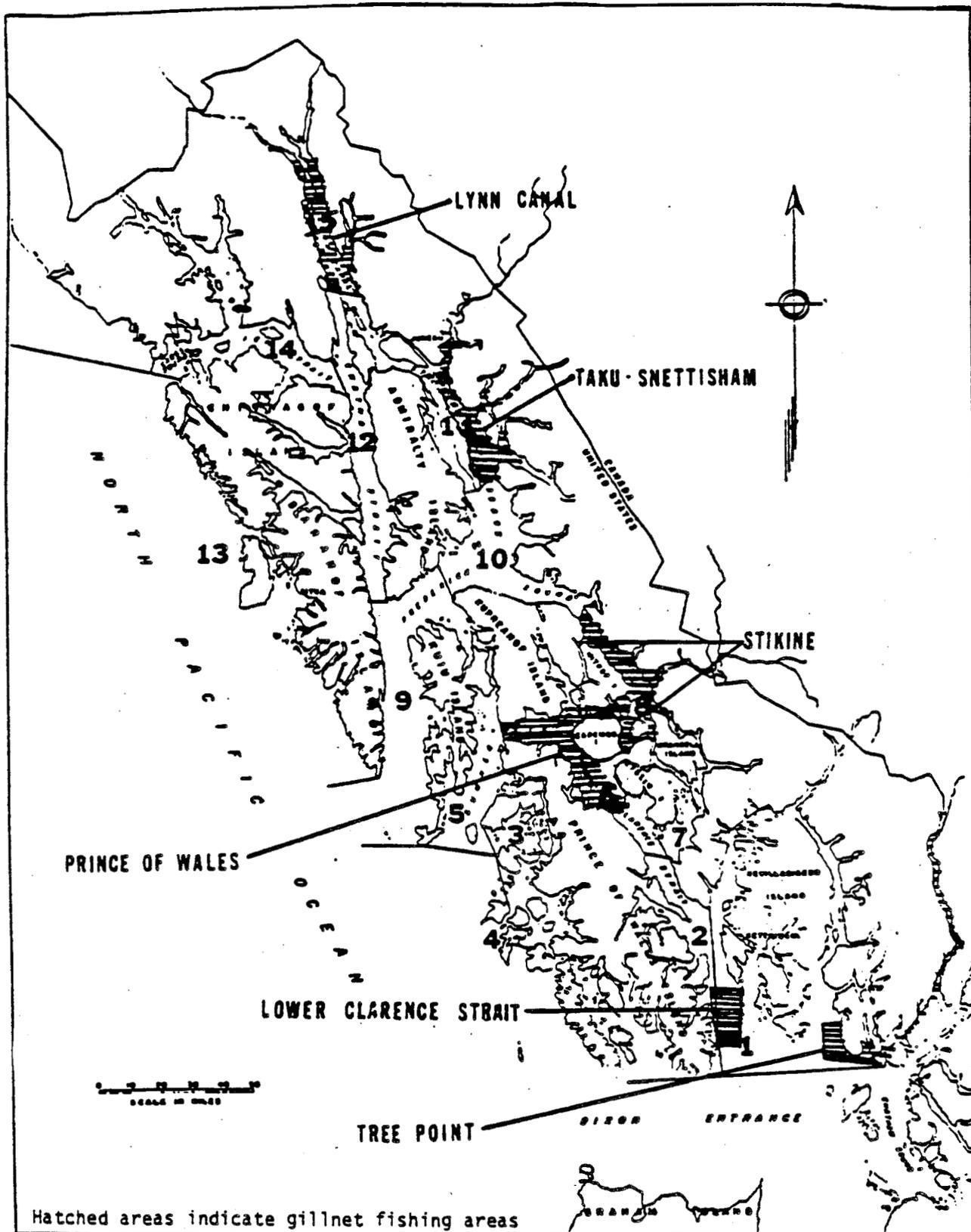


Figure 1. Map showing Northern and Southern portions of Southeast Alaska.



Hatched areas indicate gillnet fishing areas

Figure 2. Map Showing Southeast Alaska Regulatory Fishing Districts and Drift Gillnet Fishing Areas.

Table 1. Southeast Alaska annual commercial purse seine salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	6,509	358,697	125,871	2,572,279	726,017	3,789,373
1961	4,134	418,952	246,524	10,936,344	2,173,119	13,779,073
1962	10,145	411,748	239,382	10,139,595	1,593,386	12,394,256
1963	6,659	422,633	316,491	18,189,644	1,188,152	20,123,579
1964	16,819	570,666	506,505	17,310,850	1,662,135	20,066,975
1965	14,992	672,015	557,005	10,061,603	1,185,571	12,491,186
1966	11,877	480,519	452,057	18,919,555	2,846,668	22,710,676
1967	9,054	600,628	188,965	2,807,783	1,545,059	5,151,489
1968	13,335	494,998	463,553	24,099,793	2,252,605	27,324,284
1969	6,776	338,233	110,415	4,312,402	332,680	5,100,506
1970	5,959	307,821	295,683	9,628,111	1,936,834	12,174,408
1971	4,799	162,823	326,264	8,505,647	1,496,399	10,495,932
1972	16,800	323,965	391,204	11,370,064	2,169,435	14,271,468
1973	8,751	348,679	129,593	5,609,519	1,219,552	7,316,094
1974	6,759	235,934	166,687	4,174,219	999,601	5,583,200
1975	2,056	61,878	70,201	3,410,938	381,307	3,926,380
1976	1,426	135,823	87,604	4,287,516	512,777	5,025,146
1977	5,243	329,396	160,519	11,600,431	342,322	12,437,911
1978	13,998	274,238	245,074	19,044,766	529,779	20,107,854
1979	10,079	397,448	176,593	9,000,060	441,686	10,025,866
1980	12,507	527,310	194,250	12,314,942	1,026,839	14,075,848
1981	10,268	444,699	286,010	16,453,340	534,917	17,729,234
1982	31,375	463,236	449,459	22,475,115	862,164	24,281,349
1983	13,581	794,300	399,279	34,634,877	609,764	36,451,803
1984	20,769	470,165	370,098	21,572,952	2,439,016	24,872,998
1985	23,147	720,992	431,791	47,786,490	1,859,613	50,822,034
1986	13,311	591,883	588,683	43,659,255	2,214,155	47,067,289
Average 1960 to 1986	11,153	420,729	295,399	14,995,485	1,299,317	17,022,082
1987 PRELIMINARY	6,295	311,308	131,498	7,086,037	1,252,978	8,788,116

Table 2. Southeast Alaska commercial purse seine salmon catches by area, 1986.  
(ADF&G 1/10/88)

District	- - - - - Numbers of Salmon - - - - -					Total
	Chinook	Sockeye	Coho	Pink	Chum	
District 1	245	43,305	6,341	871,943	37,767	959,601
Annette Island	5	618	9,204	28,584	17,991	56,402
Neets Bay	64	24	1,591	201	72,715	74,595
District 2	159	17,476	16,386	400,527	128,608	563,156
District 3	29	1,429	12,909	222,777	42,596	279,740
Klawock Inlet	0	152	7,340	2,650	44,768	54,910
District 4	4,102	171,214	48,992	1,674,018	71,153	1,969,479
District 5	2	1	203	51	3,526	3,783
District 6	0	0	0	0	0	0
District 7	0	0	0	0	0	0
District 9	178	4,600	4,178	323,385	57,722	390,063
District 10	283	9,784	3,098	864,795	32,071	910,031
District 11	50	442	164	45,641	1,082	47,379
District 12	193	41,490	9,403	1,411,273	110,969	1,573,328
Hidden Falls	553	3,276	1,664	330,867	410,442	746,802
District 13	300	13,704	7,784	367,733	100,247	489,768
District 14	132	3,793	2,241	541,592	121,321	669,079
<b>Southern</b>						
Subtotals	4,606	234,219	102,966	3,200,751	419,124	3,961,666
<b>Northern</b>						
Subtotals	1,689	77,089	28,532	3,885,286	833,854	4,826,450
<b>Total</b>						
Southeast	6,295	311,308	131,498	7,086,037	1,252,978	8,788,116

Table 3. Northern Southeast Alaska annual commercial purse seine salmon numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	1,377	193,185	40,578	1,208,645	344,005	1,787,790
1961	2,738	306,490	98,626	7,545,647	1,276,238	9,229,739
1962	3,308	190,704	44,844	450,906	779,813	1,469,575
1963	3,992	241,483	146,899	13,772,188	697,716	14,862,278
1964	6,155	259,808	179,568	7,184,778	615,968	8,246,277
1965	6,451	353,618	243,509	5,106,087	949,074	6,658,739
1966	6,071	273,071	170,354	4,720,620	2,277,117	7,447,233
1967	2,349	213,594	120,294	2,358,831	1,317,519	4,012,587
1968	4,665	336,407	208,564	9,729,290	1,167,207	11,446,133
1969	4,173	270,034	87,731	3,453,139	297,203	4,112,280
1970	3,686	236,663	165,940	4,972,826	1,408,347	6,787,462
1971	2,595	113,699	127,703	2,911,913	866,044	4,021,954
1972	5,998	157,942	155,628	3,026,945	1,394,570	4,741,083
1973	4,059	181,604	56,225	1,741,261	634,047	2,617,196
1974	1,559	66,858	27,415	514,119	440,342	1,050,293
1975	108	5,471	2,185	585,294	66,959	660,017
1976	12	19,126	1,744	80,775	55,005	156,662
1977	233	17,674	20,194	2,064,103	30,357	2,132,561
1978	501	36,641	9,101	2,398,505	39,990	2,484,738
1979	797	36,311	19,990	3,198,769	226,125	3,481,992
1980	512	39,640	12,918	899,599	415,620	1,368,289
1981	2,280	61,068	58,571	4,414,338	287,626	4,823,883
1982	3,643	79,881	135,346	10,765,882	163,980	11,148,732
1983	2,796	64,137	57,828	5,329,149	295,765	5,749,675
1984	1,790	57,763	48,850	4,194,752	1,442,639	5,745,794
1985	8,008	99,150	77,584	19,380,794	1,012,230	20,577,766
1986	1,379	18,601	17,798	942,755	947,936	1,928,469
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Average 1960 to 1986	3,009	145,579	86,518	4,553,774	720,350	5,509,230
1987 PRELIMINARY	1,689	77,089	28,532	3,885,286	833,854	4,826,450

Table 4. Northern Southeastern Alaska pink salmon spawning escapement index by district and year, 1960-87. (ADF&G 1/10/88)

----- Thousands of Fish by District -----								
Year	109	110	111	112	113	114	115	Total
1960	103.8	228.9	330.1	191.6	350.1	134.1	19.9	1,358.5
1961	439.3	392.7	486.3	520.7	707.6	223.9	0.0	2,770.5
1962	403.1	459.7	252.1	186.4	338.9	188.3	33.9	1,862.4
1963	538.9	328.1	423.2	867.6	1,316.8	558.7	25.6	4,058.9
1964	710.0	483.4	410.6	493.2	525.2	123.7	0.0	2,746.1
1965	660.9	242.4	349.2	483.0	772.5	413.2	0.0	2,921.2
1966	670.5	610.0	501.8	660.9	536.9	112.3	0.0	3,092.4
1967	361.0	180.1	269.7	351.4	572.9	176.7	3.5	1,915.3
1968	694.0	967.7	458.6	580.0	298.2	164.6	47.3	3,210.4
1969	378.6	289.5	241.8	482.5	767.2	251.1	10.1	2,420.8
1970	469.1	529.5	443.5	684.0	348.5	171.5	54.2	2,700.3
1971	487.5	595.6	283.0	594.5	604.0	393.6	0.0	2,958.2
1972	430.0	727.2	606.2	558.2	316.7	194.0	0.0	2,832.3
1973	309.1	302.8	288.0	526.9	586.5	261.4	89.1	2,363.8
1974	292.0	290.9	444.6	358.9	427.1	132.3	0.0	1,945.8
1975	209.0	88.1	157.0	294.0	663.4	136.8	10.1	1,558.4
1976	230.9	192.5	103.4	267.9	502.8	136.4	0.0	1,433.9
1977	503.5	283.9	352.1	671.5	2,058.9	242.5	50.3	4,162.7
1978	463.7	428.0	205.5	1,005.5	867.4	206.7	0.1	3,176.9
1979	730.8	731.7	493.1	830.0	1,964.5	251.8	80.7	5,082.6
1980	428.7	415.3	283.3	639.2	608.7	243.6	33.5	2,652.3
1981	363.8	389.3	299.1	767.9	1,948.5	240.0	45.4	4,054.0
1982	764.1	614.9	731.2	844.8	1,155.9	203.5	49.6	4,364.0
1983	586.0	396.0	761.0	829.3	1,880.5	272.9	54.7	4,780.4
1984	695.5	443.5	466.5	483.9	1,577.2	205.4	30.0	3,902.0
1985	1,162.6	1,084.2	1,803.3	1,363.4	2,749.8	581.0	265.5	9,009.8
1986	739.8	287.8	215.1	780.6	737.2	179.3	0.7	2,940.5
1987	595.1	1,110.7	819.1	539.4	932.7	162.2	64.3	4,223.5
Goal	600.0	1,000.0	500.0	600.0	1,600.0	500.0	-	4,800.0

Table 5. Southern Southeast Alaska annual commercial purse seine salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	5,132	165,512	85,293	1,363,634	382,012	2,001,583
1961	1,396	112,462	147,898	3,390,697	896,881	4,549,334
1962	6,837	221,044	194,538	9,688,689	813,573	10,924,681
1963	2,667	181,150	169,592	4,417,456	490,436	5,261,301
1964	10,664	310,858	326,937	10,126,072	1,046,167	11,820,698
1965	8,541	318,397	313,496	4,955,516	236,497	5,832,447
1966	5,806	207,448	281,703	14,198,935	569,551	15,263,443
1967	6,705	387,034	68,671	448,952	227,540	1,138,902
1968	8,670	158,591	254,989	14,370,503	1,085,398	15,878,151
1969	2,603	68,199	22,684	859,263	35,477	988,226
1970	2,273	71,158	129,743	4,655,285	528,487	5,386,946
1971	2,204	49,124	198,561	5,593,734	630,355	6,473,978
1972	10,802	166,023	235,576	8,343,119	774,865	9,530,385
1973	4,692	167,075	73,368	3,868,258	585,505	4,698,898
1974	5,200	169,076	139,272	3,660,100	559,259	4,532,907
1975	1,948	56,407	68,016	2,825,644	314,348	3,266,363
1976	1,414	116,697	85,860	4,206,741	457,772	4,868,484
1977	5,010	311,722	140,325	9,536,328	311,965	10,305,350
1978	13,497	237,597	235,973	16,646,261	489,789	17,623,116
1979	9,282	361,137	156,603	5,801,291	215,561	6,543,874
1980	11,995	487,670	181,332	11,415,343	611,219	12,707,559
1981	7,988	383,631	227,439	12,039,002	247,291	12,905,351
1982	27,732	383,355	314,113	11,709,233	698,184	13,132,617
1983	10,785	730,163	341,451	29,305,728	313,999	30,702,128
1984	18,979	412,402	321,248	17,378,200	996,377	19,127,204
1985	15,139	621,842	354,207	28,405,696	847,383	30,244,268
1986	11,932	573,282	570,885	42,716,500	1,266,219	45,138,820
Average 1960 to 1986	8,144	275,150	208,880	10,441,710	578,967	11,512,852
1987 PRELIMINARY	4,606	234,219	102,966	3,200,751	419,124	3,961,666

Table 6. Southern Southeastern Alaska pink salmon spawning escapement index by district and year, 1960-87. (ADF&G 1/10/88)

- - - - - Thousands of Fish by District - - - - -								
Year	101	102	103	105	106	107	108	Total
1960	732.2	209.7	950.7	163.6	89.1	241.2	0.0	2,386.5
1961	620.8	174.3	665.7	276.4	460.1	191.0	0.0	2,388.3
1962	1,264.6	312.2	1,312.8	410.5	523.1	405.5	143.7	4,372.4
1963	1,001.4	251.6	1,131.7	424.6	466.9	468.8	205.0	3,950.0
1964	1,267.4	499.6	1,246.0	548.9	725.4	438.5	128.1	4,853.9
1965	696.3	256.6	1,085.1	442.5	525.8	286.8	38.3	3,331.4
1966	1,476.4	509.7	1,333.3	499.4	591.3	410.3	0.0	4,820.4
1967	566.3	88.6	369.2	342.8	219.9	136.3	123.0	1,846.1
1968	1,832.8	524.3	1,173.7	528.9	356.2	385.2	88.2	4,889.3
1969	724.6	308.6	407.8	182.2	183.8	159.2	103.1	2,069.3
1970	1,509.0	252.5	1,462.9	231.3	297.8	319.0	93.4	4,165.9
1971	1,347.6	636.0	1,573.2	336.6	411.6	475.1	42.8	4,822.9
1972	1,640.2	318.8	900.4	303.1	244.3	426.7	246.1	4,079.6
1973	903.5	518.1	818.8	293.9	368.3	395.4	97.4	3,395.4
1974	1,278.3	464.8	1,149.1	230.0	216.3	274.7	83.0	3,696.2
1975	1,444.0	668.8	1,438.2	309.3	403.5	483.6	30.4	4,777.8
1976	1,495.4	619.6	1,539.3	173.8	708.2	694.1	18.1	5,248.5
1977	2,235.0	673.9	1,607.6	278.7	357.4	956.6	65.8	6,175.0
1978	2,108.3	541.1	1,709.7	308.1	304.9	447.4	35.6	5,455.1
1979	1,056.9	649.7	1,654.4	475.8	389.9	475.5	117.9	4,820.1
1980	2,314.5	630.1	2,704.1	157.8	166.3	283.4	37.0	6,293.2
1981	1,904.0	594.0	2,553.3	376.5	264.4	288.9	33.4	6,014.5
1982	2,257.3	558.7	2,050.4	272.6	370.0	464.1	83.4	6,056.5
1983	3,100.4	1,140.6	3,302.8	550.7	284.0	384.5	43.5	8,806.5
1984	3,760.4	937.1	3,322.9	277.8	369.6	415.3	24.4	9,107.5
1985	3,861.1	1,163.9	4,693.2	649.1	903.2	978.6	95.4	12,344.5
1986	4,520.5	1,390.4	5,742.6	678.8	899.8	571.5	44.7	13,848.3
1987	2,218.5	427.5	1,976.6	187.1	175.9	310.7	130.9	5,427.1
Goal	2,000.0	600.0	1,700.0	500.0	600.0	600.0	-	6,000.0

Table 7. Southeast Alaska annual commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	11,523	127,058	37,986	55,984	199,887	432,438
1961	9,440	169,724	52,743	282,997	251,900	766,804
1962	10,161	233,082	98,404	435,132	233,421	1,010,200
1963	6,427	194,420	112,776	653,826	265,251	1,232,700
1964	9,371	246,250	172,411	753,312	250,045	1,431,389
1965	11,892	279,349	166,452	698,339	269,986	1,426,018
1966	12,527	334,702	155,922	790,314	365,070	1,658,535
1967	16,464	274,038	134,029	205,683	250,050	880,264
1968	12,902	245,875	202,965	607,653	363,761	1,433,156
1969	15,407	348,343	65,704	379,738	209,538	1,018,730
1970	9,460	240,700	163,901	848,376	494,438	1,756,875
1971	15,718	328,774	159,143	654,434	435,737	1,593,806
1972	25,142	449,019	275,393	443,866	744,150	1,937,570
1973	24,471	532,164	124,349	652,692	592,982	1,926,658
1974	15,590	363,731	186,532	339,292	664,837	1,569,982
1975	9,082	108,334	102,321	350,440	297,655	867,832
1976	7,222	322,984	156,469	384,003	503,265	1,373,943
1977	5,600	550,360	182,090	1,500,378	373,516	2,611,944
1978	8,302	374,424	223,321	846,559	305,321	1,757,927
1979	13,828	488,394	83,048	968,154	412,833	1,966,257
1980	5,642	422,425	112,609	1,297,098	588,680	2,426,454
1981	6,494	466,090	118,868	1,468,673	293,702	2,353,827
1982	16,252	790,775	201,468	731,314	475,389	2,215,198
1983	4,885	607,986	218,109	1,420,575	533,742	2,785,297
1984	10,424	616,836	199,308	1,708,234	1,103,276	3,638,078
1985	10,701	882,011	332,818	2,278,565	1,204,489	4,708,584
1986	8,560	686,464	448,768	1,794,754	912,222	3,850,768
Average 1960 to 1986	11,611	395,715	166,219	835,199	466,487	1,875,231
1987 PRELIMINARY	8,941	783,389	189,108	1,577,243	834,384	3,393,065

Table 8. Southeast Alaska annual Portland Canal/Tree Point (District 1) commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	1,214	14,281	4,312	19,823	98,971	138,601
1961	907	35,269	4,067	91,803	35,635	167,681
1962	1,498	41,174	12,110	155,690	36,578	247,050
1963	508	22,037	3,110	93,651	41,642	160,948
1964	1,098	47,070	15,707	162,476	79,156	305,507
1965	1,079	53,566	10,675	60,772	21,753	147,845
1966	642	66,063	9,362	275,634	32,818	384,519
1967	2,186	74,071	3,112	82,312	29,017	190,698
1968	587	66,535	16,404	249,421	93,341	426,288
1969	744	89,752	3,304	87,831	20,604	202,235
1970	340	52,765	16,425	516,105	68,097	653,732
1971	778	116,101	5,170	67,013	31,087	220,149
1972	1,296	134,533	35,695	178,387	156,767	506,678
1973	1,008	159,764	18,459	269,749	109,997	558,977
1974	776	113,299	21,327	166,637	81,770	383,809
1975	1,961	25,352	12,155	123,753	30,341	193,562
1976	1,807	117,965	16,275	210,061	36,262	382,370
1977	1,182	192,728	12,173	769,841	84,321	1,060,245
1978	2,591	153,409	47,797	531,879	116,731	852,407
1979	3,654	88,957	6,427	72,687	60,564	232,289
1980	1,531	108,766	19,995	675,466	155,118	960,876
1981	1,415	105,478	18,353	426,918	38,337	590,501
1982	3,967	190,575	28,201	347,252	84,559	654,554
1983	1,094	136,006	41,671	772,342	139,713	1,090,826
1984	1,494	88,226	35,417	717,003	227,658	1,069,798
1985	2,788	172,820	51,043	691,147	233,917	1,151,715
1986	1,033	145,631	61,592	906,309	272,495	1,387,060
Average 1960 to 1986	1,451	96,748	19,642	323,036	89,528	530,404
1987 PRELIMINARY	1,785	107,488	36,644	583,118	157,856	886,891

Table 9. Southeast Alaska annual lower Clarence Strait commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	0	0	0	0
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	0	0	0	0	0
1969	0	0	0	0	0	0
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	0	0	0	0	0	0
1973	0	0	0	0	0	0
1974	0	0	0	0	0	0
1975	0	0	0	0	0	0
1976	0	0	0	0	0	0
1977	0	0	0	0	0	0
1978	0	0	0	0	0	0
1979	0	0	0	0	0	0
1980	0	0	0	0	0	0
1981	0	0	0	0	0	0
1982	0	0	0	0	0	0
1983	0	0	0	0	0	0
1984	2	126	149	15,059	1,159	16,495
1985	0	9	50	40,163	30	40,252
1986	0	14	50	1,654	39	1,757
Average 1984 to 1986	1	50	83	18,959	409	19,501
1987 PRELIMINARY	0	0	0	0	0	0

Table 10. Southeast Alaska annual Prince of Wales (District 6) commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	46	10,354	336	1,246	502	12,484
1961	416	20,614	14,934	124,236	64,479	224,679
1962	1,308	47,033	42,276	256,620	59,119	406,356
1963	1,560	80,767	52,103	514,596	90,103	739,129
1964	2,082	76,541	64,654	443,086	44,218	630,581
1965	1,802	87,749	75,728	625,848	27,658	818,785
1966	1,665	89,847	62,823	400,932	40,756	596,023
1967	1,318	86,385	17,670	91,609	26,370	223,352
1968	1,316	64,671	67,151	169,107	61,366	363,611
1969	1,036	70,343	10,748	197,100	10,906	290,133
1970	785	42,778	35,470	94,892	32,231	206,156
1971	1,336	53,202	48,085	527,975	37,680	668,278
1972	2,573	101,338	93,427	89,467	72,382	359,187
1973	1,931	71,995	38,447	303,621	87,729	503,723
1974	2,038	57,242	45,714	104,337	50,303	259,634
1975	2,587	32,051	30,962	203,015	23,968	292,583
1976	384	15,481	19,126	139,439	6,868	181,298
1977	671	67,023	8,401	419,107	13,300	508,502
1978	2,682	41,574	55,578	224,715	16,545	341,094
1979	2,720	66,373	28,083	648,212	35,507	780,895
1980	580	107,418	16,580	45,560	26,269	196,407
1981	1,565	182,905	22,611	435,268	34,571	676,920
1982	1,648	193,360	31,671	25,484	18,615	270,778
1983	567	48,942	62,430	208,167	20,144	340,250
1984	892	91,653	41,359	343,255	70,258	547,417
1985	1,690	264,987	91,220	584,946	69,661	1,012,504
1986	1,704	145,709	194,912	308,484	82,289	733,098
Average 1960 to 1986	1,441	82,161	47,130	278,901	41,622	451,254
1987 PRELIMINARY	836	136,427	34,534	243,482	42,025	457,304

Table 11. Southeast Alaska annual Stikine River (District 8) commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	sockeye	Coho	Pink	Chum	Total
1960	7,824	13,639	27,480	5,584	8,189	62,726
1961	7,243	21,557	36,858	52,295	12,535	130,488
1962	7,491	27,514	38,399	36,375	20,306	130,085
1963	1,431	9,979	11,612	10,198	11,024	44,244
1964	2,911	20,299	29,388	114,555	10,771	177,924
1965	3,106	21,419	8,301	4,729	2,480	40,035
1966	4,516	36,710	16,493	61,908	17,730	137,357
1967	6,372	29,226	6,747	4,713	5,955	53,013
1968	4,604	14,594	36,407	91,028	14,537	161,170
1969	5,023	19,210	5,823	11,884	2,312	44,252
1970	3,207	15,120	18,403	20,523	12,305	69,558
1971	3,717	18,143	14,876	21,806	4,665	63,207
1972	9,332	51,734	38,520	17,153	17,363	134,102
1973	9,254	21,387	5,837	6,585	6,680	49,743
1974	8,199	2,428	16,021	4,188	2,107	32,943
1975	1,534	0	0	0	1	1,535
1976	1,123	18	6,056	722	124	8,043
1977	1,443	48,374	14,405	16,253	4,233	84,708
1978	531	56	32,650	1,157	1,001	35,395
1979	91	2,158	234	13,478	1,064	17,025
1980	631	14,053	2,946	7,224	6,910	31,764
1981	283	8,833	1,403	1,466	3,594	15,579
1982	1,033	6,886	19,971	16,988	741	45,619
1983	47	178	15,484	4,171	675	20,555
1984	14	1,290	5,141	4,960	1,892	13,297
1985	20	1,060	1,926	5,325	1,892	10,223
1986	102	4,185	7,439	4,901	5,928	22,555
Average 1960 to 1986	3,373	15,187	15,512	20,006	6,556	60,635
1987 PRELIMINARY	149	1,620	1,015	3,331	949	7,0064

Table 12. Southeast Alaska annual Taku/Snettisham (District 11) commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	8,810	42,819	22,374	33,155	41,852	149,010
1961	7,434	45,981	15,486	41,455	24,433	134,789
1962	5,931	36,745	15,661	17,280	20,635	96,252
1963	2,652	24,119	10,855	21,692	20,114	79,432
1964	2,509	34,140	29,315	26,593	12,853	105,410
1965	4,170	27,569	32,667	2,768	11,533	78,707
1966	4,829	33,925	26,065	23,833	35,133	123,785
1967	5,417	17,735	40,391	12,372	22,834	98,749
1968	4,904	19,501	39,103	67,365	21,890	152,763
1969	6,986	41,169	10,802	73,927	15,049	147,933
1970	3,357	50,922	44,960	197,017	110,390	406,646
1971	6,958	66,181	41,830	31,484	91,145	237,598
1972	10,955	80,404	49,780	144,339	147,957	433,435
1973	9,799	85,317	35,453	58,186	109,245	298,000
1974	2,905	38,676	38,661	57,732	86,687	224,661
1975	2,182	32,513	1,185	9,567	2,678	48,125
1976	1,757	61,749	41,729	14,962	81,803	202,000
1977	1,068	70,097	54,917	88,578	61,102	275,762
1978	1,926	55,398	31,944	51,385	36,254	176,907
1979	3,702	122,376	16,192	152,410	61,200	355,880
1980	2,422	123,117	41,515	295,553	192,750	655,357
1981	1,720	49,765	26,803	255,029	76,092	409,409
1982	3,057	83,479	29,072	109,385	37,310	262,303
1983	888	31,627	21,443	66,080	15,188	135,226
1984	1,773	77,233	33,836	145,949	86,741	345,532
1985	2,651	88,192	55,597	311,248	106,720	564,408
1986	2,606	73,061	30,512	16,568	58,792	181,539
Average 1960 to 1986	4,199	56,067	31,043	86,145	58,829	236,282
1987 PRELIMINARY	2,060	74,525	35,157	357,708	121,630	591,080

Table 13. Southeast Alaska annual Lynn Canal (District 15) commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	sockeye	Coho	Pink	Chum	Total
1960	1,453	59,604	10,964	1,760	58,562	132,343
1961	683	67,860	18,256	25,503	127,350	239,652
1962	806	103,696	24,436	2,041	115,036	246,015
1963	276	57,518	35,096	13,689	102,368	208,947
1964	771	68,200	33,347	6,602	103,047	211,967
1965	1,735	89,046	39,081	4,222	206,562	340,646
1966	868	108,087	40,794	6,008	235,172	390,929
1967	1,171	66,621	66,109	14,677	165,874	314,452
1968	1,489	80,004	43,262	7,803	169,615	302,173
1969	1,618	127,869	35,027	8,996	160,667	334,177
1970	1,771	79,115	48,643	19,839	271,415	420,783
1971	2,929	75,147	49,182	6,156	271,160	404,574
1972	986	81,010	57,971	14,520	349,681	504,168
1973	2,479	193,701	26,153	14,551	279,331	516,215
1974	1,672	152,086	64,809	6,398	443,970	668,935
1975	816	18,338	57,543	3,255	238,782	318,734
1976	2,142	127,089	71,984	4,429	375,033	580,677
1977	1,214	160,079	91,426	130,860	201,634	585,213
1978	536	108,480	53,165	3,811	118,428	284,420
1979	3,572	192,974	27,015	28,763	242,832	495,156
1980	440	53,085	28,845	81,832	168,870	333,072
1981	1,300	93,410	44,546	137,676	116,882	393,814
1982	5,945	273,538	72,247	69,128	306,350	727,208
1983	2,119	369,311	69,223	157,781	340,622	939,056
1984	6,207	334,566	68,210	76,499	643,678	1,129,160
1985	3,260	304,005	98,355	239,080	699,024	1,343,724
1986	2,772	289,889	82,121	38,115	381,382	794,279
Average 1960 to 1986	1,890	138,308	50,289	41,629	255,308	487,426
1987 PRELIMINARY	3,223	415,815	53,635	165,941	393,120	1,031,734

Table 14. Estimated harvest of Alaskan hatchery reared salmon in the Southeast Alaska region general common property, terminal common property, and private hatchery cost recovery fisheries, 1987. (ADF&G 1/10/88)

Fishery	----- Numbers of Salmon -----					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Terminal Common Property Fisheries						
Total Public Facilities	3,643	0	9,957	0	455,210	468,810
Hidden Falls Seine	0	0	0	0	410,442	410,442
Klawock Inlet Seine	0	0	7,340	0	44,768	52,108
Crystal Lake Gillnet	69	0	2,617	0	0	2,686
Crystal Lake						
Experimental Troll	176	0	0	0	0	176
Port Walter						
Experimental Troll	3,398	0	0	0	0	3,398
Total Private Facilities	1,234	0	3,054	0	103,649	107,937
Neets Bay Seine	64	0	1,591	0	72,715	74,370
Neets Bay Gillnet	292	0	1,463	0	30,934	32,689
Neets Bay Terminal Troll	5	0	0	0	0	5
Neets Bay						
Experimental Troll	855	0	0	0	0	855
Medvejie Creek						
Experimental Troll	18	0	0	0	0	18
Total	4,877	0	13,011	0	558,859	576,747

--continued--

Table 14. Estimated harvest of Alaskan hatchery reared salmon in the Southeast Alaska region general common property, terminal common property, and private hatchery cost recovery fisheries, 1987. (ADF&G 1/10/88) (Continued)

Fishery	- - - - - Numbers of Salmon - - - - -					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Terminal Facility Cost Recovery						
Neets Bay	2,255	0	35,790	0	417,397	455,442
Nakat Inlet	0	0	1,184	0	8,004	9,188
Tangas Harbor	0	0	1,779	3,725	3,268	8,772
Whitman Lake	0	0	668	0	0	668
Burnette Inlet	0	0	0	136,820	8,632	145,452
Earl Wess Cove	0	0	3,390	0	0	3,390
Mist Cove	0	0	9,221	0	0	9,221
Port Armstrong	0	0	0	242,770	0	242,770
Gunnuk Creek	0	0	0	15,592	0	15,592
Port Snettisham	102	0	0	0	3,506	3,608
Cowee Creek	0	0	0	3,591	0	3,591
Sheep Creek	0	0	0	509,999	0	509,999
Hidden Falls	4	0	0	0	29,091	29,095
Sheldon Jackson	0	0	0	47,357	2,056	49,413
Silver Bay	0	0	0	0	36,678	36,678
Deep Inlet	0	0	0	0	84,661	84,661
Suprise Lake	0	0	100	0	0	100
Burro Creek	0	0	0	206	0	206
<b>Total</b>	<b>2,361</b>	<b>0</b>	<b>52,132</b>	<b>960,060</b>	<b>593,293</b>	<b>1,607,846</b>

--continued--

Table 14. Estimated harvest of Alaskan hatchery reared salmon in the Southeast Alaska region general common property, terminal common property, and private hatchery cost recovery fisheries, 1987. (ADF&G 1/10/88) (Continued)

Fishery	- - - - - Numbers of Salmon - - - - -					Total
	Chinook	Sockeye	Coho	Pink	Chum	
General Common Property Fisheries						
Seine	306	0	8,078	0	55,305	63,689
Drift Gillnet	1,955	0	20,532	0	87,144	109,631
Troll	16,608	0	87,107	0	495	104,210
Set Gillnet	4	0	0	0	0	4
Total	18,873	0	115,717	0	142,944	277,534
Total Hatchery	26,111	0	180,860	960,060	1,295,096	2,462,127

Note: The terminal area harvest is based on landings reported on fish tickets and includes only those species produced at each facility respectively. They do not account for the incidental harvest of natural stocks or stocks from other hatcheries within each terminal area. The landings for the general common property fisheries are based on expansion of coded wire tag recoveries and accounts only for those hatchery produced from Alaskan hatcheries where releases were tagged.

