

KODIAK MANAGEMENT AREA
1992 COMMERCIAL HERRING SAC ROE AND FOOD/BAIT FISHERIES

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HERRING SAC ROE FISHERY 1992

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 harangus*) 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. 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. Gillnets and seines were reduced 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 herring sac roe 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 trend in harvest during the past 14 years has been relatively stable, averaging 2,256 tons per year, (Table 3). 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 84% to a low of 60% and averaged 74% from 1979-1992. 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 26% from 1979-1992.

Most purse seiners form combines of two to ten vessels which work together with a tender and spotter to reduce operational costs and to cover more areas. 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 sonars 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 sonars but the majority of these fishermen rely on color down-sounding sonars 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. 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, Division of Commercial Fisheries manages this fishery from its Kodiak Office. From 1974 through 1992, 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

1992 Herring Sac Roe Fishery Season Summary

Fishing Seasons and Weekly Fishing Periods

The fishing season for the Kodiak herring sac roe fishery opened by regulation on April 15 and closed by regulation on June 30 (ADF&G 1992 Reg. Book). Fishing periods are established by emergency order. As in the past 10 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 pre-established 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) 1991 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 1983-1991 to set a preseason GHL for the KMA. A comparison of the preseason GHL's with the actual harvests is presented in Figure 5. These preseason harvest projections aid fishermen and processors in planning prior to the start of each season.

Inseason Fishery Management

Inseason managing of the sac roe fishery relies primarily on ADF&G field crews stationed in management units where harvests are anticipated. Mobility to better cover management units has improved over the past three years with the addition of three, 21 foot skiffs equipped with twin engine 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 offered. 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 42 foot seine vessel (K-Hi-C), which was used for the first time this year for the herring season. This vessel replaced the less seaworthy M/V Coho and greatly increasing both the mobility and logistics role the boat performs in stationing of the herring field crews.

When a GHL is obtained for a management unit, the field crew initiates notification of an impending management unit closure. Fishermen within the area are given as much prior notification time as possible, but due to the rapid pace at which the fishery occurs, notification time can be as brief as thirty minutes. In management units which do not have field crews present, ADF&G aerial surveys and timely accurate harvest reports from fishermen, spotters, and processors are used to assess herring harvests. 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. The management of the fishery is very dependent on the accurate and timely reporting of herring harvests, and past cooperation has been excellent. As reports of herring harvested reach or exceed GHL's, management units are closed by emergency order.

Fish Ticket Data

Commercial catch data is compiled by ADF&G, Division of Commercial Fisheries. These 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) sac roe 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 herring sac roe 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 ADF&G and industry 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 not selective in capturing. 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.

Commercial catch samples are 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. Weights are taken on a minimum of 50% of a sample, with smaller size samples, 100 fish and less, having all weights taken.

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 1992 Kodiak herring sac roe season was 77 days in duration extending from April 15 through June 30, (Table 3). A total of 4,283 tons of herring were harvested, which was 57% higher than the preseason GHV of 2,720 tons. This was a record high harvest for the sac roe fishery surpassing the previous record of 2,769 tons set in 1966. Seine caught herring totalled 3,266 tons, which was 76% of the total harvest, while gillnet gear accounted for 1,023 tons, which was 24% of the total harvest. A comparison of harvest by gear type from 1979-1992 averaged 74% and 26% for seine and gillnet gear, respectively (Figure 6). During the period 1979-1992, seine and gillnets accounted for annual harvests of 1,669 and 588 tons respectively. (Table 3). Roe recovery averaged 8.7% for seine caught fish and 10.2% for gillnet gear, for a combined average roe recovery of 9.2%. 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 \$500 a ton was used to calculate estimated values of the fishery. The total exvessel value of the fishery was estimated at \$2.1 million dollars which was similar to the 1991 harvest value with a 57% lesser harvest.

A total of 40 seiners and 74 gillnetters fished during the 1992 season. This effort level is comparable to that of the past six years, showing a gradual increase in gear levels over the past three years. Average exvessel earnings by seiners was estimated at \$41,000 and \$7,000 for gillnetters. Six buyers/processors operated seven plants which purchased herring in the 1992 season.

Spring climatic conditions were exceptionally good throughout the 1992 sac roe season. This enabled spotters excellent opportunity to survey vast areas of the KMA in search of herring concentrations. It also increased the mobility of fishing boats to travel to these concentrations

and to make deliveries to processors. Conversely, in 1991 poor weather conditions during the sac roe season hampered spotters and fishermen (Gretsch 1991).

Preseason, processors expressed interest in buying 120 gram minimum weight herring. Early into the season from April 15 through approximately April 25 processors didn't stringently follow their guidelines with herring purchased. Most seine harvests from the West Afognak management units and the Uganik District were below this standard. Market conditions changed due to large harvests in other state herring fisheries which flooded the demand for herring in this weight category. By late April processors reaffirmed their preseason interests in 120 gram and larger herring. This action resulted in a slowing of the overall fishery performance, as fishermen had to be more selective in the herring harvested. Overall the dominant age class in the KMA was age 4 herring at 62% of the harvest which averaged 114 grams in weight.

District Summaries

The 1992 distribution of herring harvest by district has seen an increase in harvest in the Afognak, Uganik, General, and Alitak Districts. The Uyak District has witnessed a decline in harvest and the Mainland District is comparable to the past three years (Figure 7). Of the 74 management units in the KMA, 54 units had a herring harvest (Table 4), and 25 of these units were closed 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. Favorable 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. ADF&G stationed three field crews in management units which were anticipated to have herring 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), Crew #2 (Paramanof-Foul Bays then moved to the Kitoi Bay, Izhut Bay, McDonald's Lagoon management units), and Crew #3 (Raspberry Straits, this crew was equipped with a 21 foot skiff). Fishery activity started in the westside Afognak management units. Malina Bay had a harvest of 101 tons which closed the unit on April 16, which had a preseason GHIL of 45 tons. The Foul Bay and Paramanof management units had harvests of 362 tons, (GHIL of 50 tons) and 145 tons, (GHIL of 20 tons) respectively and both were closed April 18. The GHIL's for these management units were far exceeded due primarily to the unexpected large schools of herring present in these management units. Age 4 herring were the dominant age class harvested in the aforementioned units and the 1993 outlook for these management units is excellent. The Devil's Inlet and Blue Fox Bay management units had a harvest of 70 tons and was closed on April 20, with a GHIL of 20 tons combined. This seine harvest was the largest for this management unit in the past ten years, generally there is no harvest in these units. The Perenosa Bay unit closed on May 16 with a harvest of 13 tons and the GHIL was 15 tons. The Izhut Bay unit closed on May 16 with a

harvest of 8 tons the GHL was 20 tons. This unit was closed due to poor fishery performance. No other emergency orders were issued for this district. The Raspberry Straits Management Unit, has seen an increase in the spawning biomass during the past four years. However this stock has shown slower than average growth rates with age 4 herring averaging 106 grams and age 5 at 129 grams. In comparison the overall KMA weight averages were 114 and 176 grams for the respective age classes. A total of 93 tons were harvested and the GHL was 165 tons and this unit remained open for the duration of the season. Another six management units had a combined harvest of 23 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 450 tons, a total of 820 tons were harvested with 88% of the harvest coming from purse seine gear and 12% from gillnet gear.

Uganik District

A field crew was stationed in Terror Bay near the east entrance of West Uganik Passage to monitor the fishery in this area. This crew was equipped with a 12 foot inflatable boat. They were able to monitor the Viekoda Bay, Terror Bay, West Uganik Passage, and N.E. Arm Uganik Bay. The fishery developed rapidly in the Uganik District with the field crew arriving from Malina Bay on Afognak to Terror Bay on April 17, the second 24 hour opening of the season. The crew monitored the Viekoda Bay management unit and by 7:15 P.M. on April 17 this unit was closed with a harvest of 168 tons, the GHL was 40 tons. Three sets were made which accounted for this harvest. On April 21 a state aircraft (Beaver) was dispatched to Terror Bay, which picked up one of the field crew members and assessed fishery activity in the Uganik District. The Village Island, South Arm Uganik, and Northeast Arm Uganik Bay management units were closed in period on the evening of April 21. Harvests were 351 tons, 58 tons, and 120 tons respectively for the units with GHL's of 45 tons, 50 tons, and 55 tons, respectively. Activity resumed the next day April 22 with the field crew monitoring the Terror Bay management unit. By the period closure at 12:00 Noon the harvest totalled 102 tons with a GHL of 60 tons and the unit was closed by E.O.. This was the first season where the majority of the management units in this district simultaneously had large concentrations of spawning herring present.

As previously mentioned by late April, processors increased size requirements on seine caught herring and the result was a slowing of the harvest rate. The West Uganik Passage management unit was closed in period with a harvest of 99 tons with a GHL of 25 tons on April 27. The field crew was relocated to the East Arm Uganik management unit. Activity in this unit was slow and by May 8 gillnetters were able to fill the GHL. This unit closed at 12:00 Noon on May 8 at the end of the fishing period with a total harvest of 58 tons and the GHL was 50 tons. Only one other management unit of the remaining three not discussed had a harvest. The Kupreanof Straits had a gillnet harvest of 0.6 tons and had a GHL of 10 tons. All seven closures for this district were initiated from the field crew monitoring the commercial fishery activity. A district total of 953 tons were harvested from a district GHL of 325 tons, 92% of this harvest was with purse seine gear and 8% by gillnet.

General District

On April 14 a two person ADF&G field crew was stationed in Ameer Bay with the transportation of the crew and equipment provided by the tender M/V Deliverance. This crew was equipped with a 22 foot skiff which enabled them to monitor seven management units along the eastside of Kodiak Island. Additionally, the state vessel K-Hi-C with skiff was also stationed in this district on April 18, being delayed by weather for the first two openings. The 1991 fishery performance was excellent and it was anticipated that the 1992 season would see an increase in effort. However, the increase in effort wasn't realized and the fishery proceeded orderly. The East Sitkalidak Straits management unit had a harvest of 130 tons with a GHL of 120 tons. This unit closed on the first opening at 12:00 noon on April 16, with the majority of the harvest going to gillnetters. The majority of effort switched next to West Sitkalidak Straits, while to the north at the Inner Kiluida Bay 86 tons of herring were harvested with a GHL of 20 tons, this unit was closed on April 18. The West Sitkalidak Straits was divided inseason to allow herring harvests to occur in bays south of the major fishery location, this area included Three Saints Bay to Newman Bay, establishing an exploratory unit labeled "S.W. Sitkalidak Straits". The West Sitkalidak Section was closed on April 20 with a harvest of 162 tons, (GHL of 100 tons). Fishery performance and biomass estimates were greater than anticipated and the harvest was allowed to exceed the preseason GHL for this unit. The West Sitkalidak exploratory unit closed on May 2 with a harvest of 193 tons. Fishery performance and biomass estimates indicated a strong spawning population in this exploratory area. The field crew relocated to Barling Bay and then onto the Alitak District as fishery activity diminished and the K-Hi-C returned to Kodiak on April 20. The Kauignak management unit was closed April 26, with a harvest of 32 tons (GHL of 10 tons). The Barling Bay and Middle Bay management units both closed on April 30 with 40 tons (GHL 40 tons) and 17 tons (GHL of 20 tons), respectively. A field crew was flown into the Inner Ugak management unit and on May 2 harvests for this unit totalled 83 tons (GHL of 75 tons) and this unit was closed. The Pasagshak unit which is a subsection of the Outer Ugak management unit had a harvest of 22 tons (GHL of 25 tons) and closed May 2. This field crew was next moved to the Shearwater Bay management unit. The Shearwater unit was closed on May 4 with a harvest totalling 163 tons (GHL of 50 tons). This field crew was then moved to the Uyak District. The Outer Ugak exploratory unit produced a harvest of 115 tons and was closed May 14. A field crew was stationed with a skiff in the Kizhuyak Bay management unit. Effort levels fluctuated reaching a high of 26 boats over a three week period. Fishery performance was fair and the harvest accumulated to 118 tons (GHL 110 tons) and on May 20 this unit was closed. The field crew was moved to the Uyak District. The Womens Bay and Kalsin Bay units closed May 30 with 149 tons (GHL of 110 tons) and 17 tons (GHL of 15 tons) harvested respectively. No other emergency orders were issued for the General District; two additional management units had herring harvests which totalled 29 tons. Of the 21 management units in the General District, only one unit was closed in period, seven units closed from the combined efforts of ADF&G office and field crew information gathering, eight units were closed by the ADF&G office staff, and the remaining seven units remained open until June 30. The total GHL for the General District was 750 tons. A total of 1,388 tons were actually harvested, with 59% of the harvest from purse seine gear and 41% of the harvest from gillnet gear.

Uyak District

The K-Hi-C was stationed in early May in the Uyak District and monitored the Spiridon and Zachar Bay management units. A field crew was flown into the Brown's Lagoon unit and a second crew was flown into the Inner Uyak Bay unit. The herring stocks in the Uyak District were perceived to be declining after the 1991 season and some unit, GHLS were lowered. This downward trend in the stock status continued for the 1992 season. Brown's Lagoon management unit was closed on May 16 after a harvest of 17 tons (GHL 20 tons). The Spiridon Bay management unit was closed May 20 with a harvest of 117 tons (GHL 120 tons). The Zachar Bay unit was closed on June 2 with a harvest of 87 tons (GHL 100 tons). The Zachar Bay field crew then moved to the Inner Uyak District, low gear numbers prompted their removal to Kodiak on June 8. The Inner Uyak management unit had a harvest of 81 tons (GHL 180 tons). By June 7 the majority of herring fishermen had quit to prepare for the upcoming salmon season. Herring harvest rates were low, and the chances of having an excessive over harvest by not having an ADF&G crew present seemed unlikely. Harvests from the Larsen Bay management unit totalling 3 tons, (GHL of 10 tons), and the Harvester Island management unit had a 5 ton harvest, (GHL of 10 tons). In the Uyak District a total of 311 tons were harvested from a GHL of 440 tons. Seine gear harvested 63% and gillnet gear 37% of the total harvest. No in period closures were necessary, three emergency orders were issued to close units when GHL's were approached, and the four remaining units stayed open through June 30.

Alitak District

The Alitak District is comprised of a total of eight management units, three are exploratory areas, and five have GHL's. The Deadman Bay management unit closed on April 28 with a harvest of 220 tons (GHL 195 tons). The Sulua-Portage Bay management unit closed the following period on April 30 with a harvest of 274 tons (GHL 95 tons). This was the earliest date these management units have closed. The fishery performance and stock status for these units are strong. Due to obligations of the field crews to other units, field crew placement was not possible especially as rapidly as these fisheries proceeded. A skiff equipped field crew was placed in the Alitak District and started monitoring duties in the Inner Alitak exploratory management unit. On May 8 this unit was closed with a harvest of 82 tons, industry estimates of the spawning biomass in this unit was 600 tons. The Lower Olga-Moser Bay management unit closed May 16 with a harvest of 19 tons (GHL 15 tons). The Upper Olga Bay management unit was monitored by ADF&G personnel stationed at salmon weirs. Fishery performance of this unit was fair, with 107 tons harvested (GHL 145 tons) and this unit remained open until June 30. The Geese/Twoheaded exploratory unit had a harvest of 10 tons and with the remaining two units which had no harvest and remained open until June 30. The Alitak District had a harvest of 712 tons with a district total GHL of 460 tons. Seine gear harvested 81% of the harvest and gillnet gear 19%. No in-period closures were issued for 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 Inner Kukak management unit had a harvest of 36 tons (GHL of 65 tons) by gillnetters over a three week period in May. During periods of flyable weather conditions several spotters were able to locate concentrations of herring. These herring were either immature or had spawned before the seiners arrived and were released. Both the Alinchak and Wide Bay management units had predominantly seine harvests of 16 tons (GHL of 40 tons) and 57 tons (GHL of 125 tons). No emergency orders were issued for this district and all units closed on June 30.

Age Composition, Weights, and Lengths

During the 1992 season, age-4-year-old herring comprised 62% of the commercial seine harvest, (Figure 8). The remaining age classes represented the following percentage of the harvest; Age 3 (3%), Age 5 (27%), and Age 6-11+ (8%). Age 3 herring are considered "recruit herring", entering into the commercial fishery and spawning for the first time. The strong dominance of age 4 herring overshadowed the other age classes in the fishery. A comparison of age frequency by management units for the 1992 season is presented in (Figure 9 and Table 5).

The lengths of herring sampled during the 1992 season are comparable to the past four years, showing no changes in growth rates (Table 6).

The weights of herring age 3 showed a decrease in average weight which were harvested in 1991. This trend continued in 1992 when these same fish were harvested as Age 4, being the smallest by age observed in this fishery. All other age classes had comparable growth rates to the past four years (Table 7).

Spawning Biomass

In 1992, the spawning biomass index for that portion of the Kodiak Area fished was estimated at 32,000 tons as determined by industry spotter and ADF&G surveys. This is the highest

biomass estimate recorded for this fishery from 1979-1992. 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; 6,000 tons in the Afognak District, 5,000 tons in the General District, 13,000 tons in the Uganik District, 2,000 tons in the Uyak District, 2,000 tons in the Alitak District, and 4,000 tons in the Mainland District. The sac roe harvest of 4,283 tons represented a total indexed exploitation rate of 13%. Which is up from the 1991 season of 11% 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.

The Kodiak biomass and resulting harvest rates can mainly be attributed to not only an increasing biomass but also the excellent spring climatic conditions in 1992. These favorable conditions increased the area and duration of surveys completed by spotters, with clear skies and calm sea conditions vastly increasing chances of observing herring schools. These climatic conditions should enhance the survival of the 1992 spawn which was observed in record amounts.

1993 Management Plans and Issues

The 1993 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 1992 and the increasing biomass estimates for the past three years, the preliminary GHL for 1993 is 3,500 tons an increase of 22% over the 1992 season. At this time, a major increase in the GHL isn't prudent since the 1993 harvest is expected to target the dominant age 5 and 6 year old fish. Age 5 and 6 year old herring should comprise 70-80% of the harvest. However, weights are expected to be lower than experienced prior to 1990, for the age 5 herring. These age compositions, spawn observations, and fishery performances are all indicators that the Kodiak area biomass should support a stable to increasing sac roe fishery in upcoming years.

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.

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 the current regulatory harvest strategy in 1988, (Appendix C.1.).

METHODS

Fishery Characteristics

The current herring food/bait 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 fishermen. 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.

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 and the only gear restrictions are for maximum purse seine length of 100 fathoms and maximum purse seine depth of 1,025 meshes and a maximum length for gillnets of 150 fathoms. 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.

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.

Harvest Strategy

The 1992/93 Kodiak Food/Bait Fishery Management Plan describes the current harvest strategy in detail (Appendix C.1). 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.

In accordance with the addendum to the 1988 Kamishak Bay Herring Management Plan, "the allocation of herring to the Shelikof Strait food/bait fishery is based on spawning biomass", primarily age 5 and older herring and not on the biomass of juveniles. The quantity of Kamishak Bay stocks age 4 and younger found in each landing will have their weights adjusted upward to reflect a harvest 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.

RESULTS

1992-93 Season Summary

Through December 31, 1992 a total of 217 tons of herring have been harvested. Evaluation of AWL samples along with biomass observations from the skipper were used to evaluate the stock harvested, Kodiak or Kamishak. AWL data showed a presence of older age class (age 6-11) herring which better reflects the Kamishak stock. AWL data collected during the 1992 sac roe fishery from the areas adjacent to the harvest location had a dominance (80-90%) of age 4 herring with few older age class fish present. The "adjusted" harvest total (converting age 4 and younger weights to age 5 weights) from the Kamishak food/bait harvest is 255 tons. This adjusted harvest is likely to be off, due to a sampling error. The October 17 sample was taken from the top of the load, which the skipper reported being from a short tow from a smaller inner bay school. This sample increased the adjusted tonnage estimate upward. If this sample is removed and the adjustment average from the other two samples is applied to the second delivery the total adjusted harvest would total 240.5 tons.

Currently seven vessels (two seine, three gillnet, and two trawl) and seven buyer/processors are registered to participate in this fishery. Trawl gear accounted for 99% of the season harvest at 217 tons. There was a harvest of 0.5 ton by gillnet gear.

The Fishery

The 1992/93 GHM for Kamishak herring stocks over wintering in Shelikof Strait was 240 tons. An additional 426 tons was available for harvesting from the remainder of the Kodiak Management Area's local spawning stocks.

Kodiak's food/bait herring season started August 1 and should remain open until February 28, 1993. Fishing periods are 24 hours per day and seven days a week. During the 1992-93 season the harvests occurred between mid-August through mid-October. Two emergency orders (E.O.'s) have been issued, one which established fishing periods and areas open and the second which

was issued to close areas to fishing after a harvest had occurred. The food\bait management units FB1, FB2, FB4, FB5, FB11, and FB12 which are affected by harvest of Kamishak herring stocks under the current inseason harvest strategy were closed on October 20 and the area affected by this closure can be seen (Appendix C.1.). This closure prevented a targeted fishery on Kodiak stocks (total GHF for these units was 215 tons) which may have been located in these management units.

Herring samples were collected from each commercial harvest for age, weight and length (AWL) analysis, (Table 9). These samples were used in conjunction with harvest location and skipper interviews to assist in assigning harvests to Kamishak spawning stocks.

ADF&G Hydroacoustic Survey

Due to budget restraints, the state research vessel R/V RESOLUTION was used to complete one hydroacoustic survey trip to assess overwintering concentrations of herring. The survey trip ran from November 3-6, 1992. During the survey minor concentrations of herring were located in the Terror Bay, Kupreanof Strait, and Raspberry Strait. Attempts to obtain samples with a test trawl were unsuccessful due to the size and scattering of the herring schools. Areas surveyed included Raspberry Straits, Eastern Shelikof Strait from Ban Island to Noisy Island, Viekoda Bay, Terror Bay, West Uganik Passage, South and East Arm Uganik Bays and Kupreanof Straits. No hydroacoustic tapes were made on this survey due to the "dispersed" schooling encountered during this trip.

1993-94 Management Plans and Issues

Additional ADF&G surveys and sampling needs to be completed in order to continue to document overwintering herring concentrations. This is especially important since Kodiak's local spawning population is increasing, which is complicating stock assignments (local vs. Kamishak) of harvested herring. An additional management concern is the lack of funding to provide for on the grounds monitoring of the fishery in the event there is an increase in effort levels. Changes in the harvest strategy are dependent on Board of Fish action on a proposed regulation change regarding the Food/Bait Herring Fishery.

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. The conditions of this permit can be seen in Appendix D.1.

1992 Harvest and Effort

A total of 45 permits were issued in 1992, with ten permits returned through December 31, 1992. The total harvest was 1,923 pounds with 483 pounds from the General District, 1,000 pounds from the Uganik District, 120 pounds from the Afognak District and 320 from the Alitak District.

