

1991

KODIAK MANAGEMENT AREA  
HERRING SAC-ROE HARVEST STRATEGY

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## ABSTRACT

This document is intended to provide commercial fishermen and buyers with the pertinent management information and guidelines that are required to be adhered to when participating in the Kodiak commercial sac-roe fishery.

The 1991 Kodiak herring sac-roe fishery guideline harvest level is 2,510 tons. The season for this fishery will begin at 12:00 noon on April 15 and will close at 12:00 noon on June 30. Fishing periods will be 24 hours in duration starting at 12:00 noon on odd numbered days and ending at 12:00 noon on even numbered days.

The Kodiak sac-roe fishery is currently managed by the use of 57 management units; herring within these units are treated as individual stocks and have a history of sac-roe harvests. Additionally there are 14 exploratory management units which potentially support sac-roe stocks and 6 management units which occur offshore and are not perceived to have habitat suitable for spawning activity to occur.

Guideline Harvest Levels (G.H.L.) are provided for each of the 57 management units as shown in Table 1 on page 9. In-season emergency order closures for each unit will occur as the G.H.L.'s for each unit are achieved. Closures may also result prior to attaining a G.H.L. if the fishery performance indicates that stock status is weaker than expected.

All in-season emergency order closures or reopenings will be broadcast on 4125 Khz by Peggy Dyson following her daily marine weather broadcasts at 8:00 a.m. and 6:00 p.m. News releases will be available both inside and outside the Kodiak ADF&G building. Additionally, the most current closure announcements will be available 24 hours/day on the ADF&G record-a-phone at 486-4559.

All herring buyers/processors and all tenders are required to register at the Kodiak ADF&G office prior to commencing operations in the Kodiak Area. There is no special vessel registration required for fishing vessels.

1991  
KODIAK AREA HERRING SAC-ROE FISHERY

INTRODUCTION

The Kodiak Area herring sac-roe fishery has occurred annually since 1964, a 27 year period. This fishery was an open-to-entry fishery from 1964 to 1980, and was under a moratorium-to-new-entry fishery from 1981 to 1984, and has been a limited entry fishery from 1985 to present. Effort levels since 1979 are shown in Table 2 on page 13. A listing of entry permits issued by gear type as of February 1991 is shown in Table 3 on page 14.

This fishery targets on individual herring stocks during their spawning period. The desired product is pre-spawn herring having a roe recovery percentage acceptable to industry. In recent years the average roe recovery has approximated 10%.

From 1964 through 1990 the average harvest has approximated 1,350 tons. For the twelve (12) year period from 1979-1990, when both seine and gillnet gear levels have evolved through similar regulatory adjustments, the average harvest is estimated at 2,073 tons. The annual harvest levels during this twelve year period have oscillated closely to this average harvest (Table 2, page 13).

GENERAL HARVEST POLICY

This commercial fishery is intended to occur in an orderly fashion, with minimal waste of the resource and within conservation limits as determined by the Alaska Department of Fish and Game (ADF&G). Consequently, ADF&G will manage the fishery per the statewide general herring guideline harvest policy which provides for harvesting to occur in traditional in-shore areas, at the traditional time of greatest roe recovery value, and not to exceed 10-20% total harvest of the available spawning biomass. However, roe recovery will not be a criteria for emergency openings or closures except in cases where documented excessive wastage is, or is expected to be, a factor.

Because of the differential timing and abundance of Kodiak's various exploited herring stocks, relatively high ratio of gear levels to Guideline Harvest Levels (GHL's), and the competition between gear types for the same stocks, this fishery is best served by a fixed opening date, which is currently April 15. The season will close for each stock by emergency order as their respective guideline harvest levels are achieved or when fishery performance and stock performance indicate that deviations from the guideline harvest levels are warranted, i.e. where actual harvests occur at levels greater or lesser than expected. Stocks which are considered to be under-exploited in-season will remain open for adequate exploitation to occur or until the

regulatory closure of June 30. During the regulatory season, April 15 to June 30, stocks which have been closed to harvesting may be reopened if it is determined by ADF&G that "new" fish have increased the available spawning biomass to the point that the initial exploitation rate has dropped below 10% for that stock (See Table 1.) Any reopenings will require confirmation that the "new" fish are not juvenile herring, post spawners, or other forage fish and will require that ADF&G have the ability to monitor and regulate the reopening "on the grounds". At least 24 hours notice will be given prior to any reopenings.

### REGULATORY ABSTRACT

#### REGULATIONS IN EFFECT:

There are no new regulations for the 1991 season.

#### REGISTRATION REQUIREMENTS:

##### Tenders and Processors

The tender registration procedure requires:

- Each tender operator and processor must register with the Kodiak ADF&G office either in person or may be registered by an authorized agent for that tender or processor.
- Registration must occur prior to taking fish on-board the tender or taking fish at the processing plant.

Registration will ensure that all tenders and processors know the proper reporting requirements needed by ADF&G to manage the herring sac-roe fishery.

#### THIS REGULATION WILL BE STRICTLY ENFORCED FOR THE 1991 SEASON!

- (See Regulation 5 AAC 27.540 of the Commercial Herring Regulations.

##### Fishing Vessels

There are no special registration requirements for either seine or gillnet vessels.

#### GUIDELINE HARVEST LEVELS:

For the 1991 sac-roe season, approximately 2,510 short tons are expected to be harvested from the entire management area. Harvest projections by management unit are listed in Table 1.

These harvest projections are the best estimates of desired harvest levels for each stock based upon ADF&G evaluation of stock status. These harvest projections are not guaranteed quotas and the actual harvest may exceed or fall short of these projections.

In-season evaluation of each stocks actual status will be guided by several criteria associated with stock performance, e.g. biomass estimates, age composition, etc! and with fishery performance, e.g. fishery timing and harvest duration, etc!

### FISHING SEASON

April 15 through June 30 unless closed earlier by emergency order on a stock by stock basis.

Closures may result when desired harvest levels of each stock are either achieved or in jeopardy of being significantly exceeded. Closures may also result when unexpected weaknesses in stock strength become apparent.

### FISHING PERIODS

Initially, fishing periods will be 24 hours long. They will begin at 12:00 Noon on all odd numbered days and end at 12:00 Noon on all even numbered days. The first 24 hour fishing period will begin at 12:00 Noon on April 15.

### CLOSED AREAS:

#### Regulatory Closures

Browns Lagoon is closed at the seaward entrance of the lagoon.

Women's Bay is closed inside of a line from Shannon's Point to Nyman's Peninsula. The latitudes and longitudes of these points are described in regulation 5 AAC 27.530 (page 36 of the 1990/91 Commercial Herring Regulation Booklet).

#### 1991 Emergency Order Closures:

All Uganik Island Lagoons will remain closed until it can be determined that specific and adequate spawning biomasses are available for harvest.

