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KODIAK MANAGEMENT AREA
ANNUAL HERRING MANAGEMENT REPORT, 1993

By:

Dennis Gretsch,
David Prokopowich,
and
Kevin Brennan

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SAC ROE HERRING FISHERY 1993

INTRODUCTION

Area Description

The Kodiak Management Area (KMA) comprises the entire Kodiak archipelago and that portion of the Alaska Peninsula which drains into Shelikof Strait between Cape Douglas and Kilokak Rocks at Imuya Bay. The archipelago is approximately 150 miles long, extending from Shuyak Island south to the Trinity Islands. The Alaska Peninsula portion is about 160 miles long and is separated from the archipelago by the Shelikof Strait which averages 30 miles in width, (Figure 1).

Historical Perspective

The Pacific herring *Clupea harengus pallasii* sac roe fishery began in Kodiak in 1964 with an average harvest of 1,523 tons between 1964-1992, (Table 1 and Figure 2). Prior to 1974, the fishery was unregulated with regard to harvest quotas, gear types, seasons, and fishing periods. From 1964-1977, purse seine gear was used exclusively, with an average annual harvest of 898 tons and up to ten seiners participating in the fishery. Starting in 1974 purse seine gear was restricted to 150 fathoms in length and 1,000 meshes in depth. Between 1974-1978 season dates ranged from March 1 through June 30 with a harvest quota of 3,400 tons. Annual harvests, along with effort levels, fish abundance, prices and processor interest, fluctuated greatly from 1964 through 1977. Improved market conditions in 1978 prompted increased effort in this fishery with 29 purse seiners and 11 gillnetters participating. It was during this time period that a few seiners started to use airplanes (to spot herring) and tenders (to transport herring to processors).

Between 1977 and 1982, the regulatory and management strategy went through a rapid developmental phase. Regulatory changes focused on gear efficiency, gear conflicts between seiners and gillnetters, gear level restrictions (exclusive registration and limited entry) and closed waters. In 1979 the sac roe season was reduced to May 1 through June 30, and the overall Guideline Harvest Level (GHL) was reduced to 2,400 tons distributed throughout the management area. A limit of 300 fathoms was also placed on the maximum length of gillnets and fishing periods were first limited to 48 hours open followed by 24 hour closures.

Maximum lengths for gillnets and seines were reduced again in 1981 to 150 fathoms and 100 fathoms, respectively. In addition, trawl and beach seine gear were eliminated as legal gear during the sac roe season. Fishing periods were established by emergency order in 1981, in which 24 hour fishing periods were followed by 24 hour closures. Beginning in 1982, the starting date for the season was changed from May 1, to April 15. In 1985 the fixed overall

GHL of 2,400 tons was replaced by the current harvest strategy where GHL's are set annually on a stock by stock basis. The overall regulatory effect during the developmental phase (1977-1982) has been the emergence of a relatively stable commercial sac roe fishery.

Fishery Characteristics

The current Kodiak sac roe herring fishery occurs from mid-April to late June in 40-50 bays and coastal locations. The fishery opens on April 15, with the entire management area opened at one time, excluding those stocks requiring biological protection. A unique characteristic of this fishery is that it commences prior to any major build-up of herring. This allows for a more general distribution of effort and reduces harvest rates within a bay. Both gear types fish the same areas during the same time periods. Roe recovery and quality standards are determined by industry personnel.

Beginning in 1979, combined gear levels increased substantially, reaching a high of 201 units (92 seiners and 109 gillnets) and 193 units (79 seiners and 114 gillnets) in 1980 and 1981 respectively (Table 1). With the implementation of limited entry following the 1981 sac roe season, new entry into the fishery was restricted to past participants until permanent transferable permits could be awarded. Since 1982, gear levels have been relatively constant with 90 to 120 units of gear fished annually, (Figure 3). Transferrable permits for both gear types are still increasing as the Limited Entry Commission continues its determinations of participants who may qualify for a transferable permit. Only 52-69% of the 174 available permits have been used annually since limited entry has been in place, (Table 2).

The overall trend in harvest during the past 15 years has been relatively stable, averaging 2,356 tons per year, (Table 3). However, during the past two years harvests have substantially increased nearly doubling the long term average. Prior to 1978, the entire sac roe harvest was taken by seine gear. The percentage of the total harvest by seine gear ranged from a high of 85% to a low of 60% and averaged 75% from 1979-1993. In 1978 seven units of gillnet gear accounted for 3% of the total harvest. Gillnet percentage of total harvest peaked in 1988 at 40%, and averaged 25% from 1979-1993.

To reduce operational costs and to cover more areas most purse seiners form combines of two to ten vessels. These combines include one or several tenders and spotter aircraft. By 1979 the use of small, single engine, float equipped airplanes became more prevalent. Airplanes are the most productive way to find and direct seiners to harvestable herring. In 1986, several seiners started using side scanning sonar to locate schools of herring. This technology enabled fishermen to work during any time of the day and in adverse weather conditions which were unworkable for airplanes. Sonar technology continues to improve and most seiners are now equipped with scanning sonar.

Gillnet vessels generally work independently and usually rely on processors to provide tenders to deliver their fish to the processing location. A few gillnetters are equipped with scanning sonar but the majority of these fishermen rely on color down-sounding sonar to locate herring schools or fish areas where seiners are making sets.

Since 1979, seiners have gradually increased seine depths to the legal limit of 1,025 meshes, which includes 25 meshes of chaffing gear. Seines are restricted to 100 fathoms in length and gillnets to 150 fathoms. Similarly, the gillnet fleet has evolved from floating nets of 80-100 meshes of depth to sinking nets with 120-160 meshes in depth. Gear efficiency appears to have reached its maximum under the current regulations; no limit on gear depth exists for gillnets, but additional gear depth would be difficult to operate because of the small size of boats used in the fishery. Over the last few years the use of mechanical shakers has increased. The shaker greatly reduces the time and effort needed to remove herring from net and greatly increases the gear efficiency.

Herring originally were caught at or near their spawning area from 1978-1983. As fishermen's knowledge increased in identifying these areas, the herring have been harvested in deeper waters (15-20 fathoms) further from their spawning destination.

The Alaska Department of Fish and Game, (ADF&G), relies on the fishing industry to establish roe recovery standards. Generally, tenders will have a processor representative onboard to ensure that marketable sac roe quality herring are harvested. Competition among shore-based processors and the high quality of sac roe results in this fishery having one of the highest ex-vessel value per ton in the state. The high quality of fish is obtained from inseason handling of a relatively small amount of herring over a long time period.

Fishery Monitoring

The ADF&G, Commercial Fisheries Management and Development Division manages this fishery from its Kodiak Office. From 1974 through 1993, the ADF&G has used a state vessel to monitor this fishery in bays which received the greatest fishing effort. In 1979 through 1992, in conjunction with the state vessel, two person ADF&G field crews were also utilized to monitor the fishery. The annual harvest is distributed between 40-50 management units and there is a general sequence of harvest timing by groups of these units.

Field crews are stationed in anticipated harvest units, or bays, which have historically produced the major harvests for a district. These crews are positioned in remote bays with chartered float planes or by vessel and are equipped with an inflatable boat or skiff, powered with an outboard motor. Daily contact with fishermen, spotters and tender operators is maintained to acquire fishery data. The information consisting of current harvest, effort levels, and fleet movements is then reported via single side band (SSB) radio at least three times per day. The use of field crews has been a key element in preventing an excessive harvest from occurring and exceeding the GHL. Additional data collected consists of identifying spawning areas and collecting age-weight-length (A-W-L) samples from the commercial harvest. Frequent ADF&G aerial surveillance of the entire area supplements and often directs the placement of fishery monitoring field crews. The ADF&G office staff, consisting of an area and an assistant area management biologist, tally field crew, processor, and tender reports to assess herring harvests and decide which management units may need to be closed to fishing. Industry spotter reports are also used to provide information concerning all aspects of the fishery. A "Kodiak Herring Sac Roe Harvest

Strategy" is written and distributed annually which describes in detail, guideline harvest levels, regulatory changes, and expected fishing periods (Appendix A.1).

METHODS

1993 Sac Roe Herring Fishery Season Summary

Fishing Seasons and Weekly Fishing Periods

The fishing season for the Kodiak sac roe herring fishery opened by regulation on April 15 and closed by regulation on June 30 (ADF&G 1993 Herring Regulation Book). Fishing periods are established by emergency order. As in the past 12 years, fishing periods began at 12:00 noon on odd numbered days, and closed at 12:00 noon on even numbered days of the month. Staggered days of fishing have the advantage of providing clearly defined closed periods which allows ADF&G staff time to assess, summarize, and update all harvest data from previous fishing periods, as well as verify between reported and actual harvests. Since 1979, the occurrence of excessive harvests within a management unit have primarily been prevented by these preestablished fishing periods.

Districts and Management Units

The Kodiak Management Area is divided into seven districts which define geographical areas used in managing the sac roe and food\bait herring fisheries. For the sac roe fishery, each district is then broken into management units which are intended to define the spawning area used by a stock of herring or may be used to define a geographical area. There are a total of 74 management units (Figure 4).

Guideline Harvest Levels

Preseason guideline harvest levels (GHL's) were established for all management units which have produced consistent herring harvests in previous seasons. These GHL's are meant to reflect the status of a particular stock of herring by management unit or district. Criteria for establishing the GHL include; 1) 1992 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) proportion 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. Some management units are designated "exploratory" and are assigned no GHL because these areas have had sporadic or

no harvest of herring in past years. Inseason closures in these exploratory areas are used to ensure that excessive harvests are minimized. If at any time during the season it appears that preseason expectations were incorrect, GHL's can be adjusted above or below preseason levels. See Appendix A.1. concerning the inseason harvest strategy.

GHL's for the KMA from 1979-1982 were fixed at 2,400 tons. The aforementioned criteria has been used from 1983-1993 to set a preseason GHL for the KMA. The preseason GHL has accurately reflected the actual harvests (Figure 5.). These preseason harvest projections aid fishermen and processors in planning prior to the start of each season.

Inseason Fishery Management

Inseason management of the sac roe fishery relies primarily on ADF&G field crews stationed in management units where harvests are anticipated. Mobility of field crews to cover management units has improved over the past three years with the addition of three, 21 foot skiffs equipped with outboards. Presently two skiffs are used by field crews and a third skiff works from the ADF&G vessel K-Hi-C. These skiffs allow field crews to monitor more management units and under rougher sea conditions than the 12 foot inflatable boats were capable of. Two crews still utilize inflatable boats which permits the crews to be placed and moved by aircraft. A lease agreement was made with the Kodiak Island Borough School District for the use of a 42 foot seine vessel (K-Hi-C), for a three week period during the peak of the herring season. The K-Hi-C acts as mobile field station along with providing logistical support to field crews.

As mentioned previously, all management units of the KMA are opened collectively starting on April 15 at 12:00 noon. Generally, once the preseason GHL has been harvested for a management unit, it is closed for the season. Due to the rapid pace at which some fisheries occur, in-period closures are frequent. In management units which have an ADF&G field crew present, in-period closures may occur with as little as 15 minutes advanced notification time. In management units which do not have field crews present in-period closures may occur by, 1) announcement on single side band frequency 4.125 mhz following the marine weather forecast at 8:00 A.M. or 6:00 P.M. daily, or 2) field announcement with the arrival by aircraft of an ADF&G representative.

Processors and independent tender operators are required to provide daily tallies of herring deliveries by management unit and accurate estimates of herring onboard tenders that have not yet delivered to the cannery. Timely and accurate harvest reports from ADF&G field crews, fishermen, spotters, and processors are critical in order to assess herring harvests and guide the management of the fishery. To date industry cooperation has been excellent in support of this fishery.

Actual fishery performance is used to evaluate the health of a particular fishery. With key components including, 1) duration of fishing time to harvest the management unit GHL, 2) catch per unit of effort, and 3) quality of herring harvested which considers factors such as roe recovery percentages, weights, and age compositions.

Fish Ticket Data

Commercial catch data is compiled by ADF&G, Division of Commercial Fisheries Management and Development. Actual dock weights of herring are used inseason to verify initial harvest estimates. All final data are compiled post season from sales receipts (fish tickets) received from processors of purchased tonnages of herring they received from fishermen. Fish ticket data is then compiled with the aid of a computer and a summary of the herring harvest is generated. The ADF&G staff then edits this summary for errors and lost fish tickets.

Biomass Estimates

Previous attempts to estimate the total spawning biomass in the KMA by ADF&G with aerial surveys has been met with limited success. Aerial assessment provided only a limited evaluation and did not give a true representation of the herring stocks. Problems associated with aerial surveys in the Kodiak Area include: 1) herring tend to spawn in the evening, night and early morning hours, limiting the time which surveys can be conducted, 2) most management units have many distinct schools of herring which will spawn from April through June, 3) large numbers of juvenile herring, spawning herring, spawned out herring, and other fishes such as capelin can be found in sac roe herring fishery areas. (These fish may stay within the fishery areas for the duration of the sac roe season or may move, so that aerial biomass estimates may be duplicated or be incomplete), 4) the large geographical area for the KMA, (57 management units which have identified spawning stocks), and the limited time per day which the herring would be congregated in shallower more visible survey waters, and 5) adverse weather conditions. Industry (spotters) have helped greatly in past seasons by providing biomass estimates, spawn observations, fleet movements and harvest estimates. These spotters are very experienced, many having been involved for several seasons in the Kodiak Area and other statewide herring fisheries. Biomass estimates are compiled for each district from surveys flown by industry and ADF&G spotters. It has been estimated by both ADF&G and industry spotters that only 25% to 50% of the actual biomass is observed for the Kodiak Area herring stocks. There appears to be a significant amount of subtidal spawning occurring in waters 10-20 fathoms in depth. These fish and spawning activity may not be detected from aerial surveys. Previous attempts to assess this subtidal spawning with divers was not successful.

Commercial Catch Sampling

Commercial catch samples are taken from purse seine harvests, except when a management unit has only a gillnet harvest. Seine caught herring are the most desirable samples, since this gear type is less selective than gillnet gear. Field crews collect several samples from different seine sets within a management unit to obtain a representative sample of all age classes present for each herring stock. Samples are also obtained from tenders and/or fishing boats delivering to the processor if it is known that the catch being delivered came from one single management unit.

Catch samples are frozen upon arrival to Kodiak and are analyzed by the end of the sac roe season.

Commercial catch samples are thawed and analyzed for age, weight, length, sex, and sexual maturity.

A single scale is removed from the preferred area which is located on the left side of the fish, three rows below the lateral line and three scales posterior to the center of the opercular plate (Brodie, personal communication 1991). The scale is visually analyzed with the aid of a microscope to determine the age of the fish in years.

Standard length measurements are taken on all herring sampled. This length is the straight line distance from the anterior most part of the fish, including the lower jaw with the mouth closed, to the end of the vertebra (hypural plate). Lengths are taken on all samples using a herring measuring board to the nearest millimeter.

Weight measurements are taken on a Mettler balance to the nearest gram on all fish within a sample.

Sex and sexual maturity are determined on all herring in a sample. Each fish is slit open and visually inspected for gonad relative maturity. The relative maturity is broken down into a scale of key characteristics ranging from virgin herring through spawned out herring, with eight levels of maturity identifying gonad key characteristics.

RESULTS

Harvest and Effort Summary

The 1993 Kodiak sac roe herring season was 77 days in duration extending from April 15 through June 30, (Table 3). A total of 4,929 tons of herring were harvested, which was 40% higher than the preseason GHF of 3,525 tons. This is the second consecutive year that a new record high harvest occurred, the 1992 harvest was 4,283 tons. Seine caught herring totalled 4,203 tons, which was 85% of the total harvest, while gillnet gear accounted for 726 tons, which was 15% of the total harvest. A comparison of harvest by gear type from 1979-1993 averaged 75% and 25% for seine and gillnet gear, respectively (Figure 6). During the period 1979-1993, seine and gillnets accounted for annual harvests of 1,838 and 597 tons respectively. (Table 3). Roe recovery averaged 9.8% for seine caught fish and 10.4% for gillnet gear, for a combined average roe recovery of 9.9%. The average price per ton paid at the dock was difficult to establish due to factors such as the size of herring harvested and delivery method, tendered or dock delivery. Prices ranged from \$100 to \$1200 a ton and for ADF&G's purposes an average price of \$550 a ton was used to calculate estimated values of the fishery. The total exvessel value of the fishery was estimated at \$2.7 million dollars.

A total of 41 seiners and 86 gillnetters fished during the 1993 season. Which is a gradual increase in gear over the previous three years. Average exvessel earnings by seiners was estimated at \$56,000 and \$5,000 for gillnetters. Eight buyers/processors operated ten processing plants purchased herring in the 1993 season.

Spring climatic conditions were fair to good for the 1993 sac roe season. Overall, weather conditions led to little loss in fishing time which can drastically hamper spotters and fishermen as occurred in the 1991 season (Gretsch 1991).

For the 1992 sac roe season Kodiak processors set a 120 gram average minimum weight for herring delivered at the dock. In 1993 this minimum standard increased to 140 grams. Some concerns existed preseason that the average weights of herring stocks from the Westside of Afognak Island and the Uganik District would not meet this standard, as average weights were low in this area during the 1992 fishery. ADF&G age-weight-length, (A-W-L) data ranged from 117-143 gram averages for these management units with no deliveries being refused by processors. Market conditions may have changed due to poor harvests in Prince William Sound. Based on ADF&G samples the 1993 KMA harvest had an average weight of 156 grams and was dominated by Age 5 herring at 63% of the total harvest.

District Summaries

The distribution of herring harvest by district has seen an increase in harvest over the last two seasons in the Afognak, Uganik, General, and Alitak Districts (Figure 7.). The Uyak District has experienced a decline in harvest and the Mainland District is comparable to the past five years. Of the 74 management units in the KMA, 50 units had a herring harvest (Table 4), and 31 of these units were closed in season by emergency order (Appendix B.1).

Afognak District

The bays of Afognak Island are among the earliest areas in which herring are harvested in the KMA. Warm winter and spring climatic conditions seems to have induced an early movement of herring into the spawning areas of the Paramanof, Malina, and Foul Bay management units as was experienced in 1992, (Gretsch 1992). ADF&G stationed one field crew and the K-Hi-C in these management units which were anticipated to have the earliest harvests. Field crews were moved to new management units when the management unit they monitored was closed by emergency order or effort levels were less than anticipated. Field crews monitored the following management units: Crew #1 (Malina Bay, Paramanof Bay, and Raspberry Straits) and the K-Hi-C (Paramanof-Foul Bays). Actual fishery activity started in the westside Afognak management units. Malina Bay had a record harvest of 312 tons which closed the unit on April 17, with a preseason GHL of 90 tons. The Foul Bay management unit had a harvest of 158 tons, (GHL of 60 tons) and closed April 18. The Devil's Inlet and Blue Fox Bay management units had a combined harvest of 240 tons and were closed on April 20, with a GHL of 30 tons combined. The Raspberry Strait Management Unit has seen an increase in the spawning biomass during the past four years, fishery performance in 1992 was slowed due to the small size of the herring, with age 4 herring averaging 106 grams and age 5 at 129 grams. This unit was closed in 1993 on

April 21 with a harvest of 445 tons with the bulk of this catch occurring in a single seine set. The exceeding of the GHL's for these management units can primarily be attributed to stronger than expected spawning stocks. Age 5 herring were the dominant age class harvested in the aforementioned units and the 1994 outlook for these management units is excellent. The Danger Bay unit was closed on May 10 with a total harvest of 30 tons the GHL for this unit was 25 tons. No other emergency orders were issued for this district. Four other management units had a combined harvest of 16 tons of which only one unit approached its GHL. Of the 18 management units of the Afognak District which have GHL's, three were closed with the assistance of ADF&G field crews, three by ADF&G office staff, and the remainder were open through June 30. The total GHL's for the District was 595 tons, a record total of 1,634 tons were harvested with 95% of the harvest coming from purse seine gear and 5% from gillnet gear.

Uganik District

A field crew was stationed in West Uganik Passage by the ADF&G vessel Resolution to monitor the fishery in the Uganik District. This crew was equipped with a 21 foot skiff and based their field camp from the Island Air floating cabin. With the skiff the crew was able to monitor the Viekoda Bay, Terror Bay, West Uganik Passage, Village Island, N.E. Arm, East Arm and South Arm Uganik Bays which spans approximately 30 miles. The fishery developed rapidly in the Uganik District. The Village Island management unit had an early and robust showing of herring and was closed April 18 with a harvest of 484 tons with a GHL of 135 tons. A similar harvest occurred in this unit in 1992 when 350 tons were harvested. These harvests although greatly exceeding the GHL are not likely to jeopardize this stock as the GHL for this unit were set conservatively. Fishery performance in 1994 will be the best indicator as to whether the 1992 and 1993 harvests were excessive. The South Arm closed on April 19 with a harvest of 92 tons (GHL 60 tons). Next the Viekoda Bay and the East Arm Uganik Bays were closed on April 20 with harvests of 95 tons (GHL 80 tons) and 113 tons (GHL 60) respectively. Terror Bay closed the following day April 21 with a harvest of 214 tons (GHL 90 tons). Vessels next concentrated and the West Uganik Passage was closed on April 24 with a harvest of 73 tons (GHL 75 tons). Fishery performance for the Northeast Arm was poor with only 3 tons harvested. Of the eight management units of the Uganik District which have GHL's, five were closed with the assistance of ADF&G field crews, one by ADF&G office staff, and the remainder were open through June 30. A district total of 1,075 tons were harvested from a district GHL of 620 tons, 98% of this harvest was with purse seine gear and 2% by gillnet.

General District

On April 13 a two person ADF&G field crew was stationed in Ameer Bay with the transportation of the crew and equipment provided by the R/V Resolution. This crew was equipped with a 21 foot skiff which enabled them to monitor seven management units along the eastside of Kodiak Island. Additionally, a raft equipped crew was flown into Kiliuda Bay. Fishery performance along the Eastside of Kodiak Island has been improving the past three years. The East Sitkalidak Straits management unit had a harvest of 293 tons with a GHL of 180 tons and was closed on April 17. Tanginak Anchorage was closed on April 18 with a harvest of 19 tons (GHL 15 tons). The raft equipped crew was involved with the partial closure of the Inner Kiliuda unit April 24 with a harvest of 127 tons (GHL 60 tons). The crew was moved to the Shearwater management unit and as fishing activity diminished there they were moved to the Inner Ugak Bay management

unit. The Uganik District skiff equipped field crew was relocated to the Kizhuyak management unit April 25. The Inner Ugak and Barling management units were closed on May 2 with harvests of 130 tons (GHL 95 tons) and 39 tons (GHL 40 tons) respectively. The Inner Ugak crew next was moved into the town of Kodiak to monitor management units along the road system. The crew monitored the Pasagshak management unit which closed on May 6 with a harvest of 28 tons (GHL 30 tons). The West and Southwest Sitkalidak Straits units closed May 6 with harvests of 150 tons (GHL 150 tons) and 136 tons (GHL 125 tons) respectively. The skiff equipped field crew relocated to the Alitak District. The Middle Bay management unit closed May 14 with a harvest of 16 tons (GHL of 20 tons). The Shearwater management unit was closed May 26 with a harvest of 91 tons (GHL 75 tons). The remaining eight management units remained open until June 30 with five of these having a combined harvest of 156 tons. Of the 22 management units in the General District, nine units were closed with assistance of field crews, two units were closed by the ADF&G office staff, and the remaining ten units remained open until June 30. The total GHL for the General District was 1,075 tons. A total of 1,237 tons were actually harvested, with 65% of the harvest from purse seine gear and 35% of the harvest from gillnet gear.

Uyak District

A field crew was flown into the Brown's Lagoon management unit on April 23. On April 27 the K-Hi-C was stationed in the Uyak District to monitor the Spiridon, Zachar, and Inner Uyak Bay management units. The herring stocks in the Uyak District were perceived to be declining after the 1991 season and some unit GHL's were lowered for the 1992 season and again for the 1993 season. This downward trend in the stock status continued for the 1993 season. With the low fishery activity the K-Hi-C returned to Kodiak leaving the field crew a 21' skiff to monitor the district. The Larsen Bay management unit closed on May 15 with a harvest of 16 tons (GHL 10 tons). The Brown's Lagoon management unit was closed on May 30 with a harvest of 19 tons (GHL 30 tons). The remaining management units were open through June 30. Fishery performance was poor in the Inner Uyak, Zachar Bay, and Spiridon Bay management units with a combined harvest of 57 tons for these areas. Through the 1980's these management units were some of the most productive for herring in the KMA. The GHL's for this district will again be reduced for the 1994 season in hopes of reversing this downward trend in these stocks. Of the six management units of the Uyak District only two were closed by emergency order, one initiated with the assistance of the field crew and the other by the office staff. In the Uyak District a total of 92 tons were harvested from a GHL of 350 tons. Seine gear harvested 90% and gillnet gear 10% of the total harvest.

Alitak District

The Alitak District is comprised of a total of eight management units, two are exploratory areas, and six have GHL's. A skiff equipped field crew was stationed in Sulua Bay and monitored it and surrounding management units within Alitak Bay. A closure of the Deadman Bay management occurred on April 28, with a harvest of approximately 260 tons. This initial harvest occurred in an exploratory portion of Deadman Bay. A sufficient biomass was documented in the traditional harvest location and a GHL of 120 tons was established for that portion of Deadman Bay north of 57° 05' north latitude to reopen on May 1. This reopened portion of the Deadman Bay management unit closed on May 20 with a harvest of 119 tons. The Inner Alitak

management unit was closed on April 29 with a harvest of 71 tons (GHL of 75 tons). The Sulua-Portage Bay management unit closed on April 30 with a harvest of 201 tons (GHL 145 tons). The fishery performance and stock status for these units are strong. The Lower Olga-Moser Bay management unit closed May 20 with a harvest of 27 tons (GHL 20 tons). The remaining management units were open through June 30. The Upper Olga Bay management unit was monitored by ADF&G personnel stationed at salmon weirs. Fishery performance in this unit has been in a decline the last three years with the GHL being lowered annually. This season 50 tons were harvested of the 145 ton GHL. The Geese/Twoheaded and Outer Alitak exploratory units had a harvest of 15 tons and 28 tons respectively. The North Upper Olga Bay management unit had no harvest. The Alitak District had a harvest of 774 tons with a district total GHL of 590 tons. Seine gear harvested 79% of the harvest and gillnet gear 21%. Field crews assisted in the four closures within this district.

Mainland District

The Mainland District is comprised of 13 management units, four which have GHL's, five which are exploratory, and four units are offshore which were not expected to produce a sac roe harvest. The Mainland District experiences more extreme weather conditions than the other districts around Kodiak and Afognak Islands. Sea conditions encountered, while crossing the Shelikof Strait to reach this district greatly reduces the mobility of vessels which fish this district. The Mainland District frequently experiences high winds, low ceilings, and limited visibility, greatly limiting the effectiveness of spotters. Fishing effort in this district, generally involves only one or two seine combines and 5-10 gillnet vessels. Several management units on the southern part of this district are the farthest units from the port of Kodiak. No field crews are stationed in this district due to the high expense of placing and supplying crews in this remote area. The weather conditions, combined by the small number of vessels which fish these units reduces the likelihood that excessive harvests will occur. The Alinchak Bay management unit closed on May 10 with a harvest of 63 tons (GHL 40 tons) and was the only inseason closure for the district. Other management units which had herring harvests include the Inner Kukak harvest 15 tons (GHL 65 tons), Inner Katmai harvest 24 tons (GHL 65 tons), and Wide Bay harvest 15 tons (GHL 125 tons). None of these units approached the GHL's and along with the remaining nine management were open through June 30.

Age Composition, Weights, and Lengths

During the 1993 season, age-5-year-old herring comprised 64% of the commercial seine harvest, (Figure 8). The remaining age classes represented the following percentage of the harvest; Age 3 (9%), Age 4 (4%), and Age 6-11+ (23%). Age 3 herring are considered "recruit herring", entering into the commercial fishery and spawning for the first time. The strong dominance of age 5 herring overshadowed the other age classes in the fishery. In general the most management units had a dominance of Age 5 herring while the eastside Kodiak Island management units had a dominance of Age 6 herring (Figure 9 and Table 5).

When compared to previous brood years the weights of herring age 3 showed a decrease in average weight in 1991 harvest. This trend continued in 1992 and 1993 when these same fish

were harvested as Age 4 and 5 respectively, being the smallest by age observed in this fishery (Table 6). All other age classes in the 1993 fishery had comparable growth rates to the past four years (Table 7).

The lengths of herring sampled during the 1993 season are comparable to the past four years, showing little change in growth rates (Table 8).

Spawning Biomass

In 1993, the spawning biomass index for that portion of the Kodiak Area fished was estimated to range from 42,500 to 56,000 tons as determined by industry spotter and ADF&G surveys. This is the highest biomass estimate recorded for this fishery from 1979-1993. Since 1988 the indexed biomass has increased dramatically from 5,500 tons to 15,500 tons in 1990 and doubled by 1992 to 32,000 tons. A breakdown by district includes; 10,000-13,000 tons in the Afognak District, 10,000-14,000 tons in the General District, 12,000-15,000 tons in the Uganik District, 1,500-2,000 tons in the Uyak District, 7,000-9,000 tons in the Alitak District, and 2,000-3,000 tons in the Mainland District. The sac roe harvest of 4,929 tons represented a total indexed exploitation rate which ranged from 12 to 9% of the spawning biomass. Which is similar to the past three seasons yet lower than most years, which have ranged from 28-41%.

These exploitation rates should be qualified, in that surveys represent an unknown and undoubtedly highly variable proportion of the actual biomass. These exploitation rates can be used for trend evaluation, but they should not be compared to the spawning biomass indices achieved by ADF&G in Prince William Sound, Cook Inlet, and Bristol Bay. These areas have a relatively large biomass available for aerial indexing and where that portion of the observed biomass is annually less variable, i.e. there is greater opportunity for observing a greater and more consistent proportion of the actual total biomass. The exploitation rates achieved in these fisheries would be more comparable between areas.

1994 Management Plans and Issues

The 1994 management plan will be similar to those plans which have been in effect since 1982. The GHL's for the management units will be based on the stock status and ADF&G's ability to manage the fishery. Based on the age class data collected in 1993 and the increasing biomass estimates for the past three years, the preliminary GHL for 1994 is 4,000 tons an increase of 14% over the 1993 season. The 1994 harvest is expected to target the dominant age 6 and 7 year old fish which should comprise 70-80% of the harvest. These age compositions, spawn observations, and fishery performances are all indicators that the Kodiak area biomass should support a stable sac roe fishery over next few years. Observations and harvests of age 2 and 3 herring during the 1994 season will provide the best insights into the future production of this fishery.

ADF&G will continue to rely greatly on industry spotter pilots, processors, and fishermen to provide fishery data to manage this fishery. Conflicts between seine and gillnet gear still occur

at times but for the most part, herring fishermen seem to be satisfied with the current management strategy. This attitude may change if the harvest allocation between gear types exceeds historical ranges. The current harvest strategy will be challenged in the 1994 season as herring abundance is at historic levels with potentially high gear levels.

HERRING FOOD/BAIT FISHERY

INTRODUCTION

Historical Perspective

Historically, the Kodiak "food/bait" herring fishery was one of the State's three major domestic fisheries. Southeastern Alaska and Prince William Sound were the other two major fisheries. Although the earliest recorded harvest was in 1912, Kodiak's herring fishery experienced a notable expansion during the early 1920's as industry personnel searched for new areas where large herring were available. Large herring were preferred since the initial products were utilized as food products such as salted and pickled herring. This fishery developed primarily from the response to demand for food products created by World War I. By the late 1920's the demand for herring food products had declined but demand for reduction products such as, fish meal and oil, increased. During the fishery's peak production years it was primarily a reduction fishery and yielded tonnages which dwarf current food/bait harvests, (Figure 10). During a seventeen year period (1934-1950) an average harvest of 31,600 tons was sustained, (Table 8). The primary product was fish meal and oil, which required large quantities of herring available for harvesting with secondary uses being limited amounts of salted food and bait products. Major harvest areas were located in eastern Shelikof Strait and adjacent bays and straits along the west side of Kodiak and Afognak Islands. Quotas and harvest weights were measured by barrels (where 250 lb of herring equals one barrel) until 1956, when the unit of measure was changed to short tons. Historical effort involved large, approximately 70 feet in length, "sardine seiner" type vessels used in conjunction with "holding pounds" delivering to five major reduction plants. In addition, small local seine vessels and gillnets were used for a portion of the food industry delivering to floating and small shore based salting and pickling operations.

