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ALASKA PENINSULA AND ALEUTIAN ISLANDS MANAGEMENT  
AREAS SAC ROE HERRING REPORT AND THE ALEUTIAN ISLANDS  
MANAGEMENT AREA FOOD AND BAIT HERRING REPORT, 1995

By

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## ABSTRACT

The 1995 commercial sac roe Pacific herring *Clupea harengus pallasii*, season extended from April 15 through July 15 in the Alaska Peninsula and Aleutian Islands waters. However, the opening of the Sand Point, Pavlof, and King Cove Districts was from April 15 through July 15; the opening of the Unimak, Akutan, Unalaska, Umnak, and Adak Districts was from April 15 through June 15; the Amak District was open from April 15 through June 30; and the Port Moller District was opened from May 17 through June 30. In 1995, the Port Heiden District was not open to commercial herring fishing. The Aleutian Islands Management Area "Dutch Harbor" food and bait herring fishery was open on July 16.

In 1995, commercial sac roe herring harvests occurred in North Peninsula waters from May 29 through June 20 and in South Peninsula waters from June 6 to June 17. No sac roe herring harvest occurred in the Aleutian Islands Management Area. The North Peninsula harvest was 337.3 tons while the South Peninsula harvest was 62.7 tons, resulting in a total Alaska Peninsula harvest of 400.0 tons. The 1995 Alaska Peninsula sac roe herring harvest was about four times the 1994 harvest of 98.1 tons but only about a third of the 1985-94 average harvest of 1,165.3 tons. During the sac roe herring fishery, 13 purse seine permit holders made 39 deliveries to four companies that purchased herring. The average roe recovery during the sac roe season was 8.8% for the North Peninsula, 9.4% for the South Peninsula, and overall 8.9%. The average price per ton was \$450 for 10% roe recovery and  $\pm$  \$50 for each percentage point above or below 10% and \$50 for bait herring, giving a sac roe herring exvessel value of about \$159,500 for the Alaska Peninsula fishery.

Aerial biomass survey estimates for the North Peninsula were: 60 tons for Herendeen Bay and 477 tons for Moller Bay. No herring were observed in the Port Heiden District nor along the coast. Fishermen and commercial pilots reported herring in several locations where ADF&G personnel were unable to survey.

In 1995, commercial food and bait harvests occurred in the Aleutian Islands Management Area on July 16. The Aleutian Islands "Dutch Harbor" commercial food and bait herring harvest was 1,748.1 tons (220.0 food and 1,528.1 bait), with an allocation of 1,982 tons, and a test fishery harvest of 45.1 tons. The average price per ton was \$300, giving a food and bait exvessel value of about \$524,430 for the Aleutian Islands Management Area; 14 purse seine permit holders made 24 deliveries to six processing companies.

**KEY WORDS:** Alaska Peninsula, Aleutian Islands, herring, harvest, age, length, weight, sex, sac roe, food

## INTRODUCTION

### *Alaska Peninsula*

The Alaska Peninsula and Aleutian Islands Management Areas (Figures 1-2) are described as Management Area "M" and are divided into three subareas; (1) the South Peninsula, consisting of Pacific Ocean coastal waters extending west of Kupreanof Point to 163°30' W. long. (the south side of Unimak Island near Cape Lazaref); (2) the Aleutian Islands, consisting of Bering Sea waters extending west of Unimak Pass and Pacific Ocean waters extending west from 163°30' W. long. (the southern portion of Unimak Island near Cape Lazaref) to the International Date Line; and (3) the North Peninsula, consisting of Bering Sea waters extending west from Cape Menshikof to Cape Sarichef (Figures 3-9).

The North Peninsula is composed of three districts and 23 statistical areas, the South Peninsula includes three districts and 45 statistical areas, and the Aleutian Islands includes five districts and 41 statistical areas. Commercial Pacific herring *Clupea harengus pallasii* sac roe fishing normally begins in late May in both North and South Peninsula waters. The Aleutian Islands has not had a sac roe herring harvest since at least 1979. The food and bait herring fishery in the Aleutian Islands Management Area begins by regulation on July 16.

Commercial herring fisheries have been regulated by emergency order to achieve exploitation rates mandated by the Alaska Board of Fisheries (BOF), these regulations also address problems with wastage. Management plans and other BOF directives set policies by which these fisheries are prosecuted (ADF&G 1994; McCullough and Campbell 1995a and 1995b).

Herring have been observed throughout the South Peninsula, most areas of the North Peninsula, and in Unalaska Island waters of the Aleutian Islands Management Area. Major concentrations of herring and fishing effort have occurred in North Peninsula waters in Port Heiden, Port Moller, and Herendeen Bays, and along the Bering Sea coast in near shore waters from Entrance Point to Cape Seniavin. Known herring stocks and most fishing effort occurs in South Peninsula waters in the Shumagin Islands, and Stepovak, Pavlof, and Canoe Bays. Fishing effort in the Aleutian Islands Management Area has been limited to Unalaska and Akutan Islands waters.

From 1981 through 1995, the Alaska Department of Fish and Game (ADF&G) has deployed field crews for the purpose of collecting data and monitoring the fishery. Crews have collected herring samples and documented spawning areas and substrate. Aerial surveys have been used with limited success to monitor the fishery due to the size of the area, poor weather, turbidity of the water, and the unpredictable nature of the herring stocks. ADF&G has been conducting aerial surveys on the Alaska Peninsula since 1981, however only surveys flown in 1989, 1991, and 1992 are considered an accurate assessment of the total spawning biomass in North Peninsula waters.

Aerial surveys of the Port Moller area by ADF&G personnel in 1976 reported numerous schools of herring in Herendeen Bay (Warner and Shafford 1979). The first commercial harvests of sac roe herring in this area occurred in 1982 when 643.8 tons were harvested (Table 1). From 1985-94, an average of 932.2 tons have been harvested during the North Peninsula sac roe herring fishery. Until 1992, the majority of the harvest was taken from Herendeen and Moller Bays with the balance being taken off the Bering Sea coast between Entrance Point and the Seal Islands (Table 2). In 1992, more than 40% of the North Peninsula harvest came from Port Heiden Bay.

Prior to 1982, fishing vessels destined to or returning from the Togiak herring fishery frequently looked for herring in the Port Moller and Port Heiden Districts but made no deliveries. In the Port Moller District during 1986-88, there was an average of 52 vessels observed although few permit holders actually made landings. In 1986, fishing effort increased on the earlier arriving stocks. In order to shift fishing pressure from the earlier arriving stocks to the later more abundant stocks, the Port Moller District opening was initially delayed until May 30 from 1989 to 1992. However, the fishery could open prior to May 30 by emergency order if a large biomass of herring was documented in the area. The later opening date in the 1989-91 seasons started a trend of decreasing effort. Fishers returning from Togiak tended to pursue halibut or salmon fisheries rather than wait for the Port Moller herring fishery to open. The Port Moller District opened prior to May 30 in 1991-93 due to a herring biomass sufficient to warrant commercial harvests. The run timing of the North Peninsula stocks appears to be two to three days after the peak observed biomass in the Togiak fishery. Since 1993, the Togiak sac roe herring harvest strategy has extended the harvest well after the peak biomass observation date. This has caused less than expected harvests in the North Peninsula due to the late arrival of industry, well past the expected North Peninsula peak biomass.

The South Peninsula sac roe herring harvest and fishing effort continues to fluctuate since it began in 1979. During those years when a commercial sac roe herring harvest occurred, landings have been reported from 18 geographical locations; of these, only Canoe Bay has produced an annual harvest (Tables 1, 3; Figure 8).

In South Peninsula waters, significant landings have occurred in 1980 (453.8 tons) and in 1981 (797.4 tons; Table 1). The BOF closed the South Peninsula sac roe herring fishery in 1983, allocating all harvests to a food and bait herring fishery that failed to develop. From 1984 through 1991, the BOF allocated the harvest between the sac roe fishery (75% of the allowable harvest) and the food and bait fishery (25% of the allowable harvest). In 1992, the BOF allocated the entire harvest to the sac roe herring fishery (McCullough and Campbell 1995a).

In South Peninsula waters, effort and harvests have generally decreased since 1981. Most bays have small commercial quantities of herring and harvesting the small stocks makes fishing North Peninsula herring more attractive (Table 4). Most South Peninsula herring also appear to spawn later than North Peninsula herring, this prevents many salmon fishers from participating in the South Peninsula herring fishery.

## *Aleutian Islands*

The Aleutian Islands Management Area food and bait herring season per regulation is from July 16 through February 28. Actual fishing time of the food and bait fishery is based on inseason evaluation of the fishing effort and harvest rate (Tables 5, 6). Although the entire Aleutian Islands Management Area is usually open during this season, fishing effort has been limited to the vicinity of Unalaska and Akutan Islands due to processing capabilities and herring concentrations. The Unimak, Akutan, and Unalaska Districts and that portion of the Umnak District located east of Samalga Pass are commonly referred to as the "Dutch Harbor" food and bait herring fishery (Figures 2-5). Two management plans: (1) the Bering Sea herring fishery management plan (Appendix B), and (2) Aleutian Islands Management Area food and bait herring management plan, 1995 (McCullough and Campbell 1995b) and various regulations (ADF&G 1994) are used to manage the fishery.

Historically, the "Dutch Harbor" food and bait fishery occurred from 1929 through 1938 and in 1945 (Table 5). This fishery was a mixture of gillnet and purse seine harvests, holding pounds, and numerous small, shorebased hand packing operations. A large portion of the harvest was brined for either food or bait purposes while some product was frozen. Purse seine gear provided the bulk of the harvest.

The "Dutch Harbor" food and bait herring fishery has occurred annually since 1981 (Tables 5, 6). Harvests during 1981-86 and 1990-94 were achieved with purse seine gear only. During the 1987-88 herring seasons one gillnet permit holder participated while in 1989 two gillnetters made landings. Currently, purse seine vessels average about 50 feet in keel length and employ seines up to 250 fathoms in length and 25 to 35 fathoms in depth. Gillnet vessels are commonly 32 feet in length and there are no restriction on gear length.

Prior to 1992, fishing occurred at night with the use of sonar, since then the fishery has mostly occurred during daylight hours using aircraft to spot herring schools. Generally, permit holders freely exchange information concerning the location of herring schools. When herring concentrations leave traditional fishing areas, fishers will conduct organized "sonar searches" over fairly large areas until a concentration of herring is located. During the past two seasons, aircraft have also been used to spot herring schools. When catcher vessels leave the immediate area of shorebased processing facilities, industry follows with floating processors and tenders. Processing efficiency and product quality may decline when this occurs. Harvest locations have extended over approximately 90 miles, from Tigalda Island to Makushin Bay on Unalaska Island. The majority of the harvest has occurred within a five mile radius of shorebased processing facilities in Unalaska and Akutan Bays.

A similarity between the recent and historical fisheries is the quality problem associated with feeding herring. Feed problems were overcome in the historical fishery by the use of holding pounds, where seine caught herring were held until their stomachs became empty. Gillnet caught herring required special handling to prevent spoilage. In the current fishery, the use of ice and

chilled seawater in conjunction with rapid processing alleviates most of the feed related problems. When feeding conditions are severe, processors will suspend buying.

One difference between the current and historical (1929-38 and 1945) fisheries is the availability of herring. Historically, herring were categorized into an early summer run (late June to late July) and a late summer run (late August to early September). This pattern does not seem to apply to the current (post 1980) fishery. Herring now appear in the Dutch Harbor area about July 1 and are available through mid-September.

Shorebased processors purchase the majority of the herring harvested. Floating processors have been used most years; however, they are limited by daily handling capacities. In 1988 and 1990-94, some herring were tendered to the King Cove shore plant; in 1989, 1990-92, and 1994 to the Sand Point shore plant, and in 1988-94 to the Akutan shore plant.