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- Johnson, B.A. and C. Burkey, and D. Gaudet. (Draft manuscript 1988). Stock identification of Pacific herring in the bait fishery in Shelikof Strait, Alaska, 1985/86. Alaska Department of Fish and Game, Division of Commercial Fisheries. Juneau.

Table 1. Historical harvest and effort level for the herring sac roe fishery for the Kodiak Management Area, 1964-1992.

YEAR	TONS HARVESTED	SEINE	GILLNET	NUMBER of CO'S	NUMBER OF VESSELS			TOTAL
					TRAWLS	GILLNET	SEINE	
1964	567.8	567.8	-	2	0	0	5	5
1965	657.2	657.2	-	2	0	0	8	8
1966	2,769.3	2,769.3	-	4	0	0	11	11
1967	1,662.4	1,662.4	-	4	0	0	5	5
1968	2,000.6	2,000.6	-	4	0	0	10	10
1969	1,130.0	1,130.0	-	9	0	0	21	21
1970	341.6	341.6	-	5	0	0	13	13
1971	284.3	284.3	-	2	0	0	4	4
1972	215.0	215.0	-	1	0	0	4	4
1973	831.0	831.0	-	4	0	0	11	11
1974	868.0	868.0	-	4	0	0	26	26
1975	8.0	8.0	-	3	0	0	2	2
1976	4.6	4.6	-	1	0	0	1	1
1977	338.4	338.4	-	3	0	0	11	11
1978	903.6	880.6	23.0	7	2	7	28	35
1979	1,735.1	1,457.2	277.9	8	0	125	57	182
1980	2,383.0	2,009.0	374.0	9	1	109	92	201
1981	2,065.4	1,596.2	469.2	9	0	114	79	193
1982	1,770.6	1,447.0	323.6	6	0	67	45	112
1983	2,318.5	1,796.9	521.6	7	0	64	41	105
1984	2,162.7	1,691.2	471.5	7	0	69	39	108
1985	1,967.7	1,244.2	723.5	7	0	81	34	115
1986	1,558.4	1,110.8	447.6	8	0	71	31	102
1987	2,145.9	1,591.3	554.6	8	0	62	29	91
1988	2,171.0	1,303.5	867.5	6	0	76	33	109
1989	2,249.0	1,513.0	736.0	6	0	83	37	120
1990	2,347.0	1,644.0	703.0	6	0	63	27	90
1991	2,432.0	1,697.0	735.0	6	0	64	32	96
1992	4,283.0	3,260.0	1,023.0	6	0	74	40	114

Table 2. Status of Kodiak herring sac-roe limited entry permits, 1987-1991.

Gear Type	Year				
	1988	1989	1990	1991	1992
G.N. TRANSFERABLE	64	68	72	74	94
G.N. NON-TRANSFERABLE	<u>41</u>	<u>44</u>	<u>27</u>	<u>28</u>	<u>14</u>
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	<u>24</u>	<u>25</u>	<u>25</u>	<u>22</u>	<u>11</u>
SEINE TOTAL	70	72	72	70	70
SEINE FISHED	33	37	27	32	40
TOTALS					
TRANSFERABLE	110	115	119	122	153
NON-TRANSFERABLE	<u>65</u>	<u>69</u>	<u>52</u>	<u>50</u>	<u>25</u>
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.

Table 3. Kodiak herring sac roe fishery summary by year and by gear, 1979-1992.

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
14 YEAR AVG.	60	2,273	2,256	1,669	588	74	26	134	375	44	80	35,769	6,841

Table 4. Herring sac roe 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, 1992.

STAT. AREA	MGMT. UNITS	GUIDELINE HARVEST LEVEL	PURSE SEINE	% GILLNET	%	TOTAL	DATE CLOSED	
AFOGNAK DISTRICT								
A010	Raspberry Sts.	165 TONS	64.1	69	29.4	31	93.5	6/30
A020	Malina Bay	45 TONS	100.8	100	0	-	100.8	4/16
A031	Paramanof Bay	50 TONS	344.0	95	17.9	5	361.9	4/18
A032	Foul Bay	20 TONS	133.5	92	11.4	8	144.9	4/18
A040	Devils Inlet	10 TONS	0	-	0	-	0	4/20
A040	Blue Fox	10 TONS	69.6	100	0	-	69.6	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	6.6	50	6.5	50	13.1	5/16
A071	Delphin Bay	10 TONS	4.4	100	0	-	4.4	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	20 TONS	0.5	6	7.6	94	8.1	5/16
A091	Kitoy Bay	15 TONS	0	-	5.4	100	5.4	6/30
A092	MacDonalds Lagoon	10 TONS	0	-	1.5	100	1.5	6/30
A100	Danger Bay	15 TONS	0	-	11.8	100	11.8	4/22
A101	Litnik	10 TONS	0	-	4.4	100	4.4	6/30
A102	Inshore Marmot	10 TONS	0	-	0.2	100	0.2	6/30
DISTRICT TOTAL		450 TONS	723.5		96.1		819.6	

-Continued-

Table 4. (Page 2 of 5)

STAT. AREA	MGMT. UNITS	GUIDELINE HARVEST LEVEL	PURSE SEINE	% GILLNET	%	TOTAL	DATE CLOSED
UYAK DISTRICT							
UY10	Offshore Uyak ^a	-	0	-	0	0	6/30
UY20	Harvester Island	10 TONS	5.0	100	0	5.0	6/30
UY30	Inner Uyak	180 TONS	64.7	80	16.4	81.1	6/30
UY31	Larsen Bay	10 TONS	0	-	2.7	2.7	6/30
UY32	Browns Lagoon	20 TONS	8.2	47	9.2	17.4	5/16
UY40	Zachar Bay	100 TONS	63.7	73	23.5	87.2	6/02
UY50	Spiridon Bay	120 TONS	53.3	45	64.2	117.5	5/20
DISTRICT TOTAL		440 TONS	194.9		116.0	310.9	
UGANIK DISTRICT							
UG10	Kupreanof	10 TONS	0	-	0.6	0.6	6/30
UG20	Viekoda	40 TONS	166.9	99	0.7	167.6	4/17
UG21	Terror	60 TONS	101.0	99	0.7	101.7	4/22
UG21	Uganik Is. Lagoon ^b	0 TONS	0	-	0	0	6/30
UG30	Village Island	45 TONS	332.9	95	17.9	350.8	4/21
UG31	W. Uganik Pass	25 TONS	98.0	98	1.5	99.5	4/27
UG32	NE Arm Uganik	55 TONS	119.9	100	0	119.9	4/21
UG33	E. Arm Uganik	40 TONS	0	-	54.9	54.9	5/08

-Continued-

Table 4. (Page 3 of 5)

STAT. AREA	MGMT. UNITS	GUIDELINE HARVEST LEVEL	PURSE SEINE	% GILLNET		%	TOTAL	DATE CLOSED
UG34	S. Arm Uganik	50 TONS	57.8	100	0	-	57.8	4/21
UG40	Offshore Uganik ^a	-	0	-	0	-	0	6/30
DISTRICT TOTAL		325 TONS	876.5	76.3			952.8	
ALITAK DISTRICT								
AL10	Outer Alitak	(Exploration)	0	-	0	-	0	6/30
AL20	Inner Alitak	(Exploration)	46.0	56	36.1	44	82.1	5/08
AL21	Deadman Bay	195 TONS	210.9	96	9.0	4	219.9	4/28
AL30	Sulua/Portage Bay	95 TONS	238.8	87	34.9	13	273.7	4/30
AL40	Lower Olga/Moser	15 TONS	18.6	100	0	-	18.6	5/16
AL40	N. Upper Olga B.	10 TONS	0	-	0	-	0	6/30
AL50	Upper Olga Bay	145 TONS	51.1	48	56.0	52	107.1	6/30
AL60	Geese/Twoheaded	(Exploration)	10.3	100	0	-	10.3	6/30
DISTRICT TOTAL		460 TONS	575.7	136.0			711.7	
STURGEON/HALIBUT DIST.								
SH10	Sturgeon/Halibut	(Exploration)	0	-	0	-	0	6/30
DISTRICT TOTAL		0 TONS	0	0			0	

-Continued-

Table 4. (Page 4 of 5)

STAT. AREA	MGMT. UNITS	GUIDELINE HARVEST LEVEL	PURSE SEINE	% GILLNET	%	TOTAL	DATE CLOSED	
GENERAL DISTRICT								
GO10	Kaiugnak	10 TONS	29.5	93	2.2	7	31.7	4/26
GO20	W. Sitkalidak St.	100 TONS	107.6	66	54.3	34	161.9	4/20
GO20	S.W.Sitkalidak St.(Exploration)		120.0	62	72.7	38	192.7	5/02
GO21	Barling	40 TONS	0	-	40.0	100	40.0	4/30
GO22	E. Sitkalidak St.	120 TONS	36.8	28	93.0	72	129.8	4/16
GO23	Tanginak Anchorage	15 TONS	4.8	20	19.6	80	24.4	4/21
GO30	Outer Sitkalidak (Exploration)		0	-	0	-	0	6/30
GO40	Outer Kiliuda (Exploration)		23.1	93	1.7	7	24.8	6/30
GO41	Inner Kiliuda	20 TONS	86.2	100	0	-	86.2	4/18
GO42	Shearwater	50 TONS	99.4	61	63.4	39	162.8	5/04
G050	Pasagshak	25 TONS	0	-	21.6	100	21.6	5/02
GO50	Outer Ugak (Exploration)		114.6	100	0	-	114.6	5/14
GO51	Inner Ugak	75 TONS	79.7	96	3.0	4	82.7	5/02
GO60	Womens Bay	110 TONS	67.5	45	81.6	55	149.1	5/30
GO70	Monashka/Mill B. (Exploration)		0	-	0	-	0	6/30
GO80	Anton Larsen	10 TONS	0	-	3.8	100	3.8	6/30
GO81	Sheratin	10 TONS	0	-	0	-	0	6/30
GO90	Kizhuyak	110 TONS	33.3	28	84.3	72	117.6	5/20
G100	Kalsin Bay	15 TONS	0.9	5	15.8	95	16.7	5/30
G101	Middle Bay	20 TONS	15.3	92	1.4	8	16.7	4/30
G102	Inshore Chiniak	10 TONS	0	-	0	-	0	6/30
G103	Spruce Island	10 TONS	0	-	1.5	100	1.5	6/30
DISTRICT TOTAL		750 TONS	818.7		559.9		1378.6	

-Continued-

Table 4. (Page 5 of 5)

STAT. AREA	MGMT. UNITS	GUIDELINE HARVEST LEVEL	PURSE SEINE	% GILLNET	%	TOTAL	DATE CLOSED
MAINLAND DISTRICT							
M010	North Mainland	(Exploration)	0	-	0	0	6/30
M020	Inner Kukak	65 TONS	0	-	36.1	36.1	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	0	-	0	0	6/30
M060	Outer Katmai ^a	-	0	-	0	0	6/30
M070	Alinchak	40 TONS	14.2	87	2.2	16.4	6/30
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	56.9	100	0	56.9	6/30
M120	Lower Shelikof	(Exploration)	0	-	0	0	6/30
DISTRICT TOTAL		295 TONS	71.1		38.3	109.4	
GRAND TOTAL		2720 TONS	3260.4		1022.6	4283.0	

^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 The spawning biomass has probably been reduced to less than 50 tons and the unit is closed to fishing.

Table 5. Summary of age composition by percent for the Kodiak Management Area, 1992.^{a,b}

STOCK NAME ^b MGMT. AREA	HARVEST ^b TONS	AGE COMPOSITION (%)										N
		2	3	4	5	6	7	8	9	10	11+	
Raspberry/Muskomee	93.5	-	3.0	94.3	1.9	-	0.3	0.3	0.3	-	-	371
Malina	100.8	-	-	95.0	3.5	-	0.7	0.7	-	-	-	141
Paramanof	361.9	-	0.6	91.1	6.6	0.3	-	1.4	-	-	-	348
Foul	144.9	-	-	81.9	13.8	0.3	0.7	3.4	-	-	-	298
Blue Fox	69.6	-	0.7	92.6	6.0	-	0.7	-	-	-	-	149
Perenosa	13.1	-	0.8	41.2	45.8	2.3	4.6	3.8	0.8	-	0.8	131
Delphin	4.4	-	3.0	78.4	11.9	1.7	0.8	2.5	0.4	0.4	0.8	236
Danger 1/	11.8	-	-	33.9	50.0	11.3	-	3.2	1.6	-	-	62
Viekoda	167.6	-	2.0	96.2	1.6	0.2	-	-	-	-	-	548
Terror	101.7	-	3.2	93.7	2.6	-	-	0.5	-	-	-	651
Village Islands	350.8	-	1.0	95.5	3.6	-	-	-	-	-	-	418
W. Uganik Passage	99.5	-	3.5	93.7	2.8	-	-	-	-	-	-	143
N.E. Arm Uganik	119.9	-	1.3	95.1	2.8	-	-	0.5	0.3	-	-	387
E. Arm Uganik	54.9	-	4.0	93.9	2.0	-	-	-	-	-	-	99
Inner Uyak	81.1	1.6	32.8	8.2	21.3	1.1	4.4	10.4	12.0	-	8.2	183
Brown's Lagoon	17.4	-	2.8	77.4	17.9	-	-	1.9	-	-	-	106
Zachar	87.2	10.4	17.5	27.2	22.4	1.5	0.4	4.9	6.0	0.4	9.3	268
Spiridon	117.5	0.5	4.5	49.1	18.2	-	3.2	4.5	4.5	0.5	15.0	220
Inner Alitak	82.1	-	0.3	87.3	11.1	-	0.3	0.6	-	-	0.3	323
Deadman	219.9	-	-	87.9	10.6	-	-	1.5	-	-	-	404
Sulua	273.7	-	-	88.8	10.2	-	-	1.0	-	-	-	205
Lower Olga	18.6	3.0	1.0	45.0	7.0	14.0	5.0	13.0	6.0	-	6.0	100
Upper Olga	107.1	-	0.6	11.3	14.5	36.5	13.2	14.5	4.4	-	5.0	159
Kaiugnak	31.7	-	-	22.5	75.1	0.6	-	1.2	0.6	-	-	169
W. Sitkalidak	354.6	-	-	36.3	61.8	0.4	0.2	0.4	0.2	-	0.6	479
Barling 1/	40.0	-	-	3.1	82.5	1.0	-	7.2	4.1	-	2.1	97
E. Sitkalidak	129.8	-	0.3	46.4	51.1	0.6	-	1.4	0.3	-	-	360

-Continued-

Table 5. (Page 2 of 2)

STOCK NAME ^b MGMT. AREA	HARVEST ^b TONS	AGE COMPOSITION (%)										
		2	3	4	5	6	7	8	9	10	11+	N
Tanginak Anchorage	24.4	-	-	49.5	39.8	-	-	3.2	4.3	-	3.2	93
Inner Kiliuda	86.2	-	-	11.4	82.1	2.6	0.4	2.6	0.4	-	0.4	229
Shearwater	162.8	-	0.4	6.7	88.3	1.4	0.4	1.4	1.4	-	-	283
Outer Ugak	135.7	-	1.0	4.6	72.7	8.9	0.7	3.6	5.9	0.3	2.3	304
Inner Ugak	82.7	-	1.4	28.2	58.9	7.0	0.3	1.1	2.0	-	1.1	358
Womens	149.1	0.3	0.7	20.1	71.4	2.6	0.7	0.3	0.3	-	3.6	304
Kizhuyak	117.6	0.8	6.2	44.6	37.2	4.1	-	2.9	1.2	0.4	2.5	242
Middle	16.7	-	1.7	64.3	33.0	0.9	-	-	-	-	-	115
Kukak	36.1	7.8	22.6	64.3	4.3	-	-	0.9	-	-	-	115
Alinchak	16.4	-	8.9	83.7	4.9	-	0.8	0.8	0.8	-	-	123
Wide	56.9	1.9	9.6	73.1	7.7	1.9	1.0	4.8	-	-	-	104
TOTAL	4139.7	0.5	2.9	62.35	26.9	2.0	0.7	2.0	1.2	0.05	1.4	9325

^a All samples were from commercial purse seine catches collected by ADF&G personnel, except the samples from Danger Bay and Barling Bay were from commercial gillnet catches collected by ADF&G personnel.

^b Of the 52 stocks exploited in 1992, samples were collected from 38 (73%). These 38 stocks yielded 4139.7 tons or 97% of the management area's total harvest of 4283 tons.

Table 6. Summary of average lengths in (mm.) by age class, by management unit, Kodiak Management Area, 1992.^{a,b}

STOCK NAME ^b MGMT. AREA	HARVEST ^b TONS	LENGTH COMPOSITION (%)										AVG.	N
		2	3	4	5	6	7	8	9	10	11+		
Raspberry/Muskomee	93.5	-	183	200	214	-	239	220	255	-	-	200	371
Malina	100.8	-	-	206	222	-	247	235	-	-	-	207	141
Paramanof	361.9	-	180	203	218	227	-	237	-	-	-	204	348
Foul	144.9	-	-	203	219	232	230	238	-	-	-	206	298
Blue Fox	69.6	-	188	205	221	-	234	-	-	-	-	206	149
Perenosa	13.1	-	200	208	228	246	249	251	242	-	277	222	131
Delphin	4.4	-	188	203	223	237	246	252	251	244	274	208	236
Danger ^a	11.8	-	-	224	229	242	-	247	262	-	-	230	62
Viekoda	167.6	-	185	198	215	229	-	-	-	-	-	198	548
Terror	101.7	-	181	192	204	-	-	233	-	-	-	192	651
Village Islands	350.8	-	189	203	215	-	-	-	-	-	-	203	418
W. Uganik Passage	99.5	-	181	194	204	-	-	-	-	-	-	194	143
N.E. Arm Uganik	119.9	-	187	200	211	-	-	232	257	-	-	201	387
E. Arm Uganik	54.9	-	182	190	215	-	-	-	-	-	-	190	99
Inner Uyak	81.1	173	207	215	239	244	255	256	257	-	260	232	183
Brown's Lagoon	17.4	-	182	202	223	-	-	239	-	-	-	206	106
Zachar	87.2	169	211	207	236	245	241	258	260	270	270	223	268
Spiridon	117.5	158	197	208	236	-	259	258	263	267	270	228	220
Inner Alitak	82.1	-	193	201	218	-	234	252	-	-	261	203	323
Deadman	219.9	-	-	203	223	-	-	249	-	-	-	206	403
Sulua	273.7	-	-	209	227	-	-	241	-	-	-	211	205
Lower Olga	18.6	151	182	193	214	242	251	257	267	-	268	220	100
Upper Olga	107.1	-	177	208	231	240	248	253	264	-	263	240	159
Kaiugnak	31.7	-	-	220	240	262	-	273	271	-	-	236	169
W. Sitkalidak	354.6	-	-	211	234	239	-	268	268	-	277	226	478
Barling ^a	40.0	-	-	220	235	220	-	264	271	-	269	239	97
E. Sitkalidak	129.8	-	199	216	236	240	-	261	272	-	-	227	360
Tanginak Anchorage	24.4	-	-	214	233	-	-	258	271	-	275	228	93
Inner Kiliuda	86.2	-	-	211	234	238	248	267	273	-	275	233	229
Shearwater	162.8	-	205	216	234	243	253	270	279	-	-	234	283
Outer Ugak	135.7	-	192	211	231	241	268	257	266	265	268	235	304

-Continued-

Table 6. (page 2 of 2)

STOCK NAME ^b MGMT. AREA	HARVEST ^b TONS	LENGTH COMPOSITION (%)										AVG.	N
		2	3	4	5	6	7	8	9	10	11+		
Inner Ugak	82.7	-	197	211	227	235	250	265	265	-	271	225	358
Womens	149.1	164	205	212	233	246	257	251	271	-	272	231	304
Kizhuyak	117.6	159	190	205	230	244	-	259	273	279	273	219	242
Middle	16.7	-	195	212	233	247	-	-	-	-	-	219	115
Kukak	36.1	145	173	198	211	-	-	250	-	-	-	189	115
Alinchak	16.4	-	184	208	223	-	263	254	270	-	-	208	123
Wide	56.9	147	182	211	223	237	249	259	-	-	-	211	104
TOTAL	4139.7	162	194	202	231	240	250	254	264	265	268	214	9323

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^a All samples were from commercial purse seine catches collected by ADF&G personnel, except the samples from Danger Bay and Barling Bay were from commercial gillnet catches collected by ADF&G personnel.

^b Of the 52 stocks exploited in 1992, samples were collected from 38 (73%). These 38 stocks yielded 4139.7 tons or 97% of the management area's total harvest of 4283 tons.

Table 7. Summary of the average weights in grams by age class, by management unit, Kodiak Management Area, 1992.^{a,b}

STOCK NAME ^b MGMT. AREA	HARVEST ^b TONS	WEIGHT COMPOSITION (%)										AVG.	N
		2	3	4	5	6	7	8	9	10	11+		
Raspberry/Muskomee	93.5	-	74	106	129	-	-	149	236	-	-	106	202
Malina	100.8	-	-	117	147	-	216	103	-	-	-	119	141
Paramanof	361.9	-	75	115	147	169	-	194	-	-	-	118	347
Foul Bay	144.9	-	-	116	153	169	189	207	-	-	-	124	259
Blue Fox	69.6	-	79	116	156	-	199	-	-	-	-	118	149
Perenosa	13.1	-	109	124	166	208	213	243	201	-	312	159	109
Delphin	4.4	-	89	114	153	162	200	236	216	235	320	125	236
Danger ^a	11.8	-	-	158	174	206	-	219	266	-	-	175	62
Viekoda	167.6	-	78	106	130	-	-	-	-	-	-	105	487
Terror	101.7	-	73	93	109	-	-	166	-	-	-	93	455
Village Islands	350.8	-	77	109	133	-	-	-	-	-	-	110	378
W. Uganik Passage	99.5	-	77	102	160	-	-	-	-	-	-	101	70
N.E. Arm Uganik	119.9	-	84	108	126	-	-	167	-	-	-	109	327
E. Arm Uganik	54.9	-	81	94	120	-	-	-	-	-	-	94	99
Inner Uyak	81.1	-	121	118	184	175	229	254	260	-	259	196	77
Brown's Lagoon	17.4	-	84	116	166	-	-	205	-	-	-	126	104
Zachar	87.2	-	129	131	163	234	217	231	-	-	-	144	88
Spiridon	117.5	49	100	118	182	-	259	260	280	283	303	175	220
Inner Alitak	82.1	-	98	116	152	-	191	259	-	-	256	121	323
Deadman	219.9	-	-	119	157	-	-	245	-	-	-	125	404
Sulua	273.7	-	-	120	159	-	-	199	-	-	-	125	176
Lower Olga	18.6	46	93	99	148	194	214	254	288	-	298	164	99
Upper Olga	107.1	-	84	128	180	203	220	240	249	-	290	204	148
Kaiugnak	31.7	-	-	142	187	272	-	269	285	-	-	179	169
W. Sitkalidak	354.6	-	-	126	182	176	-	302	-	-	327	160	351
Barling ^a	40.0	-	-	160	185	148	-	286	298	-	304	198	97
E. Sitkalidak	129.8	-	98	131	177	195	-	277	260	-	-	157	359
Tanginak Anchorage	24.4	-	-	137	180	-	-	284	286	-	318	171	93
Inner Kiliuda	86.2	-	-	127	180	187	188	282	314	-	278	178	228
Shearwater	162.8	-	124	138	182	201	265	286	320	-	-	183	279

-Continued-

Table 7. Page 2 of 2

STOCK NAME MGMT. AREA	HARVEST ^b TONS	WEIGHT COMPOSITION (%)											
		2	3	4	5	6	7	8	9	10	11+	AVG.	N
Outer Ugak	135.7	-	91	129	181	212	293	264	302	284	340	195	304
Inner Ugak	82.7	-	110	145	173	189	269	282	304	-	344	172	355
Womens	149.1	41	107	136	188	218	249	259	324	-	325	184	303
Kizhuyak	117.6	46	91	114	162	203	-	258	308	331	321	150	184
Middle	16.7	-	106	128	178	227	-	-	-	-	-	145	115
Kukak	36.1	37	66	108	133	-	-	246	-	-	-	95	115
Alinchak	16.4	-	84	131	162	-	277	251	232	-	-	131	123
Wide	56.9	36	77	132	163	203	236	259	-	-	-	136	104
TOTAL AVG.	4139.7	40	87	114	176	201	226	247	284	283	303	140	8139

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^a All samples were from commercial purse seine catches collected by ADF&G personnel, except the samples from Danger Bay and Barling Bay were from commercial gillnet catches collected by ADF&G personnel.

