



BRISTOL BAY SALMON (Oncorhynchus sp.) - 1978
A Compilation of Catch and Escapement Data

Compiled and Edited by:

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and
Michael L. Nelson

April 1983

ADF&G TECHNICAL DATA REPORTS

This series of reports is designed to facilitate prompt reporting of data from studies conducted by the Alaska Department of Fish and Game, especially studies which may be of direct and immediate interest to scientists of other agencies.

The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

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ABSTRACT

Numbers of Bristol Bay salmon that were either caught in the fishing districts or counted as escapement in the rivers are presented in 1978. Sex and age composition, mean lengths and weights, standard errors, sample sizes, plus catches allocated to river of origin are presented in tabular form. Emergency order periods and related catches are also discussed.

INTRODUCTION

This publication is the sixteenth in a series of annual catch and escapement statistics for the Bristol Bay sockeye salmon (*Oncorhynchus nerka*) fishery. This issue also initiates an annual compilation of catch and escapement statistics for Bristol Bay chinook (*O. tshawytscha*), chum (*O. keta*) and pink salmon (*O. gorbuscha*).

Personnel of the Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries, collected all data and aged all scales for both the catch and escapement. Final harvest data were compiled from fish tickets by the Statistics Section. Age-weight-length (AWL) data were collected by field crews. Computer tabulation of the sockeye data was accomplished by Nancy Graves, programmer, Anchorage.

METHODS AND MATERIALS

Much of the data used in this report were collected by field crews at escapement counting towers and catch samplers at selected canneries throughout Bristol Bay. Figure 1 shows the approximate location of these projects.

Salmon escapement enumeration crews collected samples daily using beach seines. Commercial catch samplers collected samples whenever the various districts were open to commercial fishing. Samples were obtained from fish as they were unloaded from tenders. An attempt was made to spread samples as much as possible among the various delivering tenders. Sample sizes were based on statistical analysis of past sampling efforts which indicated that for sockeye and chinook salmon a 600-fish sample per period and for pink and chum salmon a 400-fish sample per period provided data sufficiently precise for the estimation of age and sex composition.

Escapement enumeration of sockeye salmon was conducted on nine river systems in Bristol Bay in 1978. These were: Kvichak, Naknek, Egegik, Ugashik, Wood, Igu-shik, Nuyakuk, Snake, and Togiak. Escapement counts were made from towers located on the banks of each of the rivers except at Snake River where a weir has been constructed just below the lake outlet. Tower counts were conducted for 10 minutes on each bank, each hour. The counts were expanded to estimate hourly escapements and the expanded counts were summed to estimate the total daily escapement. Sockeye salmon escapements in the Branch and the Nushagak-Mulchatna Rivers plus several Togiak District systems were estimated by aerial survey techniques.

Escapement enumeration of chinook and chum salmon in the Nushagak and Togiak Districts was accomplished through aerial surveys, while pink salmon in the Nushagak District were enumerated by a tower counting crew on the Nuyakuk River and by aerial survey on other river systems where towers were not present.

Sockeye salmon caught in the Naknek-Kvichak and Nushagak Districts, which have mixed stocks from a number of different rivers, were allocated by comparing the age and sex composition of the catch samples with that of the escapement samples from the contributing river system.

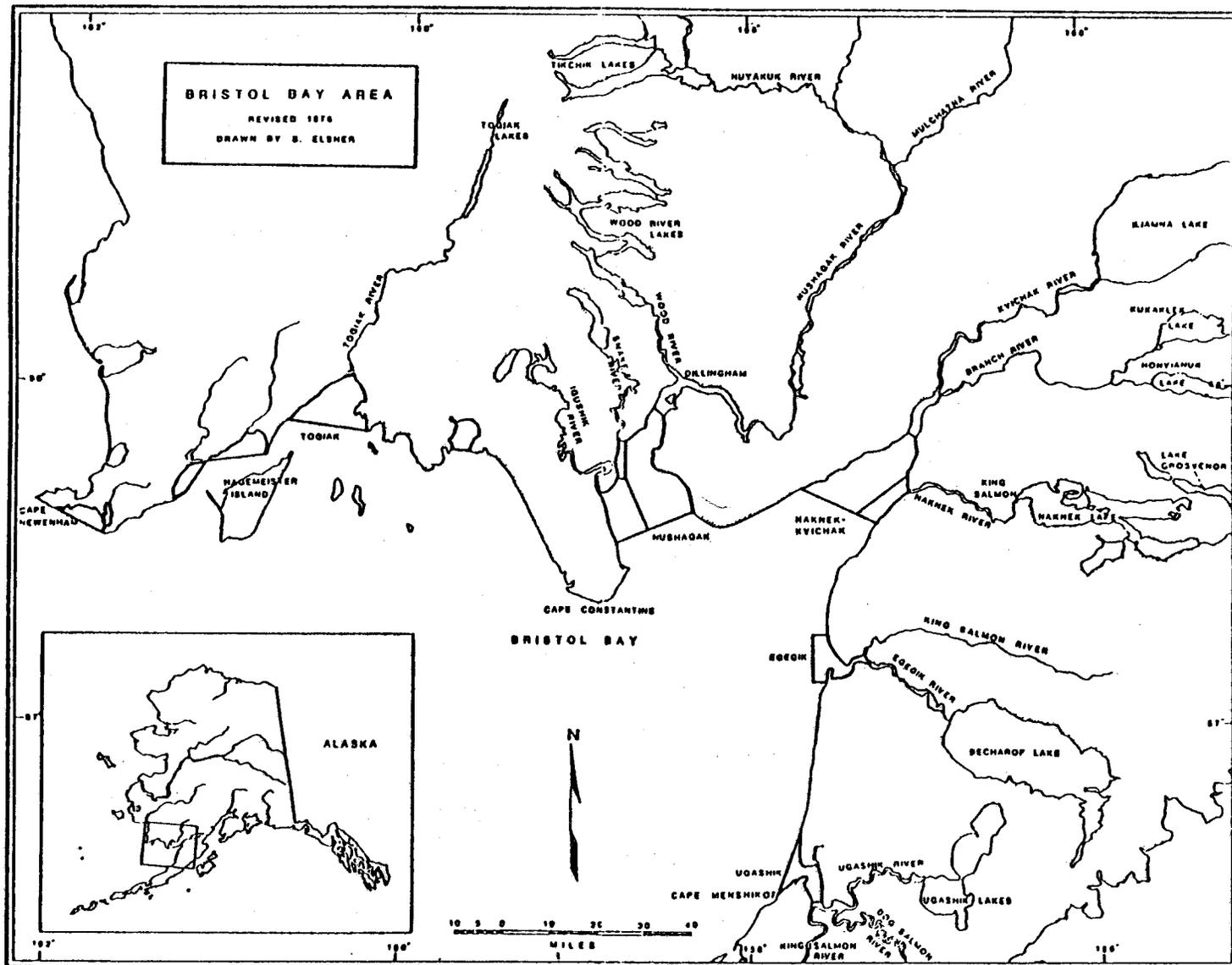


Figure 1. Bristol Bay area map.

The two digit age designation used was Gilbert/Rich. The first digit represents the total age of the fish while the second digit represents the number of years of fresh water residence. Thus a 53 fish (more properly 5 subscript 3) is 5 years old, migrated to the ocean after spending 1 year in the stream, 2 years in the lake, and 2 years in the ocean. Similarly, a 52 fish is one that is 5 years old and spent 1 year in the stream, 1 year in the lake, and 3 years in the ocean.

Length measurements are from mid-eye to fork of tail and weights are round weights.

RESULTS

The area-wide salmon catch during the 1978 season totaled 16.5 million fish, the largest since 1970. The harvest of 9.9 million sockeye salmon from the five major fishing districts dominated the catch. The inshore run of sockeye salmon to Bristol Bay totaled 19.9 million fish, 8.4 million above the pre-season forecast. Sockeye salmon escapement goals were achieved for the fifth consecutive year in all systems except the Ugashik River which remained closed to fishing for the entire season.

The exceptional sockeye returns in 1978 are a direct result of good escapement achieved through strict harvest control and improved survival conditions during recent years. Drastic reductions in foreign high seas gill net fishing have reduced the interceptions of Bristol Bay salmon stocks and also contributed to increased inshore returns.

Management considerations during the 1978 salmon fishery emphasized the achievement of sockeye salmon escapement goals in all systems while allowing the harvest of those fish in excess of escapement requirements. In the Nushagak District where large runs of chinook, chum, and pink salmon occurred, management strategies also allowed for adjustments in the fishery whenever possible to achieve adequate escapements of these species.

A record harvest of pink salmon occurred. The harvest of pink salmon totaled 5.2 million fish compared to the recent 10 year, even-year average of 1.1 million fish.

Salmon price negotiations between the industry and the fishermen were concluded early in the season and little fishing time was lost except where fishermen in both the Naknek-Kvichak and Egegik Districts lost some fishing time prior to June 27 due to unresolved fish prices. Detailed information concerning fishing time is provided in Table 1.

The Japanese high seas mothership fishery harvest of Bristol Bay sockeye salmon was again reduced in 1978 by implementation of the new International North Pacific Fisheries Commission (INPFC) treaty, which restricts, by area and time, the movements and fishing pattern of the mothership fleet. Indications are that the new treaty arrangements drastically reduced Japanese interceptions of western Alaska salmon in 1978. Estimates of the Japanese high seas harvest by the mothership fleet from the 1978 Bristol Bay sockeye salmon run included 328,000 fish taken as immatures in 1977, and 124,000 fish harvested as matures in 1978, or 452,000 fish

Table 1. Bristol Bay emergency order fishing periods, commissioners and general announcements by district, 1978¹.

Emergency Order Number ²	Date and Time	Hours Open
<u>NAKNEK-KVICHAK DISTRICT</u>		
K1	June 25 3 pm - June 26 3 am	12
K2	June 27 5 pm - June 28 5 am	12
K3	June 29 7 pm - June 30 7 am	12
Kvichak section only		
K5	July 6 12 N - July 6 12 M	12
K6	July 6 12 M - July 17 9 am	10 days, 9 hrs ³
Naknek section only		
K6	July 7 12 N - July 7 12 M	12
K8	July 7 12 M - July 8 12 M	24
K9	July 8 12 M - July 9 1 pm	13
K10	July 13 5 pm - July 14 5 pm	24
K11	July 17 7 am - July 17 9 am	2
<u>EGEGIK DISTRICT</u>		
K1	June 24 1 pm - June 25 1 am	12
K2	June 27 3 pm - June 28 3 am	12
K3	June 30 7 am - June 30 7 pm	12
K4	June 30 5:30 am - June 30 5:30 pm	12 ⁴
K7	July 7 11 am - July 7 11 pm	12
K8	July 7 11 pm - July 8 12 M	25
K9	July 8 12 MN - July 17 9 am	8 days, 9 hrs ⁵
<u>UGASHIK DISTRICT</u>		
K11	July 17 9 am - July 19 9 am	48 ⁶
K12	July 20 9 am - July 22 9 am	48 ⁷
<u>NUSHAGAK DISTRICT</u>		
D2	June 20 11 am - June 20 11 pm	12 ⁸
D3	June 23 2 pm - June 24 2 am	12
D4	June 28 6 am - June 28 6 pm	12
D5	July 2 10 am - July 2 10 pm	12
D7	July 4 11 am - July 4 11 pm	12
D8	July 4 11 pm - July 15 9 am	10 days, 10 hrs
D10	July 15 9 am - July 16 9 am	24
D12	July 25 9 am - July 31 9 am	24 ⁹
D14	July 27 6 am - July 27 6 pm	12 ¹⁰
D15	July 27 6 pm - July 29 9 am	39
D16	July 29 9 am - July 31 9 am	48
D17	Aug 5 9 am - Aug 7 9 am	48
Igushik section only		
D6	July 2 10 pm - July 3 10 am	12

-Continued-

Table 1. Bristol Bay emergency order fishing periods, commissioners and general announcements by district, 1978¹ (continued).

Emergency Order Number ²	Date and Time	Hours Open
<u>TOGIK DISTRICT</u>		
Togiak section only		
D9	July 14 9 am - July 15 9 pm	36
D11	July 21 9 am - July 22 9 pm	36
D13	July 28 9 am - July 29 9 pm	36
<u>Commissioners Announcements</u>		
Number	Date	Description
78-1	April 28	Establishes and describes constructive ports in Nushagak and Kulukak Bays.
78-2	July 6	Permitted a waiver of the 48-hour waiting period prior to relocation of set net gear in the Naknek-Kvichak District.
<u>General Announcements</u>		
Number	Date	Description
K1	July 2	<p>The commercial harvest of sockeye salmon in the Naknek-Kvichak District now stands at 1.4 million. Catch per unit of effort declined significantly during the past period. The outside test boat has not detected any significant buildup within the district. The rate of escapement into the Kvichak River is currently on the decline. An aerial survey reveals a continuing drop in the rate of escapement into the lower part of the river above the fishery. The Naknek River escapement rate is also continuing to decline. Only 15% of the Naknek River goal has been tallied to date and is lagging behind the rate normal for this date.</p> <p>In the Egegik District the commercial harvest to date is 422,000 with a drastic decline in catch per unit of effort during the period on June 30. The Egegik escapement is 158,000 and although an additional 120,000 fish remain in the lagoon below the counting tower, the numbers of fish moving into clear water is declining. Inside and outside test fishing indicates a decline also.</p>

-Continued-

Table 1. Bristol Bay emergency order fishing periods, commissioners and general announcements by district, 1978¹ (continued).

<u>General Announcements</u>		<u>Description</u>
<u>Number</u>	<u>Date</u>	
		<p>The commercial harvest in the Ugashik District has been minimal to date and less than 2,000 fish have been counted in the river during a recent aerial survey. This district will probably remain closed through July 17 to secure needed escapements.</p> <p>Faced with a general decline in the abundance of fish in these districts the prospects for additional fishing time are not imminent at this time. We will continue to intensively monitor the situation in all districts for any improvement in the situation. The current opening in the Nushagak District should provide more information on the trend in the sockeye salmon run to Bristol Bay this season.</p>
K2	July 5	<p>Continuous test fishing over the past four days indicates a significant buildup of fish within the Naknek-Kvichak District and the lower ends of the major rivers above the fishery. An aerial survey of the Kvichak River this afternoon should reveal the actual strength of the escapements. The Naknek River escapements are still lagging behind the level normal for this date but have also begun to increase. If escapement rates continue through this afternoon additional fishing time will be imminent.</p> <p>Outside and inside test fishing continues in the Egegik District and indicates a gradual increase in fish this district also. Unless passage by the inside boat increases dramatically in the next two tides, fishing time is not imminent.</p> <p>Escapements in the Ugashik District remain insignificant. At this time fishing in this district is not expected before July 17.</p>

-Continued-

Table 1. Bristol Bay emergency order fishing periods, commissioners and general announcements by district, 1978¹ (continued).

General Announcements		Description
Number	Date	
K3	July 6	Escapements into the Naknek River are still lagging behind the rate necessary to attain the goal in this system. Any additional fishing time in the Naknek-Kvichak District in the immediate future may be limited to the Kvichak section only. In the event that this does occur we intend to waive the 48-hour waiting period for relocation of set nets within the district.

- ¹ Emergency order period: Naknek-Kvichak, Egegik, and Ugashik Districts from 9:00 am June 23, until 9:00 am July 17; Nushagak District from 9:00 am June 16 until 9:00 am July 17.
- ² Letter code on emergency order numbers indicate field office where the announcement originated ("K" is King Salmon and "D" is Dillingham).
- ³ Fishing time in the Kvichak section extended until the end of the emergency order period at 9:00 am, July 17. This announcement also provided for a waiver of the 48-hour waiting period normally required of set net fishermen prior to the relocation of their gear to an alternate site. This exception was limited to fishermen located in the Naknek section.
- ⁴ Amended Emergency Order K3 to adjust the timing of the period more in unison with prevailing tide conditions.
- ⁵ Fishing time extended until the end of the emergency order period at 9:00 am, July 17.
- ⁶ Closed to fishing two days beyond the end of the emergency order period.
- ⁷ Closed to fishing. Two day closure followed a 24-hour test opening on July 19-20.
- ⁸ Also restricted further fishing to waters north of the sockeye salmon boundary line.
- ⁹ Closed to fishing beginning 9:00 am, July 25. This emergency order allowed only a 24-hour period on July 24-25.
- ¹⁰ This emergency order and emergency orders D15 and 16 superceded emergency order D12.

(2% of the total Bristol Bay run). This level of interception is well below the 20-year average of 10% or 1.9 million fish. In addition, the relatively low sockeye salmon catches by the Japanese land-based gill net fleet was also due, in part, to a series of reductions in this fishery brought about by the new INPFC treaty.

Inshore commercial fishing effort was similar to recent high years, with 2,618 units of gear and 1,864 vessels registered to fish Bristol Bay, compared with 2,279 and 1,728 respectively, in 1977. Of the total licensed gear units, it is estimated that only 1,893 units, or 72% actually participated in the fishery.

District registration in 1978 was similar to previous years, with Naknek-Kvichak and Nushagak Districts accounting for over 76% of the total. Registration by residency continued to show an overall resident/non-resident ratio of 2 to 1, with the usual district ratios: Naknek-Kvichak and Egegik Districts with nearly equal numbers of resident and non-resident fishermen, while the remaining district fishermen were primarily resident.

Sockeye Salmon

The total sockeye salmon return in 1978 of 19.9 million fish (Table 2) was over triple the average historical level of 5.8 million fish for comparable years in the current 5-year cycle. The majority of the run consisted of fish produced from three brood years (1972-1974). Two of these brood years (1972-1973) experienced the lowest total run since accurate records first became available during the late 1950's. Detailed data concerning age, length, weight, and sex composition of the 1978 sockeye salmon run is provided in Tables 3 through 6.

Above average production from low escapements in 1973, however, resulted in exceptional numbers of 5-year-old sockeye salmon in 1978, particularly in the Nushagak District. Strong escapements in 1974 also produced large returns of 4-year-old fish, especially in terms of the returns to the Kvichak and Wood Rivers. A large return to the Kvichak River was anticipated and was the result of a recently adopted escapement management plan for this system. This plan required increased escapements in the Kvichak River during the year immediately preceding the peak with the objective of spreading sockeye salmon production over several years in the system's 5-year cycle. Four-year-old fish also dominated the run in the Wood River system and were produced from a 1.7 million escapement in 1974.

The 1978 sockeye salmon run was also an exceptional one in many other respects. The total run to the Naknek-Kvichak District of 10.3 million fish was four times the average for all past years in the same relative position of the 5-year Kvichak River production cycle. The Kvichak River escapement of 4.1 million fish was the largest in this stage of the cycle since accurate counts were first available in the mid-1950's and the catch of 5.1 million was the largest since 1936 for all comparable cycle years.

The 1978 season in the Nushagak District was comparable to many of the years during the early 1900's to 1930's when peak production occurred in this district. The total Nushagak District sockeye salmon run of 6.6 million fish was the largest since both catch and escapement estimates were first available in the late 1940's. The escapement into Wood River of 2.3 million fish was the third largest ever

Table 2. Bristol Bay sockeye salmon inshore return, by river system, 1978.

System	Catch	Escapement	Total Return
Kvichak River	3,815,636	4,149,288	7,964,924
Branch River	225,653	229,400 ¹	455,053
Naknek River	1,082,379	813,378	1,895,757
Subtotal Naknek-Kvichak District	5,123,668	5,192,066	10,315,734
Egegik River	1,207,294	895,698	2,102,992
Ugashik River	7,995	70,434	78,429
Wood River	1,791,559	2,267,238	4,058,797
Igushik River	538,356	536,154	1,074,510
Nuyakuk River	685,666	576,666	1,262,332
Snake River	14,859	18,074	32,933
Nushagak-Mulchatna River	106,726	87,000 ¹	193,726
Subtotal Nushagak-Igushik District	3,137,166	3,485,132	6,622,298
Togiak River	452,016	273,576 ²	725,592 ²
Total Bay	9,928,139	9,916,906	19,845,045

¹ Total escapement estimated by aerial survey.

² Does not include 66,500 sockeye salmon escapement estimated by aerial survey of Togiak and Kulukak tributary streams.

Table 3. Bristol Bay sockeye salmon inshore return, ocean age group by river system, 1978.

SYSTEM	OCEAN AGE GROUP				TOTAL
	1	2	3	4	
KVICHAK					
NUMBER	306,744	6,403,264	1,232,731	22,185	7,964,924
PERCENT	3.85	80.39	15.48	.28	40.14
BRANCH					
NUMBER	19,333	300,330	135,321	69	455,053
PERCENT	4.25	66.00	29.74	.01	2.29
NAKNEK					
NUMBER	3,162	742,167	1,138,734	11,694	1,895,757
PERCENT	.16	39.15	60.07	.62	9.55
SUB-TOTAL NAKNEK-KVICHAK					
NUMBER	329,239	7,445,761	2,506,786	33,948	10,315,734
PERCENT	3.19	72.18	24.30	.33	51.98
EGEGIK					
NUMBER	17,665	733,687	1,350,572	1,068	2,102,992
PERCENT	.84	34.89	64.22	.05	10.60
UGASHIK					
NUMBER	11,194	26,851	39,984	400	78,429
PERCENT	14.27	34.24	50.98	.51	.39
WOOD					
NUMBER	49,513	2,925,791	1,068,038	15,455	4,058,797
PERCENT	1.22	72.09	26.31	.38	20.45
IGUSHIK					
NUMBER	1,307	460,289	605,498	7,416	1,074,510
PERCENT	.12	42.84	56.35	.69	5.41
MUYAKUK					
NUMBER	--	126,532	1,090,726	45,074	1,262,332
PERCENT	--	10.02	86.41	3.57	6.36
SNAKE					
NUMBER	--	30,498	2,435	--	32,933
PERCENT	--	92.61	7.39	--	.17
NUSHAGAK-MULCHATNA					
NUMBER	--	21,953	164,177	7,596	193,726
PERCENT	--	11.33	84.75	3.92	.98
SUB-TOTAL NUSHAGAK-IGUSHIK					
NUMBER	50,820	3,565,063	2,930,874	75,541	6,622,298
PERCENT	.77	53.83	44.26	1.14	33.37
TOGIK					
NUMBER	--	274,380	406,355	44,857	725,592 ¹
PERCENT	--	37.82	56.00	6.18	3.66
TOTAL BAY					
NUMBER	408,918	12,045,742	7,234,571	155,814	19,845,045
PERCENT	2.06	60.70	36.46	.78	100.00

¹ Does not include 66,500 sockeye salmon escapement estimated by aerial survey of Togiak and Kulukak tributary streams.

Table 4. Bristol Bay sockeye salmon inshore return, age group by river system, number, 1978.

RIVER SYSTEM	AGE GROUP													
	31	32	41	42	43	51	52	53	62	63	64	73	74	
KVICHAK	--	5,334	1,338	6,137,945	301,410	1,503	955,315	265,319	20,682	276,078	--	--	--	
BRANCH	--	14,681	62	283,166	4,652	69	120,766	17,164	--	12,567	--	--	1,926	
NAKNEK	--	580	360	224,742	2,582	405	574,485	508,391	2,657	556,294	9,034	8,632	7,595	
SUB-TOTAL NAKNEK-KVICHAK	--	20,595	1,760	6,645,853	308,644	1,977	1,650,566	790,874	23,339	844,939	9,034	8,632	9,521	

EGEGIK	--	--	--	127,244	17,665	--	125,306	560,297	195	1,174,331	46,146	873	50,935	

UGASHIK	--	2,837	--	10,884	8,357	--	6,242	14,465	--	33,263	1,502	400	479	

WOOD	9,381	45,866	3,810	2,848,907	3,647	--	1,041,655	67,503	15,455	22,573	--	--	--	
IGUSHIK	--	--	8,183	437,435	1,307	--	586,361	22,854	7,416	10,954	--	--	--	
NUYAKUK	10,020	--	--	115,171	--	2,528	991,425	1,341	42,028	99,301	--	518	--	
SNAKE	--	--	--	26,056	--	--	2,435	4,442	--	--	--	--	--	
NUSHAGAK-NULCHATNA	--	--	--	12,395	--	--	134,431	9,558	7,596	29,746	--	--	--	
SUB-TOTAL NUSHAGAK-IGUSHIK	19,401	45,866	11,993	3,439,964	4,954	2,528	2,756,307	105,698	72,495	162,574	--	518	--	

TOGIKAK	348	--	1,043	242,619	--	--	351,964	31,413	42,671	53,348	--	2,186	-- ¹	

TOTAL BAY	19,749	69,298	14,796	10,466,564	339,620	4,505	4,890,385	1,502,747	138,700	2,268,455	56,682	12,609	60,935	

¹ Does not include 66,500 sockeye salmon escapement estimated by aerial survey of Togiak and Kulukak tributary streams.

Table 5. Bristol Bay sockeye salmon inshore return, age group by river system, percent, 1978.