Generally, the exvessel value for bait herring has exceeded that for food herring, although during the past few seasons the same price has been paid for both food and bait herring. While Aleutian food herring are a suitable and desirable product, an ample and more reliable supply of food herring from other countries currently dominates the market. Food herring must be processed quickly from fresh herring; when the allocation is harvested quickly (less than a day) processors can only produce a limited amount of food herring before the flesh is no longer fit for human consumption. The bait product from this fishery has a more stable market. Bait is used locally and in other Alaskan fishing ports for the longline and pot groundfish and pot crab fisheries. Bait demands have been increasing in recent years, and a premium price is placed on quality bait which is fresh and has high oil content. Overall, the market for bait herring has remained more stable than that for food.

The harvest strategy of the "Dutch Harbor" food and bait herring fishery has evolved since it was re-established in 1981. During 1981 and 1982, there were no harvest restrictions. From 1983 to 1985, the BOF implemented a harvest ceiling of 3,527 tons per year due to the concern of multiple exploitation (exceeding an overall 20% exploitation rate) on Eastern Bering Sea spawning stocks, specifically the Bristol Bay, Nelson Island, and Port Moller stocks. A scale pattern analysis study found that herring in the Aleutian Islands herring fishery were composed of multiple stocks likely to spawn throughout the Bering Sea but were dominated by the Togiak stock complex (Rogers and Schnepf 1985). The extensive sac roe fisheries occurring on these stocks coupled with the "Dutch Harbor" food and bait fishery which may harvest some of these stocks, may create biological concerns due to possible exploitation above the BOF guideline harvest policy. In 1986, a modification of the harvest ceiling was implemented by ADF&G in response to the BOF concern for the possible lack of recruitment in the contributing stocks (primarily Togiak). The 1986 harvest allocation in the Aleutians was reduced by 30% (2,453 ton harvest allocation). This reduction corresponded with the percent reduction of the observed Togiak spawning biomass between the springs of 1985 and 1986. The 1987 harvest allocation was 2,332 tons, which was proportional to the 1985 to 1987 reduction of observed Togiak spawning biomass.

In 1988, the BOF implemented the Bering Sea Herring Fisheries Management Plan, which established criteria for calculating the "Dutch Harbor" food and bait quota. To ensure conservation of herring stocks, the BOF adopted a requirement that the overall exploitation of a herring stock should not exceed 20% of the spawning biomass. For the Togiak spawning stock, an allocation between the sac roe fishery, spawn on kelp fishery, and the "Dutch Harbor" food and bait fishery was established so that the overall harvest did not exceed 20% of the observed spawning biomass. The number of fishers involved and the value of the fishery were factors considered by the BOF when allocations were determined. The Bering Sea Herring Fishery Management Plan defines the biological criteria and the quota for the "Dutch Harbor" food and bait fishery (Appendix B).

In 1991, the BOF changed the "Dutch Harbor" food and bait herring fishery opening date from August 15 to July 16. This change was implemented to lessen the chance of catching herring stocks other than Togiak and North Alaska Peninsula in the "Dutch Harbor" fishery. In 1992, ADF&G action changed the fishery from night to daytime. In 1992-94, as an aid in monitoring the fishery, ADF&G initially set daytime fishing periods of two hours or less. Although sonar was still used to locate schools, spotter pilots and fishers visually detected feeding birds and sea mammals which directed them to herring schools.

The objectives of this report are: (1) to present the number of herring in the commercial harvest for each statistical area in the Alaska Peninsula and Aleutian Islands Management Areas during 1995; (2) to estimate the age and sex composition of harvests; (3) to estimate the mean length and weight of herring harvested in commercial fisheries; and (4) to estimate the biomass of herring within each area. This information will add to a database allowing for evaluation of harvest rates, recruitment events, and to refine management of these fisheries. This report is intended as a reference document; interpretation and discussion of the data are therefore limited.

## METHODS

Commercial harvest data were compiled by the Commercial Fisheries Management and Development Division of ADF&G. Data were based on computer tabulations originating from individual sale receipts (fish tickets) given to fishers at the time of delivery. Fish tickets and the computer generated summaries were edited by ADF&G Alaska Peninsula staff for errors and omissions. Because extensive fish ticket editing is usually required to finalize the data for any given year, future reports may contain differences in the harvest information listed in this report.

Harvests were sampled throughout the season from harvests in the fishing areas. Harvest sampling occurred in Port Moller and Canoe Bay for Alaska Peninsula harvests, and in Dutch Harbor for herring harvested in the Aleutian Islands. In the Alaska Peninsula and Aleutian Islands, herring were randomly sampled, usually collected from the holds of tender vessels but occasionally directly from the fishers net to minimize scale loss. The harvest area of each tender

and fishing vessel sampled was determined through vessel operator interviews and fish ticket information.

Generally, tender operators purchase herring from fishers who sell their harvest to a specific company. Since all Alaska Peninsula and Aleutian Islands catch sampling occurred before sorting within the cannery, there was no preselection of herring other than from delivery areas; although not tested, each sample was assumed to be representative of the harvest within a sample area. While this insured that samples were randomly selected from the fishery, the samples may not be characteristic of the population structure because the distribution of the population is unknown in the fishery.

Age compositions were computed for the harvest for each area sampled. Age was determined by examining scales (Warner and Shafford 1979). Scales were taken from the preferred area, located on the left side of the herring three rows below the lateral line and three scales posterior to the center of the operculum plate (Anonymous 1986). One scale was taken from each herring. Ages were recorded in actual fish age in years. The accuracy of age determination was not tested. Sex compositions were determined from internal observation of individual herring. Standard length measurements were taken to within 1 mm from the anterior most portion of the fish, including the lower jaw with the mouth closed, to the end of the vertebra (hypural plate) using a meter stick with 1 mm gradations. Accuracy of a length measurement was within  $\pm 5$  mm. Mean lengths were calculated from an unweighted composite of the data collected from each area sampled. Weight measurements of fish were taken using a digital scale with 2.0 g gradations and reading the scale device to within 2.0 g. Accuracy of a weight measurement was within  $\pm 2.0$  g. Mean weights were calculated from an unweighted composite of the data collected from each area sampled.

Biomass estimates of herring schools occurred during aerial surveys. The methodology of these surveys is described in an ADF&G manual (Anonymous 1986). Observers fly at a recommended altitude of 1,500 feet and count the number of schools of herring and measure the length and width of each school. Each school is classified into one of three size classes based on its surface area: small schools with an area  $\leq 50$  m<sup>2</sup>; medium-sized schools with a surface area  $> 50$  m<sup>2</sup> and  $\leq 450$  m<sup>2</sup>; and large schools with a surface area  $> 450$  m<sup>2</sup>. The number of schools in each size-class are converted to Relative Abundance Indices (RAI) by assuming that one small school equals one RAI, one medium-sized school equals five RAI, and the RAI's of a large school equals the schools total surface area in square feet divided by 538 square feet. Aerial observers also classify the survey conditions on each flight with a rating system: one equals excellent, two equals good, three equals fair, four equals poor, five equals unsatisfactory. A conversion factor of 1.52 short tons/RAI is used for schools observed in water depths of 16 feet or less and 2.58 short tons/RAI is used for schools observed in water depths of 16 to 26 feet. In deep water, no attempt was made to convert RAI units into tonnages due to the lack of data. Conversion factors were calculated from surveys of schools of known biomass and surface area in known water depths that were conducted with commercial fishing vessels in Bristol Bay in 1983. If more than one survey of an area was conducted in a single day, then the largest number of RAI's recorded in each area was chosen as the most accurate index of biomass, because observers were more

likely to underestimate the biomass than they were to overestimate the biomass (Anonymous 1986). Some schools of fish, especially in South Peninsula waters, may have been capelin or other finfish.

Harvest guidelines were established pre-season and were based on past fishery performance, age class data, and biomass estimates from ADF&G and industry aerial surveys (Table 4). Areas with little or no data on stock biomass were open for exploratory fishing. Management intent is to allow a maximum annual exploitation rate of 20 percent on each stock.

## SAC ROE FISHERY

### *Results*

In 1995, 13 purse seine permit holders made 39 landings in the Alaska Peninsula Management Area (Table 7). The 1995 herring harvest of 400.0 tons was about four times greater than the 1994 harvest of 98.1 tons but about one third of the 1985-94 average harvest of 1,164.3 tons (Table 1).

In 1995, 26 purse seine permit holders, 13 tenders, and 6 companies indicated an interest in participating in the Alaska Peninsula sac roe herring fishery. However, only 13 purse seine permit holders made at least one landing and three companies purchased herring. This was an increase of seven purse seine permit holders making deliveries from the 1994 level.

The total 1995 commercial herring harvest during the sac roe season for the Alaska Peninsula and Aleutian Islands Management Areas was 400.0 tons (the entire harvest sold as a sac roe product), with an exvessel value of about \$159,500.

### *Fishing Effort*

In 1994 and 1995, the number of permit holders making at least one delivery in the Alaska Peninsula more than doubled. The increased effort was due in part to new halibut regulations that provide liberal time periods for harvesting halibut.

In 1995, the first herring in the Port Moller District were observed on May 13 (86 tons). Because of poor survey conditions, ADF&G managed the fishery based on the 1,100 ton pre-season guideline harvest. The first spotter pilot arrived on May 14, the first fishing vessels were on-the-grounds by May 15; and the initial buyer was ready on May 17. The Port Moller District opened to commercial herring fishing on May 17. However, the first commercial harvest did not occur until May 29. Only three companies, all floating, processed herring in North

Peninsula waters while one company with both floating and shore based facilities, processed herring in South Peninsula waters.

In areas with guideline harvest levels, inseason fishing time was based on ADF&G biomass surveys and fishery performance. In areas open for exploration, (Aleutian Islands Management Area, the Port Heiden and Amak Districts, the Western Section of the Port Moller District, the Seal Cape-Wosnesenski Section of the Pavlof District and General Sections of the King Cove and Sand Point Districts), liberal fishing time was allowed to give fishers the opportunity to locate and exploit unknown herring stocks. Neither industry or ADF&G had timely surveys of the Port Heiden District but herring may have been present during May. All exploration areas were unproductive (Tables 2, 3).

### *North Peninsula*

There are three commercial herring fishing districts in North Peninsula waters: Port Heiden, Port Moller, and Amak Districts. No harvests were reported nor were herring observed in the Amak District. No harvests occurred in the Port Heiden District, although a few small schools of fish, (reported as herring), were observed by local fishers. In all districts herring may be taken with purse seines and gillnets. Both gear types share common time and area openings.

The 1995 projected guideline herring harvest for North Peninsula commercial herring fisheries included herring harvested only in the Port Moller District (Table 4; McCullough and Campbell 1995a). All fishing periods in the Port Moller District were by emergency order when herring biomass and tender and processor capacity warranted an opening. The Amak District was open for exploration continuously from April 15 through June 30. All North Peninsula waters closed to herring fishing on June 30. A minimum of six hours advanced notice for commercial fishing periods in the Port Moller and Port Heiden Districts was initiated prior to the fishing season.

ADF&G herring staff arrived in the Port Moller area on May 12 and herring were observed on the following day. On May 17, the first commercial fishing vessels and tenders arrived and the commercial fishery opened. However, because of the lack of herring and poor weather, few herring were harvested. From May 17 through June 7, commercial fishing periods of one to three hours were allowed almost daily, but only small harvests occurred. Through June 7, only 31.4 tons of herring had been harvested in Herendeen Bay, 3.2 tons near Deer Island, and 104.4 tons in Port Moller Bay. Although industry waited for additional biomass to enter the fishery, it became apparent that either the herring had spawned and departed before ADF&G or industry arrived in the district or they were not coming (Table 8). By June 8 effort had decreased to only a few fishing vessels and one processor. The Port Moller District was open to continuous herring fishing from June 8 until June 30. During this time period about 59% of the harvest (198.3 tons) occurred (Table 9).

A list of ADF&G aerial surveys of North Peninsula waters is presented in Table 8. In past years, accurate biomass estimates have been difficult to obtain due to poor survey conditions and the rapid arrival and departure of fish. In 1995, herring were visible in substantial numbers only during the June 1 aerial survey. The 1995 aerial survey biomass estimates were much lower than the 1992 and 1993 estimates. In 1995, the documented biomass for the North Peninsula was 537 tons: 60 tons for Herendeen Bay and 477 tons for Moller Bay (Table 8). Intensive aerial surveys by ADF&G to document spawning biomass and locations were not possible prior to May 13 or after June 2 due to budget constraints.

