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ABUNDANCE, AGE, SEX, AND SIZE OF SALMON (*Oncorhynchus* sp.) CATCHES AND ESCAPEMENTS IN THE KUSKOKWIM AREA, 1984

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October 1986

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Commissioner

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FOREWORD

This presentation of Kuskokwim area salmon statistics is the third in a series of annual reports which summarize available information regrding composition and abundance of inshore returns. The primary objective of this publication is to present the basic biological information collected by the Alaska Department of Fish and Game in 1984 during ongoing research and management-related investigations on salmon in the Kuskokwim, Quinhagak, and Goodnews Bay Districts. Included are commercial and subsistence catch data, available escapement estimates, and age and size composition by sex. Detailed knowledge of these population attributes is required in order to accurately evaluate and manage for stock-specific production. Unfortunately, while Kuskokwim area catch information is largely known, the considerable number of spawning streams scattered throughout the immense Kuskokwim Bay and River drainages has historically precluded complete collection of escapement data. In 1984, total drainage-wide abundances and escapements of Kuskokwim River chinook, coho, and chum salmon were estimated although no attempts were made to allocate catches to streams of origin.

ABSTRACT

Commercial and subsistence gill net fisheries in the Kuskokwim area of western Alaska harvested a total of 134,998 chinook *(Oncorhynchus tshawytscha)*, 82,580 sockeye *(O. nerka)*, 845,722 coho *(O. kisutch)*, 24,263 pink *(O. gorbuscha)*, and 638,605 chum *(O. keta)* salmon in 1984. Most (72%) of the chinook salmon harvest was female and evenly split between ages 5_2 (40%) and 6_2 (37%). The major age classes represented for three of the other species were: sockeye, 61% age 5_2; coho, 94% age 4_3; and chum salmon, 87% age 4_1. Chinook, sockeye, coho, and chum salmon escapements to the Kuskokwim, Kanektok, and Goodnews Rivers were sampled for age, sex, and size. Escapement age compositions for all species were similar in most instances to those of respective commercial catches.

KEY WORDS: Pacific salmon *(Oncorhynchus)*, catch allocation, chinook salmon, chum salmon, sockeye salmon, coho salmon, age classification, fishery synopsis.

INTRODUCTION

The Kuskokwim area includes five fishing districts located in or adjacent to three unique river systems (Figure 1). Two separate and currently used fishing districts are located within the confines of the mainstem Kuskokwim River (335-10 and 20), and the other two districts are located near the mouths of the Kanektok (335-40) and Goodnews Rivers (335-50). All three river systems support major annual runs of chinook *(Oncorhynchus tshawytscha)*, chum *(O. keta)*, and coho salmon *(O. kisutch)*. In addition, the Kanektok and Goodnews Rivers support significant annual runs of sockeye *(O. nerka)* and even-year runs of pink salmon *(O. gorbuscha)*. The Kuskokwim River also supports occasionally significant runs of sockeye salmon, though catches of this species are largely incidental.

Nearly all of the commercial fishing occurs in the Lower Kuskokwim River District (335-10), the Quinhagak District (335-40), and the Goodnews Bay Districts (335-50). The Alaska Department of Fish and Game (ADF&G) presently conducts a number of activities to collect biological information on the salmon populations returning to these areas. Of major importance are programs designed to collect information concerning: 1) the magnitude and timing of the commercial and subsistence harvest in each fishing district; 2) the age, size, and sex composition of each commercial catch component; 3) the timing and either absolute or relative magnitude of selected major spawning populations; and 4) the age, size, and sex composition of some of the enumerated spawning populations. By documenting annual run characteristics, the ADF&G hopes to improve and standardize the salmon data base, and thereby facilitate management to discrete stocks within the production areas. Few studies to date have concentrated on critically evaluating Kuskokwim area production because of limited historic escapement and stock-specific catch data.

Available annual data presently include commercial catch statistics, subsistence harvest estimates, some escapement estimates, and age, sex, and size information. Commercial catch statistics are formally published by the ADF&G, Division of Commercial Fisheries (CF). Subsistence harvest estimates are generated by CF from information collected during autumn surveys, and are presented in the ADF&G Kuskokwim Area Annual Management Report series (ADF&G 1985). All available escapement information is maintained in a computerized stream catalog. Prior to 1982, historic age, sex, and size data were reported informally in various A-Y-K (Arctic-Yukon-Kuskokwim) reports. Beginning in 1982, age, sex, and length of Kuskokwim River salmon has been presented in the Technical Data Report series, of which this report is the third edition.

This report is a comprehensive presentation of currently available information on the abundance and age, size, and sex composition of the Kuskokwim area salmon runs in 1984. Catch and escapement information is apportioned by age class and sex within each species. Standard error and sample size statistics are also included in this report. In those instances where site-specific information is completely unavailable, abundance estimates are apportioned by average age, sex, and size data from segments of the population sampled in other locations. It should be noted that numerous small populations exist about which little or no information is available.

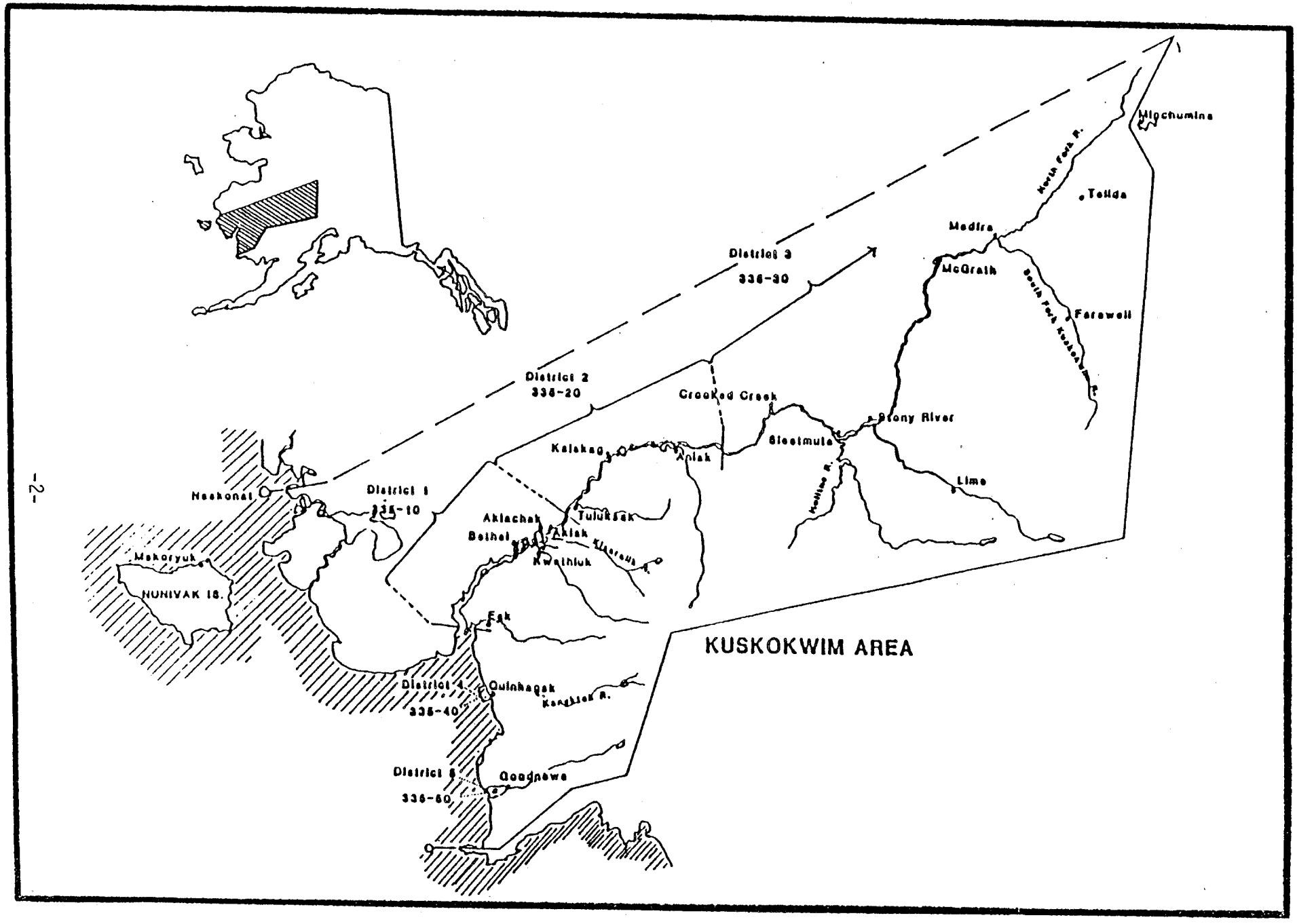

Figure 1. Map of the Kuskokwim area showing commercial fishing district boundaries.

METHODS

Study Area Description

The Kuskokwim area consists of all water draining into the area between Cape Newenham and Naskonat Peninsula, including Nunivak Island (Figure 1). Commercial fishing occurs in two separate fishing districts in the mainstem Kuskokwim River and in marine waters in the mouths of both the Kanektok and Goodnews Rivers. The Lower Kuskokwim River District (District 1, or statistical area 335-10) extends approximately 78 miles (125 km) from the lower end of Eek Island upriver to Bethel during most of the summer when chum and sockeye salmon predominate, and it extends an additional 44 miles (71 km) upriver to Mishevik Slough both early and late in the season when chinook and coho salmon are respectively more prevalent. The Middle Kuskokwim River District (District 2, or statistical area 335-20) extends from Mishevik Slough 123 miles (198 km) upriver to the mouth of the Kolmakof River. District 4 is located near the village of Quinhagak at the mouth of the Kanektok River and extends along the ocean shoreline for roughly 7 miles (12 km) from the mouth of Oyak Creek southward to the mouth of the Arolik River. District 5 is located within the confines of Goodnews Bay at the mouth of the Goodnews River.

Drift and set gill nets are the only legal commercial fishing gear allowed in the Kuskokwim area, although most commercial fishing has been conducted with drift gill nets in recent years. The maximum aggregate net length is 50 fathoms (90 m), and salmon may be taken in nets with stretch mesh sizes of not more than six inches (15 cm) after 25 June in the Kuskokwim River. Nets with mesh sizes larger than six inches (15 cm) may not be deeper than 35 meshes, and those with mesh sizes of six inches (15 cm) or less may not be deeper than 45 meshes. All commercial fishing in both the Quinhagak and Goodnews Bay Districts is limited to 50 fathoms (90 m), six inch (15 cm) stretch mesh gill nets or less. Subsistence fishing commonly occurs with the same gill nets used for commercial purposes. The gill net size most commonly used to intentionally harvest chinook salmon in the Kuskokwim River is 8-inch (20 cm) stretch mesh, whereas 5-1/2 inch (14 cm) stretch mesh is the standard for all other commercial and subsistence salmon fishing in the Kuskokwim area.

Abundance Data

All harvest data presented in this report were compiled by ADF&G in Bethel, Alaska. The commercial harvest data were tabulated from fish tickets, and are considered preliminary until final catch figures are formally published by ADF&G. Final harvest figures are not expected to differ from the preliminary values by more than 1%. All historic commercial harvest comparisons were made based upoon statistics published by ADF&G (1982).

Subsistence harvest data were estimated from door to door subsistence surveys in 13 selected villages throughout the Kuskokwim management area in 1984. Interviews included retrieving ADF&G-supplied catch calendars and any additional pertinent verbal information. Surveyed villages were censused, and relative fishery participation and harvest data from interviewed families were linearly expanded for the estimated number of non-respondent families.

Record keeping is voluntary, however, and there is little quality control during data collection in-season. Consequently, reported subsistence harvests are not as precise as commercial harvest information.

Escapement data presented in this report were collected in a variety of ways. These include visual obervation from both a tower and a weir, hydroacoustic sensing by side-scanning sonar, peak abundance aerial survey assessment, and calibrated test fishing CPUE data. Of these, only adjusted weir count on the Kogrukluk River (Schneiderhan 1985a), expanded tower counts on the middle fork of the Goodnews River (Schultz 1985), and test fishing-derived abundance estimates on the Kuskokwim River (Huttunen 1985a) are considered to represent total escapements. Sonar appears to accurately reflect fish presence within the ensonified water column, and is used to estimate fish passage on both the Kanektok and Aniak Rivers (Huttunen 1985b; Schneiderhan 1985b). Other escapement information presented are from aerial stream surveys during presumed periods of peak abundance under fair to good survey conditions. While it is not currently feasible to survey all of the small spawning tributaries within the Kuskokwim drainage, an attempt was made to census all of the known major salmon spawning concentrations to provide relative escapement indices for these systems.

Age, Sex, and Length

All salmon species except pink salmon were sampled for age, sex, and length. Age was determined from scale samples taken in the preferred area on the left side of the fish, approximately two rows above the lateral line and on a diagonal between the posterior end of the dorsal fin and anterior end of the anal fin (INPFC 1963). All ages are reported using Gilbert-Rich[1] notation signifying total and freshwater ages. Sex was determined from external morphological characteristics except for commercially caught chinook salmon, many of which were sampled by examination of the gonads. All reported lengths were taken mid-eye to fork of tail.

Samples were collected from as many catch and escapement time and area strata as practical. Where possible, samples were collected throughout the duration of the salmon migration. Sampling effort was distributed throughout the period of commercial harvest of chinook, sockeye, coho, and chum salmon in Districts 1, 4, and 5, and on the escapements of all species enumerated both at Ignatti weir and at the Aniak River sonar project. Samples from the Goodnews and Kanektok River system escapements were collected from spawning ground carcass surveys. Subsistence catches were not sampled.

Age and sex composition was estimated for each sampled fishery with a stratified systematic sampling design (Cochran 1977). Time strata were of variable length depending on the number of samples collected. An attempt was made to sample a sufficient number of fish within a strata to simultaneously estimate the true proportion of each major age class in the catch within ± 5 percentage points 90% of the time.

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1 Gilbert-Rich Formula - Total years of life at maturity (large type)-years of life at outmigratiion from freshwater (subscript).

Age compositions and associated variances were estimated with procedures outlined by Cochran (1977) for stratified sampling programs:

$$C_{tj} = C_t P_{tj} \qquad V[C_{tj}] = (C_t)^2 \left(\frac{P_{tj}(P_{tj} - 1)}{N_t - 1} \right)$$

$$C_{.j} = \sum_{t=1}^{t} C_{tj} \qquad V[C_{.j}] = \sum_{t=1}^{t} V[C_{tj}]$$

where:

C_t = Number of fish caught in stratum t,

P_{tj} = Fraction of sample in stratum t of age j,

N_t = Number of samples during stratum t,

C_{tj} = Estimated number of fish of age j during stratum t,

T = Total number of strata,

$C_{.j}$ = Estimated number of fish of age j for the season, T.

If there were insufficient samples to attain the above levels of precision and accuracy, the samples were pooled into a single sample period for that fishery or escapement. Catch or escapement was then apportioned by age and sex. The age, sex, and size characteristics of the subsistence harvests in all districts and also those of the District 2 commercial harvest were estimated by directly apportioning the nearest commercial catch samples. This was possible because the gear used to harvest salmon for subsistence purposes was largely the same as that used for commercial fishing.

