

# Informational Leaflet 120

## DEVELOPMENT AND GROWTH OF THE KODIAK ISLAND SHRIMP FISHERY

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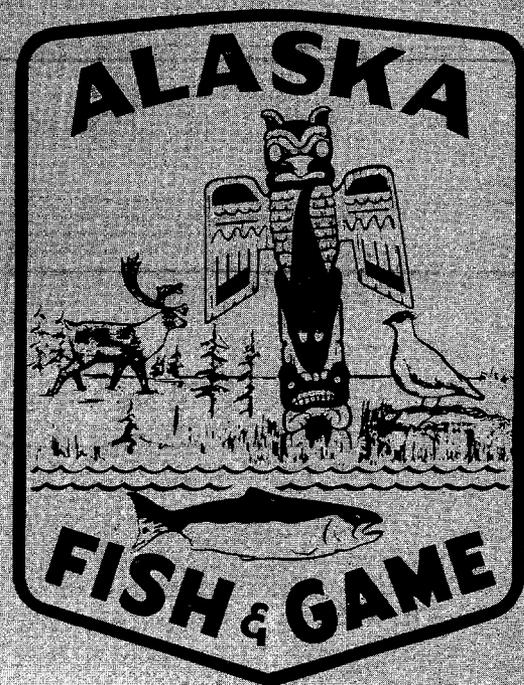
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# DEVELOPMENT AND GROWTH OF THE KODIAK ISLAND SHRIMP FISHERY<sup>1/</sup>

By

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## INTRODUCTION

Two necessary conditions in the proper management of a constantly utilized fishery are the maintenance of a relative index of fishing success, i.e., catch per unit effort and an understanding of the life histories of the species involved. Although the available catch data contains no reference to catch per unit effort, a great deal can still be learned from its analysis in terms of area fished and catch fluctuations by year, season and area.

One objective of this report is to discuss aspects of the development and growth of the Kodiak shrimp fishery with emphasis on the present fishery. Another objective is to present in detail the 1960-1967 shrimp catch data in tabular and graphic form in order to provide a reference to its growth and relative importance in respect to other Alaska shrimp fisheries.

## REVIEW OF LITERATURE AND BACKGROUND HISTORY

The first commercial Alaskan shrimp fishery was developed in 1915 near Petersburg in Southeastern Alaska. Annual catches of the Southeast Alaska shrimp fishery steadily increased from 68,845 pounds in 1916 to a peak of 7,605,871 pounds in 1958.

<sup>1/</sup>This project is partially financed by the Commercial Fisheries Research and Development Act of 1964 (P.L. 88-309) under sub-project 5-9-R-3, Contract No. 14-17-0007-739.

Interest in a commercial shrimp fishery in Kodiak was first shown in 1957 by local fishermen who explored Chiniak and Marmot Bays with conventional otter trawls. This exploratory fishing produced catches as high as 500 pounds of sidestripe and pink shrimp in 20-minute trawls. See Table 1 for the common and scientific names for the six commercial species of shrimp found in the Kodiak area. A commercial shrimp fishery in Kodiak became a reality in 1958 with the installation of three shrimp peeling machines by one processor. Shrimp catches by local fishermen and federal exploratory fishing vessels during this year ranged from 1,000 to 6,000 pounds per hour (Beals, 1965).

Table 1. Common and scientific names for six commercial species of shrimp found in the Kodiak area.

Common Name	Scientific Name
Sidestripe shrimp	<u>Pandalopsis dispar</u>
Pink shrimp*	<u>Pandalus borealis</u>
Coon-stripe shrimp	<u>Pandalus hypsinotus</u>
Humpy shrimp	<u>Pandalus goniuris</u>
Ocean or smooth pink	<u>Pandalus jordini</u>

\* Pink shrimp is the most valuable species, comprising about 97 percent of the catch landed at Kodiak.

The year 1959 marked the start of a full-scale shrimp operation in Kodiak with an annual catch of 2,897,000 pounds in spite of an early cessation of the fishery due to technical problems. Annual Kodiak shrimp catches, which increased from 3,378,000 pounds in 1960 to 38,723,069 pounds in 1967, equalled and then far surpassed the combined catch for the remainder of Alaska (Table 2).

Table 2. Kodiak District contributions to annual Alaska shrimp catches, 1959 - 1967.

