

## **TECHNICAL FISHERY REPORT 88-09**

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Alaska Department of Fish and Game  
Division of Commercial Fisheries  
PO Box 3-2000  
Juneau, Alaska 99802

June 1988

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### **Catch and Escapement Statistics for Kodiak Management Area Sockeye and Coho Salmon, 1985**

by  
**Patrick B. Holmes**  
and  
**Barbara E. Monkiewicz**

The Technical Fishery Report Series was established in 1987, replacing the Technical Data Report Series. The scope of this new series has been broadened to include reports that may contain data analysis, although data oriented reports lacking substantial analysis will continue to be included. The new series maintains an emphasis on timely reporting of recently gathered information, and this may sometimes require use of data subject to minor future adjustments. Reports published in this series are generally interim, annual, or iterative rather than final reports summarizing a completed study or project. They are technically oriented and intended for use primarily by fishery professionals and technically oriented fishing industry representatives. Publications in this series have received several editorial reviews and at least one *blind* peer review refereed by the division's editor and have been determined to be consistent with the division's publication policies and standards.

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## ABSTRACT

Catch and escapement statistics and age, sex, and size data are provided for sockeye (*Oncorhynchus nerka*) and coho (*O. kisutch*) salmon of the Kodiak Management Area for the 1985 season. The 1985 commercial salmon harvest was 9,898,360 fish. The species composition of the catch was 1,843,477 sockeye, 284,151 coho, 7,334,825 pink (*O. gorbuscha*), 430,937 chum (*O. keta*), and 4,970 chinook (*O. tshawytscha*) salmon. The majority of the sockeye (90%) and coho (81%) salmon were harvested in the Kodiak Island Archipelago. During 1985, 465 permit holders made 10,638 landings of sockeye and/or coho salmon within the management area. The sockeye catch was 95% higher than the 1975-84 average of 943,248 fish. The coho harvest was 126% greater than the 1975-84 average of 126,608 fish. The estimated total escapements of sockeye and coho salmon were 2,734,677 and 365,792 fish, respectively; these estimates included 2,413,617 sockeye and 115,770 coho salmon enumerated at nine weirs. Sockeye salmon in the catch were mainly 4- (23.2%), 5- (65.4%), and 6-year-old (10.4%) fish. The average sockeye length in the catch was 526 mm, and the male to female ratio was 1.0:1. Most of the sockeye escapements were composed of 5- (68.2%), and 6-year-old (16.2%) fish. The average sockeye length in the escapements was 515 mm, and the male to female ratio was 1.1:1. The majority of the coho catch in the three areas sampled were ages 1.1 and 2.1. The mean length of the coho catch samples was 645 mm, and the male to female ratio ranged from 1.4:1 to 2.7:1. Coho salmon in the escapement were primarily age 1.1 (26.0%) and 2.1 (58.1%) fish. The average coho length in the escapements was 636 mm, and the male to female ratio was 1.4:1.

KEY WORDS: Kodiak, sockeye salmon, *Oncorhynchus nerka*, coho salmon, *Oncorhynchus kisutch*, catch, escapement.

## INTRODUCTION

The Kodiak Management Area encompasses the area from Cape Douglas on the Alaska Peninsula to the southern entrance of Imuya Bay near Kilokak Rocks, including the entire Kodiak Island Archipelago. The management area is divided into nine districts, 17 sections, and 98 statistical reporting areas (Figure 1, 2). The region includes 636 designated anadromous streams and lakes (ADF&G 1985a). Salmon escapements were monitored in 325 streams during 1985, including 40 sockeye (*Oncorhynchus nerka*) and 273 coho (*O. kisutch*) systems.

Within the management area commercial salmon fishing is permitted with purse seines, beach seines, and set gill nets. However, there are some exclusive gear areas (ADF&G 1985b, Appendix A).

Five salmon species are harvested in the Kodiak Management Area. In order of commercial importance they are sockeye salmon, pink salmon (*O. gorbuscha*), chum salmon (*O. keta*), coho salmon, and chinook salmon (*O. tshawytscha*). This report focuses on sockeye and coho salmon (Table 1).

The primary sockeye systems are the Karluk River, Red (Ayakulik) River, Frazer Lake, and Upper Station Lakes (Manthey et al. 1986, Figure 3). The major sockeye fishing areas of Kodiak Island are the Uganik Bay, Uyak Bay, Karluk, Red River, and Alitak Bay Districts. The only non-local stock interception fishery is in the Cape Igvak Section, located in the south end of the Mainland District. The majority (80%) of the sockeye salmon harvested there are Chignik River stock (Lechner 1969). The major secondary sockeye systems are Afognak Lake, Pauls Lake, Uganik Lake, Little River Lake, Saltery Lake, Swikshak River, and Kafliia Lakes. Most of the primary and secondary sockeye systems are managed concurrently with pink and chum salmon after July 6, and late sockeye runs often overlap coho fisheries.

The largest coho salmon fisheries occur in the Afognak, Mainland, and Red River Districts. The largest coho escapements usually occur in Karluk River, Red (Ayakulik) River, and Afognak River.

The sockeye and coho catch and escapement data collected in the Kodiak Management Area during 1985 and presented in this report will provide a data base for developing brood tables, forecasting returns and evaluating escapement goals.

## METHODS

The catch data in this report were compiled by the Computer Services Section of the Division of Commercial Fisheries, Alaska Department of Fish and Game, from individual fish ticket receipts given to fishermen by buyers at the time of delivery. These catch data were edited for misreported landings, incorrect gear types in exclusive gear areas, and late landings during closed periods. The data in this report may differ slightly from earlier publications because of more recent editing.

Sockeye and coho salmon escapements at the Buskin River, Karluk River, Red River, Upper Station Lakes, Frazer Lake, Afognak Lake, and Pauls Lake were based on weir counts, surveys below each weir at the end of the season, and field staff estimates of fish passage when the weirs were inoperable due to flooding (Holmes and Monkiewicz 1988).

Aerial escapement data were taken from Manthey et al. (1986). Many of the surveys were flown with the primary objective of enumerating pinks and chums; as a result, sockeye and coho were not always surveyed during periods of peak abundance. Peak counts reflect the highest number of fish counted during the season, not necessarily the peak escapement for each species. Survey data in this report may differ slightly from earlier publications due to recent editing. Total escapement estimates were based on the expansion of peak aerial survey counts. An expansion ratio of 2.0:1 was applied for sockeye escapements (Barrett et al. 1984). All coho peak surveys were expanded by a ratio of 2.4:1, based on data presented by Minard (1986).

Coho escapement surveys were conducted by foot and raft on the Kodiak road system and selected streams on Afognak and Shuyak Islands (Figures 2, 4, and 5). Surveyors wore polarized sunglasses and used tally counters to count fish. Road system surveys were conducted both prior to the directed fisheries and during the peak of spawning. Surveys conducted during the fishing season included only the lower portion of the streams, while the surveys conducted during the spawning period covered the entire reach. The Shuyak Island and Afognak Island surveys assessed in-season buildup and initial escapements in the lower reaches of the streams.

Commercial catch samples of 480 sockeye salmon were collected weekly for age, sex, and length from the major fisheries, and samples of 240 coho were taken on a time-available basis from the directed coho fisheries (B. Johnson, Alaska Department of Fish and Game, Kodiak, personal communication; Thompson 1987). Sampling was conducted at the Columbia Wards Fisheries' processing plant in Alitak Bay and at the Port of Kodiak (Figure 3). The fishing areas sampled and the types of fishing gear used at each location are listed in Table 2.

Fish were sampled from unsorted commercial catches to avoid sampling bias. The harvest area of each sample was determined initially from the processing plant superintendent or foreman. The location of the catch was confirmed by interviewing the tender operator prior to unloading to determine that the delivery was not mixed with fish from another area.

Fish sampled from the catch and escapement were sexed, measured for length in millimeters (mid-eye to fork-of-tail), and scales were taken for age determination. Sex was derived from morphological examination. Lengths were taken using a caliper or measuring trough, and were accurate within 5 mm. One scale was obtained from each sockeye salmon, and two from each coho salmon. Scales were taken from the preferred area of the fish (INPFC 1963), and mounted on gum cards which were later impressed on cellulose acetate using methods described by Clutter and Whitesel (1956).

Age was determined from scales obtained from each sampled fish using procedures described by Moser (1968). Scale impressions were aged utilizing

a standard microfiche viewer. Ages were recorded using European notation. (The first digit in this notation is the number of freshwater annuli and the second digit, following the period, is the number of marine annuli; the total age is the sum of these digits plus one, for the year preceding scale development.) An adaptation of the NORMSEP program (Tomlinson 1971), developed by Bernard and Sharr was used to determine the saltwater age of reabsorbed scales by examination of the length frequency modes of the sampled population (S. Sharr, Alaska Department of Fish and Game, Cordova, personal communication).

Sockeye catches were assigned to their systems of origin based on tagging data (Lechner 1969, Nicholson 1978, Tyler et al. 1985, Manthey et al. 1986) and unpublished estimates, by Kodiak Management Area biologists, of the timing and distribution of specific stocks (K. Manthey and L. Malloy, Alaska Department of Fish and Game, Kodiak, personal communication) (Tables 3 and 4). Assignment of the catch within the Alitak Bay District was based upon a 1984 tagging study that was adjusted for the relative abundance of the 1985 Frazer Lake and Upper Station early run escapements (B. Barrett, Alaska Department of Fish and Game, Kodiak, personal communication).

Age and sex compositions of the sockeye catches assigned to stream of origin were based on escapement samples. The harvests of Karluk River, Upper Station early run, and Frazer Lake sockeye salmon were assigned delay factors of 1 to 3 weeks, based on differences in estimated run timing between the fishery and weir at the respective system of origin (Table 5). No delay factors were utilized for the catches assigned to Pauls Lake, Afognak Lake, Uganik Lake, Red River, Upper Station late run, Saltery Lake, Buskin Lake, Swikshak River, and Kafliia Lake (Manthey et al. 1986, Tyler et al. 1985).

Escapement sample sizes were based on analyses by B. Johnson (Alaska Department of Fish and Game, Kodiak, personal communication) and Thompson (1987). Weekly samples of 235 sockeye salmon were collected at each of the major sockeye system weirs including Dog Salmon (outlet to Frazer Lake), Upper Station, Red River, and Karluk River. Secondary sockeye systems were sampled with beach seines. A single sample of 600 sockeye salmon was taken from Saltery Lake, Swikshak River, Uganik Lake, and Little River Lake; Kafliia Lake had a sample of 600 sockeye salmon taken from both runs. During the early run at Afognak Lake a combined sample of 213 sockeye salmon were collected at the weir and from the sport fishery; in addition, a sample of 600 late run fish was taken from the lake with a beach seine. The Division of Sport Fisheries provided a sample of 436 sockeye salmon from Buskin Lake. Coho samples of 235 fish were taken from the escapements at Afognak River, Buskin River, Karluk River, Pauls Lake, Red River, and Saltery River. Coho samples of less than 120 fish were taken at Upper Station weir, and at Akalura and Silver Salmon Lagoons.

Most of the data used in this report were compiled and stratified by statistical week using a microcomputer. A statistical week is a 7-day period which begins at 0000 hours on Sunday and ends at 2400 hours the following Saturday. Each week of the year is numbered consecutively beginning with the first Sunday in January. Statistical weeks and the corresponding calendar dates are listed in Appendix B. Age composition and

associated standard errors were calculated for catch and escapement samples taken on a weekly basis.