RESULTS AND DISCUSSION

Commercial and Subsistence Harvest

Kuskokwim area commercial harvests totaled 74,006 chinook, 81,307 sockeye, 829,965 coho, 23,902 pink, and 488,482 chum salmon in 1984 (Table 1). The chinook salmon harvest, while 4% above the previous 5-year average, was 12% below the most recent 3-year mean catch and 21% below the 1983 record catch. Commercial catches of sockeye and chum salmon were also above recent 5-year averages (8% and 24%, respectively), while catches of pink salmon were 76% below the most recent 5 even-year catches. The record harvest of coho salmon in 1984 was 68% greater than the previous record harvest, and over twice the most recent 5-year average. The largest commercial catches of sockeye, coho, and chum salmon were reported from District 1 while peak chinook and pink salmon catches occurred in District 4. Relatively low numbers of all species were caught in District 2 with coho and chum salmon predominating. Commercial

Table 1. Total harvest of Kuskokwim area salmon in numbers of fish by fishery, district, and species, 1984.

COMMERCIAL HARVEST:

District	Chinook	Sockeye	Coho	Pink	Chum	Total
1	29,946	46,571	605,098	2,931	396,031	1,080,577
2	1,796	2,004	18,349	11	27,687	49,847
4	33,652	17,258	135,342	16,249	50,424	252,925
5	8,612	15,474	71,176	4,711	14,340	114,313
Subtotal	74,006	81,307	829,965	23,902	488,482	1,497,662

SUBSISTENCE HARVEST:

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Kuskokwim River 1/	57,206	0	13,472	0	149,300	219,978
Quinhagak	3,157	309	2,131	295	634	6,526
Goodnews Bay	629	964	154	66	189	2,002
Subtotal	60,992	1,273	15,757	361	150,123	228,506
Total	134,998	82,580	845,722	24,263	638,605	1,726,168

1/ Sockeye salmon harvested for subsistence purposes are generally included in figures presented for Kuskokwim River chum salmon.

effort and harvest of species and fishing period is presented for each district in Appendix Tables 1-4.

Subsistence harvests in all districts were estimated at 60,992 chinook, 1,273 sockeye, 15,757 coho, 361 pink, and 150,123 chum salmon (Table 1). The chinook salmon harvest was 20% greater than reported in 1983, but was only 4% above the recent 5-year average. Subsistence catches of sockeye, coho, pink, and chum salmon, historically pooled and classified as "small" salmon, were 23% larger than similar catches in 1983 and 3% greater than the most recent 5-year average. Nearly all of the chinook (94%), coho (86%), and chum salmon (99%) harvested for subsistence purposes were caught in District 1. In contrast, most (76%) of the sockeye salmon were caught in District 5 while the bulk (82%) of pink salmon were reported from District 4.

Escapement Abundance

Salmon spawn in numerous tributaries throughout the Kuskokwim, Kanektok, and Goodnews River drainages. Estimates of the total spawning abundances of each species escaping to the Kuskokwim River drainage were derived by commercial harvest-calibrated test fishing CPUE data (Huttunen 1985a), while those presented for the Kanektok and Goodnews Rivers were developed by test fishing-apportioned sonar counts (Huttunen 1985b) and aerial survey-expanded tower counts (Schulz 1985), respectively.

Chinook Salmon:

Chinook salmon spawn in numerous tributaries to the Kuskokwim River, and in the Kanektok and Goodnews River systems. In all, 8,693 chinook salmon were observed in Kuskokwim River spawning tributaries in 1984, while the total drainage-wide escapement was estimated at 47,524 fish (Table 2). Total escapements to the Kanektok and Goodnews River systems were estimated at 38,245 and 8,743 chinook salmon, respectively. Escapements to all systems except the Kanektok and Goodnews were well below objectives.

Sockeye Salmon:

Major spawning concentrations of sockeye salmon were reported only in the Holitna, Kogrukluk, Kanektok, and Goodnews Rivers (501, 4,130, 67,213, and 54,754 fish, respectively). No drainage-wide escapements were developed for Kuskokwim River sockeye salmon in 1984.

Coho Salmon:

Aerial surveys of peak coho salmon abundance were flown on the Aniak, Goodnews, and Kanektok Rivers (5,204, 43,925, and 46,380 fish observed, respectively) in 1984. An additional 29,824 coho salmon were passed through a weir on the Kogrukluk River, and an estimated total of 520,409 escaped to spawn in the Kuskokwim River drainage.

Pink Salmon:

Pink salmon were recorded only in the Goodnews and Kanektok Rivers in 1984 with partial migration estimates of 24,030 and 40,595, respectively.

Table 2. Peak aerial survey salmon escapement estimates in Kuskokwim area spawning tributaries by species, 1984. 1/

Location	Date	Chinook	Sockeye	Coho	Pink	Chum
KUSKOKWIM RIVER:						
Aniak R.	7/14/84	814	200			9,139
	8/27/84			5,204		
2/						254,747
Bear Ck.	--- Not Surveyed ---					
Cheeneetnuk R.	7/23/84	1,177				30
Chineekluk Ck.	--- Not Surveyed ---					
Chukowan R.	--- Not Surveyed ---					
Eek R.	--- Not Surveyed ---					
Mdl. Fk. Eek R.	--- Not Surveyed ---					
Holitna R. 3/	7/16/84	643	501			35,469
Holokuk R.	--- Not Surveyed ---					
Kisaralik R.	7/13/84	157	28			643
Kogrukluk R. 4/		4,928	4,130	29,824		41,484
Kwethluk R.	7/13/84	273	150			1,636
Oskawalik R.	--- Not Surveyed ---					
Salmon R. 5/ 6/	8/05/84	12				100
N. Fk. Salmon R. 7/	7/23/84	43				
Md Fk. Salmon R. 7/	7/23/84	3				
S. Fk. Salmon R. 7/	7/23/84	526				
Tuluksak R.	7/13/84	117				2,848
Kuskokwim River Subtotal (aerial and weir/sonar)		8,693	5,009	35,028	0	346,096
Kuskokwim River Total 8/		47,524		520,409		927,640
KUSKOKWIM BAY:						
Goodnews River	7/27/84	2,002	12,807			28,124
	8/26/84			43,925		
9/		8,743	67,213			117,739
Kanektok River	7/27/84	11,282	30,840		24,030	48,360
	8/26/84			46,380		
2/		38,245	54,754		40,595	200,140
Kuskokwim Bay Subtotal (aerial and weir/sonar)		13,284	43,647	90,305	24,030	76,484
Kuskokwim Bay Subtotal		46,988	121,565	90,305	64,625	312,084

1/ All surveys were good to fair unless otherwise noted.
2/ Adjusted sonar count.
3/ Downstream from Kogrukluk Weir on the Holitna River system.
4/ Weir count.
5/ Aniak River system.
6/ Poor survey conditions.
7/ Pitka River System.
8/ From calibrated test fishing CPUE data.
9/ Expanded tower count.

Chum Salmon:

Chum salmon spawn in numerous tributaries to the Kuskokwim, Kanektok, and Goodnews Rivers each year. A total of some 346,096 chum salmon were documented in spawning tributaries to the Kuskokwim River in 1984, and a total of 927,640 were estimated to have spawned in the Kuskokwim River drainage. An additional 117,739 and 200,140 chum salmon were estimated to have spawned in the Goodnews and Kanektok River systems, respectively.

Age, Sex, and Length Composition

Age, sex, and length compositions of Kuskokwim area salmon catches and escapements are presented separately for each species.

Chinook Salmon:

The majority of the 1984 Kuskokwim area chinook salmon commercial harvest was comprised of age 5_2 and age 6_2 fish (Table 3, Appendix Tables 5-8). District 1 and 5 commercial catches were primarily age 6_2 (41.2% and 44.4%, respectively), while those in District 4 were predominantly age 5_2 (54%). Age 4_2 and age 5_2 chinook salmon were typically (94%) males, while the sex composition of age 6_2 and age 7_2 fish was only slightly skewed toward females (52%).

Kuskokwim area subsistence salmon harvests were not sampled in 1984. Therefore, the age, sex, and length information presented was apportioned directly from the nearest commercial harvest samples. This was reasonable because virtually all of the gear used to harvest salmon for subsistence purposes is the same as that used for commercial fishing (Appendix Tables 9-11). The subsistence harvest of Kuskokwim River chinook salmon nearly doubled the number caught commercially, while subsistence catches in Disricts 4 and 5 were relatively minor.

The average size by age class ranged from 314 mm for age 3_2 to 934 mm for age 7_2 male commercially caught chinook salmon (Table 4). Average sizes of female chinook salmon ranged from 668 mm for age 5_2 to 939 mm for age 7_2.

Escapement samples of chinook salmon from the Kogrukluk River weir were largely 5_2 (48%) in contrast to the more evenly distributed age composition of the Kuskokwim River catch (Table 5). Age 6_2 fish comprised the largest portion of the escapement samples from both the Kanektok and Goodnews Rivers, also in contrast to respective catch samples which were evenly split between age 5_2 and age 6_2 fish where all commercial fishing is conducted with 15.2 cm (6 in) maximum mesh gill nets.

Mean lengths of spawning male Kuskokwim area chinook salmon ranged from 361 mm to 1,047 mm for age 3_2 and age 7_3 Kanektok River fish, respectively (Table 6, Appendix Tables 12-14). Mean lengths of escaping female chinook salmon ranged from 568 mm for age 4_2 Kogrukluk River fish to 936 mm for age 7_2 fish sampled on the Goodnews River.

Table 3. Total harvest of Kuskokwim area chinook salmon by age, sex, and fishery, 1984.

District	Fishery	n	Sex	AGE GROUP * 32	42	51	52	53	62	63	72	73	83	Total
1	Commercial	658	M	91	3,049	46	9,419	91	5,780	228	1,092	228	46	20,070
			F	0	0	0	1,138	0	6,554	91	1,638	364	91	9,876
			Total	91	3,049	46	10,557	91	12,334	319	2,730	592	137	29,946
2	Commercial	1/	M	5	183	4	562	5	347	14	65	14	4	1,203
			F	0	0	0	68	0	394	5	99	22	5	593
			Total	5	183	4	630	5	741	19	164	36	9	1,796
	Subsistence	1/ 2/	M	174	5,825	87	17,995	174	11,041	435	2,087	435	87	38,340
			F	0	0	0	2,173	0	12,519	174	3,130	696	174	18,866
			Total	174	5,825	87	20,168	174	23,560	609	5,217	1,131	261	57,206
4	Commercial	583	M	0	4,041	0	17,720	0	4,964	0	1,328	0	0	28,053
			F	0.	0	0	519	0	3,406	0	1,674	0	0	5,599
			Total	0	4,041	0	18,239	0	8,370	0	3,002	0	0	33,652
	Subsistence	3/	M	0	379	0	1,664	0	467	0	123	0	0	2,633
			F	0	0	0	48	0	318	0	158	0	0	524
			Total	0	379	0	1,712	0	785	0	281	0	0	3,157
5	Commercial	500	M	17	655	17	2,773	0	1,929	0	465	0	0	5,856
			F	0	0	0	241	0	1,895	0	620	0	0	2,756
			Total	17	655	17	3,014	0	3,824	0	1,085	0	0	8,612
	Subsistence	4/	M	1	48	1	203	0	141	0	34	0	0	428
			F	0	0	0	18	0	138	0	45	0	0	201
			Total	1	48	1	221	0	279	0	79	0	0	629
TOTAL HARVEST			M	288	14,180	155	50,336	270	24,669	677	5,194	677	137	96,583
			F	0	0	0	4,205	0	25,224	270	7,364	1,082	270	38,415
			Total	288	14,180	155	54,541	270	49,893	947	12,558	1,759	407	134,998

* 32-83 are computerized printing of the Gilbert-Rich subscripted 3_2 - 8_3.
1/ Allocations based on District 1 commercial catch samples.
2/ Entire Kuskokwim River subsistence harvest.
3/ Allocations based on District 4 commercial catch samples.
4/ Allocations based on District 5 commercial catch samples.

Table 4. Mean length (mm) of Kuskokwim area chinook salmon commercial catch samples by age, sex, and fishery, 1984. 1/

District	Fishery	Sex		AGE GROUP *									
				32	42	51	52	53	62	63	72	73	83
1	Commercial 2/	M	Mean	481	556	767	712	495	854	675	864	842	870
			Std. Err.	3.5	5.7	0	4.5	43.5	8.1	22.9	14.4	63.6	0
			Samp Size	2	67	1	207	2	127	5	24	5	1
		F	Mean				792		885	880	898	848	867
			Std. Err.				15.5		4.3	10	8.9	19.3	22.5
			Samp Size				25		144	2	36	8	2
4	Commercial 3/	M	Mean		524		668		836		927		
			Std. Err.		7.0		4.1		8.5		13.1		
			Samp Size		70		307		86		23		
		F	Mean				809		862		939		
			Std. Err.				22.7		6.7		9.1		
			Samp Size				9		59		29		
5	Commercial 3/	M	Mean	314	510	870	694		841		934		
			Std. Err.	0	10.2	0	5.9		7.0		12.5		
			Samp Size	1	38	1	161		112		27		
		F	Mean				812		885		928		
			Std. Err.				11.2		5.9		8.9		
			Samp Size				14		110		36		

* 32-83 are computerized printing of the Gilbert-Rich subscripted 3_2 - 8_3.
1/ Lengths are reported as mid-eye to fork-of-tail.
2/ From 22 and 14 cm (8.5 and 5.5 in) mesh gillnets.
3/ From 15 cm (6 in) mesh gillnets only.

Table 5. Percent of Kuskokwim area chinook salmon escapement samples by age, sex,and spawning area, 1984.

River	Sample Size	Sex	AGE GROUP * 32	41	42	51	52	61	62	63	72	73	82	Total
Kogrukluk 1/	1,371	M	0.1	0.1	21.1	0.0	45.6	0.0	10.1	0.0	1.1	0.0	0.0	78.1
		F	0.0	0.0	0.1	0.1	2.0	0.0	17.0	0.0	2.6	0.0	0.1	21.9
		Total	0.1	0.1	21.2	0.1	47.6	0.0	27.1	0.0	3.7	0.0	0.1	100.0
Kanektok 2/	545	M	1.5	0.2	4.8	0.0	34.0	0.0	20.0	0.2	2.0	0.4	0.0	63.1
		F	0.0	0.0	0.0	0.4	3.9	0.2	28.3	0.2	3.9	0.0	0.0	36.9
		Total	1.5	0.2	4.8	0.4	37.9	0.2	48.3	0.4	5.9	0.4	0.0	100.0
Goodnews 3/	111	M	0.0	0.0	4.5	0.0	22.6	0.0	20.7	0.0	3.6	0.0	0.0	51.4
		F	0.0	0.0	0.0	0.0	4.5	0.0	39.6	0.0	4.5	0.0	0.0	48.6
		Total	0.0	0.0	4.5	0.0	27.1	0.0	60.3	0.0	8.1	0.0	0.0	100.0

* 32-82 are computerized printing of the Gilbert-Rich subscripted 3_2 - 8_2.
1/ Weir samples.
2/ Combined beach seine (n=49) and carcass (n=496) samples.
3/ Carcass samples.