In 1995, ADF&G did not document any spawning in the North Peninsula.

Exploitation in individual districts ranged from no harvest in the Amak and Port Heiden Districts to an unknown rate in the Port Moller District. Three companies purchased herring from North Peninsula fishers, the average price per ton was \$450 for 10% roe recovery ( $\pm$  \$50 for each percentage point above or below 10%), the average roe recovery was 8.8% with the exvessel value being \$133,115.

From 1982 through 1995, commercial harvests of herring from the Port Moller District were landed from May 8 to July 4 (Figure 6, Table 1). Historically, most harvests were taken during a time period of 20 days or less from mid-May to mid-June. In 1995, the commercial harvest was almost evenly split between the Inner Moller Bay and Herendeen Bay Sections (Table 9).

In 1995, a total of 221 herring were sampled from the commercial harvest in Inner Port Moller and Herendeen Bays. In Inner Moller Bay the most abundant estimated age classes were age 6 16%, age 7 23%, and age 8 38% (Table 10; Figure 10). The male to female ratio was 1:0.7. The average length of the herring harvested was 330 mm, and the average weight was 293 g (Table 11). In Herendeen Bay the most abundant age classes were estimated as age 4 72% and age 7 11% (Table 10; Figure 10). The male to female ratio was 1:0.9. The average herring length in the harvest was 287 mm, and the average weight was 191 g (Table 11).

Age class data from the 1995 harvest indicates that in 1996 age 7, 8, and 9 herring should dominate Port Moller Bay harvests, while age 6 herring may dominate Herendeen Bay harvests. Since the abundance of newly recruited year classes (ages 3 and 4) cannot be reliably determined until the herring are nearly fully recruited into the fishery at age 5, no attempt has been made to estimate the potential contribution of younger age herring to the fishery. Confidence in the 1996 North Peninsula forecast is only fair (Appendix D).

Historically, from mid-May through early-June, commercial spotter pilots and ADF&G observers have also reported on the biomass of capelin in North Peninsula waters. In 1995, North Peninsula capelin stocks appeared to be depressed but the stocks were more abundant than the very low biomass observed during 1993-94.

## *South Peninsula*

The 1995 projected guideline harvest for South Peninsula herring fisheries was 150 tons (Table 4), which did not include herring harvested in sections open to exploration (McCullough and Campbell 1995a). The General Sections of the Sand Point and King Cove Districts and the Seal Cape-Wosnesenski Section of the Pavlof District were open for exploration. South Peninsula herring fisheries were open seven days a week beginning April 15 through June 9 when the fishing periods were established as 24 hours of fishing followed by a 24 hour closure. By June 18 effort had decreased to one fishing vessel and the fishing period was open seven days a week until the closure of the sac roe season (July 15).

From 1980 through 1995, South Peninsula commercial herring harvests were landed from May 9 to July 14 and in 1995 were landed from June 6-17 (Table 1). Most harvests have occurred during a time period of 20 days or less. In 1995, commercial harvests occurred in Balboa and Canoe Bays and totalled 62.7 tons (Tables 3, 7, 12 and 13). The average roe recovery was 9.4%. Prices paid by the single company that purchased herring from South Peninsula waters was about \$450 per ton for 10% roe recovery  $\pm$  \$50 for each percentage point above or below 10%. The South Peninsula sac roe herring fishery exvessel estimated value was \$26,385.

Fishing vessels and tenders arrived in Canoe Bay in late May but mature (ripe) herring were not available until June 17. Due to budget constraints, the ADF&G Canoe Bay field crew had to be pulled on June 9. The market for South Peninsula herring closed on June 18, no additional South Peninsula sac roe harvests occurred after June 18. Poor survey conditions and budget constraints limited ADF&G aerial survey effort to two flights on May 31 and June 1 (Table 14). Commercial spotter pilots and several fishing vessels reported herring through late-July in other locations, but ADF&G was not able to document their presence.

No herring were sampled from the South Peninsula harvests. No spawning was observed in South Peninsula waters. Other finfish (capelin and juvenile pollock, cod, and salmon) were abundant in Stepovak, Balboa, Beaver, and Canoe Bays.

## **ALEUTIAN ISLANDS FOOD AND BAIT FISHERY**

The Aleutian Islands (Unimak, Akutan, and Unalaska Districts and that portion of the Umnak District located east of Samalga Pass) "Dutch Harbor" commercial food and bait herring fishery may open to commercial herring fishing on July 16. In 1995, the fishery was restricted to the Unalaska District. The fishery had one period on July 16 with a total fishing time of 20 minutes. The fleet consisted of 18 purse seine vessels, 12 tenders representing 6 processing companies, and 3 aircraft.

On July 16, there was a single 20 minute fishing period from 12:30 a.m. until 12:50 a.m. During the period, 14 of the 18 permit holders made successful sets and harvested an estimated 1,748.1 tons. The harvest came from the inner portion of Unalaska Bay bounded by Eider Point to Ulakta Head, and south of the bridge connecting Dutch Harbor to Unalaska. Because of the relatively small amount of herring remaining on the allocation, 233.9 tons, and the large volume of herring reported in the area, another commercial herring period could not be conducted without risk of exceeding the allocation.

Fourteen permit holders made a total of 24 landings for a harvest of 1,748.1 tons; 1,528.1 tons as bait and 220.0 tons as a food product (Table 15). A total of 233.9 tons remained unharvested from the allocation. The exvessel value of the fishery was an estimated \$524,430. ADF&G also conducted a test fishery to obtain biological data and to finance management of the fishery. ADF&G contracted a commercial permit holder who harvested an additional 43 tons of herring.

A total of 625 herring from the commercial fishery were sampled for age, length, weight, and sex data. In the Unalaska District, the most abundant age classes in the commercial harvest were estimated as age 7 30.4%, age 8 27.5%, and 11 10.4% (Tables 16, 17; Figures 2-4). The male to female ratio was 1.0:1.0. The average herring length in the sample was 286 mm, and the average weight was 353 g (Table 16).

The strength of age 7 and age 8 herring in the "Dutch Harbor" fishery reflects the expected dominance of the age 7 and age 8 herring from the Togiak fishery (personnel communication, Kathy Rowell, Alaska Department of Fish and Game, Anchorage).

## LITERATURE CITED

- Anonymous. 1986. Bering Sea herring aerial survey manual, modified for Port Moller. Unpublished document prepared by Alaska Department of Fish and Game, Commercial Fisheries Division, 211 Mission Road, Kodiak, Alaska 99615.
- ADF&G (Alaska Department of Fish and Game). 1994. 1994-95 Commercial herring fishing regulations, 1994 edition. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Juneau.
- McCullough, J.N., and R.D. Campbell. 1995a. Alaska Peninsula and Aleutian Islands Management Areas sac roe herring management plan, 1995. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 4K95-19, Kodiak.
- McCullough, J.N., and R.D. Campbell. 1995b. Aleutian Islands Management Area food and bait herring management plan, 1995. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 4K95-22, Kodiak.
- Rogers, D.E., and K.N. Schnepf. 1985. Feasibility of using scale analysis methods to identify Bering Sea herring stocks. University of Washington Fisheries Research Institute, Report FRI-UW-8501, Seattle, Washington.
- Warner, I.M., and P. Shafford. 1979. Forage fish spawning surveys-southern Bering Sea. Alaska Marine Environmental Assessment Project. Completion Report (revised November 1979), Alaska Department of Fish and Game, Kodiak. 59p.

Table 1. Alaska Peninsula Management Area commercial sac roe herring harvest by time period and area, 1979-95.

Year	South Peninsula		North Peninsula		Total
	Harvest (Tons)	Time Period	Harvest (Tons)	Time Period	
1979	10.1	July 4-July 4	0.0		10.1
1980	453.8	May 18-July 14	0.0		453.8
1981	797.4	May 9-June 23	0.0		797.4
1982	138.3	May 31-June 14	505.5	May 31-June 12	643.8
1983	0.0		627.0	May 9-May 29	627.0
1984	210.4	May 13-June 1	431.2	May 24-June 8	641.6
1985	287.8	June 1-June 11	710.2	May 24-June 4	998.0
1986	281.9	June 7-June 14	894.4	May 18-May 30	1,176.3
1987	319.0	June 8-June 19	513.8	May 9-June 5	832.8
1988	376.7	May 31-June 20	294.3	May 17-June 15	671.0
1989	310.3	May 13-June 19	729.0	May 28-June 23	1,039.3
1990	312.2	May 14-June 14	272.8	June 4-June 19	585.0
1991	157.4	May 16-June 11	1,313.0	May 17-July 4	1,470.5
1992	180.4	June 4-June 7	3,969.0	May 23-June 17	4,149.4
1993	97.0	May 27-June 9	535.9	May 8-June 9	632.9
1994	8.2	June 2-June 3	89.8	May 21-June 7	98.1
1995	62.7	June 6-June 17	337.3	May 29-June 20	400.0
1985-94 Average	233.1		932.2		1,165.3

Table 2. North Peninsula commercial sac roe herring harvest by geographic area, 1982-95.

Year	Port Moller District			Bear River Bering Sea Coast	Port Heiden District	Total
	Deer Island	Herendeen Bay	Moller Bay		Port Heiden Bay	
1982	0.0	279.5	180.0	46.0	0.0	505.5
1983	0.0	509.3	36.5	81.3	0.0	627.0
1984	0.0	180.8	250.4	0.0	0.0	431.2
1985	0.0	173.3	255.5	281.4	0.0	710.2
1986	0.0	156.1	254.8	483.5	0.0	894.4
1987	0.0	156.6 <sup>a</sup>	349.8	7.3	0.0	513.8
1988	0.0	8.2	286.1	0.0	0.0	294.3
1989	0.0	67.0	246.5	415.6	0.0	729.0
1990	0.0	155.8	117.1	0.0	0.0	272.8
1991	156.3	167.0	689.6	300.2	0.0	1,313.0
1992	18.3	0.0	2,350.7	0.0	1,600.0	3,969.0
1993	0.0	106.6	371.0	57.9	0.0	535.9
1994	7.2	0.0	82.6	0.0	0.0	89.8
1995	3.2	145.7	188.4	0.0	0.0	337.3
1995 District Total		337.3			0.0	337.3
1985-94 Average	18.2	99.1	500.4	154.6	160.0	932.2

<sup>a</sup> At least 11 tons were caught in the Deer Island-Mud Bay Section.

Table 3. South Peninsula commercial sac roe herring harvest by geographic area, 1980-95.

Year	Area									Total
	Stepovak Bay <sup>a</sup>	Balboa Bay	Pavlof Bay	Canoe Bay	Volcano-Dolgoi	Belkofski Bay	Lenard Harbor	Dolgoi Harbor	Shumagin Islands	
1980	195.0	132.0	114.0	12.0	0.0	0.0	0.0	0.0	0.0	453.0
1981	122.0	36.0	225.0	206.0	65.0	23.0	110.0	0.0	0.0	787.0
1982	0.0	5.0	0.0	171.2	0.0	0.0	0.0	0.0	0.0	176.2
1983 <sup>b</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	30.0	25.0	0.0	155.4	0.0	0.0	0.0	0.0	0.0	210.4
1985	11.0	0.0	95.0	239.0	0.0	0.0	0.0	0.0	0.0	345.0
1986 <sup>c</sup>	0.0	0.0	61.0	140.5	13.0	8.0	59.0	0.0	0.0	281.5
1987 <sup>c</sup>	0.0	0.0	92.0	118.0	0.0	38.0	59.0	12.0	0.0	319.0
1988 <sup>d</sup>	0.3	11.0	69.0	236.5	17.0	12.0	31.0	0.0	0.0	376.8
1989	39.0	17.0	53.0	148.0	0.0	0.0	9.0	5.0	39.0	310.0
1990	71.7	20.8	0.0	120.4	0.0	3.2	5.9	0.0	90.4	312.2
1991	19.3	19.3	0.0	77.5	0.0	0.0	0.0	0.0	41.4	157.4
1992	0.0	0.0	0.0	180.4	0.0	0.0	0.0	0.0	0.0	180.4
1993	4.6	0.0	0.0	92.2	0.0	0.0	0.0	0.0	0.0	96.8
1994	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	8.2
1995	0.0	9.8	0.0	52.9	0.0	0.0	0.0	0.0	0.0	62.7
1985-94 Average										
	14.6	6.8	37.0	136.1	3.0	6.1	16.4	1.7	17.1	238.7

<sup>a</sup> The 198488 catches came from Ramsey Bay, the 1989 and 1993 catch came from Granville Bay.