Total catch or escapement by age within a statistical week was determined by multiplying each week's catch or escapement by the percentage age composition of the respective week's sample. Standard error for a particular age class was determined by taking the square root of the variances, as given by Cochran (1977) in equation 3.12 (without the definite population correction factor). The standard error provides a measure of the relative accuracy of the estimate but is not valid for confidence intervals. No standard errors or variances were calculated across statistical weeks. Total catch and escapement by age was obtained by simple summation.

Length compositions by age and sex were determined for each catch and escapement sampled with the exception of the Buskin River sample. Mean lengths were computed from an unweighted composite of data collected from each area sampled. Sex composition was computed by statistical week for each sample.

## RESULTS AND DISCUSSION

The 1985 commercial salmon catch for the Kodiak Management Area was 9,898,360 salmon, a reduction of 15% from the 1975-84 average catch (Manthey et al. 1986). The species composition was 1,843,477 sockeye salmon, 284,151 coho salmon, 7,334,825 pink salmon, 430,937 chum salmon, and 4,970 chinook salmon.

During 1985, 465 limited entry permit holders made 11,780 landings for all species of salmon. Effort was distributed among three gear types. Purse seines were used by 274 permit holders to make 7,474 landings. Beach seine users included 21 permit holders who made 215 landings. Set gill net gear was utilized by 170 permit holders to make 4,091 landings. Detailed catch and effort data for sockeye and coho salmon are presented by statistical week and area in Holmes and Monkiewicz (1988).

### *Sockeye Salmon*

The commercial catch of 1,843,477 sockeye salmon was the second-highest harvest since 1945 (Manthey et al. 1986), 95% higher than the 1975-84 average of 943,248 fish (Table 1). A total of 1,718,672 sockeye salmon was assigned to the Kodiak Management Area; an additional harvest of 124,805 fish from the Cape Igvak Section was assigned to the Chignik Management Area. The majority of the sockeye salmon (90%) harvested in the management area were taken from the Kodiak Island Archipelago. A total of 1,412,032 sockeye salmon, 77% of the commercial harvest, was assigned to systems of origin (Table 6). The majority (83%) of the total sockeye return was produced by four systems: the Karluk River, Red (Ayakulik) River, Frazer Lake, and Upper Station Lakes. Major sockeye fisheries occurred in the Uganik Bay, Uyak Bay, Karluk, Red River, and Alitak Bay Districts, and in

the Cape Igvak Section of the Mainland District. These districts produced 96% of the management area's sockeye harvest. The Alitak Bay District produced the largest portion (38%) of the sockeye catch (Table 7).

The purse seine harvest of 1,195,295 sockeye salmon represented nearly 65% of the total catch. The beach seine harvest was 3,762 sockeye salmon, less than 1% of the total harvest. The set gill net catch was 644,420 sockeye salmon, approximately 35% of the total. Detailed catch and effort data are presented by statistical week and area in Holmes and Monkiewicz (1988).

The estimated total harvest of sockeye salmon originating in the Kodiak Management Area was 1,741,849 fish. This estimate includes sockeye salmon harvests of 1,718,672 fish from the commercial fishery, 7,536 fish from the sport catch (Miles 1986), and 15,641 fish from the subsistence harvest (Manthey et al. 1986).

The estimated total sockeye escapement was 2,734,677 fish, which includes 2,413,617 sockeye salmon counted at the seven systems monitored with weirs and an additional estimated total escapement of 321,060 fish at 22 systems without weirs (Table 6, Holmes and Monkiewicz 1988). Escapements at all weirs, with the exception of Afognak River and Pauls Lake, were higher than in 1984 (Manthey et al. 1986). The majority (88.3%) of the sockeye escapements occurred at the following weirs: Karluk River, 995,948 fish; Red River, 388,757 fish; Upper Station, 435,813 fish; and Dog Salmon (Frazer Lake outlet), 506,337 fish (Table 8).

The estimated total sockeye run to the Kodiak Management Area was 4,476,526 fish. This figure includes the harvest of 1,741,849 fish and the estimated total escapement of 2,734,677 fish. Age, length, and sex data are summarized for 91.2% (4,080,747 fish) of the total sockeye run (Table 6, Holmes and Monkiewicz 1988).

The majority of the sockeye catches sampled during 1985 were comprised of 4- (23.2%) and 5-year-old (65.4%) fish; the 4-year-old sockeye salmon were mainly age 1.2 and the 5-year-old sockeye salmon were predominantly age 2.2. The early run sockeye salmon in the Cape Igvak Section harvest were primarily 4- (33.1%) and 5-year-old (62.1%) fish; the 5-year-old sockeye salmon included the highest percentage of age 1.3 (27.3%) and the lowest percentage of age 2.2 (34.8%) fish caught in the management area (Table 9). The sockeye catches assigned to streams of origin were primarily 4- (22.5%) and 5-year-old (69.5%) fish (Table 10).

The majority of the sockeye escapements were comprised of 5- (68.2%) and 6-year-old (16.2%) fish. The 5-year-old fish were mainly age 2.2 at Karluk River, Red River, Upper Station Lake, Frazer Lake, Little River Lake, and Swikshak River; however they were primarily age 1.3 at Afognak, Buskin, Kafliia, Saltery, and Uganik Lakes. The largest percentage of 6-year-old (56.7%) fish occurred at Uganik Lake where the 6-year-old fish were mainly age 2.3 (Table 11).

The mean length of sockeye salmon from the major commercial fisheries excluding the Cape Igvak fisheries, was 528 mm. Sockeye salmon from the Uganik Bay District had the largest mean length (549 mm) in the sampled catch (Table 12). The mean length of sockeye salmon in the escapements was

515 mm. The largest sockeye salmon in the monitored escapements, excluding a small sample from the early run to Afognak Lake, occurred at Uganik Lake (mean length of 557 mm) (Table 13).

Sockeye sex compositions in the sampled catch area ranged from a male to female ratio of 0.6:1 in Upper Olga Bay to 1.8:1 in Moser Bay (Table 12). The overall male to female ratio was 1.0:1. Sex composition by statistical week and area is presented in Holmes and Monkiewicz (1988).

Sockeye sex compositions in the monitored escapements ranged from a male to female ratio of 0.7:1 at Buskin Lake to 2.4:1 at Kafia Lakes (Table 13). The overall male to female ratio was 1.1:1. Sex composition by statistical week and area is presented in Holmes and Monkiewicz (1988).

### *Coho Salmon*

The 1985 harvest of 284,151 coho was the second-highest reported catch since 1934 (Manthey et al. 1986), and 126% greater than the 1975-84 average catch of 125,608 (Table 1). The majority (81%) of the coho were taken in the Kodiak Island Archipelago. The largest district catch (79,289 fish) was from the Afognak District (Table 7); however the largest terminal harvest (41,866 fish) occurred in the Ayakulik Section of the Red River District (Holmes and Monkiewicz 1988).

Purse seine operators delivered 245,972 coho salmon, which represented nearly 86% of the total harvest. The beach seine harvest was 4,317 fish, less than 2% of the total catch. The set gill net harvest was 33,862 coho, approximately 12% of the total catch. Detailed catch and effort data are presented by week in Holmes and Monkiewicz (1988).

The estimated total coho harvest, including sport, subsistence, and commercial catch, was 306,414 fish. The coho sport catch was 13,625 fish (Miles 1986). The subsistence harvest was 8,638 coho salmon (Manthey et al. 1986).

The estimated total escapement of coho salmon was 365,792 fish. This estimate includes 115,770 coho enumerated at nine weirs, and an estimated 250,022 coho salmon for systems without weirs (Table 8, Holmes and Monkiewicz 1988). The largest escapements of coho salmon occurred on Kodiak Island at the Karluk River (37,870 fish) and the Red River (32,307 fish). The Afognak River supported the largest coho escapement on Afognak Island with 13,846 fish (Table 8). The Buskin River had the largest escapement on the Kodiak road system with 9,474 fish enumerated through the weir. Big Bay Creek supported the largest coho escapement on Shuyak Island, with an estimated total escapement of 3,168 fish (Holmes and Monkiewicz 1988).

Coho catch samples were collected from three terminal fishing areas: Zachar Bay, Karluk Lagoon, and Halo Bay. Coho salmon from Zachar Bay and Halo Bay were primarily ages 1.1 and 2.1, while the fish from Karluk Lagoon were primarily ages 2.1 and 3.1 (Table 14). Mean lengths of the coho salmon ranged from 621 mm at Halo Bay to 668 mm at Karluk Lagoon (Table 15). The

coho male to female ratio ranged from 1.4:1 at Karluk Lagoon to 2.5:1 at Halo Bay (Table 15).

The majority of the coho salmon in the sampled escapements were age 1.1 (26%) and 2.1 (56%) fish. The Karluk River escapement had the largest component of age 3.1 (30.5%) fish (Table 16). Mean lengths ranged from 622 mm at Silver Salmon Lagoon to 644 mm at Pauls Lake, with an average length of 636 mm for all sampled coho escapements (Table 17). The coho male to female ratio ranged from 0.3:1 at Upper Station weir to 4.6:1 at Akalura Lagoon (Table 17).

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**TABLES AND FIGURES**

Table 1. Sockeye and coho salmon catches in the Kodiak Management Area from 1975 to 1985.

YEAR	NUMBER OF FISH SPECIES	
	SOCKEYE	COHO
1975	136,418	23,659
1976	641,484	23,714
1977	623,468	27,920
1978	1,071,782	48,795
1979	631,735	140,629
1980	651,394	139,154
1981	1,288,980	121,544
1982	1,204,793	343,531
1983	1,231,989	157,612
1984	1,950,439	229,524
1975-1984 AVERAGE	943,248	125,608
1985	1,843,477	284,151

Table 2. Commercial salmon catch sampling locations and catch areas sampled, 1985.

SAMPLING LOCATION	CATCH AREA	GEAR TYPE	SPECIES SAMPLED	
			SOCKEYE	COHO
Port of Kodiak				
	Uganik Bay District	set gillnet	X	
	Uyak Bay District	seine and gillnet	X	
	Karluk District	purse seine	X	
	Zachar Bay	purse seine		X
	Karluk Lagoon	purse seine		X
	Halo Bay	purse seine		X
Lazy Bay				
	Red River District	purse seine	X	
	Cape Alitak Section	purse seine	X	
	Moser/Olga Bay Section	set gillnet	X	
	Cape Igvak Section	purse seine	X	

Table 3. Sockeye catch composition by stock in the Kodiak Management Area, 1985.