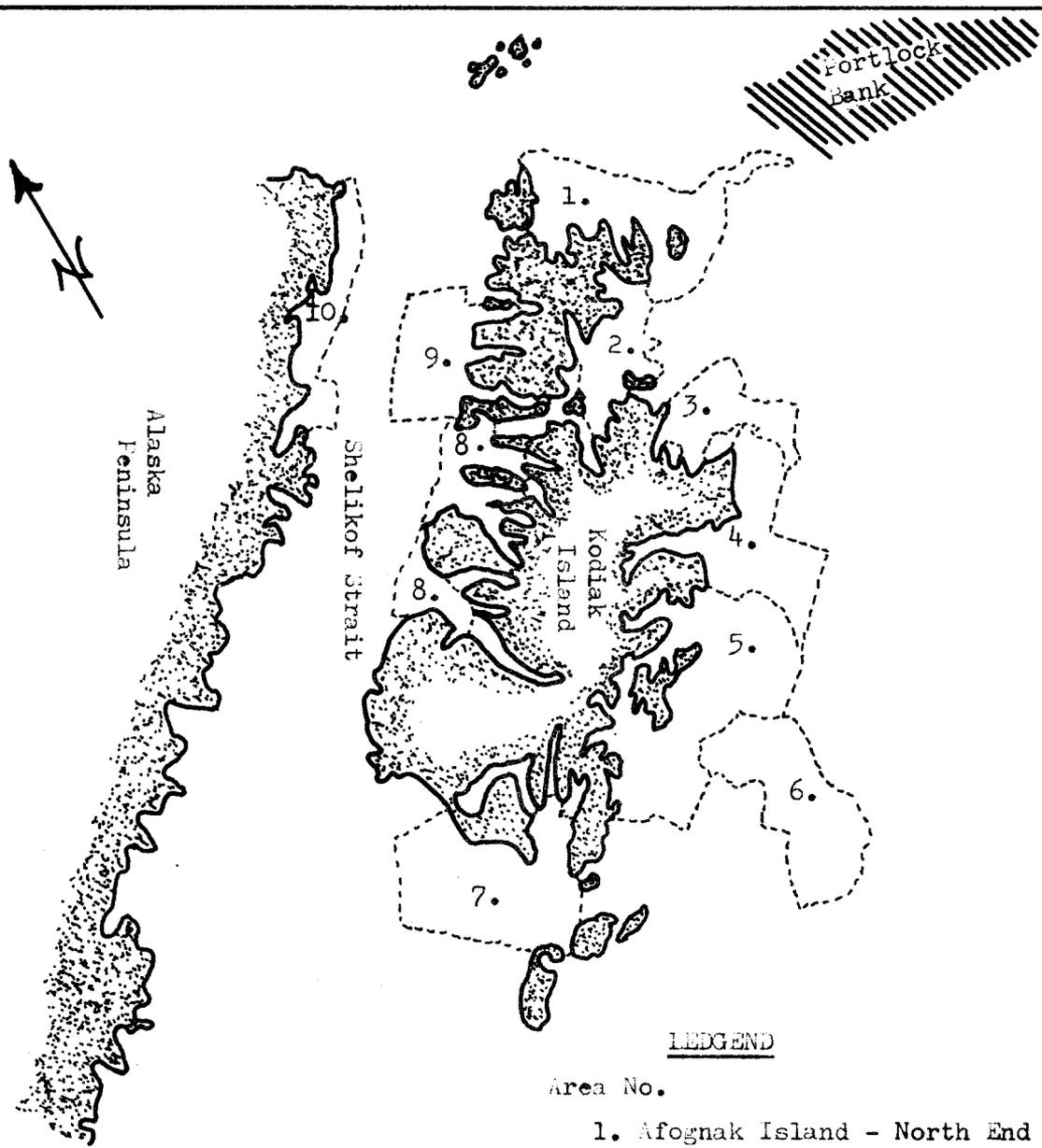
Year	Total Alaska catch in lbs.	Kodiak District catch in lbs.	Percent contribution by Kodiak District
1959	13,052,321	2,897,000	22.2
1960	7,436,207	3,378,985	45.4
1961	15,980,500	11,083,633	69.4
1962	16,943,120	12,654,173	74.7
1963	15,126,950	10,118,472	66.9
1964 <sup>1/</sup>	7,726,750	3,946,959	51.1
1965	16,818,941	13,810,177	82.1
1966	28,192,621	24,097,141	85.5
1967	<u>46,300,000</u> <sup>2/</sup>	<u>38,723,069</u>	<u>83.6</u>
Totals	167,577,410	120,709,609	72.0

<sup>1/</sup> Year of the Alaska earthquake

<sup>2/</sup> Preliminary estimate

#### REVIEW OF CATCH STATISTICS

A survey of the 1960-1967 Kodiak District shrimp catch records revealed that fishing was done primarily in bays or inshore areas. The only record of offshore fishing by American fishermen was from 1961 when 179,000 pounds of shrimp were caught on the Albatross Bank (statistical area 6, Figure 1).



LEGEND

- Area No.
- 1. Afognak Island - North End
  - 2. Marmot Bay
  - 3. Chiniak Bay
  - 4. Ugak Bay
  - 5. Sitkalidak Strait
  - 6. Albatross Bank
  - 7. Alitak Bay
  - 8. Uyak Bay
  - 9. Malina Bay
  - 10. Kukak Bay

Fig. 1 - Description of shrimp catch areas in Kodiak District: 1960 - 1967.

Analysis of annual Kodiak shrimp catches by statistical area showed ten areas of fishing concentration (Figure 1). No biological significance is attached to the designation of these areas at this time; they are merely used as a convenient tool with which to demonstrate fishing distribution and the contribution of each area to the total catch.

As a result of the varying and often limited demands on the local shrimp processors, the percentage of the annual and monthly catches are used as a relative basis of comparison as well as the number of pounds landed. It should be emphasized that a low percentage of annual or monthly catch in a particular area does not necessarily indicate less abundance. This may merely indicate that equivalent catches could be made closer to port. This consideration in regard to analysis of shrimp catch data points out the necessity of obtaining valid catch per unit effort information.

Sitkalidak Straits produced 66.8 percent of the total Kodiak District shrimp catch between 1960 and 1967. Ugak and Marmot Bays were the second and third largest producers, respectively (Figure 2). These relative catches were also apparent in the individual annual catches during these years (Figure 3 and Appendix Tables A to H). The largest proportion (56.8%) of the total 1960-1967 shrimp catch was caught between April and August (Table 3).

Sitkalidak Straits nearly always contributed the highest percentage of the monthly catch of any area between 1965 and 1967. An exception to this was seen in August and September, 1966 and August through October in 1967 when the majority of the fishing was in Ugak Bay (Figures 4 and 5, Appendix Tables F, G, and H). Fishermen report that this heavy fishing pressure in Ugak Bay in August through October was a result of a high abundance of shrimp in the Sitkalidak Straits area which were too small to be of commercial value.

A summarization by the U.S. Bureau of Commercial Fisheries of the annual shrimp catches by foreign fleets shows that 45,958,000 pounds of shrimp were caught in the Kodiak District by the Russians and Japanese from 1963 through 1967 (Table 4). This foreign fishing was conducted on the Portlock and Albatross Bank areas.