From the early 1960's to 1973, there were no harvest quotas and the season was open year round. Beginning in 1974, the season dates were changed to run from August 1 through February 28; however no regulatory Guideline Harvest Levels (GHL's) were in effect until 1979. During 1979 and 1980, the GHL was 12,600 tons for the food and bait season. As a result of the rapidly developing sac roe fishery, the GHL for the food/bait season was reduced to 1,000 tons in 1981 and remained at that level through 1987. Regulatory GHL's for the food/bait herring fishery were initially replaced with a regulatory harvest strategy in 1988 which was further defined in 1993 to address harvest activities in the Shelikof Strait, (Appendix C.1.).

METHODS

Fishery Characteristics

The current food/bait herring fishery can be characterized as being a secondary commercial fishery on herring concentrations located in Kodiak waters. It is primarily a bait fishery providing a frozen product for longline and crab/cod pot fishers. Effort and harvest levels are at historical lows for the food/bait fishery, while the sac roe fishery supports relatively high levels of effort and harvest. The food/bait fishery is an open-to-entry fishery, while the sac roe fishery has been limited-to-entry since 1981. Existing regulations designate priority status to the sac roe fishery, in that regulatory harvest strategy allocates a very major percentage of the allowable harvest on local stocks to the sac roe fishery.

During the early 1980's, major concentrations of herring were located in eastern Shelikof Strait and in adjacent bays to the west side of Kodiak and Afognak Islands. The biomass found in this area exceeded that of known Kodiak spawning stocks. These herring were targeted by food/bait fishermen and questions arose concerning the origin of these fish. In 1986, a stock identification study based on scale pattern analysis was performed on herring which were harvested from a large biomass located in the east part of the Shelikof Strait (Johnson 1988). The study concluded that at least 80% of the East Shelikof herring that were sampled were of Kamishak Bay spawning stock origins, which is within the Lower Cook Inlet Management Area.

In March 1988, the Alaska State Board of Fisheries allocated not more than two percent of the previous season's total available spawning biomass from Kamishak to be harvested during Kodiak's food/bait herring fishery. For local Kodiak spawning stocks, which are exploited during the sac roe fishery, the food/bait GHL on those same stocks is 10% of the previous seasons sac roe harvest.

Problems arose from this management plan as it was difficult to assign harvest levels to the intermixed spawning stocks, Kodiak and Kamishak. This plan was in affect through the 1992/93 season.

1993/94 Harvest Strategy

In November 1992, the Alaska Board of Fisheries approved a new management plan (5AAC27.465) Kamishak Bay District Herring Management Plan which outlined criteria for the management of the Kamishak Bay sac roe herring and Shelikof Strait food/bait fishery, (1993 Herring Regulation Book). This plan defines allocations to these fisheries based on biomass estimates.

The allocation of Kamishak Bay herring stocks to the Shelikof Strait food and bait fishery is based on the spawning biomass of age 5 and older herring and not on the biomass of juveniles.

The quantity of herring stocks aged four years and younger caught during the food/bait fishery will be adjusted to approximate the biomass of a similar number of age 5 herring.

Age 4 and younger herring were selected because in the Kamishak spawning stocks, herring are not considered to have attained complete recruitment into the spawning biomass until they have reached age 5.

In January 1993, the Alaska Board of Fisheries approved a new harvest strategy (5AAC 27.535) which defined criteria for managing the Kodiak food/bait herring fishery (1993 Herring Regulation Book). The major change in this new strategy was the combining of the Kamishak stock GHL with the Kodiak stock GHL for food/bait management units FB 1, FB 4, and FB 5. When this combined GHL is achieved the Shelikof Strait food and bait management units are closed collectively. This plan alleviates the problem of identifying the spawning stock of a harvest in areas where intermixing may occur.

A harvest strategy is published annually (Appendix C.1.) which details the aforementioned management plans, GHL's, and regulations which pertain to this fishery.

By regulation, the herring food/bait season extends from August 1 through February 28. The entire Kodiak Area is open to continuous fishing on August 1 for all legal gear types, which include purse seine, gillnet and trawl. There are no exclusive gear areas.

During the January 1993 Alaska Board of Fisheries meeting a new regulation was adopted concerning the gear restrictions placed on purse seines. The purse seine specifications were increased to 150 fathoms in length and 1,625 meshes in depth. Prior to the 1985/86 food/bait season there were no gear restrictions. Restrictions on seine and gillnet gear were imposed for the 1986/87 season and seine gear efficiency was reduced (Figure 11). Gillnets are only restricted to a length of 150 fathoms and there are no trawl restrictions.

All permit holders and buyers are required to register at the Kodiak ADF&G office prior to fishing or purchasing herring. At that time, management plans are issued and catch reporting procedures and current regulations are reviewed. Each landing is sampled for age, weight, length (AWL) information and skipper interviews are conducted to evaluate which sac roe stocks are being impacted.

RESULTS

1993-94 Season Summary

The 1993-94 allocation for Kamishak herring stocks over wintering in Shelikof Strait was 380 tons. In addition for the Kodiak stocks in food/bait management units FB 1, FB 4, and FB 5 there was an additional 272 ton GHL. Combined the GHL for both stocks was 652 tons for the management units which are affected by (5 AAC 27.465) Kamishak Bay District Herring Management Plan.

For the Kodiak spawning stocks the total GHL was 489 tons, which represents 10% of the previous spring's sac roe harvest on a stock by stock basis. The total GHL for the KMA was 869 tons, (380 tons Kamishak allocation and 489 tons Kodiak stocks).

Kodiak's food/bait herring season started August 1, 1993 and remained open until February 28, 1994. Fishing periods are 24 hours per day and seven days a week. During the 1993-94 season the harvest occurred in October. Three emergency orders (E.O.'s) were issued, one which established fishing periods and areas open and the other two were issued to close areas to fishing after a harvest had occurred.

For the 1993-94 season a total of 837 tons were harvested in the KMA. Eleven vessels and five buyer/processors registered for this fishery. Trawl gear accounted 56% of the total harvest and purse seine gear 44%. The total exvessel value of this fishery was \$335,000 dollars.

The state vessel R/V K-Hi-C was dispatched to the Eastern Shelikof Strait to monitor the fishery as the GHL was approached. Catch rates were high and the K-Hi-C was essential in the on-grounds management of the fishery. The food/bait management units FB1, FB2, FB4, FB5, FB11, and FB12 which are affected by the combined harvest of Kamishak herring stocks, were closed on October 19 and the area affected by this closure can be seen (Appendix C.1.). The actual harvest totalled 707 tons. As stated in the Kamishak Bay District Herring Management Plan (5 AAC 27.465) the quantity of age 4 and younger herring harvested will be adjusted to a similar number of age 5 herring, this adjusted harvest totalled 764 tons (Table 10). The combined GHL for these units was 652 tons.

The Alitak food/bait management unit FB7 was closed when the GHL was achieved, the GHL for this unit was 77 tons. AWL data from this harvest reveals a high percentage of Age 5 and 6 herring (Table 11) which was identical to the sac roe herring harvest from the Alitak District.

AWL samples along with biomass observations from the fishers was obtained upon delivery of herring harvests to the processors. A large portion of this years harvest was delivered to Homer and was processed in plants in Kenai and Homer.

No ADF&G hydroacoustic surveys were conducted in 1993 on overwintering herring concentrations.

1993-94 Management Plans and Issues

The success of purse seine gear in this fishery will likely impel other seiners to participate next season. The need for additional on-grounds monitoring of the fishery will be necessary as gear levels escalate. Improvements in timeliness of catch reporting may be needed with increasing gear levels. Hydroacoustic surveys and collection of samples need to be conducted to assess the Kodiak herring stocks.

HERRING SUBSISTENCE/PERSONAL USE FISHERY

The Fishery

The subsistence and personal use fishery for herring is regulated only during the sac roe herring fishery season, April 15 through June 30. During this time period, a permit is required for individuals to harvest herring who are not sac roe commercial fishermen. Sac roe commercial fishermen may retain herring from their lawfully taken commercial catch to fulfill their subsistence or personal use needs. The majority of the harvest of herring during this time period is for individual bait purposes in longline fisheries. With small amounts utilized for food, sport fishing bait, and fertilizer. The conditions of this permit can be seen in Appendix D.1.

1993 Harvest and Effort

A total of 50 permits were issued in 1993, with 15 permits returned through February 7, 1994. The total harvest was 7,650 pounds with 6,810 pounds from the General District, 700 pounds from the Uganik District, 90 pounds from the Afognak District, and 50 pounds from the Uyak District. Eight of the permits returned accounted for the harvest.

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Table 1. Historical harvest and effort level for the sac roe herring fishery for the Kodiak Management Area, 1964-1993.

Year	Total Harvest Tons	Harvest By Gear ^a		Number of Buyer's	Number of Vessels			
		Seine	Gillnet		Trawl	Gillnet	Seine	Total
1964	568	568	-	2	0	0	5	5
1965	657	657	-	2	0	0	8	8
1966	2,769	2,769	-	4	0	0	11	11
1967	1,662	1,662	-	4	0	0	5	5
1968	2,001	2,001	-	4	0	0	10	10
1969	1,130	1,130	-	9	0	0	21	21
1970	342	342	-	5	0	0	13	13
1971	284	284	-	2	0	0	4	4
1972	215	215	-	1	0	0	4	4
1973	831	831	-	4	0	0	11	11
1974	868	868	-	4	0	0	26	26
1975	8	8	-	3	0	0	2	2
1976	5	5	-	1	0	0	1	1
1977	338	338	-	3	0	0	11	11
1978	904	881	23	7	2	7	28	35
1979	1,735	1,457	278	8	0	125	57	182
1980	2,383	2,009	374	9	1	109	92	201
1981	2,065	1,596	469	9	0	114	79	193
1982	1,771	1,447	324	6	0	67	45	112
1983	2,318	1,797	521	7	0	64	41	105
1984	2,163	1,691	472	7	0	69	39	108
1985	1,968	1,244	724	7	0	81	34	115
1986	1,558	1,111	447	8	0	71	31	102
1987	2,146	1,591	555	8	0	62	29	91
1988	2,171	1,304	867	6	0	76	33	109
1989	2,249	1,513	736	6	0	83	37	120
1990	2,347	1,644	703	6	0	63	27	90
1991	2,432	1,697	735	6	0	64	32	96
1992	4,283	3,260	1,023	6	0	74	40	114
1993	4,929	4,203	726	6	0	86	41	127

Table 2. Status of Kodiak sac roe herring limited entry permits, 1987-1993.

Gear Type	Year					
	1988	1989	1990	1991	1992	1993
Gillnet						
Transferable	64	68	72	74	97	95
Non-Transferable	<u>41</u>	<u>44</u>	<u>27</u>	<u>28</u>	<u>11</u>	<u>8</u>
TOTAL	105	112	99	102	108	103
FISHED	76	83	63	64	74	86
Seine						
Transferable	46	47	47	48	59	66
Non-Transferable	<u>24</u>	<u>25</u>	<u>25</u>	<u>22</u>	<u>13</u>	<u>12</u>
TOTAL	70	72	72	70	72	78
FISHED	33	37	27	32	40	41
Combined Totals						
Transferable	110	115	119	122	156	161
Non-Transferable	<u>65</u>	<u>69</u>	<u>52</u>	<u>50</u>	<u>24</u>	<u>20</u>
TOTAL	175	184	171	172	180	181
FISHED	109	120	90	96	114	127

Table 3. Kodiak sac roe herring fishery summary by year and by gear, 1979-1993.

YEAR	SEASON LENGTH (DAYS)	GUIDELINE HARVEST LEVEL (TONS)	TOTAL HARVEST (TONS)	HARVEST BY GEAR TYPE (TONS)		PERCENT HARVEST BY GEAR TYPE (TONS)		NUMBER OF LANDINGS		NO. UNITS		AVG. \$'S EARNED	
				SEINE	G/N	SEINE	G/N	SEINE	G/N	SEINE	G/N	SEINE	G/N
1979	36	2,400	1,735	1,457	278	84	16	-	-	57	125	38,347	3,333
1980	35	2,400	2,383	2,009	374	84	16	-	-	92	109	14,978	2,573
1981	48	2,400	2,065	1,596	469	77	23	207	406	79	114	14,402	3,471
1982	59	2,400	1,771	1,447	324	82	18	138	191	45	67	17,819	2,719
1983	51	2,400	2,319	1,797	522	78	22	164	284	41	64	35,061	6,520
1984	54	2,400	2,163	1,691	472	78	22	138	212	39	69	34,691	5,467
1985	59	2,000	1,968	1,244	724	63	37	118	348	34	81	32,935	8,039
1986	61	1,690	1,558	1,110	448	71	29	132	385	31	71	34,010	6,002
1987	61	1,640	2,146	1,591	554	74	26	122	411	29	62	54,872	8,945
1988	59	2,065	2,171	1,304	867	60	40	169	555	33	76	51,350	14,837
1989	76	2,415	2,249	1,513	736	67	33	171	627	37	83	34,749	7,537
1990	75	2,375	2,347	1,644	703	70	30	156	544	27	63	51,724	9,652
1991	83	2,510	2,432	1,697	735	70	30	169	587	32	64	45,077	9,762
1992	77	2,720	4,283	3,260	1,023	76	24	185	706	40	74	40,750	6,912
1993	77	3,525	4,929	4,203	726	85	15	237	294	41	86	56,380	4,640
15-YR AVG.	61	2,356	2,435	1,838	597	75	25	140	370	44	81	37,140	6,695

Table 4. Sac roe herring harvest summary listing guideline harvest levels by management unit, harvest in tons by gear type, percentage of harvest by gear type, total harvest, and date the management unit closed for the Kodiak Management Area, 1993.

Stat. Area	Mgmt. Units	Guideline Harvest Level	Purse (Tons)	%	Gillnet (Tons)	%	Total (Tons)	Date Closed
AFOGNAK DISTRICT								
A010	Raspberry Sts.	165 TONS	384.5	86	60.4	14	444.9	4/21
A020	Malina Bay	90 TONS	305.4	98	7.0	2	312.4	4/17
A031	Paramanof Bay	100 TONS	418.0	97	13.2	3	431.2	4/20
A032	Foul Bay	60 TONS	158.4	100	0	-	158.4	4/18
A040	Devils Inlet	10 TONS	16.8	100	0	-	16.8	4/20
A040	Blue Fox	20 TONS	223.4	100	0	-	223.4	4/20
A050	Offshore W. Afog. ^a	-	0	-	0	-	0	6/30
A060	Shuyak Is.	20 TONS	0	-	0	-	0	6/30
A070	Perenosa Bay	15 TONS	9.9	100	0	-	9.9	6/30
A071	Delphin Bay	10 TONS	0	-	0	-	0	6/30
A072	Seal Bay	10 TONS	0	-	0	-	0	6/30
A080	Tonki Bay	15 TONS	0	-	0	-	0	6/30
A090	Izhut Bay	15 TONS	5.0	100	0	-	5.0	6/30
A091	Kitoi Bay	10 TONS	0	-	0.4	100	0.4	6/30
A092	MacDonalds Lagoon	10 TONS	0	-	0	-	0	6/30
A100	Danger Bay	25 TONS	25.7	84	4.8	16	30.5	5/10
A101	Litnik	10 TONS	0	-	0.7	100	0.7	6/30
A102	Duck Bay	10 TONS	0	-	0	-	0	6/30
DISTRICT TOTAL		595 TONS	1547.1		86.5		1633.6	

-Continued-

Table 4. (page 2 of 4)

Stat. Area	Mgmt. Units	Guideline Harvest Level	Purse (Tons)	%	Gillnet (Tons)	%	Total (Tons)	Date Closed
UYAK DISTRICT								
UY10	Offshore Uyak ^a	-	0	-	0	-	0	6/30
UY20	Harvester Island	10 TONS	0	-	0	-	0	6/30
UY30	Inner Uyak	135 TONS	29.8	89	3.8	11	33.6	6/30
UY31	Larsen Bay	10 TONS	15.7	100	0	-	15.7	5/15
UY32	Browns Lagoon	30 TONS	17.5	80	1.9	20	19.4	5/30
UY40	Zachar Bay	75 TONS	3.2	100	0	-	3.2	6/30
UY50	Spiridon Bay	90 TONS	16.6	81	4.0	19	20.6	6/30
	DISTRICT TOTAL	350 TONS	82.8		9.7		92.5	
UGANIK DISTRICT								
UG10	Kupreanof	10 TONS	0	-	0	-	0	6/30
UG20	Viekoda	80 TONS	95.3	100	0	-	95.3	4/20
UG21	Terror	90 TONS	212.4	99	1.5	1	213.9	4/21
UG21	Uganik Is. Lagoon ^a	0 TONS	0	-	0	-	0	6/30
UG30	Village Island	135 TONS	480.6	99	3.4	1	484.0	4/18
UG31	W. Uganik Pass	75 TONS	62.0	84	11.4	16	73.4	4/24
UG32	NE Arm Uganik	110 TONS	3.3	100	0	-	3.3	6/30
UG33	E. Arm Uganik	60 TONS	113.2	100	0	-	113.2	4/20
UG34	S. Arm Uganik	60 TONS	91.9	100	0	-	91.9	4/19
UG40	Offshore Uganik ^a	-	0	-	0	-	0	6/30
	DISTRICT TOTAL	620 TONS	1058.7		16.3		1075.0	
ALITAK DISTRICT								
AL10	Outer Alitak	(Exploration)	28.2	100	0	-	28.2	6/30
AL20	Inner Alitak	75 TONS	22.0	31	49.5	69	71.5	4/29
AL21	Deadman Bay	230 TONS	295.7	78	83.3	22	379.0	5/20
AL30	Sulua/Portage Bay	145 TONS	170.1	84	32.6	16	202.7	4/30

-Continued-

Table 4. (page 3 of 4)

Stat. Area	Mgmt. Units	Guideline Harvest Level	Purse (Tons)	%	Gillnet (Tons)	%	Total (Tons)	Date Closed
ALITAK DISTRICT (Cont.)								
AL40	Lower Olga/Moser	20 TONS	27.3	100	0	-	27.3	5/30AL40
	N. Upper Olga B.	10 TONS	0	-	0	-	0	6/30
AL50	Upper Olga Bay	110 TONS	49.6	99	0.4	1	50.0	6/30
AL60	Geese/Twoheaded	(Exploration)	15.2	100	0	-	15.2	6/30
	DISTRICT TOTAL	590 TONS	608.1		165.8		773.9	
STURGEON/HALIBUT DIST.								
SH10	Sturgeon/Halibut	(Exploration)	0	-	0	-	0	6/30
	DISTRICT TOTAL	0 TONS	0		0		0	
GENERAL DISTRICT								
GO10	Kaiugnak	20 TONS	8.0	60	5.3	40	13.3	6/30
GO20	W. Sitkalidak St.	150 TONS	90.1	60	59.9	40	150.0	5/06
GO20	S.W. Sitkalidak St.	125 TONS	57.8	42	78.3	57	136.1	5/06
GO21	Barling	40 TONS	5.3	13	34.0	87	39.3	5/02
GO22	E. Sitkalidak St.	180 TONS	233.5	80	59.5	20	293.0	4/17
GO23	Tanginak Anchorage	15 TONS	0	-	19.1	100	19.1	4/18
GO30	Outer Sitkalidak	(Exploration)	0	-	0	-	0	6/30
GO40	Outer Kiliuda	(Exploration)	45.8	100	0	-	45.8	6/30
GO41	Inner Kiliuda	60 TONS	127.3	100	0	-	127.3	4/24
GO42	Shearwater	75 TONS	14.1	15	76.9	85	91.0	5/26
GO50	Pasagshak	30 TONS	12.0	43	15.8	57	27.8	5/06
GO50	Outer Ugak	(Exploration)	44.9	86	7.2	14	52.1	5/20
GO51	Inner Ugak	95 TONS	93.9	72	35.8	28	129.7	5/02
GO60	Womens Bay	110 TONS	3.8	13	25.8	87	29.6	6/30
GO70	Monashka/Mill B.	(Exploration)	0	-	0	-	0	6/30
GO80	Anton Larsen	10 TONS	0	-	0	-	0	6/30
GO81	Sheratin	10 TONS	0	-	0.3	100	0.3	6/30
GO90	Kizhuyak	100 TONS	51.1	76	16.3	24	67.4	6/30

-Continued-

Table 4. (page 4 of 4)

Stat. Area	Mgmt. Units	Guideline Harvest Level	Purse (Tons)	%	Gillnet (Tons)	%	Total (Tons)	Date Closed
GENERAL DISTRICT (Cont.)								
G100	Kalsin Bay	15 TONS	0	-	0	-	0	6/30
G101	Middle Bay	20 TONS	14.9	95	0.8	5	15.7	5/14
G102	Inshore Chiniak	10 TONS	0	-	0	-	0	6/30
G103	Spruce Island	10 TONS	0	-	0	0	0	6/30
DISTRICT TOTAL		1075 TONS	802.5		435.0		1237.5	
MAINLAND DISTRICT								
M010	North Mainland	(Exploration)	0	-	0	-	0	6/30
M020	Inner Kukak	65 TONS	1.9	13	12.8	87	14.7	6/30
M030	Outer Kukak ^a	-	0	-	0	-	0	6/30
M040	Inner Missak	(Exploration)	0	-	0	-	0	6/30
M040	Outer Missak ^a	-	0	-	0	-	0	6/30
M050	Inner Katmai	65 TONS	24.3	100	0	-	24.3	6/30
M060	Outer Katmai ^a	-	0	-	0	-	0	6/30
M070	Alinchak	40 TONS	63.1	100	0	-	63.1	5/10
M080	Puale Bay	(Exploration))	0	-	0	-	0	6/30
M090	Portage Bay	(Exploration)	0	-	0	-	0	6/30
M100	Outer Portage ^a	-	0	-	0	-	0	6/30
M110	Wide Bay	125 TONS	14.7	100	0	-	14.7	6/30
M120	Lower Shelikof	(Exploration)	0	-	0	-	0	6/30
DISTRICT TOTAL		295 TONS	104.0		12.8		116.8	
GRAND TOTAL		3525 TONS	4203.2		726.1		4929.3	

^a 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.)

Table 5. Age Compositon, by percent, of sac roe herring stocks, Kodiak Management Area, 1993.^{a,b}

Area	Harvest (tons)	Percent at Age										Total Avg.	N
		2	3	4	5	6	7	8	9	10	11+		
Rasp. St./Muskomee	445	-	2.0	3.2	88.6	4.9	0.2	0.3	0.8	-	0.2		658
Malina Bay	312	-	0.8	1.3	89.9	6.9	0.3	0.3	0.5	-	-		377
Paramanof Bay	431	-	-	1.5	90.0	6.2	-	0.3	2.1	-	-		339
Foul Bay	158	-	-	-	87.8	8.1	-	-	4.1	-	-		148
Blue Fox Bay	223	-	-	0.6	87.7	6.8	-	-	3.1	1.2	0.6		162
Izhut Bay	5	-	17.2	3.2	49.5	17.2	6.5	1.1	3.2	-	2.2		93
Danger Bay	30	-	-	-	20.5	57.5	6.8	1.4	4.1	5.5	4.1		73
Viekoda Bay	95	-	4.5	1.7	90.8	2.5	-	0.6	-	-	-		357
Terror Bay	214	-	14.2	6.5	75.1	2.9	-	-	1.3	-	-		309
Village Islands	484	-	0.6	1.2	92.5	4.7	-	0.3	0.6	-	-		321
W. Uganik Passage	73	-	10.8	5.3	80.7	2.2	0.2	-	0.9	-	-		455
E. Arm Uganik	113	-	2.6	1.7	90.0	5.2	-	-	0.4	-	-		230
S. Arm Uganik	92	-	0.9	1.5	93.5	3.4	-	-	0.6	-	-		324
Inner Uyak Bay	34	3.0	53.6	9.5	14.9	10.1	1.8	.6	1.8	1.2	3.6		168
Brown's Lagoon	19	1.0	25.8	15.9	41.3	13.1	0.5	0.3	0.8	0.8	0.5		383
Zachar Bay	3	1.4	8.6	48.6	14.3	14.3	1.4	-	1.4	4.3	5.7		70
Spiridon Bay	21	-	5.2	10.3	5.2	17.2	-	1.7	15.5	1.7	43.1		58
Inner Alitak Bay	71	-	-	-	95.7	4.3	-	-	-	-	-		93
Deadman Bay	379	0.8	6.1	1.4	58.2	15.4	2.5	0.6	5.7	5.1	4.3		512
Sulua Bay	203	-	0.9	-	83.9	12.9	-	-	1.8	-	0.5		217
W. Sitkalidak St.	286	-	6.0	-	39.9	50.8	1.6	-	1.6	-	-		183
Barling Bay	39	-	-	-	17.0	77.4	-	-	5.7	-	-		53
E. Sitkalidak St.	293	-	10.8	0.4	41.5	43.0	0.4	-	2.2	1.1	0.7		277
Inner Kiliuda Bay	127	0.5	5.2	0.9	8.5	82.0	1.4	-	0.5	0.9	-		211
Shearwater Bay	91	2.3	61.6	-	14.0	19.8	-	-	1.2	1.2	-		86
Outer Ugak Bay	52	-	2.4	5.8	1.9	74.8	11.7	-	1.5	1.5	0.5		206
Inner Ugak Bay	130	-	11.3	4.2	5.6	70.4	5.6	-	1.4	1.4	-		71
Womens Bay	30	-	50.3	1.8	17.8	28.2	1.2	-	0.6	-	-		163
Middle Bay	16	-	14.3	0.5	20.1	59.3	3.7	0.5	1.1	0.5	-		189
Kizhuyak Bay	67	0.5	6.5	8.0	50.6	27.4	3.7	-	1.5	1.0	0.7		401
Alinchak Bay	63	-	1.9	27.3	66.5	3.3	-	-	-	1.0	-		209
31 Mgmt. Units	4599	0.3	8.7	4.5	63.5	18.2	1.2	0.2	1.6	0.8	1.0		7,396

^a All samples were from commercial seine catches collected by ADF&G personnel except the Barling Bay sample was from a commercial gillnet catch collected by ADF&G personnel.

^b Of the 50 stocks exploited in 1993, samples were collected from 31 (62%). These 31 stocks yielded 4,599 tons or 93% of the management area's total harvest of 4929.3 tons.

Table 6. Comparison of age, weight, and length (AWL) of sac roe herring, Kodiak Management Area, 1989-1993.

Year	Age										Total Avg.	N
	2	3	4	5	6	7	8	9	10	11+		
% Age												
1989	.3	7.1	6.2	42.0	19.3	1.0	10.0	4.5	8.5	1.1		3,026
1990	.7	52.0	3.7	3.3	20.4	8.5	.6	3.0	2.6	5.2		7,672
1991	.05	26.3	49.4	2.6	1.4	8.7	5.2	.6	2.7	3.05		5,498
1992	.5	2.9	62.35	26.9	2.0	.7	2.0	1.2	.05	1.4		9,325
1993	.3	8.7	4.5	63.5	18.2	1.2	.2	1.6	.8	1.0		7,396
Avg. Weights												
1989	60	85	130	176	224	251	269	271	276	284	199	2,569
1990	52	95	141	167	191	248	229	280	283	290	152	4,885
1991	53	81	137	169	191	221	255	261	301	292	153	4,239
1992	40	87	114	176	201	226	247	284	283	303	140	8,139
1993	58	94	134	144	203	226	226	250	281	310	156	6,852
Avg. Lengths												
1989	168	185	210	227	247	254	259	259	260	263	235	3,026
1990	158	188	214	226	232	250	245	261	258	260	212	7,671
1991	166	184	215	225	235	244	251	257	266	263	215	5,497
1992	162	194	202	231	240	250	254	264	265	268	214	9,323
1993	161	191	211	216	240	247	244	254	261	264	219	7,394

Table 7. Average weight summary of sac roe herring stocks, Kodiak Management Area, 1993.^{a,b}

Area	Harvest (tons)	Avg. Weights (gms) by Age										Total Avg.	N
		2	3	4	5	6	7	8	9	10	11+		
Rasp. St./Muskomee	445	-	79	114	134	149	207	180	203	-	279	134	658
Malina Bay	312	-	75	111	140	166	172	205	241	-	-	142	318
Paramanof Bay	431	-	-	129	140	169	-	180	206	-	-	143	330
Foul Bay	158	-	-	-	145	189	-	-	226	-	-	152	148
Blue Fox Bay	223	-	-	132	144	174	-	-	198	244	235	149	162
Izhut Bay	5	-	93	146	163	201	242	222	281	-	343	170	93
Danger Bay	30	-	-	-	156	212	256	250	265	335	314	217	73
Viekoda Bay	95	-	79	105	129	157	-	168	-	-	-	128	357
Terror Bay	214	-	74	99	124	161	-	-	187	-	-	120	215
Village Islands	484	-	92	112	134	159	-	230	218	-	-	136	310
W. Uganik Passage	73	-	75	98	122	141	-	-	264	-	-	117	298
E. Arm Uganik	113	-	82	131	135	162	-	-	184	-	-	135	230
S. Arm Uganik	92	-	86	108	141	177	-	-	169	-	-	141	319
Inner Uyak Bay	34	57	118	169	155	224	224	315	304	268	333	161	100
Brown's Lagoon	19	57	105	148	158	208	226	286	276	296	321	152	383
Zachar Bay	3	59	103	159	168	211	239	-	254	269	293	177	70
Spiridon Bay	21	-	103	163	171	232	-	258	282	290	322	263	58
Inner Alitak Bay	71	-	-	-	166	201	-	-	-	-	-	168	83
Deadman Bay	379	-	104	160	176	206	202	229	262	255	288	194	429
Sulua Bay	203	-	93	-	168	206	-	-	227	-	290	174	215
W. Sitkalidak St.	286	-	89	-	170	209	227	-	234	-	-	187	183
Barling Bay	39	-	-	-	168	206	-	-	201	-	-	200	53
E. Sitkalidak St.	293	-	99	101	164	206	283	-	267	290	305	179	258
Inner Kiliuda Bay	127	56	95	131	178	211	216	-	269	313	-	202	211
Shearwater Bay	91	64	88	-	153	190	-	-	334	222	-	121	86
Outer Ugak Bay	52	-	101	162	157	213	219	-	284	344	340	210	206
Inner Ugak Bay	130	-	88	160	187	211	221	-	290	-	-	193	60
Womens Bay	30	-	91	149	158	215	213	-	242	-	-	141	160
Middle Bay	16	-	93	121	169	214	249	297	354	326	-	191	189
Kizhuyak Bay	67	54	80	133	142	195	232	-	297	326	348	161	400
Alinchak Bay	63	-	81	118	153	183	-	-	-	318	-	145	197
31 Mgmt. Units	4,599	57.6	93.8	134.1	143.8	202.9	226.5	226.4	250.2	280.6	310.4	156.1	6,852

^a All samples were from commercial seine catches collected by ADF&G personnel except the Barling Bay sample was from a commercial gillnet catch collected by ADF&G personnel.

^b Of the 50 stocks exploited in 1993, samples were collected from 31 (62%). These 31 stocks yielded 4,599 tons or 93% of the management area's total harvest of 4929.3 tons.