SYSTEM OF ORIGIN	STATISTICAL WEEKS	DISTRICT	SECTION	STATISTICAL AREA	PERCENT OF CATCH	SOURCE	
<u>MAJOR SYSTEMS</u>							
Karluk River, early run	23-26	Afognak	Southwest Afognak	251-10	30.0	(Manthey et al. 1986)	
	23-26	Uganik Bay		253-11	30.0	(Manthey et al. 1986)	
					253-31	30.0	(Manthey et al. 1986)
			Uyak Bay		254-10	100.0	(Manthey et al. 1986)
	23-29	Karluk		254-10	100.0	(Manthey et al. 1986)	
	23-30	Karluk		255-10	100.0	(Manthey et al. 1986)	
				255-20	100.0	(Manthey et al. 1986)	
	27-28	Afognak	Southwest Afognak	251-10	60.0	(Manthey et al. 1986)	
	27-28	Uganik Bay		253-11	60.0	(Manthey et al. 1986)	
				253-31	60.0	(Manthey et al. 1986)	
	27-29	Sturgeon River		256-40	50.0	(Manthey et al. 1986)	
	Karluk River, late run	29-39	Afognak	Southwest Afognak	251-10	60.0	(Manthey et al. 1986)
		29-39	Uganik Bay		253-11	60.0	(Manthey et al. 1986)
					253-31	60.0	(Manthey et al. 1986)
			Uyak Bay		254-10	100.0	(Manthey et al. 1986)
30-39		Karluk		254-10	100.0	(Manthey et al. 1986)	
31-39		Karluk		255-10	100.0	(Manthey et al. 1986)	
				255-20	100.0	(Manthey et al. 1986)	
30-39		Sturgeon River		256-40	50.0	(Manthey et al. 1986)	
Red River	23-39	Red River	Ayakulik	256-10	100.0	(Manthey et al. 1986)	
				256-20	100.0	(Manthey et al. 1986)	
	23-26	Red River	Gurney Bay	256-25	70.0	(Manthey et al. 1986)	
	23-26	Sturgeon River		256-30	70.0	(Manthey et al. 1986)	
	27-39	Red River	Gurney Bay	256-25	100.0	(Manthey et al. 1986)	
	27-39	Sturgeon River		256-30	100.0	(Manthey et al. 1986)	
				256-40	50.0	(Manthey et al. 1986)	
Frazer Lake	23-27	Afognak	Southwest Afognak	251-10	30.0	(Manthey et al. 1986)	
	23-27	Uganik Bay		253-11	30.0	(Manthey et al. 1986)	
					253-31	30.0	(Manthey et al. 1986)
			Sturgeon River		256-30	30.0	(Manthey et al. 1986)
				256-40	30.0	(Manthey et al. 1986)	
	23-26	Red River	Gurney Bay	256-25	30.0	(Manthey et al. 1986)	
	23-27	Alitak Bay	Cape Alitak	257-10	76.2	(Barrett 1987)	
				257-20	76.2	(Barrett 1987)	
	23-27	Alitak Bay	Moser/Olga Bay	257-40	90.3	(Barrett 1987)	
23-27	Alitak Bay	Moser/Olga Bay	257-41	91.3	(Barrett 1987)		

- continued -

Table 3. (p 2 of 2)

SYSTEM OF ORIGIN	STATISTICAL WEEKS	DISTRICT	SECTION	STATISTICAL AREA	PERCENT OF CATCH	SOURCE
	23-27	Alitak Bay	Deadman/Portage Bay	257-50 257-60 257-70	76.2 76.2 76.2	(Barrett 1987) (Barrett 1987) (Barrett 1987)
Upper Station, early run	23-28	Alitak Bay	Cape Alitak	257-10 257-20	3.8 3.8	(Barrett 1987) (Barrett 1987)
	23-28	Alitak Bay	Moser/Olga Bay	257-40	5.2	(Barrett 1987)
	23-28	Alitak Bay	Moser/Olga Bay	257-41	3.5	(Barrett 1987)
	23-28	Alitak Bay	Deadman/Portage Bay	257-50 257-60 257-70	3.8 3.8 3.8	(Barrett 1987) (Barrett 1987) (Barrett 1987)
Upper Station, late run	29-39	Alitak Bay	Cape Alitak	257-10 257-20	95.0 95.0	(Barrett 1987) (Barrett 1987)
	29-39	Alitak Bay	Moser/Olga Bay	257-40	95.0	(Barrett 1987)
	29-39	Alitak Bay	Moser/Olga Bay	257-41	95.0	(Barrett 1987)
	29-39	Alitak Bay	Deadman/Portage Bay	257-50 257-60 257-70	95.0 95.0 95.0	(Barrett 1987) (Barrett 1987) (Barrett 1987)
<u>MINOR SYSTEMS</u>						
Pauls Lake	24-39	Afognak	North Afognak	251-83	100.0	Terminal area
Afognak Lake, early run	23-29	Afognak	East Afognak	252-54	100.0	Terminal area
Afognak Lake, late run	30-39	Afognak	East Afognak	252-54	100.0	Terminal area
Uganik Lake	23-26	Uganik Bay		253-12 253-13	60.0 60.0	(Manthey, pers com) (Manthey, pers com)
Uganik Lake	27-35	Uganik Bay		253-12	100.0	(Manthey, pers com)
Saltery Lake	23-39	General	Ugak	259-11	100.0	(Malloy, pers com)
Swikshak River	23-39	Mainland	Kukak	262-15	100.0	Terminal area
Kaflia Lake, early run	23-30	Mainland	Kukak	262-30	100.0	Terminal area
Kaflia Lake, late run	31-39	Mainland	Kukak	262-30	100.0	Terminal area

Table 4. Sockeye stock composition by district for the Kodiak Management Area, 1985.

DISTRICT	SECTION	STATISTICAL		PERCENT COMPOSITION	STOCK	SOURCE
		AREA	WEEKS			
Afognak	Southwest Afognak	251-10	23-26	30.0	Karluk River, early run	(Manthey et al. 1986)
			23-27	30.0	Frazer Lake	(Manthey et al. 1986)
			27-28	60.0	Karluk River, early run	(Manthey et al. 1986)
			29-39	60.0	Karluk River, late run	(Manthey et al. 1986)
	North Afognak	251-83	24-39	100.0	Pauls Lake	Terminal area.
	East Afognak	252-54	23-29	100.0	Afognak Lake, early run	Terminal area
			30-39	100.0	Afognak Lake, late run	Terminal area
	Uganik Bay	253-11	253-11	23-26	30.0	Karluk River, early run
23-27				30.0	Frazer Lake	(Manthey et al. 1986)
27-28				60.0	Karluk River, early run	(Manthey et al. 1986)
29-39				60.0	Karluk River, late run	(Manthey et al. 1986)
253-12				23-26	60.0	Uganik Lake
253-12		253-12	27-35	100.0	Uganik Lake	(Manthey, pers com)
			253-13	23-26	60.0	Uganik Lake
253-31		253-31	23-26	30.0	Karluk River, early run	(Manthey et al. 1986)
			23-27	30.0	Frazer Lake	(Manthey et al. 1986)
			27-28	60.0	Karluk River, early run	(Manthey et al. 1986)
			29-39	60.0	Karluk River, late run	(Manthey et al. 1986)
Uyak Bay		254-10	23-29	100.0	Karluk River, early run	(Manthey et al. 1986)
			30-39	100.0	Karluk River, late run	(Manthey et al. 1986)
Karluk	254-10	254-10	23-29	100.0	Karluk River, early run	(Manthey et al. 1986)
			30-39	100.0	Karluk River, late run	(Manthey et al. 1986)
	255-10	255-10	23-30	100.0	Karluk River, early run	(Manthey et al. 1986)
			31-39	100.0	Karluk River, late run	(Manthey et al. 1986)
	255-20	255-20	23-30	100.0	Karluk River, early run	(Manthey et al. 1986)
			31-39	100.0	Karluk River, late run	(Manthey et al. 1986)
Sturgeon River	256-30	256-30	23-26	30.0	Frazer Lake	(Manthey et al. 1986)
			23-26	70.0	Red River	(Manthey et al. 1986)
			27-39	100.0	Red River	(Manthey et al. 1986)
	256-40	256-40	23-26	30.0	Frazer Lake	(Manthey et al. 1986)
			27-29	50.0	Karluk River, early run	(Manthey et al. 1986)
			27-39	50.0	Red River	(Manthey et al. 1986)
			30-39	50.0	Karluk River, late run	(Manthey et al. 1986)
Red River	Ayakulik	256-10	23-39	100.0	Red River	(Manthey et al. 1986)
	Ayakulik	256-20	23-39	100.0	Red River	(Manthey et al. 1986)

- continued -

Table 4. (p 2 of 2)

DISTRICT	SECTION	STATISTICAL		PERCENT COMPOSITION	STOCK	SOURCE
		AREA	WEEKS			
Alitak Bay	Gurney Bay	256-25	23-26	70.0	Red River	(Manthey et al. 1986)
			23-26	30.0	Frazer Lake	(Manthey et al. 1986)
			27-39	100.0	Red River	(Manthey et al. 1986)
	Cape Alitak	257-10	23-28	3.8	Upper Station, early run	(Barrett 1987)
			23-27	76.2	Frazer Lake	(Barrett 1987)
			29-39	95.0	Upper Station, late run	(Barrett 1987)
	Cape Alitak	257-20	23-28	3.8	Upper Station, early run	(Barrett 1987)
			23-27	76.2	Frazer Lake	(Barrett 1987)
			29-39	95.0	Upper Station, late run	(Barrett 1987)
	Moser/Olga Bay	257-40	23-27	90.3	Frazer Lake	(Barrett 1987)
			23-28	5.2	Upper Station, early run	(Barrett 1987)
			29-39	95.0	Upper Station, late run	(Barrett 1987)
	Moser/Olga Bay	257-41	23-27	91.3	Frazer Lake	(Barrett 1987)
			23-28	3.5	Upper Station, early run	(Barrett 1987)
			29-39	95.0	Upper Station, late run	(Barrett 1987)
	Deadman/Portage Bay	257-50	23-27	76.2	Frazer Lake	(Barrett 1987)
			23-28	3.8	Upper Station, early run	(Barrett 1987)
			29-39	95.0	Upper Station, late run	(Barrett 1987)
257-60		23-27	76.2	Frazer Lake	(Barrett 1987)	
		23-28	3.8	Upper Station, early run	(Barrett 1987)	
		29-39	95.0	Upper Station, late run	(Barrett 1987)	
257-70		23-27	76.2	Frazer Lake	(Barrett 1987)	
		23-28	3.8	Upper Station, early run	(Barrett 1987)	
		29-39	95.0	Upper Station, late run	(Barrett 1987)	
General	Ugak	259-11	23-39	100.0	Saltery Lake	Terminal area.
Mainland	Kukak	262-15	23-39	100.0	Swikshak River	Terminal area
			23-30	100.0	Kaflia Lake, early run	Terminal area
	Kukak	262-30	31-39	100.0	Kaflia Lake, late run	Terminal area
			23-26	80.0	Chignik River, early run	(Lechner 1969)
	Alinchak	262-70	27-30	80.0	Chignik River, late run	(Lechner 1969)
			23-26	80.0	Chignik River, early run	(Lechner 1969)
	Cape Igvak	262-75	27-30	80.0	Chignik River, late run	(Lechner 1969)
			23-26	80.0	Chignik River, early run	(Lechner 1969)
	Cape Igvak	262-80	27-30	80.0	Chignik River, late run	(Lechner 1969)
			23-26	80.0	Chignik River, early run	(Lechner 1969)
	Wide Bay	262-85	27-30	80.0	Chignik River, late run	(Lechner 1969)
			23-26	80.0	Chignik River, early run	(Lechner 1969)
	Cape Igvak	262-90	27-30	80.0	Chignik River, late run	(Lechner 1969)
			23-26	80.0	Chignik River, early run	(Lechner 1969)
	Cape Igvak	262-95	23-26	80.0	Chignik River, early run	(Lechner 1969)
27-30			80.0	Chignik River, late run	(Lechner 1969)	

Table 5. Delay factors used for assigning sockeye harvest to system of origin, Kodiak Management Area, 1985.