#### THE PRESENT FISHERY

The shrimp fishery in Kodiak consists of a fleet of 16 actively fishing vessels and two fulltime shrimp processing plants. Two additional processors

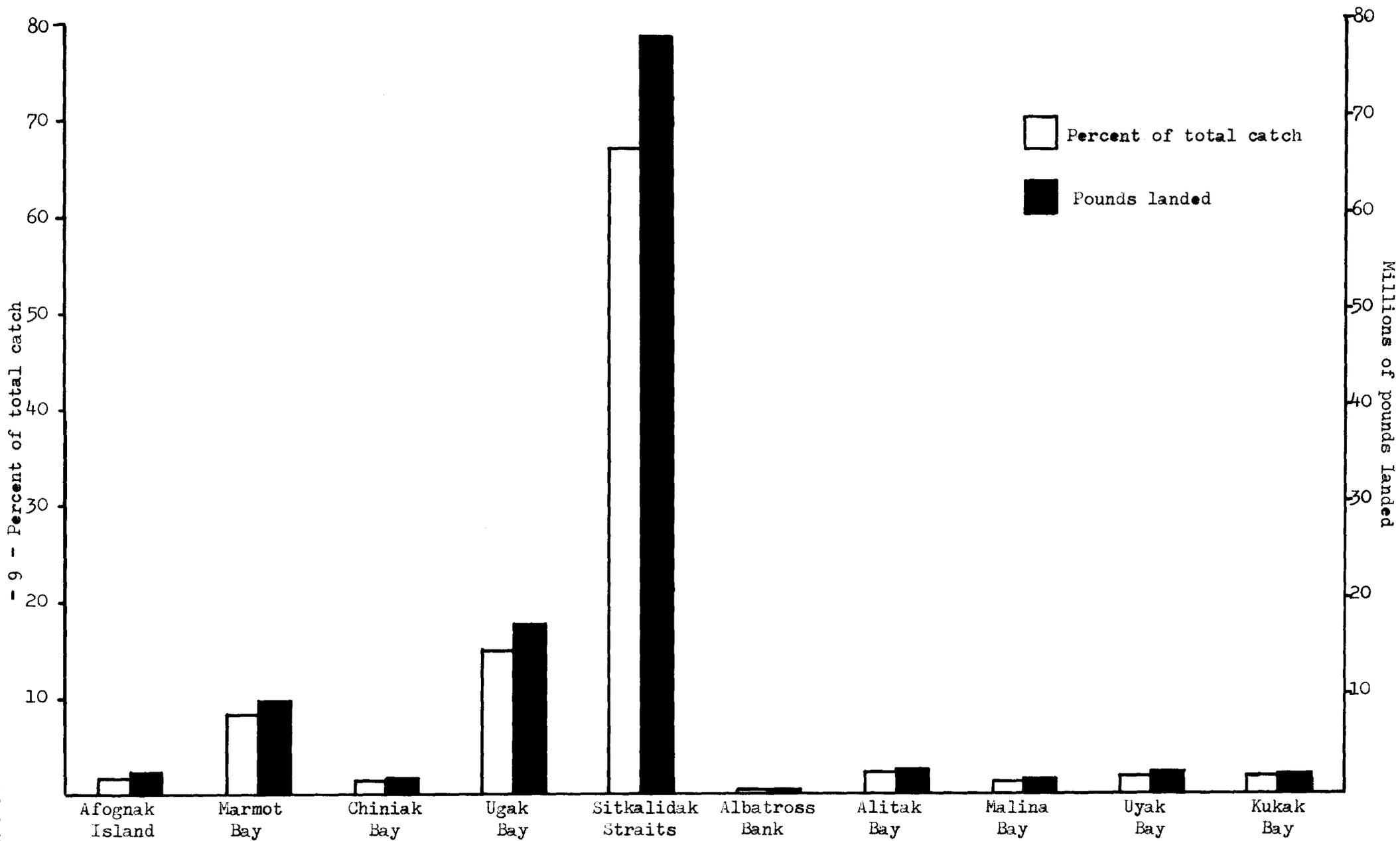


Fig. 2 - Percent and pounds of shrimp landed from each catch area in Kodiak District, 1960 - 1967

