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THE NORTH ALASKA PENINSULA
SALMON REPORT

Report to the Alaska Board of Fisheries

By:

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INTRODUCTION

The North Peninsula area of the Alaska Peninsula Salmon Management Area extends from Cape Sarichef on Unimak Islands east to Cape Menshikof on the border with Bristol Bay (Area T; Figure 1). This report describes those fisheries that are located on the North Peninsula which consists of two districts: 1) the Northwestern District encompasses the coastal waters from Cape Sarichef to Moffet Point, and 2) the Northern District from Moffet Point to Cape Menshikof.

Legal gear types in the Northwestern and Northern Districts are purse seine (also includes beach seine), and drift and set gillnet (ADF&G 1992). Gear restrictions exist within many areas. The majority of the salmon harvest occurs in the Northern District, specifically the area from Nelson Lagoon to Strogonof Point (Figure 2). The Nelson Lagoon Section is open to set and drift gillnet gear only; the Herendeen-Moller Bay Section to seine, drift and set gillnet gear, the Bear River Section to seine and drift gillnet gear, the Three Hills Section to drift gillnet gear only, and the Ilnik Section to set and drift gillnet gear.

The commercial salmon fishing season opens in most of the Northwestern District on June 1, and in parts of the Northern District on May 1. Weekly fishing periods occur in most areas and are usually either 6:00 a.m. Monday to 6:00 p.m. Wednesday (2.5 days/week) or 6:00 a.m. Monday to 6:00 p.m. Thursday (3.5 days/week; Table 1).

Escapement abundance into local salmon systems determines commercial fisheries openings, closings, and duration. Sockeye salmon are the primary species of harvest on the North Peninsula. During June 1 through September 15 within the Nelson Lagoon to Strogonof Point area, management emphasis is on four sockeye systems, Nelson, Bear, Sandy, and Ilnik Rivers. Nelson and Bear Rivers are the dominant systems. Alaska Department of Fish and Game (ADF&G) weir camps located at these four systems provide daily escapement enumeration used to manage commercial fisheries.

ESCAPEMENT BY SPECIES

There are 62 salmon systems in the North Peninsula, with chinook salmon found in 10 systems, sockeye salmon found in 32, coho salmon have been documented in at least 13 systems, pink salmon in 11 systems, and chum salmon in 38 systems (Figure 3).

Chinook

Chinook salmon escapement occurs almost entirely within the Northern District. The Northwestern District has only one documented chinook salmon stream while 9 systems are found in the Northern District (Figure 3). The bulk of the escapement occurs in the Nelson, Meshik, and Cinder River systems.

Sockeye

Of the 32 sockeye salmon systems on the North Peninsula, 14 are found in the Northwestern District and 18 in the Northern District (Figure 3). The North Peninsula 1975-94 average sockeye escapement was 906,300 fish, while the 1985-94 average escapement was 888,800 fish, and the 1990-94 average 1,084,900 fish (Figure 4). The majority of the escapement occurs in the Northern District, specifically in the Bear, Nelson, Sandy, and Ilnik Rivers. During some years, as in 1994, significant sockeye salmon escapement is observed north of Strogonof Point in the Meshik and Cinder River systems (Table 2).

Local origin sockeye salmon are abundant from Nelson Lagoon to Strogonof Point in June, July, August, and September (Figure 5). Escapement goals for the main systems with the 1990-94 average escapement are listed in Table 3. The Nelson River sockeye run begins in mid June, peaks in early July, and is over by mid August; Bear River supports two distinct runs: an early run that begins in early June, peaks in early July, and ends in late July; and the late run which begins in late July, peaks in early August, and is over in mid to late September; Sandy River run timing, based on the first year escapement weir counts in 1994, begins in mid June, peaks in late June, and ends in late July; and Ilnik River run timing is early and closely parallels Bear River early run timing (Figure 5).

Return Per Spawner Data

To reconstruct runs postseason, accurate age and stock composition estimates from commercial catches and escapements are required. Scale samples for completing this have been collected annually since 1985 by the Alaska Department of Fish and Game. Apportioning the commercial catch to stock of origin prior to August 1 requires a method to determine stock of origin in a mixed stock fishery. In the Port Moller to Strogonof Point reach, the late June and portion of the July fishery has been documented in some years to harvest nonlocal stocks bound for Bristol Bay. Local (except the late run into Bear River) and nonlocal stock runs are considered completed within this reach prior to July 31, therefore allowing return per spawner data (R/S) to be gathered for the Bear River late run. Although this run, at least in some years, may commence during the latter part of July, the bulk of the run occurs in August and lasts into September.

Since R/S data is not available earlier in the season when potentially nonlocal stocks and the majority of local stocks (early Bear, Nelson, Sandy, and Ilnik River runs) are present in the commercial catch, it is appropriate to inquire about other R/S data that may be applied to North Peninsula systems. Some of the best R/S data by ADF&G is available in neighboring Bristol Bay. System specific R/S is available, however, until a further understanding of the specific R/S data of local systems is known, it would only be appropriate to use the entire Bristol Bay (Kvichak, Naknek, Egegik, Ugashik, Wood, and Igushik Rivers) combined R/S average. The combined most recent years averages are listed below:

Recent 15 year R/S average = 3.45
Recent 10 year R/S average = 3.76
Recent 5 year R/S average = 4.69

It would be inappropriate to use old R/S data to predict future runs as it would be to use recent R/S data and apply it to past runs. To be able to determine the recent past and near future potential run to the North Peninsula, the 5 year average for Bristol Bay of 4.69 was used to calculate the early North Peninsula (Bear River early, Sandy, Nelson, and Ilnik Rivers) run potential, while the 1980-88 Bear River late run average R/S of 5.02 was applied to the Bear River late run instead of the five year average R/S of 7.37 because the range associated with the 1980-88 data is considerably tighter than the five year data. Confidence intervals at 80% were applied to the Bristol Bay and late Bear River run R/S data. Bristol Bay R/S ranges from 3.57 to 5.80 with a mean of 4.69. The Bear River late run R/S ranges from 3.25 to 6.78 with a mean of 5.02. The run timing of local stock fish by five day period that may be present in local commercial fisheries is presented in Table 4. The potential run size bound for these four systems for the entire season would be expected to range from 3.15-5.42 million sockeye with a midpoint of 4.29 million (Table 4). The estimated run potential prior to July 20 would be expected to range from 2.35-3.82 million sockeye (Table 4). The run potential depicted in Table 4, includes the escapement. To determine the potential fish available to harvest, the escapement (which has averaged 899,000 sockeye for these systems from 1990-94) would be subtracted.

This analysis is intended to be used as a guide for the potential run production of North Peninsula sockeye systems and not as a stock identification study.

Coho

Coho salmon systems are almost in equal abundance in the Northwestern District (7) and Northern District (6). Further systems are found in many of tributaries of the major systems, and therefore, the number of coho systems is considered minimum. Due to inadequate funding and fall weather conditions, very few surveys are flown to adequately determine coho salmon abundance. Only in 1990 was an adequate assessment attempted. Previous escapement counts indicate that North Peninsula coho escapement range from about 140,000-300,000 fish (Table 5). Substantial coho salmon production occurs in the Cinder, Meshik (Port Heiden), Ilnik, and Nelson Rivers.

Pink

Pink salmon are usually of only limited economic importance in the North Peninsula. However, in some areas they may be economically important. The 1975-94 average pink salmon escapement was 37,500 fish, with the 1985-94 average of 42,800 fish (Table 5). Bechevin Bay and Herendeen-Moller Bay are usually the largest pink salmon producing systems. Pink salmon appeared in substantial numbers in Herendeen Bay for the first time in 1990.

Chum

Chum salmon systems are the most abundant of all salmon systems (38), split equally between the Northwestern (19) and Northern (19) Districts. Escapement from 1975-94 averaged 415,500

salmon, with the 1985-94 average of 358,500 fish (Table 5). The chum salmon indexed escapement goal for areas managed on the basis of chum salmon stocks is 300,000-600,000 fish.

HARVEST BY SPECIES

Chinook

The 1975-94 chinook salmon harvest averaged 15,700 fish, which is similar to the 1985-94 average of 15,200 (Table 5). Most of the annual harvest occurs in the Northern District, with the majority of the harvest occurring in the Port Heiden, Nelson Lagoon, and Bear River Sections.

Sockeye

The 1985-94 average sockeye harvest in the North Peninsula was 2,451,800 fish, the 1975-94 average annual harvest was 1,862,300 (Table 5; Figure 6). The record harvest occurred in 1993, when 3,866,600 fish were harvested of which 88% (3,331,900) were taken in the Port Moller to Strogonof Point area. The bulk of the North Peninsula harvest occurs in the Nelson Lagoon to Strogonof Point reach, with a substantial portion of the harvest occurring in the Port Moller to Strogonof Point area (Bear River, Three Hills, and Ilnik Sections; Table 2; Figure 2).

In Nelson Lagoon, the 1975-94 average sockeye harvest was 265,900, the 1985-94 average harvest of 336,700 fish, and the 1990-94 average harvest of 369,000 fish (Figure 7). Annually, between 30-40 permit holders typically fish the section, the majority of the gear is set gillnet. The peak weekly sockeye harvest typically occurs in early to mid July, as occurred in 1994 (Figure 8).

The 1975-94 average sockeye harvest in the Port Moller to Cape Seniavin (includes the Bear River Section) reach was 845,600 fish, the 1985-94 average was 944,900 fish, and the 1990-94 average was 1,284,400 fish (Figure 9). The number of permits fished in the Bear River Section has stabilized over the past 10 years to an average of 161 permits fished per year, above the 1975-84 average of 103 permits (Figure 10). Prior to 1983, the Bear River Section accounted for the majority of the harvest in the Port Moller to Strogonof Point reach (includes the Bear River, Three Hills and Ilnik Sections). Since 1985, the Bear River Section averaged 48% of the total sockeye harvest within these three sections combined. The peak weekly harvest in the Port Moller to Cape Seniavin area usually occurs in late June and early July and decreases slightly with another peak in mid August. Sockeye catches in the Port Moller to Cape Seniavin reach in 1994 remained consistent from early July through early September, with only minor fluctuations during this period (Figure 11).

In the Cape Seniavin to Strogonof Point reach (encompassing the Three Hills and Ilnik Sections) the 1975-94 average sockeye harvest was 647,300, the 1985-94 average was 1,045,800 fish, and the 1990-94 average was 1,221,700 fish (Figure 9). The number of permits fished in the Three Hills Section began to increase in 1983 and 1984 with the 1985-94 average number of permits

fished within this section of 130, up from the 1975-84 average of 52 (Figure 10). In the Ilnik Section, the number of permits began to increase in 1983 with the 1985-94 average number of permits fished in the section of 137, up from the 1975-84 average of 35 (Figure 10). The number of permits fished in these sections has stabilized since the increase in 1983 and 1984. From 1985-94, the Three Hills Section averaged 22% of the sockeye harvest within the Bear River, Three Hills, and Ilnik Sections combined, while the Ilnik Section averaged 30% (Figure 12). Catches within this reach typically peak during early and mid July, then decrease rapidly as observed in 1994 (Figure 11).

Scale Pattern Analysis 1987-90 Summary

Commercial salmon fisheries in Alaska are managed for attaining annual system specific escapement goals to ensure future harvestable surplus and stock perpetuation. Escapement goals and preseason run forecasts are based on run reconstruction using catch and escapement data. To reconstruct runs postseason, a series of accurate age and stock composition estimates from catches and escapements are required.

Scale pattern analysis (SPA) studies to determine stocks of origin studies in the Harbor Point to Strogonof Point reach were conducted from 1987-90. SPA studies were usually conducted for a period of 2-3 weeks during the peak of the fishery in the Harbor Point to Strogonof Point reach (Table 6). Results were varied with North Peninsula stocks dominating the catch during some periods and years and Bristol Bay stocks dominating others. Non-local stocks of Bristol Bay origin have contributed to late June - early July fisheries east of Cape Seniavin and to a lesser degree west of Cape Seniavin as determined from SPA studies (Table 6; Geiger 1989; Swanton and Murphy 1992).

In the Harbor Point to Cape Seniavin reach during June 19-July 2, 1988, the sockeye harvest was 137,937 fish, with SPA the local contribution was determined to compose 96% of the catch while the Bristol Bay component was 4% (Figure 13). Within the same reach in 1990, from July 8-21 118,157 sockeye were harvested, of which 58% were of North Peninsula origin and 42% Bristol Bay origin (Figure 13).

Within the Cape Seniavin to Strogonof Point area, during July 6-12, 1987, 275,192 sockeye were harvested (75% North Peninsula and 25% Bristol Bay) and during the July 13-19 period 193,179 fish were caught (58% North Peninsula and 42% Bristol Bay; Figure 14). During a three week period in 1988, SPA was used to determine stock of origin for the week of June 26-July 2 when 100,355 fish were harvested (93% North Peninsula and 7% Bristol Bay), July 3-9 weekly harvest of 395,564 fish (50% North Peninsula and 50% Bristol Bay), and July 10-16 harvest of 183,100 fish (52% North Peninsula and 48% Bristol Bay; Figure 14). In 1989, conservation considerations limited the fishery in this area (Geiger 1989). After June 29 and prior to July 12, this area was fished for only one 18 hour period on July 5 and approximately 36% of the harvest during this opening was estimated to be of Bristol Bay origin (Figure 15). No other fishery occurred in this area until July 12. In 1990, SPA during the July 8-21 period found 22% of the 763,786 harvest were of North Peninsula origin, and 78% bound for Bristol Bay (Figure 15).

SPA studies from 1987-89 depict Bristol Bay stocks as Ugashik River stocks (Geiger 1989). Naknek and Egegik scales were analyzed but were not included in the 1987-89 research because of the poor model accuracy when included with North Peninsula stocks. In 1990, an aggregate of Bristol Bay stocks (Naknek, Egegik, and Ugashik) were used as a combination, therefore, it is not possible to determine the harvest of specific Bristol Bay stocks (Swanton and Murphy 1992). Bear and Nelson River stocks were used in all years to generate North Peninsula estimates. The accuracy of the models, run timing, and age composition comparison of the escapement were used to determine which stocks (local and nonlocal) would be used in the analysis of North Peninsula catches.

It is impossible to accurately determine the local and nonlocal contribution of sockeye salmon to North Peninsula catches without adequate stock identification studies. Due to budget restrictions, SPA studies have not been conducted on North Peninsula harvests since 1990.