RIVER SYSTEM	AGE GROUP													TOTAL
	31	32	41	42	43	51	52	53	62	63	64	73	74	
KVICHAK	--	.07	.02	77.06	3.78	.02	11.99	3.33	.26	3.47	--	--	--	40.14
BRANCH	--	3.23	.01	62.23	1.02	.02	26.54	3.77	--	2.76	--	--	.42	2.29
NAKNEK	--	.03	.02	11.85	.14	.02	30.30	26.82	.14	29.34	.48	.46	.40	9.55
SUB-TOTAL NAKNEK-KVICHAK	--	.20	.02	64.42	2.99	.02	16.00	7.67	.23	8.19	.09	.08	.09	51.98

EBEGIK	--	--	--	6.05	.84	--	5.96	26.64	.01	55.84	2.20	.04	2.42	10.60

UGASHIK	--	3.62	--	13.88	10.66	--	7.96	18.44	--	42.41	1.91	.51	.61	.39

WOOD	.23	1.13	.09	70.19	.09	--	25.67	1.66	.38	.56	--	--	--	20.45
IGUSHIK	--	--	.76	40.71	.12	--	54.57	2.13	.69	1.02	--	--	--	5.41
NUYAKUK	.79	--	--	9.12	--	.20	78.54	.11	3.33	7.87	--	.04	--	6.36
SNAKE	--	--	--	79.12	--	--	7.39	13.49	--	--	--	--	--	.17
NUSHAGAK-MULCHATNA	--	--	--	6.40	--	--	69.39	4.93	3.92	15.36	--	--	--	.98
SUB-TOTAL NUSHAGAK-IGUSHIK	.29	.69	.18	51.95	.07	.04	41.62	1.60	1.09	2.46	--	.01	--	33.37

TOGIAK	.05	--	.14	33.44	--	--	48.51	4.33	5.88	7.35	--	.30	--	3.66

TOTAL BAY	.10	.35	.08	52.74	1.71	.02	24.64	7.57	.70	11.43	.29	.06	.31	100.00

Table 6. Bristol Bay catch and escapement of sockeye salmon, age, length (mm) and weight (kg) by sex, 1978.

	AGE GROUP														TOTAL
	31	32	41	42	43	51	52	53	54	62	63	64	73	74	
MALES															
NUMBER	7655	48077	4698	5562391	278590	1728	2317133	837415	0	63888	1049455	23018	7301	26173	10227522
AV LENGTH	502.4	455.6	606.6	520.5	386.2	638.0	593.8	530.6	0.	608.3	601.8	538.2	589.4	612.7	543.3
STD ERROR	10.7	5.3	0.	2.1	4.6	0.	2.3	3.4	0.	10.1	2.5	7.3	6.5	9.2	2.2
SAHP SIZE	8	57	8	4361	217	1	3176	1105	0	148	1656	35	10	43	10825
AV WEIGHT	0.	1.6	5.4	2.4	0.9	0.	3.7	2.6	0.	4.5	3.8	2.7	2.6	3.9	3.0
STD ERROR	0.	0.0	0.	0.0	0.0	0.	0.1	0.1	0.	0.4	0.1	0.1	0.	0.2	0.1
SAHP SIZE	0	14	1	725	42	0	314	327	0	17	501	18	1	21	1981
FEMALES															
NUMBER	12094	21221	10098	4904173	61030	2777	2573252	665332	0	74812	1219000	33664	5308	34762	9617523
AV LENGTH	484.9	459.6	574.0	500.2	393.9	574.0	567.2	515.4	0.	581.6	581.6	522.3	583.4	578.9	530.0
STD ERROR	6.6	21.6	7.8	1.8	12.1	0.	2.1	3.3	0.	10.8	2.1	8.4	0.	6.5	1.9
SAHP SIZE	10	8	14	3611	66	3	3531	909	0	168	1841	50	13	48	10272
AV WEIGHT	1.5	0.6	3.4	2.1	0.7	0.	3.0	2.3	0.	3.4	3.2	2.3	3.2	3.1	2.6
STD ERROR	0.	0.	0.	0.0	0.0	0.	0.1	0.0	0.	0.1	0.0	0.1	0.	0.1	0.0
SAHP SIZE	1	1	1	512	5	0	396	257	0	20	637	22	1	22	1875
SEXES COMBINED															
NUMBER	19749	69298	14796	10466564	339620	4505	4890385	1502747	0	138700	2260455	56682	12609	60935	19845045
AV LENGTH	491.7	456.6	584.4	511.0	387.5	598.5	579.8	523.8	0.	594.1	591.0	528.8	586.9	593.4	536.8
STD ERROR	8.5	7.3	5.6	2.0	6.3	0.	2.2	3.4	0.	10.4	2.3	7.9	3.7	7.8	2.1
SAHP SIZE	18	65	22	7972	283	4	6707	2014	0	316	3497	85	23	91	21097
AV WEIGHT	1.5	1.6	5.2	2.3	0.8	0.	3.3	2.4	0.	4.0	3.5	2.5	2.7	3.5	2.8
STD ERROR	0.	0.0	0.	0.0	0.0	0.	0.1	0.1	0.	0.3	0.0	0.1	0.	0.1	0.1
SAHP SIZE	1	15	2	1237	47	0	710	584	0	37	1138	40	2	43	3856

recorded and was only exceeded in 1908 and in 1946 when 2.6 million and 3.7 million fish escaped the fishery, respectively.

Chinook Salmon

The chinook salmon run to Bristol Bay in 1978 was exceptionally strong. The commercial harvest of 192,000 was the second largest in the 86-year history of the fishery and was well above the long-term average catch of 94,000. The Nushagak District normally produces over 75% of the area chinook salmon harvest and the 1978 run of 249,000 was the strongest year since total run estimates were first available in 1966. The chinook salmon catch of 119,000 in this district was the second largest in history and the escapement of 130,000 was the largest ever recorded.

The Togiak District also produced a record run of chinook salmon and was almost double the previous record of 55,000 set in 1977. The total run of chinook salmon to this district amounted to 97,000, with a catch of 57,000 and an escapement of 40,000.

Chum Salmon

The area chum salmon harvest of 1.2 million fish was double the long-term average and the fifth largest catch ever made. The Nushagak District accounted for over 56% or 652,000 of the total harvest. The chum salmon harvest in the Togiak District of 275,000 was the largest ever made and just slightly above the previous record of 271,000 set during 1977. The 1978 chum run was also unusual since 5-year-old fish from the 1973 brood year were dominant while the majority of Bristol Bay chum salmon normally return as 4-year-old fish. Escapement estimates for chum salmon are made only in the Nushagak and Togiak Districts where over 70% of the Bristol Bay harvest of this species occurs. Just under 300,000 chum salmon escaped the fishery in the Nushagak, while the 396,000 chum salmon escapement in the Togiak District was the second largest ever recorded.

Pink Salmon

The pink salmon return of 1978 was nothing short of phenomenal. Bristol Bay produces significant runs of this species only during even years and the total run this season was nearly 16.6 million fish (Table 7). The commercial harvest of 5.2 million pink salmon for all districts was almost five times the long-term average of 1.1 million pink salmon. The total run of 13.7 million pink salmon in the Nushagak District was the largest in the history of recorded catch and escapement and is very likely the largest ever. The next largest run in Nushagak was 5.1 million pink salmon in 1958. The Naknek-Kvichak District pink salmon run was also large. The catch in this district of 735,000 was the second largest in the history of the fishery and was surpassed only by a 950,000 fish catch in 1920. The total pink salmon run to the Naknek-Kvichak District totaled 2.7 million.

Coho Salmon

The coho salmon harvest of 94,000 for all districts combined was almost double the long-term average of 45,000. The Nushagak and Togiak Districts accounted for almost the entire area-wide coho salmon harvest (89,000). Much of the catch in the Nushagak District occurred incidental to the pink salmon fishery, however,

Table 7. Bristol Bay pink salmon inshore return, by river system, 1978.

District and River System	Pink Salmon		Total Run
	Catch	Escapement	
<u>NAKNEK-KVICHAK DISTRICT</u>			
Kvichak River		440,000	
Branch River		736,000	
Naknek River		780,000	
Totals	734,880	1,956,000	2,690,880
<u>EGEGIK DISTRICT</u>	11,430	--	11,430
<u>UGASHIK DISTRICT</u>	530	--	530
<u>NUSHAGAK DISTRICT</u>			
Wood River		205,000	
Igushik River		16,210	
Nuyakuk River ¹		7,190,184	
Nuyakuk River ²		1,200,000	
Nushagak River		771,600	
Mulchatna River		0	
Snake River		3,483	
Totals	4,348,336	9,386,477	13,734,813
<u>TOGIAK DISTRICT</u>	57,524	150,000	207,524
<u>TOTAL BRISTOL BAY</u>	<u>5,152,700</u>	<u>11,492,477</u>	<u>16,645,177</u>

¹ Upriver from the counting tower.

² Downriver from the counting station.

increased late season fishing effort here and at Togiak has resulted in increased coho salmon catches during recent years.

NAKNEK-KVICHAK DISTRICT

The Naknek-Kvichak District (Figure 2) was expected to produce slightly over 4.0 million sockeye salmon surplus to escapement requirements. Although it was anticipated that Kvichak River stocks would dominate the run, the Naknek River contribution was expected to comprise about 22% of the district total. Sockeye runs to this district exhibit wide fluctuations due to the cyclic production pattern of the Kvichak River stocks. The 1978 run was a non-peak production year in the five-year cycle.

Fishing effort during the four full days of fishing immediately prior to the start of the regulatory period on 23 June resulted in an accumulative catch of 84,000 sockeye salmon. By this date no obvious trend in the development of the run was apparent. Most fishermen did not fish the period announced for 25-26 June, because of a price dispute and an insignificant amount of effort provided a catch of less than 8,000 fish, which was not indicative of run development into the district by that time (Table 8). With only moderate catches to date and an apparent building trend into the lower Kvichak River as indicated by the inside test fishing program, a second 12-hour opening was permitted on 27-28 June. Price agreements had been negotiated by this time and the entire fleet fished for the first time. Catch per unit of effort (CPUE) was high and the combined harvest of all species totaled over 732,000 fish (Table 8).

Sockeye salmon escapements were running ahead of normal by 28 June and catches during the previous period were stronger than expected totaling over 20% of the total forecasted harvest for the district. Following a 38-hour closure the district was reopened for an additional 12-hour period on the evening of 29 June. Effort remained about the same, however the total catch and CPUE was only two-thirds of the previous period. Escapement rate of sockeye salmon in the Kvichak and Naknek Rivers were still ahead of schedule, however mild spring conditions and warmer water temperatures suggested the possibility of earlier than normal run timing. Almost 33% of the forecasted season harvest of sockeye had been secured by the end of the period on 30 June. The overall situation prompted the adoption of a cautious attitude toward any immediate announcements for additional fishing time pending an improvement in the status of the run. The first indication of a possible reversal in the sockeye escapement trend came on 4 July when the Naknek River escapement counts began increasing again (Table 9). By 5 July, it was apparent that a 1.5 million sockeye salmon escapement was assured in the Kvichak River. Escapements were also continuing to increase on the Naknek River, however, by midnight of 5 July, only 42% of the goal was assured and was lagging behind the concurrent trend in the Kvichak River (Table 10).

After a 6-day closure of the district an announcement was made for a 12-hour opening in the Kvichak section only starting at 12 noon on 6 July (Table 1). Inside test fishing catches and sockeye salmon escapement counts from the Kvichak River continued to escalate and by midnight, 6 July, the lower end of the Kvichak River escapement management range was assured. Fishing time was then extended in the Kvichak section until further notice and ultimately remained open until 17 July with the resumption of regular five day-per-week fishing (Table 1).

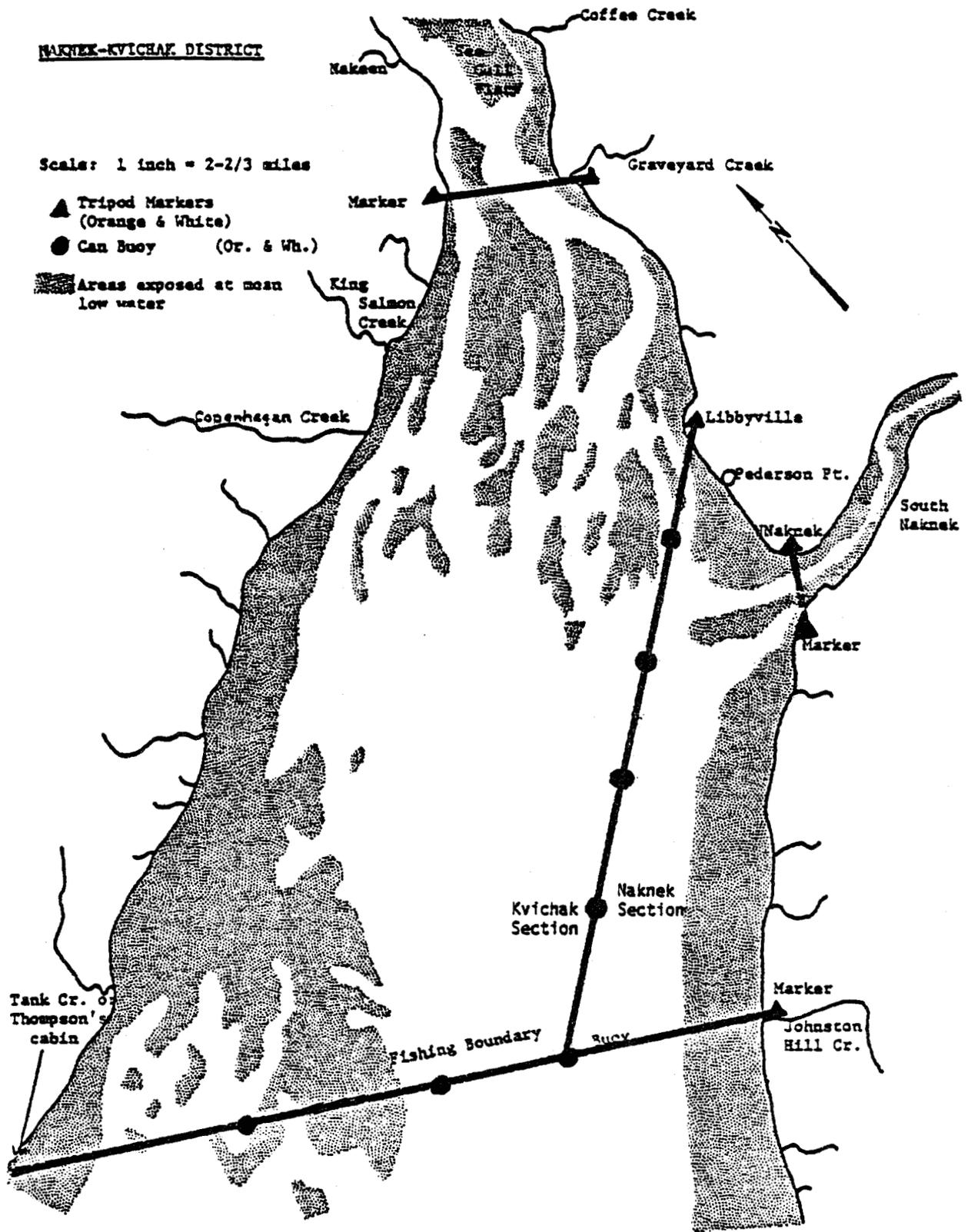


Figure 2. Naknek-Kvichak District commercial fishing boundaries, 1978.

Table 8. Naknek-Kvichak District commercial catch of salmon by species and period, 1978.

Period	Effort		Sockeye	Chinook	Chum	Pink	Coho	Total	
	Drift	Set							
5/29 - 6/3	5 days	1	1	2	3	0	0	0	5
6/ 5 - 10	5 days	3	1	1	26	1	0	0	28
6/12 - 17	5 days	3	19	1,071	332	4	0	0	1,407
6/19 - 23	4 days	216	131	83,016	1,125	11,331	0	0	95,472
6/25 - 26	12 hrs	15	24	7,880	3	158	0	0	8,041
6/27 - 28	12 hrs	561	171	719,344	88	12,769	0	0	732,201
6/29 - 30	12 hrs	590	176	526,093	172	7,018	46	0	533,329
7/ 6 - 8	60 hrs	707	211	1,983,824	2,550	44,735	2,502	0	2,033,611
7/ 9 - 15	7 days	749	207	1,433,550	837	37,837	1,481	0	1,473,705
7/16 - 22	6 days	473	176	304,346	884	31,257	1,361	0	337,848
7/24 - 29	5 days	304	112	56,971	736	34,791	44,849	129	137,476
7/31 - 8/5	5 days	178	56	5,212	153	5,356	514,578	126	525,425
8/ 7 - 12	5 days	82	36	2,332	21	184	165,436	537	168,510
8/14 - 19	5 days	13	2	26	0	10	4,627	121	4,784
TOTALS		0	0	5,123,668	6,930	185,451	734,880	913	6,051,842
PERCENT OF DISTRICT CATCH		0	0	84.7	0.1	3.1	12.1	+	100.0

Table 9. Naknek River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
June 23	0	0	0.00	0.00
24	252	252	0.03	0.03
25	90	342	0.01	0.04
26	102	444	0.01	0.05
27	1,194	1,638	0.15	0.20
28	28,758	30,396	3.54	3.74
29	28,920	59,316	3.56	7.30
30	42,678	101,994	5.25	12.55
July 1	13,002	114,996	1.60	14.15
2	4,800	119,796	0.59	14.74
3	10,728	130,524	1.32	16.06
4	55,392	185,916	6.81	22.87
5	147,426	333,342	18.12	40.99
6	160,848	494,190	19.78	60.77
7	85,320	579,510	10.49	71.26
8	75,930	655,440	9.33	80.59
9	21,516	676,956	2.65	83.24
10	30,210	707,166	3.71	86.95
11	10,938	718,104	1.34	88.29
12	41,064	759,168	5.05	93.34
13	20,082	779,250	2.47	95.81
14	5,970	785,220	0.73	96.54
15	2,658	787,878	0.33	96.87
16	8,154	796,032	1.00	97.87
17	9,912	805,944	1.22	99.09
18	2,880	808,824	0.35	99.44
19	2,880	811,704	0.35	99.79
20	966	812,670	0.12	99.91
21	708	813,378	0.09	100.00

Table 10. Kvichak River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
June 22	162	162	0.00	0.00
23	312	474	0.01	0.01
24	8,652	9,126	0.21	0.22
25	29,118	38,244	0.70	0.92
26	22,356	60,600	0.54	1.46
27	6,048	66,648	0.15	1.61
28	2,166	68,814	0.05	1.66
29	101,766	170,580	2.45	4.11
30	250,020	420,600	6.03	10.14
July 1	268,620	689,220	6.47	16.61
2	130,782	820,002	3.15	19.76
3	43,548	863,550	1.05	20.81
4	15,420	878,970	0.37	21.18
5	31,872	910,842	0.77	21.95
6	285,312	1,196,154	6.88	28.83
7	611,586	1,807,740	14.74	43.57
8	702,672	2,510,412	16.93	60.50
9	456,054	2,966,466	10.99	71.49
10	517,146	3,483,612	12.46	83.95
11	388,590	3,872,202	9.37	93.32
12	81,756	3,953,958	1.97	95.29
13	34,674	3,988,632	0.84	96.13
14	74,112	4,062,744	1.79	97.92
15	22,788	4,085,532	0.55	98.47
16	10,170	4,095,702	0.24	98.71
17	3,948	4,099,650	0.09	98.80
18	4,332	4,103,982	0.10	98.90
19	13,236	4,117,218	0.32	99.22
20	15,606	4,132,824	0.38	99.60
21	10,236	4,143,060	0.25	99.85
22	6,228	4,149,288	0.15	100.00

The peak daily sockeye salmon escapement into the Naknek River of 161,000 occurred on 6 July, and brought the accumulative escapement count to about 62% of the goal of 800,000 (Table 9). Based on the improving trend a 12-hour period was subsequently announced for the Naknek section beginning at noon on 7 July.

Additional fishing periods were permitted in the Naknek section as the escapement began approaching the lower end of the management escapement range of 700-900,000 fish, but a progressive decline in the rate necessitated another closure of the section on the afternoon of 9 July. Regular 5 day-per-week fishing was allowed to resume after the end of the emergency order period on 17 July.

The season harvest of 5.1 million sockeye salmon was 1.0 million larger than the pre-season forecast and is the largest catch since 1936 in the same relative position in the cycle. The total run to the Naknek-Kvichak District was 10.3 million and when compared with the previous 4 years at the same position in the Kvichak cycle (1958, 1963, 1968, and 1973) is over four times the average of 2.5 million fish.

The Kvichak River escapement of 4.1 million sockeye salmon is the largest in this stage of the cycle since complete escapement records were first available in the mid-1950's. The next largest escapement in this position of the cycle was 2.6 million in 1968.

The escapement of 813,000 sockeye salmon in the Naknek River was very close to the desired goal of 800,000. The total run to the Naknek system exceeded the forecast by 300,000 fish, but management of these stocks was complicated by the interception of Naknek River sockeye salmon during uninterrupted fishing on the more abundant Kvichak River stocks in the adjacent section.

Management of the entire district was also made more difficult by the atypical dual or bimodal run this season in both the Naknek and Kvichak Rivers. The first peak occurred in the district on about 28 June followed by another distinct surge of fish about a week later on 5-6 July. In spite of the unusual migration pattern which interrupted fishing time until escapement trends were confirmed on 5 July, fishermen caught over 5.0 million sockeye salmon.

Sockeye salmon are harvested as mixed stocks in the Naknek-Kvichak District. The fish in the catch were apportioned to the individual river systems by comparing the age and sex composition of the catch samples with that of the escapement samples from the three contributing river systems.

Age composition of the sockeye run this season was dominated by 4-year-old fish (67%) from the 1974 brood year escapement into the Kvichak River (Table 11). These exceptional returns are due to the combined results of larger than usual brood year escapements at this stage of the cycle and improved survival conditions during the past few years. The Naknek-Kvichak District harvest was composed of 54% male and 46% female sockeye salmon (Table 12). Additional details on age, sex, and size composition of the 1978 Naknek-Kvichak sockeye salmon return are provided by Tables 13 through 23.

Table 11. Naknek-Kvichak District inshore return of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP												TOTAL
	32	41	42	43	51	52	53	62	63	64	73	74	
MALES													
ESCAPEMENT	11,888	--	1,848,347	253,541	--	303,055	221,423	4,939	148,586	580	2,319	924	2,795,602
CATCH	--	--	1,822,241	5,281	--	441,322	225,992	9,582	258,627	1,760	3,520	1,760	2,770,085
TOTAL	11,888	--	3,670,588	258,822	--	744,377	447,415	14,521	407,213	2,340	5,839	2,684	5,565,687
PERCENT	.21	--	65.95	4.65	--	13.37	8.04	.26	7.32	.04	.11	.05	53.95
FEMALES													
ESCAPEMENT	8,707	--	1,663,128	44,740	--	325,729	189,092	--	159,886	1,613	1,033	2,536	2,396,464
CATCH	--	1,760	1,312,137	5,082	1,977	580,460	154,367	8,818	277,840	5,081	1,760	4,301	2,353,583
TOTAL	8,707	1,760	2,975,265	49,822	1,977	906,189	343,459	8,818	437,726	6,694	2,793	6,837	4,750,047
PERCENT	.18	.04	62.64	1.05	.04	19.08	7.23	.19	9.21	.14	.06	.14	46.05
SEXES COMBINED													
ESCAPEMENT	20,595	--	3,511,475	298,281	--	628,784	410,515	4,939	308,472	2,193	3,352	3,460	5,192,066
CATCH	--	1,760	3,134,378	10,363	1,977	1,021,782	380,359	18,400	536,467	6,841	5,280	6,061	5,123,668
TOTAL	20,595	1,760	6,645,853	308,644	1,977	1,650,566	790,874	23,339	844,939	9,034	8,632	9,521	10,315,734
PERCENT	.20	.02	64.42	2.99	.02	16.00	7.67	.23	8.19	.09	.08	.09	100.00

Table 12. Naknek-Kvichak District commercial catch of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	05/20-07/06	734	411	323	55.99	44.01	1,451,270	812,632	638,638
2	07/07-07/08	736	370	366	50.27	49.73	1,869,961	940,062	929,899
3	07/09-08/19	1,024	578	446	56.45	43.55	1,802,437	1,017,391	785,046
TOTAL		2,494	1,359	1,135	54.06	45.94	5,123,668	2,770,085	2,353,583

Table 13. Naknek-Kvichak District commercial catch of sockeye salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP											TOTAL
			41	42	43	51	52	53	62	63	64	73	74	
MALES														
1	05/20-07/06	COUNT	--	656,433	--	--	73,156	35,590	--	47,453	--	--	--	812,632
		PERCENT	--	80.78	--	--	9.00	4.38	--	5.84	--	--	--	29.33
2	07/07-07/08	COUNT	--	591,985	--	--	149,902	127,035	2,541	68,599	--	--	--	940,062
		PERCENT	--	62.97	--	--	15.95	13.51	.27	7.30	--	--	--	33.94
3	07/09-08/19	COUNT	--	573,823	5,281	--	218,264	63,367	7,041	142,575	1,760	3,520	1,760	1,017,391
		PERCENT	--	56.40	.52	--	21.45	6.23	.69	14.01	.17	.35	.17	36.73
COLUMN TOTALS		COUNT	--	1,822,241	5,281	--	441,322	225,992	9,582	258,627	1,760	3,520	1,760	2,770,085
		PERCENT	--	65.78	.19	--	15.93	8.16	.35	9.34	.06	.13	.06	100.00
FEMALES														
1	05/20-07/06	COUNT	--	377,647	--	1,977	156,199	27,681	1,977	73,157	--	--	--	638,638
		PERCENT	--	59.13	--	.31	24.46	4.33	.31	11.46	--	--	--	27.13
2	07/07-07/08	COUNT	--	520,845	5,082	--	200,716	68,599	5,081	121,954	5,081	--	2,541	929,899
		PERCENT	--	56.01	.55	--	21.58	7.38	.55	13.11	.55	--	.27	39.51
3	07/09-08/19	COUNT	1,760	413,645	--	--	223,545	58,087	1,760	82,729	--	1,760	1,760	785,046
		PERCENT	.22	52.69	--	--	28.48	7.40	.22	10.54	--	.22	.22	33.36
COLUMN TOTALS		COUNT	1,760	1,312,137	5,082	1,977	580,460	154,367	8,818	277,840	5,081	1,760	4,301	2,353,583
		PERCENT	.08	55.75	.22	.08	24.66	6.56	.37	11.81	.22	.07	.18	100.00
SEXES COMBINED														
1	05/20-07/06	COUNT	--	1,034,080	--	1,977	229,355	63,271	1,977	120,610	--	--	--	1,451,270
		PERCENT	--	71.25	--	.14	15.80	4.36	.14	8.31	--	--	--	28.32
2	07/07-07/08	COUNT	--	1,112,830	5,082	--	350,618	195,634	7,622	190,553	5,081	--	2,541	1,869,961
		PERCENT	--	59.51	.27	--	18.75	10.46	.41	10.19	.27	--	.14	36.50
3	07/09-08/19	COUNT	1,760	987,468	5,281	--	441,809	121,454	8,801	225,304	1,760	5,280	3,520	1,802,437
		PERCENT	.10	54.78	.29	--	24.51	6.74	.49	12.50	.10	.29	.20	35.18
COLUMN TOTALS		COUNT	1,760	3,134,378	10,363	1,977	1,021,782	380,359	18,400	536,467	6,841	5,280	6,061	5,123,668
		PERCENT	.04	61.18	.20	.04	19.94	7.42	.36	10.47	.13	.10	.12	100.00

Table 14. Naknek-Kvichak District commercial catch of sockeye salmon, age length (mm) and weight (kg) by sex, 1978.