### EXTRA TIME FOR GILLNETTERS

Under certain conditions, herring gillnetters are allowed a two hour grace period before having to completely remove their gear from the water. These conditions are:

1. Herring gillnets may remain in the water up to two hours after the "primary closure time" for those fishing periods having fishing time of three hours or less.
2. Herring gillnets may remain in the water up to two hours after the announced "primary" closure time for those fishing periods greater than three hours in length, where the announcement occurs less than three hours before the scheduled "primary closure time" of the fishing period.

The "primary closure time" is the time at which all seine gear must have completed fishing. When it applies, the "secondary closure time", i.e. at the end of the two hour grace period for gillnet gear, ALL GILLNETS MUST BE COMPLETELY OUT OF THE WATER AND NO GILLNET GEAR MAY BE SET OR RESET AFTER THE "PRIMARY CLOSING TIME".

### AIRPLANES:

There are no restrictions on the use of airplanes in the roe herring fishery.

### SIZE LIMITS:

No CFEC herring seine permit holder may sell or have aboard a vessel any herring that were taken during the herring sac-roe season if the number of individual herring per 50 lbs. of net weight exceeds 250 fish.

In an attempt to prevent waste, permit holders are encouraged to check with their markets prior to fishing to find out minimum size/weight restrictions and roe percentages which are acceptable.

### IN-SEASON STRATEGY

#### General Discussion

As shown in Table 1, those sections where historical harvests have occurred, have been assigned guideline harvest levels. Those sections where sporadic or no harvests have occurred, have been designated "Exploratory" with no designated guideline harvest level, however in-season

closures will be used to ensure that excessive harvests are minimized in exploratory situations.

The guideline harvest levels established for each section, district and/or the entire management area are meant to reflect the stock status. This means that the previous season's stock performance has been evaluated and that trends have been identified and used to establish the current season's GHL's. Specifically, these criteria are 1) 1990 expected biomass vs. actual biomass estimates, 2) average school size, 3) trends in age composition, 4) level of recruitment (age 3), 5) proportion of the spawning population age 5 and younger, 6) level of age 2 fish in the spawning biomass (indicator of future recruit strength) and 7) spawn observations (extent, frequency, amount deposited). This information is supplemented by fishery performance information, namely the expected vs. actual harvest timing, harvest duration, and harvest level.

Guideline harvest level adjustments are subsequently made based upon the aforementioned criteria. Adjustments may vary from 0 to  $\pm 100\%$  of the previous season's GHL depending upon the degree remedial action which is required, generally adjustments are gradual,  $\pm 25\%$  or  $\pm 50\%$ .

At any time in-season, closed area adjustments can be made when it appears that pre-season expectations were incorrect. Consequently there may be sections either closed prior to reaching their GHL's or allowed to harvest in excess of their GHL's either in one opening or reopenings if the assessed available spawning biomass warrants it.

### Fishing Periods

Initially, fishing periods will begin at 12:00 Noon on the odd numbered days of the month beginning on April 15 and end at 12:00 Noon on the even numbered days. Staggered days of fishing have the advantage of providing clearly defined closed periods which allow the staff time to collect, summarize, and update all harvest data from previous fishing periods; it allows for comparisons between reported and actual harvests. Since 1979, the occurrence of significant excessive harvests in this fishery have been prevented by providing pre-established fishing periods. Towards the end of the season (usually early June) when fleet size and exploited stocks are few in number, fishing periods may be modified to provide more continuous fishing time to facilitate adequately harvesting late occurring stocks. However, ADF&G's ability to monitor this fishery becomes very limited by late May and June, and this will be a major consideration in the nature of fishing period modifications.

For the 1991 sac-roe fishery, more restrictive adjustments in fishing periods are not expected to occur. However, in the event that active gear levels expand or become unexpectedly efficient to the point that a pattern of excessive harvests develop, deviations from the normal 24 hour fishing periods may be required.

**E.O. Announcements: "Getting the Word"**

Because the management strategy allows for all gear types to fish all open areas during the open fishing periods, there is considerable dispersion of gear throughout the management area. Consequently, it is very important for the fleet to keep abreast of any changes in closures, potential short notice closures, and/or reopenings. This can be accomplished in the following ways: 1) By personal contact with the Kodiak Herring Management staff in Kodiak via office visits, telephone (either at work or at home), or radio-telephone; 2) By contact with ADF&G field personnel and the ADF&G vessel, the M/V COHO; 3) By contacting Peggy Dyson on 4125 mhz or any local herring processor and having them transmit the latest Kodiak herring emergency order; 4) By calling the 24-hour recorded message phone at 486-4559; 5) By listening for any emergency order update which will be broadcast by Peggy Dyson following either her 8:00 A.M. or 6:00 P.M. weather broadcasts; 6) By reading or collecting the latest emergency order from the pouch posted outside the entrance to the Kodiak Fish and Game building; and 7) By listening to the Fish and Game reports broadcast over the local AM and FM radio stations (consult stations for broadcast times). No announcements will be given via VHF because of the limited broadcast range from the Kodiak office; however special consideration may be given to the Chiniak Bay fishery if the VHF base station is operational for the 1991 season.

In-season closure announcements for management units which are not monitored by an ADF&G field crew normally occur at the end of a fishing period. However, short notice in-period closures may occur in management units not monitored by ADF&G field crews. Closures of this type will be announced by ADF&G management staff monitoring the area by aircraft or initially announced on 4125 mhz following the weather broadcasts at 8:00 A.M. or 6:00 P.M. daily.

Because of the extensive announcements associated with this fishery, it is highly recommended that fishermen document the latest E.O. announcement broadcast from Peggy Dyson by either marking a chart or making a tape recording of her broadcast. Many fishermen currently do this as do the ADF&G and F&W protection vessels.

### ADF&G Field Crews/Fishermen Cooperation:

The crew on board the Department's M/V COHO and seasonal biologists in remote tent camps will aid the Area Management Biologists by making frequent fishermen contacts in order to collect data on harvest levels and rates, fleet movements, and fleet observations of herring concentrations. Fishermen cooperation will be appreciated when Department personnel request herring samples from the commercial catch; also, samples from juvenile schools inadvertently seined-up will be gladly accepted by all ADF&G personnel. These samples will be used primarily for monitoring age composition, when used with other stock performance indicators, assists in determining the health of the stock. Copies of historical age data by stock are readily available at the Kodiak ADF&G office.

ADF&G field crews will also be monitoring and mapping spawning activities, and will be soliciting information on commercial sightings to supplement information gathered by ADF&G. Fishermen and spotter pilots are encouraged to provide biomass and spawning information to ADF&G; these reports will be treated confidentially. Past cooperation has generally been excellent and has proven valuable in evaluating stock status and in gaining critical management information.