<sup>b</sup> In 1983 the South Peninsula sac roe fishery was closed, all herring catches were allocated to a food and bait fishery that did not develop.

<sup>c</sup> Stepovak Bay (Kupreanof Point to Swedania Point) was closed during 1986-87 due to the herring biomass being below the threshold biomass required for a commercial fishery.

<sup>d</sup> In Stepovak Bay seven tons of immature (green) herring were dumped on May 7, and an additional two tons were dumped on May 11.

Table 4. Alaska Peninsula and Aleutian Islands Management Areas sac roe herring harvest guideline levels, by management area, 1995.<sup>a</sup>

Management Area	Sac Roe Guideline Harvest In Short Tons
<i>South Peninsula</i>	
Sand Point District	
Stepovak Bay Section	50
Swedania Point-Balboa Bay Section	b
Point Aliaksin-Beaver Bay Section	b
General Section	b
Pavlof District	
Canoe Bay Section	100
Pavlof Bay Section	b
Seal Cape-Wosnesenski Section	b
General Section (Volcano Bay)	b
King Cove District	
Belkofski Section	b
Deer Passage Section	b
Cold Bay Section	b
General Section	b
<i>South Peninsula Total</i>	<i>150</i>
<i>North Peninsula</i>	
Amak District	b
Port Moller District <sup>e</sup>	
Western Section	b
Deer Island Section <sup>d</sup>	
Herendeen Bay Section	200
Inner Moller Bay Section	200
Outer Moller Bay	650
Bear River Section <sup>e</sup>	50
Port Heiden District <sup>f</sup>	b
<i>North Peninsula Total</i>	<i>1,100</i>

-Continued-

Table 4. (page 2 of 2)

Management Area	Sac Roe Guideline Harvest In Short Tons
<i>Aleutian Islands</i>	
Unimak District	b
Akutan District	b
Unalaska District	b
Umnak District	b
Adak District	b
<i>Guideline Harvest Total<sup>f</sup></i>	<i>1,250</i>

<sup>a</sup> The Aleutian Islands Management Area is open for exploration; no deliveries have ever been made from the Aleutian Islands. Portions of a section, district, or area may be closed if it is suspected that additional harvests in a given location will exceed 20% of the spawning biomass.

<sup>b</sup> All areas without guideline harvest levels are open for exploration. Harvests in these areas will be kept small (50 tons or less) until ADF&G is able to document the spawning biomass. For the General Section of the Sand Point District (Shumagin Islands), Seal Cape-Wosnesenski Section, the General Section of the King Cove District, Amak District, Western Section of the Port Moller District, and the Aleutian Islands, no more than 50 tons of herring will be allowed to be harvested from the waters near any single island or bay in exploratory areas unless ADF&G documents a herring biomass that would allow a larger harvest.

<sup>c</sup> Herring abundance in the Port Moller District is difficult to document. The 1995 herring abundance may justify a larger harvest than 1,100 tons, however to increase the guideline harvest level a larger than expected spawning biomass must be documented by ADF&G.

<sup>d</sup> Herring harvested in the Deer Island Section of Herendeen Bay will be counted against the Herendeen Bay guideline harvest level.

<sup>e</sup> Herring harvested along the Bering Sea coast will be counted against the Port Moller and Herendeen Bays guideline harvest level if it is suspected that these herring were traveling into Port Moller or Herendeen Bays.

<sup>f</sup> In 1992, commercial quantities of herring were harvested for the first time in the Port Heiden District. The 1995 herring abundance may justify a harvest larger than 50 tons, however to increase the guideline harvest level a larger than expected spawning biomass must be documented by ADF&G. The commercial herring fishery will be managed conservatively until adequate data is obtained to warrant a liberal management approach. Herring harvested along the Bering Sea coast will be counted against the Port Heiden guideline harvest level if it is suspected that these herring were traveling in to Port Heiden Bay.

<sup>g</sup> Total does not include harvests that may occur in areas open for exploration.

Table 5. Aleutian Islands area "Dutch Harbor" food and bait herring fisheries historical summary, 1929-95.

Year	Harvest In Short Tons	Number Of Processors	Successful Number Permits	Number Landings	Tons Per Boat	Tons Per Landing	Price Per Ton	Exvessel Value (Thousands)	Exvessel Value Per Vessel (Thousands)	
1929	1,259	*	*	*	*	*	*	*	*	
1930	1,916	*	*	*	*	*	*	*	*	
1931	1,056	12	26	*	*	*	*	*	*	
1932	2,510	12	30	*	*	*	*	*	*	
1933	1,585	12	38	*	*	*	*	*	*	
1934	1,533	9	*	*	*	*	*	*	*	
1935	2,412	10	*	*	*	*	*	*	*	
1936	1,379	8	*	*	*	*	*	*	*	
1937	579	*	*	*	*	*	*	*	*	
1938	513	*	*	*	*	*	*	*	*	
1939-44					No Fishery					
1945	75	*	*	*	*	*	*	*	*	
1946-80					No Fishery					
1981	704	a	a	16	352	44	300	211	a	
1982	3,565	6	7	95	509	38	300	1,020	146	
1983	3,567	5	8	96	446	37	232	828	104	
1984	3,578	5	9	61	398	59	210	751	83	
1985	3,480	3	6	78	560	45	162	564	94	
1986	2,394	4	7	53	342	45	254	600	86	
1987	2,503	4	8 <sup>b</sup>	45	373	56	300	751	94	
1988	2,004	6	8 <sup>b</sup>	59	251	34	252	505	63	
1989	3,081	5	9 <sup>b</sup>	69	342	45	283	873	97	
1990	820	5	7	8	117	103	350	287	41	
1991	1,325	5	8	18	166	74	300	398	50	
1992	1,949	5	11	26	177	75	300	573	52	
1993	2,790	4	13	32	215	87	300	837	64	
1994	3,349	7	14	65	239	52	300	1,005	72	
1995	1,748	6	14	24	125	73	300	524	37	
1929-38 Average	1,474	11	31 *	*	*	*	*	*	*	
1985-94 Average	2,370	5	9	45	278	62	280	639	71	

<sup>a</sup> The number of processors, fishing vessels, and catch by gear type can not be released due to state confidentiality requirements.

<sup>b</sup> The catch by gear type can not be released due to state confidentiality requirements or is not available.

Table 6. Aleutian Islands area "Dutch Harbor" commercial food and bait herring harvests, 1981-95.

Year	Landing First	Date Last	Days Fished	Preseason Togiak Spawning Biomass Short Tons	Harvest Quota Short Tons	Food & Bait Harvest Short Tons	% Togiak Spawning Biomass Harvested	Number Permit Holders Fishing
1981	Aug 3	Aug 23	21	159,000	None	704	0.4	<sup>a</sup>
1982	Aug 5	Sep 12	39	98,000	None	3,565	3.6	6
1983	Jul 23	Sep 6	46	142,000	3,525 <sup>b</sup>	3,567	2.5	5
1984	Jul 17	Jul 27	11	115,000	3,525 <sup>b</sup>	3,578	3.1	5
1985	Jul 17	Aug 11	26	132,000	3,525 <sup>b</sup>	3,480	2.6	3
1986	Jul 16	Jul 28	13	96,000	2,453 <sup>c</sup>	2,394	2.5	4
1987	Jul 16	Jul 23	4 <sup>d</sup>	88,000	2,332 <sup>c</sup>	2,503	2.8	9
1988	Jul 16	Sep 18	21	132,000	3,100 <sup>e</sup>	2,004	1.6	8
1989	Jul 16	Aug 5	19 <sup>f</sup>	100,108	3,100 <sup>e</sup>	3,081	3.2	9
1990	Aug 15	Aug 15	<1	72,000	903 <sup>e</sup>	820	1.1	7
1991	Jul 17 <sup>g</sup>	Jul 17	<1	83,229	931 <sup>e</sup>	1,325	1.6	8
1992	Jul 16	Jul 28 <sup>h</sup>	5	60,214 <sup>i</sup>	1,940 <sup>i</sup>	1,949	1.3	11
1993	Jul 16	Jul 16	<1	164,135	2,193	2,790	1.7	13 <sup>k</sup>
1994	Jul 16	Jul 19	4	165,747 <sup>j</sup>	2215 <sup>j</sup>	3,349	2.0	14 <sup>k</sup>
1995	Jul 16	Jul 16	<1	149,093	1,982	1,748	1.2	18 <sup>k</sup>
1985-94								
Average			10	109,343	2,269	2,370	2	9

<sup>a</sup> Number may not be released due to state confidentiality requirements.

<sup>b</sup> Harvest ceiling of 3,525 established by Alaska Board of Fisheries.

<sup>c</sup> Harvest quota set by ADF&G. Reduced proportionate with the drop from the 1985 Togiak spawning biomass level.

<sup>d</sup> Closed July 19 reopened for 14 hours on July 23.

<sup>e</sup> Harvest quota set under provisions of the Bering Sea Herring Fisheries Management Plan.

<sup>f</sup> Closed July 26, reopened July 27 through August 5.

<sup>g</sup> Fishery opened for six hours on July 16; weather prevented any fishing effort.

<sup>h</sup> Fishery co-op after July 16.

<sup>i</sup> The preseason forecasted biomass was adjusted by ADF&G, the final biomass estimate for Togiak was 146,037 tons and the harvest quota was adjusted to 1,940 tons.

<sup>j</sup> The preseason forecasted biomass was adjusted by ADF&G (Kathy Rowell, personal communication, May 25, 1994).

<sup>k</sup> Number of permit holders registered to fish.

Table 7. Alaska Peninsula sac roe herring harvest, number of landings, and permits by year, 1979-95.

Year	North Peninsula				South Peninsula				Total			
	Pounds	Tons	Landings	Permits	Pounds	Tons	Landings	Permits	Pounds	Tons	Landings	Permits
1979					20,213	10.1	1	1	20,213	10.1	1	1
1980					907,649	453.8	15	6	907,649	453.8	15	6
1981					1,594,884	797.4	93	56	1,594,884	797.4	93	56
1982	1,011,000	505.5	6	3	276,655	138.3	13	4	1,287,655	643.8	19	7
1983	1,253,922	627	47	23	0	0	0	0	1,253,922	627	47	23
1984	862,345	431.2	20	11	420,755	210.4	20	5	1,283,100	641.6	40	15
1985	1,420,394	710.2	31	17	575,561	287.8	8	5	1,995,955	998	39	20
1986	1,788,775	894.4	116	50	563,816	281.9	14	6	2,352,591	1,176.30	130	51
1987	1,027,617	513.8	46	27	637,960	319	8	2	1,665,577	832.8	54	27
1988	588,599	294.3	21	9	753,322	376.7	22	10	1,341,921	671	43	19
1989	1,457,925	729	24	10	620,549	310.3	31	13	2,078,474	1,039.20	55	19
1990	545,685	272.8	23	5	624,420	312.2	31	6	1,170,105	585.1	54	9
1991	2,626,080	1,313.0	59	11	314,828	157.4	26	10	2,940,908	1,470.50	85	18
1992	7,938,010	3,969.0	100	24	360,600	180.3	11	7	8,302,710	4,151.40	112	29
1993	1,071,740	535.9	44	16	193,600	96.8	17	3	1,265,780	632.9	61	17
1994	179,600	89.8	7	5	16,400	8.2	a	a	196,000	98.1	11	6
1995	674,520	337.3	37	12	125,380	62.7	a	a	799,900	400	39	13
1985-94 Average												
	1,864,443	932.2	47	17	466,106	233.1	17	7	2,330,549	1,165.30	64	22

\* Number can not be released due to state confidentiality requirements.

Table 8. North Peninsula aerial herring biomass surveys, 1995.

