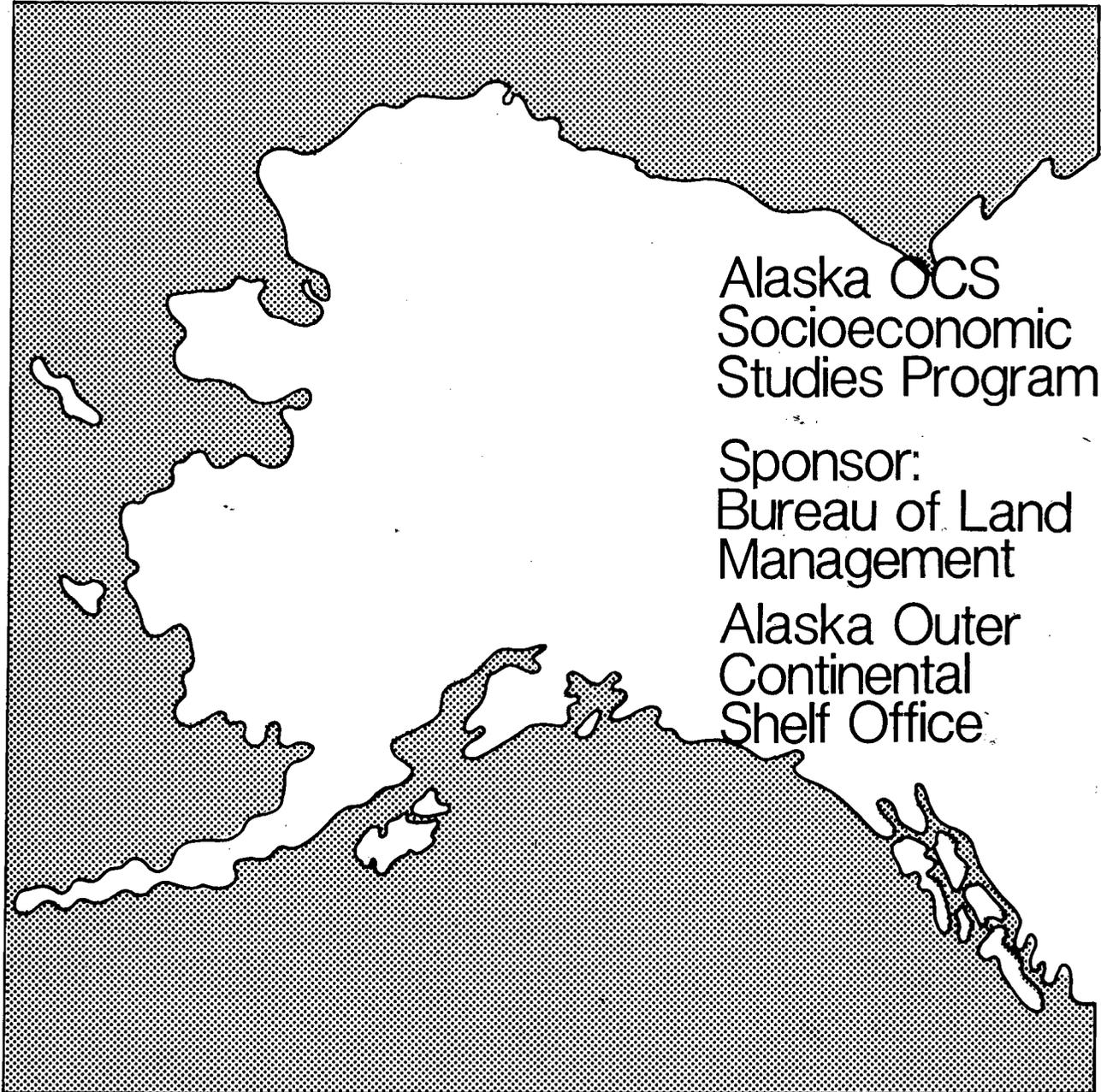


**Technical Report
Number 71**



**ALASKA PENINSULA SOCIOECONOMIC
AND SOCIOCULTURAL
SYSTEMS ANALYSIS**

TECHNICAL REPORT 71

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ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM
ALASKA PENINSULA SOCIOECONOMIC AND SOCIOCULTURAL SYSTEMS ANALYSIS

PREPARED FOR

BUREAU OF LAND MANAGEMENT
ALASKA OUTER CONTINENTAL SHELF OFFICE

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ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM
ALASKA PENINSULA SOCIOECONOMIC AND SOCIOCULTURAL SYSTEMS ANALYSIS

Prepared under contract with:

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ABSTRACT

This report provides detailed information concerning both the intracommunity socioeconomic and sociocultural systems and structures and the intercommunity linkages extant in selected communities located on and in the vicinity of the Alaska Peninsula. Communities included in this project are: Pilot Point / Ugashik, Port Heiden, Nelson Lagoon, False Pass, King Cove, and Sand Point. The geographic area includes portions of both the ADF&G Alaska Peninsula Management Area as well as the Bristol Bay Management Area.

Secondary data sources are utilized to the extent practical; however, considerable field study was accomplished. The field study yielded primary data for many of the sociocultural topics while also providing necessary insights regarding the essence of the communities.

Seafood production activities dominate in each location. The salmon fisheries are by far the most important. Local participation is greatest in the harvesting sector. Topics addressed in the report include: Fishing locations, patterns, gear types and strategies, effort, catch, value, permit and vessel utilization, and employment. Recent increases in salmon runs have had significance in all of these communities. Purse seining has significantly increased yet drift gillnetting tends to bring the most communities together on common fishing grounds. Successful fishing seasons have brought not only increased investments and participation in the industry but also increased development of other economic activities. These are primarily retail enterprises at the local level.

The communities range in size from a population of 13 in Ugashik to 629 in Sand Point. Subsistence protein dependence is highest in the communities which have a more narrow economic base -- up to 90% in Pilot Point / Ugashik compared with about 40% in Sand Point.

Kinship is the major determiner of social organization in the communities. People of the Aleut ethnic origin are common to all of the locations; yet, the Russian and Scandanavian influence is apparent

throughout the region. Religion, education and socio-political organization are also addressed in the report.

King Cove, Nelson Lagoon, False Pass and Sand Point all fall within the Alaska Peninsula region while the remaining communities are more identified with the Bristol Bay region. Linkages between the Alaska Peninsula communities are of medium to low intensity with the social arena exhibiting the greatest level of linkage. Cultural linkages have good potential for high intensity but little of it has been realized. Economic and political linkages are low. Linkages between communities in the Bristol Bay region are in the medium to high range. Economic activities, primarily fishing, are strongly linked with Pilot Point and Port Heiden notably sharing fishing grounds to a significant level. Political and social linkages are medium.

Very little extraregional linkage is evident between the two areas. However, extraregional ties exist between the Alaska Peninsula communities and the Aleutian Islands at a medium level with low level linkages to the Chignik area and Anchorage. Extraregional links from the Bristol Bay communities are of medium strength with the Chignik area and are at a low level with Anchorage.

CHAPTER 1

INTRODUCTION

1.1 GENERAL BACKGROUND AND PURPOSE

This report focuses on the socioeconomic and sociocultural structures and systems of the communities located on the Alaska Peninsula. It is part of the BLM's Alaska OCS Socioeconomic Studies Program. It is related to potential impact from oil and gas OCS development which may occur in the vicinity of the Alaska Peninsula--particularly those located within Lease Sale 75 (The Northern Aleutian Shelf).

The study area for the report consists of the Alaska Peninsula Management Area and the Ugashik District of the Bristol Bay Management Area, both as defined by the Alaska Department of Fish and Game (see Exhibits 3.1 and 3.2). Within the study area, the communities addressed by this report include Sand Point, King Cove, False Pass, and Nelson Lagoon in the Alaska Peninsula area, and Pilot Point and Ugashik in the Bristol Bay area. Cold Bay is the only other community within the study area; however, since it is a regional transportation center and marginally involved in seafood harvesting and production activities, it was not included.

The period emphasized in the report is 1975 through 1981 to provide an analysis of recent trends. Earlier periods are also addressed as they are relevant to current circumstances.

The purpose of the study was to provide baseline community level information that would indicate both the significance of the seafood production activities to both socioeconomic and sociocultural characteristics of the community and the potential mechanisms through which impacts from OCS development would likely be visited on this region in Alaska. The primary concentration in the report is on community level information. Linkages among communities are described as they would have potential for OCS impacts. An overview of salmon harvesting activities in the study area is included to better define the relative position of the communities at that level.

Special attention is paid to the social organization and integration dynamics that are unique to individual communities. Cross-cultural features are discussed insofar as

they enhance the understanding of contemporary community functioning. Wherever possible, recent trends and changes affecting local socioeconomic and sociocultural structures and systems are identified and discussed for the selected communities.

Earl R. Combs, Inc. (ECI) was the primary contractor for the project. ECI's project manager was Jeffrey Tobolski. Lemuel Guluka served as project leader. Other key ECI staff members included Kwang Im and Daniel Trefethen. Chief subcontractor on the project was Dr. Stephen Langdon of the University of Alaska at Anchorage and he was assisted by Taylor Brelsford. The ECI team was primarily responsible for analyzing fisheries harvest and production statistics while Langdon and Brelsford were primarily responsible for community-level socioeconomic and sociocultural information.

1.2 METHODOLOGIES AND DATA SOURCES

A variety of methodologies and data sources were required for this report. Both primary and secondary documents were used. Of major importance were printouts of landings data organized by statistical area, week, gear type, and species provided by the Alaska Department of Fish and Game (ADF&G) for the Alaska Peninsula Management Area. Similar, but not strictly comparable, data was obtained from Bristol Bay Area Management Reports prepared by ADF&G. Alaska Peninsula Area Management Reports provided additional supplementary data as well. The Commercial Fisheries Entry Commission (CFEC) provided landings and gross earnings data for the fishermen from the various communities. It should be noted that this data was presented by CFEC in a manner that preserves the confidentiality of individual fisherman information. Seafood processing statistics were provided directly by the processing firms operating in the area. However, the influx of floating processors in the past two years operating in these areas, from whom information was not obtained, should be noted.

Additional documentary sources were available in many communities on local community conditions. These included comprehensive plans, grant applications, local government financial data, and city council and school board minutes.

Ethnographic, historic, demographic, and various government sources were used to aid in the reconstruction of the cultural characteristics and relationship of the communities as well as the historic changes that have led to their current condition. Since the literature on these communities and their inhabitants is relatively meager, much of the historical material was obtained from key person

interviews of elderly residents during the fieldwork.

Fieldwork periods from ten days to three weeks were spent in each of the communities (with the exception of Ugashik) during the summer of 1981 by Langdon and Brelsford. Informal interviewing was conducted with a number of fishermen in each community on the conduct of the local fishery, past and present. A wider circle of community residents were informally interviewed on broader sociocultural topics such as kinship, subsistence, religion, and political participation. Key person interviewing was done with processing personnel to obtain information about processing personnel characteristics, seasonal employment patterns, and other aspects of local processing. Key person interviewing was done with political figures and city employees to obtain a picture of local political processes and linkages to other communities and regional organizations. Key person interviewing was done with school personnel, health personnel, and local government employees.

In addition to informal and key person interviewing, observation was another important methodology used in the fieldwork. A wide variety of activities were observed in each community including fishing activities (in several communities this included participation as well), processing activities, subsistence activities, mutual assistance, attendance at religious services, recreational activities, and attendance and participation at local government meetings. Observation, including listening, was particularly important in identifying sociocultural values present in each community. It should be remarked that the comments on sociocultural values in each community are heavily qualified by the short-term period of fieldwork available.

1.3 REPORT ORGANIZATION

This report is organized to discuss the study area in general and also to pay particular attention to individual communities. The general approach is to discuss the region in terms of the seafood resources as depicted in the catch and effort statistics, and then to shift the emphasis to individual communities and their interrelationships. The shift is accomplished through the use of and by reference to ADF&G districts and statistical areas.

Following this introduction, Chapters 2 and 3 present information on the fishery resources. Chapter 2 presents catch and effort information in the study area from 1975 to 1980. The trends in gear usage as well as the relative importance of individual gear types are reviewed. Chapter 3

shifts the discussion to the district and statistical area level. A statistical area specific discussion of the most important salmon resources is followed by an inventory of vessels and gear types used in each community. Chapter 3 concludes with an analysis of catch per unit effort by gear type in selected Alaska Peninsula districts and statistical areas. Districts and statistical areas were chosen for their importance to total landings and for their importance to fishermen from communities in close proximity to the fishing grounds.

Chapter 4 contains detailed information on the socioeconomic and sociocultural organization of each of the six communities. First socioeconomic information is presented. Participation in fishing and fish processing activities by people from the community is reviewed. Other forms of economic activity including subsistence are then surveyed. Other community-specific factors are reviewed and analyzed, including social organization, political organization and cultural values. After these community-by-community surveys there is an analysis of community linkages and overall trends in Chapter 5.

CHAPTER 2

SALMON FISHERIES OF THE STUDY AREA

The salmon fisheries of the study area fall within the Alaska Peninsula management area and the southeastern portion of the Bristol Bay management area. The area covered extends from Cape Kupreanof, the eastern boundary of the Alaska Peninsula management area, westward around Unimak Island and then northeast to Cape Menshikof, the northeastern boundary of the Alaska Peninsula area. The discussion of the Bristol Bay area focuses on the Ugashik district but Bay-wide data are presented where needed. Since fishermen from the communities in the study area occasionally fish in the Egegik and Naknek-Kvichak districts, data on those districts are included in Appendix C.

The discussion below presents an overview of the salmon fisheries of each management area separately. Catch and effort statistics and ex-vessel value and price are discussed by species and gear type. Several data bases are slightly different from one area to another because management of the two areas is done by two distinct sets of Department of Fish and Game personnel who historically collected different data.

2.1 ALASKA PENINSULA MANAGEMENT AREA

Commercial catches of salmon in this area grew steadily during the six years ending in 1980. In 1975 the total catch in the area described amounted to only 1,786 m.t. By 1980 this had grown to 30,758 m.t., representing more than a 16 fold increase over the 1975 catch. With the exception of 1977 each one of the years registered a higher harvest over the preceding year. The highest single year change in total harvest, however, was in 1979 when 29,054 m.t. were harvested compared to a catch of 16,260 m.t. the previous year. Individual major gear types all registered increased catches over this period although the relative importance of each has undergone considerable changes (see Table 2.1). A gear by gear account is given next and draws on the statistics contained in Tables 2.2 and 2.3 and Figures 2.1, 2.2 and 2.3.

The large growth in catch can be attributed directly to increased use of purse seine gear. In 1975 purse seines harvested 572 m.t. which accounted for 32% of the total catch. By 1980 purse seines brought in a total of 23,232 m.t. representing 76% of all commercial salmon caught in the area. The effort expended has also increased dramatically. In 1975

TABLE 2.1
SUMMARY OF SALMON CATCH IN THE
ALASKA PENINSULA MANAGEMENT AREA, 1975 - 1980
(In Metric Tons)

Fishing ¹ Gear	1975	1976	1977	1978	1979	1980
PS	572	5,987	3,771	12,057	21,943	23,232
DG	1,051	2,982	2,166	3,429	5,421	5,563
SG	163	505	552	774	1,690	1,963
Total	1,786	9,474	6,489	16,260	29,054	30,758

¹ PS = Purse Seine
DG = Drift gillnet
SG = Set gillnet

Source: Commercial Fisheries Entry Commission.

TABLE 2.2

SALMON CATCH FOR THE ALASKA PENINSULA MANAGEMENT AREA (M.T.), 1975 - 1980

GEAR TYPE	S T A T I S T I C A L W E E K																			Total
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Purse Seine																				
1975			38	204	123			9	9		6	136	47							572
1976		11	74	243	348	61	18	210	515	1006	1814	1482	205							5,987
1977			55	113	175		90	92	266	562	969	910	519		20					3,771
1978			93	252	229	276	295	870	1495	1827	2665	3079	889	69	10	8				12,057
1979		158	306	1221	449	512	1386	1974	2542	4330	4759	3430	495	269	71	39	2			21,943
1980		24	14	4705	3539	648	752	755	1898	2497	3616	3658	1063		40	16	7			23,232
Drift Gillnet																				
1975			44	206	254	143	44	44	48	16	22	83	73	47	27					1,051
1976		2	272	533	666	274	398	243	194	154	65	76	61	37	6	*		1	*	2,982
1977			32	387	425	199	409	223	134	62	56	63	63	71	40	1		1		2,166
1978	13	38	244	730	501	623	289	167	144	102	134	166	175	84	15	4				3,429
1979	14	63	195	434	796	906	784	384	356	487	331	275	207	100	75	14				5,421
1980	1	10	19	1195	647	650	680	548	439	302	331	226	187	156	123	49				5,563
Set Gillnet																				
1975			2	9	24	42	10	18	14			3	8	10	23					163
1976		1	3	24	141	140	39	30	48	10	10	5	13	27	6	6	2			505
1977			8	30	62	52	130	38	82	31	13	28	12	23	37	4	1	1		552
1978	2	3	71	74	142	169	75	49	51	19	35	21	13	31	13	6	*			774
1979	3	14	73	128	205	223	264	223	110	110	61	61	53	75	67	20				1,690
1980		1	3	161	172	233	234	197	259	193	137	59	63	66	118	59	6	2		1,963

* Less than .5 MT.

Source: Commercial Fisheries Entry Commission.

ECI

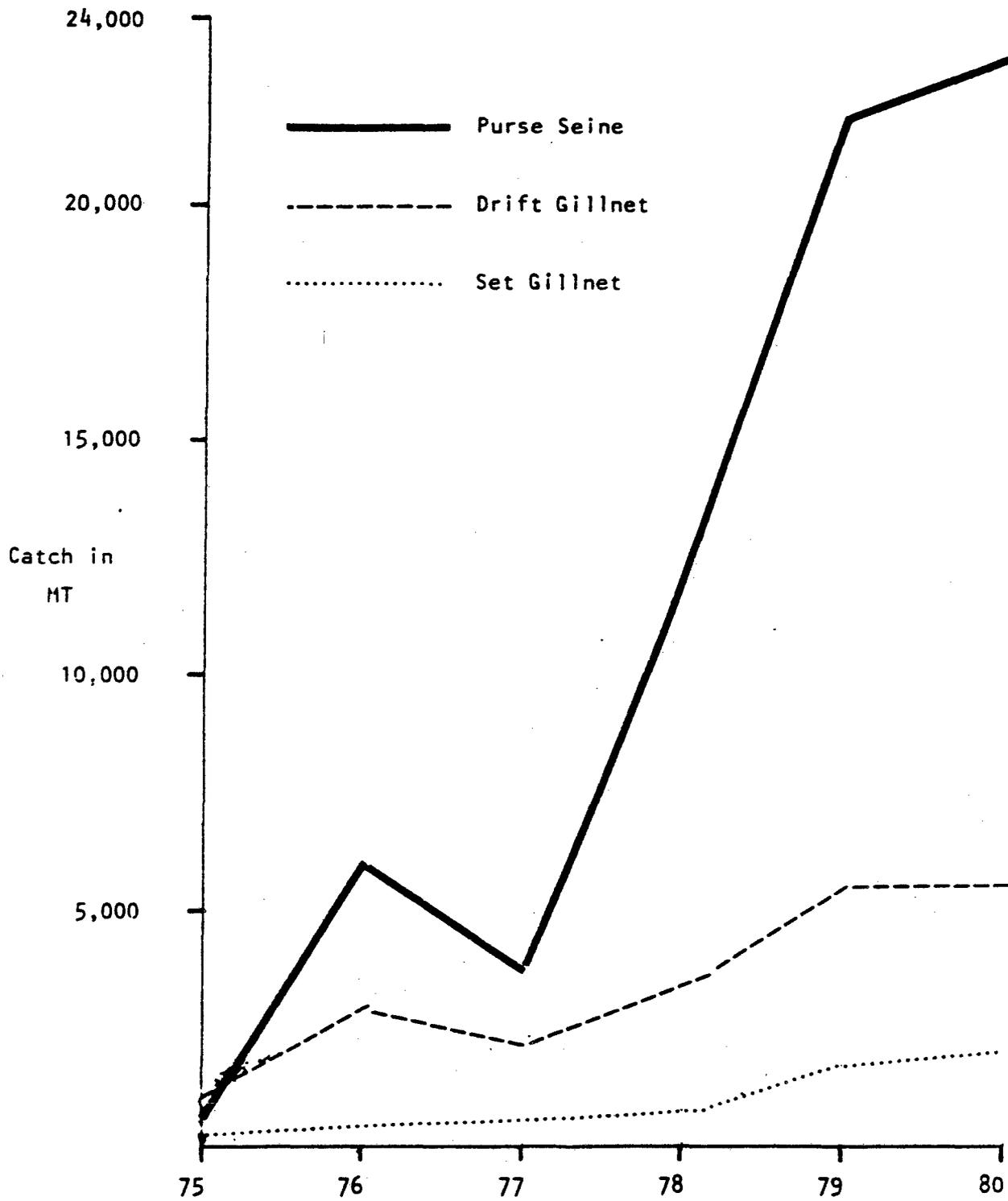
TABLE 2.3

SALMON FISHING EFFORT FOR THE ALASKA PENINSULA MANAGEMENT AREA (NO. OF LANDINGS), 1975 - 1980

GEAR TYPE	S T A F I S T I C A L W E E K												Total							
	22	23	24	25	26	27	28	29	30	31	32	33		34	35	36	37	38	39	40
Purse Seine																				
1975			23	49	34			11	16		5	50	19							207
1976	18	68	88	92	92	30	3	96	199	218	323	291	30							1,456
1977		32	49	42			43	63	115	274	347	239	120	11						1,335
1978		78	126	66	107	107	147	286	402	368	369	383	92	12	6	6				2,448
1979		86	113	222	130	171	557	702	875	850	750	666	222	136	20	17	2			5,519
1980		2	1	380	344	209	236	267	438	449	443	336	133		9	5	2			3,254
Drift Gillnet																				
1975		57	208	162	121	121	52	93	158	53	86	142	131	86	53					1,402
1976	14	302	421	411	253	218	218	188	161	141	126	100	93	71	19	2	4	1		2,525
1977		79	418	274	131	131	224	191	172	109	105	120	100	119	54	7		1		2,104
1978	23	57	438	695	296	355	242	188	168	180	130	112	167	121	39	5				3,216
1979	35	87	397	700	558	474	508	313	265	323	213	179	166	83	65	26				4,392
1980	15	44	59	789	490	498	515	518	468	227	355	263	182	209	100	49				4,781
Set Gillnet																				
1975			5	24	42	53	23	30	53			31	38	29	48					376
1976		6	24	80	150	176	72	69	61	32	36	21	41	56	18	13	5			860
1977			34	70	80	78	145	70	109	39	24	57	42	54	76	7	4	1		890
1978		7	8	119	133	141	164	120	94	44	39	49	35	56	36	12	1			1,138
1979		21	44	124	219	249	264	237	213	142	110	66	76	101	86	43				2,057
1980			5	28	246	251	274	277	192	131	120	66	49	83	147	90	8	1		2,218