Coho

The majority of the North Peninsula coho harvest occurs in the Northern District, specifically in Nelson Lagoon, Cinder River, Inner Port Heiden, Bear River, and Ilnik (mainly Ilnik Lagoon) Sections (Table 7). The 1985-94 average North Peninsula harvest is 189,700 fish. The harvest has ranged from 64,300 in 1993 to 241,200 in 1994. Coho catches typically commence during the first week of August, peak during the last 10 days of August and first week of September, and end in mid to late September.

Pink

The 1975-94 even-year pink salmon harvest was 187,900 fish, below the 1985-94 even-year harvest of 210,500 fish (Table 5). Directed pink salmon fisheries occur in Bechevin Bay in the Northwestern District and occasionally Herendeen Bay in the Northern District. Odd year harvest are typically less than 10,000 fish (Table 5).

Chum

The 1975-94 chum salmon harvest of 303,000 fish, is above the 1985-94 average of 273,500 fish (Table 5). In the Northwestern District, the bulk of the harvest usually occurs in the Izembek-Moffet Bay Section, with occasional substantial harvests occurring in Bechevin and Uria Bays, and Swanson Lagoon. In the Northern District, the Herendeen-Moller Bay and Bear River Sections typically dominate the catch.

AREA M AND AREA T OVERLAP AREA

The Area M and Area T overlap area was created shortly after statehood to allow Port Heiden fishers the opportunity to fish for chinook and coho salmon in their traditional area within the Inner Port Heiden Section, and allow Pilot Point fishers to fish inside the Cinder River Section for chinook and coho (and occasionally sockeye on strong runs) salmon and still be able to harvest sockeye in the Bristol Bay area.

All of the most recent effort (from about 1985-94) in the Cinder River Section is from Area T permit holders. During every month except July, Area T permit holders are allowed to fish during the open season in the Inner Port Heiden and Cinder River Sections. Area T permit holders were allowed to fish in the Ilnik Section during August and September prior to 1990.

Since 1976, when 16 Area T permit holders fished the overlap area, the number of Area T permit holders that have fished within this area increased and peaked in 1992 with 122 permits (104 drift gillnet and 18 set gillnet). The majority of Area T permit holders that fish Alaska Peninsula waters are fishing within the Cinder River Section for coho salmon in August and September. In 1986, Area T fishers started operating in the Ilnik and Outer Port Heiden Sections. In 1990, the Board of Fisheries eliminated Area T fishers from the Ilnik Section (except inside Ilnik Lagoon) and closed the Outer Port Heiden Section to all commercial fishing operations by both Area M and Area T fishers due to concern over potential interception of coho salmon bound for Inner Port Heiden (Meshik River). Area T fishers predominantly fish in the Cinder River Section during May and June for chinook and sockeye and in August and September for coho salmon, along with predominantly local (Port Heiden) Area T permit holders that fish in the Inner Port Heiden Section.

BOARD OF FISHERIES REGULATION CHANGES

Board of Fisheries regulation changes in the Northern District over concern for potential interception of salmon are summarized in Table 8.

MANAGEMENT STRATEGY

The Bear River, Three Hills, and Ilnik Sections are managed on the basis of catch per unit effort indicators and relative abundance of fish as determined by escapement surveys and weir counts. Table 9 briefly depicts the sockeye stocks used to manage these three sections. This section is not a detailed description of the management strategy, but a general description of the factors that are considered when management actions are taken.

Bear River and Three Hills Sections

The Bear River and Three Hills Sections are managed on the basis of Bear and Sandy River sockeye salmon stocks (Table 9). At times when the escapement objectives in Bear and Sandy Rivers are not being met, the Bear River and Three Hills Sections may be closed until escapement responds adequately to warrant a fishery. If escapement objectives are not lagging dramatically and harvests indicate fish are en route, then the closed waters at the river terminus may be expanded in order to obtain the escapement objectives. If escapement into Ilnik and/or Ocean River (if Ocean River flows into the Bering Sea versus Ilnik Lagoon, which occurs approximately every 6 years) are lacking and area closures in the Ilnik Section are not effective, the eastern portion of the Three Hills line may be moved to the west to provide for a larger closed water area in an attempt to increase the escapement.

Ilnik Section

The Ilnik Section, including the area outside of Ilnik Lagoon, will be managed prior to July 16 (the approximate end of the Ilnik River sockeye run) for Ilnik sockeye stocks (Table 9). Time and area closures may be considered prior to July 16 if there are conservation concerns for Bear and Ugashik Rivers. If Bear and Ugashik River sockeye runs are expected to meet escapement requirements, fishing time in the Ilnik Section will be determined by local Ilnik River escapement. Time and area adjustments are considered if escapement objectives are not met. Post July 15, the Ilnik Section will be managed for Bear River sockeye stocks (Table 9). However, if Ilnik and Ugashik runs are late and escapement requirements are not being met, an extension past July 15 may be needed to ensure escapement to these systems.

OUTLOOK FOR 1995

The projected 1995 commercial salmon season harvest projections for the North Peninsula are: chinook salmon 15,000, sockeye 2,700,000, 200,000 coho, 5,000 pink, and 200,000 chum salmon. The bulk of the sockeye projected harvest (2,400,000 fish) is expected to occur in the Port Moller to Stroganof Point area.

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Table 1. Scheduled North Peninsula fishing periods, 1994.

SECTION	OPEN SEASON	FISHING PERIOD
Cinder River, outside Cinder River Lagoon.	August 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Cinder River, inside Cinder River Lagoon	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Outer Port Heiden	No open season	
Inner Port Heiden	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Ilnik Section outside Ilnik Lagoon between Three Hills and Loran C line 9990-Y-33265 running off of Ilnik (Unangashak) Bluffs.	July 5 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Ilnik Section between Loran C line 9990-Y-33265 and Strogonof Point.	July 15 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Ilnik Section inside Ilnik Lagoon	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Three Hills	June 25 - June 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Three Hills	July 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Bear River	May 1 - June 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Bear River	July 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Herendeen-Moller Bay Section, enclosed by a line from Harbor Point to Entrance Point	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Herendeen-Moller Bay Section, not enclosed by a line from Harbor Point to Entrance Point	May 1 - July 20	6:00 a.m. Monday to 6:00 p.m. Thursday
Nelson Lagoon	May 1 - June 15	6:00 a.m. Monday to 12:00 Midnight Wednesday
Nelson Lagoon	June 16 - August 15	6:00 a.m. Monday to 12:00 Midnight Thursday
Nelson Lagoon	August 16 - September 30	6:00 a.m. Monday to 12:00 Midnight Wednesday
Caribou Flats	No open season	

-Continued-

Table 1. (page 2 of 2)

SECTION	OPEN SEASON	FISHING PERIOD
Black Hills ^a	May 1 - July 4 July 5 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday 6:00 a.m. Monday to 6:00 p.m. Friday
Izembek-Moffet Bay	June 1 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Swanson Lagoon	June 1 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Urilia Bay ^b	June 28 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Dublin Bay	July 10 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Bechevin Bay	June 1 - September 30	By Emergency Order Only

^a Due to declining chinook salmon stocks, the fishing periods prior to July 4 are reduced to 6:00 a.m. Monday to 6:00 p.m. Wednesday.

^b It is becoming apparent that the early portion of the Urilia Bay sockeye run has suffered from overfishing, with escapements being achieved during late June and July. Consequently, in 1993 the Urilia Bay Section will remain closed to commercial salmon fishing until Monday June 28 unless observed escapements warrant an earlier opening.

Table 2. Northern District sockeye salmon runs, 1962-1994^a.

Year		Outer Port Heiden ^b and Cinder River	Inner Port Heiden	Three Hills & Ilnik	Bear River	Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
1962	Catch	900	17,800	9,700	142,900	0	69,600	0	240,900
	Escapement	5,000	(19,000)	5,900	215,000	100	54,200	1,000	300,200
	Total	5,900	(36,800)	15,600	357,900	100	123,800	1,000	541,100
1963	Catch	0	0	26,600	120,000	0	71,500	0	218,100
	Escapement	1,400	(14,200)	10,400	238,600	100	31,000	(1,300)	297,000
	Total	1,400	(14,200)	37,000	358,600	100	102,500	(1,300)	515,100
1964	Catch	0	6,300	33,300	107,500	0	88,700	0	235,800
	Escapement	1,500	10,000	(6,500)	250,200	200	80,000	1,500	349,900
	Total	1,500	16,300	(39,800)	357,700	200	168,700	1,500	585,700
1965	Catch	0	9,700	58,400	62,400	100	53,800	0	184,400
	Escapement	7,500	30,000	(12,500)	137,000	0	37,000	500	224,500
	Total	7,500	39,700	(70,900)	199,400	100	90,800	500	408,900
1966	Catch	0	8,000	11,000	152,600	0	60,000	0	231,600
	Escapement	3,000	(11,700)	24,300	185,000	600	36,500	2,300	263,400
	Total	3,000	(19,700)	35,300	337,600	600	96,500	2,300	495,000
1967	Catch	0	3,100	0	156,100	12,500	40,200	0	211,900
	Escapement	(3,800)	(12,000)	26,400	200,000	200	42,000	(500)	284,900
	Total	(3,800)	(15,100)	26,400	356,100	12,700	82,200	(500)	496,800
1968	Catch	0	0	78,600	90,500	3,400	51,100	0	223,600
	Escapement	4,100	(15,000)	(15,000)	166,000	400	31,000	(2,000)	233,500
	Total	4,100	(15,000)	(93,600)	256,500	3,800	82,100	(2,000)	457,100
1969	Catch	0	5,200	24,000	205,500	4,400	72,800	0	311,900
	Escapement	(3,800)	(15,000)	(15,600)	406,000	100	78,500	(2,500)	521,500
	Total	(3,800)	(20,200)	(39,600)	611,500	4,500	151,300	(2,500)	833,400
1970	Catch	0	0	21,000	113,700	1,700	52,000	0	188,400
	Escapement	1,500	14,100	16,100	294,000	0	82,400	1,400	409,500
	Total	1,500	14,100	37,100	407,700	1,700	134,400	1,400	597,900
1971	Catch	0	0	57,100	238,600	1,300	47,500	0	344,500
	Escapement	2,000	30,800	26,500	281,000	200	60,100	500	401,100
	Total	2,000	30,800	83,600	519,600	1,500	107,600	500	745,600
1972	Catch	0	0	12,000	136,200	1,000	23,200	0	172,400
	Escapement	400	3,500	13,100	135,400	0	28,000	0	180,400
	Total	400	3,500	25,100	271,600	1,000	51,200	0	352,800
1973	Catch	0	0	16,700	117,700	3,300	23,900	0	161,600
	Escapement	1,200	7,200	16,000	130,100	0	18,700	0	173,200
	Total	1,200	7,200	32,700	247,800	3,300	42,600	0	334,800
1974	Catch	0	0	50,700	157,500	7,700	25,600	0	241,500
	Escapement	1,300	1,400	14,600	266,500	0	39,900	1,800	325,500
	Total	1,300	1,400	65,300	424,000	7,700	65,500	1,800	567,000
1975	Catch	0	600	8,700	165,700	3,700	51,500	0	230,200
	Escapement	900	5,100	40,800	310,000	100	138,600	2,000	497,500
	Total	900	5,700	49,500	475,700	3,800	190,100	2,000	727,700
1976	Catch	0	5,000	219,700	310,900	9,900	74,900	0	620,400
	Escapement	6,300	30,300	15,700	328,000	500	108,900	7,400	497,100
	Total	6,300	35,300	235,400	638,900	10,400	183,800	7,400	1,117,500
1977	Catch	0	3,400	97,900	268,700	11,100	56,300	0	437,400
	Escapement	3,900	23,600	20,700	265,200	13,500	155,000	4,100	486,000
	Total	3,900	27,000	118,600	533,900	24,600	211,300	4,100	923,400
1978	Catch	0	800	32,200	556,400	53,700	213,400	0	856,500
	Escapement	3,800	18,800	21,200	814,000	4,900	304,300	1,500	1,168,500
	Total	3,800	19,600	53,400	1,370,400	58,600	517,700	1,500	2,025,000

-Continued-

Table 2. (page 2 of 2)