	AGE GROUP											
	41	42	43	51	52	53	62	63	64	73	74	TOTAL
MALES												
NUMBER	0	1,822,241	5,281	0	441,322	225,992	9,582	258,627	1,760	3,520	1,760	2,770,085
AV LENGTH	0.00	530.24	484.30	0.00	588.47	536.26	597.98	598.84	551.00	592.50	617.00	546.71
STD ERROR	0.00	1.36	36.32	0.00	3.00	4.03	10.16	3.41	0.00	1.48	0.00	2.14
SAMP SIZE	0	891	3	0	220	104	5	132	1	2	1	1,359
AV WEIGHT	0.00	2.43	0.00	0.00	3.42	2.48	3.20	3.57	0.00	0.00	0.00	2.70
STD ERROR	0.00	.02	0.00	0.00	.07	.07	.12	.09	0.00	0.00	0.00	.04
SAMP SIZE	0	891	0	0	220	104	4	132	0	0	0	1,351
FEMALES												
NUMBER	1,760	1,312,137	5,082	1,977	580,460	154,367	8,818	277,840	5,081	1,760	4,301	2,353,583
AV LENGTH	584.00	518.45	347.00	569.00	570.30	519.09	591.61	578.05	528.00	578.00	572.77	538.47
STD ERROR	0.00	1.33	14.99	0.00	2.26	4.08	4.99	3.43	15.98	0.00	0.00	2.04
SAMP SIZE	1	631	2	1	285	74	4	132	2	1	2	1,135
AV WEIGHT	0.00	2.10	.60	0.00	2.95	2.09	0.00	3.08	0.00	0.00	0.00	2.43
STD ERROR	0.00	.02	0.00	0.00	.04	.07	0.00	.06	0.00	0.00	0.00	.03
SAMP SIZE	0	631	2	0	285	74	0	132	0	0	0	1,124
SEXES COMBINED												
NUMBER	1,760	3,134,378	10,363	1,977	1,021,782	380,359	18,400	536,467	6,841	5,280	6,061	5,123,668
AV LENGTH	584.00	525.31	416.97	569.00	578.15	529.29	594.93	588.07	533.92	587.67	585.62	542.93
STD ERROR	0.00	1.35	27.79	0.00	2.58	4.05	7.86	3.42	10.65	.99	0.00	2.09
SAMP SIZE	1	1,522	5	1	505	178	9	264	3	3	3	2,494
AV WEIGHT	0.00	2.29	.60	0.00	3.15	2.33	3.20	3.32	0.00	0.00	0.00	2.57
STD ERROR	0.00	.02	0.00	0.00	.05	.07	.07	.07	0.00	0.00	0.00	.04
SAMP SIZE	0	1,522	2	0	505	178	4	264	0	0	0	2,475

Table 15. Kvichak River apportioned catch and escapement of sockeye salmon, age composition and age group, 1978.

	AGE GROUP									TOTAL
	32	41	42	43	51	52	53	62	63	
CATCH										
MALES										
NUMBER	--	--	1,668,894	5,236	--	253,676	66,641	8,457	83,212	2,086,114
PERCENT	--	--	80.00	.25	--	12.16	3.19	.41	3.99	54.67
FEMALES										
NUMBER	--	1,338	1,224,367	4,571	1,503	337,852	59,949	7,866	92,074	1,729,520
PERCENT	--	.08	70.79	.26	.09	19.53	3.47	.46	5.32	45.33
SEXES COMBINED										
NUMBER	--	1,338	2,893,261	9,807	1,503	591,528	124,590	16,323	175,286	3,815,634
PERCENT	--	.03	75.83	.26	.04	15.50	3.32	.43	4.59	100.00
ESCAPEMENT										
MALES										
NUMBER	3,968	--	1,692,804	251,362	--	174,199	65,294	4,359	47,807	2,239,793
PERCENT	.18	--	75.58	11.22	--	7.78	2.92	.19	2.13	53.98
FEMALES										
NUMBER	1,366	--	1,551,880	40,241	--	189,588	73,435	--	52,985	1,909,495
PERCENT	.07	--	81.27	2.11	--	9.93	3.85	--	2.77	46.02
SEXES COMBINED										
NUMBER	5,334	--	3,244,684	291,603	--	363,787	138,729	4,359	100,792	4,149,288
PERCENT	.13	--	78.20	7.03	--	8.77	3.34	.10	2.43	100.00
CATCH AND ESCAPEMENT										
MALES										
NUMBER	3,968	--	3,361,698	256,598	--	427,875	131,935	12,816	131,019	4,325,909
PERCENT	.09	--	77.71	5.93	--	9.89	3.05	.30	3.03	54.31
FEMALES										
NUMBER	1,366	1,338	2,776,247	44,812	1,503	527,440	133,384	7,866	145,059	3,639,015
PERCENT	.04	.04	76.29	1.23	.04	14.49	3.66	.22	3.99	45.69
SEXES COMBINED										
NUMBER	5,334	1,338	6,137,945	301,410	1,503	955,315	265,319	20,682	276,078	7,964,924
PERCENT	.07	.02	77.06	3.78	.02	11.99	3.33	.26	3.47	100.00

Table 16. Kvichak River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/22-07/02	600	317	283	52.83	47.17	820,002	433,234	386,768
2	07/03-07/08	650	367	283	56.46	43.54	1,690,410	954,431	735,979
3	07/09-07/22	752	391	361	51.99	48.01	1,638,876	852,128	786,748
TOTAL		2,002	1,075	927	53.98	46.02	4,149,288	2,239,793	1,909,495

Table 17. Kvichak River escapement of sockeye salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP						TOTAL	
			32	42	43	52	53	62		63
MALES										
1	06/22- 07/02	COUNT	1,367	382,667	17,767	19,133	2,733	--	9,567	433,234
		PERCENT	.32	88.33	4.10	4.42	.63	--	2.21	19.34
2	07/03- 07/08	COUNT	2,601	715,173	83,220	96,223	36,409	--	20,805	954,431
		PERCENT	.27	74.93	8.72	10.08	3.81	--	2.18	42.61
3	07/09- 07/22	COUNT	--	594,964	150,375	58,843	26,152	4,359	17,435	852,128
		PERCENT	--	69.82	17.65	6.91	3.07	.51	2.05	38.05
COLUMN TOTALS		COUNT	3,968	1,692,804	251,362	174,199	65,294	4,359	47,807	2,239,793
		PERCENT	.18	75.58	11.22	7.78	2.92	.19	2.13	100.00
FEMALES										
1	06/22- 07/02	COUNT	1,366	323,901	13,667	21,867	8,200	--	17,767	386,768
		PERCENT	.35	83.75	3.53	5.65	2.12	--	4.59	20.26
2	07/03- 07/08	COUNT	--	598,145	2,601	93,623	26,006	--	15,604	735,979
		PERCENT	--	81.27	.35	12.72	3.53	--	2.12	38.54
3	07/09- 07/22	COUNT	--	629,834	23,973	74,098	39,229	--	19,614	786,748
		PERCENT	--	80.06	3.05	9.42	4.99	--	2.49	41.20
COLUMN TOTALS		COUNT	1,366	1,551,880	40,241	189,588	73,435	--	52,985	1,909,495
		PERCENT	.07	81.27	2.11	9.93	3.85	--	2.77	100.00
SEXES COMBINED										
1	06/22- 07/02	COUNT	2,733	706,568	31,434	41,000	10,933	--	27,334	820,002
		PERCENT	.33	86.17	3.83	5.00	1.33	--	3.34	19.76
2	07/03- 07/08	COUNT	2,601	1,313,318	85,821	189,846	62,415	--	36,409	1,690,410
		PERCENT	.16	77.69	5.08	11.23	3.69	--	2.15	40.74
3	07/09- 07/22	COUNT	--	1,224,798	174,348	132,941	65,381	4,359	37,049	1,630,876
		PERCENT	--	74.73	10.64	8.11	3.99	.27	2.26	39.50
COLUMN TOTALS		COUNT	5,334	3,244,684	291,603	363,787	138,729	4,359	100,792	4,149,288
		PERCENT	.13	78.20	7.03	8.77	3.34	.10	2.43	100.00

Table 18. Kvichak River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP							TOTAL
	32	42	43	52	53	62	63	
MALES								
NUMBER	3,968	1,692,804	251,362	174,199	65,294	4,359	47,807	2,239,793
AV LENGTH	364.18	508.64	381.89	550.51	521.53	545.50	564.67	499.06
STD ERROR	0.00	2.01	4.97	6.96	16.13	39.53	10.26	3.15
SAMP SIZE	2	828	104	78	18	2	23	1,055
FEMALES								
NUMBER	1,366	1,551,880	40,241	189,588	73,435	0	52,985	1,909,495
AV LENGTH	320.00	493.08	408.89	538.94	508.06	0.00	573.98	498.56
STD ERROR	0.00	1.53	14.72	6.69	7.85	0.00	9.49	2.79
SAMP SIZE	1	756	22	86	34	0	28	927
SEXES COMBINED								
NUMBER	5,334	3,244,684	291,603	363,787	138,729	4,359	100,792	4,149,288
AV LENGTH	352.86	501.20	385.62	544.48	514.40	545.50	569.56	498.83
STD ERROR	0.00	1.78	6.67	6.82	10.72	39.53	9.84	2.99
SAMP SIZE	3	1,584	126	164	52	2	51	1,982

Table 19. Branch River apportioned catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP									TOTAL
	32	41	42	43	51	52	53	63	74	
CATCH										
MALES										
NUMBER	--	--	73,955	45	--	33,572	4,565	3,993	655	116,785
PERCENT	--	--	63.32	.04	--	28.75	3.91	3.42	.56	51.75
FEMALES										
NUMBER	--	62	59,183	248	69	41,085	3,652	3,986	583	106,868
PERCENT	--	.06	54.36	.23	.06	37.74	3.35	3.66	.54	48.25
SEXES COMBINED										
NUMBER	--	62	133,138	293	69	74,657	8,217	7,979	1,238	225,653
PERCENT	--	.03	59.00	.13	.03	33.08	3.64	3.54	.55	100.00
ESCAPEMENT										
MALES										
NUMBER	7,340	--	75,014	2,179	--	23,054	4,473	2,294	344	114,698
PERCENT	6.40	--	65.40	1.90	--	20.10	3.90	2.00	.30	50.00
FEMALES										
NUMBER	7,341	--	75,014	2,180	--	23,055	4,474	2,294	344	114,702
PERCENT	6.40	--	65.40	1.90	--	20.10	3.90	2.00	.30	50.00
SEXES COMBINED										
NUMBER	14,681	--	150,028	4,359	--	46,109	8,947	4,588	688	229,400
PERCENT	6.40	--	65.40	1.90	--	20.10	3.90	2.00	.30	100.00
CATCH AND ESCAPEMENT										
MALES										
NUMBER	7,340	--	148,969	2,224	--	56,626	9,038	6,287	999	231,483
PERCENT	3.17	--	64.35	.96	--	24.46	3.91	2.72	.43	50.87
FEMALES										
NUMBER	7,341	62	134,197	2,428	69	64,140	8,126	6,280	927	223,570
PERCENT	3.28	.03	60.02	1.09	.03	28.69	3.64	2.81	.41	49.13
SEXES COMBINED										
NUMBER	14,681	62	283,166	4,652	69	120,766	17,164	12,567	1,926	455,053
PERCENT	3.23	.01	62.23	1.02	.02	26.54	3.77	2.76	.42	100.00

¹ Total escapement estimated by aerial survey. Sex ratio arbitrarily set 1:1. Age composition estimated from otolith samples.

Table 20. Naknek River apportioned catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP												TOTAL
	32	41	42	43	51	52	53	62	63	64	73	74	
CATCH													
MALES													
NUMBER	--	--	79,392	--	--	154,074	154,786	1,125	171,422	1,760	3,520	1,105	567,184
PERCENT	--	--	14.00	--	--	27.16	27.29	.20	30.22	.31	.62	.20	52.40
FEMALES													
NUMBER	--	360	28,587	263	405	201,523	90,766	952	181,780	5,081	1,760	3,718	515,195
PERCENT	--	.07	5.55	.05	.08	39.12	17.62	.18	35.28	.99	.34	.72	47.60
SEXES COMBINED													
NUMBER	--	360	107,979	263	405	355,597	245,552	2,077	353,202	6,841	5,280	4,823	1,082,379
PERCENT	--	.03	9.98	.02	.04	32.85	22.69	.19	32.63	.63	.49	.45	100.00
ESCAPEMENT													
MALES													
NUMBER	580	--	80,529	--	--	105,802	151,656	580	98,485	580	2,319	580	441,111
PERCENT	.13	--	18.26	--	--	23.98	34.38	.13	22.33	.13	.53	.13	54.23
FEMALES													
NUMBER	--	--	36,234	2,319	--	113,086	111,183	--	104,607	1,613	1,033	2,192	372,267
PERCENT	--	--	9.73	.62	--	30.38	29.87	--	28.10	.43	.28	.59	45.77
SEXES COMBINED													
NUMBER	580	--	116,763	2,319	--	218,888	262,839	580	203,092	2,193	3,352	2,772	813,378
PERCENT	.07	--	14.36	.29	--	26.91	32.31	.07	24.97	.27	.41	.34	100.00
CATCH AND ESCAPEMENT													
MALES													
NUMBER	580	--	159,921	--	--	259,876	306,442	1,705	269,907	2,340	5,839	1,685	1,008,295
PERCENT	.06	--	15.86	--	--	25.77	30.39	.17	26.77	.23	.58	.17	53.19
FEMALES													
NUMBER	--	360	64,821	2,582	405	314,609	201,949	952	286,387	6,694	2,793	5,910	887,462
PERCENT	--	.04	7.30	.29	.05	35.45	22.76	.11	32.27	.75	.31	.67	46.81
SEXES COMBINED													
NUMBER	580	360	224,742	2,582	405	574,485	508,391	2,657	556,294	9,034	8,632	7,595	1,895,757
PERCENT	.03	.02	11.85	.14	.02	30.30	26.82	.14	29.34	.48	.46	.40	100.00

Table 21. Naknek River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/23-07/05	736	412	324	55.98	44.02	333,342	186,599	146,743
2	07/06-07/21	828	439	389	53.02	46.98	480,036	254,512	225,524
TOTAL		1,564	851	713	54.23	45.77	813,378	441,111	372,267

Table 22. Naknek River escapement of sockeye salmon, sex, and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP										TOTAL
			32	42	43	52	53	62	63	64	73	74	
MALES													
1	06/23- 07/05	COUNT	--	45,744	--	50,726	62,954	--	27,175	--	--	--	186,599
		PERCENT	--	24.51	--	27.18	33.74	--	14.56	--	--	--	42.30
2	07/06- 07/21	COUNT	580	34,785	--	55,076	88,702	580	71,310	580	2,319	580	254,512
		PERCENT	.23	13.67	--	21.64	34.85	.23	28.02	.23	.91	.23	57.70
COLUMN TOTALS		COUNT	580	80,529	--	105,802	151,656	580	98,485	580	2,319	580	1,111
		PERCENT	.13	18.26	--	23.98	34.38	.13	22.33	.13	.53	.13	100.00
FEMALES													
1	06/23- 07/05	COUNT	--	21,740	--	51,632	43,932	--	28,080	453	453	453	146,743
		PERCENT	--	14.81	--	35.19	29.94	--	19.14	.31	.31	.31	39.42
2	07/06- 07/21	COUNT	--	14,494	2,319	61,454	67,251	--	76,527	1,160	580	1,739	225,524
		PERCENT	--	6.43	1.03	27.25	29.82	--	33.93	.51	.26	.77	60.58
COLUMN TOTALS		COUNT	--	36,234	2,319	113,086	111,183	--	104,607	1,613	1,033	2,192	372,267
		PERCENT	--	9.73	.62	30.38	29.87	--	28.10	.43	.28	.59	100.00
SEXES COMBINED													
1	06/23- 07/05	COUNT	--	67,484	--	102,358	106,886	--	55,255	453	453	453	333,342
		PERCENT	--	20.24	--	30.71	32.06	--	16.58	.13	.14	.14	40.98
2	07/06- 07/21	COUNT	580	49,279	2,319	116,530	155,953	580	147,837	1,740	2,899	2,319	480,036
		PERCENT	.12	10.27	.48	24.28	32.49	.12	30.80	.36	.60	.48	59.02
COLUMN TOTALS		COUNT	580	116,763	2,319	218,888	262,839	580	203,092	2,193	3,352	2,772	813,378
		PERCENT	.07	14.36	.29	26.91	32.31	.07	24.97	.27	.41	.34	100.00

Table 23. Naknek River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP										TOTAL
	32	42	43	52	53	62	63	64	73	74	
MALES											
NUMBER	580	80,529	0	105,802	151,656	580	98,485	580	2,319	580	441,111
AV LENGTH	435.00	483.16	0.00	573.77	506.81	575.00	584.81	452.00	595.30	553.00	536.42
STD ERROR	0.00	4.36	0.00	2.69	3.35	0.00	2.92	0.00	12.20	0.00	3.31
SAMP SIZE	1	161	0	207	292	1	183	1	4	1	851
FEMALES											
NUMBER	0	36,234	2,319	113,086	111,183	0	104,607	1,613	1,033	2,192	372,267
AV LENGTH	0.00	476.54	338.00	554.95	505.44	0.00	563.86	494.79	565.18	567.71	533.53
STD ERROR	0.00	4.18	8.60	2.11	2.99	0.00	1.87	2.31	0.00	5.02	2.57
SAMP SIZE	0	73	4	220	213	0	194	3	2	4	713
SEXES COMBINED											
NUMBER	580	116,763	2,319	218,888	262,839	580	203,092	2,193	3,352	2,772	813,378
AV LENGTH	435.00	481.11	338.00	564.05	506.23	575.00	574.02	483.47	586.02	564.63	535.09
STD ERROR	0.00	4.30	8.60	2.39	3.20	0.00	2.38	1.73	8.13	4.02	2.97
SAMP SIZE	1	234	4	427	505	1	377	4	6	5	1,564

The combined harvests of the other species of salmon totaled 928,000 fish and was highlighted by the second largest pink salmon catch in the history of the Naknek-Kvichak fishery (Table 8). The season catch of 735,000 pink salmon was surpassed only by a 950,000 fish harvest in 1920. Last season fishing effort and processing capacity was minimal and consequently the total catch was not indicative of the actual number of fish available for harvest. Because of the unusual size of the pink salmon return, aerial escapement counts were conducted on the major river tributaries this season and almost 2.0 million fish were observed on the spawning grounds.

The total harvest of all salmon in the Naknek-Kvichak District, exclusive of sockeye salmon, has averaged slightly over 266,000 during the past 20 years. This year's catch of 185,000 chum salmon surpassed the historical average while the chinook and coho salmon catches fell short of long term trends for these species.

EGEGIK DISTRICT

The sockeye salmon run to the Egegik District (Figure 3) in 1978 was forecast to total 1.5 million fish with an anticipated harvest of about 900,000. The 1978 run to Egegik River exhibited the same bimodal run timing as that experienced in the Naknek-Kvichak District, with peak days in the district coming on 28 June and 6-7 July (Table 24).

The commercial harvest up to the beginning of the emergency order period of 23 June was 117,000 or 13% of the forecasted catch and was the largest catch during this time period since 1967. A 12-hour period was announced for 24-25 June and the sockeye salmon catch of about 25,000 was low as most fishermen were still involved in a price dispute. Another 12-hour period was announced for 27-28 June after a closure of 38 hours, and the catch totaled about 136,000 sockeye salmon bringing the accumulative catch to 277,000 and 30% of the forecasted harvest. With an estimated sockeye salmon escapement into the lake and lagoon of 84,000 fish and with the inside test boat catch indices estimating a total of 128,000 past the test fish site, another 12-hour period on 30 June was announced after a closure of 52 hours.

The Egegik fishing period on 30 June produced only 70,000 sockeye salmon, and it appeared that the run may have already peaked. Sockeye salmon escapement through 30 June was 93,000 past the counting tower, with another 210,000 estimated in the lagoon below the tower (Table 25). Due to the low sockeye salmon catch on 30 June, and the fact that only 51% of the escapement goal was achieved, a decision was reached to close the fishery on 11 July, a closure which eventually lasted 6-1/2 days.

The outside test fish boat was sent out each day of the closure from 1 July through 6 July and on 5 July the sockeye salmon catch increased sharply. The inside test fish program also indicated that escapements had increased dramatically, from a daily escapement of 22,000 on 5 July to 190,000 on 6 July. Sockeye salmon escapements on 6 July were 288,000 past the counting tower and about 10,000 in the lagoon, while the inside test fish program estimated a total escapement of about 446,000 fish.

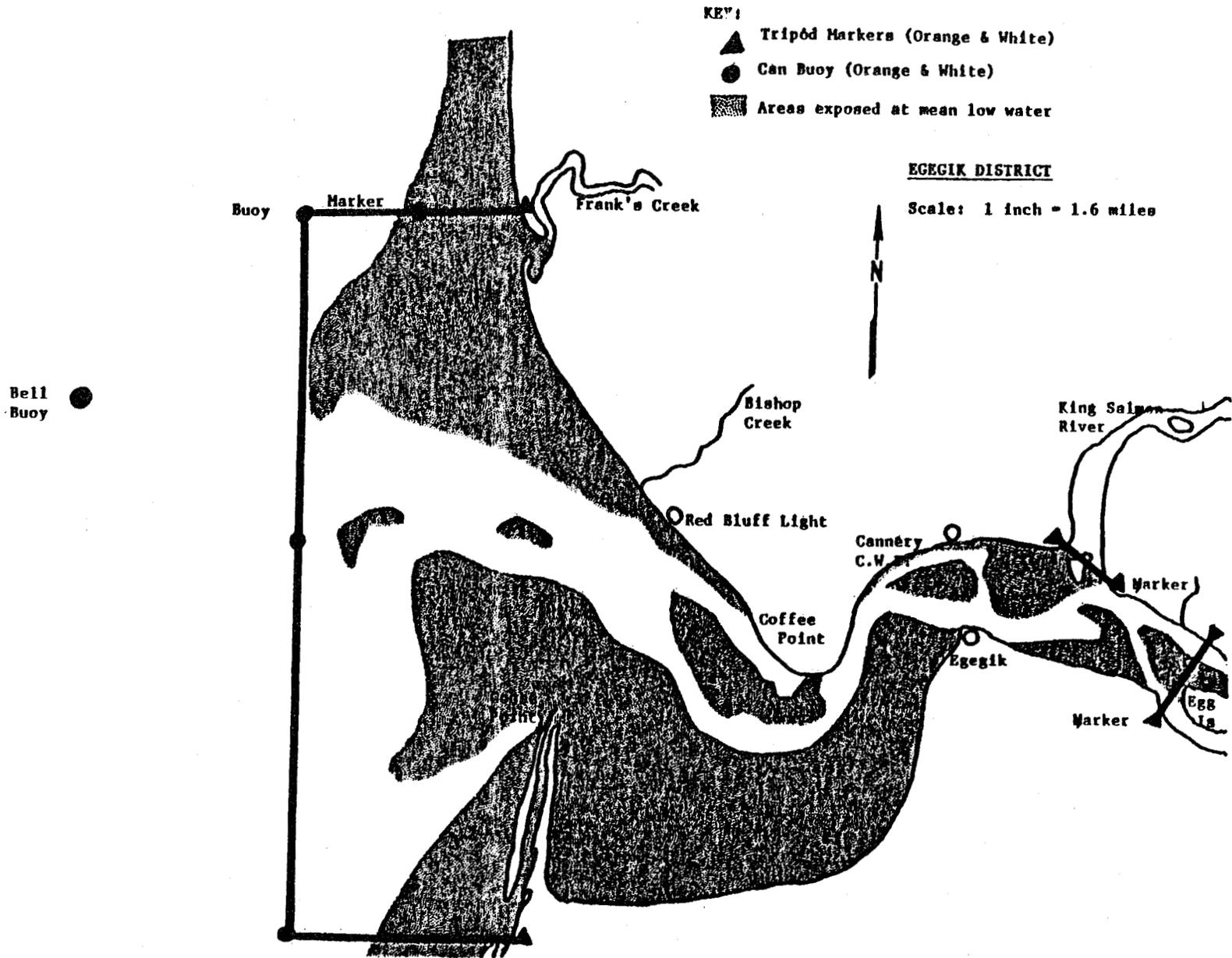


Figure 3. Egegik District commercial fishing boundaries, 1978.