Table 15. Canadian commercial fisheries salmon catches in the Stikine River, 1972-1987. (ADF&G 1/10/88)

Year	- - - - - Numbers of salmon - - - - -					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1972	0	230	0	0	0	230
1973	200	3,678	0	0	0	3,878
1974	0	3,500	0	0	0	3,500
1975	1,202	2,252	55	0	0	3,509
1976	1,160	3,644	25	0	0	4,829
1977	162	6,310	32	0	0	6,504
1978	500	5,000	0	0	0	5,500
1979	1,625	13,534	10,720	1,994	424	28,297
1980	2,231	20,919	6,669	756	771	31,346
1981	1,558	27,624	2,675	3,857	1,128	36,346
1982	2,687	20,540	15,944	1,842	722	41,435
1983	2,063	21,120	6,173	1,120	304	30,780
1984	702	5,327	1	62	0	6,092
1985	1,296	25,464	2,175	2,356	536	31,827
1986	2,911	17,434	2,280	108	307	23,040
Average 1972-1986	1,200	11,772	3,117	806	279	17,174
1987 Preliminary	2,645	9,615	5,731	646	459	19,096

Table 16. Canadian commercial fisheries salmon catches in the Taku River, 1978-1987. (ADF&G 1/10/88)

- - - - - Numbers of salmon - - - - -						
Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1979	97	13,578	6,006	13,661	15,474	48,816
1980	225	22,602	6,405	26,821	18,516	74,569
1981	159	10,922	3,607	10,771	5,591	31,050
1982	54	3,144	51	202	3	3,454
1983	556	17,056	8,390	1,874	1,760	29,636
1984	515	27,242	5,357	6,964	2,492	42,570
1985	350	14,244	1,770	3,373	136	19,873
1986	352	14,739	1,783	58	110	17,042
Average 1979-1986	289	15,441	4,171	7,966	5,510	33,376
1987 PRELIMINARY	233	13,554	5,599	6,503	2,270	28,159

Table 17. Southeast Alaska region annual commercial trap salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	1,753	2,387	45,409	3,796	53,345
1961	0	9,949	5,740	157,046	8,648	181,383
1962	0	7,489	3,975	579,917	6,911	598,292
1963	0	4,166	1,646	86,836	2,204	94,852
1964	0	11,029	6,796	351,493	11,597	380,915
1965	0	3,345	2,256	33,626	246	39,473
1966	0	44,815	15,975	576,020	7,065	643,875
1967	0	3,144	368	6,925	321	10,758
1968	122	3,972	1,663	242,024	3,184	250,965
1969	0	970	400	29,238	258	30,866
1970	0	2,926	2,499	101,883	1,387	108,695
1971	0	0	0	0	0	0
1972	135	8,139	4,688	415,242	4,518	432,722
1973	25	1,118	324	41,692	226	43,385
1974	15	2,615	1,006	109,053	375	113,064
1975	3	621	562	108,217	1,108	110,511
1976	45	5,010	1,223	435,801	2,838	444,917
1977	51	14,309	1,374	293,504	2,617	311,855
1978	135	6,071	4,371	702,157	1,344	714,078
1979	250	15,478	3,684	189,580	1,260	210,252
1980	139	8,095	2,005	449,292	1,013	460,544
1981	86	11,467	1,647	194,206	1,199	208,605
1982	553	24,412	4,576	517,637	898	548,076
1983	194	4,854	6,270	802,700	1,776	815,794
1984	182	16,474	5,595	649,458	6,284	677,993
1985	366	10,903	3,540	522,679	1,563	539,051
1986	0	3,068	1,410	458,860	1,788	465,126
Average 1960 to 1986	85	8,377	3,184	300,018	2,756	314,422
1987 PRELIMINARY	0	6,098	734	83,087	937	90,856

Table 18. Annette Island annual commercial purse seine salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	1	1,430	9,984	205,834	3,665	220,914
1978	26	2,041	2,113	499,675	7,899	511,754
1979	0	311	239	66,050	3,511	70,111
1980	3	1,853	912	464,336	17,272	484,376
1981	4	1,316	5,740	240,523	4,735	252,318
1982	18	2,476	3,079	419,195	13,670	438,438
1983	3	6,148	3,341	1,001,650	5,017	1,016,159
1984	15	9,500	14,703	502,474	27,046	553,738
1985	47	6,073	3,911	488,423	9,128	507,582
1986	19	5,040	20,285	851,282	13,802	890,428
Average 1977 to 1986	14	3,619	6,431	473,944	10,575	494,582
1987 PRELIMINARY	5	618	9,204	28,584	17,991	56,402

Table 19. Southeast Alaska annual Annette Island commercial drift gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1975	2	80	476	10,850	1,885	13,293
1976	9	682	1,299	14,390	3,175	19,555
1977	22	12,059	768	75,739	8,926	97,514
1978	36	15,507	2,187	33,612	16,362	67,704
1979	89	15,556	1,726	52,604	11,666	81,641
1980	38	15,986	2,728	191,463	38,763	248,978
1981	211	25,699	5,152	212,316	24,226	267,604
1982	569	42,819	6,660	162,537	27,376	239,961
1983	170	21,922	7,858	212,034	17,400	259,384
1984	39	23,665	8,201	404,010	71,458	507,373
1985	292	50,881	23,217	406,164	75,597	556,151
1986	98	27,920	52,839	512,270	96,755	689,882
Average 1975 to 1986	131	21,065	9,426	190,666	32,799	254,087
1987 PRELIMINARY	527	47,412	24,033	223,285	86,748	382,005

Table 20. Southeast Alaska reported subsistence salmon harvest by species and number of permits issued, 1961-1987. (ADF&G 1/10/88)

Year	Number of Permits	----- Numbers of salmon -----					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1961	554						14,826
1962	309						7,067
1963	696						6,514
1964	642						9,525
1965	665						10,303
1966	2,372						15,384
1967	632	6	7238	489	482	4059	12,274
1968	815	62	8382	624	1328	4260	14,656
1969	774	9	6305	70	1771	3180	11,335
1970	788	13	10751	0	2246	2415	15,425
1971	1,067	0	9598	0	3648	6123	19,369
1972	936	10	9098	0	1253	3970	14,331
1973	1,031	6	7,584	63	2,675	6,799	17,127
1974	1,042	6	7,822	61	2,690	6,819	17,398
1975	944	0	9,454	96	11,428	5,277	26,255
1976	1,166	0	9,625	9	1,590	3,594	14,818
1977	888	0	6,484	68	1,963	3,007	11,522
1978	1,490	0	10,662	57	4,832	3,150	18,701
1979	1,611	0	17,078	60	5,585	4,001	26,724
1980	3,612	40	21,586	10	1,439	3,741	26,816
1981	2,751	1	20,268	129	6,065	4,512	30,975
1982	2,956	8	32,117	99	4,239	3,717	40,180
1983	2,763	38	15,877	211	1,859	2,559	20,544
1984	2,996	55	19,204	721	2,560	2,502	25,042
1985	3,199	17	25,060	363	2,074	2,815	30,329
1986	3,489	28	20,662	277	912	2,722	24,601
<hr/>							
Average							
1961-1986	1,546	15	13,743	170	3,032	3,961	18,540
1987							
Preliminary	2,810	34	29,041	113	1,534	3,609	34,331

Table 21. Yakutat area reported subsistence salmon harvest by species and number of permits issued, 1975-1987. (ADF&G 1/10/88)

Year	Number of Permits	- - - - - Numbers of salmon - - - - -					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1975	18	27	510	40	0	0	577
1976	35	83	1,060	55	0	0	1,198
1977	45	92	1,242	781	0	0	2,115
1978	127	59	870	912	0	0	1,841
1979	73	238	525	720	0	0	1,483
1980	68	284	961	1,507	0	0	2,227
1981	88	167	952	1,701	0	0	2,820
1982	71	198	1,645	2,180	0	0	4,023
1983	N/A	188	1,175	360	0	0	1,723
1984	88	233	890	572	0	0	1,695
1985	46	230	1,003	59	0	0	1,292
1986	170	301	2,357	586	0	0	3,244
<b>Average</b> 1975-1986	60	161	893	721	0	0	1,775
1987 PRELIMINARY	161	71	1,690	44	0	0	1,805

**REPORT TO THE BOARD OF FISHERIES  
1987 SOUTHEAST ALASKA SALMON TROLL FISHERY**

**By  
Region I Staff**

**Southeast Region  
Alaska Department of Fish and Game  
Division of Commercial Fisheries**

**February 1988**

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## ABSTRACT

In 1987, the Southeast Alaska troll fishery harvested an estimated 242,300 chinook, 1,040,000 coho, 410,000 pink, 8,800 chum, and 7,200 sockeye salmon. The troll harvest of chinook in 1987 was 2.6% greater than the 1986 troll chinook harvest of 236,000. The troll coho harvest of 1,040,000 was 50% less than the 1986 harvest. Participation in the 1987 troll fishery was similar to the 1986 fishery with 762 hand troll and 829 power troll permits reporting landings.

The 1987 troll chinook fishery was managed in accordance with the following Pacific Salmon Commission provisions:

1. An all-gear base catch ceiling of 263,000 chinook salmon.
2. An Alaska hatchery add-on to be calculated inseason on the basis of coded-wire tag sampling.
3. A 7 1/2 percent management range, calculated in numbers of fish, for cumulative deviations from the base catch ceiling beginning in 1987. This is equivalent to +/- 19,700 chinook relative to the 263,000 base catch ceiling.

Preliminary data indicates the 1987 all gear commercial and recreational catch was 279,700 chinook salmon including 16,000 Alaska hatchery add-on. This figure includes 242,300 troll catch, 15,400 incidental net catch, and 22,000 recreational fishery harvest. The all gear base catch, excluding hatchery add-on, was 263,700 chinook salmon. This was 700 chinook or about 0.2% above the base catch ceiling.

Approximately 28,400 chinook salmon were harvested during the winter troll fishery October 1 through April 14. Experimental fisheries conducted near several hatcheries in June, harvested 4,400 chinook. Approximately 209,500 chinook salmon were harvested during the main summer troll chinook season June 20 through July 12.

The 1987 summer troll chinook season was limited to 23 days (June 20-July 12) or 18 days less than the 1986 season. Chinook catch rates during the 1987 summer season were 9,100 chinook per fleet day, an increase of 50% over the 1986 rate of 6,000 per fleet day.

Preliminary data indicates that 1987 chinook escapements to Southeast Alaska and transboundary index systems were generally similar to 1986. Escapements increased in four of the eleven index systems and decreased in seven systems. However, 1987 escapements varied by less than 10 percent from 1986 levels in six of the eleven systems. Escapements to southern and central systems continued to show the greatest improvements relative to the base period with northern systems generally showing less improvement.

Coho salmon returns to Southeast Alaska in 1987 were weaker than returns in recent years. Both natural and hatchery returns were weaker than anticipated. The 1987 troll fishery harvest of 1 million coho was approximately half of the 1986 troll harvest of 2.1 million, and about 62% of the 1985 troll coho harvest of 1.6 million. By comparison the 1971-80 average troll coho catch was 654,000 while the 1980-85 average troll coho catch was 1.1 million coho.

Coho salmon escapements in 1987 again showed substantial geographical variability with indicators for different stock groups ranging from poor to above the recent average.

## INTRODUCTION

The commercial troll fishery in Southeast Alaska occurs in waters under both state and Federal jurisdictions, east of the longitude of Cape Suckling (Figure 1). All other waters of Alaska, including the Federal Exclusive Economic Zone (EEZ) west of Cape Suckling are closed to commercial trolling.

The commercial troll fishery harvests primarily chinook and coho salmon stocks. Other species of salmon harvested by trollers are normally considered incidental to the taking of the two primary target species although targeting and landing of pink salmon has increased in recent years. The troll fishery normally harvests about 90% of the chinook salmon and 50-75% of the coho salmon taken in Southeast Alaska commercial fisheries.

Based on preliminary catch reports, the 1987 season chinook salmon troll catch was approximately 242,300 fish calculated from October 1, 1986 through September 30, 1987. The troll harvest of coho salmon was 1,040,000 fish. Catches of other species by troll gear in 1987 included approximately 410,000 pink, 8,800 chum, and 7,200 sockeye salmon. Comparative annual salmon catches by the troll fishery since 1960 are shown in Table 1.

In 1987 approximately 10 percent (25,200 fish) of the chinook catch and 8 percent (85,600 fish) of the coho catch by the troll fishery was reported taken in that portion of the Federal Exclusive Economic Zone (EEZ) lying beyond three miles seaward of the surfline (as defined by state commercial fishing regulations).

In 1987, state and federal private hatcheries contributed approximately 16,600 chinook and 87,000 coho to the commercial troll fisheries.

## Salmon Stocks

Native chinook and coho salmon stocks occur throughout Southeast Alaska. Chinook salmon stocks spawn primarily in the large mainland rivers and their tributaries, the most important of which are the Asek, Taku, Stikine, and the Behm Canal rivers. In total, 34 rivers in Southeast Alaska are known to produce runs of chinook salmon. The three major systems, the Asek, Taku and Stikine rivers, are also "transboundary" rivers, originating in Canada and flowing to the sea through Southeast Alaska. Shared ownership and coordinated management of the transboundary stocks are addressed in the U.S./Canada Pacific Salmon Treaty.

Southeast Alaska chinook stocks are nearly all "spring type" entering spawning streams during spring and early summer months. After emergence the following spring, the majority of fry remain in freshwater rearing areas for one year, migrating seaward the next spring. For most Southeast Alaska origin chinook, ocean residency may last 2, 3 or 4 years. Several age classes of mature spawners and immature chinook salmon are harvested by trollers during the fishing season.

Current information indicates the majority of chinook salmon harvested in the Southeast Alaska troll fishery are produced from spawning streams and hatcheries in Canada and the Pacific Northwest. This information is based on scale pattern analysis, coded wire tagging studies and general productivity considerations. Production from Alaska stocks is expected to increase as natural stocks rebuild and hatchery production increases.

Chinook salmon catches in Southeast Alaska are depressed from historical production levels (Figure 2). Annual commercial catches during the past ten years have averaged about 300,000 fish. These harvests are considerably lower than levels produced between 1920 and 1950 when catches averaged 540,000 fish. The decline in harvest has been the result of several factors including (1) depressed natural chinook stocks both in Southeast Alaska and coastwide due to overfishing, (2) loss of freshwater

spawning and rearing habitat, particularly in the Pacific Northwest where construction of dams on the Columbia River has drastically reduced salmon production and (3) in more recent years, regulatory restriction of harvest designed to rebuild natural spawning stocks. Since 1981, the commercial harvest of chinook has been managed by maintaining the catch at guideline harvest levels established by the Board of Fisheries and the North Pacific Fisheries Management Council; commercial catches during the period have averaged 274,000. Catch reductions have been implemented both as part of a 15-year rebuilding program for Southeast Alaska chinook stocks and as part of coastwide conservation actions taken for depressed non-Alaskan chinook stocks which contribute to the Southeast Alaska fisheries.

Southeast Alaska hatchery chinook production has increased significantly in recent years. Annual contributions to common property fisheries have increased from several thousand prior to 1985 to approximately 23,000 in 1987. Preseason projections for 1988 indicate an expected contribution of about 36,000 chinook to common property, mixed stock fisheries.

Coho salmon occur in most of the 2,000 streams in Southeast Alaska which host anadromous fish and spawn during the fall and early winter months. Coho harvested by trollers are primarily of Alaskan origin, are mostly of a single age class (4 year fish), and are caught in the year of spawning.

Commercial coho salmon catches have increased substantially since 1982 averaging about 2 million fish for the last three years compared to about 1 million during the 1970's. This is thought to be primarily the result of the unusually mild winters experienced in recent years. However, the average catches of about one million prior to 1982 were considerably lower than some historical periods such as the 1930's when annual harvests averaged about 1.6 million fish (Figure 3). (The highest decade average catch of 2 million during the 1940's was followed by a drastic decline in catches for the next two decades suggesting that overfishing had occurred and that the highest level of catches was probably not sustainable.) Prior to 1980 there was considerable concern that overharvesting of coho was occurring and as a result more conservative management was implemented

beginning in 1980. Larger returns since 1982 may have temporarily alleviated any overharvesting which was occurring - at least for most stocks. However, there is still concern that with existing fishing patterns, overharvest may occur when coho runs return to more normal or below average levels of abundance.

Hatchery production of coho salmon in Southeast Alaska has increased substantially in recent years. In 1986 Alaska hatcheries contributed approximately 400,000 coho to the commercial catch of all gear types. In 1987 however, hatchery produced coho declined and contributed about 129,000 fish to commercial fisheries.

### Fishing Effort

The Alaska Commercial Fisheries Entry Commission currently issues 940 permanent power troll permits and 2,150 hand troll permits. In 1987, preliminary estimates indicate that 829 power troll gear units and 762 hand troll gear units were actually fished. Hand troll gear permit holders accounted for about 12 percent of the 1987 chinook troll catch and about 18 percent of the coho troll catch.

The number of power troll permits fished annually since 1975 has remained relatively constant, ranging between 736 and 878 permits. However, the number of hand troll permits fished annually has fluctuated substantially and has declined significantly in recent years. (The hand troll fishery was not placed under limited entry until 1980). From approximately 1,000 in 1975, the number of hand troll permits actively fished increased to a high of 2,549 in 1978 and then declined to less than 900 in 1984-1987, although approximately 2,150 permits have been issued. The large number of hand troll permits fished during the late 1970's was thought to be partly the result of persons participating in the fishery to allow them to qualify for permits when the hand troll fishery was eventually placed under limited entry.

## Current Fishery Management Problems

In recent years several changes have occurred in the troll fishery that have affected management decisions and consequently the conduct of the fishery. As mentioned above, chinook production from Southeast Alaska river systems has been depressed since the 1950's. In spite of restriction of terminal area net fisheries, recreational fisheries bag limits, and inside troll fishery restrictions through the late 1970's, escapements did not improve substantially. Beginning in 1981 the Board of Fisheries adopted a fifteen year rebuilding program for Southeast Alaska's chinook salmon stocks. This has resulted in spring closures of the troll fishery when the availability of mature Alaska spawning fish is high. These closures were complimented by accompanying reductions in the overall level of harvest through use of catch ceilings so that savings made early in the season would not be merely offset by harvest of immature fish later in the season. Since 1981, the entire troll fishery has been closed from April 15 through May 14 with additional spring closures being implemented since 1982 in selected terminal migration corridors to provide extra protection as required for certain local stocks. As a result of these restrictions, escapements to rivers in Southeast Alaska have generally improved.

Second, escapements for many non-Alaskan chinook systems that contribute to the Southeast Alaska troll fisheries are also currently below optimum levels. The exact contribution of these depressed natural stocks to the Alaska troll fishery is not known but it is significant. In cooperation with coastwide management of these stocks, and under terms of the U.S./-Canada Salmon Treaty, the Board of Fisheries again directed the Commercial Fisheries staff to manage the troll fishery to achieve a reduced chinook harvest level in 1987. The base target harvest ceiling for all commercial and recreational fisheries was 263,000 chinook salmon. Harvest of new Alaska hatchery production estimated inseason, was to be allowed in addition to the base catch ceiling.

Third, increased troll fishing effort in outer coastal and offshore fishing areas is increasing the mixed stock nature of the coho salmon fishery. This has resulted in more of the harvest occurring early in the season before run strength can be fully assessed and effective in-season management measures implemented. Additionally, the Board has recognized that the increase in landings from the coastal and offshore fishing areas is reducing the allocation of coho salmon to inside user groups. To address this problem, the Board has provided for implementation of a 10-day regionwide troll closure, if necessary, to meet conservation and catch distribution objectives. A regionwide 10-day closure has been implemented for the troll fishery each year since 1980. Additional troll closures are to be implemented as required for coho conservation.

#### 1987 CHINOOK SALMON FISHERY

Preliminary figures indicate that trollers took 242,300 chinook, (winter plus summer), net gear took approximately 15,400 chinook and recreational fisheries took an estimated 22,000 chinook during the 1987 season for a total catch of 279,700 (Table 2). This compares to the all-gear target harvest of 279,000 chinook consisting of a base catch ceiling of 263,000 plus a 16,000 fish allowance for new Alaska hatchery production. The total hatchery contribution to the all gear fisheries was about 23,300 chinook (Table 3). A reduction of 5,000 fish for old production and about 2,300 fish for possible estimation error yielded a hatchery add on of 16,000 fish, based on computational procedures established by the Pacific Salmon Commission.

The 1987 troll catch of 242,300 was 2.6 percent greater than the 1986 catch of 236,000 chinook. Compared to the 1970-80 average troll catch of 300,000 chinook salmon, the 1987 catch was reduced by about 19.2 percent or 58,000 fish. Comparative troll and total all gear commercial and recreational chinook salmon catches since 1975 shown graphically in Figure 4 and in tabular form for 1965-87 in Table 4.

## Troll Fishery Winter Season

The 1987 winter season extended from October 1, 1986 through April 14, 1987. Beginning and ending dates for the winter troll season have been the same since 1981. As in previous years, fishing during the 1986/87 winter season was limited to those areas of Southeast Alaska lying inside (east of) the surfline, portions of District 16 north of Cape Spencer, and the waters of Yakutat Bay. All outer coastal areas including the EEZ west of the surfline were closed during the winter fishery.

As shown in Table 5 approximately 28,400 chinook were harvested by the troll fishery during the 1986/87 winter season. This catch was 5,400 or 23 percent above the catch of 23,000 taken in both the 1985 and 1986 winter fishery, but 14 percent below the catch of 33,000 chinook taken in 1984 (Figure 5). Contributions to the winter troll fishery from Alaska hatcheries has increased in recent years. In 1987 approximately 3,500 chinook, or 12 percent of the winter troll chinook catch, originated from Alaska hatcheries.

## Troll Fishery Summer Season

The pre-season management plan for the 1987 troll fishing season included a summer season troll target harvest of 193,000 chinook salmon. This target was determined by subtracting a winter catch of 28,400, a pre-season estimated net fisheries catch of 20,000, and a recreational fishery pre-season projection of 22,000 from the established all-gear base catch ceiling of 263,000 chinook salmon. (These pre-season projections did not include projected catches of new Alaska hatchery production which were to be estimated inseason from coded wire tag returns.) The number of chinook taken by the troll fishery that were estimated to be new hatchery production was 11,700 fish. This number added to the base summer target

of 193,000 gave an allowable catch of 204,700 chinook. The actual summer catch was 209,700 chinook which was 5,000 chinook or about 2.4% above the target catch. This overage was compensated for by smaller than expected recreational and incidental net catches of chinook salmon.

### In Season Management

The 1987 general summer troll chinook season opened June 20 and continued for 23 days through July 12. In response to high chinook catch rates, five outer coastal areas of high chinook abundance were closed from July 4 through July 12 in an effort to slow the chinook catch rate. This was intended to extend the chinook fishery, and reduce the duration of chinook non-retention occurring after the chinook catch ceiling was reached and the troll fishery remained open to other species. In spite of the area closures, high chinook catch rates continued and the chinook fishery was closed beginning July 13. Chinook non-retention was monitored by onboard observers during July 13 - August 2 (21 days) and August 3 - September 20 (39 days) when the troll fishery remained open for other species. Troll harvest of non-chinook species during the general summer season included: 1.04 million cohos, 487,000 pinks, 13,000 chums and 10,000 sockeye (Table 1).

The 23-day summer season in 1987 was the shortest on record, and was nearly 11 days shorter than the previous shortest summer season of 33.6 days in 1985 (Figure 6). Chinook catch rates during the 1987 23-day summer chinook season increased to 9,100 chinook per fleet day, or approximately 50 percent above the 6,000 rate which occurred during a similar structured summer season in 1986. This continued the trend of increasing chinook catch rates during the past several summer seasons (Figure 7 and Table 6).

Alaska hatcheries contributed an estimated 11,700 chinook, or about 5.6 percent of the 1987 summer troll chinook catch (Table 3).

## Experimental Terminal Hatchery Area Fisheries

In 1987, experimental troll fisheries were conducted several days a week during the first three weeks of June in areas adjacent to several hatcheries. These fisheries, conducted near the Crystal Lake, Little Port Walter, Neets Bay and Medvejie hatcheries, were implemented to determine the feasibility of increasing harvest of mature chinook returning to local hatcheries. About 70 boats participated in these fisheries, harvesting 4,447 chinook salmon of which 1,414 chinook or 32 percent were Alaska hatchery fish (Table 7).

## Natural Chinook Salmon Escapements

Natural chinook salmon escapements to Southeast Alaska and transboundary rivers in 1987 were generally similar to 1986. The most notable exception was in the Stikine River where the 1987 escapement was more than double the 1986 level, and the third largest escapement recorded. The current escapement goal for all Southeast Alaska and transboundary systems is approximately 64,000 chinook salmon. Preliminary information on 1987 chinook escapements to 11 indicator systems yielded an estimated total escapement of 50,700 chinook salmon, about 79 percent of the goal, for all Southeast Alaska and transboundary rivers (Table 8). This was 4,600 chinook or about 10 percent above the estimated 1986 total escapement of 46,100. Compared to the 1975-80 base period average of 26,400, the 1987 escapement represented an increase of 92 percent or 24,300 chinook salmon (Table 9, Figure 8).

Consistent with recent years, escapements to southern and central systems continued to show the greatest improvements, while northern systems generally showed less improvement relative to the 1975-80 base period.

Results of the rebuilding program since 1981 indicate the 15-year rebuilding schedule should be achieved for most indicator systems. However, as expected, rebuilding rates have not been uniform between years or between individual systems. Given the diversity of these runs, fluctuations in brood year survivals, and the nature of mixed stock fisheries through which they pass, substantial variations in annual escapements and system recovery rates are expected to continue.

A review of chinook salmon escapement goals for Southeast Alaska and transboundary rivers is currently being conducted. This review will take into account data obtained since 1981 as well as historical data.

### 1987 COHO SALMON FISHERY

The troll coho salmon season normally occurs from June 15 through September 20 although the major portion of the catch generally occurs from mid-July through early September. Troll coho catches generally peak near mid-August while catches in inside gillnet fisheries peak approximately one month later near mid-September; migrations into spawning streams peak about mid-October (Figure 9). During the past several years, however, a higher proportion of the troll catch has occurred earlier in the season (Figure 10). While the recent early chinook closures, and subsequent increases in coho targeting, have contributed to this pattern, it also appears that other factors such as run timing or effort shift may also have contributed.

Southeast Alaska coho salmon fisheries are managed on assessed in-season run strength and are regulated to achieve conservation objectives and allocation policies established by the Board of fisheries. The coho fishery is not managed under harvest guidelines as is the chinook fishery.

Existing Board regulations specify a 10-day closure during the coho season, if necessary, to move more coho into inshore and terminal areas. The primary purpose of this closure is to allow coho to segregate into more distinct stock units to facilitate run strength assessment, ensure adequate escapements and to better maintain the historical allocation balance to inside fisheries. A trend in recent years for more of the troll effort to be expended in outer coastal areas has resulted in more of the harvest being taken by outside fisheries with a resulting decrease in harvest opportunities by inside fisheries. The 10-day closure has been implemented each year since 1980.

The 1987 coho salmon returns to Southeast Alaska were weaker than returns in recent years. Both natural and hatchery returns were weaker than anticipated. The troll fishery harvest of 1 million was approximately half of the 1986 troll harvest of 2.1 million and about 62% of the 1985 troll coho harvest of 1.6 million. By comparison the 1971-80 average troll coho catch was 654,000 while the 1980-85 average troll coho catch was 1.1 million coho.

Opening of the 1987 troll coho season was delayed from the normal June 15 opening date until June 20 to correspond to the opening of chinook summer season. Normally less than 1% of the seasonal troll catch of coho occurs prior to June 20. The fishery was open for coho June 20 through September 20 except for one 10-day closed period August 3 - 12. In addition, several areas along the coast were closed to trolling beginning July 4 to reduce the incidental hook and release of chinook.

Following the chinook closure at midnight July 12, trollers were required to off-load any chinook aboard before continuing to fish for cohos and other species. Approximately 86 percent of the season coho catch occurred after the chinook closure (Figure 11 and Table 10).

From the beginning of the summer season on June 20, troll landings of coho appeared to be substantially below recent average levels for most outside

areas. Following the midnight July 12 closure for chinook salmon, the Department closely monitored coho catch rates to assess run strength. By late July, inseason catch rate information continued to indicate the coho return was below recent average levels. A decision was made at that point to begin the ten-day closure one week earlier on August 3 instead of August 12, the tentative date used for preseason planning. This earlier closure was intended to provide more flexibility for assessing run strength and implementing additional coho conservation measures if needed later in the season.

The troll fishery was closed to all fishing for ten days, August 3-12, and reopened August 13 for all species except chinook. This closure was implemented to ensure adequate spawning of coho salmon. Post season fish ticket data indicates the troll coho catch prior to the closure was about 652,000, or about 63 percent of the season total.

Following the ten-day closure, coho catch rates in inside troll, net and recreational fisheries increased, indicating improved movement of coho to inside areas. Trolling remained open to the taking of coho and other species, except chinook salmon, through the normal September 20 closing date. However, select areas closed to all trolling following the July 13 chinook closure to minimize hook and release of chinook salmon remained closed during this period (Table 11). Additionally, portions of Lynn Canal were closed to trolling for the last week of the season, (September 14-20), to prevent harvesting of milling coho salmon in the vicinity of Berners River.

The total 1987 troll catch was 1.0 million coho salmon. This was 1.1 million less than the record catch of 2.1 million in 1986, and about 200,000 or 17 percent below the 1981-85 average catch of 1.2 million.

Contributions of Southeast Alaska hatcheries to the troll fishery declined to an estimated 87,000 coho in 1987 from 264,000 in 1986.

The proportion of the total commercial coho harvest taken by troll gear in 1987 was approximately 71 percent compared to 66 percent in 1986 and an average of 60 percent for 1971-80.