Year		Outer Port Heiden ^b and Cinder River	Inner Port Heiden	Three Hills & Ilnik	Bear River	Herendeen- Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
1979	Catch	100	36,900	194,400	1,320,900	32,100	320,900	0	1,905,300
	Escapement	6,000	(46,700)	97,500	1,013,000	5,000	360,100	3,000	1,531,300
	Total	6,100	(83,600)	291,900	2,333,900	37,100	681,000	3,000	3,436,600
1980	Catch	0	24,600	252,200	741,900	10,500	318,500	0	1,347,700
	Escapement	30,000	(47,000)	(100,000)	751,000	1,500	352,600	3,900	1,286,000
	Total	30,000	(71,600)	(352,200)	1,492,900	12,000	671,100	3,900	2,633,700
1981	Catch	0	3,800	68,900	1,327,200	18,600	374,700	0	1,793,200
	Escapement	100,000	(26,600)	(151,000)	741,500	600	251,000	(4,000)	1,274,700
	Total	100,000	(30,400)	(219,900)	2,068,700	19,200	625,700	(4,000)	3,067,900
1982	Catch	0	8,800	142,500	1,009,300	11,300	229,200	400	1,401,500
	Escapement	(13,000)	(62,000)	(43,000)	361,300	500	179,600	6,000	665,400
	Total	(13,000)	(70,800)	(185,500)	1,370,600	11,800	408,800	6,400	2,066,900
1983	Catch	100	100	729,600	1,126,200	15,000	192,900	0	2,063,900
	Escapement	9,000	8,600	40,100	358,000	500	128,800	2,600	547,600
	Total	9,100	8,700	769,700	1,484,200	15,500	321,700	2,600	2,611,500
1984	Catch	0	1,700	743,700	637,400	31,400	118,800	0	1,533,000
	Escapement	16,000	31,100	22,300	414,000	700	251,000	600	735,700
	Total	16,000	32,800	766,000	1,051,400	32,100	369,800	600	2,268,700
1985	Catch	300	5,100	978,200	821,300	4,500	703,500	0	2,512,900
	Escapement	12,600	45,500	22,700	451,500	700	314,800	3,700	851,500
	Total	12,900	50,600	1,000,900	1,272,800	5,200	1,018,300	3,700	3,364,400
1986	Catch	700	38,000	1,148,800	938,200	1,300	178,400	0	2,305,400
	Escapement	25,700	26,400	66,900	279,400	300	117,900	2,300	518,900
	Total	26,400	64,400	1,215,700	1,217,600	1,600	296,300	2,300	2,824,300
1987	Catch	200	2,400	719,400	214,000	700	128,500	100	1,065,300
	Escapement	15,300	28,300	30,700	266,700	700	155,700	8,700	506,100
	Total	15,500	30,700	750,100	480,700	1,400	284,200	8,800	1,571,400
1988	Catch	600	10,000	753,600	495,000	3,900	186,600	0	1,449,700
	Escapement	2,000	35,900	26,900	347,500	400	142,500	6,900	562,100
	Total	2,600	46,900	780,500	842,500	4,300	329,100	6,900	2,011,800
1989	Catch	3,000	13,400	749,000	557,800	5,700	325,000	14,300	1,668,200
	Escapement	4,000	11,200	16,700	487,000	500	206,800	7,600	733,800
	Total	7,000	24,600	765,700	1,044,800	6,200	531,800	21,900	2,402,000
1990	Catch	1,200	9,700	942,900	876,200	4,300	410,400	13,300	2,258,000
	Escapement	14,000	26,800	35,800	564,300	400	269,200	5,700	916,200
	Total	15,200	36,500	978,700	1,440,500	4,700	679,600	19,000	3,174,200
1991	Catch	300	5,400	864,900	1,044,700	4,600	274,000	16,400	2,210,300
	Escapement	47,400	26,500	135,200	681,200	(500)	279,200	9,000	1,179,000
	Total	47,700	31,900	1,000,100	1,725,900	5,100	553,200	25,400	3,389,300
1992	Catch	4,500	8,000	1,700,200	1,398,300	5,900	378,700	900	3,496,500
	Escapement	15,200	33,100	45,100	471,200	200	179,700	16,600	761,100
	Total	19,700	41,100	1,745,300	1,869,500	6,100	558,400	17,500	4,257,600
1993	Catch	8,900	500	1,280,100	2,041,800	10,000	452,900	4,000	3,798,200
	Escapement	(20,000)	(50,000)	70,300	501,900	400	267,200	10,200	920,000
	Total	(28,900)	(50,500)	1,350,400	2,543,700	10,400	720,100	14,200	4,718,200
1994	Catch	5,200	600	1,320,500	1,059,000	2,200	329,200	1,200	2,717,900
	Escapement	83,400	44,900	75,300	581,200	400	333,400	5,100	1,123,700
	Total	88,600	45,500	1,395,800	1,640,200	2,600	662,600	6,300	3,841,600

^a Figures in parenthesis are extrapolated estimates. Except for Bear and Nelson Rivers where weir and tower counts are used, escapements are indexed totals.

^b Outer Port Heiden Section catches occurred only between 1986 and 1989. This section has been closed since 1989.

Table 3. Sockeye salmon escapement goals and estimated total escapement in 1994 for systems located within the vicinity of the Nelson Lagoon to Strogonof Point reach.

System	Escapement Goal	1985-94 Average Indexed Escapement
Nelson River System	114,000-178,000	227,000
Bear River		
Early Run	120,000-135,000	250,900
Late Run	80,000-115,000	173,400
Total	200,000-250,000	424,300
Sandy River	40,000-60,000	38,400
Ilnik River	40,000-60,000	52,300
Total	394,000-548,000	742,000

Table 4. Escapement goal numbers and estimated percent run by date for selected North Peninsula sockeye salmon systems and estimated total run potential.

System	1990-94 Avg. Escapement (1,000's)	Escapement Run Timing ^a										Estimated Total Run Potential (1,000's)	Estimated Run Using R/S of 4.69 ^b		
		Pre 6/15	6/15-20	6/20-25	6/25-30	7/1-5	7/5-10	7/10-15	7/15-20	7/20-25	7/25-30		Post 8/1	Range Using 80% Confidence Interval ^c	Estimated Potential Run Prior to 7/20
Bear River															
Early Run	297	3.3%	6.7%	16.6%	26.7%	13.3%	6.7%	10.0%	7.0%	5.0%	4.7%		1,393	1,060-1,723	957-1,556
Late Run	207										10.0%	90.0%	1,039 ^d	673-1,393	0
Nelson River	266			24.0%	28.0%	16.7%	20.0%	4.0%	1.6%	1.0%	0.7%		1,248	950-1,543	934-1,517
Sandy River	57	5.0%	5.0%	10.0%	30.0%	23.3%	16.6%	7.0%	3.0%				267	203-331	203-331
Ilnik River	72	10.0%	5.0%	5.0%	20.0%	10.0%	40.0%	10.0%					338	257-418	257-418
Totals	899 ^e												4,285 ^{f,g}	3,143-5,423	2,351-3,822

^a Nelson and Sandy Rivers are lagged 5 days in time to the Cape Seniavin area. Escapement timing is dependent on fishery performance, weather, and run, and may vary as much as 7-10 days.

^b Run potential is based on a 5 year average escapement for each North Peninsula system and average return per spawner of 4.69:1, which is the most recent 5 year Bristol Bay (Kvichak, Naknek, Egegik, Ugashik, Wood, and Igushik Rivers) average. The recent 15 year average R/S of 3.45:1 and the 10 year average R/S of 3.76:1 were not used.

^c Range is based on 80% confidence intervals around the mean R/S. Bristol Bay R/S using an 80% confidence interval was 3.57-5.80:1. The late Bear River run confidence intervals range from 3.25-6.78:1.

^d For the Bear River late run (calculated post 7/31) R/S 1980-88 average of 5.02:1 was used, the 1984-88 average of 7.37 was not used.

^e Does not include escapement into systems other than Bear, Nelson, Sandy, and Ilnik Rivers. Escapement into other systems ranged from 156,000-223,000 sockeye from 1990-94.

^f The total run does not include North Peninsula fish that are harvested in the South Peninsula June fishery, which averages 117,000 sockeye from 1990-94 (Eggers, *In press*), and the post June South Peninsula harvest which is unknown but may be equivalent to the June harvest. This information is based on tagging studies which identified North Peninsula sockeye salmon in these fisheries.

^g Includes catch plus escapement. To obtain the potential harvest, the escapement must be subtracted from this number.

Table 5. North Peninsula salmon runs^a by species, 1962-1994.

Year		Number of Fish					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1962	Catch	5,400	249,700	35,200	31,200	34,900	356,400
	Escapement	4,400	351,200		4,000	150,900	
	Total	9,800	600,900		35,200	185,800	
1963	Catch	3,600	225,200	40,500	6,900	49,900	326,100
	Escapement	6,200	351,000		4,400	203,200	
	Total	9,800	576,200		11,300	253,100	
1964	Catch	3,600	250,800	36,600	6,800	139,000	436,800
	Escapement	25,900	419,900		(15,100)	156,100	
	Total	29,500	670,700		(21,900)	295,100	
1965	Catch	6,100	199,500	34,500	2,100	69,700	311,900
	Escapement	22,100	238,400		900	49,300	
	Total	28,200	437,900		3,000	119,000	
1966	Catch	5,600	245,300	37,300	16,000	82,800	387,000
	Escapement	8,200	283,300		2,000	149,000	
	Total	13,800	528,600		18,000	231,800	
1967	Catch	5,500	224,700	46,800	700	41,300	319,000
	Escapement	12,200	299,700		700	122,600	
	Total	17,700	524,400		1,400	163,900	
1968	Catch	4,500	237,100	64,900	200	73,500	380,200
	Escapement	15,800	251,300		26,500	250,800	
	Total	20,300	488,400		26,700	324,300	
1969	Catch	4,800	321,300	49,100	100	28,100	403,400
	Escapement	19,500	575,000		4,400	146,800	
	Total	24,300	896,300		4,500	174,900	
1970	Catch	3,800	187,800	26,300	7,900	48,000	273,800
	Escapement	8,300	451,500		11,100	169,800	
	Total	12,100	639,300		19,000	217,800	
1971	Catch	2,200	353,800	8,200	300	64,200	428,700
	Escapement	5,200	435,100		8,600	109,400	
	Total	7,400	788,900		8,900	173,600	
1972	Catch	1,800	179,300	9,700	100	84,700	275,600
	Escapement	5,000	190,200		1,300	124,000	
	Total	6,800	369,500		1,400	208,700	
1973	Catch	2,600	165,400	19,800	100	152,800	340,700
	Escapement	4,300	180,200		(200)	122,400	
	Total	6,900	345,600		(300)	278,100	
1974	Catch	2,700	246,200	16,800	10,600	34,400	310,700
	Escapement	3,000	332,800		(23,000)	105,100	
	Total	5,700	579,000		(33,600)	139,500	
1975	Catch	2,100	233,300	28,400	300	8,800	272,900
	Escapement	4,600	516,800		600	109,200	
	Total	6,700	750,100		900	118,000	
1976	Catch	5,000	641,100	26,100	700	73,600	746,500
	Escapement	6,000	532,600		37,300	293,400	
	Total	11,000	1,173,700		38,000	367,000	

-Continued-

Table 5. (page 2 of 3)

Year		Number of Fish					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1977	Catch	5,500	472,000	34,100	900	129,100	641,600
	Escapement	7,100	541,100		8,500	681,200	
	Total	12,600	1,013,100		9,400	810,300	
1978	Catch	14,300	896,600	63,300	485,200	163,800	1,623,200
	Escapement	13,700	1,213,500		96,800	310,500	
	Total	28,000	2,110,100		582,000	474,300	
1979	Catch	17,100	1,979,200	112,800	5,000	65,700	2,179,800
	Escapement	15,800	1,574,000		9,300	305,300	
	Total	32,900	3,553,200		14,300	371,000	
1980	Catch	16,800	1,397,100	127,900	301,700	700,200	2,543,700
	Escapement	11,000	1,387,600		103,600	769,500	
	Total	27,800	2,784,700		405,300	1,469,700	
1981	Catch	18,900	1,844,300	155,400	11,200	706,800	2,736,600
	Escapement	12,400	1,347,900		6,100	535,200	
	Total	31,300	3,192,200		17,300	1,242,000	
1982	Catch	30,100	1,435,300	238,000	12,300	331,100	2,046,800
	Escapement	20,000	718,400		51,700	457,600	
	Total	50,100	2,153,700		64,000	788,700	
1983	Catch	29,500	2,093,400	75,100	3,400	348,700	2,550,100
	Escapement	25,700	580,300		4,000	392,600	
	Total	55,200	2,673,700		7,400	741,300	
1984	Catch	23,000	1,734,900	198,600	27,400	796,700	2,780,600
	Escapement	17,700	826,000		56,600	870,200	
	Total	40,700	2,560,900		84,000	1,666,900	
1985	Catch	23,500	2,596,100	176,100	3,100	666,600	3,465,400
	Escapement	12,900	898,100		1,400	344,200	
	Total	36,400	3,494,200		4,500	1,010,800	
1986	Catch	11,700	2,463,700	164,100	22,600	271,200	2,933,300
	Escapement	8,700	580,300		13,300	243,600	
	Total	20,400	3,044,000		35,900	514,800	
1987	Catch	14,200	1,209,400	171,800	3,500	368,700	1,767,600
	Escapement	10,700	556,000		100	510,900	
	Total	24,900	1,765,400		3,600	879,600	
1988	Catch	16,800	1,528,100	234,000	65,200	393,100	2,237,200
	Escapement	11,700	614,900	(200-300) ^b	43,500	500,300	
	Total	28,500	2,143,000	(434-534) ^b	108,700	893,400	
1989	Catch	10,900	1,718,700	227,600	4,100	157,200	2,118,500
	Escapement	5,600	814,400	(150-250) ^b	1,900	212,300	
	Total	16,500	2,533,100	377.6-477.6 ^b	6,000	369,500	
1990	Catch	12,300	2,416,000	193,000	517,700	126,100	3,265,100
	Escapement	7,100	1,032,200	(140-175) ^b	132,200	226,400	
	Total	19,400	3,448,200	333.0-368.0 ^b	649,900	352,500	

-Continued-

Table 5. (page 3 of 3)

Year		Number of Fish					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1991	Catch	9,400	2,391,400	218,300	4,200	191,300	2,814,600
	Escapement	9,600	1,317,300		6,300	303,300	
	Total	19,000	3,708,700		10,500	494,600	
1992	Catch	13,100	3,575,500	206,800	194,400	341,600	4,331,400
	Escapement	6,600	861,300		207,600	351,700	
	Total	19,700	4,436,800		402,000	693,300	
1993	Catch	23,600	3,866,600	64,400	5,300	135,000	4,094,900
	Escapement	13,700	1,003,800		72,800	402,400	
	Total	37,300	4,870,400		78,100	537,400	
1994	Catch	19,000	2,752,900	241,200	225,400	116,000	3,354,500
	Escapement	38,400	1,211,400		133,200	480,200	
	Total	57,400	3,964,300		358,600	596,200	

^a Escapements are indexed totals. Figure in parenthesis are very rough extrapolated estimates.

^b Numbers of fish in thousands.

Table 6. Summary of North Peninsula sockeye stock separation studies, 1987-94.

Area	Year	Date	Estimated Stock Composition	Commercial Harvest During Period	Source
Harbor Point - Cape Seniavin					
	1988	19 June - 2 July	96% North Peninsula 4% Bristol Bay (Ugashik)	137,937	Geiger (1989)
	1990	8-21 July	10% Bear River (North Peninsula) 48% Nelson River (North Peninsula) 42% Bristol Bay	118,157	Swanton and Murphy (1992)
	1991-1994		Not available		
Cape Seniavin - Strogonof Point					
	1987	6-12 July	75% North Peninsula 25% Bristol Bay (Ugashik)	275,192	Geiger (1989)
		13-19 July	58% North Peninsula 42% Bristol Bay (Ugashik)	193,179	Geiger (1989)
	1988	26 June - 2 July	93% North Peninsula 7% Bristol Bay (Ugashik)	103,355	Geiger (1989)
		3-9 July	50% North Peninsula 50% Bristol Bay (Ugashik)	395,564	Geiger (1989)
		10-16 July	52% North Peninsula 48% Bristol Bay (Ugashik)	183,100	Geiger (1989)
	1989	5 July (18 hr opening)	64% North Peninsula 36% Bristol Bay (Ugashik)	126,283	Geiger (1989)
	1990	8-21 July	11% Bear River (North Peninsula) 11% Nelson River (North Peninsula) 78% Bristol Bay	763,786	Swanton and Murphy (1992)
	1991-1994		Not available		

Table 7. North Peninsula coho salmon catches by district and section, 1985-1994.