^b Of the 52 stocks exploited in 1992, samples were collected from 38 (73%). These 38 stocks yielded 4139.7 tons or 97% of the management area's total harvest of 4283 tons.

Table 8. Historical herring food/bait 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	N/A
1921	944.9	1949	0.0	1977	N/A
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	217.5
1937	27659.3	1965	35.0		
1938	24522.0	1966	198.0		
1939	38600.5	1967	300.3		

Table 9. Commercial food and bait herring AWL summaries for the Kodiak Management Area, 1992/93.

Sample Period	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			
10/13	0	-	-	-	-	-	-	-	-	-	-	-	-	
	1	-	-	-	-	-	-	-	-	-	-	-	-	
	2	7	-	-	7	3.4	126	96.2	7	188	10.3	7	1.25	2.04
	3	1	4	-	5	2.4	112	12.5	5	200	5.8	5	.80	1.46
	4	29	27	-	56	26.9	156	30.0	56	219	11.0	56	12.44	16.32
	5	9	8	-	17	8.2	205	50.2	16	239	19.9	17	4.96	4.96
	6	9	5	-	14	6.7	235	49.5	14	251	12.1	14	4.66	4.66
	7	6	6	-	12	5.8	255	29.9	12	254	6.9	12	4.34	4.34
	8	17	17	-	34	16.3	285	31.0	34	263	8.4	34	13.77	13.77
	9	19	20	-	39	18.8	288	40.1	38	263	10.5	39	15.95	15.95
	10	2	4	-	6	2.9	302	39.5	6	268	11.5	6	2.57	2.57
11+	7	11	-	18	8.7	330	56.6	18	269	20.4	18	8.44	8.44	
Period total		106	102	-	208	100.0	234	77.9	206	244	26.0	208	69.18	74.51
10/17	0	-	-	-	-	-	-	-	-	-	-	-	-	
	1	-	-	-	-	-	-	-	-	-	-	-	-	
	2	5	1	2	8	3.0	84	11.3	8	179	9.2	8	1.18	2.82
	3	20	11	1	32	12.1	125	15.3	32	202	6.8	32	6.97	11.27
	4	91	91	-	182	68.9	149	19.0	182	213	7.8	182	47.35	64.07
	5	7	9	-	16	6.1	201	31.3	16	233	9.4	16	5.63	5.63
	6	1	6	-	7	2.7	214	24.2	6	237	9.7	7	2.62	2.62
	7	-	2	-	2	.8	219	41.0	2	243	9.9	2	.77	.77
	8	-	4	-	4	1.5	259	39.5	4	255	8.4	4	1.81	1.81
	9	3	4	-	7	2.7	298	24.1	7	261	6.4	7	3.65	3.65
	10	-	-	-	-	-	-	-	-	-	-	-	-	-
11+	4	2	-	6	2.3	331	39.1	6	265	10.5	6	3.47	3.47	
Period total		131	130	3	264	100.0	159	48.5	263	216	17.3	264	73.45	96.10
10/19	0	-	-	-	-	-	-	-	-	-	-	-	-	
	1	-	-	2	2	.8	42	1.4	2	148	2.1	2	.12	.59
	2	10	9	5	24	9.8	83	14.6	24	187	19.0	24	2.85	7.08
	3	2	4	-	6	2.5	122	11.6	6	210	4.2	6	1.06	1.77
	4	34	45	-	79	32.4	158	26.0	78	223	9.4	79	17.99	23.31
	5	9	8	-	17	7.0	205	19.5	17	239	7.8	17	5.02	5.02
	6	11	12	-	23	9.4	237	28.9	23	252	8.2	23	7.85	7.85
	7	6	4	-	10	4.1	244	44.8	10	254	15.2	10	3.51	3.51
	8	18	16	-	34	13.9	279	40.4	34	261	10.1	34	13.65	13.65
	9	18	13	-	31	12.7	306	33.5	31	269	9.1	31	13.68	13.68
	10	-	1	-	1	.4	347	-	1	278	-	1	.50	.50
11+	6	11	-	17	7.0	325	44.3	17	270	13.9	17	7.96	7.96	
Period total		114	123	7	244	100.0	211	82.4	243	238	28.9	244	74.19	84.92

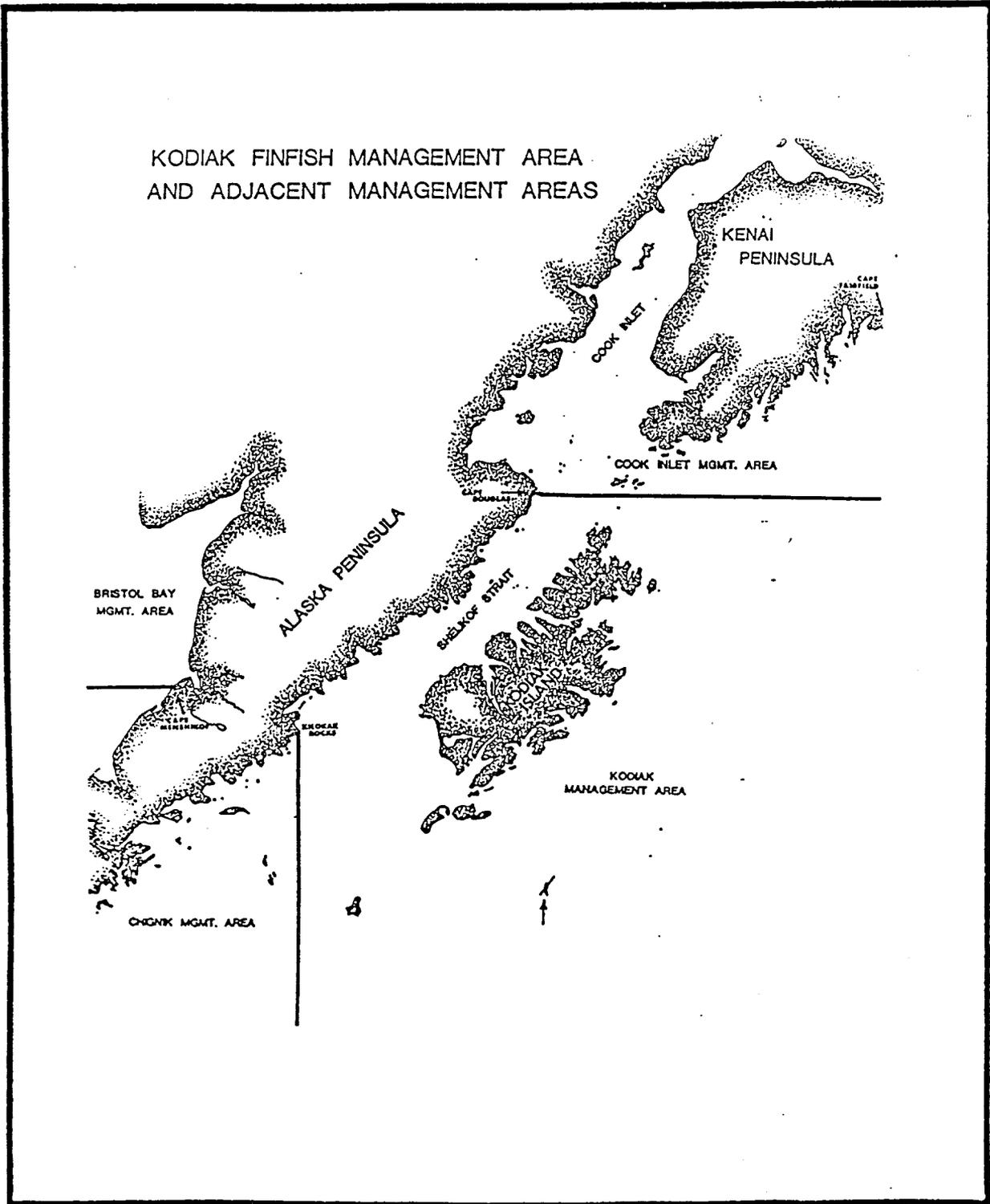


Figure 1. Map of southwestern Alaska emphasizing the Kodiak Management Area and it's relationship to surrounding management areas.

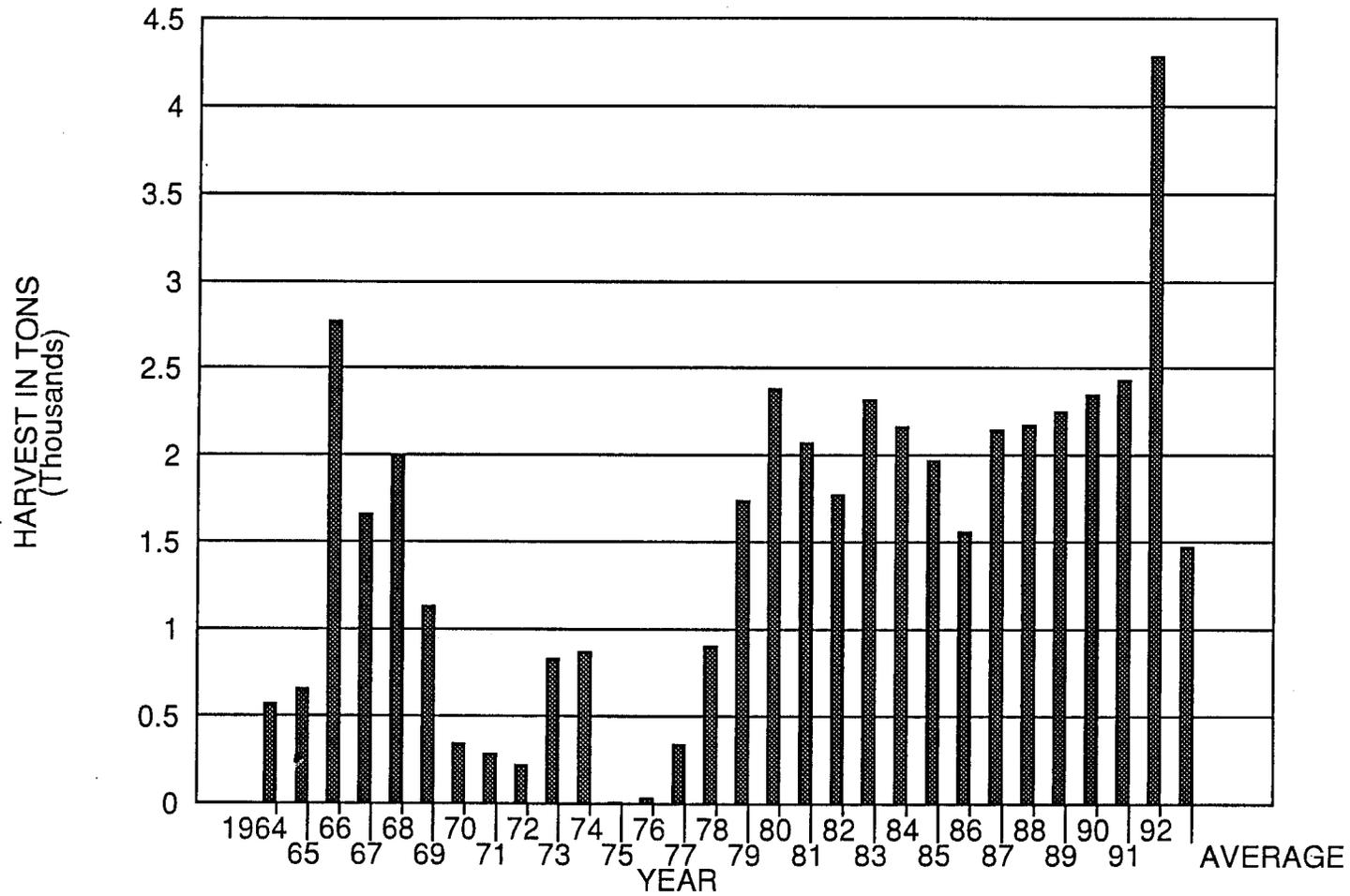


Figure 2. Historic harvest of sac roe herring for the Kodiak Management Area, 1964-1992.

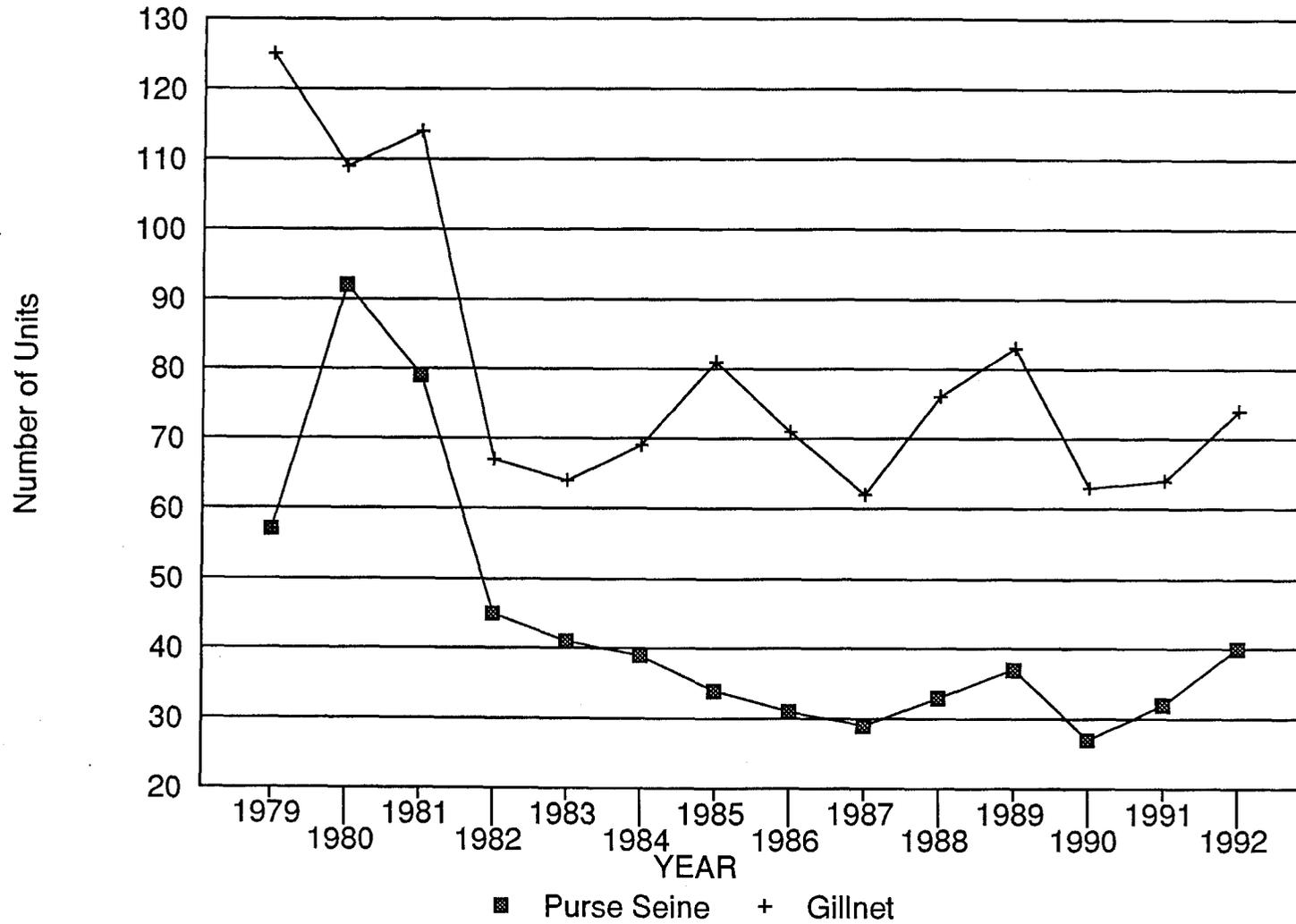


Figure 3. Kodiak sac roe herring fishery comparison of seine and gillnet gear levels, 1979-1992.

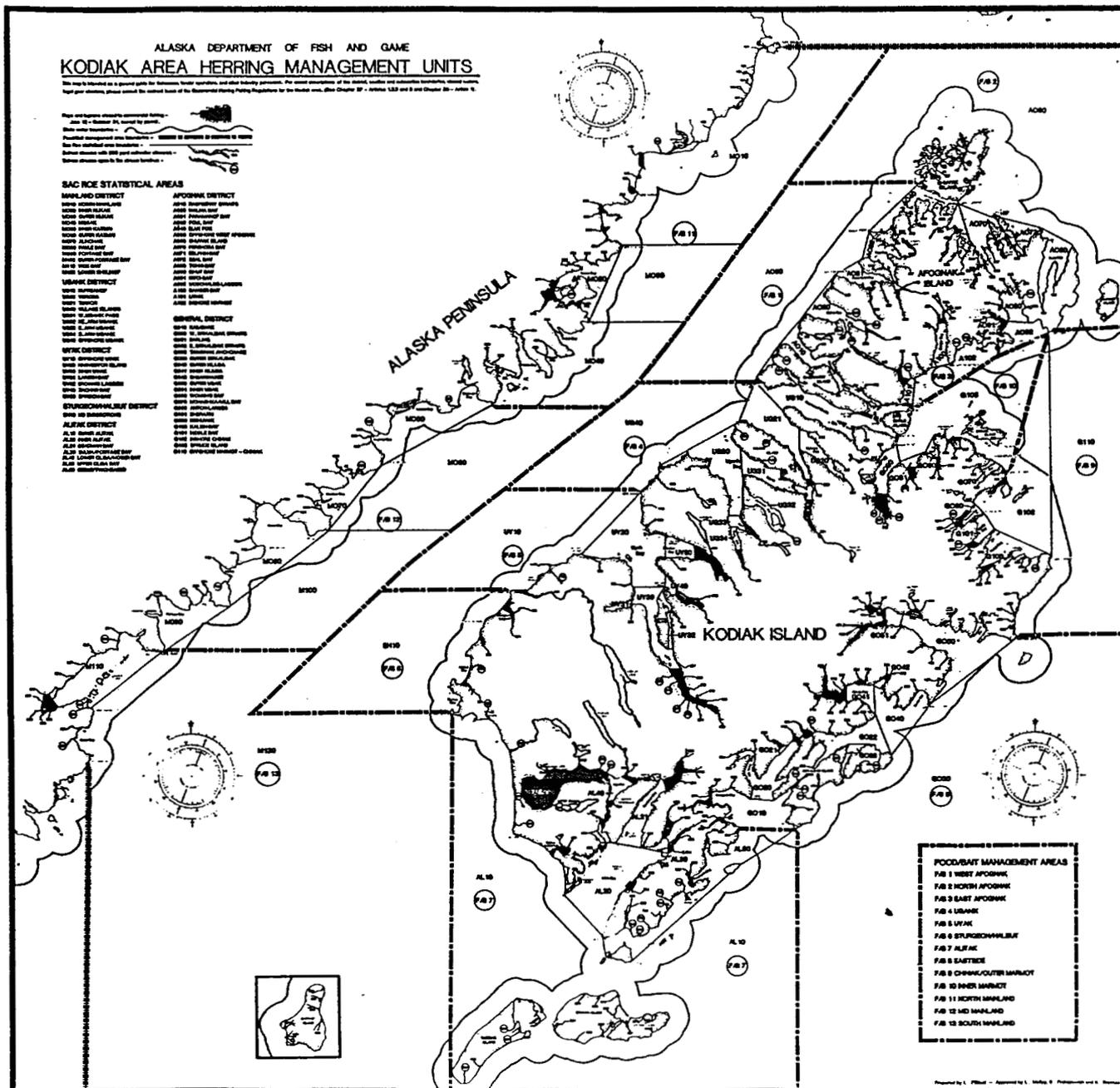


Figure 4. Map of the Kodiak Management Area with the statistical units for herring fishing shown.