Table 6. Mean length (mm) of Kuskokwim area chinook salmon escapement samples by age and sex, 1984.

River		Sex		AGE GROUP 32	41	42	51	52	61	62	63	72	73	82
Kogrukluk	1/	M	Mean	369	692	538		660		831		991		
			Std. Err.	0.0	0.0	4.4		3.8		14.6		22.7		
			Samp Size	1	1	288		615		138		16		
		F	Mean			568	826	746		866		924		837
			Std. Err.			0.0	0.0	17.0		6.1		14.0		0.0
			Samp Size			1	1	29		243		37		1
Kanektok	2/	M	Mean	361	660	508		704		883	875	984	1,047	
			Std. Err.	0.0	0.0	9.1		4.9		7.2	0.0	16.8	7.5	
			Samp Size	1	1	26		186		109	1	11	2	
		F	Mean				893	802	955	865	910	910		
			Std. Err.				22.5	8.3	0.0	4.4	0.0	11.8		
			Samp Size				2	21	1	155	1	21		
Goodnews	3/	M	Mean			556		729		929		1,003		
			Std. Err.			40.3		17.7		13.6		40.8		
			Samp Size			5		25		23		4		
		F	Mean					793		874		936		
			Std. Err.					18.6		8.2		26.1		
			Samp Size					5		44		5		

1/ Weir samples.
2/ Combined beach seine (n=49) and carcass (n=496)samples.
3/ Spawning ground carcass samples.

Sockeye Salmon:

The relatively minor sockeye salmon catches in Districts 1, 4, and 5 were sampled sufficiently to apportion harvests by age and sex. Catches in District 2 and all subsistence harvest estimates were not sampled. Age 5_2 sockeye salmon were the dominant age class in all districts comprising 57 to 74% of the commercial harvest samples in each district (Table 7, Appendix Tables 15-18). Commercial sex ratios were nearly even ranging from 48% males in District 1 to 62% males in District 5.

Estimated subsistence catches of sockeye salmon are available for the Kanektok and Goodnews River stocks only in 1984 as sockeye salmon catches in the Kuskokwim River are included with pink and occasionally small chinook salmon in estimated reported harvests of chum salmon there. Nearby commercial harvest data were used to apportion the relatively minor reported harvests by age and sex (Appendix Tables 19-20).

The mean length of commercially caught male sockeye salmon in the Kuskokwim area ranged from 539 mm for age 4_2 to 619 mm for age 6_2 District 1 fish, and those of the females ranged from 524 mm for age 4_2 fish in District 4 to 695 mm for age 5_1 fish from District 1 (Table 8).

Escapement samples of sockeye salmon were also predominated by age 5_2 fish in each location sampled with strong presences of age 4_2 fish in the Kanektok and Goodnews Rivers (Table 9, Appendix Tables 21-23). No temporal changes in age composition were noted in Kogrukluk River samples collected, although the sex composition of the escapement reversed from largely female (61%) in the first half of the run to predominantly male (74%) later in the migration.

Average size of spawning male sockeye salmon ranged from 500 mm for age 3_1 to 623 mm for age 6_2 Kanektok River fish, while mean length of females ranged from 514 mm for age 4_2 to 588 mm for age 6_3 Kogrukluk River fish (Table 10).

Coho Salmon:

Kuskokwim area coho salmon catches were typically age 4_3 in 1984 (Table 11), with seasonal harvest proportions ranging from 93% in District 1 to 99% age 4_3 in Districts 4 and 5 (Appendix Tables 24-27). No temporal trends in age or sex compositions were apparent in the District 1 commercial harvest samples collected in 1984, and sex compositions in all districts were just slightly skewed towards males (from 52% in District 1 to 58% in District 5).

Subsistence harvests of coho salmon were relatively minor in comparison to commercial catches, and were not sampled. Harvest estimates were apportioned by the most proximal commercial harvest samples available (Appendix Tables 28-30).

The mean length of commercially caught Kuskokwim area male coho salmon ranged from 573 mm for age 3_2 fish in District 1 to 599 mm for age 4_3 fish in District 4. Female average sizes varied between 560 mm at age 3_2 in District 1 and 601 mm at age 4_3 in District 4 (Table 12). The small variance in average size among age groups reflects the complete one-ocean age at maturity schedule exhibited by the species.

Table 7. Total harvest of Kuskokwim area sockeye salmon by age, sex, and fishery, 1984.

				AGE GROUP *								
District	Fishery	n	Sex	31	41	42	51	52	53	62	63	Total
1	Commercial	296	M	0	1,731	1,416	0	12,587	1,573	157	4,877	22,341
			F	157	1,888	2,989	157	13,690	1,573	157	3,619	24,230
			Total	157	3,619	4,405	157	26,277	3,146	314	8,496	46,571
2	Commercial	1/	M	0	74	60	0	543	68	6	211	962
			F	6	82	129	6	589	68	6	156	1,042
			Total	6	156	189	6	1,132	136	12	367	2,004
	Subsistence	2/	M	0	0	0	0	0	0	0	0	0
			F	0	0	0	0	0	0	0	0	0
			Total	0	0	0	0	0	0	0	0	0
4	Commercial	531	M	0	0	2,958	0	5,459	488	0	845	9,750
			F	0	0	1,723	0	4,680	520	0	585	7,508
			Total	0	0	4,681	0	10,139	1,008	0	1,430	17,258
	Subsistence	3/	M	0	0	53	0	98	9	0	15	175
			F	0	0	31	0	84	9	0	10	134
			Total	0	0	84	0	182	18	0	25	309
5	Commercial	549	M	0	0	2,283	0	6,765	225	0	338	9,611
			F	0	28	930	0	4,764	28	0	113	5,863
			Total	0	28	3,213	0	11,529	253	0	451	15,474
	Subsistence	4/	M	0	0	144	0	420	14	0	21	599
			F	0	2	57	0	297	2	0	7	365
			Total	0	2	201	0	717	16	0	28	964
TOTAL HARVEST			M	0	1,805	6,914	0	25,872	2,377	163	6,307	43,438
			F	163	2,000	5,859	163	24,104	2,200	163	4,490	39,142
			Total	163	3,805	12,773	163	49,976	4,577	326	10,797	82,580

* 31-63 are computerized printing of the Gilbert-Rich subscripted 3_1 - 6_3.
1/ Allocations based on District 1 commercial catch samples.
2/ Sockeye salmon harvested during subsistence fishing activities are largely incidental and are included in numbers of chum salmon.
3/ Allocations based on District 4 commercial catch samples.
4/ Allocations based on District 5 commercial catch samples.

Table 8. Mean length (mm) of Kuskokwim area sockeye salmon commercial catch samples by age, sex, and fishery, 1984. 1/

District	Fishery	Sex		AGE GROUP * 31	41	42	51	52	53	62	63
1	Commercial 2/	M	Mean		577	539		588	541	619	592
			Std. Err.		10.7	10.9		2.8	8.5	0.0	4.0
			Samp Size		11	9		80	10	1	142
		F	Mean	529	557	532	695	557	544	605	563
			Std. Err.	0.0	3.8	5.1	0.0	0.0	7.0	0.0	3.6
			Samp Size	1	12	19	1	1	10	1	23
4	Commercial 3/	M	Mean			554		590	555		585
			Std. Err.			3.5		1.8	10.8		5.1
			Samp Size			91		168	15		26
		F	Mean			524		554	515		559
			Std. Err.			4.2		2	6.3		4.4
			Samp Size			53		144	16		18
5	Commercial 3/	M	Mean			564		589	563		560
			Std. Err.			4.3		1.8	4.5		8.8
			Samp Size			81		240	8		12
		F	Mean		589	529		559	530		560
			Std. Err.		0.0	5.5		1.7	0.0		22.1
			Samp Size		1	33		169	1		4

* 31-63 are computerized printing of the Gilbert-Rich subscripted 3_1 - 6_3.
1/ Lengths are reported as mid-eye to fork-of-tail.
2/ From 22 and 14 cm (8.5 and 5.5 in) mesh gillnets.
3/ From 15 cm (6 in) mesh gillnets only.

Table 9. Percent of Kuskokwim area sockeye salmon escapement samples by age, sex, and spawning area, 1984.

River	Sample Size	Sex	AGE GROUP * 31	41	42	51	52	53	62	63	Total
Kogrukluk 1/	737	M	0.0	1.3	0.5	0.0	50.8	0.3	0.0	0.2	53.1
		F	0.0	0.4	1.4	0.1	42.5	2.2	0.0	0.4	47.0
		Total	0.0	1.7	1.9	0.1	93.3	2.5	0.0	0.6	100.1
Kanektok 2/	382	M	0.3	0.8	22.0	0.0	36.2	0.5	0.5	1.0	61.3
		F	0.0	0.8	8.1	0.0	28.5	0.5	0.0	0.8	38.7
		Total	0.3	1.6	30.1	0.0	64.7	1.0	0.5	1.8	100.0
Goodnews 3/	47	M	0.0	0.0	23.4	0.0	25.6	2.1	0.0	0.0	51.1
		F	0.0	0.0	21.3	0.0	27.6	0.0	0.0	0.0	48.9
		Total	0.0	0.0	44.7	0.0	53.2	2.1	0.0	0.0	100.0

* 31-63 are computerized printing of the Gilbert-Rich subscripted 3_1 - 6_3.
1/ Weir samples.
2/ Combined beach seine (n=107) and carcass (n=275) samples.
3/ Carcass samples.

Table 10. Mean length (mm) of Kuskokwim area sockeye salmon escapement samples by age and sex, 1984.

River		Sex		AGE GROUP 31	41	42	51	52	53	62	63
Kogrukluk	1/	M	Mean		562	583		579		606	581
			Std. Err.		9.1	3.3		1.5		8.1	7.0
			Samp Size		10	3		410		3	2
		F	Mean		543	514	564	544		570	588
			Std. Err.		3.0	16.5	0.0	1.6		7.2	32.0
			Samp Size		2	9	1	280		15	2
Kanektok	2/	M	Mean	500	570	582		590	540	623	593
			Std. Err.	0.0	8.7	2.9		2.0	20.0	17.0	16.4
			Samp Size	1	3	84		138	2	2	4
		F	Mean		541	535		546	550		554
			Std. Err.		10.7	5.8		2.0	10.0		1.3
			Samp Size		3	31		109	2		3
Goodnews	3/	M	Mean			582		586	615		
			Std. Err.			8.5		5.4	0		
			Samp Size			11		12	1		
		F	Mean			527		539			
			Std. Err.			4.1		5.5			
			Samp Size			10		13			

1/ Weir samples.
2/ Combined beach seine (n=107) and carcass (n=275) samples.
3/ Spawning ground carcass samples.

Table 11. Total harvest of Kuskokwim area coho salmon by age, sex, and fishery, 1984.

District	Fishery	n	Sex	AGE GROUP * 32	43	54	Total
1	Commercial	1,333	M	11,199	292,707	9,367	313,273
			F	15,086	267,166	9,573	291,825
			Total	26,285	559,873	18,940	605,098
2	Commercial	1/	M	339	8,876	284	9,499
			F	457	8,103	290	8,850
			Total	796	16,979	574	18,349
	Subsistence	2/	M	249	6,516	209	6,974
			F	336	5,949	213	6,498
			Total	585	12,465	422	13,472
4	Commercial	429	M	0	76,347	315	76,662
			F	631	57,734	315	58,680
			Total	631	134,081	630	135,342
	Subsistence	3/	M	0	1,202	4	1,206
			F	11	910	4	925
			Total	11	2,112	8	2,131
5	Commercial	286	M	0	41,561	0	41,561
			F	498	29,117	0	29,615
			Total	498	70,678	0	71,176
	Subsistence	4/	M	0	90	0	90
			F	1	63	0	64
			Total	1	153	0	154
TOTAL HARVEST			M	11,787	427,299	10,179	449,265
			F	17,020	369,042	10,395	396,457
			Total	28,807	796,341	20,574	845,722

* 32-54 are computerized printing of the Gilbert-Rich subscripted 3_2 - 5_4.
1/ Allocations based on District 1 commercial catch samples.
2/ Entire Kuskokwim River subsistence harvest.
3/ Allocations based on District 4 commercial catch samples.
4/ Allocations based on District 5 commercial catch samples.

Table 12. Mean length (mm) of Kuskokwim area coho salmon commercial catch samples by age, sex, and fishery, 1984. 1/

District	Fishery		Sex		AGE GROUP * 32	43	54
1	Commercial	2/	M	Mean	573	585	575
				Std. Err.	12.1	3.1	16.3
				Samp Size	29	628	26
			F	Mean	560	578	582
				Std. Err.	14.2	2.5	8.5
				Samp Size	38	582	30
4	Commercial	2/	M	Mean		599	583
				Std. Err.		3.0	0.0
				Samp Size		242	1
			F	Mean	567	601	583
				Std. Err.	16.5	2.0	0.0
				Samp Size	2	183	1
5	Commercial	2/	M	Mean		597	
				Std. Err.		3.7	
				Samp Size		167	
			F	Mean	630	606	
				Std. Err.	5.0	3.1	
				Samp Size	2	117	

* 32-54 are computerized printing of the Gilbert-Rich subscripted 3_2 - 5_4.
1/ Lengths are reported as mid-eye to fork-of-tail.
2/ From 15 cm (6 in) mesh gillnets only.

Only coho salmon escaping to spawn in the Kogrukluk River were sampled for age, sex, and length in 1984 (Table 13). Similar to commercial harvest samples of the species, the escapement samples were uniformly one-ocean, and most (95%) were age 4_3 with the bulk of the remainder (4%) as age 3_2 (Appendix Table 31). The seasonal sex composition was slightly skewed toward males (61%), while their temporal predominance declined from 69% early in the run to 50% in the last sampling period.

Chum Salmon:

Commercial chum salmon catches were sampled in Districts 1, 4, and 5, as were escapements to the Aniak, Kogrukluk, Kanektok, and Goodnews Rivers in 1984. Age 4_1 chum salmon completely predominated all commercial harvests sampled in the Kuskokwim area (Table 14), ranging from 69% of the total in District 5 to 89% in District 1 (Appendix Tables 32-35). Sex compositions of catches were approximately equal ranging from 57% male in District 1 to 43% male in District 4. Temporal shifts in age composition were uncommon although the largest 5_1 component in District 1 (31%) was observed during the first sampling period from 18 to 21 June. The sex composition did shift from slight male predominance (57%) before 28 June to largely female predominance (67%) after that date.

Subsistence harvests of Kuskokwim area chum salmon were not sampled in 1984, so estimated harvests were again apportioned by sex and age based upon nearby commercial harvest samples (Appendix Tables 36-38). Subsistence harvests were substantial, representing 24% of the Kuskokwim area total and 27% of the Kuskokwim River total harvest of chum salmon.

Mean lengths of commercially harvested male chum salmon varied between 516 mm for age 3_1 in District 4 and 627 mm for age 5_1 fish from District 1. Average female samples varied between 533 mm for age 3_1 fish in District 5 and 615 mm age 6_1 fish in District 4 (Table 15).