Table 8. Average length summary of sac roe herring stocks, Kodiak Management Area, 1993.^{a,b}

Area	Harvest (tons)	Avg. Length (mm) at Age										Total Avg.	N
		2	3	4	5	6	7	8	9	10	11+		
Raspberry St./Muskomee	445	-	183	203	212	221	245	230	237	-	264	212	658
Malina Bay	312	-	179	199	213	225	230	243	250	-	-	214	377
Paramanof Bay	431	-	-	209	214	225	-	237	242	-	-	215	339
Foul Bay	158	-	-	-	217	233	-	-	245	-	-	219	148
Blue Fox Bay	223	-	-	212	218	226	-	-	238	257	248	219	162
Izhut Bay	5	-	192	215	223	240	250	236	265	-	271	225	93
Danger Bay	30	-	-	-	227	247	254	255	277	281	269	247	73
Viekoda Bay	95	-	183	204	211	222	-	228	-	-	-	210	357
Terror Bay	214	-	180	197	208	219	-	-	240	-	-	204	309
Village Islands	484	-	190	203	212	223	-	233	241	-	-	213	320
W. Uganik Passage	73	-	183	196	208	220	240	-	239	-	-	205	455
E. Arm Uganik	113	-	182	208	212	222	-	-	254	-	-	212	230
S. Arm Uganik	92	-	182	198	214	229	-	-	239	-	-	214	324
Inner Uyak Bay	34	156	198	218	223	241	242	260	253	252	258	212	168
Brown's Lagoon	19	163	197	216	224	240	244	257	256	253	260	218	383
Zachar Bay	3	171	203	225	229	247	257	-	254	262	265	231	70
Spiridon Bay	21	-	200	231	232	252	-	268	263	270	268	255	58
Inner Alitak Bay	71	-	-	-	220	236	-	-	-	-	-	221	93
Deadman Bay	379	156	192	215	224	236	238	244	254	253	257	228	511
Sulua Bay	203	-	194	-	223	235	-	-	246	-	267	225	217
W. Sitkalidak St.	286	-	190	-	229	243	250	-	256	-	-	235	183
Barling Bay	39	-	-	-	235	246	-	-	255	-	-	244	53
E. Sitkalidak St.	293	-	194	189	226	242	267	-	260	272	268	231	277
Inner Kiliuda Bay	127	170	192	215	231	243	245	-	260	273	-	239	211
Shearwater Bay	91	175	189	-	219	237	-	-	279	265	-	204	86
Outer Ugak Bay	52	-	192	221	219	240	246	-	268	275	285	239	206
Inner Ugak Bay	130	-	188	218	231	240	242	-	270	277	-	234	71
Womens Bay	30	-	193	221	226	248	253	-	251	-	-	216	163
Middle Bay	16	-	194	204	229	246	256	272	280	272	-	236	189
Kizhuyak Bay	67	159	184	214	219	239	248	-	269	268	279	224	401
Alinchak Bay	63	-	187	207	222	235	-	-	-	267	-	218	209
31 Mgmt. Units	4,599	161.4	191.2	211.1	215.6	239.6	246.7	244.2	253.6	260.8	263.8	219.4	7,394

^a All samples were from commercial purse seine catches collected by ADF&G personnel except the Barling Bay sample was from a commercial gillnet catch collected by ADF&G personnel.

^b Of the 50 stocks exploited in 1993, samples were collected from 31 (62%). These 31 stocks yielded 4599 tons, or 93% of the management area's total harvest of 4929.3 tons.

Table 9. Historical food/bait herring harvest for the Kodiak Management Area, 1912-1991.

YEAR	TONS	YEAR	TONS	YEAR	TONS
1912	20.0	1940	22677.0	1968	15.4
1913	0.0	1941	40083.5	1969	11.0
1914	0.0	1942	16791.0	1970	7.5
1915	0.0	1943	35352.0	1971	44.2
1916	70.0	1944	26835.0	1972	49.8
1917	137.9	1945	31114.0	1973	178.0
1918	118.4	1946	47505.9	1974	40.1
1919	259.7	1947	50743.0	1975	5.2
1920	45.9	1948	46428.0	1976	No Data
1921	944.9	1949	0.0	1977	No Data
1922	1482.6	1950	44132.5	1978	398.9
1923	321.5	1951	4299.0	1979	124.8
1924	4823.0	1952	1389.0	1980	380.7
1925	9997.0	1953	725.0	1981	18.0
1926	2680.9	1954	0.0	1982	326.0
1927	2592.9	1955	0.0	1983	33.4
1928	625.0	1956	13524.0	1984	123.0
1929	No Data	1957	21218.5	1985	102.0
1930	622.0	1958	1711.0	1986	213.0
1931	1000.0	1959	3831.0	1987	217.1
1932	3594.0	1960	0.0	1988	340.2
1933	2312.5	1961	0.0	1989	344.6
1934	60000.0	1962	0.0	1990	312.6
1935	No Data	1963	0.0	1991	215.3
1936	24748.0	1964	309.8	1992	311.5
1937	27659.3	1965	35.0	1993	837.0
1938	24522.0	1966	198.0		
1939	38600.5	1967	300.3		

Table 10. Commercial Food and Bait Herring AWL Summary for the Uganik District (F/B 4) of the Kodiak Management Area 1993.

Age (years)	Sex			Percent of Total	Weight			Std. Length			Tons	Adj. Tons	
	Male	Female	Unknown		Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured			
1	-	-	1	1	.0	31	-	1	133	-	1	.05	.33
2	29	25	1	55	2.5	96	16.4	55	186	11.8	55	8.76	18.11
3	210	163	-	373	17.2	141	21.0	372	205	8.9	373	86.94	122.79
4	136	130	-	266	12.2	172	25.6	264	218	9.3	266	75.76	87.57
5	573	537	-	1110	51.1	198	26.7	1109	228	9.2	1110	365.41	365.41
6	63	58	-	121	5.6	228	34.6	121	238	10.7	121	45.75	45.75
7	29	24	-	53	2.4	271	37.3	52	250	9.2	53	23.79	23.79
8	14	19	-	33	1.5	295	39.0	33	254	10.1	33	16.13	16.13
9	40	35	-	75	3.4	293	43.5	75	254	11.3	75	36.41	36.41
10	31	21	-	52	2.4	329	35.8	52	261	9.1	52	28.38	28.38
11+	19	16	-	35	1.6	334	47.6	35	225	11.3	35	19.37	19.37
Total	1144	1028	2	2174	100.0	196	55.1	2169	225	18.3	2174	706.75	764.02

Table 11. Commercial Food and Bait Herring AWL Summary for the Alitak District (F/B 7) for the Kodiak Management Area, 1993.

Age (years)	Sex			Percent of Total	Weight			Std. Length			Tons	
	Male	Female	Unknown		Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured		
1	-	-	-	-	-	-	-	-	-	-	-	
2	30	25	-	55	15.8	101	29.4	55	187	7.3	55	9.79
3	12	5	-	17	4.9	151	20.6	17	210	8.5	17	4.55
4	8	9	-	17	4.9	185	19.5	17	226	6.6	17	5.58
5	73	72	-	145	41.5	220	27.5	145	234	10.7	145	56.61
6	38	26	-	64	18.3	248	27.7	64	245	8.2	64	28.17
7	10	10	-	20	5.7	258	30.4	20	248	8.3	20	9.14
8	4	-	-	4	1.1	272	30.5	4	253	5.9	4	1.93
9	5	5	-	10	2.9	302	45.0	10	257	11.2	10	5.35
10	5	5	-	10	2.9	289	23.2	10	259	7.5	10	5.11
11+	4	3	-	7	2.0	292	44.8	7	230	6.3	7	3.62
Total	189	160	-	349	100.0	210	62.6	349	230	23.1	349	129.84

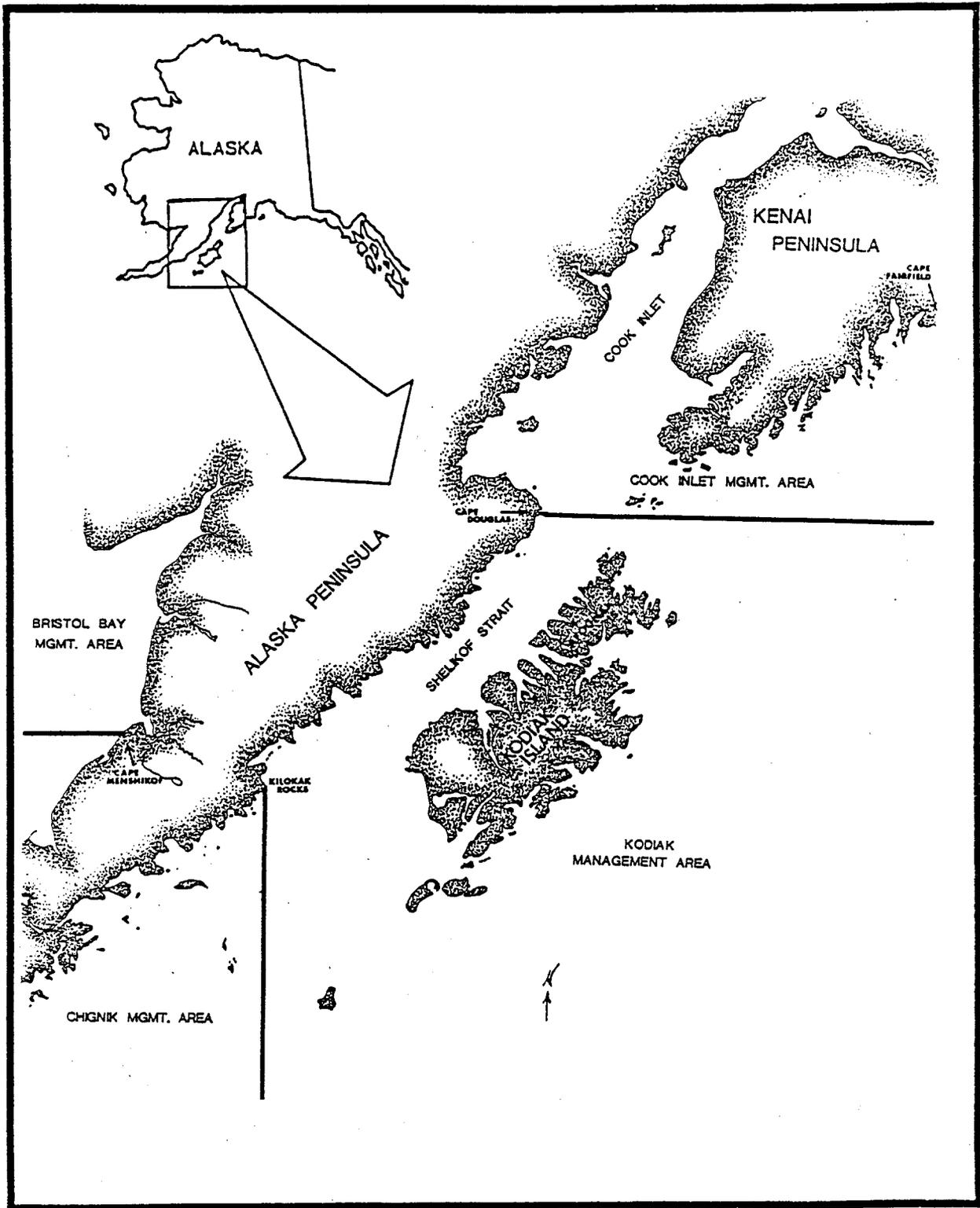


Figure 1. Map of southwestern Alaska emphasizing the Kodiak Management Area and it's relationship to surrounding management areas.

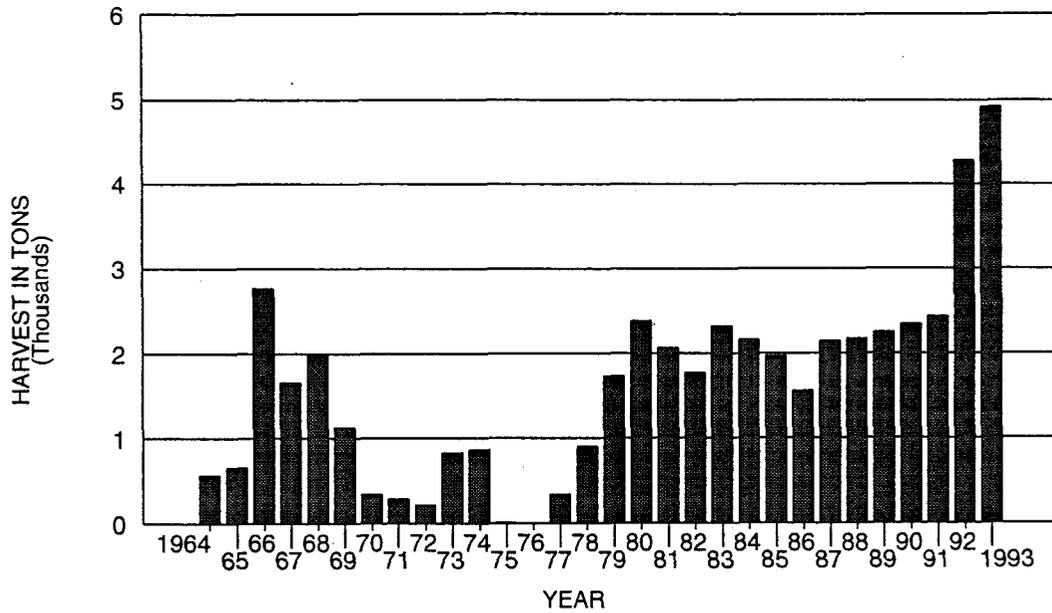


Figure 2. Sac roe herring harvest in the Kodiak Management Area, 1964-1993.

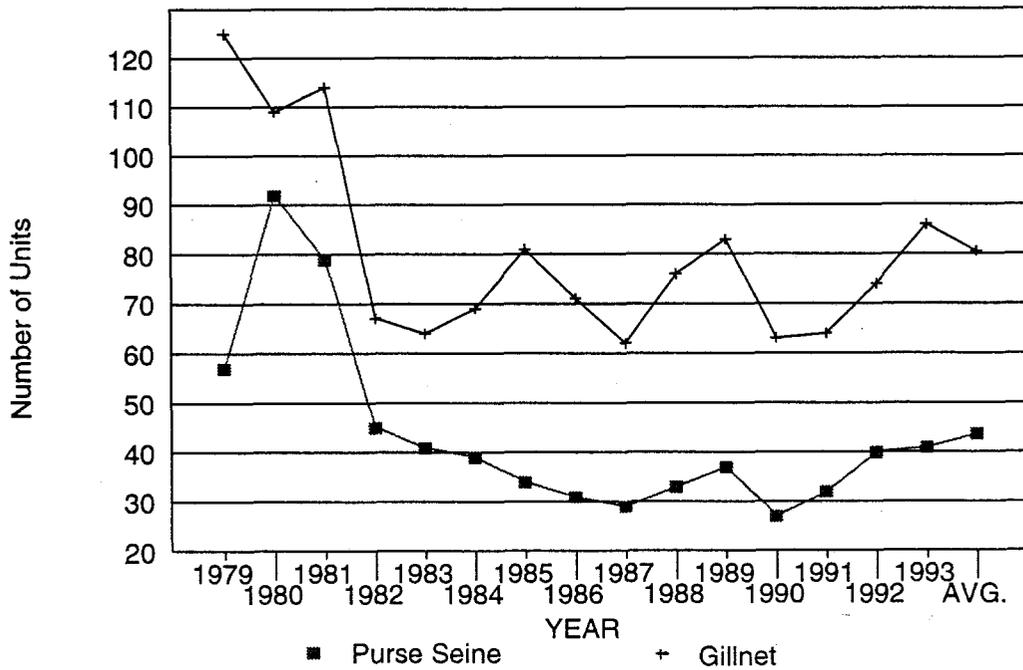


Figure 3. Number of units of each gear type used in the sac roe herring fishery in the Kodiak Management Area, 1979-1993.

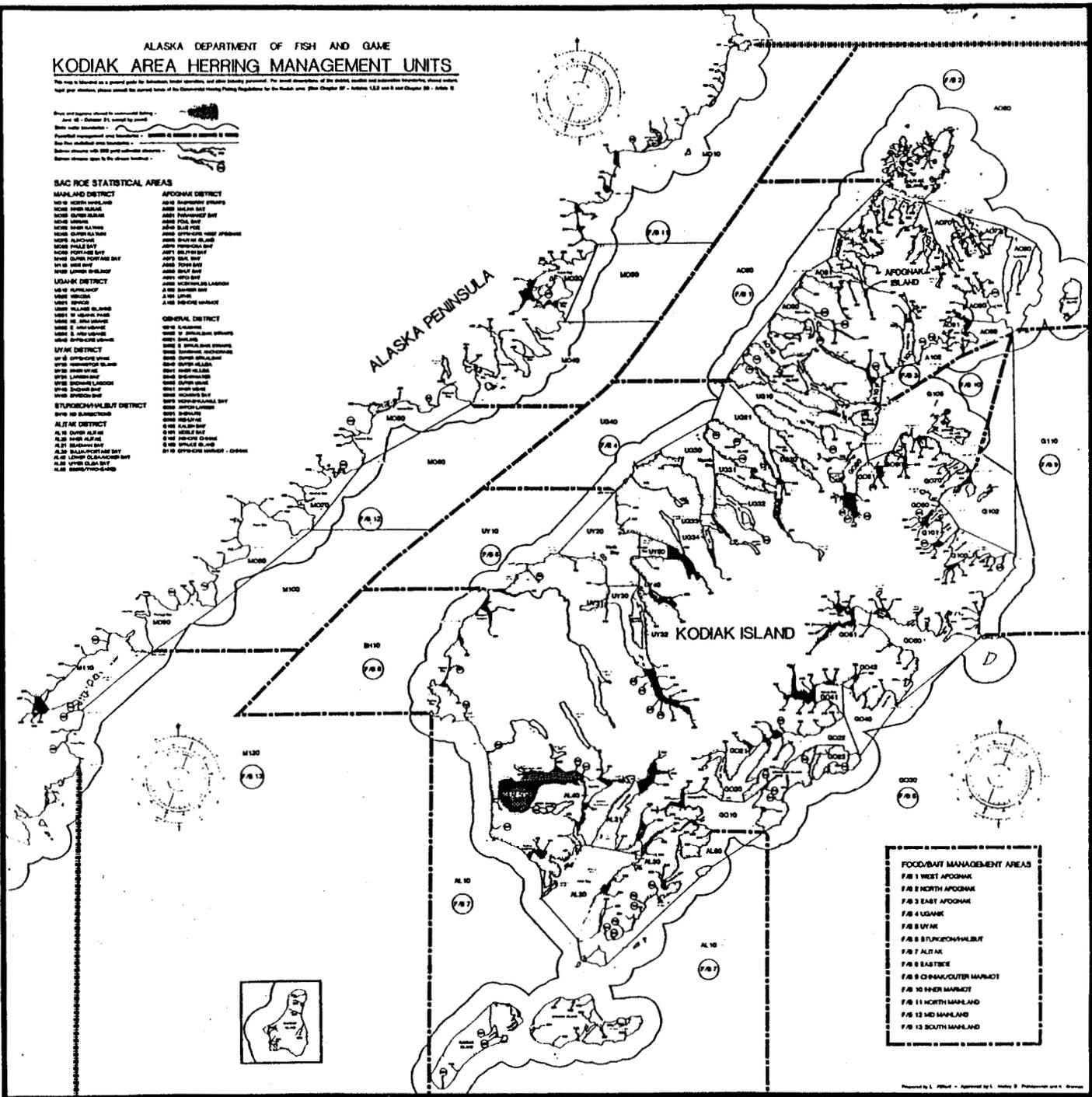


Figure 4. Map of the Kodiak Management Area with the management units for herring fishing shown.

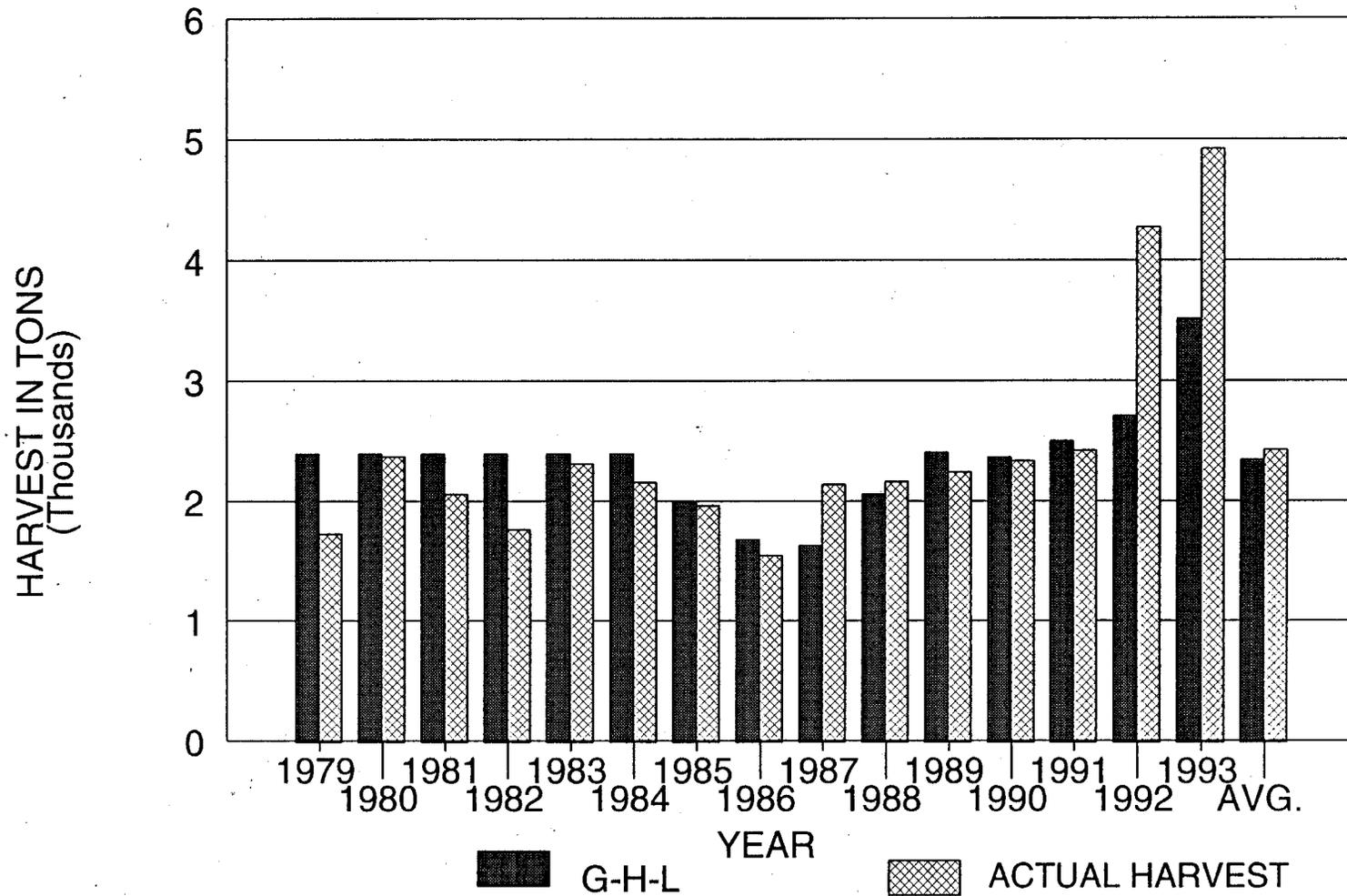


Figure 5. Comparison of the projected guideline harvest level (GHL) to the actual sac roe herring harvest in the Kodiak Management Area, 1979-1993.

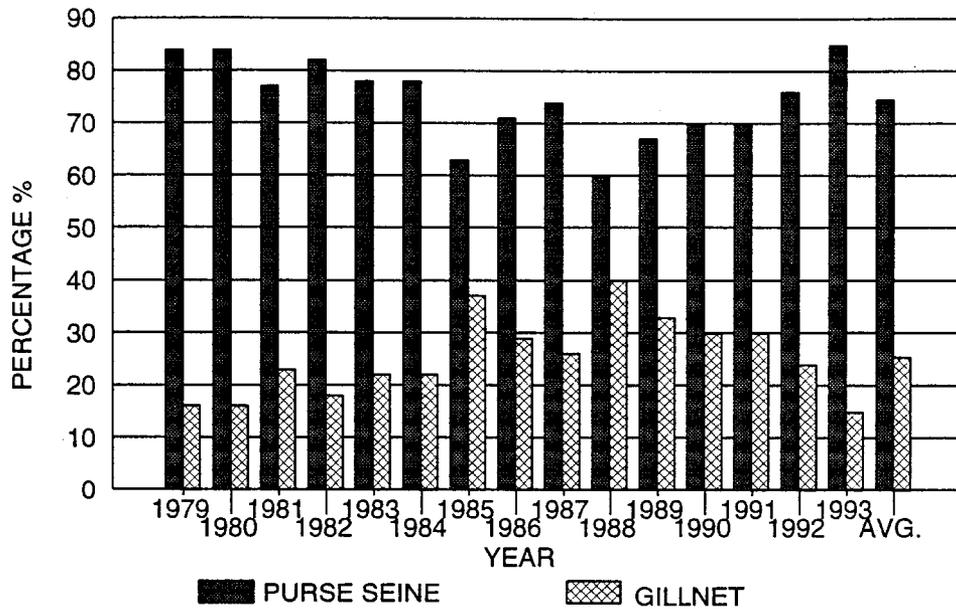


Figure 6. Percent of sac roe herring harvest by gear type in the Kodiak Management Area, 1979-1993.

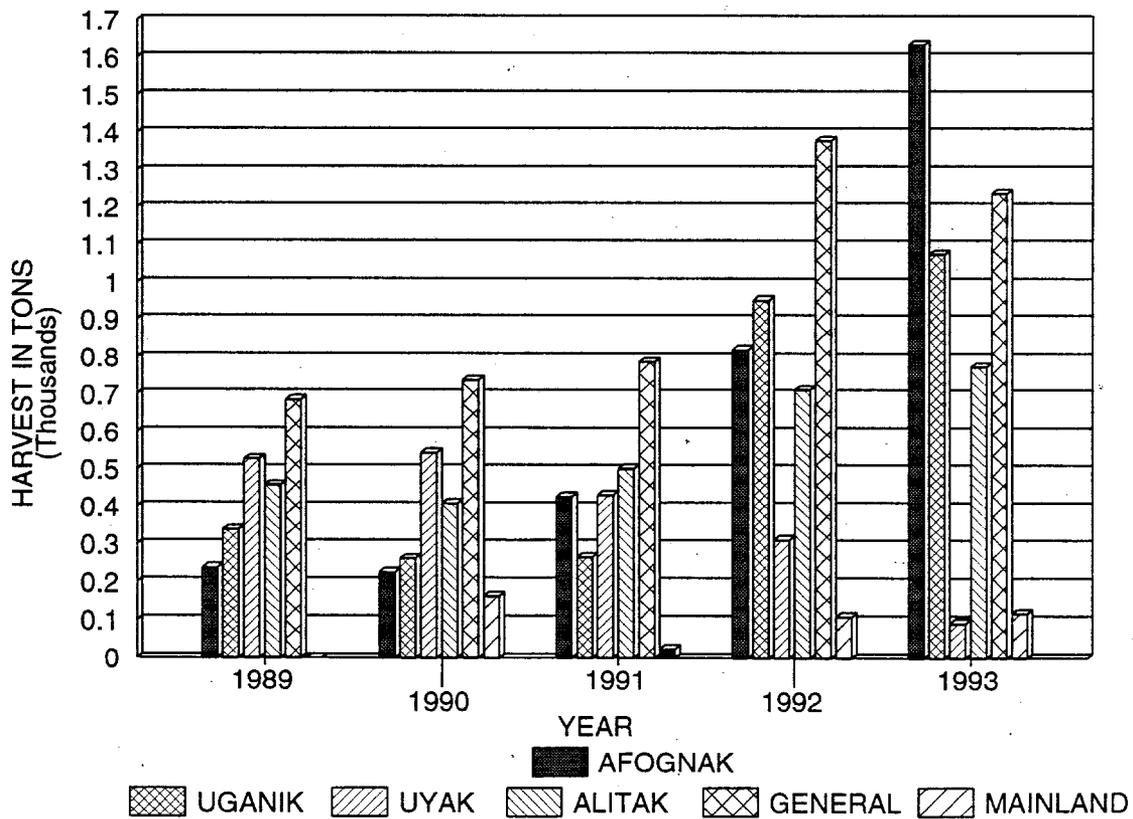


Figure 7. Sac roe herring harvest by district and year for the Kodiak Management Area, 1989-1993.

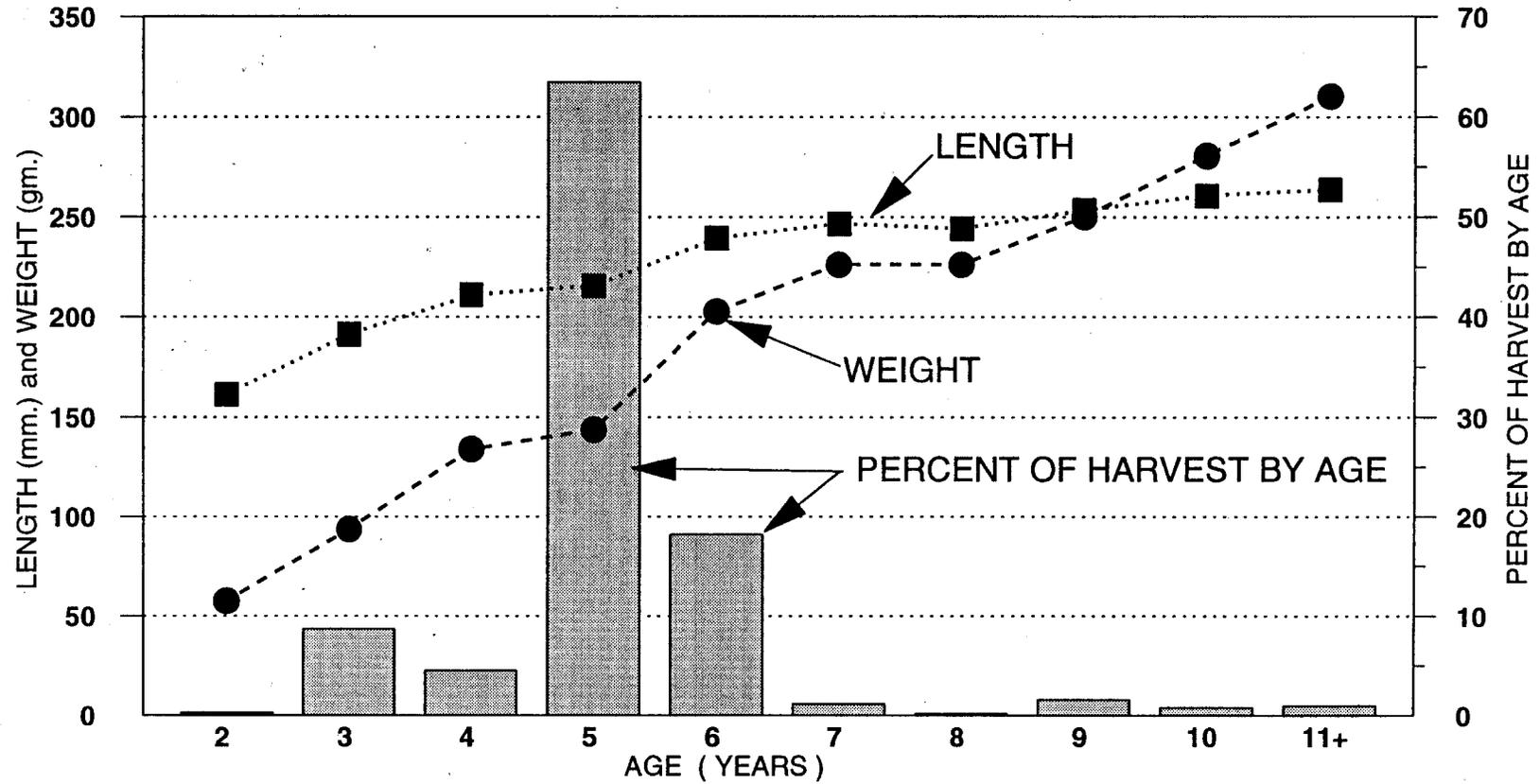
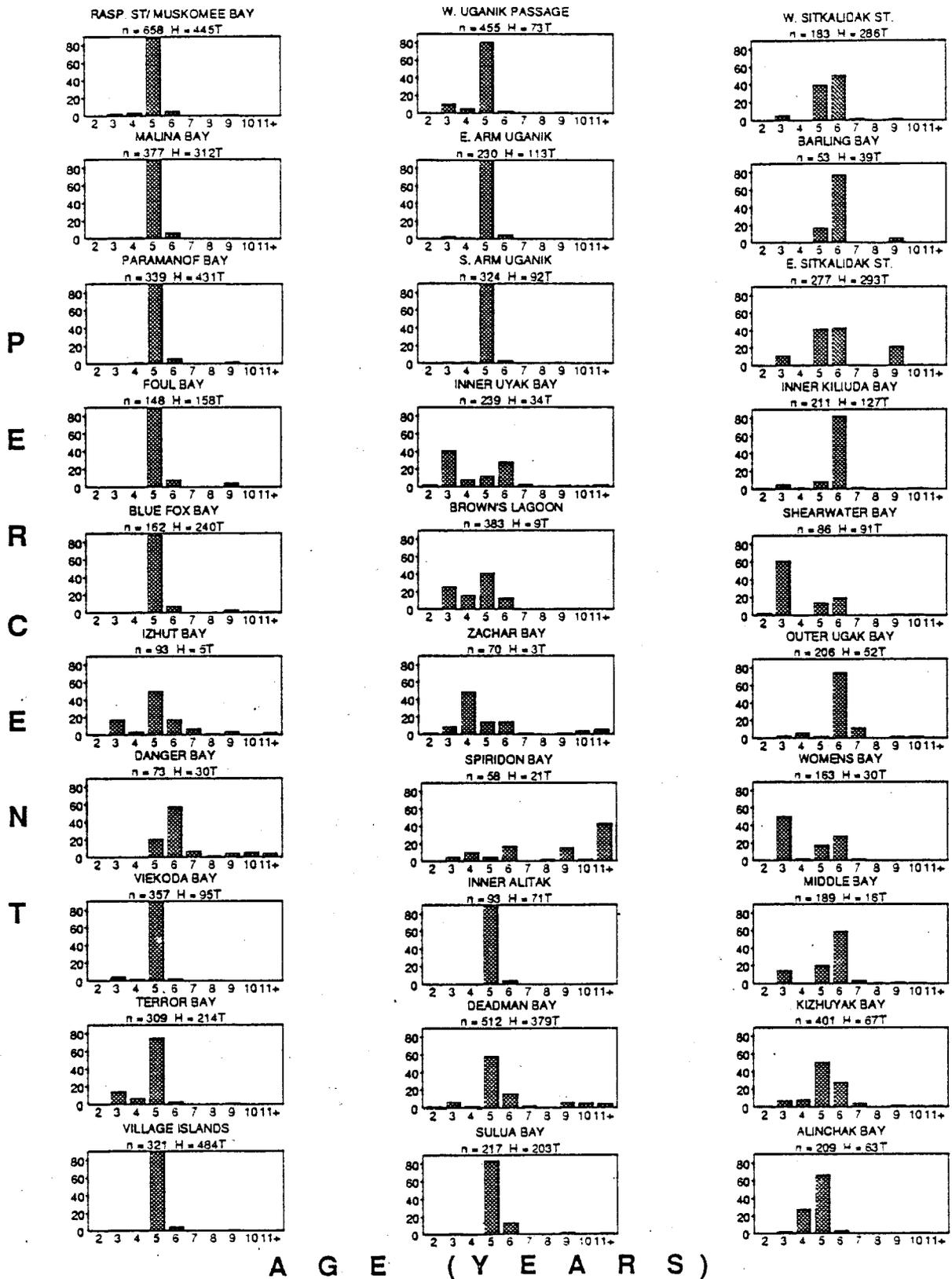


Figure 8. Age composition (%), weight, and length summary of the sac roe herring harvest, Kodiak Management Area, 1993.