### In-Season Catch Reporting

With approximately 100+ limited entry permit holders expected to fish during the 1991 sac-roe season, frequent aerial surveys and timely catch reports will continue to be an important management tool, particularly in areas that are not covered by field crews. Timely and accurate catch information provided by the processors and fishermen will be essential in managing the fishery. Processors and independent tender operators will be required to provide daily tallies of herring deliveries by statistical area and must provide accurate estimates of herring onboard tenders that have not yet delivered to the cannery. Inaccurate or untimely information could result in the closure of an area. Individual code sheets will be provided for each tender or processor that is required to report catches on a daily basis by radio. Each tender operator and buyer must register with the Department prior to fishing and will be given a packet containing regulations, statistical charts, etc.

### Guideline Harvest Level

The 1991 sac-roe harvest should be one of the largest on record, approximately 2,510 tons are expected to be harvested. If recruitment is above average in several major stocks or if virgin stocks are exploited, the actual harvest may well exceed the GHL. However, if recruitment is generally weak area-wide and/or adverse weather conditions prevail throughout the season the actual harvest may be significantly less than the GHL.

The listing in Table 1, "GUIDELINE HARVEST LEVELS BY MANAGEMENT UNIT" will be used as an aid in making in-season management decisions. These harvest levels are meant to reflect the status of each listed stock, however, some stocks lack the data base needed for adequate evaluation. Consequently, annual harvest levels for these stocks may fluctuate considerably until their status is better understood. Again, all fishermen, pilots and processors are encouraged to provide the ADF&G management staff with any information or estimates on stock size they may accumulate either in-season or post-season.

TABLE 1  
KODIAK HERRING SAC ROE FISHERY  
KODIAK GUIDELINE HARVEST LEVELS BY STOCK

Page 1 of 4

| STAT. AREA             | MGMT. UNITS                     | 1991 GUIDELINE HARVEST LEVEL | REQUIRED SPAWNING BIOMASS @10% EXPLOITATION | REQUIRED SPAWNING BIOMASS @20% EXPLOITATION |
|------------------------|---------------------------------|------------------------------|---|---|
| <u>AFOGNAK DIST.</u>   |                                 |                              |   |   |
| A010                   | Raspberry Sts.                  | 110 TONS                     | 1,100 Tons                                  | 550 Tons                                    |
| A020                   | Malina Bay                      | 30 TONS                      | 300 Tons                                    | 150 Tons                                    |
| A031                   | Paramanof Bay                   | 40 TONS                      | 400 Tons                                    | 200 Tons                                    |
| A032                   | Foul Bay                        | 20 TONS                      | 200 Tons                                    | 100 Tons                                    |
| A040                   | Devils Inlet                    | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| A040                   | Blue Fox                        | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| A050                   | Offshore W. Afog. <sup>1/</sup> | -                            | <u>1/</u>                                   | <u>1/</u>                                   |
| A060                   | Shuyak Is.                      | 20 TONS                      | 200 Tons                                    | 100 Tons                                    |
| A070                   | Perenosa Bay                    | 15 TONS                      | 150 Tons                                    | 75 Tons                                     |
| A071                   | Delphin Bay                     | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| A072                   | Seal Bay                        | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| A080                   | Tonki Bay                       | 15 TONS                      | 150 Tons                                    | 75 Tons                                     |
| A090                   | Izhut Bay                       | 25 TONS                      | 250 Tons                                    | 125 Tons                                    |
| A091                   | Kittoi Bay                      | 15 TONS                      | 150 Tons                                    | 75 Tons                                     |
| A092                   | MacDonalds Lagoon               | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| A100                   | Danger Bay                      | 20 TONS                      | 200 Tons                                    | 100 Tons                                    |
| A101                   | Litnik                          | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| A102                   | Duck Bay                        | 10 TONS                      | 100 Tons                                    | 50 Tons                                     |
| <hr/>                  |                                 |                              |   |   |
| <u>District Totals</u> | <u>17</u>                       | <u>380 TONS</u>              | <u>3,800 Tons</u>                           | <u>1,900 Tons</u>                           |

Continued

Table 1. Page 2 of 4

| STAT. AREA              | MGMT. UNITS                     | 1991 GUIDELINE HARVEST LEVEL | REQUIRED SPAWNING BIOMASS @10% EXPLOITATION | @20% EXPLOITATION |
|-------------------------|---------------------------------|------------------------------|---|-------------------|
| <u>UGANIK DIST.</u>     |                                 |                              |   |                   |
| UG10                    | Kupreanof                       | 10 TONS                      | 100 Tons                                    | 50 Tons           |
| UG20                    | Viekoda                         | 20 TONS                      | 200 Tons                                    | 100 Tons          |
| UG21                    | Terror                          | 60 TONS                      | 600 Tons                                    | 300 Tons          |
| UG21                    | Uganik Is. Lagoon <sup>2/</sup> | CLOSED                       | 2/  | 2/                |
| UG30                    | Village Island                  | 35 TONS                      | 350 Tons                                    | 175 Tons          |
| UG31                    | W. Uganik Pass                  | 20 TONS                      | 200 Tons                                    | 100 Tons          |
| UG32                    | NE Arm Uganik                   | 75 TONS                      | 750 Tons                                    | 375 Tons          |
| UG33                    | E. Arm Uganik                   | 40 TONS                      | 400 Tons                                    | 200 Tons          |
| UG34                    | S. Arm Uganik                   | 40 TONS                      | 400 Tons                                    | 200 Tons          |
| UG40                    | Offshore Uganik <sup>1/</sup>   | -                            | 1/  | 1/                |
| <hr/>                   |                                 |                              |   |                   |
| <b>District Totals</b>  | <b>8</b>                        | <b>300 TONS</b>              | <b>3,000 Tons</b>                           | <b>1,500 Tons</b> |
| <u>UYAK DISTRICT</u>    |                                 |                              |   |                   |
| UY10                    | Offshore Uyak <sup>1/</sup>     | -                            | 1/  | 1/                |
| UY20                    | Harvester Island                | 10 TONS                      | 100 Tons                                    | 50 Tons           |
| UY30                    | Inner Uyak                      | 240 TONS                     | 2,400 Tons                                  | 1,200 Tons        |
| UY32                    | Browns Lagoon                   | 20 TONS                      | 200 Tons                                    | 100 Tons          |
| UY31                    | Larsen Bay                      | 10 TONS                      | 100 Tons                                    | 50 Tons           |
| UY40                    | Zachar Bay                      | 100 TONS                     | 1,000 Tons                                  | 500 Tons          |
| UY50                    | Spiridon Bay                    | 160 TONS                     | 1,600 Tons                                  | 800 Tons          |
| <hr/>                   |                                 |                              |   |                   |
| <b>District Totals</b>  | <b>6</b>                        | <b>540 TONS</b>              | <b>5,400 Tons</b>                           | <b>2,700 Tons</b> |
| <u>ALITAK DIST.</u>     |                                 |                              |   |                   |
| AL10                    | Outer Alitak                    | (Exploration)                | 3/  | 3/                |
| AL20                    | Inner Alitak                    | (Exploration)                | 3/  | 3/                |
| AL21                    | Deadman Bay                     | 155 TONS                     | 1,550 Tons                                  | 775 Tons          |
| AL30                    | Sulua/Portage Bay               | 75 TONS                      | 750 Tons                                    | 375 Tons          |
| AL40                    | Lower Olga/Moser <sup>4/</sup>  | 15 TONS                      | 150 Tons                                    | 75 Tons           |
| AL40                    | No. Upper Olga B. <sup>4/</sup> | 10 TONS                      | 100 Tons                                    | 50 Tons           |
| AL50                    | So. Upper Olga B. <sup>4/</sup> | 190 TONS                     | 1,900 Tons                                  | 950 Tons          |
| AL60                    | Geese/Twoheaded                 | (Exploration)                | 3/  | 3/                |
| <hr/>                   |                                 |                              |   |                   |
| <b>District Totals:</b> | <b>5</b>                        | <b>445 TONS</b>              | <b>4,450 Tons</b>                           | <b>2,225 Tons</b> |