Section	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	10 Year Average
Dublin Bay	0	0	0	0	0	0	0	0	0	0	0
Urilia Bay	0	3,300	7,600	4,800	0	1,300	0	0	3,200	4,900	2,500
Swanson Lagoon	26,200	22,000	8,300	12,300	7,000	4,600	18,900	3,900	300	100	10,400
Bechevin Bay	1,400	0	800	100	1,500	0	100	0	600	100	500
Izembek-Moffet Bay	0	0	2,900	3,000	100	0	0	0	0	12,300	1,800
Northwestern District Total	27,600	25,300	19,600	20,200	8,600	5,900	19,000	3,900	4,100	17,400	15,200
Black Hills	0	0	0	0	0	0	0	0	0	0	0
Caribou Flats	0	0	0	0	0	0	0	0	0	0	0
Nelson Lagoon	91,000	99,300	83,700	95,400	119,300	79,200	67,400	73,400	24,600	62,200	79,600
Herendeen-Moller B.	4,900	0	0	0	0	600	200	0	0	700	600
Bear River	16,200	11,300	5,000	15,700	14,500	20,100	36,300	22,100	10,200	13,800	16,500
Three Hills	1,400	1,900	2,100	3,300	1,400	1,100	2,500	4,600	1,600	11,200	3,100
Ilnik	6,200	5,400	21,300	35,000	26,000	11,400	5,000	13,000	7,200	20,700	15,100
Inner Port Heiden	15,400	19,300	27,500	27,300	25,900	38,900	37,200	16,700	3,300	25,000	23,700
Outer Port Heiden	0	1,200	0	8,600	14,300	0	0	0	0	0	2,400
Cinder River	13,500	300	12,600	28,500	17,500	35,800	50,600	73,100	13,300	90,200	33,500
Northern District Total	148,600	138,700	152,200	213,800	218,900	187,100	199,200	202,900	60,200	223,800	174,500
NORTH PENINSULA TOTAL	176,200	164,000	171,800	234,000	227,500	193,000	218,200	206,800	64,300	241,200	189,700

Table 8. Northern District BOF regulation changes concerning potential interception of salmon.

Year	Board of Fisheries Regulation Changes
1988	Reduced the weekly fishing period in the Ilnik Section 24 hours to 6:00 a.m. Monday to 6:00 p.m. Wednesday over concern for Unangashak River coho and Ilnik River sockeye stocks.
1990	<p data-bbox="464 655 1285 740">Closed the Outer Port Heiden Section to Area M and Area T permit holders over interception concerns for migrating coho into Port Heiden.</p> <p data-bbox="464 761 1285 825">Closed the outer portion of the Ilnik Section to Area T permit holders.</p> <p data-bbox="464 846 1285 953">Delayed the season opening in that portion of the Ilnik Section between Unangashak Bluffs and Strogonof Point from July 5 to July 15, over sockeye interception concerns with Bristol Bay.</p>
1992	The minimum gillnet mesh size restriction of 5.25" was removed in the Bear River Section after July 20. The remainder of the North Peninsula minimum 5.25" gillnet mesh restriction remains in effect. Concern over the possible interception of specific Bristol Bay sockeye stocks prevented this regulation from extending to other areas on the North Peninsula.

Table 9. Sockeye salmon stocks used to manage three sections in the Northern District.

Section	Stocks	
	Pre-July 16	Post July 15
Bear River	Bear R., Sandy R.	Bear R., Sandy R.
Three Hills	Bear R., Sandy R., Ilnik R.	Bear R., Sandy R.
Ilnik	Ilnik R., Bear R., Sandy R., Ugashik R. ^a	Bear R., Sandy R., Ilnik R., Ugashik R. ^b

^a Bear and Ugashik Rivers will be considered if a conservation concern exists.

^b Bear, Ilnik, and Ugashik Rivers will be considered post July 15 if the runs are late and escapement requirements are not being met.

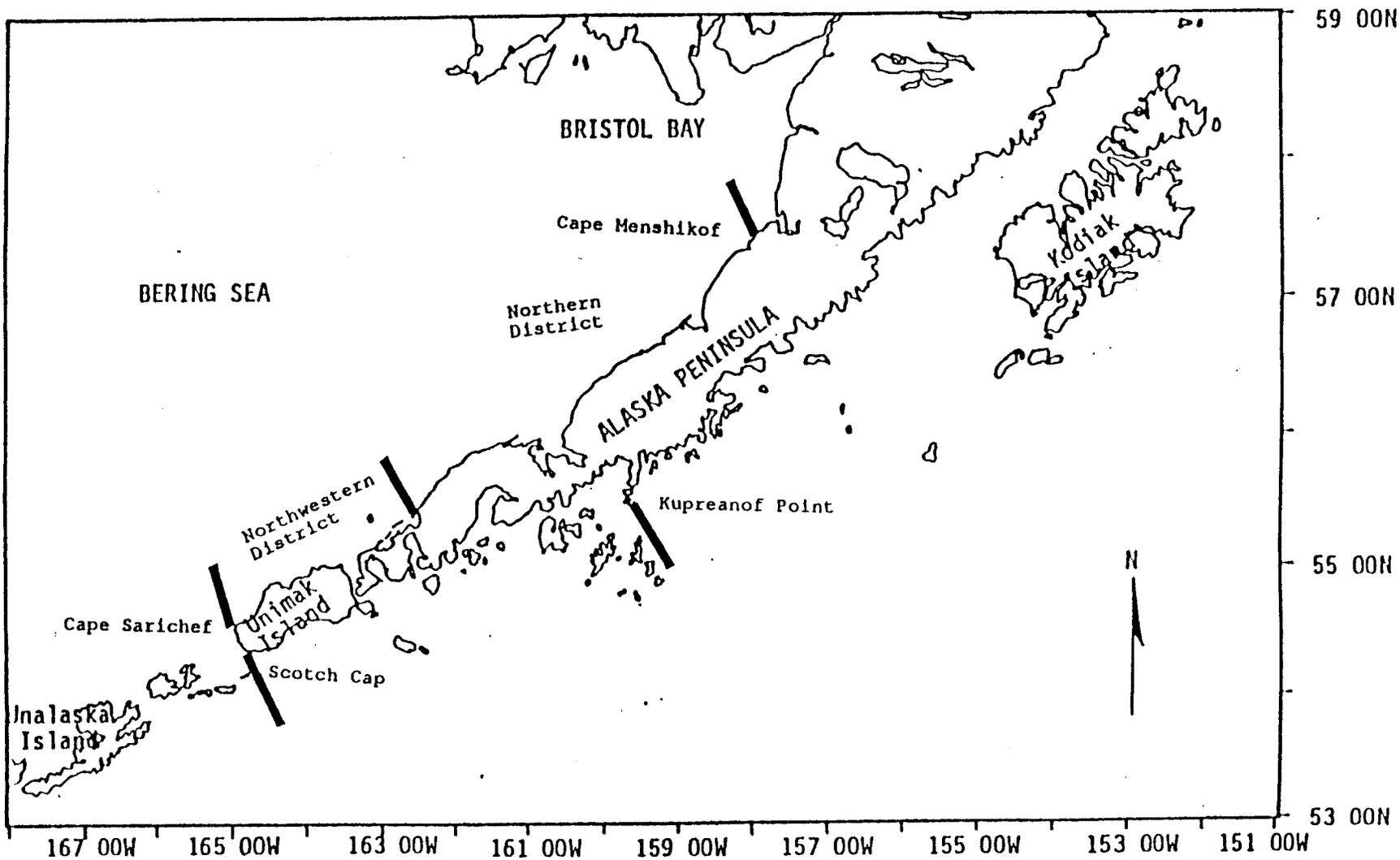
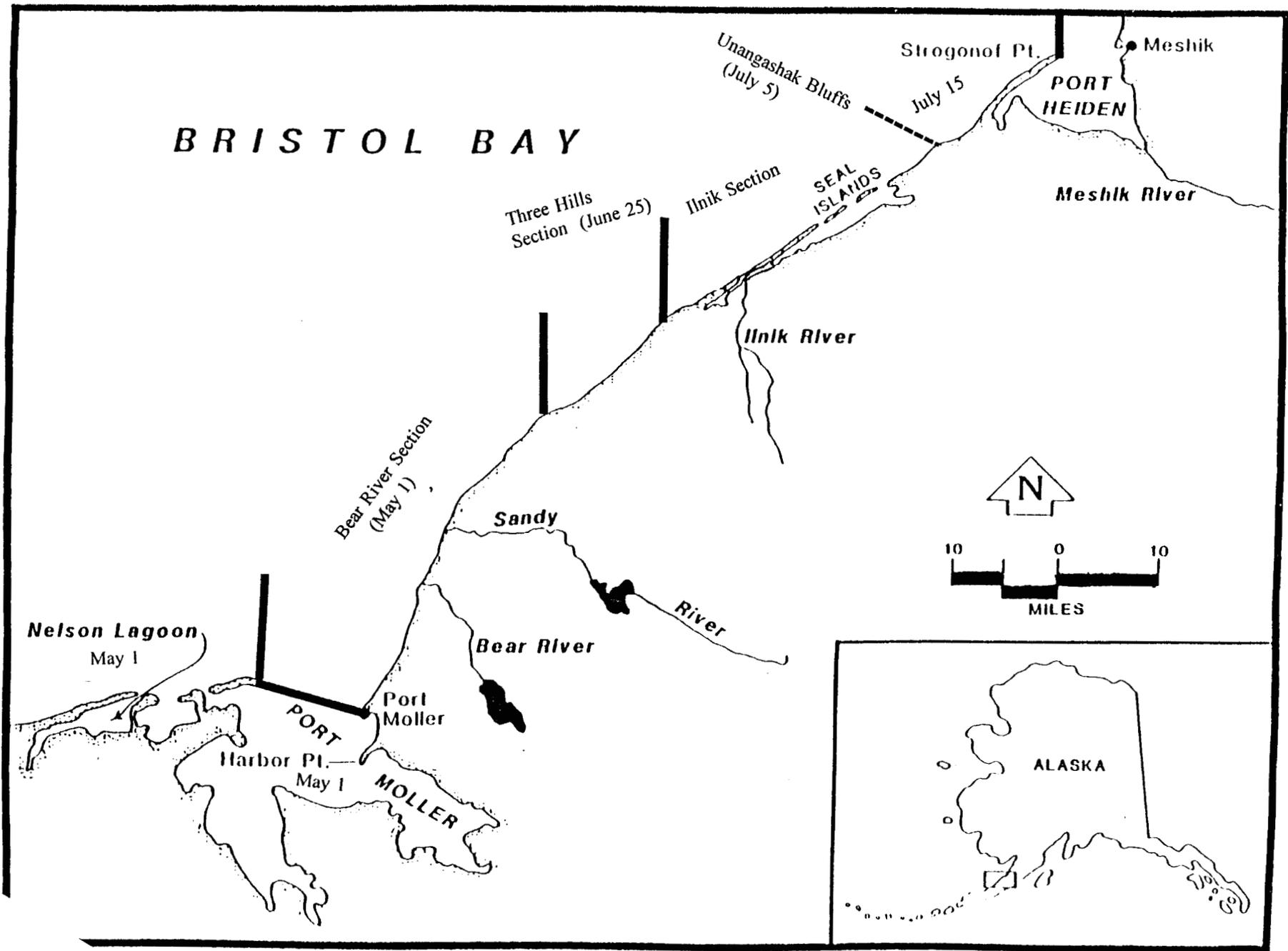


Figure 1. North and South Alaska Peninsula with North Peninsula districts depicted.



Nelson Lagoon to Strogonof Point reach, with district sections, commercial salmon season opening dates, and major sockeye salmon systems depicted.

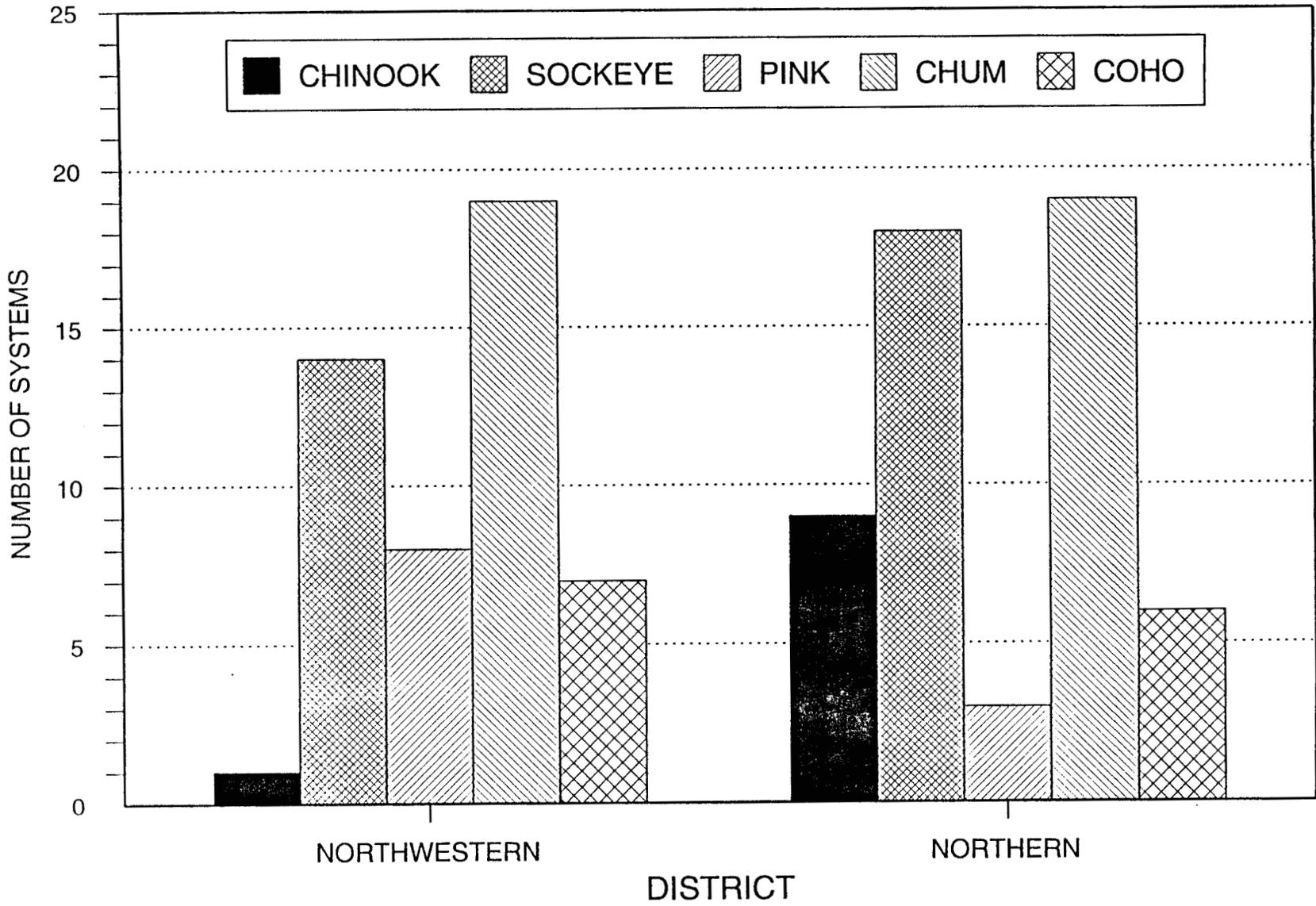


Figure 3. Number of salmon systems by species and district in the North Peninsula.