Similar to commercial harvest samples, escapements from all rivers sampled indicated a complete predominance of age 4_1 fish in 1984 with nearly all the remainder existing as age 5_1 fish (Table 16, Appendix Tables 39-42). Contrasting sharply with commercial harvest sampling results, however, escapements to all but the Goodnews River showed a predominance of males, indicating female-selective commercial fisheries. No temporal shifts in either age or sex compositions were apparent in the Kogrukluk weir samples in 1984.

Mean lengths of escaping Kuskokwim area chum salmon ranged from 515 mm for age 3_1 to 643 mm for age 6_1 Kanektok River males, while average sizes of females ranged from 550 mm for age 4_1 Kogrukluk River fish to 625 mm for age 6_1 Kanektok River fish (Table 17). Escapement mean lengths were not systematically different from similarly aged nearby commercial harvest samples.

Table 13. Percent of Kuskokwim area coho salmon escapement samples by age, sex, and spawning area, 1984.

River	Sample Size	Sex	AGE GROUP * 32	43	54	Total
Kogrukluk 1/	884	M	2.1	58.0	0.7	60.8
		F	1.4	37.2	0.6	39.2
		Total	3.5	95.2	1.3	100.0

* 32-54 are computerized printing of the Gilbert-Rich subscripted 3_2 - 5_4.

1/ Weir samples.

Table 14. Total harvest of Kuskokwim area chum salmon by age, sex, and fishery, 1984.

District	Fishery	n	Sex	AGE GROUP * 31	41	51	52	61	Total
1	Commercial	1,825	M	1,278	148,123	18,984	70	2,860	171,315
			F	1,782	202,998	19,242	0	694	224,716
			Total	3,060	351,121	38,226	70	3,554	396,031
2	Commercial	1/	M	89	10,358	1,326	5	199	11,977
			F	124	14,190	1,346	0	50	15,710
			Total	213	24,548	2,672	5	249	27,687
	Subsistence	2/	M	478	55,853	7,151	30	1,075	64,587
			F	672	76,516	7,256	0	269	84,713
			Total	1,150	132,369	14,407	30	1,344	149,300
4	Commercial	464	M	109	17,061	6,738	0	0	23,908
			F	0	20,104	6,086	0	326	26,516
			Total	109	37,165	12,824	0	326	50,424
	Subsistence	3/	M	1	214	85	0	0	300
			F	0	253	77	0	4	334
			Total	1	467	162	0	4	634
5	Commercial	457	M	0	4,394	2,196	0	282	6,872
			F	63	5,522	1,789	0	94	7,468
			Total	63	9,916	3,985	0	376	14,340
	Subsistence	4/	M	0	58	29	0	4	91
			F	1	72	24	0	1	98
			Total	1	130	53	0	5	189
TOTAL HARVEST			M	1,955	236,061	36,509	105	4,420	279,050
			F	2,642	319,655	35,820	0	1,438	359,555
			Total	4,597	555,716	72,329	105	5,858	638,605

* 31-61 are computerized printing of the Gilbert-Rich subscripted 3_1 - 6_1.
1/ Allocations based on District 1 commercial catch samples.
2/ Entire Kuskokwim River subsistence harvest.
3/ Allocations based on District 4 commercial catch samples.
4/ Allocations based on District 5 commercial catch samples.

Table 15. Mean length (mm) of Kuskokwim area chum salmon commercial catch samples by age, sex, and fishery, 1984. 1/

District	Fishery	Sex		AGE GROUP * 31	41	51	52	61
1	Commercial 2/	M	Mean	549	587	627	520	616
			Std. Err.	18.6	2.2	5.4	0.0	17.0
			Samp Size	5	613	136	1	18
		F	Mean	546	562	582		568
			Std. Err.	4.9	1.5	5.6		15.0
			Samp Size	12	934	102		4
4	Commercial 3/	M	Mean	516	596	625		
			Std. Err.	0.0	2.3	4.0		
			Samp Size	1	157	62		
		F	Mean		576	600		615
			Std. Err.		2.0	4.6		7.6
			Samp Size		185	56		3
5	Commercial 3/	M	Mean		585	600		610
			Std. Err.		2.5	3.8		5.1
			Samp Size		140	70		9
		F	Mean	533	565	583		600
			Std. Err.	27.0	2.0	3.5		29.3
			Samp Size	2	176	57		3

* 31-61 are computerized printing of the Gilbert-Rich subscripted 3_1 - 6_1.
1/ Lengths are reported as mid-eye to fork-of-tail.
2/ From 22 and 14 cm (8.5 and 5.5 in) mesh gillnets.
3/ From 15 cm (6 in) mesh gillnets only.

Table 16. Percent of Kuskokwim area chum salmon escapement samples by age, sex, and spawning area, 1984.

River	Sample Size	Sex	AGE GROUP * 31	41	51	52	61	Total
Aniak 1/	103	M	0.0	50.5	14.6	0.0	1.9	67.0
		F	0.0	21.3	10.7	0.0	1.0	33.0
		Total	0.0	71.8	25.3	0.0	2.9	100.0
Kogrukluk 2/	1,248	M	0.0	50.8	13.7	0.0	2.0	66.5
		F	0.0	23.8	8.4	0.0	1.3	33.5
		Total	0.0	74.6	22.1	0.0	3.3	100.0
Kanektok 3/	772	M	0.1	38.1	17.1	0.1	1.2	56.6
		F	0.1	32.0	11.1	0.0	0.3	43.5
		Total	0.2	70.1	28.2	0.1	1.5	100.1
Goodnews 4/	90	M	0.0	32.3	4.4	0.0	0.0	36.7
		F	0.0	56.6	6.7	0.0	0.0	63.3
		Total	0.0	88.9	11.1	0.0	0.0	100.0

* 31-61 are computerized printing of the Gilbert-Rich subscripted 3_1 - 6_1.
1/ From catches in 11, 14, 18, and 22 cm mesh gill nets.
2/ Weir samples.
3/ Combined beach seine (n=514) and carcass (n=258) samples.
4/ Carcass samples.

Table 17. Mean length (mm) of Kuskokwim area chum salmon escapement samples by age and sex, 1984.

River		Sex		AGE GROUP 31	41	51	52	61
Aniak	1/	M	Mean		599	623		641
			Std. Err.		4.3	10.2		14.5
			Samp Size		52	15		2
		F	Mean		552	552		566
			Std. Err.		7.2	7.2		0.0
			Samp Size		22	11		1
Kogrukluk	2/	M	Mean		575	606		616
			Std. Err.		1.3	3.6		7.4
			Samp Size		667	152		21
		F	Mean		550	574		587
			Std. Err.		2	3.8		8.3
			Samp Size		303	91		14
Kanektok	3/	M	Mean	515	600	623	600	643
			Std. Err.	0.0	1.7	3.2	0.0	9.2
			Samp Size	1	294	131	1	9
		F	Mean	550	564	588		625
			Std. Err.	0.0	1.7	3.3		45.0
			Samp Size	1	247	86		2
Goodnews	4/	M	Mean		597	610		
			Std. Err.		5.1	16.4		
			Samp Size		29	4		
		F	Mean		553	566		
			Std. Err.		4.0	13.2		
			Samp Size		51	6		

1/ 14 cm mesh gill net samples.
2/ Weir samples.
3/ Combined beach seine (n=514) and carcass (n=258) samples.
4/ Spawning ground carcass samples.

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APPENDICES

Appendix Table 1. Lower Kuskokwim District (W-1) commercial catch of salmon by species and date, 1984.

			CATCH				
Date	Hrs.	Fishermen1/	Chinook	Sockeye	Coho	Pink	Chum
6/18	6	484	10,845	409	0	0	5,803
6/21	6	443	6,336	2,618	0	4	22,094
6/25	6	466	3,018	10,473	0	12	19,773
6/28	6	470	2,625	10,942	0	55	67,120
7/02	6	483	1,988	8,145	0	249	69,897
7/05	6	426	1,218	6,798	1	188	54,981
7/09	6	496	1,211	2,821	52	264	36,440
7/12	6	436	858	2,188	196	363	24,269
7/16	6	373	744	1,121	619	599	18,613
7/30	6	459	351	281	56,609	333	2,329
8/02	6	401	291	157	49,240	201	1,184
8/06	9	542	106	113	84,406	263	639
8/09	9	523	106	111	80,990	177	373
8/13	9	504	81	67	80,268	60	235
8/16	9	502	50	29	78,342	62	131
8/20	9	491	33	14	63,829	31	59
8/23	9	481	21	11	49,372	26	63
8/27	9	350	53	2	16,472	33	18
8/30	9	210	9	1	11,222	11	5
9/03	6	60	2	0	1,603	0	5
9/06	6	39	0	0	1,877	0	0
TOTAL	150	654	29,946	46,571	605,098	2,931	396,031

1/ Number of fishermen making at least one delivery

Appendix Table 2. Middle Kuskokwim District (W-2) commercial catch of salmon by species and date, 1984.

			CATCH				
Date	Hrs.	Fishermen1/	Chinook	Sockeye	Coho	Pink	Chum
6/21	6	15	561	84	0	0	967
6/25	6	25	493	543	0	0	5,705
6/28	6	33	525	395	0	0	13,376
7/02	6	25	204	982	0	11	7,420
8/06	6	16	9	0	4,339	0	110
8/09	6	11	1	0	4,340	0	69
8/13	6	12	1	0	2,792	0	24
8/16	6	17	1	0	3,652	0	16
8/20	6	13	1	0	2,179	0	0
8/23	6	8	0	0	1,047	0	0
8/27	6	0	0	0	0	0	0
8/30	6	0	0	0	0	0	0
TOTAL	72	49	1,796	2,004	18,349	11	27,687

1/ Number of fishermen making at least one delivery

Appendix Table 3. Quinhagak District (W-4) commercial catch of salmon by species and date, 1984.

			CATCH				
Date 1/	Hrs.	Fishermen2/	Chinook	Sockeye	Coho	Pink	Chum
6/18	12	140	11,997	453	0	7	1,809
6/22	12	164	5,458	1,336	0	13	4,471
6/25	12	99	4,122	1,640	0	18	5,417
6/28	12	101	3,283	1,967	0	53	4,702
7/02	12	70	1,902	1,577	1	50	6,034
7/05	12	62	850	1,157	0	139	2,768
7/09	12	84	1,259	2,497	4	297	5,610
7/11	12	98	1,176	2,011	9	431	4,567
7/13	12	105	1,011	1,842	7	994	4,270
7/16	12	46	441	564	39	563	1,784
7/18	12	73	445	657	234	1,217	2,410
7/20	12	75	412	477	787	2,021	2,256
7/23	12	95	324	361	1,386	2,902	1,316
7/25	12	98	379	317	3,482	2,871	1,397
7/27	12	118	194	202	5,512	2,412	677
7/30	12	35	73	19	3,079	598	173
8/01	12	81	67	53	5,680	1,144	272
8/03	12	66	40	30	5,390	130	151
8/06	12	61	38	16	8,436	194	95
8/08	12	127	71	30	19,215	142	132
8/10	12	75	28	15	9,428	30	16
8/13	12	78	36	28	10,961	0	53
8/15	12	165	28	12	14,216	13	28
8/17	12	63	2	1	9,785	0	2
8/20	12	67	10	3	8,728	0	11
8/22	12	44	6	1	5,165	0	1
8/24	12	65	3	5	6,926	10	2
8/27	12	68	3	2	3,736	0	0
8/29	12	57	1	1	3,623	0	0
8/31	12	48	48	1	2,996	0	0
9/03	12	50	2	1	2,717	0	0
9/05	12	46	1	0	3 799	0	0
9/07	12	0	0	0	0	0	0
TOTAL	396	260	33,652	17,258	135,342	16,249	50,424

1/ Starting date of each commercial opening
2/ Number of fishermen making at least one delivery

Apppendix Table 4. Goodnews District (W-5) commercial catch of salmon by species and date, 1984.

			CATCH				
Date 1/	Hrs.	Fishermen2/	Chinook	Sockeye	Coho	Pink	Chum
6/18	12	29	1,706	348	0	0	501
6/21	12	35	1,298	967	0	0	591
6/25	12	38	1,896	2,087	0	5	2,351
6/28	12	37	807	2,097	0	12	1,981
7/02	12	41	578	2,108	0	75	1,889
7/05	12	36	351	2,056	0	135	1,720
7/09	12	41	347	2,167	0	479	1,371
7/12	12	40	327	1,444	0	465	1,057
7/16	12	40	294	902	18	627	1,215
7/20	12	47	192	395	111	590	657
7/23	12	36	97	318	195	365	253
7/25	12	30	82	135	383	230	205
7/27	12	38	104	166	1,059	391	166
7/30	12	35	73	84	1,306	243	120
8/01	12	32	70	45	2,811	370	61
8/03	12	35	76	36	3,943	261	61
8/06	12	39	39	34	4,275	138	41
8/08	12	43	60	37	2,712	103	26
8/10	12	40	36	18	4,198	58	17
8/13	12	37	36	9	4,852	28	18
8/15	12	40	26	5	5,999	25	10
8/17	12	37	22	4	6,880	23	6
8/20	12	40	12	3	9,590	19	3
8/22	12	34	9	7	6,731	17	6
8/24	12	41	9	1	4,356	7	1
8/27	12	37	13	0	2,115	28	4
8/29	12	44	4	1	3,402	3	4
8/31	12	45	1	0	2,606	5	0
9/03	12	38	2	0	1,432	7	2
9/05	12	31	5	0	2,202	2	3
9/07	12	0	0	0	0	0	0
TOTAL	372	77	8,612	15,474	71,176	4,711	14,340

1/ Starting date of each commercial opening
2/ Number of fishermen making at least one delivery

Appendix Table 5. Lower Kuskokwim District (W-1) commercial catch of chinook salmon, age and length (mm) by sex, 1984.