Continued

Table 1. Page 3 of 4

| STAT.<br>AREA                 | MGMT.<br>UNITS             | 1991 GUIDELINE<br>HARVEST LEVEL | REQUIRED SPAWNING BIOMASS |                   |
|-------------------------------|----------------------------|---------------------------------|---------------------------|-------------------|
|                               |                            |                                 | @10% EXPLOITATION         | @20% EXPLOITATION |
| <u>STURGEON/HALIBUT DIST.</u> |                            |                                 |                           |                   |
| SH10                          | Sturgeon/Halibut           | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| <u>GENERAL DISTRICT</u>       |                            |                                 |                           |                   |
| GO10                          | Kaiugnak                   | 10 TONS                         | 100 Tons                  | 50 Tons           |
| GO20                          | W. Sitkalidak St.          | 65 TONS                         | 650 Tons                  | 325 Tons          |
| GO21                          | Barling                    | 20 TONS                         | 200 Tons                  | 100 Tons          |
| GO22                          | E. Sitkalidak St.          | 95 TONS                         | 950 Tons                  | 475 Tons          |
| GO23                          | Tanginak Anchorage         | 15 TONS                         | 150 Tons                  | 75 Tons           |
| GO30                          | Outer Sitkalidak           | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| GO40                          | Outer Kiliuda              | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| GO41                          | Inner Kiliuda              | 10 TONS                         | 100 Tons                  | 50 Tons           |
| GO42                          | Shearwater                 | 25 TONS                         | 250 Tons                  | 125 Tons          |
| GO50                          | Pasagshak                  | 25 TONS                         | 250 Tons                  | 125 Tons          |
| GO50                          | Outer Ugak                 | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| GO51                          | Inner Ugak                 | 50 TONS                         | 500 Tons                  | 250 Tons          |
| GO60                          | Womens Bay                 | 110 TONS                        | 1,100 Tons                | 550 Tons          |
| GO70                          | Monashka/Mill B.           | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| GO80                          | Anton Larsen               | 15 TONS                         | 150 Tons                  | 75 Tons           |
| GO81                          | Sheratin                   | 10 TONS                         | 100 Tons                  | 50 Tons           |
| GO90                          | Kizhuyak                   | 110 TONS                        | 1,100 Tons                | 550 Tons          |
| G100                          | Kalsin Bay                 | 15 TONS                         | 150 Tons                  | 75 Tons           |
| G101                          | Middle Bay                 | 20 TONS                         | 200 Tons                  | 100 Tons          |
| G102                          | Inshore Chiniak            | 10 TONS                         | 100 Tons                  | 50 Tons           |
| G103                          | Spruce Island              | 10 TONS                         | 100 Tons                  | 50 Tons           |
| <hr/>                         |                            |                                 |                           |                   |
| <u>District Total</u>         | <u>17</u>                  | <u>615 TONS</u>                 | <u>6,150 Tons</u>         | <u>3,075 Tons</u> |
| <u>MAINLAND DIST.</u>         |                            |                                 |                           |                   |
| M010                          | North Mainland             | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| M020                          | Inner Kukak                | 50 TONS                         | 500 Tons                  | 250 Tons          |
| M030                          | Outer Kukak <sup>1/</sup>  | -                               | <u>1/</u>                 | <u>1/</u>         |
| M040                          | Inner Missak               | (Exploration)                   | <u>3/</u>                 | <u>3/</u>         |
| M040                          | Outer Missak <sup>1/</sup> | -                               | <u>1/</u>                 | <u>1/</u>         |
| M050                          | Inner Katmai               | 50 TONS                         | 500 Tons                  | 250 Tons          |

Continued

Table 1. Page 4 of 4

| STAT. AREA                           | MGMT. UNITS                 | 1991 GUIDELINE HARVEST LEVEL | REQUIRED SPAWNING BIOMASS |                    |
|--------------------------------------|-----------------------------|------------------------------|---------------------------|--------------------|
|                                      |                             |                              | @10% EXPLOITATION         | @20% EXPLOITATION  |
| <u>MAINLAND DISTRICT</u> (Continued) |                             |                              |                           |                    |
| M060                                 | Outer Katmai <sup>1/</sup>  | -                            | <u>1/</u>                 | <u>1/</u>          |
| M070                                 | Alinchak                    | 30 TONS                      | 300 Tons                  | 150 Tons           |
| M080                                 | Puale Bay                   | (Exploration)                | <u>3/</u>                 | <u>3/</u>          |
| M090                                 | Portage Bay                 | (Exploration)                | <u>3/</u>                 | <u>3/</u>          |
| M100                                 | Outer Portage <sup>1/</sup> | -                            | <u>1/</u>                 | <u>1/</u>          |
| M110                                 | Wide Bay                    | 100 TONS                     | 1,000 Tons                | 500 Tons           |
| M120                                 | Lower Shelikof              | (Exploration)                | <u>3/</u>                 | <u>3/</u>          |
| <hr/>                                |                             |                              |                           |                    |
| <b>District Total</b>                | <b>4</b>                    | <b>230 TONS</b>              | <b>2,300 Tons</b>         | <b>1,150 Tons</b>  |
| <b>GRAND TOTAL</b>                   | <b>57</b>                   | <b>2,510 TONS</b>            | <b>25,100 Tons</b>        | <b>12,550 Tons</b> |

<sup>1/</sup>These are offshore management units which are not expected to yield herring of sac-roe quality. These units are more applicable to the food/bait fishery. (See Herring Food/Bait Fishery Management Plan.)

<sup>2/</sup>The Uganik Lagoon Unit refers to all lagoons on Uganik Island. Spawning biomasses associated with these lagoons appear to have been reduced to less than 50 tons, thus all waters of the lagoons located on Uganik Island will remain closed to commercial herring fishing effective at 12:00 Noon April 15, 1991.