### 1987 Coho Salmon Escapements

Coho salmon are produced in over 2,000 streams in Southeast Alaska. Annual estimates of total system escapement are made for only seven to ten streams, while peak escapement surveys are conducted on 50 to 70 additional streams. Annual escapement assessment is based on these estimates and selected inside fishery performance indicators. Specific escapement goals have not yet been established for coho salmon indicator systems due to lack of complete productivity data. However, moderate to high harvest rates for most stocks indicate that the resource is near full utilization. Therefore, until enough data is available from research programs to develop objective goals, most escapement assessments will be expressed qualitatively in relationship to historical figures. Region-wide escapement assessment in recent years has indicated that the strength of annual coho salmon escapement tends to be quite variable geographically.

In 1987, coho salmon escapements again showed substantial geographical variability with indicators for different stock groups ranging from poor to above the recent average.

#### Yakutat

Both survey success and fishery performance in the Yakutat area were adversely affected by all-time record rainfall during September and October. Surveys that were successfully conducted indicated that overall escapement was average or above. Relatively large escapements to some systems probably resulted from adverse effects of fall weather on the setnet fishery.

### Northern Inside

Surveys and weir counts in the northern inside area indicated that escapements were variable for different stock groups, ranging from substantially below average to well above average. Surveys of Chilkat River tributaries indicated above average escapement, while the Berners River and most Juneau roadside indicator streams were substantially below the recent average. Lower Taku River stocks were above average while three early spawning indicator stocks in the upper Taku drainage were substantially below 1986, the first year when those stocks were assessed.

### Northern Outside

Escapement surveys and weir counts indicated that coho salmon escapement along the outside coast of northern Southeast was similar to 1986, ranging from very low for rivers and small streams to below average for two lake systems with weirs.

### Southern Southeast

Surveys and weir counts in the Ketchikan area indicated that coho salmon escapement was generally poor compared to average levels, with particularly low counts for the Carroll River and Indian Creek, a tributary of the Chickamin River. Although escapement assessment efforts were increased in the Petersburg area, comparable counts from prior years are not available for most of the new indicator systems. Surveys of lower Stikine tributaries indicated that, overall, escapement was lower than in 1986.

## SPECIAL PROBLEMS

### Hook and Release of Chinook Salmon During Chinook only Closures

After the quota for troll caught chinook had been reached, fishermen were allowed to continue fishing for other species of salmon. Chinook that were hooked were required to be returned to the water. Trolling for chinooks closed on July 13 and did not reopen for the rest of the summer. During 1987 fishermen were required to release chinook for 60 days. This was 18 days more than the 42 days in 1986 and 12 days longer than the 48 days in 1985.

To reduce the incidence of chinook hook and release during this period the Department closed four areas along the outer coast, one area in Icy Straits, and the offshore area commonly known as the Fairweather grounds. (Description of areas given in Table 11) The areas had previously been identified as areas of probable high chinook abundance. Fishermen were also encouraged to avoid fishing in areas where chinook abundance was found to be high and to utilize gear and techniques most selective for coho salmon.

The Department also conducted an observer program using Department employees as observers to document the incidence of chinook hook and release. A report on this study is being prepared.



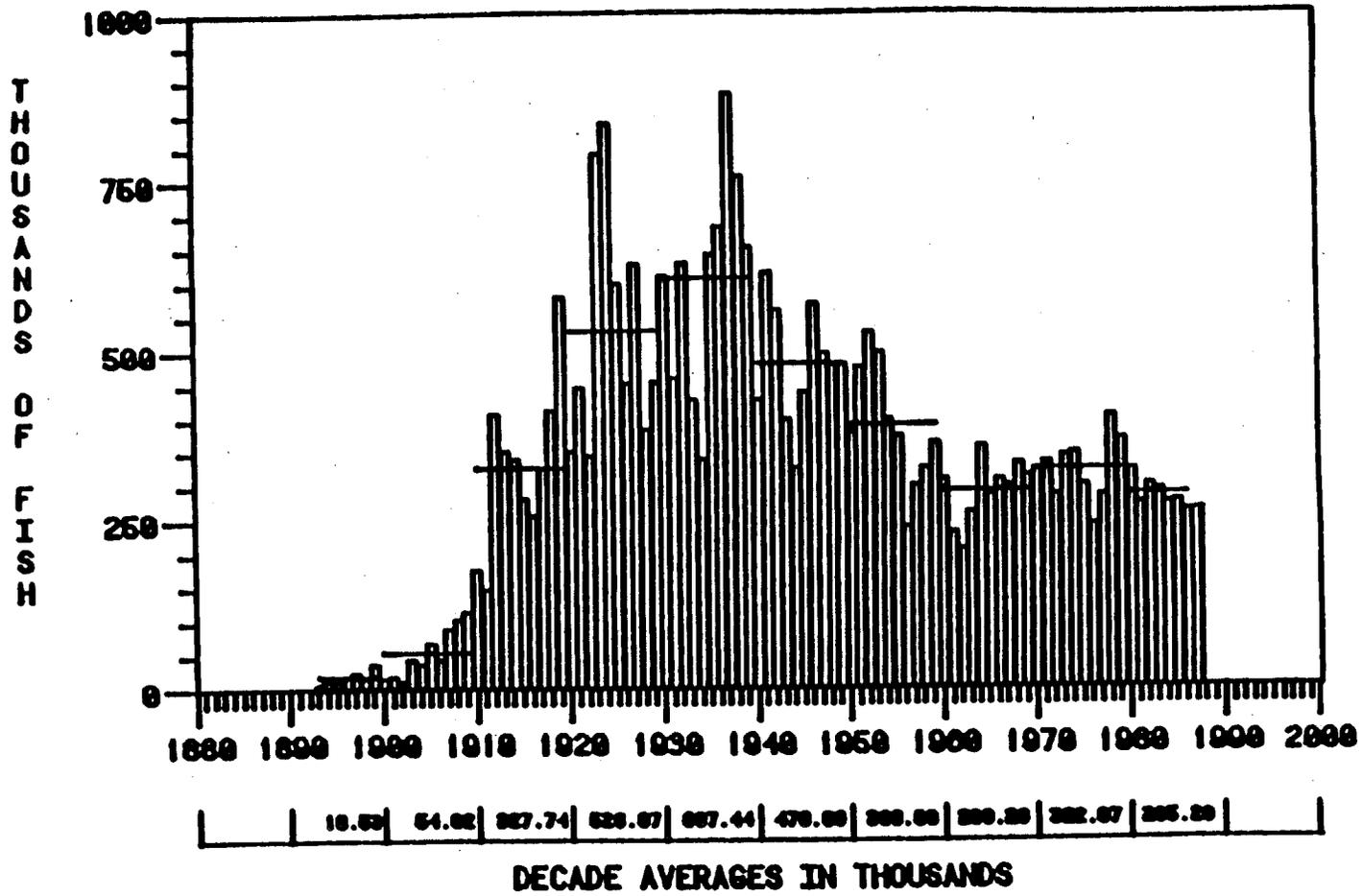


Figure 2. Southeast Alaska region historical commercial chinook salmon catches by all gear, 1893 to present.

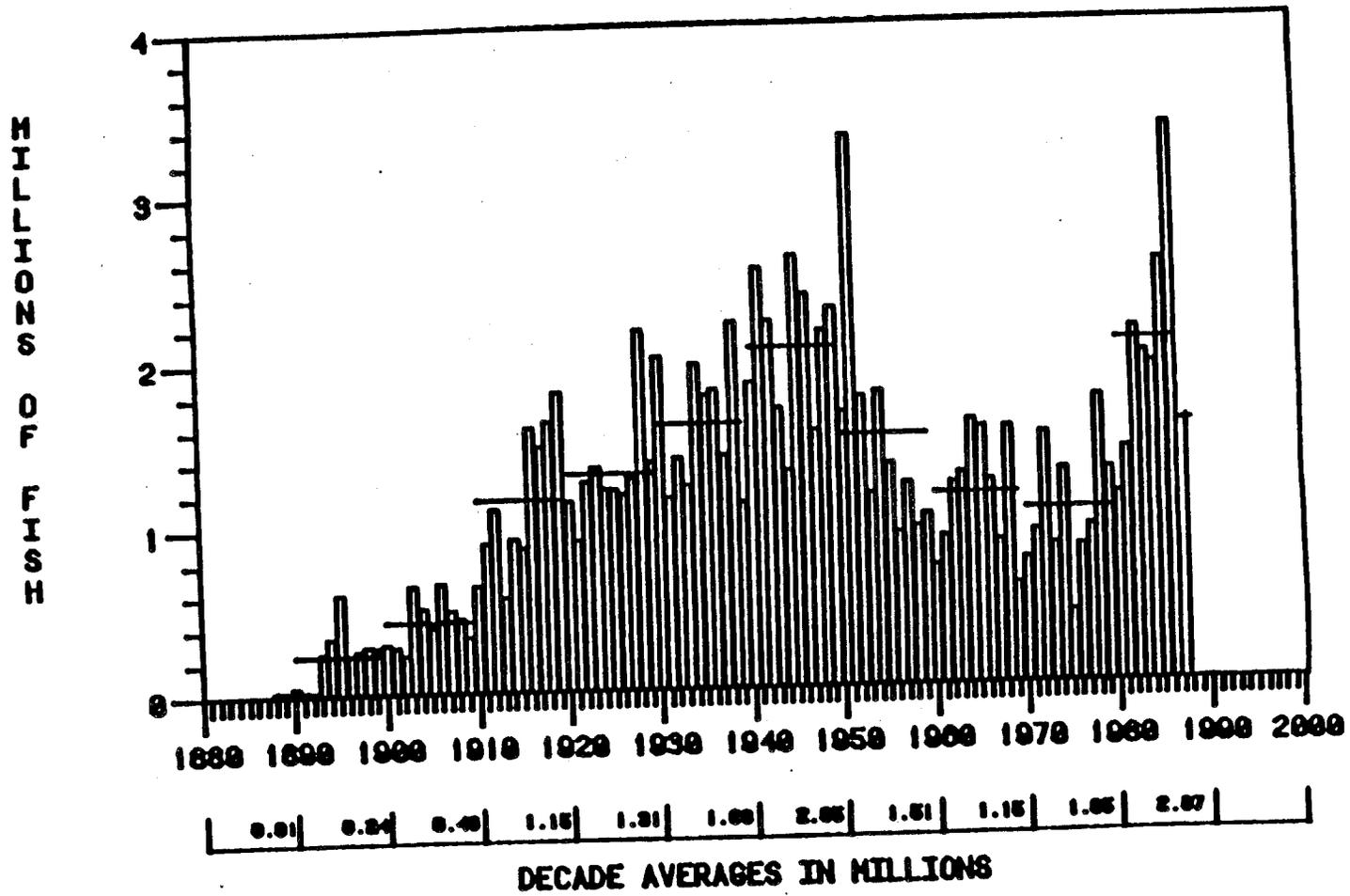


Figure 3. Southeast Alaska region historical commercial coho salmon catches by all gear, 1888 to present.

# S.E. ALASKA CHINOOK SALMON CATCHES

TOTAL AND BY TROLL GEAR, 1975-PRESENT

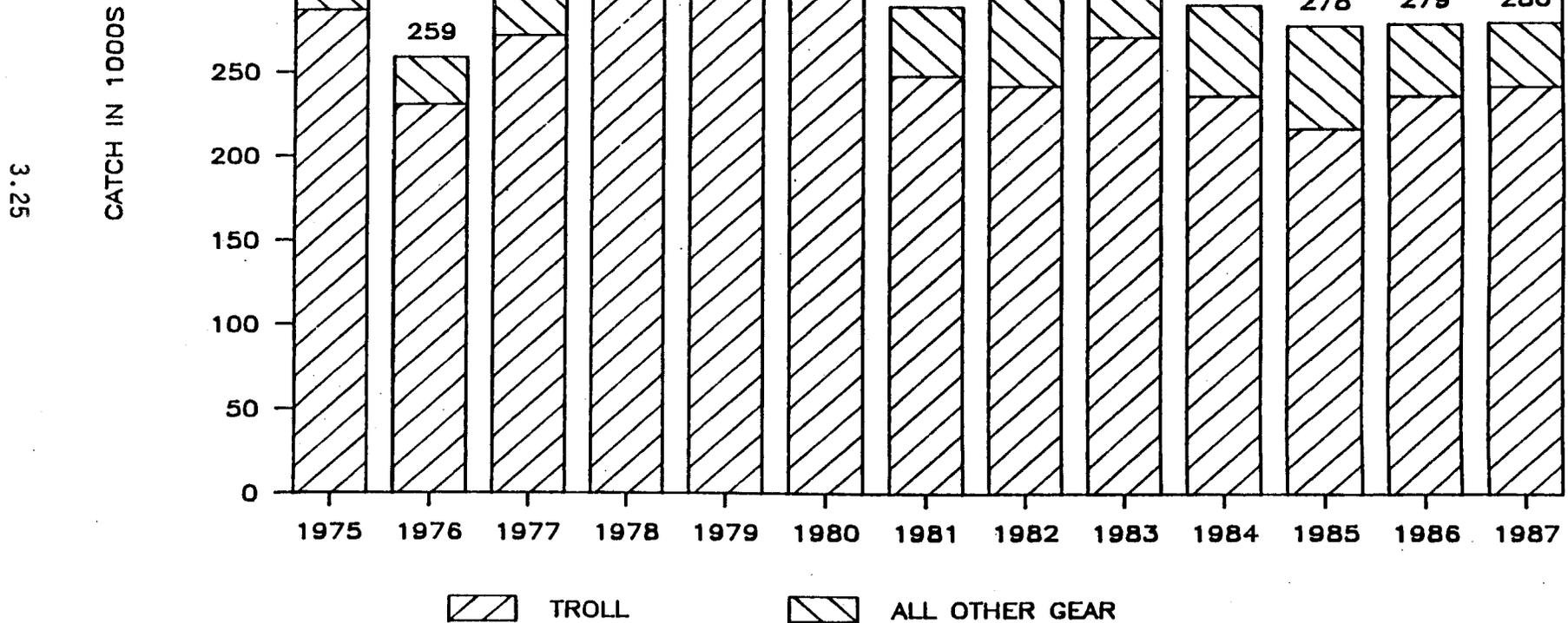


Figure 4. Total Southeast Alaska region chinook salmon catches by all gear and by troll gear, 1975-87.

# S.E. ALASKA WINTER TROLL FISHERY CHINOOK CATCH AND LANDINGS (X 10)

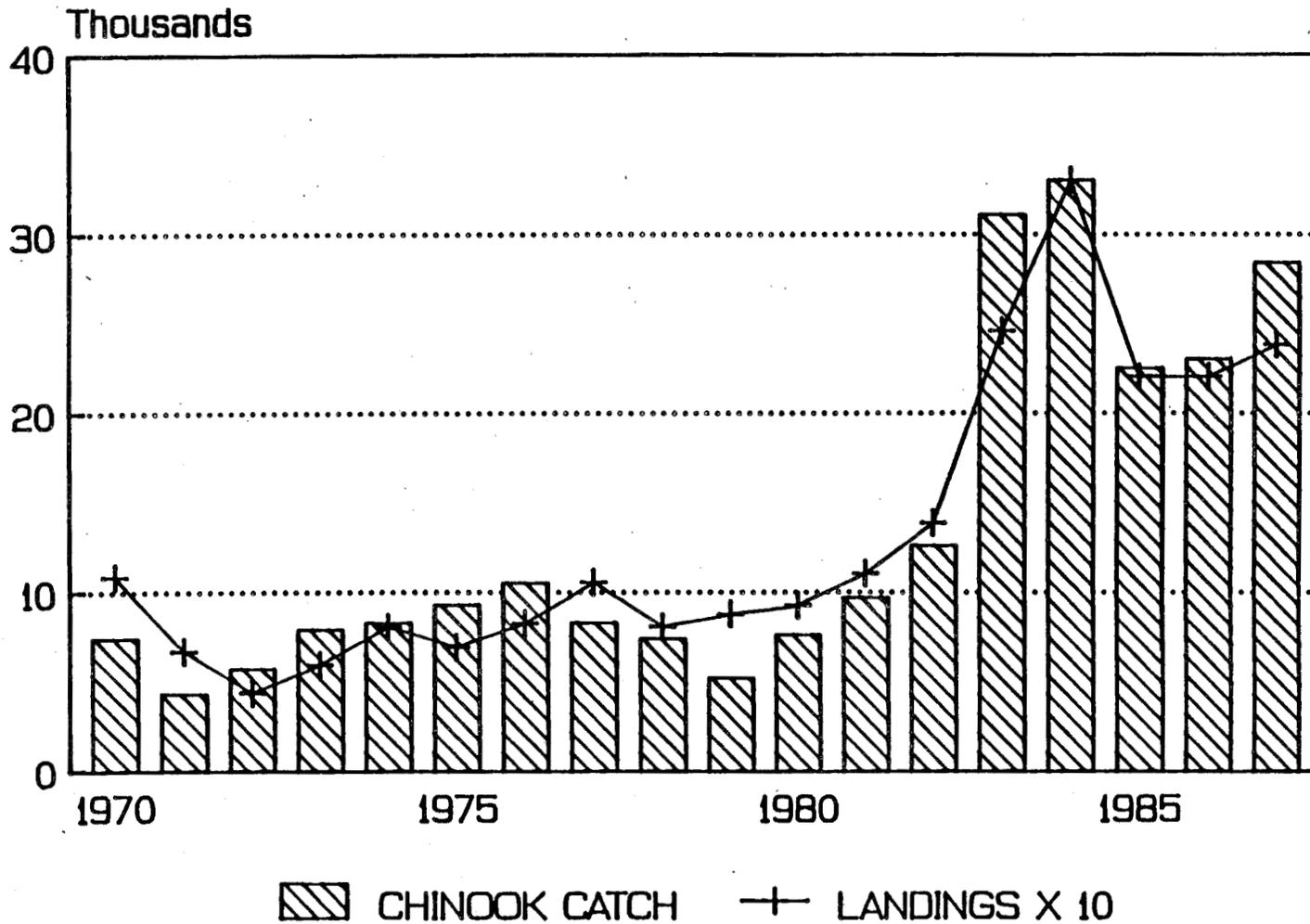


Figure 5. Annual Southeast Alaska region winter troll fishery chinook salmon catches and effort, 1970-87.

# S.E. ALASKA SUMMER TROLL SEASON

## DAYS OPEN FOR CHINOOK FISHING

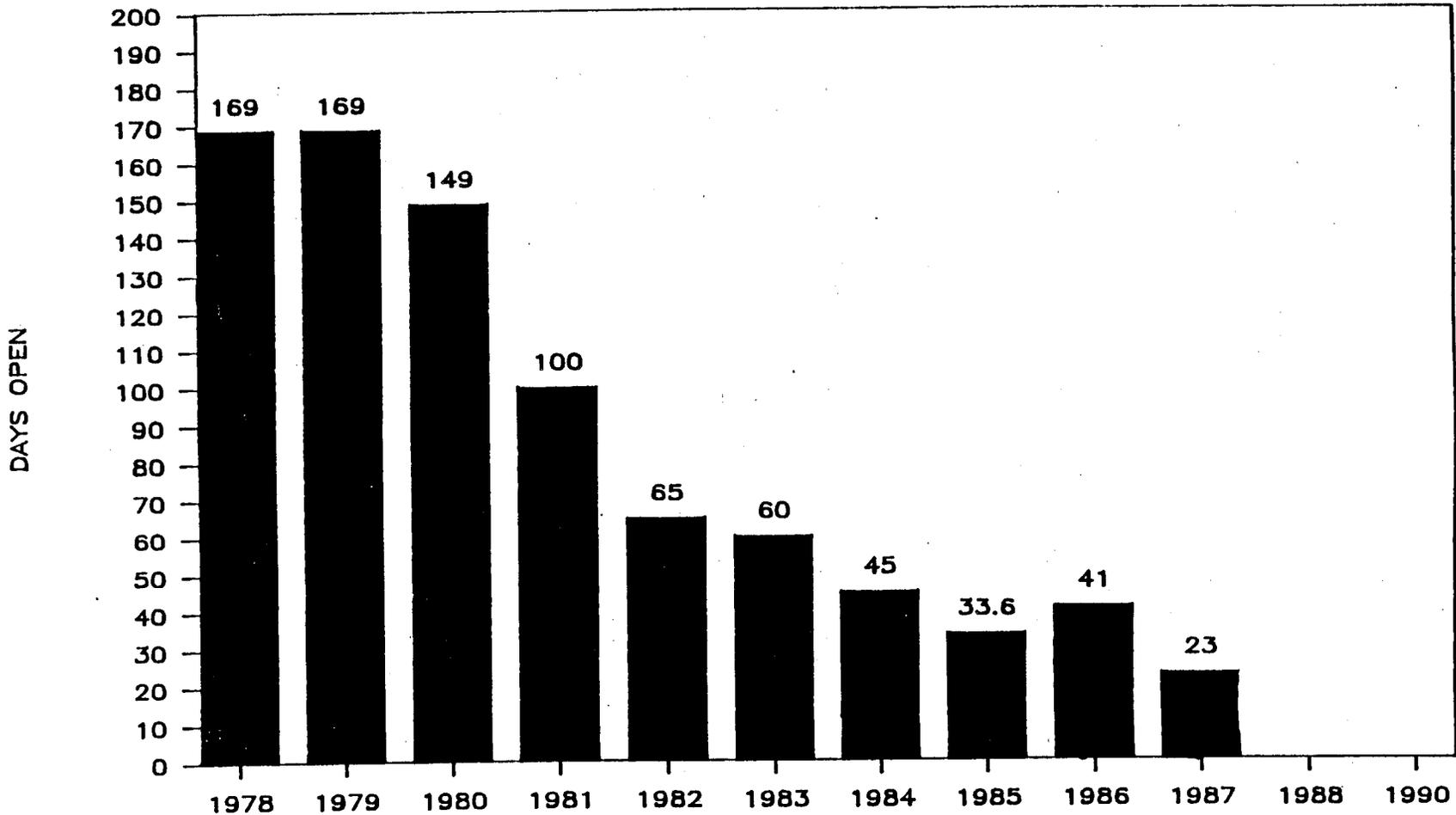


Figure 6. Number of days Southeast Alaska troll fishery open to chinook salmon fishing during the summer season, April 15 through September 30, 1978 to present.

# S.E. ALASKA SUMMER TROLL FISHERY

## JUNE/JULY CHINOOK CATCH RATES

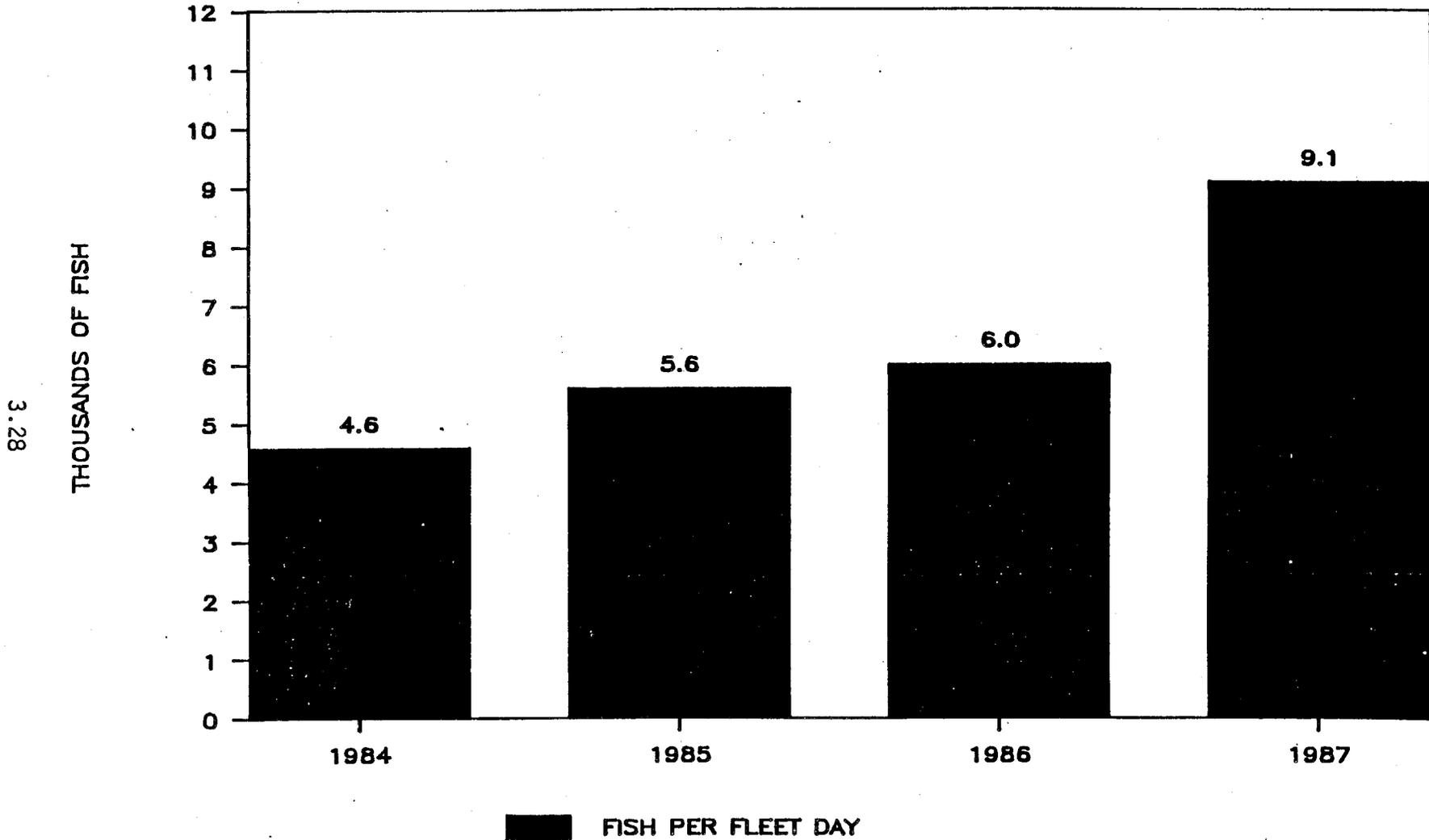


Figure 7. Chinook salmon catch rates for fleet day during comparable periods in June and July for the Southeast Alaska troll fishery, 1984-87.

# EST. TOTAL CHINOOK ESCAPEMENTS

S.E. ALASKA AND TRANSB. RIVERS, 1975-87

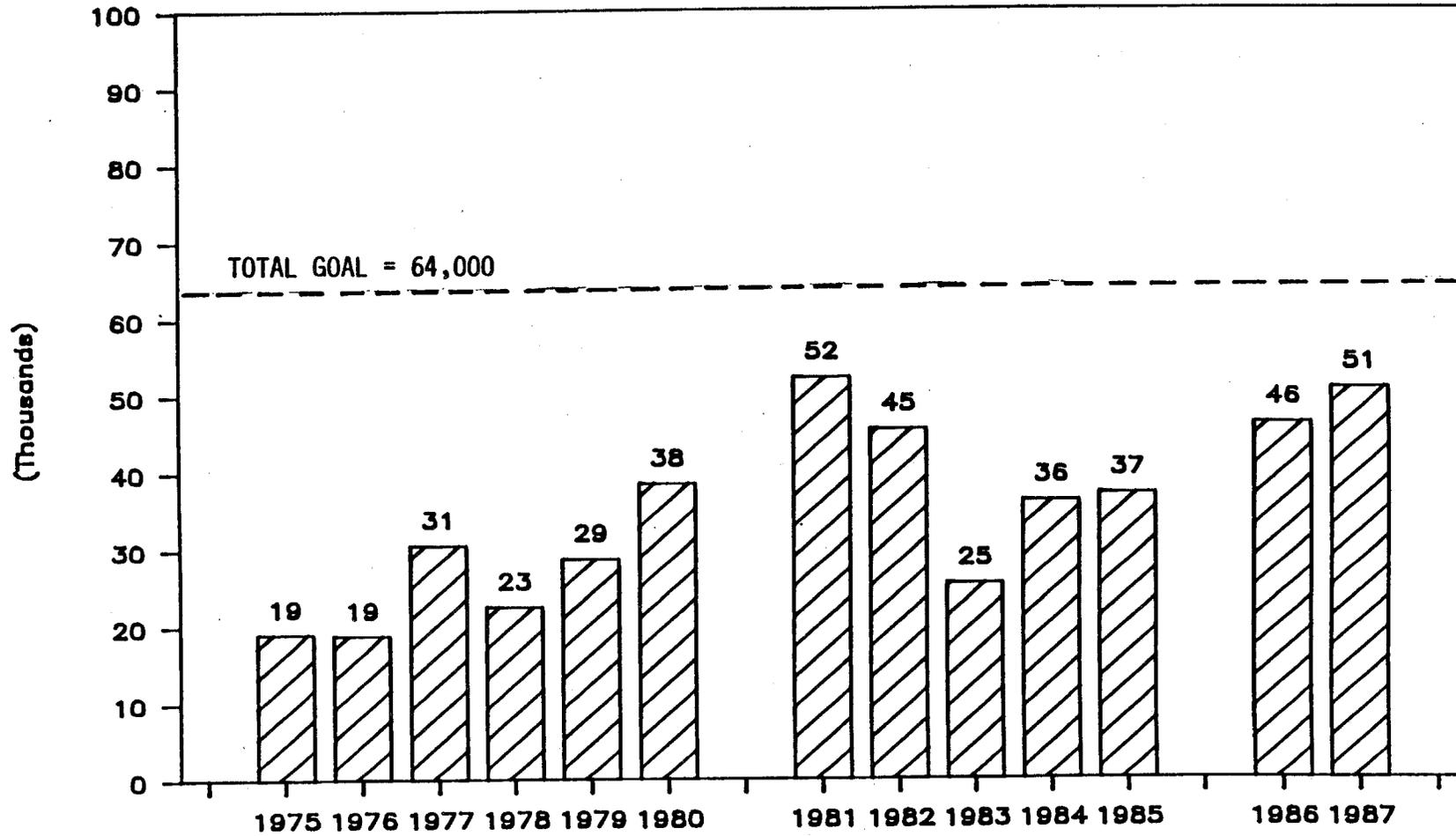


Figure 8. Estimated total chinook salmon escapements to Southeast Alaska and transboundary spawning systems, 1975-87.

Average Weekly Proportion of the Coho Salmon Catch by  
Troll and Drift Gillnet Gear Compared with Escapement  
at Selected Weir Sites, 1982-1985

3.30

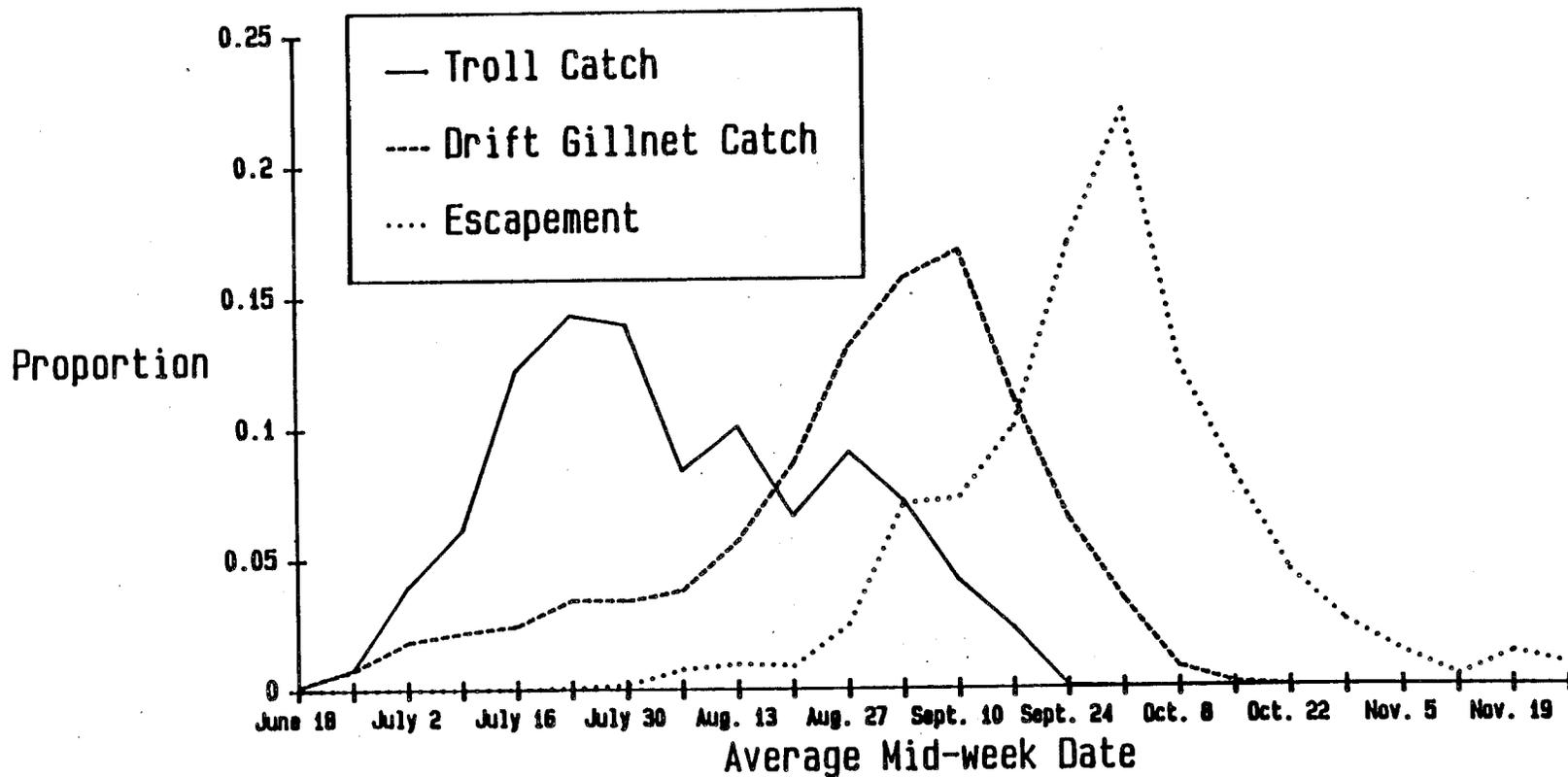


Figure 9. Average timing distribution of coho salmon in the Southeast Alaska troll and drift gillnet fisheries and at selected weir sites, 1982-85.