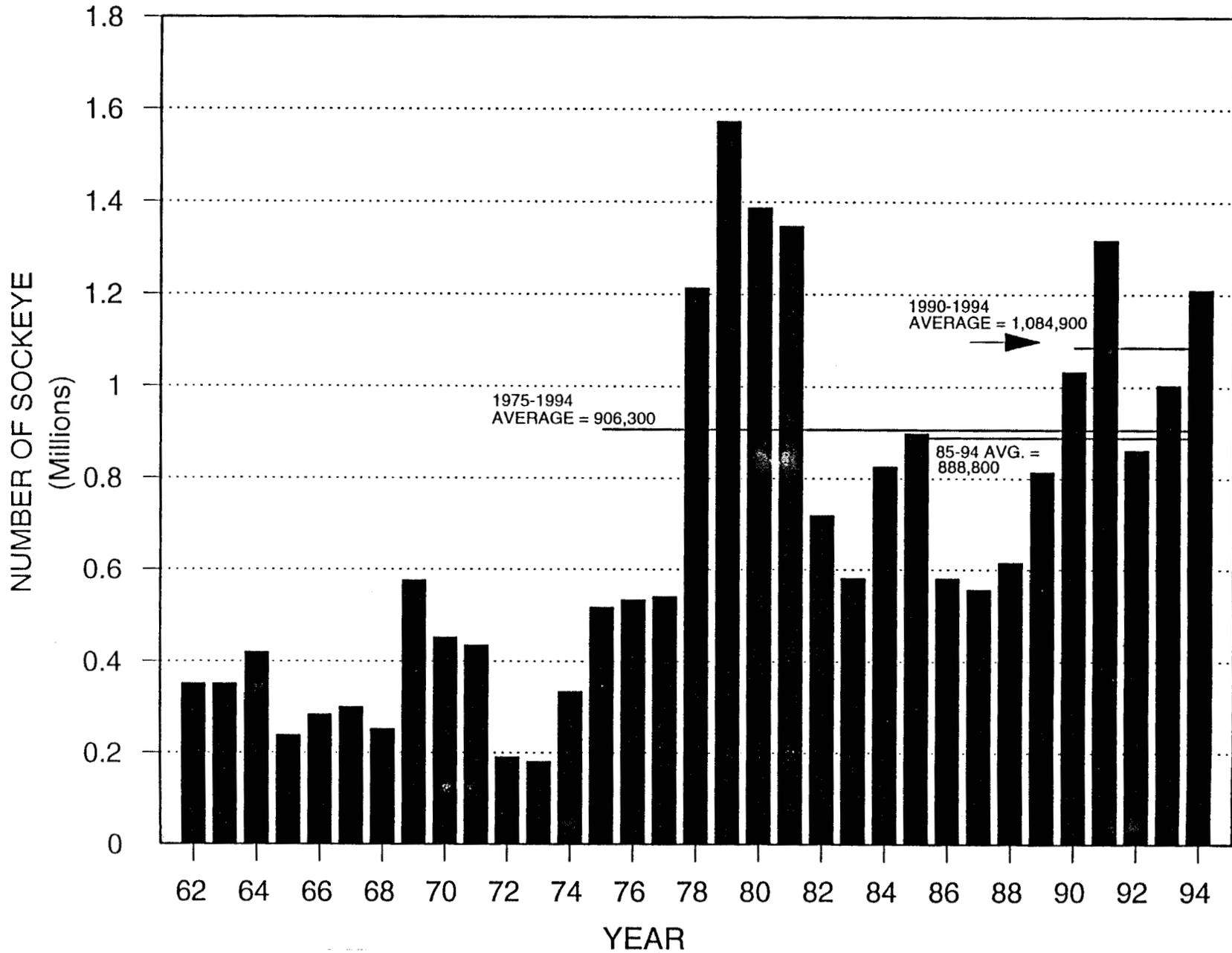


Figure 4. North Peninsula indexed sockeye salmon escapement, 1962-94.

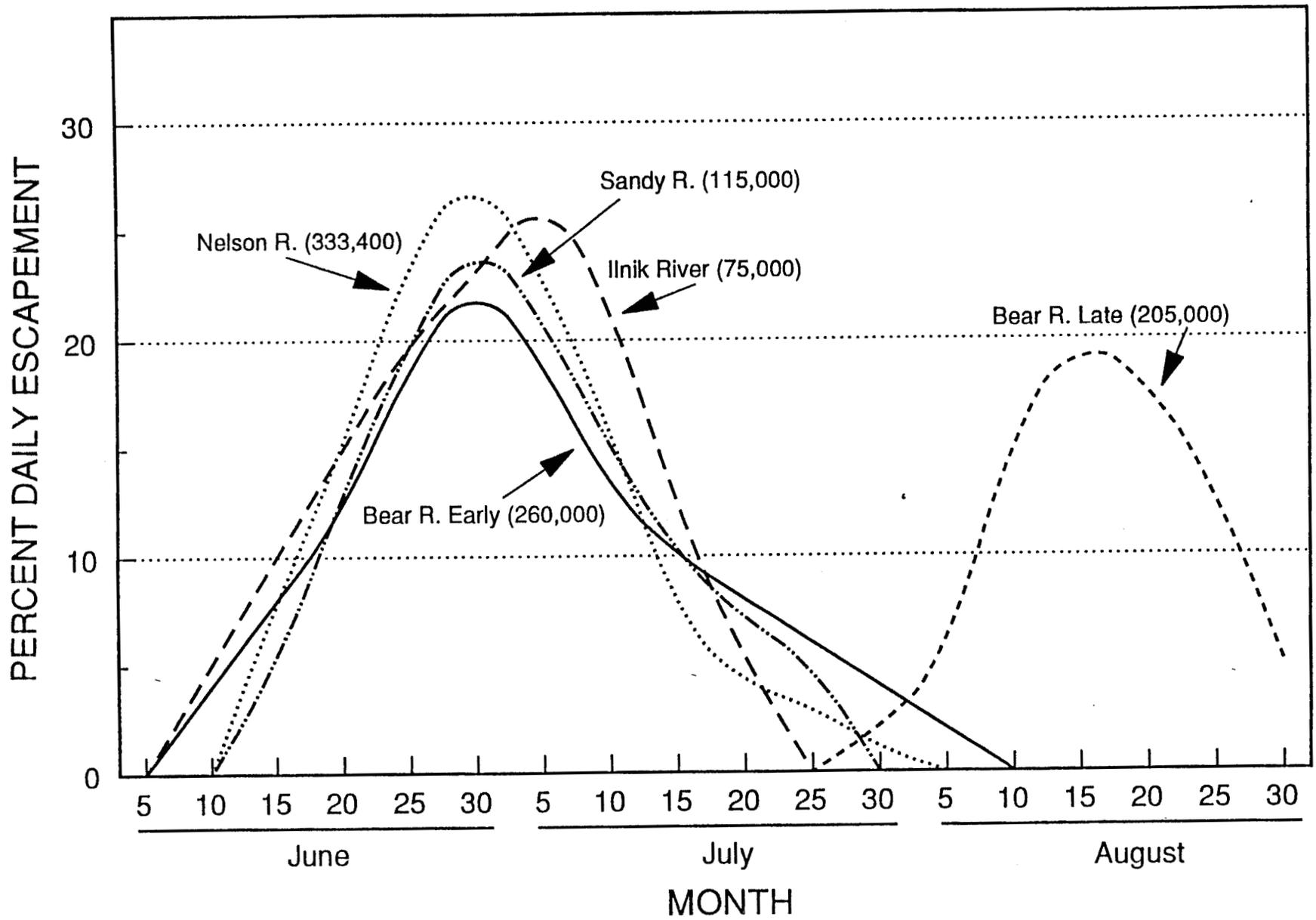


Figure 5. Approximate run timing of selected North Peninsula sockeye systems with 1994 escapement.

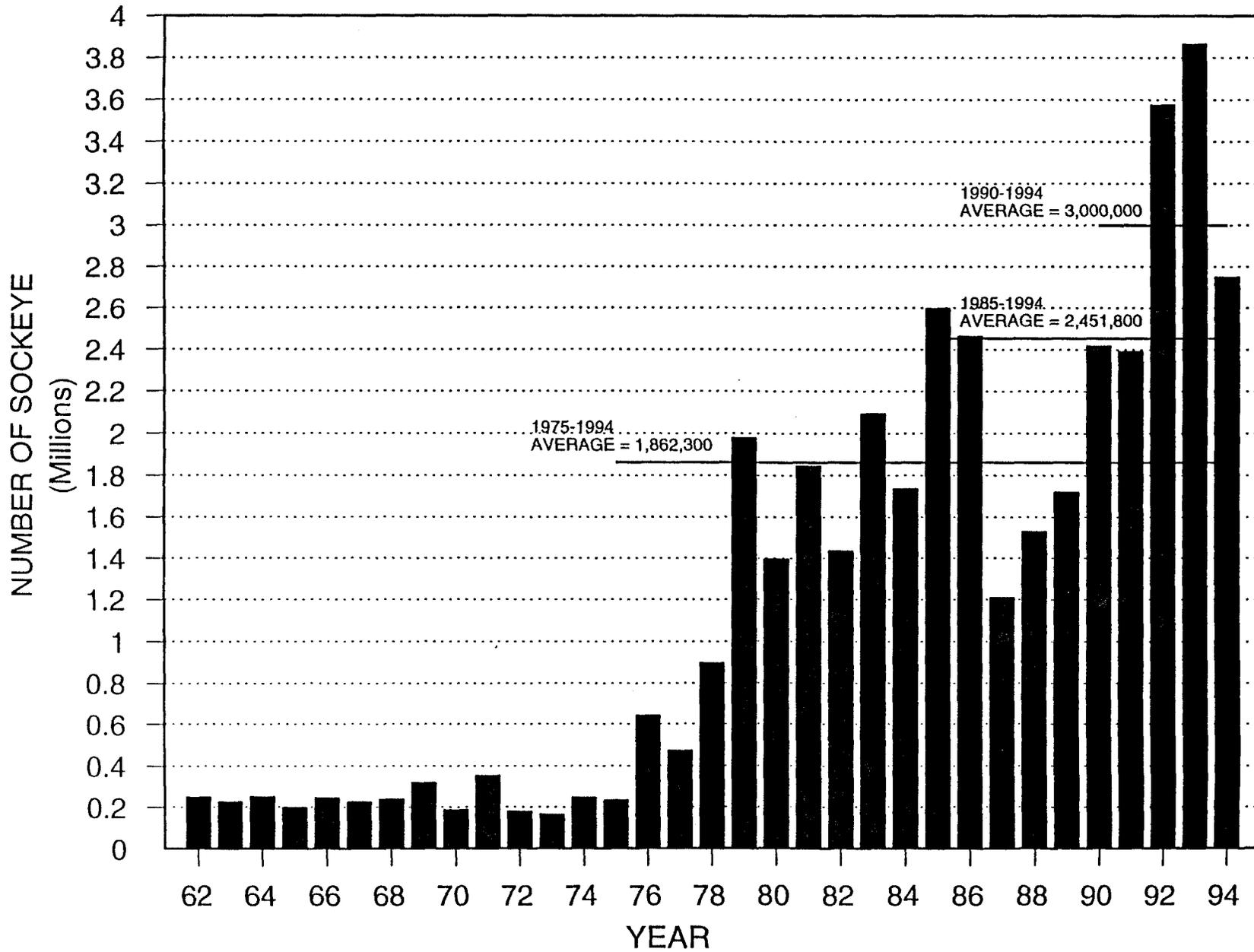


Figure 6. North Peninsula commercial sockeye salmon harvest, 1962-94.