SYSTEM OF ORIGIN	STATISTICAL WEEK	DISTRICT	SECTION	STATISTICAL AREA	DELAY FACTOR IN WEEKS	
<u>MAJOR SYSTEMS</u>						
Karluk River, early run	23-26	Afognak	Southwest Afognak	251-10	2	
	23-26	Uganik Bay		253-11	2	
				253-31	2	
	23-29	Uyak Bay		254-10	1	
	23-29	Karluk		254-10	1	
	23-30	Karluk		255-10	1	
				255-20	1	
	27-28	Afognak	Southwest Afognak	251-10	2	
	27-28	Uganik Bay		253-11	2	
				253-31	2	
	27-29	Sturgeon River		256-40	1	
	-----					
	Karluk River, late run	29-39	Afognak	Southwest Afognak	251-10	3
29-39		Uganik Bay		253-11	3	
				253-31	3	
30-39		Uyak Bay		254-10	2	
30-39		Karluk		254-10	2	
31-39		Karluk		255-10	2	
30-39		Sturgeon River		255-20	2	
				256-40	2	
-----						
Red River	23-39	Red River	Ayakulik	256-10	0	
	23-26	Red River	Gurney Bay	256-20	0	
				256-25	0	
	23-26	Sturgeon River		256-30	0	
	27-39	Red River	Gurney Bay	256-25	0	
	27-39	Sturgeon River		256-30	0	
				256-40	0	
-----						
Frazer Lake	23-27	Afognak	Southwest Afognak	251-10	2	
	23-27	Uganik Bay		253-11	2	
				253-31	2	
	23-26	Sturgeon River		256-30	1	
				256-40	1	
	23-26	Red River	Gurney Bay	256-25	1	
	23-27	Alitak Bay	Cape Alitak	257-10	0	
				257-20	0	
23-27	Alitak Bay	Moser/Olga Bay	257-40	0		
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Table 5. (pg 2 of 2)

SYSTEM OF ORIGIN	STATISTICAL WEEK	DISTRICT	SECTION	STATISTICAL AREA	DELAY FACTOR IN WEEKS
	23-27	Alitak Bay	Moser/Olga Bay	257-41	0
	23-27	Alitak Bay	Deadman/Portage Bay	257-50 257-60 257-70	0 0 0
Upper Station, early run	23-28	Alitak Bay	Cape Alitak	257-10 257-20	1 1
	23-28	Alitak Bay	Moser/Olga Bay	257-40	1
	23-28	Alitak Bay	Moser/Olga Bay	257-41	1
	23-28	Alitak Bay	Deadman/Portage Bay	257-50 257-60	1 1
Upper Station, late run	29-39	Alitak Bay	Cape Alitak	257-70 257-10 257-20	1 0 0
	29-39	Alitak Bay	Moser/Olga Bay	257-40	0
	29-39	Alitak Bay	Moser/Olga Bay	257-41	0
	29-39	Alitak Bay	Deadman/Portage Bay	257-50 257-60 257-70	0 0 0
<u>MINOR SYSTEMS</u>					
Pauls Lake	24-39	Afognak	North Afognak	251-83	0
Afognak Lake, early run	23-29	Afognak	East Afognak	252-54	0
Afognak Lake, late run	30-39	Afognak	East Afognak	252-54	0
Uganik Lake	23-26	Uganik Bay		253-12 253-13	0 0
Uganik Lake	27-35	Uganik Bay		253-12	0
Saltery Lake	23-39	General	Ugak	259-11	0
Swikshak River	23-39	Mainland	Kukak	262-15	0
Kaflia Lake, early run	23-30	Mainland	Kukak	262-30	0
Kaflia Lake, late run	31-39	Mainland	Kukak	262-30	0

Table 6. Estimated numbers of sockeye salmon returning to the Kodiak Management Area, 1985.

SYSTEM	CATCH	ESCAPEMENT	RUN
<u>MAJOR</u>			
Karluk River			
early run	36,146	322,983	359,129
late run	97,170	672,965	770,135
Red River	582,960	388,757	971,717
Upper Station			
early run	6,364	27,405	33,769
late run	523,660	408,408	932,068
Frazer Lake	140,138	506,337	646,475
Subtotal	1,386,438	2,326,855	3,713,293
<u>SECONDARY</u>			
Pauls Lake	1,242	14,939	16,181
Afognak Lake			
early run	1,950	46,811	48,761
late run	28	7,002	7,030
Uganik Lake	8,070	80,000 <sup>a</sup>	88,070
Little River Lake	b	28,000 <sup>a</sup>	28,000
Buskin Lake	347	18,010	18,357
Saltery Lake	3,507	52,300 <sup>a</sup>	55,806
Swikshak River	7,283	50,000 <sup>a</sup>	57,283
KafLIA Lake			
early run	3,167	14,800 <sup>a</sup>	17,966
late run	0	30,000 <sup>a</sup>	30,000
Subtotal	25,594	341,862	367,456
<u>OTHER</u>	316,642 <sup>c</sup>	65,960 <sup>ad</sup>	382,602
<u>TOTAL</u>	1,718,672	2,734,677	4,453,344

<sup>a</sup>Estimated total escapement based on expansion of peak aerial survey by 2.0:1 (Barrett et al. 1984).

<sup>b</sup>No catch data available for this system.

<sup>c</sup>Catch not assigned to system.

<sup>d</sup>Estimated escapement to 22 minor systems.

Table 7. Kodiak Management Area sockeye and coho catch and effort by district, 1985.

DISTRICT	GEAR TYPE	NUMBER OF LANDINGS	CATCH IN NUMBERS	
			SOCKEYE	COHO
Afognak	Purse Seine	1,002	28,733	79,289
	Beach Seine	24	506	1,580
	Set Gill Net	8	610	95
	Total	1,034	29,849	80,964
Uganik	Purse Seine	548	40,838	9,106
	Beach Seine	13	124	195
	Set Gill Net	1,152	83,454	6,419
	Total	1,713	124,416	15,720
Uyak <sup>a</sup>	Purse Seine	524	54,603	13,331
	Beach Seine	38	309	868
	Set Gill Net	1,020	110,393	4,798
	Total	1,582	165,305	18,997
Karluk	Purse Seine	81	29,471	6,601
	Beach Seine	6	1,108	1,399
	Total	87	30,579	8,000
Red River	Purse Seine	1,782	575,827	41,872
	Total	1,782	575,827	41,872
Sturgeon River	Purse Seine	39	7,144	2,759
	Total	39	7,144	2,759
Alitak Bay	Purse Seine	1,194	260,274	22,656
	Beach Seine	45	1,687	36
	Set Gill Net	1,704	441,592	21,207
	Total	2,943	703,553	43,899
General	Purse Seine	459	23,388	17,272
	Beach Seine	11	28	239
	Set Gill Net	141	8,371	1,343
	Total	611	31,787	18,854

-continued-

Table 7. (pg 2 of 2)

DISTRICT	GEAR TYPE	NUMBER OF LANDINGS	CATCH IN NUMBERS	
			SOCKEYE	COHO
Kodiak Archipeligo	Purse Seine	5,629	1,020,278	192,886
	Beach Seine	137	3,762	4,317
	Set Gill Net	4,025	644,420	33,862
	Total	9,791	1,668,460	231,065
Mainland	Purse Seine	847	175,017	53,086
	Total	847	175,017	53,086
ALL DISTRICTS COMBINED	Purse Seine	6,476	1,195,295	245,972
	Beach Seine	137	3,762	4,317
	Set Gill Net	4,025	644,420	33,862
TOTAL ALL DISTRICTS		10,638	1,843,477 <sup>b</sup>	284,151

<sup>a</sup>Includes landing from Karluk District east of Rocky Point.

<sup>b</sup>Includes 124,805 sockeye of Chignik Management Area origin, harvested from the Mainland District.

Table 8. Sockeye and coho escapements at Kodiak Management Area weirs, 1985.

WEIR	ESCAPEMENTS	
	SOCKEYE	COHO
Pauls Lake	14,939	9,536
Long Lagoon	a	1,000
Afognak River	Early Run 46,811 Late Run 7,002	13,846
Karluk River	Early Run 322,983 Late Run 672,965	37,870
Red River	388,757	32,307
Upper Station		
Early Run	27,405	3,714
Late Run	408,408	
Dog Salmon Creek <sup>b</sup>	506,337	4,000
Buskin River	18,010	9,474
Saltery Weir	a	4,023
TOTAL	2,413,617	115,770

<sup>a</sup>Weir not operational for sockeye salmon.

<sup>b</sup>Outlet of Frazer Lake.

Table 9. Age composition of the sockeye catches in selected fishing locations within the Kodiak Management Area, 1985.

	AGE GROUP												TOTALS	
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4		3.3
<u>Cape Icyak Section</u>														
Number	1,833	0	736	50,030	0	41,937	53,341	0	0	5,150	0	0	368	153,401
Percent	0.0	0.0	0.5	32.6	0.0	27.3	34.8	0.0	0.0	3.4	0.0	0.0	0.2	100.0
<u>Cape Alitak Section</u>														
Number	1,926	0	750	56,259	0	11,951	126,174	0	36	9,883	1,766	0	312	209,057
Percent	0.9	0.0	0.4	26.9	0.0	5.7	60.4	0.0	.0	4.7	0.8	0.0	0.1	100.0
<u>Red River District</u>														
Number	0	2,295	0	149,334	4,205	125,448	257,729	0	0	41,712	1,025	178	0	581,926
Percent	0.0	0.4	0.0	25.7	0.7	21.6	44.3	0.0	0.0	7.2	0.2	.0	0.0	100.0
<u>Lower Oloa Bay</u>														
<u>Statistical Area</u>														
Number	2,077	0	132	25,520	0	6,390	82,874	0	0	12,324	653	116	343	100,431
Percent	1.6	0.0	0.1	19.6	0.0	4.9	63.5	0.0	0.0	9.4	0.5	0.1	0.3	100.0
<u>Upper Oloa Bay</u>														
<u>Statistical Area</u>														
Number	14	19	0	705	149	27	3,174	0	0	87	61	0	0	4,236
Percent	0.3	0.4	0.0	16.6	3.5	0.6	74.9	0.0	0.0	2.1	1.4	0.0	0.0	100.0
<u>Moser Bay Statistical Area</u>														
Number	1,912	0	567	87,729	232	12,223	181,535	0	0	18,545	2,436	88	520	305,787
Percent	0.6	0.0	0.2	28.7	0.1	4.0	59.4	0.0	0.0	6.1	0.8	.0	0.2	100.0

- continued -

Table 9. (pg 2 of 2)

	AGE GROUP													TOTALS
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	
<u>Deadman-Portage Section</u>														
Number	394	0	94	15,286	0	2,701	30,565	0	11	2,181	437	0	63	51,732
Percent	0.8	0.0	0.2	29.5	0.0	5.2	59.1	0.0	.0	4.2	0.8	0.0	0.1	100.0
<u>Kariuk District, south of Rocky Point</u>														
Number	0	0	0	150	0	0	16,807	0	0	1,050	12,455	0	150	30,612
Percent	0.0	0.0	0.0	0.5	0.0	0.0	54.9	0.0	0.0	3.4	40.7	0.0	0.5	100.0
<u>Uganik Bay District</u>														
Number	40	257	542	5,271	40	27,959	52,090	0	385	20,594	10,711	0	1,099	119,068
Percent	.0	0.2	0.5	4.4	.0	23.5	43.7	0.0	0.3	17.4	9.0	0.0	0.9	100.0
<u>Uyak Bay District</u>														
Number	342	0	318	8,099	0	22,290	91,157	0	104	20,169	21,224	23	1,572	165,597
Percent	0.2	0.0	0.2	4.9	0.0	13.5	55.0	0.0	0.1	12.2	12.8	.0	1.1	100.0
TOTALS	8,544	2,571	3,139	398,383	4,626	250,926	895,446	0	536	131,794	50,768	407	4,727	1,751,867
PERCENT	0.5	0.1	0.2	22.7	0.3	14.3	51.1	0.0	.0	7.5	2.9	.0	0.3	100.0

Table 10. Age composition of the sockeye catches assigned to systems of origin in the Kodiak Management Area, 1985.