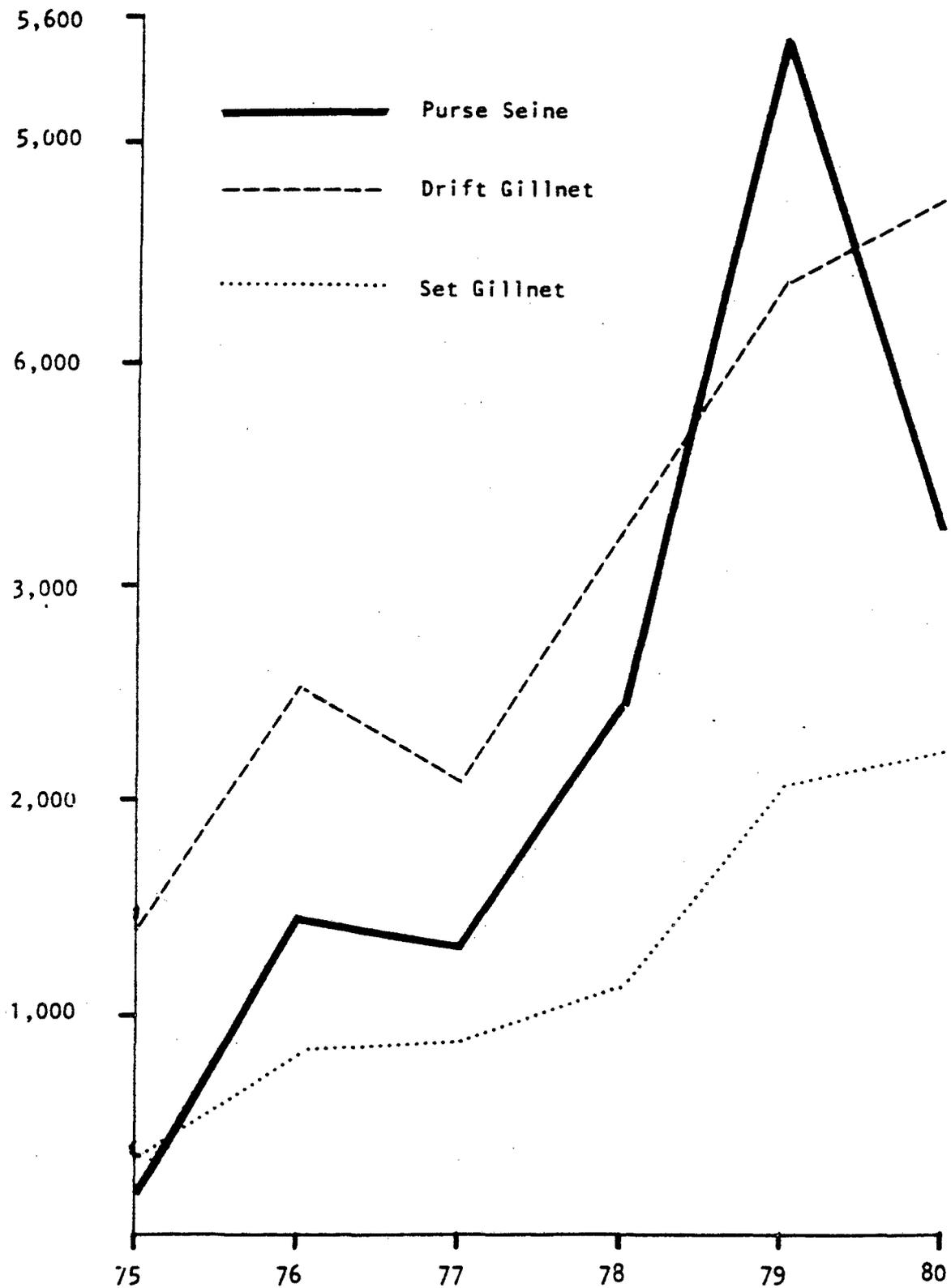
Source: Commercial Fisheries Entry Commission.

EC1



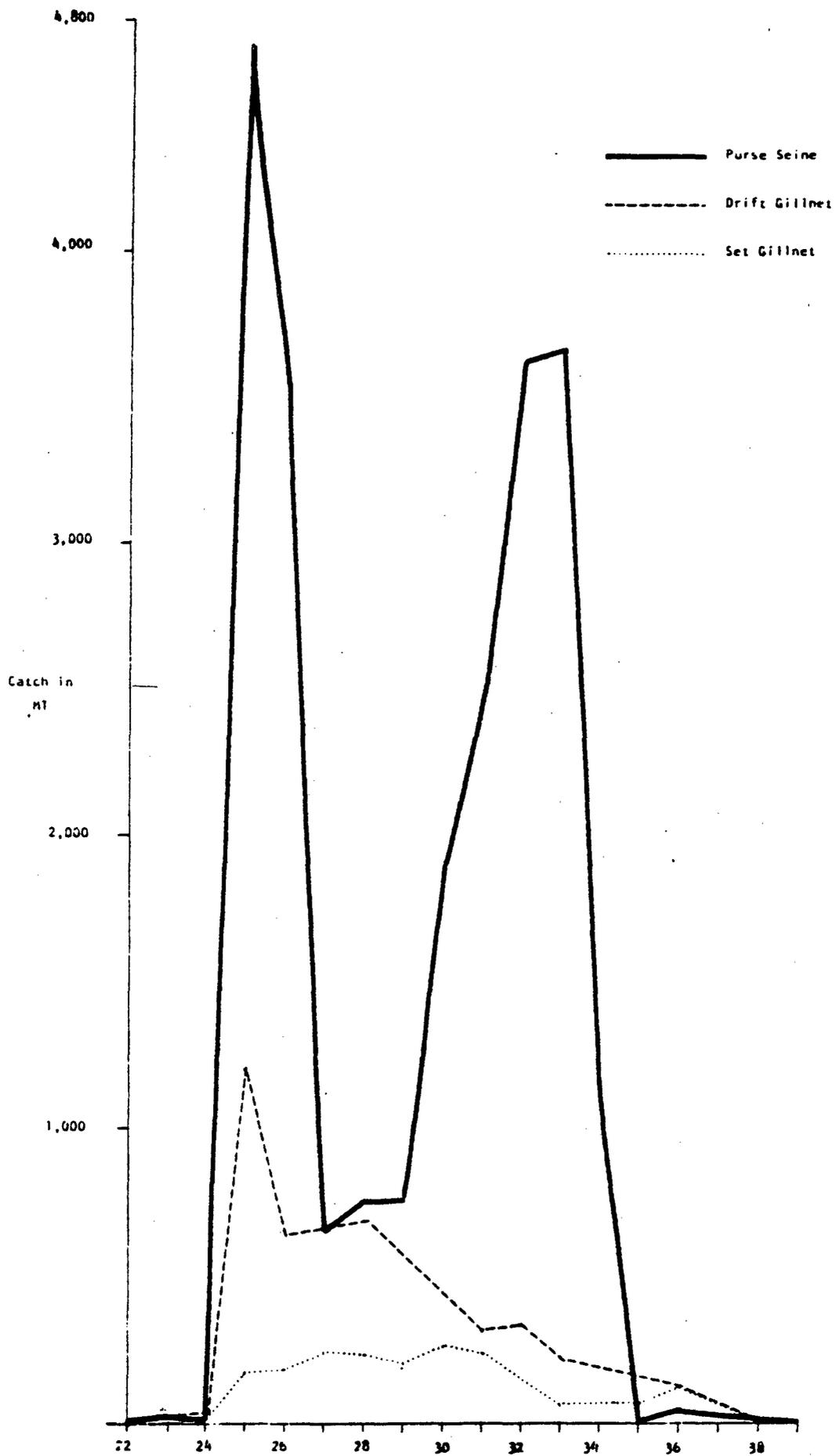
Salmon Catch by Gear Type in the Alaska Peninsula Management Area, 1975 - 1980

FIGURE 2.1



Number of Salmon Landings by Gear Type in the Alaska Peninsula Management Area, 1975 - 1980

FIGURE 2.2



Weekly Variation of 1980 Salmon Catch - by Gear Type in the Alaska Peninsula Management Area

FIGURE 2.3

there were 207 purse seine landings. This increased in 1976 to 1,446 but fell briefly to 1,335 landings in 1977. In 1978 and 1979 landings grew to a record 5,519 in the latter year. In 1980 the number of landings fell to 3,254 but without a corresponding drop in catch. In fact, the 1980 purse seine catch exceeded that of 1979 by over 1,000 m.t. Still, the 1980 effort level is almost 16 times as great as that expended in 1975. Since the purse seine catch itself has grown to 40 times as high as in 1975, the conclusion is that catch per unit effort (CPUE) has grown by a factor of 2.5. This conclusion, however, needs to be properly qualified in light of changes in net sizes and configurations in order to isolate that change in CPUE that is solely due to resource abundance.

The majority of purse seine catches are usually registered during the first three weeks in August (usually statistical weeks 31-33). The only exceptions were in 1975 and 1980 when the highest weekly catches were recorded in June during statistical week 25. Fishing, however, extends from early June through part of September, depending on the geographic area and current regulations.

Drift gillnet catches increased five-fold over the six year period ending in 1980. The relative contribution of this gear to total catch, however, dropped from 59% in 1975 to under 20% in 1980. In the former year a catch of 1,051 m.t. was registered, and though much lower than the 1980 catch of 5,563 m.t., was the highest catch of any single salmon harvesting gear in the area. This leadership role was lost the following year (1976) and is unlikely to be regained as long as purse seines continue to operate in those areas where they are now legal.

The highest weekly drift gillnet catches generally occur during late June to very early July. The third and fourth weeks in June together with the first week in July usually register the highest single week catches. This is different from the purse seine performance where in most years the highest catches come some six weeks later in the year.

Of the three gears considered during the period 1975-1980, set gillnets have always accounted for the lowest salmon harvest. In 1975 set gillnet catches in the area under discussion were recorded at only 163 m.t. This was 9% of the total catch then. Steady growth in total set gillnet harvest has been observed throughout the late 1970's and culminated in a high catch of 1,963 m.t. in 1980. Although this was twelve times as high as the 1975 catch, the contribution to total harvest had fallen from 9% to 6%. Catch statistics show that the highest weekly catches are usually during either the last

week in June or the first week in July. The activity tapers off thereafter although there usually is recovery six to seven weeks later in August for one or two weeks before the fishery trickles to trace catches towards the end of its season.

The total value of the Alaska Peninsula salmon fishery increased dramatically from 1975 to 1979 due to increases in poundage landed and to the price paid per pound. There was also a notable shift in the distribution of value by gear type during the period. Tables 2.4, 2.5, and 2.6 present information on value by species and gear type and price for the Alaska Peninsula management area which are discussed below.

Total value of the Alaska Peninsula salmon increased from \$1,684,000 in 1975 to \$35,555,000 in 1979. Value increased over 21 times from 1975 to 1979 while catch increased just over 16 times. Red salmon and pink salmon contributed an average of 78.9% of the total value of the Alaska Peninsula salmon fishery over the period. As indicated in Table 2.4, red salmon became the dominant species in terms of overall value contributed in 1977, a spot it has not retreated from since that time. Table 2.5 displays the change in average price per pound by species and gear type. As the table indicates, all species have increased in average value with red salmon more than doubling in value for all gear types. It should be noted that although prices are not available for the 1980 season, they did drop significantly for red salmon from their 1979 level, largely due to excess fish remaining on the market from 1979. It is noteworthy that the purse seine price of pink salmon rose only 27% over the period while the purse seine price for reds rose by 132%. Consequently, increase in price played a far greater role in the growth in the contribution of red salmon to total value than it did for pink salmon.

Over the entire period, purse seines took 48% of total value, drift gillnets 42.6% and set gillnets 9.4%. As Table 2.6 displays, purse seines became increasingly dominant in the last two years of the period, a trend which continued in 1980 and 1981. Although purse seines surpassed drift gillnets in total landings in 1976 and steadily increased their percentage of the total harvest, their share of total value did not surpass that of the drift gillnetters in 1977 due to drift gillnetters' much larger percentage of the red catch. Further discussion of this point is provided in the statistical area comparison section in Chapter 3.

TABLE 2.4

ALASKA PENINSULA TOTAL EX-VESSEL VALUE BY SPECIES
1975-1979

Year	Thousands of Dollars (percentage of total value in brackets)					TOTAL
	KING	RED	SILVER	PINK	DOG	
1975	17 (1)	1,286 (76)	99 (6)	70 (4)	212 (13)	1,684
1976	63 (1)	2,163 (33)	143 (2)	2,782 (42)	1,408 (22)	6,559
1977	63 (1)	3,339 (57)	197 (3)	1,140 (19)	1,162 (20)	5,900
1978	275 (2)	6,595 (40)	631 (4)	6,400 (38)	2,590 (16)	16,491
1979	516 (1)	20,660 (58)	3,544 (10)	9,020 (25)	1,815 (6)	35,555

TABLE 2.5

ALASKA PENINSULA ESTIMATED AVERAGE PRICE PER POUND
BY SPECIES AND GEAR TYPE, 1975 - 1979

Gear Type	Year	Species				
		KING	RED	SILVER	PINK	DOG
PURSE SEINE	1975	.50	.47	.42	.30	.25
	1976	.49	.52	.47	.27	.26
	1977	.75	.70	.61	.20	.40
	1978	.92	.80	.72	.31	.47
	1979	1.09	1.09	.76	.38	.51
DRIFT AND SET GILLNET	1975	.50	.47	.42	.30	.25
	1976	.53	.34	.47	.27	.34
	1977	.85	.63	.61	.33	.40
	1978	.78	.76	.74	.38	.49
	1979	1.17	1.17	1.02	.41	.63

Source: Commercial Fisheries Entry Commission

TABLE 2.6

TOTAL ALASKA PENINSULA SALMON
EX-VESSEL VALUE BY GEAR TYPE
1975 - 1979

Year	Thousands of Dollars (percentage of total value in brackets)			
	Purse Seine	Drift Gillnet	Set Gillnet	Total
1975	508 (30)	1,017 (60)	159 (10)	1,684
1976	3,735 (57)	2,264 (35)	560 (8)	6,559
1977	2,483 (42)	2,757 (47)	660 (11)	5,900
1978	9,795 (59)	5,496 (33)	1,200 (8)	16,491
1979	18,325 (52)	13,557 (38)	3,673 (10)	35,555

2.2 BRISTOL BAY MANAGEMENT AREA

The Bristol Bay management area has seen the largest salmon fishery in Alaska in recent years in terms of total salmon catch, total units of gear, and value of catch. Tables 2.7, 2.8, 2.9, 2.10 and 2.11 present summary information discussed in the text below.

Total catch has grown from 5.3 million fish in 1975 to 28.2 million fish in 1980 (see Table 2.7). The most important species in Bristol Bay in poundage is the red salmon. The 1980 red salmon harvest of 23.7 million fish, comprising 84% of the total catch, was the fifth largest ever recorded. The red salmon return of 62.4 million fish was the largest ever recorded, and total red catch would have easily surpassed the previous high of 24.7 million fish recorded in 1938 had it not been for the strike over price which prevented significant harvesting from occurring prior to July 3.

The other four species also increased from previous lows in the 1972-74 period to surpass previously recorded highest catch levels. However, different species reached their peak in different years. For king salmon, the highest recorded harvest of 4.6 million fish occurred in 1978; for dogs, the record harvest of 1.6 million fish occurred in 1977; for pinks, the record harvest of 4.6 million fish occurred in 1978; and for silvers, the record harvest of 335,000 fish occurred in 1980.

Total fishing effort as defined by number of fishing units is presented in Table 2.8. Effort as measured by landing in the Alaska Peninsula management area is not available for Bristol Bay due to the size and intensity of the fishery. Consequently the even highly qualified CPUE figures available for Alaska Peninsula fisheries are not possible for Bristol Bay. Despite the State of Alaska's limited entry program, total fishing effort increased from 1975 to 1980 with the total number of units growing from 2,176 in 1976 to 2,775 in 1980. This represents a 28% increase with the largest proportion of it occurring from 1977 to 1978 when an increase of 339 units was recorded, a 15% increase in effort in 1978 over that of 1977.

Only drift gillnet and set gillnet gear types are allowed to commercially harvest salmon in Bristol Bay. Both gear types increased in number from 1975 to 1980 although, as Table 2.8 shows, they exhibited different patterns of growth with set gillnet gear growing every year from 1975 to 1980 while drift gillnet dropped in 1976 from its 1975 level but then grew steadily through 1980. The largest annual increases for

TABLE 2.7

SUMMARY OF SALMON CATCH IN BRISTOL BAY
BY SPECIES AND GEAR TYPE, 1975 - 1980¹

Year	Gear Type	Number of Fish (1,000)					Total
		Red	King	Dog	Pink	Silver	
1975	Drift	4,458 (91)	29 (96)	305 (94)	-	37 (80)	4,830 (91)
	Set	441 (9)	1 (4)	20 (6)	-	9 (20)	471 (9)
	TOTAL	4,899	30	325		46	5,301
1976	Drift	5,073 (90)	90 (94)	1,282 (96)	927 (89)	17 (63)	7,388 (91)
	Set	546 (10)	6 (6)	47 (4)	110 (11)	10 (37)	720 (9)
	TOTAL	5,619	96	1,329	1,037	27	8,108
1977	Drift	4,328 (89)	126 (96)	1,527 (96)	-	89 (83)	6,074 (90)
	Set	550 (11)	5 (4)	71 (4)	-	18 (17)	644 (10)
	TOTAL	4,878	131	1,598		107	6,718
1978	Drift	8,711 (88)	185 (97)	1,097 (95)	4,584 (89)	72 (76)	14,648 (89)
	Set	1,217 (12)	7 (3)	61 (5)	567 (11)	23 (24)	1,877 (11)
	TOTAL	9,929	192	1,158	5,153	95	16,525
1979	TOTAL	21,958	202	930	2	300	23,393
1980	TOTAL	23,674	96	1,405	2,650	335	28,160

¹ No gear type catch breakout available for 1979 and 1980.