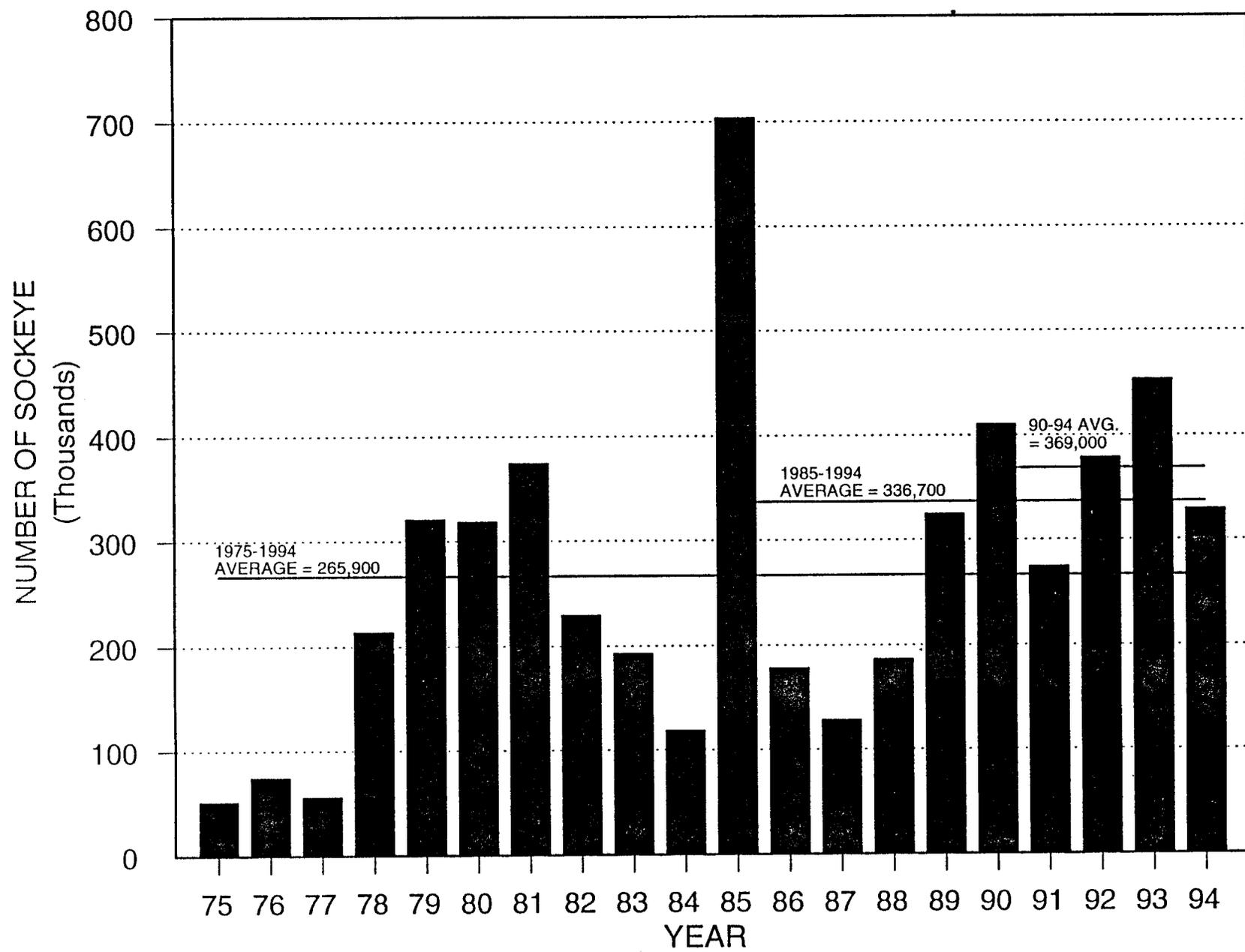


Figure 7. Nelson Lagoon commercial sockeye salmon harvest, 1962-94.

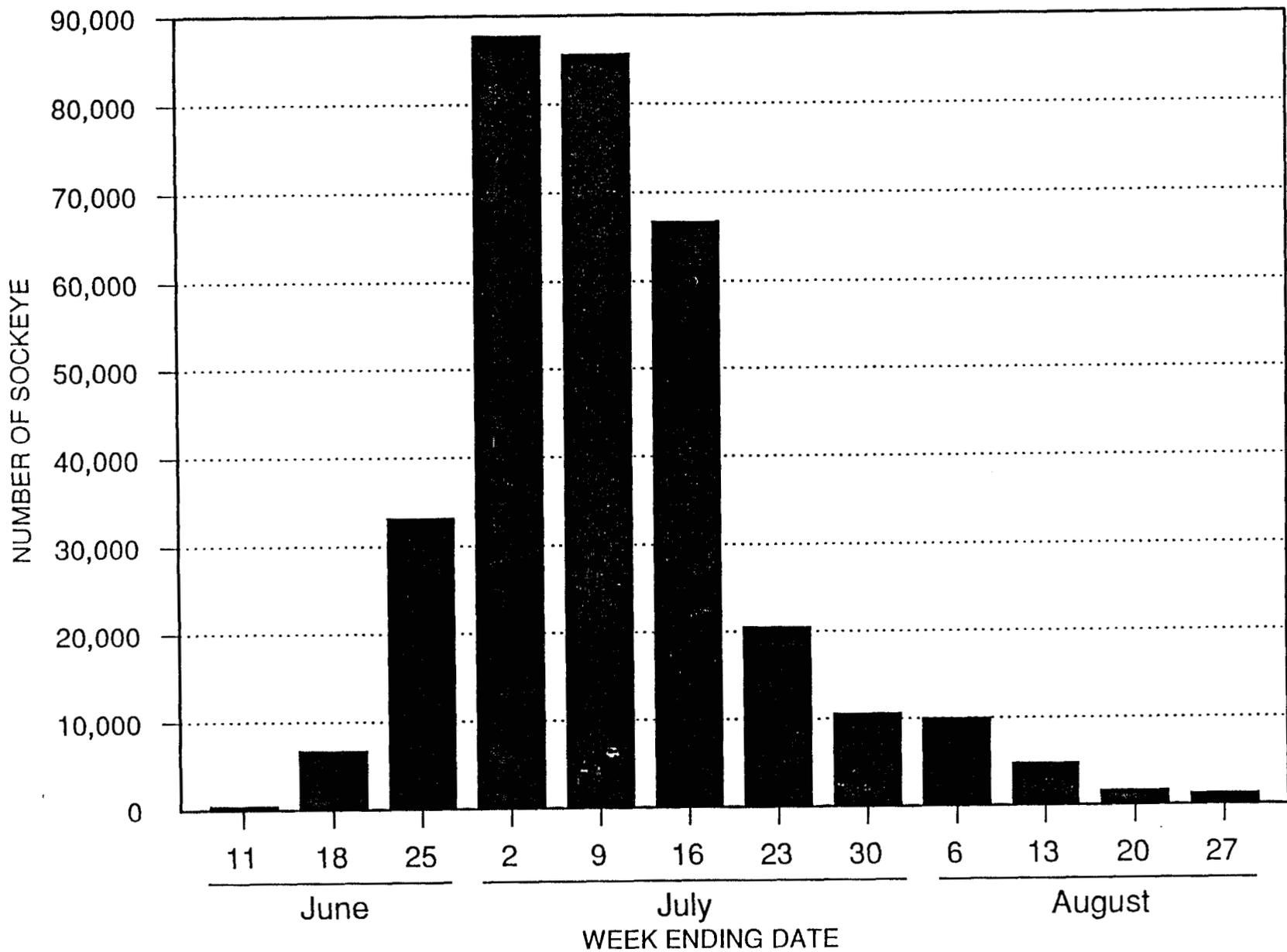


Figure 8. Nelson Lagoon commercial sockeye salmon harvest by week, 1994.

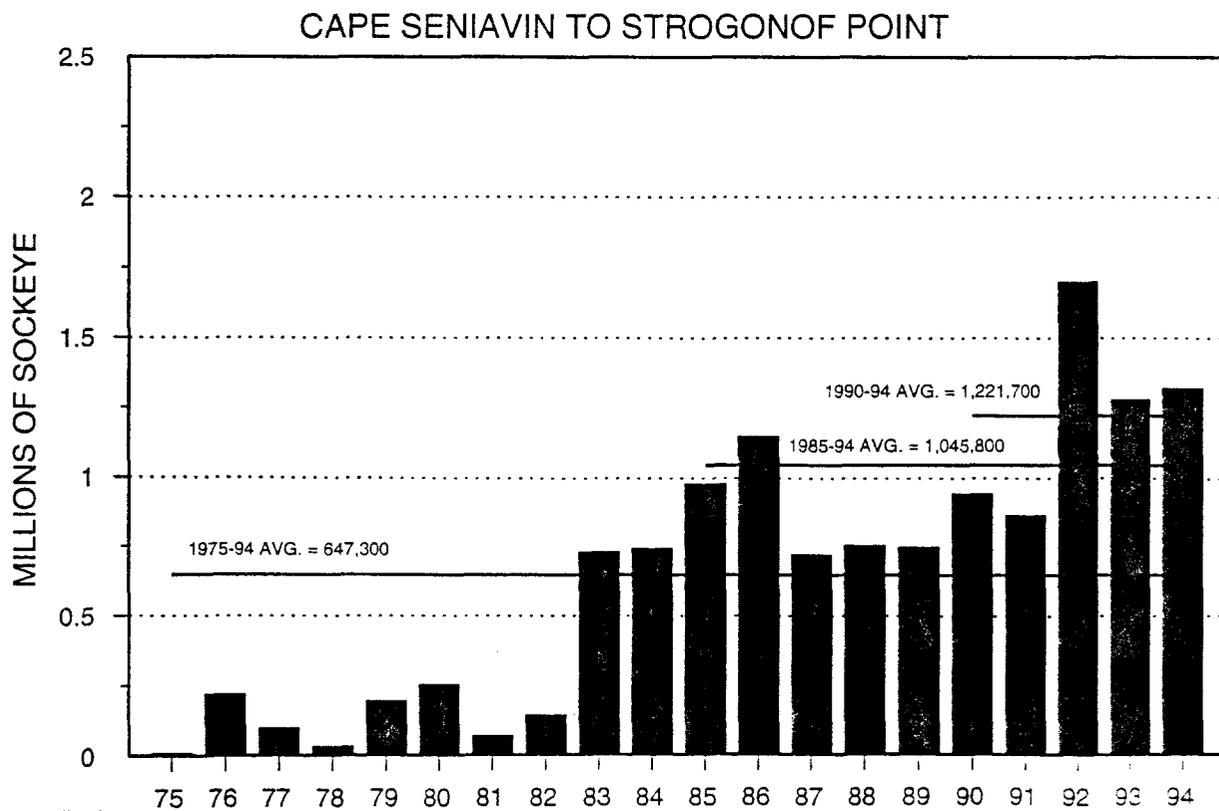
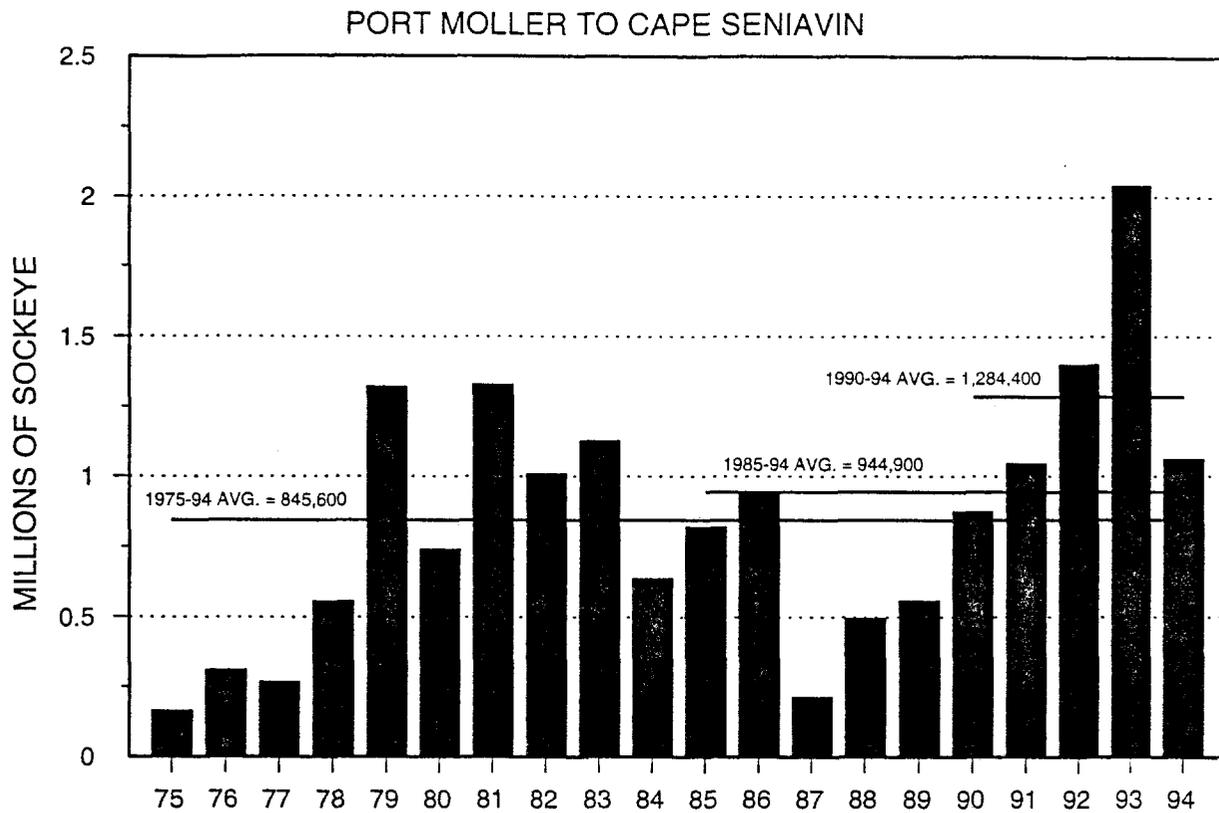


Figure 9. Port Moller to Strogonof Point commercial sockeye salmon harvest 1975-94.