Table 24. Egegik District commercial catch of salmon by species and period, 1978.

Period	Time	Effort		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set						
5/29 - 6/ 3	5 days	1	0	59	0	0	0	0	59
6/ 5 - 6/10	5 days	7	10	463	241	67	0	0	771
6/12 - 6/17	5 days	34	46	4,910	605	290	0	0	5,805
6/19 - 6/23	4 days	240	91	111,272	1,327	8,937	0	0	121,536
6/24 - 6/25	12 hrs	74	74	24,738	224	1,302	0	0	26,264
6/27 - 6/28	12 hrs	260	95	135,638	200	2,772	0	0	138,610
6/30	12 hrs	243	95	70,348	256	2,590	0	0	73,194
7/7 - 7/ 8	37 hrs ¹	219	81	368,701	21	10,546	6	0	379,274
7/9 - 7/15	7 days	262	114	433,198	123	11,976	0	0	445,297
7/16 - 7/22	6 days	119	76	49,218	26	4,527	388	9	54,168
7/24 - 7/29	5 days	25	32	6,909	22	1,166	2,324	32	10,453
7/31 - 8/ 5	5 days	12	6	1,498	78	235	5,538	1,098	8,447
8/7 - 8/12	5 days	8	6	342	3	72	3,174	1,117	4,708
TOTALS		0	0	1,207,294	3,126	44,480	11,430	2,256	1,268,856
PERCENT OF DISTRICT CATCH		0	0	95.2	0.2	3.5	0.9	0.2	100.0

¹ District opened at 11:00 a.m. for 12 hours and extended until regular 5 day-per-week fishing after July 17.

Table 25. Egegik River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
June 18	408	408	0.05	0.05
19	918	1,326	0.10	0.15
20	1,824	3,150	0.20	0.35
21	966	4,116	0.11	0.46
22	2,718	6,834	0.30	0.76
23	1,476	8,310	0.17	0.93
24	876	9,186	0.10	1.03
25	3,438	12,624	0.38	1.41
26	5,748	18,372	0.64	2.05
27	5,076	23,448	0.57	2.62
28	10,140	33,588	1.13	3.75
29	11,952	45,540	1.33	5.08
30	47,808	93,348	5.34	10.42
July 1	53,376	146,724	5.96	16.38
2	57,234	203,958	6.39	22.77
3	13,896	217,854	1.55	24.32
4	3,864	221,718	0.43	24.75
5	12,432	234,150	1.39	26.14
6	54,210	288,360	6.05	32.19
7	124,698	413,058	13.92	46.11
8	177,960	591,018	19.87	65.98
9	183,300	774,318	20.46	86.44
10	96,762	871,080	10.80	97.24
11	6,810	877,890	0.76	98.00
12	2,496	880,386	0.28	98.28
13	4,284	884,670	0.48	98.76
14	4,632	889,302	0.52	99.28
15	3,012	892,314	0.34	99.62
16	1,938	894,252	0.22	99.84
17	1,446	895,698	0.16	100.00

By 6 July it appeared that the Egegik sockeye salmon run was also assuming a bimodal entry pattern and that the second run of fish contained the bulk of the total run. A 12-hour period was announced for 7 July after a 6-1/2 day closure to secure adequate sockeye salmon escapement. With an assured escapement of 300,000 fish through 6 July, and approximately 190,000 sockeye salmon in the river as indicated by the inside test fish program, it was apparent that the lower escapement range was assured.

The commercial sockeye salmon catch during the first 12 hours of the period on 7 July approached 250,000 fish. The period was later further extended until the end of the emergency order period on 17 July when attainment of the escapement goal was verified.

The final sockeye salmon catch of about 1.2 million fish and the accumulative escapement of about 900,000 fish were both slightly above the long term averages for this district, while the total run in 1978 of about 2.1 million sockeye salmon was 7% higher than the average Egegik run. Additional details concerning age, sex, and size composition of the Egegik sockeye salmon run are provided in Table 26 through 32.

The catch of other species in the Egegik District comprised only 5% of the total catch, and was composed of 3,126 chinook, 44,480 chum, 11,430 pink, and 2,256 coho salmon (Table 24). Escapements were not estimated for the non-sockeye salmon species.

UGASHIK DISTRICT

The sockeye salmon run to the Ugashik District (Figure 4) in 1978 was forecasted to total 247,000 fish. The escapement goal for this river is 500,000 fish, and no harvest was anticipated.

Prior to the emergency order period on 23 June about 3,000 sockeye salmon had been harvested (Table 33). Aerial surveys of the Ugashik lagoon began on 24 June and did not show any significant buildup of fish until 13 July when 5,000 were counted. By 15 July the lagoon count was up to 26,000 with an additional 40,000 past the counting tower (Table 34). Inside test fish indices had been dropping since the peak on 9 July, and it was clear at this point that the Ugashik sockeye salmon run would fall well below the forecasted level and that additional closure would be necessary to protect the remaining run. An extended closure of 48 hours was announced with a 24-hour period of open fishing to begin on 19 July to assess remaining sockeye run strength in the district. A disappointing catch of 4,000 sockeye was made during this 24-hour period, and the district was subsequently closed to further fishing until 24 July to protect the remaining fish.

The total sockeye salmon run to this system was only 78,000 fish, 32% of the forecasted level and 17% of the long term average. The final sockeye salmon escapement level was about 70,000 fish (Table 35). The inside test fish program, reinstated in 1978, did not appear to give reasonable numbers of fish passing into the river, but it did provide accurate trends concerning run timing and general run strength which were of considerable help in determining run magnitude. Additional details concerning age, sex, and size composition of the 1978 sockeye salmon run are provided in Tables 36 through 41.

Table 26. Egegik River catch and escapement of sockeye salmon, sex composition, and age group, 1978.

	AGE GROUP									TOTAL
	42	43	52	53	62	63	64	73	74	
CATCH										
MALES										
NUMBER	49,008	--	29,517	173,006	--	275,243	11,771	873	14,898	554,316
PERCENT	8.84	--	5.33	31.21	--	49.65	2.12	.16	2.69	45.91
FEMALES										
NUMBER	41,795	--	55,995	128,502	--	396,795	14,347	--	15,544	652,978
PERCENT	6.40	--	8.57	19.68	--	60.77	2.20	--	2.38	54.09
SEXES COMBINED										
NUMBER	90,803	--	85,512	301,508	--	672,038	26,118	873	30,442	1,207,294
PERCENT	7.52	--	7.08	24.98	--	55.67	2.16	.07	2.52	100.00
ESCAPEMENT										
MALES										
NUMBER	20,814	8,715	26,212	141,525	--	258,270	8,114	--	8,270	471,920
PERCENT	4.41	1.85	5.55	29.99	--	54.73	1.72	--	1.75	52.69
FEMALES										
NUMBER	15,627	8,950	13,582	117,264	195	244,023	11,914	--	12,223	423,778
PERCENT	3.69	2.11	3.21	27.67	.05	57.58	2.81	--	2.88	47.31
SEXES COMBINED										
NUMBER	36,441	17,665	39,794	258,789	195	502,293	20,028	--	20,493	895,698
PERCENT	4.07	1.97	4.44	28.89	.02	56.08	2.24	--	2.29	100.00
CATCH AND ESCAPEMENT										
MALES										
NUMBER	69,822	8,715	55,729	314,531	--	533,513	19,885	873	23,168	1,026,236
PERCENT	6.80	.85	5.43	30.65	--	51.99	1.94	.08	2.26	48.80
FEMALES										
NUMBER	57,422	8,950	69,577	245,766	195	640,818	26,261	--	27,767	1,076,756
PERCENT	5.33	.83	6.46	22.83	.02	59.51	2.44	--	2.58	51.20
SEXES COMBINED										
NUMBER	127,244	17,665	125,306	560,297	195	1,174,331	46,146	873	50,935	2,102,992
PERCENT	6.05	.84	5.96	26.64	.01	55.84	2.20	.04	2.42	100.00

Table 27. Egegik District commercial catch of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/03-07/08	820	378	442	46.10	53.90	716,129	330,118	386,011
2	07/09-08/12	712	325	387	45.65	54.35	491,165	224,198	266,967
TOTAL		1,532	703	829	45.91	54.09	1,207,294	554,316	652,978

Table 28. Egegik District commercial catch of sockeye salmon, sex, and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL
			42	52	53	63	64	73	74	
MALES										
1	06/03- 07/08	COUNT	29,693	15,720	97,813	177,286	3,493	873	5,240	330,118
		PERCENT	8.99	4.76	29.63	53.70	1.06	.26	1.59	59.55
2	07/09- 08/12	COUNT	19,315	13,797	75,193	97,957	8,278	--	9,658	224,198
		PERCENT	8.62	6.15	33.54	43.69	3.69	--	4.31	40.45
COLUMN TOTALS		COUNT	49,008	29,517	173,006	275,243	11,771	873	14,898	554,316
		PERCENT	8.84	5.33	31.21	49.65	2.12	.16	2.69	100.00
FEMALES										
1	06/03- 07/08	COUNT	18,340	36,680	69,866	256,758	2,620	--	1,747	386,011
		PERCENT	4.75	9.50	18.10	66.52	.68	--	.45	59.12
2	07/09- 08/12	COUNT	23,455	19,315	58,636	140,037	11,727	--	13,797	266,967
		PERCENT	8.79	7.24	21.96	52.45	4.39	--	5.17	40.88
COLUMN TOTALS		COUNT	41,795	55,995	128,502	396,795	14,347	--	15,544	652,978
		PERCENT	6.40	8.57	19.68	60.77	2.20	--	2.38	100.00
SEXES COMBINED										
1	06/03- 07/08	COUNT	48,033	52,400	167,679	434,044	6,113	873	6,987	716,129
		PERCENT	6.71	7.32	23.41	60.61	.85	.12	.98	59.32
2	07/09- 08/12	COUNT	42,770	33,112	133,829	237,994	20,005	--	23,455	491,165
		PERCENT	8.71	6.74	27.25	48.45	4.07	--	4.78	40.68
COLUMN TOTALS		COUNT	90,803	85,512	301,508	672,038	26,118	873	30,442	1,207,294
		PERCENT	7.52	7.08	24.98	55.67	2.16	.07	2.52	100.00

Table 29. Egegik District commercial catch of sockeye salmon, age, length (mm), and weight (kg) by sex, 1978.

	AGE GROUP							TOTAL
	42	52	53	63	64	73	74	
MALES								
NUMBER	49,008	29,517	173,006	275,243	11,771	873	14,898	554,316
AV LENGTH	523.25	598.95	542.26	612.89	546.75	535.00	618.37	580.80
STD ERROR	4.04	5.82	2.00	1.81	9.24	0.00	7.99	2.63
SAMP SIZE	62	38	221	345	16	1	20	703
AV WEIGHT	2.40	3.81	2.70	3.93	2.68	2.60	3.86	3.37
STD ERROR	.06	.11	.04	.04	.14	0.00	.16	.05
SAMP SIZE	62	38	221	345	16	1	20	703
FEMALES								
NUMBER	41,795	55,995	128,502	396,795	14,347	0	15,544	652,978
AV LENGTH	512.64	587.35	527.90	593.09	529.94	0.00	586.82	573.08
STD ERROR	3.24	3.29	1.74	1.34	4.51	0.00	5.30	1.89
SAMP SIZE	55	70	165	497	20	0	22	829
AV WEIGHT	2.10	3.20	2.30	3.26	2.32	0.00	3.08	2.97
STD ERROR	.04	.06	.03	.02	.05	0.00	.08	.03
SAMP SIZE	55	70	165	497	20	0	22	829
SEXES COMBINED								
NUMBER	90,803	85,512	301,508	672,038	26,118	873	30,442	207,294
AV LENGTH	518.37	591.35	536.14	601.20	537.52	535.00	602.26	576.63
STD ERROR	3.66	4.18	1.89	1.53	6.61	0.00	6.58	2.23
SAMP SIZE	117	108	386	842	36	1	42	1,532
AV WEIGHT	2.26	3.41	2.53	3.54	2.48	2.60	3.46	3.15
STD ERROR	.05	.08	.03	.03	.09	0.00	.12	.04
SAMP SIZE	117	108	386	842	36	1	42	1,532

Table 30. Egegik River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/18-07/01	752	356	396	47.34	52.66	146,724	69,460	77,264
2	07/02-07/06	511	261	250	51.08	48.92	141,636	72,342	69,294
3	07/07-07/17	620	337	283	54.35	45.65	607,338	330,118	277,220
TOTAL		1,883	954	929	52.69	47.31	895,698	471,920	423,778

Table 31. Egegik River escapement of sockeye salmon, sex, and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL	
			42	43	52	53	62	63	64		74
MALES											
1	06/18- 07/01	COUNT	2,536	195	4,293	10,341	--	50,534	--	1,561	69,460
		PERCENT	3.65	.28	6.18	14.89	--	72.75	--	2.25	14.72
2	07/02- 07/06	COUNT	5,543	1,663	5,266	22,451	--	36,310	277	832	72,342
		PERCENT	7.66	2.30	7.28	31.03	--	50.19	.38	1.15	15.33
3	07/07- 07/17	COUNT	12,735	6,857	16,653	108,733	--	171,426	7,837	5,877	330,118
		PERCENT	3.86	2.08	5.04	32.94	--	51.93	2.37	1.78	69.95
COLUMN TOTALS		COUNT	20,814	8,715	26,212	141,525	--	258,270	8,114	8,270	471,920
		PERCENT	4.41	1.85	5.55	29.99	--	54.73	1.72	1.75	100.00
FEMALES											
1	06/18- 07/01	COUNT	1,951	2,537	6,534	12,877	195	51,314	585	1,171	77,264
		PERCENT	2.53	3.28	8.59	16.67	.25	66.41	.76	1.52	18.23
2	07/02- 07/06	COUNT	3,880	2,495	4,989	15,245	--	41,854	554	277	69,294
		PERCENT	5.60	3.60	7.20	22.00	--	60.40	.80	.40	16.35
3	07/07- 07/17	COUNT	9,796	3,918	1,959	89,142	--	150,855	10,775	10,775	277,220
		PERCENT	3.53	1.41	.71	32.16	--	54.42	3.89	3.89	65.42
COLUMN TOTALS		COUNT	15,627	8,950	13,582	117,264	195	244,023	11,914	12,223	423,778
		PERCENT	3.69	2.11	3.21	27.67	.05	57.58	2.81	2.88	100.00
SEXES COMBINED											
1	06/18- 07/01	COUNT	4,487	2,732	10,927	23,218	195	101,848	585	2,732	146,724
		PERCENT	3.06	1.86	7.45	15.82	.13	69.42	.40	1.86	16.38
2	07/02- 07/06	COUNT	9,423	4,158	10,255	37,696	--	78,164	831	1,109	141,636
		PERCENT	6.65	2.94	7.24	26.61	--	55.19	.59	.78	15.81
3	07/07- 07/17	COUNT	22,531	10,775	18,612	197,875	--	322,281	18,612	16,652	607,338
		PERCENT	3.71	1.77	3.07	32.58	--	53.07	3.06	2.74	67.81
COLUMN TOTALS		COUNT	36,441	17,665	39,794	258,789	195	502,293	20,028	20,493	895,698
		PERCENT	4.07	1.97	4.44	28.89	.02	56.08	2.24	2.29	100.00

Table 32. Egegik River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP								TOTAL
	42	43	52	53	62	63	64	74	
MALES									
NUMBER	20,814	8,715	26,212	141,525	0	258,270	8,114	8,270	471,920
AV LENGTH	523.76	406.90	600.57	537.54	0.00	604.99	526.92	605.23	575.94
STD ERROR	5.99	7.73	5.52	2.45	0.00	1.88	6.10	13.75	2.78
SAMP SIZE	46	14	58	245	0	565	9	17	954
FEMALES									
NUMBER	15,627	8,950	13,582	117,264	195	244,023	11,914	12,223	423,778
AV LENGTH	512.69	366.36	580.42	514.67	581.00	583.91	515.06	573.00	555.16
STD ERROR	7.61	13.49	3.88	2.85	0.00	1.50	14.81	9.73	2.89
SAMP SIZE	34	26	54	212	1	568	16	18	929
SEXES COMBINED									
NUMBER	36,441	17,665	39,794	258,789	195	502,293	20,028	20,493	895,698
AV LENGTH	519.01	386.36	593.69	527.18	581.00	594.75	519.86	586.01	566.11
STD ERROR	6.68	11.47	4.73	2.64	0.00	1.69	11.67	11.68	2.84
SAMP SIZE	80	40	112	457	1	1,133	25	35	1,883

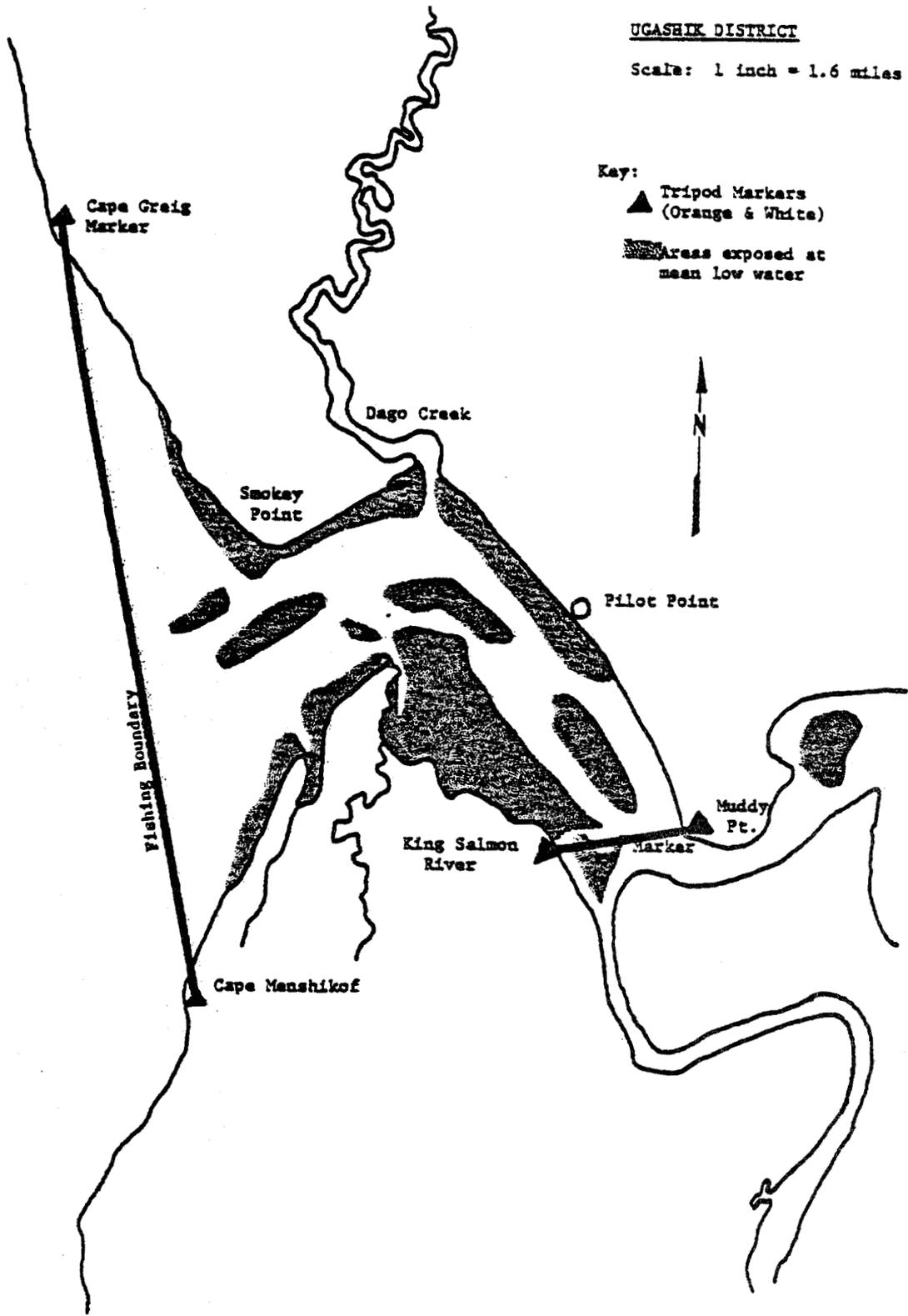


Figure 4. Ugashik District commercial fishing boundaries, 1978.

Table 33. Ugashik District commercial catch of salmon by species and period, 1978.

Period	Time	Effort		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set						
5/29 - 6/ 3	5 days	2	0	0	170	0	0	0	170
6/ 5 - 6/10	5 days	13	2	0	1,145	0	0	0	1,145
6/12 - 6/17	5 days	22	1	0	2,944	1	0	0	2,945
6/19 - 6/23	4 days	25	2	3,039	1,667	638	1	0	5,345
7/19 - 7/20	24 hrs ¹	31	3	4,156	6	511	0	0	4,673
7/24 - 7/29	5 days	4	0	323	0	209	80	1	613
7/31 - 8/ 5	5 days	2	1	408	2	67	200	179	856
8/ 7 - 8/12	5 days	1	2	51	1	23	249	43	367
8/14 - 8/19	5 days	1	0	14	0	0	0	490	504
8/21 - 8/27	5 days	0	0	0	0	0	0	0	0
8/28 - 9/ 2	5 days	1	0	2	0	0	0	892	894
9/ 4 - 9/ 9	5 days	1	0	2	0	0	0	338	340
9/11 - 9/16	5 days	1	0	0	0	0	0	57	57
9/18 - 9/23	5 days	1	0	0	0	0	0	24	24
TOTALS		0	0	7,995	5,935	1,449	530	2,024	17,933
PERCENT OF DISTRICT CATCH		0	0	44.6	33.1	8.1	2.9	11.3	100.0

¹ District closed until July 24 at 9:00 a.m. when normal 5 day-per-week fishing resumed.

Table 34. Ugashik River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
July 6	168	168	0.24	0.24
7	1,362	1,530	1.93	2.17
8	54	1,584	0.08	2.25
9	1,782	3,366	2.53	4.78
10	3,252	6,618	4.62	9.40
11	1,758	8,376	2.50	11.90
12	8,904	17,280	12.64	24.54
13	7,596	24,876	10.78	35.32
14	4,566	29,442	6.48	41.80
15	10,584	40,026	15.03	56.83
16	13,854	53,880	19.67	76.50
17	7,110	60,990	10.09	86.59
18	1,548	62,538	2.20	88.79
19	240	62,778	0.34	89.13
20	180	62,958	0.26	89.39
21	204	63,162	0.29	89.68
22	696	63,858	0.99	90.67
23	714	64,572	1.01	91.68
24	426	64,998	0.60	92.28
25	1,506	66,504	2.14	94.42
26	876	67,380	1.24	95.66
27	336	67,716	0.48	96.14
28	270	67,986	0.38	96.52
29	1,218	69,204	1.73	98.25
30	912	70,116	1.30	99.55
31	318	70,434	0.45	100.00

Table 35. Ugashik River catch and escapement of sockeye salmon, sex composition, and age group, 1978.

	AGE GROUP									
	32	42	43	52	53	63	64	73	74	TOTAL
CATCH										
MALES										
NUMBER	--	--	--	485	242	1,454	242	--	242	2,665
PERCENT	--	--	--	18.20	9.08	54.56	9.08	--	9.08	33.33
FEMALES										
NUMBER	--	485	242	242	1,696	2,423	--	242	--	5,330
PERCENT	--	9.10	4.54	4.54	31.82	45.46	--	4.54	--	66.67
SEXES COMBINED										
NUMBER	--	485	242	727	1,938	3,877	242	242	242	7,995
PERCENT	--	6.06	3.03	9.09	24.24	48.49	3.03	3.03	3.03	100.00
ESCAPEMENT										
MALES										
NUMBER	2,679	7,248	7,406	2,364	7,248	14,890	551	79	79	42,544
PERCENT	6.30	17.04	17.41	5.56	17.04	35.00	1.29	.18	.18	60.40
FEMALES										
NUMBER	158	3,151	709	3,151	5,279	14,496	709	79	158	27,890
PERCENT	.57	11.30	2.54	11.30	18.93	51.97	2.54	.28	.57	39.60
SEXES COMBINED										
NUMBER	2,837	10,399	8,115	5,515	12,527	29,386	1,260	158	237	70,434
PERCENT	4.03	14.76	11.52	7.83	17.79	41.72	1.79	.22	.34	100.00
CATCH AND ESCAPEMENT										
MALES										
NUMBER	2,679	7,248	7,406	2,849	7,490	16,344	793	79	321	45,209
PERCENT	5.93	16.03	16.38	6.30	16.57	36.15	1.75	.18	.71	57.64
FEMALES										
NUMBER	158	3,636	951	3,393	6,975	16,919	709	321	158	33,220
PERCENT	.48	10.94	2.86	10.21	21.00	50.93	2.13	.97	.48	42.36
SEXES COMBINED										
NUMBER	2,837	10,884	8,357	6,242	14,465	33,263	1,502	400	479	78,429
PERCENT	3.62	13.88	10.66	7.96	18.44	42.41	1.91	.51	.61	100.00

Table 36. Ugashik District commercial catch of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/05-09/06	33	11	22	33.33	66.67	7,995	2,665	5,330

Table 37. Ugashik District commercial catch of sockeye salmon, sex and age group, by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL	
			42	43	52	53	63	64	73		74
MALES											
1	06/05-	COUNT	--	--	485	242	1,454	242	--	242	2,665
	09/06	PERCENT	--	--	18.18	9.09	54.55	9.09	--	9.09	100.00
FEMALES											
1	06/05-	COUNT	485	242	242	1,696	2,423	--	242	--	5,330
	09/06	PERCENT	9.09	4.55	4.55	31.82	45.45	--	4.55	--	100.00
SEXES COMBINED											
1	06/05-	COUNT	485	242	727	1,938	3,877	242	242	242	7,995
	09/06	PERCENT	6.06	3.03	9.09	24.24	48.49	3.03	3.03	3.03	100.00

Table 38. Ugashik District commercial catch of sockeye salmon, age, length (mm), and weight (kg), by sex, 1978.