Date	Port Moller District						Bear River to Strogonof Point		
	Herendeen Bay			Moller Bay			RAI <sup>a</sup>	Tons <sup>b</sup>	Rating <sup>c</sup>
	RAI <sup>a</sup>	Tons <sup>b</sup>	Rating <sup>c</sup>	RAI <sup>a</sup>	Tons <sup>b</sup>	Rating <sup>c</sup>	RAI <sup>a</sup>	Tons <sup>b</sup>	Rating <sup>c</sup>
May 13	22	34 <sup>d</sup>	3	34	52 <sup>d</sup>	3	0	0	2
May 17	0	0	2	0	0	2	0	0	2
May 18 <sup>e</sup>	0	0	2	15	23 <sup>d</sup>	2	0	0	2
May 19	0	0	2	44	67 <sup>d</sup>	2	0	0	2
May 19	0	0	2	0	0	2	0	0	2
May 21	0	0	2	0	0	2	0	0	2
May 25	0	0	3	0	0	3	0	0	3
May 31	0	0	2	18	27 <sup>d</sup>	2	0	0	2
June 1	17	26 <sup>d</sup>	1	202	308 <sup>d</sup>	1	0	0	2
June 2				0	0	5			
Total Biomass Observed <sup>f</sup>									
	39	60		313	477		0	0	

Herendeen Bay includes both the Herendeen Bay and Deer Island-Mud Bay Sections.  
Moller Bay includes both the Inner and Outer Port Moller Bay Sections.

RAI units express the surface area of herring schools in terms of small schools (surface area equal to 538 square feet). For example, 10 RAI units are equivalent to 10 small herring schools each with a surface area of 538 square feet.

<sup>a</sup> Relative Abundance Index (RAI): small school (less than 538 square feet) = 1 RAI unit  
medium school (538 square feet to 4,841 square feet) = 5 RAI units  
large school (total surface area in square feet/538 square feet) = RA

<sup>b</sup> Tons: RAI units are multiplied by 1.52 (schools in water less than 16 feet of depth)

<sup>c</sup> Rating of survey: (1) Excellent, (2) Good, (3) Fair, (4) Poor, (5) Unsatisfactory

<sup>d</sup> Used in calculating biomass estimate

<sup>e</sup> An additional 29 tons of juvenile herring were observed in Herendeen Bay.

<sup>f</sup> A minimum of 200.1 additional tons of new herring moved into the district and were harvested after June 2.

Table 9. North Peninsula commercial sac roe herring harvest by area, day, and percent roe, 1995.

Area	Date	Catch in Short Tons		Percent Roe	Total
		Food/Bait	Sac Roe		
<b>Herendeen Bay</b>	May 29	0.0	16.6	7.10	
	May 30	0.0	6.5	9.50	
	June 2	0.0	6.5	8.47	
	June 3	0.0	1.8	10.00	
	June 12	0.0	32.3	9.90	
	June 14	0.0	1.4	9.50	
	June 16	0.0	8.8	8.40	
	June 19	0.0	45.7	8.80	
	June 20	0.0	26.1	9.10	
Total		0.0	145.7	9.05	145.7
<b>Deer Island</b>	May 30	0.0	3.2	9.30	
Total		0.0	3.2	9.30	3.2
<b>Inner Moller Bay</b>	May 31	0.0	34.1	8.15	
	June 1	0.0	41.7	9.03	
	June 2	0.0	28.6	8.47	
	June 9	0.0	22.4	8.50	
	June 15	0.0	15.1	8.30	
	Total		0.0	141.9	8.51
<b>Outer Moller Bay</b>	June 12	0.0	30.1	8.20	
	June 17	0.0	16.3	9.63	
	Total	0.0	46.5	8.69	46.5
<b>Total</b>		0.0	337.3	8.77	337.3

Table 10. Estimated age composition of North Peninsula commercial purse seine sac roe herring harvests by area, in percent, 1985-95.

Area	Year	Ages									
		2	3	4	5	6	7	8	9	10	11+
Herendeen Bay											
	1985	0	5	49	21	15	6	4	0	0	0
	1986	0	0	3	25	13	20	21	17	1	0
	1987	0	2	4	22	24	17	13	10	6	2
	1988	0	3	23	30	22	9	4	3	3	2
	1989	0	0	2	62	22	5	1	1	0	7
	1990	0	14	3	1	57	15	3	1	1	5
	1991	0	2	72	5	2	11	4	0	2	3
	1992				No harvest in this section						
	1993				No samples from this section						
	1994				No harvest in this section						
	1995	0	5	22	42	17	7	2	0	0	5
Deer Island-Mud Bay											
	1991	0	1	65	7	3	18	5	0	1	1
	1992	0	0	17	64	5	2	6	3	2	2
	1993-95				No samples from this section						
Inner Moller Bay											
	1985	0	1	12	8	15	33	27	2	0	1
	1986	0	1	7	21	12	18	19	20	1	1
	1987	0	2	11	13	22	12	11	17	11	0
	1988	0	1	30	29	12	6	5	5	8	5
	1989	0	1	1	67	19	3	1	2	2	4
	1990	0	13	4	2	49	16	5	2	2	6
	1991	0	1	59	13	2	16	1	5	2	1
	1992	0	0	23	60	4	2	6	2	1	2
	1993	0	0	0	10	48	5	2	17	8	10
	1994	0	0	3	12	19	46	4	1	10	6
	1995	0	1	2	8	16	23	38	3	4	6
Outer Moller-Bering Sea Coast											
	1985	0	1	26	16	20	17	17	1	1	0
	1986	0	0	2	22	13	21	23	18	1	0
	1987	0	2	48	9	14	5	11	8	3	0
	1988				No harvest in this section						
	1989	0	0	0	6	26	6	24	7	10	21
	1991 <sup>a</sup>	90	10	0	0	0	0	0	0	0	0
	1991 <sup>b</sup>	0	3	74	6	1	11	2	1	1	0
	1992 <sup>b</sup>	0	2	41	49	2	0	2	2	0	2
	1993				No samples from this section						
	1994	0	0	8	8	0	54	0	0	23	8
	1995				No samples from this section						

Table 10. (page 2 of 2)

Area	Year	Ages									
		2	3	4	5	6	7	8	9	10	11+
Bering Sea Coast											
Bear River area											
	1991	0	2	86	8	0	4	1	0	0	1
	1992	No harvest in this section									
	1993	No samples from this section									
	1994-95	No harvest in this section									
Cape Kutuzof area											
	1991	0	0	37	10	0	40	9	2	2	2
	1992-95	No harvest in this section									
Port Heiden											
	1992	0	0	9	64	5	1	13	2	1	4
	1993-95	No harvest in this section									

<sup>a</sup> Juvenile herring sample.

<sup>b</sup> Outer Port Moller Bay Section samples only.

Table 11. Estimated age, sex, weight, and length of herring harvested in the Inner Port Moller (May 15) and Herendeen Bay (May 29) commercial sac roe herring fishery, 1995.

Age Years	Sample Size			Catch (Percent)			Weight			Length <sup>a</sup>		
	Male	Female	Total	Male	Female	Total	N	Mean (g)	SD (g)	N	Mean (mm)	SD (mm)
<b>Inner Port Moller</b>												
3	1	0	1	0.6	0	0.6	1	196	0	1	290	0
4	3	0	3	1.7	0	1.7	3	162	18.2	3	278	6.8
5	6	8	14	3.3	4.4	7.8	14	221	21.2	14	298	9.1
6	16	13	29	8.9	7.2	16.1	28	247	34.8	29	313	10.5
7	20	21	41	11.1	11.7	22.8	41	292	34	41	331	9.7
8	45	23	68	25	12.8	37.8	68	312	40.3	68	338	11.8
9	4	2	6	2.2	1.1	3.3	6	318	64.3	6	345	8.7
10	5	3	8	2.8	1.7	4.4	8	333	42.2	8	349	10.7
11	5	5	10	2.8	2.8	5.6	10	394	50.3	10	362	10.5
Total	105	75	180	58.3	41.7	100.0	179	293	57.3	180	330	19.9
<b>Herendeen Bay</b>												
3	1	1	2	2.4	2.4	4.9	2	125	17	2	259	5.7
4	2	7	9	4.9	17.1	22	9	144	9.5	9	262	3.2
5	11	6	17	26.8	14.6	41.5	17	187	33.5	17	286	10.4
6	5	2	7	12.2	4.9	17.1	7	204	34.5	7	294	17.9
7	2	1	3	4.9	2.4	7.3	3	242	46.9	3	317	15.3
8	0	1	1	0	2.4	2.4	1	248	0	1	332	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	1	1	2	2.4	2.4	4.9	2	346	4.9	2	346	7.8
Total	22	19	41	53.7	46.3	100	41	191	54.6	41	287	24.1
<b>All Areas</b>												
3	2	1	3	0.9	0.5	1.4	3	149	42.7	3	269	18.3
4	5	7	12	2.3	3.2	5.4	12	149	13.9	12	266	8.2
5	17	14	31	7.7	6.3	14	31	203	32.9	31	291	11.6
6	21	15	36	9.5	6.8	16.3	35	239	38.4	36	309	14.1
7	22	22	44	10	10	19.9	44	288	36.6	44	330	10.6
8	45	24	69	20.4	10.9	31.2	69	311	40.7	69	338	11.8
9	4	2	6	1.8	0.9	2.7	6	318	64.3	6	345	8.7
10	5	3	8	2.3	1.4	3.6	8	333	42.2	8	349	10.7
11	6	6	12	2.7	2.7	5.4	12	386	49.2	12	359	11.7
Total	127	94	221	57.5	42.5	100	220	274	69.2	221	322	26.6

<sup>a</sup> Lengths are not standard, lengths are from tip of lower jaw to fork of tail.

Table 12. South Peninsula commercial sac roe herring harvest by area, day, and percent roe, 1995.

Area	Date	Catch Tons	Roe Percent
Balboa Bay	June 6	9.8	9.60
Canoe Bay	June 17	52.9	9.30
Total		62.7 <sup>a</sup>	9.35

<sup>a</sup> No samples were collected from South Peninsula herring harvests.

Table 13. Estimated age composition of South Peninsula commercial purse seine sac roe herring harvests by area, in percent, 1985-95.

Year	Ages									
	2	3	4	5	6	7	8	9	10	11
<b>Stepovak Bay</b>										
1985	No samples									
1986-87	No catch									
1988	0	5	78	17	0	0	1	0	0	0
1989	0	3	31	50	13	0	0	0	2	0
1990	1	6	8	28	50	7	1	0	1	1
1991 <sup>a</sup>	0	4	13	6	23	42	13	0	0	0
1992	No catch									
1993 <sup>a</sup>	No samples									
1994-95	No catch									
<b>Balboa Bay</b>										
1988	0	32	50	9	0	1	3	1	2	3
1989	No samples									
1990	0	4	7	22	59	4	0	4	0	0
1991	0	16	11	16	26	32	0	0	0	0
1992-94	No catch									
1995	No samples									
<b>Shumagin Islands</b>										
1989	0	1	15	79	1	0	0	3	0	2
1990	0	4	0	26	67	2	0	0	0	1
1991	0	0	17	2	30	48	2	0	0	0
1992-95	No catch									
<b>Canoe Bay</b>										
1985	0	1	3	81	7	6	1	1	0	1
1986	0	6	0	3	82	6	2	0	1	0
1987	0	25	28	1	5	34	3	3	0	0
1988	0	24	31	20	0	1	16	4	2	1
1989	0	6	56	22	9	0	0	5	1	1
1990	0	23	5	49	17	5	0	0	1	0
1991	0	27	16	1	41	12	2	0	1	0
1992	0	0	6	9	1	55	23	4	0	2
1993	0	21	4	16	9	2	35	11	2	1
1994	0	71	15	1	9	2	1	2	0	0
1995	No samples									
<b>Pavlof Bay</b>										
1985-86	No samples									
1987	0	6	18	5	11	48	9	2	1	0
1988	0	34	50	5	0	2	7	0	2	0
1989	No samples									
1990-95	No catch									

-Continued-

Table 13. (page 2 of 2)

Year	Ages									
	2	3	4	5	6	7	8	9	10	11
<b>Lenard Harbor</b>										
1986	0	3	0	3	83	7	4	0	0	0
1987	0	67	5	0	3	25	0	0	0	0
1988-89	No samples									
1990	0	3	2	35	46	6	0	3	6	0
1991-95	No catch									

<sup>a</sup> The 1991 and 1993 Stepovak Bay catch was in the northeastern portion of the bay.