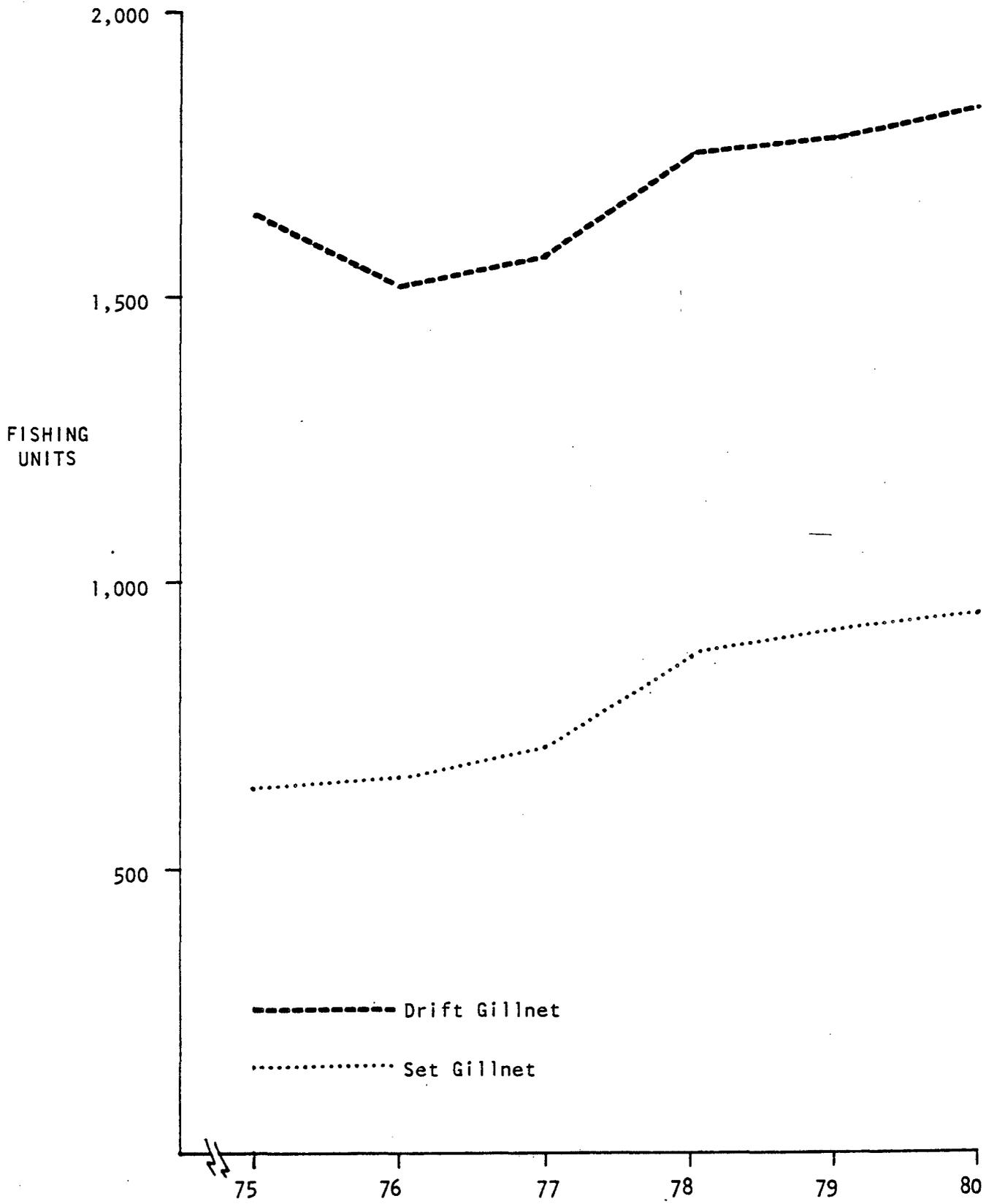
Source: ADF&G 1980b

TABLE 2.8

TOTAL BRISTOL BAY FISHING UNITS
BY GEAR TYPE, 1975 - 1980

Year	Gear Type (percentage figure in brackets)		Total
	Drift	Set	
1975	1,633 (72)	638 (28)	2,271
1976	1,517 (70)	659 (30)	2,176
1977	1,568 (69)	711 (31)	2,279
1978	1,747 (67)	871 (33)	2,618
1979	1,779 (66)	912 (34)	2,691
1980	1,827 (66)	948 (34)	2,775

Source: ADF&G 1980b



BRISTOL BAY FISHING UNITS BY GEAR TYPE
1975 - 1980

FIGURE 2.4

TABLE 2.9

BRISTOL BAY VESSEL LENGTH, 1975 - 1980

Year	Vessel Length (percentage figures in brackets)			Total
	to 25 ft.	26-29 ft.	30-32 ft.	
1975	455 (28)	243 (15)	944 (57)	1,642
1976	489 (29)	254 (15)	926 (56)	1,669
1977	517 (30)	286 (17)	925 (53)	1,728
1978	561 (30)	351 (19)	952 (51)	1,864
1979	717 (31)	419 (18)	1,199 (51)	7,335
1980	741 (28)	459 (17)	1,493 (55)	2,693

Source: ADF&G 1980b

TABLE 2.10

BRISTOL BAY
TOTAL EX-VESSEL VALUE TO FISHERMEN BY SPECIES,
1975 - 1980

Year	Thousands of Dollars (Percentage of total shown in brackets)						Total
	King	Red	Silver	Pink	Dog		
1975	214 (2)	11,047 (92)	151 (1)	-	615 (5)		12,027
1976	742 (3)	17,139 (78)	82 (.004)	1,093 (5)	2,892 (13)		21,948
1977	1,943 (7)	10,446 (75)	445 (2)	5 (0)	4,258 (16)		26,097
1978	3,206 (6)	40,034 (77)	435 (1)	5,424 (10)	3,173 (6)		52,272
1979	4,303 (3)	132,116 (93)	2,454 (2)	3 (0)	2,586 (2)		141,462
1980	1,884 (2)	75,837 (90)	1,337 (2)	2,246 (3)	2,957 (4)		84,261

Source: ADF&G 1980b

TABLE 2.11

BRISTOL BAY
ESTIMATED AVERAGE PRICE PER POUND BY SPECIES,
1975 - 1980

Year	King	Red	Silver	Pink	Dog
1975 ¹	.35	.402	.37	.226	.228
1976	.454	.502	.405	.3092	.32
1977	.45	.595	.5325	.3392	.369
1978	.70	.68	.62	.33	.38
1979	1.00	1.025	1.05	.33	.41
1980	1.00	.57	.57	.25	.34

¹ Figures for 1975-1977 are weighted averages, with AIFMA prices counting for 60% and WACMA prices counting for 40% of the final derived figure.

Source: ADF&G 1980b

both gear types occurred in 1978 with drift gillnets increasing by 179 units (or 11.4%) over the previous year and set gillnets increasing by 160 units (or 23%) over the previous year. Overall growth in drift gillnet gear showed an increase of 194 units (or 12%) from 1,633 in 1975 to 1,827 in 1980. Overall growth in set gillnet gear showed an increase of 310 units (or 49%) from 638 in 1975 to 948 in 1980. This difference in rates of growth between the two gear types is in part due to the fact that the limited entry commission was very lenient in awarding set gillnet permits in 1975. As the fishery has become more lucrative, many of those permits which sat idle in lean years have been activated.

In addition to numbers of units fishing, there are several other indices which display the increase in fishing effort in Bristol Bay from 1975 to 1980. One of these is the proportion of fishing vessels registered (Table 2.9) to the number of units fishing (Table 2.8). This is a meaningful ratio because set gillnet gear can be operated without a vessel, but it is less effective to do so. Drift gillnet gear, of course, requires a vessel. Consequently, an increase in the proportion of fishing vessels to units of gear means that more set gillnet units are acquiring vessels. In 1975 72% of units fishing had vessels while by 1980 the percentage had increased to 97%. The most dramatic increases occurred between 1978 and 1979 when a 23% increase occurred from 71% in 1978 to 87% in 1979 and between 1979 and 1980 when an additional 11% increase occurred from 87% to 97%.

A second indice of increasing effort in the Bristol Bay fishery is the average length, hold capacity, and horsepower of the drift gillnet vessels. Table 2.9 summarizes the relative proportions of vessels of different lengths in the fishery. When examining this table, it is important to keep in mind that vessels used in the set gillnet fishery are typically skiffs under 25 feet in length. Consequently, the substantial increase in the number of these vessels would mean that the relative proportion of larger vessels would decline. It is noteworthy then that the two dramatic surges of additional vessels which occurred from 1978 to 1979 and 1979 to 1980 did not reduce the proportion of vessels in the 30-32 foot class. In fact, there was a significant increase in the number of 30-32 foot vessels from 1979 to 1980 (nearly a 25% increase) which more than offset the additional small set gillnet vessels added to the fishery. This latter assertion is supported by the fact that the proportion of 30-32 foot vessels in the fishery rose from 51% in 1978 and 1979 to 55% in 1980. Although no comparable hard data are available on hold capacity and horsepower, Baker and Muse (1979) reported on the basis of their 1977 Bristol Bay survey, that average vessel horsepower had increased about 10% from 1972. It is

clear that even greater increases in average horsepower and hold capacity accompanied the increased average vessel length with the major upgrading of the fleet that took place between 1979 and 1980.

One final indicator of increased effort in the Bristol Bay Fishery is the amount of labor involved in the harvesting sector. An overall increase in labor can be inferred merely from the increase in total fishing units from 2,176 in 1976 to 2,775 in 1980 reported in Table 2.8. In addition to this, however, is the fact that drift gillnet units are using more average persons per unit of gear now than they were in 1975 (Larson 1980). Thus, not only are more units of gear in operation but each drift unit is using more labor than it was previously. It is unclear if a similar pattern holds for the set gillnet fishery.

The value of the Bristol Bay salmon fishery presents a more complicated picture than found in the landings. Table 2.10 displays the total value of Bristol Bay salmon by species from 1975 to 1980 and Table 2.11 presents the estimated Bristol Bay-wide average price per pound by species from 1975 to 1980. As can be seen in Table 2.10, total value increased from \$12,027,000 to \$141,462,000 in 1979 before falling back to \$84,261,000 in 1980. The value increased nearly 12 times from 1975 to 1979 while catch increased only a little over five times. Value from red salmon increased from \$11,047,000 in 1975 to \$132,111,000 in 1980, a 12-fold increase, while total red salmon catch increased five and one-half times from a low of 4.3 million fish in 1977 to a high of 23.7 million fish in 1980.

As shown in Table 2.11, all species increased in price per pound from 1975 to 1979 with silver, king, and red salmon showing the largest increases. Likewise all species, with the exception of king salmon, showed declines in 1980. The 1980 red salmon price of \$.57 was almost 50% lower than the 1979 price and is primarily responsible for decline in total exvessel earnings from \$141.5 million in 1979 to \$84.3 million in 1980. Depressed market conditions due to the large amounts of high priced salmon held over from 1979 contributed both to the lower price and the strike which kept the 1980 harvest well below what it could have been.

There is no price differential between drift gillnet and set gillnet caught fish in Bristol Bay. There is, however, some difference in the relative success of each gear type in catching different salmon species. As Table 2.7 displays, drift gillnets predominate in the harvest of all species, but set gillnets are comparatively better at harvesting silver salmon than they are at harvesting king and dog salmon.

One of the reasons for the significant increase in the value of the salmon fisheries in these two areas is the changes in the proportion of fish processed by different methods that have occurred. Table 2.12 summarizes information on the proportion of Bristol Bay salmon processed in different ways. As can be seen, the percentages of higher quality, higher priced frozen and fresh export fish have increased dramatically. In 1979, the per pound price differential between canned and fresh/frozen reds was \$.30 ; \$1.00 for fresh/frozen, and \$.70 for canned. From a combined total of 5% in 1975, fresh/frozen climbed to 50% of total catch in 1979 before falling off slightly to 47% in 1980. The most significant jump occurred in 1979. It should be noted that the brine export category refers to fish taken out of Bristol Bay for canning in other areas such as the Alaska Peninsula, Chignik, and Kodiak. The increasing percentage of brine export fish is a result of the large run size of recent years, but may also be a result of firms without canneries in Bristol Bay purchasing a larger share of the catch than firms with canneries located in Bristol Bay.

TABLE 2.12

TOTAL POUNDS OF BRISTOL BAY SALMON BY TYPE OF PROCESSING,
1975 - 1980

Year	Thousands of Pounds of Salmon Processed (percentage of total shown in brackets)				Total
	Canned	Frozen/Cured	Fresh Export	Brine Export	
1975	23,097 (78)	942 (3)	585 (2)	5,136 (17)	29,760
1976	40,518 (84)	1,955 (4)	1,275 (3)	4,466 (9)	48,214
1977	35,167 (79)	2,317 (5)	3,518 (8)	3,603 (8)	44,605
1978	62,218 (67)	11,445 (12)	9,991 (11)	9,304 (10)	92,958
1979	54,245 (37)	46,713 (32)	26,605 (18)	17,557 (12)	145,120
1980	49,383 (34)	42,860 (29)	26,225 (18)	27,780 (19)	146,246

CHAPTER 3

SUBREGIONAL SALMON HARVEST CHARACTERISTICS

This chapter is divided into three sections. The first section looks at statistical areas to identify important locations of harvest by species, gear type, and community. The second inventories vessel and gear organization by community and the third analyzes comparative catch per unit effort information by gear type for selected areas.

3.1 STATISTICAL AREA SPECIFIC SALMON FISHERY PATTERNS

Important aspects of the salmon fisheries in the study area include statistical area specific harvest patterns and timing of the predominant species runs. While all five of the Pacific salmon common to North America are caught in this region, pink and red salmon are the most significant resources in terms of tonnage and total value to the local communities. Pink and reds are nearly equal in the Alaska Peninsula management area while the reds are the overwhelmingly predominant species in Bristol Bay. In this section an area specific discussion of these major species is presented. Detailed data on catch by statistical area, week, species, gear type, and year are presented in Appendices A, B, and C.

For the reader's convenience, Exhibits 2.1 and 2.2 showing the applicable ADF&G five-digit statistical areas and districts appear on the following two pages. Beginning with the areas on the southeast side of the Peninsula and following around into the Bristol Bay Management Area, the major salmon fisheries are discussed. In the statistical areas prefixed by 281 through 283, the predominant species caught is pink salmon. Areas 281-63 and 281-64 were the best producers consistently through the late 1970's but in 1980 the largest catches came from statistical areas 283-31 and 282-11. Purse seiners take the lion's share of the catch with the peak catch period occurring during statistical weeks 32 and 33 (second and third weeks of August).

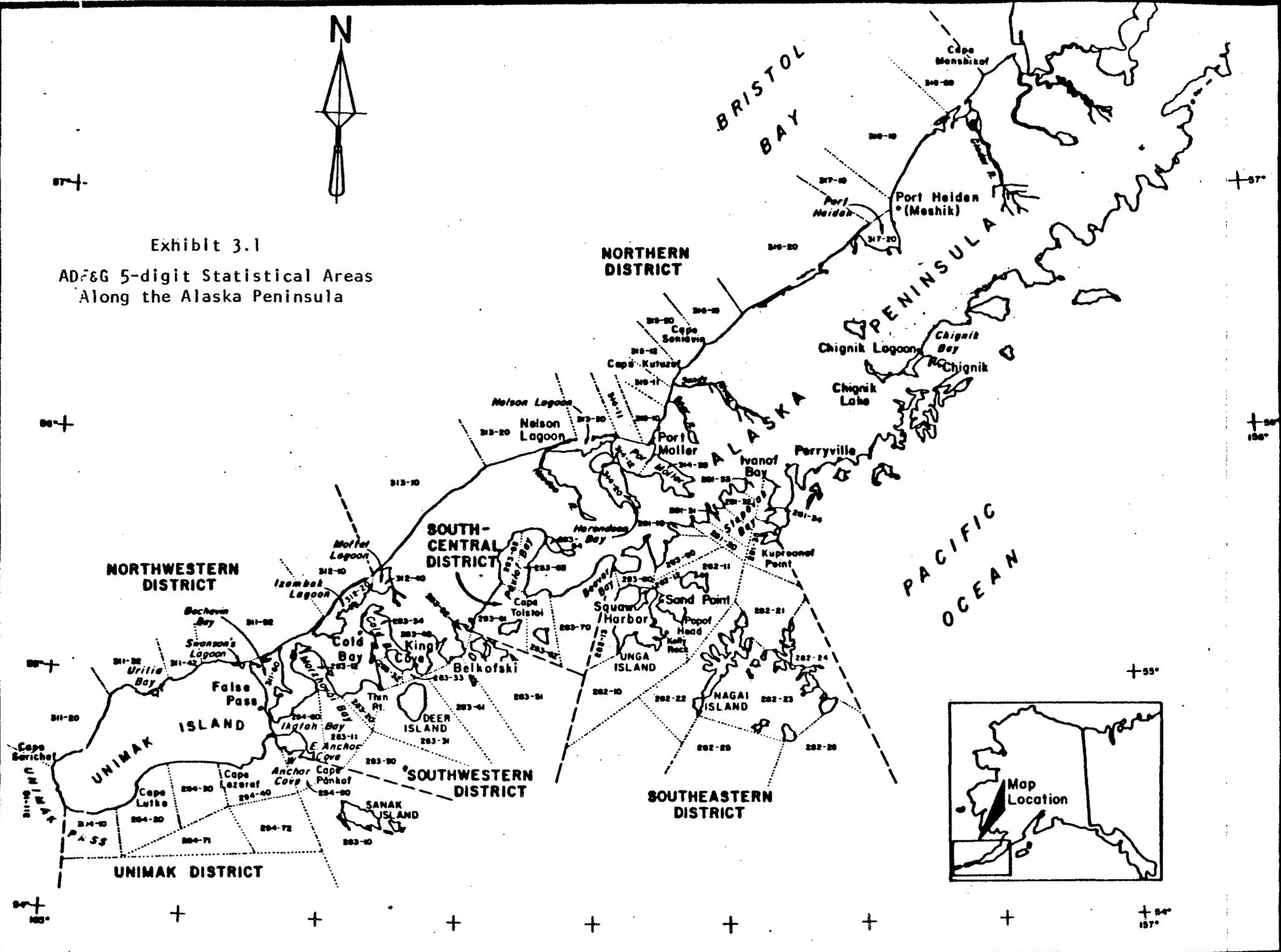
During weeks 24 through 26, statistical area 282-11 was the major producer of red salmon for purse seine gear in the Alaska Peninsula from 1975 to 1978.