	AGE GROUP										
	32	42	51	52	53	62	63	72	73	83	TOTAL
MALES											
NUMBER	91	3,049	46	9,419	91	5,780	228	1,092	228	46	20,070
PERCENT	0.30	10.20	0.20	31.30	0.30	19.30	0.80	3.60	0.80	0.20	67.00
AV LENGTH	481.50	555.64	767.00	712.50	495.50	854.36	674.60	863.75	842.20	870.00	737.25
STD ERROR	3.50	5.69	0.00	4.51	43.50	8.08	22.91	14.43	63.58	0.00	7.29
SAMP SIZE	2	67	1	207	2	127	5	24	5	1	441
FEMALES											
NUMBER	0	0	0	1,138	0	6,554	91	1,638	364	91	9,876
PERCENT	0.00	0.00	0.00	3.80	0.00	21.90	0.30	5.50	1.20	0.30	33.00
AV LENGTH	0.00	0.00	0.00	792.28	0.00	885.28	880.00	897.92	848.12	867.50	875.08
STD ERROR	0.00	0.00	0.00	15.52	0.00	4.27	10.00	8.88	19.34	22.50	7.11
SAMP SIZE	0	0	0	25	0	144	2	36	8	2	217
SEXES COMBINED											
NUMBER	91	3,049	46	10,557	91	12,334	319	2,730	592	137	29,946
PERCENT	0.30	10.20	0.20	35.10	0.30	41.20	1.10	9.10	2.00	0.50	100.00
AV LENGTH	481.50	555.64	767.00	721.10	495.50	870.79	733.19	884.25	845.84	868.34	782.71
STD ERROR	3.50	5.69	0.00	5.70	43.50	6.05	19.22	11.10	36.36	15.00	7.23
SAMP SIZE	2	67	1	232	2	271	7	60	13	3	658

Appendix Table 6. Middle Kuskokwim District (W-2) commercial catch of chinook salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP										
	32	42	51	52	53	62	63	72	73	83	TOTAL
MALES											
NUMBER	5	183	4	562	5	347	14	65	14	4	1,203
PERCENT	0.30	10.20	0.20	31.30	0.30	19.30	0.80	3.60	0.80	0.20	67.00
AV LENGTH	481.50	555.64	767.00	712.50	495.50	854.36	674.60	863.75	842.20	870.00	737.25
FEMALES											
NUMBER	0	0	0	68	0	394	5	99	22	5	593
PERCENT	0.00	0.00	0.00	3.80	0.00	21.90	0.30	5.50	1.20	0.30	33.00
AV LENGTH	0.00	0.00	0.00	792.28	0.00	885.28	880.00	897.92	848.12	867.50	875.08
SEXES COMBINED											
NUMBER	5	183	4	630	5	741	19	164	36	9	1,796
PERCENT	0.30	10.20	0.20	35.10	0.30	41.20	1.10	9.10	2.00	0.50	100.00
AV LENGTH	481.50	555.64	767.00	721.10	495.50	870.79	733.19	884.25	845.84	868.34	782.71

1/ Allocations by sex and age class based upon 1984 District 1 commercial catch samples.

Appendix Table 7. Quinhagak District (W-4) commercial catch of chinook salmon, age and length (mm) by sex, 1984.

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	4,041	17,720	4,964	1,328	28,053
PERCENT	12.00	52.70	14.80	3.90	83.40
AV LENGTH	523.51	668.07	835.79	926.52	689.16
STD ERROR	7.04	4.09	8.50	13.09	5.72
SAMP SIZE	70	307	86	23	486
FEMALES					
NUMBER	0	519	3,406	1,674	5,599
PERCENT	0.00	1.50	10.10	5.00	16.60
AV LENGTH	0.00	809.00	862.02	939.38	880.23
STD ERROR	0.00	22.74	6.74	9.06	8.92
SAMP SIZE	0	9	59	29	97
SEXES COMBINED					
NUMBER	4,041	18,239	8,370	3,002	33,652
PERCENT	12.00	54.20	24.90	8.90	100.00
AV LENGTH	523.51	672.08	846.46	933.69	720.95
STD ERROR	7.04	4.62	7.78	10.84	6.25
SAMP SIZE	70	316	145	52	583

Appendix Table 8. Goodnews District (W-5) commercial catch of chinook salmon, age and length (mm) by sex, 1984.

	AGE GROUP						
	32	42	51	52	62	72	TOTAL
MALES							
NUMBER	17	655	17	2,773	1,929	465	5,856
PERCENT	0.20	7.60	0.20	32.20	22.40	5.40	68.00
AV LENGTH	314.00	510.18	870.00	693.53	840.91	933.70	740.05
STD ERROR	0.00	10.18	0.00	5.88	6.97	12.49	7.21
SAMP SIZE	1	38	1	161	112	27	340
FEMALES							
NUMBER	0	0	0	241	1,895	620	2,756
PERCENT	0.00	0.00	0.00	2.80	22.00	7.20	32.00
AV LENGTH	0.00	0.00	0.00	812.36	885.05	928.14	888.39
STD ERROR	0.00	0.00	0.00	11.21	5.89	8.88	7.03
SAMP SIZE	0	0	0	14	110	36	160
SEXES COMBINED							
NUMBER	17	655	17	3,014	3,824	1,085	8,612
PERCENT	0.20	7.60	0.20	35.00	44.40	12.60	100.00
AV LENGTH	314.00	510.18	870.00	703.03	862.78	930.52	787.52
STD ERROR	0.00	10.18	0.00	6.31	6.43	10.43	7.15
SAMP SIZE	1	38	1	175	222	63	500

Appendix Table 9. Kuskokwim River subsistence catch of chinook salmon, age and length (mm) by sex, 1984. 1/ 2/

	AGE GROUP										
	32	42	51	52	53	62	63	72	73	83	TOTAL
MALES											
NUMBER	174	5,825	87	17,995	174	11,041	435	2,087	435	87	38,340
PERCENT	0.30	10.20	0.20	31.30	0.30	19.30	0.80	3.60	0.80	0.20	67.00
AV LENGTH	481.50	555.64	767.00	712.50	495.50	854.36	674.60	863.75	842.20	870.00	737.24
FEMALES											
NUMBER	0	0	0	2,173	0	12,519	174	3,130	696	174	18,866
PERCENT	0.00	0.00	0.00	3.80	0.00	21.90	0.30	5.50	1.20	0.30	33.00
AV LENGTH	0.00	0.00	0.00	792.28	0.00	885.28	880.00	897.92	848.12	867.50	875.08
SEXES COMBINED											
NUMBER	174	5,825	87	20,168	174	23,560	609	5,217	1,131	261	57,206
PERCENT	0.30	10.20	0.20	35.10	0.30	41.20	1.10	9.10	2.00	0.50	100.00
AV LENGTH	481.50	555.64	767.00	721.10	495.50	870.79	733.29	884.25	845.84	868.33	782.70

1/ Allocations by sex and age class based on 1984 District 1 commercial catch samples.
2/ Includes estimated subsistence catches from McGrath, Nikolai, Takotna, and Telida.

Appendix Table 10. Quinhagak area subsistence catch of chinook salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	379	1,664	467	123	2,663
PERCENT	12.00	52.70	14.80	3.90	83.40
AV LENGTH	523.51	668.07	835.79	926.52	689.16
FEMALES					
NUMBER	0	48	318	158	524
PERCENT	0.00	1.50	10.10	5.00	16.60
AV LENGTH	0.00	809.00	862.02	939.38	880.23
SEXES COMBINED					
NUMBER	379	1,712	785	281	3,157
PERCENT	12.00	54.20	24.90	8.90	100.00
AV LENGTH	523.51	672.08	846.46	933.69	720.95

1/ Allocations by sex and age class based upon 1984 District 4 commercial catch samples.

Appendix Table 11. Goodnews area subsistence catch of chinook salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP						
	32	42	51	52	62	72	TOTAL
MALES							
NUMBER	1	48	1	203	141	34	428
PERCENT	0.20	7.60	0.20	32.20	22.40	5.40	68.00
AV LENGTH	314.00	510.18	870.00	693.53	840.91	933.70	740.05
FEMALES							
NUMBER	0	0	0	18	138	45	201
PERCENT	0.00	0.00	0.00	2.80	22.00	7.20	32.00
AV LENGTH	0.00	0.00	0.00	812.36	885.05	928.14	888.39
SEXES COMBINED							
NUMBER	1	48	1	221	279	79	629
PERCENT	0.20	7.60	0.20	35.00	44.40	12.60	100.00
AV LENGTH	314.00	510.18	870.00	703.03	862.78	930.52	787.52

1/ Allocations by sex and age class based upon 1984 District 5 commercial catch samples.

Appendix Table 12. Kogrukluk River escapement of chinook salmon, age and length (mm) by sex, 1984.

PERIOD 1 (6/19/84-7/6/84)

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	251	837	165	27	1,280
PERCENT	16.20	54.10	10.60	1.80	82.70
AV LENGTH	538.00	657.66	825.35	975.00	662.63
STD ERROR	4.72	3.21	13.19	22.96	5.21
SAMP SIZE	73	244	48	8	373
FEMALES					
NUMBER	3	31	176	58	268
PERCENT	0.20	2.00	11.30	3.80	17.30
AV LENGTH	568.00	680.67	865.27	925.29	853.24
STD ERROR	0.00	23.55	7.62	11.42	10.32
SAMP SIZE	1	9	51	17	78
SEXES COMBINED					
NUMBER	254	868	341	85	1,548
PERCENT	16.40	56.10	21.90	5.60	100.00
AV LENGTH	538.41	658.48	845.91	941.20	695.59
STD ERROR	4.72	3.93	10.32	15.11	6.09
SAMP SIZE	74	253	99	25	451

-Continued-

Appendix Table 12. Kogrukluk River escapement of chinook salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 2 (7/7/84-7/16/84)

	AGE GROUP						
	41	42	51	52	62	72	TOTAL
MALES							
NUMBER	5	487	0	947	215	14	1,668
PERCENT	0.20	23.30	0.00	45.40	10.30	0.30	79.90
AV LENGTH	692.00	540.59	0.00	662.64	839.56	979.33	652.59
STD ERROR	0.00	4.48	0.00	3.96	15.73	17.75	5.75
SAMP SIZE	1	102	0	198	45	3	349
FEMALES							
NUMBER	0	0	5	33	339	43	420
PERCENT	0.00	0.00	0.20	1.60	16.20	2.10	20.10
AV LENGTH	0.00	0.00	826.00	757.71	867.38	919.67	863.53
STD ERROR	0.00	0.00	0.00	13.61	6.66	15.80	8.17
SAMP SIZE	0	0	1	7	71	9	88
SEXES COMBINED							
NUMBER	5	487	5	980	554	57	2,088
PERCENT	0.20	23.30	0.20	47.00	26.50	2.80	100.00
AV LENGTH	692.00	540.59	826.00	665.89	856.59	934.59	695.07
STD ERROR	0.00	4.48	0.00	4.29	10.18	16.29	6.24
SAMP SIZE	1	102	1	205	116	12	437

-Continued-

Appendix Table 12. Kogrukluk River escapement of chinook salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 3 (7/17/84-8/14/840

	AGE GROUP						
	32	42	52	62	72	82	TOTAL
MALES							
NUMBER	3	302	463	120	13	0	901
PERCENT	0.20	23.40	35.90	9.30	1.00	0.00	69.80
AV LENGTH	369.00	534.14	661.12	821.67	995.20	0.00	644.07
STD ERROR	0.00	4.18	4.28	14.97	25.38	0.00	5.99
SAMP SIZE	1	113	173	45	5	0	337
FEMALES							
NUMBER	0	0	35	324	29	3	391
PERCENT	0.00	0.00	2.70	25.00	2.30	0.20	30.20
AV LENGTH	0.00	0.00	792.15	864.23	929.27	873.00	862.77
STD ERROR	0.00	0.00	14.27	5.08	16.51	0.00	6.77
SAMP SIZE	0	0	13	121	11	1	146
SEXES COMBINED							
NUMBER	3	302	498	444	42	3	1,292
PERCENT	0.20	23.40	38.60	34.30	3.30	0.20	100.00
AV LENGTH	369.00	534.14	670.28	852.69	949.87	873.00	710.18
STD ERROR	0.00	4.18	4.98	7.76	19.28	0.00	6.23
SAMP SIZE	1	113	186	166	16	1	483

-Continued-

Appendix Table 12. Kogrukluk River escapement of chinook salmon, age and length (mm) by sex, 1984 (continued).

PERIODS COMBINED

	AGE GROUP								
	32	41	42	51	52	62	72	82	TOTAL
MALES									
NUMBER	3	5	1,040	0	2,247	500	54	0	3,849
PERCENT	0.06	0.10	21.10	0.00	45.60	10.14	1.10	0.00	78.10
AV LENGTH	369.00	692.00	538.09	0.00	660.47	830.58	980.99	0.00	653.81
STD ERROR	0.00	0.00	4.42	0.00	3.75	14.60	22.74	0.00	5.63
SAMP SIZE	1	1	288	0	615	138	16	0	1,059
FEMALES									
NUMBER	0	0	3	5	99	839	130	3	1,079
PERCENT	0.00	0.00	0.06	0.10	2.01	17.03	2.64	0.06	21.90
AV LENGTH	0.00	0.00	568.00	826.00	745.76	865.72	924.32	873.00	860.78
STD ERROR	0.00	0.00	0.00	0.00	16.99	6.08	14.00	0.00	7.97
SAMP SIZE	0	0	1	1	29	243	37	1	312
SEXES COMBINED									
NUMBER	3	5	1,043	5	2,346	1,339	184	3	4,928
PERCENT	0.06	0.10	21.16	0.10	47.61	27.17	3.74	0.06	100.00
AV LENGTH	369.00	692.00	538.18	826.00	664.07	852.60	940.95	873.00	699.13
STD ERROR	0.00	0.00	4.41	0.00	4.35	9.16	16.64	0.00	6.16
SAMP SIZE	1	1	289	1	644	381	53	1	1,371

Appendix Table 13. Kanektok River escapement of chinook salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP										
	32	41	42	51	52	61	62	63	72	73	TOTAL
MALES											
NUMBER	561	70	1,825	0	13,053	0	7,649	70	772	140	24,140
PERCENT	1.50	0.20	4.80	0.00	34.00	0.00	20.00	0.20	2.00	0.40	63.10
AV LENGTH	361.12	660.00	508.35	0.00	703.97	0.00	882.68	875.00	984.09	1047.50	749.16
STD ERROR	16.24	0.00	9.13	0.00	4.86	0.00	7.21	0.00	16.82	7.50	6.56
SAMP SIZE	8	1	26	0	186	0	109	1	11	2	344
FEMALES											
NUMBER	0	0	0	140	1,474	70	10,877	70	1,474	0	14,105
PERCENT	0.00	0.00	0.00	0.40	3.90	0.20	28.30	0.20	3.90	0.00	36.90
AV LENGTH	0.00	0.00	0.00	892.50	801.90	955.00	865.01	910.00	909.71	0.00	864.03
STD ERROR	0.00	0.00	0.00	22.50	8.28	0.00	4.35	0.00	11.80	0.00	5.67
SAMP SIZE	0	0	0	2	21	1	155	1	21	0	201
SEXES COMBINED											
NUMBER	561	70	1,825	140	14,527	70	18,526	140	2,246	140	38,245
PERCENT	1.50	0.20	4.80	0.40	37.90	0.20	48.30	0.40	5.90	0.40	100.00
AV LENGTH	361.12	660.00	508.35	892.50	713.90	955.00	872.31	892.50	935.28	1047.50	791.52
STD ERROR	16.24	0.00	9.13	22.50	5.21	0.00	5.53	0.00	13.53	7.50	6.23
SAMP SIZE	8	1	26	2	207	1	264	2	32	2	545

1/ Apportioned sonar estimates based upon combined beach seine and spawning ground carcass samples.

Appendix Table 14. Goodnews River escapement of chinook salmon, age and length (mm) by sex, 1984.

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	394	1,969	1,812	315	4,490
PERCENT	4.50	22.60	20.70	3.60	51.40
AV LENGTH	556.00	729.08	929.17	1002.50	813.82
STD ERROR	40.29	17.66	13.61	40.75	19.63
SAMP SIZE	5	25	23	4	57
FEMALES					
NUMBER	0	394	3,465	394	4,253
PERCENT	0.00	4.50	39.60	4.50	48.60
AV LENGTH	0.00	793.00	873.57	936.40	871.93
STD ERROR	0.00	18.55	8.24	26.10	10.85
SAMP SIZE	0	5	44	5	54
SEXES COMBINED					
NUMBER	394	2,363	5,277	709	8,743
PERCENT	4.50	27.10	60.30	8.10	100.00
AV LENGTH	556.00	739.74	892.66	965.77	842.09
STD ERROR	40.29	17.80	10.09	32.61	15.36
SAMP SIZE	5	30	67	9	111

Appendix Table 15. Lower Kuskokwim District (W-1) commercial catch of sockeye salmon, age and length (mm) by sex, 1984.