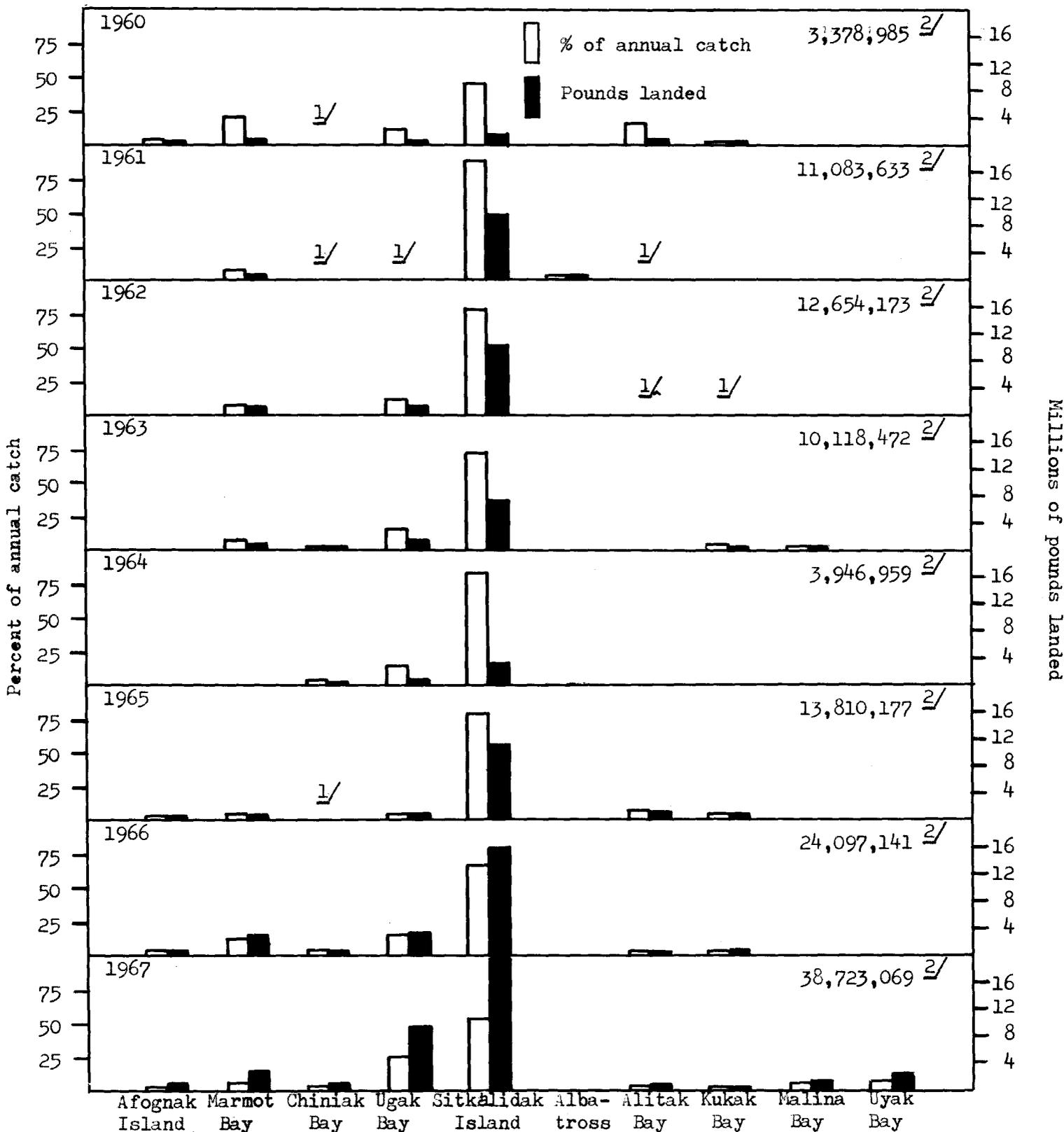


Fig. 3 - Percent and pounds of shrimp landed annually from each catch area in Kodiak District: 1960 - 1967.

<sup>1/</sup> Annual area catches 0.6% or less of total annual catch not shown.  
<sup>2/</sup> Annual catch in pounds

Table 3. -- Percent of annual shrimp catches landed by month in Kodiak District, 1960-1967.

Year	Month												Total lbs <sup>1/</sup>
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
1960	5.1	7.8	8.9	14.8	21.5	13.0	14.3	7.0	3.7	3.9	0	0	3,379.0
1961	3.8	6.7	7.8	11.0	11.2	11.3	9.2	10.9	7.8	7.8	5.0	7.5	11,083.6
1962	7.2	7.6	6.7	7.9	11.5	11.4	15.1	13.9	9.2	6.7	2.0	0.8	12,654.2
1963	2.5	6.2	11.3	19.3	13.9	17.8	12.7	8.5	7.8	0	0	0	10,118.5
1964	0	0	0	2.0	7.4	16.7	26.0	5.6	13.7	17.8	9.4	1.4	3,947.0
1965	2.6	5.0	3.0	9.1	9.8	7.0	7.5	12.2	13.3	9.4	12.7	8.2	13,810.2
1966	1.8	11.1	3.4	11.0	12.4	8.8	13.1	9.5	6.7	8.1	9.4	4.7	24,097.1
1967	5.9	6.2	9.4	9.8	8.9	13.0	12.6	12.2	6.9	8.6	4.9	2.6	38,723.0
Totals-lbs <sup>1/</sup>	4803.6	8359.4	7626.7	12,468.2	12,901.9	13,705.1	14,822.0	13,009.3	9,616.2	9,217.4	7,112.9	4,259.9	117,812.6
%	4.1	7.1	6.5	10.6	11.0	11.6	12.6	11.0	8.2	7.7	6.0	3.6	100.0