The major proportion of the catch in these areas is taken by purse seine and beach seine fishermen from Sand Point and King Cove. King Cove fishermen are predominant in districts 283-11 east to district 283-63. Districts 283-62, 283-63,



Exhibit 3.1

ADF&G 5-digit Statistical Areas
Along the Alaska Peninsula



30

157°

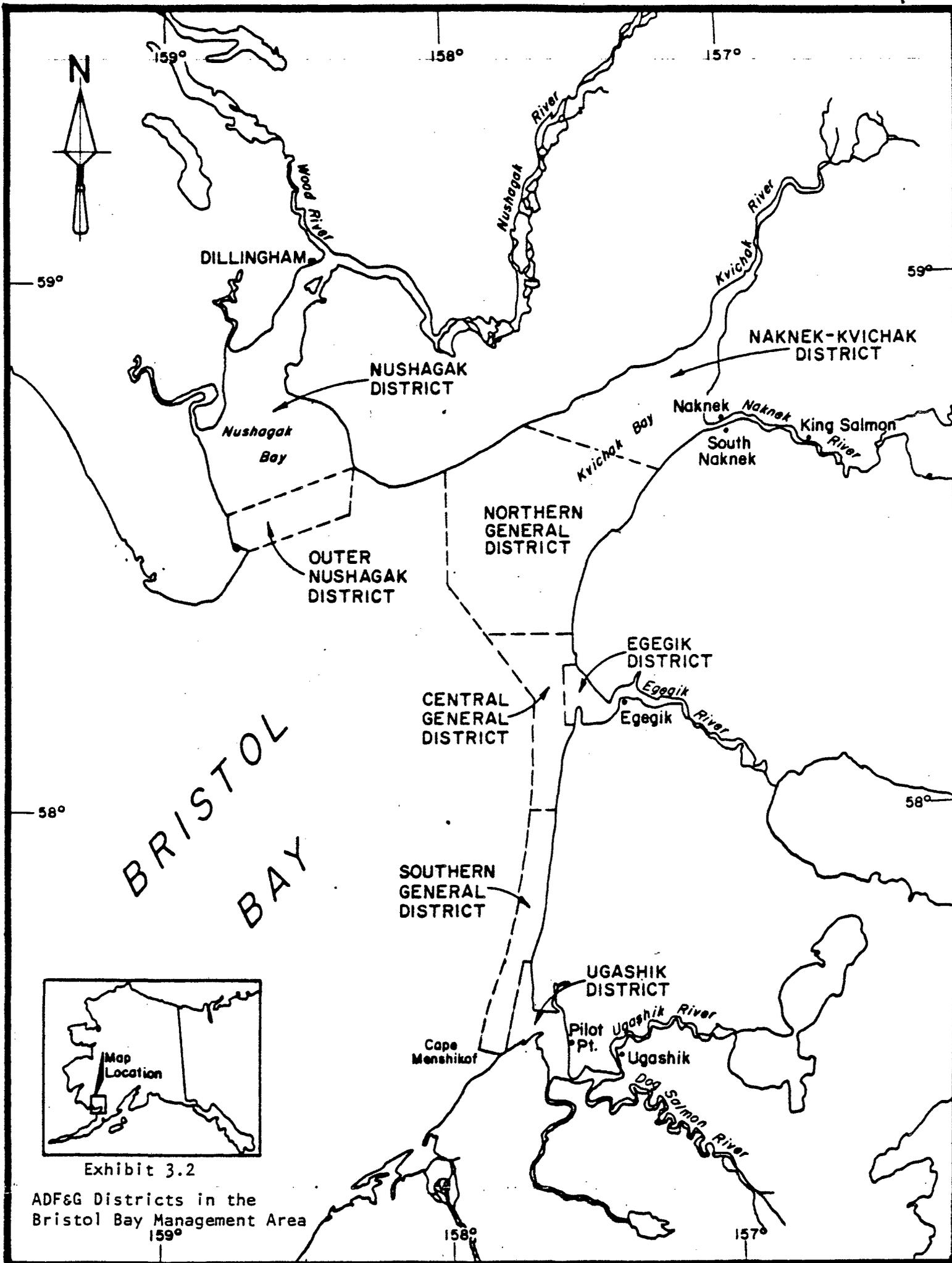


Exhibit 3.2

ADF&G Districts in the Bristol Bay Management Area

283-64, and 283-65 are generally an area of overlap where vessels from both communities are equally likely to be found. Sand Point vessels are predominant in districts 282 and 281.

The statistical areas prefixed by 284 comprise what is commonly referred to as the Unimak fishery. Reds are the predominant species. Area 284-60 was the best producer between 1975 and 1979 with drift gillnets taking the largest catches during statistical weeks 25 and 26 (last part of June). In 1979 and 1980, however, purse seiners increased their catch from area 284-20 at the same peak time to dominate the scene. The added effort came from the Sand Point purse seine fleet for whom the Unimak fishery is now the most valuable red fishery. Previously, the red fishery in area 282-11 was the most important red salmon fishery for the Sand Point seiners.

Fishermen from all the Alaska Peninsula communities have taken part in the Unimak fishery in recent years. Nelson Lagoon drift gillnet fishermen in the last two or three years have reduced their efforts in this area due to the strength of runs to their area. Sand Point purse seiners increased their efforts here in 1979 and 1980 due to regulations which have concentrated the June red fishery here rather than in the Shumagins. King Cove fishermen are roughly divided into equal components of drift and purse seine units in this area while False Pass fishermen use drift gillnet gear here.

Areas prefixed by 311 and 312 are primarily areas where red catch predominates. Area 312 includes the very productive dog salmon fisheries of Izembeck and Moffett Lagoon (areas 312-20 and 312-40, respectively). Very few pinks are caught except that in 1978 over 1.6 million pounds were caught in 311-52 by purse seiners. Area 311-52 was the best producing area in the late 1970's; however, in 1980 the largest catch was from 311-20. In all instances, purse seiners landed the largest portion of the catch. Peak catches occurred during weeks 29 through 31 (middle of July to early August).

The 311 area fishery is known locally as the Urilia Bay and Swanson's Lagoon fishery and is dominated by False Pass fishermen using beach seines with several occasional beach seine units from King Cove also participating. The same is true for area 312.

As we move northeast along the north side of the Peninsula, reds become the predominant species. Very few pinks are caught in these areas. Some other fisheries are relatively important, like the king and silver fisheries in Nelson Lagoon, but the major catches in areas prefixed by 313

and 314 are of red salmon. Area 313-30 is the major producing area and set gillnets are the primary producers followed by drift gillnets. Statistical weeks 25 through 28 (end of June through the middle of July) have the highest catches but good catches are posted by both gear types through the end of July (week 30).

Statistical area 313-30 is the Nelson Lagoon fishery which is utilized almost exclusively by residents of Nelson Lagoon using drift and set gillnet gear.

Red salmon are again the most important in areas prefixed by 315 and 316. Drift gillnets take most of the catch although about 200,000 pounds were caught by purse seiners in area 315-11 during week 27 of 1980. Area 315-11 generally is the most productive with consistently good catches throughout the period between weeks 26 and 35 (end of June through August). Peak catches are usually early in this period (weeks 27 and 28). This is the primary fishery for the Port Moller fleet.

The Port Moller area fishery is carried out almost exclusively by drift gillnet vessels. The fleet is composed of 50% non-area resident fishermen who come from other parts of Alaska and Washington and 50% of Alaska Peninsula resident fishermen drawn from all four communities in the Alaska Peninsula portion of the study area.

Areas 317 and 318 produce mainly reds. Set gillnets produced the largest catches in 1979 and 1980. Area 317-20 (Port Heiden) is more noteworthy for its early king run and late silver run than it is for the red salmon which are strictly pass-through fish headed for various systems further north in Bristol Bay. Area 318-20 includes the important late fall Cinder River fishery. Early years (1975-1978) saw relatively little production in these statistical areas. Statistical weeks 26 to 29 (end of June through the third week of July) is the peak production period. Port Heiden fishermen participate overwhelmingly in these fisheries using set gillnets and drift gillnets. Set gillnets are used for red salmon while drift gear takes the largest proportion of the king and silver catch. Pilot Point fishermen, using drift gillnets, are the primary participants in area 318-20.

In the Bristol Bay management area, five-digit statistical areas are not used. Rather, the area is divided into a number of districts. The districts which fishermen from Port Heiden, Pilot Point, and Ugashik have used are Naknek-Kvichak, Egegik, and Ugashik districts (see Exhibit 2.2) but overwhelmingly they have concentrated their efforts

in the Ugashik district. This discussion focuses on the Ugashik district although catch statistics are presented for all three districts in Appendix C. It should be noted that in 1979 and 1980 an additional district, termed the general district and subdivided into northern, central, and southern, was created by management personnel in order to allow for earlier harvesting of the enormous runs and provide for more orderly processing of the catch (see Exhibit 3.2). This did not change the pattern of reporting of catch statistics as catches made in the general districts were assigned to either the Naknek-Kvichak, Egegik, or Ugashik district, depending on the location of the general district harvest.

Salmon caught in the Ugashik district comprise only a small fraction of the total Bristol Bay catch, ranging from 0.32% in 1975 to 3.53% in 1980. In this district, as elsewhere in Bristol Bay, reds are the major species. Peak catch normally occurs around statistical week 29 or between the middle and end of July. Drift gillnets take the majority of the run, although it is likely that set gillnets take a larger share than the Bristol Bay-wide average of 90% drift and 10% set, due to special provisions for set gillnetting on the Ugashik River (see section 4.6 for further discussion on this point).

Pilot Point, Ugashik, and Port Heiden residents make up the largest portion of the drift gillnet fleet; however, recent years with large catches have seen a significant influx of fishermen from the Egegik and Naknek-Kvichak districts during peak periods of the run. Set gillnetting has been primarily the domain of Pilot Point residents along with a few from Ugashik and Port Heiden.

3.2 VESSELS AND GEAR UTILIZATION

In this section information on number of vessels including age and gear characteristics is presented. This is done in the context of homeports and does not correspond to local ownership of vessels which is discussed in Chapter 4. Rather this information may indicate activity levels in the vicinity of selected communities.

Pilot Point and Ugashik

There were 35 fishing vessels with their home port in Pilot Point in 1979. Two of these vessels were one to ten years old. The rest were divided almost equally into three categories: those between 11 and 20 years (11 vessels), those between 21 and 30 years (12 vessels), and those at least 31 years old or of undetermined age.

All the vessels, except one for which length was not reported, were at most 40 ft. in length. The majority 15 vessels were between 21 and 30 ft. in length, while 7 vessels and 12 vessels were respectively 20 ft. or less and 31 ft. or more. Two types of fishing gear were used by these vessels as can be seen from Table 3.2. Twenty-two vessels reportedly carried drift gillnets only. Seven vessels used set gillnets while the remaining six vessels reported more than one gear type. This is in accordance with the gear regulations for the general area in which both Pilot Point and Ugashik fall.

Port Heiden

A total of 23 fishing vessels listed Port Heiden as their home port in 1979. Tabulation of vessel statistics by age and length group shows fairly uniform distribution. There were five boats of up to 10 years of age, four boats between 11 and 20 years old, five boats of between 21 and 30 years old and four which were of unknown age. Most of the vessels fell in the range from 21 ft. to 40 ft. There were 10 boats each in the length ranges 21'-30' ft. and 31'-40' ft. Two boats were 20 ft. or less and the length of one vessel was not reported. These statistics are contained in Tables 3.3 and 3.4.

The reported gear types included mostly the drift and set gillnets (Table 3.4). Twelve of the 23 boats carried drift gillnets. Set gillnets were used on seven boats while the remaining four boats reported having multiple gear, more than one type. It should be noted that salmon fishing regulations in the general vicinity of Port Heiden prescribe use of drift or set gillnet only.

Port Moller

Forty-five vessels reported Port Moller as their home port during 1979. Like Pilot Point and Port Heiden, Port Moller, the vessels rarely exceed 40 ft. in length. However, whereas the size distribution of boats with a home port in Pilot Point and Port Heiden is more uniform, the vessels in Port Moller tend to be larger on average. For example, as shown in Table 3.5, 27 of the 43 boats of up to 40 ft. in length were in the 31'-40' category. In addition two vessels were longer than 40 ft. As far as the age of the vessels is concerned most (18) tended to be in the mid-age range of between 16 and 25 years. Fourteen are ten years or newer with eight of these having been bought no more than seven years ago.

By far the most predominant type of gear carried is the drift gillnet. Of a total of 45 vessels homeported at Port

TABLE 3.1

NUMBER OF VESSELS WITH A HOME PORT IN PILOT POINT.
BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5		1								1
6 - 10	1									1
11 - 15		1	1						1	3
16 - 20	4	1	3							8
21 - 25		2	7							9
26 - 30	2		1							3
Older Than 31		5								5
Unknown		5								5
Total	7	15	12						1	35

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.2
NUMBER OF VESSELS WITH A HOME PORT IN PILOT POINT
BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine										
Beach Seine										
Drift Gillnet		10	11						1	22
Set Gillnet	3	4								7
Hand Troll										
Longline										
Pot										
Multiple	4	1	1							6
Unknown										
Total	7	15	12						1	35

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.3

NUMBER OF VESSELS WITH A HOME PORT IN PORT HEIDEN
BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5		2	3							5
6 - 10										
11 - 15	1									1
16 - 20		1	2							3
21 - 25			4							4
26 - 30			1							1
Older Than 31		5								5
Unknown	1	2							1	4
Total	2	10	10						1	23

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.4
 NUMBER OF VESSELS WITH A HOME PORT IN PORT HEIDEN
 BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine										
Beach Seine										
Drift Gillnet		3	9							12
Set Gillnet	2	4							1	7
Hand Troll										
Longline										
Pot										
Multiple		3	1							4
Unknown										
Total	2	10	10						1	23

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.5

NUMBER OF VESSELS WITH A HOME PORT IN PORT MOLLER
BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5	3	3	2							8
6 - 10	4		2							6
11 - 15										
16 - 20			15							15
21 - 25	1		2							3
26 - 30			6							6
Older Than 31										
Unknown	5				1	1				7
Total	13	3	27		1	1				45

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

Moller in 1979, more than half carried exclusively drift gillnets. All of these vessels were in the larger size group of 31'-40'. Only seven boats used exclusively set gillnets. Gear carried by three vessels was not recorded while a residual 10 vessels used both gear types. Table 3.6 illustrates these statistics.

Gear regulations in the Port Moller area allow use of drift gillnets, set gillnets, purse seines, and beach seines. Of all the communities considered in this analysis, Port Moller is the only one on the north side of the Alaska Peninsula that falls in a regulatory area where purse seines may be used.

Nelson Lagoon

There were, in 1979, 36 fishing vessels with a reported home port of Nelson Lagoon. A great majority of these (21) were from one to five years old. Only two vessels were ported 26 years or older. No age was recorded for five of the vessels.

Tabulation of the vessel characteristics (See Tables 3.7 and 3.8) shows that no vessel of greater than 40' in length used Nelson Lagoon as a home port. This is very similar to the communities of Pilot Point and Port Heiden. As noted, only two vessels exceed this length in Port Moller. However, whereas vessels associated with Pilot Point and Port Heiden were usually uniformly distributed by length categories and whereas vessels in Port Moller were generally concentrated in the larger size group (31'-40'), more than 50% of the vessels in Nelson Lagoon were 20' long or less.

Gear utilization by vessels favored multiple gear use with 31 of the 36 vessels reporting more than one gear. The regulations in the Nelson Lagoon immediate area generally require use of drift or set gillnets only. These vessels, however, are in a position to leave the Lagoon for Port Moller or Herendeen Bay where the gear regulations allow purse seines and beach seines. The fact that the Nelson Lagoon vessels are generally small in size, however, would limit extensive use of limit purse seines by this fleet.

False Pass

In 1979 False Pass was a home port for 24 fishing vessels. This compares with 23 vessels reported for Port Heiden but is well below the figures for Pilot Point (35) Nelson Lagoon (36) and Port Moller (45). All vessels were 15 years or newer. In fact 22 of them were 10 years old or less.

TABLE 3.6
NUMBER OF VESSELS WITH A HOME PORT IN PORT MOLLER
BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine										
Beach Seine										
Drift Gillnet			25							25
Set Gillnet	7									7
Hand Troll										
Longline										
Pot										
Multiple	6	2	2							10
Unknown		1			1	1				3
Total	13	3	27		1	1				45

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.7
 NUMBER OF VESSELS WITH A HOME PORT IN NELSON LAGOON
 BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5	13	3	5							21
6 - 10	3		2							5
11 - 15	1		2							3
16 - 20										
21 - 25										
26 - 30		2								2
Older Than 31										
Unknown	3	2								5
Total	20	7	9							36

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.8

NUMBER OF VESSELS WITH A HOME PORT IN NELSON LAGOON
BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine										
Beach Seine										
Drift Gillnet			1							1
Set Gillnet	2	1								3
Hand Troll										
Longline										
Pot										
Multiple	17	6	8							31
Unknown	1									1
Total	20	7	9							36

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

The only other community thus far discussed that is characterized by a relatively new fleet is Nelson Lagoon. With the exception of one vessel, all the False Pass fleet were 40' long or less. The majority (15 vessels) were of medium size (21'-30'). Tables 3.9 and 3.10 give details of fleet characteristics.

Gear regulations governing the False Pass area are similar to those in the Port Moller area. Only these two areas may be fished with drift gillnets, set gillnets, purse seines, and beach seines. Although the two seine gear types and the set nets are allowed on the southside (statistical areas 281-283), drift gillnets may not be used in these areas.

King Cove

King Cove served as a home port to 74 fishing vessels in 1979. Of the communities examined in this study only Sand Point served more vessels than King Cove that year. The King Cove fleet contained a fair number of new vessels. A total of 31 vessels were less than five years old. Furthermore, as is displayed in Table 3.11, as many as 55 of the 74 vessels reporting King Cove as their home port were no more than 15 years old.

The size distribution shows that the majority of the vessels fell into the category of 40' or less. As many as 21 vessels were recorded at 20' or less while 17 and 26 vessels were respectively placed in the 21'-30' and 31'-40' length groups. Only nine boats were reported as being longer than 40' and six of these did not exceed 50' in length. Length was not reported for one of the boats.

More than half of the fleet (42 vessels) reported carrying multiple gear (See table 3.12). Purse seine gear alone was reported for 17 vessels while another seven vessels reported beach seines as the only gear. Three boats reported drift gillnet only. Only one boat (of less than 20') reported set gillnets as the only gear carried.

The salmon gear regulations for statistical areas in the vicinity of King Cove allow use of a variety of gear. These include purse seines, beach seines and set gillnets.

Sand Point

Sand Point is home port to more fishing vessels than any of the other communities discussed in this report. In 1979 a total of 172 vessels reported Sand Point as their home port.

TABLE 3.9
 NUMBER OF VESSELS WITH A HOME PORT IN FALSE PASS
 BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5	2	5	3	1						11
6 - 10		9	2							11
11 - 15		1	1							2
16 - 20										
21 - 25										
26 - 30										
Older Than 31										
Unknown										
Total	2	15	6	1						24

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.10

NUMBER OF VESSELS WITH A HOME PORT IN FALSE PASS
BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine		6								6
Beach Seine	1									1
Drift Gillnet		7	3							10
Set Gillnet	1	1								2
Hand Troll										
Longline										
Pot										
Multiple		1	3	1						5
Unknown										
Total	2	15	6	1						24

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.11
NUMBER OF VESSELS WITH A HOME PORT IN KING COVE
BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine	8	6	3							17
Beach Seine	5	2								7
Drift Gillnet			3							3
Set Gillnet	1									1
Hand Troll										
Longline		1								1
Pot								1		1
Multiple	5	8	20	6	1	1			1	42
Unknown	2									2
Total	21	17	26	6	1	1		1	1	74

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.12

NUMBER OF VESSELS WITH A HOME PORT IN KING COVE
BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5	11	7	9	3					1	31
6 - 10	4	3	9		1					17
11 - 15	1	4		1				1		7
16 - 20		1	4							5
21 - 25	1		2							3
26 - 30			1							1
Older Than 31				2		1				3
Unknown	4	2	1							7
Total	21	17	26	6	1	1		1	1	74

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

This was more than twice the number reported for King Cove, h second to Sand Point. Most of Sand Point's vessels were relatively new. At least 114 were less than 10 years of age. Fewer than 20 vessels were older than 20 years (Table 3.13).

A considerable portion of the fleet (83 vessels) was made up of vessels less than 20' in length. However, there were quite a few vessels in the 21'-50' range including 20 which were 41'-50' long. At least seven vessels were 51' or longer. More than half the fleet carried multiple gear (Table 3.14). Carrying a single type of gear, however, was also frequent. Twenty-seven vessels reported only purse seine gear while 17 reported use of set gillnets. Eight vessels relied on longline gear, probably for halibut fishing, while three vessels reported pot gear only. Two of the three vessels reporting pot gear were larger than 80' long.

As in the King Cove area three types of gear may be used to capture salmon. They include purse seines, beach seines and set gillnets.

3.3 CATCH PER UNIT EFFORT

In this section catch per unit effort statistics are presented by gear type for selected areas of the Alaska Peninsula. The areas were selected due to their proximity to communities and their importance as harvest locations.

The three areas selected for purse seine gear analysis are the southeastern district, the southwestern district, and the northwestern district (see Exhibit 3.2 for district locations). The southeastern district extends from Kupreanof Point, the eastern boundary of the Alaska Peninsula area on the southside, to Point Aliaksin on the west and includes the major Shumagin Islands and Stepovak Bay fishing grounds. The community of Sand Point is in close proximity to these fishing grounds. The southwestern district includes all the waters on the southside of the Peninsula from Arch Point on the east to Cape Pankof on the west. King Cove is located in the southwestern district. The northwestern district covers the waters from Scotch Cap on the southwest corner of Unimak north and east to Moffett Point on the northside of the Peninsula. District waters also include Bechevin Bay and Isanotski Strait north of the False Pass cannery dock. Fishermen from False Pass beach seine intensively in this district.