1/ ALL SAMPLES WERE COLLECTED FROM COMMERCIAL PURSE SEINE CATCHES BY ADF&G PERSONNEL, EXCEPT THE BARLING BAY SAMPLE WHICH ADF&G PERSONNEL COLLECTED FROM A COMMERCIAL GILLNET CATCH.

Figure 9. Age frequency (%) by management unit from the Kodiak sac roe herring fishery, 1993.

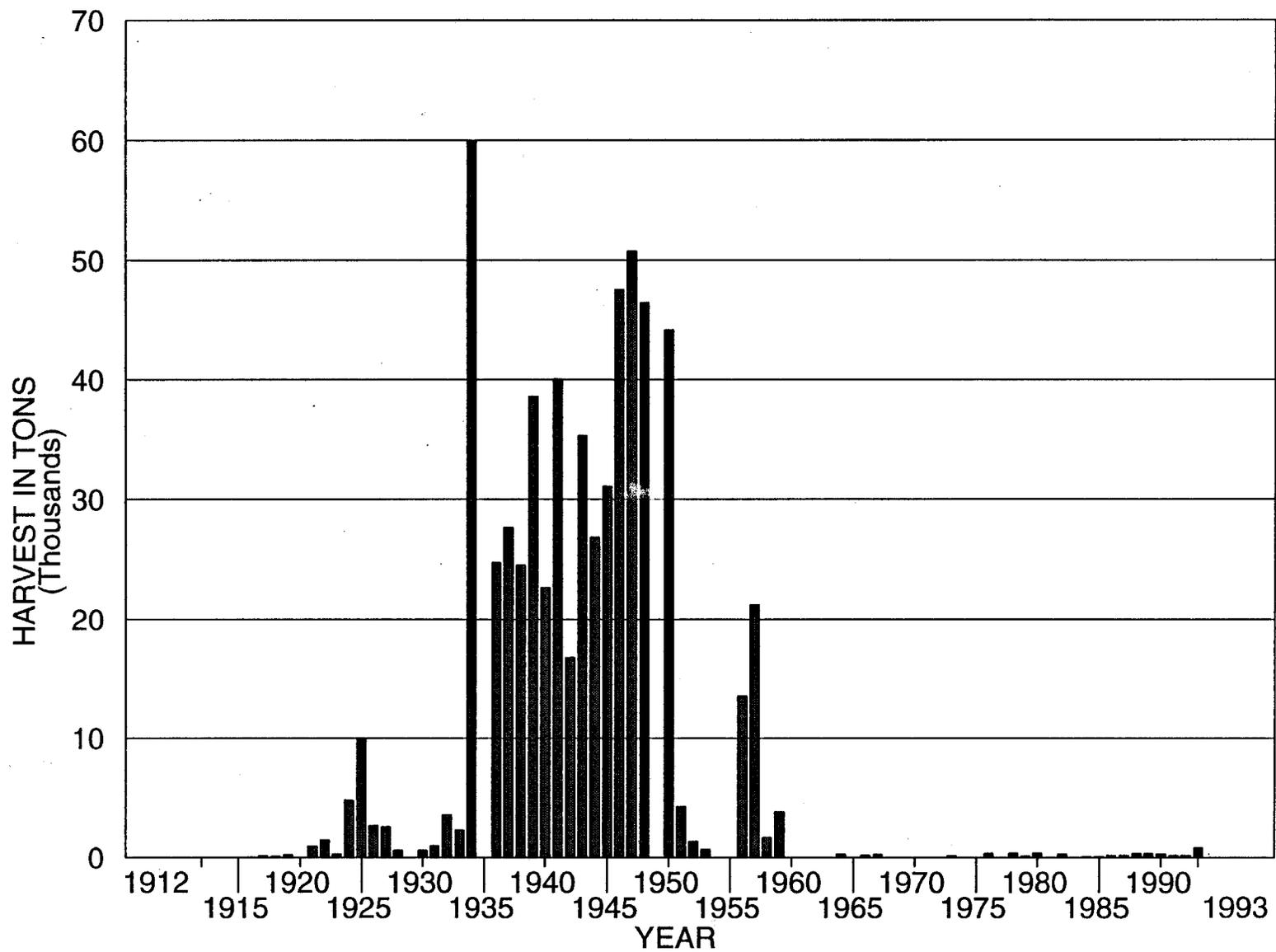


Figure 10. Historic food/bait herring harvest for the Kodiak Management Area, 1912-1993.

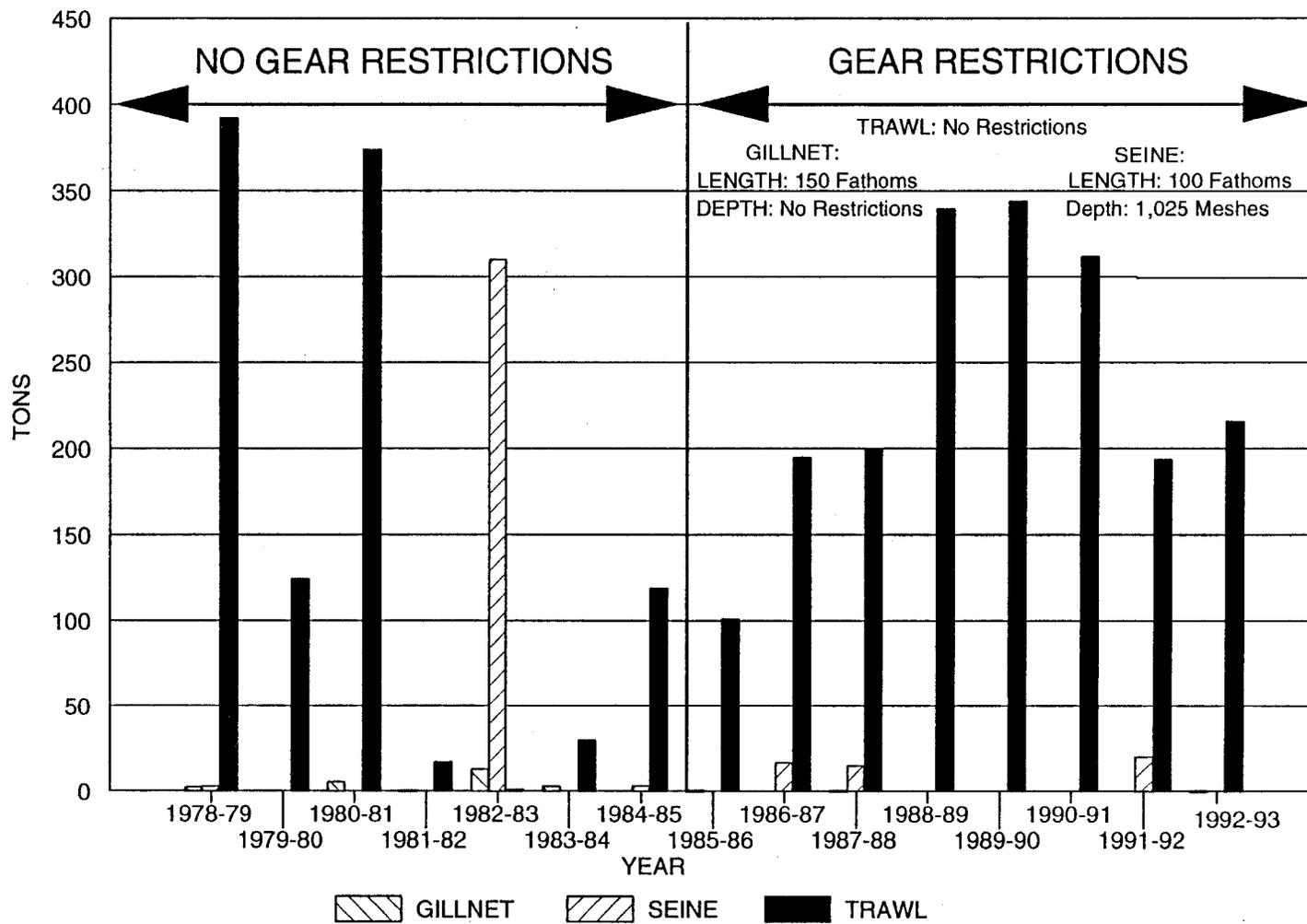


Figure 11. Food and bait herring harvest by gear type for the Kodiak Management Area 1979-1993.

APPENDIX

KODIAK MANAGEMENT AREA
HERRING SAC ROE HARVEST STRATEGY, 1993

By

Dave Prokopowich,
Kevin Brennan,
and
Dennis Gretsch

Regional Information Report¹ No. 4K93-16

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¹The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

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ABSTRACT

This document is intended to provide commercial fishermen and buyers with the guidelines to follow during the Kodiak commercial sac roe fishery.

The 1993 Kodiak herring sac roe fishery guideline harvest level is 3,525 tons. The season 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 75 management units; herring within 57 of these units are treated as individual stocks and have a history of sac roe harvests. Additionally there are 11 exploratory management units which potentially support sac roe stocks and 7 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). Inseason 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 inseason emergency order closures or reopenings will be broadcast on 4.125 mhz following the 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.

To prevent waste, permit holders are encouraged to check with their markets prior to fishing to find out minimum size/weight restrictions and roe percentage which are acceptable. All herring which are harvested during the sac roe season which are sold as bait or are discarded due to quality problems will be included as part of the total sac roe harvest.

INTRODUCTION

The Kodiak Area herring sac roe fishery has occurred annually since 1964 (29 years). This fishery was an open-to-entry fishery from 1964 to 1980, under a moratorium to new entries from 1981 to 1984, and has been a limited entry fishery since 1985. Effort levels since 1979 are shown in Table 2. A listing of entry permits issued by gear type is shown in Table 3.

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Since 1964 the harvest has averaged about 1,523 tons. Since 1979 the annual harvest has averaged about 2,256 tons and has provided a stable fishery with harvests ranging from 1,559 tons in 1986 to 4,283 in 1992. The average roe recovery was approximately 10%.

This fishery targets on individual herring stocks immediately prior to spawning to ensure the greatest roe development and resulting roe recovery.

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 catches in traditional in-shore areas, for the greatest roe recovery, and not to exceed a 20% exploitation rate on the available spawning biomass. Roe recovery standards are determined by industry personnel.

Because of the differential timing and abundance of Kodiak's various herring stocks, relatively high 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. Generally the season will close for each stock by emergency order as their respective guideline harvest levels are achieved. When fishery and stock performance indicate that deviations from the guideline harvest level (i.e. where actual harvests occur at lesser or greater levels than expected), these areas may be closed under low performance or additional harvest may be warranted if the spawning biomass is greater than expectations. Stocks which are considered to be underexploited inseason 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 the ability for ADF&G to monitor and regulate the reopening "on the grounds". At least 24 hours notice will be given prior to any reopenings.

REGULATORY ABSTRACT

Management Unit Boundary Clarifications

The boundary line in effect this year between the Sulua-Portage Bay Management Unit (AL30) and the Inner Alitak Bay Management Unit (AL20) is depicted on the Kodiak Area Herring Management Unit chart and is also shown in Figure 3.

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Listed below is the correct description of the Sulua-Portage Bay Subsection and the Inner Alitak Bay Subsection boundary line.

5 AAC 27.505. Description of districts and sections.

(e)(2)(A) Inner Alitak Bay Subsection: all waters enclosed by a line from Cape Alitak to Cape Trinity, south of a line from Cape Hepburn to Bun Point and south of a line extending from Cape Hepburn at 56°57'18" N. lat., 153°58'00" W. long., eastward to 56°56'30" N. lat., 153°51'27" W. long.

(e)(3) Sulua-Portage Bay Section: all waters of Sulua and Portage Bays north of a line from Cape Hepburn at 56°57'18" N. lat., 153°58'00" W. long., to 56°56'30" N. lat., 153°51'27" W. long.

NEW REGULATIONS

There are several new regulations in effect for the 1993 herring sac roe season which were adopted by the Alaska State Board of Fisheries at its January 1993 meeting. These regulations, as listed below, deal with management unit boundaries, closed waters, and limits on vessel use by purse seine permit holders.

Management Unit Boundaries

5 AAC 27.505. Descriptions of districts and sections.

(a)(3)(A) Paramanof Bay Subsection: all waters of Paramanof Bay east of a line from Cape Paramanof (59°18'20" N. lat., 153°03'30" W. long.) to the westernmost tip of Ban Island and south of a line extending from the eastside of Ban Island to the westside of Afognak Island at 58°19'15" N. lat.

(B) Foul Bay Subsection: all waters of Foul Bay east of a line from the westernmost tip of Ban Island to Black Cape (58°24'30" N. lat., 152°53' W. long.) excluding the Paramanof Bay Subsection.

(f)(5)(B) Outer Ugak Subsection: all waters of Ugak Bay east of 152°49' W. long and west of a line from Dangerous Cape to Narrow Cape, excluding the Pasagshak Subsection.

(C) Pasagshak Subsection: all waters of Pasagshak Bay north and east of a line from 57°26'06" N. lat., 152°31' W. long, to 57°25'29" N. lat 152°29'15" W. long.

Seine Specifications and Operators

5 AAC 27.525. Seine specifications and operations. (d) From April 1 through July 31, an Area K CFEC sac roe seine permit holder may use, to take herring, only the vessel identified on the permit, unless the permit holder has registered, in person, at the department's Kodiak office, to use a replacement vessel. Only one replacement seine vessel may be registered by a CFEC permit holder at a time.

Waters Closed to Herring Fishing

5 AAC 27.530. Waters closed to herring fishing. (a) During the period July 1 through October 31, herring may not be taken in waters described in 5 AAC 18.350 and 5 AAC 39.290. (Waters closed to salmon fishing).

(b)(1) Brown's Lagoon: all waters, beginning at the seaward entrance, are closed to herring fishing from April 15 through June 30.

(3) Uganik Island: lagoons on Uganik Island described as follows are closed to herring fishing from April 15 through June 30:

(A) south and west of a line from (57°51'06" N. lat. 153°13'32" W. long.), to (57°52'07" N. lat., 153°15' W. long.);

(B) north of a line from (57°49'22" N. lat., 153°17'39" W. long.), to (57°49'28" N. lat., 153°19'18" W. long.)

(C) east of a line from (57°50'51" N. lat., 153°19'11" W. long.), to (57°50'04" N. lat., 153°19'11" W. long.);

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 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.

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

- (See Regulation 5 AAC 27.540 of the Commercial Herring Regulations for additional information. **Note: This regulation will be strictly enforced).**

Fishing Vessels

There are **no special registration requirements** for either seine or gillnet vessels unless a purse seine permit holder intends to use a different vessel than is listed on his/her permit card. (See new regulation on page 4.)

Guideline Harvest Levels

For the 1993 sac roe season, approximately 3,525 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 estimates of 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.

Inseason stock evaluation will be guided by the following criteria: 1) stock performance based on biomass estimates and age compositions, 2) fishery performance including fishery timing and harvest duration.

Fishing Season

The fishing season will be from April 15 through June 30. Adjustments to the season will be announced by emergency order on a stock by stock basis. Closures will occur 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

Initial fishing periods will be 24 hours and will begin at 12:00 Noon on odd numbered days and end at 12:00 Noon on even numbered days. The first 24 hour period will begin at 12:00 Noon on April 15. Depending on effort levels, harvest rates, and ADF&G's ability to monitor the fishery, the length of fishing periods may be reduced. Any reductions in fishing time will be announced by emergency order.

Regulatory Closures

Browns Lagoon is closed at the seaward entrance of the lagoon (5 AAC 27.530).

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.

All Uganik Island Lagoons are closed due to the small and geographically confined stocks which are highly susceptible to overexploitation (5 AAC 27.530).

(Please refer to the 1993 Commercial Herring Fishing Regulation Booklet).

Extra Time For Gillnetters

When the following conditions exist, herring gillnetters are allowed a two hour grace period before having to completely remove their gear from the water.

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.

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 (approximately 91 grams average weight).

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. ALL HERRING WHICH ARE HARVESTED DURING THE SAC ROE SEASON WHICH ARE SOLD AS BAIT OR ARE DISCARDED DUE TO QUALITY PROBLEMS WILL BE INCLUDED AS PART OF THE TOTAL SAC ROE HARVEST.

Inseason Strategy

General Discussion

Table 1 lists by district those management units in which historical harvests have occurred. These management units have been assigned guideline harvest levels. Those management units where sporadic or no harvests have occurred, have been designated "Exploratory" with no designated guideline harvest level. Inseason closures will be used to ensure that excessive harvests are minimized in exploratory situations.

The guideline harvest levels established for each management unit, 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) 1992 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, duration, and level.

Guideline harvest level adjustments are subsequently made based upon stock performance. Generally, adjustments are gradual, $\pm 25\%$ or $\pm 50\%$.

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

Fishing Periods

Starting April 15, fishing periods will begin at 12:00 Noon on the odd numbered days of the month and end at 12:00 Noon on the even numbered days, through June 30. Staggered days of fishing provide clearly defined closed periods which allow staff time to collect, summarize, and update all harvest data from previous fishing periods. The closures also 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. Later in the season (usually early June) when fleet size and exploitable stocks are lower, fishing periods

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may be modified to more adequately harvest late occurring stocks. However, ADF&G's ability to monitor this fishery is limited in late May and June, and this factor will be considered in modifying the fishing periods.

E.O. Announcements: "Getting the Word"

By regulation, both purse seine and gillnet gear are allowed to fish in any open area. This allows for a considerable dispersion of gear in the management area. Consequently, it is important for the fleet to be aware of any changes in closures or reopenings. This can be accomplished by: 1) personal contact with the Kodiak Herring Management staff in Kodiak via office visits, or telephone at 486-1830 (extensions 234, 235, or 231), or radio-telephone, 2) contact with ADF&G field personnel and the ADF&G vessel, the M/V K-Hi-C, which can be reached on VHF Channel 6 or SSB on 3.230 mhz, 3) contacting any local herring processor and having them transmit the latest Kodiak herring emergency order, 4) **calling the 24-hour recorded message phone at 486-4559**, 5) listening for any emergency order update which will be broadcast following the 8:00 A.M. or 6:00 P.M. marine weather broadcasts, on 4.125 mhz, 6) obtaining the most recent emergency order from the pouch posted outside the entrance to the Kodiak Fish and Game building, and 7) 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.

Inseason 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 or initially announced on 4.125 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 recommended that fishermen document the latest E.O. announcement broadcast by either marking a chart or making a tape recording of the broadcast.**

ADF&G Field Crews/Fishermen Cooperation:

The crew on board the Department's M/V K-Hi-C and seasonal personnel in remote tent camps will aid the Area Management Biologists by making frequent fishermen contacts to collect data on harvest levels and rates, fleet movements, and fleet observations of herring concentrations. Fishermen's cooperation will be appreciated when Department personnel request herring samples from their commercial catch. 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, and when used with other stock performance indicators, will assist in determining the health of the stock. Copies of historical age data by stock are available at the Kodiak ADF&G office.

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

Inseason Catch Reporting

During the 1993 season, frequent aerial surveys and timely catch reports will be an important management tool, particularly in areas without 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 accurate estimates of delivered herring still on tenders. Inaccurate or untimely information could result in area closures. Individual code sheets will be provided to each tender or processor 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 1993 GHJ of 3,525 tons could result in a near record sac roe herring harvest for the Kodiak Area. The actual harvest will depend on the accuracy of the preseason forecast, and the weather conditions during the season.

Table 1 lists the Guideline Harvest Levels by Management Unit, (GHLs) and will be used as an aid in making inseason management decisions. These harvest levels are meant to reflect the status of each stock listed. Annual harvest levels for these stocks may fluctuate considerably until their status is better understood. All fishermen, spotter pilots, and processors are encouraged to provide the ADF&G management staff with any information on stocks to improve the management of the fishery.

Table 1. Herring sac roe fishery guideline harvest levels by stock, Kodiak Management Area, 1993.

STAT. AREA	MGMT. UNITS	1993 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS	
			@10% EXPLOITATION	@20% EXPLOITATION
AFOGNAK DISTRICT				
A010	Raspberry Sts.	165 TONS	1,650 Tons	825 Tons
A020	Malina Bay	90 TONS	900 Tons	450 Tons
A031	Paramanof Bay	100 TONS	1,000 Tons	500 Tons
A032	Foul Bay	60 TONS	600 Tons	300 Tons
A040	Devils Inlet	10 TONS	100 Tons	50 Tons
A040	Blue Fox	20 TONS	200 Tons	100 Tons ^a
A050	Offshore W. Afog. ^a	-		
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	15 TONS	150 Tons	75 Tons
A091	Kitoi Bay	10 TONS	100 Tons	50 Tons
A092	MacDonalds Lagoon	10 TONS	100 Tons	50 Tons
A100	Danger Bay	25 TONS	250 Tons	125 Tons
A101	Litnik	10 TONS	100 Tons	50 Tons
A102	Duck Bay	10 TONS	100 Tons	50 Tons
District Totals		595 TONS	5,950 Tons	2,975 Tons
UGANIK DISTRICT				
UG10	Kupreanof	10 TONS	100 Tons	50 Tons
UG20	Viekoda	80 TONS	800 Tons	400 Tons
UG21	Terror	90 TONS	900 Tons	450 Tons
UG30	Village Island	135 TONS	1,350 Tons	675 Tons
UG31	W. Uganik Pass	75 TONS	750 Tons	375 Tons
UG32	NE Arm Uganik	110 TONS	1,100 Tons	550 Tons
UG33	E. Arm Uganik	60 TONS	600 Tons	300 Tons
UG34	S. Arm Uganik	60 TONS	600 Tons	300 Tons ^a
UG40	Offshore Uganik ^a	-		
District Totals		620 TONS	6,200 Tons	3,100 Tons
UYAK DISTRICT				
UY10	Offshore Uyak ^a	-		
UY20	Harvester Island	10 TONS	100 Tons	50 Tons
UY30	Inner Uyak	135 TONS	1,350 Tons	675 Tons
UY32	Browns Lagoon	30 TONS	300 Tons	150 Tons
UY31	Larsen Bay	10 TONS	100 Tons	50 Tons
UY40	Zachar Bay	75 TONS	750 Tons	375 Tons
UY50	Spiridon Bay	90 TONS	900 Tons	450 Tons
District Totals		350 TONS	3,500 Tons	1,750 Tons

-Continued-

Table 1. (page 2 of 3)

STAT. AREA	MGMT. UNITS	1993 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS		
			@10% EXPLOITATION	@20% EXPLOITATION	
ALITAK DISTRICT					
AL10	Outer Alitak	(Exploration)		b	b
AL20	Inner Alitak	75 TONS	750 Tons		375 Tons
AL21	Deadman Bay	230 TONS	2,300 Tons		1,150 Tons
AL30	Sulua/Portage Bay	145 TONS	1,450 Tons		725 Tons
AL40	Lower Olga/Moser ^c	20 TONS	200 Tons		100 Tons
AL40	No. Upper Olga Bay ^c	10 TONS	100 Tons		50 Tons
AL50	So. Upper Olga Bay ^c	110 TONS	1,100 Tons		550 Tons
AL60	Geese/Twoheaded	(Exploration)		b	b
District Totals		590 TONS	5,900 Tons		2,950 Tons
STURGEON/HALIBUT DISTRICT					
SH10	Sturgeon/Halibut	(Exploration)		b	b
GENERAL DISTRICT					
GO10	Kaiugnak	20 TONS	200 Tons		100 Tons
GO20	W. Sitkalidak St.	150 TONS	1,500 Tons		750 Tons
GO20	SW Sitkalidak St.	125 TONS	1,250 Tons		625 Tons
GO21	Barling	40 TONS	400 Tons		200 Tons
GO22	E. Sitkalidak St.	180 TONS	1,800 Tons		900 Tons
GO23	Tanginak Anchorage	15 TONS	150 Tons		75 Tons
GO30	Outer Sitkalidak	(Exploration)		b	b
GO40	Outer Kiliuda	(Exploration)		b	b
GO41	Inner Kiliuda	60 TONS	600 Tons		300 Tons
GO42	Shearwater	75 TONS	750 Tons		375 Tons
GO53	Pasagshak	30 TONS	300 Tons		150 Tons
GO50	Outer Ugak	(Exploration) ^b		b	b
GO51	Inner Ugak	95 TONS	950 Tons		475 Tons
GO60	Womens Bay	110 TONS	1,100 Tons		550 Tons
GO70	Monashka/Mill B.	(Exploration)		b	b
GO80	Anton Larsen	10 TONS	100 Tons		50 Tons
GO81	Sheratin	10 TONS	100 Tons		50 Tons
GO90	Kizhuyak	100 TONS	1,000 Tons		500 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
District Total		1,075 TONS	10,750 Tons		5,375 Tons
MAINLAND DIST.					
M010	North Mainland	(Exploration)		b	b
M020	Inner Kukak	65 TONS	650 Tons		325 Tons
M030	Outer Kukak ^a	-		a	a
M040	Inner Missak	(Exploration)		b	b
M040	Outer Missak ^a	-		a	a
M050	Inner Katmai	65 TONS	650 Tons		325 Tons

-Continued-

Table 1. (page 3 of 3)

STAT. AREA	MGMT. UNITS	1993 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS	
			@10% EXPLOITATION	@20% EXPLOITATION
MAINLAND DISTRICT (Cont.)				
M060	Outer Katmai ^a	-	a	a
M070	Alinchak	40 TONS	400 Tons _b	200 Tons
M080	Puale Bay (Exploration) ^b		b	b
M090	Portage Bay (Exploration)		a	a
M100	Outer Portage ^a	-		
M110	Wide Bay	125 TONS	1,250 Tons _b	625 Tons _b
M120	Lower Shelikof (Exploration)			
District Total		295 TONS	2,950 Tons	1,475 Tons
GRAND TOTAL		3,525 TONS	35,250 Tons	17,625 Tons

^a 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.)

^b Adequate biomass to justify an "exploratory" harvest; the actual harvest should not exceed 20% of the available biomass.

^c The following management units have been modified either in name or boundaries for the purpose of inseason 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 Management Area herring sac roe fishery industry summary, 1979-1992.

Year	Gear Type	Units of Gear	Est. Number Landings	Est. Harvest (Tons)	Est. Harvest Percent	Est. Total Value	Est. Average Earnings	Average Tons/Boat	Average Tons/Lndgs	Average Lndgs/Boat
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	-	-
	TOTAL	182	-	1735.1	100	\$2,602,458	-	-	-	-
1980	Purse Seine	92	-	2009.0	84	\$1,377,987	\$14,978	21.8	-	-
	Gillnet	109	-	374.0	16	\$280,423	\$2,573	3.4	-	-
	TOTAL	201	-	2383.0	100	\$1,685,410	-	-	-	-
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
	TOTAL	193	613	2065.4	100	\$1,633,404	-	-	-	-
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
	TOTAL	112	329	1770.6	100	\$1,533,404	-	-	-	-
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
	TOTAL	105	448	2318.5	100	\$1,854,800	-	-	-	-
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
	TOTAL	108	350	2162.7	100	\$1,730,160	-	-	-	-
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
	TOTAL	115	466	1967.7	100	\$1,770,930	-	-	-	-
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
	TOTAL	102	517	1559.4	100	\$1,480,480	-	-	-	-
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
	TOTAL	91	533	2145.9	100	\$2,145,900	-	-	-	-
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
	TOTAL	109	724	2170.8	100	\$2,822,170	-	-	-	-

-Continued-

Table 2. (page 2 of 2)

Year	Gear Type	Units of Gear	Est. Number Landings	Est. Harvest (Tons)	Est. Harvest Percent	Est. Total Value	Est. Average Earnings	Average Tons/Boat	Average Tons/Lndgs	Average Lndgs/Boat
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
	TOTAL	120	798	2248.6	100	\$1,911,310				
1990	Purse Seine	27	156	1644.0	70	\$1,397,400	\$51,724	60.9	10.5	5.8
	Gillnet	63	544	703.0	30	\$597,550	\$9,652	11.2	1.3	8.6
	TOTAL	90	700	2347.0	100	\$1,994,950				
1991	Purse Seine	32	169	1697.0	70	\$1,442,450	\$45,077	53.0	10	5.3
	Gillnet	64	587	735.0	30	\$624,750	\$9,762	11.5	1.3	9.2
	TOTAL	96	756	2432.0	100	\$2,067,200				
1992	Purse Seine	40	185	3260.0	76	\$1,630,000	\$40,750	81.5	17.6	4.6
	Gillnet	74	706	1023.0	24	\$511,500	\$6,912	13.8	1.4	9.5
	TOTAL	114	891	4283.0	100	\$2,141,500				

Table 3. Status of Kodiak herring sac roe limited entry permits, 1988-1992.

Gear Type	Year				
	1988	1989	1990	1991	1992
G.N. TRANSFERABLE	64	68	72	74	94
G.N. NON-TRANSFERABLE	41	44	27	28	14
G.N. TOTAL	105	112	99	102	108
G.N. FISHED	76	83	63	64	74
SEINE TRANSFERABLE	46	47	47	48	59
SEINE NON-TRANSFERABLE	24	25	25	22	11
SEINE TOTAL	70	72	72	70	70
SEINE FISHED	33	37	27	32	40
TOTALS					
TRANSFERABLE	110	115	119	122	153
NON-TRANSFERABLE	65	69	52	50	25
TOTAL	175	184	171	172	178
FISHED	109	120	90	96	114

Note: Data from December 1992, 1992 permit status is preliminary from C.F.E.C.

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Table 4. Residency status of the limited entry permit holders for the Kodiak herring sac roe fishery, 1985-1992.