1/ Pounds shown to nearest 0.1 thousand

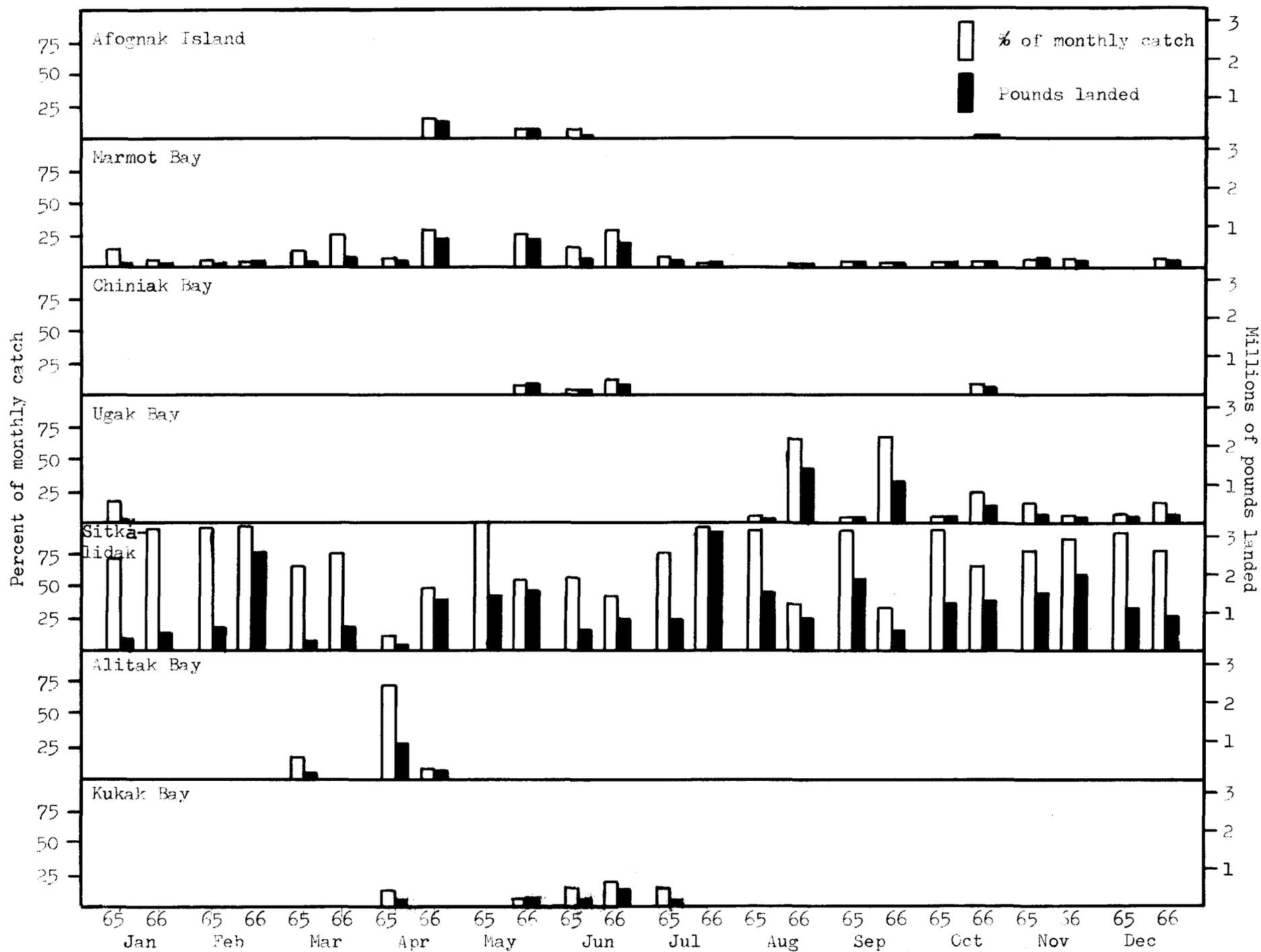


Fig. 4 - Percent and pounds of shrimp landed by month from each catch area in Kodiak District: 1965 and 1966

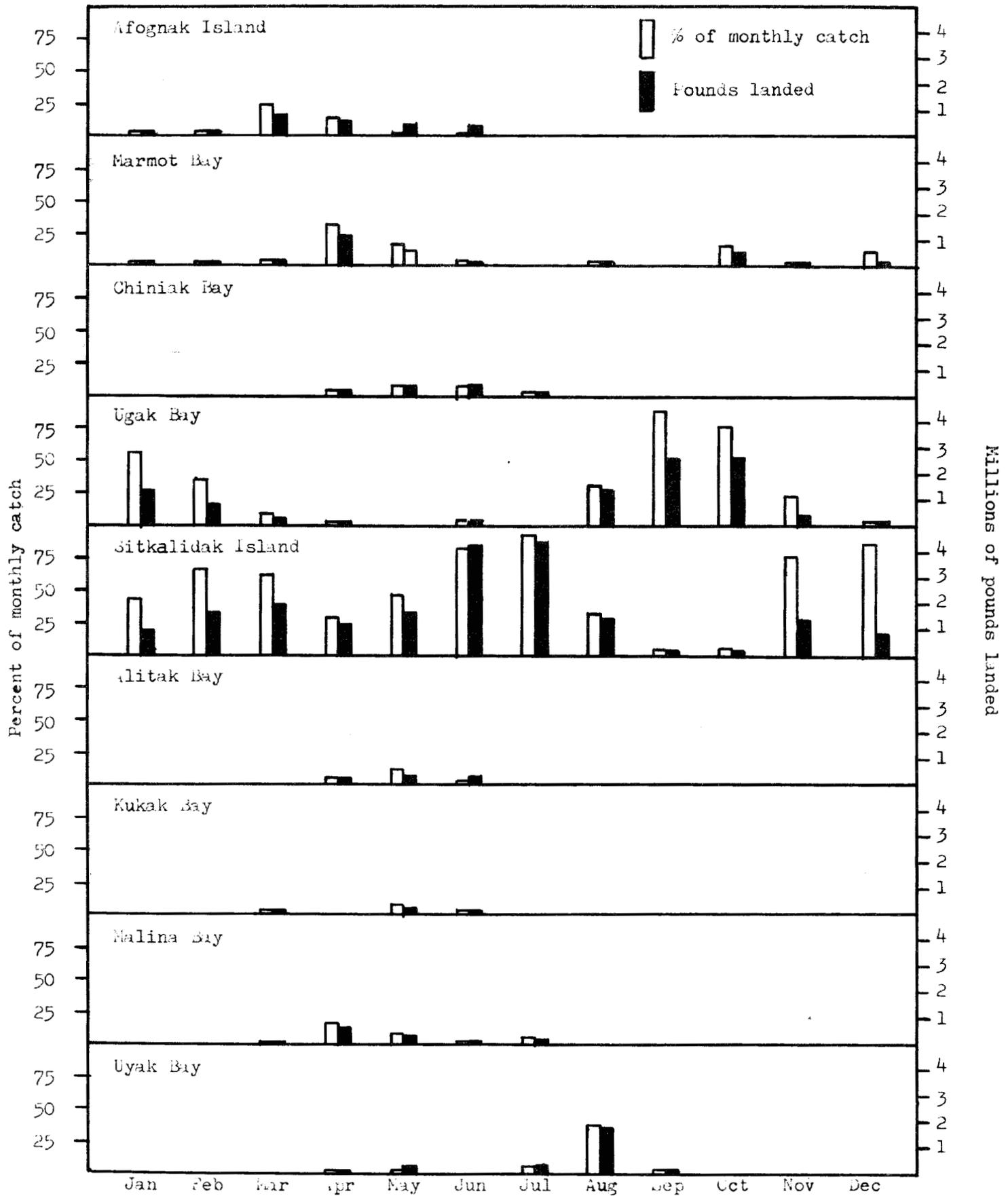


Fig. 5 - Percent and pounds of shrimp landed by month from each catch area in Kodiak District: 1967. Monthly area catches less than 2000 pounds not shown.

Table 4. Shrimp catches by foreign fishing fleets in Kodiak District,  
1963-1967 1/

Year	Nation		Totals
	Russia	Japan	
1963	0	640	640
1964	0	2,300	2,300
1965	2,500	500	3,000
1966	2,000	450	2,450
1967	<u>11,500</u>	<u>1,000</u>	<u>12,500</u>
Totals	16,000	4,890	20,890

1/ Catches shown in metric tons

are presently handling shrimp on a very limited basis <sup>1/</sup> and two other local plants are having peelers installed and expect to begin processing the catches of two or three vessels each in spring 1968.

The bulk of the Kodiak shrimp catch is machine peeled, cooked and packed at the local processing plants. The product enters the market either in cans or in frozen packs. Although an estimated 96 percent of the Kodiak catch consists of pink shrimp, processors are now attempting to develop a market for side-stripe shrimp.