SYSTEM	AGE													TOTALS
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	
Karluk River, early run														
Number	0	222	0	1,388	2,351	1,084	23,309	403	0	4,586	2,380	0	443	36,146
Percent	0.0	0.6	0.0	3.8	6.5	3.0	64.5	1.1	0.0	12.7	6.6	0.0	1.2	100.0
Karluk River, late run														
Number	0	0	0	402	1,337	57	69,776	676	0	7,473	17,157	0	292	97,170
Percent	0.0	0.0	0.0	0.4	1.4	0.1	71.8	0.7	0.0	7.7	17.7	0.0	0.3	100.0
Red River														
Number	0	2,308	0	149,697	4,226	125,631	256,076	0	0	41,765	1,025	178	0	582,906
Percent	0.0	0.4	0.0	25.7	0.7	21.6	44.3	0.0	0.0	7.2	0.2	.0	0.0	100.0
Upper Station, early run														
Number	14	6	14	1,094	223	774	2,103	0	14	2,102	14	6	0	6,364
Percent	0.2	0.1	0.2	17.2	3.5	12.2	33.0	0.0	0.2	33.0	0.2	0.1	0.0	100.0
Upper Station, late run														
Number	1,424	1,205	0	137,663	10,645	10,439	347,831	404	0	9,402	4,567	0	0	523,660
Percent	0.3	0.2	0.0	26.3	2.0	2.0	66.4	0.1	0.0	1.8	0.9	0.0	0.0	100.0
Frazer Lake														
Number	0	321	0	793	200	473	129,500	0	0	0,851	0	0	0	140,138
Percent	0.0	0.2	0.0	0.6	0.1	0.3	92.4	0.0	0.0	6.3	0.0	0.0	0.0	100.0

- continued -

Table 10. (p 2 of 3)

SYSTEM	AGE													TOTALS
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	
Subtotal	1,438	4,062	14	291,017	18,982	138,458	830,595	1,483	14	74,259	25,143	184	735	1,386,384
Percent	0.1	0.3	.0	21.0	1.4	10.0	59.9	0.1	.0	5.4	1.8	.0	0.1	100.0
<u>SECONDARY</u>														
Afoqnak Lake, early run														
Number	0	0	0	505	0	1,041	192	0	10	202	0	0	0	1,950
Percent	0.0	0.0	0.0	25.9	0.0	53.4	9.8	0.0	0.5	10.4	0.0	0.0	0.0	100.0
Afoqank Lake, late run														
Number	0	0	0	7	0	12	9	0	0	1	0	0	0	23
Percent	0.0	0.0	0.0	25.0	0.0	42.9	28.6	0.0	0.0	3.6	0.0	0.0	0.0	100.0
Uganik Lake														
Number	0	17	17	709	34	2,093	625	0	0	4,575	0	0	0	8,070
Percent	0.0	0.2	0.2	8.8	0.4	25.9	7.7	0.0	0.0	56.7	0.0	0.0	0.0	100.0
Buskin River														
Number	0.0	3.1	0.0	154.4	3.1	176.6	7.3	0.0	0.7	1.7	0.0	8.3	0.0	347.0
Percent	0.0	0.9	0.0	44.5	0.9	50.9	2.1	0.0	0.2	0.5	0.0	2.4	0.0	100.0
Saltery Lake														
Number	7	0	0	943	0	1,719	270	0	0	568	0	0	0	3,507
Percent	0.2	0.0	0.0	26.9	0.0	49.0	7.7	0.0	0.0	16.2	0.0	0.0	0.0	100.0

- continued -

Table 10. (pg 3 of 3)

SYSTEM	AGE													TOTALS
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	
Swikshak River														
Number	33	753	33	3,992	458	622	753	0	154	360	0	115	0	7,283
Percent	0.5	10.3	0.5	54.8	6.3	8.5	10.3	0.0	2.3	4.9	0.0	1.6	0.0	100.0
Kafia Lake, early run														
Number	0	76	0	886	32	841	593	0	0	739	0	0	0	3,167
Percent	0.0	2.4	0.0	28.0	1.0	26.6	18.7	0.0	0.0	23.3	0.0	0.0	0.0	100.0
Subtotal	40	849	50	7,196	527	6,505	2,448	0	175	6,447	0	123	0	24,352
Percent	0.2	3.5	0.2	29.6	2.2	26.7	10.1	0.0	0.7	26.5	0.0	0.5	0.0	100.0
TOTALS	1,478	4,911	64	298,213	19,509	144,963	833,043	1,483	189	80,705	25,143	307	735	1,410,736
PERCENT	0.1	0.3	.0	21.1	1.4	10.3	59.1	0.1	.0	5.7	1.8	.0	0.1	100.0

Table 11. Age composition of the major and selected minor sockeye escapements in the Kodiak Management Area, 1985.

SYSTEM	Age												TOTALS	
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4		3.3
<u>MAJOR</u>														
Karluk Lake, early run														
Number	0	1,335	0	0,270	19,399	10,841	181,648	4,164	0	46,572	40,833	0	9,913	322,983
Percent	0.0	0.4	0.0	2.6	6.0	3.4	55.2	1.3	0.0	14.4	12.6	0.0	3.1	100.0
Karluk Lake, late run														
Number	0	0	0	1,734	10,393	580	478,353	3,276	0	40,010	135,965	0	2,654	672,965
Percent	0.0	0.0	0.0	0.3	1.5	0.1	71.1	0.5	0.0	5.9	20.2	0.0	0.4	100.0
Red River														
Number	153	2,800	0	129,445	3,042	100,495	134,394	0	153	17,688	587	0	0	399,757
Percent	.0	0.7	0.0	33.3	0.8	25.9	34.6	0.0	.0	4.5	0.2	0.0	0.0	100.0
Upper Station, early run														
Number	36	29	67	3,376	1,284	3,277	7,353	31	36	11,820	67	29	0	27,405
Percent	0.1	0.1	0.2	12.3	4.7	12.0	26.8	0.1	0.1	43.1	0.2	0.1	0.0	100.0
Upper Station, late run														
Number	800	1,189	0	123,154	6,311	10,702	256,232	174	0	7,090	2,676	0	0	408,408
Percent	0.2	0.3	0.0	30.2	1.5	2.6	62.7	.0	0.0	1.7	0.7	0.0	0.0	100.0
Frazer Lake														
Number	0	467	0	436	1,741	314	461,606	0	0	41,773	0	0	0	506,337
Percent	0.0	0.1	0.0	0.1	0.3	0.1	91.2	0.0	0.0	8.3	0.0	0.0	0.0	100.0

- continued -

Table 11. (pg 2 of 3)

SYSTEM	Age													TOTALS
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	
Subtotal	1,069	5,820	67	266,423	42,170	126,209	1,519,586	7,645	189	164,953	180,128	29	12,567	2,326,855
Percent	.0	0.3	.0	11.4	1.8	5.4	65.3	0.3	.0	7.1	7.7	.0	0.5	100
<u>MINOR</u>														
Afognak Lake, early run														
Number	0	0	0	11,428	0	24,394	5,934	0	220	4,835	0	0	0	46,811
Percent	0.0	0.0	0.0	24.4	0.0	52.1	12.7	0.0	0.5	10.3	0.0	0.0	0.0	100.0
Afognak Lake, late run														
Number	0	44	0	1,787	0	3,003	1,890	0	0	278	0	0	0	7,002
Percent	0.0	0.6	0.0	25.5	0.0	42.9	27.0	0.0	0.0	4.0	0.0	0.0	0.0	100.0
Uganik Lake														
Number	0	167	167	7,029	335	20,753	6,193	0	0	45,356	0	0	0	80,000
Percent	0.0	0.2	0.2	8.8	0.4	25.9	7.7	0.0	0.0	56.7	0.0	0.0	0.0	100.0
Little River														
Number	0	0	0	613	0	490	25,243	0	0	735	919	0	0	28,000
Percent	0.0	0.0	0.0	2.2	0.0	1.8	90.2	0.0	0.0	2.6	3.3	0.0	0.0	100.0
Buskin Lake														
Number	0	165	0	8,014	165	9,170	372	0	41	93	0	0	0	18,010
Percent	0.0	0.9	0.0	44.5	0.9	50.9	2.1	0.0	0.2	0.5	0.0	0.0	0.0	100.0

- continued -

Table 11. (pg 3 of 3)

SYSTEM	Age													TOTALS
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	
<b>Saltery Lake</b>														
Number	103	0	0	14,057	0	25,633	4,031	0	0	8,475	0	0	0	52,299
Percent	0.2	0.0	0.0	26.9	0.0	49.0	7.7	0.0	0.0	16.2	0.0	0.0	0.0	100.0
<b>Swikshak River</b>														
Number	225	5,169	225	27,416	3,146	4,270	5,169	0	1,124	2,472	0	797	0	58,203
Percent	0.4	10.3	0.4	54.8	6.3	8.5	10.3	0.0	2.2	4.9	0.0	1.5	0.0	100.0
<b>Kafila Lake, early run</b>														
Number	0	357	0	4,129	143	3,911	2,785	0	0	3,454	0	0	0	14,759
Percent	0.0	2.4	0.0	28.0	1.0	26.6	16.7	0.0	0.0	23.3	0.0	0.0	0.0	100.0
<b>Kafila Lake, late run</b>														
Number	0	0	0	288	0	10,535	2,180	0	0	15,661	52	0	355	30,062
Percent	0.0	0.0	0.0	0.7	0.0	35.1	7.3	0.0	0.0	55.5	0.2	0.0	1.2	100.0
<b>Subtotal</b>														
Number	328	5,962	392	74,691	3,795	102,180	53,781	0	1,352	62,249	52	797	355	222,526
Percent	2.1	1.2	0.1	32.8	1.2	31.3	15.5	0.0	0.4	25.2	0.3	0.2	1.1	100.0
<b>TOTAL</b>														
Number	1,397	11,792	499	341,114	49,955	286,385	1,573,367	7,645	1,274	847,302	181,055	816	10,930	2,653,779
PERCENT	0.1	0.4	0.2	12.9	1.7	8.5	59.3	0.3	0.1	9.3	6.6	0.0	0.5	100.0

Table 12 . Mean lengths and sex ratios of the sockeye catch in selected fishing locations in the Kodiak Management Area, 1985.