Year	Status	PURSE SEINE		GILLNET		TOTALS	
		Number	%	Number	%	Number	%
1985	Residents	62	.89	114	.94	176	.92
	Non-Resident	8	.11	4	.03	12	.06
	Unknown	0	-	3	.03	3	.02
	TOTAL	<u>70</u>		<u>121</u>		<u>191</u>	
1986	Residents	65	.90	115	.97	180	.95
	Non-Resident	7	.10	3	.03	10	.05
	Unknown	0	-	0	-	0	-
	TOTAL	<u>72</u>		<u>118</u>		<u>190</u>	
1987	Residents	58	.88	101	.94	159	.91
	Non-Resident	6	.09	2	.01	8	.05
	Unknown	2	.03	5	.05	7	.04
	TOTAL	<u>66</u>		<u>108</u>		<u>174</u>	
1988	Residents	62	.90	105	.96	167	.94
	Non-Resident	6	.09	1	.01	7	.04
	Unknown	1	.01	3	.03	4	.02
	TOTAL	<u>69</u>		<u>109</u>		<u>178</u>	
1989	Residents	62	.86	107	.93	169	.90
	Non-Resident	7	.10	4	.035	11	.06
	Unknown	3	.04	4	.035	7	.04
	TOTAL	<u>72</u>		<u>115</u>		<u>187</u>	
1990	Residents	59	.83	95	.92	154	.89
	Non-Resident	9	.13	4	.04	13	.07
	Unknown	3	.04	4	.04	7	.04
	TOTAL	<u>71</u>		<u>103</u>		<u>174</u>	
1991	Residents	59	.84	94	.92	153	.89
	Non-Resident	8	.11	4	.04	12	.07
	Unknown	3	.05	4	.04	7	.04
	TOTAL	<u>70</u>		<u>102</u>		<u>172</u>	
1992	Residents	57	.71	89	.82	146	.78
	Non-Resident	9	.11	6	.05	15	.08
	Unknown	14	.17	13	.12	27	.14
	TOTAL	<u>80</u>		<u>108</u>		<u>188</u>	

Table 5. Alaska Department of Fish and Game, Division of Commercial Fisheries 1993 management staff.

Office Staff:

Regional Supervisor	Larry Nicholson
Regional Finfish Coordinator	Pete Probasco
Area Management Biologist	Dave Prokopowich
Assistant Management Biologist	Kevin Brennan
Assistant Management Biologist	Dennis Gretsck
Fishery Biologist	Joan Brodie
Clerk	Sharon Theis

M/V K-Hi-C:

Boat Officer	Tom Emerson
Fishery Biologist	Dennis Gretsck
Fishery Biologist	Kevin Brennan

Field Crews:

Fishery Technician	Kim Rudge
Fishery Technician	Mo Lambdin
Fishery Technician	Jon Becker
Fishery Technician	Ed Hajdys
Fishery Biologist	Dave Sarafin
Fishery Technician	Ed Sampson
Fishery Technician	Paul Kuriscak
Fishery Technician	Shawna Rudio

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Table 6. Historical harvests of Kodiak sac roe and food/bait herring (short tons), 1912-1992.

YEAR	FOOD & BAIT	SAC ROE	TOTAL	YEAR	FOOD & BAIT	SAC 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
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	1991	215.3	2432.0	2647.3
1951	4299.0	0.0	4299.0	1992	311.3	4283.0	4594.3
1952	1389.0	0.0	1389.0				

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Table 7. Historical harvest by gear type for the Kodiak herring sac roe fishery, 1964-1992.

Year	Total Harvest Tons	Seine Tons	Gillnet	Number of Companies	Number of Vessels		
					Seine	Gillnet	Total
1964	568	568		2	5		5
1965	657	657		2	8		8
1966	2,769	2,769		4	11		11
1967	1,662	1,662		4	5		5
1968	2,001	2,001		4	10		10
1969	1,130	1,130		9	21		21
1970	342	342		5	13		13
1971	284	284		2	4		4
1972	215	215		1	4		4
1973	831	831		4	11		11
1974	868	868		4	26		26
1975	8	8		3	2		2
1976	5	5		1	1		1
1977	338	338		3	11		11
1978	904	881	23	7	28	7	35
1979	1,735	1,457	278	8	57	125	182
1980	2,383	2,009	374	9	92	109	201
1981	2,065	1,596	469	9	79	114	193
1982	1,771	1,447	324	6	45	67	112
1983	2,319	1,797	522	7	41	64	105
1984	2,163	1,691	472	7	39	69	108
1985	1,968	1,244	724	7	34	81	115
1986	1,558	1,111	448	8	31	71	102
1987	2,146	1,591	555	8	29	62	91
1988	2,171	1,304	868	6	33	76	109
1989	2,249	1,513	736	6	37	83	120
1990	2,347	1,644	703	6	27	63	90
1991	2,432	1,697	735	6	32	64	96
1992	4,283	3,260	1,023	6	40	74	114
Total	44,172	35,920	8,254				
Average	1,523	1,239	550				

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Table 8. 1992 Alaska statewide herring harvests and preliminary 1993 harvest projections.

Fishery	1992 ACTUAL		1993 PROJECTIONS				Stock Status/Trend
	Opening or First Harvest	Harvest (s. tons)	Harvest (s. tons)	Expl. Rate	Mean Wt. (g)	Spawning Biomass (s. tons)	
Southeastern							
Kah Shakes	4/03	1,256	N/A				Moderate/Increasing
Sitka	4/06	5,368	9,691	20%		48,450	High/Increasing
Seymour Canal	Closed		0			1,800	Low/Increasing
Lynn Canal	Closed		0			1,750	Depressed/Stable
Hoonah Snd. Pound	4/05	13.3	11 ^a			5,750	High/Stable
Craig	No Fishery		19 ^a			12,350	Moderate/Stable
Food and Bait	1/14	3,273	2,979	15%		26,700	Moderate/Stable
Prince William Sound							
Seine	4/13	16,784	15,586				
Gillnet	4/23	940	912				
Pound Kelp	4/07	160	305 ^a				
Wild Kelp	5/17	107	268 ^a				
Food/Bait	10/01	4,259	4,373 ^b				
Total			24,444	20% ^c		134,133	High/Stable
Lower Cook Inlet							
Eastern & Outer Districts							
Southern Dist.	No Fishery		0	Exploratory Only		Unknown	Unknown
Kamishak Dist.	4/24	2,200	2,592	10% ^d	172	28,805	Moderate/Increasing
Upper Cook Inlet							
Sac Roe	Closed	0	0			Unknown	Depressed/Declining
Food and Bait	5/13	35	50			Unknown	Depressed/Increasing
Kodiak							
Sac Roe	4/15	4,283	3,500			Unknown	High/Stable
Food and Bait							
Eastern Shelikof	8/01	210	288 ^b	1%		Unknown	Moderate/Increasing
Other Kodiak	8/01	90	350			Unknown	High/Stable
Chignik Sac Roe	No Fishery		-			Unknown	Unknown
Alaska Peninsula							
Port Moller		3,969	3,500			24,843	High/Stable
South Peninsula		180	415			Unknown	Moderate/Stable
Dutch Harbor							
Food and Bait	7/17	1,326	1,978 ^b				
Bristol Bay (Togiak)							
Seine	5/20	19,407	19,709				
Gill Net	5/20	5,030	6,570				
Spawn on Kelp	5/13	1,742 ^a	175 ^a				
Total			26,454	20% ^e		148,786	Depressed/Declining
Kuskokwim Area							
Security Cove	5/15	806	1,256	20%		6,282	Moderate/Increasing
Goodnews Bay	5/29	744	720	20%		3,600	Moderate/Increasing
Cape Avinof	6/04	452	354	15%		2,358	Moderate/Increasing
Nunivak Island	6/04	24	591	15%		3,942	Low/Increasing
Nelson Island	6/10	250	351			3,514	Low/Increasing
Cape Romanzof	6/09	529	355	15%		2,369	Depressed/Declining
Norton Sound							
Gillnet	Closed	0	8,154				
Beach Seine	Closed	0	900				
Total		0	9,054	20%		45,270	High/Stable
Port Clarence	No Harvest		165			Unknown	
Summary							
Sac Roe Harvest Total ^f		62,224	75,321				
Food and Bait Harvest Total:		9,356	10,018				
Total Herring Harvest:		71,576	82,339		Total Known Biomass	455,902	

^a Harvest of spawn-on-kelp product in short tons.

^b Preliminary 1993 food/bait guideline. The 1993 guideline will be set after 1993 sac roe season.

^c The Prince William Sound exploration rate includes allowances for pound and wild spawn on kelp fisheries.

^d Kamishak District exploitation rate includes the eastern Shelikof food and bait harvests.

^e Togiak exploration rate includes allowances for spawn-on-kelp fishery and Dutch Harbor food and bait harvest.

^f Sac roe statewide total harvests do not include allowances for spawn-on-kelp fishery mortality.

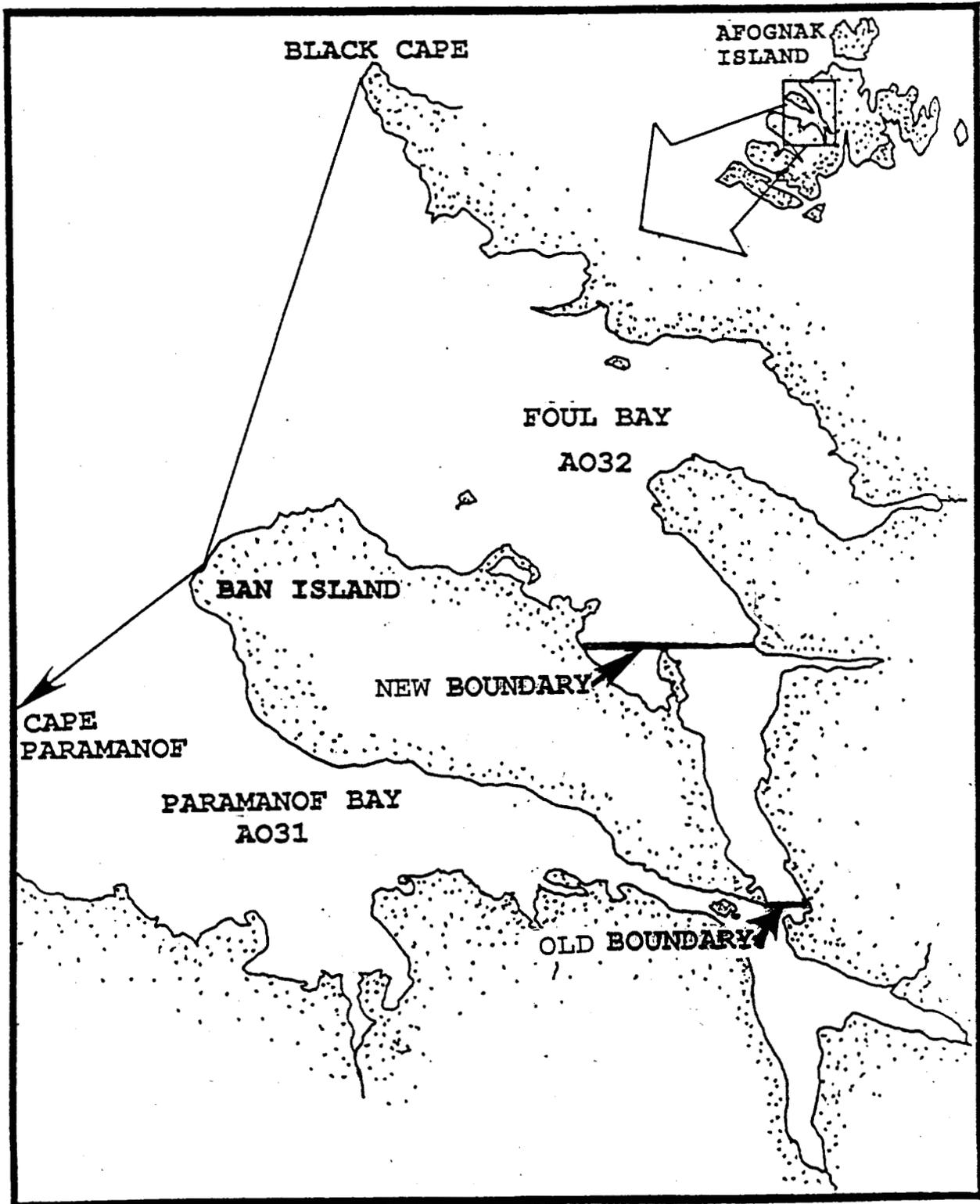


Figure 1. Map showing the new boundary separating the Paramanof Bay and Foul Bay Management Units.

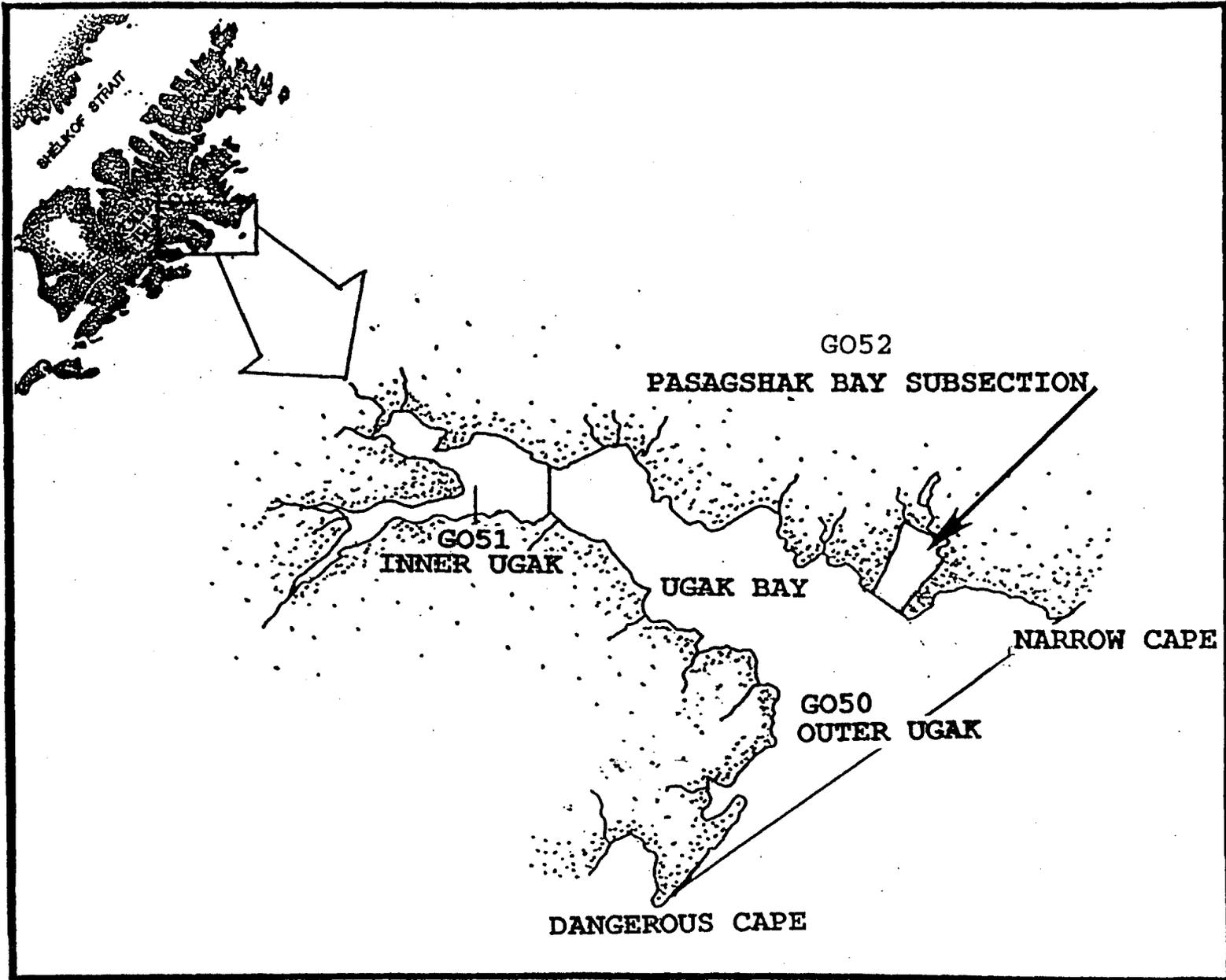


Figure 2. Map showing the new boundary for the Pasagshak Bay Management Unit.

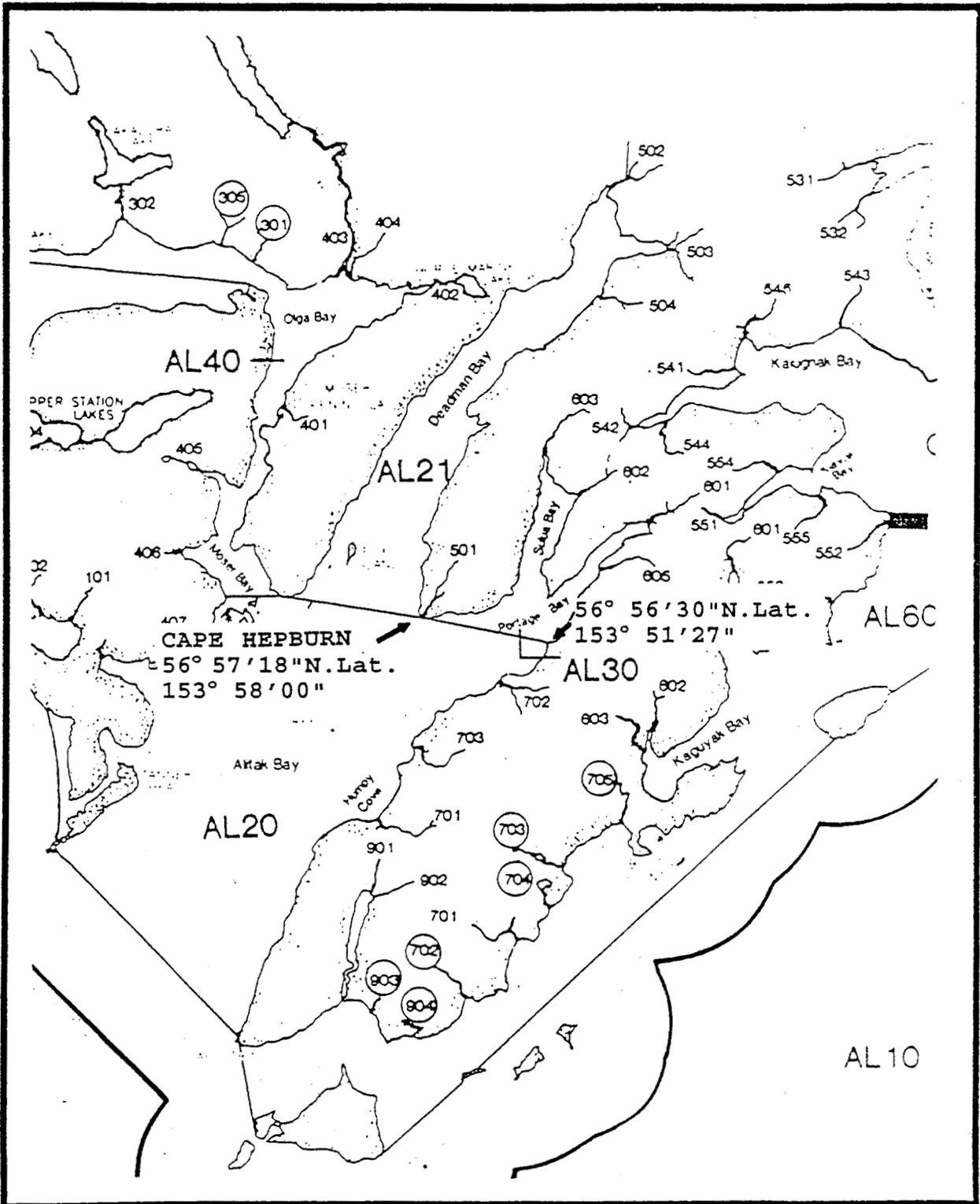


Figure 3. Map showing boundary line between the Sulua-Portage Bay and Inner Alitak Bay Management Units.

Appendix B.1. Summary of emergency order abstracts issued for the sac roe herring fishery, Kodiak Management Area, 1993.

EMERGENCY ORDER NO. 4-FH-K-01-93

Issued at: Kodiak, Alaska
Tuesday, January 12, 1993

EFFECTIVE DATE: 7:00 P.M.
Tuesday, January 12, 1993

Expiration Date: Feb. 28, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes the Alitak Unit (Food/Bait Unit #7) to commercial herring fishing effective at 7:00 P.M. Tuesday, January 12, 1993, through 12:00 Midnight, February 28, 1993:

All remaining closed waters are as listed in the ADF&G 1992 Commercial Herring Fishing Regulations Book.

REGULATION:

5 AAC 27.530 is amended to read:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING.

(d) From 7:00 P.M. Tuesday, January 12, 1993, through 12:00 Midnight February 28, 1993, herring may not be taken in the Alitak Unit (Food/Bait Unit #7)

JUSTIFICATION:

As shown in the 1992/93 Harvest Strategy for the Kodiak Management Area Commercial Food/Bait Herring Fishery (R.I.R. #4K92-32), the harvest level for the Alitak Management Unit (Food/Bait Unit #7) is approximately 70 tons. Current harvest estimates indicate that the commercial catch is near or at that level. Therefore, to prevent additional exploitation of local spawning stocks a closure of the Alitak Management Unit (Food/Bait Unit #7) is warranted.

-Continued-

EMERGENCY ORDER NO. 4-FH-K-02-93

Issued at: Kodiak, Alaska
Monday, April 5, 1993

EFFECTIVE DATE: 12:00 Noon
Thursday, April 15, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency
Order.

EXPLANATION:

This emergency order establishes fishing periods for the 1993 Kodiak Area commercial sac roe herring fishery, describes the initial fishing period, and clarifies waters closed to commercial herring fishing.

The fishery will open for 24 hour fishing periods, each of which begins at 12:00 Noon on the odd numbered days of the month and closes at 12:00 Noon on the even numbered days of the month. Each 24 hour opening will be separated by a 24 hour closure in the entire management area. During open periods the following waters will remain closed, as listed in Commercial Herring Fishing Regulation 5 AAC 27.530.(b):

- (1) Inside Brown's Lagoon proper
- (2) Women's Bay inside of a line from Shannon's Point to the southern tip of Nyman's Peninsula
- (3) All lagoons on Uganik Island

The only exception to this "24 hour on - 24 hour off" rule is the period from 12:00 Noon May 31 through 12:00 Noon June 2 when the fishery shall actually be open for a 48 hour period due to the occurrence of two consecutive odd numbered days.

Further, in this emergency order the northern boundary line between the Inner Alitak Section and the Sulua-Portage Section of the Alitak Bay District is clarified. The northern boundary of the Inner Alitak Section is described as a line at the latitude of Bun Point in Moser Bay, continuing from Bun Point to Cape Hepburn, and from Cape Hepburn at 56°57'18" N. lat., 153°58'00" W. long. eastward across Sulua and Portage Bays to a point at 56°56'30" N. lat., 153°51'27" W. long.

-Continued-

REGULATION:

5 AAC 27.505.(e)(2) and (3) are amended to read:

5 AAC 27.505. DESCRIPTION OF DISTRICTS AND SECTIONS.

(e) (2) Inner Alitak Bay Section: all waters north of a line from Cape Trinity to Cape Alitak, south of the latitude of Bun Point (56°58'25" N. lat.) in Moser Bay, all waters of Deadman Bay, and south of a line from Cape Hepburn (56°57'18" N. lat., 153°58'00" W. long.) eastward to a point on the Aliulik Peninsula at 56°56'30" N. lat., 153°51'27" W. long.;

(A) Inner Alitak Bay Subsection: all waters north of a line from Cape Trinity to Cape Alitak, south of the latitude of Bun Point in Moser Bay, south of a line from Bun Point to Cape Hepburn, and south of a line from Cape Hepburn eastward to a point on the Aliulik Peninsula at 56°56'30" N. lat., 153°51'27" W. long.;

(B) Deadman Bay Subsection: all waters of Deadman Bay north of a line from Cape Hepburn to Bun Point.

(3) Sulua-Portage Section: all waters of Sulua and Portage Bays north of a line from Cape Hepburn eastward to a point on the Aliulik Peninsula at 56°56'30" N. lat., 153°51'27" W. long.;

5 AAC 27.510.(c) is included to read:

5 AAC 27.510. FISHING SEASONS AND WEEKLY FISHING PERIODS.

(c) During the sac roe herring season, from 12:00 Noon April 15 through June 30, 1993, herring may be taken during fishing periods which begin at 12:00 Noon on the odd numbered days of the month and close at 12:00 Noon on the even numbered days of the month. Herring may be taken in open waters of the Kodiak Management Area during the following periods:

- (1) From 12:00 Noon April 15 through 12:00 Noon April 16;
- (2) From 12:00 Noon April 17 through 12:00 Noon April 18;
- (3) From 12:00 Noon April 19 through 12:00 Noon April 20;
- (4) From 12:00 Noon April 21 through 12:00 Noon April 22;

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- (5) From 12:00 Noon April 23 through 12:00 Noon April 24;
- (6) From 12:00 Noon April 25 through 12:00 Noon April 26;
- (7) From 12:00 Noon April 27 through 12:00 Noon April 28;
- (8) From 12:00 Noon April 29 through 12:00 Noon April 30;
- (9) From 12:00 Noon May 1 through 12:00 Noon May 2;
- (10) From 12:00 Noon May 3 through 12:00 Noon May 4;
- (11) From 12:00 Noon May 5 through 12:00 Noon May 6;
- (12) From 12:00 Noon May 7 through 12:00 Noon May 8;
- (13) From 12:00 Noon May 9 through 12:00 Noon May 10;
- (14) From 12:00 Noon May 11 through 12:00 Noon May 12;
- (15) From 12:00 Noon May 13 through 12:00 Noon May 14;
- (16) From 12:00 Noon May 15 through 12:00 Noon May 16;
- (17) From 12:00 Noon May 17 through 12:00 Noon May 18;
- (18) From 12:00 Noon May 19 through 12:00 Noon May 20;
- (19) From 12:00 Noon May 21 through 12:00 Noon May 22;
- (20) From 12:00 Noon May 23 through 12:00 Noon May 24;
- (21) From 12:00 Noon May 25 through 12:00 Noon May 26;
- (22) From 12:00 Noon May 27 through 12:00 Noon May 28;
- (23) From 12:00 Noon May 29 through 12:00 Noon May 30;
- (24) From 12:00 Noon May 31 through 12:00 Noon June 2;
- (25) From 12:00 Noon June 3 through 12:00 Noon June 4;
- (26) From 12:00 Noon June 5 through 12:00 Noon June 8;
- (27) From 12:00 Noon June 7 through 12:00 Noon June 10;
- (28) From 12:00 Noon June 9 through 12:00 Noon June 12;
- (29) From 12:00 Noon June 11 through 12:00 Noon June 14;
- (30) From 12:00 Noon June 13 through 12:00 Noon June 16;
- (31) From 12:00 Noon June 15 through 12:00 Noon June 18;
- (32) From 12:00 Noon June 17 through 12:00 Noon June 20;
- (33) From 12:00 Noon June 19 through 12:00 Noon June 22;
- (34) From 12:00 Noon June 21 through 12:00 Noon June 24;
- (35) From 12:00 Noon June 23 through 12:00 Noon June 26;
- (36) From 12:00 Noon June 25 through 12:00 Noon June 28;
- (37) From 12:00 Noon June 27 through 12:00 Noon June 30.

JUSTIFICATION:

Regulations adopted by the Board of Fisheries established that fishing periods for the commercial sac roe herring fishery in the Kodiak Area would be announced by Emergency Order. During the sac roe herring fishing season, April 15 through June 30, the small herring

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stocks of the Kodiak Area are concentrated and so vulnerable to over exploitation. This Emergency Order is necessary to establish the initial and inseason fishing periods for the commercial sac roe herring fishery.

A system of 24 hour openings separated by 24 hour closures provides reduced time that individual stocks are subject to exploitation and assists the Department by allowing adequate closed periods to collect harvest information and assess the situations in the various management units. Also, set 24 hour open periods allow Kodiak herring fishers opportunity to spread out throughout open areas, and to test and release herring which do not meet the market's current stringent standards for size and maturity.

In addition, during the 1992 commercial sac roe herring fishing season it was discovered that there was an inconsistency between the legal description in the regulation book and the established boundaries of the Inner Alitak Bay Section and the Sulua-Portage Bay Section of the Alitak Bay District. The boundary description was unclear, the latitude and longitude listed for Cape Hepburn was incorrect, and the northeastern point of the boundary was incorrectly listed. To rectify these problems it is necessary to redescribe these points and boundaries in regulation.

EMERGENCY ORDER NO. 4-FH-K-03-93

Issued at: Kodiak, Alaska
Saturday, April 17, 1993

EFFECTIVE DATE: 2:00 P.M.
Saturday, April 17, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Malina Bay Section (AO20) of the Afognak District and the East Sitkalidak Subsection (GO22) of the General District effective at 2:00 P.M. Saturday April 17, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to read:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

-Continued-

(c) From 2:00 P.M. April 17 through June 30, herring may not be taken in the following waters:

(1) Malina Bay Section: all waters of Malina Bay east of a line from Steep Cape (58°12' N. lat., 153°12'30" W. long.) to Cape Paramanof (58°18'20" N. lat., 153°03'30" W. long.)

(2) East Sitkalidak Subsection: all waters of East Sitkalidak Strait and associated bays enclosed by a line from Left Cape (57°15'30" N. lat., 152°57' W. long.) to Cape Barnabas (59°09' N. lat., 152°53' W. long.) and east of 153°16'24" W. long., excluding the Tanginak Anchorage Subsection.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for the Malina Bay Section of the Afognak District (AO20) is 90 tons. It further states that the guideline harvest for the East Sitkalidak Subsection of the General District (GO22) is 180 tons. Preliminary catch information indicates the catch in both these areas is at or over the guideline harvest level. Consequently a closure of these entire management units is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93

EMERGENCY ORDER NO. 4-FH-K-04-93

Issued at: Kodiak, Alaska
Sunday, April 18, 1993

EFFECTIVE DATE: 9:00 A.M.
Sunday, April 18, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Village Islands Subsection (UG30) of the Uganik District effective at 9:00 A.M. Sunday April 18, 1993 until further notice.

-Continued-

REGULATION:

5 AAC 27.530. is amended to read:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(d) From 9:00 A.M. April 18 through June 30, herring may not be taken in the following waters:

(1) Village Islands Subsection: all waters of Uganik Bay south of a line from Cape Ugat (57°52'20" N. lat., 153°50'40" W. long.) to Cape Uganik (57°57'57" N. lat., 153°31' W. long.), west of lines from Cape Uganik to East Point (57°50'30" N. lat., 153°28'30" W. long.), and from East Point to Rock Point (57°46'25" N. lat., 153°29'10" W. long.), and north of the latitude of Packer's Spit (57°44'30" N. lat.).

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for the Village Islands Subsection of the Uganik District (UG30) is 135 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest level. Consequently a closure of this entire management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 and E.O #4-FH-K-03-93.

EMERGENCY ORDER NO. 4-FH-K-05-93

Issued at: Kodiak, Alaska
Sunday, April 18, 1993

EFFECTIVE DATE: 12:00 Noon
Sunday, April 18, 1993

Expiration Date: June 30, 1993 or until
superseded by a subsequent
Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Foul Bay Subsection (A032) of the Afognak District, and closes that portion of the West Sitkalidak Strait Subsection (G020)

-Continued-

of the General District north of a line extending from Cape Liakik on Kodiak Island eastward to the shore of Sitkalidak Island at 57°06'48" N. latitude, both effective at 12:00 Noon Sunday April 18, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to read:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(e) From 12:00 Noon April 18 through June 30, herring may not be taken in the following waters:

(1) The north portion of the West Sitkalidak Subsection: all waters of West Sitkalidak Strait north of a line extending from Cape Liakik eastward to the shore of Sitkalidak Island at 57°06'48" N. latitude, excluding the Barling Bay Subsection.

(2) Foul Bay Subsection: all waters of Foul Bay east of a line from the westernmost tip of Ban Island to Black Cape (58°24'30" N. lat., 152°53' W. long.) excluding the Paramanof Bay Subsection.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for that portion of the West Sitkalidak Strait Subsection (G020) of the General District north of a line extending from Cape Liakik on Kodiak Island eastward to the shore of Sitkalidak Island at 57°06'48" N. latitude is 150 tons. Further, the 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy states that the guideline harvest for the Foul Bay Subsection (A032) of the Afognak District is 60 tons. Preliminary catch information indicates the catch in these areas is at or over the guideline harvest levels. Consequently closure of these management units is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-04-93.