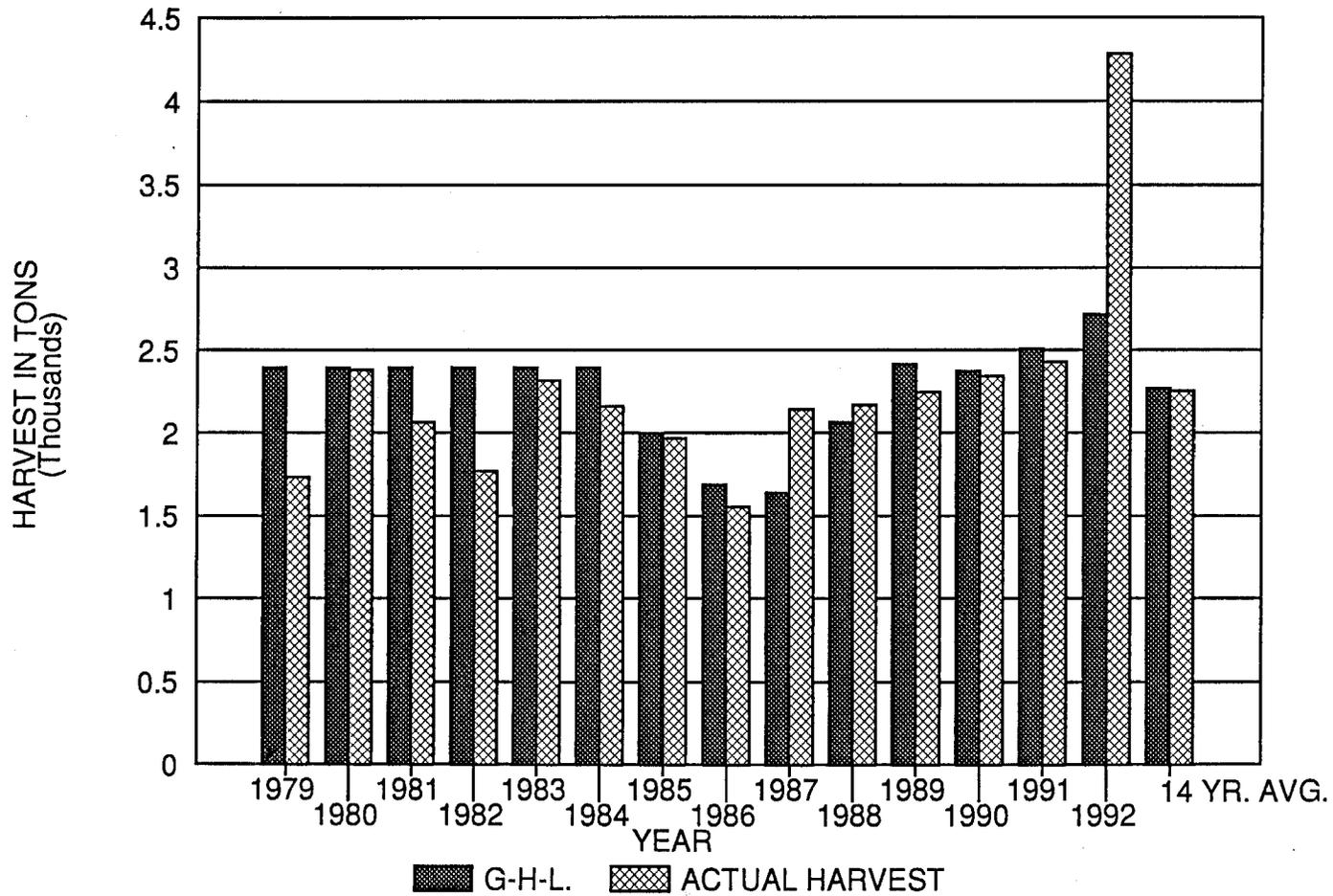


Figure 5. Comparison of herring guideline harvest levels to actual herring harvests, for the Kodiak Management Area, 1979-1992.

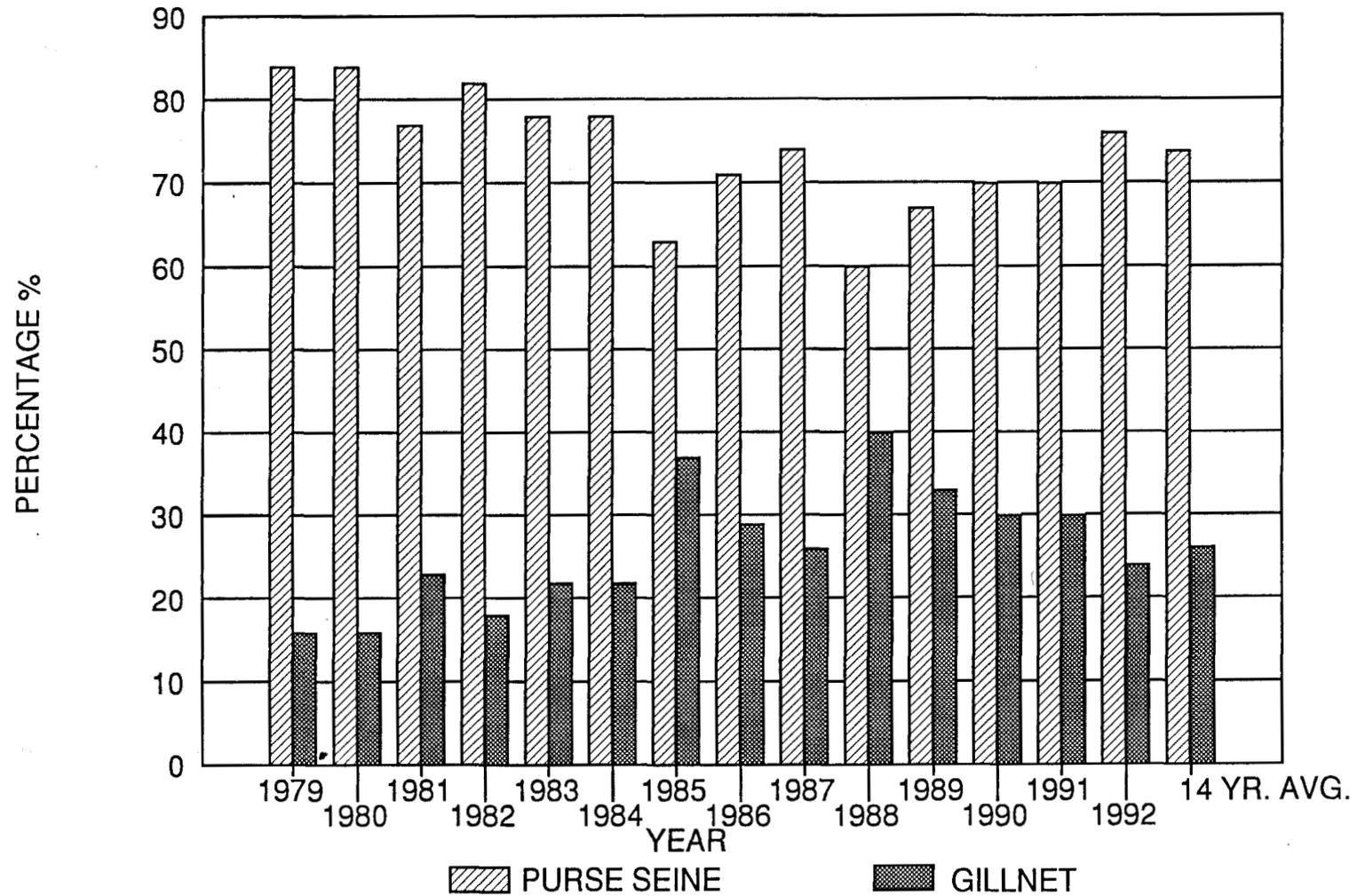


Figure 6. Comparison of herring harvests by gear type for the Kodiak Management Area, 1979-1992.

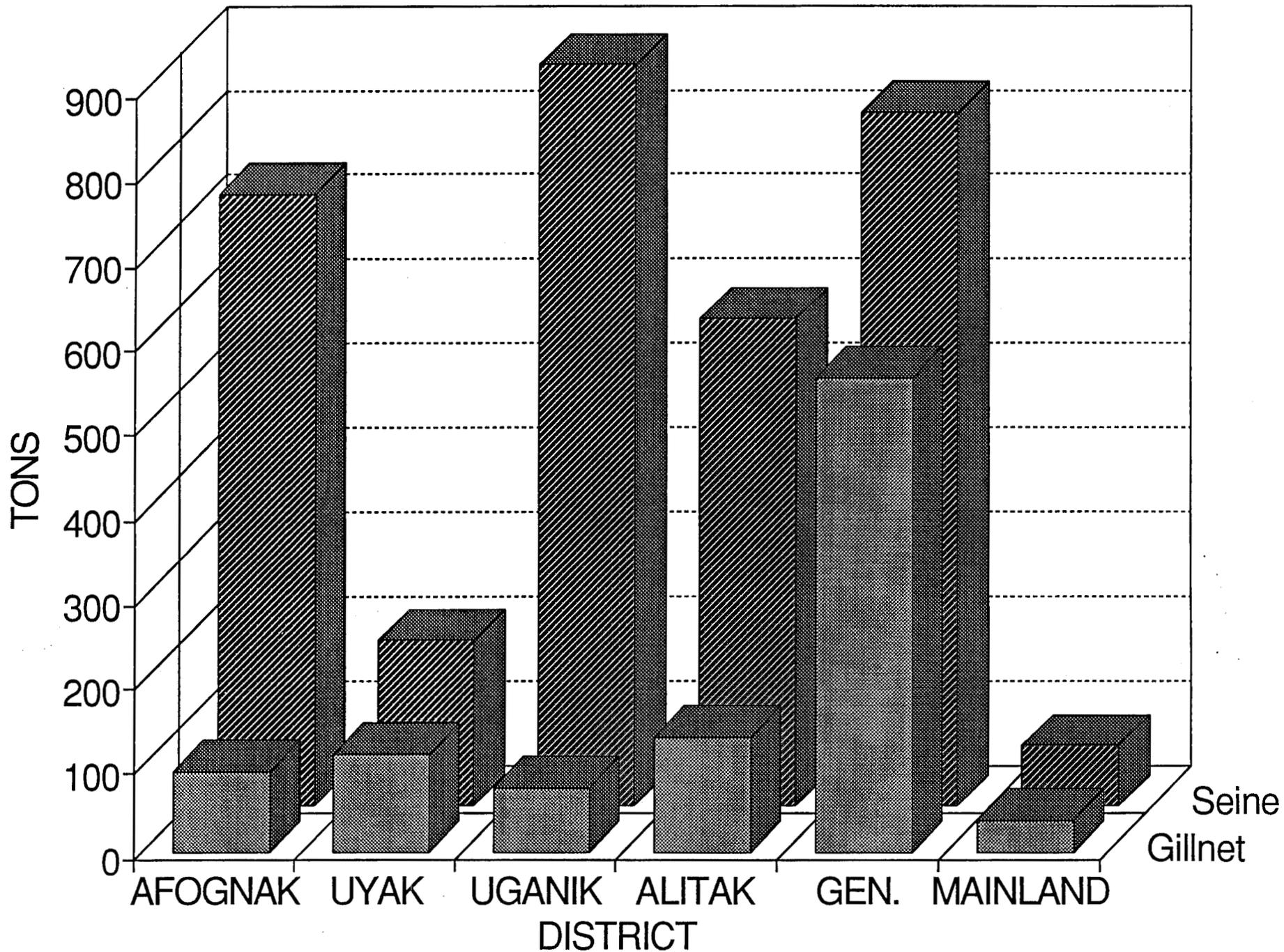


Figure 7. Herring sac roe harvest by district and gear type for the Kodiak Management Area, 1992.

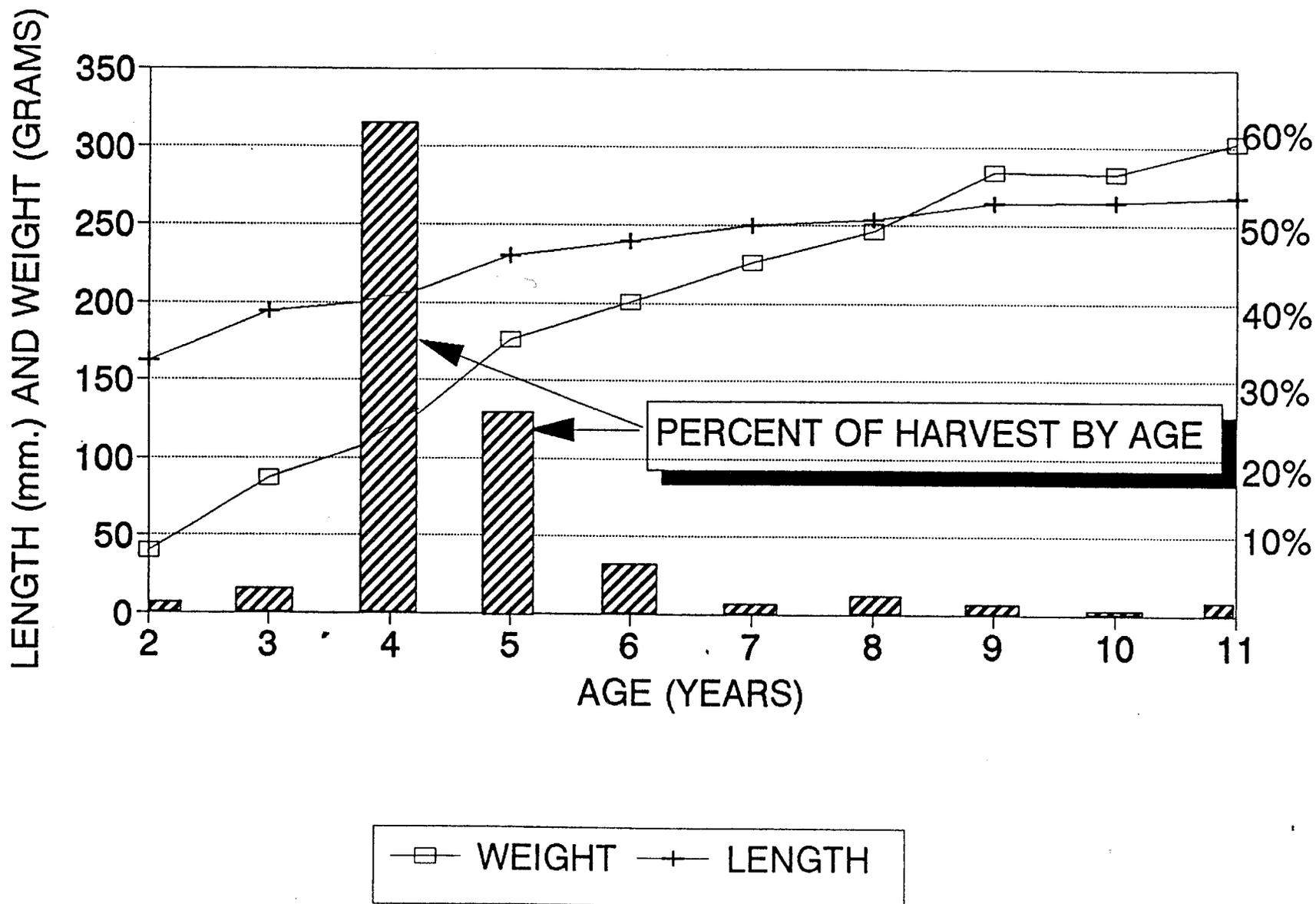


Figure 8. Age composition (%), weight, and length summary of the commercial herring sac roe harvest, Kodiak Management Area, 1992.

KODIAK SAC ROE HERRING FISHERY 1992 A-W-L DATA

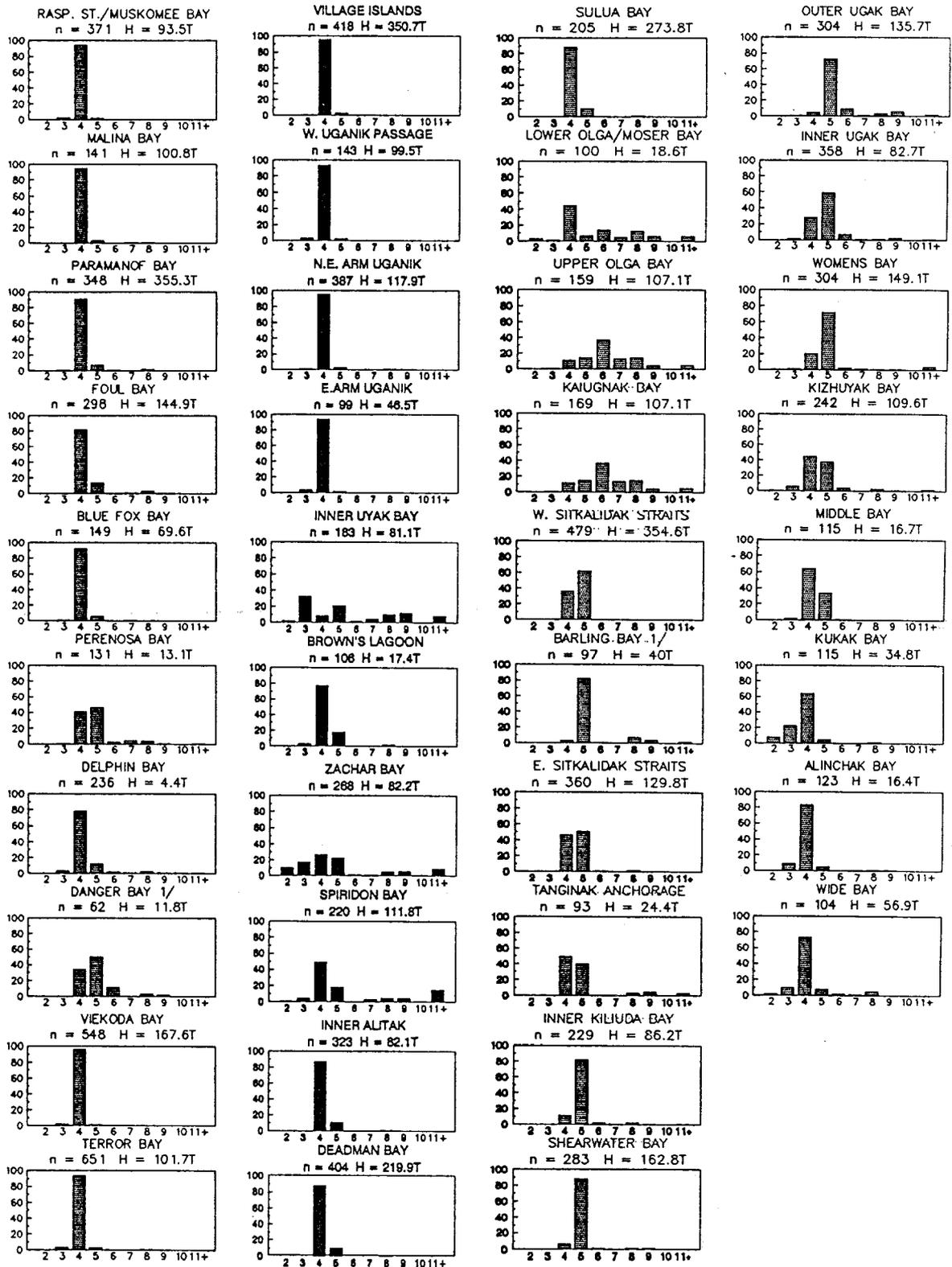


Figure 9. Age frequency (%) by management unit from the 1992 Kodiak sac roe herring fishery.

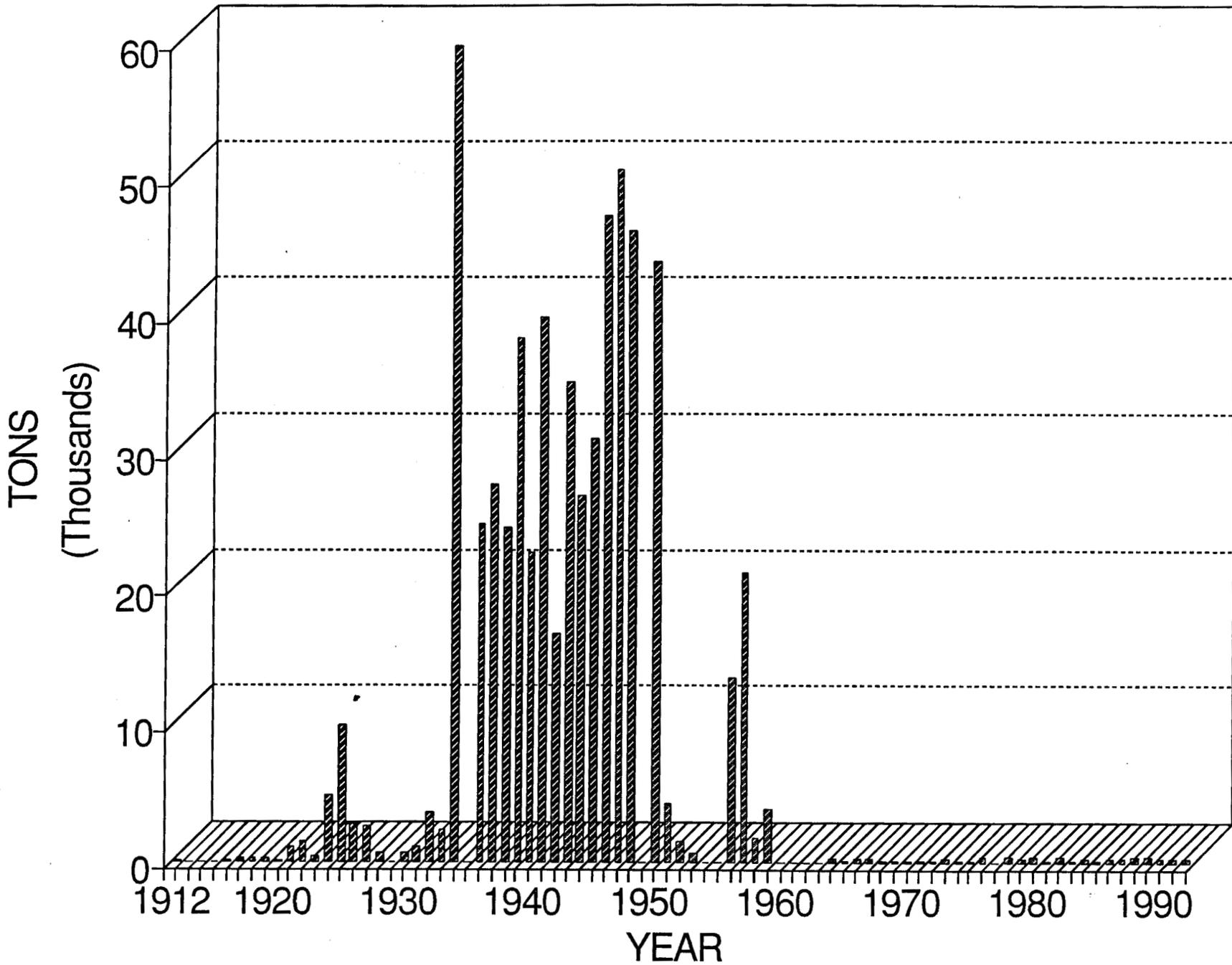


Figure 10. Historic herring food/bait harvest for the Kodiak Management Area, 1912-1992.

APPENDIX

Appendix A.1. Herring sac roe harvest strategy, Kodiak
Management Area, 1992.

KODIAK MANAGEMENT AREA
HERRING SAC-ROE HARVEST STRATEGY, 1992

By

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ABSTRACT

This document is intended to provide commercial fishermen and buyers with the pertinent management information and guidelines that are required to be adhered to when participating in the Kodiak, (AREA K), management area.

The 1992 Kodiak herring sac-roe fishery guideline harvest level is 2,720 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 74 management units; herring within 53 of these units are treated as individual stocks and have a history of sac-roe harvests. Additionally, there are 14 exploratory management units which potentially support sac-roe stocks and 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) on page 9. In-season emergency order closures for each unit will occur as the G.H.L.'s for each unit are achieved. Closures may also result prior to attaining a G.H.L. if the fishery performance indicates that stock status is weaker than expected.