Table 14. South Peninsula aerial herring biomass surveys, 1995.

Date	Canoe Bay		
	RAI <sup>a</sup>	Tons <sup>b</sup>	Rating <sup>c</sup>
May 31	22	34 <sup>d</sup>	2
June 1	11	17 <sup>d</sup>	2
Total Biomass Observed <sup>e</sup>			
	33	51	

RAI units express the surface area of herring schools in terms of small schools (surface area equal to 538 square feet). For example, 10 RAI units are equivalent to 10 small herring schools, each with a surface area of 538 square feet.

<sup>a</sup> Relative Abundance Index (RAI): small school (less than 538 square feet) = 1 RAI unit; medium school (538 square feet to 4,841 square feet) = 5 RAI units; large school (total surface area in square feet/538 square feet) = RAI

<sup>b</sup> Tons: RAI units are multiplied by 1.52 (schools in water less than 16 feet of depth).

<sup>c</sup> Rating of survey: (1) Excellent, (2) Good, (3) Fair, (4) Poor, (5) Unsatisfactory

<sup>d</sup> Used in calculating biomass estimate.

<sup>e</sup> Minimum of 70 additional tons of new herring moved into the district and were harvested after June 1.

Table 15. Aleutian Islands Management Area "Dutch Harbor" commercial purse seine food and bait herring harvest by day, 1995.

Area	Date	Catch in Short Tons		
		Bait	Food	Total
Unalaska Bay <sup>a</sup>	July 16	1,528.1	220.0	1,748.1
Total		1,528.1	220.0	1,748.1

Note: There was an additional 43.2 tons harvested during test fisheries.

<sup>a</sup> Unalaska Bay harvest was from statistical area 302-31.

Table 16. Estimated age, sex, weight, and length of herring harvested in the Aleutian Islands "Dutch Harbor" commercial food and bait herring fishery, July 16, 1995.

Age Years	Sample Size			Catch (Percent)			Weight			Length		
	Male	Female	Total	Male	Female	Total	N	Mean (g)	SD (g)	N	Mean (mm)	SD (mm)
4	1	0	1	0.2	0	0.2	1	195	0	1	241	0
5	11	9	20	1.8	1.4	3.2	20	251	39.5	20	261	10.8
6	17	18	35	2.8	2.9	5.6	35	285	40.8	35	271	9.2
7	91	99	190	14.6	15.8	30.4	186	304	46	190	275	10.1
8	84	87	172 <sup>a</sup>	13.4	13.9	27.5	169	344	43.4	172	283	12.7
9	10	18	28	1.6	2.9	4.5	27	364	67.2	28	290	12.1
10	18	9	27	2.9	1.4	4.3	27	415	64.3	27	299	8.7
11	35	30	65	5.6	4.8	10.4	65	416	60.6	65	301	11.3
12	16	15	31	2.6	2.4	5	31	424	68.4	31	299	11.8
13	7	5	12	1.1	0.8	1.9	12	413	87.2	12	308	17.7
14	19	11	30	3	1.8	4.8	30	486	65.1	30	316	11.7
15	4	5	9	0.6	0.8	1.4	9	512	92.5	9	318	12.3
16	2	2	4	0.3	0.6	0.6	4	510	40.4	4	316	8.8
17	1	0	1	0.2	0	0.2	1	465	0	1	323	0
Aged Total												
	316	308	625	50.6	49.4	100	617	353	80.2	625	286	17.7
Unaged Total												
	17	15	32	53.1	46.9	5.1	31	335	75.5	32	282	18.5

<sup>a</sup> Unable to determine the sex of one of the herring sampled.

Table 17. Estimated age composition of Aleutian Islands commercial purse seine food and bait herring harvests, in percent, 1991-95.

Year	Ages													
	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1991	0.2	0.2	0.2	8.7	11.0	5.7	13.4	11.2	22.1	17.2	8.9	1.0	0.0	0.2
1992	0.0	0.3	0.2	0.3	23.3	25.0	4.8	15.2	8.9	10.0	9.4	2.5	0.2	0.0
1993	0.3	9.5	51.8	5.1	5.9	13.2	6.2	2.5	1.6	1.7	1.3	0.8	0.0	0.0
1994	0.2	1.7	24.3	36.7	3.8	4.0	13.3	6.5	3.6	3.3	1.0	0.9	0.9	0.0
1995	0.2	3.2	5.6	30.4	27.5	4.5	4.3	10.4	5.0	1.9	4.8	1.4	0.6	0.2

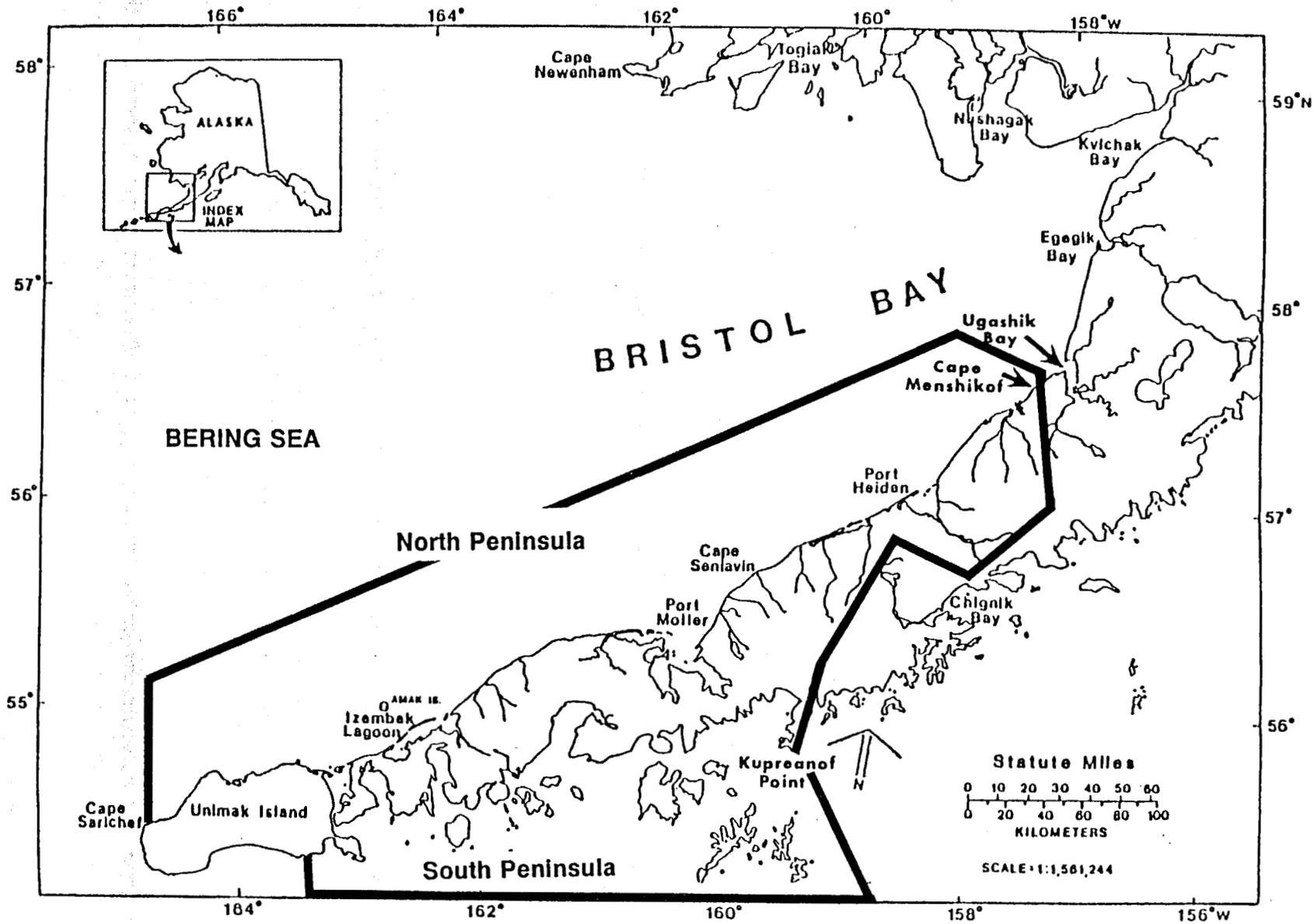


Figure 1. Map of the Alaska Peninsula Management Area, the study area on the Pacific Ocean portion of map is from Kupreanof Point to Unimak Island and on the Bering Sea from Cape Sarichef to Cape Menshikof.

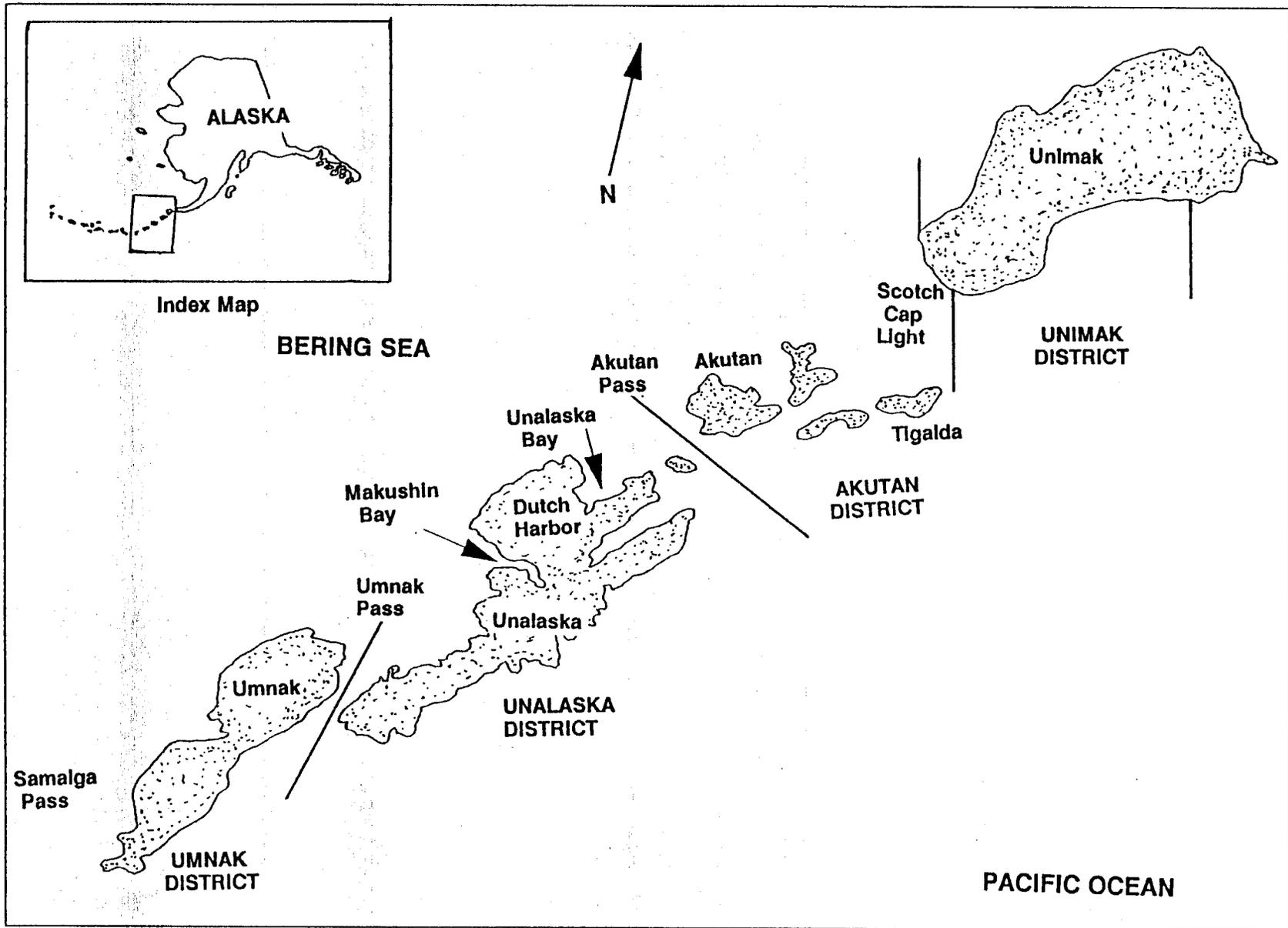


Figure 2. Map of the Aleutian Islands "Dutch Harbor" Management Area, the study area is from the Unimak District to Samalga Pass.