### Average Weekly Troll Catch of Coho Salmon in Southeast Alaska

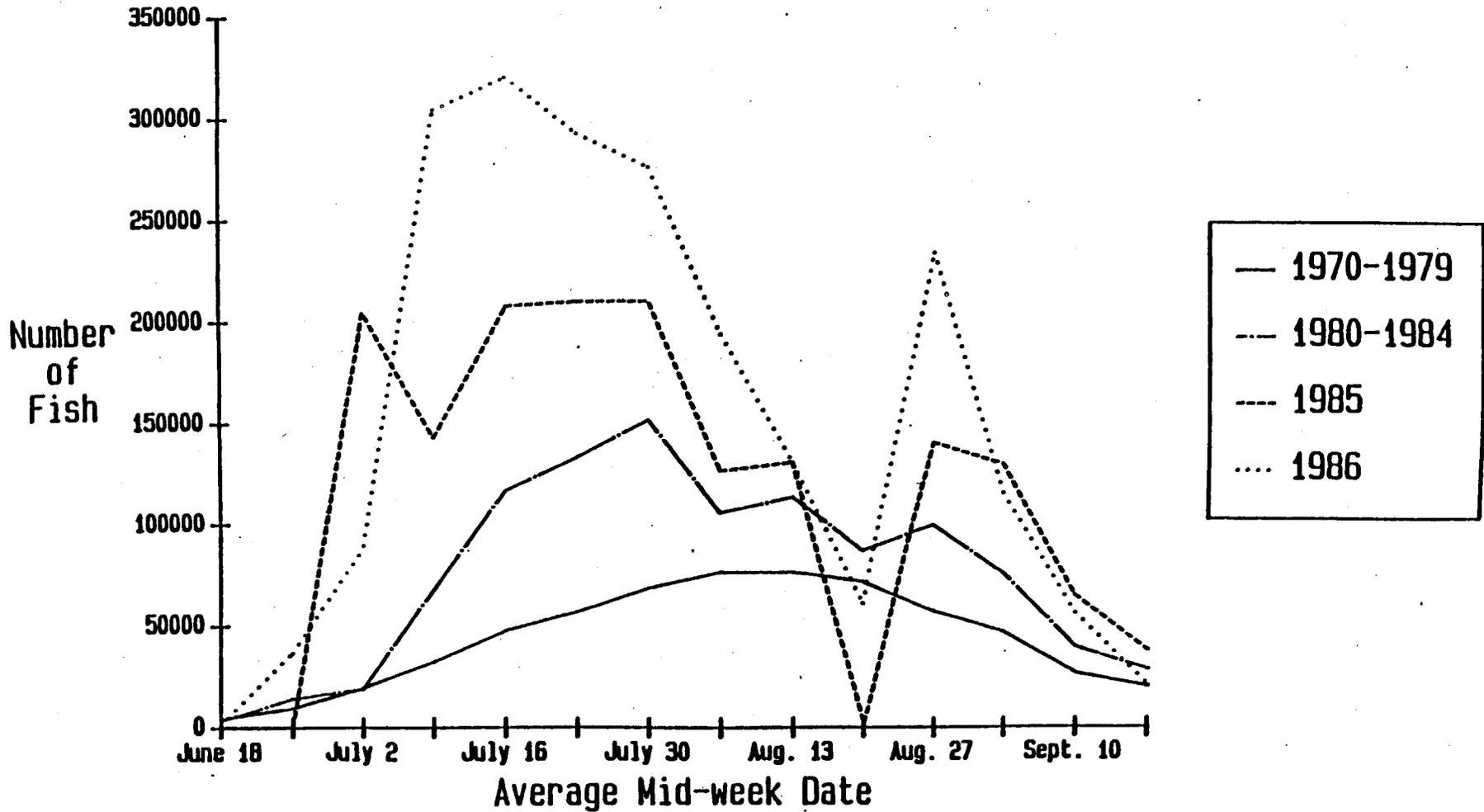


Figure 10. Changes in timing of coho salmon catches by the Southeast Alaska troll fishery.

# 1987 S.E. ALASKA TROLL FISHERY

WEEKLY COHO LANDINGS IN 1000S

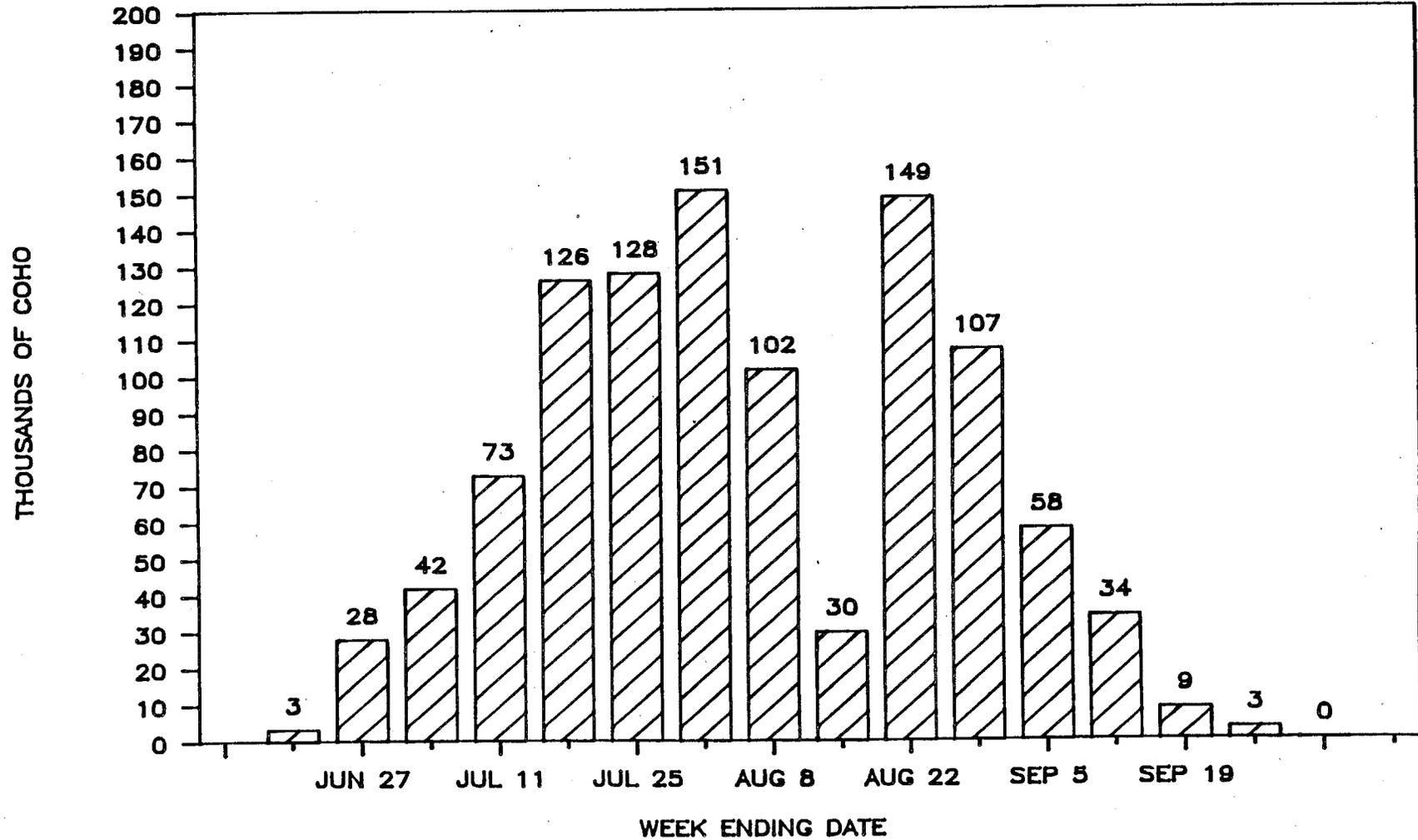


Figure 11. 1987 Southeast Alaska troll fishery coho salmon catches by landing week.

Table 1a. Southeast Alaska Region annual commercial all troll salmon catches in numbers by species by calendar year for 1960 to 1979 and by accounting year (October 1-September 30) for 1980-87 (ADF&G 1/10/88).

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	282,404	939	396,211	25,563	2,453	707,570
1961	204,289	1,264	399,932	19,303	2,679	627,467
1962	173,597	1,181	643,740	75,083	2,676	896,277
1963	243,679	2,014	693,050	106,939	6,230	1,051,912
1964	329,461	1,004	730,766	124,566	2,576	1,188,373
1965	308,902	1,872	695,887	81,127	6,359	1,094,147
1966	282,083	679	528,621	63,623	5,203	880,209
1967	274,678	157	443,677	57,372	7,051	782,935
1968	304,455	574	779,500	126,271	2,791	1,213,591
1969	290,168	858	388,459	83,727	1,720	764,932
1970	304,602	477	267,647	70,072	3,235	646,033
1971	311,439	932	391,279	104,557	7,603	815,810
1972	242,282	1,083	791,947	166,771	11,635	1,213,718
1973	307,807	1,222	540,125	134,586	10,460	994,200
1974	319,793	2,609	844,748	263,044	13,822	1,444,016
1975	287,342	1,098	214,170	76,882	2,784	582,276
1976	231,239	1,266	524,762	193,786	4,252	955,305
1977	271,735	5,783	506,887	281,244	11,621	1,077,270
1978	375,433	2,804	1,100,902	617,633	26,193	2,122,965
1979	338,319	7,018	918,845	629,144	24,661	1,917,987
1979-1980	303,873	2,866	707,360	267,589	12,201	1,291,613
1980-1981	249,065	7,470	862,177	577,256	8,964	1,708,060
1981-1982	242,221	2,339	1,321,546	503,425	5,699	2,082,882
1982-1983	271,192	7,968	1,279,518	498,503	20,549	2,079,340
1983-1984	235,557	10,538	1,131,936	572,599	28,035	1,978,731
1984-1985	200,180	7,755	1,603,110	968,958	52,932	2,832,935
1985-1986	237,486	6,890	2,127,068	181,929	51,394	2,606,491
Average 1960 to 1986	274,936	2,987	771,625	254,502	12,436	1,316,928
1986-1987 PRELIMINARY	242,414	9,786	1,041,151	487,007	12,843	1,793,201

Table 1b. Southeast Alaska Region annual commercial hand troll salmon catches in numbers by species by calendar year for 1960 to 1979 and by accounting year (October 1-September 30) for 1980-87 (ADF&G 1/10/88).

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	NA	NA	NA	NA	NA	NA
1961	NA	NA	NA	NA	NA	NA
1962	NA	NA	NA	NA	NA	NA
1963	NA	NA	NA	NA	NA	NA
1964	NA	NA	NA	NA	NA	NA
1965	NA	NA	NA	NA	NA	NA
1966	NA	NA	NA	NA	NA	NA
1967	NA	NA	NA	NA	NA	NA
1968	NA	NA	NA	NA	NA	NA
1969	NA	NA	NA	NA	NA	NA
1970	NA	NA	NA	NA	NA	NA
1971	NA	NA	NA	NA	NA	NA
1972	NA	NA	NA	NA	NA	NA
1973	NA	NA	NA	NA	NA	NA
1974	NA	NA	NA	NA	NA	NA
1975	27,995	96	40,922	28,853	541	98,407
1976	26,294	516	88,733	44,054	2,061	161,658
1977	33,176	1,740	155,813	116,776	4,143	311,648
1978	54,383	1,155	378,927	243,469	9,573	687,507
1979	58,919	2,448	244,815	281,711	7,926	595,819
1979-1980	52,360	1,183	180,404	111,758	4,531	349,539
1980-1981	34,097	2,174	181,591	173,495	2,580	394,909
1981-1982	37,048	504	261,545	131,494	1,185	432,886
1982-1983	38,666	1,532	236,179	136,694	2,777	415,479
1983-1984	34,300	1,987	178,366	151,514	4,899	371,206
1984-1985	29,983	1,731	263,527	257,050	9,881	562,172
1985-1986	29,651	809	339,288	40,097	6,698	416,549
Average 1975 to 1986	38,073	1,323	212,509	143,080	4,733	399,815
1986-1987 PRELIMINARY	29,204	2,134	183,233	135,109	3,018	352,698

Table 1c. Southeast Alaska Region annual commercial power troll salmon catches in numbers by species by calendar year for 1960 to 1979 and by accountine year (October 1-September 30) for 1980-87 (ADF&G 1/10/88).

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	NA	NA	NA	NA	NA	NA
1961	NA	NA	NA	NA	NA	NA
1962	NA	NA	NA	NA	NA	NA
1963	NA	NA	NA	NA	NA	NA
1964	NA	NA	NA	NA	NA	NA
1965	NA	NA	NA	NA	NA	NA
1966	NA	NA	NA	NA	NA	NA
1967	NA	NA	NA	NA	NA	NA
1968	NA	NA	NA	NA	NA	NA
1969	NA	NA	NA	NA	NA	NA
1970	NA	NA	NA	NA	NA	NA
1971	NA	NA	NA	NA	NA	NA
1972	NA	NA	NA	NA	NA	NA
1973	NA	NA	NA	NA	NA	NA
1974	NA	NA	NA	NA	NA	NA
1975	259,347	1,002	173,248	48,029	2,243	483,869
1976	204,945	750	436,029	149,732	2,191	793,647
1977	238,559	4,043	351,074	164,468	7,478	765,622
1978	321,050	1,649	721,975	374,164	16,620	1,435,458
1979	279,400	4,570	674,030	347,433	16,735	1,322,168
1979-1980	251,513	1,683	526,956	155,831	7,670	942,074
1980-1981	214,968	5,296	680,586	403,761	6,384	1,313,151
1981-1982	205,173	1,835	1,060,001	371,931	4,514	1,649,996
1982-1983	232,526	6,436	1,043,339	361,809	17,772	1,663,861
1983-1984	201,257	8,551	953,570	421,085	23,136	1,607,525
1984-1985	170,197	6,024	1,339,583	711,908	43,051	2,270,763
1985-1986	207,835	6,081	1,787,780	141,832	44,696	2,189,942
Average 1975 to 1986	232,231	3,993	812,348	304,332	16,041	1,369,840
1986-1987 PRELIMINARY	213,210	7,652	857,918	351,898	9,825	1,440,503

Table 2. Preliminary summary of 1987 chinook salmon catches by Southeast Alaska fisheries (ADF&G 1/10/88).

Fishery	----- Preliminary Catches -----	
	Number	Percent
Troll Fishery	242,300	86.6%
Winter (OCT 1 - APR 14)	28,400	
June Experim. Hatchery	4,400	
General Summer (Jun 20 - Jul 12)	209,500	
Net Fisheries	15,400	5.5%
Drift Gillnet	8,800	
Set Gillnet	1,800	
Purse Seine (> 5 lb.)	4,600	
Trap/Annette Is. (Projected)	200	
Commercial Fisheries Subtotals	<u>257,700</u>	<u>92.1%</u>
Recreational Fisheries (Season Proj.)	22,000	7.9%
All Gear Totals	<u>279,700</u>	<u>100.0%</u>

1987 Southeast Alaska All Gear Catch Ceiling:

Base = 263,000  
 Addon = 16,000  
 Total = 279,000

Deviation From Catch Ceiling = 700 0.3%

Preliminary 1987 Alaska Hatchery Addon Computations

23,300 = Estimated 1987 Total Alaska Hatchery Harvest  
 Less 5,000 = "Old" (1984) Hatchery Harvest  
 -----  
 18,300 = Estimatee "New" Hatchery Harvest in 1987  
 Less 2,300 = Potential Estimation Error Risk Adjustment  
 -----  
 16,000 = Estimated 1987 Hatchery Addon

Table 3. Preliminary Post-season estimates of Alaska hatchery chinook salmon contributions to 1987 Southeast Alaska Fisheries (ADF&G 1/10/88).

Hatchery	----- Troll Fishery -----							
	Winter No.	Fishery %	Exper. No.	Fisheries %	Summer No.	Fishery %	Troll No.	Troll Totals %
Crystal Lake (ADF&G)	1,416	40.7%	614	43.4%	6,524	55.7%	8,554	51.5%
Deer Mountain (ADF&G)	37	1.1%	6	0.4%	26	0.2%	69	0.4%
Hidden Falls (ADF&G)	34	1.0%	13	0.9%	243	2.1%	290	1.7%
Little Port Walter (NMFS)	814	23.4%	509	36.0%	2,399	20.5%	3,722	22.4%
Medvejie (NSRAA)	33	0.9%	0	0.0%	26	0.2%	59	0.4%
Neets Bay (SSRAA)	46	1.3%	33	2.4%	375	3.2% <sup>1/</sup>	454	2.7%
Port Snettisham (ADF&G)	58	1.7%	63	4.5%	747	6.4%	868	5.2%
Tamgas Creek (BIA)	7	0.2%	58	4.1%	486	4.1%	551	3.3%
Whitman (SSRAA)	1,036	29.8%	118	8.3%	887	7.6%	2,041	12.3%
Gear Totals	3,481	100.0%	1,414	100.0%	11,713	100.0%	16,608	100.0%
Gear Percentages		14.9%		6.1%		50.2%		71.2%

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Table 3. Preliminary Post-season estimates of Alaska hatchery chinook salmon contributions to 1987 Southeast Alaska Fisheries (ADF&G 1/10/88). (Continued)

Hatchery	Net Fisheries			Subtotals		Sport Fisheries <sup>3/</sup>		All Gear Totals	
	Gillnet No.	Seine No.	Trap <sup>2/</sup> No.	Net No.	%	No.	%	No.	%
Crystal Lake (ADF&G)	242	54	0	296	12.8%	1,281	29.1%	10,131	43.4%
Deer Mountain (ADF&G)	10	1	0	11	0.5%	486	11.0%	566	2.4%
Hidden Falls (ADF&G)	23	52	0	75	3.2%	64	1.5%	429	1.8%
Little Port Walter (NMFS)	63	71	0	134	5.8%	322	7.3%	4,178	17.9%
Medvejie (NSRAA)	0	0	0	0	0.0%	1	+	60	0.3%
Neets Bay (SSRAA)	379	67	0	446	19.3% <sup>1/</sup>	488	11.1%	1,388	6.0%
Port Snettisham (ADF&G)	301	15	0	316	13.6%	170	3.9%	1,354	5.8%
Tamgas Creek (BIA)	643	0	39	682	29.4%	45	1.0%	1,278	5.5%
Whitman (SSRAA)	294	46	16	356	15.4%	1,544	35.1%	3,941	16.9%
<b>Gear Totals</b>	<b>1,955</b>	<b>306</b>	<b>55</b>	<b>2,316</b>	<b>100.0%</b>	<b>4,400</b>	<b>100.0%</b>	<b>23,325</b>	<b>100.0%</b>
<b>Gear Percentages</b>	<b>8.4%</b>	<b>1.3%</b>	<b>0.2%</b>	<b>9.9%</b>		<b>18.9%</b>		<b>100.0%</b>	

- 1/ Neets Bay contributions include Stat. Area 101-95 terminal catches: troll 6; Seine 63; Gillnet 287.
- 2/ Preliminary estimates of Alaska hatchery contributions to Annette Island trap gear based on projected total season trap catch of 200 chinook salmon.
- 3/ Preliminary estimates of total Alaska hatchery contributions to 1987 sport fisheries based on 1986 total percentage contribution (20%); total contribution allocated to hatcheries based on 1986 proportions.

Table 4. Annual Southeast Alaska commercial and recreational chinook salmon catches, 1965 to present (ADF&G 1/10/88).

Year	Numbers of Fish in Thousands				Total	Ave. 1985-87 Catch as Percent of Period Average
	Commercial Troll <sup>1/</sup>	Net	Subtotal	Recreational Fisheries <sup>2/</sup>		
1965	259	28	287	13	300	
1966	282	26	308	13	321	
1967	275	26	301	13	314	
1968	304	28	332	14	346	
1969	290	24	314	14	328	
-----						
Average 1965-69	282	26	308	13	322	87%
1970	305	18	323	14	337	
1971	334	22	356	15	371	
1972	242	45	287	15	302	
1973	308	36	344	16	360	
1974	322	25	347	17	364	
-----						
Average 1970-74	302	29	331	15	347	80%
1975	287	14	301	17	318	
1976	231	11	242	17	259	
1977	272	13	285	17	302	
1978	376	25	401	17	418	
1979	338	29	367	17	384	
-----						
Average 1975-79	301	18	319	17	336	83%
1980	300	22	322	20	342	
1981	248	20	268	21	289	
1982	242	49	291	26	317	
1983	271	20	291	22	313	
1984	236	32	268	22	290	
-----						
Average 1980-84	259	29	288	22	310	90%

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Table 4. Annual Southeast Alaska commercial and recreational chinook salmon catches, 1965 to present (ADF&G 1/10/88). (Continued)

Year	Numbers of Fish in Thousands				Total	Ave. 1985-87 Catch as Percent of Period Average
	Commercial Troll <sup>1/</sup>	Fisheries Net	Subtotal	Recreational Fisheries <sup>2/</sup>		
Preliminary						
1985	217	36	253	25	278	
1986	236	22	258	21	279	
1987	242	15	257	22	279	
Average 1985-87	232	24	256	23	279	100%

- 1/ Troll catches prior to 1980 are reported by calendar year; for 1981 and subsequent years catches are for the catch accounting year Oct. 1 - Sept. 30.
- 2/ Estimates of recreational catches for 1965-76 based on 1977-80 average catch per capita data. Recreational catches for 1977 to present based on statewide mail surveys.
- 3/ Purse seine chinook catches reported under net fisheries for 1986-87 do not include chinook less than five pounds reported on fish tickets.

Table 5. Southeast Alaska winter troll fishery vessel landings and chinook salmon catches, and comparison with total season troll chinook catches, 1970 to present (ADF&G 1/10/88).

Year	Vessel Landings	No. of Chinook	Winter Fishery Chinook Per Landing	Percent of Total	Total Season Catch
1970	1,085	7,400	6.8	2.4%	305,000
1971	668	4,300	6.4	1.3%	334,000
1972	434	5,700	13.1	2.4%	242,000
1973	593	7,900	13.3	2.6%	308,000
1974	804	8,300	10.3	2.6%	322,000
1975	691	9,300	13.5	3.2%	287,000
1976	825	10,500	12.7	4.5%	231,000
1977	1,054	8,300	7.9	3.1%	272,000
1978	807	7,400	9.2	2.0%	376,000
1979	878	5,200	5.9	1.5%	338,000
-----					
Average 1970-79	784	7,400	9.9	2.5%	302,000
1980	927	7,600	8.2	2.5%	300,000
1981	1,104	9,700	8.8	3.9%	248,000
1982	1,385	12,600	9.1	5.2%	242,000
1983	2,455	31,100	12.7	11.5%	271,000
1984	3,300	33,000	10.0	14.0%	236,000
-----					
Preliminary					
1985	2,200	22,500	10.2	10.4%	217,000
1986	2,200	23,000	10.5	9.7%	236,000
1987	2,379	28,400	11.9	11.7%	242,000

Note: Troll winter season dates are Oct. 1 through April 14. Total season catches for 1970-80 are for calendar year; catches from 1981 to present are for chinook catch accounting year Oct. 1 through Sept. 30.

Table 6. Southeast Alaska summer troll fishery chinook salmon catch rates during comparable time periods, 1984-1987 (ADF&G 1/10/88).

Numbers of Fish in Thousands				
Year	Fishing Period	No. of Days	Chinook Catch	Fish Per Fleet Day
1984	(Fishery Closed April 15 through June 4.)			
	June 5-30	26	130	5.0
	July 11-29	19	77	4.1
	Combined	45	207	4.6
1985	(Fishery Closed April 15 through June 2.)			
	June 3-12	10	66	6.6
	July 1-22	22	114	5.2
	Combined	32	180	5.6
1986	(Fishery closed April 15 through June 19.)			
	June 20 - July 15	26	155	6.0
1987	(Fishery closed April 15 through June 19.)			
	June 20 - July 12	23	209	9.1

Table 7. Preliminary chinook salmon catches and estimated contributions from Alaska hatcheries to Southeast Alaska experimental troll fisheries in near-terminal hatchery areas, June 1987 (ADF&G 1/10/88).

Near-Terminal Hatchery Area	Period <sup>1/</sup>				Alaska Hatchery Contributions <sup>2/</sup>	
	June 1-6	7-13	14-18	Total	No.	Percent
Medvejie	9	3	6	18	0	0%
Crystal Lake	23	66	87	176	92	52%
Little Port	255	854	2,289	3,398	1,156	34%
Neets Bay	187	304	364	855	166	19%
	474	1,227	2,746	4,447	1,414	32%

Data Sources: Catches: ADF&G CWT Lab report of 10 Oct 1987. Alaska hatchery contributions: ADF&G CWT lab report of 10 Sept 1987

1/ Length of weekly fishing periods varied by area.

2/ Estimated contributions from all Southeast Alaska hatcheries.

Table 8. Estimated total 1987 chinook escapements to Southeast Alaska and Transboundary River systems (ADF&G 1/10/88).

System/Index Tributaries	Index Systems			Estim. Total Escap.	Categ. Expans. Factor	Estim. Total Escap.
	1987 Escap. Index	Survey Expans. Factor	Tribut. Expans. Factor			
Major Category (Transboundary) Systems (3 total)						
Alsek/Klukshu	2,615 (W)	1	1/.64	4,086		
Taku/Nakina, Nahlin	4,028 (A)	1/.75	1/.60	8,951		
Stikine/Little Tahltan	2,706 (A)	1/.625	1/.25	17,318		
Major Subtotals	<u>9,349</u>			<u>30,355</u>	1	30,355
Medium Category Systems (9 total)						
Situk	1,884 (W)	1	1	1,884		
Chilkat/Big Boulder	98 (F)	1/.80	1/.14	875		
Andrews Creek	651 (F)	1/.625	1	1,042		
Behm Canal Systems						
Unuk	1,973 (A)	1/.625	1	3,157		
Chickamin	975 (A)	1/.625	1	1,560		
Blossom	1,349 (A)	1/.625	1	2,158		
Keta	768 (A)	1/.625	1	1,229		
Subtotals	<u>5,065</u>			<u>8,104</u>		
Medium Subtotals	7,698			11,905	9/7	15,306
Minor Category Systems (22 total)						
King Salmon R.	228 (W)	1	1	228		
Minor Subtotals	<u>228</u>			228	22/1	5,016
All Systems Totals	<u>17,275</u>			<u>42,488</u>		<u>50,677</u>

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Table 8. Estimated total 1987 chinook escapements to Southeast Alaska and Transboundary River systems (ADF&G 1/10/88). (Continued)

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- Notes: (1) (W) = weir count; (A) = aerial survey estimates; (F) = foot survey estimates.  
(2) Escapement estimates include large, 3-ocean and older chinook only; jacks are not included except for Alsek/Klukshu weir count.  
(3) Total escapement estimates = (index escapements) x (expansion factors).

Data Sources: All systems except transboundary rivers: ADF&G management records (Pers. Comm. P. Kissner, D. Ingledue)  
Transboundary river systems: Alsek/Klukshu weir count - CDFO mgm't records (S. Johnson) Taku and Stikine - joint CDFO (S. Johnson), ADF&G (P. Kissner)

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Table 9. Estimated total chinook salmon escapements to escapement indicator systems and to all Southeast Alaska and Transboundary (T) Rivers, 1975-86. (Index escapements have been expanded for survey counting rates and unsurveyed tributaries.) (ADF&G 1/10/88)

Year	MAJOR SYSTEMS				MEDIUM SYSTEMS								MINOR SYSTEMS			TOTAL ALL SYSTEMS		
	Alsek (T)	Taku (T)	Stikine (T)	Subt.	Major Situk	Chilkat (T)	Andrews	Unuk (T)	Chickamin(T)	Blossom	Keta	Behm Subt.	Medium Unsurv.	Medium Subt.	King Salm.		Minor Unsurv.	Minor Subt.
1975	4,501	4,609	4,480	13,590	1,557	188	371	88	562	245	325	1,220	951	4,287	53	1,102	1,155	19,032
1976	1,944	8,278	2,560	12,782	1,933	223	404	317	195	109	134	755	948	4,263	81	1,707	1,788	18,833
1977	4,913	10,000	5,120	20,033	1,872	223	456	1,866	376	179	368	2,789	1,526	6,866	168	3,517	3,685	30,584
1978	4,650	4,987	4,045	13,682	1,103	214	388	2,824	290	229	627	3,970	1,621	7,296	71	1,497	1,568	22,546
1979	6,880	6,593	7,462	20,935	1,754	214	327	922	224	86	682	1,914	1,202	5,411	110	2,310	2,420	28,766
1980	4,120	13,402	13,677	31,199	1,125	214	281	1,683	418	142	307	2,550	1,192	5,362	88	1,837	1,925	38,486
Average 75-80	4,501	7,978	6,224	18,704	1,557	213	371	1,283	344	165	407	2,200	1,240	5,581	95	1,995	2,090	26,375
1981	3,302	17,889	21,338	42,529	643	1,670	511	1,170	608	254	526	2,558	1,538	6,920	126	2,652	2,778	52,227
1982	3,688	8,407	18,112	30,207	434	500	635	2,162	806	552	1,206	4,726	1,799	8,094	324	6,798	7,122	45,423
1983	3,938	3,018	3,802	10,758	592	1,080	366	1,770	890	942	1,315	4,917	1,987	8,942	260	5,460	5,720	25,420
1984	2,594	6,307	8,282	17,183	1,726	2,045	355	2,939	1,622	813	976	6,350	2,993	13,469	248	5,197	5,445	36,097
1985	2,227	10,851	10,227	23,305	1,521	625	510	1,862	1,531	1,134	998	5,525	2,340	10,521	146	3,072	3,218	37,044
Average 81-85	3,150	9,294	12,352	24,796	983	1,184	475	1,981	1,091	739	1,004	4,815	2,131	9,589	221	4,636	4,857	39,242

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Table 9. Estimated total chinook salmon escapements to escapement indicator systems and to all Southeast Alaska and Transboundary (T) Rivers, 1975-86. (Index escapements have been expanded for survey counting rates and unsurveyed tributaries.) (ADF&G 1/10/88) (Continued)

Year	----- MAJOR SYSTEMS -----				----- MEDIUM SYSTEMS -----								-- MINOR SYSTEMS --			TOTAL			
	Alsek (T)	Taku (T)	Stikine (T)	Subt.	Major Situk	Chilkat (T)	Andrews	Unuk (T)	Chicka- min(T)	Blossom	Keta	Behm Subt.	Medium Unsurv.	Medium Subt.	King Salm.	Minor Unsurv.	Minor Subt.	ALL SYSTEMS	
Percent change 1981-85 from 1975-80																			
Number	-1,352	1,316	6,128	6,093	-574	971	104	697	747	574	597	2,616	891	4,008	126	2,641	2,766	12,868	
X	-30%	16%	98%	33%	-37%	457%	28%	54%	217%	348%	147%	119%	72%	72%	132%	132%	132%	49%	
Goals	5,000	25,556	13,440	43,996	2,100	2,009	750	2,880	1,440	1,280	800	6,400	3,217	14,476	250	5,250	5,500	63,971	
Percent of Goals																			
Average																			
75-80	90%	31%	46%	43%	74%	11%	49%	45%	24%	13%	51%	34%	39%	39%	38%	38%	38%	41%	
Average																			
81-85	63%	36%	92%	56%	47%	59%	63%	69%	76%	58%	126%	75%	66%	66%	88%	88%	88%	61%	
Preliminary Escapements																			
1986	4,231	12,178	8,026	24,435	2,067	170	1,131	3,402	2,683	2,045	1,104	9,234	3,600	16,202	249	5,224	5,473	46,110	
1987	4,086	8,951	17,318	30,355	1,884	875	1,042	3,157	1,560	2,158	1,229	8,104	3,401	15,306	228	4,788	5,016	50,677	
1987 Change from 1986																			
Number	-145	-3,227	9,292	5,920	-183	705	-89	-245	-1,123	113	125	-1,130	-199	-896	-21	-436	-457	4,567	
X	-3%	-26%	116%	24%	-9%	415%	-8%	-7%	-42%	6%	11%	-12%	-6%	-6%	-8%	-8%	-8%	10%	
Average 1986-87 as Percent of Goal																			
	83%	41%	94%	62%	94%	26%	145%	114%	147%	164%	146%	135%	109%	109%	95%	95%	95%	76%	

Table 10. Preliminary 1987 Southeast Alaska troll fishery chinook and coho salmon catches by period (ADF&G 1/10/88).