The three areas selected for drift gillnet gear analysis are Ikatan Bay (statistical area 284-60), Port Heiden (statistical area 317-20), and several statistical areas in the Nelson Lagoon/Port Moller vicinity (statistical areas

TABLE 3.13

NUMBER OF VESSELS WITH A HOME PORT IN SAND POINT
BY VESSEL LENGTH AND BY AGE GROUP, 1979

Vessel Age Group (years)	VESSEL LENGTH									Total
	Less than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
1 - 5	47	12	6	9	1	1		1	1	78
6 - 10	23	4	5	2	1			1		36
11 - 15	9	10	7	3	1					30
16 - 20	2	1	6	1						10
21 - 25			1	1						2
26 - 30		1								1
Older Than 31			2	4		1				7
Unknown	2	4							2	8
Total	83	32	27	20	3	2		2	3	172

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

TABLE 3.14

NUMBER OF VESSELS WITH A HOME PORT IN SAND POINT
BY VESSEL LENGTH AND BY GEAR TYPE, 1979

Gear Type	VESSEL LENGTH									Total
	Less Than 21'	21' to 30'	31' to 40'	41' to 50'	51' to 60'	61' to 70'	71' to 80'	81' to 90'	Unknown	
Purse Seine	14	11		1					1	27
Beach Seine	2	4								6
Drift Gillnet	1									1
Set Gillnet	14	2							1	17
Hand Troll		1								1
Longline	7		1							8
Pot				1				2		3
Multiple	37	11	25	18	3	2			1	97
Unknown	8	3	1							12
Total	83	32	27	20	3	2		2	3	172

Source: CFEC, 1979 Vessel License Listing by Owner-Name.

313-30 and 314-12, 20, and 30). Locations of the areas can be found on Exhibit 3.1. Ikatan Bay is fished by drift gillnet units from King Cove and False Pass while the communities of Port Heiden and Nelson Lagoon are closest to the other two selected areas.

The three areas selected for set gillnet gear analysis are the southeastern district (statistical areas 281 and 282), Nelson Lagoon/Port Moller vicinity (statistical areas 313-30 and 314-12, 20, and 30), and Port Heiden (statistical area 317-20). Set gillnetters from Sand Point are the primary users of this gear type in the southeastern district while residents from Nelson Lagoon and Port Heiden are chiefly responsible for set gillnet harvests in the areas in close proximity to their communities. The areas described above are not exhaustive of the fishery districts in the Alaska Peninsula Management Area. For example, the southcentral district between Sand Point and King Cove contains the highly productive Pavlof Bay; the Unimak Bight is also omitted; and the Sandy and Bear Rivers areas on the north have not been included. A more exhaustive qualitative approach based on community participation in all areas is used in Chapter 4.

Purse Seine Gear

Catch. Purse seine gear performance in area fisheries is depicted in Figure 3.1. As was discussed in chapter 2.0, use of purse seine gear over the 1975-1980 period grew and accounted for the dramatic growth in total catch in the Alaska Peninsula Management Area. The three areas discussed here show this same phenomenon.

For the three years starting in 1978, the southwestern district saw the most dramatic change as peak weekly catch rose from under 1,500 m.t. in 1978 and 1979 to 3,500 m.t. in 1980. In each case the peak was statistical week 33, which falls around mid- August.

Peak catches in the district around Sand Point were similar to those in the southwestern district in 1978 and occurred during the same week. In 1979 the southeastern district peak catch came two weeks earlier and was much higher (close to 2,000 m.t.) than the southwestern district peak catch. This growth, however, did not persist in 1980 as the southeastern peak catch fell again and the fishery stopped two weeks before the southwestern fishery.

Generally, purse seine catches in the northwestern district are lower than those of the other two areas. However, as Figure 3.1 illustrates, a week-by-week appraisal

reveals that northwestern catches are higher than southwestern catches earlier in the season. Another general comment regards the distribution of catch over the season. The fishery around Sand Point occurs over a longer period while the southwestern district fishery tends to be more concentrated later in the season in August. This is the case because the Shumagin Islands fishing grounds (282-11) provide a convenient place for intercepting stocks bound for streams in many different statistical areas.

Productivity. The productivity index used in these discussions is catch per unit effort (CPUE). For the three years used here 1978-1980 purse seine CPUE in the southeastern district was the strongest of the three area fisheries during 1978 and 1979 but was surpassed by both southwestern and northwestern fisheries in 1980. This was particularly so in the latter part of the season after mid-July. The week-by-week CPUE in the southeastern district increased gradually (with fluctuations) to a peak in weeks 31 to 32 before the fishery came to a close a week or so later. Figure 3.2 shows that the week-by-week CPUE plots for this district were bi-modal in 1979 and 1980. In both years the first peak occurred very early in the season, in late June. The difference, however, is that the 1979 early peak was much stronger than the second peak.

The CPUE plots for purse seines in the southwestern district show that productivity in 1978 was similar to 1980's performance. The 1979 season did not show as strong a CPUE. The peak weekly CPUE's in 1978 and 1980 were in excess of 24,000 lbs. per landing. In 1979 the highest catch per landing was about 14,000 lbs.

Similar to performance in the southwestern area, CPUE's for the southwestern district show that 1979 was characterized by lower productivity than the 1978 and 1980 seasons. In 1979 there were three weeks in the middle of the season when no catch was made. Overall, southeast seems to have a higher level of productivity earlier in the season while the southwest was generally stronger towards the close, and the northwest fluctuates up and down through the season. The catch and effort statistics on which this and the discussion on drift and set gillnetting are based may be found in appendix tables A-11 to A-26. Comparable data for the earlier years 1975-1977 may be found in appendix tables A-1 to A-10. Exvessel information for 1980 is given in appendix tables A-27 to A-29.

Comparison of Weekly CPUE for Salmon by Purse Seine Gear
in Selected Districts, 1978 - 1980

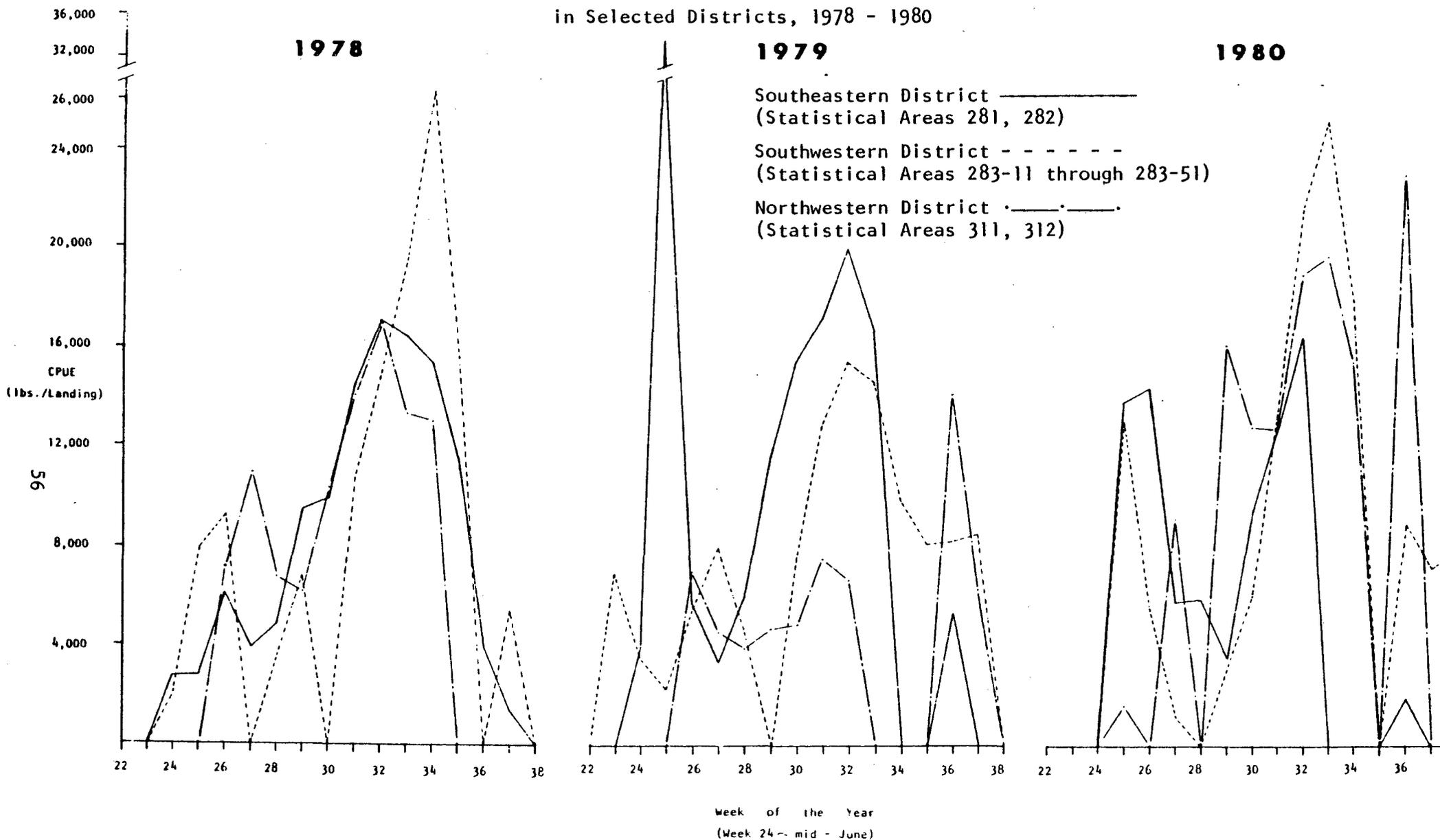


FIGURE 3.2

Drift Gillnetting

Catch. Performance by drift gillnet gear in the areas analyzed is depicted in Figures 3.3 and 3.4. As noted earlier, the relative importance of the Ikatan Bay (284-60) fishery to overall drift gillnet catch fell from 35-40% in the early years (1975-78) to 20% in 1979 and 1980. This occurred for a combination of reasons including competition with purse seine gear, where the red run hit in the Unimak area, and incredibly strong runs to northside streams.

The area around Nelson Lagoon and Port Moller shows dible strength in each of the three years. Comparatively, Port Heiden is low in catch week by week and has extended periods during the season when no catch is recorded. In summary Ikatan Bay is strongest in terms of weekly catches but sees action for only about four weeks. On the other hand the Nelson Lagoon/Port Moller area, though registering lower catches, is characterized by a longer harvest and consistent season. Port Heiden shows the lowest weekly catches and experiences a split season.

Productivity. The dominance of the Ikatan Bay area drift gillnetting in peak weekly catches is of no consequence when one examines CPUE'S. Surprisingly only in 1979 when peak catches were generally poor in this area does Ikatan Bay show a dominant CPUE of close to 24,000 lbs. per landing. For the most part, however, (see figure 3.4) Ikatan Bay CPUE's were lower than those of Nelson Lagoon/Port Moller and comparable to productivity in Port Heiden.

Set Gillnetting

Catch. Performance by set gillnet gear in the areas analyzed is shown in Figures 3.5 and 3.6. Nelson Lagoon and the southeastern district are the major locations for set gillnet activity in the Alaska Peninsula management area. In 1978 Nelson Lagoon/Port Moller was dominant through most of the season. That is, almost each week the catch caught in this area was higher than in either the southeastern district or Port Heiden.

In 1979 and 1980, however, catch levels in the southeastern district rose significantly and approached those in Nelson Lagoon. Figure 3.5 shows that in 1979 the Nelson Lagoon/Port Moller area started strong and dominated the first four weeks. After that catches in the southeastern district were higher and remained so for approximately six weeks before catch levels again rose in the Nelson Lagoon/Port Moller to higher levels for the closing three weeks of the season. In 1980 the pattern was similar to 1979 with the southeastern district catches increasing over the previous year's levels

Comparison of Weekly Salmon Catch by Drift Gillnet Gear
in Selected Districts, 1978 - 1980

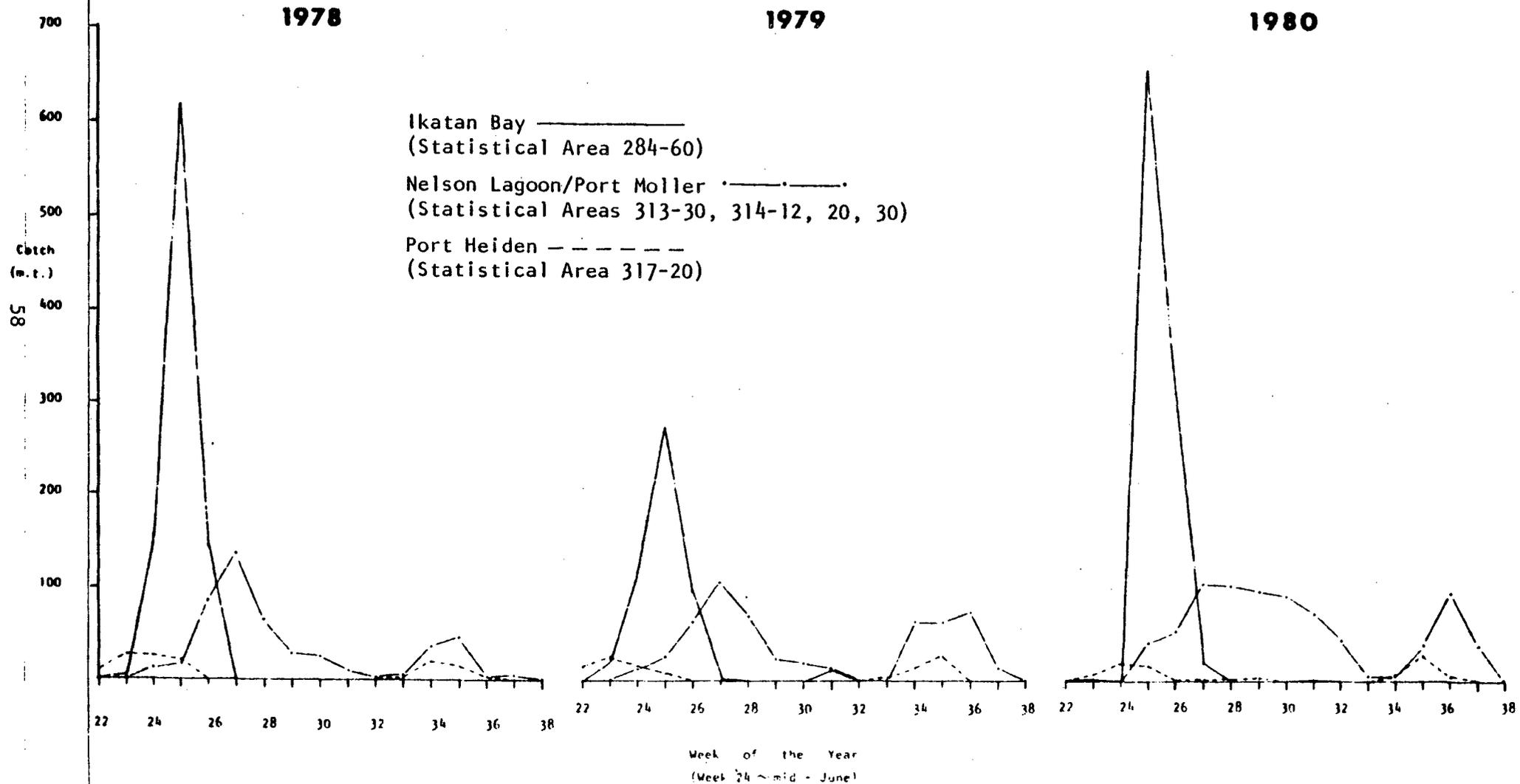


FIGURE 3.3

Comparison of Weekly CPUE for Salmon by Drift Gillnet Gear
in Selected Districts, 1978 - 1980

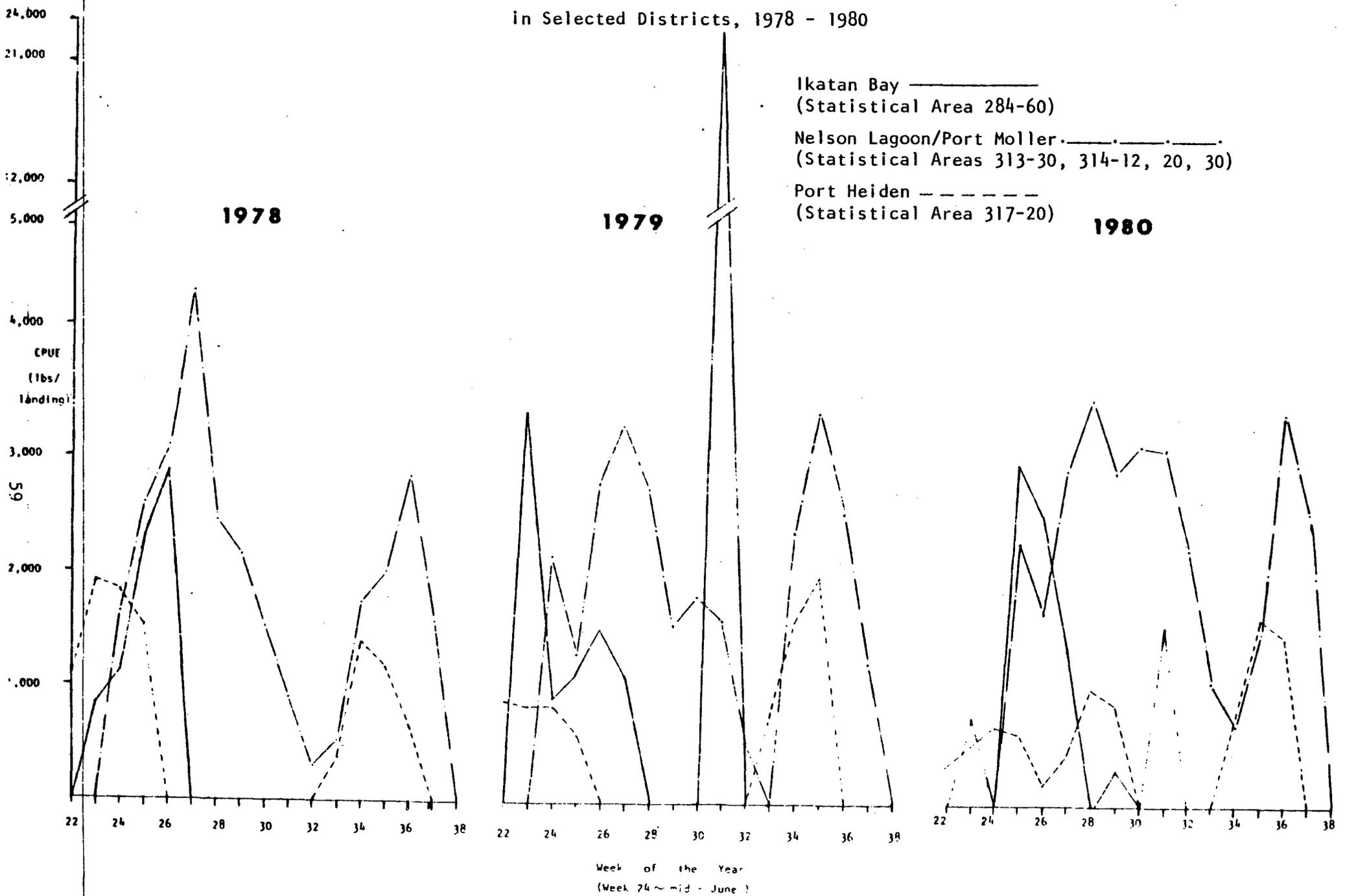


FIGURE 3.4

COMPARISON OF WEEKLY SALMON CATCH BY SET GILLNET GEAR
IN SELECTED DISTRICTS, 1978 - 1980

1978

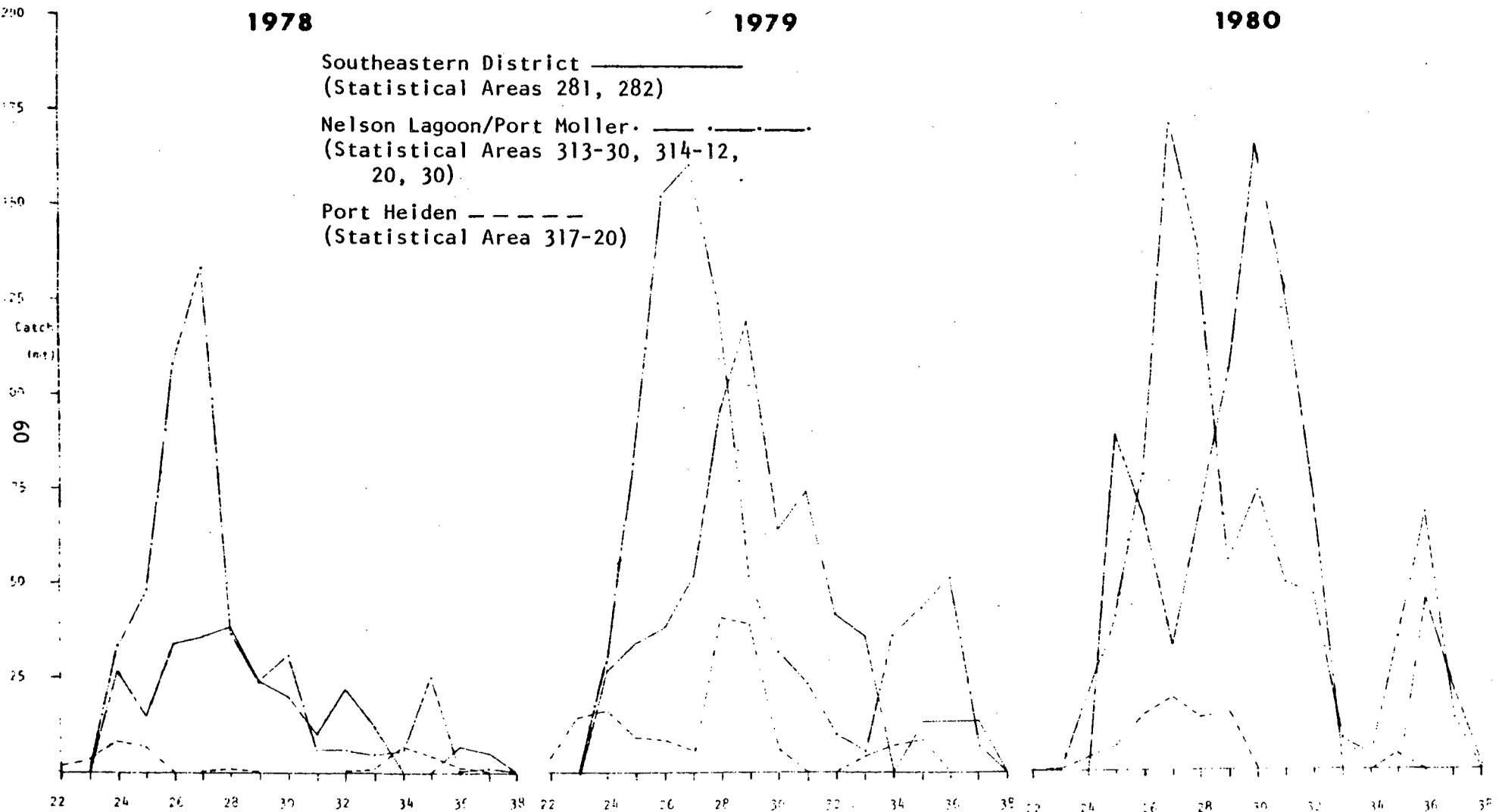
1979

1980

Southeastern District —————
(Statistical Areas 281, 282)