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EMERGENCY ORDER NO. 4-FH-K-06-93

Issued at: Kodiak, Alaska
Sunday, April 18, 1993

EFFECTIVE DATE: 12:00 Noon
Sunday, April 18, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency
Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Tanginak Anchorage Subsection (Unit G023) of the General District effective at 12:00 Noon Sunday April 18, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to read:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(f) From 12:00 Noon April 18 through June 30, herring may not be taken in the following waters:

(1) Tanginak Anchorage Subsection: all waters of McDonald's Lagoon and Tanginak Anchorage south of the latitude of Lagoon Point (57°11'15" N. lat., 153°04' W. long).

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for the Tanginak Anchorage Subsection (G023) of the General District is 15 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-05-93.

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EMERGENCY ORDER NO. 4-FH-K-07-93

Issued at: Kodiak, Alaska
Monday, April 19, 1993

EFFECTIVE DATE: 1:45 P.M.
Monday, April 19, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency
Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the South Arm Uganik Subsection (Unit UG34) of the Uganik District effective at 1:45 P.M. Monday April 19, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(g) From 1:45 P.M. April 19 through June 30, herring may not be taken in the following waters:

(1) South Arm Uganik Subsection: all waters of South Arm Uganik Bay south of the latitude of Mink Point.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for the South Arm Uganik Subsection (Unit UG34) of the Uganik District is 60 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-06-93.

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EMERGENCY ORDER NO. 4-FH-K-08-93

Issued at: Kodiak, Alaska
Monday, April 19, 1993

EFFECTIVE DATE: 12:01 A.M.
Tuesday, April 20, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency
Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Blue fox Bay Section (Unit A040) of the Afognak District effective at 12:01 A.M. Tuesday April 20, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(h) From 12:01 A.M. April 20 through June 30, herring may not be taken in the following waters:

(1) Bluefox Bay Section: all waters encompassed by a line from Black Cape (58°24'30" N. lat., 152°53' W. long.) to Cape Newland (58°30'30" N. lat., 152°53' W. long.) and by the longitude of Cape Currant (152°29'10" W. long.) north to Shuyak Island.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for the Blue Fox Bay Section (Unit A040) of the Afognak District is 30 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-07-93.

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EMERGENCY ORDER NO. 4-FH-K-09-93

Issued at: Kodiak, Alaska
Tuesday, April 20, 1993

EFFECTIVE DATE: 7:30 A.M.
Tuesday, April 20, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Paramanof Bay Subsection (Unit A031) of the Afognak District effective at 7:30 A.M. Tuesday April 20, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(i) From 7:30 A.M. April 20 through June 30, herring may not be taken in the following waters:

(1) Paramanof Bay Subsection: all waters of Paramanof Bay east of a line from Cape Paramanof (58°18'20" N. lat., 153°03'30" W. long.) to the westernmost tip of Ban Island and south of a line extending from the eastside of Ban Island to the westside of Afognak Island at 58°19'15" N. latitude.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest for the Paramanof Bay Subsection (Unit A031) of the Afognak District is 100 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-08-93.

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EMERGENCY ORDER NO. 4-FH-K-10-93

Issued at: Kodiak, Alaska
Tuesday, April 20, 1993

EFFECTIVE DATE: 9:45 A.M.
Tuesday, April 20, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing that portion of the Inner Kiliuda Bay Subsection (Unit G040) of the General District effective at 9:45 A.M. Tuesday April 20, 1993 until further notice. Further, this emergency order closes the Viekoda Bay Subsection (Unit UG20) of the Uganik District effective at 11:30 A.M. Tuesday, April 20 1993, until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(j) From 9:45 A.M. April 20 through June 30, herring may not be taken in the following waters:

(1) West portion of the Inner Kiliuda Subsection: all waters of Inner Kiliuda Bay west of a line at 153°05'48" W. longitude.

(k) From 11:30 A.M. April 20 through June 30, herring may not be taken in the following waters:

(1) Viekoda Bay Subsection: all waters of Inner Viekoda Bay east of the longitude of Naugolka Point (57°33'30" N. lat., 152°13'40" W. long.)

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Inner Kiliuda Subsection (Unit G040) of the General District is 60 tons. Preliminary catch information indicates that a significant harvest has occurred in the inner portion of the bay, in a non-traditional harvest area. To prevent over

-Continued-

exploitation of the stocks in this area a closure of Inner Kiliuda Bay west of 153°05'48" W. longitude is warranted, while the remainder of the subsection will remain open to preserve traditional harvest opportunities.

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy also states that the guideline harvest level for the Viekoda Bay Subsection (Unit UG20) of the Uganik District is 80 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-09-93.

EMERGENCY ORDER NO. 4-FH-K-11-93

Issued at: Kodiak, Alaska
Tuesday, April 20, 1993

EFFECTIVE DATE: 11:00 A.M.
Tuesday, April 20, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency
Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the East Arm Uganik Subsection (Unit UG33) of the Uganik District effective at 11:00 A.M. Tuesday April 20, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(l) From 11:00 A.M. April 20 through June 30, herring may not be taken in the following waters:

(1) East Arm Uganik Subsection: all waters of Mush Bay and that portion of Inner Uganik Bay south of the latitude of Packer's Spit (57°44'30" N. lat.) and north of the latitude of Mink Point (57°43' N. lat.).

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JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the East Arm Uganik Subsection (Unit G040) of the Uganik District is 60 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-10-93.

EMERGENCY ORDER NO. 4-FH-K-12-93

Issued at: Kodiak, Alaska
Wednesday, April 21, 1993

EFFECTIVE DATE: 2:30 P.M.
Wednesday, April 21, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Raspberry Straits Section (Unit A010) of the Afognak District effective at 2:30 P.M. Wednesday April 21, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(m) From 2:30 P.M. April 21 through June 30, herring may not be taken in the following waters:

- (1) Raspberry Straits Section: all waters of Raspberry Strait encompassed by a line extending from Raspberry Cape (58°03'35" N. lat., 153°25' W. long.) to Steep Cape (58°12' N. lat., 153°12'30" W. long.) and by lines from Head Point (57°59'40" N. lat., 152°46'10" W. long.) to Dolphin Point (57°59'10" N. lat., 152°43'25" W. long.) and from Occident Point

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(57°57'25" N. lat., 152°51'30" W. long.) to Last Timber Point (57°58'50" N. lat., 152°58'55" W. long.).

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Raspberry Straits Section (Unit A010) of the Afognak District is 165 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-11-93.

EMERGENCY ORDER NO. 4-FH-K-13-93

Issued at: Kodiak, Alaska
Wednesday, April 21, 1993

EFFECTIVE DATE: 7:00 P.M.
Wednesday, April 21, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Terror Bay Subsection (Unit UG21) of the Uganik District effective at 7:00 P.M. Wednesday April 21, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(n) From 7:00 P.M. April 21 through June 30, herring may not be taken in the following waters:

(1) Terror Bay Subsection: all waters of Terror Bay and Outer Viekoda Bay enclosed by lines from Raspberry Cape to Cape Uganik, from Raspberry

-Continued-

Cape to Outlet Cape, west of the longitude of Naugolka Point, and all waters of West Uganik Passage east of 153° 15' 42" W. long.;

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Terror Bay Subsection (Unit UG21) of the Uganik District is 90 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-12-93.

EMERGENCY ORDER NO. 4-FH-K-14-93

Issued at: Kodiak, Alaska
Saturday, April 24, 1993

EFFECTIVE DATE: 7:00 A.M.
Saturday, April 24, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the entire Inner Kiliuda Bay Subsection (Unit GO41) of the General District effective at 7:00 A.M. Saturday April 24, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(o) From 7:00 A.M. April 24 through June 30, herring may not be taken in the following waters:

(1) Inner Kiliuda Subsection: all waters of Inner Kiliuda Bay west of a line from Left Cape to Shearwater Point.

-Continued-

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Inner Kiliuda Bay Subsection (Unit GO41) of the General District is 60 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-13-93.

EMERGENCY ORDER NO. 4-FH-K-15-93

Issued at: Kodiak, Alaska
Saturday, April 24, 1993

EFFECTIVE DATE: 12:00 Noon
Saturday, April 24, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency
Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the West Uganik Pass Subsection (Unit UG31) of the Uganik District effective at 12:00 Noon Saturday April 24, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(p) From 12:00 Noon April 24 through June 30, herring may not be taken in the following waters:

(1) West Uganik Pass Subsection: all waters of West Uganik Passage west of 153°15'42" W. long. and east of a line from Cape Uganik (57°57'57" N. lat., 153°31' W. long.) to East Point (57°50'30" N. lat., 153°28'30" W. long.).

-Continued-

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the West Uganik Pass Subsection (Unit UG31) of the Uganik District is 75 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-14-93.

EMERGENCY ORDER NO. 4-FH-K-16-93

Issued at: Kodiak, Alaska
Monday, April 26, 1993

EFFECTIVE DATE: 12:00 Noon
Monday, April 26, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Shearwater Subsection (Unit G042) of the General District effective at 12:00 Noon Monday April 26, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(q) From 12:00 Noon April 26 through June 30, herring may not be taken in the following waters:

- (1) Shearwater Subsection: all waters of Shearwater Bay east of a line from Shearwater Point (57°20' N. lat., 152°58' W. long.) to Pillar Point (57°19'15" N. lat., 152°54'30" W. long.)

-Continued-

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Shearwater Subsection (Unit G042) of the General District is 75 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-14-93.

EMERGENCY ORDER NO. 4-FH-K-17-93

Issued at: Kodiak, Alaska
Wednesday, April 28, 1993

EFFECTIVE DATE: 12:00 Noon
Wednesday, April 28, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Deadman Bay Subsection (Unit AL21) of the Alitak Bay District effective at 12:00 Noon Wednesday April 28, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(r) From 12:00 Noon April 28 through June 30, herring may not be taken in the following waters:

(1) Deadman Bay Subsection: all waters of Deadman Bay north of a line from Cape Hepburn to Bun Point.

-Continued-

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Deadman Bay Subsection (Unit AL21) of the Alitak Bay District is 230 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Reports from commercial fishermen and spotters indicate that quantities of herring well in excess of the preseason projected biomass are present in Deadman Bay. ADF&G personnel are prevented by poor weather from confirming these reports on site, so until Department personnel can assess the situation closure of this management unit is necessary.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93.

EMERGENCY ORDER NO. 4-FH-K-18-93

Issued at: Kodiak, Alaska
Thursday, April 29, 1993

EFFECTIVE DATE: 3:00 P.M.
Thursday, April 29, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the eastern portion of the Inner Alitak Bay Subsection (Unit Al20) of the Alitak Bay District effective at 3:00 P.M. Thursday April 29, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(s) From 3:00 P.M. April 29 through June 30, herring may not be taken in the following waters:

(1) East Portion of the Inner Alitak Bay Subsection: all waters east of 154°00'00" W. long., south of a line from Bun Point to Cape Hepburn, and south of a line from Cape Hepburn eastward to a point on the Aliulik Peninsula at 56°56'30" N. lat., 153°51'27" W. long.;

-Continued-

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Inner Alitak Bay Subsection (Unit A120) of the Alitak Bay District is 75 tons. This is the first year that a GHF was set for this management unit...prior to this season this unit was considered exploratory. Preliminary catch information indicates that the catch in the eastern portion of the subsection is at or over the guideline harvest level. This is the portion of the management unit where harvests have occurred in past seasons. A closure of the eastern portion of the subsection is warranted to prevent over exploitation of the stocks, while the western portion will remain open to preserve further exploratory fishing opportunities.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-17-93.

EMERGENCY ORDER NO. 4-FH-K-19-93

Issued at: Kodiak, Alaska
Friday, April 30, 1993

EFFECTIVE DATE: 12:00 Noon
Friday, April 30, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Sulua-Portage Bay Section (Unit AL30) of the Alitak Bay District effective at 12:00 Noon Friday April 30, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(t) From 12:00 Noon April 30 through June 30, herring may not be taken in the following waters:

- (1) Sulua-Portage Section: all waters of Sulua and Portage Bays north of a line from Cape Hepburn eastward to a point on the Aliulik Peninsula at 56°56'30" N. lat., 153°51'27" W. long.;

-Continued-

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Sulua-Portage Bay Section (Unit AL30) of the Alitak Bay District is 145 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently, a closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-18-93.

EMERGENCY ORDER NO. 4-FH-K-20-93

Issued at: Kodiak, Alaska
Sunday May 2, 1993

EFFECTIVE DATE: 10:45 A.M.
Sunday May 2, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Inner Ugak Bay Subection (Unit G051) of the General District effective at 10:45 A.M. Sunday May 2, 1993 until further notice. This emergency order also closes to commercial herring fishing the Barling Bay Subsection (G021) of the General District effective at 12:00 Noon Sunday May 2, 1993 until further notice.

In addition, this emergency order reopens that portion of the Deadman Bay Subsection (Unit AL21) of the Alitak District north of 57°05' N.lat. effective at 6:00 P.M. Monday May 3, 1993. This portion of the management unit will now go back on the normal "24 Hours On - 24 Hours Off" fishing schedule, and only the southern portion will remain closed. This action supersedes Emergency Order #4-FH-K-17-93, which closed the entire Deadman Bay Subsection.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(u) From 10:45 A.M. May 2 through June 30, herring may not be taken in the following waters:

-Continued-

(1) Inner Ugak Subsection: all waters of Ugak Bay west of 152°49' W. long..

(v) From 12:00 Noon May 2 through June 30, herring may not be taken in the following waters:

(1) Barling Bay Subsection: all waters of Barling Bay west of a line from Old Harbor to Barling Spit (57°10'15" N. lat.)

5 AAC 27.530.(r) is amended as follows:

(r) From 12:00 Noon April 28 through June 30, herring may not be taken in the following waters:

(1) That portion of the Deadman Bay Subsection south of 57°05' N. lat.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Inner Ugak Bay Subsection (Unit G051) of the General District is 95 tons. Further, it states that the guideline harvest level for the Barling Bay Subsection (G021) of the General District is 40 tons. Preliminary catch information indicates that the catch in these areas is at or over the guideline harvest levels. Consequently, closure of these management units is warranted to prevent over exploitation.

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Deadman Bay Subsection (Unit AL21) of the Alitak Bay District is 230 tons. By April 28th preliminary catch information indicated that the catch in this area was at or over that guideline harvest level. However reports from commercial fishermen and spotters indicated that quantities of herring well in excess of the preseason projected biomass were present in Deadman Bay. ADF&G personnel were prevented by poor weather from confirming these reports on site, so closure of this entire management unit was necessary. The harvest which occurred in Deadman was primarily from the southern portion of the bay, while traditionally the majority of the harvest had come from up inside the north portion of the bay. On Friday April 30 Department personnel were able to conduct a survey flight over the Deadman Bay Subsection. A quantity of herring, estimated at about 600 tons and believed to be an unexploited biomass, was spotted well up inside Deadman Bay. It is estimated that an additional 120 tons of herring could be taken from the north portion of Deadman Bay. As

-Continued-

stated in the harvest strategy, a reopening of an area can occur only if a monitoring crew is present, and only with 24 hours advance notice. An ADF&G monitoring crew was finally able to get to this area today, so an opening for the north portion of the subsection can be announced. The opening time will be 6:00 P.M. Monday, to allow 24 hours notice from the reading of this announcement after the 6:00 P.M. weather broadcast on SSB channel 4125 Khz.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93, and E.O #4-FH-K-18-93 through E.O #4-FH-K-19-93.

EMERGENCY ORDER NO. 4-FH-K-21-93

Issued at: Kodiak, Alaska
Thursday May 6, 1993

EFFECTIVE DATE: 12:00 Noon
Thursday May 6, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Pasagshak Subsection (Unit G052) and the entire West Sitkalidak Subsection (Unit G020), both of the General District, effective at 12:00 Noon Thursday May 6, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(w) From 12:00 Noon May 6 through June 30, herring may not be taken in the following waters:

(1) Pasagshak Subsection: all waters of Pasagshak Bay north and east of a line from 57°26'06" N. lat., 152°31' W.long., to 57°25'29" N. lat., 152°29'15" W.long..

(2) West Sitkalidak Subsection: all waters of West Sitkalidak Straits and associated bays west of 153°16'24" W. long. and north of a line from Cape Kasiak to Natalia Point, excluding the Barling Bay Section.

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JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Pasagshak Subsection (Unit G052) of the General District is 30 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently, closure of this management unit is warranted to prevent over exploitation.

Further, the harvest strategy states that the guideline harvest level for the West Sitkalidak Subsection (G020) of the General District is split between the northeast portion, with a guideline of 150 tons, and the southwest portion, with a guideline of 125 tons. The northeast portion was previously closed, and now preliminary catch information indicates that the catch in the southwest portion is at or over the guideline harvest level for that area. Consequently, closure of this management unit is also warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93 and E.O #4-FH-K-18-93 through E.O #4-FH-K-20-93.

EMERGENCY ORDER NO. 4-FH-K-22-93

Issued at: Kodiak, Alaska
Monday May 10, 1993

EFFECTIVE DATE: 12:00 Noon
Monday May 10, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Danger Bay Subsection (Unit A100) of the Afognak District and the Alinchak Section (Unit M070) of the Mainland District effective at 12:00 Noon Monday May 10, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

-Continued-

(x) From 12:00 Noon May 10 through June 30, herring may not be taken in the following waters:

(1) Danger Bay Subsection: all waters north of a line from Cape Kazakof (58°04'40" N. lat., 152°37'40" W. long.) to Cape Kostromitinof (58°05'05" N. lat., 152°32'30" W. long.).

(1) Alinchak Section: all waters west of a line from Cape Kubugakli (57°53'30" N. lat., 155°03'35" W. long.) to Cape Kekurnoi (57°43'30" N. lat., 155°07'50" W. long.).

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Danger Bay Subsection (Unit A100) of the Afognak District is 25 tons. Further, the harvest strategy states that the guideline harvest level and the Alinchak Section (Unit M070) of the Mainland District is 40 tons. Preliminary catch information indicates that the catch in these areas is at or over the guideline harvest levels. Consequently, closure of these management units is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93, and E.O #4-FH-K-18-93 through E.O #4-FH-K-21-93.

EMERGENCY ORDER NO. 4-FH-K-23-93

Issued at: Kodiak, Alaska
Friday May 14, 1993

EFFECTIVE DATE: 12:00 Noon
Friday May 14, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Middle Bay Subsection (Unit G101) of the General District effective at 12:00 Noon Friday May 14, 1993 until further notice.

-Continued-

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(y) From 12:00 Noon May 14 through June 30, herring may not be taken in the following waters:

- (1) Middle Bay Subsection: all waters of Middle Bay south and west of a line from Broad Point to Cliff Point.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Middle Bay Subsection (Unit G101) of the General District is 20 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently, closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93, and E.O #4-FH-K-18-93 through E.O #4-FH-K-22-93.

EMERGENCY ORDER NO. 4-FH-K-24-93

Issued at: Kodiak, Alaska
Saturday May 15, 1993

EFFECTIVE DATE: 6:00 P.M.
Saturday May 15, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Larsen Bay Subsection (Unit UY31) of the Uyak District effective at 6:00 P.M. Saturday May 15, 1993 until further notice.

-Continued-

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(z) From 6:00 P.M. May 15 through June 30, herring may not be taken in the following waters:

- (1) Larsen Bay Subsection: all waters of Larsen Bay west of a 153°58'12" W. long.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Larsen Bay Subsection (Unit UY31) of the Uyak District is 10 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently, closure of this management unit is warranted to prevent over exploitation.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93, and E.O #4-FH-K-18-93 through E.O #4-FH-K-23-93.

EMERGENCY ORDER NO. 4-FH-K-25-93

Issued at: Kodiak, Alaska
Thursday May 20, 1993

EFFECTIVE DATE: 12:00 Noon
Thursday May 20, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Outer Uyak Subsection (Unit G050) of the General District and the entire Deadman Bay Subsection (Unit AL21) of the Alitak District effective at 12:00 Noon Thursday May 20, 1993 until further notice.

-Continued-

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(aa) From 12:00 Noon May 20 through June 30, herring may not be taken in the following waters:

- (1) Outer Ugak Subsection: all waters of Ugak Bay east of 152°49' W. long. and north and west of a line from Dangerous Cape to Narrow Cape.
- (2) Deadman Bay Subsection: all waters of Deadman Bay north of a line from Cape Hepburn to Bun Point.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the Outer Ugak Subsection (Unit G050) of the General District is open to exploratory fishing. Preliminary catch information indicates that there have been harvests in several portions of this area. A closure of this entire management unit is warranted to prevent over exploitation of these developing stocks.

In Emergency Order number 4-FH-K-20-93 the north portion of the Deadman Bay Subsection was reopened to commercial herring

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O. #4-FH-K-02-93 through E.O. #4-FH-K-16-93, and E.O. #4-FH-K-18-93 through E.O. #4-FH-K-24-93.

EMERGENCY ORDER NO. 4-FH-K-26-93

Issued at: Kodiak, Alaska
Sunday May 30, 1993

EFFECTIVE DATE: 12:00 Noon
Sunday May 30, 1993

Expiration Date: June 30, 1993
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial herring fishing the Browns Lagoon Subsection (Unit UY32) of the Uyak District and the Lower Olga-Moser Bay Section (Unit AL40) of the Alitak District effective at 12:00 Noon Sunday May 30, 1993 until further notice.

-Continued-

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(bb) From 12:00 Noon May 30 through June 30, herring may not be taken in the following waters:

(1) Browns Lagoon Subsection: that portion of the Inner Uyak Bay Section in Amook Pass south of a line from the northern tip of Amook Island to Carlsen Point, and north of the latitude of the southern tip of Amook Island.

(2) Lower Olga-Moser Bay Section: all waters of Lower Olga and Moser Bays encompassed by a line from Stockholm Point (57°07'40" N. lat., 154°06'36" W. long.) to the terminus of Silver Salmon Creek (stream #257-303), and the latitude of Bun Point.

JUSTIFICATION:

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the for the Lower Olga-Moser Bay Section (Unit AL40) of the Alitak District is 30 tons. Preliminary catch information indicates that the catch in this area is at or over the guideline harvest level. Consequently, closure of this management unit is warranted to prevent over exploitation.

The 1993 Kodiak Management Area Herring Sac Roe Harvest Strategy (R.I.R. #4K93-16) states that the guideline harvest level for the Browns Lagoon Subsection (Unit UY32) of the Uyak District is 30 tons. Preliminary catch information indicates that the catch in this area is very near the guideline harvest level. The ADF&G field crew which has been monitoring this management unit has left the area. Therefore, to prevent possible over exploitation closure of this management unit is warranted.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-02-93 through E.O #4-FH-K-16-93, and E.O #4-FH-K-18-93 through E.O #4-FH-K-25-93.

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EMERGENCY ORDER NO. 4-FH-K-28-93

Issued at: Kodiak, Alaska
Tuesday, October 19, 1993

EFFECTIVE DATE: 4:15 A.M.
Tuesday, October 19, 1993

Expiration Date: Feb. 28, 1994
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes the following management units to commercial herring fishing effective at 4:15 A.M. Tuesday, October 19, 1993, through 12:00 Midnight, February 28, 1994:

- 1) West Afognak Unit (Food/Bait Unit #1)
- 2) North Afognak Unit (Food/Bait Unit #2)
- 3) Uganik Unit (Food/Bait Unit #4)
- 4) Uyak Unit (Food/Bait Unit #5)
- 5) North Mainland Unit (Food/Bait Unit #11)
- 6) Mid-Mainland Unit (Food/Bait Unit #12)

All remaining closed waters are as listed in the ADF&G 1993 Commercial Herring Fishing Regulations Book.

REGULATION:

5 AAC 27.530 is amended to read:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING.

(t) From 4:15 A.M. Tuesday, October 19, 1993, through 12:00 Midnight February 28, 1993, herring may not be taken in the following waters:

- (1) West Afognak Unit (Food/Bait Unit #1)
- (2) North Afognak Unit (Food/Bait Unit #2)
- (3) Uganik Unit (Food/Bait Unit #4)
- (4) Uyak Unit (Food/Bait Unit #5)
- (5) North Mainland Unit (Food/Bait Unit #11)
- (6) Mid-Mainland Unit (Food/Bait Unit #12).

-Continued-

JUSTIFICATION:

Over the past week there has been a significant harvest of bait herring from the westside of Kodiak Island. Based preliminary sampling of the harvest, along with the harvest location and estimates of the biomass available obtained from skipper interviews, it is of high probability that these herring are mixed Kodiak and Kamishak spawning stocks. As described by Kodiak Herring Fishing Regulation 5AAC 27.535.(b), and shown in the 1993/94 Harvest Strategy for the Kodiak Management Area Commercial Food/Bait Herring Fishery (R.I.R. #4K93-25), the guideline harvest level (GHL) for the management units along the west side of the Afognak District, the Uganik District, and the Uyak District is a combination of the allowable food/bait herring harvest of Kamishak stocks and local Kodiak stocks. The combined GHL for Kamishak and local Kodiak stocks on the west side is 652 tons. Preliminary catch reports indicate that the total harvest from the over wintering areas of the westside of Kodiak Island is close to, or may exceed the 652 ton limit. Therefore, to prevent additional exploitation of Kamishak or local Kodiak spawning stocks a closure of the following food/bait management areas is warranted: West Afognak Unit (Food/Bait Unit #1); North Afognak Unit (Food/Bait Unit #2); Uganik Unit (Food/Bait Unit #4); Uyak Unit (Food/Bait Unit #5); North Mainland Unit (Food/Bait Unit #11); and the Mid-Mainland Unit (Food/Bait Unit #12).

EMERGENCY ORDER NO. 4-FH-K-29-93

Issued at: Kodiak, Alaska
Friday, October 29, 1993

EFFECTIVE DATE: 8:15 A.M.
Friday, October 29, 1993

Expiration Date: Feb. 28, 1994
or until superseded by a
subsequent Emergency Order.

EXPLANATION:

This emergency order closes to commercial food/bait herring fishing the Alitak Unit (Food/Bait Unit #7) effective at 8:15 A.M. Friday October 29, 1993 until further notice.

REGULATION:

5 AAC 27.530. is amended to include:

5 AAC 27.530. WATERS CLOSED TO HERRING FISHING

(u) From 8:15 A.M. October 29, 1993 through February 28, 1994 herring may not be taken in the following waters:

-Continued-

(1) Alitak Bay District: all waters east of the longitude of Cape Ikolik, west of the longitude of Black Point (153° 18' W. long.), south of the latitude of Black Point (57° N. lat.) to Cape Kiavak (57° N. lat., 153° 33' W. long.).

JUSTIFICATION:

The Kodiak Management Area Food/Bait Herring Fishing Harvest Strategy 1993/1994 (R.I.R. #4K93-25) states that the guideline harvest level for the Alitak Unit (Food/Bait Unit #7) is 77 tons. Preliminary catch information indicates that the catch is currently at or over the guideline harvest level. Therefore, a closure of this entire management unit is warranted to prevent over exploitation of local herring stocks.

The following commercial herring fishing emergency orders, related to this fishery, remain effective: E.O #4-FH-K-28-93.

Appendix C.1.

KODIAK MANAGEMENT AREA
COMMERCIAL FOOD/BAIT HERRING FISHERY
HARVEST STRATEGY
1993/94

By

Dennis Gretsch,
Dave Prokopowich,
and
Kevin Brennan

Regional Information Report¹ No 4K93-25

Alaska Department of Fish and Game
Division of Commercial Fisheries, Westward Region
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INTRODUCTION

The Kodiak Management Area (KMA) food/bait herring fishery has a long history dating back to 1912. Early harvests were primarily utilized for food and reduction products and harvests far surpassed current levels. Since, the early 1960's the harvest has been utilized primarily as bait for the crab and longline fisheries.

This fishery targets both Kodiak and Kamishak spawning stocks which are present in the KMA during the food/bait season (August 1, 1993 to February 28, 1994), Figure 1. Since the herring sac roe fisheries in the Kodiak and Cook Inlet areas are closed-to-entry fisheries, they are treated as primary fisheries. These fisheries are managed to provide for the majority of the harvest on the affected stocks to occur during the Kodiak and Kamishak sac roe fisheries. The food/bait fishery on these same stocks are subsequently treated as secondary fisheries. The associated harvest levels are directly related to the results of the sac roe fisheries of these stocks.

This harvest strategy will summarize the recent regulatory changes which affect the management of this fishery.

HARVEST STRATEGIES

During the Board of Fisheries meeting held in Anchorage in November of 1992 and in Kodiak in January of 1993, new harvest strategies were adopted which will direct the management of the KMA food/bait herring fishery.

KAMISHAK HERRING STOCKS

In the Cook Inlet Area 1993 Commercial Herring Fishing Regulations, the Kamishak Bay District Herring Management Plan (5AAC 27.465.), outlines criteria for the management of the Kamishak Bay sac roe herring fishery and Shelikof Strait food/bait fishery as follows:

5 AAC 27.465 Kamishak Bay District Herring Management Plan.

- a) The purpose of the Kamishak Bay District herring management plan is to describe the management strategies used to set the guideline harvest levels for the Kamishak Bay sac roe fishery, and for that portion of the Kamishak Bay stock allocated to the food and bait fishery conducted in the North Afognak Island, West Afognak Island, Uganik, North Mainland, and Mid-Mainland food and bait management units of the Kodiak management area, known as the Shelikof Strait food and bait fishery, as described in (5 ACC 27.535(c)), Figure 2.
- b) The management year for the Kamishak Bay herring stock is July 1 through June 30.

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- c) The allocation of the allowable harvest of the Kamishak Bay herring stock is 90 percent to the Kamishak Bay sac roe fishery, and 10 percent to the Shelikof Strait food and bait fishery.
- d) The guideline harvest level for the fall Shelikof Strait food and bait fishery and the following spring Kamishak Bay sac roe fishery will be based on the projected biomass as determined by the most recent aerial surveys, age class composition, historical mortality, and recruitment trends.
- e) The maximum exploitation rate for the Kamishak Bay herring stock is 20 percent of the spawning biomass, and will be determined as follows:
 - 1) if the spawning biomass is 30,000 short tons or more, the maximum exploitation rate is 20 percent, with 18 percent allocated to the Kamishak sac roe fishery and 2 percent allocated to the Shelikof Strait food and bait fishery;
 - 2) if the spawning biomass is 20,000 short tons or more, but less than 30,000 short tons, the maximum exploitation rate is 15 percent, with 13.5 percent allocated to the Kamishak sac roe fishery and 1.5 percent allocated to the Shelikof Strait food and bait fishery;
 - 3) if the spawning biomass is 8,000 short tons or more, but less than 20,000 short tons, the allowable exploitation rate is 10 percent, with 9 percent allocated to the Kamishak sac roe fishery and 1 percent allocated to the Shelikof Strait food and bait fishery;
 - 4) if the spawning biomass is less than 8,000 short tons, the Kamishak Bay sac roe fishery and the Shelikof food and bait fishery north of the latitude of Miner's Point will be closed, Figure 3.
- f) The management strategy for the Kamishak sac roe fishery is to target the fishery on older age classes, and to limit exploitation rates on younger age class herring (age five and younger) to 10 percent or less.
- g) The allocation of Kamishak Bay herring stocks to the Shelikof Strait food and bait fishery will be based on the spawning biomass of age five and older herring and not on the biomass of juveniles. The quantity of herring stocks aged four years and younger caught in the Shelikof Strait food and bait fishery will be adjusted to approximate the biomass of a similar number of age five herring.

KODIAK FOOD/BAIT HARVEST STRATEGY

The specific management plan which guides the KMA food/bait fishery is described in the Kodiak Area 1993 Commercial Herring Fishing Regulation 5 AAC 27.535. The allocation of Kamishak Bay herring stocks which overwinter in the Shelikof Strait in the KMA food/bait fishery is described in the Kamishak Bay District Herring Management Plan (5 AAC 27.465).