	AGE GROUP								TOTAL
	42	43	52	53	63	64	73	74	
MALES									
NUMBER	0	0	485	242	1,454	242	0	242	2,665
AV LENGTH	0.00	0.00	577.50	500.00	591.30	576.00	0.00	626.00	582.26
STD ERROR	0.00	0.00	50.49	0.00	6.86	0.00	0.00	0.00	12.92
SAMP SIZE	0	0	2	1	6	1	0	1	11
AV WEIGHT	0.00	0.00	2.90	1.80	3.30	3.60	0.00	4.50	3.23
STD ERROR	0.00	0.00	.07	0.00	0.00	0.00	0.00	0.00	.01
SAMP SIZE	0	0	2	1	6	1	0	1	11
FEMALES									
NUMBER	485	242	242	1,696	2,423	0	242	0	5,330
AV LENGTH	500.00	420.00	580.00	536.70	583.20	0.00	598.00	0.00	553.95
STD ERROR	12.02	0.00	0.00	4.84	5.00	0.00	0.00	0.00	4.90
SAMP SIZE	2	1	1	7	10	0	1	0	22
AV WEIGHT	1.80	1.40	2.70	2.20	3.00	0.00	3.20	0.00	2.56
STD ERROR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAMP SIZE	2	1	1	7	10	0	1	0	22
SEXES COMBINED									
NUMBER	485	242	727	1,938	3,877	242	242	242	7,995
AV LENGTH	500.00	420.00	578.33	532.12	586.24	576.00	598.00	626.00	563.39
STD ERROR	12.02	0.00	33.66	4.23	5.69	0.00	0.00	0.00	7.58
SAMP SIZE	2	1	3	8	16	1	1	1	33
AV WEIGHT	1.80	1.40	2.83	2.15	3.11	3.60	3.20	4.50	2.78
STD ERROR	0.00	0.00	.05	0.00	0.00	0.00	0.00	0.00	.00
SAMP SIZE	2	1	3	8	16	1	1	1	33

Table 39. Ugashik River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	07/06-07/31	894	540	354	60.40	39.60	70,434	42,544	27,890

Table 40. Ugashik River escapement of sockeye salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP								TOTAL	
			32	42	43	52	53	63	64	73		74
MALES												
1	07/06-	COUNT	2,679	7,248	7,406	2,364	7,248	14,890	551	79	79	42,544
	07/31	PERCENT	6.30	17.04	17.41	5.56	17.04	35.00	1.30	.19	.19	100.00
FEMALES												
1	07/06-	COUNT	158	3,151	709	3,151	5,279	14,496	709	79	158	27,890
	07/31	PERCENT	.56	11.30	2.54	11.30	18.93	51.98	2.54	.28	.56	100.00
SEXES COMBINED												
1	07/06-	COUNT	2,837	10,399	8,115	5,515	12,527	29,386	1,260	158	237	70,434
	07/31	PERCENT	4.03	14.76	11.52	7.83	17.79	41.72	1.79	.22	.34	100.00

Table 41. Ugashik River escapement of sockeye salmon, age, length (mm) and weight (kg), by sex, 1978.

	AGE GROUP									TOTAL
	32	42	43	52	53	63	64	73	74	
MALES										
NUMBER	2,679	7,248	7,406	2,364	7,248	14,890	551	79	79	42,544
AV LENGTH	371.10	534.20	392.00	612.10	544.60	616.00	554.10	614.00	631.00	534.49
STD ERROR	5.47	2.80	2.76	4.11	2.53	1.77	7.37	0.00	0.00	2.68
SAMP SIZE	34	92	94	30	92	189	7	1	1	540
AV WEIGHT	.80	2.90	.90	4.60	3.00	4.30	3.20	0.00	0.00	3.03
STD ERROR	.02	.06	.02	.07	.06	.04	0.00	0.00	0.00	.05
SAMP SIZE	34	92	94	30	92	189	7	0	0	538
FEMALES										
NUMBER	158	3,151	709	3,151	5,279	14,496	709	79	158	27,890
AV LENGTH	405.00	505.90	387.00	578.50	521.40	586.00	513.20	631.00	578.50	556.03
STD ERROR	67.03	2.50	6.77	3.37	2.82	1.50	5.73	0.00	.49	2.67
SAMP SIZE	2	40	9	40	67	184	9	1	2	354
AV WEIGHT	.60	2.00	.80	3.20	2.50	3.50	1.90	0.00	0.00	2.98
STD ERROR	0.00	.05	.03	.08	.05	.04	.03	0.00	0.00	.04
SAMP SIZE	2	40	9	40	67	184	9	0	0	351
SEXES COMBINED										
NUMBER	2,837	10,399	8,115	5,515	12,527	29,386	1,260	158	237	70,434
AV LENGTH	372.99	525.62	391.56	592.90	534.82	601.20	531.09	622.50	596.00	543.02
STD ERROR	8.89	2.71	3.11	3.69	2.66	1.64	6.45	0.00	.33	2.68
SAMP SIZE	36	132	103	70	159	373	16	2	3	894
AV WEIGHT	.79	2.63	.89	3.80	2.79	3.91	2.47	0.00	0.00	3.01
STD ERROR	.02	.06	.02	.08	.06	.04	.02	0.00	0.00	.05
SAMP SIZE	36	132	103	70	159	373	16	0	0	889

The catch for all species totaled slightly under 18,000 and was only 65% of the 20-year average. The only species other than sockeye which contributed significantly to the catch were chinook and coho salmon. The chinook salmon catch of 5,935 was three times the average, while the coho salmon catch of 2,024 was only 62% of the long term average.

NUSHAGAK DISTRICT

In Nushagak District the pre-season inshore sockeye salmon forecast to all river systems totaled 2.4 million fish, and was virtually identical to the 20-year long term average run of 2.3 million to this district. Sockeye escapement requirements totaled 1.3 million fish, leaving a probable season harvest of 1.2 million fish.

Management of Nushagak's salmon resource is made more difficult by the multi-species aspect of this district's salmon runs, and by occurrence of more than one major sockeye salmon producing river system. Nushagak District has accounted for over 71% of Bristol Bay's commercial production of chinook salmon, and is the only area with a major directed commercial effort aimed at chinook salmon. Additionally, this district (Figure 5) produces large numbers of chum (52% of the total Bay production), even-year pink (87% of total), and coho salmon (57% of total).

The chinook salmon accumulative commercial catch up to the weekend closure of 10 June totaled over 24,000 (Table 42) compared with the long term average of 8,000 through 8 June. The chinook salmon run appeared to be both large and early, and when fishing resumed on 12 June after a 48-hour weekend closure, the daily catches and CPUE were the highest recorded since 1958 when adequate comparative data collection was first initiated.

Fishing resumed on 12 June and by 14 June it was apparent that the catch would be about 40,000 chinook salmon for the first 2 days of the period. Although upriver subsistence nets indicated good escapement to date the heavy catches prompted a decision to let the fishery close 24 hours prior to the normal closure on 17 June. The four-day opening from 12-16 June produced 66,000 chinook salmon bringing the accumulative catch to 90,000 chinook salmon compared with the long term average catch of 25,000 fish through 15 June. In addition to the large chinook salmon catch through 16 June, the chum salmon harvest of over 28,000 fish was the largest recorded since adequate records were first initiated in 1960.

Additional fishing periods allowed on 20 June and 23-24 June continued to show a high incidence of chum salmon. The accumulative sockeye, chinook, and chum salmon catches through 24 June had now reached 147,000, 104,000, and 235,000 fish, respectively (Table 42).

Based on test fish and stock separation data, the Nuyakuk River sockeye salmon run was indicating a run considerably larger than that forecast. Accelerated escapement trends in both Wood and Igushik Rivers prompted another 12-hour fishing period for 28 June. The actual catch of 28 June of 626,000 fish (521,000 sockeye salmon) was an all-time record high catch for a 12-hour period for this district.

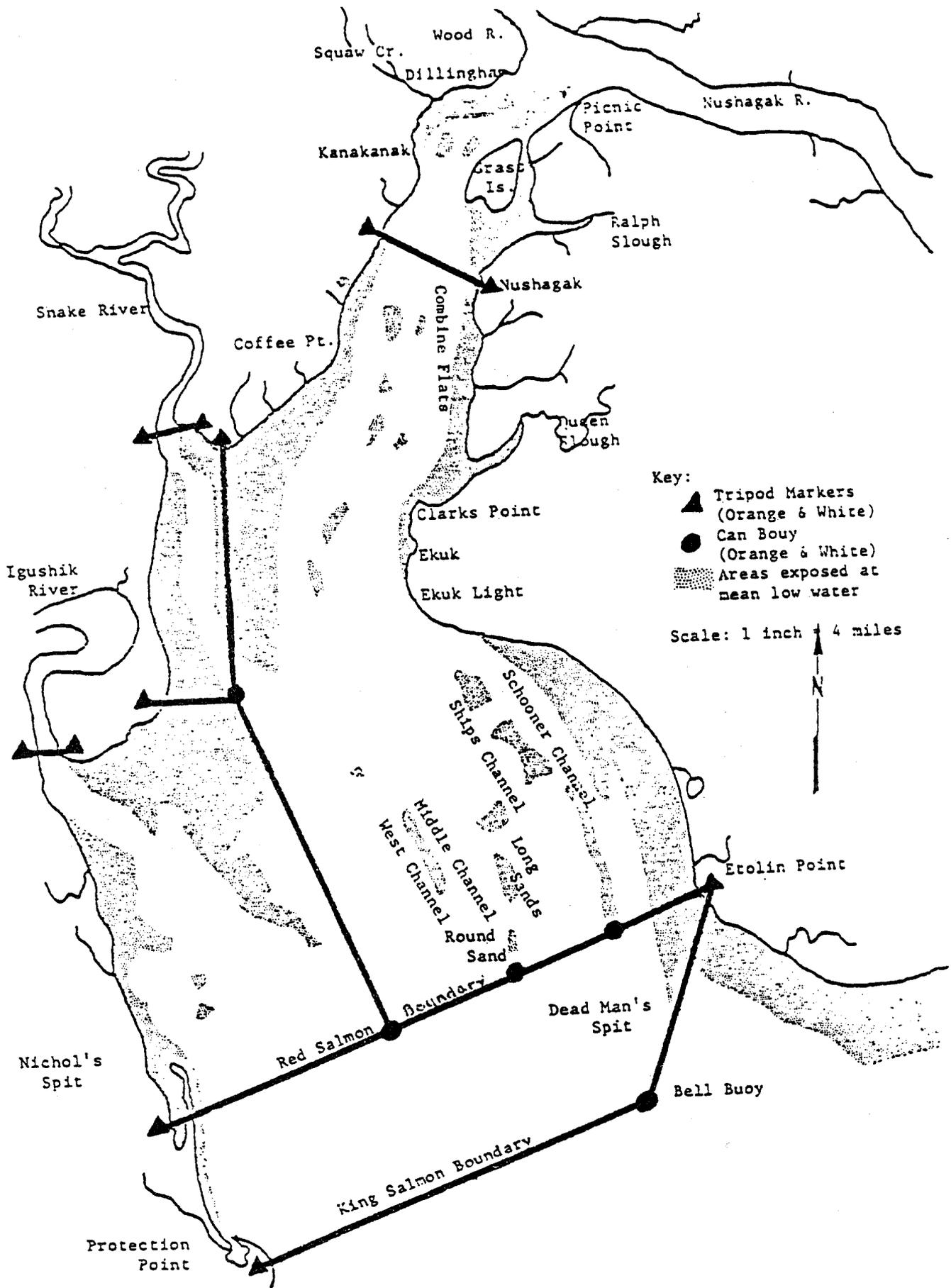


Figure 5. Nushagak-Igushik District commercial fishing boundaries, 1978.

Table 42. Nushagak-Igushik District commercial catch of salmon by species and period, 1978.

Period	Time	Effort		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set						
5/22 - 5/27	5 days	4	0	0	81	0	0	0	81
5/29 - 6/ 3	5 days	155	4	3	6,404	322	0	0	6,729
6/ 5 - 6/10	5 days	390	5	324	18,267	1,987	0	0	20,578
6/12 - 6/16	4 days	431	13	1,895	65,524	25,812	0	0	93,231
6/20	12 hrs	373	77	60,783	8,051	141,650	3	0	210,487
6/23 - 6/24	12 hrs	382	73	84,370	6,012	65,492	4	0	155,878
6/28	12 hrs	394	164	520,770	2,381	102,728	15	0	625,894
7/ 2 - 7/ 3	24 hrs ¹	407	168	669,148	3,882	71,074	471	8	744,583
7/ 4 - 7/ 8	4 days	484	196	1,181,395	3,516	141,127	1,143	11	1,327,192
7/ 9 - 7/16	7 days	458	204	481,994	1,108	66,058	17,709	26	566,895
7/17 - 7/22	5 days	376	123	107,198	2,960	24,507	435,396	371	570,432
7/24 - 7/25	24 hrs	258	71	13,119	194	4,267	725,811	1,022	744,413
7/26 - 7/29	3 days	240	68	10,728	81	3,490	1,129,636	2,872	1,146,807
7/30 - 8/4	6 days	196	71	5,132	69	2,301	1,659,892	17,591	1,684,985
8/ 5 - 8/12	7 days	155	41	206	17	924	358,578	17,929	377,654
8/14 - 8/19	5 days	67	16	101	0	4	16,625	4,400	21,130
8/21 - 8/26	5 days	15	14	0	1	0	2,950	381	3,332
8/28 - 9/ 2	5 days	0	5	0	0	0	103	129	232
TOTALS				3,137,166	118,548	651,743	4,348,336	44,740	8,300,533
PERCENT OF DISTRICT CATCH				37.8	1.4	7.9	52.4	0.5	100.0

¹ Second 12 hours of this period was "Igushik only".

Through 28 June the sockeye salmon escapement to both Wood and Igushik Rivers were ahead of normal trends. The Wood River escapement rate began to accelerate on 29 June when over 167,000 sockeye salmon were enumerated, bringing the escapement up to 219,000 or 27% of the escapement goal (Table 43). Igushik River had accounted for 51,000 sockeye salmon or 34% of the escapement goal through 29 June (Table 44).

The outside Nushagak test boat began another scheduled trip on 30 June to estimate sockeye salmon run strength in the district. Exceptional sockeye salmon catch indices were made from Grassy Island off Dillingham to well below Ekuk, which indicated a strong influx of sockeye salmon.

Verification of in-river strength came from aerial surveys flown on 1 July when Wood and Igushik Rivers were estimated to have 65,000 and 18,000 sockeye salmon below the counting stations, respectively. Wood and Igushik Rivers were estimated to have received 54% and 63% of their respective escapement goals through 1 July.

Another 12-hour period was announced for 2 July as escapements continued to improve in Wood and Igushik Rivers. The catch for 2 July increased to 745,000 fish, and sockeye salmon CPUE continued to increase (Table 42). The 12-hour period was extended for an additional 12 hours in the Igushik section when the Igushik sockeye run continued to show strength in the fishery, and the escapement was expected to reach 80% of the goal.

After a short closure to assess continuing sockeye salmon run strength on 3 July, the fishery was reopened on 4 July for a 12-hour period, and was subsequently extended until 15 July, when daily escapement tower counts and aerial surveys on 4 July indicated that escapement goals would be exceeded in both Wood and Igushik Rivers. Heavy daily total catches continued on 4 July (207,000), 5 July (144,000), and then peaked again on 6 July (560,000), showing the same bimodal run entry pattern that had manifested itself at Naknek-Kvichak and Egegik.

The Nushagak District sockeye salmon return totaled 6.6 million fish, the largest since both catch and escapement estimates were first available in the late 1940's. The Nushagak District sockeye salmon catch totaled 3.1 million, the largest since 1944, and 3-1/2 times the recent long term average, while the entire district sockeye escapement of 3.5 million was the largest since 1946 when 4.7 million were estimated to have escaped the fishery.

Nushagak District's "second season" commences about mid-July and is targeted on pink salmon. The pink salmon pre-season forecast for 3.2 million fish was expected to allow a harvest of 2.4 million fish after escapement requirements of 800,000 were assured. Nushagak District's even-year pink salmon runs have averaged 2.0 million fish since 1958 with returns ranging from 100,000 in 1972 to 5.1 million in 1958. Although the upper range of the forecast was placed at 4.0 million fish, there was no additional information which indicated a run significantly larger than forecast.

Fishing resumed on a 5 day-per-week basis on 17 July, and by the weekend of 22-23 July, a disappointing catch of 435,000 fish had been taken (Table 42). In view of the pre-season forecast and normal run entry pattern, a catch of about

Table 43. Wood River daily sockeye salmon escapement counts, 1978.

DATE	DAILY COUNT	ACCUMULATIVE COUNT	DAILY PERCENT OF TOTAL	ACCUMULATIVE PERCENT
JUNE 19	300	300	0.01	0.01
20	918	1,218	0.04	0.05
21	30	1,248	0.	0.05
22	144	1,392	0.01	0.06
23	6,630	8,022	0.29	0.35
24	8,490	16,512	0.37	0.72
25	11,334	27,846	0.50	1.22
26	5,616	33,462	0.25	1.47
27	4,536	37,998	0.20	1.67
28	13,626	51,624	0.60	2.27
29	167,796	219,420	7.40	9.67
30	107,154	326,574	4.73	14.40
JULY 1	108,018	434,592	4.76	19.16
2	145,440	580,032	6.41	25.57
3	202,716	782,748	8.94	34.51
4	433,260	1,216,008	19.11	53.62
5	389,172	1,605,180	17.17	70.79
6	85,020	1,690,200	3.75	74.54
7	100,974	1,791,174	4.45	78.99
8	142,284	1,933,458	6.28	85.27
9	101,328	2,034,786	4.47	89.74
10	67,710	2,102,496	2.99	92.73
11	33,072	2,135,568	1.46	94.19
12	28,044	2,163,612	1.24	95.43
13	25,452	2,189,064	1.12	96.55
14	11,838	2,200,902	0.52	97.07
15	7,950	2,208,852	0.35	97.42
16	4,260	2,213,112	0.19	97.61
17	9,462	2,222,574	0.42	98.03
18	19,698	2,242,272	0.87	98.90
19	6,042	2,248,314	0.27	99.17
20	5,838	2,254,152	0.26	99.43
21	5,766	2,259,918	0.25	99.68
22	3,504	2,263,422	0.15	99.83
23	3,336	2,266,758	0.15	99.98
24	480	2,267,238	0.02	100.00

Table 44. Igushik River daily sockeye salmon escapement counts, 1978.

DATE	DAILY COUNT	ACCUMULATIVE COUNT	DAILY PERCENT OF TOTAL	ACCUMULATIVE PERCENT
JUNE 23	1,896	1,896	0.35	0.35
24	5,142	7,038	0.96	1.31
25	4,338	11,376	0.81	2.12
26	10,290	21,666	1.92	4.04
27	9,948	31,614	1.86	5.90
28	9,930	41,544	1.85	7.75
29	9,564	51,108	1.78	9.53
30	18,978	70,086	3.54	13.07
JULY 1	24,252	94,338	4.52	17.59
2	27,222	121,560	5.08	22.67
3	24,528	146,088	4.57	27.24
4	29,076	175,164	5.42	32.66
5	37,068	212,232	6.91	39.57
6	45,126	257,358	8.42	47.99
7	37,788	295,146	7.05	55.04
8	46,914	342,060	8.75	63.79
9	24,498	366,558	4.57	68.36
10	32,280	398,838	6.02	74.38
11	32,484	431,322	6.06	80.44
12	27,564	458,886	5.14	85.58
13	28,932	487,818	5.40	90.98
14	20,118	507,936	3.75	94.73
15	12,222	520,158	2.28	97.01
16	5,826	525,984	1.09	98.10
17	3,426	529,410	0.64	98.74
18	2,178	531,588	0.41	99.15
19	2,064	533,652	0.38	99.53
20	1,854	535,506	0.35	99.88
21	648	536,154	0.12	100.00

800-900,000 was expected. The relatively poor harvest to date and a counted escapement of less than 4,000 fish through 23 July prompted a decision to let the fishery close for the normal 48-hour weekend closure, followed by a 24-hour fishery scheduled for 24-25 July.

The 24-hour catch on 24-25 July of 744,000 fish (726,000 pink salmon) showed conclusively that a strong run was in progress, but additional fishing time was delayed because of the low observed escapement. Aerial surveillance of lower Nushagak River was intensified, but through 24 July, total pink salmon was estimated at only 100,000 fish compared with a commercial harvest of 1.2 million.

Aerial surveillance continued and the fishery was reopened on 27 July for a 12-hour period, with the intention of further extended fishing time if escapement trends show continued pink salmon run strength. Unlimited fishing time was announced on 28 July, when aerial surveillance of Nushagak River showed over 500,000 pink salmon from Black Point to Portage Creek, with the fishery continuing strong.

The total district pink salmon run eventually reached 13.7 million over 4 times higher than the pre-season forecast of 3.2 million. The pink salmon catch totaled 4.3 million, largest in the history of the fishery, while the escapement of 9.4 million was over twice the previous recorded highest of 4.0 million in 1958.

The commercial harvest of 8.3 million salmon of all species in Nushagak District in 1978 was an all-time record harvest for this 86-year-old fishery, and four times higher than the 20-year average of 1.8 million fish. Nushagak District chinook salmon harvest totaled 118,548 of the district harvest, which was above the long term average of 67,000. The chinook salmon escapement was estimated to be 130,000. The chinook salmon total run was estimated at 249,000 fish. The Nushagak chum salmon catch of 651,743 was also well above the long term average of 335,000 for this district. The chum salmon escapement was estimated to exceed 293,000 fish and the total run was estimated to be 945,000. Increased late season fishing activities in Nushagak, directed primarily at pink salmon, resulted in a coho salmon harvest of 44,740 fish, almost twice the long term average of 26,000. The Nushagak District sockeye salmon catch was apportioned to the various river systems in a similar manner to that applied to Naknek-Kvichak mixed stocks. Additional data concerning run strength as well as age, sex, and size composition of the 1978 Nushagak District salmon run can be found in Tables 45 through 83.

TOGIK DISTRICT

Togiak District (Figure 6) is not managed under the same concept as the other Bristol Bay salmon districts. Open fishing periods in the Togiak District are established in advance and then adjusted via emergency order in-season, as needed, to achieve the desired balance between catch and escapement.

The 1978 pre-season forecasted sockeye salmon return to the Togiak District was 280,000 fish while the actual return of 792,000 was over 2-1/2 times larger than the level predicted. It was evident by the last week of June when the accumulative sockeye catch had reached over 70,000 that a strong run was in progress (Table 84). The long term average catch through late June is 21,000 fish. By 1 July the accumulative escapement had already reached 19% of the desired goal and was increasing at a strong, steady daily rate in spite of the large daily

Table 45. Nushagak-Igushik District inshore return of sockeye salmon, sex composition, and age group, 1978.