	AGE GROUP								
	31	41	42	51	52	53	62	63	TOTAL
MALES									
NUMBER	0	1,731	1,416	0	12,587	1,573	157	4,877	22,341
PERCENT	0.00	3.70	3.00	0.00	27.10	3.40	0.30	10.50	48.00
AV LENGTH	0.00	576.91	539.11	0.00	587.60	540.80	619.00	592.26	581.64
STD ERROR	0.00	10.72	10.89	0.00	2.82	8.48	0.00	3.99	4.58
SAMP SIZE	0	11	9	0	80	10	1	31	142
FEMALES									
NUMBER	157	1,888	2,989	157	13,690	1,573	157	3,619	24,230
PERCENT	0.30	4.10	6.40	0.30	29.40	3.40	0.30	7.80	52.00
AV LENGTH	529.00	557.00	532.21	695.00	556.79	543.70	605.00	563.09	554.89
STD ERROR	0.00	3.81	5.09	0.00	2.24	7.01	0.00	3.55	3.17
SAMP SIZE	1	12	19	1	87	10	1	23	154
SEXES COMBINED									
NUMBER	157	3,619	4,405	157	26,277	3,146	314	8,496	46,571
PERCENT	0.30	7.80	9.40	0.30	56.50	6.80	0.60	18.30	100.00
AV LENGTH	529.00	566.52	534.43	695.00	571.55	542.25	612.00	579.83	567.72
STD ERROR	0.00	7.12	6.95	0.00	2.52	7.75	0.00	3.80	3.85
SAMP SIZE	1	23	28	1	167	20	2	54	296

Appendix Table 16. Middle Kuskokwim District (W-2) commercial catch of sockeye salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP								
	31	41	42	51	52	53	62	63	TOTAL
MALES									
NUMBER	0	74	60	0	543	68	6	211	962
PERCENT	0.00	3.70	3.00	0.00	27.10	3.40	0.30	10.50	48.00
AV LENGTH	0.00	576.91	539.11	0.00	587.60	540.80	619.00	592.26	581.64
FEMALES									
NUMBER	6	82	129	6	589	68	6	156	1,042
PERCENT	0.30	4.10	6.40	0.30	29.40	3.40	0.30	7.80	52.00
AV LENGTH	529.00	557.00	532.21	695.00	556.79	543.70	605.00	563.09	554.89
SEXES COMBINED									
NUMBER	6	156	189	6	1,132	136	12	367	2,004
PERCENT	0.30	7.80	9.40	0.30	56.50	6.80	0.60	18.30	100.00
AV LENGTH	529.00	566.52	534.43	695.00	571.55	542.25	612.00	579.83	567.72

1/ Allocations by sex and age class based upon 1984 District 1 commercial catch samples.

Appendix Table 17. Quinhagak District (W-4) commercial catch of sockeye salmon, age and length (mm) by sex, 1984.

	AGE GROUP				
	42	52	53	63	TOTAL
MALES					
NUMBER	2,958	5,459	488	845	9,750
PERCENT	17.10	31.70	2.80	4.90	56.50
AV LENGTH	553.64	589.75	554.87	584.73	576.61
STD ERROR	3.47	1.75	10.84	5.11	3.02
SAMP SIZE	91	168	15	26	300
FEMALES					
NUMBER	1,723	4,680	520	585	7,508
PERCENT	10.00	27.10	3.00	3.40	43.50
AV LENGTH	523.79	554.01	514.62	558.67	544.71
STD ERROR	4.22	1.82	6.25	4.44	2.88
SAMP SIZE	53	144	16	18	231
SEXES COMBINED					
NUMBER	4,681	10,139	1,008	1,430	17,258
PERCENT	27.10	58.80	5.80	8.30	100.00
AV LENGTH	542.65	573.25	534.11	574.07	562.73
STD ERROR	3.75	1.78	8.47	4.84	2.96
SAMP SIZE	144	312	31	44	531

Appendix Table 18. Goodnews District (W-5) commercial catch of sockeye salmon, age and length (mm) by sex, 1984.

	AGE GROUP					
	41	42	52	53	63	TOTAL
MALES						
NUMBER	0	2,283	6,765	225	338	9,611
PERCENT	0.00	14.80	43.60	1.50	2.20	62.10
AV LENGTH	0.00	564.25	589.07	563.00	573.83	582.03
STD ERROR	0.00	4.29	1.79	4.45	8.79	2.69
SAMP SIZE	0	81	240	8	12	341
FEMALES						
NUMBER	28	930	4,764	28	113	5,863
PERCENT	0.20	6.00	30.80	0.20	0.70	37.90
AV LENGTH	589.00	529.03	559.18	530.00	559.75	554.41
STD ERROR	0.00	5.50	1.71	0.00	22.14	2.69
SAMP SIZE	1	33	169	1	4	208
SEXES COMBINED						
NUMBER	28	3,213	11,529	253	451	15,474
PERCENT	0.20	20.80	74.40	1.70	2.90	100.00
AV LENGTH	589.00	554.06	576.72	559.35	570.30	571.56
STD ERROR	0.00	4.64	1.75	3.95	12.13	2.69
SAMP SIZE	1	114	409	9	16	549

Appendix Table 19. Quinhagak area subsistence catch of sockeye salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP				
	42	52	53	63	TOTAL
MALES					
NUMBER	53	98	9	15	175
PERCENT	17.10	31.70	2.80	4.90	56.50
AV LENGTH	553.64	589.75	554.87	584.73	576.61
FEMALES					
NUMBER	31	84	9	10	134
PERCENT	10.00	27.10	3.00	3.40	43.50
AV LENGTH	523.79	554.01	514.62	558.67	544.71
SEXES COMBINED					
NUMBER	84	182	18	25	309
PERCENT	27.10	58.80	5.80	8.30	100.00
AV LENGTH	542.65	573.25	534.11	574.07	562.73

1/ Allocations by sex and age class based upon 1984 District 4 commercial catch samples.

Appendix Table 20. Goodnews area subsistence catch of sockeye salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP					
	41	42	52	53	63	TOTAL
MALES						
NUMBER	0	144	420	14	21	599
PERCENT	0.00	14.80	43.60	1.50	2.20	62.10
AV LENGTH	0.00	564.25	589.07	563.00	573.83	582.03
FEMALES						
NUMBER	2	57	297	2	7	365
PERCENT	0.20	6.00	30.80	0.20	0.70	37.90
AV LENGTH	589.00	529.03	559.18	530.00	559.75	554.41
SEXES COMBINED						
NUMBER	2	201	717	16	28	964
PERCENT	0.20	20.80	74.40	1.70	2.90	100.00
AV LENGTH	589.00	554.06	576.72	559.35	570.30	571.56

1/ Allocations by sex and age class based upon 1984 District 5 commercial catch samples.

Appendix Table 21. Kogrukluk River escapement of sockeye salmon, age and length (mm) by sex, 1984.

PERIOD 1 (6/21/84-7/15/84)

	AGE GROUP					
	41	42	52	62	63	TOTAL
MALES						
NUMBER	29	15	953	0	0	997
PERCENT	1.20	0.60	37.70	0.00	0.00	39.50
AV LENGTH	571.25	584.00	577.36	0.00	0.00	577.28
STD ERROR	6.34	5.00	1.93	0.00	0.00	2.11
SAMP SIZE	4	2	130	0	0	136
FEMALES						
NUMBER	15	51	1,377	66	15	1,524
PERCENT	0.60	2.00	54.70	2.60	0.60	60.50
AV LENGTH	543.00	515.86	545.18	567.78	588.50	545.57
STD ERROR	3.00	15.35	1.45	7.75	31.50	2.49
SAMP SIZE	2	7	188	9	2	208
SEXES COMBINED						
NUMBER	44	66	2,330	66	15	2,521
PERCENT	1.80	2.60	92.40	2.60	0.60	100.00
AV LENGTH	561.83	531.00	558.34	567.78	588.50	558.10
STD ERROR	5.23	13.05	1.65	7.75	31.50	2.34
SAMP SIZE	6	9	318	9	2	344

Appendix Table 21. Kogrukluk River escapement of sockeye salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 2 (7/16/84-8/15/84)

	AGE GROUP						
	41	42	51	52	62	63	TOTAL
MALES							
NUMBER	25	4	0	1,146	12	8	1,195
PERCENT	1.50	0.30	0.00	71.20	0.80	0.50	74.30
AV LENGTH	551.67	579.00	0.00	579.49	606.00	581.00	579.20
STD ERROR	11.00	0.00	0.00	1.36	8.08	7.00	1.67
SAMP SIZE	6	1	0	280	3	2	292
FEMALES							
NUMBER	0	8	4	377	25	0	414
PERCENT	0.00	0.50	0.30	23.40	1.50	0.00	25.70
AV LENGTH	0.00	499.50	564.00	541.65	575.00	0.00	543.02
STD ERROR	0.00	20.50	0.00	2.02	6.28	0.00	2.65
SAMP SIZE	0	2	1	92	6	0	101
SEXES COMBINED							
NUMBER	25	12	4	1,523	37	8	1,609
PERCENT	1.50	0.80	0.30	94.60	2.30	0.50	100.00
AV LENGTH	551.67	526.00	564.00	570.13	585.33	581.00	569.90
STD ERROR	11.00	20.50	0.00	1.52	6.88	7.00	1.92
SAMP SIZE	6	3	1	372	9	2	393

-Continued-

Appendix Table 21. Kogrukluk River escapement of sockeye salmon, age and length (mm) by sex, 1984 (continued).

PERIODS COMBINED

	AGE GROUP						
	41	42	51	52	62	63	TOTAL
MALES							
NUMBER	54	19	0	2,099	12	8	2,192
PERCENT	1.31	0.46	0.00	50.82	0.29	0.19	53.08
AV LENGTH	562.19	582.95	0.00	578.52	606.00	581.00	578.32
STD ERROR	9.14	3.33	0.00	1.54	8.08	7.00	1.80
SAMP SIZE	10	3	0	410	3	2	428
FEMALES							
NUMBER	15	59	4	1,754	91	15	1,938
PERCENT	0.36	1.43	0.10	42.47	2.20	0.36	46.92
AV LENGTH	543.00	513.64	564.00	544.42	569.76	588.50	545.04
STD ERROR	3.00	16.49	0.00	1.64	7.16	31.50	2.54
SAMP SIZE	2	9	1	280	15	2	309
SEXES COMBINED							
NUMBER	69	78	4	3,853	103	23	4,130
PERCENT	1.67	1.89	0.10	93.29	2.49	0.56	100.00
AV LENGTH	558.01	530.52	564.00	563.00	573.99	585.89	562.70
STD ERROR	8.12	13.20	0.00	1.58	7.32	19.25	2.11
SAMP SIZE	12	12	1	690	18	4	737

Appendix Table 22. Kanektok River escapement of sockeye salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP							
	31	41	42	52	53	62	63	TOTAL
MALES								
NUMBER	143	430	12,040	19,780	287	287	573	33,540
PERCENT	0.30	0.80	22.00	36.20	0.50	0.50	1.00	61.30
AV LENGTH	500.00	570.00	581.98	590.01	540.00	623.00	592.50	586.81
STD ERROR	0.00	8.66	2.90	1.96	20.00	17.00	16.40	2.91
SAMP SIZE	1	3	84	138	2	2	4	234
FEMALES								
NUMBER	0	430	4,443	15,624	287	0	430	21,214
PERCENT	0.00	0.80	8.10	28.50	0.50	0.00	0.80	38.70
AV LENGTH	0.00	541.33	534.94	545.67	550.00	0.00	553.67	543.56
STD ERROR	0.00	10.73	5.75	1.99	10.00	0.00	1.33	3.05
SAMP SIZE	0	3	31	109	2	0	3	148
SEXES COMBINED								
NUMBER	143	860	16,483	35,404	574	287	1,003	54,754
PERCENT	0.30	1.60	30.10	64.70	1.00	0.50	1.80	100.00
AV LENGTH	600.00	555.66	569.30	570.44	545.00	623.00	575.85	570.05
STD ERROR	0.00	9.69	3.67	1.97	15.00	17.00	9.94	2.96
SAMP SIZE	1	6	115	247	4	2	7	382

1/ Apportioned sonar estimates based upon combined beach seine and spawning ground carcass samples.

Appendix Table 23. Goodnews River escapement of sockeye salmon, age and length (mm) by sex, 1984.

	AGE GROUP			
	42	52	53	TOTAL
MALES				
NUMBER	15,731	17,161	1,430	34,322
PERCENT	23.40	25.60	2.10	51.10
AV LENGTH	581.73	586.17	615.00	585.34
STD ERROR	8.48	5.38	0.00	6.57
SAMP SIZE	11	12	1	24
FEMALES				
NUMBER	14,301	18,590	0	32,891
PERCENT	21.30	27.60	0.00	48.90
AV LENGTH	527.30	539.38	0.00	534.13
STD ERROR	4.09	5.46	0.00	4.86
SAMP SIZE	10	13	0	23
SEXES COMBINED				
NUMBER	30,032	35,751	1,430	67,213
PERCENT	44.70	53.20	2.10	100.00
AV LENGTH	555.81	561.84	615.00	560.28
STD ERROR	6.39	5.42	0.00	5.74
SAMP SIZE	21	25	1	47

Appendix Table 24. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1984.