The 1993/94 Kodiak Harvest Strategy combines the Kamishak food/bait guideline harvest level (GHL) with the Kodiak GHL for the West Afognak, Uganik, and Uyak food/bait management units. Kodiak herring stocks have dramatically increased over the past three years. Intermixing of Kodiak and Kamishak stocks occurs during the winter months on the west side of the Kodiak Island group. Actual inseason management is guided by the following regulation:

5 AAC 27.535. HARVEST STRATEGIES.

- a) Except as otherwise provided in this section, the department shall manage the herring food/bait fishery so that the food/bait harvest does not exceed 10 percent of the actual Kodiak herring sac roe harvest in the previous season.
- b) The department shall manage the herring food/bait fishery in waters set out in the Afognak District (5 AAC 27.505 (a)(1)-(5)), in the Uganik District (5 AAC 27.505(b)) and Uyak District (5 AAC 27.505(c)) so that the total harvest does not exceed the sum of (1) the allowable harvest of the Kamishak spawning stocks that overwinter in the Shelikof Strait as determined under the Kamishak Bay District herring management plan (5 AAC 27.465) and (2) GHL set for the food/bait fishery in these waters as provided in (c), Figure 2.
- c) The GHL for the herring food/bait fishery in waters set out in the Afognak District (5 AAC 27.505 (a)(1)-(5)), Uganik District (5 AAC 27.505(b)) and Uyak District (5 AAC 27.505(c)) shall not exceed 10 percent of the herring sac roe harvest of the previous season in these waters.
- d) When the Kamishak Bay herring spawning biomass is below 8,000 short tons the department shall close the food/bait fishery in Shelikof Strait north of the latitude of Miner's Point, Figure 3.

MANAGEMENT UNITS

To accommodate this harvest strategy, thirteen (13) food/bait management units have been established to include geographical groupings of sac roe stocks and adjacent offshore areas.

Each food/bait management unit consists of several sac roe herring fishery management units, Figures 4-13. Each food/bait management unit GHL is based upon 10% of the total sac roe herring harvest which occurred within the food/bait management unit boundaries.

GUIDELINE HARVEST LEVELS

The 1993-1994 food/bait G.H.L. for the KMA will be affected by the following management considerations:

Kodiak Spawning Stocks

For Kodiak spawning stocks, as described in 5 AAC 27.535(a) Harvest Strategies, the department shall limit the food/bait harvest to 10% of the previous spring's sac roe harvest on a stock by stock basis, (Table 1). Harvest levels on Kodiak stocks in the adjacent offshore areas will reflect the combined food/bait G.H.L. for the sac roe stocks included within that management unit. Partial closure of food/bait management units may occur.

A maximum of 489 tons properly distributed throughout the KMA will be the food/bait harvest on Kodiak spawning stocks.

Kamishak Spawning Stocks

The 1994 Kamishak spawning biomass is forecasted at 25,000 tons. As described in 5 AAC 27.535(e)(2) if the spawning biomass is 20,000 short tons or more, but less than 30,000 short tons, the maximum exploitation rate is 15 percent, with 13.5 percent allocated to the Kamishak sac roe fishery and 1.5 percent allocated to the Shelikof Strait food and bait fishery.

The GHL for the Kamishak Bay herring stocks for the Shelikof Strait Bait Fishery is 380 tons.

As discussed in 5 AAC 27.535(b) Harvest Strategies, the GHL's for the Kodiak food/bait management units (F/B 1, F/B 4, and F/B 5) will be combined with the Kamishak Bay herring allocation.

The Kamishak Bay GHL of 380 tons plus the Kodiak stock combined GHL's for food/bait units F/B 1, F/B 4, and F/B 5 of 272 tons, gives a combined GHL of 652 tons. When the 652 ton GHL is reached or approached, the following management units will be closed collectively to further food/bait herring fishing, F/B 1, F/B 2, F/B 4, F/B 5, F/B 11, and F/B 12, Figure 2. Herring harvested in food and bait management units F/B 2, F/B 11, and F/B 12 are attributed to the Kamishak Bay GHL.

REGULATIONS

Season Opening Times and Dates

From August 1, 1993 through February 28, 1994.

Fishing Periods

Open to continuous fishing from 12:01 A.M. 8/1/93 to 12:00 P.M. 2/28/94 unless superseded by emergency order closures.

Closed Waters

See CLOSED WATERS section of the 1993 Commercial Herring Fishing Regulations (page 38), 5 AAC 27.530.

Consult 1993 Commercial Salmon Fishing Regulations, (5 AAC 18.350), for a listing of closed waters for the Kodiak food/bait herring fishery for the period August 1 through October 31, pages 59-63.

Permits Required

Interim Use Permit is required before a registration permit will be issued. Interim use permits are issued from the Commercial Fisheries Entry Commission in Juneau for the following gear types:

- H01K Purse Seine
- H34K Gillnet
- H07K Trawl

Registration Permit - Kodiak ADF&G Office

- All fishers and processor/buyers are required to register with the Kodiak ADF&G office prior to fishing.

Registration Permit will be used for:

- Monitoring fleet size by gear type.
- Clarifying catch reporting procedures, closed water areas, and in-season emergency order announcement procedures.

Legal Gear Restrictions

New gear restrictions for purse seine gear were adopted by the State Board of Fisheries for the 1993/94 food/bait season. No changes were implemented for trawl or gillnet gear.

- 01 - Purse Seines
 - Maximum length: (NEW regulation) 150 fathoms
 - Maximum depth: (NEW regulation) 1,625 meshes. For Area K there are no web size restrictions.
 - Lead length unrestricted.
- 34 - Gillnets
 - Maximum length: 150 fathoms; mesh size: 2-1/8" - 2-1/2".
- 07 - Trawl
 - No restrictions

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Consult the 1993 Commercial Herring Fishing Regulations for a complete listing of all regulations.

EMERGENCY ORDER (E.O.) ANNOUNCEMENTS

It is important for Kodiak food/bait fishers to be aware of management unit closures. This can be accomplished by 1) personal contact with the Kodiak ADF&G management staff via office visits or by calling 486-1830, 2) contacting Kodiak ADF&G management staff on SSB radio frequency 3.230 mhz, 3) contacting local herring processors, 4) calling the Kodiak ADF&G recorded message phone at 486-4559, 5) listening for an emergency order update which will be broadcasted at 8:00 A.M. and 6:00 P.M. after the marine weather on SSB radio frequency 4.125 mhz or 6) by picking up the most recent emergency order from the holder mounted outside the ADF&G office.

REPORTS REQUIRED BY FISHERMEN

All landings of herring for food/bait purposes must be verbally reported to ADF&G before the product is totally unloaded at the dock.

The following phone numbers will reach Fish and Game personnel 24 hours per day:

- ADF&G Office: Monday through Friday
8:00 A.M. to 4:30 P.M. - 486-1807 or 486-1830.
- After Office Hours:
4:30 P.M. to 8:00 A.M.
 - 486-6007 (Dave Prokopowich)
 - 486-3031 (Dennis Gretsich)
 - 486-6475 (Kevin Brennan)
 - 486-4831 (Pete Probasco)

All fish tickets must be completed and sent to the Kodiak Fish and Game office within a week of the landing.

Send to: Alaska Department of Fish and Game
Division of Commercial Fisheries
ATTN: Dave Prokopowich
211 Mission Road
Kodiak, Alaska 99615

FISHER COOPERATION

Department personnel will conduct confidential skipper interviews to obtain biomass estimates, average school size and herring distribution data. Additionally, fisher cooperation will be appreciated when Department personnel request herring samples. These samples will be used to determine age composition, and length and weight characteristics of the commercial harvest.

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Table 1. Kodiak Management Area 1993/94 herring food/bait harvest strategy. A listing of guideline harvest levels by food/bait management units^a. (G.H.L. harvest numbers represent short tons).

Food/Bait Mgmt. Units	Sac Roe Management Units		1993 Sac Roe		1993/94 Food/Bait
	No.	Name	G.H.L.	Harvest	G.H.L.
F/B 1 West Afognak Unit	AO10	Raspberry	165	445	44
	AO20	Malina	90	312	31
	AO31	Paramanof	100	431	43
	AO32	Foul Bay	60	158	16
	AO40	Blue Fox/Devil's Inlet	30	240	24
	AO50	Offshore Afognak	Exploration	0	Exploration
UNIT TOTALS:			445	1586	158
F/B 2 North Afognak Unit	AO60	Shuyak	20	0	0
	AO70	Perenosa	15	10	1
	AO71	Delphin	10	0	0
	AO72	Seal Bay	10	0	0
	AO80	Tonki	15	0	0
UNIT TOTALS:			70	10	1
F/B 3 East Afognak Unit	AO90	Izhut	15	5	1
	AO91	Kitoi	10	0	0
	AO92	McDonalds	10	0	0
	A100	Danger	25	30	3
	A101	Litnik	10	1	0
	A102	Inshore Marmot	10	0	0
UNIT TOTALS:			80	36	4
F/B 4 Uganik Unit	UG10	Kupreanof	10	0	0
	UG20	Viekoda	80	95	9
	UG21	Terror	90	214	21
	UG30	Village Islands	135	484	48
	UG31	W. Uganik Passage	75	73	7
	UG32	N.E. Arm Uganik	110	3	0
	UG33	E. Arm Uganik	60	113	11
	UG34	S. Arm Uganik	60	92	9
	UG40	Offshore Uganik	Exploration	0	0
	UNIT TOTALS:			620	1,074
F/B 5 Uyak Unit	UY10	Offshore Uyak	Exploration	0	Exploration
	UY20	Harvester	10	0	1
	UY30	Inner Uyak	135	34	3
	UY32	Browns Lagoon	30	9	1
	UY31	Larsen Bay	10	16	2
	UY40	Zachar	75	3	0
	UY50	Spiridon	90	21	2
UNIT TOTALS:			350	83	9

-Continued-

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Table 1. (page 2 of 3)

Food/Bait Mgmt. Units	Sac Roe Management Units		1993 Sac Roe		1993/94 Food/Bait
	No.	Name	G.H.L.	Harvest	G.H.L.
F/B 6 Sturgeon/ Halibut Unit	SH01	Sturgeon/Halibut	Exploration	0	Exploration
F/B 7 Alitak Unit	AL10	Outer Alitak	Exploration	28	3
	AL20	Inner Alitak	75	71	7
	AL21	Deadman	230	379	38
	AL30	Sulua	145	203	20
	AL40	Lower Olga/N. Upper Olga	30	27	3
	AL50	Upper Olga/Moser	110	50	5
	AL60	Geese/Twoheaded	Exploration	15	1
UNIT TOTALS:			590	773	77
F/B 8 Eastside Unit	GO10	Kaiugnak	20	13	1
	GO20	W. Sitkalidak	275	286	29
	GO21	Barling	40	39	4
	GO22	E. Sitkinak	180	293	29
	GO23	Tanginak	15	19	2
	GO30	Outer Sitkalidak	Exploration	0	Exploration
	GO40	Outer Kiliuda	Exploration	46	5
	GO41	Inner Kiliuda	60	127	13
	GO42	Shearwater	75	91	9
	GO50	Outer Ugak	Exploration	52	5
	GO50	Pasagshak	30	28	3
	GO51	Inner Ugak	95	130	13
UNIT TOTALS:			790	1112	113
F/B 9 Chiniak Unit	GO60	Womens Bay	110	30	3
	G100	Kalsin Bay	15	0	0
	G101	Middle Bay	20	16	2
	G102	Inshore Chiniak	10	0	0
UNIT TOTALS:			155	46	5
F/B 10 North Kodiak Unit	GO70	Monashka/Mill Bay	Exploration	0	Exploration
	GO80	Anton Larsen	10	0	0
	GO81	Sheratin	10	0	0
	GO90	Kizhuyak	100	67	7
	G103	Spruce Island	10	0	0
UNIT TOTALS:			130	67	7
F/B 11 No. Mainland Unit	MO10	North Mainland	Exploration	0	Exploration
	MO20	Inner Kukak	65	15	1
	MO30	Outer Kukak	Exploration	0	Exploration
	MO40	Inner/Outer Missak	Exploration	0	Exploration
UNIT TOTALS:			65	15	1

-Continued-

Table 1. (page 3 of 3)

Food/Bait Mgmt. Units	Sac Roe Management Units		1993 Sac Roe		1993/94 Food/Bait
	No.	Name	G.H.L.	Harvest	G.H.L.
F/B 12	MO50	Inner Katmai	65	24	2
	MO60	Outer Katmai	Exploration	0	Exploration
Mid-Mainland Unit	MO70	Alinchak	40	63	6
	MO80	Puale Bay	Exploration	0	Exploration
	MO90	Portage Bay	Exploration	0	Exploration
UNIT TOTALS:			105	87	8
F/B 13	M100	Outer Portage	-	0	Exploration
So. Mainland Unit	M110	Wide Bay	125	15	1
	M120	Lower Shelikof	Exploration	0	Exploration
UNIT TOTALS:			125	15	1
GRAND TOTALS:			3,525	4,916	489

^a The Kodiak Area total G.H.L. for food/bait fishery, as indicated in the 1993 Herring Regulations, is managed so that the food/bait harvest does not exceed 10% of the actual herring sac-roë harvest in the previous season. This table reflects the available food/bait harvest for each sac-roë stock or food/bait unit, whichever applies. (See Harvest Strategy.) G-H-L and harvest figures are rounded to the nearest ton.

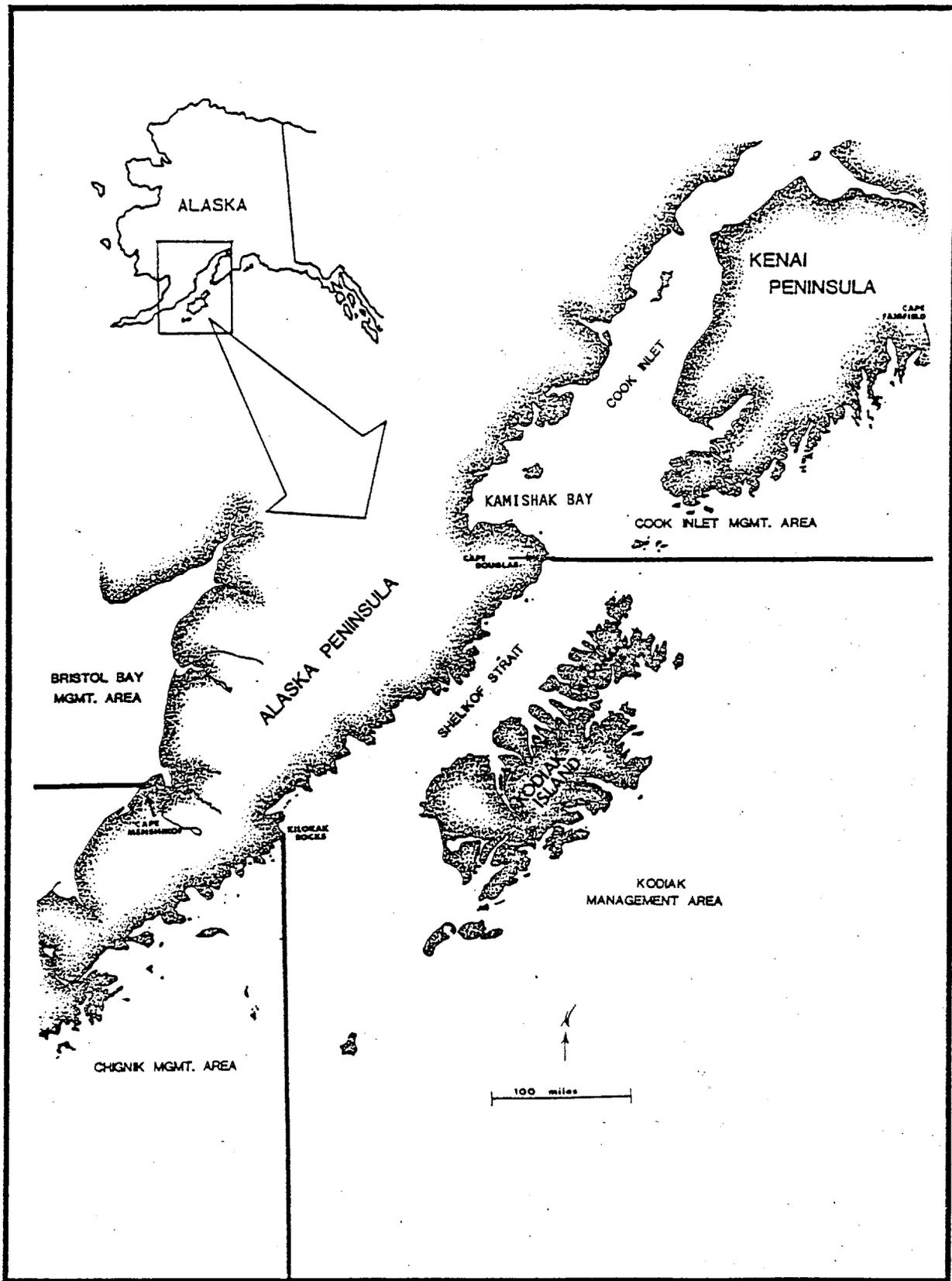


Figure 1. Map of southcentral Alaska showing the Kodiak and Cook Inlet herring management areas, along with the location of Kamishak Bay and Shelikof Strait.

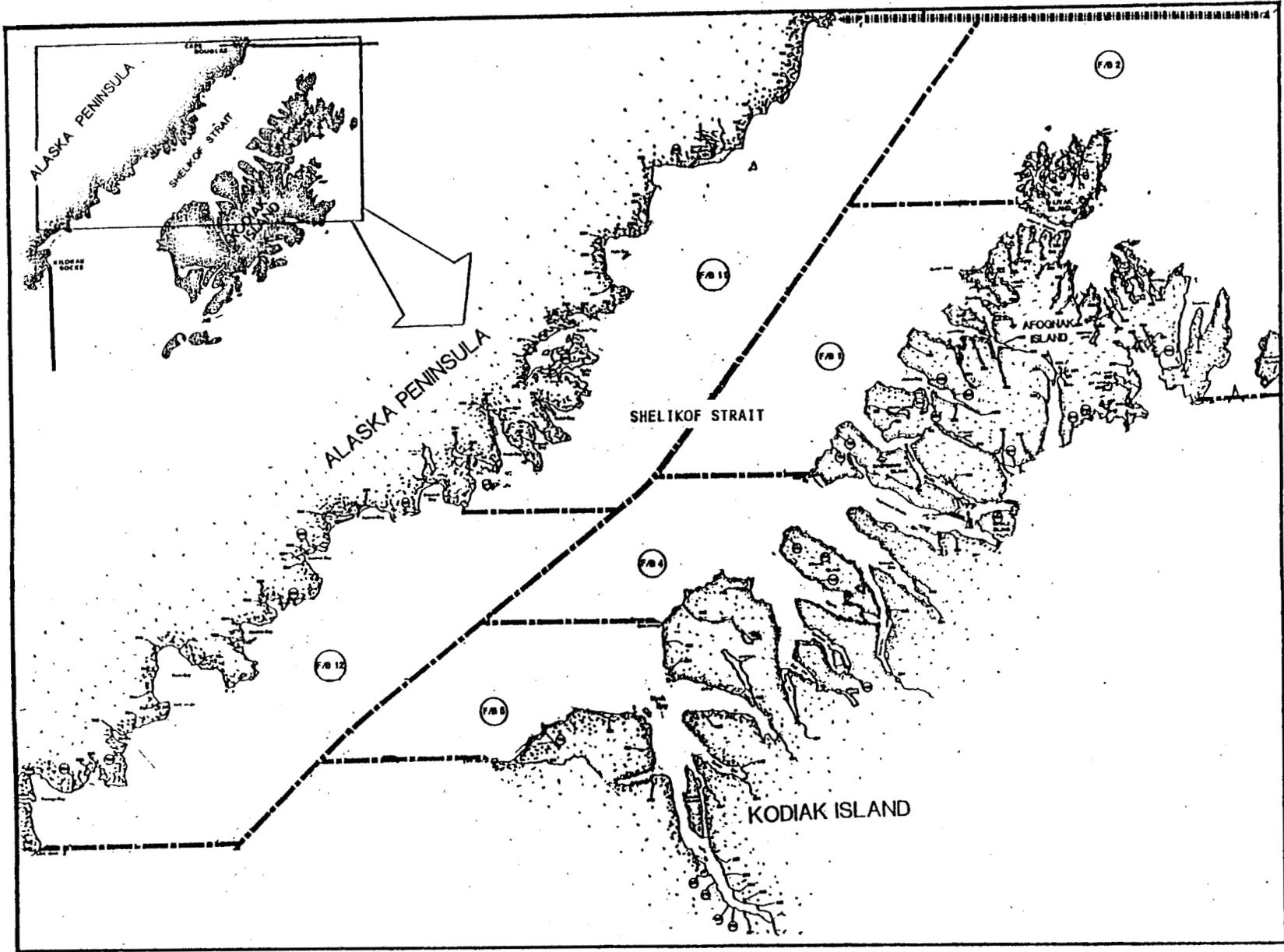


Figure 2. Kodiak food and bait herring management units, (FB1, FB2, FB4, FB5, FB11, and FB12) which are affected by the harvest of Kamishak Bay herring.

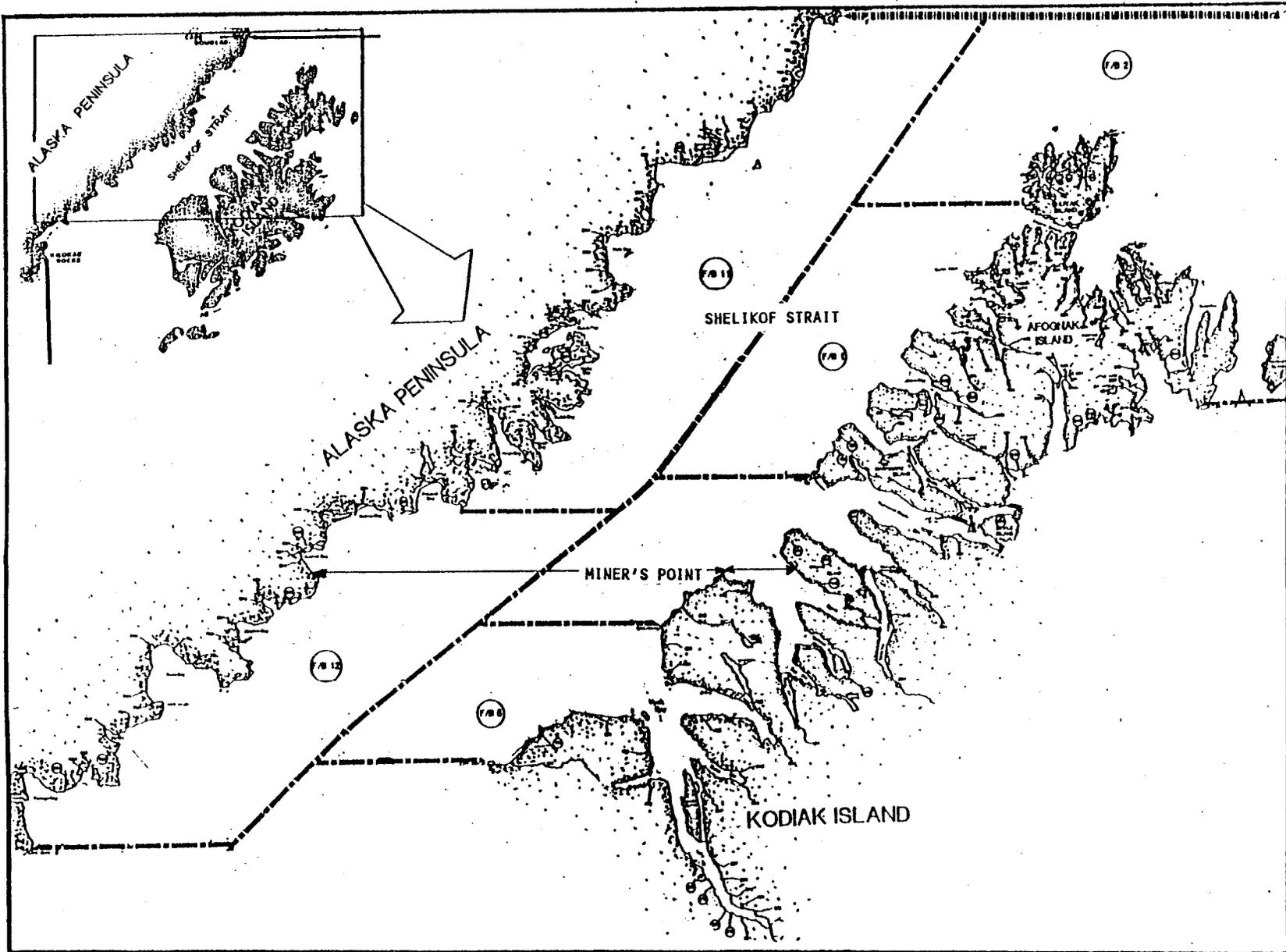


Figure 3. Kodiak food and bait management area north of the latitude of Miner's Point which would be closed if the Kamishak Bay herring biomass is below 8,000 tons.

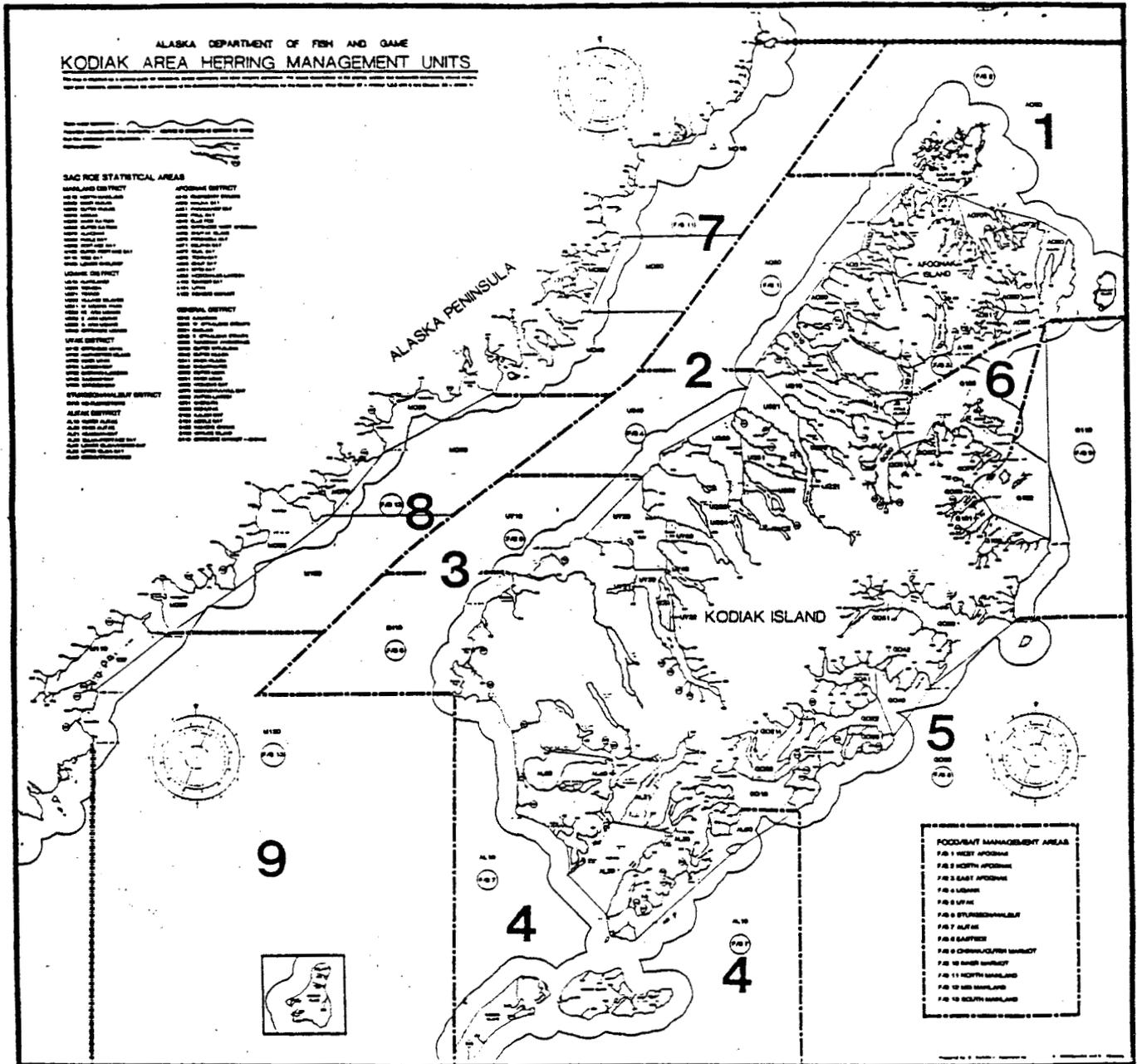


Figure 4. Kodiak Area herring management units and key to enlarged maps (1-9).

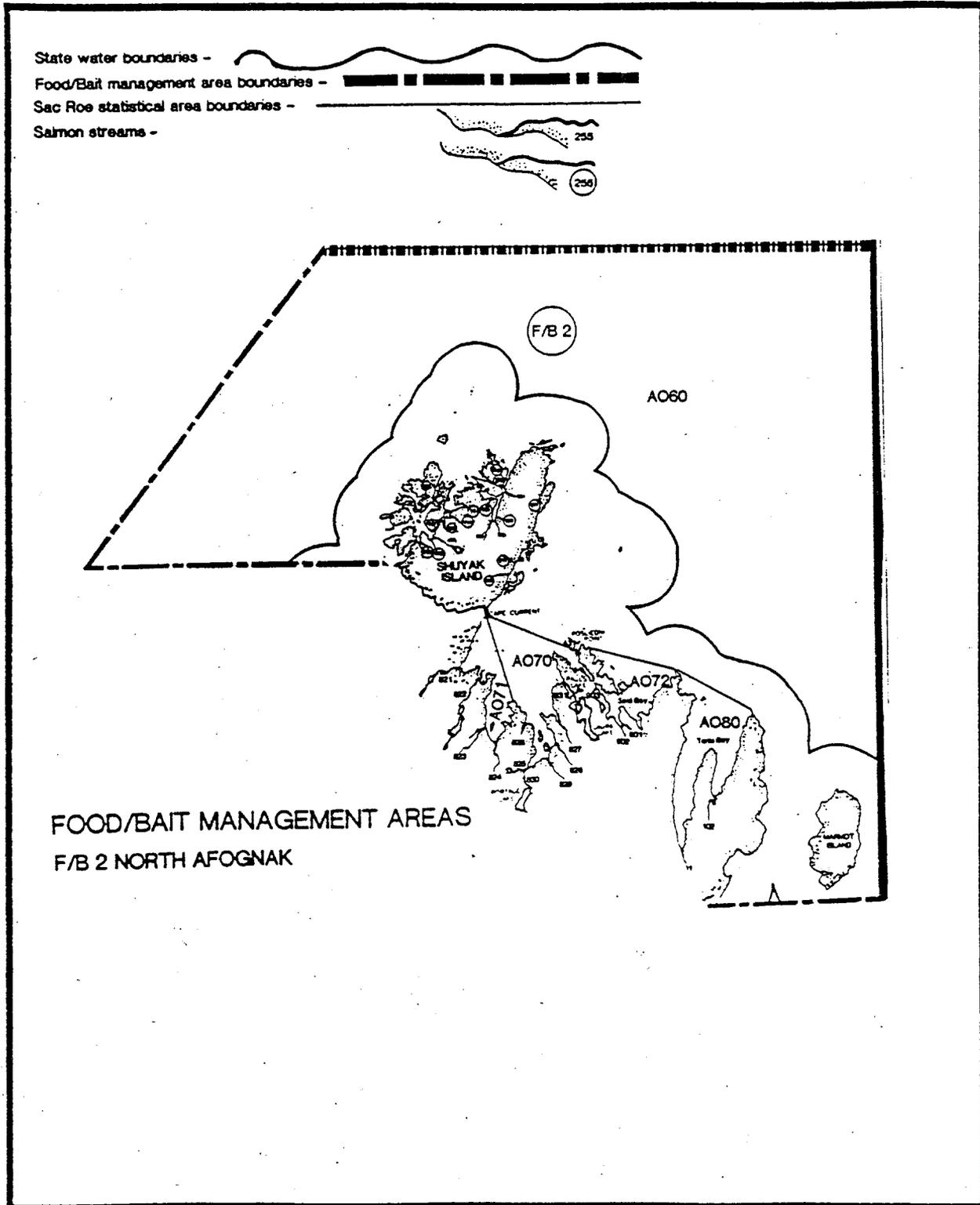


Figure 5. Map #1, food and bait herring management unit 2, Kodiak Management Area.