LOCATION	LENGTH (mm)			N	SEX
	N	MEAN	SE		M:F RATIO
Uganik Bay District	2,233	549	1	2,487	1.0:1
Uyak Bay District (including Karluk east of Rocky Point)	3,733	543	1	4,287	1.0:1
Karluk District south of Rocky Point	203	529	3	237	1.2:1
Red River District	1,839	528	1	2,074	0.8:1
Cape Alitak Section	2,589	520	1	2,879	1.0:1
Upper Olga Bay Statistical Area	613	481	2	720	0.6:1
Lower Olga Bay Statistical Area	2,082	526	1	2,342	1.4:1
Moser Bay Statistical Area	2,028	521	1	2,278	1.8:1
Deadman/Portage Bay Section	2,141	522	1	2,399	1.0:1
Cape Igvak Section	417	508	2	466	0.9:1

Table 13. Mean lengths and sex ratios of the sampled sockeye escapements in the Kodiak Management Area, 1985.

SYSTEM	RUN	LENGTH (mm)			SEX	
		N	MEAN	SE	N	M:F RATIO
<u>MAJOR</u>						
Karluk River	early	1,076	514	2	1,341	0.8:1
	late	1,205	538	1	1,914	1.5:1
Red River		1,017	527	1	1,127	1.2:1
Upper Station	early	881	533	2	957	1.2:1
	late	1,676	487	1	1,918	0.9:1
Frazer Lake		842	504	1	941	1.0:1
<u>SECONDARY</u>						
Afognak Lake	early	213	519	3	234	0.9:1
	late	478	495	2	596	1.1:1
Uganik Lake		476	557	2	595	1.3:1
Little River		457	500	1	595	1.7:1
Buskin Lake		-	-	-	456	0.7:1
Saltery Lake		506	535	2	622	1.0:1
Swikshak River		446	465	3	588	1.0:1
Kaflia Lake	early	496	441	3	617	2.4:1
	late	578	516	1	634	1.1:1

Table 14. Age composition of the coho catch samples from selected fishing locations within the Kodiak Management Area, 1985.

LOCATION	STATISTICAL AREA	N		-----AGE-----					Total
				1.1	2.1	2.2	3.1	4.1	
Zachar Bay	254-30	129	Number	2,125	4,354	0	207	0	6,686
			Percent	31.8	65.1	0.0	3.1	0.0	100.0
Karluk Lagoon	255-10	73	Number	443	3,547	89	2,305	89	6,473
			Percent	6.8	54.8	1.4	35.6	1.4	100.0
Halo Bay	262-20	308	Number	4,303	2,957	0	48	0	7,308
			Percent	58.9	40.5	0.0	.6	0.0	100.0

Table 15. Mean lengths and sex ratios of the coho catches in selected fishing locations within the Kodiak Management Area, 1985.

LOCATION	STATISTICAL AREA	LENGTH (mm)			N	SEX
		N	MEAN	SE		M:F RATIO
Zachar Bay	254-30	129	647	4	238	1.8:1
Karluk Lagoon	255-10	73	668	5	142	1.4:1
Halo Bay	262-20	308	621	3	477	2.5:1

Table 16. Age composition of selected coho escapements in the Kodiak Management Area, 1985.

SYSTEM	-----AGE GROUPS-----						Totals
	1.0	2.0	3.0	1.1	2.1	3.1	
<u>Pauls Lake</u>							
Number	0	0	59	3,414	5,886	177	9,536
Percent	0.0	0.0	0.6	35.8	61.7	1.9	100.0
<u>Afognak River</u>							
Number	0	64	0	4,275	9,316	191	13,846
Percent	0.0	0.5	0.0	30.9	67.3	1.4	100.0
<u>Karluk River</u>							
Number	0	680	1,587	2,721	21,317	11,565	37,870
Percent	0.0	1.8	4.2	7.2	56.3	30.5	100.0
<u>Red River</u>							
Number	0	0	0	12,021	18,783	1,503	32,307
Percent	0.0	0.0	0.0	37.2	58.1	4.7	100.0
<u>Akalura Lagoon</u>							
Number	0	0	0	194	1,897	310	2,400 <sup>a</sup>
Percent	0	0.0	0.0	8.1	79.0	12.9	100.0
<u>Silver Salmon</u>							
Number	0	54	0	753	699	54	1,560 <sup>a</sup>
Percent	0.0	3.5	0.0	48.3	44.8	3.5	100.0
<u>Upper Station</u>							
Number	103	103	0	619	2,579	310	3,714
Percent	2.8	2.8	0.0	16.7	69.4	8.3	100.0
<u>Buskin River</u>							
Number	167	1,085	0	4,758	3,464	0	9,474
Percent	1.8	11.5	0.0	50.2	36.6	0.0	100.0
<u>Saltery River</u>							
Number	0	54	0	1,019	2,896	54	4,023
Percent	0.0	1.3	0.0	25.3	72.0	1.3	100.0
<hr/>							
Totals	270	2,040	1,646	29,775	66,837	14,164	114,730
Percent	0.2	1.8	1.5	26.0	58.1	12.4	100.0

<sup>a</sup>Total escapement estimated by expanding the peak aerial escapement count by a factor of 2.4.

Table 17. Mean lengths and sex ratios of the sampled coho escapements in the Kodiak Management Area, 1985.

SYSTEM	LENGTH (mm)			SEX	
	N	MEAN	SE	N	M:F RATIO
Pauls Lake	162	644	4	207	1.3:1
Afognak River	217	623	4	361	1.0:1
Karluk River	167	638	7	299	1.6:1
Red River	129	639	4	240	1.5:1
Akalura Lagoon	62	635	4	118	4.6:1
Silver Salmon Lagoon	29	622	12	48	1.5:1
Upper Station	36	635	13	50	0.3:1
Buskin River	-	-	-	256	1.2:1
Saltery River	150	631	6	305	1.7:1

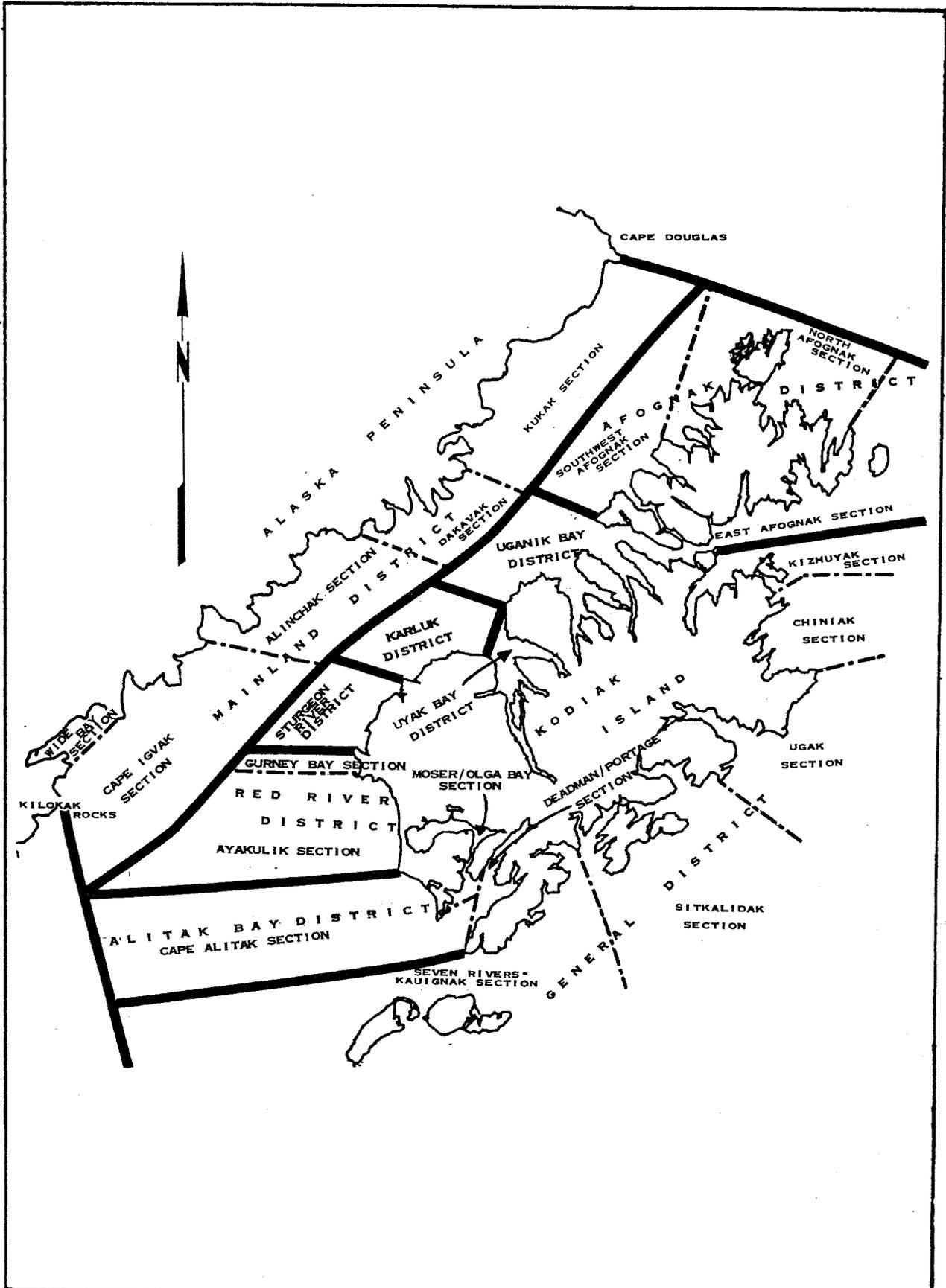


Figure 1. Kodiak Management Area districts and sections, 1985.