Period (No. of days)	Thousands of Fish	
	Chinook	Coho
Winter Season (Oct. 1, 1986 - Apr. 14, 1987)	28.4	-
Summer Season		
Apr 15 - May 30 (46 days)	- Closed All Species	-
June exper. hatchery fisheries (four near-terminal hatchery areas opened several days per week during first three weeks of June)	4.4	
Jun 20 - Jul 12 (23 days)	209.5	145.6 <sup>1/</sup>
Jul 13 - Aug 2 (21 days)	- Closed -	506.5
Aug 3 - 12 (10 days)	- Closed All Species	-
Aug 13 - Sep 20 (39 days)	- Closed -	388.0
Sep 21-30 (10 days)	- Closed All Species <sup>2/</sup>	-
Summer Season Subtotals	213.9	1,040.1
1987 Season Totals	242.3	1,040.1

1/ Coho catches reported on fish tickets by date of catch through Stat. Week 28 ending July 11.

2/ An area adjacent to the Klawock hatchery was open to trolling during Sept. 20-30 to allow harvest of coho surplus to brood stock needs.

Note: Troll catches of other species included: sockeye - 7,200; pink - 410,000; chum - 8,800.

**REPORT TO THE BOARD OF FISHERIES  
1987 YAKUTAT SALMON SET GILL NET FISHERY**

**By  
Region I Staff**

**Southeast Region  
Alaska Department of Fish and Game  
Division of Commercial Fisheries**

**February 1988**

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## ABSTRACT

The 1987 Yakutat set net fishery produced a cumulative catch of 414,007 salmon which was 12% above the recent 10-year average. Sockeye returns to most streams were excellent, with the Alsek River being the one notable exception. The Situk River rebounded strongly from its recent history of decline. Coho harvest was slightly below average, but harvest was affected by inclement weather and overall returns were average to above average. Pink returns and harvest were low, with sockeye and coho comprising 93% of the total harvest. Chum returns were strong, but isolated to a few systems and total chum harvest was 13% above the recent 10-year average. King salmon returns were above recent year averages. King harvest was 13% below the recent 10-year average, but was the highest catch in the last five years.

## INTRODUCTION

The Yakutat area encompasses the Alaska Panhandle south of Cape Suckling and north of Cape Fairweather and accounts for 200 miles of coastline (Figure 1). The area is divided into two districts, the Yakataga District west of Icy Cape and the Yakutat District east of Icy Cape. Commercial fishing occurs in the various rivers along the Yakutat forelands and in the adjoining ocean waters. Salmon are harvested in the Yakutat area by set gill nets and troll gear. A separate Board of Fisheries Report is prepared for the Yakutat-Southeastern Alaska troll fishery. This report will concentrate on the set gill net fishery.

Yakutat set gill net fisheries target primarily on sockeye salmon during the summer and coho salmon during the fall season. The set gill net landings of chinook, pink, and chum are considered primarily incidental while fishing for the major target species. A directed fishery for pink salmon does occur in portions of Yakutat Bay. On the East River, the take of chum salmon is significant during the fall coho salmon season.

Commercial fishing began in 1902 in the Yakutat area and was virtually unregulated until 1927. The area is presently producing below historically high levels, but current production is on an upward trend. The total set net catch in recent years (since 1970) has ranged from 154,000 (1970) to 456,000 (1985) fish with a value of \$1 million to \$5 million to the 162 Yakutat set net permit holders.

The Yakutat set net permits are not registered to specific sites and fishermen are free to fish any open river in the area. No formal forecasts are made for the Yakutat area salmon stocks. Seasonal expectations are derived from parent year catch, escapement, and age structure information. The 1987 seasonal return of sockeye salmon was expected to be average, to above average for most river systems except the Situk, where a below average return was expected. Returns of coho salmon were expected to be average to above average.

The 1987 total set net harvest of approximately 414,000 salmon was well above average. The 1987 catch was valued at approximately \$5.1 million to the 155 fishermen who participated in the fishery and was comprised primarily of sockeye and coho salmon. Annual salmon landings in the Yakutat set net fisheries are shown in Tables 1 through 15.

Because of distinct differences in salmon run timing, the Yakutat set net fisheries are initially open by regulation at various times. A few areas are open by emergency order when harvestable salmon surpluses are available. During the 1987 season Yakutat Bay and the Alsek and East Rivers opened on June 8 while other areas opened in late June or early July due to late and/or depressed returns. Inseason management of each river fishery was based on catch per unit effort analysis of the commercial catch and, where possible, salmon escapement rates.

#### SOCKEYE SALMON FISHERY

Sockeye salmon are the main target species in the Yakutat District set gill net salmon fisheries. The total 1987 Yakutat area sockeye salmon catch was approximately 259,000 fish, which is nearly double the recent 15-year average of 144,000 fish. This sockeye catch was primarily the result of a strong (third highest ever) return to the East River, and the seventh highest catch since 1946 in the Situk River. All other rivers experienced average to above average catches of sockeye salmon, except the Alsek River, which was below average.

#### Alsek River

The Alsek River fishery is located approximately 40 miles southeast of Yakutat and is accessible only by air or water. The fishery occurs

throughout the lower 14 miles of the river including Dry Bay, a large braided channel area near the river mouth, and an adjacent surf ocean fishing area.

The Klukshu River system is considered to be the single most important sockeye and chinook spawning system in the Alsek River drainage. The salmon escapement counts of the Klukshu River Weir (operated by the Canadian government) serve as an escapement index for the Alsek River system. It is estimated that 60% of the sockeye and 50% of the chinook spawn in this tributary. Escapement goals for the Canadian portion of the Alsek River drainage have not been agreed upon by the United States and Canada. The current United States escapement goals for sockeye and chinook, in the entire drainage, are 33,000 and 7,200 fish respectively. The Klukshu River sockeye escapement goal is 20,000 fish.

Although no salmon run sharing agreement is yet in place with the Canadians, the rebuilding of these runs will require joint conservation efforts. Canadian sport and subsistence fisheries harvest both chinook and sockeye salmon and have also been managed conservatively in recent years. Canadian subsistence fishing is limited prior to August 15 and the total Canadian harvest has been reduced from historical levels in recent years. Sport fishing is closed in certain areas to protect spawning fish and limited bag limits are in effect.

The 1987 Alaskan Alsek River season opening was delayed, from the date specified by regulation by one week, until June 8, the second Monday of the month. It was the first time since 1981 that the Alsek River opened earlier than the third Monday in June. Based on 1982 parent year escapements, all timing segments of the sockeye run were expected to be strong enough to support commercial harvesting. The delayed opening was justified for chinook salmon conservation. The fishing time was expanded to a two-day opening during the second week of the season. Sockeye salmon catches were good until the third week, when they declined. The decline continued for the remainder of the sockeye season. In-season total run

and escapement model estimates showed more conclusively each week that the minimum desired Klukshu escapement goal would not be achieved without limiting fishing. The river was closed completely during the week of July 20 and remained on 24-hour weekly fishing periods for the rest of the sockeye season. The total 1987 Alsek River sockeye salmon harvest of 11,300 fish was less than half of both the recent 15-year average harvest. The Klukshu Lake spawning escapement was 9,346 sockeye salmon after a Canadian subsistence harvest of 1,158 fish. This escapement was less than one third of the 1982 parent year level of 34,000 fish and far below the desired escapement goal. Additionally sockeye escapements to the small U.S. tributaries were poor to fair.

The Alsek River ocean/surf fishing area was open during the same time periods as the in-river fishery. The ocean/surf fishing area includes the shoreline 3/4 mile in each direction from the river mouth out to the outermost bar where the surf breaks. Only two permits fished the Alsek surf/ocean fishery in 1987, during one week, and while their catches were good, adverse weather and ocean conditions limited the time that they could fish, so total catches were minimal.

#### East River

The East River fishery is located approximately four miles east by road from the Alsek River. The river originates from up-welling springs on the Dry Bay forelands and does not extend into Canada. It is joined four miles from its mouth by the Doame River which contributes primarily coho salmon and some early run sockeye salmon to the East River fishery. The adjacent ocean waters and lower 3.5 miles of the East River are usually open to fishing. The East River sockeye are the latest returning in the Yakutat area: peaking in early to mid-August when other area sockeye returns are ending. Most gillnetters fishing this river fish other rivers earlier in the season. Again this year the fishing effort on the East

River far exceeded that on the Situk River, which has historically supported the most effort of all Yakutat set gill net fisheries.

The 1987 East River season opening date was June 8, to coincide with the opening date for the adjacent Alsek River. As in recent years the fishing time on the East River remained the same as the Alsek River until early July. Beginning in early July fishing time was increased to four days per week at the peak of the return as East River sockeye escapement levels built steadily. During the week of August 3, peak effort reached a record high level of 89 units, 57% of all active set net permits in the Yakutat area. The total 1987 East River sockeye harvest of approximately 133,000 fish was the second highest on record. The sockeye escapement was excellent, with a peak aerial count of 34,000 fish.

The East River surf and ocean areas were open within 500 yards of the shore at low tide and two miles up and down the beach from the river mouth during the same time periods as the inriver fishery. Effort in the surf and ocean areas has been increasing in recent years. The surf area was fished for seven weeks during the season, from early July through late August, accounting for 30% of the total East River sockeye harvest (see Table 15). Peak effort in the surf was 16 nets (weeks of July 27 and August 10), a new record for the East River. There were 13 or more nets in the surf in five of the seven weeks this area was fished. The ocean area was fished for only five weeks during the season, from late July through late August, and accounted for 16% of the total East River catch. Peak effort was 30 nets (week of August 3), a new record for the ocean fishery.

#### Yakutat Bay

Two separate sockeye salmon fisheries occur in Yakutat Bay: the Manby shore fishery along the northwest shore eastward of Pt. Manby, and the Yakutat Bay fishery along the southeast shore in and around Monti Bay.

Both fisheries are mixed stock fisheries supported primarily by sockeye salmon returns bound for the Yakutat foreland systems south of Yakutat Bay.

The Monti Bay fishery opened on the second Monday of June (June 8) as per regulation. Early season weekly fishing periods were limited to 24 hours in anticipation of poor sockeye returns to the Situk River. Record high fishing effort occurred in Yakutat Bay during the early weeks of the season due to the closure of the Situk River fishery. A new record high of 52 permits fished during the second week of the Yakutat Bay fishery. By the fifth week of the season (week of July 6) it was apparent that the sockeye return to the Situk River was good, and weekly fishing time in Yakutat Bay was increased to 2.5 and 3.5 days for the remainder of the sockeye season. Total 1987 sockeye catch for Yakutat Bay was approximately 25,000 fish, the second highest since record keeping began in 1930 and 45% above the recent 10-year average.

The Manby Shore ocean fishery opening date was delayed one week until June 22 to conserve Situk River stocks suspected to be migrating through the area. Once opened the weekly fishing periods were maintained the same as the Monti Bay fishery. This area was fished for four of the open weeks with peak-weekly effort of 10 permits. Fishing success was similar to the southern Yakutat Bay fishery around Monti Bay. The Manby Shore ocean total sockeye harvest was approximately 5,000 fish. The streams along Manby Shore also opened on June 22, with peak effort of 3 permits in the Sudden - Grand Wash system. The Manby Shore instream sockeye harvest of approximately 3,000 fish was fair.

Yakutat Bay sockeye catches were sampled heavily during 1987 for tagged sockeye returning to the Situk River. Thirty-five thousand Situk smolt were coded-wire tagged and adipose clipped in the spring of 1983 to evaluate their contribution to interceptive fisheries. Analysis of the 1987 tag returns indicated Situk River sockeye returns contributed over 50% of the Yakutat Bay harvest. A wide range of contribution occurred

each week during the season, ranging from 15 to 100%. No tag returns came for any other ocean fisheries.

#### Situk, Ahrnklin and Lost Rivers

The Situk-Ahrnklin River fishery, historically the largest and most heavily fished in the Yakutat area, is located approximately seven miles from Yakutat by road. Fishing occurs in the large Situk-Ahrnklin Lagoon. The Lost River fishery, only two miles to the west, also harvests Situk River stocks as well as some resident stocks. Weekly fishing periods on the Lost River usually coincide with those of the Situk-Ahrnklin fishery.

The Situk River sockeye salmon escapement spawning goal was changed from a range of 80,000 to 100,000 fish to 50,000 fish for the 1987 season. The change was based on an evaluation of recently available spawner-recruit information.

The Situk-Ahrnklin fishery was closed for the first two weeks of the 1987 fishing season in anticipation of a poor sockeye return. The initial open periods on July 22 and 29 were limited to that portion of the Situk - Ahrnklin Lagoon outside Blacksand Island at the Ahrnklin River mouth. This was the first time the fishery has been limited to a portion of the lagoon. It was done to evaluate if a directed fishery for sockeye salmon returning to the Ahrnklin River would impact returns to the Situk River. The area was fished for two weeks for a 24 hour opening each week.

Escapement surveys during the last week of June showed a very strong and sudden surge of sockeye escapement into the Situk River. This prompted a quick opening of the normal Situk-Ahrnklin River fishing area for an unusual 24-hour Friday-Saturday period to harvest the rapidly building surplus of fish. The good run continued and extended open periods were allowed for the remainder of the sockeye season. The total fishing time of 58 days was by far the highest in the last 10 years.

The total 1987 Situk River fishery harvest of 63,400 sockeye was the seventh highest catch since 1946 and more than double the previous 10-year average catch. Effort peaked at 61 permits and remained near that level most of the sockeye season. The 1987 Situk weir recorded an escapement of 72,720 sockeye which exceeded the escapement goal. The option of fishing seven days per week later in the season, when it became apparent that the escapement was going to be well over 50,000 fish, was rejected in order to maintain the integrity of the late run segment of Situk River sockeye salmon return.

The opening of the Lost River was delayed in 1987 for three weeks (until July 6) to conserve Situk River sockeye stocks, which this fishery intercepts. The Lost River sockeye harvest was approximately 2,000 fish which was about average.

#### Italo River

The Italo River is located approximately 15 miles east of the Situk River. In December 1986, during heavy rains and stormy weather, the Italo River diverted its course, at a point approximately 3 miles above its mouth, and flowed east to join the Akwe River near its mouth. Throughout 1987, the two rivers shared a common mouth and each river was fished some distance above the junction of the two rivers. This fishing area on the Italo River was established by emergency order with markers were placed 1/4 mile upstream from the new confluence of the Italo and Akwe Rivers. This was done to prevent fishing on mixed stocks of salmon in the new common mouth area.

The Italo River fishery is opened each year by emergency order when sockeye salmon escapements are building adequately. During 1987, the fishery was opened on July 6. Fishing time ranged from 1.5 to 2.5 days per week. Fishing efforts were low throughout the sockeye season, ranging

from one to two gillnetters each week. The sockeye catch of 900 fish was less than half the recent 15-year average. Sockeye escapements were average in Italo River, totaling approximately 6,000 fish. No good surveys were obtained at Italo Lake.

### Akwe River

The Akwe River supports a small fishery and is located between the Italo and Alsek Rivers. As described in the previous section of the change of the Italo River into the Akwe River created a need to change the open fishing area on the two rivers. To prevent fishing on mixed stocks, the Akwe River was closed downstream of a point 1/2 mile above the confluence of the Italo and Akwe Rivers. A fishing area of approximately 3 miles in length was allowed on the Akwe River in 1987.

The Akwe River opened on June 22. Low water conditions made the sockeye especially vulnerable to the gear. Fishing time started and remained at 1.5 days for all but one week during the sockeye season. Effort was greater than average, peaking at 12 permits during the week of July 6, with four weeks of 10 or more permits fishing the river. Some effort that normally would have been on the Italo River fished the Akwe River due to the limited fishing area on the Italo River. The 1987 Akwe River sockeye harvest of 12,100 fish was 56% above average. Sockeye escapements appeared good.

### PINK AND CHUM SALMON FISHERY

Humpback Creek, located in Yakutat Bay, supports the only directed pink salmon fishery in the Yakutat area. Pink salmon are harvested in other

rivers as an incidental take to the sockeye salmon fishery, and primarily in the Situk River.

Pink salmon returns were very weak in 1987. The total set net pink harvest was approximately 13,000 fish, 74% below the recent fifteen-year average of 49,000 fish. No effort occurred at Humpback Creek and only a few gillnetters fished the Situk River for pink salmon. Pink salmon spawning escapements were poor in both Humpback Creek and the Situk River.

No targeted chum salmon fisheries occur in the Yakutat area. Chums are harvested in small numbers during the summer sockeye and fall coho salmon fisheries. Summer chum salmon are found in small numbers in many Yakutat area rivers, predominantly in the Italo and Akwe Rivers. Fall chum salmon are present primarily in the East River with small numbers in the lower Alsek River. The 1987 harvest of approximately 14,700 chum salmon, most from the East River, was 35% above the recent 15-year average of 11,000 fish.

#### COHO SALMON FISHERY

Coho salmon generally comprise approximately one-third of the Yakutat commercial salmon set net harvest. This species is harvested during late summer and fall in the same rivers of the Yakutat District that support sockeye salmon fisheries. The Yakataga District (west of Icy Bay) supports only a coho salmon fishery. The 1987 set net harvest of coho salmon was approximately 125,000 fish, which is above the recent year average catch. Yakutat area coho catches have increased steadily in the past decade. About 41% of the 1987 set net coho salmon harvest occurred in the Yakataga District, from the Tsiu, Kaliakh, and Kiklukh Rivers.

## Yakataga District

The Yakataga District with the exception of the Tsiu River was opened July 20, prior to the coho salmon season, to allow the opportunity for exploratory fishing for sockeye salmon. However, no one fished the district until the normal start of the fall coho season in mid-August.

The first fishing efforts in the Yakataga District occurred on the Kaliakh River on August 17. A high effort of 24 units fished on the Kaliakh River in 1987 due to closures of the nearby Tsiu River which was closed due to poor escapements as a result of extremely low water. The Kaliakh River is a much larger and glacial system which did not experience low water. The Kaliakh River was fished for five weeks and produced an average harvest of approximately 15,900 coho.

The Tsiu River opening, adjacent to the Kaliakh River, was delayed until August 28 due to poor escapements caused by low stream flow. Trolling in the Yakataga district was also closed, but remained closed for only one day since fish began moving up the Tsiu River shortly after the closure. Due to low stream flows the upstream markers were initially moved one-quarter mile downstream from their normal placement to ensure adequate escapement. Later high water levels aided fish movement, and on September 8 the upstream markers were restored to their normal position; approximately one-half mile downstream from Duck Camp Island.

Peak catch and effort for both the Tsiu and Kaliakh Rivers occurred during the first two weeks of the season. Fishing effort was heavy on the Tsiu, with a maximum of 37 permits. The total Tsiu River coho harvest was approximately 35,700 fish. Fishermen were aided this year by the presence of two major buyers instead of one as in most past years.

The total harvest of 51,600 coho salmon in the Yakataga District was very near the recent five-year average of 53,400. Initial escapement surveys

indicated good numbers of spawners, however, very heavy rains and high dark water from early September through the end of the season prevented total seasonal escapement enumeration. Final escapements are believed to be good.

#### Yakutat District

Coho salmon began entering Yakutat District fisheries in late July and landings were good until early September, when record heavy rainfalls caused river levels to rise. The rains continued and fishing conditions deteriorated rapidly for the remainder of the season, with heavy debris loads, dirty water, and rapid currents making fishing difficult. Approximately 74,000 coho salmon were harvested during the 1987 season by set gill net gear in the Yakutat District. This year's harvest was 86% of the recent five-year average of 86,000 coho.

Most rivers started with normal three-day openings (noon Monday through noon Thursday) and fishing time was extended throughout the Yakutat District to four days per week during the final four weeks of the season due to greatly reduced fishing efficiency caused by the high water levels. During what are normally peak weeks, some rivers saw little or no effort due to the poor fishing conditions.

This year's coho catch on the Situk River of 29,900 fish was slightly above the recent 10-year average. Most other rivers in the Yakutat District, because of the high water levels, experienced below average catches, including the Lost, Akwe, Itelio and Alsek Rivers. The Yahtse River was the brightest spot in the Yakutat District in 1987, with a catch of 12,700, 39% above the recent 10-year average. An effort of 9 permits in the Yahtse River was also above average. For the second year in a row, markers were placed on the Yahtse River to protect several clear water spawning tributaries. Later escapement counts in all systems were flooded

out, but escapements were probably good to excellent in most areas, based on earlier surveys.

#### CHINOOK SALMON FISHERY

No directed commercial set net chinook fishery currently occurs in the Yakutat area. All chinook currently harvested by set nets are taken incidentally during the early weeks of the sockeye fisheries. Most of the chinook landed annually are taken in the Situk and Alsek Rivers. Most Yakutat area chinooks harvested in the set net fishery are mature spawners except in Yakutat Bay where some feeders are caught. The 1960-86 average annual total set net harvest of chinook in the Yakutat area is 1,900 fish. The 1987 harvest of approximately 2,900 fish is above this average and is the highest harvest since 1981. The 1987 harvest exceeded the Yakutat set net harvest level specified by regulation of 1,000 fish by 77%. The above average harvest was a reflection of overall above average returns and extended fishing times on the Situk River during the sockeye season.

A total of 347 mature chinook salmon was taken incidentally during the early fishing weeks of the 1987 sockeye salmon season on the Alsek River. This is the second highest chinook catch there since 1982, yet is still well below historical levels. The 1987 Klukshu River Weir count of chinook salmon was 2,616 fish. While this is below the 3,500 fish escapement goal for this tributary it exceeds expectations from the two parent year escapements of 2,100 (1981) and 2,400 (1982) fish. Most of the chinook returns are well up-river by the time the Alaskan set net fishery begins, especially in recent years when the season opening has been delayed due to conservation concerns for the early run sockeye. In 1987, many Alsek River fishermen voluntarily released unharmed chinook from their nets. For the second year in a row, by emergency order, gillnet mesh size was restricted on the Alsek River to six inches or less

during June and July to reduce incidental catch of chinook salmon. This restriction was in place from June 8 through July 31. In river observations by department personnel revealed the same results as in 1986, i.e., this mesh size still entangled chinook salmon by the snout. Many of the chinook released after capture on the Alsek were unharmed because they had been caught in this manner and not gilled. Sex ratios among the "snared" chinook were very close to 1 male : 1 female.

Chinook salmon incidentally harvested during the Situk River sockeye salmon fishery totalled 891 fish in 1987, 54% above the recent 10-year average catch and highest catch since 1980. This was due to an overall increase in fishing time for sockeye and a fairly strong return of chinook. A total of 1,799 large chinook spawners was counted through the Situk weir, 200 fish short of the escapement goal. The total return of 2,558 chinook salmon was excellent with approximately 5:1 return per spawner. Several conservation measures were put in place on the Situk River in 1987 to reduce the chinook harvest; a maximum six-inch mesh restriction was in place in the Situk commercial and subsistence fisheries; all fishermen were encouraged to release chinook unharmed; and the sport fishery on the Situk River for chinook was closed for most of the season.

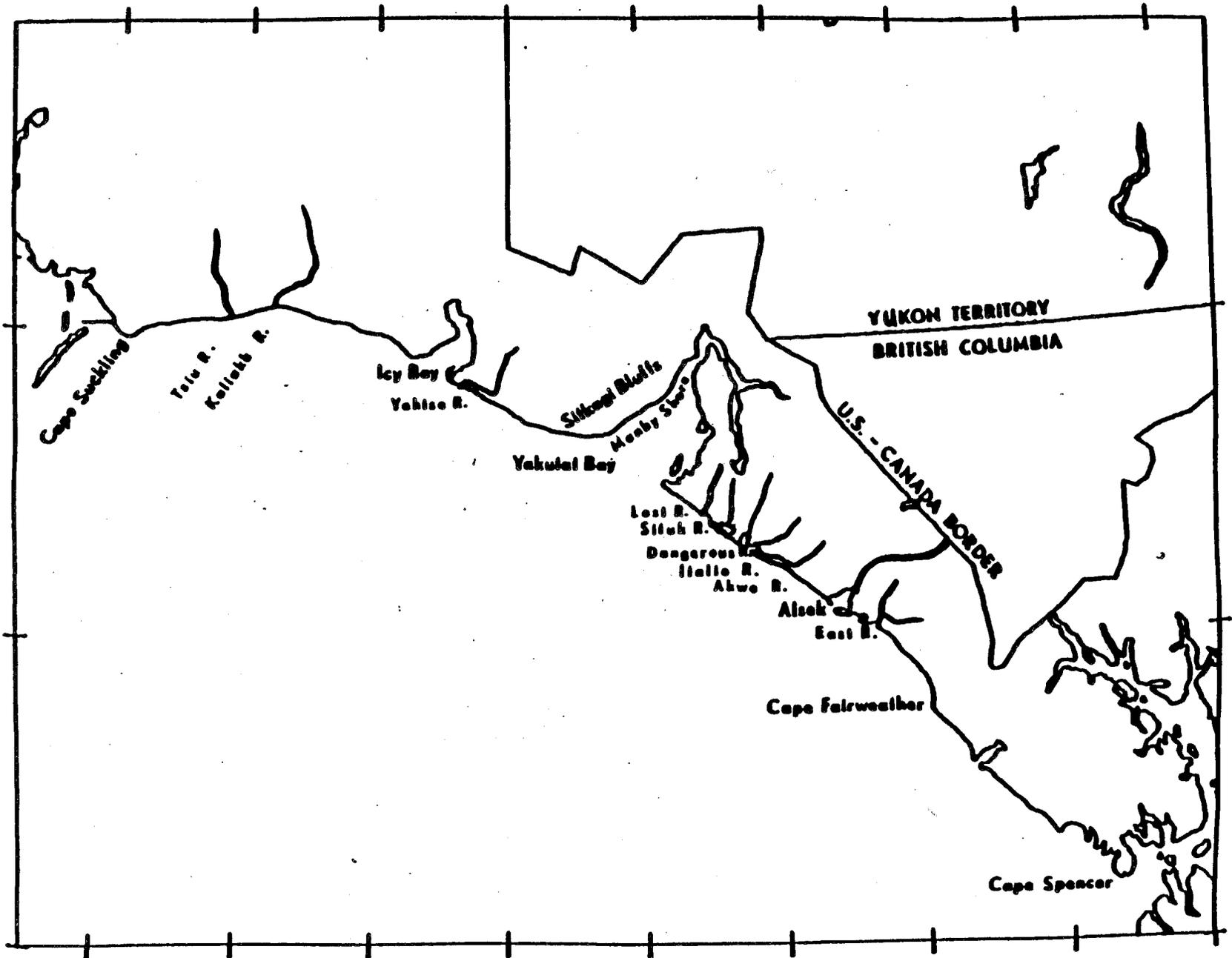


Figure 1. Yakutat Management Area (Cape Suckling to Cape Fairweather).