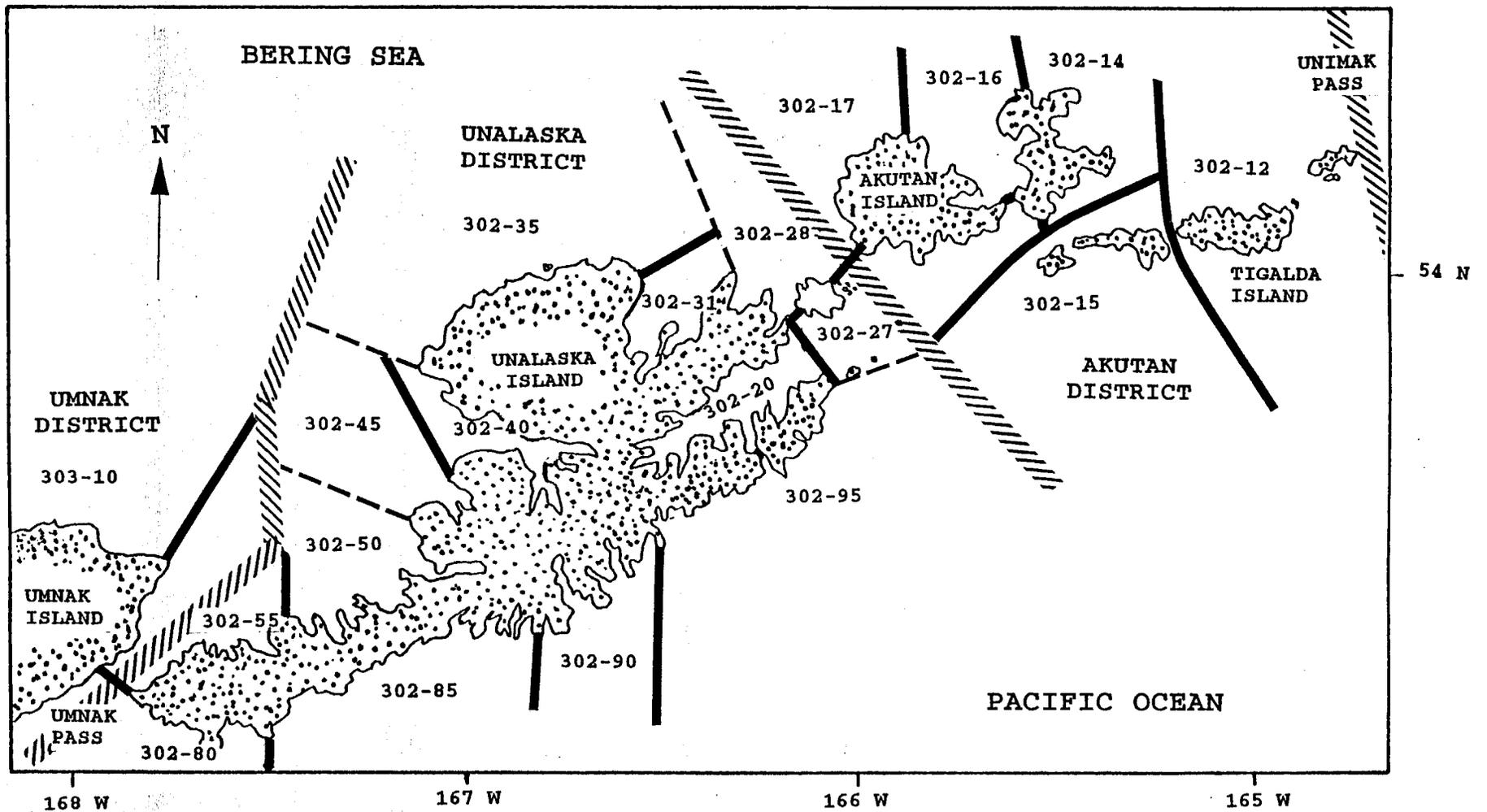


Figure 3. Map of the Aleutian Islands Area from Unimak Pass to Unimak Pass with the statistical herring fishing areas shown.

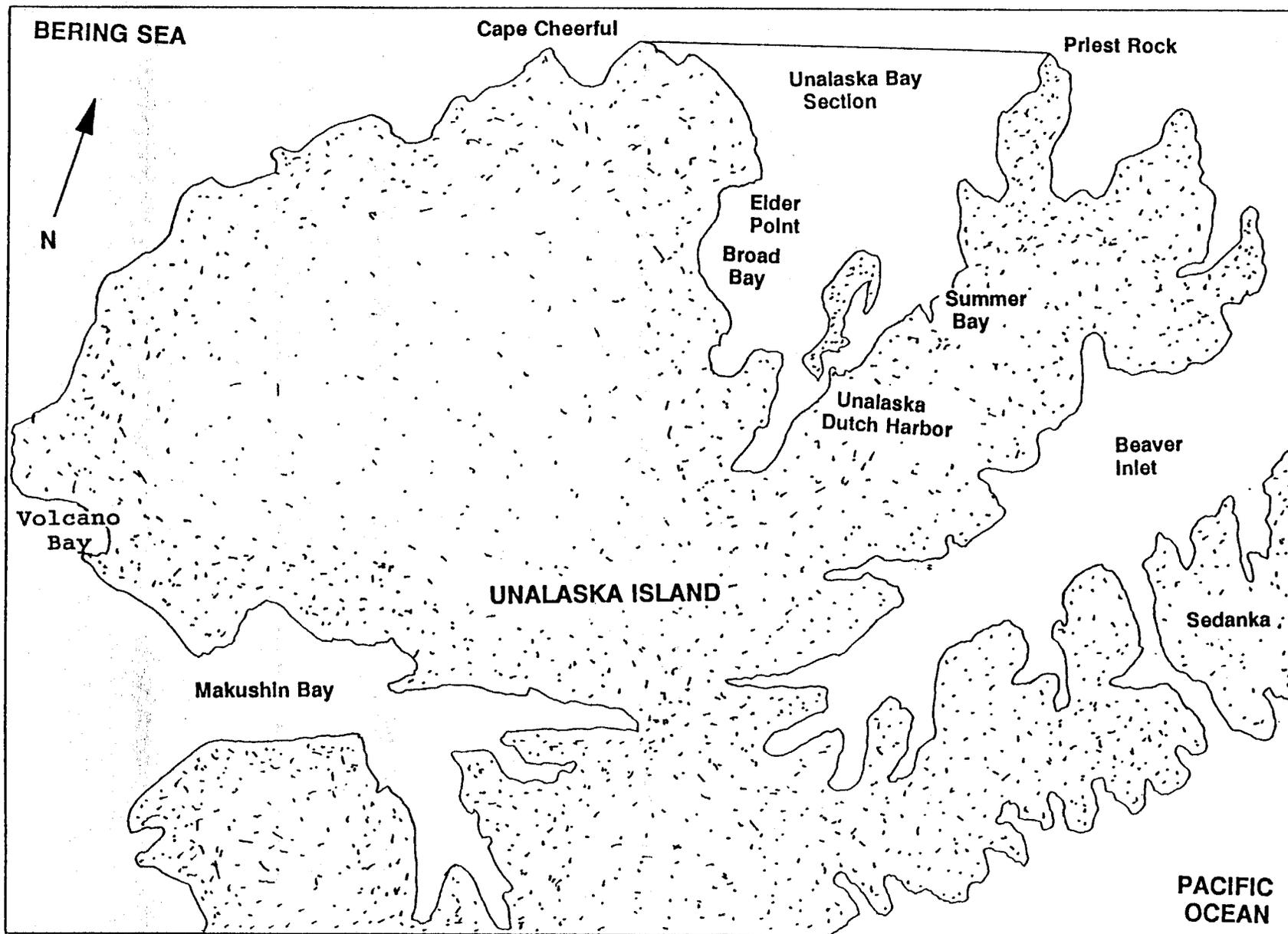


Figure 4. Map of Unalaska Island from Beaver Inlet to Volcano Bay.

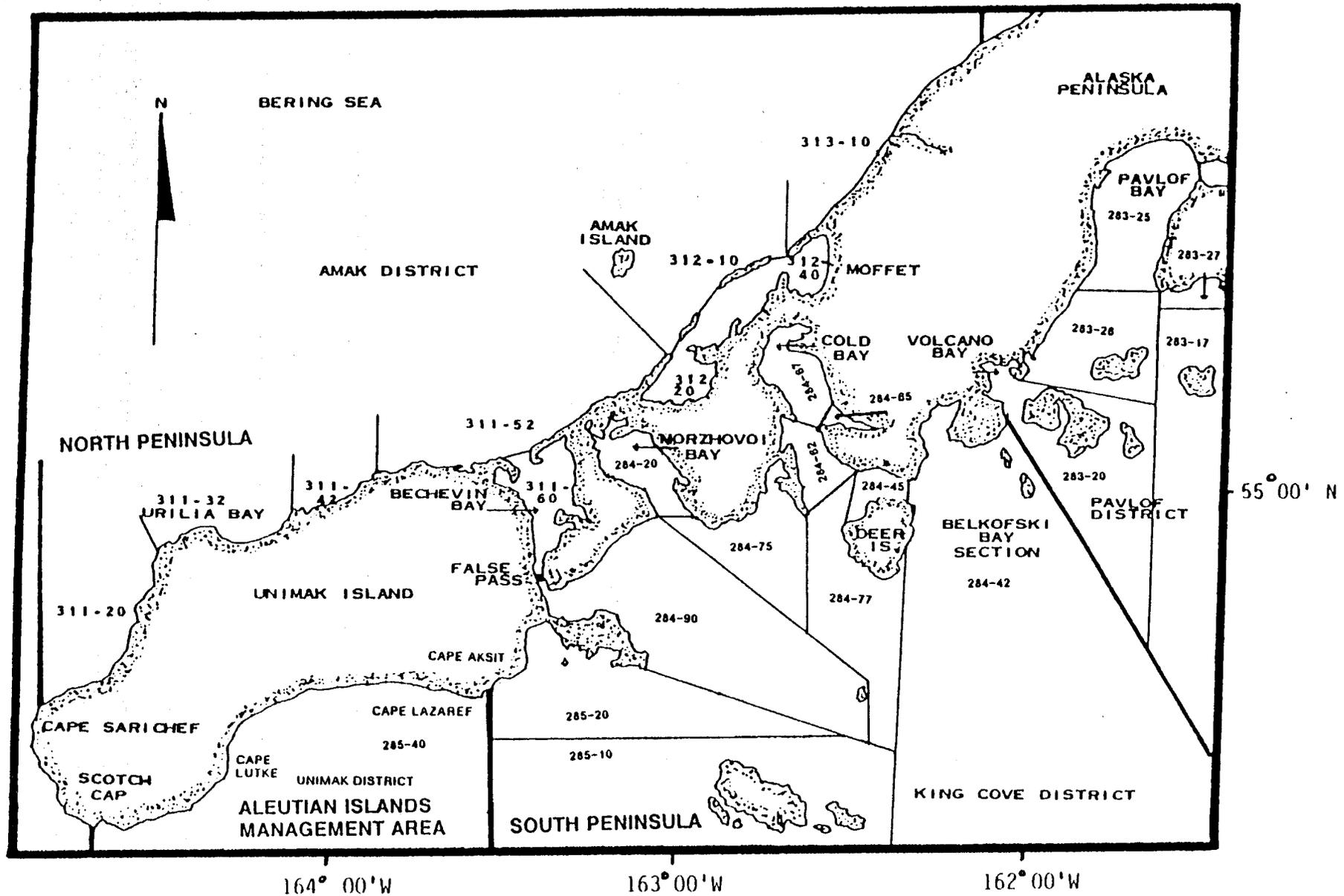


Figure 5. Map of the Alaska Peninsula Area from Cape Sarichef to Pavlof Bay with the statistical herring fishing areas shown.