	AGE GROUP											TOTAL
	31	32	41	42	43	51	52	53	62	63	73	
MALES												
ESCAPEMENT	671	23,860	217	925,261	3,647	--	644,925	15,564	12,502	30,353	--	1,657,000
CATCH	6,984	9,650	3,786	769,573	--	1,728	719,493	35,732	19,143	34,844	--	1,600,933
TOTAL	7,655	33,510	4,003	1,694,834	3,647	1,728	1,364,418	51,296	31,645	65,197	--	3,257,933
PERCENT	.24	1.03	.12	52.02	.11	.05	41.88	1.58	.97	2.00	--	49.20
FEMALES												
ESCAPEMENT	3,327	10,628	2,076	1,146,243	1,307	671	575,302	21,022	23,010	44,028	518	1,828,132
CATCH	8,419	1,728	5,914	598,887	--	129	816,587	33,380	17,840	53,349	--	1,536,233
TOTAL	11,746	12,356	7,990	1,745,130	1,307	800	1,391,889	54,402	40,850	97,377	518	3,364,365
PERCENT	.35	.37	.24	51.87	.04	.02	41.37	1.62	1.21	2.89	.02	50.80
SEXES COMBINED												
ESCAPEMENT	3,998	34,488	2,293	2,071,504	4,954	671	1,220,227	36,586	35,512	74,381	518	3,485,132
CATCH	15,403	11,378	9,700	1,368,460	--	1,857	1,536,080	69,112	36,983	88,193	--	3,137,166
TOTAL	19,401	45,866	11,993	3,439,964	4,954	2,528	2,756,307	105,698	72,495	162,574	518	6,622,298
PERCENT	.29	.69	.18	51.95	.07	.04	41.62	1.60	1.09	2.46	.01	100.00

Table 46. Nushagak section commercial catch of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	05/29-06/28	514	263	251	51.17	48.83	471,919	241,468	230,451
2	06/29-07/01	515	229	286	44.47	55.53	169,846	75,524	94,322
3	07/02-07/08	1,039	536	503	51.59	48.41	1,795,085	926,050	869,035
4	07/09-08/19	582	294	288	50.52	49.48	588,692	297,380	291,312
TOTAL		2,650	1,322	1,328	50.91	49.09	3,025,542	1,540,422	1,485,120

Table 47. Nushagak section commercial catch of sockeye salmon, sex, and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP									TOTAL
			31	32	41	42	51	52	53	62	63	
MALES												
1	05/29- 06/28	COUNT	--	--	918	80,795	--	150,573	918	3,673	4,591	241,468
		PERCENT	--	--	.38	33.46	--	62.36	.38	1.52	1.90	15.68
2	06/29- 07/01	COUNT	660	--	--	32,320	--	38,587	989	1,979	989	75,524
		PERCENT	.87	--	--	42.79	--	51.09	1.31	2.62	1.31	4.90
3	07/02- 07/08	COUNT	5,183	8,638	1,728	501,034	1,728	347,269	24,188	12,094	24,188	926,650
		PERCENT	.56	.93	.19	54.10	.19	37.50	2.61	1.31	2.61	60.12
4	07/09- 08/19	COUNT	1,012	1,012	1,011	125,426	--	155,770	8,092	1,011	4,046	297,380
		PERCENT	.34	.34	.34	42.18	--	52.38	2.72	.34	1.36	19.30
COLUMN TOTALS		COUNT	6,855	9,650	3,657	739,575	1,728	692,199	34,187	18,757	33,814	1,540,422
		PERCENT	.44	.63	.24	48.01	.11	44.94	2.22	1.22	2.19	100.00
FEMALES												
1	05/29- 06/28	COUNT	918	--	--	34,889	--	180,872	2,754	3,673	7,345	230,451
		PERCENT	.40	--	--	15.14	--	78.49	1.20	1.59	3.19	15.52
2	06/29- 07/01	COUNT	--	--	1,319	31,331	--	58,044	--	1,649	1,979	94,322
		PERCENT	--	--	1.40	33.22	--	61.54	--	1.75	2.10	6.35
3	07/02- 07/08	COUNT	3,455	1,728	3,455	381,823	--	411,194	20,732	10,366	36,282	869,035
		PERCENT	.40	.20	.40	43.94	--	47.32	2.39	1.19	4.17	58.52
4	07/09- 08/19	COUNT	4,046	--	1,011	129,472	--	140,599	8,092	2,023	6,069	291,312
		PERCENT	1.39	--	.35	44.44	--	48.26	2.78	.69	2.08	19.61
COLUMN TOTALS		COUNT	8,419	1,728	5,785	577,515	--	790,709	31,578	17,711	51,675	1,485,120
		PERCENT	.57	.12	.39	38.89	--	53.24	2.12	1.19	3.48	100.00
SEXES COMBINED												
1	05/29- 06/28	COUNT	918	--	918	115,684	--	331,445	3,672	7,346	11,936	471,919
		PERCENT	.20	--	.19	24.51	--	70.23	.78	1.56	2.53	15.60
2	06/29- 07/01	COUNT	660	--	1,319	63,651	--	96,631	989	3,628	2,968	169,846
		PERCENT	.39	--	.78	37.47	--	56.89	.58	2.14	1.75	5.61
3	07/02- 07/08	COUNT	8,638	10,366	5,183	882,857	1,728	758,463	44,920	22,460	60,470	1,795,085
		PERCENT	.48	.58	.29	49.18	.10	42.25	2.50	1.25	3.37	59.33
4	07/09- 08/19	COUNT	5,058	1,012	2,022	254,898	--	296,369	16,184	3,034	10,115	588,692
		PERCENT	.86	.17	.34	43.30	--	50.34	2.75	.52	1.72	19.46
COLUMN TOTALS		COUNT	15,274	11,378	9,442	1,317,090	1,728	1,482,908	65,765	36,468	85,489	3,025,542
		PERCENT	.50	.38	.31	43.53	.06	49.01	2.17	1.21	2.83	100.00

Table 48. Nushagak District commercial catch of sockeye salmon, age, length (mm), and weight (kg) by sex, 1978.

	AGE GROUP									TOTAL
	31	32	41	42	51	52	53	62	63	
MALES										
NUMBER	6,855	9,650	3,657	739,575	1,728	692,199	34,187	18,757	33,814	1,540,422
AV LENGTH	511.15	491.34	612.21	525.29	638.00	601.87	521.84	626.58	603.26	562.63
STD ERROR	14.22	4.55	0.00	1.86	0.00	1.64	7.54	8.16	9.29	2.16
SAMP SIZE	6	6	3	600	1	636	26	18	26	1,322
AV WEIGHT	0.00	1.80	5.40	2.39	0.00	3.84	2.14	5.14	4.13	3.11
STD ERROR	0.00	0.00	0.00	.03	0.00	.05	.07	.25	.03	.04
SAMP SIZE	0	5	1	600	0	636	25	13	23	1,303
FEMALES										
NUMBER	8,419	1,728	5,785	577,515	0	790,709	31,578	17,711	51,675	1,485,120
AV LENGTH	491.34	500.00	572.25	505.79	0.00	569.62	511.91	582.75	567.66	543.14
STD ERROR	8.46	0.00	4.76	1.79	0.00	1.45	6.34	18.72	8.11	2.14
SAMP SIZE	7	1	7	482	0	750	23	17	41	1,328
AV WEIGHT	1.50	0.00	0.00	2.00	0.00	2.94	2.94	3.37	3.03	2.58
STD ERROR	0.00	0.00	0.00	.02	0.00	.03	0.00	.04	.04	.02
SAMP SIZE	4	0	0	482	0	750	20	15	41	1,312
SEXES COMBINED										
NUMBER	15,274	11,378	9,442	1,317,090	1,728	1,482,908	65,765	36,468	85,489	3,025,542
AV LENGTH	500.23	492.65	587.73	516.74	638.00	584.67	517.07	605.30	581.74	553.07
STD ERROR	11.12	3.90	3.33	1.83	0.00	1.54	6.98	13.29	8.57	2.15
SAMP SIZE	13	7	10	1,082	1	1,386	49	35	67	2,650
AV WEIGHT	1.50	1.80	5.40	2.22	0.00	3.36	2.51	4.21	3.46	2.85
STD ERROR	0.00	0.00	0.00	.03	0.00	.04	.04	.15	.03	.03
SAMP SIZE	4	5	1	1,082	0	1,386	45	28	64	2,615

Table 49. Igushik section commercial catch of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	05/29-08/19	867	470	397	54.21	45.79	111,624	60,511	51,113

Table 50. Igushik section commercial catch of sockeye salmon, sex, and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP								TOTAL
			31	41	42	51	52	53	62	63	
MALES											
1	05/29- 08/19	COUNT	129	129	29,998	--	27,294	1,545	386	1,030	60,511
		PERCENT	.21	.21	49.57	--	45.11	2.55	.64	1.70	100.00
FEMALES											
1	05/29- 08/19	COUNT	--	129	21,372	129	25,878	1,802	129	1,674	51,113
		PERCENT	--	.25	41.81	.25	50.63	3.53	.25	3.27	100.00
SEXES COMBINED											
1	05/29- 08/19	COUNT	129	258	51,370	129	53,172	3,347	515	2,704	111,624
		PERCENT	.12	.23	46.02	.12	47.63	3.00	.46	2.42	100.00

Table 51. Igushik District commercial catch of sockeye salmon, age, length (mm), and weight (kg) by sex, 1978.

	AGE GROUP								TOTAL
	31	41	42	51	52	53	62	63	
MALES									
NUMBER	129	129	29,998	0	27,294	1,545	386	1,030	60,511
AV LENGTH	528.00	594.00	532.80	0.00	603.40	531.10	589.30	607.90	566.36
STD ERROR	0.00	0.00	1.51	0.00	1.35	5.92	13.22	8.94	1.74
SAMP SIZE	1	1	233	0	212	12	3	8	470
AV WEIGHT	0.00	0.00	2.40	0.00	3.90	2.20	3.60	3.40	3.10
STD ERROR	0.00	0.00	.03	0.00	.03	.12	.17	0.00	.03
SAMP SIZE	0	0	233	0	212	12	3	8	468
FEMALES									
NUMBER	0	129	21,372	129	25,878	1,802	129	1,674	51,113
AV LENGTH	0.00	600.00	512.70	593.00	574.20	509.20	591.00	573.50	546.33
STD ERROR	0.00	0.00	1.54	0.00	1.26	6.28	0.00	6.30	1.71
SAMP SIZE	0	1	166	1	201	14	1	13	397
AV WEIGHT	0.00	3.40	2.10	0.00	3.00	1.80	0.00	0.00	2.57
STD ERROR	0.00	0.00	.02	0.00	.02	0.00	0.00	0.00	.02
SAMP SIZE	0	1	166	0	201	14	0	0	382
SEXES COMBINED									
NUMBER	129	258	51,370	129	53,172	3,347	515	2,704	111,624
AV LENGTH	528.00	597.00	524.44	593.00	589.19	519.31	589.73	586.60	557.19
STD ERROR	0.00	0.00	1.52	0.00	1.31	6.11	9.92	7.31	1.73
SAMP SIZE	1	2	399	1	413	26	4	21	867
AV WEIGHT	0.00	3.40	2.28	0.00	3.46	1.98	3.60	3.40	2.86
STD ERROR	0.00	0.00	.02	0.00	.03	.05	.13	0.00	.03
SAMP SIZE	0	1	399	0	413	26	3	8	850

Table 52. Nushagak District commercial catch of chinook salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	5/22- 6/19	457	261	196	57.11	42.89	90,276	51,558	38,718
2	6/20- 8/26	208	140	68	67.31	32.69	28,272	19,029	9,243
TOTAL		665	401	264	60.30	39.70	118,548	70,587	47,961

Table 53. Nushagak District commercial catch of chinook salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP								TOTAL	
			32	41	42	52	62	63	72	73		83
MALES												
1	5/22- 6/19	COUNT	0	198	790	26,865	20,347	1,185	1,778	395	0	51,558
		PERCENT	0.00	.28	1.12	38.06	28.83	1.68	2.52	.56	0.00	73.04
2	6/20- 8/26	COUNT	272	0	8,970	6,117	3,126	136	408	0	0	19,029
		PERCENT	.39	0.00	12.71	8.67	4.43	.19	.58	0.00	0.00	26.96
COLUMN TOTALS		COUNT	272	198	9,760	32,982	23,473	1,321	2,186	395	0	70,587
		PERCENT	.39	.28	13.83	46.73	33.25	1.87	3.10	.56	0.00	100.00
FEMALES												
1	5/22- 6/19	COUNT	0	0	198	3,753	28,841	0	2,963	2,568	395	38,718
		PERCENT	0.00	0.00	.41	7.83	60.13	0.00	6.18	5.35	.82	80.73
2	6/20- 8/26	COUNT	0	0	1,087	1,359	5,845	0	680	272	0	9,243
		PERCENT	0.00	0.00	2.27	2.83	12.19	0.00	1.42	.57	0.00	19.27
COLUMN TOTALS		COUNT	0	0	1,285	5,112	34,686	0	3,643	2,840	395	47,961
		PERCENT	0.00	0.00	2.68	10.66	72.32	0.00	7.60	5.92	.82	100.00
SEXES COMBINED												
1	5/22- 6/19	COUNT	0	198	988	30,618	49,188	1,185	4,741	2,963	395	90,276
		PERCENT	0.00	.17	.83	25.83	41.49	1.00	4.00	2.50	.33	76.15
2	6/20- 8/26	COUNT	272	0	10,057	7,476	8,971	136	1,088	272	0	28,272
		PERCENT	.23	0.00	8.48	6.31	7.57	.11	.92	.23	0.00	23.85
COLUMN TOTALS		COUNT	272	198	11,045	38,094	58,159	1,321	5,829	3,235	395	118,548
		PERCENT	.23	.17	9.32	32.13	49.06	1.11	4.92	2.73	.33	100.00

Table 54. Nushagak District commercial catch of chinook salmon, age, length (mm), and weight (kg), by sex, 1978.

	AGE GROUP									TOTAL
	32	41	42	52	62	63	72	73	83	
MALES										
NUMBER	272	198	9,760	32,982	23,473	1,321	2,186	395	0	70,587
AV LENGTH	565.00	717.00	584.48	742.02	878.39	746.62	960.40	884.00	0.00	772.48
STD ERROR	20.00	0.00	5.56	5.86	8.42	14.16	18.54	21.00	0.00	7.27
SAMP SIZE	2	1	70	181	126	7	12	2	0	401
AV WEIGHT	0.00	0.00	4.00	7.61	11.26	7.84	17.07	0.00	0.00	8.65
STD ERROR	0.00	0.00	.23	.28	.64	0.00	.79	0.00	0.00	.41
SAMP SIZE	0	0	18	63	44	1	3	0	0	129
FEMALES										
NUMBER	0	0	1,285	5,112	34,686	0	3,643	2,840	395	47,961
AV LENGTH	0.00	0.00	613.96	808.43	892.06	0.00	936.70	897.53	923.00	879.66
STD ERROR	0.00	0.00	7.45	14.08	4.21	0.00	10.87	13.87	3.00	6.45
SAMP SIZE	0	0	9	29	189	0	20	15	2	264
AV WEIGHT	0.00	0.00	11.20	9.80	12.90	0.00	15.01	12.89	0.00	12.68
STD ERROR	0.00	0.00	.76	.53	.34	0.00	.83	1.47	0.00	.47
SAMP SIZE	0	0	4	15	69	0	7	5	0	100
SEXES COMBINED										
NUMBER	272	198	11,045	38,094	58,159	1,321	5,829	3,235	395	118,548
AV LENGTH	565.00	717.00	587.91	750.94	886.54	746.62	945.59	895.88	923.00	815.84
STD ERROR	20.00	0.00	5.77	6.99	5.89	14.16	13.75	14.71	3.00	6.94
SAMP SIZE	2	1	79	210	315	7	32	17	2	665
AV WEIGHT	0.00	0.00	4.72	7.90	12.24	7.84	15.78	12.89	0.00	10.30
STD ERROR	0.00	0.00	.33	.33	.46	0.00	.82	1.47	0.00	.44
SAMP SIZE	0	0	22	78	113	1	10	5	0	229

Table 55. Nushagak District commercial catch of chum salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	6/14- 6/23	450	303	147	67.33	32.67	169,771	114,312	55,459
2	6/24- 7/ 4	495	192	303	38.79	61.21	239,294	92,817	146,477
3	7/ 5- 7/20	547	176	371	32.18	67.82	242,678	78,083	164,595
TOTAL		1,492	671	821	44.97	55.03	651,743	285,212	366,531

Table 56. Nushagak District commercial catch of chum salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP			TOTAL
			31	41	51	
MALES						
1	6/14-	COUNT	0	14,336	99,976	114,312
	6/23	PERCENT	0.00	5.03	35.05	40.08
2	6/24-	COUNT	967	35,773	56,077	92,817
	7/ 4	PERCENT	.34	12.54	19.66	32.54
3	7/ 5-	COUNT	5,324	39,485	33,274	78,083
	7/20	PERCENT	1.87	13.84	11.67	27.38
COLUMN TOTALS		COUNT	6,291	89,594	189,327	285,212
		PERCENT	2.21	31.41	66.38	100.00
FEMALES						
1	6/14-	COUNT	0	15,091	40,368	55,459
	6/23	PERCENT	0.00	4.12	11.01	15.13
2	6/24-	COUNT	0	61,395	85,082	146,477
	7/ 4	PERCENT	0.00	16.75	23.21	39.96
3	7/ 5-	COUNT	8,873	98,491	57,231	164,595
	7/20	PERCENT	2.42	26.87	15.61	44.91
COLUMN TOTALS		COUNT	8,873	174,977	182,681	366,531
		PERCENT	2.42	47.74	49.84	100.00
SEXES COMBINED						
1	6/14-	COUNT	0	29,427	140,344	169,771
	6/23	PERCENT	0.00	4.52	21.53	26.05
2	6/24-	COUNT	967	97,168	141,159	239,294
	7/ 4	PERCENT	.15	14.91	21.66	36.72
3	7/ 5-	COUNT	14,197	137,976	90,505	242,678
	7/20	PERCENT	2.18	21.17	13.89	37.24
COLUMN TOTALS		COUNT	15,164	264,571	372,008	651,743
		PERCENT	2.33	40.59	57.08	100.00

Table 57. Nushagak District commercial catch of chum salmon, age, length (mm), and weight (kg), by sex, 1978.

	AGE GROUP			
	31	41	51	TOTAL
MALES				
NUMBER	6,291	89,594	189,327	285,212
AV LENGTH	557.35	602.10	640.54	626.63
STD ERROR	8.83	4.14	3.05	3.50
SAMP SIZE	14	201	456	671
AV WEIGHT	3.31	3.64	4.61	4.28
STD ERROR	.23	.13	.12	.13
SAMP SIZE	5	48	124	177
FEMALES				
NUMBER	8,873	174,977	182,681	366,531
AV LENGTH	528.80	578.78	593.58	584.95
STD ERROR	6.41	1.77	2.13	2.06
SAMP SIZE	20	389	412	821
AV WEIGHT	2.09	3.02	3.27	3.12
STD ERROR	.10	.06	.07	.06
SAMP SIZE	3	93	102	198
SEXES COMBINED				
NUMBER	15,164	264,571	372,008	651,743
AV LENGTH	540.64	586.68	617.48	603.19
STD ERROR	7.41	2.58	2.61	2.71
SAMP SIZE	34	590	868	1,492
AV WEIGHT	2.55	3.23	3.95	3.63
STD ERROR	.18	.08	.10	.09
SAMP SIZE	8	141	226	375

Table 58. Nushagak District commercial catch of pink salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	7/18- 7/27	700	368	332	52.57	47.43	1,180,552	620,633	559,919
2	7/28- 8/ 1	438	260	178	59.36	40.64	3,167,784	1,880,420	1,287,364
TOTAL		1,138	628	510	55.18	44.82	4,348,336	2,501,053	1,847,283

Table 59. Nushagak District commercial catch of pink salmon, sex and age group, by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP	
			21	TOTAL
MALES				
1	7/18- 7/27	COUNT	620,633	620,633
		PERCENT	24.81	24.81
2	7/28- 8/ 1	COUNT	1,880,420	1,880,420
		PERCENT	75.19	75.19
COLUMN TOTALS		COUNT	2,501,053	2,501,053
		PERCENT	100.00	100.00
FEMALES				
1	7/18- 7/27	COUNT	559,919	559,919
		PERCENT	30.31	30.31
2	7/28- 8/ 1	COUNT	1,287,364	1,287,364
		PERCENT	69.69	69.69
COLUMN TOTALS		COUNT	1,847,283	1,847,283
		PERCENT	100.00	100.00
SEXES COMBINED				
1	7/18- 7/27	COUNT	1,180,552	1,180,552
		PERCENT	27.15	27.15
2	7/28- 8/ 1	COUNT	3,167,784	3,167,784
		PERCENT	72.85	72.85
COLUMN TOTALS		COUNT	4,348,336	4,348,336
		PERCENT	100.00	100.00

Table 60. Nushagak District commercial catch of pink salmon, age, length (mm), and weight (kg), by sex, 1978.

	AGE GROUP	
	21	TOTAL
MALES		
NUMBER	2,501,053	2,501,053
AV LENGTH	448.17	448.17
STD ERROR	1.27	1.27
SAMP SIZE	628	628
AV WEIGHT	1.45	1.45
STD ERROR	.03	.03
SAMP SIZE	184	184
FEMALES		
NUMBER	1,847,283	1,847,283
AV LENGTH	437.99	437.99
STD ERROR	1.06	1.06
SAMP SIZE	510	510
AV WEIGHT	1.38	1.38
STD ERROR	.02	.02
SAMP SIZE	122	122
SEXES COMBINED		
NUMBER	4,348,336	4,348,336
AV LENGTH	443.85	443.85
STD ERROR	1.17	1.17
SAMP SIZE	1,138	1,138
AV WEIGHT	1.42	1.42
STD ERROR	.02	.02
SAMP SIZE	306	306

Table 61. Wood River apportioned catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP									TOTAL
	31	32	41	42	43	52	53	62	63	
CATCH										
MALES										
NUMBER	--	9,650	--	602,566	--	255,442	21,289	1,516	2,273	892,736
PERCENT	--	1.08	--	67.50	--	28.61	2.39	.17	.25	49.83
FEMALES										
NUMBER	6,724	1,728	2,820	522,271	--	326,922	22,666	5,655	10,037	898,823
PERCENT	.75	.19	.31	58.11	--	36.37	2.52	.63	1.12	50.17
SEXES COMBINED										
NUMBER	6,724	11,378	2,820	1,124,837	--	582,364	43,955	7,171	12,310	1,791,559
PERCENT	.37	.63	.16	62.79	--	32.51	2.45	.40	.69	100.00
ESCAPEMENT										
MALES										
NUMBER	--	23,860	--	724,467	3,647	228,968	9,273	990	1,980	993,185
PERCENT	--	2.40	--	72.94	.37	23.06	.93	.10	.20	43.81
FEMALES										
NUMBER	2,657	10,628	990	999,603	--	230,323	14,275	7,294	8,283	1,274,053
PERCENT	.21	.83	.08	78.46	--	18.08	1.12	.57	.65	56.19
SEXES COMBINED										
NUMBER	2,657	34,488	990	1,724,070	3,647	459,291	23,548	8,284	10,263	2,267,238
PERCENT	.12	1.52	.04	76.04	.16	20.26	1.04	.37	.45	100.00
CATCH AND ESCAPEMENT										
MALES										
NUMBER	--	33,510	--	1,327,033	3,647	484,410	30,562	2,506	4,253	1,885,921
PERCENT	--	1.78	--	70.36	.19	25.69	1.62	.13	.23	46.47
FEMALES										
NUMBER	9,381	12,356	3,810	1,521,874	--	557,245	36,941	12,949	18,320	2,172,876
PERCENT	.43	.57	.17	70.04	--	25.65	1.70	.60	.84	53.53
SEXES COMBINED										
NUMBER	9,381	45,866	3,810	2,848,907	3,647	1,041,655	67,503	15,455	22,573	4,058,797
PERCENT	.23	1.13	.09	70.19	.09	25.67	1.66	.38	.56	100.00

Table 62. Wood River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/19-07/02	586	335	251	57.17	42.83	580,032	331,588	248,444
2	07/03-07/24	635	249	386	39.21	60.79	1,687,206	661,597	1,025,609
TOTAL		1,221	584	637	43.81	56.19	2,267,238	993,185	1,274,053

Table 63. Wood River escapement of sockeye salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP									TOTAL
			31	32	41	42	43	52	53	62	63	
MALES												
1	06/19-	COUNT	--	7,918	--	235,576	990	80,175	3,959	990	1,980	331,588
	07/02	PERCENT	--	2.39	--	71.04	.30	24.18	1.19	.30	.60	33.39
2	07/03-	COUNT	--	15,942	--	488,891	2,657	148,793	5,314	--	--	661,597
	07/24	PERCENT	--	2.41	--	73.90	.40	22.49	.80	--	--	66.61
COLUMN TOTALS		COUNT	--	23,860	--	724,467	3,647	228,968	9,273	990	1,980	993,185
		PERCENT	--	2.40	--	72.94	.37	23.06	.93	.10	.20	100.00
FEMALES												
1	06/19-	COUNT	--	--	990	165,299	--	76,216	990	1,980	2,969	248,444
	07/02	PERCENT	--	--	.40	66.53	--	30.68	.40	.80	1.20	19.50
2	07/03-	COUNT	2,657	10,628	--	834,304	--	154,107	13,285	5,314	5,314	1,025,609
	07/24	PERCENT	.26	1.04	--	81.35	--	15.03	1.30	.52	.52	80.50
COLUMN TOTALS		COUNT	2,657	10,628	990	999,603	--	230,323	14,275	7,294	8,283	1,274,053
		PERCENT	.21	.83	.08	78.46	--	18.08	1.12	.57	.65	100.00
SEXES COMBINED												
1	06/19-	COUNT	--	7,918	990	400,875	990	156,391	4,949	2,970	4,949	580,032
	07/02	PERCENT	--	1.37	.17	69.11	.17	26.96	.86	.51	.85	25.58
2	07/03-	COUNT	2,657	26,570	--	1,323,195	2,657	302,900	18,599	5,314	5,314	1,687,206
	07/24	PERCENT	.16	1.57	--	78.43	.16	17.95	1.10	.32	.31	74.42
COLUMN TOTALS		COUNT	2,657	34,488	990	1,724,070	3,647	459,291	23,548	8,284	10,263	2,267,238
		PERCENT	.12	1.52	.04	76.04	.16	20.26	1.04	.37	.45	100.00

Table 64. Wood River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP									
	31	32	41	42	43	52	53	62	63	TOTAL
MALES										
NUMBER	0	23,860	0	724,467	3,647	228,968	9,273	990	1,980	993,185
AV LENGTH	0.00	466.38	0.00	514.18	476.17	593.69	515.97	607.00	604.00	531.51
STD ERROR	0.00	6.49	0.00	1.84	0.00	2.33	39.03	0.00	6.01	2.46
SAMP SIZE	0	14	0	422	2	137	6	1	2	584
FEMALES										
NUMBER	2,657	10,628	990	999,603	0	230,323	14,275	7,294	8,283	274,053
AV LENGTH	481.00	471.80	567.00	482.56	0.00	564.51	499.89	575.26	554.14	498.54
STD ERROR	0.00	9.65	0.00	1.44	0.00	2.32	14.42	5.73	9.00	1.88
SAMP SIZE	1	4	1	481	0	135	6	4	5	637
SEXES COMBINED										
NUMBER	2,657	34,488	990	1,724,070	3,647	459,291	23,548	8,284	10,263	267,238
AV LENGTH	481.00	468.05	567.00	495.85	476.17	579.05	506.23	579.06	563.76	512.98
STD ERROR	0.00	7.19	0.00	1.63	0.00	2.33	26.73	4.58	8.15	2.16
SAMP SIZE	1	18	1	903	2	272	12	5	7	1,221