<sup>3/</sup>Adequate biomass to justify an "exploratory" harvest; the actual harvest should not exceed 20% of the available biomass.

<sup>4/</sup>The following management units have been modified either in name or boundaries for the purpose of in-season management of the Olga/Moser Bay herring stocks. Each unit will be described by emergency order when closures are issued for these units.

- AL40 Lower Olga/Moser Unit: Formerly that portion of the Olga/Moser Bay Section south of the latitude of Stockholm Point.
- AL50 North Upper Olga Unit: Formerly that portion of the Olga/Moser Bay Section north of the latitude of Stockholm Point.
- AL50 South Upper Olga Unit: Formerly called the Upper Olga Bay Section.

TABLE 2.  
KODIAK AREA MANAGEMENT  
HERRING SAC-ROE FISHERY INDUSTRY SUMMARY 1979 - 1990

| YEAR | GEAR TYPE    | UNITS OF GEAR | NUMBER LANDINGS | EST. HARVEST (TONS) | EST. HARVEST PERCENT | EST. TOTAL VALUE   | EST. AVERAGE EARNINGS | AVERAGE TONS/BOAT | AVERAGE TONS/LNDG | AVERAGE LNDG/BOA |
|------|--------------|---------------|-----------------|---------------------|----------------------|--------------------|-----------------------|-------------------|-------------------|------------------|
| 1979 | PURSE SEINE  | 57            | -               | 1457.2              | 84                   | \$2,185,788        | \$38,347              | 25.6              | -                 | -                |
|      | GILLNET      | 125           | -               | 277.9               | 16                   | \$416,670          | \$3,333               | 2.2               | -                 | -                |
|      | <b>TOTAL</b> | <b>182</b>    | <b>-</b>        | <b>1735.1</b>       | <b>100</b>           | <b>\$2,602,458</b> |                       |                   | <b>-</b>          | <b>-</b>         |
| 1980 | PURSE SEINE  | 92            | -               | 2009.0              | 84                   | \$1,377,987        | \$14,978              | 21.8              | -                 | -                |
|      | GILLNET      | 109           | -               | 374.0               | 16                   | \$280,423          | \$3,573               | 3.4               | -                 | -                |
|      | <b>TOTAL</b> | <b>201</b>    | <b>-</b>        | <b>2383.0</b>       | <b>100</b>           | <b>\$1,658,410</b> |                       |                   | <b>-</b>          | <b>-</b>         |
| 1981 | PURSE SEINE  | 79            | 207             | 1596.2              | 77                   | \$1,137,764        | \$14,402              | 20.2              | 7.7               | 2.6              |
|      | GILLNET      | 114           | 406             | 469.2               | 23                   | \$395,640          | \$3,471               | 4.1               | 1.2               | 3.6              |
|      | <b>TOTAL</b> | <b>193</b>    | <b>613</b>      | <b>2065.4</b>       | <b>100</b>           | <b>\$1,633,404</b> |                       |                   |                   |                  |
| 1982 | PURSE SEINE  | 45            | 138             | 1447.0              | 82                   | \$801,840          | \$17,819              | 32.2              | 10.5              | 3.1              |
|      | GILLNET      | 67            | 191             | 323.6               | 18                   | \$182,160          | \$2,719               | 4.8               | 1.7               | 1.8              |
|      | <b>TOTAL</b> | <b>112</b>    | <b>329</b>      | <b>1770.6</b>       | <b>100</b>           | <b>\$1,533,404</b> |                       |                   |                   |                  |
| 1983 | PURSE SEINE  | 41            | 164             | 1796.9              | 78                   | \$1,437,520        | \$35,061              | 43.8              | 11                | 4                |
|      | GILLNET      | 64            | 284             | 521.6               | 22                   | \$417,280          | \$6,520               | 8.2               | 1.8               | 4.4              |
|      | <b>TOTAL</b> | <b>105</b>    | <b>448</b>      | <b>2318.5</b>       | <b>100</b>           | <b>\$1,854,800</b> |                       |                   |                   |                  |
| 1984 | PURSE SEINE  | 39            | 138             | 1691.2              | 78                   | \$1,352,960        | \$34,691              | 43.3              | 12.3              | 3.5              |
|      | GILLNET      | 69            | 212             | 471.5               | 22                   | \$377,200          | \$5,467               | 6.8               | 2.2               | 3.1              |
|      | <b>TOTAL</b> | <b>108</b>    | <b>350</b>      | <b>2162.7</b>       | <b>100</b>           | <b>\$1,730,160</b> |                       |                   |                   |                  |
| 1985 | PURSE SEINE  | 34            | 118             | 1244.2              | 63                   | \$1,119,780        | \$32,935              | 36.6              | 10.5              | 3.5              |
|      | GILLNET      | 81            | 348             | 723.5               | 37                   | \$651,150          | \$8,039               | 8.9               | 2.1               | 4.3              |
|      | <b>TOTAL</b> | <b>115</b>    | <b>466</b>      | <b>1967.7</b>       | <b>100</b>           | <b>\$1,770,930</b> |                       |                   |                   |                  |
| 1986 | PURSE SEINE  | 31            | 132             | 1110.8              | 71                   | \$1,054,310        | \$34,010              | 35.8              | 8.4               | 4.3              |
|      | GILLNET      | 71            | 385             | 448.6               | 29                   | \$426,170          | \$6,002               | 6.3               | 1.2               | 5.4              |
|      | <b>TOTAL</b> | <b>102</b>    | <b>517</b>      | <b>1559.4</b>       | <b>100</b>           | <b>\$1,480,480</b> |                       |                   |                   |                  |
| 1987 | PURSE SEINE  | 29            | 122             | 1591.3              | 74                   | \$1,591,300        | \$54,872              | 54.9              | 13                | 4.2              |
|      | GILLNET      | 62            | 411             | 554.6               | 26                   | \$554,600          | \$8,945               | 9                 | 1.35              | 6.6              |
|      | <b>TOTAL</b> | <b>91</b>     | <b>533</b>      | <b>2145.9</b>       | <b>100</b>           | <b>\$2,145,900</b> |                       |                   |                   |                  |
| 1988 | PURSE SEINE  | 33            | 169             | 1303.6              | 60                   | \$1,694,550        | \$51,350              | 39.5              | 7.7               | 5.1              |
|      | GILLNET      | 76            | 555             | 867.2               | 40                   | \$1,127,620        | \$14,837              | 11.4              | 1.6               | 7.3              |
|      | <b>TOTAL</b> | <b>109</b>    | <b>724</b>      | <b>2170.8</b>       | <b>100</b>           | <b>\$2,822,170</b> |                       |                   |                   |                  |
| 1989 | PURSE SEINE  | 37            | 171             | 1512.6              | 67                   | \$1,285,710        | \$34,749              | 40.9              | 8.8               | 4.6              |
|      | GILLNET      | 83            | 627             | 736.0               | 33                   | \$625,600          | \$7,537               | 8.9               | 1.2               | 7.6              |
|      | <b>TOTAL</b> | <b>120</b>    | <b>798</b>      | <b>2248.6</b>       | <b>100</b>           | <b>\$1,911,310</b> |                       |                   |                   |                  |
| 1990 | PURSE SEINE  | 27            | 156             | 1644.0              | 70                   | \$1,397,400        | \$51,755              | 60.9              | 10.5              | 5.8              |
|      | GILLNET      | 63            | 544             | 703.0               | 30                   | \$597,550          | \$9,485               | 11.2              | 1.3               | 8.6              |
|      | <b>TOTAL</b> | <b>90</b>     | <b>700</b>      | <b>2347.0</b>       | <b>100</b>           | <b>\$1,994,950</b> |                       |                   |                   |                  |