Nelson Lagoon/Port Moller. — · — · — · —
(Statistical Areas 313-30, 314-12,
20, 30)

Port Heiden - - - - -
(Statistical Area 317-20)



Week of the Year
Week 29 = 10 June

FIGURE 3.5

during the early and mid-season weeks. Port Heiden set gillnetting consistently showed lower catches and followed a split season pattern similar to that for drift gillnetting in the same area. This pattern is due to the break between the king salmon and silver salmon runs of the Meshik River.

Productivity. Catch per unit effort statistics presented in Figure 3.6 reveal two facts. The first is that productivity in terms of catch per landing closely follows the pattern established for total catches. In other words the Nelson Lagoon/Port Moller area and southeastern district share and exchange leadership during the season. The second fact is that CPUE's do not differ very much between the two leading areas, and furthermore, Port Heiden CPUE's are not too far below those of the other two areas.

The peak weekly catches per landing are usually in excess of 3,000 lbs. and have been as high as 4,000 lbs. in the Sand Point area. Most of the time, however, the CPUE's seem to be in the 1,000 to 2,000 lbs. per landing range.

CHAPTER 4

COMMUNITY PROFILES

4.1 SAND POINT

4.1.1 Sand Point Introduction

Sand Point is a rapidly growing fishing community located on the northwest corner of Popof Island. The surrounding Shumagin Islands have been the site of a succession of fisheries dating back to the discovery of important cod resources before the turn of the century. This strategic location has contributed to a rich history which makes contemporary Sand Point a diverse community well located to prosper from the recent good fortunes of the Alaska Peninsula salmon fishery.

Although fairly remote, lying 571 air miles west of Anchorage, Sand Point is well served by both marine and air transportation. Scheduled air service is provided six days a week by Reeve Air Aleutian and marine freight ships arrive weekly. The Alaska State Ferry system has recently included Sand Point in its scheduled service.

The most important topographical feature of Sand Point is its favorable natural harbor. Although the island is hilly, conditions at the mouth of Humboldt Creek were conducive to early use as a harbor site, and more recently to development of a modern small boat harbor.

The climate of the surrounding Shumagin Islands can be characterized by three elements typical of the south side of the Alaska Peninsula: moderate temperature, high levels of precipitation, and high winds. Average temperatures range from 24 degrees F in March to 56 degrees F in June. Measurable precipitation occurs three out of five days of the year with an annual average of 23 inches of precipitation, including 40.5 inches of snow. Winds are predominantly from the southwest and northwest and average 13 mph throughout the entire year. Winds as high as 70 mph have been recorded in Sand Point. While this climate is not as severe as that of the exposed north side of the peninsula, weather nonetheless represents a major constraint on the activity of the fishing fleet (City of Sand Point 1981a).

Sand Point was established in the 1890s by a Caucasian entrepreneur as a supply station for the San Francisco-based

ships en route to the newly discovered cod fishery in the Okhotsk Sea off the Russian coast. An equally important cod fishery was discovered shortly thereafter in the Shumagin Islands (Fitzgerald 1981). Two other economic activities emerged as significant in the early part of the present century alongside the continuing importance of the fishery. Fox farming was briefly an important economic enterprise on Popof and other nearby islands, but the discovery of a commercial quantity of gold on neighboring Unga was the more important of the non-fishery sources of growth. In fact, gold mining brought to Unga a larger population than that of Sand Point until the deposit began to play out in the 1930s. Superior harbor conditions and the continuing importance of fishing provided Sand Point with a base for sustained growth (Jones and Ward 1973:10-11).

With the establishment of the first salmon cannery at Sand Point in 1931 by Alaska Pacific Salmon, the modern role of this community as a seafood processing site was inaugurated. This facility, located on the gravel spit near the present day airstrip, eventually ceased seafood processing and became a seasonal fish camp, now operated by Ocean Beauty Alaska. It was joined by another facility on the spit, which is now operated by Peter Pan.

Closer to the center of town the first commercial building in the community was converted into a halibut processing facility and renamed Aleutian Cold Storage in 1946. Since then, this plant has diversified operations to include a number of species, and it remains the only processing facility currently active in the community, having just added salmon to its operation in 1980.

The continuing prosperity at Sand Point contrasts sharply with the pattern at a number of Aleut villages in the vicinity. From 1950 to 1970, Sand Point received immigrants from a number of nearby villages, notably, Unga and Pauloff Harbor (also called Sanak). The more favorable economic opportunities available in Sand Point set in motion a self-reinforcing process of decline in the smaller villages. As people left the smaller villages for Sand Point, the range of public and private services available suffered; conversely, as Sand Point grew, it became the obvious site for improved and expanded public services.

In short, the community of Sand Point has always grown as a result of involvement with an expanding fishing industry: first through its capacities as a commercial supply and repair site, and later as a center of harvesting and processing activities. In recent decades the regional economy of the

area surrounding Sand Point has become heavily dependent upon the fishery as other enterprises played out, and the consolidation of regional economic activity and population has contributed strongly to the recent growth of the community.

4.1.2 Sand Point Demography

Population Trends: Past, Present and Future. A review of historic trends in population growth for Sand Point reveals several important periods with different features. Table 4.1.1 indicates the population in Sand Point and the most important neighboring villages from 1890 to the present. During the period up to 1929, the population of Sand Point actually declined from its initial level, but after 1930 the community experienced rapid and sustained growth. The rate of increase is particularly marked for the period after 1950, when consolidation of the regional population began in earnest.

On neighboring Unga Island, the village of Unga experienced growth in population, associated with gold mining activity for the most part, up until 1930. The population then began to decline until the village was abandoned in the late 1960s. Pauloff Harbor, on Sanak Island, also contributed most of its population to Sand Point during the 1970s, but in contrast to Unga, Pauloff Harbor had never grown very large, and its population remained relatively constant in size up to the time the village was abandoned.

The significant trends effecting the present population of Sand Point emerged after 1930. On the one hand, the rise of the modern fishery, with a number of important facilities at Sand Point, constituted the base for continuing economic expansion and population growth. The strength of this trend is not yet played out, and subject to the noteworthy constraints of the limited entry regulatory program, the fishery will continue to provide a base for new growth in the community.

The second trend to emerge after 1930 was the consolidation of the regional population into Sand Point. Several neighboring villages were abandoned, their residents moving to Sand Point during this period. This trend has clearly run its course, as there remain no small villages in the vicinity of Sand Point. Thus, while population redistribution within the region played an important role in generating the present population configuration of the community, it will not do so in the future. Natural increase among the resident population and immigration will be the major components of future population growth at Sand Point.

TABLE 4.1.1
HISTORICAL TRENDS IN POPULATION:
SAND POINT AND MAJOR NEIGHBORING VILLAGES

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980
Sand Point	146			60	69	99	107	254	360	625
Pirate Cove				98						
Unga	157	33	108	313	150	152	107	43		
Squaw Harbor						79	45		21	
Pauloff Harbor (Sanak)	132			62	52	61	68	77	3	

Sources: Jones and Woods 1973, City of Sand Point 1981a

TABLE 4.1.2
SAND POINT PROJECTED POPULATION GROWTH, 1980-2000

Method	1980	1990	2000
"Average Annual Growth"	794	1013.6	1294.41
"Straight Line"	900	2150	3400
"Rate of Increase"	900	2025	4680
"Economic Base"	900	1675	3099

Sources: City of Sand Point 1981a, Lane-Knoff and Plunkett 1981

Estimates of the Sand Point population in the year 2000 vary widely, ranging from a low estimate of 1294 to a high estimate of 4680. As presented in Table 4.1.2, these estimates are derived from different methods. Without entering into a detailed examination of the premises behind each method, it is safe to reject three of these estimates as extremely unlikely. The first three estimates listed on Table 4.1.2 all generate estimates based upon the continuation of numerical trends from the past. No attention is paid to the historical causes of these trends, nor to the likelihood that these factors will continue into the future. The fourth method, in contrast, bases its estimate upon the projected growth in the bottomfishery and the likely population increase associated with this growth. While the estimate which was generated through this method seems considerably optimistic, this method has the merit of making its assumptions clear so that as more detailed information about the bottomfishery becomes available, this projection can be revised.

These remarks indicate the extreme difficulty of estimating population growth in a small community over a relatively long period of time. In the shorter term, however, several factors indicate the current pressures toward population growth in Sand Point. The most important of these is the very recent increase in the number of births each year, as noted below.

<u>Year</u>	<u>Births</u>
1979	10
1980	25

These figures, provided by the City of Sand Point Health Clinic, suggest that the rate of family formation is accelerating rapidly, perhaps as a result of the extremely profitable past few years in the salmon fishery. This economic prosperity, in the view of several informants, encourages young couples to begin their families now rather than holding off for another few years.

Another indicator of population pressure is found in the demand for housing. When the Shumagin Corporation announced plans to subdivide and develop a tract of land including 125 lots, over 160 requests were quickly submitted. This suggests that the rate of new household formation will accelerate when new land is available for homes.

Finally, the continued health of the salmon fishery would suggest continuing population growth through both natural increase and immigration. Despite this generally favorable

picture, the limited entry regulation of the salmon fishery could have a dampening effect inasmuch as young people who are not able to obtain a limited entry permit from their family might well feel pressured to leave the community in search of employment.

Population Structure: Age, Sex, Ethnicity, and Household Size. The 1980 population of Sand Point was 794 according to a census conducted that year by the City of Sand Point. The federal census that year enumerated 625 local residents. In 1981, the city census found 846 residents (City of Sand Point 1981). In both instances, the city's census was conducted during the summer when the population of Sand Point is considerably larger than the year-round average as a result of several factors which contribute to a seasonal increase. Transient boats with crews made up predominantly of outsiders use Sand Point as a summer base of operations, local boats hire a number of nonresidents as crew members, and the cold storage plant and fish camps bring in a large seasonal workforce at this time. Unfortunately, no figures were available regarding the size of the year-round population, but 600 to 650 would be a reasonable estimate.

The Sand Point population is young with only a small number of senior citizens. While no comprehensive information on the age structure of the population was available, figures on preschool and school enrollments, shown in Table 4.1.3, support the observation regarding the high proportion of young people. When the number of recent births is added, 210 of 794 (26.4%) of the total population is under the age of 18. If it were possible to subtract from the figure for the total population those who are summer or seasonal residents only, then the proportion of school-aged children in the year-round resident population would be much greater.

The sex ratio of Sand Point shows that males outnumber females. Males make up 54% (n=429) of the population while females constitute 46% (n=365). This ratio is closer than would be expected of a community which attracts a seasonal workforce which is disproportionately male.

The residents of Sand Point are predominantly of Aleut heritage. Russian and Northern European surnames attest to the historical influence of these groups: the former prior to the 19th century, the latter after entering this region with the cod fishery of the late 19th and early 20th century. In 1978, according to the city's Comprehensive Plan, 87% of the Sand Point population were of Aleut origin (City of Sand Point 1981). In 1970, the proportion of Aleut people was 74.4%. Perhaps this increase was due to the result of immigration

TABLE 4.1.3
SAND POINT SCHOOL AGE POPULATION, 1980-1981

Approximate Age	Grade	Number
17	12	11
16	11	19
15	10	13
14	9	12
13	8	11
12	7	11
11	6	14
10	5	6
9	4	9
8	3	11
7	2	9
6	1	11
5	K	18
4	Preschool	13
3	Preschool	17
		173 Total

Source: Lane-Knorr and Plunkett 1981

TABLE 4.1.4
SAND POINT HOUSEHOLD SIZE, 1980-1981

Household Size	1980 Number of Cases	1981 Number of Cases
1	26	24
2	32	43
3	38	39
4	38	32
5	22	23
6	9	8
7	9	7
8	0	2
Total	177	178
Average number per household:	3.45	3.28

Note: A number of individuals were listed in the census each year as living at the Aleutian Cold Storage Bunkhouse, on local vessels, or at the fish camps on the spit; these have not been included in the present analysis. In 1980 these people number 184 persons, while in 1981 there were 1978 such persons.

from the neighboring villages during this decade. For the future, however, it is likely that this proportion will drop as continuing health in the fishery attracts new residents from outside the region.

During 1980, the resident population occupied 177 households in addition to those people living at the processing facilities, the bunkhouse, and on fishing boats. Excluding these unusual housing situations from consideration, the average number of persons per household was 3.45, as noted on Table 4.1.4. In 1981, the average number of persons per household was 3.26; relative to the preceeding year, one new household was occupied while the population living in houses had decreased slightly. Interestingly, despite the local view that Sand Point suffers from an accute shortage of housing, the average figures for household size are lower than in other communities in the study area.

4.1.3 Sand Point Socioeconomic Organization

Fisheries: Commercial Harvesting

General Overview. The major species pursued by Sand Point fishermen are salmon and crab. The pursuit of these species is accomplished in a variety of ways involving gear types, vessels, and area locations.

Under the Limited Entry regulations affecting all salmon fisheries in Alaska, Sand Point fishermen are licensed to operate one or more of the three salmon harvest gear types: purse seine, drift gillnet, or set gillnet. In addition, a significant number of the vessels use pots to fish for king and Tanner crab in the winter. The various gear types are combined aboard Sand Point vessels in four major strategies. The large limit purse seine vessels typically use beach seines for part of the season and crab pots during the winter. In a strategy which has emerged more recently, intermediate-sized vessels use drift gillnets for most of the season and turn to hand purse seines, or beach seining during the pink salmon runs. A third strategy combines set gillnetting with hand purse seining. The fourth strategy is unique to Sand Point among the communities on the southside of the Alaska Peninsula. Historically, many vessels devoted their efforts exclusively to set gillnetting, and a number continue to practice this single gear type strategy.

The first strategy, combining purse seines, beach seines, and crab pots, was pursued by an estimated 33 Sand Point vessels in 1981. An additional 16 vessels utilize both seine gears without participating in the winter crab fishery. These

vessels range in size from 36 to 58 feet, the majority being of the 58-foot "limit" configuration, so-called because current regulations limit seine vessels in Alaska to this size or smaller. A smaller group of vessels, generally older in age, cluster around the 42-foot length.

Fishermen pursuing this strategy begin their season in June in the South Unimak or False Pass fishery, located on the south side of Unimak Island. The bulk of the run occurs during the second and third weeks of June, and the Unimak fishery is virtually over by the end of June. Most of these vessels return to Sand Point to fish locally during the slack weeks of early July.

By late July another important run begins as stocks of pink salmon pass through a number of important deep water locations on the way to inshore areas. The purse seine boats congregate at these points in the Shumagin Islands. During the later part of July and early August, most of these boats will convert to beach seining, a technique for use in shallower waters, in order to pursue the pink salmon runs nearer the shore. This activity is concentrated in the bays on the south side of the Alaska Peninsula, from Pavlof Bay to Kupreanof Point. Canoe Bay, a very shallow inlet in the northeast corner of Pavlof Bay is a particularly productive pink salmon site. When strong pink runs are anticipated in the Aleutian Islands, some Sand Point vessels make the long journey west to take part in this harvest.

By September these boats are being prepared for the fall and winter crab season. These boats, considerably smaller than the Bering Sea class crabbers which average 120 feet in length, are unable to withstand the severe Bering Sea storm weather. As a result, Sand Point vessels limit their crab fishing efforts to the southside of the Alaska Peninsula. While a few boats venture as far west as Beaver Inlet and Unalaska Island, the great bulk of the Sand Point crabbing effort is concentrated in the Unimak Bight area, Pavlof Bay, and to a smaller extent in the Shumagin Islands. The Sand Point boats generally work between 100 and 150 crab pots.

In the second strategy, approximately 15 vessels utilize a combination of drift gillnet gear and beach seines. This particular strategy is new in Sand Point, having emerged as a significant feature of the Sand Point picture in the last four to five years.

These boats begin their three-part season in early June in the South Unimak fishery. The timing of their participation in this fishery parallels that of the purse

seine vessels, although the drift gillnet boats use different, generally less exposed, areas with East and West Anchor Cove mentioned as especially productive sites.

The drift gillnet vessels are precluded by regulation from fishing east of Morzhovoi Bay and so, as the Unimak fishery closes at the end of June, these boats travel through False Pass and along the north side of the peninsula to Port Moller, the second site of their activity. Throughout the month of July the Sand Point drift gillnet boats fish an area extending from Frank's Point to Three Hills, that is, to the north and east of Port Moller itself. The preponderance of their effort takes place on the outside shores where the boats are quite exposed to the weather and can be badly damaged if caught by storms.

In late July the majority of these boats undertake the third part of their season, returning to the south side of the peninsula to fish the pink runs with beach seines. A small number of the Sand Point vessels remain on the north side for the late silver salmon run in the Port Moller area.

The fishermen pursuing the third strategy combine the use of set gillnets for most of the season, with the use of beach seines for the pink salmon runs. Some 23 boats, with an average size of 32 feet, pursue this strategy. Most of these vessels fish at registered or traditionally recognized set net sites for the greater part of the summer. For the most part, these sites are located in the bays on the south side of the Alaska Peninsula in an area extending from Stepovak to Balboa Bay. A small number of sites are found in the Shumagin Islands and a small number of the set net fishermen fish at varying locations ranging as far away as Beaver Bay. With the arrival of the pink runs in August, these vessels turn to beach seining in the bays on the south side of the peninsula.