The vessels of the Kodiak shrimp fleet range from 40 to 85 feet in length with the average length being 55 feet. The majority of these vessels are of the seiner-type. Kodiak shrimp trawlers are presently equipped with semi-balloon otter trawls with ground-line lengths of 80 to 90 feet. The trawls are set from the stern of the vessels and are taken aboard with a reel or winch. The catch is stored in large bins in the vessel hold and mixed with crushed ice. Catches from a one to three-hour drag average 8,000 to 12,000 pounds and those as high as 24,000 pounds have been recorded. Landings range from 50,000 to 90,000 pounds depending to some extent on the vessel's holding capacity.

#### SHRIMP RESEARCH IN THE KODIAK DISTRICT

No extensive shrimp research programs were conducted at Kodiak prior to 1967. In view of the increasing annual catches and the potential for expansion in the Kodiak shrimp fishery, the Alaska Department of Fish and Game instituted a shrimp research position utilizing Federal-Aid monies under P.L. 88-309 at Kodiak in September 1967.

A review of the 1960-1966 Kodiak District shrimp catch statistics has been undertaken. Catch data analyses presented in this report are a result of this review.

<sup>1/</sup> One of these processors is experimentally processing sidestripe shrimp in order to create a market for the product and the other is quick-freezing whole shrimp and shipping them to Seattle for further processing.

### Catch Sampling Program

A year round catch sampling program has been designed which will provide information on species composition, age-class structure and sexual composition of the commercial catch from heavily fished areas. The objectives of this program for the Kodiak District are as follows:

- A. Monitor species composition of the commercial catch for each major fishing location.
- B. Monitor age-class composition of the commercial catch for each major fishing location.
- C. Study the basic life histories of the six commercial species of pandalid shrimp for the following:
  1. Age (sex) - length relationships
  2. Growth rates
  3. Breeding periods
  4. Period of female ovigerousness
  5. Hatching period

### Logbook Program

A trawl logbook has been designed which will serve both as a permanent log for the vessel as well as a fishing record for research personnel which can be subjected to I.B.M. analysis. At present, 75 percent of the shrimp trawlers in the Kodiak District are using these logs. The purposes in this trawler log are as follows:

1. To yield catch per effort data by area in relation to gear type and size.
2. To show exact location, length, direction and configuration of each drag.
3. To provide a form for trawling data which can be subjected to I.B.M. analysis.

4. To provide a trawl log which can be used statewide for all trawl fisheries.
5. To provide a trawl log which will be of future value to the fishermen as well as to research personnel.
6. To provide catch per effort information which will be compatible with that received from foreign fisheries.

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APPENDIX

Appendix Table A. Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1960. <sup>1/</sup>

Catch area		Month												Yearly Totals
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Afognak Is.	lbs	0	0	0	96.2	0	0	0	0	0	0	0	0	96.2
	%	0	0	0	19.2	0	0	0	0	0	0	0	0	2.8
Marmot Bay	lbs	0	0	0	146.1	221.1	189.4	96.4	11.2	23.0	14.0	0	0	701.2
	%	0	0	0	29.1	30.5	43.2	19.8	4.8	18.5	10.7	0	0	20.8
Chiniak Bay	lbs	0	0	0	4.4	0	0	0	0	0	0	0	0	4.4
	%	0	0	0	0.9	0	0	0	0	0	0	0	0	0.2
Ugak Bay	lbs	0	0	0	0	0	0	181.6	110.0	0	59.4	0	0	351.0
	%	0	0	0	0	0	0	37.2	46.6	0	45.3	0	0	10.4
Sitkalidak St.	lbs	172.7	259.5	232.7	231.0	105.8	94.1	159.8	114.6	101.2	57.7	0	0	1,529.1
	%	100.0	100.0	77.3	46.0	14.5	21.5	32.8	48.6	81.5	44.0	0	0	45.2
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Alitak Bay	lbs	0	0	68.2	24.0	400.1	75.9	0	0	0	0	0	0	568.2
	%	0	0	22.7	4.8	55.0	17.3	0	0	0	0	0	0	16.8
Malina Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Uyak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Kukak Bay	lbs	0	0	0	0	0	79.2	49.7	0	0	0	0	0	128.9
	%	0	0	0	0	0	18.0	10.2	0	0	0	0	0	3.8
Monthly Totals	lbs	172.7	259.5	300.9	501.7	727.0	438.6	487.5	235.8	124.2	131.1	0	0	3,379.0
	%	5.1	7.8	8.9	14.8	21.5	13.0	14.3	7.0	3.7	3.9	0	0	100.0

1/ Pounds landed shown in thousands.

Appendix Table B. -- Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1961. 17

Catch area	Month												Yearly Totals	
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec		
Afognak Is. lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Afognak Is. %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marmot Bay lbs	32.6	0	0	347.2	386.4	0	118.5	0	0	9.4	0	0	894.1	
Marmot Bay %	8.0	0	0	28.5	31.1	0	11.6	0	0	1.1	0	0	8.1	
Chiniak Bay lbs	0	0	0	0	1.9	0	0	0	0	0	0	0	1.9	
Chiniak Bay %	0	0	0	0	0.2	0	0	0	0	0	0	0	0.2	
Ugak Bay lbs	0	0	0	41.4	0	0	0	0	0	0	0	0	41.4	
Ugak Bay %	0	0	0	3.4	0	0	0	0	0	0	0	0	3.4	
Sitkalida St. lbs	333.3	605.6	857.2	830.0	786.6	1253.8	906.1	1208.5	872.3	861.3	561.0	826.8	9,902.5	
Sitkalida St. %	82.1	81.4	100.0	68.1	63.4	100.0	88.4	100.0	100.0	98.9	100.0	100.0	89.3	
Albatross Bk. lbs	40.1	138.6	0	0	0	0	0	0	0	0	0	0	178.7	
Albatross Bk. %	9.9	18.6	0	0	0	0	0	0	0	0	0	0	1.6	
Alitak Bay lbs	0	0	0	0	64.9	0	0	0	0	0	0	0	64.9	
Alitak Bay %					5.3								5.3	
Malina Bay lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
Malina Bay %	0	0	0	0	0	0	0	0	0	0	0	0	0	
Uyak Bay lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
Uyak Bay %	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kukak Bay lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kukak Bay %	0	0	0	0	0	0	0	0	0	0	0	0	0	
Monthly Totals lbs	406.0	744.2	857.2	1218.6	1239.8	1253.8	1024.6	1208.5	872.3	870.7	561.0	826.8	11,083.5	
Monthly Totals %	3.8	6.7	7.8	11.0	11.2	11.3	9.2	10.9	7.8	7.8	5.0	7.5	100.0	

1/ Pounds landed shown in thousands.