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

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

NEW>> The boundaries between the Paramanof Bay subsection and the Foul Bay subsection will be changed for the 1992 season, to provide for more accurate assignment of harvest to stock management unit. The boundaries are amended to read from regulation, 5 ACC 27.505, (1991 Commercial Herring Fishing Regulation, page 38). See (Figure 1), for map of this new boundary.

(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 the latitude of (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.) and north of the latitude of (58°19'15" N.lat.).

INTRODUCTION

The Kodiak Area herring sac-roë fishery has occurred annually since 1964, (28 years). This fishery was an open-to-entry fishery from 1964 to 1980, and was 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.

Since 1964 the harvest has averaged about 1,425 tons. Since 1979 the harvest has averaged about 2,101 tons and has provided a stable harvest ranging from 1,559 tons in 1986 to 2,432 in 1991. The average roë recovery has approximated 10%.

This fishery targets on individual herring stocks immediately prior to spawning to ensure for the greatest roë development and resulting roë 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 roë recovery, and not to exceed a 20% harvest rate on the available spawning biomass. However, roë recovery will not be a criteria for emergency openings or closures except in cases where documented excessive wastage is, or is expected to be, a factor.

Because of the differential timing and abundance of Kodiak's various 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 under-exploited in-season will remain open for adequate exploitation to occur or until the regulatory closure of June 30. During the regulatory season, April 15 to June 30, stocks which have been closed to harvesting may be reopened if it is determined by ADF&G that "new" fish have increased the available spawning biomass to the point that the initial exploitation rate has dropped

below 10% for that stock, see Table 1. Any reopenings will require confirmation that the "new" fish are not juvenile herring, post spawners, or other forage fish and will require that ADF&G have the ability to monitor and regulate the reopening "on the grounds". At least 24 hours notice will be given prior to any reopenings.

REGULATORY SUMMARY

NEW REGULATIONS:

There are no new regulations for the 1992 season. A boundary change will be in effect and will be announced by emergency order prior to the first opening. The boundaries between the Paramanof Bay subsection and the Foul Bay subsection will be changed for the 1992 season, to provide for more accurate assignment of harvest to stock management unit. The boundaries are amended to read from regulation, 5 ACC 27.505, (1991 Commercial Herring Fishing Regulation, page 38). See (Figure 1), for map of this new boundary.

(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 the latitude of (58°19'15" N. lat.).

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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.

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 be enforced).

Fishing Vessels

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

GUIDELINE HARVEST LEVELS:

For the 1992 sac-roe season, approximately 2,720 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.

In-season 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, April 15. Depending on effort levels, harvest rates, and ADF&G's ability to monitor the fishery, the length of fishing periods may need to be reduced. Reductions in time for the fishing periods, if necessary, will be announced by emergency order.

CLOSED AREAS:

Regulatory Closures

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

Women's Bay is closed inside of a line from Shannon's Point to Nyman's Peninsula. The latitudes and longitudes of these points are described in regulation 5 AAC 27.530

(page 46 of the 1991 Commercial Herring Regulation Booklet).

1992 Emergency Order Closures:

All Uganik Island Lagoons will remain closed, due to the small and geographically confined stocks which are highly susceptible to over exploitation.

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-roë season if the number of individual herring per 50 lbs. of net weight exceeds 250 fish.

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

IN-SEASON 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. In-season 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) 1991 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. Adjustments to the GHL depends upon the degree remedial action which is required. Generally, adjustments are gradual, $\pm 25\%$ to $\pm 50\%$.

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

Fishing Periods

Initially, fishing periods will begin at 12:00 Noon on the odd numbered days of each month beginning on April 15 and end at 12:00 Noon on the even numbered days, through June 30. Staggered days of fishing have the advantage of providing 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. Towards the end of the season (usually early June) when fleet size and exploitable stocks are few in number, fishing periods may be modified to provide more continuous fishing time to facilitate adequately harvesting late occurring stocks. However, ADF&G's ability to monitor this fishery becomes very limited by late May and June, and this will be a major consideration in the nature of fishing period modifications.

In 1992, more restrictive adjustments in fishing periods may occur. In the event that active gear levels expand or become unexpectedly efficient to the point that a pattern of excessive harvests develop, deviations from the normal 24 hour fishing periods may be required.

Emergency Order, (E.O.), Announcements: "Getting the Word"

Because management strategy allows both gear types to fish all open areas during the fishing periods, there is considerable dispersion of gear throughout the management area. Consequently, it is important for the fleet to keep abreast of any changes in closures, potential short notice closures, and/or reopenings. This can be accomplished in the following ways: 1) personal contact with the Kodiak Herring Management staff in Kodiak via office visits, or telephone at 486-4791, 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, 3) contacting Peggy Dyson on 4125 mhz or any local herring processor and having them transmit the latest Kodiak herring emergency order, 4) calling the ADF&G 24-hour recorded message phone at 486-4559, 5) listening for any emergency order update which will be broadcast by Peggy Dyson following either the 8:00 A.M. or 6:00 P.M. weather broadcasts, 6) reading or collecting 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.

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

Because of extensive announcements associated with this fishery, it is recommended that fishermen document the latest E.O. announcement broadcast from Peggy Dyson by either marking a chart or making a tape recording of her broadcast.

ADF&G Field Crews/Fishermen Cooperation:

The crew on board the department's M/V K-Hi-C and seasonal biologists and technicians in remote tent camps will aid the Area Management Biologists by making frequent fishermen contacts in order to collect data on harvest levels and rates, fleet movements, and fleet observations of herring concentrations. Fishermen'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 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, these reports will be treated confidentially. Past cooperation has been excellent and has proven valuable in evaluating stock status and in gaining critical management information.

In-Season Catch Reporting

With approximately 100+ limited entry permit holders expected to fish during the 1992 season, frequent aerial surveys and timely catch reports will continue to be an important management tool, particularly in areas that are not covered by field crews. Timely and accurate catch information provided by the processors and fishermen will be essential in managing the fishery. Processors and independent tender operators will be required to provide daily tallies of herring deliveries by statistical area and must provide accurate estimates of herring onboard tenders that have not yet delivered to the cannery. Inaccurate or untimely information could result in the closure of an area. Individual code sheets will be provided for each tender or processor that is required to report catches on a daily basis by radio. Each tender operator and buyer must register with the Department prior to fishing and will be given a packet containing regulations, statistical charts, etc.

Guideline Harvest Level

The 1992 GHL of 2,720 tons should result in a near record sac-roe herring harvest for the Kodiak Area. If recruitment is above average in several major stocks or if virgin stocks are exploited, the actual harvest may well exceed the GHL. If pre-season estimates of recruitment are incorrect area-wide and/or adverse weather conditions prevail throughout the season the actual harvest may be significantly less than the GHL.

Table 1, lists the Guideline Harvest Levels by Management Unit, (GHL's) and will be used as an aid in making in-season 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 fully 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.

Appendix A.1. (page 16 of 29)

Table 1. Kodiak Management Area herring sac-roe herring guideline harvest levels by management unit, 1992.

STAT. AREA	MGMT. UNITS	1992 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS	
			@10% EXPLOITATION	@20% EXPLOITATION
<u>AFOGNAK DIST.</u>				
A010	Raspberry Sts.	165 TONS	1,650 Tons	825 Tons
A020	Malina Bay	45 TONS	450 Tons	225 Tons
A031	Paramanof Bay	50 TONS	500 Tons	250 Tons
A032	Foul Bay	20 TONS	200 Tons	100 Tons
A040	Devils Inlet	10 TONS	100 Tons	50 Tons
A040	Blue Fox	10 TONS	100 Tons	50 Tons
A050	Offshore W. Afog. ^{1/}	-	1/	1/
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	20 TONS	200 Tons	100 Tons
A091	Kitoi Bay	15 TONS	150 Tons	75 Tons
A092	MacDonalds Lagoon	10 TONS	100 Tons	50 Tons
A100	Danger Bay	15 TONS	150 Tons	75 Tons
A101	Litnik	10 TONS	100 Tons	50 Tons
A102	Duck Bay	10 TONS	100 Tons	50 Tons
District Totals		450 TONS	4,500 Tons	2,250 Tons

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Table 1. (Page 2 of 4)

STAT. AREA	MGMT. UNITS	1992 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS	
			@10% EXPLOITATION	@20% EXPLOITATION
<u>UGANIK DIST.</u>				
UG10	Kupreanof	10 TONS	100 Tons	50 Tons
UG20	Viekoda	40 TONS	400 Tons	200 Tons
UG21	Terror	60 TONS	600 Tons	300 Tons
UG21	Uganik Is. Lagoon ^{2/}	CLOSED	2/	2/
UG30	Village Island	45 TONS	450 Tons	225 Tons
UG31	W. Uganik Pass	25 TONS	250 Tons	125 Tons
UG32	NE Arm Uganik	55 TONS	550 Tons	275 Tons
UG33	E. Arm Uganik	40 TONS	400 Tons	200 Tons
UG34	S. Arm Uganik	50 TONS	500 Tons	250 Tons
UG40	Offshore Uganik ^{1/}	-	1/	1/
District Totals		325 TONS	3,250 Tons	1,625 Tons
<u>UYAK DISTRICT</u>				
UY10	Offshore Uyak ^{1/}	-	1/	1/
UY20	Harvester Island	10 TONS	100 Tons	50 Tons
UY30	Inner Uyak	180 TONS	1,800 Tons	900 Tons
UY32	Browns Lagoon	20 TONS	200 Tons	100 Tons
UY31	Larsen Bay	10 TONS	100 Tons	50 Tons
UY40	Zachar Bay	100 TONS	1,000 Tons	500 Tons
UY50	Spiridon Bay	120 TONS	1,200 Tons	600 Tons
District Totals		440 TONS	4,400 Tons	2,200 Tons
<u>ALITAK DIST.</u>				
AL10	Outer Alitak	(Exploration)	3/	3/
AL20	Inner Alitak	(Exploration)	3/	3/
AL21	Deadman Bay	195 TONS	1,950 Tons	975 Tons
AL30	Sulua/Portage Bay	95 TONS	950 Tons	475 Tons
AL40	Lower Olga/Moser ^{4/}	15 TONS	150 Tons	75 Tons
AL40	No. Upper Olga B. ^{4/}	10 TONS	100 Tons	50 Tons
AL50	So. Upper Olga B. ^{4/}	145 TONS	1,450 Tons	725 Tons
AL60	Geese/Twoheaded	(Exploration)	3/	3/
District Totals:		460 TONS	4,600 Tons	2,300 Tons

Continued

Table 1. (Page 3 of 4)

STAT. AREA	MGMT. UNITS	1992 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS @10% EXPLOITATION	REQUIRED SPAWNING BIOMASS @20% EXPLOITATION
<u>STURGEON/HALIBUT DIST.</u>				
SH10	Sturgeon/Halibut	(Exploration)	3/	3/
<u>GENERAL DISTRICT</u>				
GO10	Kaiugnak	10 TONS	100 Tons	50 Tons
GO20	W. Sitkalidak St.	100 TONS	1,000 Tons	500 Tons
GO20	S.W. Sitkalidak St.	(Exploration)	3/	3/
GO21	Barling	40 TONS	400 Tons	200 Tons
GO22	E. Sitkalidak St.	120 TONS	1,200 Tons	600 Tons
GO23	Tanginak Anchorage	15 TONS	150 Tons	75 Tons
GO30	Outer Sitkalidak	(Exploration)	3/	3/
GO40	Outer Kiliuda	(Exploration)	3/	3/
GO41	Inner Kiliuda	20 TONS	200 Tons	100 Tons
GO42	Shearwater	50 TONS	500 Tons	250 Tons
GO50	Pasagshak	25 TONS	250 Tons	125 Tons
GO50	Outer Ugak	(Exploration)	3/	3/
GO51	Inner Ugak	75 TONS	750 Tons	375 Tons
GO60	Womens Bay	110 TONS	1,100 Tons	550 Tons
GO70	Monashka/Mill B.	(Exploration)	3/	3/
GO80	Anton Larsen	10 TONS	100 Tons	50 Tons
GO81	Sheratin	10 TONS	100 Tons	50 Tons
GO90	Kizhuyak	110 TONS	1,100 Tons	550 Tons
G100	Kalsin Bay	15 TONS	150 Tons	75 Tons
G101	Middle Bay	20 TONS	200 Tons	100 Tons
G102	Inshore Chiniak	10 TONS	100 Tons	50 Tons
G103	Spruce Island	10 TONS	100 Tons	50 Tons
<u>District Total</u>		750 TONS	7,500 Tons	3,750 Tons
<u>MAINLAND DIST.</u>				
M010	North Mainland	(Exploration)	3/	3/
M020	Inner Kukak	65 TONS	650 Tons	325 Tons
M030	Outer Kukak ^{1/}	-	1/	1/
M040	Inner Missak	(Exploration)	3/	3/

Table 1. (Page 4 of 4)

STAT. AREA	MGMT. UNITS	1992 GUIDELINE HARVEST LEVEL	REQUIRED SPAWNING BIOMASS	
			@10% EXPLOITATION	@20% EXPLOITATION
<u>MAINLAND DISTRICT</u> (Continued)				
MO40	Outer Missak ^{1/}	-	1/	1/
MO50	Inner Katmai	65 TONS	650 Tons	325 Tons
MO60	Outer Katmai ^{1/}	-	1/	1/
MO70	Alinchak	40 TONS	400 Tons	200 Tons
MO80	Puale Bay	(Exploration)	3/	3/
MO90	Portage Bay	(Exploration)	3/	3/
M100	Outer Portage ^{1/}	-	1/	1/
M110	Wide Bay	125 TONS	1,250 Tons	625 Tons
M120	Lower Shelikof	(Exploration)	3/	3/
District Total		295 TONS	2,950 Tons	1,475 Tons
GRAND TOTAL		2,720 TONS	27,200 Tons	13,600 Tons

^{1/}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.)

^{2/}The Uganik Lagoon Unit refers to all lagoons on Uganik Island. Spawning biomasses associated with these lagoons appear to have been reduced to less than 50 tons, thus all waters of the lagoons located on Uganik Island will remain closed to commercial herring fishing.

^{3/}Adequate biomass to justify an "exploratory" harvest; the actual harvest should not exceed 20% of the available biomass.

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

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

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Table 2. Kodiak Management Area herring sac-roe fishery industry summary, 1979-1991.

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				
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				

Table 3. Status of Kodiak herring sac-roe limited entry permits, 1987-1991.

Gear Type	Year				
	1987	1988	1989	1990	1991
G.N. TRANSFERABLE	59	63	64	72	74
G.N. NON-TRANSFERABLE	<u>48</u>	<u>41</u>	<u>41</u>	<u>31</u>	<u>28</u>
G.N. TOTAL	107	104	105	103	102
G.N. FISHED	62	76	83	63	64
SEINE TRANSFERABLE	40	45	45	46	48
SEINE NON-TRANSFERABLE	<u>26</u>	<u>24</u>	<u>24</u>	<u>35</u>	<u>22</u>
SEINE TOTAL	66	69	69	71	70
SEINE FISHED	29	33	37	27	32
TOTALS					
TRANSFERABLE	99	108	109	118	122
NON-TRANSFERABLE	<u>74</u>	<u>65</u>	<u>65</u>	<u>56</u>	<u>50</u>
TOTAL	173	173	174	174	172
FISHED	91	109	120	90	96

Note: Data from February 1992.

Table 4. Residency status of the limited entry permit holders for the Kodiak herring sac-roe fishery, 1985-1991.

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

Table 5. Alaska Department of Fish and Game, Division of Commercial Fisheries 1992 Management Staff.

Office Staff:

Regional Supervisor: Larry Nicholson
Regional Finfish Cord.: Pete Probasco

Area Management Biologist: Dave Prokopowich
Asst. Management Biologist: Kevin Brennan
Fishery Biologist: Dennis Gretsch
Fishery Biologist: Joan Brodie
Clerk Typist: Sharon Theis

M/V K-Hi-C:

Boat Officer: Tom Emerson
Fishery Biologist: Dennis Gretsch

Field Crews:

Fishery Technician: Kim Rudge
Fishery Technician: Mo Lambdin
Fishery Technician: Jon Becker
Fishery Technician: Ed Hajdys
Fishery Biologist: Dave Sarafin

Table 6. Historical harvests of Kodiak sac-oe and food/bait herring, 1912-1991.

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				
1952	1389.0	0.0	1389.0				

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Table 7. Historical harvest by gear type for the Kodiak herring sac-roë fishery, 1964-1991.

Year	Total Harvest	Seine	Gillnet	Number of Companies	Number of Vessels		Total
	Tons	Tons			Seine	Gillnet	
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
Total	39,889	32,660	7,231				
Average	1,425	1,166	517				

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Table 8. 1991 Alaska statewide herring harvests and preliminary 1992 harvest projections.

Fishery	1991 Actual		1992 Projections			Stock Status/Trend
	Opening or First Harvest	Harvest (s. tons)	Harvest (s. tons)	Expl. Rate	Mean Wt.(g) Spawning Biomass (s. ton)	
Southeastern						
Kah Shakes	4/08	660	1,200	11.5%	10,450	Moderate/Increasing
Sitka	4/10	1,908	3,356	14.3%	23,450	Moderate/Increasing
Seymour Canal	Closed		0		2,100	Depressed/Increasing
Lynn Canal	Closed		0		Unknown	Depressed/Stable
Hoonah Snd. Pound	4/05	13	11 ^a	6%	2,700	High/Stable
Food and Bait	1/14	3,273	2,732	15%	12,500	Moderate/Stable
Prince William Sound						
Seine	4/09	11,923	14,100			
Gillnet	4/18	792	825			
Pound Kelp	4/07	160	276 ^a			
Wild Kelp	5/11	108	243 ^a			
Food/Bait	10/01	4,259	3,956 ^b			
Total			19,400 ^c	20%	121,342	High/Stable
Lower Cook Inlet						
Eastern & Outer Districts						
	5/10		0			
Southern Dist.No Fishery.....		Exploratory Only		Unknown	Unknown
Kamishak Dist.	4/26	1,992	1,479	10% [#]	214	16,431
Upper Cook Inlet						
Sac-Roe	5/10	27	30		Unknown	Depressed/Declining
Food and Bait	5/23	16	100		Unknown	Depressed/Increasing
Kodiak						
Sac-Roe	4/15	2,432	2,700		Unknown	Moderate/Stable
Food and Bait						
Eastern Shelikof	8/01	100	164	1%	16,431	Moderate/Increasing
Other Kodiak	8/01	115	270		Unknown	Moderate/Stable
Chignik Sac-Roe						
.....No Fishery.....			50		Unknown	Unknown
Alaska Peninsula						
Port Moller	5/17	1,313	500	6%	8,400	High/Stable
South Peninsula	5/28	157	300		Unknown	Moderate/Stable
Dutch Harbor						
Food and Bait	7/17	1,325	738			
Bristol Bay (Toiglak)						
Seine	5/10	11,788	7,354			
Gill Net	5/10	3,182	2,451			
Spawn on Kelp	5/13	174 ^a	175 ^a			
Total		14,627 ^f	10,954 ^f	20%	60,214	Depressed/Declining
Kuskokwim Area						
Security Cove	5/13	570	608	20%	3,042	Moderate/Declining
Goodnews Bay	5/22	267	596	20%	2,478	Moderate/Declining
Cape Avinof	5/26	267	207	15%	1,382	Moderate/Declining
Nunivak Island	5/20	60	337	15%	2,249	Depressed/Stable
Nelson IslandNo Harvest.....		0		1,555	Depressed/Stable
Cape Romanzof						
	5/21	526	400	15%	2,672	Depressed/Declining
Norton Sound						
Gillnet	5/29	5,400	4,680			
Beach Seine	5/23	522	520			
Total		5,922	5,200	20%	26,069	High/Stable
Port Clarence						
.....No Harvest.....			165		Unknown	
Sac Roe Harvest Total ^h		43,732	41,859			
Food and Bait Harvest Total:		9,243	7,889	Total Known		
Total Herring Harvest:		57,491	49,748	Biomass		282,334

FOOTNOTES ON NEXT PAGE

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FOOTNOTES

^aHarvest of spawn-on-kelp product in short tons.

^bPreliminary 1990 food/bait guideline. The 1991 guideline will be set after 1991 sac-roe season.

^cIncludes mortality allowances of 2,730 and 1,550 tons for pound and wild spawn on kelp fisheries.

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

^eTogiak total harvest includes an allowance for 1,500 tons mortality for the spawn-on-kelp fishery.

^fProjected biomass below minimum for commercial harvest; fishery will be opened if threshold biomass observed.

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

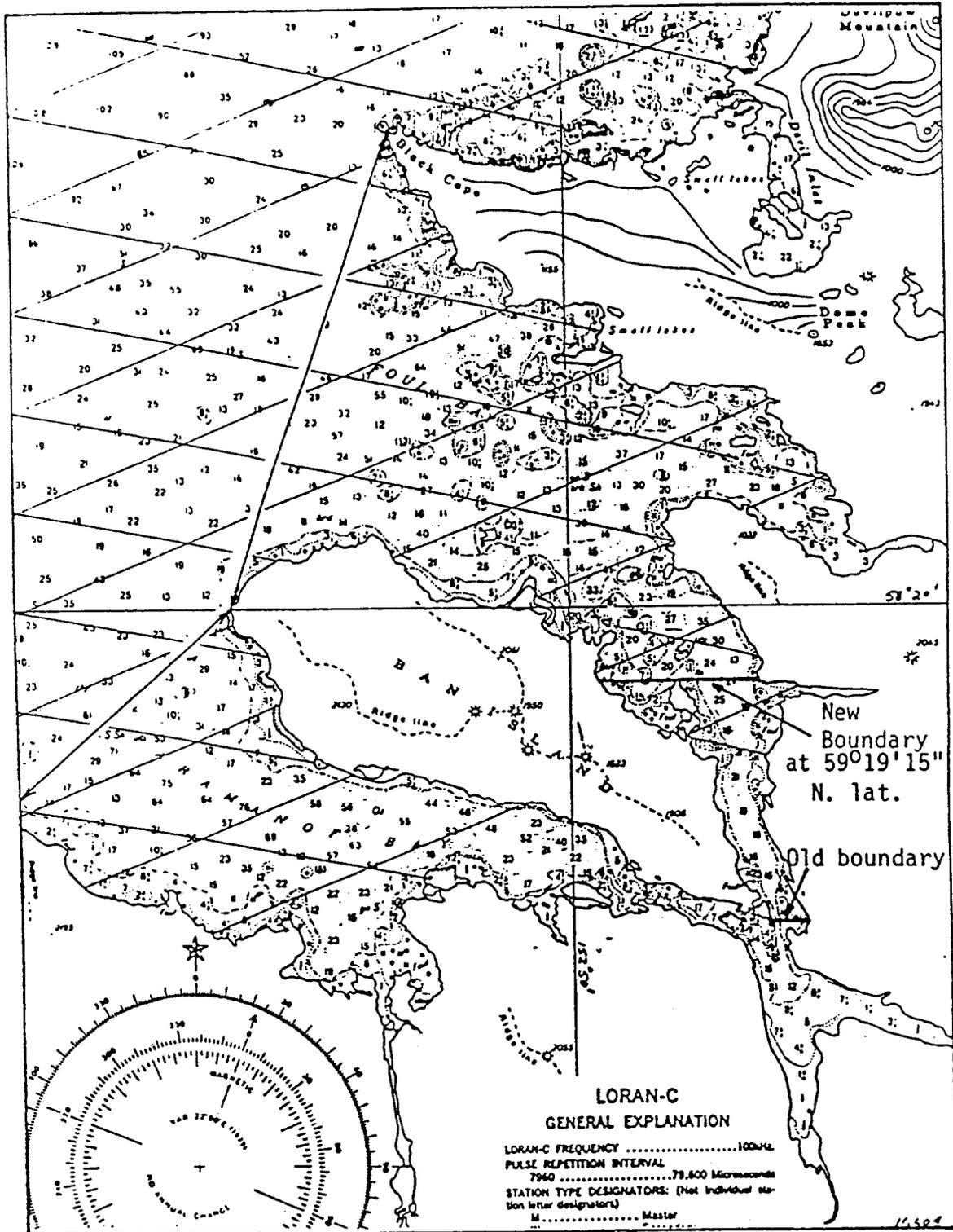


Figure 1. Map showing the new boundary separating the Paramanof Bay and Foul Bay management units.