Although at present only a few vessels pursue the fourth strategy, based on exclusive use of set gillnets, this was historically the more important of the set net strategies. Beach seining has only been adopted as a supplement to set gillnetting in the past half decade. In 1979, 13 vessels pursued this strategy using vessels averaging 32 feet in length. While exact figures for 1981 are not available for this strategy, the current total is lower than that of 1979. The general trend is toward combined use of set gillnet and beach seine gear, although in years with exceptionally favorable conditions for set gillnetting, as was the case in 1979, more vessels return to this strategy. The seasonal pattern and the areas used in this strategy do not differ significantly from those of the combined set gillnet

strategy.

Another addition to the salmon strategies in Sand Point has recently been added, although to date only a handful of vessels have tried this particular location and gear type. The Izembeck-Moffat Lagoon on the north side of the Alaska Peninsula has had a reputation as very difficult fishing because of the shallow water and the high potential for winds. In the last year or two, five Sand Point vessels have attempted, with moderate success, to fish this lagoon. It is unlikely that more will follow.

A very small number of boats pursue strategies based on other species of fish or shellfish, but these must be seen as marginal for the fleet as a whole. There is a single 68-foot shrimp trawler in the Sand Point fleet, but it has been idle for the past two years due to the decline in the shrimp stocks in Pavlof Bay and other southside locations since the mid-1970s. Three vessels fish exclusively for halibut during the summer, in each case a result of the fact that the boat owner does not have a salmon permit. At present there are no Sand Point boats regularly participating in the cod or other bottomfisheries, although a few boat owners have tried this on an experimental basis.

Although the fishermen of Sand Point catch all five species of salmon, pink salmon predominate in the total season's harvest. When the actual harvests for 1975 through 1979 are averaged, pink salmon make up 66% of the total. From this it is clear that the southside fisheries in late July actually make up the major fishing opportunity for the Sand Point fleet. Second in numerical importance are the red salmon caught predominantly in the June South Unimak fishery and the July Port Moller fishery. Red salmon made up 21% of the average harvest during the 1975 through 1979 seasons. Dog salmon are third in importance, constituting 12%. These are caught in the southside bays in late July, alongside the more important pink stocks. A small proportion of silvers, just under 2% of the average over the preceding five years, are taken, predominantly by the small number of Sand Point boats which remain on the north side for the late August-early September silver runs.

Following salmon in importance are the three species of crab. King, opilio, and bairdi crab are taken, although the first two make up the bulk of the crab harvest. As noted previously, virtually the entire crab harvest is from the southside of the peninsula.

Limited Entry Permits. Under the state's limited entry program for salmon fisheries, Sand Point fishermen are licensed for the Alaska Peninsula, known as Area M. As of early 1980, fishermen in Sand Point held a total of 118 permits, distributed in the combinations and frequencies shown in Table 4.1.5. Among these, the purse seine permits, which permit either beach or purse seining, are the most common type, with 42% of the total. Next in rank are the set net permits which constitute 33%, followed by drift gillnet permits which make up 25% of the total.

Most permit holders have more than a single permit, with an average of 1.62 permits per holder. The combinations of permits held correspond roughly with the major strategies noted above, that is, drift and set gillnet permits are usually held in combination with a purse seine permit. There are 18 cases in which a set gillnet permit is the only permit held, indicating the historical importance of the exclusive set gillnetting strategy. A single purse seine permit is the next most common pattern, with 15 cases and a similar number of cases are found in which the permit holder owns both a purse seine and a drift gillnet permit.

These figures reveal several important aspects of the fishing patterns at Sand Point. For example, the generally low number of drift permits suggests that this gear was little used in Sand Point at the time of implementation of the limited entry program. More importantly, nearly all of the drift gillnet permits are held in combination with other permits. Drift gillnetting, then, is a relatively new strategy which was added on to previous adaptations. With the prevalence of strategies using a combination of gear types, these patterns of multiple permit holding do not indicate "surplus" permits.

The king crab fishery is not presently restricted in entry, although all fishermen are licensed. Sixty-nine Sand Point fishermen were licensed in 1981 for this fishery. This figure represents a steady increase in the number of crab licenses since the low of 29 in 1975.

Areas and Times Fished. The Sand Point fishermen fish exclusively in the Alaska Peninsula area, or Area M. This area is divided into a number of sub-districts with some variation in regulations between them, particularly between those on the northside of the peninsula and those on the southside. The most significant difference concerns the type of openings: on the northside the subdistricts, for the most part, have regular weekly openings throughout the season, while on the southside virtually all openings are by emergency orders.

TABLE 4.1.5

SAND POINT PATTERNS OF LIMITED ENTRY PERMIT HOLDINGS
1980

<u>Permit Holding Pattern</u>	<u>Number of Cases</u>	<u>Total Permits</u>
Purse seine, drift gillnet, set gillnet	9	27
Purse seine, drift gillnet	15	30
Purse seine, set gillnet	11	22
Drift gillnet, set gillnet	1	2
Purse seine	15	15
Drift gillnet	4	4
Set gillnet	18	18
		<u>118 Total</u>

Average number of permits per permit holder: 1.62

The South Unimak fishery is especially tightly regulated since it is an interception fishery, harvesting the Bristol Bay runs on their way to the bay. The South Unimak fishery is allocated a quota of the projected Bristol Bay red salmon run. In 1981 this quota totaled 8.3%, of which 6.8% was to be taken in the South Unimak district and the remainder in the Shumagin Islands. This fishery is further regulated in order to distribute the impacts of this harvest throughout the month of June. The heaviest part of the run and the majority of the quota to be taken, occur in the third week of June.

Considering the fleet as a whole, a more general picture of the geographical distribution of effort throughout the season can be identified. As noted in the discussion above concerning the various strategies pursued by Sand Point fishermen, the vast majority of the local fleet begins fishing in June in the Unimak Bight area. The set gillnet-beach seine fishermen are an exception to this as they remain in the vicinity of Sand Point during this early portion of the salmon season, as do a limited number of purse seine-crab strategy fishermen.

When the Unimak runs decline at the end of June, the drift net-beach seine fishermen move through False Pass up to the Port Moller region where they fish the outside shores as far north as Ilnik throughout the month of July. The purse seine-crab fishermen, in contrast, return to the Shumagin Islands and pass the early part of the month of July "scratch fishing" the generally light runs of this period. By the end of the month, the pink runs will begin to pass through the Shumagin Islands on the way to the bays on the south side of the peninsula. Some of the purse seiners continue to use deep water gear at this time, but by August virtually all of these boats will have converted over to the shallower beach seine gear. The set net fishermen continue to fish their sites in the Shumagins throughout July.

When the pink runs become more concentrated in early August, most vessels, including the drift gillnet boats returning from the Port Moller area, have turned to beach seine gear. This portion of the season lasts until the end of August.

By mid-September, the vessels fishing southside pink salmon are finished and the few vessels which fished the silver run outside of Port Moller have returned to the community. The salmon season is over and many fishermen store their equipment and leave the village for short vacations. The crab fishermen, on the other hand, begin to ready their pots and other equipment for the fall and winter crab

fishery.

Fleet Characteristics. The resident Sand Point fleet numbers approximately 91 vessels, nearly all of which are engaged in the salmon fishery. About one-third of these boats also fish for crab in the winter, and a handful are involved in the halibut and shrimp fisheries. Two other groups of boats make use of Sand Point harbor. A small number of boats belonging to non-residents dock at Sand Point year round. These include eight Chignik seiners and seven drift boats of Washington state registry. A much larger group of boats, referred to as transients, pass through Sand Point harbor at various times of the year. Numbering 82 vessels during the period from April 1980 to April 1981, this group is made up predominantly of two kinds of boats. Thirty-nine Bering Sea class crab boats, ranging in size from 96 to 136 feet, use the dock in the fall and winter. Another important group is made up of 19 limit seiners of Washington state registry which moor at the dock for periods not exceeding three months during the year.

The single most striking characteristic of the Sand Point fleet is the large number of new boats. As shown in Table 4.1.6, 29 boats (nearly one-third of the fleet) were constructed in 1978 or after. This represents a tremendous rate of vessel replacement during the recent prosperity of the salmon fishery. Although the tendency to upgrade the boats is not limited to any one strategy among those discussed above, there is some indication that set net-beach seine strategy boat operators have been less likely than the others to replace or upgrade their vessels.

Accompanying the trend toward new vessel construction there have been significant improvements in electronics equipment. Vessels now commonly have several radios--CB, VHF, and Single Side Band--radar, depth recorders, and LORAN. This equipment is extremely expensive to install and maintain, but the increased safety and efficiency which is provided convinces most fishermen that the expense is well worth the benefit. A fulltime electronics technician now resides in Sand Point year around operating a franchise of a Seattle firm.

The costs of the vessels vary considerably depending upon the year of construction, size of the vessel, and the material from which it is made. The 58-foot limit seiners which have joined the fleet in the past three years are said to have cost upwards of \$700,000 each, with some variation depending upon the manufacturer and the configuration of the boat. Most of these are constructed of fiberglass although a few new steel

TABLE 4.1.6
SAND POINT FISHING VESSELS
AGE AND LENGTH, 1981

Length	Year of Construction															Total	
	1981	80	79	78	77	76	75	74	73	72	71	70	69	68	pre '68		
less than 28'				1													1
28-30'			2							1				1	2		6
31-33'		1	1	1								1	1		7		12
34-36'		2		1				1	1				2		2		9
37-39'			2	1							1		1		1		6
40-42'	1		3														4
43-45'		1	1							1						1	4
46-48'		1	1	1												2	5
49-51'			2	1			1									4	8
42-54'			2					1									3
55-57'																	0
58-60'			1			1							1				3
over 60'*							1	1								1	3
Totals	1	5	15	6		1	2	2	1	3	1	1	5	1	20		64

Notes: Information available on 67 vessels.

* Boats of this size include 2 crabbing vessels and 1 shrimp trawler.

boats are found. The smaller and older boats pursuing this strategy are valued in the neighborhood of \$350,000 for vessels made of wood averaging 42 feet in length. Vessels involved in the drift gillnetting-beach seining strategy have also been upgraded recently. Half of the vessels in this strategy were built in 1979 or later and virtually all are of relatively recent fiberglass construction. These vessels range in size from 29 to 41 feet, but most are 34 and 35 feet in length. The boats pursuing the set net-beach seine strategy are generally older and much smaller in size. Half of these boats were built before 1969 and half are 32 feet in length or less, although the range is from 22 to 46 feet in length.

The most important factor in this trend toward upgrading the fleet has, of course, been the extremely prosperous past few years in the salmon fishery. Another important factor, however, has been the availability of subsidized loans through the Alaska Commercial Fishery Loan program. Sand Point boat owners have been relatively well served by this program, as can be seen in Table 4.1.7.

While these are substantial sums of money and Sand Point has received a steadily increasing number of loans, it is important to note that the sums of individual loans were not large in relation to the costs of purchasing new equipment.

Tax incentives toward reinvestment of fishery earnings in fishery equipment have also played an important role in the trend toward the technical improvements in the fleet. Under the federal Fishing Vessel Capital Construction program, boat owners are able to defer taxes on a substantial portion of their earnings when those funds are reinvested in new fishing vessels. Although informants were understandably reluctant to discuss their tax circumstances, a number of instances were mentioned in which new vessels were purchased solely as a result of this particular tax incentive.

Vessel Economics. The cost of the vessel is not the sole factor in considering the economics of running a fishing boat. There are significant costs associated with other gear which must be purchased as well as with the payments due the crew members aboard the boat.

The minimum equipment for a purse seine strategy vessel would come to approximately \$77,000, based upon figures collected at neighboring King Cove, shown in Table 4.1.8. This sum includes two very expensive pieces of equipment: a purse seine costing approximately \$30,000, and a deep draft aluminum skiff also valued at approximately \$30,000. The equipment needed for a beach seine operation is considerably

TABLE 4.1.7

ALASKA STATE COMMERCIAL FISHING LOANS: SAND POINT

<u>FY</u>	<u>Number of Loans</u>	<u>Value of Loans</u>
1977	3	\$ 153,800
1978	6	529,000
1979	7	647,500
1980 (partial)	<u>1</u>	<u>45,000</u>
Totals:	17	\$ 1,375,300

TABLE 4.1.8

SAND POINT FISHING GEAR ESTIMATED COSTS, 1981

1. Purse Seining

a. Limit Purse Seine			
250 fathom purse seine	\$ 30,000		
150 fathom lead	3,000		
16-20' aluminum skiff with diesel engine	30,000		
Power block	3,000	Total, \$66,000	
b. Beach Seine			
250 fathom seine	8,000		
Seine skiff (24')	3,000		
End skiff (18')	2,000		
40 hp outboards (2)	4,500		
Power block	3,000	Total, \$11,000	

2. Drift Gillnetting

a. Southside			
Reel and hydraulics	5,000		
200 fathoms, 150 mesh	6,000	Total, \$11,000	
b. Northside			
Reel and hydraulics	5,000		
200 fathoms, 50 mesh	4,000	Total, \$ 9,000	

3. Crabbing

Vessels range from a low of 50 pots or \$15,000
to a high of 225 pots or \$67,500

- a. \$200/pot (varies, depending on species and type of construction)
- b. \$50/buoy, line per pot
- c. \$50/transportation

less expensive, amounting to about \$11,000. The skiffs are wood, powered by outboard motors, and the seine itself is shallower and therefore less costly.

For the majority of purse seine vessels which participate in the winter crab fishery, the costs of equipment varies based on the number of crab pots used. The smaller 42-foot vessels in this fishery average 50 pots, while the limit seiners use between 100 and 150. At an average cost of \$300 per pot including line, buoys, and off-season storage and transportation, the cost of crabbing equipment ranges from \$15,000 to \$45,000.

Vessels having gillnetting as a major strategy spend between \$9,000 and \$111,000 on equipment; if they are also involved in the beach seine operations, as most of them are, then an additional \$11,000 worth of equipment is required. The gillnets used on the southside of the peninsula are more expensive than those used on the northside; the difference in cost is due to the greater depth of the southside net. Due to the combination of areas fished during a season, the drift gillnetters are required to have gillnets of both depths.

Crew payments are the final factor to be considered in tracing the economics of the Sand Point vessels. In all cases, the crew members are paid on a share system, that is, prior to actually fishing, the boat owner and the crew members agree upon what share of the vessel's income will be paid to the crew as their wages. Crew shares differ from individual to individual, depending upon experience, and the shares commonly found aboard purse seine vessels differ from those aboard gillnet vessels. Taking all crew shares in aggregate, the portion of vessel income paid to the crew ranges from the 55% reported from many of the larger purse seine-hand purse seine strategy vessels to 30% for drift gillnet-beach seine strategy vessels. Set net vessels are commonly crewed by family members and no information on crew shares was disclosed.

For purse seine strategy vessels, a range of 9% to 11% of the gross vessel income was reported for individual shares. Since most vessels of this sort operate with a five-member crew, the total proportion of vessel income devoted to crew payments would reach 55%. In addition, some captains were said to deduct the costs of fuel and food for the fishing season from the vessel income before calculating the crew shares in effect diminishing the level of return to the individual crew members. As will be discussed below, large purse seine vessels in Sand Point usually have a high proportion of non-family and non-resident crew members, many

of whom have considerable experience in the salmon fishery. Crew shares are commonly discussed as part of the decision to work on a particular boat or not, and generous captains are said to be able to retain the more experienced crew members for years on end, while captains perceived as less generous will be obliged to hire new crew members each year, if not several times during a single season.

On the boats primarily oriented to drift gillnetting, a single crew member usually accompanies the captain of the boat, although two crew members occur infrequently, as does a captain who operates his vessel unassisted. Crew members are commonly family members or relatives, so crew shares play a smaller role in decisions as to which boat to work on. The range of shares reported was from 15%, which was most common, to rarer instances of 20% and even one case of a 30% share for an extremely experienced crew member.

A rough picture of the relationship between gross earnings on a vessel and the net return to the boat operator is available from estimates prepared from Commercial Fisheries Entry Commission data. These data are presented in Table 4.1.9. Although the ratios of gross to net earnings vary from year to year for each gear type, the general factors involved are exemplified in looking at the figures for 1977, the most recent year covered in this series. That year purse seine operators retained 38% of the vessel's gross earnings as their own portion, with 28% expended in operating costs, and 34.2% in payments to crew members. For drift gillnet vessels that year, operating costs absorbed a higher proportion, 45%, while payments to a crew member accounted for 23.4% of the gross vessel income; the boat operator retained 31% of the gross as his own share. The situation with set gillnets shows even higher costs and a lower rate of return to the boat owner. In 1977, set gillnet vessel operating costs amounted to 53% of the gross income of the vessel. The share paid to the crew amounted to 38.5% of the gross, leaving the operator with 8.5% of the gross vessel income as his own share.

Although there are problems with estimates of this sort, these figures conclusively demonstrate the number of competing claims upon a vessel's earnings. When average landing and earning figures are examined below, ratios of gross to net income should be kept in mind.

Crew Composition. The number of crew members needed for each of the strategies differs. Limit purse seine operations require the largest crews while gillnet operations require much smaller crew complements. The strategies differ, too, in the degree to which their crew members are likely to be family members, local, or non-local residents.

TABLE 4.1.9

ESTIMATES OF ALASKA PENINSULA SALMON FISHERY
GROSS EARNINGS, COSTS AND NET EARNINGS BY GEAR TYPE
1975 - 1977

Permit Type	1975	1976	1977
Purse Seine			
Average Gross	7,732	33,837	28,210
Less Costs ¹	3,729	5,972	7,802
Net Earnings	4,003	27,862	20,402
Crew Share (34.2% of gross)	2,645	11,575	9,650
Return to Operator	1,358	10,287	10,758
Drift Gillnet			
Average Gross	7,771	17,041	19,075
Less Costs ¹	6,396	8,267	8,675
Net Earnings	1,375	8,774	10,400
Crew Share (23.4%)	1,821	3,993	4,469
Return to Operator	-446	4,781	5,931
Set Gillnet			
Average Gross	3,277	6,546	10,104
Less Costs ¹	4,011	5,016	5,346
Net Earnings	-734	1,529	4,758
Crew Share (38.5%)	1,262	2,521	3,891
Return to Operator	-1,996	-992	-867

¹ Operating, fixed, and capital costs

Source: Rogers and Kreinheder 1980

Operation of a large purse seine vessel normally requires six men, or five crew members plus the captain. On the smaller purse seine boats, crews of four plus the captain are more common. Beach seine operations require fewer people, with two or three people most common although some of the larger boats retain crews of four in addition to the captain.

In contrast, boats which are primarily involved in drift gillnetting usually carry only a single crew member besides the captain. Although these boats usually have family members as crew, the fact that they must be away from the community for such extended periods of time discourages the practice of carrying several family members aboard as additional help. Set gillnetting usually requires only a single crew member in addition to the captain, but in Sand Point these vessels often carry additional family members along as crew.

From these remarks it is clear that for both forms of gillnetting, the tendency in Sand Point is to use family members or close relatives as crew members. For the larger purse seine strategy vessels, however, non-family and non-local residents make up a significant portion of the total pool of crew members. Although no census of boat crews and their residence was possible, informants readily estimated that approximately half of the all crew members working on the limit seiners were from outside the community.

Crabbing requires a smaller crew, with three men, including captain, usually operating the limit size purse seiners during the winter season. Apparently with the recent prosperity in the salmon fishery, captains have some difficulty in finding local crew members to work on the boats during the extremely strenuous and dangerous operations of the crab season. No estimates were advanced concerning the proportion of the crab boat labor force made up of local residents, but it is presumably well over half.

Landings and Earnings. Salmon landings and earnings by Sand Point fishermen have improved enormously over the period from 1975 to 1979 as detailed in Table 4.1.10. In 1975, the total salmon landings were 941,000 pounds with a value of \$350,000. By 1979, total landings were 16.7 million pounds worth \$9.5 million. In other words, roughly 16 times more salmon were landed by not quite twice as many fishermen. Moreover, the value of the salmon had increased sharply so that the total value of the 1979 harvest was slightly more than 27 times that of 1975. When the five years are averaged, Sand Point fishermen harvested an average of 8.2 million pounds of salmon worth \$3.6 million per year.

TABLE 4.1.10
 SAND POINT TOTAL SALMON LANDINGS AND EARNINGS
 1975 - 1979

	1975	1976	1977	1978	1979	Average
Number of Gear Operators	37	48	41	55	65	49.2
Total Landings (1,000 pounds)	941	6739	4749	12040	16740	8242
Total Earnings (\$T,000)	350	1971	1555	4759	9503	3628

The growth in landings and earnings has been relatively constant over the period in question although a slight decline was registered in 1977. The most dramatic improvement from one year to the next was in 1978 when landings were 2.5 times those of the preceeding year and earnings were three times larger. The figures for 1979 continue to show rapid growth, especially in earnings, which nearly doubled the total produced by the already dramatic increase registered in 1978. Although comparable figures are not available for 1980 and 1981 these two years continued the trend set in 1979. The Sand Point fishery is currently operating at a more productive level than that reflected by the 1975-79 average, more closely approximating the 1979 level.