Appendix Table C.-- Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1962. <sup>1/</sup>

Catch area		Month												Yearly Totals	
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec		
Afognak Is.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marmot Bay	lbs	0	0	261.0	585.6	308.1	0	0	0	63.8	0	0	0	1,218.5	
	%	0	0	31.1	58.4	21.1	0	0	0	5.5	0	0	0	9.7	
Chiniak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ugak Bay	lbs	0	0	0	0	0	0	0	0	746.0	507.0	49.4	44.7	1,347.1	
	%	0	0	0	0	0	0	0	0	64.1	60.5	19.5	44.3	10.6	
Sitkalidak St.	lbs	907.0	966.0	578.8	417.6	1150.6	1379.7	1913.6	1760.7	354.2	331.8	203.1	56.1	10,019.2	
	%	100.0	100.0	68.9	41.6	78.9	95.2	100.0	100.0	30.4	39.5	80.5	55.7	79.2	
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	
Alitak Bay	lbs	0	0	0	0	0	50.0	0	0	0	0	0	0	50.0	
	%	0	0	0	0	0	3.5	0	0	0	0	0	0	0.4	
Malina Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	
Uyak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kukak Bay	lbs	0	0	0	0	0	19.5	0	0	0	0	0	0	19.5	
	%	0	0	0	0	0	1.3	0	0	0	0	0	0	0.1	
Monthly Totals	lbs	907.0	966.0	839.8	1003.2	1458.7	1449.2	1913.6	1760.7	1164.0	838.8	252.5	100.8	12,654.3	
	%	7.2	7.6	6.7	7.9	11.5	11.4	15.1	13.9	9.2	6.7	2.0	0.8	100.0	

1/ Pounds landed shown in thousands.

Appendix Table D.-- Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1963. <sup>1/</sup>

Catch area		Month												Yearly Totals	
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec		
Afognak Is.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marmot Bay	lbs	0	0	70.2	361.0	327.8	0	0	0	0	0	0	0	0	759.0
	%	0	0	6.1	18.5	23.3	0	0	0	0	0	0	0	0	7.5
Chiniak Bay	lbs	0	0	0	0	55.9	0	66.6	0	0	0	0	0	0	122.5
	%	0	0	0	0	4.0	0	5.2	0	0	0	0	0	0	1.2
Ugak Bay	lbs	0	0	0	0	0	0	352.8	416.6	790.3	0	0	0	0	1,559.7
	%	0	0	0	0	0	0	27.4	48.4	100.0	0	0	0	0	15.4
Sitkalidak St.	lbs	260.2	624.2	1073.9	1590.3	486.5	1790.1	868.6	444.5	0	0	0	0	0	7,138.3
	%	100.0	100.0	93.9	81.5	34.5	100.0	67.4	51.6	0	0	0	0	0	70.6
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alitak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malina Bay	lbs	0	0	0	0	152.7	0	0	0	0	0	0	0	0	152.7
	%	0	0	0	0	10.8	0	0	0	0	0	0	0	0	1.5
Uyak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kukak Bay	lbs	0	0	0	0	386.3	0	0	0	0	0	0	0	0	386.3
	%	0	0	0	0	27.4	0	0	0	0	0	0	0	0	3.8
Monthly Totals	lbs	260.2	624.2	1144.1	1951.3	1409.2	1790.1	1288.0	861.1	790.3	0	0	0	0	10,118.5
	%	2.5	6.2	11.3	19.3	13.9	17.8	12.7	8.5	7.8	0	0	0	0	100.0

1/ Pounds landed shown in thousands.

Appendix Table E.-- Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1964. <sup>1/</sup>

Catch area		Month												Yearly Totals
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Afognak Is.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Marmot Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Chiniak Bay	lbs	0	0	0	0	0	0	62.1	0	0	0	0	0	62.1
	%	0	0	0	0	0	0	6.1	0	0	0	0	0	1.6
Ugak Bay	lbs	0	0	0	0	0	0	0	0	429.0	128.9	0	0	557.9
	%	0	0	0	0	0	0	0	0	79.5	18.3	0	0	14.1
Sitkalidak St.	lbs	0	0	0	80.1	226.2	620.2	962.7	220.7	110.8	574.3	372.1	53.9	3,221.0
	%	0	0	0	100.0	77.6	93.8	93.9	100.0	20.5	81.7	100.0	100.0	81.6
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Alitak Bay	lbs	0	0	0	0	65.2	40.7	0	0	0	0	0	0	105.9
	%	0	0	0	0	22.4	6.2	0	0	0	0	0	0	2.7
Malina Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Uyak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Kukak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Monthly	lbs	0	0	0	80.1	291.4	660.9	1024.8	220.7	538.8	703.2	372.1	53.9	3,946.9
Totals	%	0	0	0	2.0	7.4	16.7	26.0	5.6	13.7	17.8	9.4	1.4	100.0

1/ Pounds landed shown in thousands.

Appendix Table F. Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1965. <sup>1/</sup>