TABLE 3.  
STATUS OF KODIAK SAC ROE HERRING PERMITS

|                        | 1987      | 1988      | 1989      | 1990      |
|------------------------|-----------|-----------|-----------|-----------|
| G.N. TRANSFERABLE      | 59        | 63        | 64        | 72        |
| G.N. NON-TRANSFERABLE  | <u>48</u> | <u>41</u> | <u>41</u> | <u>31</u> |
| G.N. TOTAL             | 107       | 104       | 105       | 103       |
| G.N. FISHED            | 62        | 76        | 83        | 63        |
| SEINE TRANSFERABLE     | 40        | 45        | 45        | 46        |
| SEINE NON-TRANSFERABLE | <u>26</u> | <u>24</u> | <u>24</u> | <u>25</u> |
| SEINE TOTAL            | 66        | 69        | 69        | 71        |
| SEINE FISHED           | 29        | 33        | 37        | 27        |
| TOTALS                 |           |           |           |           |
| TRANSFERABLE           | 99        | 108       | 109       | 118       |
| NON-TRANSFERABLE       | <u>74</u> | <u>65</u> | <u>65</u> | <u>56</u> |
| TOTAL                  | 173       | 173       | 174       | 174       |
| FISHED                 | 91        | 109       | 120       | 90        |

Table 4.

1991

HERRING SAC-ROE SEASON

ALASKA DEPARTMENT OF FISH AND GAME

KODIAK AREA MANAGEMENT STAFF

Area Management Biologist

Dave Prokopowich

Asst. Area Management Biologist

Kevin Brennan

Fishery Biologist

Joan Brodie

M/V Coho Crew

Tom Emerson  
Dennis Gretsch

Herring Field Crew Personnel

Kim Rudge  
Mo Lambdin  
Shawna Rudio  
Ed Hajdys  
Dave Sarafin

Ed Sampson  
Jon Becker  
Bruce McIntosh  
Sue Tuccio  
Bruce Wetterlin

Aircraft Pilots

Hal Terry  
Larry Nicholson

REGIONAL SUPERVISOR:

Larry Nicholson

REGIONAL FINFISH COORDINATOR:

Pete Probasco

1990 ALASKA STATEWIDE HERRING HARVESTS AND PRELIMINARY 1991 HARVEST PROJECTIONS<sup>1/</sup>

| Fishery                            | 1990 ACTUAL              |                     | 1991 PROJECTED      |                   | Expl. Rate    | Mean Wt.(g) | Spawning Biomass (s. tons) | Stock Status/Trend |
|------------------------------------|--------------------------|---------------------|---------------------|-------------------|---------------|-------------|----------------------------|--------------------|
|                                    | Opening or First Harvest | Harvest (s. tons)   | Harvest (s. tons)   | Harvest (s. tons) |               |             |                            |                    |
| <b>Southeastern</b>                |                          |                     |                     |                   |               |             |                            |                    |
| Kah Shakes                         | .....No Fishery.....     |                     | 679                 | 21%               |               | 3,300       | Depressed/Stable           |                    |
| Sitka                              | 4/05                     | 3,804               | 3,200               | 14%               |               | 22,695      | Moderate/Declining         |                    |
| Seymour Canal                      | 4/28                     | 359                 | 0                   |                   |               | 2,850       | Depressed/Declining        |                    |
| Lynn Canal                         | .....No Fishery.....     |                     | 0                   |                   |               | Unknown     | Depressed/Stable           |                    |
| Hoonah Snd. Pound                  | 4/14                     | 12                  | 11 <sup>a</sup>     | 6%                |               | 2,350       | High/Stable                |                    |
| Food and Bait                      | 1/01                     | 3,843               | 2,814               | 15%               |               | 18,350      | Moderate/Stable            |                    |
| <b>Prince William Sound</b>        |                          |                     |                     |                   |               |             |                            |                    |
| Seine                              | 4/12                     | 8,302               | 11,300              |                   |               |             |                            |                    |
| Gillnet                            | 4/13                     | 505                 | 660                 |                   |               |             |                            |                    |
| Pound Kelp                         | 4/11                     | 101                 | 221 <sup>a</sup>    |                   |               |             |                            |                    |
| Wild Kelp                          | 4/21                     | 119                 | 195 <sup>a</sup>    |                   |               |             |                            |                    |
| Food/Bait                          | 11/01                    | 1,800               | 3,170 <sup>b</sup>  |                   |               |             |                            |                    |
| Total                              |                          |                     | 19,448 <sup>c</sup> | 20%               | 155           | 96,800      | High/Stable                |                    |
| <b>Lower Cook Inlet</b>            |                          |                     |                     |                   |               |             |                            |                    |
| Eastern & Outer Districts          |                          |                     |                     |                   |               |             |                            |                    |
| .....No Fishery.....               |                          |                     |                     |                   |               |             |                            |                    |
| Southern Dist.                     | .....No Fishery.....     |                     | 200                 | 3%                | 160           | 6,214       | Moderate/Increasing        |                    |
| Kamishak Dist.                     | 4/22                     | 2,264               | 1,553               | 10% <sup>e</sup>  | 214           | 17,256      | Moderate/Declining         |                    |
| <b>Upper Cook Inlet</b>            |                          |                     |                     |                   |               |             |                            |                    |
| Sac-Roe                            | 4/22                     | 72                  | 100                 |                   |               | Unknown     | Depressed/Increasing       |                    |
| Food and Bait                      | 4/30                     | 55                  | 100                 |                   |               | Unknown     | Depressed/Increasing       |                    |
| <b>Kodiak</b>                      |                          |                     |                     |                   |               |             |                            |                    |
| Sac-Roe                            | 4/15                     | 2,347               | 2,500               |                   |               | Unknown     | Moderate/Increasing        |                    |
| Food and Bait                      |                          |                     |                     |                   |               |             |                            |                    |
| Eastern Shelikof                   | 8/01                     | 189                 | 173                 |                   |               |             |                            |                    |
| Other Kodiak                       | 8/01                     | 124                 | 250                 |                   |               | Unknown     | Moderate/Stable            |                    |
| <b>Chignik Sac-Roe</b>             |                          |                     |                     |                   |               |             |                            |                    |
| .....No Fishery.....               |                          |                     |                     |                   |               |             |                            |                    |
|                                    |                          |                     | 65                  |                   |               | Unknown     |                            |                    |
| <b>Alaska Peninsula</b>            |                          |                     |                     |                   |               |             |                            |                    |
| Port Moller                        | 5/30                     | 273                 | 300                 | 15%               |               | 2,000       | Depressed/Stable           |                    |
| South Peninsula                    | 5/14                     | 312                 | 450                 |                   |               | Unknown     | Moderate/Stable            |                    |
| Dutch Harbor                       |                          |                     |                     |                   |               |             |                            |                    |
| Food and Bait                      | 8/15                     | 820                 | 662                 |                   |               |             |                            |                    |
| <b>Bristol Bay (Togiak)</b>        |                          |                     |                     |                   |               |             |                            |                    |
| Seine                              | 5/09                     | 9,245               | 6,594               |                   |               |             |                            |                    |
| Gill Net                           | 5/08                     | 3,062               | 2,198               |                   |               |             |                            |                    |
| Spawn on Kelp                      | 5/11                     | 206 <sup>a</sup>    | 175 <sup>a</sup>    |                   |               |             |                            |                    |
| Total                              |                          | 14,627 <sup>f</sup> | 10,954 <sup>f</sup> | 20%               |               | 54,772      | Depressed/Declining        |                    |
| <b>Kuskokwim Area</b>              |                          |                     |                     |                   |               |             |                            |                    |
| Security Cove                      | 5/12                     | 234                 | 224                 | 15%               |               | 1,490       | Moderate/Declining         |                    |
| Goodnews Bay                       | 5/18                     | 455                 | 221                 | 15%               |               | 1,472       | Moderate/Declining         |                    |
| Cape Avinof                        | 5/29                     | 50                  | 256                 | 15%               |               | 1,708       | Moderate/Declining         |                    |
| Nunivak Island                     | .....No Fishery.....     |                     | 9                   |                   |               | 235         | Depressed/Declining        |                    |
| Nelson Island                      | .....No Harvest.....     |                     | 9                   |                   |               | 1,897       | Depressed/Declining        |                    |
| <b>Cape Romanzof</b>               |                          |                     |                     |                   |               |             |                            |                    |
|                                    | 5/23                     | 329                 | 447                 | 15%               |               | 2,983       | Depressed/Declining        |                    |
| <b>Norton Sound</b>                |                          |                     |                     |                   |               |             |                            |                    |
| Gillnet                            | 5/28                     | 6,032               | 4,368               |                   |               |             |                            |                    |
| Beach Seine                        | 5/28                     | 347                 | 508                 |                   |               |             |                            |                    |
| Total                              |                          | 6,379               | 5,075               | 20%               |               | 23,371      | High/Stable                |                    |
| <b>Port Clarence</b>               |                          |                     |                     |                   |               |             |                            |                    |
| .....No Harvest.....               |                          |                     |                     |                   |               |             |                            |                    |
|                                    |                          |                     | 165                 |                   |               | Unknown     |                            |                    |
| <hr/>                              |                          |                     |                     |                   |               |             |                            |                    |
| Sac Roe Harvest Total <sup>h</sup> |                          | 37,992              | 36,188              |                   |               |             |                            |                    |
| Food and Bait Harvest Total:       |                          | 6,831               | 7,168               |                   | Total Unknown |             |                            |                    |
| Total Herring Harvest:             |                          | 44,823              | 43,356              |                   | Biomass       | 261,743     |                            |                    |

Footnotes on next page

Table 5. Page 2 of 2

<sup>a</sup>Harvest of spawn-on-kelp product in short tons.

<sup>b</sup>Preliminary 1990 food/bait guideline. The 1991 guideline will be set after 1991 sac-roe season.

<sup>c</sup>Includes mortality allowances of 2,750 and 1,550 tons for pound and wild spawn on kelp fisheries.

<sup>e</sup>Kamishak District exploitation rate includes the eastern Shelikof food and bait harvests.

<sup>f</sup>Togiak total harvest includes an allowance for 1,500 tons mortality for the spawn-on-kelp fishery.

<sup>g</sup>Projected biomass below minimum for commercial harvest; fishery will be opened if threshold biomass observed.

<sup>h</sup>Sac-roe statewide total harvests do not include allowances for spawn-on-kelp fishery mortality.

<sup>1</sup>Table compiled on January 22, 1991, harvest estimates are preliminary and are subject to change.

TABLE 6.  
KODIAK MANAGEMENT AREA  
COMMERCIAL HERRING FISHERIES HISTORICAL HARVEST LEVELS  
(SHORT TONS)