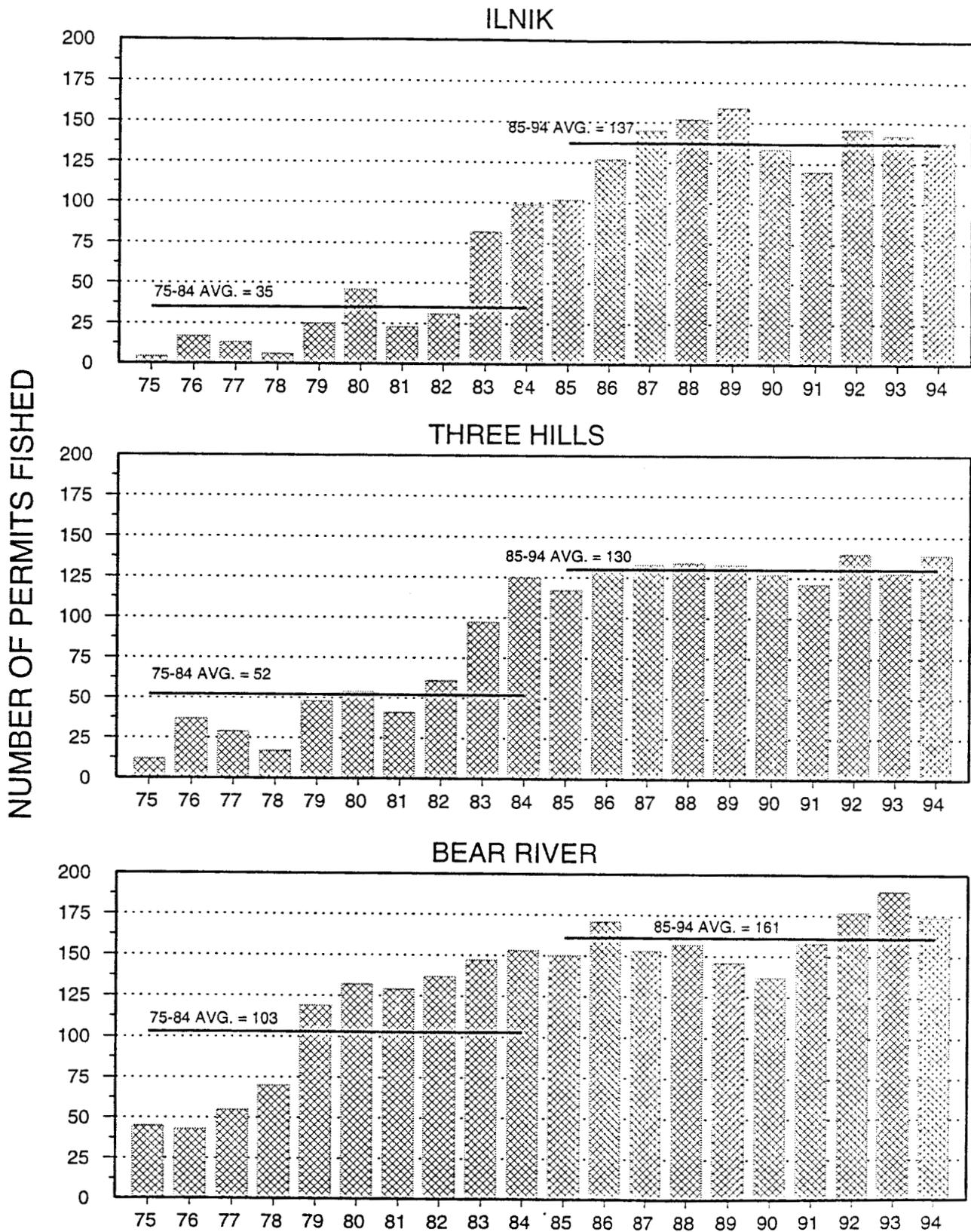


Figure 10. Number of commercial salmon permits fished in the Bear River, Three Hills, and Ilnik Sections, 1975-94.

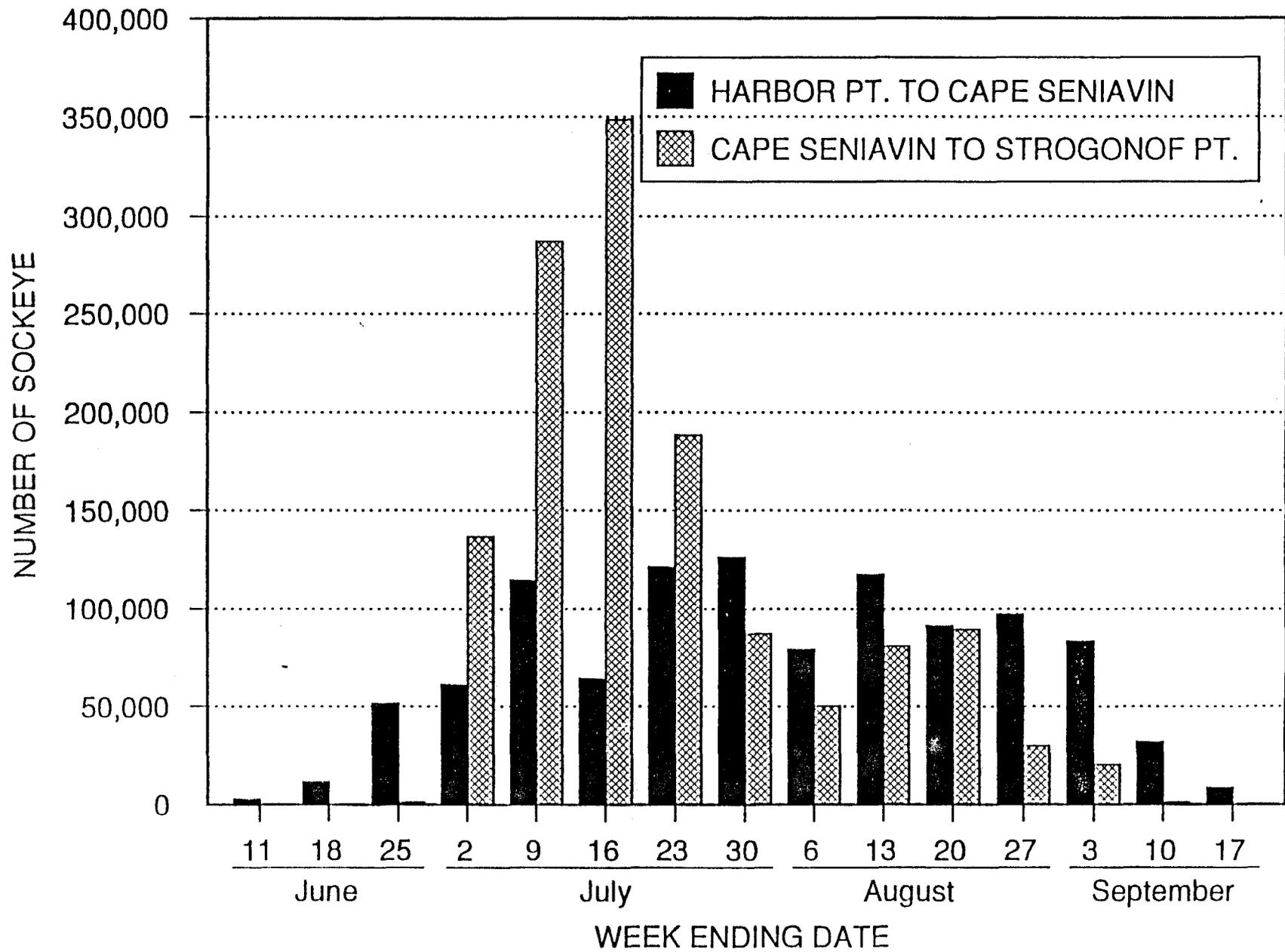


Figure 11. Port Moller to Strogonof Point sockeye salmon harvest by week, 1994.

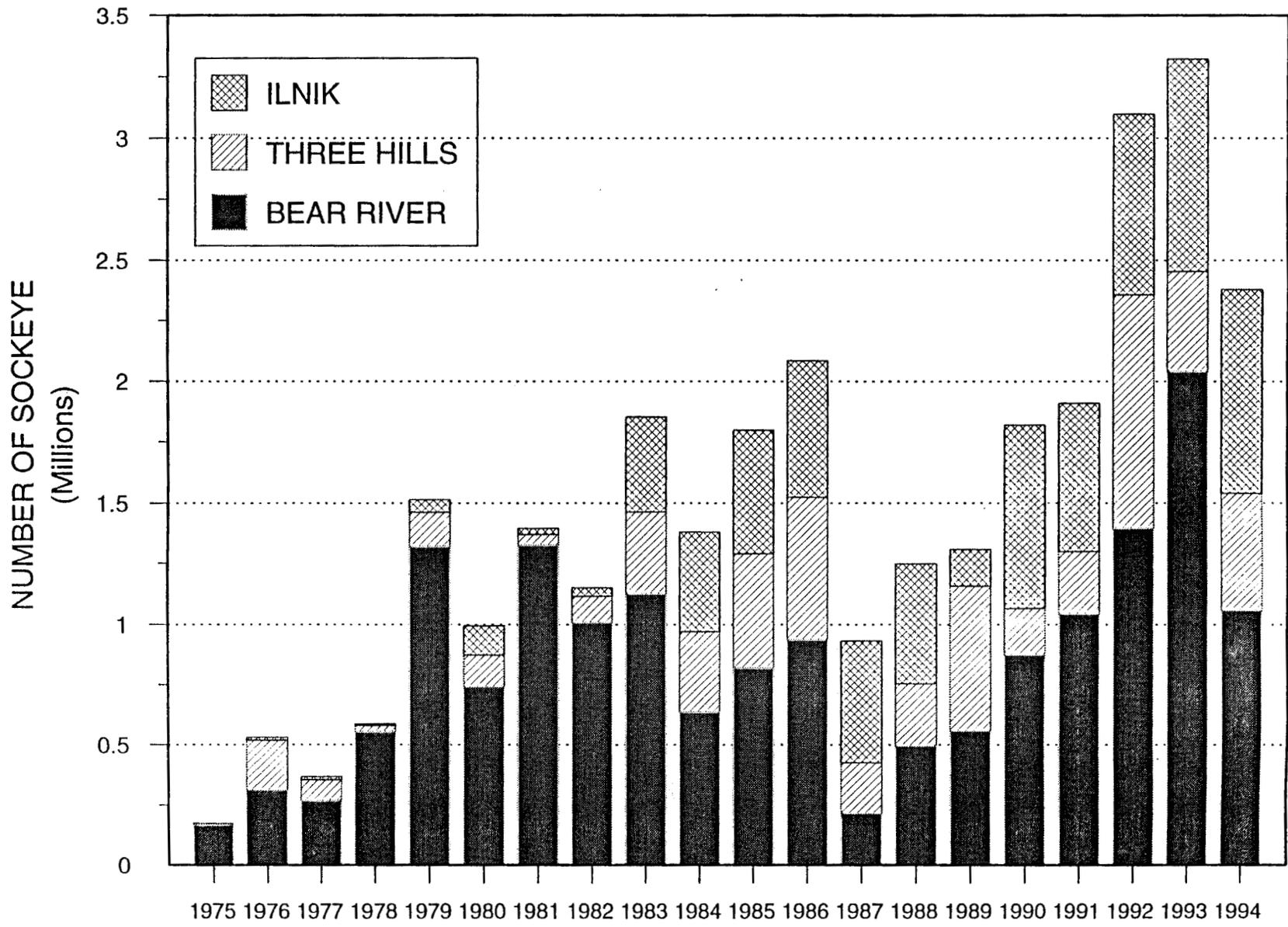


Figure 12. Commercial sockeye salmon harvest in the Bear River, Three Hills, and Ilnik Section from 1975-94.

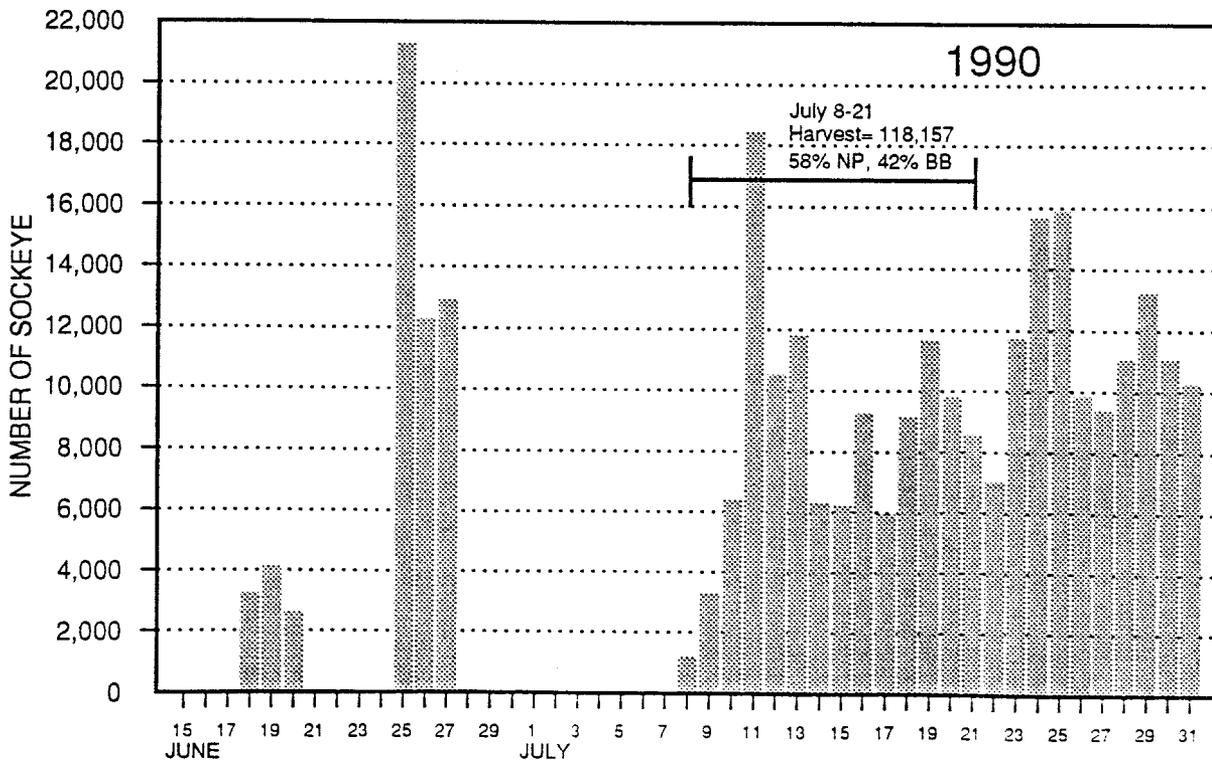
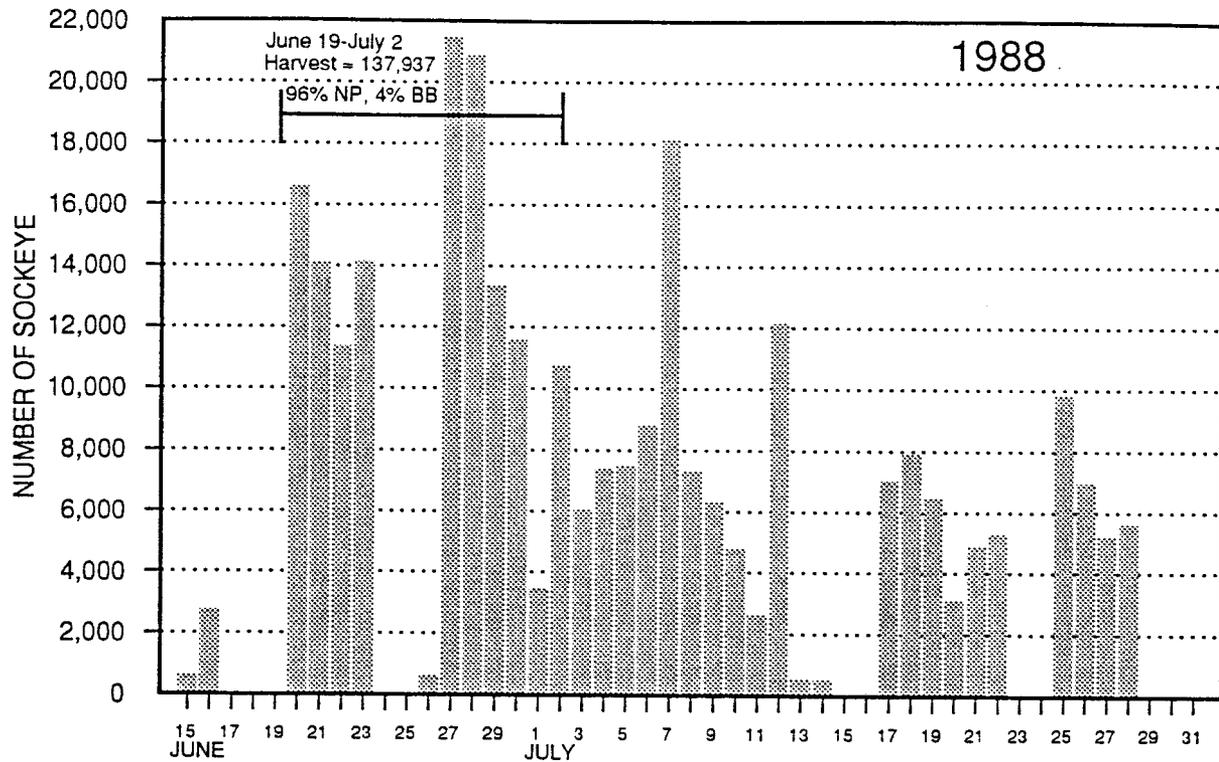


Figure 13. Harbor Point to Cape Seniavin commercial sockeye catch by day with scale pattern analysis results depicted, 1988 and 1990.