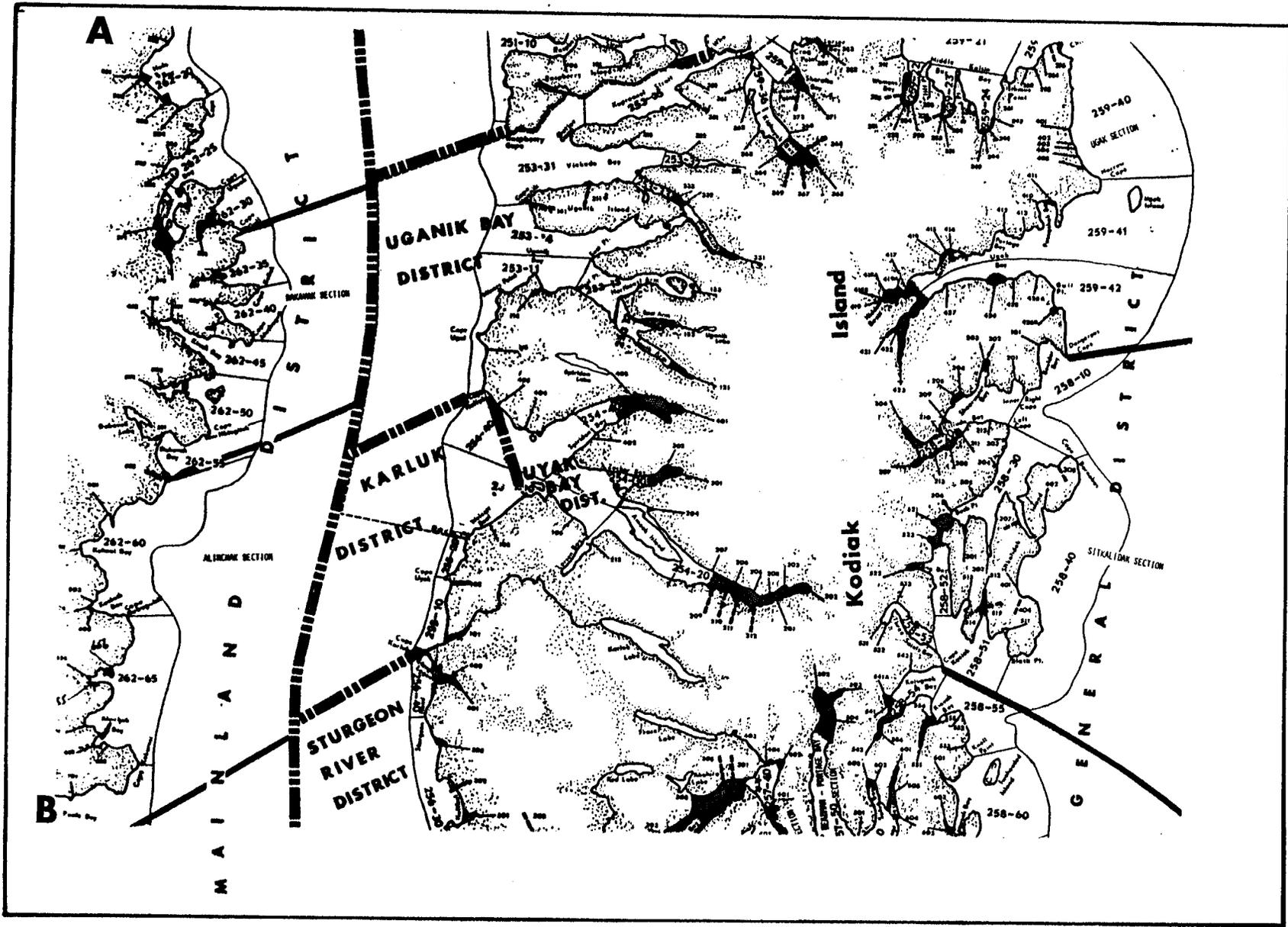


Figure 2. (p 2 of 3)

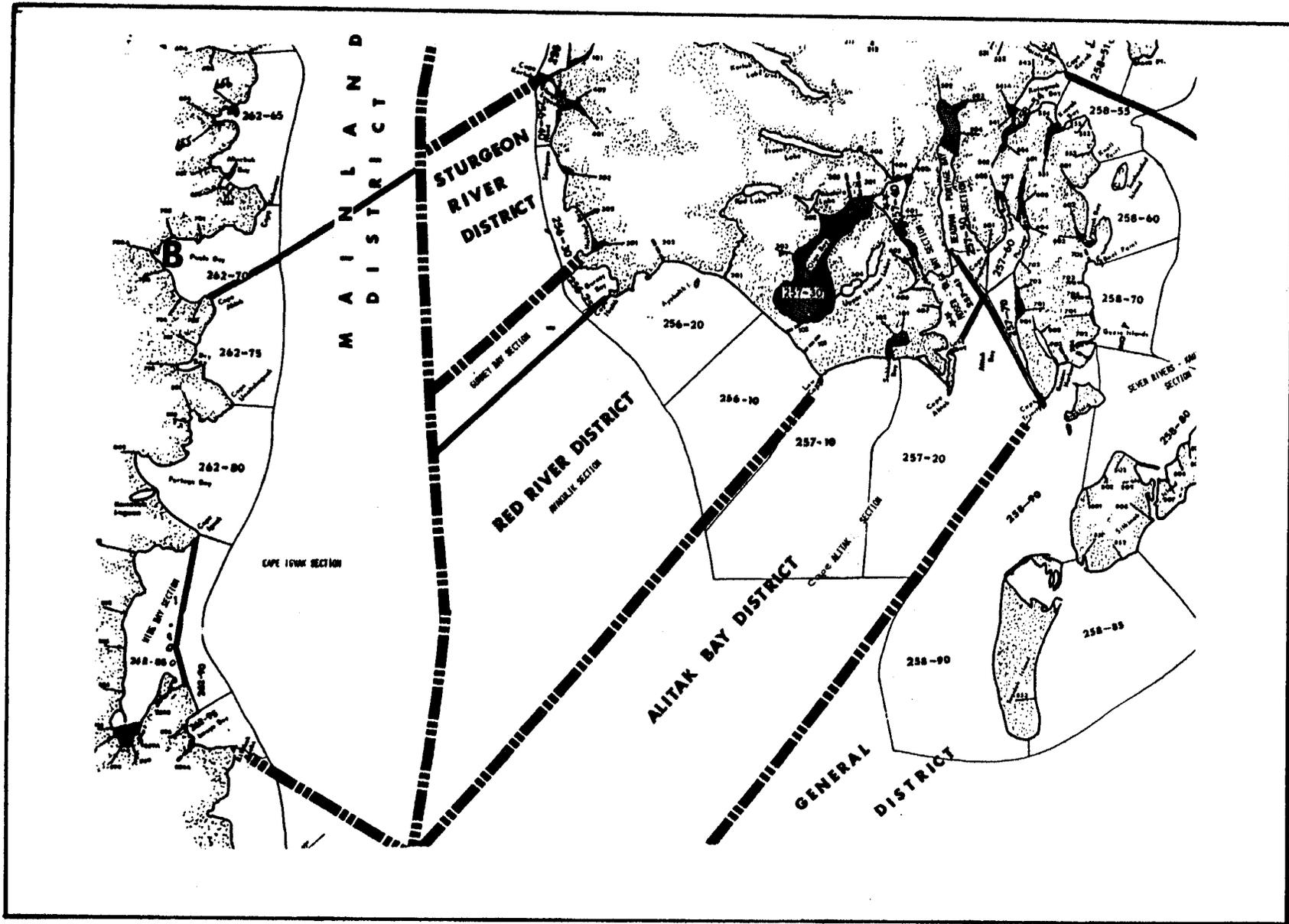


Figure 2. (p 3 of 3)

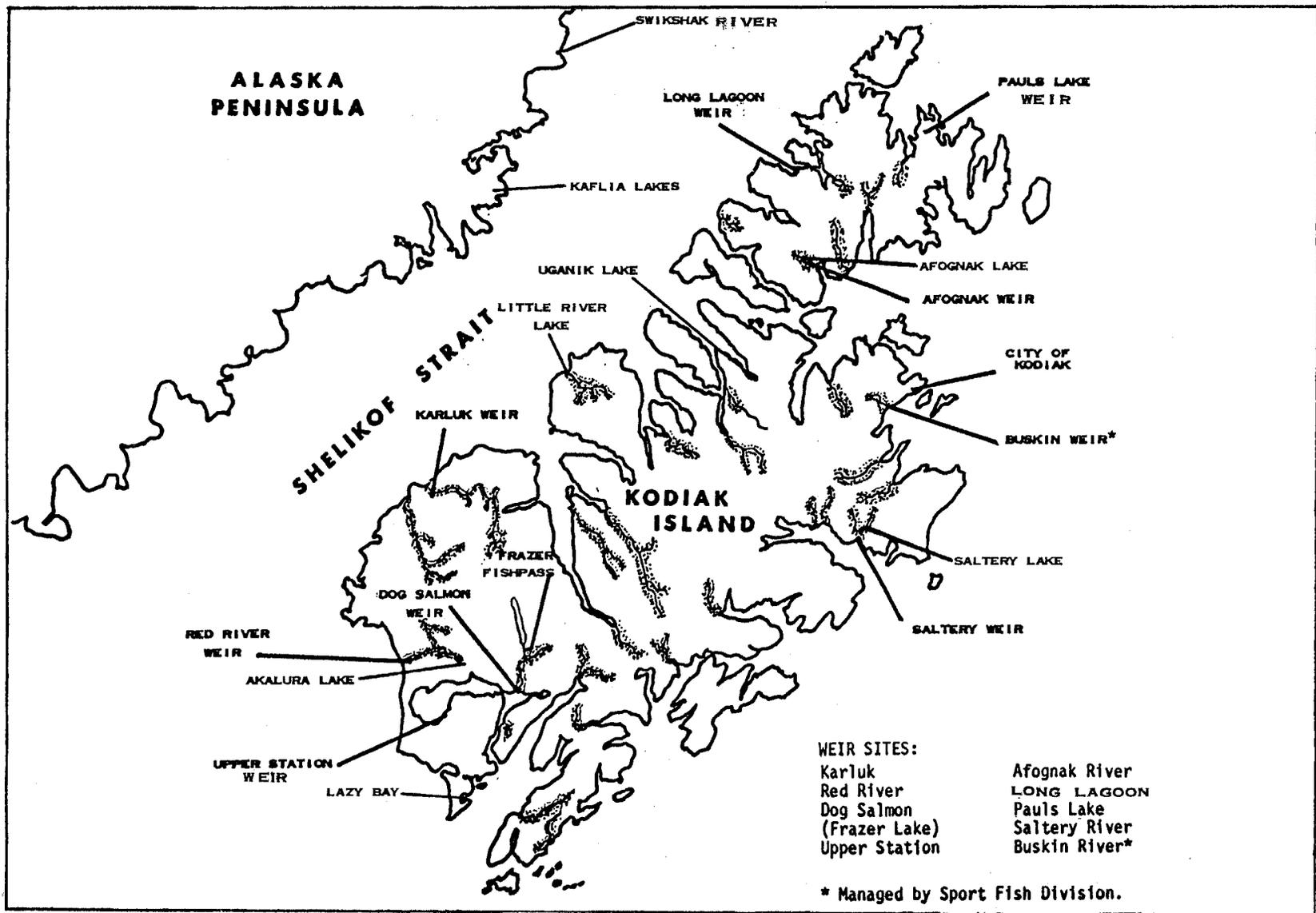


Figure 3. Kodiak catch and escapement sampling sites, 1985.