Catch area		Month												Yearly Totals
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Afognak Is.	lbs	0	0	0	0	0	56.7	0	0	0	0	0	0	56.7
	%	0	0	0	0	0	5.9	0	0	0	0	0	0	0.4
Marmot Bay	lbs	48.0	34.6	55.1	65.0	0	168.0	85.6	0	54.5	9.0	116.9	0	636.7
	%	13.4	5.0	13.5	5.2	0	17.4	8.3	0	3.0	0.7	6.6	0	4.6
Chiniak Bay	lbs	0	0	0	0	0	15.9	0	0	0	0	0	0	15.9
	%	0	0	0	0	0	1.7	0	0	0	0	0	0	0.1
Ugak Bay	lbs	55.6	0	0	0	0	0	0	101.2	47.7	68.6	270.0	109.6	652.7
	%	15.6	0	0	0	0	0	0	6.0	2.6	5.3	15.2	9.6	4.7
Sitkalidak St.	lbs	253.5	656.7	272.5	130.5	1357.5	561.0	790.3	1589.2	1737.1	1223.5	1392.0	1029.3	10,993.1
	%	71.0	95.0	66.9	10.4	100.0	58.2	76.8	94.0	94.4	94.0	78.2	90.4	79.6
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Alitak Bay	lbs	0	0	79.8	921.2	0	0	0	0	0	0	0	0	1,001.0
	%	0	0	19.6	73.3	0	0	0	0	0	0	0	0	7.3
Malina Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Uyak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Kukak Bay	lbs	0	0	0	139.2	0	162.0	153.2	0	0	0	0	0	454.4
	%	0	0	0	11.1	0	16.8	14.9	0	0	0	0	0	3.3
Monthly Totals	lbs	357.1	691.3	407.4	1255.9	1357.5	963.6	1029.1	1690.4	1839.3	1301.1	1778.9	1138.9	13,810.5
	%	2.6	5.0	3.0	9.1	9.8	7.0	7.5	12.2	13.3	9.4	12.9	8.2	100.0

1/ Pounds landed shown in thousands.

Appendix Table G. -- Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1966. <sup>1/</sup>

Catch area		Month												Yearly Totals
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Afognak Is.	lbs	0	0	0	401.8	208.7	0	0	0	0	10.6	0	0	621.1
	%	0	0	0	15.1	7.0	0	0	0	0	0.5	0	0	2.6
Marmot Bay	lbs	23.2	89.1	205.1	793.5	758.5	618.2	59.7	2.9	22.6	41.0	141.5	59.1	2,814.4
	%	5.5	3.3	25.1	29.9	25.4	29.3	1.9	0.1	1.4	2.1	6.3	5.2	11.7
Chiniak Bay	lbs	0	0	0	0	254.1	222.1	0	0	0	107.9	0	0	584.1
	%	0	0	0	0	8.5	10.5	0	0	0	5.5	0	0	2.4
Ugak Bay	lbs	0	0	0	0	0	0	0	1472.4	1095.9	475.2	145.2	210.3	3,399.0
	%	0	0	0	0	0	0	0	64.0	68.0	24.2	6.4	18.7	14.1
Sitkalidak St.	lbs	399.6	2580.0	612.4	1300.8	1574.9	859.1	3107.2	827.3	492.8	1329.3	1969.0	857.9	15,910.3
	%	94.5	96.7	74.9	48.9	52.6	40.7	98.1	35.9	30.6	67.7	87.3	76.1	66.0
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Alitak Bay	lbs	0	0	0	162.0	0	0	0	0	0	0	0	0	0
	%	0	0	0	6.1	0	0	0	0	0	0	0	0	6.1
Malina Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Uyak Bay	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Kukak Bay	lbs	0	0	0	0	194.4	411.8	0	0	0	0	0	0	606.2
	%	0	0	0	0	6.5	19.5	0	0	0	0	0	0	2.5
Monthly Totals	lbs	422.8	2,669.1	817.5	2658.1	2990.6	2111.2	3166.9	2302.6	1611.3	1964.0	2255.7	1127.3	24,097.1
	%	1.8	11.1	3.4	11.0	12.4	8.8	13.1	9.5	6.7	8.1	9.4	4.7	100.0

1/ Pounds landed shown in thousands.

Appendix Table H. -- Percent and pounds of shrimp landed by month from each shrimp catch area in Kodiak District, 1967. <sup>1/</sup>

Catch area		Month												Yearly Totals
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Afoznak Is.	lbs	4.1	7.9	755.5	524.5	49.5	43.6	0	0	0	0	0	0	1,385.1
	%	0.2	0.3	23.2	13.8	1.4	0.9	0	0	0	0	0	0	3.6
Marmot Bay	lbs	5.6	2.3	128.0	1169.2	581.3	94.6	0.5	67.2	0	512.7	9.2	105.1	2,675.7
	%	0.3	0.1	3.9	30.8	17.0	1.9	.01	1.4	0	15.4	0.5	10.4	6.9
Chiniak Bay	lbs	4.1	0	0	123.9	264.6	417.4	60.3	0	0	0	0	0	870.3
	%	0.2	0	0	3.3	7.7	8.3	1.2	0	0	0	0	0	2.2
Ugak Bay	lbs	1296.5	826.3	302.6	10.5	0	99.5	0	1441.9	2532.1	2608.8	427.6	29.4	9,575.2
	%	56.8	34.4	9.3	0.3	0	2.0	0	30.5	94.6	78.7	22.6	2.9	24.7
Sitkalidak St.	lbs	967.5	1568.5	1972.9	1120.1	1581.1	4220.9	4399.2	1466.7	112.4	197.2	1455.7	877.7	19,939.0
	%	42.5	65.2	60.5	29.5	46.1	83.8	90.1	31.0	4.2	5.9	76.9	86.7	51.5
Albatross Bk.	lbs	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0
Alitak Bay	lbs	0	0	0	187.9	359.5	32.9	0	0	0	0	0	0	580.3
	%	0	0	0	4.9	10.5	0.6	0	0	0	0	0	0	1.5
Malina Bay	lbs	0	0	25.9	630.8	321.3	59.1	197.6	0	0	0	0	0	1,234.7
	%	0	0	0.8	16.6	9.4	1.2	4.0	0	0	0	0	0	3.2
Uyak Bay	lbs	0	0	0	32.2	23.9	1.9	229.7	1753.7	30.8	0	0	0	2,072.2
	%	0	0	0	0.8	0.7	0.04	4.7	37.1	1.2	0	0	0	5.4
Kukak Bay	lbs	0	0	74.9	0	246.4	68.3	0	0	0	0	0	0	389.6
	%	0	0	2.3	0	7.2	1.3	0	0	0	0	0	0	1.0
Monthly Totals	lbs	2277.8	2405.0	3259.8	3799.1	3427.6	5038.2	4887.3	4729.5	2675.3	3318.7	1892.5	1012.2	38,723.1
	%	5.9	6.2	8.4	9.8	8.9	13.0	12.6	12.2	6.9	8.6	4.9	2.6	100.0

1/ Pounds landed shown in thousands.

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