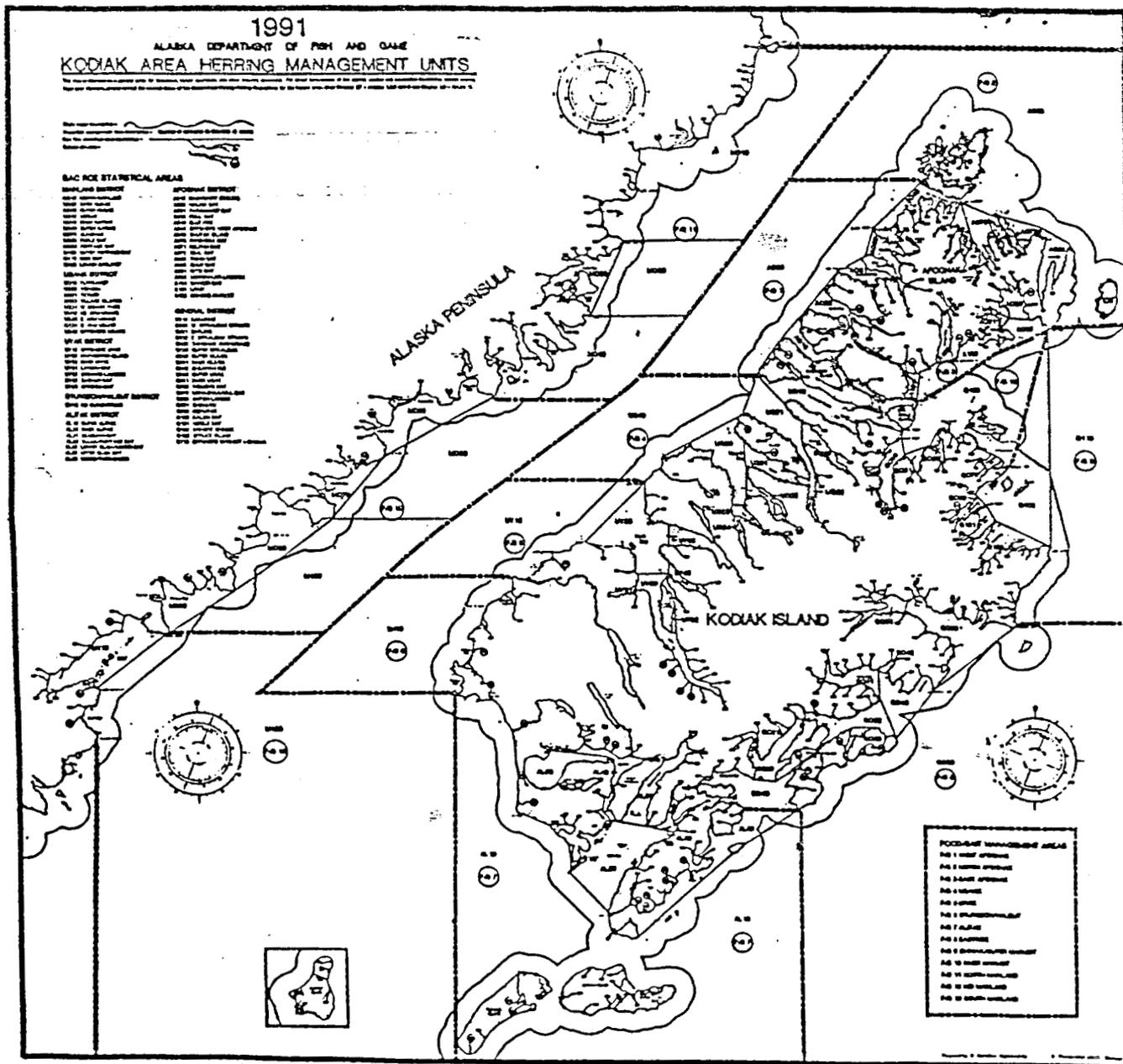


Figure 2. Reduced scale map of the 1991 Kodiak area herring management units, a full scale map can be obtained from the Kodiak ADF&G office.

Appendix B.1. Summary of emergency order abstracts issued for the herring sac roe fishery, Kodiak Management Area, 1992.

Emergency Order No. 4-FH-K-01-92

Effective Date: April 15, 1992

EXPLANATION:

This emergency order establishes fishing periods for the 1992 Kodiak Area commercial herring sac-roe 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 except for the following areas which will remained closed to commercial herring fishing until further notice:

- (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.

JUSTIFICATION:

Regulations adopted by the Board of Fisheries established that fishing periods for the commercial sac roe fishery in the Kodiak Area would be announced by Emergency Order. During the sac roe season, April 15 through June 30, the small herring stocks of the Kodiak Area are concentrated and so vulnerable to over exploitation. The 24 hour opening separated by 24 hour closures will reduce the time that individual stocks are subject to exploitation and will assist the Department by allowing time to collect harvest information and assess the situations in the various management units.

This Emergency Order is necessary to establish the initial and in-season fishing periods for the commercial herring sac-roe fishery and to clarify which waters are closed to commercial herring fishing for the entire season.

Emergency Order No. 4-FH-K-02-92

Effective Date: April 16, 1992

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 12:00 Noon Thursday April 16, 1992 until further notice.

-Continued-

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest for the Malina Bay Section of the Afognak District (AO20) is 45 tons. It further states that the guideline harvest for the East Sitkalidak Subsection of the General District (GO22) is 120 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.

Emergency Order No. 4-FH-K-03-92

Effective Date: April 17, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Viekoda Bay Subsection (UG20) of the Uganik District effective at 7:15 P.M. Friday April 17, 1992 until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest for the Viekoda Bay Subsection of the Uganik District (UG20) is 40 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.

Emergency Order No. 4-FH-K-04-92

Effective Date: April 18, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Paramanof Bay Subsection (AO31) and the Foul Bay Subsection (AO32) of the Afognak District, and the Inner Kiliuda Bay Subsection (GO41) of the General District effective at 12:00 Noon Saturday April 18, 1992 until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Paramanof Bay Subsection of the Afognak District (AO31) is 50 tons, and for the Foul Bay Subsection of the Afognak District (AO32) is 20 tons. Further, it states that the guideline harvest level for the Inner Kiliuda Bay Subsection of the General District (GO41) is 20 tons. Preliminary catch information indicates the catches in these areas are at or over the guideline harvest levels. Consequently closure of each of these entire management unit are warranted to prevent over exploitation.

-Continued-

Emergency Order No. 4-FH-K-05-92

Effective Date: April 20, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Bluefox Bay Section (AO40) of the Afognak District, and that portion of the West Sitkalidak Section (GO20) of the General District in Sitkalidak Strait north of the latitude of Cape Liakik (57°07' N. lat.), effective at 12:00 Noon Monday April 20, 1992 until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Bluefox Bay Subsection of the Afognak District (AO40) is 20 tons.

Further, it states that the guideline harvest level for the West Sitkalidak Subsection of the General District (GO20) is 100 tons. Preliminary catch information indicates the catches in these areas are at or over the guideline harvest levels. Consequently closure of each of these management units is warranted to prevent over exploitation. However, for the West Sitkalidak Subsection only a portion of the management unit will be closed. In 1991 some harvest occurred in bays in the south end of this subsection. It was felt that those harvests represented new, exploratory fisheries. To preserve these fishing opportunities only that portion of this management unit north of the latitude of Cape Liakik (57°07' N. lat.), where the harvest has occurred, will be closed to commercial herring fishing.

Emergency Order No. 4-FH-K-06-92

Effective Date: April 21, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Tanginak Anchorage Subsection (GO23) of the General District effective at 4:00 P.M. Tuesday April 21, 1992 until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Tanginak Anchorage Subsection of the General District (GO23) is 15 tons. Preliminary catch information indicates the catch in this area is at or over the guideline harvest levels. Consequently closure of the entire management unit is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-07-92

Effective Date: April 21, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the following management units on Tuesday April 21, 1992, until further notice:

The Village Islands Subsection (UG30) of the Uganik District effective at 6:00 P.M.;

The Northeast Arm Uganik Subsection (UG32) of the Uganik District effective at 6:45 P.M.;
The South Arm Uganik Subsection (UG34) of the Uganik District effective at 7:10 P.M.;

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Village Islands Subsection of the Uganik District (UG30) is 45 tons, for the Northeast Arm Uganik Subsection of the Uganik District (UG32) is 55 tons, and for the South Arm Uganik Subsection (UG34) of the Uganik District is 50 tons. Preliminary catch information indicates the catches in these areas are at or over the guideline harvest levels. Consequently closure of all of these entire management units is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-08-92

Effective Date: April 22, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Terror Bay Subsection (UG21) of the Uganik District and the Danger Bay Subsection (A100) of the Afognak District effective at 12:00 Noon Wednesday April 22, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Terror Bay Subsection (UG21) of the Uganik District is 60 tons. Further it states that the guideline harvest level for the Danger Bay Subsection (A100) of the Afognak District is 15 tons. Preliminary catch information indicates the catches in these areas are at or over the guideline harvest levels. Consequently closure of all of these entire management units is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-09-92

Effective Date: April 24, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing that portion of the West Sitkalidak Subsection (G020) of the General District north and east of a line from Cape Liakik to Natalia Point effective at 12:00 Noon Friday April 24, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the southern portion of the West Sitkalidak Subsection (G020) of the General District is open for exploratory fishing. Last season harvests occurred in this area, and preliminary catch information indicates there has been a harvest in that portion of this area north and east of a line from Cape Liakik to Natalia Point. A closure of this portion of this management unit is warranted to prevent over exploitation of these developing stocks. The southeast portion, including Three Saints Bay, will remain open to preserve further exploratory fishing opportunities.

Emergency Order No. 4-FH-K-10-92

Effective Date: April 26, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing that portion of the Kaiugnak Section (G010) of the General District east of a line from Cape Kasiak to Cape Kiavak effective at 12:00 Noon Sunday April 26, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Kaiugnak Section of the General District (G010) is 10 tons. Preliminary catch information indicates that harvests have occurred in non traditional areas of this management unit. There has been a harvest in the eastern portion while traditionally the catch has predominantly come from the bays of the western portion of this section. It is felt these harvests represent new, exploratory fisheries, and to prevent over exploitation of these developing stocks a closure of that portion of the Kaiugnak Section (G010) east of a line from Cape Kasiak to Cape Kiavak is warranted. The remainder of the Kaiugnak Section will remain open to retain traditional harvest opportunities.

Emergency Order No. 4-FH-K-11-92

Effective Date: April 27, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the West Uganik Pass Subsection (UG31) of the Uganik Bay District effective at 7:15 P.M. on Monday April 27, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the West Uganik Pass Subsection of the Uganik Bay District (UG31) is 25 tons. Preliminary catch information indicates that harvests in this area is at or over the guideline harvest level. Consequently, closure of this entire management unit is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-12-92

Effective Date: April 28, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Deadman Bay Subsection (AL21) of the Alitak Bay District effective at 12:00 Noon on Tuesday April 28, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Deadman Bay Subsection of the Alitak Bay

District (AL21) is 195 tons. Preliminary catch information indicates that harvests in this area is at or over the guideline harvest level. Consequently, closure of this entire management unit is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-13-92

Effective Date: April 30, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Sulua-Portage Section (AL30) of the Alitak Bay District, the Barling Bay Subsection (G021) and the Middle Bay Subsection (G101) both of the General District, effective at 12:00 Noon on Thursday April 30, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Sulua-Portage Section of the Alitak Bay District (AL30) is 95 tons. Further it states that in the General District the guideline harvest level for the Barling Bay Subsection (G021) is 40 tons and for the Middle Bay Subsection (G101) is 20 tons. Preliminary catch information indicates that harvests in these areas are at or over the guideline harvest levels. Consequently, closure of these entire management units is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-14-92

Effective Date: May 2, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the entire West Sitkalidak Subsection (G020), the Inner Ugak Subsection (G051), and that portion of the Outer Ugak Subsection (G050) in Pasagshak Bay north of 57°26'06" N. lat., all in the General District, effective at 12:00 Noon on Saturday May 2, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level (GHL) for the West Sitkalidak Subsection of the General District (G020) is 100 tons, but it further identifies that the southwest portion of this subsection is open to exploratory fishing. Accordingly, though the 100 ton GHL was achieved on April 20, portions of the subsection have been left open to commercial fishing to preserve fishing opportunities. Harvests have since occurred in several of the small bays of this management unit. To prevent over exploitation of these developing stocks closure of the entire subsection is warranted.

In addition, the 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that in the General District the guideline harvest level for the Inner Ugak Subsection (G051) is 75 tons and for that portion of the Outer Ugak Subsection (G050) in Pasagshak Bay is 25 tons. Preliminary catch information indicates that harvests in these areas are at or over the guideline harvest levels. Consequently, closure of these management units is warranted to prevent over exploitation. The remainder of the Outer Ugak Subsection will remain open to preserve further exploratory fishing opportunities.

Emergency Order No. 4-FH-K-15-92

Effective Date: May 4, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Shearwater Subsection (G042) in the General District, effective at 12:00 Noon on Monday May 4, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level (GHL) for the Shearwater Subsection of the General District (G042) is 50 tons. Preliminary catch information indicates that the harvest in this area is at or over the guideline harvest level. Consequently, closure of this entire management unit is warranted to prevent over exploitation. The remainder of the Outer Ugak Subsection will remain open to preserve further exploratory fishing opportunities.

Emergency Order No. 4-FH-K-16-92

Effective Date: May 6, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing that portion of the Inner Alitak Bay Section (AL20) in the Alitak Bay District east of 154° W. long., effective at 12:00 Noon on Wednesday May 6, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the Inner Alitak Bay Subsection (AL20) of the Alitak Bay District is open for exploratory fishing. Last season harvests occurred in this area, and preliminary catch information indicates there has been a harvest in that portion of this area east of 154° W. long.. A closure of this portion of this management unit is warranted to prevent over exploitation of these developing stocks. The western portion, including Kempff Bay, will remain open to preserve further exploratory fishing opportunities.

Emergency Order No. 4-FH-K-17-92

Effective Date: May 8, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the entire Inner Alitak Bay Section (AL20) in the Alitak Bay District, and the East Arm Uganik Subsection (UG33) of the Uganik Bay District effective at 12:00 Noon on Friday May 8, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the Inner Alitak Bay Subsection (AL20) of the Alitak Bay District is open for exploratory fishing.

-Continued-

Preliminary catch information indicates there have been harvests in several portions of this management unit. A closure of this entire management unit is warranted to prevent over exploitation of these developing stocks. The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy further states that the guideline harvest level for the East Arm Uganik Subsection (UG33) of the Uganik Bay District is 40 tons. Preliminary catch information indicates that the harvest in this area is at or over the guideline harvest level. Consequently, closure of this entire management unit is warranted to prevent over exploitation

Emergency Order No. 4-FH-K-18-92

Effective Date: May 14, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the entire Outer Ugak Bay Subsection (G050) in the General District, effective at 10:00 A.M. on Thursday May 14, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the Outer Ugak Bay Subsection (G050) of the General District is open for exploratory fishing. Preliminary catch information indicates there have been harvests in several portions of this management unit. A closure of this entire management unit is warranted to prevent over exploitation of these developing stocks.

Emergency Order No. 4-FH-K-19-92

Effective Date: May 16, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Perenosa Bay Subsection (A070) and the Izhut Bay Subsection (A090) in the Afognak District, the Browns Lagoon Subsection (UY32) in the Uyak District, and that portion of the Lower Olga-Moser Bay Section (AL40) east of the longitude of Stockholm Point, effective at 12:00 Noon on Saturday May 16, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that for each stock emergency order closures may occur when guideline harvest levels are achieved or when fishery performance or stock performance (ie. recruitment) indicate that deviation from the guideline harvest level is warranted. Preliminary information from ADF&G field personnel, commercial fishermen, and spotter pilots indicates that the latter case is occurring in the Perenosa Bay Subsection and the Izhut Bay Subsection of the Afognak District. Harvest rates and population estimates were low last season and continue to be depressed, even though the west side of Afognak has experienced significant recruitment of age 4 herring. Consequently, closure of these two management units is warranted to prevent over exploitation of depressed stocks.

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) further states that the guideline harvest level for the Browns Lagoon Subsection (UY32) of the Uyak District is 20 tons, and that portion of the Lower Olga-Moser Bay Section (AL40) east of the latitude of Stockholm Point is 15 tons. Preliminary

catch information indicates that harvests in these areas are at or over the guideline harvest levels. Consequently, closure of these management units is warranted to prevent over exploitation..

Emergency Order No. 4-FH-K-20-92

Effective Date: May 20, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Kizhuyak Bay Section (G090) in the General District, and the Spiridon Bay Section (UY50) in the Uyak District effective at 12:00 Noon on Wednesday May 20, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Kizhuyak Bay Section (G090) of the General District is 110 tons and for the Spiridon Bay Section (UY50) of the Uyak District is 120 tons. Preliminary catch information indicates that harvests in these areas are at or over the guideline harvest levels. Consequently, closure of these management units is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-21-92

Effective Date: May 30, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Womens Bay Section (G060) and the Kalsin Bay Subsection (G100) in the General District effective at 12:00 Noon on Saturday May 30, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Womens Bay Section (G060) of the General District is 110 tons and for the Kalsin Bay Subsection (G100) of the General District is 15 tons. Preliminary catch information indicates that harvests in these areas are at or over the guideline harvest levels. Consequently, closure of these management units is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-22-92

Effective Date: June 2, 1992

EXPLANATION:

This emergency order closes to commercial herring fishing the Zachar Bay Section (UY40) in the Uyak District effective at 12:00 Noon on Tuesday June 2, 1992, until further notice.

JUSTIFICATION:

The 1992 Kodiak Area Herring Sac-Roe Harvest Strategy (R.I.R. #4K92-14) states that the guideline harvest level for the Zachar Bay Section (UY40) of the Uyak

-Continued-

District is 100 tons. Preliminary catch information indicates that harvest in this area is at or over the guideline harvest level. Consequently, closure of this management unit is warranted to prevent over exploitation.

Emergency Order No. 4-FH-K-23-92

Effective Date: June 13, 1992

EXPLANATION:

This emergency order adjusts closed waters to allow herring fishing in those inner bay areas which normally close June 12 to protect salmon migrating, effective at 12:00 Noon on Saturday June 13, 1992, until further notice.

JUSTIFICATION:

By regulation commercial herring fishing remains open in the Kodiak Area through June 30. Specific management units are closed as the guideline harvest level for that unit is achieved or exceeded, or if a conservation problem exists. Several management units in the Kodiak Area remain open to commercial herring fishing. However, also by regulation, the inner bay areas close to commercial herring fishing June 12 to protect salmon migrating to their natal streams. Commercial herring fishing effort is low at this time, and harvestable quantities of herring may be available in the inner portion of open bays. Therefore, to allow sufficient opportunity to harvest surplus biomass, waters of the inner bays and at stream mouths which normally close June 12 will remain open through June 30, if the guideline harvest level for the management unit has not been taken.

Emergency Order No. 4-FH-K-24-92

Effective Date: August 1, 1992

EXPLANATION:

This emergency order establishes fishing periods for the 1992 Kodiak Area commercial herring food/bait fishery, and clarifies waters closed to commercial herring fishing.

The fishery began, by regulation, at 12:01 A.M. on August 1, 1992. Fishing periods will be continuous, 24 hour per day seven days per week, beginning at 12:01 A.M. August 1, 1992 through 12:00 Midnight February 28, 1993. Specific area closures will occur by emergency order as Guideline Harvest Levels are achieved (as determined by regulation 5 AAC 27.535.(a) and (b)).

All closed waters are as described in the 1992 Commercial Herring Fishing Regulation book.

JUSTIFICATION:

Regulations adopted by the Board of Fisheries established that fishing periods for the commercial food/bait herring fishery in the Kodiak Area would be announced by Emergency Order. During the food/bait season, August 1 through February 28, the small herring stocks of the Kodiak Area are present inside and outside the bays of the area. Also present along the west side of Kodiak and Afognak Island may be the herring stocks of Kamishak Bay, of the Lower Cook Inlet Area. The Board of Fisheries has adopted a regulatory harvest strategy, 5 AAC 27.535., to insure that an overharvest of herring stocks does not occur. This harvest strategy provides for

a harvest of Kodiak spawning stocks at a level not to exceed 10% of the previous spring's sac roe harvest, and a harvest of Kamishak herring stocks not to exceed 1% of the total biomass determined prior to the Kamishak sac roe season. Anticipated low effort levels is the main reason for the continuous fishing period and this may be reduced at times during the season if fishing effort becomes greater than expected. As identified in the 1992/93 Harvest Strategy for the Kodiak Management Area Commercial Food/Bait Herring Fishery, to aid in determination of harvest levels and stock identification the Department requires all herring fishermen and processors to register, to report each harvest as it occurs, and to provide the department with samples of each harvest.

Emergency Order No. 4-FH-K-25-92

Effective Date: October 20 1992

EXPLANATION:

This emergency order closes the following management units to commercial herring fishing effective at 7:00 P.M. Tuesday, October 20, 1992, through 12:00 Midnight, February 28, 1993:

- 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 1992 Commercial Herring Fishing Regulations Book.