| YEAR | FOOD &<br>BAIT | SAC<br>ROE | TOTAL   | YEAR | FOOD &<br>BAIT | SAC<br>ROE | TOTAL   |
|------|----------------|------------|---------|------|----------------|------------|---------|
| 1912 | 20.0           | 0.0        | 20.0    | 1953 | 725.0          | 0.0        | 725.0   |
| 1913 | 0.0            | 0.0        | 0.0     | 1954 | 0.0            | 0.0        | 0.0     |
| 1914 | 0.0            | 0.0        | 0.0     | 1955 | 0.0            | 0.0        | 0.0     |
| 1915 | 0.0            | 0.0        | 0.0     | 1956 | 13524.0        | 0.0        | 13524.0 |
| 1916 | 70.0           | 0.0        | 70.0    | 1957 | 21218.5        | 0.0        | 21218.5 |
| 1917 | 137.9          | 0.0        | 137.9   | 1958 | 1711.0         | 0.0        | 1711.0  |
| 1918 | 118.4          | 0.0        | 118.4   | 1959 | 3831.0         | 0.0        | 3831.0  |
| 1919 | 259.7          | 0.0        | 259.7   | 1960 | 0.0            | 0.0        | 0.0     |
| 1920 | 45.9           | 0.0        | 45.9    | 1961 | 0.0            | 0.0        | 0.0     |
| 1921 | 944.9          | 0.0        | 944.9   | 1962 | 0.0            | 0.0        | 0.0     |
| 1922 | 1482.6         | 0.0        | 1482.6  | 1963 | 0.0            | 0.0        | 0.0     |
| 1923 | 321.5          | 0.0        | 321.5   | 1964 | 309.8          | 568.0      | 877.8   |
| 1924 | 4823.0         | 0.0        | 4823.0  | 1965 | 35.0           | 657.0      | 692.0   |
| 1925 | 9997.0         | 0.0        | 9997.0  | 1966 | 198.0          | 2769.0     | 2967.0  |
| 1926 | 2680.9         | 0.0        | 2680.9  | 1967 | 300.3          | 1662.0     | 1962.3  |
| 1927 | 2592.9         | 0.0        | 2592.9  | 1968 | 15.4           | 2001.0     | 2016.4  |
| 1928 | 625.0          | 0.0        | 625.0   | 1969 | 11.0           | 1130.0     | 1141.0  |
| 1929 | NO DATA        | 0.0        | 0.0     | 1970 | 7.5            | 342.0      | 349.5   |
| 1930 | 622.0          | 0.0        | 622.0   | 1971 | 44.2           | 284.0      | 328.2   |
| 1931 | 1000.0         | 0.0        | 1000.0  | 1972 | 49.8           | 215.0      | 264.8   |
| 1932 | 3594.0         | 0.0        | 3594.0  | 1973 | 178.0          | 831.0      | 1009.0  |
| 1933 | 2312.5         | 0.0        | 2312.5  | 1974 | 40.1           | 868.0      | 908.1   |
| 1934 | 60000.0        | 0.0        | 60000.0 | 1975 | 5.2            | 8.0        | 13.2    |
| 1935 | NO DATA        | 0.0        | 0.0     | 1976 | N/A            | 5.0        | 5.0     |
| 1936 | 24748.0        | 0.0        | 24748.0 | 1977 | N/A            | 338.0      | 338.0   |
| 1937 | 27659.3        | 0.0        | 27659.3 | 1978 | 398.9          | 904.0      | 1302.9  |
| 1938 | 24522.0        | 0.0        | 24522.0 | 1979 | 124.8          | 1736.0     | 1860.8  |
| 1939 | 38600.5        | 0.0        | 38600.5 | 1980 | 380.7          | 2384.0     | 2764.7  |
| 1940 | 22677.0        | 0.0        | 22677.0 | 1981 | 18.0           | 2063.0     | 2081.0  |
| 1941 | 40083.5        | 0.0        | 40083.5 | 1982 | 326.0          | 1771.0     | 2097.0  |
| 1942 | 16791.0        | 0.0        | 16791.0 | 1983 | 33.4           | 2319.0     | 2352.4  |
| 1943 | 35352.0        | 0.0        | 35352.0 | 1984 | 123.0          | 2163.0     | 2286.0  |
| 1944 | 26835.0        | 0.0        | 26835.0 | 1985 | 102.0          | 1968.0     | 2070.0  |
| 1945 | 31114.0        | 0.0        | 31114.0 | 1986 | 213.0          | 1558.0     | 1771.0  |
| 1946 | 47505.9        | 0.0        | 47505.9 | 1987 | 217.1          | 2146.0     | 2363.1  |
| 1947 | 50743.0        | 0.0        | 50743.0 | 1988 | 340.2          | 2171.0     | 2551.2  |
| 1948 | 46428.0        | 0.0        | 46428.0 | 1989 | 315.8          | 2248.6     | 2564.4  |
| 1949 | 0.0            | 0.0        | 0.0     | 1990 | 312.6          | 2347.0     | 2659.6  |
| 1950 | 44132.5        | 0.0        | 44132.5 |      |                |            |         |
| 1951 | 4299.0         | 0.0        | 4299.0  |      |                |            |         |
| 1952 | 1389.0         | 0.0        | 1389.0  |      |                |            |         |

TABLE 7.  
KODIAK MANAGEMENT AREA  
HERRING SAC-ROE FISHERY HISTORICAL HARVEST AND EFFORT LEVELS

| YEAR           | TONS            |                 | GILLNET        | NUMBER | NUMBER OF VESSELS |         |       |
|----------------|-----------------|-----------------|----------------|--------|-------------------|---------|-------|
|                | HARVESTED       | SEINE           |                | CO.S   | SEINE             | GILLNET | TOTAL |
| 1964           | 567.8           | 567.8           |                | 2      | 5                 |         | 5     |
| 1965           | 657.2           | 657.2           |                | 2      | 8                 |         | 8     |
| 1966           | 2,769.3         | 2,769.3         |                | 4      | 11                |         | 11    |
| 1967           | 1,662.4         | 1,662.4         |                | 4      | 5                 |         | 5     |
| 1968           | 2,000.6         | 2,000.6         |                | 4      | 10                |         | 10    |
| 1969           | 1,130.0         | 1,130.0         |                | 9      | 21                |         | 21    |
| 1970           | 341.6           | 341.6           |                | 5      | 13                |         | 13    |
| 1971           | 284.3           | 284.3           |                | 2      | 4                 |         | 4     |
| 1972           | 2151.0          | 215.0           |                | 1      | 4                 |         | 4     |
| 1973           | 831.0           | 831.0           |                | 4      | 11                |         | 11    |
| 1974           | 868.0           | 868.0           |                | 4      | 26                |         | 26    |
| 1975           | 8.0             | 8.0             |                | 3      | 2                 |         | 2     |
| 1976           | 4.6             | 4.6             |                | 1      | 1                 |         | 1     |
| 1977           | 338.4           | 338.4           |                | 3      | 11                |         | 11    |
| 1978           | 903.6           | 880.6           | 23.0           | 7      | 28                | 7       | 35    |
| 1979           | 1,735.1         | 1,457.2         | 277.9          | 8      | 57                | 125     | 182   |
| 1980           | 2,383.0         | 2,009.0         | 374.0          | 9      | 92                | 109     | 201   |
| 1981           | 2,065.4         | 1,596.2         | 469.2          | 9      | 79                | 114     | 193   |
| 1982           | 1,770.6         | 1,447.0         | 323.6          | 6      | 45                | 67      | 112   |
| 1983           | 2,318.5         | 1,796.9         | 521.6          | 7      | 41                | 64      | 105   |
| 1984           | 2,162.7         | 1,691.2         | 471.5          | 7      | 39                | 69      | 108   |
| 1985           | 1,967.7         | 1,244.2         | 723.5          | 7      | 34                | 81      | 115   |
| 1986           | 1,558.4         | 1,110.8         | 447.6          | 8      | 31                | 71      | 102   |
| 1987           | 2,145.9         | 1,591.3         | 554.6          | 8      | 29                | 62      | 91    |
| 1988           | 2,171.0         | 1,303.5         | 867.5          | 6      | 33                | 76      | 109   |
| 1989           | 2,248.6         | 1,512.6         | 736.0          | 6      | 37                | 83      | 120   |
| 1990           | 2,347.0         | 1,644.0         | 703.0          | 6      | 27                | 63      | 90    |
| <b>TOTALS</b>  | <b>37,455.7</b> | <b>30,962.7</b> | <b>6,493.0</b> |        |                   |         |       |
| <b>AVERAGE</b> | <b>1,347.2</b>  | <b>1,146.8</b>  | <b>499.5</b>   |        |                   |         |       |



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