Table 1. Yakutat annual commercial set gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	908	44,671	119,149	12,911	277	177,916
1961	2,534	82,403	128,670	63,608	11,038	288,253
1962	2,747	73,937	170,776	26,063	616	274,139
1963	941	52,517	141,365	78,697	10,294	283,814
1964	1,488	90,175	169,780	40,038	1,481	302,962
1965	1,323	120,417	122,207	4,402	4,094	252,443
1966	1,555	185,360	66,252	1,405	3,396	257,968
1967	742	88,431	97,211	31,580	4,459	222,423
1968	697	80,776	92,005	2,130	13,866	189,474
1969	1,887	117,725	32,262	63,692	14,927	230,493
1970	2,272	112,169	29,748	3,555	7,093	154,837
1971	1,945	129,206	37,420	79,973	4,986	253,530
1972	2,376	131,484	45,704	2,903	8,290	190,757
1973	2,733	128,412	41,213	16,998	8,995	198,351
1974	2,214	82,413	77,556	4,248	4,185	170,616
1975	2,224	73,260	37,403	80,043	3,761	196,691
1976	1,830	130,176	51,743	28,492	7,746	219,987
1977	2,549	185,391	92,214	75,504	8,652	364,310
1978	3,057	130,681	137,408	30,522	6,181	307,849
1979	4,299	165,069	95,873	152,053	7,399	424,693
1980	2,800	159,152	119,648	141,998	20,151	443,749
1981	2,069	149,573	132,127	133,863	10,633	428,265
1982	1,456	212,368	148,994	9,886	6,305	379,009
1983	976	152,541	81,517	25,378	11,195	271,607
1984	1,062	102,545	182,256	19,870	32,230	337,963
1985	1,231	234,886	203,193	16,362	12,466	468,138
1986	1,425	150,619	87,871	7,248	16,609	263,772
Average 1960 to 1986	1,901	124,680	101,539	42,719	8,938	279,778
1987 PRELIMINARY	2,072	259,013	124,873	13,036	15,013	414,007

Table 2. Yakutat annual commercial Akwe River set gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	1	2,071	5,125	372	31	7,600
1961	0	5,206	13,359	1,844	78	20,487
1962	0	4,445	10,009	1,751	117	16,322
1963	27	4,276	6,913	10,152	51	21,419
1964	12	4,314	6,775	1,056	232	12,389
1965	15	3,611	2,703	83	156	6,568
1966	154	7,173	912	81	73	8,393
1967	65	4,496	2,014	244	72	6,891
1968	94	3,276	5,375	209	254	9,208
1969	45	4,384	601	372	239	5,641
1970	39	3,314	1,536	50	18	4,957
1971	62	9,310	4,656	24	0	14,052
1972	102	3,223	5,267	22	128	8,742
1973	88	6,132	4,670	164	125	11,179
1974	46	1,620	4,988	73	96	6,823
1975	65	3,177	3,160	773	83	7,258
1976	46	4,169	3,816	155	311	8,497
1977	108	4,936	10,299	630	272	16,245
1978	36	2,524	14,903	202	123	17,788
1979	116	7,055	10,223	2,372	139	19,905
1980	110	28,687	8,624	129	186	37,736
1981	108	15,467	6,691	918	64	23,248
1982	129	4,971	10,945	129	82	16,256
1983	99	5,822	5,290	152	74	11,437
1984	152	17,729	8,714	1,049	625	28,269
1985	144	4,676	4,429	94	27	9,370
1986	384	9,087	8,618	43	101	18,233
Average 1960 to 1986	83	6,487	6,319	857	139	13,886
1987 PRELIMINARY	257	12,125	7,119	33	551	20,085

Table 3. Yakutat annual commercial Alsek River set gill net salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	0	0	0	0
1961	2,120	23,339	7,679	84	86	33,308
1962	0	0	0	0	0	0
1963	131	6,055	7,164	42	34	13,426
1964	591	14,127	9,760	144	367	24,989
1965	719	28,487	9,638	10	72	38,926
1966	934	29,091	2,688	22	240	32,975
1967	225	11,108	10,090	107	30	21,560
1968	215	26,918	10,586	82	240	38,041
1969	685	29,259	2,493	38	61	32,536
1970	1,128	22,654	2,188	6	26	26,002
1971	1,222	25,314	4,730	3	120	31,389
1972	1,827	18,717	7,296	37	280	28,157
1973	1,757	26,523	4,395	26	283	32,984
1974	1,162	16,747	7,046	13	107	25,075
1975	1,379	13,842	2,230	16	261	17,728
1976	512	19,741	4,883	0	368	25,504
1977	1,402	40,780	11,817	689	483	55,171
1978	2,441	50,580	13,913	59	233	67,226
1979	2,525	41,449	6,158	142	263	50,537
1980	1,382	25,589	7,863	21	1,005	35,860
1981	779	23,697	10,096	65	816	35,453
1982	532	27,389	6,534	6	358	34,819
1983	94	18,546	5,253	20	432	24,345
1984	60	14,326	7,868	24	1,610	23,888
1985	213	5,940	5,622	3	427	12,205
1986	478	24,791	1,344	13	462	27,088
Average 1960 to 1986	908	21,667	6,272	62	321	29,229
1987 PRELIMINARY	347	11,281	2,517	0	1,924	16,069

Table 4. Yakutat annual commercial Dangerous River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	0	0	0	0
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	264	0	0	0	264
1969	0	0	0	0	0	0
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	0	0	0	0	0	0
1973	0	0	132	0	1	133
1974	0	0	0	0	0	0
1975	0	0	0	0	0	0
1976	0	0	0	0	0	0
1977	0	16	553	8	2	579
1978	0	29	1,144	15	5	1,193
1979	0	0	0	0	0	0
1980	0	0	0	0	0	0
1981	0	0	1,861	0	20	1,881
1982	0	0	0	0	0	0
1983	0	0	0	0	0	0
1984	3	142	267	0	0	412
1985	7	557	17	16	0	597
1986	10	2,811	202	22	8	3,053
Average 1960 to 1986	1	141	155	2	1	300
1987 PRELIMINARY	4	2,433	0	0	0	2,437

Table 5. Yakutat annual commercial East River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	525	16,502	5,932	53	109	23,121
1961	0	1,784	310	195	10,564	12,853
1962	2,278	14,475	8,362	93	133	25,341
1963	0	3,233	264	162	9,894	13,553
1964	0	853	5,122	1,081	665	7,721
1965	0	824	1,039	176	3,727	5,766
1966	1	2,863	1,061	45	2,908	6,878
1967	0	2,473	318	1	4,282	7,074
1968	1	3,798	3,482	484	12,967	20,732
1969	4	10,886	1,134	178	14,495	26,697
1970	9	21,673	3,325	296	7,010	32,313
1971	59	12,416	3,722	309	4,483	20,989
1972	10	9,575	1,685	0	7,774	19,044
1973	33	12,342	1,353	109	6,152	19,989
1974	129	14,520	3,231	109	3,231	21,220
1975	147	18,235	1,442	114	3,150	23,088
1976	156	29,726	1,280	136	6,416	37,714
1977	115	21,420	4,140	505	6,811	32,991
1978	61	30,922	7,635	200	5,363	44,181
1979	287	47,442	4,124	1,052	5,791	58,696
1980	76	48,366	2,456	557	18,255	69,710
1981	125	49,346	6,933	2,397	8,650	67,451
1982	84	98,837	2,578	493	4,731	106,723
1983	36	81,201	4,988	359	9,392	95,976
1984	121	39,353	10,924	839	22,354	73,591
1985	119	184,962	8,932	1,018	10,705	205,736
1986	111	74,972	2,823	348	14,317	92,571
Average 1960 to 1986	166	31,593	3,652	419	7,568	43,397
1987 PRELIMINARY	187	133,409	4,890	148	10,225	148,859

Table 6. Yakutat annual commercial Itlalo River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	839	4,336	18	34	5,227
1961	0	3,693	1,704	696	166	6,259
1962	1	1,375	7	12	6	1,401
1963	0	0	1,266	44	0	1,310
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	593	3,866	161	106	4,726
1969	0	0	1,637	7	30	1,674
1970	0	88	150	5	0	243
1971	0	0	0	0	0	0
1972	0	0	940	9	0	949
1973	1	1,723	1,785	215	1,382	5,106
1974	2	99	5,460	49	487	6,097
1975	1	365	3,064	70	239	3,739
1976	2	1,239	4,553	344	410	6,548
1977	7	1,166	4,912	1,048	773	7,906
1978	4	1,012	8,130	218	385	9,749
1979	19	2,315	6,110	3,622	910	12,976
1980	3	302	6,927	366	524	8,122
1981	3	1,668	6,138	2,657	709	11,175
1982	6	2,931	6,940	287	610	10,774
1983	0	1,349	4,804	445	605	7,203
1984	1	7,543	9,213	1,490	5,592	23,839
1985	4	1,314	9,491	359	435	11,603
1986	21	4,010	1,856	0	903	6,790
Average 1960 to 1986	3	1,245	3,455	449	530	5,682
1987 PRELIMINARY	2	902	1,399	3	677	2,983

Table 7. Yakutat annual commercial Kaliakh River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	51,622	271	10	51,903
1961	0	0	51,417	13	0	51,430
1962	0	0	23,443	0	0	23,443
1963	0	0	15,833	0	0	15,833
1964	0	0	24,769	0	0	24,769
1965	0	1	25,896	3	0	25,900
1966	0	0	12,202	0	0	12,202
1967	0	0	9,486	0	0	9,486
1968	0	0	5,799	0	0	5,799
1969	0	0	785	0	0	785
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	0	0	0	0	0	0
1973	0	0	601	0	2	603
1974	0	0	1,101	0	0	1,101
1975	0	0	0	0	0	0
1976	0	0	1,221	0	0	1,221
1977	0	0	1,778	0	0	1,778
1978	0	0	5,507	0	0	5,507
1979	0	0	5,266	0	0	5,266
1980	0	0	8,725	0	0	8,725
1981	0	0	3,093	0	0	3,093
1982	0	0	16,443	46	0	16,489
1983	0	0	4,598	0	0	4,598
1984	0	0	13,081	0	0	13,081
1985	0	2	23,015	0	0	23,017
1986	1	2	10,770	0	1	10,774
Average 1960 to 1986	0	0	11,720	12	0	11,733
1987 PRELIMINARY	1	8	15,923	0	1	15,933

Table 8. Yakutat annual commercial Tsiu River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	10,169	5	1	10,175
1961	0	0	0	0	0	0
1962	0	0	38,739	0	0	38,739
1963	0	0	19,771	0	0	19,771
1964	0	533	34,644	0	0	35,177
1965	0	1	41,357	8	0	41,366
1966	0	504	28,960	0	0	29,464
1967	0	342	34,899	0	0	35,241
1968	0	0	16,064	0	0	16,064
1969	0	0	3,144	0	0	3,144
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	0	0	0	0	0	0
1973	0	0	8,803	1	0	8,804
1974	0	0	8,258	0	0	8,258
1975	0	0	0	0	0	0
1976	0	0	3,129	0	0	3,129
1977	0	0	5,691	0	0	5,691
1978	0	1,767	34,392	0	0	36,159
1979	2	16	32,621	0	3	32,642
1980	0	0	28,711	0	3	28,714
1981	0	0	30,109	0	0	30,109
1982	0	0	46,436	0	0	46,436
1983	0	0	20,119	0	0	20,119
1984	0	0	51,322	0	48	51,370
1985	0	0	63,922	0	0	63,922
1986	0	0	19,590	0	0	19,590
Average 1960 to 1986	0	117	21,513	1	2	21,633
1987 PRELIMINARY	0	0	35,747	0	0	35,747

Table 9. Yakutat annual commercial Yahtse River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	50	5,005	2	0	5,057
1961	1	166	16,454	9	0	16,630
1962	0	0	19,863	0	0	19,863
1963	0	0	16,280	0	0	16,280
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	4,735	0	0	4,735
1968	0	0	11,807	0	0	11,807
1969	0	0	1,800	0	0	1,800
1970	0	0	4,980	0	0	4,980
1971	0	0	0	0	0	0
1972	0	0	5,130	20	0	5,150
1973	0	0	4,908	0	0	4,908
1974	0	0	6,679	0	0	6,679
1975	0	0	3,444	0	0	3,444
1976	0	0	0	0	0	0
1977	0	3	2,672	5	0	2,680
1978	2	104	3,428	4	1	3,539
1979	0	0	3,752	0	0	3,752
1980	0	0	15,016	0	3	15,019
1981	0	0	11,524	100	0	11,624
1982	0	0	7,668	1	0	7,669
1983	0	0	6,796	2	0	6,798
1984	1	0	1,526	0	0	1,527
1985	0	0	3,707	0	0	3,707
1986	0	0	18,278	2	2	18,282
Average 1960 to 1986	0	12	6,498	5	0	6,516
1987 PRELIMINARY	0	204	12,688	0	1	12,893

Table 10. Yakutat annual commercial Lost River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	46	3,800	9,546	1,187	2	14,581
1961	18	5,319	8,447	924	4	14,712
1962	32	4,744	10,783	679	20	16,258
1963	62	3,346	10,228	1,149	19	14,804
1964	64	6,868	12,197	2,166	20	21,315
1965	58	10,012	7,463	349	8	17,890
1966	12	9,374	2,605	103	5	12,099
1967	8	3,909	3,275	970	2	8,164
1968	44	6,145	6,958	59	12	13,218
1969	34	6,777	3,133	333	0	10,277
1970	50	6,550	2,401	160	8	9,169
1971	22	6,012	2,719	70	2	8,825
1972	19	4,076	3,627	35	6	7,763
1973	23	4,495	2,385	458	26	7,387
1974	18	1,948	4,300	280	4	6,550
1975	29	1,976	3,486	427	9	5,927
1976	42	4,607	3,786	783	15	9,233
1977	25	8,925	6,052	3,138	17	18,157
1978	21	3,831	6,360	789	7	11,008
1979	59	3,818	4,265	1,923	35	10,100
1980	42	3,880	6,813	2,035	12	12,782
1981	11	2,316	7,471	634	16	10,448
1982	12	4,980	9,366	719	14	15,091
1983	3	2,158	5,223	1,554	9	8,947
1984	22	726	10,717	1,864	96	13,425
1985	12	1,418	9,098	315	14	10,857
1986	6	491	2,489	80	9	3,075
Average 1960 to 1986	29	4,537	6,118	859	14	11,558
1987 PRELIMINARY	33	1,973	3,646	113	37	5,802

Table 11. Yakutat annual commercial Manby Shore set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	0	0	0	0
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	114	2,496	21,827	101	1	24,539
1964	0	35	26,638	0	0	26,673
1965	3	430	11,167	19	1	11,620
1966	0	0	0	0	0	0
1967	0	0	7,783	0	0	7,783
1968	0	7	7,638	3	0	7,648
1969	0	0	4,833	12	0	4,845
1970	0	1	3,190	1	0	3,192
1971	0	0	0	0	0	0
1972	0	0	2,953	0	0	2,953
1973	0	5	1,770	6	824	2,605
1974	2	64	2,199	6	232	2,503
1975	0	0	3,426	0	0	3,426
1976	0	0	11,906	10	0	11,916
1977	6	9,785	12,130	10	0	21,931
1978	2	3,149	9,277	126	1	12,555
1979	2	6,232	4,575	3	0	10,812
1980	54	10,620	8,611	65	2	19,352
1981	34	13,463	8,161	164	10	21,832
1982	26	18,657	10,544	35	101	29,363
1983	24	7,819	5,391	142	12	13,388
1984	45	6,093	17,594	1	8	23,741
1985	8	5,677	16,119	33	7	21,844
1986	0	5,013	4,080	3	5	9,101
Average 1960 to 1986	12	3,317	7,475	27	45	10,875
1987 PRELIMINARY	15	8,109	7,606	0	4	15,734

Table 12. Yakutat annual commercial Situk River set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	312	18,888	25,613	3,701	78	48,592
1961	367	35,411	26,324	12,589	97	74,788
1962	337	43,426	53,502	12,273	325	109,863
1963	466	29,541	38,294	14,266	276	82,843
1964	706	55,729	43,079	13,431	135	113,080
1965	442	66,874	20,454	3,229	122	91,121
1966	411	126,452	15,963	952	145	143,923
1967	203	61,255	23,278	19,832	67	104,635
1968	312	29,249	19,149	518	273	49,501
1969	1,089	55,856	10,656	2,897	85	70,583
1970	927	46,249	11,879	1,142	16	60,213
1971	473	62,364	21,389	2,890	79	87,195
1972	303	80,405	17,848	966	87	99,609
1973	752	67,194	10,026	11,395	171	89,538
1974	791	42,228	32,968	3,263	16	79,266
1975	562	30,354	16,408	6,686	2	54,012
1976	1,002	60,678	15,664	6,939	171	84,454
1977	833	83,970	32,020	24,347	202	141,372
1978	382	31,363	32,057	7,294	53	71,149
1979	1,028	46,384	17,624	30,131	236	95,403
1980	969	32,357	21,935	32,823	76	88,160
1981	858	29,093	37,871	26,515	252	94,589
1982	248	29,751	27,549	4,482	140	62,170
1983	349	17,797	15,186	6,864	240	40,436
1984	512	7,401	47,511	12,446	844	68,714
1985	484	18,620	55,223	8,800	166	83,293
1986	202	7,617	14,760	1,503	120	24,202
Average 1960 to 1986	567	45,056	26,083	10,081	166	81,952
1987 PRELIMINARY	891	63,399	29,861	10,933	986	106,070

Table 13. Yakutat annual commercial Yakutat Bay set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	24	2,521	1,801	7,302	12	11,660
1961	28	7,485	2,976	47,254	43	57,786
1962	99	5,472	6,068	11,255	15	22,909
1963	141	3,541	3,198	5,457	8	12,345
1964	115	7,716	6,796	22,160	62	36,849
1965	86	10,177	2,490	525	8	13,286
1966	43	9,903	1,861	202	25	12,034
1967	241	4,848	1,332	9,605	6	16,032
1968	31	10,526	1,281	169	14	12,021
1969	29	10,410	1,133	1,504	13	13,089
1970	119	11,596	99	660	15	12,489
1971	106	13,732	50	597	3	14,488
1972	115	15,488	258	492	15	16,368
1973	79	9,962	377	2,886	23	13,327
1974	64	5,187	1,326	455	12	7,044
1975	41	5,144	447	3,094	5	8,731
1976	69	9,977	1,179	1,639	55	12,919
1977	53	14,150	91	8,202	81	22,577
1978	108	5,399	635	6,618	9	12,769
1979	51	3,635	556	3,396	5	7,643
1980	164	9,341	2,063	16,150	79	27,797
1981	151	14,389	1,806	12,024	68	28,438
1982	419	24,852	3,991	3,688	269	33,219
1983	371	17,844	3,739	6,793	428	29,175
1984	145	9,213	3,381	2,139	1,010	15,888
1985	240	11,665	3,618	5,514	685	21,722
1986	211	21,724	3,060	5,234	680	30,909
Average 1960 to 1986	124	10,218	2,060	6,852	135	19,389
1987 PRELIMINARY	329	24,984	2,411	1,794	605	30,123

Table 14. Yakutat annual commercial Humpy Creek set gillnet salmon catches in numbers by species. (ADF&G 1/10/88)

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	0	0	0	0	0
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	29	327	47,324	11	47,691
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	1	821	0	822
1968	0	0	0	445	0	445
1969	1	153	913	58,351	4	59,422
1970	0	44	0	1,235	0	1,279
1971	1	58	154	76,080	299	76,592
1972	0	0	700	1,322	0	2,022
1973	0	36	8	1,738	6	1,788
1974	0	0	0	0	0	0
1975	0	167	296	68,863	12	69,338
1976	1	39	326	18,486	0	18,852
1977	0	240	59	36,922	11	37,232
1978	0	1	27	14,997	1	15,026
1979	210	6,723	599	109,412	17	116,961
1980	0	10	333	89,852	6	90,201
1981	0	134	373	88,389	28	88,924
1982	0	0	0	0	0	0
1983	0	5	130	9,047	3	9,185
1984	0	19	138	18	43	218
1985	0	55	0	210	0	265
1986	1	101	1	0	1	104
Average 1960 to 1986	8	289	162	23,093	16	23,569
1987 PRELIMINARY	0	0	0	0	0	0

Table 15. Alsek and East River surf ocean fishing effort levels and sockeye harvest (in numbers of fish) 1979-1987 (ADF&G 1/10/88).

	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>East River</b>									
Maximum No. of Surf-Ocean Fishermen	14	8	32	0	31	24	26	28	43
Estimate Surf-Ocean Catch	11,860	7,521	12,855	0	29,235	8,690	37,032	17,993	44,828
% of Total East River Harvest	25%	16%	26%	0	36%	22%	20%	24%	34%
Total East River Harvest	47,442	48,366	49,346	98,837	81,205	39,023	185,503	74,972	133,409
Total Maximum No. of Fishermen in any one week	22	52	58	32	52	48	66	78	90
<b>Alsek River</b>									
Maximum No. of Surf-Ocean Fishermen	16	18	Closed	Closed	2	2	0	4	2
Estimate Surf-Ocean Catch	15,164	3,838	0	0	600	930	0		
% of Total East River Harvest	37%	15%	0	0	3%	6%	0		
Total East River Harvest	41,449	25,589	24,680	27,389	18,546	14,409	5,595	24,791	11,281
Total Maximum No. of Fishermen in any one week	38	40	21	24	20	22	21	26	26

REPORT TO THE BOARD OF FISHERIES  
1987 SOUTHEASTERN HERRING FISHERY  
AND  
MACROCYSTIS KELP TRANSPORT FISHERY

By  
Region I Staff

Southeast Region  
Alaska Department of Fish and Game  
Division of Commercial Fisheries

February 1988

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## INTRODUCTION

The Southeastern Region is a composite of two herring statistical areas. Area A, the Southeastern area, encompasses the waters of Alaska south of Cape Fairweather and north of the International Boundary at Dixon Entrance. Area D, the Yakutat area, extends west from Cape Fairweather to Cape Suckling.

### History of the Herring Fishery

Pacific herring stocks are found throughout Southeast Alaska and have been fished commercially since a salting operation was initiated during the 1880's. Beginning in the 1890's the catch was used primarily to supply herring for reduction to meal and oil until the fishery phased out in 1967 primarily due to the development of the Peruvian anchovy reduction industry. Presently, these stocks support three distinct commercial fisheries, a food and bait herring fishery which occurs during the winter months, a herring bait pound fishery, and a sac roe herring fishery which occurs in the spring spawning season. Purse seine fishing gear dominates the food and bait fishery while purse seine and gill net gear harvest sac roe herring. Individual stocks are managed so that they are exposed to only one of these two major fisheries. Herring pounds account for only a small portion of the bait harvest. A summary of the total Southeast Alaska herring catch from 1900 to the present is presented in Table 1.

Historically, local residents have harvested quantities of herring and herring eggs on kelp and hemlock branches for subsistence use. Herring are also harvested for bait for longline and shellfish fisheries in a personal use fishery. This fishery is largely unregulated; as a result the accuracy of harvest figures is not well documented. The personal use catch is however expected to be minimal and occurs primarily in Wrangell Narrows near Petersburg and Sitka Sound.

Permits for both the gill net and seine sac roe fisheries are included under the limited entry system. A total of 91 permanent and 34 interim use gill net permits and 44 permanent and 8 interim use purse seine permits were issued for the 1987 season. Entry into the winter seine fishery is not restricted and 44 interim use permits were issued for the 1987 fishery. A total of 4 herring bait pound interim use permits were issued in 1987.

### Management Strategy

The management strategy for the southeastern Alaska herring fisheries is based upon the determination of the abundance of good quality herring available on a stock basis. A portion of the stock is harvested if the population size satisfies established threshold levels. The "threshold level" is the herring biomass needed to meet minimum spawning requirements. Threshold levels have been established for each of the winter bait and roe herring fishing areas.

The successful accomplishment of this management approach is dependent upon the determination of the size of the herring populations, the age and growth characteristics of these individual populations, and spawning success on a stock by stock basis. The determination of stock size is based on biomass estimates derived from hydroacoustic and spawning ground surveys. Age and growth information is obtained by sampling through test fishing, commercial harvest, department midwater trawling and department purse seine catches from spawning grounds.

Current management strategy used to establish herring harvest levels include an approach which allows an accelerated harvest rate when mature herring populations are high. This management strategy was first presented to the Board of Fisheries in January, 1983. This strategy is

consistent with the policies of the Alaska Board of Fisheries for maintaining annual herring harvest rates between 10-20% when spawning threshold levels are met and minimizing the harvest of small, immature herring.

The allowable harvest is based on a graduated scale that allows for higher harvest rates as the herring population increases relative to the threshold level. A graph depicting this harvest management strategy is shown in Figure 1. The scale provides for a uniform method for establishing harvest levels for each herring fishery. The approach allows for an annual harvest rate of between 10-20% of the mature herring in excess of established spawning threshold levels. When the estimate of the mature stock is at the threshold level a 10% harvest is allowed. The harvest rate increases 2% for every time the estimated spawning biomass increases by an amount equal to the threshold level. The harvest rate reaches a maximum of 20% when the population is 6 times the threshold level.

The determination of the threshold level and percent harvest calculations are based on the biomass estimate of mature herring. The herring biomass for both the winter bait and sac roe fishing area is determined either from spawn deposition sampling conducted during the previous season or current year hydroacoustical surveys. In cases where spawning ground surveys are utilized the estimate only includes mature herring that spawned the previous season. It would not account for any mortality of the herring since the spawning occurred nor would it include any additional recruitment that may have been realized since the surveys were completed. For those instances where the population estimate is derived acoustically, only those herring that would be expected to contribute to the spawn are included. This is determined by sampling the population with trawl gear and analyzing its age structure.

On October 14, 1987, the department met with the industry to discuss a modified management approach in the winter bait herring fishery. This approach includes the incorporation of stock spawning success in addition to acoustical assessment for estimating herring stock size. This

plan will allow herring harvest opportunities for herring stocks that cannot be consistently surveyed acoustically. Currently, stock size is determined in the winter fishery almost exclusively with hydroacoustics. The use of spawning ground surveys has proven successful in the management of the roe herring fisheries. This approach was utilized during the 1987/88 season where spawning success information was available.

### SEASON SUMMARY

The 1986-87 seasonal herring catch totaled approximately 16.7 million pounds (8,366 tons) (Table 1). This included a catch of 4.7 million pounds (2,347 tons) of winter bait herring and 11.9 million pounds (5,957 tons) of sac roe herring, and 130,000 pounds (65 tons) of fresh bait sold from herring pounds. The total value to the fishermen was about \$6.9 million of which \$6.3 million was for the sac roe fisheries. A summary of the 1986-87 season's herring fishery by area is presented in Table 2.

#### 1986-87 Winter Food and Bait Fishery

The winter food and bait fishery catches have steadily declined since a high of 12.8 million pound recorded during the 1976-77 season to a low of 1.2 million pounds in the 1983-84 season (Table 3). This decline can be attributed to 1) generally lower stock abundance in traditional wintering areas, 2) reduced demands for bait in the early 1980's and 3) because of a more conservative approach in managing winter bait stocks in recent years. Overall, stock conditions continue to be below required threshold levels in most winter bait areas in Southeast. During the past two seasons (1985-86 and 1986-87) catches have shown some improvements over recent years as the result of increased quotas and demands for bait. The 1986-87

catch of 4.7 million pounds (2,347 tons) is only down slightly from last years catch of 4.9 million pounds (2,442 tons) but up slightly from the 10 year average of approximately 4.4 million pounds (2,140 tons).

Three distinct stocks were identified as having harvestable quantities of bait herring for the 1986-87 winter season. The area these stocks winter in, Tenakee Inlet, Bocas de Finas and Meares Passage, were opened on January 10, 1987 at 12:00 noon (Figure 2). The harvest limits established by hydroacoustic surveys for Tenakee Inlet, Bocas de Finas, and Meares Passage were 800, 850, and 200 tons respectively. Twenty four boats participated in the winter fishery in 1987. Tenakee Inlet fishery closed on January 10, 1987 with a harvest of 1,275 tons, Bocas de Finas closed on January 17 with a harvest of 848 tons and Meares Passage closed on January 18 with a harvest of 204 tons.

One vessel fished the Yakutat area and took approximately 21 tons of bait herring during the regulatory opening from October 1, 1986 through February 28, 1987. Since the early 1970's a commercial herring harvest has occurred in Yakutat in only three years. This stock is considered separate from other Southeastern Alaska stocks. A 100 ton harvest ceiling has been established for this area based on limited spawning ground information.

#### 1987 Sac Roe Fishery

The 1987 herring roe harvest amounted to approximately 11.9 million pounds (5,957 tons), the lowest reported since 1979 and considerably below the record high of 9,636 tons that occurred in 1985. Harvests occurred in the Sitka Sound purse seine area and the Seymour Canal and Kah Shakes gill net areas in 1987 with seasonal harvest limits set at 3,600, 400, and 1200 tons respectively. Final catches for these fisheries were: Sitka 4,216 tons, Kah Shakes 1,439 tons and Seymour Canal 302 tons (Table 4). Hydroacoustic and spawning ground surveys failed to locate the minimum

threshold level in the Lynn Canal purse seine fishery, therefore no fishing was allowed. Final spawn biomass estimates from the 1987 spawn deposition surveys amounted to 16.8 million pounds in Kah Shakes, 9.6 million pounds in Seymour Canal and 92 million pounds in Sitka Sound.

### 1986-87 Herring Pound Operation

There are two types of herring pounds in Southeast Alaska: fresh bait pounds and tray pack bait pounds. The tray pack pound fishery was created in 1979. The Board of Fisheries has established a 100 ton harvest limit for each district to allow for development of a tray pack industry. Only limited catch has occurred in the early 1980's and in recent years no processors have participated in this fishery.

The fresh bait pounds are allowed by regulation in five areas in the Southeast region these being Tee Harbor, Indian Cove, Farragut Bay, Scow Bay and Sitka Sound (Figure 4). Established harvest levels for these five areas are 100 tons each for Farragut Bay, Scow Bay and Sitka Sound and 60 tons each for Tee Harbor and Indian Cove. The average annual catch for the past 5 years has been 43 tons for all areas combined (Table 5). Fishing was only allowed in Scow Bay, Farragut Bay and Sitka Sound in 1987. Tee Harbor and Indian Cove remained closed because of low population levels of herring stocks found in the Lower Lynn Canal-Stephens Passage area. The harvest from Farragut Bay and Sitka Sound amounted to 3 and 62 tons respectively. No effort occurred in Scow Bay this past season.

### Herring Roe on Kelp Subsistence Fishery

A traditional use herring roe on kelp subsistence fishery is provided for in Southeast Alaska. The fishery is regulated solely through the issuance

of subsistence roe on kelp permits. These permits specify times, areas and amounts of roe on kelp allowed. Prior to 1985, 10 pounds of roe on kelp were allowed per individual with a maximum of 50 pounds per family. In September 1984, the Board of Fisheries raised these limits to 32 pounds per individual and 158 pounds per family. No annual possession limit is specified for individuals and additional permits are issued to permit holders if harvestable surpluses are available.

Roe on kelp harvest occurs in March and April near Craig, Hydaburg, Kah Shakes, and Sitka where major herring spawning populations are found (Figure 5). *Macrocystis* is the preferred species of kelp utilized. In 1987, a record harvest of 23,865 pounds of roe on kelp was reported from these areas combined (Table 6).

#### 1987-88 Season Outlook

Generally, most herring stocks associated with the winter food and bait fishery remain below threshold levels, however, survey conducted during November and December 1987 indicated a good improvement in some major stocks. The current regulations allow for winter bait herring fishery period between October 1 and February 28. The 1987-88 fishery opening was delayed until January 4, 1988 to allow sufficient time for the department to assess the abundance of major herring stocks throughout Southeast Alaska. Acoustical surveys conducted during November and December, 1987, indicated improved stock conditions in some major areas. An overall harvest limit of 4,700 tons was established. Preliminary harvest information indicate a harvest of approximately 4,000 tons of herring for the 1987/88 season, which is the highest for recent years.

A record sac roe harvest of 10,687 tons is anticipated for Southeast in 1987. A vast majority of this catch will occur from Sitka Sound. Based on 1987 spawn deposition studies target harvest levels will be established at 9,200 tons (20% harvest rate of 92 million pounds) for the Sitka Sound

purse seine fishery, 953 tons (11.4% harvest rate of 16.8 million pounds) for the Kah Shakes gill net fishery and 534 tons (11.2% harvest rate of 9.5 million pounds) for the Seymour Canal gill net fishery. Spawn surveys conducted in the Lynn Canal purse seine area indicate the required threshold level will not be available and no commercial harvest is expected in 1988.

### Macrocystis Kelp Transport Fishery

Macrocystis kelp is currently harvested in Southeast Alaska and transported to Prince William Sound where it is used as a substrate for the commercial herring roe on kelp fisheries. Macrocystis kelp is mainly distributed along the outer coastal waters of Southeast Alaska with higher concentrations in the more southerly portion of the region. Commercial fishing regulations require that a permit must be obtained prior to harvesting kelp. Permits specify area of harvest, amounts allowed, and cutting restrictions to maintain healthy macrocystis beds. Permits are not issued in traditional herring spawning areas where kelp serves as an important substrate for herring eggs.

Prior to 1984 the demand for macrocystis kelp was minimal with less than 5-15 tons harvested annually. However, demands sharply increased in 1984 with 84 permits issued requesting 232 tons. Preliminary estimates indicate the amount actually harvested was approximately 61 tons. This sharp increase was mainly due to a demand for kelp to be spread out in the "wild" kelp fishery in Prince William Sound. In 1984 the wild kelp fishery did not open and large amounts of kelp were wasted and deteriorated on the beaches.

In December, 1984 the Board of Fisheries adopted a regulation which allowed transported kelp to be used only in the enclosed pound fishery in Prince William Sound. The Department further limited the amount of raw

kelp to be used per enclosed pound. As a result of these two restrictions macrocystis kelp transported to Prince William Sound has dropped significantly. In 1987, 22.5 tons of macrocystis kelp was harvested along the west coast of Prince of Wales Island and transported to the herring spawn on kelp pounds in Prince William Sound. This amount is an increase over 1985 and 1986 levels of 11 and 16 tons respectively. Increasing demands for kelp since 1985 are the result of higher harvest guidelines established for herring spawn on kelp in pounds each year in Prince William Sound.