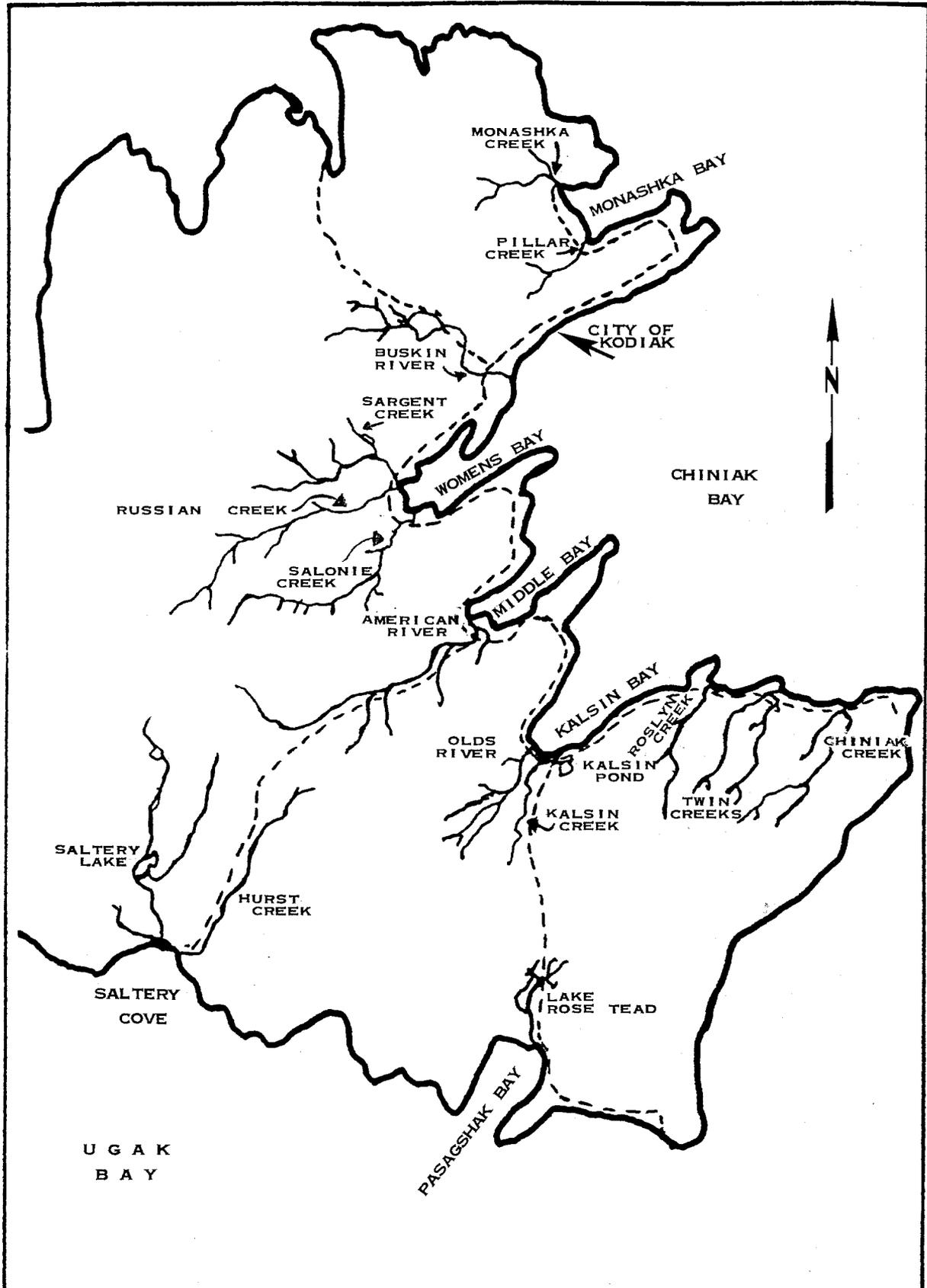


Figure 4. Kodiak road system coho streams, 1985.

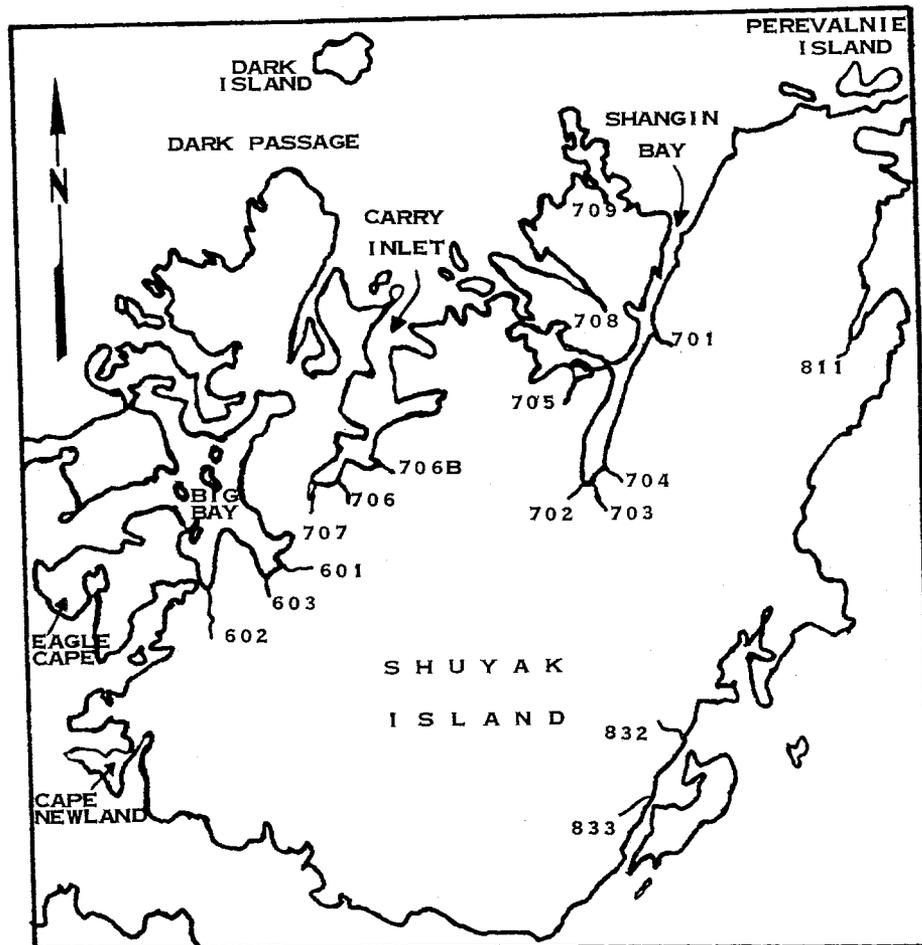


Figure 5. Shuyak Island coho streams, 1985.

APPENDICES

Appendix A. 1985 calendar weeks.

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STATISTICAL WEEK	CALENDAR DATES	STATISTICAL WEEK	CALENDAR DATES
1	01/01 to 01/05	27	06/30 to 07/06
2	01/06 to 01/12	28	07/07 to 07/13
3	01/13 to 01/19	29	07/14 to 07/20
4	01/20 to 01/26	30	07/21 to 07/27
5	01/27 to 02/02	31	07/28 to 08/03
6	02/03 to 02/09	32	08/04 to 08/10
7	02/10 to 02/16	33	08/11 to 08/17
8	02/17 to 02/23	34	08/18 to 08/24
9	02/24 to 03/02	35	08/25 to 08/31
10	03/03 to 03/09	36	09/01 to 09/07
11	03/10 to 03/16	37	09/08 to 09/14
12	03/17 to 03/23	38	09/15 to 09/21
13	03/24 to 03/30	39	09/22 to 09/28
14	03/31 to 04/06	40	09/29 to 10/05
15	04/07 to 04/13	41	10/06 to 10/12
16	04/14 to 04/20	42	10/13 to 10/19
17	04/21 to 04/27	43	10/20 to 10/26
18	04/28 to 05/04	44	10/27 to 11/02
19	05/05 to 05/11	45	11/03 to 11/09
20	05/12 to 05/18	46	11/10 to 11/16
21	05/19 to 05/25	47	11/17 to 11/23
22	05/26 to 06/01	48	11/24 to 11/30
23	06/02 to 06/08	49	12/01 to 12/07
24	06/09 to 06/15	50	12/08 to 12/14
25	06/16 to 06/22	51	12/15 to 12/21
26	06/23 to 06/29	52	12/22 to 12/28

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Appendix B. Listing of allowable commercial gear in the Kodiak Management Area by statistical area, 1985.

DISTRICT	STATISTICAL AREA	PURSE SEINE	BEACH SEINE	SET GILLNET
<u>AFOGNAK DISTRICT</u>				
Southwest Afognak Section				
	251-10	X	X	
	251-20	X	X	
North Afognak Section				
	251-30	X	X	
	251-40	X	X	
	251-50	X	X	
	251-60	X	X	
	251-70	X	X	
	251-81	X	X	
	251-82	X	X	
	251-83	X	X	
	251-90	X	X	
East Afognak Section				
	252-10	X	X	
	252-20	X	X	
	252-30	X	X	
	252-31	X	X	
	252-32	X	X	
	252-33	X	X	
	252-34	X	X	
	252-35	X	X	
<u>UGANIK BAY DISTRICT</u>				
	253-11	X	X	X
	253-12	X	X	
	253-13	X	X	X
	253-14	X	X	X
	253-31	X	X	X
	253-32	X	X	
	253-33	X	X	X
	253-35	X	X	X
<u>UYAK BAY DISTRICT</u>				
	254-10	X	X	X
	254-20	X	X	X
	254-30	X	X	X
	254-40	X	X	X
<u>KARLUK DISTRICT</u>				
	254-10	X	X	X
	254-40	X	X	X
	255-10	X	X	
	255-20	X	X	X

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DISTRICT	STATISTICAL AREA	PURSE SEINE	BEACH SEINE	SET GILLNET
<u>STURGEON RIVER DISTRICT</u>				
	256-30	X	X	
	256-40	X	X	
<u>RED RIVER DISTRICT</u>				
Gurney Bay Section				
Ayakulik Section	256-25	X	X	
	256-10	X	X	
	256-20	X	X	
<u>ALITAK BAY DISTRICT</u>				
Cape Alitak Section				
	257-10	X	X	
	257-20	X	X	
Moser Bay				
Lower Olga Bay	257-41 a	X	X	X
Upper Olga Bay	257-40 a	X	X	X
Deadman-Portage Bay Section	257-30 a	X	X	X
	257-50	X	X	
	257-60	X	X	
	257-70	X	X	
<u>GENERAL DISTRICT</u>				
Seven Rivers-Kauignak Section				
	258-55	X	X	
	258-60	X	X	
	258-70	X	X	
	258-80	X	X	
	258-85	X	X	
	258-90	X	X	
Sitkalidak Section				
	258-10	X	X	
	258-20	X	X	
	258-30	X	X	
	258-40	X	X	
	258-51	X	X	
	258-52	X	X	
	258-53	X	X	
	258-54	X	X	

- continued

Appendix B. (p 3 of 3).

DISTRICT	STATISTICAL AREA	PURSE SEINE	BEACH SEINE	SET GILLNET
Ugak Section	259-40	X	X	
	259-41	X	X	
	259-42	X	X	
Chiniak Section	259-10	X	X	
	259-21	X	X	
	259-22	X	X	
	259-23	X	X	
	259-24	X	X	
	259-25	X	X	
Kizhuyak Section	259-36	X	X	X
	259-37	X	X	X
	259-38	X	X	X
	259-39	X	X	X
<u>MAINLAND DISTRICT</u>				
Kukak Section	262-10	X	X	
	262-15	X	X	
	262-20	X	X	
	262-25	X	X	
	262-27	X	X	
	262-30	X	X	
Dakavak Section	262-35	X	X	
	262-40	X	X	
	262-45	X	X	
	262-50	X	X	
	262-55	X	X	
Alinchak Section	262-60	X	X	
	262-65	X	X	
	262-70	X	X	
Cape Igvak Section	262-75	X	X	
	262-80	X	X	
	262-85	X	X	
	262-90	X	X	
	262-95	X	X	

<sup>a</sup>In the Moser-Olga Bay Section of the Alitak District, salmon may not be taken by purse seines or beach seines before 5 September.

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