PERIOD 1 (7/12/84-8/2/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	3,531	66,089	2,018	71,638
PERCENT	2.60	48.30	1.50	52.40
AV LENGTH	551.71	581.37	581.25	579.90
STD ERROR	15.68	2.99	27.68	4.31
SAMP SIZE	7	131	4	142
FEMALES				
NUMBER	2,018	60,539	2,522	65,079
PERCENT	1.50	44.30	1.80	47.60
AV LENGTH	528.00	579.07	578.20	577.45
STD ERROR	16.79	2.35	9.45	3.08
SAMP SIZE	4	120	5	129
SEXES COMBINED				
NUMBER	5,549	126,628	4,540	136,717
PERCENT	4.10	92.60	3.30	100.00
AV LENGTH	543.09	580.27	579.56	578.74
STD ERROR	16.08	2.68	17.55	3.72
SAMP SIZE	11	251	9	271

-Continued-

Appendix Table 24. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 2 (8/3/84-8/9/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	1,361	85,080	681	87,122
PERCENT	0.80	51.50	0.40	52.70
AV LENGTH	538.00	580.15	624.00	579.83
STD ERROR	12.00	3.21	0.00	3.35
SAMP SIZE	2	125	1	128
FEMALES				
NUMBER	3,403	73,510	1,361	78,274
PERCENT	2.10	44.40	0.80	47.30
AV LENGTH	580.60	577.25	579.00	577.43
STD ERROR	20.31	2.61	16.00	3.61
SAMP SIZE	5	108	2	115
SEXES COMBINED				
NUMBER	4,764	158,590	2,042	165,396
PERCENT	2.90	95.90	1.20	100.00
AV LENGTH	568.43	578.81	594.00	578.69
STD ERROR	17.93	2.93	16.00	3.47
SAMP SIZE	7	233	3	243

-Continued-

Appendix Table 24. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 3 (8/10/84-8/16/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	3,776	74,900	1,888	80,564
PERCENT	2.40	47.20	1.20	50.80
AV LENGTH	597.00	591.91	582.67	591.93
STD ERROR	7.39	3.25	37.33	4.24
SAMP SIZE	6	119	3	128
FEMALES				
NUMBER	5,035	70,493	2,518	78,046
PERCENT	3.20	44.40	1.60	49.20
AV LENGTH	560.75	577.04	585.75	576.27
STD ERROR	14.82	2.54	8.93	3.53
SAMP SIZE	8	112	4	124
SEXES COMBINED				
NUMBER	8,811	145,393	4,406	158,610
PERCENT	5.60	91.60	2.80	100.00
AV LENGTH	576.29	584.70	584.43	584.23
STD ERROR	11.63	2.90	21.10	3.89
SAMP SIZE	14	231	7	252

-Continued-

Appendix Table 24. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 4 (8/17/84-8/27/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	1,977	60,487	4,349	66,813
PERCENT	1.50	46.60	3.40	51.50
AV LENGTH	583.00	586.40	556.00	584.32
STD ERROR	17.29	2.82	12.09	3.86
SAMP SIZE	5	153	11	169
FEMALES				
NUMBER	3,953	56,535	2,372	62,860
PERCENT	3.00	43.70	1.80	48.50
AV LENGTH	558.50	577.38	585.50	576.50
STD ERROR	13.00	2.46	9.83	3.40
SAMP SIZE	10	143	6	159
SEXES COMBINED				
NUMBER	5,930	117,022	6,721	129,673
PERCENT	4.50	90.30	5.20	100.00
AV LENGTH	566.67	582.04	566.41	580.53
STD ERROR	14.43	2.65	11.29	3.63
SAMP SIZE	15	296	17	328

-Continued-

Appendix Table 24. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 5 (8/28/84-9/3/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	554	6,151	431	7,136
PERCENT	3.80	41.80	2.90	48.50
AV LENGTH	602.22	591.08	623.00	593.87
STD ERROR	9.48	3.36	9.63	4.22
SAMP SIZE	9	100	7	116
FEMALES				
NUMBER	677	6,089	800	7,566
PERCENT	4.60	41.50	5.40	51.50
AV LENGTH	561.91	576.79	581.23	575.93
STD ERROR	11.01	2.65	6.30	3.78
SAMP SIZE	11	99	13	123
SEXES COMBINED				
NUMBER	1,231	12,240	1,231	14,702
PERCENT	8.40	83.30	8.30	100.00
AV LENGTH	580.05	583.97	595.85	584.64
STD ERROR	10.32	3.01	7.47	3.99
SAMP SIZE	20	199	20	239

-Continued-

Appendix Table 24. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIODS COMBINED

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	11,199	292,707	9,367	313,273
PERCENT	1.85	48.37	1.55	51.77
AV LENGTH	573.34	584.96	574.84	584.24
STD ERROR	12.07	3.10	16.28	3.98
SAMP SIZE	29	628	26	683
FEMALES				
NUMBER	15,086	267,166	9,573	291,825
PERCENT	2.49	44.16	1.58	48.23
AV LENGTH	560.31	577.62	582.36	576.88
STD ERROR	14.17	2.51	8.53	3.47
SAMP SIZE	38	582	30	650
SEXES COMBINED				
NUMBER	26,285	559,873	18,940	605,098
PERCENT	4.34	92.53	3.13	100.00
AV LENGTH	565.86	581.46	578.64	580.69
STD ERROR	13.26	2.82	12.12	3.73
SAMP SIZE	67	1,210	56	1,333

Appendix Table 25. Middle Kuskokwim District (W-2) commercial catch of coho salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	339	8,876	284	9,499
PERCENT	1.85	48.37	1.55	51.77
AV LENGTH	573.34	584.96	574.84	584.24
FEMALES				
NUMBER	457	8,103	290	8,850
PERCENT	2.49	44.16	1.58	48.23
AV LENGTH	560.31	577.62	582.36	576.88
SEXES COMBINED				
NUMBER	796	16,979	574	18,349
PERCENT	4.34	92.53	3.13	100.00
AV LENGTH	565.86	581.46	578.64	580.69

1/ Allocations by sex and age class based upon 1984 District 1 commercial catch samples.

Appendix Table 26. Quinhagak District (W-4) commercial catch of coho salmon, age and length (mm) by sex, 1984.

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	0	76,347	315	76,662
PERCENT	0.00	56.40	0.20	56.60
AV LENGTH	0.00	599.25	600.00	599.25
STD ERROR	0.00	2.98	0.00	2.96
SAMP SIZE	0	242	1	243
FEMALES				
NUMBER	631	57,734	315	58,680
PERCENT	0.50	42.70	0.20	43.40
AV LENGTH	566.50	601.30	583.00	600.83
STD ERROR	16.50	2.02	0.00	2.16
SAMP SIZE	2	183	1	186
SEXES COMBINED				
NUMBER	631	134,081	630	135,342
PERCENT	0.50	99.10	0.40	100.00
AV LENGTH	566.50	600.13	591.50	599.94
STD ERROR	16.50	2.56	0.00	2.62
SAMP SIZE	2	425	2	429

Appenadix Table 27. Goodnews District (W-5) commercial catch of coho salmon, age and length (mm) by sex, 1984.

	AGE GROUP		
	32	43	TOTAL
MALES			
NUMBER	0	41,561	41,561
PERCENT	0.00	58.40	58.40
AV LENGTH	0.00	597.41	597.41
STD ERROR	0.00	3.68	3.68
SAMP SIZE	0	167	167
FEMALES			
NUMBER	498	29,117	29,615
PERCENT	0.70	40.90	41.60
AV LENGTH	630.00	605.62	606.03
STD ERROR	5.00	3.05	3.08
SAMP SIZE	2	117	119
SEXES COMBINED			
NUMBER	498	70,678	71,176
PERCENT	0.70	99.30	100.00
AV LENGTH	630.00	600.79	601.00
STD ERROR	5.00	3.42	3.43
SAMP SIZE	2	284	286

Appendix Table 28. Kuskokwim River subsistence catch of coho salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	249	6,516	209	6,974
PERCENT	1.85	48.37	1.55	51.77
AV LENGTH	573.34	584.96	574.84	584.24
FEMALES				
NUMBER	336	5,949	213	6,498
PERCENT	2.49	44.16	1.58	48.23
AV LENGTH	560.31	577.62	582.36	576.88
SEXES COMBINED				
NUMBER	585	12,465	422	13,472
PERCENT	4.34	92.53	3.13	100.00
AV LENGTH	565.86	581.46	578.64	580.69

1/ Allocations by sex and age class based upon 1984 District 1 commercial catch samples.

Appendix Table 29. Quinhagak area subsistence catch of coho salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	0	1,202	4	1,206
PERCENT	0.00	56.40	0.20	56.60
AV LENGTH	0.00	599.25	600.00	599.25
FEMALES				
NUMBER	11	910	4	925
PERCENT	0.50	42.70	0.20	43.40
AV LENGTH	566.50	601.30	583.00	600.83
SEXES COMBINED				
NUMBER	11	2,112	8	2,131
PERCENT	0.50	99.10	0.40	100.00
AV LENGTH	566.50	600.13	591.50	599.94

1/ Allocations by sex and age class based upon 1984 District 4 commercial catch samples.

Appendix Table 30. Goodnews area subsistence catch of coho salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP		
	32	43	TOTAL
MALES			
NUMBER	0	90	90
PERCENT	0.00	58.40	58.40
AV LENGTH	0.00	597.41	597.41
FEMALES			
NUMBER	1	63	64
PERCENT	0.70	40.90	41.60
AV LENGTH	630.00	605.62	606.03
SEXES COMBINED			
NUMBER	1	153	154
PERCENT	0.70	99.30	100.00
AV LENGTH	630.00	600.79	601.00

1/ Allocations by sex and age class based upon 1984 District 5 commercial catch samples.

Appendix Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1984.

PERIOD 1 (7/24/84-8/11/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	20	427	0	447
PERCENT	2.90	61.10	0.00	64.00
AV LENGTH	549.60	573.00	0.00	571.96
STD ERROR	19.07	2.82	0.00	3.55
SAMP SIZE	5	107	0	112
FEMALES				
NUMBER	4	243	4	251
PERCENT	0.60	34.80	0.60	36.00
AV LENGTH	537.00	557.82	568.00	557.65
STD ERROR	0.00	3.56	0.00	3.56
SAMP SIZE	1	61	1	63
SEXES COMBINED				
NUMBER	24	670	4	698
PERCENT	3.50	95.90	0.60	100.00
AV LENGTH	547.50	567.49	568.00	566.81
STD ERROR	19.07	3.09	0.00	3.55
SAMP SIZE	6	168	1	175

-Continued-

Appendix Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 2 (8/12/84-8/20/84)

	AGE GROUP		
	32	43	TOTAL
MALES			
NUMBER	85	2,458	2,543
PERCENT	2.30	66.70	69.00
AV LENGTH	576.50	570.30	570.51
STD ERROR	14.18	2.76	3.14
SAMP SIZE	4	116	120
FEMALES			
NUMBER	106	1,039	1,145
PERCENT	2.90	28.10	31.00
AV LENGTH	557.60	563.78	563.21
STD ERROR	14.63	3.54	4.57
SAMP SIZE	5	49	54
SEXES COMBINED			
NUMBER	191	3,497	3,688
PERCENT	5.20	94.80	100.00
AV LENGTH	566.00	568.36	568.24
STD ERROR	14.43	2.99	3.58
SAMP SIZE	9	165	174

-Continued-

Appendix Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 3 (8/21/84-9/29/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	287	6,786	57	7,130
PERCENT	2.80	65.10	0.60	68.50
AV LENGTH	598.40	583.55	613.00	584.39
STD ERROR	5.69	3.18	0.00	3.28
SAMP SIZE	5	118	1	124
FEMALES				
NUMBER	172	3,048	57	3,277
PERCENT	1.70	29.20	0.60	31.50
AV LENGTH	575.67	571.06	568.00	571.25
STD ERROR	12.17	3.10	0.00	3.59
SAMP SIZE	3	53	1	57
SEXES COMBINED				
NUMBER	459	9,834	114	10,407
PERCENT	4.50	94.30	1.20	100.00
AV LENGTH	589.88	579.68	590.50	580.25
STD ERROR	8.12	3.15	0.00	3.37
SAMP SIZE	8	171	2	181

-Continued-

Appendix Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 4 (8/30/84-9/07/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	35	3,565	105	3,705
PERCENT	0.50	55.20	1.60	57.30
AV LENGTH	568.00	582.16	588.67	582.21
STD ERROR	0.00	3.33	7.88	3.46
SAMP SIZE	1	102	3	106
FEMALES				
NUMBER	35	2,657	70	2,762
PERCENT	0.50	41.10	1.10	42.70
AV LENGTH	579.00	582.08	597.50	582.43
STD ERROR	0.00	2.70	27.50	3.33
SAMP SIZE	1	76	2	79
SEXES COMBINED				
NUMBER	70	6,222	175	6,467
PERCENT	1.00	96.30	2.70	100.00
AV LENGTH	573.50	582.13	592.20	582.30
STD ERROR	0.00	3.06	15.73	3.41
SAMP SIZE	2	178	5	185

-Continued-

Appendix Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 5 (9/8/84-9/15/84)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	203	4,053	51	4,307
PERCENT	2.40	47.30	0.60	50.30
AV LENGTH	568.50	592.59	622.00	591.80
STD ERROR	20.86	2.96	0.00	3.81
SAMP SIZE	4	80	1	85
FEMALES				
NUMBER	101	4,105	51	4,257
PERCENT	1.20	47.90	0.60	49.70
AV LENGTH	598.50	588.65	583.00	588.82
STD ERROR	12.50	2.35	0.00	2.59
SAMP SIZE	2	81	1	84
SEXES COMBINED				
NUMBER	304	8,158	102	8,564
PERCENT	3.60	95.20	1.20	100.00
AV LENGTH	578.50	590.61	602.50	590.32
STD ERROR	18.08	2.65	0.00	3.21
SAMP SIZE	6	161	2	169

-Continued-

Appendix Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1984 (continued).

PERIODS COMBINED

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	630	17,289	213	18,132
PERCENT	2.11	57.98	0.71	60.80
AV LENGTH	582.57	583.24	603.16	583.45
STD ERROR	13.89	3.01	4.73	3.40
SAMP SIZE	19	523	5	547
FEMALES				
NUMBER	418	11,092	182	11,692
PERCENT	1.40	37.19	0.61	39.20
AV LENGTH	576.51	579.24	583.55	579.21
STD ERROR	11.22	2.97	11.00	3.38
SAMP SIZE	12	320	5	337
SEXES COMBINED				
NUMBER	1,048	28,381	395	29,824
PERCENT	3.51	95.17	1.32	100.00
AV LENGTH	580.16	581.67	594.12	581.79
STD ERROR	12.86	2.99	7.86	3.39
SAMP SIZE	31	843	10	884

Appendix Table 32. Lower Kuskokwim District (W-1) commercial catch of chum salmon age and length (mm) by sex, 1984.