The number of gear operators has generally grown from year to year as well, with a slight decline in numbers in 1977 in response to the poorer harvest prospects. Growth in landing and earnings, however, exceeded the rate of growth in the number of operators, so that average harvests have generally improved over the period.

Average individual harvests by gear types for 1975-1979 are shown in Table 4.1.11. Several interesting trends are apparent. In 1975, two strategies predominate: purse seines (Type V) and exclusive set gillnetting (Type VII). During the period from 1976 to 1978, drift gillnetting combined with hand purse seining (Type II) emerges as an important strategy, as does set gillnetting in combination with beach seining (Type III). During this period, exclusive set gillnetting appears to decline as a strategy, but in 1979 it reemerges stronger than before, so that all four strategies are represented in the final year of this series.

The trends in landings and earnings for each strategy differ somewhat although all have seen vast increases over the period. This results in part from the fact that the salmon runs and weather conditions in some years favor one gear type over the others. Set gillnet operators (Type VII) in 1977, for example, saw an improvement over the performance of the preceeding year, while all other gear types saw declines. The trend for purse seine operators (Type V) generally followed that of the fleet as a whole--decline in 1977 but otherwise sharp improvement over the entire period. Average returns per vessel of this type reached nearly a quarter of a million dollars in 1979, and 1980 and 1981 figures were probably higher yet. The newer strategies of set and drift gillnetting combined with hand purse seining registered their greatest improvements in 1976, landing nearly ten times the quantities of the preceeding year. Operators using these strategies also saw enormous growth in 1978 and 1979. Finally, the exclusive

TABLE 4.1.11

SAND POINT FISHERMEN'S AVERAGE SALMON LANDINGS AND GROSS EARNINGS BY GEAR TYPE, 1975 - 1979

Gear Type	1975	1976	1977	1978	1979	Average
Type I: PS, DG, SG						
Gear Operators	(0)	(6)	(5)	(4)	(6)	(4.2)
Average Landings		115,209	93,125	185,435	192,878	145,503
Average Earnings		\$ 33,819	\$ 30,203	\$ 67,356	\$ 97,959	\$ 57,672
Type II: PS, DG						
Gear Operators	(2)	(8)	(5)	(11)	(11)	(7.4)
Average Landings	14,704	128,238	100,995	229,574	178,396	176,460
Average Earnings	\$ 3,900	\$ 36,786	\$ 34,884	\$ 85,769	\$ 96,401	\$ 67,038
Type III: PS, SG						
Gear Operators	(2)	(8)	(10)	(13)	(9)	(8.4)
Average Landings	12,935	122,742	98,724	168,551	215,130	145,685
Average Earnings	\$ 3,827	\$ 35,018	\$ 30,937	\$ 65,814	\$134,228	\$ 63,363
Type IV: DG, SG						
Gear Operators	(0)	(0)	(0)	(0)	(1)	(0)
Average Landings					144,702	
Average Earnings					\$167,157	
Type V: PS						
Gear Operators	(14)	(19)	(14)	(14)	(22)	(16.6)
Average Landings	50,757	196,796	179,956	381,339	480,550	257,843
Average Earnings	\$ 18,223	\$ 57,530	\$ 57,736	\$145,449	\$248,573	\$117,095
Type VI: DG						
Gear Operators	(1)	(3)	(4)	(5)	(3)	(3.2)
Average Landings	15,286	76,690	51,389	67,202	109,036	48,727
Type VII: SG						
Gear Operators	(8)	(4)	(3)	(6)	(13)	(6.8)
Average Landings	1,832	13,279	19,813	18,706	38,657	21,777
Average Earnings	\$ 737	\$ 3,897	\$ 12,842	\$ 8,635	\$ 31,397	\$ 16,191

PS-Purse Seine; DG-Drift Gillnet; SG-Set Gillnet

set gillnetting strategy registered steady, but far more modest, improvement over the entire period.

Not all fishermen share equally in the returns of the fishery. Even within a single gear type, some individuals consistently do better than others. The extremes of individual harvests give an indication of the wide range of individual performance. The lowest recorded individual harvest was 80 pounds landed in 1975, while the largest harvest that year was 128,000 pounds. The highest reported harvest occurred in 1979 when one permit holder landed 1.1 million pounds of salmon, an event which is still very much alive in the folklore of the Sand Point fishermen. During that same year, the lowest recorded harvest was 1,600 pounds.

The more important structure of variation in the landings and earnings picture is found in comparing the scale of the harvest of purse seines against the other gear types. The magnitude of the differences in productivity between gear types can be seen by referring again to the average harvests by gear types, displayed in Table 4.1.11. Using averages for the five-year period, purse seine vessels (Type V) landed 1.57 times as many pounds of salmon as drift gillnet-beach seine operators (Type II), and 1.76 times as much as set gillnet-beach seine operators (Type III). Purse seine operators landed 6.7 times the quantity taken by the exclusive set gillnet strategy operators.

When the trend in the relation between the various gear types is plotted over the five-year period, it emerges that following seemingly anomolous year in 1975, the purse seine vessels have consistently increased the distance between their average landings and those of the other strategies. In 1979, the average purse seine vessel harvest (Type V) was 2.69 more than the average drift gillnet-beach seine vessel (Type II) and 2.23 more than the average set gillnet-beach seine vessel (Type III). The exclusive set gillnet vessels (Type VII) remained far behind, with less than one-twelfth the harvest of the purse seine vessels.

Crab landings and earnings from 1975 to 1979, displayed in Table 4.1.12, present a more complicated picture. Viewed at first in aggregate, the Sand Point crab fishery has seen a steady rise in the number of gear operators, from 24 in 1975 to 33 in 1979. The total crab landings have shown a more varied pattern, with a sharp increase through 1977 when seven million pounds were landed, followed by a slight decline to 6.8 million pounds in 1979. Interestingly, the value of crab has increased sharply and steadily from a total value of \$1.1 million in 1975 to \$6.3 million in 1979.

TABLE 4.1.12

SAND POINT CRAB HARVEST STATISTICS, 1975-1979

	1975	1976	1977	1978	1979	Average
Crab Licenses by Vessel Length:						
over 50 feet	4	8	12	16	21	12
under 50 feet	24	30	36	35	37	32
TOTAL	29	38	48	51	58	44
Fishermen Making Crab Landings:						
Total Landings (1,000 pounds)	4673	6314	7055	6643	6816	6300
Total Earnings (\$1,000)	1112	1718	3615	5819	6296	3712
Average Landings (1,000 pounds)						
Average Landings (1,000 pounds)	195	242	252	208	207	220.2
Average Earnings (\$1,000)						
Average Earnings (\$1,000)	46	66	129	182	191	122.8
Range of Landings (1,000 pounds)						
Low	33.5	16.1	6.9	3.5	3.9	12.8
High	1097	979	1258	1084	869	1057
Average	195	242	252	208	207	221
Range of Earnings (\$1,000)						
Low	8.5	5.9	2.2	1.6	3.9	4.4
High	231	361	769	1184	786	666
Average	46	66	129	182	191	123

Source: Commercial Fisheries Entry Commission

From the perspective of the individual gear operators, the average landing and earning figures show similar trends. Average landings rose from 195,000 pounds in 1975 to 252,000 pounds in 1977 and then declined to 207,000 pounds in 1979. The strong increase in value, however, meant that the average earnings per gear operator have risen steadily from \$46,000 in 1975 to \$191,000 in 1979.

As with salmon, the range of individual variation is considerable, as can be seen in the following example. In 1977, the year in which the range was greatest, the smallest recorded harvest was 3,500 pounds for a value of \$1,600, while the largest recorded harvest was 1.08 million pounds for a value of \$1.18 million.

Sand Point Developmental Trends

Vessels. The most important developmental trend concerning vessels in Sand Point is the dramatic move to upgrade the technical efficiency of the fleet. This is seen particularly clearly in the case of the purse seine strategy vessels, among which fully half of the boats were manufactured in the last three years. The new 58-foot boats have considerably greater hold capacity than the older 42-foot vessels. The difference in size is also extremely important in the winter crab fishery because the larger boats are more stable and can range further during this difficult winter fishery.

Among the other strategies, the same trend is found; however, there has been more technical upgrading among the vessels using drift gillnets than among those using set gillnets. This is reflected in the fact that half of the drift gillnet boats have been built since 1979 while the median year of construction for the set net boats is 1969.

Another important improvement in the technical efficiency of the vessels results from the improved electronic equipment now widely found onboard. Radio communications were improved with Single Side Band (SSB) and Very High Frequency (VHF) radios supplementing CB radios. Radar, however, probably made an equal, if not more important contribution. With the common occurrence of fog throughout the waters south of the Alaska Peninsula, the security offered by radar allows the vessels to fish on days when previously they would have remained in the harbor. The more recent installation of depth finders, and in some cases the more sophisticated models referred to as fish finders, has also contributed to the success of the fleet.

In addition to these technical improvements, the total size of the fleet has grown. From 37 salmon gear operators making landings in 1975, the total grew to 65 in 1979. Strictly comparable figures are not available for 1980 and 1981, but the census of vessels conducted for this report during the summer of 1981 indicated that 90 vessels made up the current Sand Point fleet. The rate of growth, then, has been extremely high over the past decade, with especially pronounced growth in the last three years. Since, in theory, the limited entry program set a ceiling on the number of boats operating in the salmon fishery, it must be pointed out that this increase entailed changes in the patterns of permit holding, described below.

Areas. During the last decade the areas exploited by Sand Point vessels have expanded considerably. Prior to this expansion, the Sand Point fleet never ventured west of Cape Tolstoi, whereas now, for both the deep water purse seine and the drift gillnet vessels, the South Unimak fishery provides a major proportion of their total season. Similarly, participation in the northside fishery outside of Port Moller dates back to only the last decade, and participation by a small number of boats in a fishery inside of Izembeck Lagoon is even more recent.

Anecdotally, boat captains speak of the need to "prospect" new areas on the outside of the Shumagin Islands, for example. They feel that perhaps too many vessels are lining up at Red Bluff on Popov Island, but the risks involved in trying an entirely new area are great--missing the bulk of the run by even a few days can destroy a boat's season. "Prospecting," then, is more widely admired as a potential, than as an actual, undertaking.

Gear Types. Several important trends can be identified concerning the importance of various gear types within the fleet as a whole. On the one hand, the fleet has diversified, since in 1975 two major strategies, purse seining and exclusive set gillnetting, were pursued, while by 1979 four major strategies are found. Exclusive set gillnetting declined in importance after 1975 although in 1979 it reemerged as a major strategy. Drift gillnetting, usually combined with hand purse seining, emerged as an important strategy in 1976 when Sand Point vessels began to participate in the Port Moller fishery. Set gillnetting combined with beach seining also emerged during this period.

On the other hand, the increasing importance of the purse seine strategy, relative to all others combined, constitutes a

trend toward specialization. This strategy is pursued by approximately half of the Sand Point fleet, but with the dramatic improvements in the technological scale and efficiency of the new larger boats, this gear type has become responsible for an ever-larger portion of the total salmon harvest by Sand Point vessels.

Gear type patterns interact with patterns of limited entry permit holding, as will be discussed below. For the present, it is important to note that the rise of the purse seine strategy has the effect of freeing some permits for re-sale in the community. Similarly, the reemergence of the exclusive set gillnetting strategy might free permits. In both instances, only a single permit is required to pursue the strategy, so that operators with more than a single permit are able to sell the "surplus" permit(s). The reorganization of permits effected in this way is presumably the source of permits for new vessels in the expansion of the Sand Point fleet since there is no evidence of the purchase of permits from fishermen from other communities.

In Sand Point the trend toward specialization and single permit holding is offset by the prevalence of strategies combining gear types requiring two permits. For the strategies combining set and drift gillnetting with beach seines, two permits are required.

Permits. There is a trend toward breaking up patterns of multiple permit holding, at least on the part of purse seine and exclusive set net strategy operators. According to informants, when these "surplus" permits are sold, few are sold out of the community so, in effect, they become the means by which additional boats enter the Sand Point salmon fleet.

Although people were hesitant to discuss specific instances, in some cases multiple permit holders have temporarily transferred permits for a part of the season to a son, for example, who in turn works on another boat for that part of the season. As a result, a permit which was previously used for only part of the season to supplement the operator's principal gear type, is fished for the entire season.

From these examples it is clear that the historical pattern of multiple gear type use in Sand Point gave rise to multiple permit holdings which, when broken up, allow for a sizeable increase in the number of vessels fishing throughout the season. Thus far, happily, this has not led to overexploitation of the salmon stocks, the original cause of the turn to a limited entry program.

Species. The Sand Point fishery has, for most of its nearly century-long existence, tended to concentrate on a single fishery at a time. This was particularly true of the early period when cod was the principal species sought. The disruptions of the Depression resulted in a dramatic decline in demand for cod and a crash in prices paid to the fishermen, so the introduction of the modern salmon fishery during this decade resulted in the replacement of cod by salmon as the major fishery in Sand Point.

After this point there was a tendency for additional species to play a subsidiary role to salmon in the operations of the fleet, but these subsidiary species have been particularly prone to overexploitation and have not challenged the role played by salmon. Halibut was added to the species sought by this fleet in the 1940s but played only a minor role in 1981. Crab, on the other hand, was added in the 1950s and has played an important role since. During the late 1970s, however, two conflicting trends emerged: the number of boats involved in the crab fishery grew as did the total value of the crab landed, but total landings began to decline as the stocks reached a point of overexploitation.

Shrimp are a similar example. First sought seriously by Sand Point boats in the early 1960s, the shrimp stocks or Pavlov Bay and elsewhere south of the Alaska Peninsula were quickly overexploited.

Bottomfish, notably cod, are currently being proposed as another opportunity for diversification in the Sand Point fleet. Under the legislation extending U.S. territorial limits to 200 miles offshore, a vacuum was opened in the bottomfishery off Alaska, and the State of Alaska has instituted many efforts to encourage local fishermen to partially fill that void.

Two factors operate against this particular diversification. Perhaps most important is the current prosperity of the salmon fishery, for with returns at the level of 1979-81, there is simply very little incentive for the Sand Point vessels to undertake the new demands of another fishery. Secondly, the bottomfishery is unsuitable for vessels the scale of those at Sand Point. Bottomfish have a low unit price so that large volumes must be landed to operate profitably. In the case of cod, the value of the landings depends on the quality of early processing, and the techniques required to produce top price cod are simply not known by many of the Sand Point fishermen. In short, while a handful of Sand Point fishermen expressed interest in the

demonstration of an electronic jigger for cod fishing, and while several fishermen briefly landed cod during the last year, there is little likelihood of any significant participation in this fishery by the current Sand Point fleet in the near future.

It remains possible, nonetheless, that new vessels, larger in scale and more specialized technologically in the bottomfishery, would make Sand Point their home port. Some of the planning scenarios used by the City of Sand Point are based upon this eventuality.

Summary. In short, the Sand Point fishery has experienced substantial intensification in the salmon fishery over the past five years. Although the number of limited entry permits in this community has remained constant, the technical efficiency of the units has risen sharply as has the number of units of gear being operated.

The fishery has also been characterized by expansion in the geographical range commonly exploited. The extension of range to the South Unimak region and more recently to the northside of the Alaska Peninsula are the principal examples.

The fishery has not seen diversification in the number of species sought. Rather, the tendency has been toward concentration on the salmon fishery. Crab, the principal subsidiary species now sought by Sand Point fishermen, is currently experiencing a decline in stock strength. Shrimp and halibut, other potential subsidiary species, are also experiencing low stock levels at present. Finally, there has been little indication of a turn to participation in the bottomfishery.

Sand Point Fisheries: Commercial Processing

History. Although Sand Point was originally founded as a commercial center to supply the cod fishery, it was not long before seafood processing was initiated as well. Early in the 20th Century, cod salteries were located at both Sand Point and nearby Pirate Cove. In the 1930s the Alaska Pacific Salmon Company began to process salmon in Sand Point and in the 1940s the Aleutian Cold Storage Company was founded, originally to process halibut. These early enterprises have changed a great deal since their beginning, and new processing concerns have come to play a greater role in contemporary Sand Point.

The original Alaska Pacific Salmon facility, located on a spit across the bay from the main part of town near the current airport, was sold to the New England Fish Company (NEFCO) in about 1960. NEFCO never actually processed salmon

at this site but used it instead as a "fish camp" or buying station. When NEFCO went bankrupt in 1980, its assets were purchased by Ocean Beauty Alaska, a subsidiary of the Sealaska Corporation. Under the new ownership, the same sort of operation continues.

The Aleutian Cold Storage plant was built in 1946 in the center of town on the site of the original store and cod saltery. Originally intended for halibut processing, this plant has seen several changes of ownership and considerable diversification in the species of seafood handled. Wakefield Fisheries leased the plant during 1950 and turned to processing king crab. By 1966, however, when Wakefield Fisheries purchased the plant, king crab stocks were declining so rapidly that Tanner crab were added to the operations. In 1969 Hunt Wesson purchased the plant and in 1972 shrimp were added to the species processed. This particular species was important for only a brief period as the stocks were rapidly depleted under the pressure of commercial harvest. In 1976 the plant was purchased by AMFAC/Pacific Pearl. The new management added salmon processing to the operation in 1980. Finally, in 1981 the plant was sold to Pelican Cold Storage and the original name of Aleutian Cold Storage was reinstated.

A third processing operation has been active in Sand Point since the early 1960s when Peter Pan established a buying station on the spit near the NEFCO facility now owned by Ocean Beauty Alaska. Although originally operating out of old, dilapidated facilities, Peter Pan completed construction in 1981 of a new 12,000 square-foot building in which fishermen's gear is stored, and extra parts, equipment, and administrative offices are housed.

Current Operations. Two very distinct types of operations are currently run by the three processing firms found at Sand Point. Ocean Beauty and Peter Pan operate seasonal buying stations. The managers at these stations arrange for the purchase of salmon from Sand Point fishermen, normally in relationships which last for many years. In return for commitments to sell salmon throughout the season, the station provides a number of services to its fishermen, notably repairs and off-season gear storage. In contrast, the Aleutian Cold Storage plant actually processes the seafood it purchases in the community. As might be expected, these two types of facilities differ considerably in the scale of their operations in Sand Point. They also differ in the kinds of relations they establish with the fishermen.

The fish camps are actually outstations of canneries in the region from which they purchase fish. As in the past, these canneries emphasize the establishment of longterm relations with the fishermen. In return for a secure market and a variety of services, the fishermen make a commitment to sell exclusively to a particular processor. Aleutian Cold Storage, on the other hand, has only recently expanded into the purchase and processing of salmon, operating as a cash buyer. Aleutian Cold Storage provides no services to fishermen and makes no long term commitment to provide a market but pays a higher price for the salmon. The tradeoff, then, is security or higher price for the fish.

The Peter Pan and Ocean Beauty buying stations begin operations sometime in May each year when barges arrive from Seattle bringing most of the personnel, spare parts, and other materials needed for the operation. Prior to the start of fishing, the stations sign on fishermen for the coming season and assist in the preparation and repair of the fishing boats. In some instances funds will be advanced to a fisherman for the purchase of new equipment, with the amount deducted later from the payment due the fisherman.

During the season itself, the managers of the buying stations arrange for pickup and purchase of the fish on the grounds. During the June red salmon runs in the South Unimak area, Ocean Beauty and Peter Pan each direct their own tender vessels on the grounds. For the large southside pink salmon runs in July and August, the Peter Pan manager directs the tender movements for both companies. The fishermen on the grounds listen on their radios each evening at an arranged time to hear about the current tender locations.

The stations also provide emergency repairs and spare parts throughout the season and for this purpose they keep mechanical shops and parts warehouses in Sand Point. In addition, among the personnel at each camp are mechanics and carpenters as well as the so-called beachmen who help with miscellaneous labor tasks.

The bookkeeping staff at each of the fish camps keeps track of the purchases from each fisherman as well as any draws for repairs, parts, or advance funds. Partial payment is made to the fishermen during the season with an additional portion due late in the fall after the market conditions for the year's pack are known.

As the season draws to a close, the stations apportion their storage space to the fishermen for off-season storage of skiffs, seines, nets, and other equipment. The majority of