Table 65. Igushik River apportioned catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP							TOTAL
	41	42	43	52	53	62	63	
CATCH								
MALES								
NUMBER	3,786	123,988	--	158,471	6,497	3,320	1,997	298,059
PERCENT	1.27	41.60	--	53.17	2.18	1.11	.67	55.36
FEMALES								
NUMBER	3,094	56,410	--	167,697	8,300	842	3,954	240,297
PERCENT	1.29	23.47	--	69.79	3.45	.35	1.65	44.64
SEXES COMBINED								
NUMBER	6,880	180,398	--	326,168	14,797	4,162	5,951	538,356
PERCENT	1.28	33.51	--	60.59	2.75	.77	1.10	100.00
ESCAPEMENT								
MALES								
NUMBER	217	149,071	--	142,047	2,830	2,168	1,740	298,073
PERCENT	.07	50.01	--	47.66	.95	.73	.58	55.59
FEMALES								
NUMBER	1,086	107,966	1,307	118,146	5,227	1,086	3,263	238,081
PERCENT	.46	45.35	.55	49.62	2.19	.46	1.37	44.41
SEXES COMBINED								
NUMBER	1,303	257,037	1,307	260,193	8,057	3,254	5,003	536,154
PERCENT	.24	47.94	.25	48.53	1.50	.61	.93	100.00
CATCH AND ESCAPEMENT								
MALES								
NUMBER	4,003	273,059	--	300,518	9,327	5,488	3,737	596,132
PERCENT	.67	45.81	--	50.41	1.56	.92	.63	55.48
FEMALES								
NUMBER	4,180	164,376	1,307	285,843	13,527	1,929	7,217	478,378
PERCENT	.88	34.36	.27	59.75	2.83	.40	1.51	44.52
SEXES COMBINED								
NUMBER	8,183	437,435	1,307	586,361	22,854	7,416	10,954	1,074,510
PERCENT	.76	40.71	.12	54.57	2.13	.69	1.02	100.00

Table 66. Igushik River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLER	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/23-07/03	675	381	294	56.44	43.56	146,088	82,459	63,629
2	07/04-07/21	597	330	267	55.28	44.72	390,066	215,614	174,452
TOTAL		1,272	711	561	55.59	44.41	536,154	298,073	238,081

Table 67. Igushik River escapement of sockeye salmon, sex and age group, by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL
			41	42	43	52	53	62	63	
MALES										
1	06/23- 07/03	COUNT	217	18,396	--	61,682	216	1,515	433	82,459
		PERCENT	.26	22.31	--	74.80	.26	1.84	.52	27.66
2	07/04- 07/21	COUNT	--	130,675	--	80,365	2,614	653	1,307	215,614
		PERCENT	--	60.61	--	37.27	1.21	.30	.61	72.34
COLUMN TOTALS		COUNT	217	149,071	--	142,047	2,830	2,168	1,740	298,073
		PERCENT	.07	50.01	--	47.66	.95	.73	.58	100.00
FEMALES										
1	06/23- 07/03	COUNT	433	9,306	--	52,808	--	433	649	63,629
		PERCENT	.68	14.63	--	82.99	--	.68	1.02	26.73
2	07/04- 07/21	COUNT	653	98,660	1,307	65,338	5,227	653	2,614	174,452
		PERCENT	.37	56.55	.75	37.45	3.00	.37	1.50	73.27
COLUMN TOTALS		COUNT	1,086	107,966	1,307	118,146	5,227	1,086	3,263	238,081
		PERCENT	.46	45.35	.55	49.62	2.19	.46	1.37	100.00
SEXES COMBINED										
1	06/23- 07/03	COUNT	650	27,702	--	114,490	216	1,948	1,082	146,088
		PERCENT	.45	18.96	--	78.37	.15	1.33	.74	27.25
2	07/04- 07/21	COUNT	653	229,335	1,307	145,703	7,841	1,306	3,921	390,066
		PERCENT	.17	58.79	.34	37.35	2.01	.33	1.01	72.75
COLUMN TOTALS		COUNT	1,303	257,037	1,307	260,193	8,057	3,254	5,003	536,154
		PERCENT	.24	47.94	.25	48.53	1.50	.61	.93	100.00

Table 68. Igushik River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP							TOTAL
	41	42	43	52	53	62	63	
MALES								
NUMBER	217	149,071	0	142,047	2,830	2,168	1,740	298,073
AV LENGTH	565.00	530.73	0.00	597.95	546.51	623.18	615.51	564.11
STD ERROR	0.00	1.74	0.00	1.78	4.44	12.07	4.00	1.91
SAMP SIZE	1	285	0	408	5	8	4	711
FEMALES								
NUMBER	1,086	107,966	1,307	118,146	5,227	1,086	3,263	238,081
AV LENGTH	575.86	499.85	400.00	564.22	511.30	580.80	566.87	533.13
STD ERROR	22.67	2.36	0.00	1.60	6.65	10.32	14.50	2.25
SAMP SIZE	3	194	2	344	8	3	7	561
SEXES COMBINED								
NUMBER	1,303	257,037	1,307	260,193	8,057	3,254	5,003	536,154
AV LENGTH	574.05	517.76	400.00	582.63	523.67	609.04	583.79	550.35
STD ERROR	17.01	1.99	0.00	1.70	5.80	11.59	10.68	2.06
SAMP SIZE	4	479	2	752	13	11	11	1,272

Table 69. Nuyakuk River apportioned catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP								TOTAL
	31	42	51	52	53	62	63	73	
CATCH									
MALES									
NUMBER	6,984	30,491	1,728	266,086	--	12,826	27,245	--	345,360
PERCENT	2.02	8.83	.50	77.05	--	3.71	7.89	--	50.37
FEMALES									
NUMBER	1,695	16,479	129	285,611	823	9,095	26,474	--	340,306
PERCENT	.50	4.84	.04	83.93	.24	2.67	7.78	--	49.63
SEXES COMBINED									
NUMBER	8,679	46,970	1,857	551,697	823	21,921	53,719	--	685,666
PERCENT	1.27	6.85	.27	80.46	.12	3.20	7.83	--	100.00
ESCAPEMENT									
MALES									
NUMBER	671	36,660	--	238,509	--	8,377	23,733	--	307,950
PERCENT	.22	11.90	--	77.45	--	2.72	7.71	--	53.40
FEMALES									
NUMBER	670	31,541	671	201,219	518	11,730	21,849	518	268,716
PERCENT	.25	11.74	.25	74.88	.19	4.37	8.13	.19	46.60
SEXES COMBINED									
NUMBER	1,341	68,201	671	439,728	518	20,107	45,582	518	576,666
PERCENT	.23	11.83	.12	76.25	.09	3.49	7.90	.09	100.00
CATCH AND ESCAPEMENT									
MALES									
NUMBER	7,655	67,151	1,728	504,595	--	21,203	50,978	--	653,310
PERCENT	1.17	10.28	.26	77.24	--	3.25	7.80	--	51.75
FEMALES									
NUMBER	2,365	48,020	800	486,830	1,341	20,825	48,323	518	609,022
PERCENT	.39	7.88	.13	79.94	.22	3.42	7.93	.09	48.25
SEXES COMBINED									
NUMBER	10,020	115,171	2,528	991,425	1,341	42,028	99,301	518	1,262,332
PERCENT	.79	9.12	.20	78.54	.11	3.33	7.87	.04	100.00

Table 70. Nuyakuk River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
June 29	3,966	3,966	0.69	0.69
30	5,520	9,486	0.96	1.65
July 1	7,806	17,292	1.35	3.00
2	3,768	21,060	0.65	3.65
3	20,574	41,634	3.57	7.22
4	67,746	109,380	11.75	18.97
5	59,658	169,038	10.34	29.31
6	47,616	216,654	8.26	37.57
7	51,558	268,212	8.94	46.51
8	58,512	326,724	10.15	56.66
9	64,158	390,882	11.13	67.79
10	43,584	434,466	7.56	75.35
11	48,102	482,568	8.34	83.69
12	21,300	503,868	3.69	87.38
13	16,812	520,680	2.92	90.30
14	14,370	535,050	2.49	92.79
15	12,828	547,878	2.22	95.01
16	8,154	556,032	1.41	96.42
17	5,736	561,768	0.99	97.41
18	2,280	564,048	0.40	97.81
19	3,660	567,708	0.63	98.44
20	1,986	569,694	0.34	98.78
21	1,386	571,080	0.24	99.02
22	1,140	572,220	0.20	99.22
23	960	573,180	0.17	99.39
24	840	574,020	0.15	99.54
25	606	574,626	0.10	99.64
26	846	575,472	0.15	99.79
27	282	575,754	0.05	99.84
28	264	576,018	0.05	99.89
29	228	576,246	0.04	99.93
30	282	576,528	0.05	99.98
31	138	576,666	0.02	100.00

Table 71. Nuyakuk River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/29-07/07	518	293	225	56.56	43.44	268,212	151,711	116,501
2	07/08-07/31	460	233	227	50.65	49.35	308,454	156,239	152,215
TOTAL		978	526	452	53.40	46.60	576,666	307,950	268,716

Table 72. Nuyakuk River escapement of sockeye salmon, sex and age group, by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL	
			31	42	51	52	53	62	63		73
MALES											
1	06/29-	COUNT	--	9,838	--	121,162	--	5,695	15,016	--	151,711
	07/07	PERCENT	--	6.48	--	79.86	--	3.75	9.90	--	49.26
2	07/08-	COUNT	671	26,822	--	117,347	--	2,682	8,717	--	156,239
	07/31	PERCENT	.43	17.17	--	75.11	--	1.72	5.58	--	50.74
COLUMN TOTALS		COUNT	671	36,660	--	238,509	--	8,377	23,733	--	307,950
		PERCENT	.22	11.90	--	77.45	--	2.72	7.71	--	100.00
FEMALES											
1	06/29-	COUNT	--	6,731	--	95,272	518	5,695	7,767	518	116,501
	07/07	PERCENT	--	5.78	--	81.78	.44	4.89	6.67	.44	43.35
2	07/08-	COUNT	670	24,810	671	105,947	--	6,035	14,082	--	152,215
	07/31	PERCENT	.44	16.30	.44	69.60	--	3.96	9.25	--	56.65
COLUMN TOTALS		COUNT	670	31,541	671	201,219	518	11,730	21,849	518	268,716
		PERCENT	.25	11.74	.25	74.88	.19	4.37	8.13	.19	100.00
SEXES COMBINED											
1	06/29-	COUNT	--	16,569	--	216,434	518	11,390	22,783	518	268,212
	07/07	PERCENT	--	6.18	--	80.70	.19	4.25	8.49	.19	46.51
2	07/08-	COUNT	1,341	51,632	671	223,294	--	8,717	22,799	--	308,454
	07/31	PERCENT	.43	16.74	.22	72.39	--	2.83	7.39	--	53.49
COLUMN TOTALS		COUNT	1,341	68,201	671	439,728	518	20,107	45,582	518	576,666
		PERCENT	.23	11.83	.12	76.25	.09	3.49	7.90	.09	100.00

Table 73. Nuyakuk River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP								TOTAL
	31	42	51	52	53	62	63	73	
MALES									
NUMBER	671	36,660	0	238,509	0	8,377	23,733	0	307,950
AV LENGTH	408.00	530.71	0.00	608.07	0.00	614.25	606.23	0.00	598.45
STD ERROR	0.00	9.24	0.00	1.57	0.00	8.08	5.63	0.00	2.94
SAMP SIZE	1	59	0	409	0	15	42	0	526
FEMALES									
NUMBER	670	31,541	671	201,219	518	11,730	21,849	518	268,716
AV LENGTH	402.00	495.62	585.00	570.97	492.00	585.13	576.78	592.00	562.72
STD ERROR	0.00	7.04	0.00	1.73	0.00	7.44	4.53	0.00	2.78
SAMP SIZE	1	50	1	342	1	20	36	1	452
SEXES COMBINED									
NUMBER	1,341	68,201	671	439,728	518	20,107	45,582	518	576,666
AV LENGTH	405.00	514.48	585.00	591.09	492.00	597.26	592.11	592.00	581.80
STD ERROR	0.00	8.23	0.00	1.64	0.00	7.72	5.12	0.00	2.86
SAMP SIZE	2	109	1	751	1	35	78	1	978

Table 74. Nuyakuk River daily pink salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
July 14	684	684	.01	.01
15	102	786	.00	.01
16	96	882	.00	.01
17	0	882	.00	.01
18	12	894	.00	.01
19	156	1,050	.00	.01
20	168	1,218	.00	.02
21	558	1,776	.01	.02
22	870	2,646	.01	.04
23	858	3,504	.01	.05
24	1,986	5,490	.03	.08
25	3,438	8,928	.04	.12
26	4,548	13,476	.06	.19
27	5,808	19,284	.08	.27
28	12,918	32,202	.18	.45
29	22,512	54,714	.31	.76
30	43,746	98,460	.61	1.37
31	87,480	185,940	1.22	2.59
Aug 1	294,054	479,994	4.09	6.68
2	482,658	962,652	6.71	13.39
3	652,410	1,615,062	9.07	22.46
4	641,046	2,256,108	8.92	31.38
5	665,208	2,921,316	9.25	40.63
6	955,752	3,877,068	13.29	53.92
7	780,660	4,657,728	10.86	64.78
8	641,526	5,299,254	8.92	73.70
9	208,152	5,507,406	2.89	76.60
10	68,562	5,575,968	.95	77.55
11	187,152	5,763,120	2.60	80.15
12	262,080	6,025,200	3.64	83.80
13	(-)28,362	5,996,838	(-).39	83.40
14	34,380	6,031,218	.48	83.88
15	37,578	6,068,796	.52	84.40
16	113,388	6,182,184	1.58	85.98
17	126,492	6,308,676	1.76	87.74
18	166,068	6,474,744	2.31	90.05
19	178,662	6,653,406	2.48	92.53
20	138,342	6,791,748	1.92	94.46
21	82,794	6,874,542	1.15	95.61
22	93,204	6,967,746	1.30	96.91
23	110,544	7,078,290	1.54	98.44
24	104,466	7,182,756	1.45	99.90
25	7,428	7,190,184 ¹	.10	100.00

¹ Tower enumeration through termination of counting on 25 August. Aerial estimate of spawning pink salmon in Nuyakuk River below counting tower on 25 August.

Total:	Tower	7,190,184
	Aerial Survey	1,200,000
	Total	8,390,184

Table 75. Nushagak District escapement of pink salmon, sex composition by sample period, from Nuyakuk River samples, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	7/21- 8/ 5	539	296	243	54.92	45.08	3,813,653	2,126,196	1,687,457
2	8/ 6- 8/17	445	205	240	46.07	53.93	5,572,824	2,567,256	3,005,568
TOTAL		984	501	483	50.91	49.09	9,386,477	4,693,452	4,693,025

Table 76. Nushagak District escapement of pink salmon, sex and age group, by sample period, from Nuyakuk River samples, 1978.

SAMPLE PERIOD	DATE		AGE GROUP	
			21	TOTAL
MALES				
1	7/21- 8/ 5	COUNT	2,126,196	2,126,196
		PERCENT	45.30	45.30
2	8/ 6- 8/17	COUNT	2,567,256	2,567,256
		PERCENT	54.70	54.70
COLUMN TOTALS		COUNT	4,693,452	4,693,452
		PERCENT	100.00	100.00
FEMALES				
1	7/21- 8/ 5	COUNT	1,687,457	1,687,457
		PERCENT	35.96	35.96
2	8/ 6- 8/17	COUNT	3,005,568	3,005,568
		PERCENT	64.04	64.04
COLUMN TOTALS		COUNT	4,693,025	4,693,025
		PERCENT	100.00	100.00
SEXES COMBINED				
1	7/21- 8/ 5	COUNT	3,813,653	3,813,653
		PERCENT	40.63	40.63
2	8/ 6- 8/17	COUNT	5,572,824	5,572,824
		PERCENT	59.37	59.37
COLUMN TOTALS		COUNT	9,386,477	9,386,477
		PERCENT	100.00	100.00

Table 77. Nuyakuk River escapement of pink salmon, age, length (mm), and weight (kg), by sex, 1978.

AGE GROUP		
	21	TOTAL
MALES		
NUMBER	4,693,452	4,693,452
AV LENGTH	442.93	442.93
STD ERROR	1.71	1.71
SAMP SIZE	501	501
FEMALES		
NUMBER	4,693,025	4,693,025
AV LENGTH	431.71	431.71
STD ERROR	1.15	1.15
SAMP SIZE	483	483
SEXES COMBINED		
NUMBER	9,386,477	9,386,477
AV LENGTH	437.32	437.32
STD ERROR	1.43	1.43
SAMP SIZE	984	984

Table 78. Snake River apportioned catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP			TOTAL
	42	52	53	
CATCH				
MALES				
NUMBER	6,900	670	1,288	8,858
PERCENT	77.90	7.56	14.54	59.61
FEMALES				
NUMBER	3,727	683	1,591	6,001
PERCENT	62.11	11.38	26.51	40.39
SEXES COMBINED				
NUMBER	10,627	1,353	2,879	14,859
PERCENT	71.52	9.11	19.37	100.00
ESCAPEMENT				
MALES				
NUMBER	8,296	601	561	9,458
PERCENT	87.71	6.36	5.93	52.33
FEMALES				
NUMBER	7,133	481	1,002	8,616
PERCENT	82.79	5.58	11.63	47.67
SEXES COMBINED				
NUMBER	15,429	1,082	1,563	18,074
PERCENT	85.36	5.99	8.65	100.00
CATCH AND ESCAPEMENT				
MALES				
NUMBER	15,196	1,271	1,849	18,316
PERCENT	82.97	6.94	10.09	55.62
FEMALES				
NUMBER	10,860	1,164	2,593	14,617
PERCENT	74.30	7.96	17.74	44.38
SEXES COMBINED				
NUMBER	26,056	2,435	4,442	32,933
PERCENT	79.12	7.39	13.49	100.00

Table 79. Snake River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
June 19	3	3	0.02	0.02
20	2	5	0.01	0.03
21	0	5	0.00	0.03
22	10	15	0.05	0.08
23	10	25	0.05	0.13
24	0	25	0.00	0.13
25	5	30	0.03	0.16
26	8	38	0.04	0.20
27	2	40	0.01	0.21
28	32	72	0.18	0.39
29	2	74	0.01	0.40
30	44	118	0.24	0.64
July 1	43	161	0.24	0.88
2	73	234	0.40	1.28
3	15	249	0.08	1.36
4	200	449	1.11	2.47
5	643	1,092	3.56	6.03
6	2,242	3,334	12.40	18.43
7	2,138	5,472	11.83	30.26
8	2,074	7,546	11.47	41.73
9	1,290	8,836	7.14	48.87
10	838	9,674	4.64	53.51
11	917	10,591	5.07	58.58
12	1,814	12,405	10.04	68.62
13	1,325	13,730	7.33	75.95
14	1,339	15,069	7.41	83.36
15	531	15,600	2.94	86.30
16	285	15,885	1.58	87.88
17	80	15,965	0.44	88.32
18	283	16,248	1.57	89.89
19	102	16,350	0.56	90.45
20	97	16,447	0.54	90.99
21	325	16,772	1.80	92.79
22	280	17,052	1.55	94.34
23	178	17,230	0.98	95.32
24	120	17,350	0.66	95.98
25	106	17,456	0.59	96.57
26	76	17,532	0.42	96.99
27	57	17,589	0.32	97.31
28	21	17,610	0.12	97.43
29	0	17,610	0.00	97.43
30	38	17,648	0.21	97.64
31	70	17,718	0.39	98.03
Aug 1	33	17,751	0.18	98.21
2	52	17,803	0.29	98.50
3	271	18,074	1.50	100.00

Table 80. Snake River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/19-08/03	451	236	215	52.33	47.67	18,074	9,458	8,616

Table 81. Snake River escapement of sockeye salmon, sex and age group by sample period, 1978.

		AGE GROUP				
SAMPLE PERIOD	DATE		42	52	53	TOTAL
MALES						
1	06/19-	COUNT	8,296	601	561	9,458
	08/03	PERCENT	87.71	6.36	5.93	100.00
FEMALES						
1	06/19-	COUNT	7,133	481	1,002	8,616
	08/03	PERCENT	82.79	5.58	11.63	100.00
SEXES COMBINED						
1	06/19-	COUNT	15,429	1,082	1,563	18,074
	08/03	PERCENT	85.36	5.99	8.65	100.00

Table 82. Snake River escapement of sockeye salmon, age, length (mm), and weight (kg), by sex, 1978.

	AGE GROUP			
	42	52	53	TOTAL
MALES				
NUMBER	8,296	601	561	9,458
AV LENGTH	533.50	589.40	524.60	536.52
STD ERROR	1.70	6.48	6.17	2.27
SAMP SIZE	207	15	14	236
AV WEIGHT	2.80	4.00	2.70	2.87
STD ERROR	.03	.13	.13	.04
SAMP SIZE	207	15	14	236
FEMALES				
NUMBER	7,133	481	1,002	8,616
AV LENGTH	499.50	561.20	497.20	502.68
STD ERROR	1.57	7.91	3.68	2.17
SAMP SIZE	178	12	25	215
AV WEIGHT	2.00	3.10	2.00	2.06
STD ERROR	.02	.14	.06	.03
SAMP SIZE	178	12	25	215
SEXES COMBINED				
NUMBER	15,429	1,082	1,563	18,074
AV LENGTH	517.78	576.86	507.03	520.39
STD ERROR	1.64	7.12	4.58	2.22
SAMP SIZE	385	27	39	451
AV WEIGHT	2.43	3.60	2.25	2.48
STD ERROR	.03	.14	.09	.04
SAMP SIZE	385	27	39	451

Table 83. Nushagak-Mulchatna River apportioned catch and escapement of sockeye salmon, sex composition, and age group, 1978.

	AGE GROUP					TOTAL
	42	52	53	62	63	
CATCH						
MALES						
NUMBER	5,628	38,824	6,658	1,481	3,329	55,920
PERCENT	10.06	69.43	11.91	2.65	5.95	52.40
FEMALES						
NUMBER	--	35,674	--	2,248	12,884	50,806
PERCENT	--	70.22	--	4.42	25.36	47.60
SEXES COMBINED						
NUMBER	5,628	74,498	6,658	3,729	16,213	106,726
PERCENT	5.27	69.80	6.24	3.50	15.19	100.00
ESCAPEMENT¹						
MALES						
NUMBER	6,767	34,800	2,900	967	2,900	48,334
PERCENT	14.00	72.00	6.00	2.00	6.00	55.56
FEMALES						
NUMBER	--	25,133	--	2,900	10,633	38,666
PERCENT	--	65.00	--	7.50	27.50	44.44
SEXES COMBINED						
NUMBER	6,767	59,933	2,900	3,867	13,533	87,000
PERCENT	7.78	68.89	3.33	4.44	15.56	100.00
CATCH AND ESCAPEMENT						
MALES						
NUMBER	12,395	73,624	9,558	2,448	6,229	104,254
PERCENT	11.89	70.62	9.17	2.35	5.97	53.82
FEMALES						
NUMBER	--	60,807	--	5,148	23,517	89,472
PERCENT	--	67.96	--	5.75	26.29	46.18
SEXES COMBINED						
NUMBER	12,395	134,431	9,558	7,596	29,746	193,726
PERCENT	6.40	69.39	4.93	3.92	15.36	100.00

¹ Total escapement estimated by aerial survey. Sex ratio arbitrarily set 1:1. Age composition estimated from past brood year data.