JUSTIFICATION:

Over the past week there has been a significant harvest of bait herring from the westside of Kodiak Island. Based on AWL data from samples 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 of Kamishak spawning stock. 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 Kamishak stocks over wintering in the Kodiak Area is not to exceed 240 tons. The current harvest estimates must be adjusted to convert the weight of age 4 and younger herring to age 5 biomass, so the estimated harvest weights will rise. The adjusted total harvest of Kamishak spawning stock from the over wintering areas of the westside of Kodiak Island will be close to, or may exceed the 240 ton limit. Therefore, to prevent additional exploitation of Kamishak 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).

END

1992/93
HARVEST STRATEGY FOR THE KODIAK MANAGEMENT AREA
COMMERCIAL FOOD/BAIT HERRING FISHERY

By

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INTRODUCTION

- This harvest strategy attempts to answer most pertinent pre-season and in-season questions regarding the Kodiak food/bait herring fishery.
- This fishery targets both Kodiak and Kamishak spawning stocks which are present in the Kodiak Area during the food/bait season (August 1, 1992 to February 28, 1993).
- Since the herring sac roe fisheries in the Kodiak and Cook Inlet areas are closed-to-entry fisheries, they are treated as primary fisheries and are managed to provide for the majority of the harvest on the affected stocks to occur in these fisheries. The food/bait fisheries on these same stocks are subsequently treated as secondary fisheries and associated harvest levels are directly related to the results of the sac roe fisheries on these stocks; food/bait harvest levels generally will not exceed 10% of the sac roe harvest on any of these stocks. Consequently, consideration is given to the biological concerns associated with "double dipping" fisheries on the same stock and is also given to the 200+ limited entry permit holders for both Kodiak and Cook Inlet sac roe fisheries whose economic interests in permits could be adversely affected without a specific allocative directive for each fishery.
- Since the commercial sac roe fisheries in Cook Inlet target on herring with mature roe beginning with age 4 and primarily on age 5 and older herring, individual food/bait landings of age 4 or less will be adjusted to reflect weights of age 5 herring for harvests which are considered to be from Kamishak spawning stocks.
- A Board of Fisheries regulatory change in March 1988 resulted in the directive to manage the Kodiak Area food/bait fishery in a manner which considers the aforementioned concerns. Specifically management is guided by the following regulation:

5 AAC 27.535

- a) The department shall manage the herring food/bait fishery, (directed on Kodiak spawning stocks) so that the food/bait harvest does not exceed 10% of the actual herring harvest in the previous season.
- b) The department shall manage the herring food/bait fishery that is directed on Kamishak spawning stocks, which over-winter in the Eastern Shelikof Strait, so that the food/bait harvest does not exceed 2% of the total available spawning biomass of Kamishak stocks as determined by the department during the most recent Kamishak herring sac roe season.

SEASON:

- August 1, 1992 through February 28, 1993.

FISHING PERIODS:

- Open to continuous fishing from 12:01 A.M. 8/1/92 to 12:00 P.M. 2/28/93 unless superseded by emergency order closures.

CLOSED WATERS:

- See CLOSED WATERS section of the 1992 Commercial Herring Fishing Regulations (page 38), 5 AAC 27.530
- Consult 1992 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 :

A. Interim Use Permits for legal gear:

- H01K Purse Seine
- H34K Gillnet
- H07K Trawl

B. Registration Permit - Kodiak ADF&G Office

- 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.
- Interim use permits are available through the Commercial Fisheries Entry Commission office in Juneau.
- Registration permits are available at the Kodiak Fish and Game Office.

LEGAL GEAR RESTRICTIONS:

- 01 - Purse Seines
 - Maximum length: 100 fathoms
 - Maximum depth: 1,025 meshes. For Area K there is no web size restrictions.
 - Lead length unrestricted.
- 34 - Gillnets
 - Maximum length: 150 fathoms; mesh size: 2-1/8" - 2-1/2".

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07 - Trawl

- No restrictions

- Consult the 1992 Commercial Herring Fishing Regulations for a complete listing of all regulations.

HARVEST STRATEGY:

Regulation 5 AAC 27.535(a)(c), as approved by the Alaska Board of Fisheries in March 1988, describes a harvest strategy for the Kodiak Area food/bait fishery which provides for:

- A secondary food/bait harvest, following a primary sac roe harvest, on both Kodiak spawning stocks and on Kamishak spawning stocks which occur in the Kodiak Management Area during the Kodiak food/bait season (8/1 - 2/28).

- An exclusion of a food/bait harvest on Kodiak stocks in that portion of Shelikof Strait associated with the occurrence of Kamishak stocks as depicted in Figure 1, except that a harvest on Kodiak stocks may occur in the aforementioned units if the harvest occurs in in-shore areas (bays) prior to a closure of these areas based upon the G.H.L. for Kamishak stocks being achieved.

- An exploratory harvest scenario on unidentified stocks which occur in areas not covered by the two aforementioned provisions.

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.

- For each management unit there is a Guideline Harvest Level (G.H.L.) which reflects the combined G.H.L.'s for Kodiak stocks included within each food/bait unit (See Table 1).

- Six of these food/bait units have also been identified and consolidated into a geographical grouping representing that area where the food/bait harvest on Kamishak stocks will most likely occur (See Figure 1).

The 1992-1993 food/bait G.H.L. for the Kodiak Area will be affected by the following management considerations:

- For Kodiak spawning stocks, the department will generally limit the food/bait harvest to 10% of the previous spring's sac roe harvest on a stock by stock basis (Table 1). Variations are explained in the footnotes in 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.

- **For identified non-Kodiak spawning stocks**, the department will control the harvest to insure that a particular stock is not overexploited. Currently, Kamishak Bay spawning stock(s) is the only identified non-Kodiak spawning stock(s) which occurs in the Kodiak Management Area during the Kodiak food/bait season (8/1 - 2/28).
 - In the case of Kamishak Bay spawning stock(s) where evidence exists that it is present in Kodiak area waters during the food/bait season, the harvest level will not be allowed to exceed 240 tons. This tonnage is approximately 1% of the 1991 Kamishak Bay pre-sac roe season total available indexed spawning biomass of 24,077 short tons.
 - Management of Kamishak stocks for both the sac roe and food/bait fisheries is outlined in Appendix A.
- During the food/bait fishery, the Department will attempt to identify the location of Kamishak stock(s) in Kodiak Area waters via data collected from the commercial fishery and/or the ADF&G vessel M/V Resolution during its hydroacoustical surveys targeting on Shelikof Strait herring biomass; the M/V K-Hi-C may also assist in this search.
- All herring samples will be expeditiously worked-up to apply age, length, and weight (AWL) comparisons between Kodiak and Kamishak stocks.
- Biomass estimates will be obtained from the fishery in terms of verbal estimation via skipper interviews as to stocks, distribution, average school size and estimated number of schools. Biomass estimates may also be obtained acoustically from the M/V Resolution surveys.
- Herring harvested in this fishery from the following management units will be identified as either Kodiak stocks (per regulation 5 AAC 27 535) or as Kamishak stock(s): F/B 1, F/B 2, F/B 4, F/B 5, F/B 11 and F/B 12 (Figure 1).
- Herring harvested from the aforementioned food/bait management units, where the harvest occurred in in-shore (bays) locations, will be considered to be Kodiak stocks unless A-W-L and/or biomass data indicates otherwise, in which case they will be considered to be Kamishak stocks.
- If the harvest ceiling of 240 tons on Kamishak stocks is achieved, all of the aforementioned management units would be closed to herring fishing for the remainder of the food/bait season.
- **For non identified herring stocks** which may occur in off-shore locations in the remaining food and bait management units, the department will control the harvest to insure that a particular stock is not overexploited. Actual harvest levels may be determined by harvest location, biomass observed and age-weight-length information.

GUIDELINE HARVEST LEVELS:

- For the 1992/93 food/bait season the following harvest levels will be in effect:
 - **For Kodiak spawning stock:** Per regulation 5 AAC 27.535(a) as described under "Harvest Strategy", a maximum of 426 tons properly distributed by stock throughout the management area will be the food/bait harvest on Kodiak spawning stocks.
 - See Table 1 for harvest projections by stock and Figures 2-11 for the geographical locations of the food/bait management units.
 - **For Kamishak spawning stock:** Per regulation 5 AAC 27.535(c) as described under "Harvest Strategy", a maximum of 240 tons harvested from that portion of Shelikof Strait depicted in Figure 1 (see attached) will be the food/bait harvest ceiling on Kamishak spawning stocks which occur in the Kodiak Area during the food/bait season (8/1 - 2/28).
 - Prior to harvesting Kamishak stocks in the aforementioned area, a harvest on Kodiak stocks may occur per regulation 5 AAC 27.535(a).
 - Herring harvested in inshore (bays) locations will be considered to be Kodiak stocks unless A-W-L sampling and/or biomass information indicates otherwise, in which case they will be considered to be Kamishak stocks.
 - **For unidentified stocks:** No guideline harvest levels are established, however the department shall manage food/bait harvests in these areas not to exceed 10% exploitation rate.
 - Harvest levels per geographically distinct biomasses will be established in-season per information obtained from A-W-L sampling and from "skipper" interviews detailing estimates of biomass seasonal distribution and school size.

REPORTS REQUIRED BY FISHERMEN:

- **Per regulation 5AAC 39.130(10) 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. - 486-1830 or 486-1807

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- After Office Hours:
 - 4:30 P.M. to 8:00 A.M.
 - 486-6007 (Dave Prokopowich)
 - 486-6475 (Kevin Brennan)
 - 486-4831 (Pete Probasco)

All fish tickets must be completed and sent in to the Kodiak Fish and Game office within a week of the landing (5AAC 39.130).

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

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Table 1. Kodiak Management Area 1992/93 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		1992 Sac Roe		1992/93 Food/Bait
	No.	Name	G.H.L.	Harvest ^a	G.H.L.
F/B 1 West Afognak Unit	AO10	Raspberry	165	93	9 ^b
	AO20	Malina	45	101	10 ^c
	AO31	Paramanof	50	362	36 ^c
	AO32	Foul Bay	20	145	15 ^c
	AO40	Blue Fox/Devil's Inlet	20	70	7 ^c
	AO50	Offshore Afognak	-	0	d
UNIT TOTALS			300	771	77
F/B 2 North Afognak Unit	AO60	Shuyak	20	0	0 ^b
	AO70	Perenosa	15	13	1
	AO71	Delphin	10	4	0 ^b
	AO72	Seal Bay	10	0	0 ^b
	AO80	Tonki	15	0	0 ^b
UNIT TOTALS			70	17	1
F/B 3 East Afognak Unit	AO90	Izhut	20	8	1
	AO91	Kitoi	15	5	1
	AO92	McDonalds	10	1	0 ^b
	A100	Danger	15	12	1
	A101	Litnik	10	4	0 ^b
	A102	Inshore Marmot	10	0	0 ^b
	UNIT TOTALS			80	30
F/B 4 Uganik Unit	UG10	Kupreanof	10	1	0 ^b
	UG20	Viekoda	40	168	17 ^c
	UG21	Terror	60	102	10 ^c
	UG30	Village Islands	45	351	35 ^c
	UG31	W. Uganik Passage	25	99	10 ^c
	UG32	N.E. Arm Uganik	55	120	12 ^c
	UG33	E. Arm Uganik	40	55	5
	UG34	S. Arm Uganik	50	58	6
	UG40	Offshore Uganik	-	0	d
	UNIT TOTALS			325	954
F/B 5 Uyak Unit	UY10	Offshore Uyak	-	0	d
	UY20	Harvester	10	5	0
	UY30	Inner Uyak	180	81	8
	UY32	Browns Lagoon	20	17	2
	UY31	Larsen Bay	10	3	0
	UY40	Zachar	100	87	9
	UY50	Spiridon	120	117	12
UNIT TOTALS			440	310	31
F/B 6 Sturgeon/ Halibut Unit	SH01	Sturgeon/Halibut	Exploration	0	Exploration
F/B 7 Alitak Unit	AL10	Outer Alitak	Exploration	0	Exploration
	AL20	Inner Alitak	Exploration	82	8
	AL21	Deadman	195	220	22
	AL30	Sulua	95	274	27 ^c
	AL40	Lower Olqa/N.UpperOlqa	25	19	2
	AL50	Upper Olqa/Moser	145	107	11
	AL60	Geese/Twoheaded	Exploration	10	1
UNIT TOTALS			460	712	71

-Continued-

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Table 1. (Page 2 of 3)

Food/Bait Mgmt. Units	Sac Roe Management Units		1992 Sac Roe		1992/93 Food/Bait
	No.	Name	G.H.L.	Harvest	G.H.L.
F/B 8 Eastside Unit	GO10	Kaiugnak	10	32	3
	GO20	W. Sitkalidak	100	355	36 ^c
	GO21	Barling	40	40	4
	GO22	E. Sitkinak	120	130	13
	GO23	Tanginak	15	24	2
	GO30	Outer Sitkalidak	Exploration	0	Exploration
	GO40	Outer Kiliuda	Exploration	25	2
	GO41	Inner Kiliuda	20	86	9 ^c
	GO42	Shearwater	50	163	16 ^c
	GO50	Outer Ugak	Exploration	115	11
	GO50	Pasagshak	25	22	2
GO51	Inner Ugak	75	83	8	
UNIT TOTALS			455	1,075	106
F/B 9 Chiniak Unit	GO60	Womens Bay	110	149	15
	G100	Kalsin Bay	15	17	2
	G101	Middle Bay	20	17	2
	G102	Inshore Chiniak	10	0	0 ^b
UNIT TOTALS			155	183	19
F/B 10 North Kodiak Unit	GO70	Monashka/Mill Bay	Exploration	0	Exploration
	GO80	Anton Larsen	10	4	0 ^b
	GO81	Sheratin	10	0	0 ^b
	GO90	Kizhuyak	110	110	11
	G103	Spruce Island	10	1	0 ^b
UNIT TOTALS			140	115	11
F/B 11 North Mainland Unit	MO10	North Mainland	Exploration	0	Exploration
	MO20	Inner Kukak	65	36	4 ^b
	MO30	Outer Kukak	-	0	Exploration
	MO40	Inner/Outer Missak	Exploration	0	Exploration
	MO40	Outer Missak			
UNIT TOTALS			65	36	4
F/B 12 Mid-Mainland Unit	MO50	Inner Katmai	65	0	0 ^b
	MO60	Outer Katmai	-	0	Exploration
	MO70	Alinchak	40	16	2 ^b
	MO80	Puale Bay	Exploration	0	Exploration
	MO90	Portage Bay	Exploration	0	Exploration
UNIT TOTALS			105	16	2
F/B 13 South Mainland Unit	M100	Outer Portage	-	0	Exploration
	M110	Wide Bay	125	57	6 ^b
	M120	Lower Shelikof	Exploration	0	Exploration
UNIT TOTALS			125	57	6
GRAND TOTALS:			2,720	4,276	426

-Continued-

Table 1. (Page 3 of 3)

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- ^a The Kodiak Area total G.H.L. for food/bait fishery, as indicated in the 1992 Herring Regulations, is managed so that the food/bait harvest does not exceed 10% of the actual herring sac roe harvest in the previous season. This table reflects the available food/bait harvest for each sac roe stock or food/bait unit, whichever applies. (See Harvest Strategy.) G-H-L and harvest figures are rounded to the nearest ton.
- ^b Sac roe management units where a sac roe underharvest has occurred.
- ^c Sac roe management units where the sac roe harvest substantially exceeded pre-season expectations. Probably as a result of increased stock abundance rather than overharvest and where an increased food/bait harvest commensurate with the increased sac roe fishery is justified.
- ^d See plan for management of the Kamishak Bay Herring Spawning Stocks in the Eastern Shelikof Strait Food and Bait Fishery (Page 9).

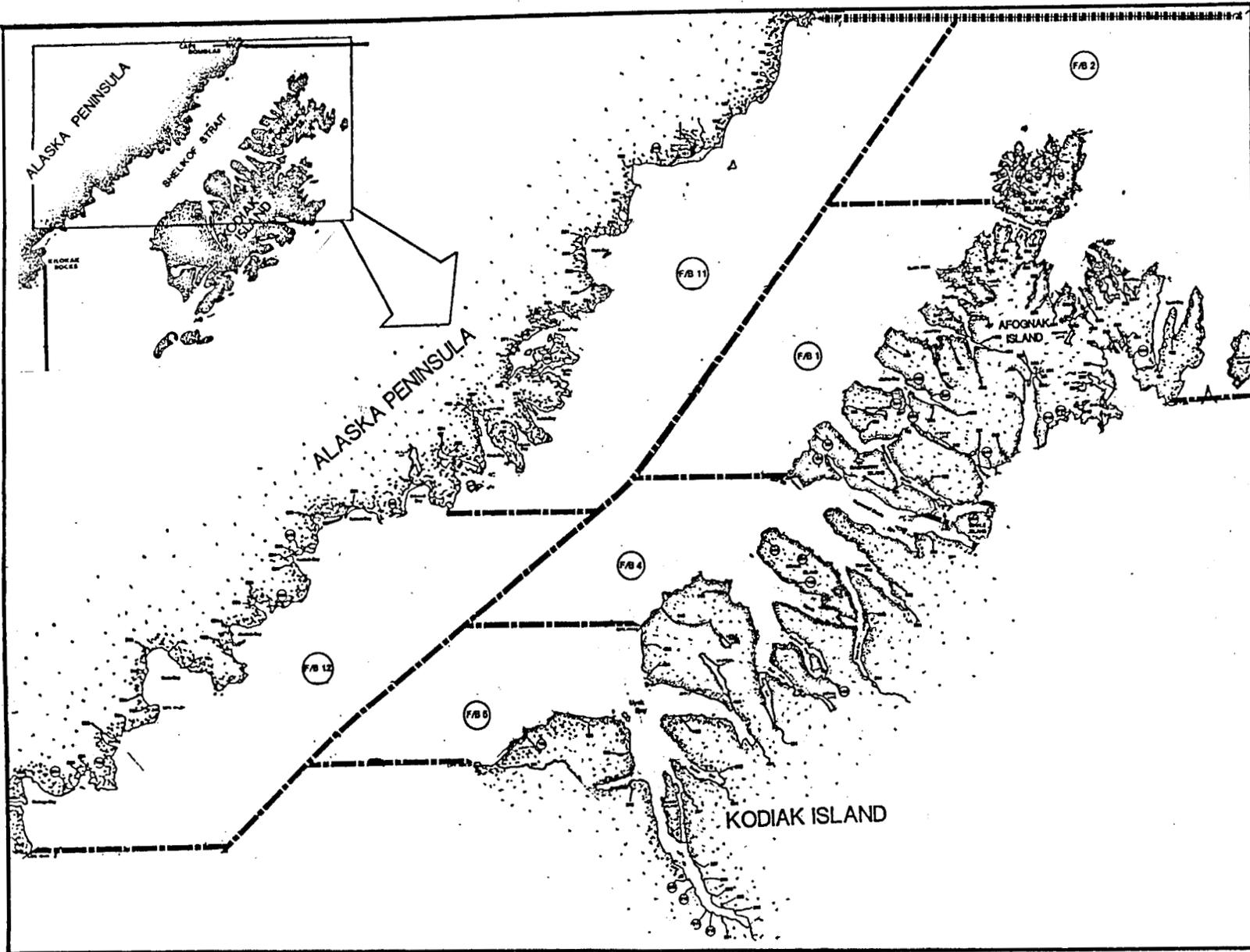


Figure 1. Food and bait herring management units, (FB1, FB2, FB4, FB5, FB11, and FB12) which are affected by harvest of Kamishak herring stocks.

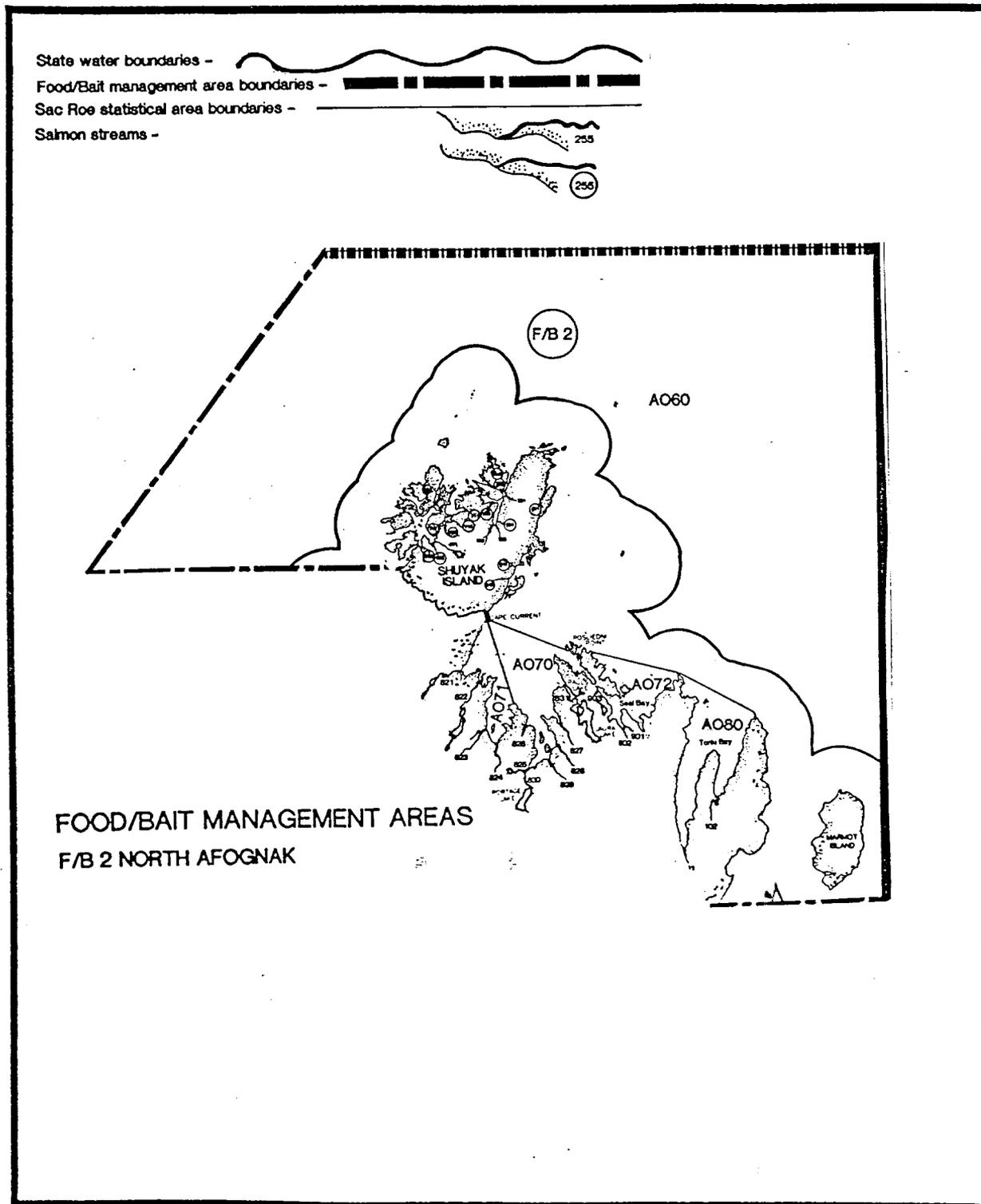


Figure 3. Map #1, food and bait herring management unit 2, Kodiak Management Area.