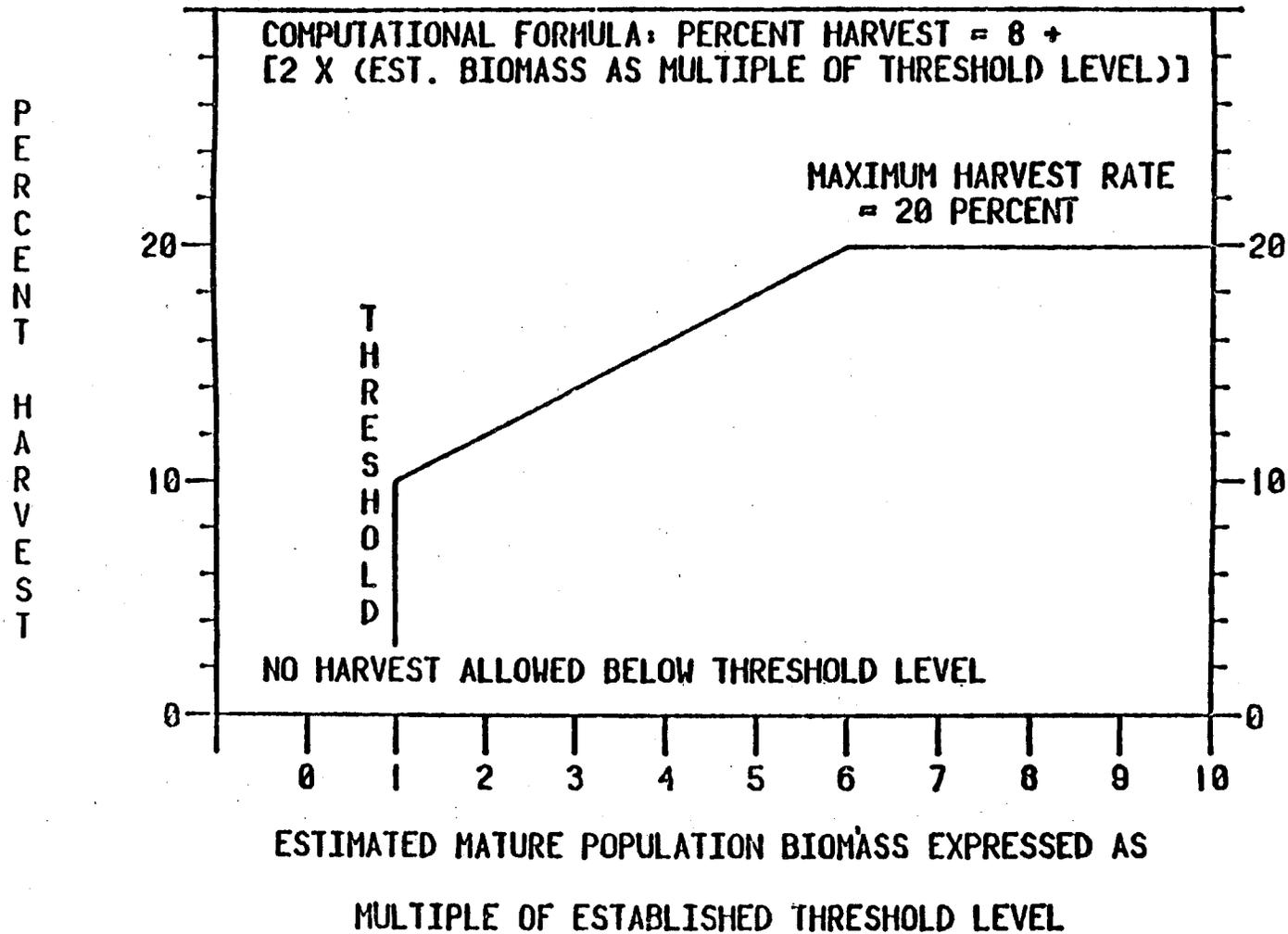


FIGURE 1 GENERALIZED HARVEST STRATEGY FOR SOUTHEAST ALASKA HERRING STOCKS SHOWING ALLOWABLE PERCENT ANNUAL HARVEST RELATED TO ESTIMATED BIOMASS OF MATURE STOCK EXPRESSED AS A MULTIPLE OF THE ESTABLISHED HARVEST THRESHOLD LEVEL (ADF&G 1/83)

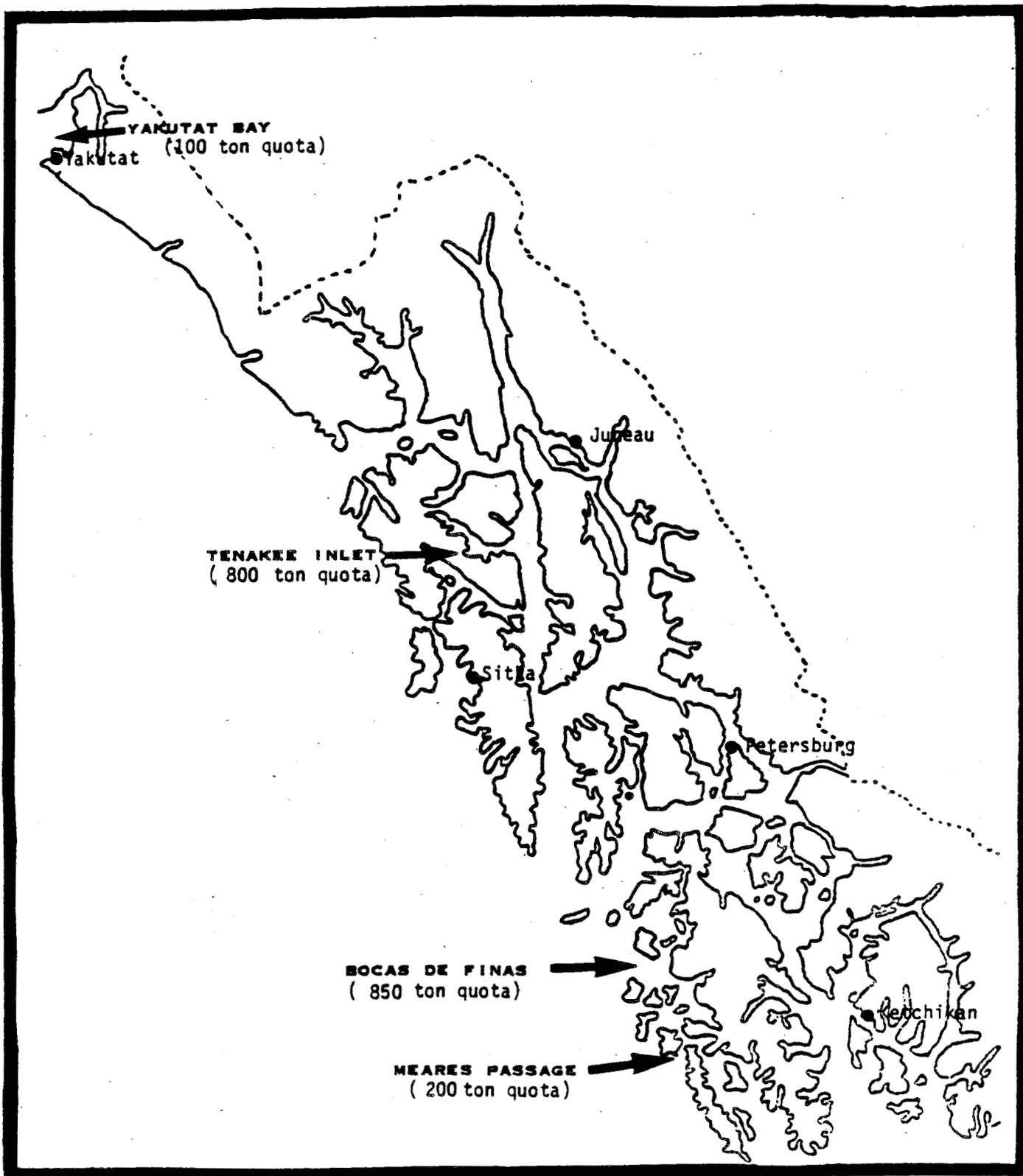


Figure 2. 1986-1987 Southeast Herring Food and Bait Fishery.

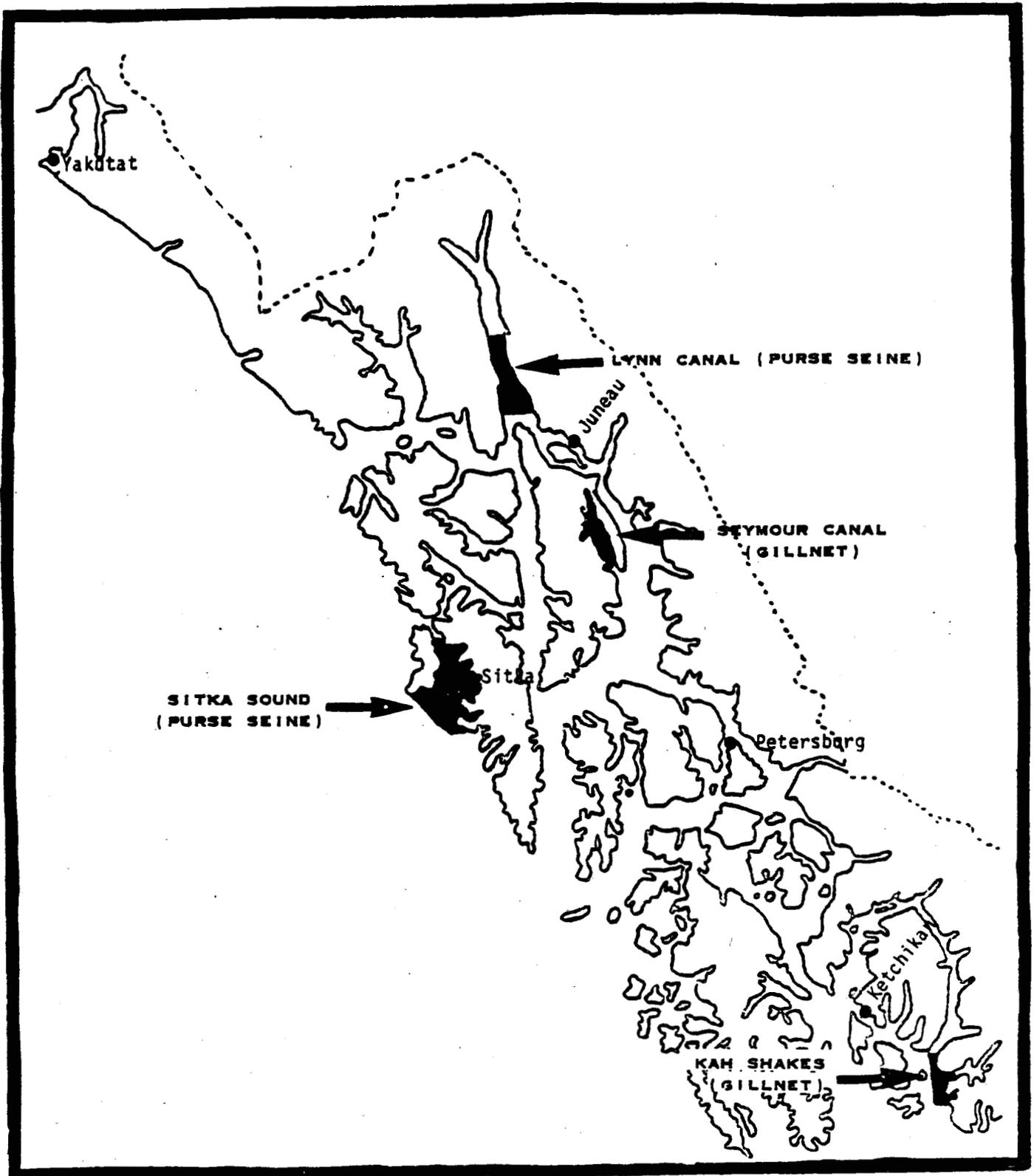


Figure 3. Southeast Alaska Sac Roe Fishing Areas.

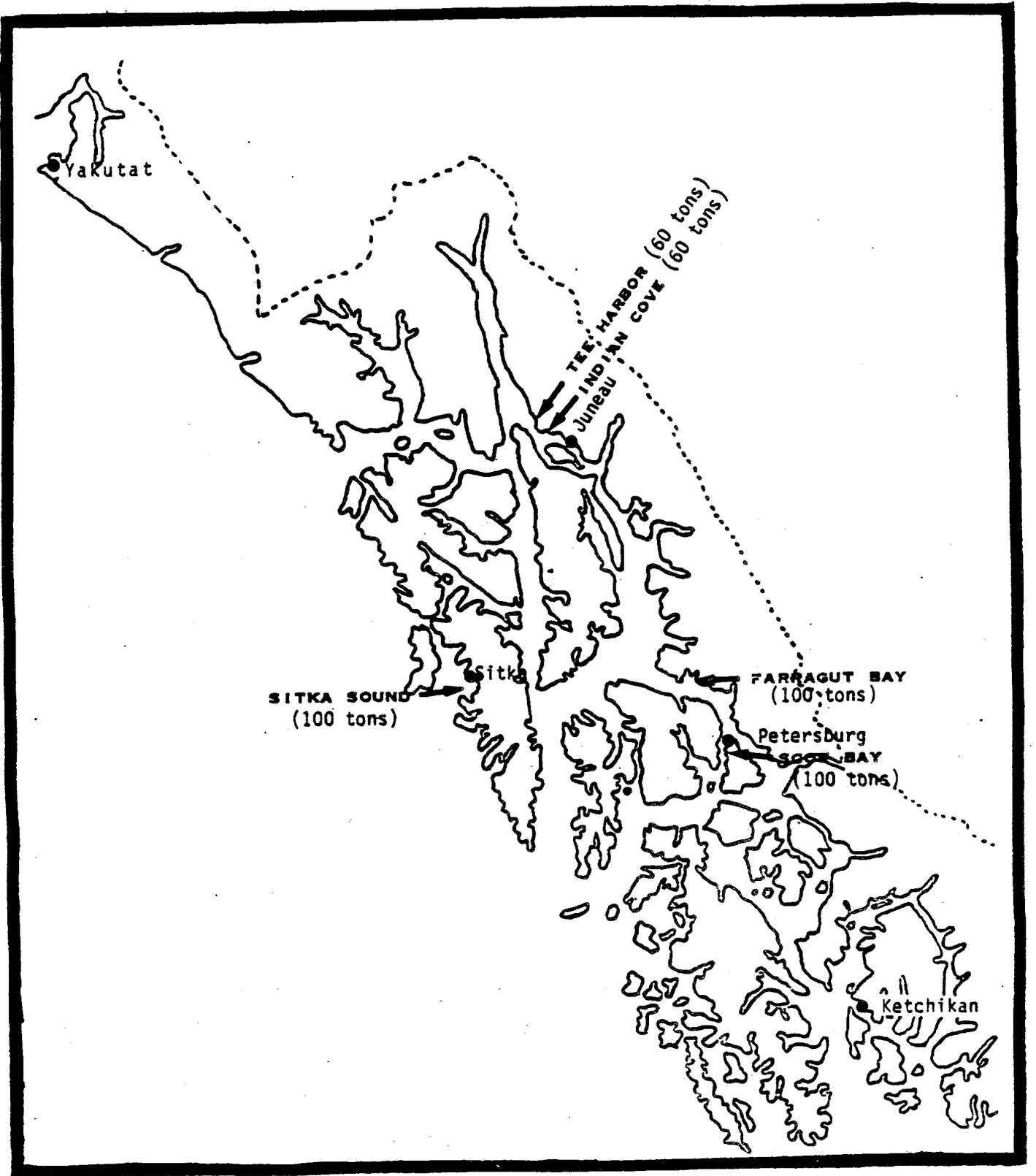


Figure 4. Fresh Bait Pounds - Southeast Alaska.

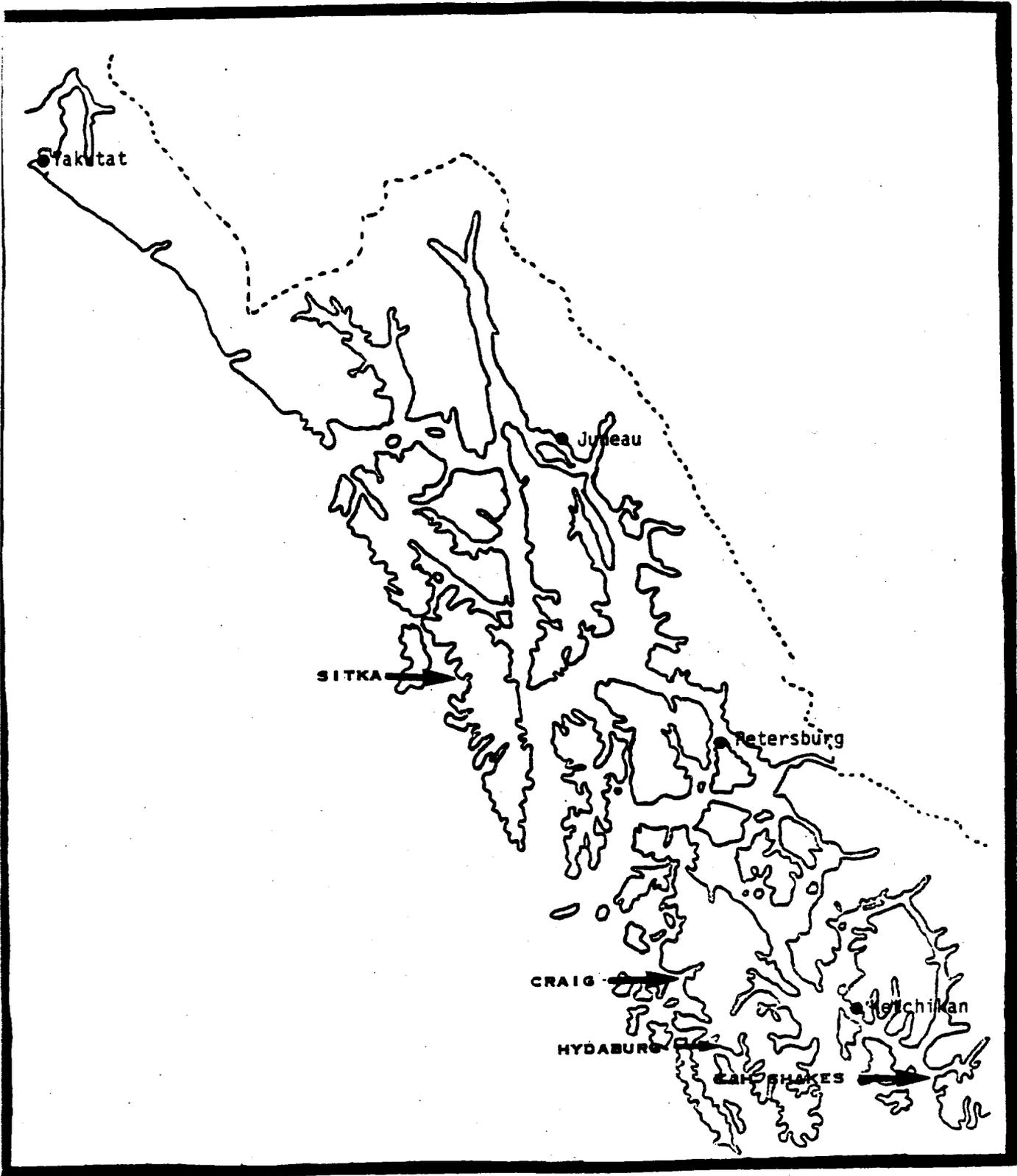


Figure 5. Major Southeast Roe on Kelp Subsistence Fishery Areas.

Table 1. Southeastern Alaska herring catches in pounds X 1,000, 1900-1987 (ADF&G 1/10/88).

Year <sup>1</sup>	Total Catch	Year	Total Catch	Year	Total Catch
1900	2,388	1935	116,310	1970	6,648
1901	2,500	1936	73,426	1971	8,414
1902	1,624	1937	100,668	1972	11,827
1903	2,988	1938	44,712	1973	12,536
1904	3,042	1939	40,056	1974	15,994
1905	2,618	1940	6,274	1975	16,195
1906	2,010	1941	12,460	1976	17,297
1907	2,764	1942	7,382	1977	12,106
1908	3,422	1943	12,470	1978	13,050
1909	2,150	1944	33,602	1979	18,408
1910	13,734	1945	48,252	1980	16,732
1911	24,114	1946	75,128	1981	17,260
1912	32,134	1947	83,658	1982	19,806
1913	26,992	1948	32,250	1983	18,162
1914	16,636	1949	28,558	1984	22,228
1915	13,928	1950	26,822	1985	19,584
1916	22,388	1951	21,304	1986	16,733
1917	24,890	1952	32,040	1987	16,739
1918	35,650	1953	24,870		
1919	21,924	1954	12,892		
1920	32,904	1955	22,736		
1921	12,024	1956	45,638		
1922	33,900	1957	49,490		
1923	42,480	1958	77,594		
1924	58,790	1959	99,732		
1925	115,564	1960	77,812		
1926	147,686	1961	49,418		
1927	90,620	1962	33,874		
1928	106,014	1963	31,212		
1929	157,498	1964	46,698		
1930	141,710	1965	24,318		
1931	89,714	1966	10,680		
1932	99,572	1967	6,050		
1933	123,176	1968	3,632		
1934	133,684	1969	7,364		

<sup>1</sup> Catch would include total season although referenced as only one year. Example: 1976 year would include 1976-77 season's catches.

Table 2. Summary of 1986-1987 season's herring fishery by area (ADF&G 1/10/88).

Winter Food & Bait Fishery

Opening Date	District	Area	Assessment (Million Pounds)	Quota (Million Pounds)	Harvest (Million Pounds)	Percent Harvest
10/86	183	Yakutat	N/A	.20	.04	N/A
1/10/87	12	Tenakee	13.00	1.60	2.55	20
1/10/87	3	Meares Passage	4.00	.40	.41	10
1/10/87	3	Bocas de Finas	15.40	1.70	1.70	11
Total				3.90	4.70	

Sac Roe Fishery

Date	District	Area	Gear	Assessment Pre-Spawn (Million Pounds)	Quota (Million Pounds)	Harvest (Million Pounds)	Percent Harvest Pre-Spawn	Roe Percent
3/31	13	Sitka	Purse Seine	49.50	7.20	8.43	14.60	9.9
3/26 & 3/27	1	Kah Shakes	Gillnet	19.70	2.40	2.90	11.90	12.0
5/6	11	Seymour	Gillnet	7.90	.80	.60	10.60	12.8
Total						10.4	11.93	

Table 3. Southeastern Alaska winter food and bait herring harvest in pounds by fishing season and month 1971/72 through 1986/87<sup>1</sup> (ADF&G 1/10/88).

Year	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
1971-72	12,000	12,200	716,000	551,000	583,400	560,200	1,655,600	4,090,400
1972-73	1,800	504,800	748,600	1,173,600	1,694,600	2,349,000	1,435,600	7,908,000
1973-74	197,600	1,783,400	2,790,000	1,438,400	1,838,600	3,595,800	68,000	8,511,800
1974-75	0	2,306,400	3,422,200	2,569,000	1,174,800	1,330,600	1,017,800	11,820,800
1975-76	0	2,871,800	3,650,800	812,000	1,558,000	2,153,800	329,800	11,376,200
1976-77	0	1,560,000	4,391,400	2,948,600	2,044,600	1,874,200	0	12,818,800
1977-78	0	2,898,800	1,597,200	730,600	1,078,000	1,780,000	0	8,084,600
1978-79	0	0	4,788,000	0	0	2,182,000	0	6,970,000
1979-80	0	3,262,000	0	2,176,000	0	0	0	5,434,000
1980-81	0	0	0	0	2,102,000	1,240,000	0	3,252,000
1981-82	0	0	180,000	0	2,800,000	80,000	0	3,060,000
1982-83	0	196,000	1,102,000	0	0	1,040,000	0	2,338,000
1983-84	0	0	0	0	0	1,240,000	0	1,240,000
1984-85	0	0	0	0	2,862,000	0	0	2,862,000
1985-86	0	0	0	0	4,884,000	0	0	4,884,000
1986-87	0	0	0	0	4,694,645	0	0	4,694,645

<sup>1</sup> These figures do not include herring bait pounds.

Table 4. Southeast Alaska sac roe herring harvest by area in tons, 1971-1987 (ADF&G 1/10/88).

Year	Sitka Sound	Seymour Canal	Lynn Canal	Kah Shakes	Other Areas	All Areas
1971	748	35	688	0	220 <sup>1</sup>	1,671
1972	602	495	524	0	201 <sup>2</sup>	1,822
1973	597	506	798	0	452 <sup>3</sup>	2,353
1974	681	904	396	0	0	1,981
1975	1,517	0	558	0	0	2,075
1976	800	195	630	426	203 <sup>4</sup>	2,254
1977	0	485	926	820	0	2,231
1978	175	729	954	171	0	2,029
1979	2,250	269	0	528	0	3,047
1980	4,385	0	975	1,140	0	6,500
1981	3,506	615	761	1,840	0	6,722
1982	4,363	0	551	2,279	0	7,193
1983	5,463	0	0	3,250	0	8,713
1984	5,711	518	0	2,182	0	8,411
1985	7,475	0	0	2,161	0	9,636
1986	5,443	339	0	1,537	0	7,319
1987	4,216	302	0	1,439	0	5,957

<sup>1</sup> Washington Bay (76 tons), Lisianski Inlet (100 tons), and Yakutat Bay (44 tons).

<sup>2</sup> Lisianski Inlet.

<sup>3</sup> Yakutat Bay (158 tons), Helm Bay (194 tons), and Lisianski Inlet (100 tons).

<sup>4</sup> Helm Bay (26 tons), Chiak Bay (40 tons), Pybus Bay (22 tons) and Gambier Bay (8 tons), Kasaan Bay (107 tons).

Table 5. Fresh herring bait pound catches by area 1983-1987 (ADF&G 1/10/88).

Catch by Area in Tons

Year	Scow Bay	Farragut Bay	Sitka Sound	Tee Harbor	Indian Cove	Total
1983	7	14	0	0	0	21
1984	3	12	35	0	0	50
1985	4	0	33	0	0	47
1986	0	5	26	0	0	31
1987	0	3	62	0	0	65
Average	3	9	31	0	0	43

Table 6. Herring spawn on kelp subsistence harvests, 1966-1987  
(ADF&G 1/10/88).

Year	Permits Issued	Permits Returned	Total Pounds Harvested <sup>1</sup>
<u>Craig/Klawock/Hydaburg</u>			
1966	145	86	5,200
1967	201	130	3,368
1968	130	95	2,260
1969	80	61	2,858
1970	103	60	3,213
1971	81	66	2,643
1972	102	44	4,250
1973	31	9	1,209
1974	159	39	3,087
1975	92	34	1,640
1976	54	12	1,728
1977	34	7	352
1978	109	83	3,521
1979	102	81	1,268
1980	309	189	3,721
1981	157	87	6,148
1982	187	81	5,485
1983	302	189	5,945
1984	261	159	4,972
1985	233	168	9,553
1986	241	142	5,565
1987	263	158	15,038
<u>Kah Shakes</u>			
1978	11	8	122
1979	16	6	0
1980	33	24	75
1981	6	5	12
1982	30	18	342
1983	33	24	103
1984	14	6	116
1985	19	10	0
1986	5	2	0
1987	5	4	0

--Continued--

Table 6. Herring spawn on kelp subsistence harvests, 1966-1987 (ADF&G 1/10/88). (Continued)

Year	Permits Issued	Permits Returned	Total Pounds Harvested <sup>1</sup>
<u>Sitka Area</u>			
1979	21	10	137
1980	19	13	145
1981	26	19	192
1982	36	25	886
1983	69	48	1,991
1984	50	40	1,281
1985	71	45	3,963
1986	90	82	3,929
1987	97	59	8,827

<sup>1</sup> Total harvest expanded from harvests reported on returned permits to include estimate of the non-reported harvest.

REPORT TO THE BOARD OF FISHERIES  
1987 SOUTHEASTERN-YAKUTAT GROUND FISH FISHERY

By  
Region I Staff

Southeast Region  
Alaska Department of Fish and Game  
Division of Commercial Fisheries

February 1988

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## ABSTRACT

The 1987 groundfish Board report differs from previous reports in that it covers only the state-managed fisheries whereas previous reports included fisheries managed by both state and federal agencies. The reasons for this change are discussed in the report.

Groundfish landings from state managed fisheries in Region I totaled nearly 9 million pounds round weight in 1987. This is an increase of 19% over the 1986 harvest and represents the largest groundfish harvest on record from state-managed fisheries in the region. The 1987 harvest was worth an estimated ex-vessel value of nearly \$5.8 million, an increase of 34% over the estimated 1986 value. Catch and value of the Region I groundfish resource have increased steadily since 1981.

Much of the increase is the result of increasing rockfish harvests, although harvests of all species, with the exception of sablefish, were higher than in 1986. Sablefish harvests decreased by 7% while the harvest of all other species combined increased by nearly 58% in 1987. Harvest of rockfish increased by 49%, flatfish by 65%, and lingcod by 69% over 1986 harvests. The most notable increase in harvest level during 1987 was in the Pacific cod fishery which increased by 83% over the 1986 landings.

During 1987 preliminary harvest limits were set for rockfish harvests in the five Southeast groundfish management areas. The rockfish fisheries were closed for the first time ever when the harvest limits were reached. The sablefish seasons were shortened again in 1987 and the upper end of the guideline harvest range for the northern inside area was exceeded by nearly 1 million pounds during the 24 hour open season. The target quota for the southern area sablefish fishery was taken in 5 day. Two of the major flatfish trawl areas and several smaller areas were closed during the year because of poor fisheries performance or excessive prohibited species by catch.

Detailed descriptions of the primary Region I groundfish fisheries are included in the report.

## INTRODUCTION

Region I encompasses all waters surrounding the Alexander Archipelago from Dixon Entrance (54°30' north latitude) on the south and along the outer coast northwest to Cape Suckling (144° west longitude) (Figure 1). The Alaska Department of Fish and Game (ADF&G) has management jurisdiction over all groundfish resources in state waters within that area. In addition, a provision in the Gulf of Alaska Groundfish Fisheries Management Plan gives ADF&G management authority over Demersal shelf rockfish in both state and federal waters in the Southeast Outside District (east of 137° west longitude).

In addition to direct management authority, the Southeast Groundfish Project provides catch information and other resource data from the adjacent Exclusive Economic Zone (EEZ) to the North Pacific Fisheries Management Council (NPFMC) and National Marine Fisheries Service (NMFS). The State is also involved in management of groundfish in the EEZ through the Groundfish Project Leader's participation on the Gulf of Alaska Groundfish Plan Team, and the joint Federal/State management of the offshore sablefish fisheries. Data provided by the State has been used extensively for in-season management of the EEZ fisheries.

With the exception of data from the demersal shelf rockfish fisheries, ADF&G did not collect any fisheries information from fisheries in the EEZ between November 1986 and July 1987. For that reason, data from federal--managed fisheries, including sablefish and slope rockfish, which make up much of the total groundfish harvest from the region are not included in this year's groundfish report to the Board. A contract to collect and enter catch data from the EEZ was finalized with NMFS in July, 1987 and ADF&G once again took the lead in providing groundfish catch data from both state and federal waters.

Primary fisheries within the region include sablefish, rockfish, lingcod, starry flounder, and Pacific cod. Sablefish, by regulation, are fished only with longline and pot gear in state waters of southeast Alaska.

Rockfish are harvested primarily by longline gear although some harvests by jigging machines also occur. Rockfish fisheries are restricted to hook and line gear by regulation in state waters of southeast Alaska. Besides the target fisheries, rockfish, Pacific cod, and lingcod are also landed in the salmon troll and halibut longline fisheries and some deep-water rockfish are landed in the sablefish fisheries. Flatfish (flounder and sole) are harvested exclusively by trawl gear. Pollock trawl fisheries which averaged nearly 1 million pounds from 1976-1980 have been minimal since 1981 and no significant landings have been reported since 1983.

The total 1987 groundfish harvest from state-managed fisheries totaled nearly 9.7 million pounds round weight, a 19% increase over 1986. The increase in value from \$4.3 million to nearly \$5.8 million (34%) was even more dramatic. The 1986- 1987 landings and value for major groundfish species are presented in Table 1.

## SABLEFISH (BLACKCOD) FISHERY

### Management Unit

Southeastern Alaska has historically been separated into inside and outside sablefish management areas with the division at the surf line. Inside waters have been divided into two areas for groundfish management. These are the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) management areas. The NSEI area includes waters of Chatham Strait, Frederick Sound, Icy Strait, and Lynn Canal while the SSEI area includes the Dixon Entrance District east of Cape Muzon, Clarence Strait, Ernest Sound, Cordova Bay, and Sumner Strait.

The state also has jurisdiction for sablefish in state waters along the outer coast out to three miles. Because there is little actual harvest

from that area, that fishery is managed according to the seasons and quotas set by the NPFMC for the adjacent federal waters.

In State waters, the sablefish fishery is regulated by season and guideline harvest levels which are reviewed periodically by the Board of Fisheries with recommendations from ADF&G.

In the SSEI area, which includes Districts 1, 2, 3, 5, 6, 7, and 8 and the Dixon Entrance District east of Cape Muzon, the season extends from June 15 through November 15 or until a guideline harvest level of 125,000 to 500,000 pounds dressed weight is reached. Most of the fish are taken from Districts 1, 2, and 6 which include the deep water areas of Clarence Strait and Behm Canal. Fish are also harvested in the Dixon Entrance District and from Cordova Bay.

In the NSEI area, which includes all waters of Districts 9, 10, 11, 12, Section 13-C and Districts 14 and 15, the season extends from an opening date in early September, which is set by Emergency Order, through November 15 or until a guideline harvest level of 500,000 to 1,500,000 pounds dressed weight has been taken. Most of the fish from the northern area are harvested from Districts 9 and 12 in Chatham Strait.

The opening date for offshore State waters, Districts 4 and 16, and Sections 13-A and 13-B, is set for April 1 to correspond with the opening of the offshore waters set by the NPFMC. As mentioned previously, those districts are managed in conjunction with the adjacent EEZ and the seasons are set accordingly. Because of the generally shallow depths, very little sablefish harvest actually occurs in those districts.

#### Catch

The 1987 sablefish landings from the state-managed fisheries totaled over 2.8 million pounds dressed weight, which converts to nearly 4.5 million

pounds (2,031 mt) round weight. While slightly below the 1986 harvest of 3.04 million pounds dressed weight, the harvest was still 40% above the high end of the combined harvest ranges set for sablefish in the inside waters. The price increased again in 1987 to an average ex-vessel dressed weight price of nearly \$1.20 per pound.

Seasons in all areas were the shortest on record. Fishing time in both inside areas totaled only 6 days with 5 days in the SSEI area and one day in the NSEI area.

### The Northern Southeast Inside (NSEI) Area

Based on the excessive harvest during the two-day opening in September 1986, the 1987 opening was reduced to 24 hours. To minimize problems with tides and to eliminate conflicts with an area 3-B halibut opening, the sablefish season was delayed until September 16. Effort and fishing performance both exceeded anticipated levels and 163 vessels harvested over 2.4 million pounds dressed weight during the 24-hour opening, exceeding the upper end of the harvest guideline by nearly one million pounds. This was the fifth season in a row in which the 1.5 million pound upper limit has been exceeded. During a 48-hour opening in 1986 146 vessels landed nearly 2.6 million pounds dressed weight.