(Shaded areas are fishing districts.
Scale 1 inch = 10 miles)

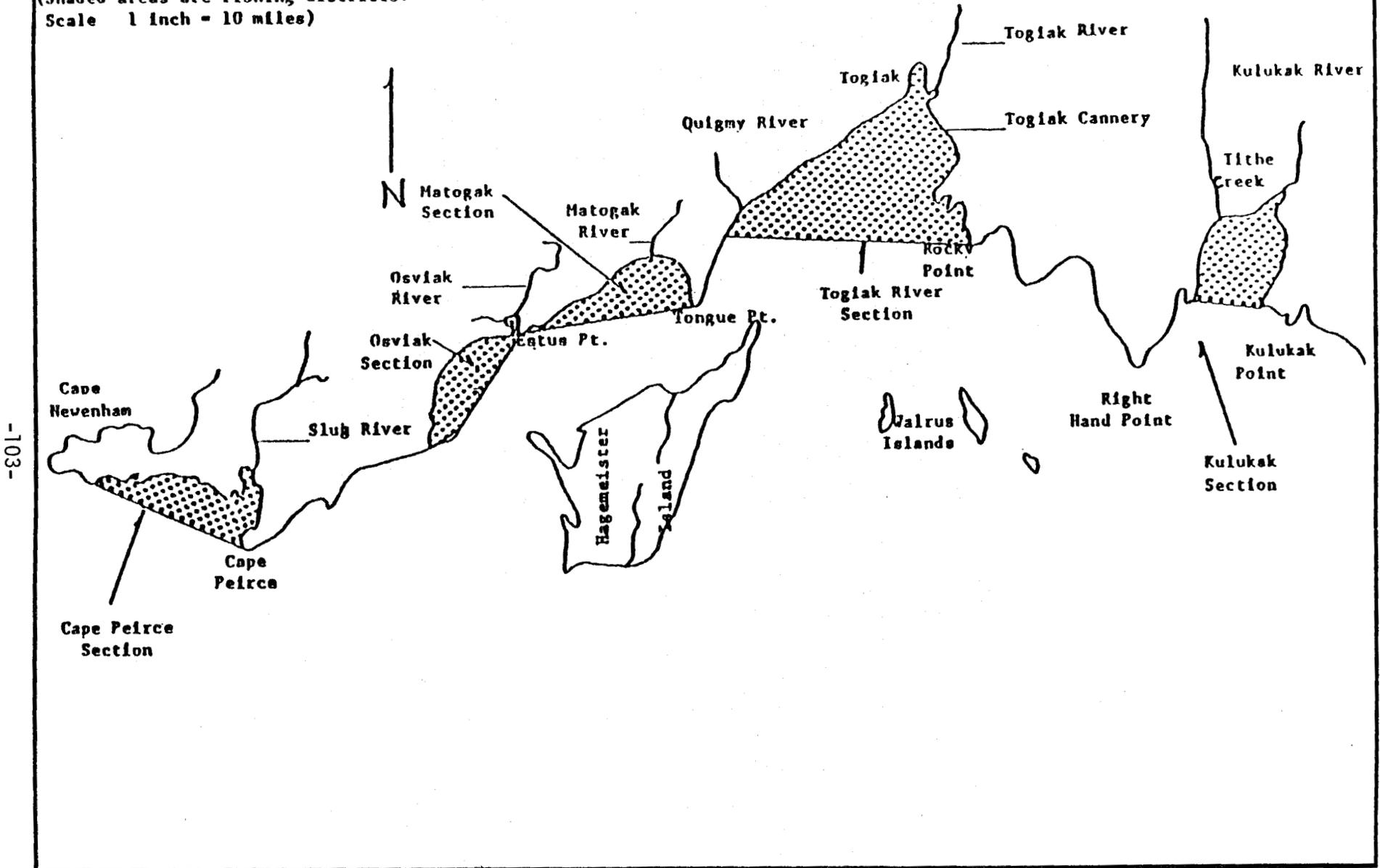


Figure 6. Togiak District commercial fishing boundaries, 1978.

Table 84. Togiak District commercial catch of salmon by species and period, 1978.

Period	Time ¹	Effort		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set						
6/ 5 - 6/10	5 days	41	5	619	1,392	268	0	0	2,279
6/12 - 6/17	5 days	90	18	2,038	6,433	1,288	0	0	9,759
6/19 - 6/24	5 days	106	29	10,896	11,116	6,190	10	0	28,212
6/26 - 7/ 1	5 days	121	34	57,331	15,773	35,734	434	0	109,272
7/ 3 - 7/ 8	5 days	124	32	124,127	8,469	65,974	2,686	0	201,256
7/10 - 7/15	6 days ²	132	32	113,303	8,502	72,881	7,144	0	201,830
7/17 - 7/22	6 days ²	145	28	72,024	4,047	62,331	8,692	1	147,095
7/24 - 7/29	6 days ²	150	27	45,726	983	22,144	19,289	47	88,189
7/31 - 8/ 5	5 days	93	27	20,783	178	7,117	14,150	79	42,307
8/ 7 - 8/12	5 days	40	24	4,116	61	765	3,496	479	8,917
8/14 - 8/19	5 days	18	17	750	23	96	733	1,112	2,714
8/21 - 8/26	5 days	49	19	240	17	113	671	7,918	8,959
8/28 - 9/ 2	5 days	56	21	34	4	33	205	15,513	15,789
9/ 4 - 9/ 9	5 days	46	10	29	0	16	14	8,311	8,370
9/11 - 9/16	5 days	44	10	0	2	10	0	7,952	7,964
9/18 - 9/23	5 days	15	4	0	0	7	0	2,926	2,933
TOTALS		0	0	452,016	57,000	274,967	57,524	44,338	885,845
PERCENT OF DISTRICT CATCH		0	0	51.0	6.4	31.1	6.5	5.0	100.0

¹ Togiak River section open 4 days-per-week, while other sections open 5 days-per-week.

² Fishing time in Togiak section extended beyond the regular 4 day-per-week fishing schedule.

commercial catches (Table 85). The high catch and strong escapement trend continued throughout the season and by 11 July the goal of 100,000 sockeye salmon had passed the counting tower. The fixed weekly fishing periods were extended for 36 hours three times during the 1978 season, on 14, 21, and 28 July to allow for additional harvest. The chinook salmon harvest at Togiak in 1978 set a new record and the catch of 57,000 was over 20,000 higher than the previous record of 35,000 set in 1977. The aerial survey estimates of chinook salmon escapement total 40,000 fish, and the total estimated run of 97,000 was the largest ever recorded.

The chum salmon catch at Togiak also broke a record in 1978 with a harvest of 274,967. The chum escapement was estimated to be 396,000 and the total run estimated at 671,000 fish, the second largest on record since total run has been estimated. Pink salmon catches totaled 57,524 fish, while the escapement was estimated to be 150,000. The 1978 coho salmon catch of 44,338 was significantly higher than the long term average catch of 10,000. Additional details concerning age, sex, and size composition of the 1978 salmon returns to Togiak District are provided in Tables 86 through 98.

Table 85. Togiak River daily sockeye salmon escapement counts, 1978.

Date	Daily Count	Accumulative Count	Daily Percent of Total	Accumulative Percent
June 27	60	60	0.02	0.02
28	510	570	0.19	0.21
29	6,930	7,500	2.53	2.74
30	8,328	15,828	3.05	5.79
July 1	3,126	18,954	1.14	6.93
2	3,228	22,182	1.18	8.11
3	5,640	27,822	2.06	10.17
4	8,646	36,468	3.16	13.33
5	14,646	51,114	5.35	18.68
6	7,998	59,112	2.92	21.60
7	7,260	66,372	2.65	24.25
8	5,742	72,114	2.10	26.35
9	9,132	81,246	3.34	29.69
10	8,556	89,802	3.13	32.82
11	12,594	102,396	4.60	37.42
12	19,602	121,998	7.17	44.59
13	19,254	141,252	7.04	51.63
14	15,702	156,954	5.74	57.37
15	11,664	168,618	4.26	61.63
16	10,488	179,106	3.83	65.46
17	8,946	188,052	3.27	68.73
18	7,176	195,228	2.62	71.35
19	11,574	206,802	4.23	75.58
20	9,636	216,438	3.52	79.10
21	8,328	224,766	3.05	82.15
22	6,072	230,838	2.22	84.37
23	3,810	234,648	1.39	85.76
24	2,682	237,330	0.98	86.74
25	2,724	240,054	1.00	87.74
26	3,534	243,588	1.29	89.03
27	4,008	247,596	1.47	90.50
28	7,272	254,868	2.66	93.16
29	6,156	261,024	2.25	95.41
30	3,528	264,552	1.29	96.70
31	3,282	267,834	1.20	97.90
Aug 1	2,250	270,084	0.82	98.72
2	2,358	272,442	0.86	99.58
3	972	273,414	0.36	99.94
4	162	273,576 ¹	0.06	100.00

¹ Does not include 66,500 sockeye salmon escapement estimated by aerial survey of Togiak and Kulukak tributary streams.

Table 86. Togiak River catch and escapement of sockeye salmon, sex composition and age group, 1978.

	AGE GROUP								TOTAL
	31	41	42	52	53	62	63	73	
CATCH									
MALES									
NUMBER	--	347	58,671	94,406	12,904	12,610	21,512	510	200,960
PERCENT	--	.17	29.20	46.98	6.42	6.28	10.70	.25	44.46
FEMALES									
NUMBER	--	--	64,433	135,883	11,911	15,973	21,744	1,112	251,056
PERCENT	--	--	25.67	54.13	4.74	6.36	8.66	.44	55.54
SEXES COMBINED									
NUMBER	--	347	123,104	230,289	24,815	28,583	43,256	1,622	452,016
PERCENT	--	.08	27.23	50.95	5.49	6.32	9.57	.36	100.00
ESCAPEMENT									
MALES									
NUMBER	--	348	61,228	55,354	3,779	5,112	5,676	--	131,497
PERCENT	--	.26	46.56	42.10	2.87	3.89	4.32	--	48.07
FEMALES									
NUMBER	348	348	58,287	66,321	2,819	8,976	4,416	564	142,079
PERCENT	.25	.24	41.02	46.68	1.98	6.32	3.11	.40	51.93
SEXES COMBINED									
NUMBER	348	696	119,515	121,675	6,598	14,088	10,092	564	273,576 ¹
PERCENT	.13	.25	43.69	44.47	2.41	5.15	3.69	.21	100.00
CATCH AND ESCAPEMENT									
MALES									
NUMBER	--	695	119,899	149,760	16,683	17,722	27,188	510	332,457
PERCENT	--	.21	36.06	45.05	5.02	5.33	8.18	.15	45.82
FEMALES									
NUMBER	348	348	122,720	202,204	14,730	24,949	26,160	1,676	393,135
PERCENT	.09	.09	31.21	51.43	3.75	6.35	6.65	.43	54.18
SEXES COMBINED									
NUMBER	348	1,043	242,619	351,964	31,413	42,671	53,348	2,186	725,592 ¹
PERCENT	.05	.14	33.44	48.51	4.33	5.88	7.35	.30	100.00

¹ Does not include 66,500 sockeye salmon escapement estimated by aerial survey of Togiak and Kulukak tributary streams.

Table 87. Togiak District commercial catch of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/05-07/02	769	352	417	45.77	54.23	70,884	32,446	38,438
2	07/03-09/09	1,495	661	834	44.21	55.79	381,132	168,514	212,618
TOTAL		2,264	1,013	1,251	44.46	55.54	452,016	200,960	251,056

Table 88. Togiak District commercial catch of sockeye salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL
			41	42	52	53	62	63	73	
MALES										
1	06/05- 07/02	COUNT	92	5,899	18,435	922	3,687	3,411	--	32,446
		PERCENT	.28	18.18	56.82	2.84	11.36	10.51	--	16.15
2	07/03- 09/09	COUNT	255	52,772	75,971	11,982	8,923	18,101	510	168,514
		PERCENT	.15	31.32	45.08	7.11	5.30	10.74	.30	83.85
COLUMN TOTALS		COUNT	347	58,671	94,406	12,904	12,610	21,512	510	200,960
		PERCENT	.17	29.20	46.98	6.42	6.28	10.70	.25	100.00
FEMALES										
1	06/05- 07/02	COUNT	--	3,503	28,299	184	3,226	3,134	92	38,438
		PERCENT	--	9.11	73.62	.48	8.39	8.15	.24	15.31
2	07/03- 09/09	COUNT	--	60,930	107,584	11,727	12,747	18,610	1,020	212,618
		PERCENT	--	28.66	50.60	5.52	6.00	8.75	.48	84.69
COLUMN TOTALS		COUNT	--	64,433	135,883	11,911	15,973	21,744	1,112	251,056
		PERCENT	--	25.67	54.13	4.74	6.36	8.66	.44	100.00
SEXES COMBINED										
1	06/05- 07/02	COUNT	92	9,402	46,734	1,106	6,913	6,545	92	70,884
		PERCENT	.13	13.27	65.93	1.56	9.75	9.23	.13	15.68
2	07/03- 09/09	COUNT	255	113,702	183,555	23,709	21,670	36,711	1,530	381,132
		PERCENT	.07	29.83	48.16	6.22	5.69	9.63	.40	84.32
COLUMN TOTALS		COUNT	347	123,104	230,289	24,815	28,583	43,256	1,622	452,016
		PERCENT	.08	27.23	50.95	5.49	6.32	9.57	.36	100.00

Table 89. Togiak District commercial catch of sockeye salmon, age, length (mm), and weight (kg), by sex, 1978.

	AGE GROUP							TOTAL
	41	42	52	53	62	63	73	
MALES								
NUMBER	347	58,671	94,406	12,904	12,610	21,512	510	200,960
AV LENGTH	597.39	534.45	600.48	539.41	602.60	607.51	630.00	578.24
STD ERROR	0.00	1.70	1.43	4.50	4.05	2.86	20.01	2.05
SAMP SIZE	2	271	498	57	75	108	2	1,013
AV WEIGHT	0.00	2.89	4.34	2.70	4.63	4.60	0.00	3.86
STD ERROR	0.00	.04	.04	.05	.11	.07	0.00	.05
SAMP SIZE	0	271	498	57	75	108	0	1,009
FEMALES								
NUMBER	0	64,433	135,883	11,911	15,973	21,744	1,112	251,056
AV LENGTH	0.00	512.04	573.46	512.94	573.53	574.31	579.80	554.93
STD ERROR	0.00	1.51	1.00	3.59	2.67	2.71	2.28	1.48
SAMP SIZE	0	277	729	48	85	107	5	1,251
AV WEIGHT	0.00	2.40	3.26	2.39	3.42	3.36	0.00	3.01
STD ERROR	0.00	.02	.02	.03	.06	.05	0.00	.03
SAMP SIZE	0	277	729	48	85	107	0	1,246
SEXES COMBINED								
NUMBER	347	123,104	230,289	24,815	28,583	43,256	1,622	452,016
AV LENGTH	597.39	522.72	584.54	526.71	586.35	590.82	595.58	565.29
STD ERROR	0.00	1.61	1.17	4.08	3.32	2.79	7.35	1.74
SAMP SIZE	2	548	1,227	105	160	215	7	2,264
AV WEIGHT	0.00	2.63	3.70	2.55	3.95	3.98	0.00	3.39
STD ERROR	0.00	.03	.03	.04	.08	.06	0.00	.04
SAMP SIZE	0	548	1,227	105	160	215	0	2,255

Table 90. Togiak District commercial catch of chinook salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	6/20- 7/ 2	255	141	114	55.29	44.71	34,714	19,197	15,517
2	7/ 3- 7/21	296	121	175	40.88	59.12	22,286	9,115	13,171
TOTAL		551	262	289	47.55	52.45	57,000	28,312	28,688

Table 91. Togiak District commercial catch of chinook salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL
			31	32	41	42	43	51	52	
MALES										
1	6/20- 7/ 2	COUNT	0	1,770	3,402	11,560	694	278	1,493	19,197
		PERCENT	0.00	6.25	12.02	40.83	2.45	.98	5.27	67.81
2	7/ 3- 7/21	COUNT	67	156	825	7,175	67	223	602	9,115
		PERCENT	.24	.55	2.91	25.34	.24	.79	2.13	32.19
COLUMN TOTALS		COUNT	67	1,926	4,227	18,735	761	501	2,095	28,312
		PERCENT	.24	6.80	14.93	66.17	2.69	1.77	7.40	100.00
FEMALES										
1	6/20- 7/ 2	COUNT	0	0	1,215	12,115	278	555	1,354	15,517
		PERCENT	0.00	0.00	4.24	42.23	.97	1.93	4.72	54.09
2	7/ 3- 7/21	COUNT	0	0	223	11,833	67	67	981	13,171
		PERCENT	0.00	0.00	.78	41.25	.23	.23	3.42	45.91
COLUMN TOTALS		COUNT	0	0	1,438	23,948	345	622	2,335	28,688
		PERCENT	0.00	0.00	5.01	83.48	1.20	2.17	8.14	100.00
SEXES COMBINED										
1	6/20- 7/ 2	COUNT	0	1,770	4,617	23,675	972	833	2,847	34,714
		PERCENT	0.00	3.11	8.10	41.54	1.71	1.46	4.99	60.90
2	7/ 3- 7/21	COUNT	67	156	1,048	19,008	134	290	1,583	22,286
		PERCENT	.12	.27	1.84	33.35	.24	.51	2.78	39.10
COLUMN TOTALS		COUNT	67	1,926	5,665	42,683	1,106	1,123	4,430	57,000
		PERCENT	.12	3.38	9.94	74.88	1.94	1.97	7.77	100.00

Table 92. Togiak District commercial catch of chinook salmon, age, length (mm), and weight (kg) by sex, 1978.

	AGE GROUP							TOTAL
	31	32	41	42	43	51	52	
MALES								
NUMBER	67	1,926	4,227	18,735	761	501	2,095	28,312
AV LENGTH	380.00	542.69	708.59	898.63	825.95	983.15	887.66	843.55
STD ERROR	0.00	18.02	13.65	11.22	33.10	31.83	19.07	13.36
SAMP SIZE	1	15	36	180	6	5	19	262
AV WEIGHT	0.00	3.04	6.73	13.75	9.84	23.14	12.76	12.01
STD ERROR	0.00	.39	.50	.76	0.00	0.00	1.11	.69
SAMP SIZE	0	3	14	48	1	2	5	73
FEMALES								
NUMBER	0	0	1,438	23,948	345	622	2,335	28,688
AV LENGTH	0.00	0.00	853.89	885.11	857.22	930.02	867.10	882.72
STD ERROR	0.00	0.00	12.21	4.39	4.67	12.94	12.05	5.47
SAMP SIZE	0	0	12	246	3	5	23	289
AV WEIGHT	0.00	0.00	10.89	12.81	13.56	15.06	12.02	12.71
STD ERROR	0.00	0.00	.56	.40	0.00	0.00	1.44	.43
SAMP SIZE	0	0	3	72	1	1	3	80
SEXES COMBINED								
NUMBER	67	1,926	5,665	42,683	1,106	1,123	4,430	57,000
AV LENGTH	380.00	542.69	745.48	891.05	835.70	953.72	876.82	863.26
STD ERROR	0.00	18.02	13.29	7.28	23.62	22.39	15.23	9.23
SAMP SIZE	1	15	48	426	9	10	42	551
AV WEIGHT	0.00	3.04	7.66	13.22	10.90	18.89	12.37	12.36
STD ERROR	0.00	.39	.51	.54	0.00	0.00	1.23	.55
SAMP SIZE	0	3	17	120	2	3	8	153

Table 93. Togiak District commercial catch of chum salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		CATCH	NUMBER IN CATCH	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	6/21- 7/ 3	241	92	149	38.17	61.83	43,480	16,598	26,882
2	7/ 4- 7/16	416	179	237	43.03	56.97	138,855	72,637	66,218
3	7/17- 7/25	365	149	216	40.82	59.18	92,632	37,814	54,818
TOTAL		1,022	420	602	41.10	58.90	274,967	127,049	147,918

Table 94. Togiak District commercial catch of chum salmon, sex and age group, by sample period, 1978.

		AGE GROUP					
SAMPLE PERIOD	DATE		31	41	51	61	TOTAL
MALES							
1	6/21-	COUNT	0	3,969	12,629	0	16,598
	7/ 3	PERCENT	0.00	3.12	9.94	0.00	13.06
2	7/ 4-	COUNT	1,217	43,014	27,594	812	72,637
	7/16	PERCENT	.96	33.86	21.72	.64	57.17
3	7/17-	COUNT	6,598	20,557	10,659	0	37,814
	7/25	PERCENT	5.19	16.18	8.39	0.00	29.76
COLUMN TOTALS		COUNT	7,815	67,540	50,882	812	127,049
		PERCENT	6.15	53.16	40.05	.64	100.00
FEMALES							
1	6/21-	COUNT	180	7,217	19,485	0	26,882
	7/ 3	PERCENT	.12	4.88	13.17	0.00	18.17
2	7/ 4-	COUNT	2,841	59,652	3,319	406	66,218
	7/16	PERCENT	1.92	40.33	2.24	.27	44.77
3	7/17-	COUNT	8,375	35,784	10,659	0	54,818
	7/25	PERCENT	5.66	24.19	7.21	0.00	37.06
COLUMN TOTALS		COUNT	11,396	102,653	33,463	406	147,918
		PERCENT	7.70	69.40	22.62	.27	100.00
SEXES COMBINED							
1	6/21-	COUNT	180	11,186	32,114	0	43,480
	7/ 3	PERCENT	.07	4.07	11.68	0.00	15.81
2	7/ 4-	COUNT	4,058	102,666	30,913	1,218	138,855
	7/16	PERCENT	1.48	37.34	11.24	.44	50.50
3	7/17-	COUNT	14,973	56,341	21,318	0	92,632
	7/25	PERCENT	5.45	20.49	7.75	0.00	33.69
COLUMN TOTALS		COUNT	19,211	170,193	84,345	1,218	274,967
		PERCENT	6.99	61.90	30.67	.44	100.00

Table 95. Togiak District commercial catch of chum salmon, age, length (mm), and weight (kg) by sex, 1978.

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	7,815	67,540	50,882	812	127,049
AV LENGTH	535.06	599.69	623.00	624.00	605.21
STD ERROR	6.59	3.19	4.44	2.00	3.96
SAMP SIZE	29	209	180	2	420
AV WEIGHT	3.13	4.26	4.49	0.00	4.29
STD ERROR	.13	.16	.18	0.00	.17
SAMP SIZE	9	47	48	0	104
FEMALES					
NUMBER	11,396	102,653	33,463	406	147,918
AV LENGTH	533.73	577.26	588.90	599.00	576.60
STD ERROR	4.30	1.88	3.31	0.00	2.59
SAMP SIZE	41	328	232	1	602
AV WEIGHT	2.43	3.29	3.48	0.00	3.27
STD ERROR	.25	.06	.09	0.00	.08
SAMP SIZE	4	90	61	0	155
SEXES COMBINED					
NUMBER	19,211	170,193	84,345	1,218	274,967
AV LENGTH	534.27	586.16	609.48	615.67	589.82
STD ERROR	5.25	2.39	3.81	1.33	3.15
SAMP SIZE	70	537	412	3	1,022
AV WEIGHT	2.69	3.67	4.09	0.00	3.74
STD ERROR	.16	.10	.13	0.00	.11
SAMP SIZE	13	137	109	0	259

Table 96. Togiak River escapement of sockeye salmon, sex composition by sample period, 1978.

PERIOD NUMBER	DATE	NO. OF FISH SAMPLED	COUNT		PERCENT		ESCAPEMENT	NUMBER IN ESCAPEMENT	
			MALES	FEMALES	MALES	FEMALES		MALES	FEMALES
1	06/27-07/11	471	227	247	47.89	52.11	102,396	49,038	53,358
2	07/12-08/04	492	237	255	48.17	51.83	171,180	82,459	88,721
TOTAL		966	464	502	48.07	51.93	273,576 ¹	131,497	142,079

¹ Does not include 66,500 sockeye salmon escapement estimated by aerial survey of Togiak and Kulukak tributary streams.

Table 97. Togiak River escapement of sockeye salmon, sex and age group by sample period, 1978.

SAMPLE PERIOD	DATE		AGE GROUP							TOTAL	
			31	41	42	52	53	62	63		73
MALES											
1	06/27- 07/11	COUNT	--	--	14,258	27,868	648	3,024	3,240	--	49,038
		PERCENT	--	--	29.07	56.83	1.32	6.17	6.61	--	37.29
2	07/12- 08/04	COUNT	--	348	46,970	27,486	3,131	2,088	2,436	--	82,459
		PERCENT	--	.42	56.96	33.33	3.80	2.53	2.95	--	62.71
COLUMN TOTALS		COUNT	--	348	61,228	55,354	3,779	5,112	5,676	--	131,497
		PERCENT	--	.26	46.56	42.10	2.87	3.89	4.32	--	100.00
FEMALES											
1	06/27- 07/11	COUNT	--	--	11,665	33,268	1,080	4,105	3,024	216	53,358
		PERCENT	--	--	21.86	62.35	2.02	7.69	5.67	.40	37.56
2	07/12- 08/04	COUNT	348	348	46,622	33,053	1,739	4,871	1,392	348	88,721
		PERCENT	.39	.39	52.55	37.25	1.96	5.49	1.57	.39	62.44
COLUMN TOTALS		COUNT	348	348	58,287	66,321	2,819	8,976	4,416	564	142,079
		PERCENT	.25	.24	41.02	46.68	1.98	6.32	3.11	.40	100.00
SEXES COMBINED											
1	06/27- 07/11	COUNT	--	--	25,923	61,136	1,728	7,129	6,264	216	102,396
		PERCENT	--	--	25.32	59.70	1.69	6.96	6.12	.21	37.43
2	07/12- 08/04	COUNT	348	696	93,592	60,539	4,870	6,959	3,828	348	171,180
		PERCENT	.20	.41	54.67	35.37	2.84	4.07	2.24	.20	62.57
COLUMN TOTALS		COUNT	348	696	119,515	121,675	6,598	14,088	10,092	564	273,576 ¹
		PERCENT	.13	.25	43.69	44.47	2.41	5.15	3.69	.21	100.00

Table 98. Togiak River escapement of sockeye salmon, age and length (mm), by sex, 1978.

	AGE GROUP								TOTAL
	31	41	42	52	53	62	63	73	
MALES									
NUMBER	0	348	61,228	55,354	3,779	5,112	5,676	0	131,497
AV LENGTH	0.00	587.00	541.27	615.06	548.47	617.01	619.48	0.00	578.98
STD ERROR	0.00	0.00	2.20	2.27	6.89	5.41	6.46	0.00	2.69
SAMP SIZE	0	1	201	208	12	20	22	0	464
FEMALES									
NUMBER	348	348	58,287	66,321	2,819	8,976	4,416	564	142,079
AV LENGTH	519.00	558.00	513.02	583.86	519.69	584.62	590.78	620.06	553.71
STD ERROR	0.00	0.00	2.34	1.68	9.44	4.74	6.14	0.00	2.43
SAMP SIZE	1	1	188	249	10	33	18	2	502
SEXES COMBINED									
NUMBER	348	696	119,515	121,675	6,598	14,088	10,092	564	273,576
AV LENGTH	519.00	572.50	527.49	598.06	536.17	596.37	606.92	620.06	565.86
STD ERROR	0.00	0.00	2.27	1.95	8.05	4.99	6.32	0.00	2.55
SAMP SIZE	1	2	389	457	22	53	40	2	966

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