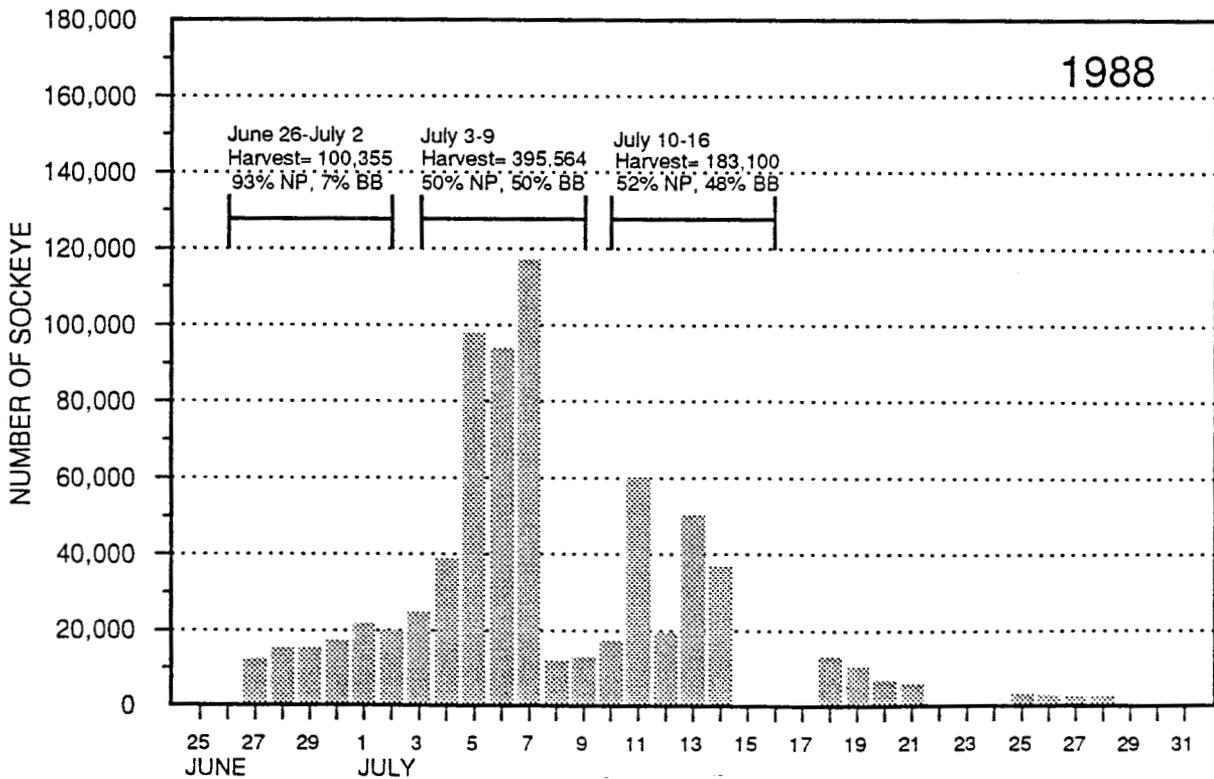
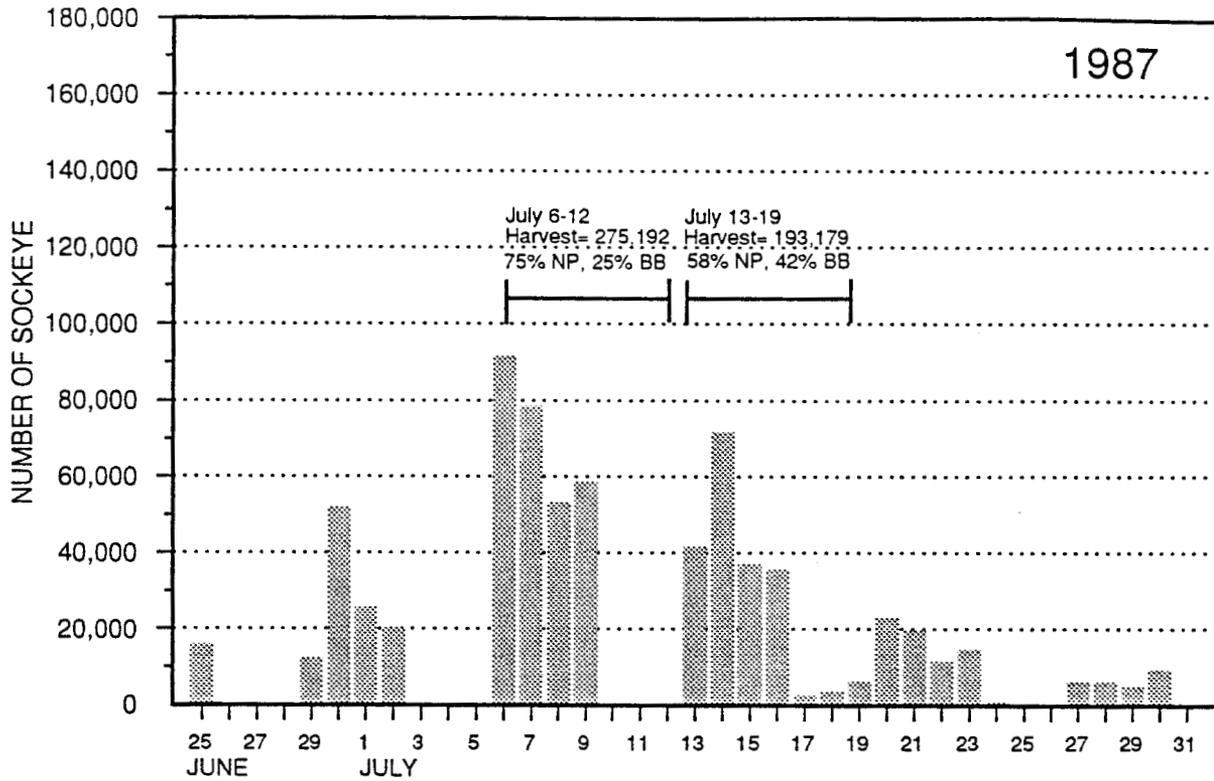


Figure 14. Cape Seniavin to Strogonof Point commercial sock salmon catch by day with scale pattern analysis depicted, 1987-88.

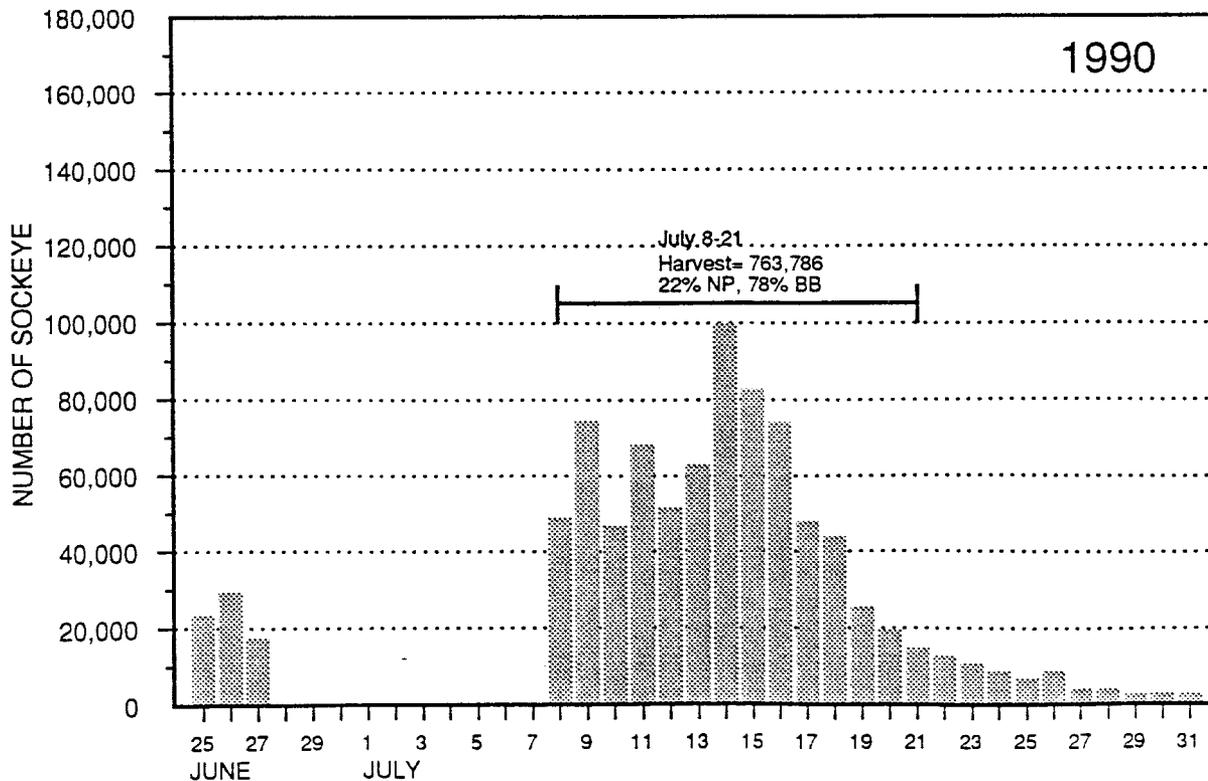
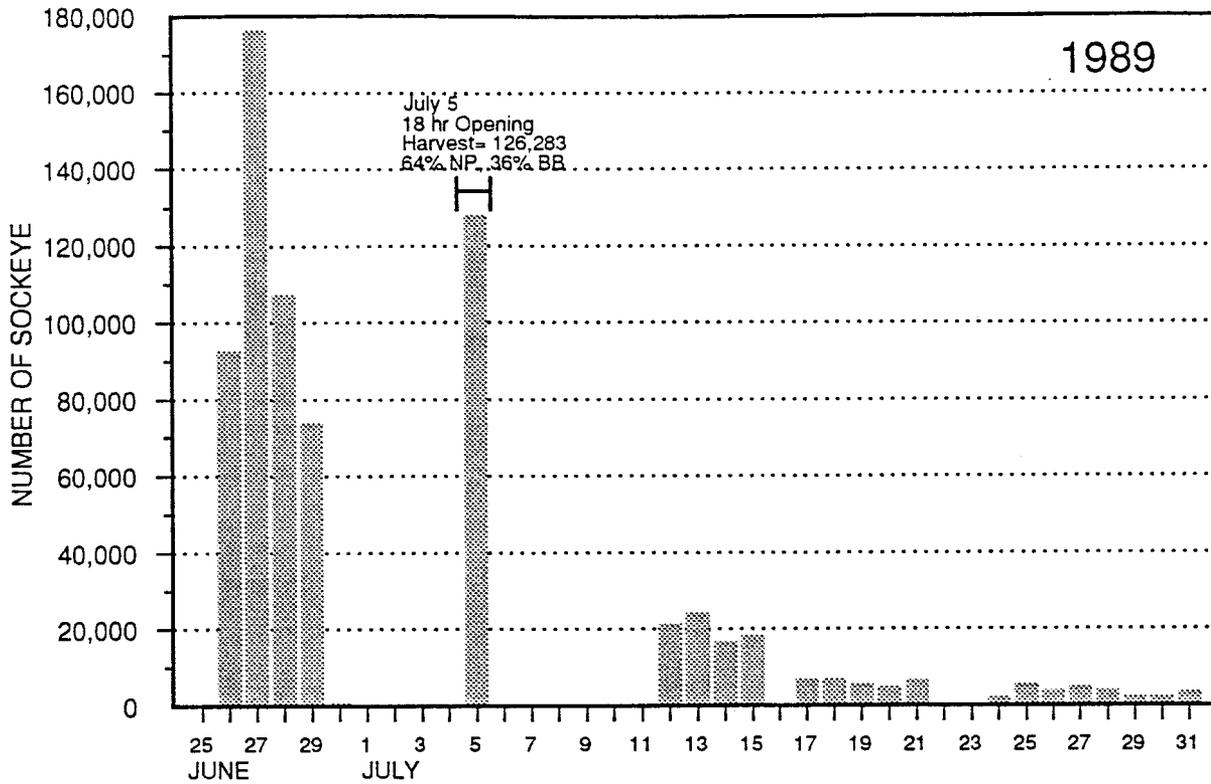


Figure 15. Cape Seniavin to Strogonof Point commercial sockeye salmon catch by day with scale pattern analysis results depicted, 1989-90.

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