A moratorium on effort imposed by the Commercial Fisheries Entry Commission in 1985 has not been successful in decreasing effort and, in fact, the effort in 1987 was over twice the 1984 effort. This is somewhat ironic since the moratorium was initiated by the fishermen who felt that the 1984 level was too great to maintain an orderly fishery. In addition to an increase in numbers of participants, the vessels are now larger, carry more gear, and fish harder than in 1984. This has resulted in an increase in fishing power much greater than the numbers of vessels alone would suggest.

## The Southern Southeast Inside (SSEI) Area

The southern area opening was delayed until June 18 in 1987 to take advantage of more favorable tides for fishing. This was done in an attempt to spread out the effort and conduct a more orderly fishery. To facilitate a fair start, the fishery opened at noon again in 1987. Based on the performance observed during the 1986 fishery, the 1987 season length was set for five days. The 1987 harvest reached approximately 328,000 pounds dressed weight, within the preseason harvest objective of 300,000 to 350,000 pounds.

Stocks are still considered depressed in the southern area. Even with a slight increase in CPUE and average size observed in 1986, harvest above the mid-point of the 125,000 to 500,000 pound harvest range does not appear to be justified. Effort decreased from 45 vessels in 1985 to 35 vessels in 1986 and further to 26 vessels in 1987. The moratorium on effort, which went into effect for the 1986 season, appears to be at least somewhat successful in reducing effort in this fishery. The high numbers in 1985 are attributed to speculation by vessels hoping to gain credit for participation prior to limited entry in that fishery. However, even with the decrease in vessels, more gear was run per vessel again during the 1987 season which resulted in increased fishing power of the fleet. Average catch increased from 10,400 pounds per vessel in 1986 to 12,600 pounds per vessel in 1987.

## Gear

In State waters of the Southeastern area sablefish fishing is restricted to longline and pot gear. Use of pot gear is further restricted to the SSEI management area only. The number of vessels participating during 1987 was reported in the section on catch.

The numbers of vessels which participated in both of the inside fisheries during 1987 was considerably above the target numbers set by CFEC for both areas. The target number for the NSEI area is 73 longline vessels while the target for the SSEI area is 12 longline and 3 pot vessels. These numbers are based upon the numbers of participants during the 1984 seasons. The 1987 effort level was 2.3 times the target level for the NSEI area and 1.7 times the target level for the SSEI area.

### Management

The state has direct management responsibility for sablefish fisheries in State waters under regulations approved by the Board of Fisheries. The ADF&G staff has also contributed substantially to offshore sablefish management in recent years. Informational Leaflets on sablefish migration, growth, status of stocks, and fisheries performance have been used to help determine appropriate harvest levels Gulf-wide. Management related research studies and modeling exercises are improving managers' understanding of the complex biology of the species throughout its range.

Staff participation on the Gulf of Alaska Groundfish Plan Team provides direct input to the NPFMC decision making process regarding harvest levels, seasons, gear issues, etc. In addition, ADF&G has acted as the primary data collection agency for domestic catch information which is used for in-season management of the offshore fisheries.

Catch data from the commercial fishery is still being used as the primary management tool for the inside fisheries. Port samplers conduct skipper interviews to obtain detailed catch, effort, and biological data which is compared from season to season to determine relative catch rates and changes in stock composition. No independent assessment surveys were conducted and on-board observers were not utilized during the 1987 seasons. However, funding was secured for resource assessment surveys which will be conducted prior to the 1988 seasons in both of the inside areas.

Port samplers and staff biologists in Sitka and Petersburg obtained skipper interviews from the NSEI area fishery during the fall opening. Staff biologists from Petersburg and Sitka traveled to Ketchikan in June to monitor the SSEI area fishery. A large portion of the sablefish landed in Petersburg and Sitka during the northern area opening were delivered round, providing an opportunity for collection of biological samples and a total of 10 landings were sampled for length and age. Age structures were also collected from the southern area fishery from heads voluntarily brought in by skippers participating in that fishery. The ADF&G groundfish age reading laboratory in Kodiak was discontinued during 1985 and so otoliths are being stored until that problem is overcome.

Because of advances in gear technology, the shorter more intense seasons, and a substantial increase in the number of vessels; fishery performance data alone is no longer considered to be a valid indicator of stock condition. A recent analysis of longline monitoring data indicates that there is a significant risk of over harvest if fisheries performance is used as the only criteria for fisheries management, particularly in rapidly evolving fisheries such as the sablefish fisheries. Independent stock assessment is considered vital for monitoring stock condition in these fisheries. The department will rely more heavily on abundance indexing surveys in both the NSEI and SSEI areas beginning in 1988. These surveys will be conducted using a combination of general fund, federal aid, and test fish funding. Comparative analysis will contribute to management for the 1989 seasons providing that funding continues through 1989.

A project is currently underway in conjunction with NMFS to estimate biomass in the NSEI area during 1984 using tag return information. If that effort proves to be successful, it will provide an estimate of exploitation rate for that fishery. That will indicate whether or not the current harvest levels are appropriate.

The Board did not consider Southeast groundfish fishery proposals during 1987 and so no changes in sablefish regulations were implemented.

## Projection

A slight decline in effort is anticipated in both inside management areas as fishermen will be required to apply for permanent permits rather than interim permits for the 1988 season. Only those who qualify to apply for permanent permits will be allowed to participate. It will be at least another year before the program will be fully implemented and number of participants will still exceed the target levels in both fisheries by a considerable amount.

A total harvest objective of approximately 1.8 million pounds is anticipated for both inside fisheries again in 1988. Season lengths are expected to be similar to 1987 with five days in the SSEI area and 24 hours in the NSEI area tentatively scheduled for 1988. Unless permit numbers are reduced substantially, it is likely that the harvest objective of 1.5 million pounds for the NSEI area will be exceeded again during 1988. It should be noted, however, that the large harvests from the NSEI area in recent years have not impacted fisheries performance from that area suggesting that the current guideline harvest range may be too low at current stock levels.

Evidence of a relatively strong 1984 year class in the southeastern area offers encouragement that stock conditions may continue to improve in the NSEI area fishery. The harvest objective for the northern area fishery will be set at the high end of the guideline harvest range (1.5 million pounds dressed weight) again in 1988 even though that level is likely to be exceeded in a 24-hour fishery.

Stock conditions in the SSEI area, which showed signs of improvement in average fish size and CPUE in 1986 were back to historic averages during the 1987 season. Average fish size and catch-per-hook values remain lower in that area than in the other management areas of the Gulf of Alaska. A harvest objective around the mid point of the guideline harvest range

(312,000 pounds dressed weight) will be in effect again during the 1988 season.

## ROCKFISH FISHERY

### Management Unit

Southeast Alaska is divided into five areas for rockfish management. The inside waters are divided into two areas each representing approximately one half of the total area. These are the NSEI and the SSEI management areas which are also used for sablefish management. In addition, the offshore waters, including both State and Federal waters, are divided into three management areas. These are the Southern Southeast Outside (SSEO) area which includes all outside waters between Cape Muzon and 56° north latitude, the Central Southeast Outside (CSEO) area which includes the outside waters between 56° and 57°30' north latitude, and the Northern Southeast Outside (NSEO) area which includes the outside waters north of 57°30' north latitude and east of 137° west longitude (Figure 1).

Two genera, Sebastes (the rockfishes), and Sebastolobus (the thornyheads), and over twenty species of rockfishes are landed in the Region I rockfish fisheries. The thornyhead rockfish are found along and at the base of the continental slope in depths as great as 1,000 fathoms. The Sebastes rockfish group is divided into three main complexes or assemblages based on habitat preference and behavior characteristics. The demersal shelf rockfish assemblage which is comprised of ten near-shore bottom dwelling species includes yelloweye and quillback rockfish. The pelagic shelf rockfish assemblage also reside in nearshore waters. The five species in that assemblage are schooling fishes which spend at least a portion of the time off the bottom. The primary commercial species in the pelagic

assemblage are the dusky and black rockfishes. The deep-water or slope assemblage is found along the edge or on the slope of the continental shelf with some species in depths as great as 350 fathoms or deeper. The slope assemblage includes Pacific ocean perch (POP), rougheye rockfish, and shortraker rockfishes as primary species.

The state has direct management authority over the demersal shelf rockfish in both state and federal waters of Southeast Alaska in accordance with a provision in the Gulf of Alaska Groundfish Fisheries Management Plan. State jurisdiction over the other assemblages is restricted to the state waters (internal waters and waters within three miles of shore). No management policies have been developed for the other assemblages and so the management section of this report deals only with the demersal shelf rockfish assemblage.

Rockfish of the demersal shelf assemblage are the target of an intensive commercial longline fishery. Fishing effort is concentrated along the outer coasts of Kruzof and Baranof Islands and the waters surrounding Prince of Wales Island including Sumner and Clarence Straits. Portions of the NSEI area, particularly Chatham Strait and Frederick Sound and the NSEO area near Cross Sound, are also fished, but to a lesser extent. In addition to the target fisheries, rockfish are harvested throughout the region incidental to fisheries for halibut, sablefish, and salmon.

Productive fishing grounds range in depth from 15-90 fathoms for the demersal and pelagic shelf assemblages and in depths from 100 fathoms to as great as 750 fathoms for the slope species and to 1,000 fathoms for thornyhead rockfish. A large portion of the productive fishing grounds occur in federal waters along the outer coast of southeast Alaska.

## Catch

During 1987, the directed shore-based rockfish fishery harvested 3.1 million pounds (1,406 metric tons) round weight. That is the highest level of harvest ever reported from the area.

Demersal shelf rockfish accounted for over 86% of the target catch (by weight), while the other two assemblages made up the remaining 14% of the catch. The slope complex may have actually contributed a slightly higher percentage than the fish ticket database indicates as all "unspecified red rockfish" are grouped with the demersal shelf complex in the fishticket database.

Preliminary harvest limits were set for demersal shelf rockfish in each management area during 1987. The limits were established and justified in a draft rockfish management plan which was completed in late May. The fisheries in all areas were managed with an October 1 season starting date consistent with the Board regulations established for the CSEO area. For that reason, management of the 1986-87 season began on October 1, 1986 and the seasonal catch is reported accordingly.

The primary rockfish fishing areas, including all waters of the SSEI, SSEO, and CSEO management areas, were closed to directed fishing on June 3, 1987. This was necessary as the harvest limits, including catches from October 1986, had already been exceeded for those areas when the draft management plan was completed. The June 3 closure date was selected as it corresponded to the closure of the area 2-C halibut fishery. This was done primarily to minimize the problems with rockfish by-catch mortality associated with the halibut fishery by allowing rockfish to be delivered unrestricted through the halibut opening. It was felt that this was necessary to allow adequate time to notify the fleet and to prevent the confusion which would have resulted from a first-time rockfish closure very close to a previously scheduled halibut opening. As a result of the late closure, the actual

harvest of 1,219 metric tons for all areas combined exceeded the 940 metric ton preliminary harvest limit specified in the management plan by approximately 30%. The NSEI area was closed on July 6 and the NSEO area was closed on August 10. The preliminary harvest limits and actual 1986-87 season harvests are listed in Table 2.

Harvest from the SSEI area dominated the southeast Alaska rockfish catch during 1987 exceeding the CSEO area harvest for the second straight year. The SSEO area harvest also exceeded the CSEO area harvest in 1987 for the first time since the inception of the directed fishery. During the 1986-87 season the SSEI area accounted for 30% of the total southeast Alaska harvest followed by the SSEO area with 29% and the CSEO area with 27%. The NSEI and NSEO areas combined accounted for only 15% of the harvest.

It is interesting to note that the distribution of the 1986-87 season catch represents a significant shift in effort. The harvest from the CSEO area accounted for well over 50% of the southeast Alaska harvest until the 1986 season and the SSEI area accounted for 43% of the total 1985-86 harvest.

Landings of demersal shelf rockfish totaled only 36 metric tons in the Yakutat area during 1987. Much of these landings were incidental to fisheries for other species, particularly the halibut fisheries. Some directed effort did occur, however, after the closure of the southeast Alaska management areas. No state management effort is currently directed toward rockfish management in the Yakutat area.

The department approved an emergency regulation, which eventually became a permanent regulation, to allow for the incidental take of demersal shelf rockfish when the directed fishery is closed. This was done to prevent resource wastage as demersal shelf rockfish brought to the surface by any type of commercial gear generally don't survive. The regulation allows for a catch of up to 10% of the primary target species.

Landings of "other rockfish" including species in the pelagic shelf, slope, and thornyhead rockfish assemblages totaled 191 metric tons region wide during 1987. Most of the total (92%) was landed on longline gear. All but 25 tons was reported from southeast Alaska.

### Gear

A total of 465 longline vessels landed rockfish in Region I during 1987. It is difficult, however, to determine directed effort from the fish ticket database. The only selection criteria currently available in the database are valid gear card and rockfish landings by area within a specified period. The number of participants who make multiple landings or rely upon rockfish fishing for a major portion of their fishing income is assumed to be a small percentage of the total number of participants.

The CFEC is currently working to determine the fleet distribution and income dependence on the rockfish fishery. That information will be included in a report on the fishery due out later in 1988.

Longline was the dominant gear group again during 1987, accounting for over 99% of the shore-based landings (by weight). Landings were also made on automatic jigging machine and hand troll permits. Trawling for rockfish is prohibited in State waters by regulation.

### Management

Because most species are so long lived and slow growing, the rockfish resource is considered to be extremely vulnerable to overexploitation. When the board adjourned in 1986 without considering southeast Alaska rockfish proposals, it was decided that the risk to the resource was too

great to delay until the Board would again discuss rockfish management. Therefore, ADF&G groundfish staff prepared the rockfish management plan described in the previous section. That plan established preliminary harvest limits for demersal shelf rockfish in all five southeast Alaska management areas based upon the best available information on stock condition and distribution. The combined limits total 940 metric tons with 82% (775 t) of the total in the CSEO, SSEO, and SSEI areas where most of the fishing occurs. ADF&G biologists are in the process of reanalyzing the available information to determine the appropriateness of the preliminary harvest limits.

The combined preliminary harvest limits of 625 metric tons set by ADF&G for demersal shelf rockfish in the three management areas which make up the Southeast Outside District were adopted by the NPFMC as a total allowable catch level for that district. However, there are still two major discrepancies between state and federal regulations. State regulations limit the harvest of demersal shelf rockfish to hook and line gear while no gear is specified in federal regulations. In addition, the season in state waters begins on October 1 while the fishery in federal waters is based on the calendar year. Proposals to make the regulations consistent have been submitted to the NPFMC for next year. A series of additional management options will be submitted to the board next fall along with a request for the endorsement of the current rockfish management policies which were developed outside of the board process.

#### Projection

The total harvest of demersal shelf rockfish will decline in the 1987-88 season regardless of whether or not additional management action is implemented. That is because the harvest will be contained within the harvest limits during the 1987-88 season whereas the harvest limits were exceeded by 30% during the 1986-87 season. Much of the effort has shifted

to the SSEO area and it is anticipated that the SSEO and SSEI areas will close much earlier than during the 1986-87 season.

The fourth quarter harvest in 1987 was above the 1986 fourth quarter harvest in all areas except the CSEO area. The harvest in the CSEO area declined by nearly 80% in 1987. It is unclear whether the dramatic decline in the CSEO area harvest is the result of reduced rockfish abundance or other factors. The staff will be examining performance from that area closely to determine the cause of that decline. That information is critical to southeast Alaska rockfish management since the justification for setting harvest levels for the other outside management areas was derived to a large extent from the information collected in the CSEO area. If it is determined that the harvest level in the CSEO area is set too high, and the harvest limit for that area is subsequently reduced, the harvest limits for the other outside areas would also have to be adjusted downward accordingly. It is quite likely that additional harvest restrictions will be needed in the near future as new information becomes available.

A stock assessment survey was conducted in the CSEO area in 1987 and over time should provide an independent indication of relative rockfish abundance in that area. Data from that survey is being analyzed and the sample design is being evaluated to determine the best methods for assessing rockfish. Future survey work will be conducted according to the results of that analysis. However, even if the methods prove to be successful, it will be several years before data from those surveys can be used for management with any degree of confidence.

Rockfish management currently presents the greatest groundfish management challenge in the region. The board should expect numerous proposals dealing with this fishery from both the staff, the industry, and from other user groups during the fall 1988 board meetings. The ADF&G groundfish staff is working on a revised rockfish management plan which will present a number of management options for consideration.

## TRAWL FISHERIES

### Management Unit

The trawl fishery targeted primarily on flatfish again during 1987 and that species group accounted for over 92% of the total trawl landings. Flatfish fisheries which have occurred almost exclusively in the SSEI area during 1986 were somewhat more evenly distributed in 1987. The SSEI area still accounted for 67% of the total flatfish harvest in 1987, but most of the catch was from different grounds than those fished during 1986. Most of the remaining effort was from the NSEI area which accounted for nearly 30% of the flatfish harvest. Much of the flatfish harvest occurs in relatively small areas. Most of the NSEI area landings were from Port Camden while the landings from the SSEI area were split between lower Duncan Canal and the Stikine River Flats. The landings from lower Duncan Canal dominating the catch for the first time since the recent trawl fishery began in the mid-1970's. Small landings of other species primarily pelagic rockfish and Pacific cod were also reported from the SSEI area during 1987 with most of the harvest from the state waters portion of that area.

### Catch

Trawl landings during 1987 totaled nearly 865,000 pounds, an increase of 65% over the 523,000 pounds reported during 1986. The trawl fisheries occur primarily during the fall and winter. The primary fishing areas were closed prior to January 1, 1987 and so there was relatively little effort in the winter of 1987.

In past years starry flounder made up to 99% of the flatfish trawl landings. Much of that was because of market constraints and fishermen both

altered their fishing strategy and sorted fish on board to deliver primarily starry flounder. During 1987 market constraints were eased somewhat and approximately 12% of the total flatfish harvest was of fish other than starry flounder.

Landings from the SSEI area totaled over 575,000 pounds or 67% of the southeast Alaska total. Much of the SSEI area harvest occurred during the fall of 1987 and over 450,000 pounds of flatfish landed from the lower Duncan Canal area prior to the closure of that area on November 21. The high harvest from that area is noteworthy because very little flatfish has been harvested from that area for several years. In fact, that area has been closed to fishing during the season with very little harvest during several of the past ten years because of poor fisheries performance and high bycatch levels of Tanner crab. The remainder of the SSEI flatfish harvest was from the Stikine River Flats and from upper Clarence Strait in an area not previously fished.

The NSEI area accounted for 256,000 pounds or approximately 30% of the total landings in 1987. Most of that harvest (93%) was flatfish from Port Camden during the late spring of 1987.

Fisheries performance from the Stikine flats was very poor during the fall of 1987 and the fishery was closed in mid-January 1988 with less than 20,000 pounds of total flatfish harvest reported from that area. That is the lowest harvest reported from that area in the past ten years.

All flounder were landed and processed within southeast Alaska again in 1987 for the second straight year. This is a significant change from past years when virtually all significant landings were delivered to out-of-state processors.

Bait landings of miscellaneous groundfish species, which have made up a substantial portion of the Region I trawl catch in the past, were minimal in 1987. Total trawl landings of Pacific cod and pollock which make up the

bulk of that harvest totaled less than 50,000 pounds in the region during 1987 including those which were landed in conjunction with the flatfish fisheries. It is unclear whether this is an indication that bait landings are going unreported or that, with the shortened crab seasons, bait fishing is no longer profitable enough to attract interest.

### Gear

Trawl permits were issued to ten individual vessels and eleven skippers during 1987. That is the largest trawl fleet ever reported for the region. Many of the vessels only reported one or two landings, however trawl fisheries were conducted in some portion of southeast Alaska area during most of the year. That is a significant departure from the seasonal nature of this fishery which has occurred almost exclusively during the fall and winter period in the past.

### Management

Trawl fisheries in State waters of Region I are managed under the terms of a special permit issued by staff biologists by authority of the Commissioner. All permits are cleared with the Regional Groundfish Biologist to maintain consistency.

The permits specify areas of harvest, gear restrictions, and reporting requirements. They are issued with a 30 day limit and are renewable only upon completion and return of department furnished log books.

Because of budget reductions, the observer program was reduced to one person working two months during 1987. Six trawl observer trips were made during 1987 which provided the information needed to close the fisheries in two areas.

Management criteria are established for the major fishing areas based on past performance of the fisheries. These criteria include: catch per trawl hour, sex ratio and average length of key species, discard rates, and prohibited species catch. If fisheries performance drops below the required criteria in an area, all current permit holders are notified that the permits are no longer valid for that area and no further permits are issued. Based on observer coverage in 1987 lower Duncan Canal and the Stikine Flats were closed during the fall fishery.

### Projection

With the establishment of local markets for flatfish and the decline of the west coast rockfish trawl fishery, interest in the southeast Alaska trawl fisheries is expected to continue to increase. This trend was demonstrated by the substantial increase in permit requests during 1987. The flatfish fisheries are limited by stock condition and those fisheries are not expected to expand significantly in the near future.

Each year the ADF&G staff receives numerous requests for information concerning the potential for trawl fisheries within the Region. Because the productive shelf area is so limited within Southeast Alaska and the limited shelf area that does exist is also occupied by other valuable commercial species, Southeast Alaska appears to have very limited potential for major trawl production. In fact, an analysis of observer data from 1978 through 1986 indicates that the value of the prohibited species bycatch by trawl gear in the area may have exceeded the ex-vessel value of the trawl landings during that time period. King crab, Tanner crab, and halibut make up the bulk of the prohibited species catch, but dungeness crab, sablefish, demersal shelf rockfish, and salmon are also caught to some extent. Analysis of the bycatch data will be completed and summarized in the 1988 board report.

Trawl fisheries for pelagic rockfish could evolve into a major fishery in a short time if market conditions become favorable and trawl gear is permitted for harvesting these species. Stock assessment data is incomplete for these species and sustainable yields are currently unknown. Because of the interest in harvesting that assemblage of rockfish by trawl gear, a clearer understanding of the intent of the regulation restricting rockfish fisheries to hook and line gear only is desperately needed.

## PACIFIC COD

### Management Unit

In addition to the directed fisheries, Pacific cod are harvested incidentally in troll, longline, and trawl fisheries throughout the region. Most of the cod are harvested within State waters with the NSEI management area accounting for the majority (58%) of the Southeast area landings. The SSEI area also produced substantial Pacific cod catches and 27% of the landings were reported from that area. The catch in all three of the outside management areas combined made up only 16% of the southeast Alaska total. Minimal landings were also reported from the Yakutat area.

### Catch

Pacific cod landings during 1987 totaled nearly 765,000 pounds, substantially higher than the 421,000 pounds reported for 1986. Distribution of the harvest was similar to 1986 with a slightly higher percentage from the NSEI and a slightly lower percentage of the landings reported from the SSEI area

in 1987 than in 1986. Most of the harvest was reported early in the year with 88% of the NSEI harvest and nearly 80% of the SSEI harvest reported from January through May. February and March were the peak months of harvest in both areas. Much of the harvest is sold directly to crab vessels on the fishing grounds for bait and it is assumed that at least some of those sales go unreported. For that reason, the actual cod harvest is probably greater than the reported catch indicates.

### Management

Much of the cod are landed in small amounts incidental to other fisheries or sold at sea as bait making it difficult to collect biological data from the catch. Therefore, very little is known about stock conditions and there are no regulations in effect at this time.

Based upon ancillary information and catch trends, cod stocks appear to be rebuilding after a period of low abundance. Increased availability may be at least partially responsible for the dramatic increase in harvest and renewed interest in the fishery observed in recent years.

A news release was issued in the late spring of 1987 reminding vessel operators that they are required by regulation to report their bait sales on fish tickets. Several fishermen reported catches after seeing the news release and so harvest data was received that otherwise might have gone unreported.

### Projection

The amount of cod landed annually depends to a large extent on market conditions. When markets are weak much of the cod is discarded or used as

bait for other species aboard the catcher vessel. Because of this, annual catch projections are extremely difficult to make. Catches have increased substantially in the past two years and that trend is expected to continue as long as markets remain favorable.

## LINGCOD

### Management Unit

Most of the lingcod harvest in the region occurs along the outer coast, although catches in the major straits are also reported. The current database does not provide an accurate breakdown of the ratio of harvest between state and federal waters, but it assumed that the majority of the landings are from the shallower state managed areas.

### Catch

Lingcod have not been a major target species in past years and historically most of the harvest has been incidental in fisheries for other species. However, beginning in 1986 directed fisheries were reported for the first time and landings have increased dramatically the past two years.

The 1987 harvest totaled over 486,000 pounds (220 metric tons) round weight, a 59% increase over the 287,000 pounds landed in 1986. That is by far the highest lingcod harvest on record and is over four times the historic average for that species.

## Gear

Most of the lingcod harvest was landed in the longline fishery during 1987. That gear type accounted for 59% of the 1987 landings followed by mechanical jigging machines with 33% and troll gear with 8% of the landings. It should be noted that much of the catch attributed to the mechanical jigging machines during 1987 was actually taken by troll vessels using "dingle bar" gear. That gear type is rigged to operate off of the hydraulic gurdies on power troll vessels and differs from power trolling only in the configuration of the terminal tackle and the proximity of the gear to bottom when fishing.

As long as power troll gear is not legal for bottomfish, all power trollers will continue to fish using jigging machine permits as they have the past several years. The Board may wish to consider allowing power troll gear as a legal gear type for bottomfish. That would provide the staff with a means of separating dingle bar landings from actual mechanical jigging machine landings for management purposes.

## Management

There are currently no regulations for lingcod in state waters. In federal waters lingcod are included in the "other groundfish" category along with such species as squid and smelt with a large Gulf-wide total allowable catch limit.

The rapid increase in lingcod harvest in southeast Alaska is a cause for some concern. Very little is known about lingcod biomass or sustainable yields of harvest. The staff is examining catch trends and distribution of harvest to see if effort is consistent in the more productive areas from year to year. These fish are extremely vulnerable to exploitation during some portions of the year and certain breeding

populations can be easily fished down resulting in a year class failure. This is, however, a species which lends itself to some rather innovative management schemes. A series of management options will be presented to the board for consideration during the fall 1988 meetings.

### Projection

Until enough information is collected to regulate the lingcod fishery or until the population crashes, catches are expected to continue to increase.

### OTHER SPECIES

Landings of other groundfish species were relatively small during 1987 and less than 100,000 pounds of all species were reported. Much of the 1987 other species harvest was dogfish shark from an experimental fishery in the Ketchikan area. There are several possible explanations for the low harvest of other groundfish compared to past years. Much of the miscellaneous groundfish catch is used for crab bait. With the shorter crab seasons the demand for fresh bait has been reduced. Also, reporting of groundfish catch by species has improved. That places much of the catch that was previously reported in the general groundfish category into the appropriate individual species categories instead. Other groundfish species harvested in past years include skates, sculpins, dogfish sharks, salmon sharks, giant wrymouths, and greenlings.

Harvest of other groundfish has depended to a large extent on demand for bait. Bait harvests are not expected to increase until the crab seasons are extended. Harvests of other species for food fish are not expected to increase substantially until markets improve. Dogfish are expected to dominate the other species category again in 1988.

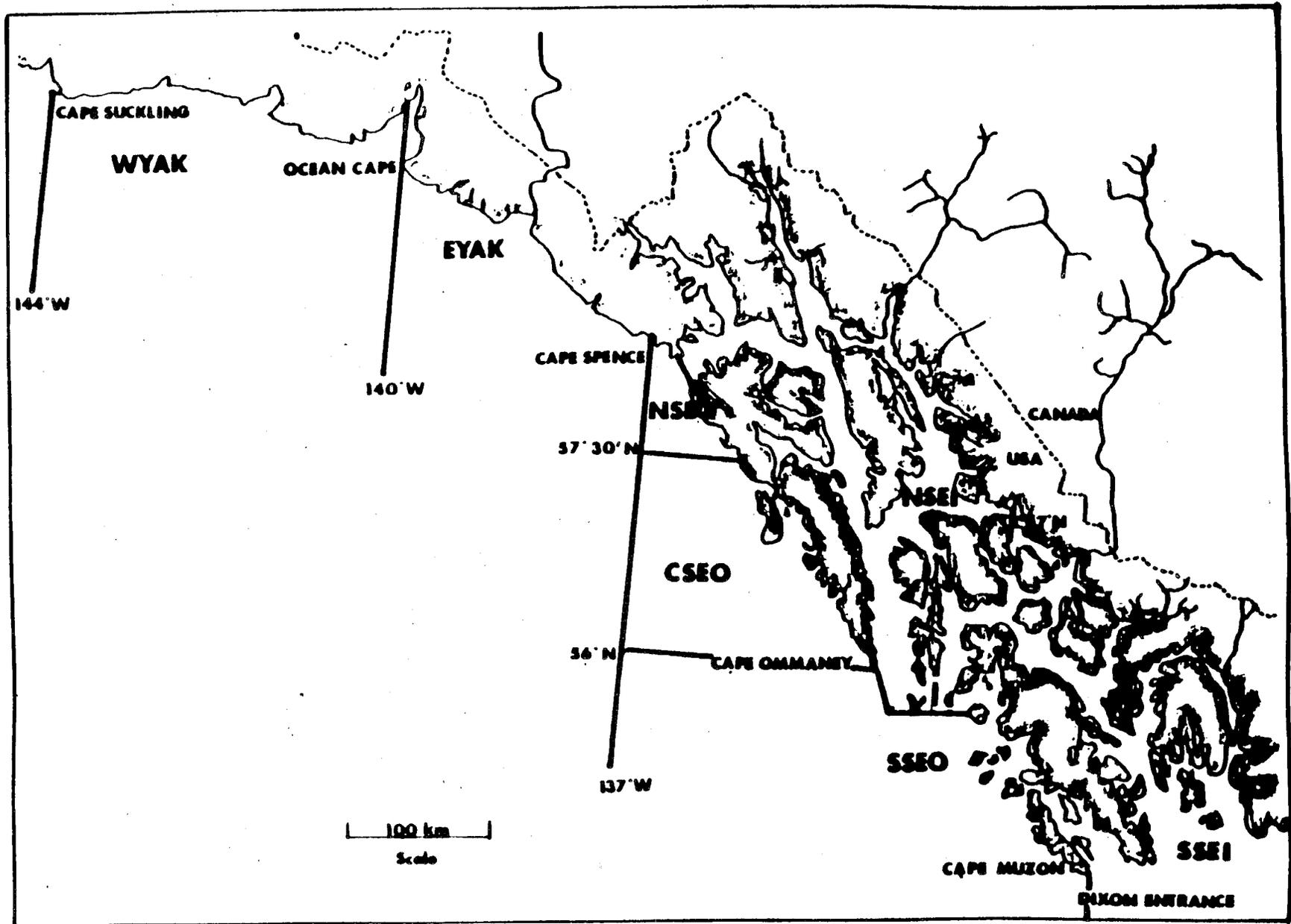


Figure 1. The eastern Gulf of Alaska coastline showing Alaska Department of Fish and Game Region I boundaries and groundfish management boundaries.

Table 1. Total groundfish landings (t) and value (\$ x 1,000) from State of Alaska managed fisheries by major species or species group, 1985-1987 (ADF&G 1/10/88).

SPECIES	YEAR					
	1985		1986		1987	
	CATCH	VALUE	CATCH	VALUE	CATCH	VALUE
Sablefish	1,854	\$2,300	2,193	\$3,050	2,031	\$3,400
Rockfish	734	650	930	925	1,385	1,700
Flatfish	126	55	237	120	392	220
Pacific cod	90	50	191	145	349	310
Lingcod	<u>82</u>	<u>45</u>	<u>130</u>	<u>80</u>	<u>220</u>	<u>150</u>
TOTAL	2,886	\$3,100	3,681	\$4,320	4,377	\$5,780

Sablefish, Pacific cod, and flatfish landings are from NSEI and SSEI only.

Rockfish landings are from SSEI, SSEO, CSEO, NSEO, and NSEI.

Lingcod landings are from SSEI, NSEI, and State waters offshore (inside three miles only).

Table 2. Preliminary demersal shelf rockfish harvest limits (t) and harvest levels (t) by Southeast Alaska rockfish management areas during the 1986-1987 fishing season (ADF&G 1/10/88).

MANAGEMENT AREA	PRELIMINARY HARVEST LIMIT	1986-87 SEASON HARVEST
CSEO	300	330.7
SSEO	250	349.4
SSEI	225	360.7
NSEI	90	75.4
NSEO	75	102.9
TOTAL	940	1,219.1