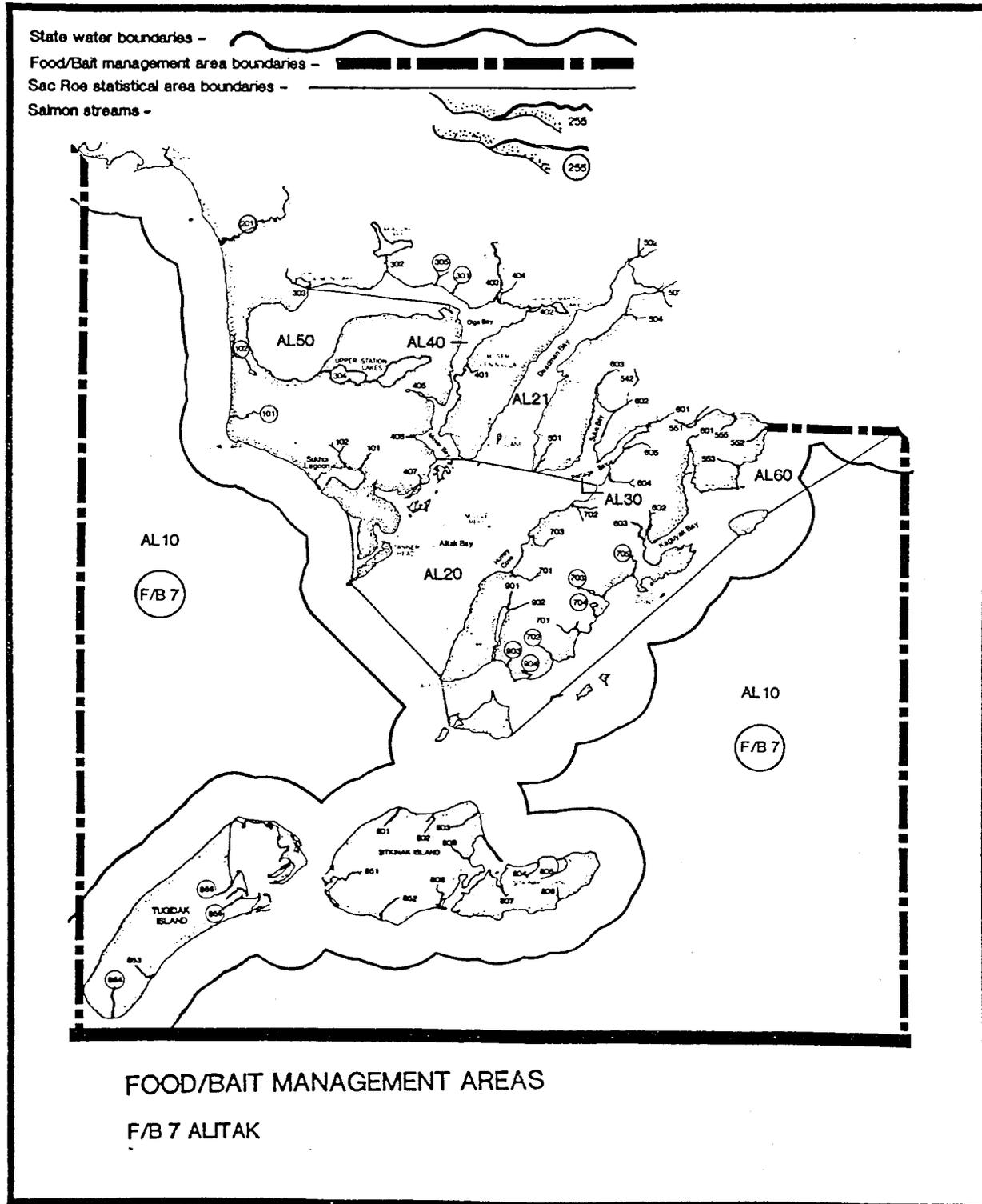


Figure 6. Map #4, food and bait herring management unit 7, Kodiak Management Area.

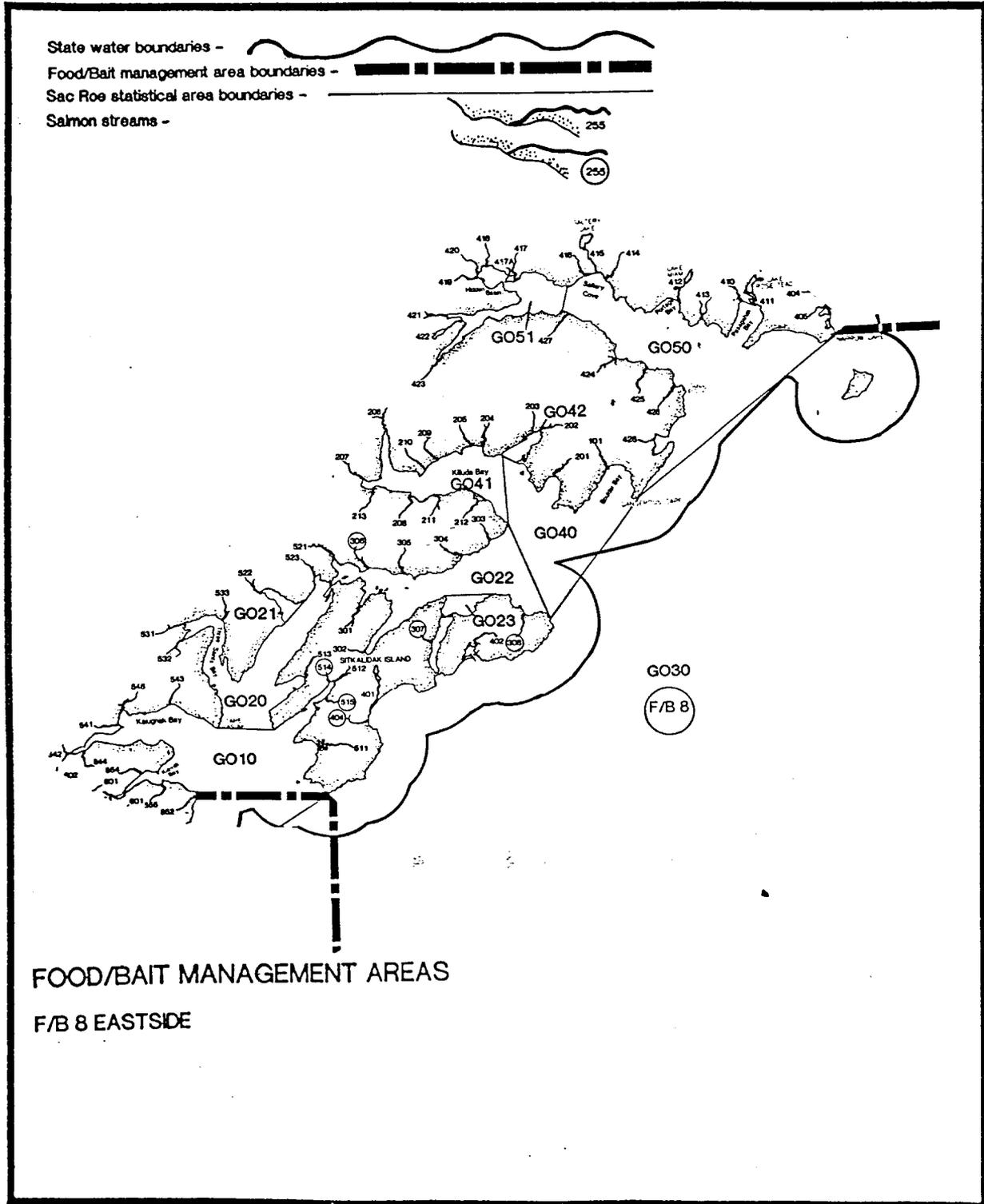


Figure 7. Map #5, food and bait herring management unit 8, Kodiak Management Area.

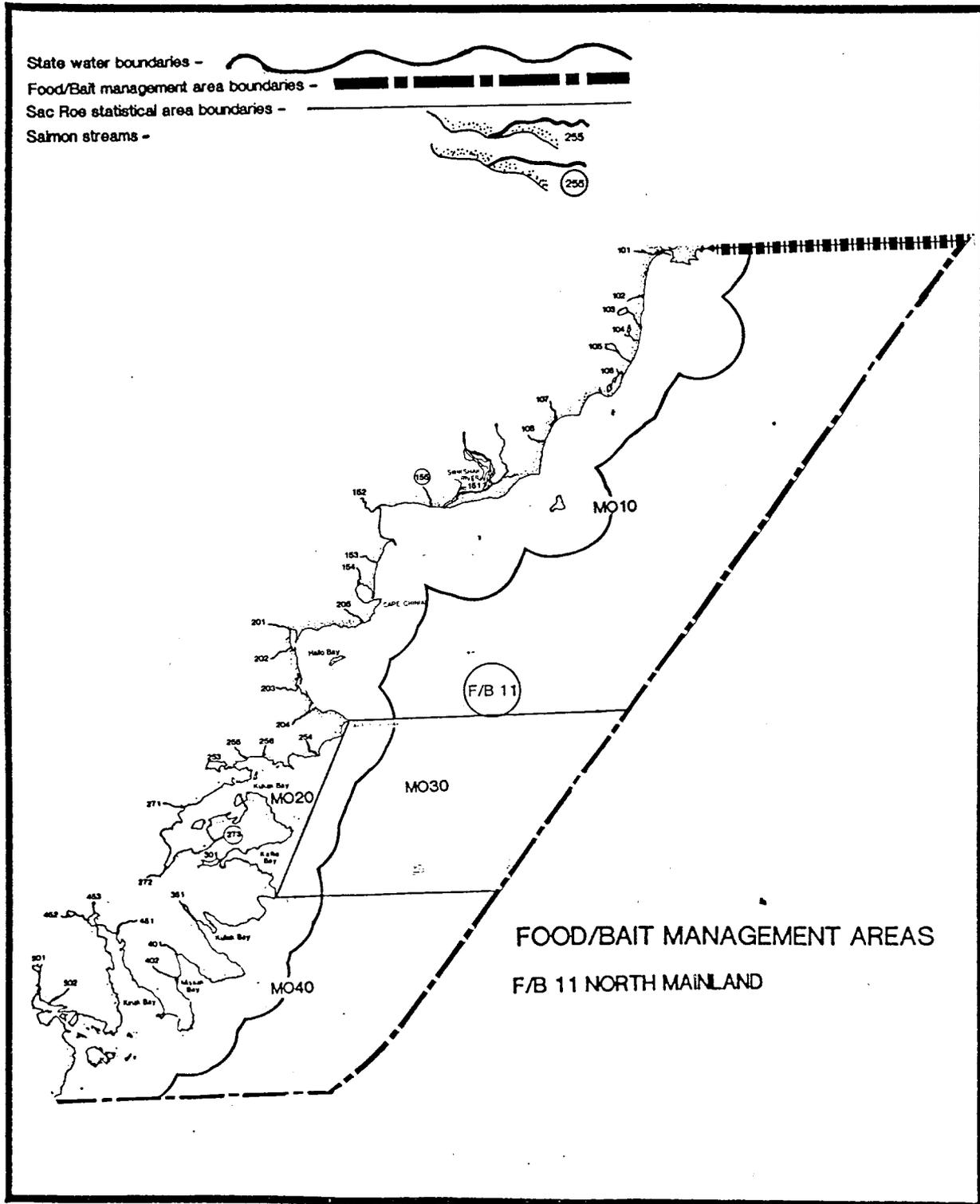


Figure 9. Map #7, food and bait herring management unit 11, North Mainland, Kodiak Management Area.

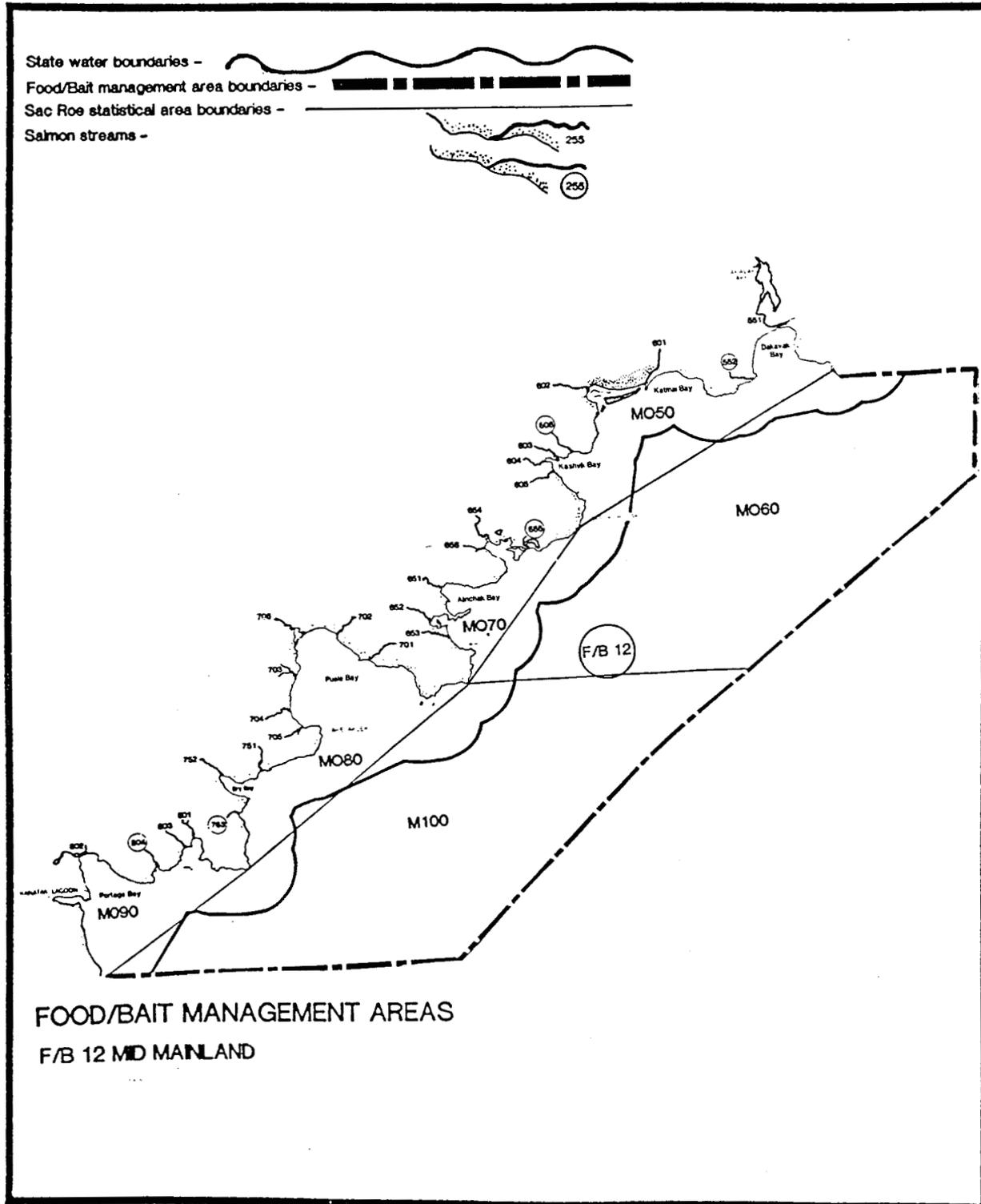


Figure 10. Map #8, food and bait herring management unit 12, mid-Mainland, Kodiak Management Area.

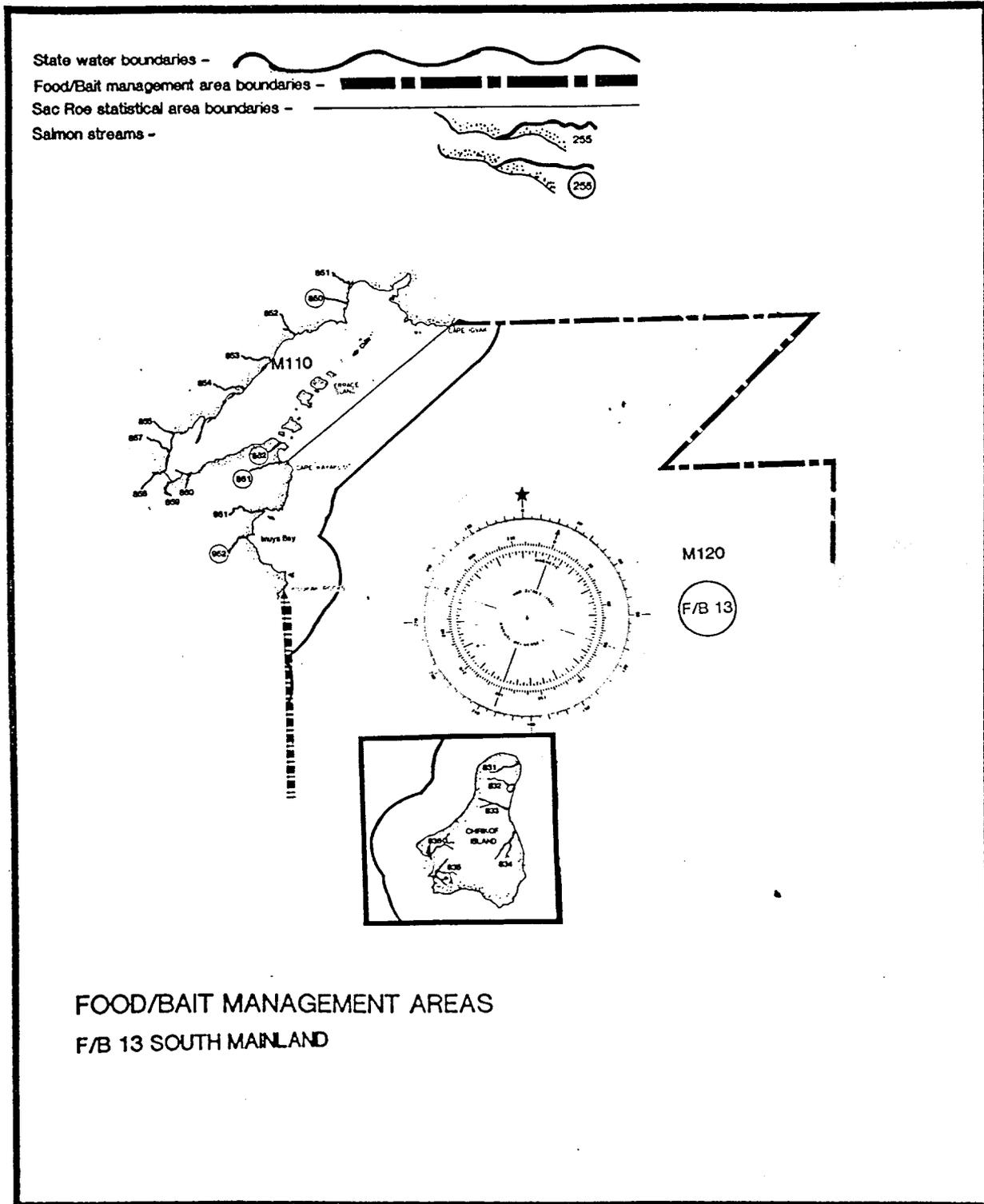


Figure 11. Map #9, food and bait herring management unit 13, South Mainland, Kodiak Management Area.

Appendix A. Management of the Kamishak Bay herring spawning stocks in the Shelikof Strait food and bait fishery.

Addendum to the 1988 Kamishak Bay
Herring Management Plan

Kamishak Bay herring spawning stocks support both the Kamishak Bay sac roe fishery and the Shelikof Strait food and bait fishery. Pursuant to the Board of Fisheries decision to allocate 2% of the Kamishak Bay herring spawning biomass to the Shelikof Strait food and bait fishery, the following adjustments will be made to the 1988 Kamishak Bay sac roe fishery management plan to accommodate the Board's actions and to protect the Kamishak Bay herring stock from over harvest:

- 1) ADF&G guidelines direct that herring harvest rates be kept at or below 20% of the current best estimate of biomass, depending upon stock strength and age composition. Best estimates of biomass of the Kamishak Bay herring stock are currently determined by aerial survey following the spring sac roe fishery. Therefore, harvest levels in the Shelikof Strait food and bait fishery will be based on this estimate of spawning biomass.
- 2) The harvest ceiling for the Shelikof Strait food and bait fishery will be 2% of the best estimate of the total Kamishak biomass, as determined by the Department during the most recent Kamishak herring sac roe season. The total Kamishak Bay biomass will be determined by the best estimate of the spawning biomass following the sac roe fishery plus the total harvest from the sac roe fishery.
- 3) Present management strategy for the Kamishak Bay spawning stock attempts to achieve a maximum harvest rate on older fish of 20% while keeping the harvest rate of fish age 5 and younger at or below 10%.
- 4) If ADF&G determines the harvest rate for the stock of Kamishak Bay herring should be less than 20%, either due to a decrease in biomass, weak year classes, or poor recruitment, the 2% food and bait harvest ceiling will be reduced proportionally. [i.e. If the biological markers (decrease in biomass, weak year classes, or poor recruitment) indicate that the sac roe harvest needs to be reduced, for example to 15%, the food and bait fishery would be reduced to 1.5%]
- 5) If the spawning biomass of the Kamishak Bay herring stock falls below the biological threshold level of 8,000 tons, both the Kamishak Bay sac roe and the Shelikof Strait food and bait fishery will be closed or severely limited.
- 6) The allocation of herring to the Shelikof Strait food and bait fishery is based on spawning biomass, primarily age 5 and older herring, not on the biomass of juveniles. Therefore, the quantity of Kamishak Bay stocks ages 4 and younger caught in Shelikof Strait will be adjusted upward to bring the biomass of these younger age classes up to the biomass of age 5 herring.

Appendix D.1. Herring subsistence/personal use conditions of permit.

HERRING SUBSISTENCE/PERSONAL USE PERMIT

FOR

THE KODIAK MANAGEMENT AREA

For Year: _____

Permit No. _____

HARVEST LOG

HARVEST DATE	HARVEST POUNDAGE	HARVEST LOCATION	TYPE OF USE		
			FOOD	BAIT	OTHER

This form must be returned to the ADF&G office by October 1, 1992

Alaska Department of Fish & Game
211 Mission Road
Kodiak, Alaska 99615

Permittee Name: _____

Address: _____

Attn: Dave Prokopowich

Phone: 486-4791

Signature: _____
(Permittee)

Issued by: _____

Title: _____

Date: _____

CONDITIONS OF THIS PERMIT ARE LISTED ON THE REVERSE SIDE OF THIS FORM.

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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