PERIOD 1 (6/18/84-6/21/84)

	AGE GROUP				
	41	51	52	61	TOTAL
MALES					
NUMBER	8,762	6,308	70	631	15,771
PERCENT	31.30	22.60	0.30	2.30	56.50
AV LENGTH	591.30	640.68	520.00	653.44	613.22
STD ERROR	2.59	3.86	0.00	14.19	3.56
SAMP SIZE	125	90	1	9	225
FEMALES					
NUMBER	9,533	2,453	0	140	12,126
PERCENT	34.20	8.80	0.00	0.50	43.50
AV LENGTH	565.56	598.31	0.00	570.00	572.24
STD ERROR	2.06	5.59	0.00	30.00	3.10
SAMP SIZE	136	35	0	2	173
SEXES COMBINED					
NUMBER	18,295	8,761	70	771	27,897
PERCENT	65.50	31.40	0.30	2.80	100.00
AV LENGTH	577.89	628.82	520.00	638.27	595.41
STD ERROR	2.31	4.34	0.00	17.07	3.36
SAMP SIZE	261	125	1	11	398

-Continued-

Appendix Table 32. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 2 (6/22/84-6/28/84)

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	419	77,979	6,708	1,258	86,364
PERCENT	0.30	49.10	4.20	0.80	54.40
AV LENGTH	560.00	590.08	633.31	614.33	593.64
STD ERROR	0.00	1.85	7.43	28.62	2.68
SAMP SIZE	1	186	16	3	206
FEMALES					
NUMBER	0	65,402	6,708	419	72,529
PERCENT	0.00	41.10	4.20	0.30	45.60
AV LENGTH	0.00	565.47	587.00	577.00	567.53
STD ERROR	0.00	1.90	5.36	0.00	2.22
SAMP SIZE	0	156	16	1	173
SEXES COMBINED					
NUMBER	419	143,381	13,416	1,677	158,893
PERCENT	0.30	90.20	8.40	1.10	100.00
AV LENGTH	560.00	578.85	610.16	605.00	581.72
STD ERROR	0.00	1.87	6.39	28.62	2.47
SAMP SIZE	1	342	32	4	379

-Continued-

Appendix Table 32. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 3 (6/29/85-7/5/85)

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	589	37,993	3,534	295	42,411
PERCENT	0.50	30.50	2.80	0.20	34.00
AV LENGTH	547.50	584.07	606.25	592.00	585.47
STD ERROR	1.50	2.32	10.25	0.00	2.97
SAMP SIZE	2	129	12	1	144
FEMALES					
NUMBER	295	76,282	5,890	0	82,467
PERCENT	0.20	61.10	4.70	0.00	66.00
AV LENGTH	549.00	561.98	577.95	0.00	563.07
STD ERROR	0.00	1.41	5.68	0.00	1.71
SAMP SIZE	1	259	20	0	280
SEXES COMBINED					
NUMBER	884	114,275	9,424	295	124,878
PERCENT	0.70	91.60	7.50	0.20	100.00
AV LENGTH	548.00	569.32	588.56	592.00	570.68
STD ERROR	1.50	1.71	7.39	0.00	2.14
SAMP SIZE	3	388	32	1	424

-Continued-

Appendix Table 32. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 4 (7/6/84-7/16/84)

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	270	23,389	2,434	676	26,769
PERCENT	0.30	27.70	2.90	0.80	31.70
AV LENGTH	537.00	578.72	606.28	591.80	581.13
STD ERROR	45.00	2.14	8.38	18.47	3.56
SAMP SIZE	2	173	18	5	198
FEMALES					
NUMBER	1,487	51,781	4,191	135	57,594
PERCENT	1.80	61.30	5.00	0.20	68.30
AV LENGTH	544.82	555.49	572.39	536.00	556.40
STD ERROR	5.31	1.22	5.57	0.00	1.64
SAMP SIZE	11	383	31	1	426
SEXES COMBINED					
NUMBER	1,757	75,170	6,625	811	84,363
PERCENT	2.10	89.00	7.90	1.00	100.00
AV LENGTH	543.62	562.72	584.84	582.50	564.25
STD ERROR	11.42	1.51	6.60	18.47	2.25
SAMP SIZE	13	556	49	6	624

-Continued-

Appendix Table 32. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1984 (continued).

PERIODS COMBINED

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	1,278	148,123	18,984	70	2,860	171,315
PERCENT	0.32	37.41	4.79	0.02	0.72	43.26
AV LENGTH	549.38	586.82	627.26	520.00	615.33	591.47
STD ERROR	18.60	2.18	5.44	0.00	17.00	3.20
SAMP SIZE	5	613	136	1	18	773
FEMALES						
NUMBER	1,782	202,998	19,242	0	694	224,716
PERCENT	0.45	51.25	4.86	0.00	0.18	56.74
AV LENGTH	545.51	561.62	582.49	0.00	567.61	563.30
STD ERROR	4.87	1.51	5.56	0.00	15.00	1.99
SAMP SIZE	12	934	102	0	4	1,052
SEXES COMBINED						
NUMBER	3,060	351,121	38,226	70	3,554	396,031
PERCENT	0.77	88.66	9.65	0.02	0.90	100.00
AV LENGTH	547.13	572.25	604.72	520.00	606.01	575.48
STD ERROR	8.91	1.77	5.49	0.00	16.63	2.50
SAMP SIZE	17	1,547	238	1	22	1,825

Appendix Table 33. Middle Kuskokwim District (W-2) commercial catch of chum salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	89	10,358	1,326	5	199	11,977
PERCENT	0.32	37.41	4.79	0.02	0.72	43.26
AV LENGTH	549.38	586.82	627.26	520.00	615.33	591.47
FEMALES						
NUMBER	124	14,190	1,346	0	50	15,710
PERCENT	0.45	51.25	4.86	0.00	0.18	56.74
AV LENGTH	545.51	561.62	582.49	0.00	567.61	563.30
SEXES COMBINED						
NUMBER	213	24,548	2,672	5	249	27,687
PERCENT	0.77	88.66	9.65	0.02	0.90	100.00
AV LENGTH	547.13	572.25	604.72	520.00	606.01	575.48

1/ Allocations by sex and age class based upon 1984 District 1 commercial catch samples.

Appendix Table 34. Quinhagak District (W-4) commercial catch of chum salmon, age and length (mm) by sex, 1984.

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	109	17,061	6,738	0	23,908
PERCENT	0.20	33.80	13.40	0.00	47.40
AV LENGTH	516.00	595.62	625.44	0.00	603.66
STD ERROR	0.00	2.33	3.98	0.00	2.79
SAMP SIZE	1	157	62	0	220
FEMALES					
NUMBER	0	20,104	6,086	326	26,516
PERCENT	0.00	39.90	12.10	0.60	52.60
AV LENGTH	0.00	576.05	599.80	615.00	581.98
STD ERROR	0.00	1.98	4.55	7.64	2.64
SAMP SIZE	0	185	56	3	244
SEXES COMBINED					
NUMBER	109	37,165	12,824	326	50,424
PERCENT	0.20	73.70	25.50	0.60	100.00
AV LENGTH	516.00	585.03	613.27	615.00	592.26
STD ERROR	0.00	2.14	4.25	7.64	2.71
SAMP SIZE	1	342	118	3	464

Appendix Table 35. Goodnews District (W-5) commercial catch of chum salmon, age and length (mm) by sex, 1984.

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	0	4,394	2,196	282	6,872
PERCENT	0.00	30.60	15.30	2.00	47.90
AV LENGTH	0.00	585.29	599.59	610.00	590.87
STD ERROR	0.00	2.52	3.78	5.11	3.03
SAMP SIZE	0	140	70	9	219
FEMALES					
NUMBER	63	5,522	1,789	94	7,468
PERCENT	0.40	38.50	12.50	0.70	52.10
AV LENGTH	533.00	564.69	582.79	600.00	569.20
STD ERROR	27.00	1.99	3.53	29.29	2.91
SAMP SIZE	2	176	57	3	238
SEXES COMBINED					
NUMBER	63	9,916	3,985	376	14,340
PERCENT	0.40	69.10	27.80	2.70	100.00
AV LENGTH	533.00	573.82	592.05	607.50	579.59
STD ERROR	27.00	2.22	3.67	11.15	2.97
SAMP SIZE	2	316	127	12	457

Appendix Table 36. Kuskokwim River subsistence catch of chum salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	478	55,853	7,151	30	1,075	64,587
PERCENT	0.32	37.41	4.79	0.02	0.72	43.26
AV LENGTH	549.38	586.82	627.26	520.00	615.33	591.47
FEMALES						
NUMBER	672	76,516	7,256	0	269	84,713
PERCENT	0.45	51.25	4.86	0.00	0.18	56.74
AV LENGTH	545.51	561.62	582.49	0.00	567.61	563.30
SEXES COMBINED						
NUMBER	1,150	132,369	14,407	30	1,344	149,300
PERCENT	0.77	88.66	9.65	0.02	0.90	100.00
AV LENGTH	547.13	572.25	604.72	520.00	606.01	575.48

1/ Allocations by sex and age class based upon 1984 District 1 commercial catch samples.

Appendix Table 37. Quinhagak area subsistence catch of chum salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	1	214	85	0	300
PERCENT	0.20	33.80	13.40	0.00	47.40
AV LENGTH	516.00	595.62	625.44	0.00	603.66
FEMALES					
NUMBER	0	253	77	4	334
PERCENT	0.00	39.90	12.10	0.60	52.60
AV LENGTH	0.00	576.05	599.80	615.00	581.98
SEXES COMBINED					
NUMBER	1	467	162	4	634
PERCENT	0.20	73.70	25.50	0.60	100.00
AV LENGTH	516.00	585.03	613.27	615.00	592.26

1/ Allocations by sex and age class based upon 1984 District 4 commercial catch samples.

Appendix Table 38. Goodnews area subsistence catch of chum salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	0	58	29	4	91
PERCENT	0.00	30.60	15.30	2.00	47.90
AV LENGTH	0.00	585.29	599.59	610.00	590.87
FEMALES					
NUMBER	1	72	24	1	98
PERCENT	0.40	38.50	12.50	0.70	52.10
AV LENGTH	533.00	564.69	582.79	600.00	569.20
SEXES COMBINED					
NUMBER	1	130	53	5	189
PERCENT	0.40	69.10	27.80	2.70	100.00
AV LENGTH	533.00	573.82	592.05	607.50	579.59

1/ Allocations by sex and age class based upon 1985 District 5 commercial catch samples.

Appendix Table 39. Aniak River escapement of chum salmon, age and length (mm) by sex, 1984. 1/

	AGE GROUP			
	41	51	61	TOTAL
MALES				
NUMBER	138,966	40,087	5,345	184,398
PERCENT	50.50	14.60	1.90	67.00
AV LENGTH	599.04	623.07	640.50	605.47
STD ERROR	4.28	10.18	14.50	5.86
SAMP SIZE	52	15	2	69
FEMALES				
NUMBER	58,794	29,397	2,672	90,863
PERCENT	21.30	10.70	1.00	33.00
AV LENGTH	551.82	552.27	556.00	552.09
STD ERROR	7.17	7.24	0.00	6.98
SAMP SIZE	22	11	1	34
SEXES COMBINED				
NUMBER	197,760	69,484	8,017	275,261
PERCENT	71.80	25.30	2.90	100.00
AV LENGTH	585.00	593.12	612.34	587.85
STD ERROR	5.14	8.94	9.67	6.23
SAMP SIZE	74	26	3	103

1/ Apportioned sonar estimates based upon test fishing catches in 11, 14, 18, and 22 cm mesh gillnets.

Appendix Table 40. Kogrukluk River escapement of chum salmon, age and length (mm), by sex, 1984.

PERIOD 1 (6/19/84-7/15/84)1

	AGE GROUP			
	41	51	61	TOTAL
MALES				
NUMBER	9,986	4,894	836	15,716
PERCENT	40.10	19.60	3.40	63.10
AV LENGTH	575.69	606.68	615.52	587.46
STD ERROR	1.58	2.80	7.43	2.27
SAMP SIZE	251	123	21	395
FEMALES				
NUMBER	5,411	3,263	517	9,191
PERCENT	21.70	13.10	2.10	36.90
AV LENGTH	552.90	573.88	588.54	562.35
STD ERROR	2.11	2.87	8.96	2.76
SAMP SIZE	136	82	13	231
SEXES COMBINED				
NUMBER	15,397	8,157	1,353	24,907
PERCENT	61.80	32.70	5.50	100.00
AV LENGTH	567.68	593.56	605.20	578.19
STD ERROR	1.77	2.83	8.02	2.45
SAMP SIZE	387	205	34	626

-Continued-

Appendix Table 40. Kogrukluk River escapement of chum salmon, age and length (mm) by sex, 1984 (continued).

PERIOD 2 (7/16/84-8/15/84)

	AGE GROUP			
	41	51	61	TOTAL
MALES				
NUMBER	11,087	773	0	11,860
PERCENT	66.80	4.70	0.00	71.50
AV LENGTH	574.10	601.41	0.00	575.88
STD ERROR	1.19	7.00	0.00	1.57
SAMP SIZE	416	29	0	445
FEMALES				
NUMBER	4,450	240	27	4,717
PERCENT	26.90	1.40	0.20	28.50
AV LENGTH	547.46	573.33	564.00	548.87
STD ERROR	1.94	11.73	0.00	2.44
SAMP SIZE	167	9	1	177
SEXES COMBINED				
NUMBER	15,537	1,013	27	16,577
PERCENT	93.70	6.10	0.20	100.00
AV LENGTH	566.47	594.76	564.00	568.19
STD ERROR	1.41	8.12	0.00	1.82
SAMP SIZE	583	38	1	622

-Continued-

Appendix Table 40. Kogrukluk River escapement of chum salmon, age and length (mm) by sex, 1984 (continued).

PERIODS COMBINED

	AGE GROUP			
	41	51	61	TOTAL
MALES				
NUMBER	21,073	5,667	836	27,576
PERCENT	50.80	13.66	2.02	66.47
AV LENGTH	574.85	605.96	615.52	582.48
STD ERROR	1.34	3.60	7.43	1.90
SAMP SIZE	667	152	21	840
FEMALES				
NUMBER	9,861	3,503	544	13,908
PERCENT	23.77	8.44	1.31	33.53
AV LENGTH	550.45	573.84	587.32	557.78
STD ERROR	2.02	3.75	8.32	2.62
SAMP SIZE	303	91	14	408
SEXES COMBINED				
NUMBER	30,934	9,170	1,380	41,484
PERCENT	74.57	22.10	3.33	100.00
AV LENGTH	567.07	593.69	604.40	574.20
STD ERROR	1.55	3.65	7.79	2.14
SAMP SIZE	970	243	35	1,248

Appendix Table 41. Kanektok River escapement of chum salmon, age and length (mm) by by sex, 1984. 1/

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	259	76,219	33,962	259	2,333	113,032
PERCENT	0.10	38.10	17.00	0.10	1.20	56.50
AV LENGTH	515.00	600.44	623.19	600.00	643.22	607.96
STD ERROR	0.00	1.67	3.24	0.00	9.19	2.29
SAMP SIZE	1	294	131	1	9	436
FEMALES						
NUMBER	259	64,036	22,295	0	518	87,108
PERCENT	0.10	32.00	11.10	0.00	0.30	43.50
AV LENGTH	550.00	563.94	587.60	0.00	625.00	570.32
STD ERROR	0.00	1.71	3.28	0.00	45.00	2.36
SAMP SIZE	1	247	86	0	2	336
SEXES COMBINED						
NUMBER	518	140,255	56,257	259	2,851	200,140
PERCENT	0.20	70.10	28.10	0.10	1.50	100.00
AV LENGTH	532.50	583.78	609.09	600.00	639.91	591.58
STD ERROR	0.00	1.69	3.26	0.00	15.70	2.32
SAMP SIZE	2	541	217	1	11	772

1/ Apportioned sonar estimates based upon combined beach seine and spawning ground carcass samples.

Appendix Table 42. Goodnews River escapement of chum salmon, age and length (mm) by sex, 1984.

	AGE GROUP		
	41	51	TOTAL
MALES			
NUMBER	37,938	5,233	43,171
PERCENT	32.30	4.40	36.70
AV LENGTH	596.72	609.75	598.30
STD ERROR	5.13	16.39	6.49
SAMP SIZE	29	4	33
FEMALES			
NUMBER	66,719	7,849	74,568
PERCENT	56.60	6.70	63.30
AV LENGTH	553.39	566.50	554.77
STD ERROR	3.96	13.17	4.93
SAMP SIZE	51	6	57
SEXES COMBINED			
NUMBER	104,657	13,082	117,739
PERCENT	88.90	11.10	100.00
AV LENGTH	569.10	583.80	570.73
STD ERROR	4.39	14.46	5.50
SAMP SIZE	80	10	90

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