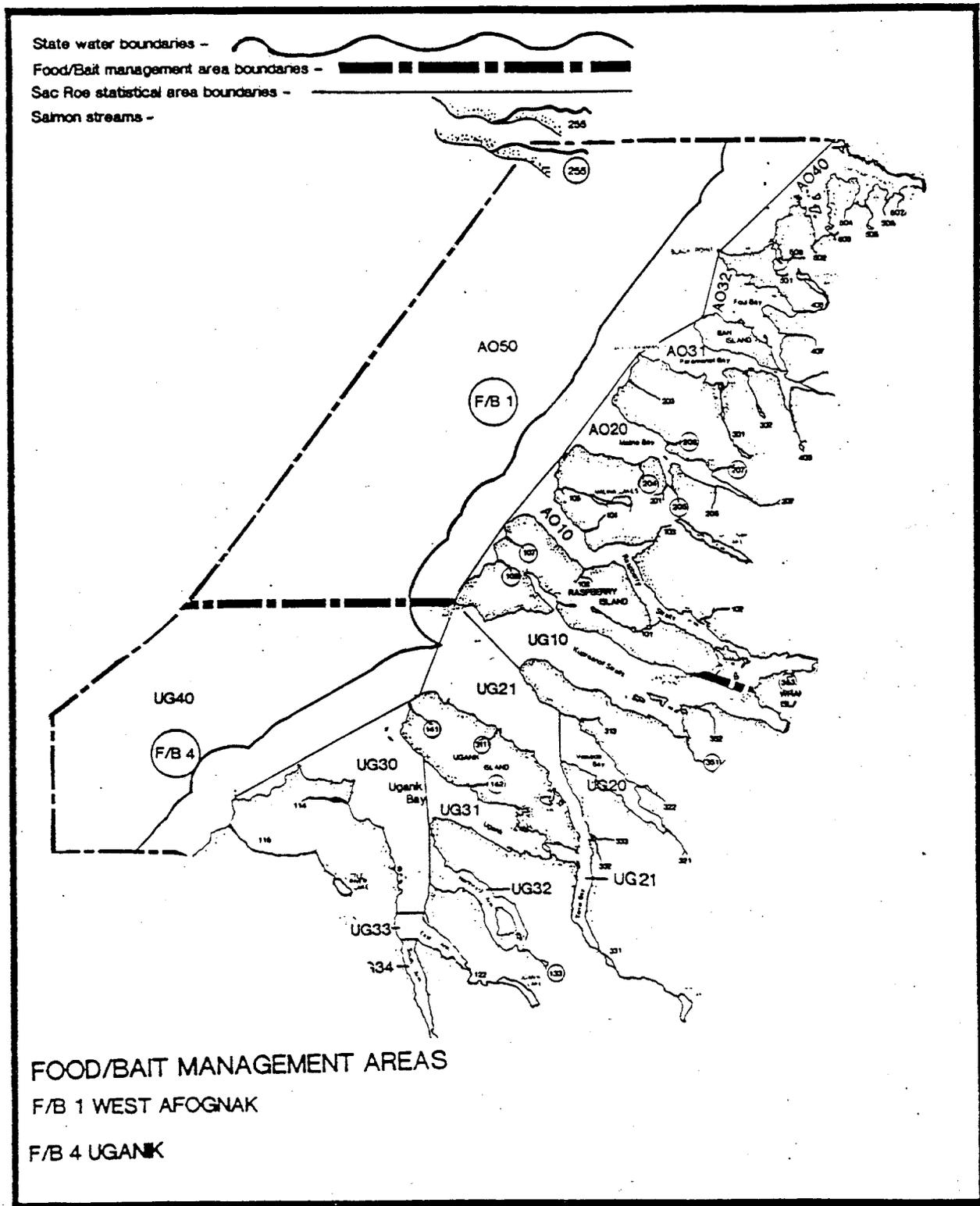


Figure 6. Map #2, food and bait herring management units 1 and 4, Kodiak Management Area.

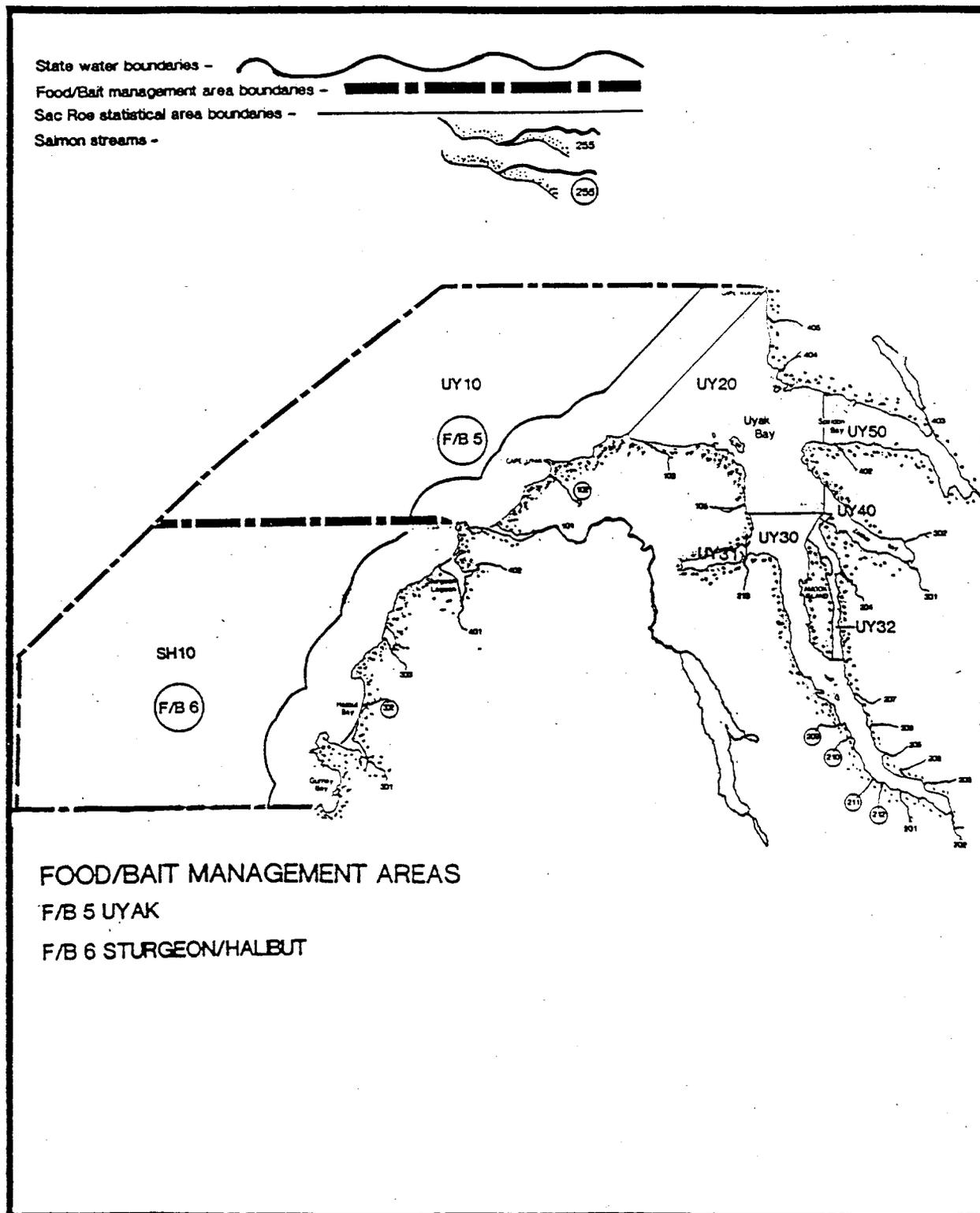


Figure 7. Map #3, food and bait herring management units 5 and 6, Kodiak Management Area.

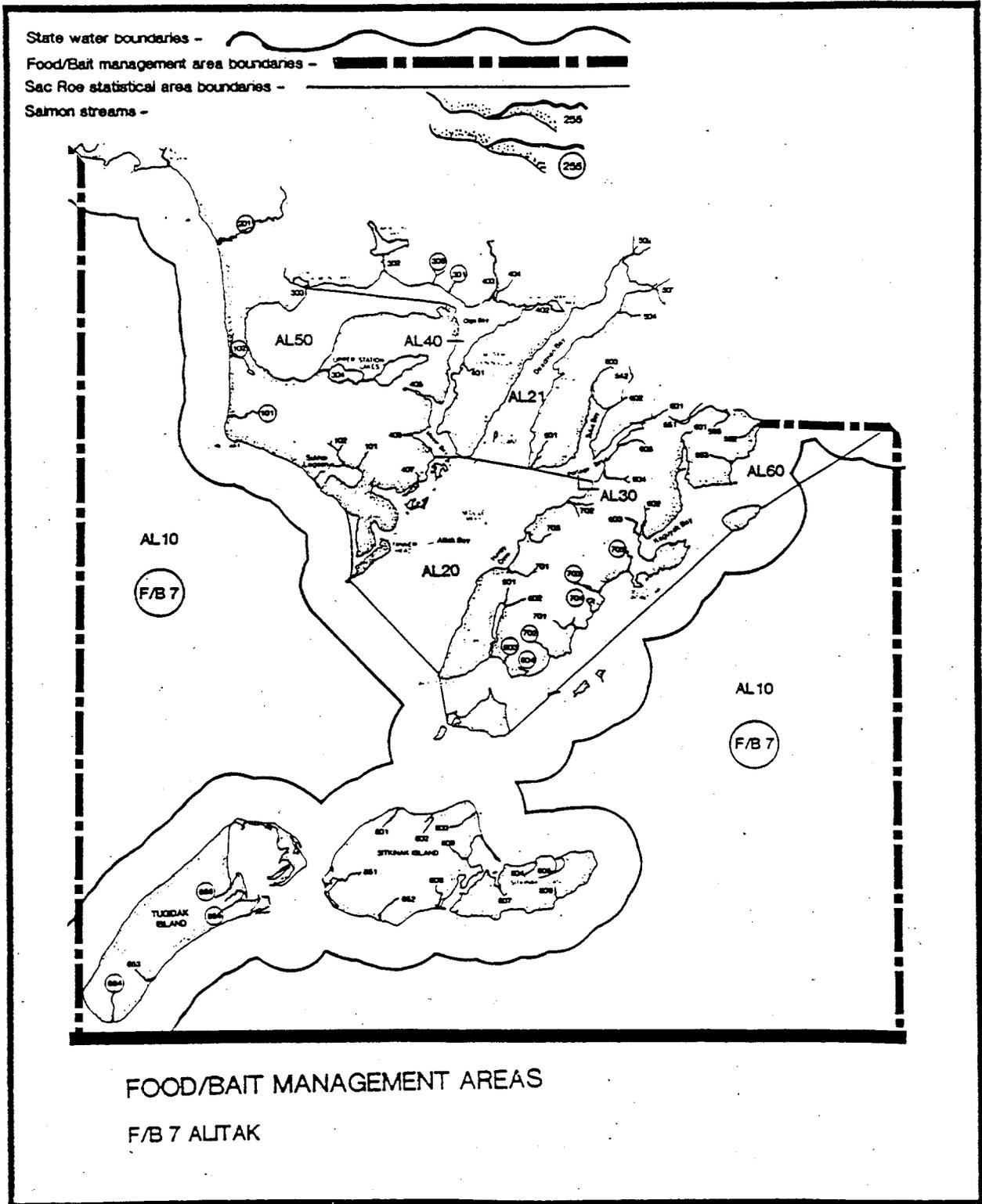


Figure 8. Map #4, food and bait herring management unit 7, Kodiak Management Area.

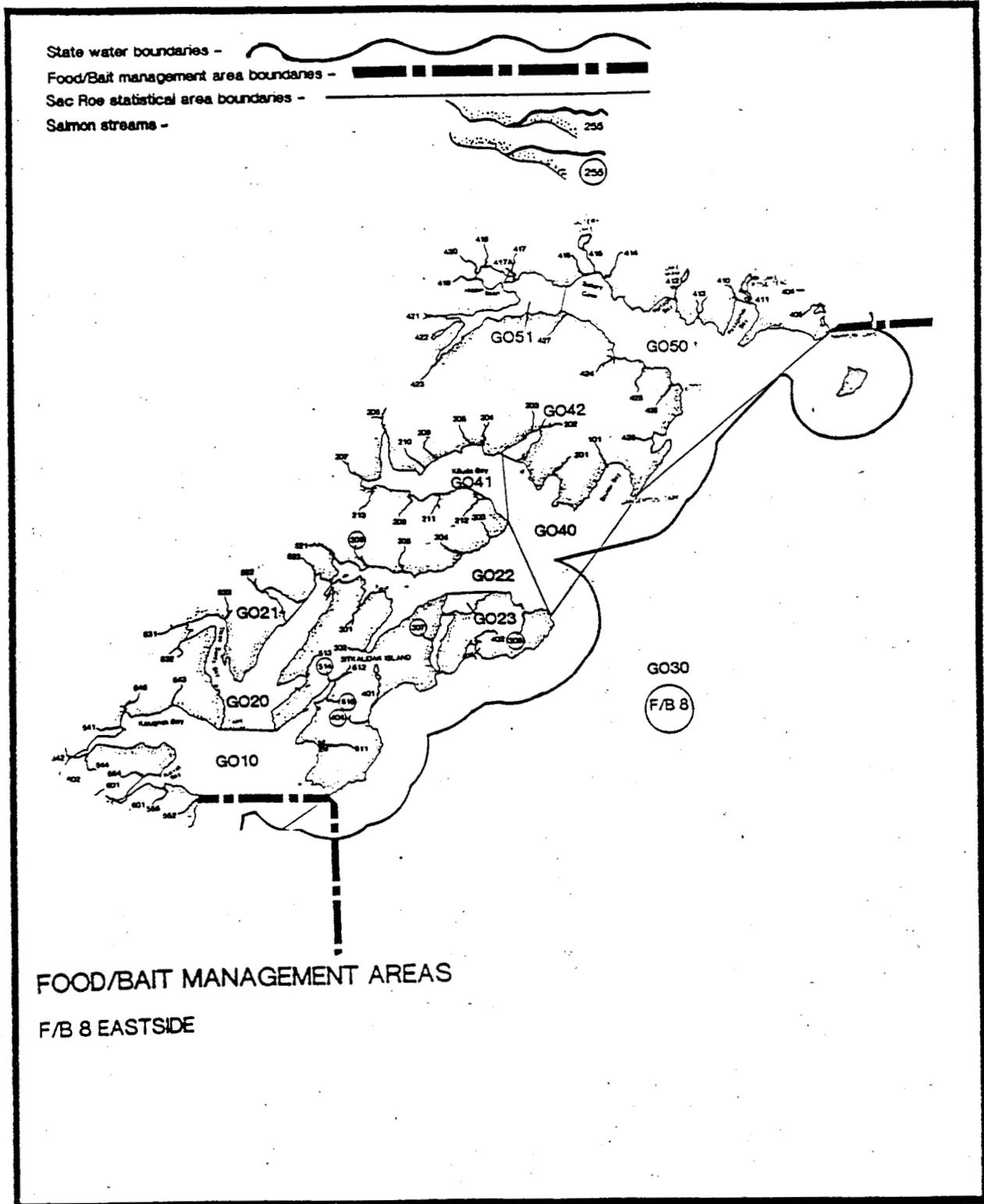


Figure 9. Map #5, food and bait herring management unit 8, Kodiak Management Area.

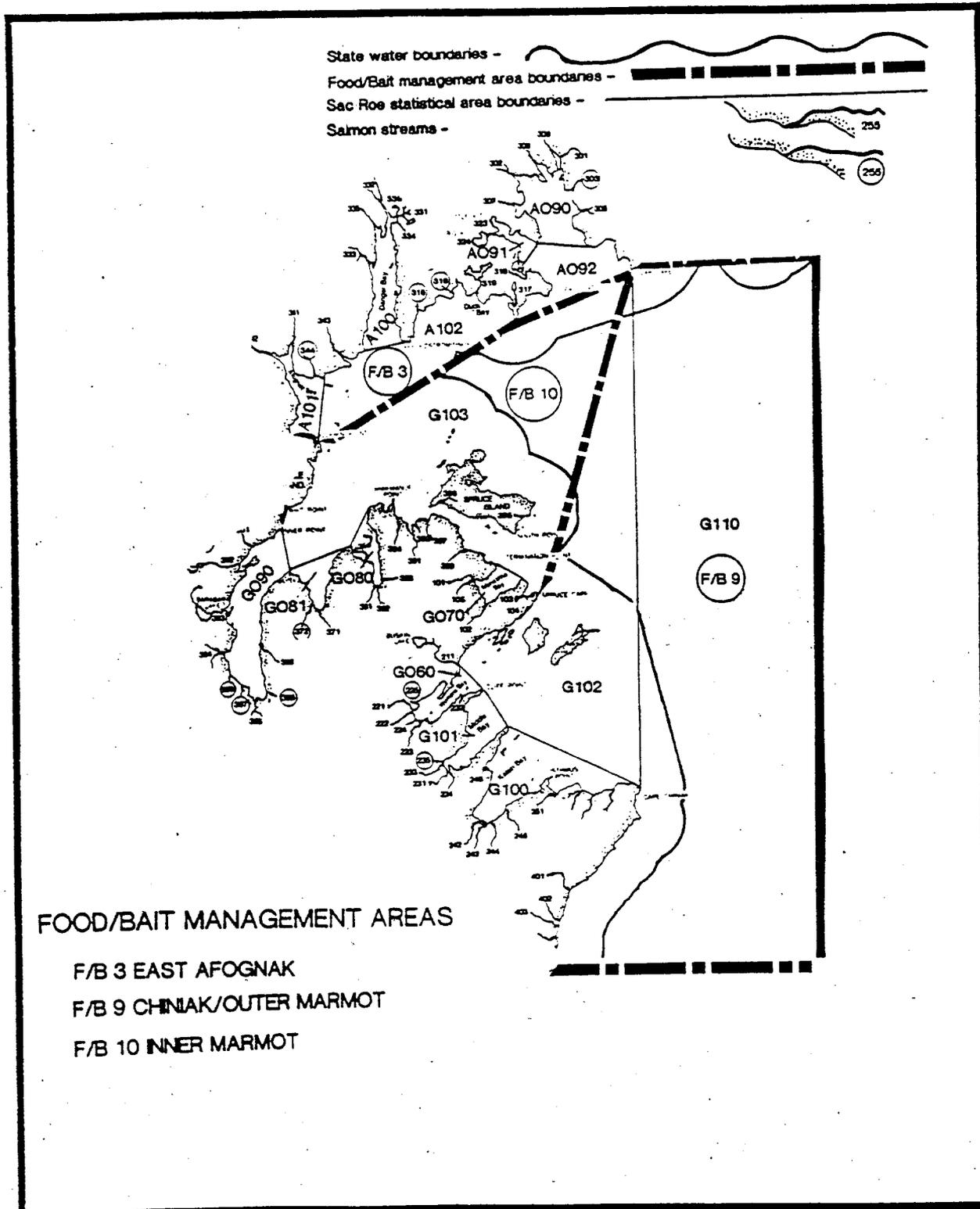


Figure 10. Map #6, food and bait herring management units 3, 9, and 10, Kodiak Management Area.

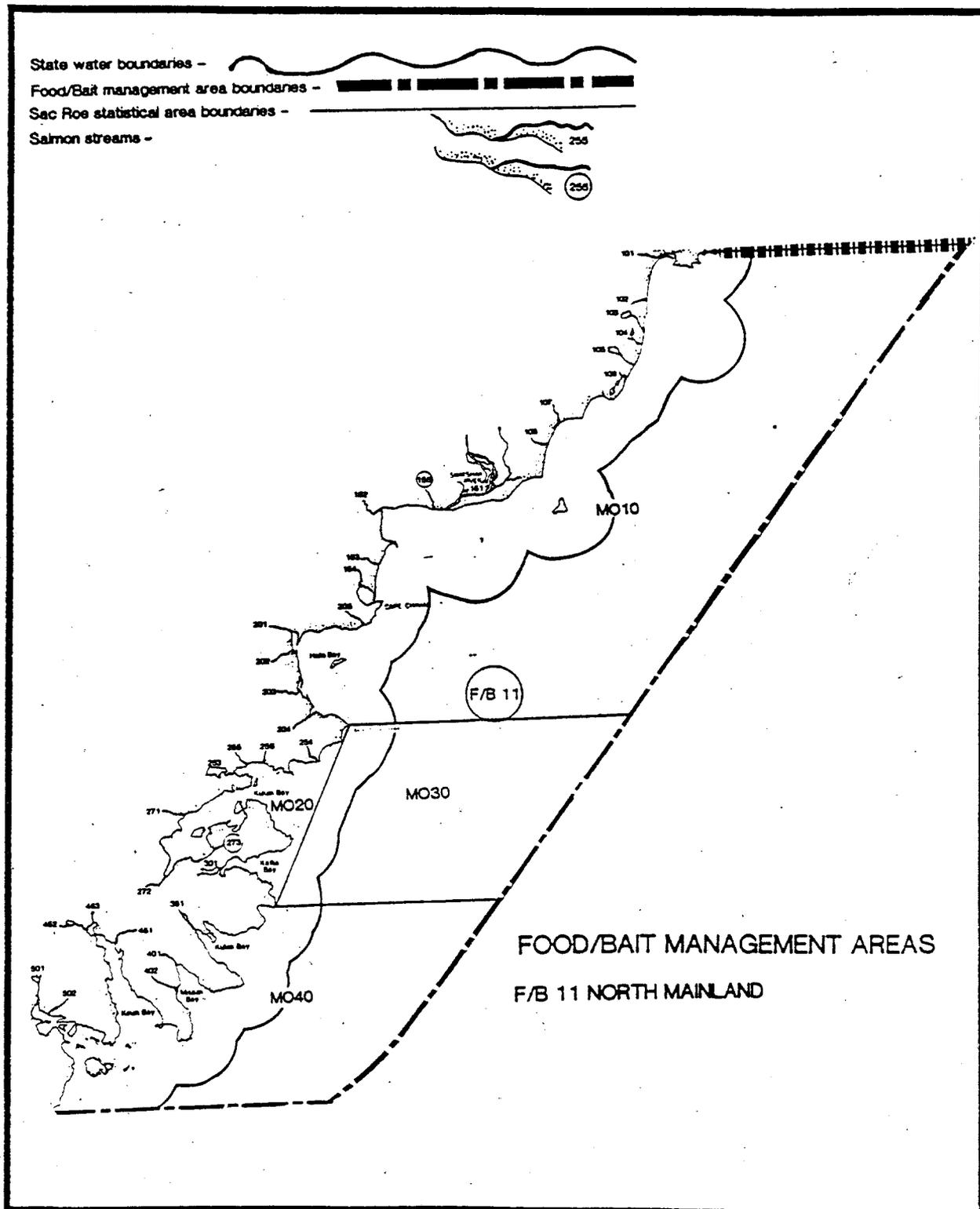


Figure 11. Map #7, food and bait herring management unit 11, North Mainland, Kodiak Management Area.

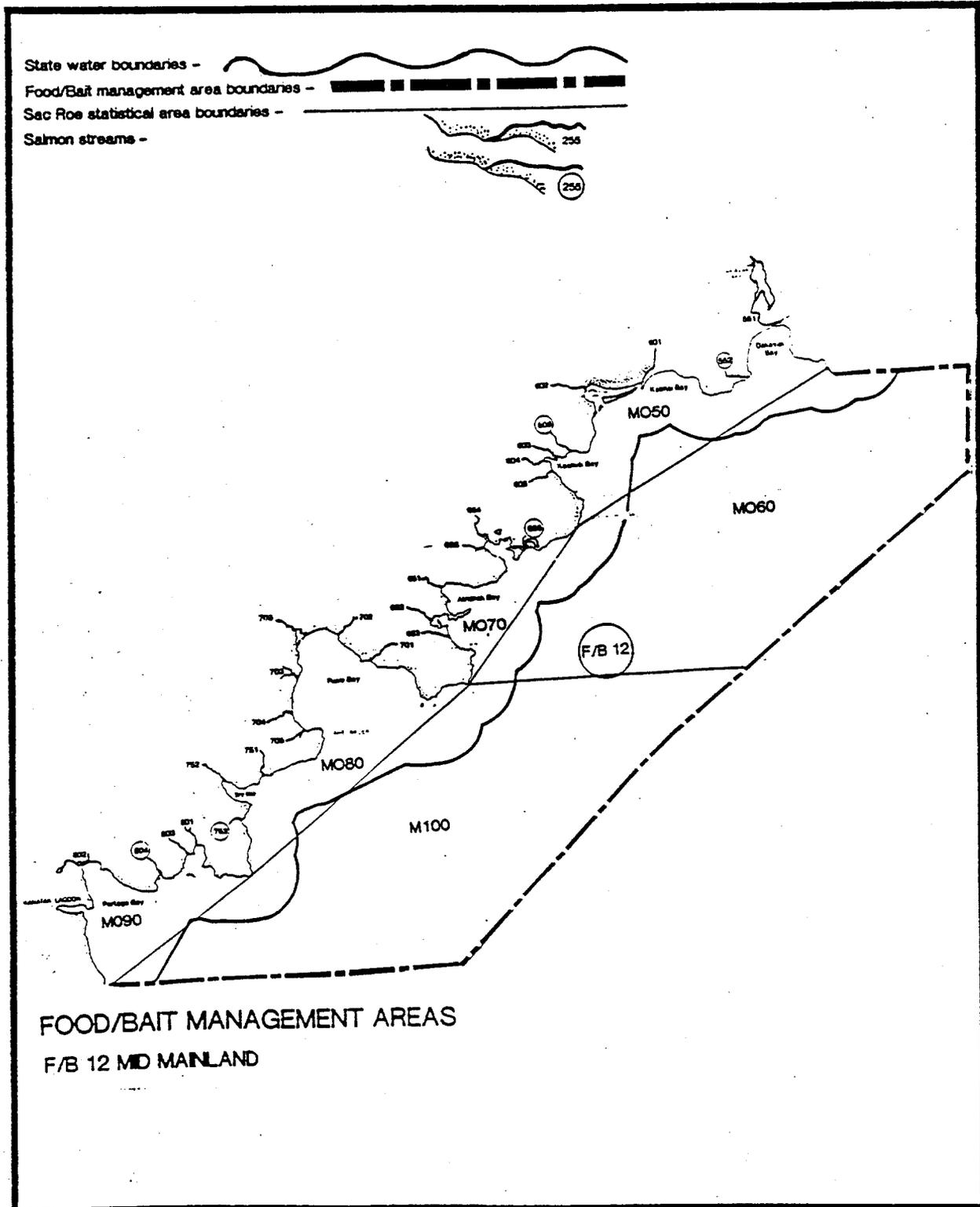


Figure 12. Map #8, food and bait herring management unit 12, mid-Mainland, Kodiak Management Area.

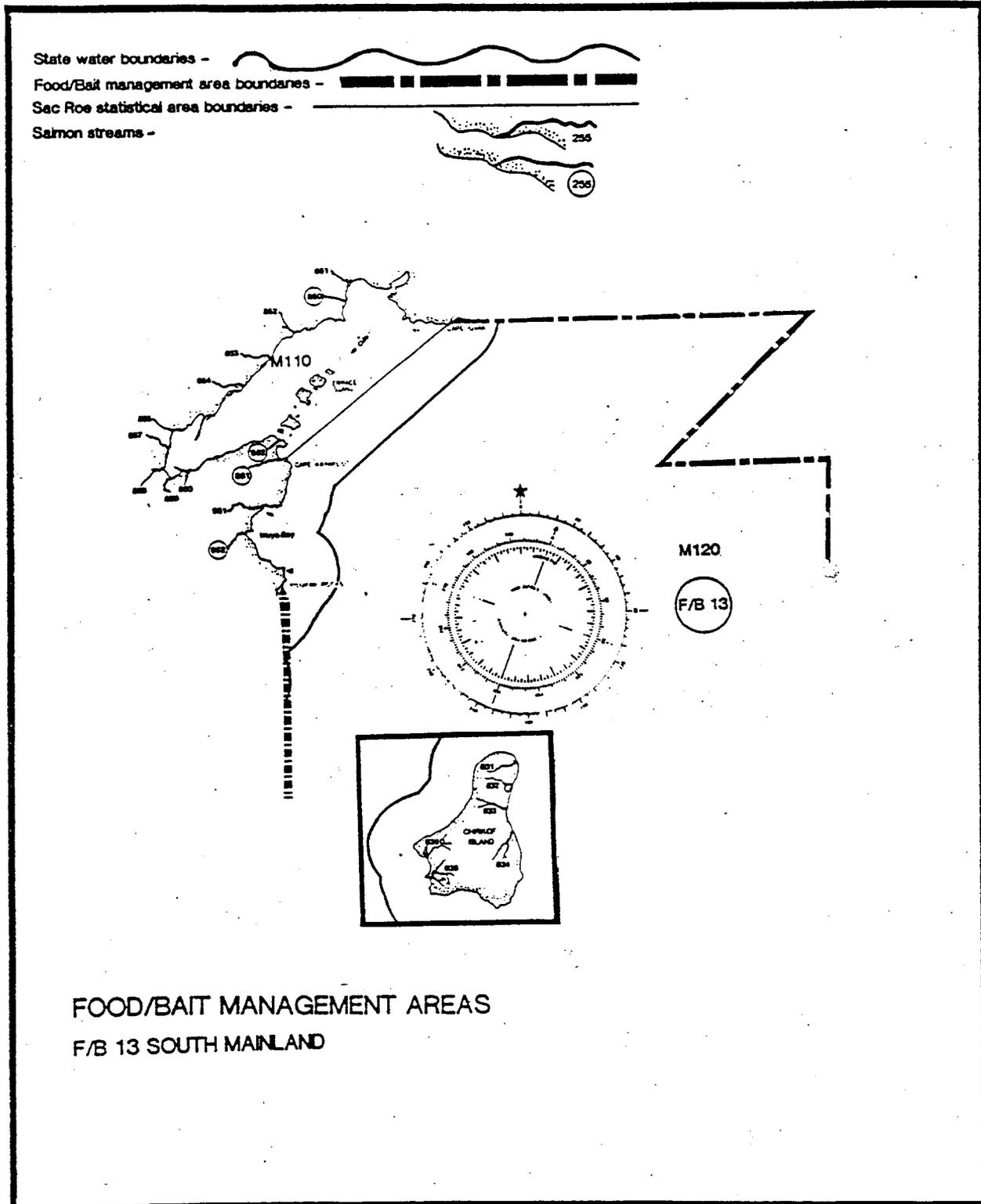


Figure 13. Map #9, food and bait herring management unit 13, South Mainland, Kodiak Management Area.

CONDITIONS OF THIS PERMIT

1. This permit provides for the taking of herring for subsistence/personal use purposes during the commercial herring sac-roë fishery. Herring caught under the conditions of this permit are for personal use only and may not be sold.
2. This permit is valid only for persons not participating in the commercial sac-roë fishery as a permit holder or crewman.
3. Commercial sac-roë fishermen participating in the Kodiak sac-roë fishery as a permit holder or crewman may retain herring from their lawfully taken commercial catch to fulfill their personal bait or food requirements.
4. For the purposes of this permit participating in the commercial sac-roë fishery means: being a permit holder or crewman who is operating commercial herring gear or on a vessel which has commercial herring gear on board.

WHEN: This permit is only required from April 15 through June 30; no permit is required to take subsistence/personal use herring during the remainder of the year, from July 1 through April 14. During the sac-roë season there are no closed periods to subsistence/personal use fishing.

WHERE: This permit is valid for all waters of the Kodiak Management Area, including those closed to commercial herring fishing. However, at any time, if biological or unlawful circumstances warrant it, emergency order closures of pertinent areas may be required.

HOW: This permit limits the type and quantity of gear to gillnet gear not exceeding 25 fathoms in length. The net must be attended at all times while fishing and be marked with buoys which have your name and address on them.

HOW MUCH: There are no restrictions on the amount of herring which can be taken with this permit.

REPORTING REQUIREMENTS: A complete record of harvest activity must be kept on the reverse side of this permit, to include harvest estimate in pounds of fish and the harvest location as well as type of use.

MISCELLANEOUS: No herring caught under the conditions of a herring subsistence/personal use permit may be onboard a vessel which also has commercially caught herring on board.

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If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

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