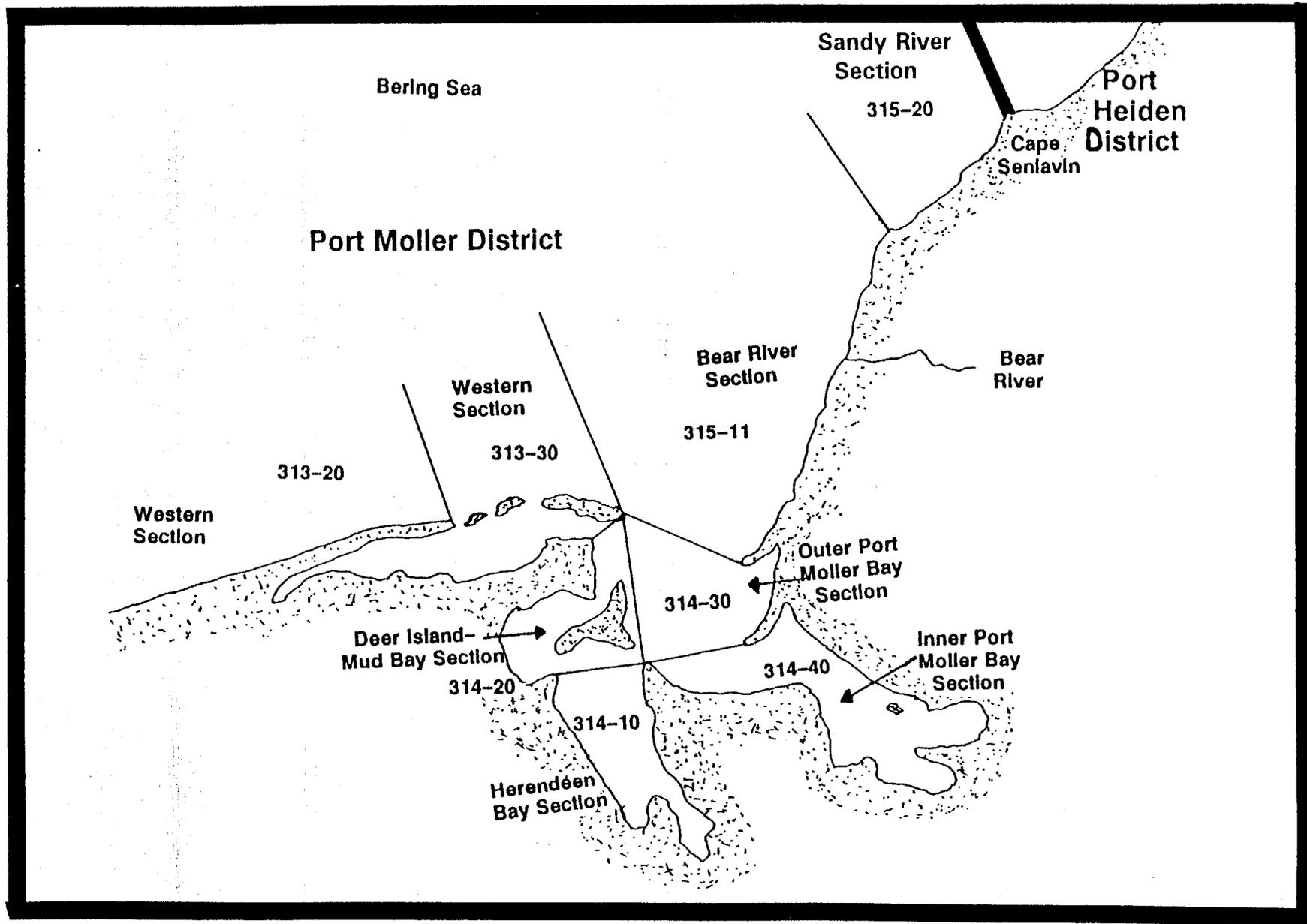


Figure 6. Map of the Port Moller District with the statistical herring fishing areas shown.

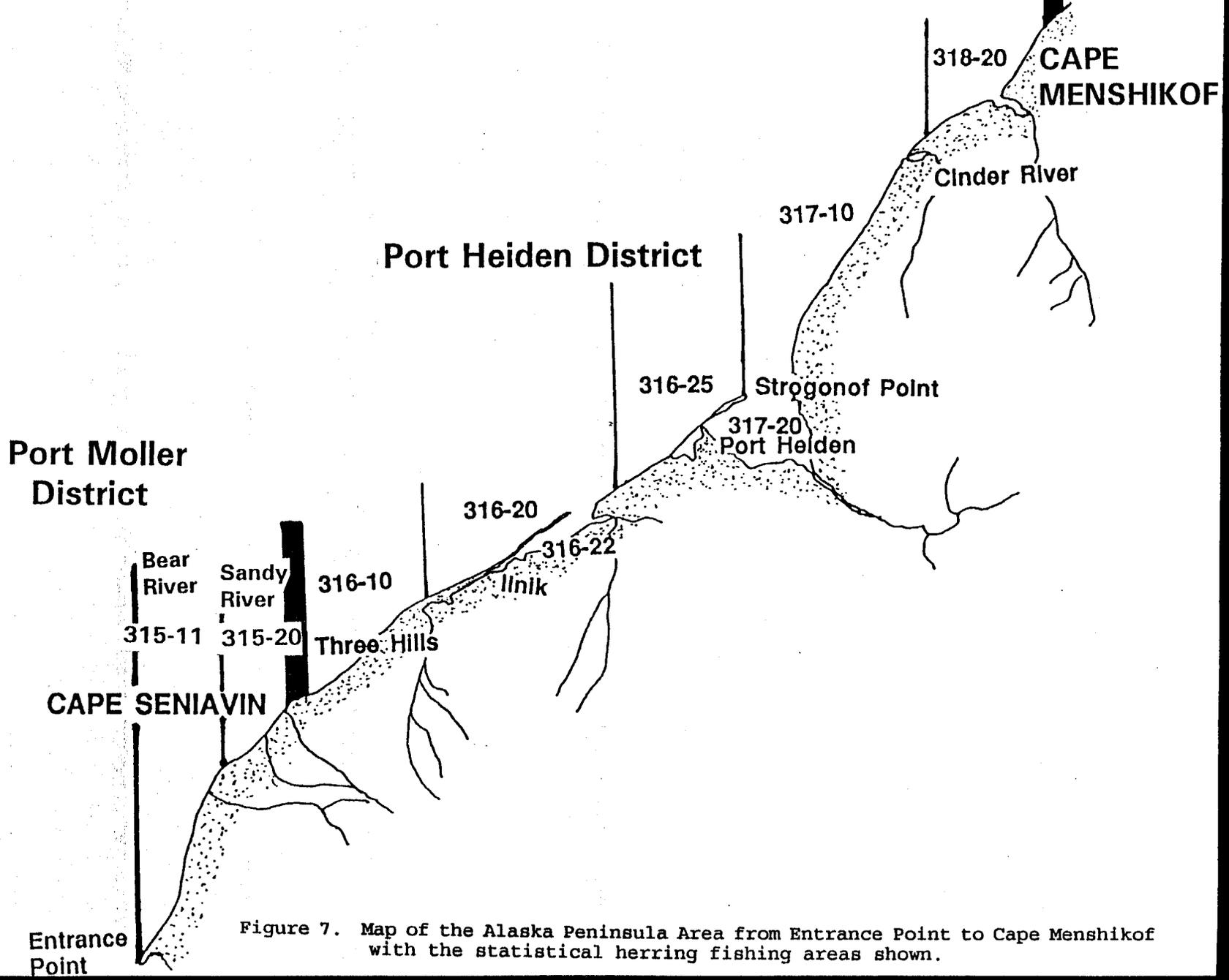


Figure 7. Map of the Alaska Peninsula Area from Entrance Point to Cape Menshikof with the statistical herring fishing areas shown.

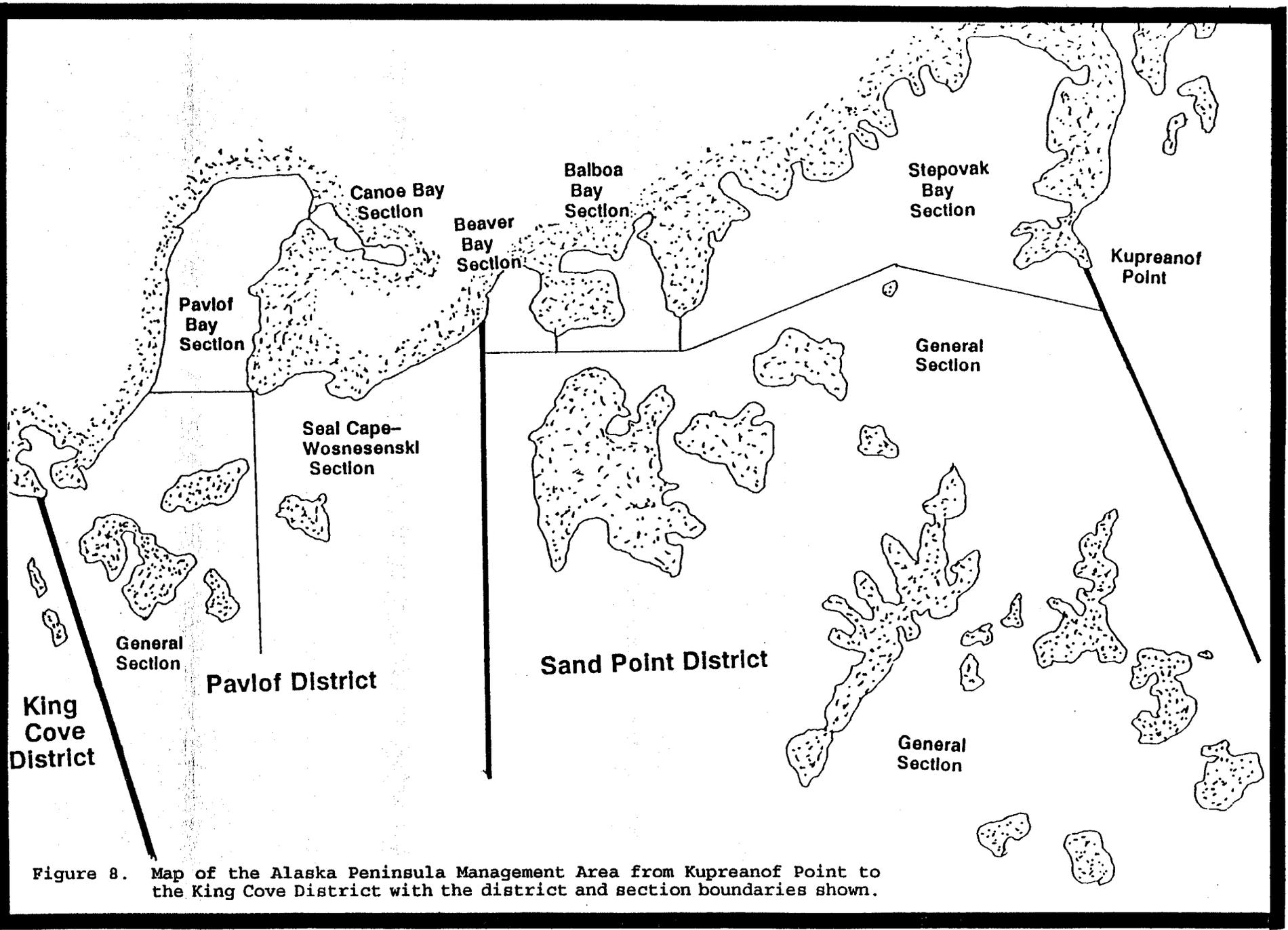


Figure 8. Map of the Alaska Peninsula Management Area from Kupreanof Point to the King Cove District with the district and section boundaries shown.

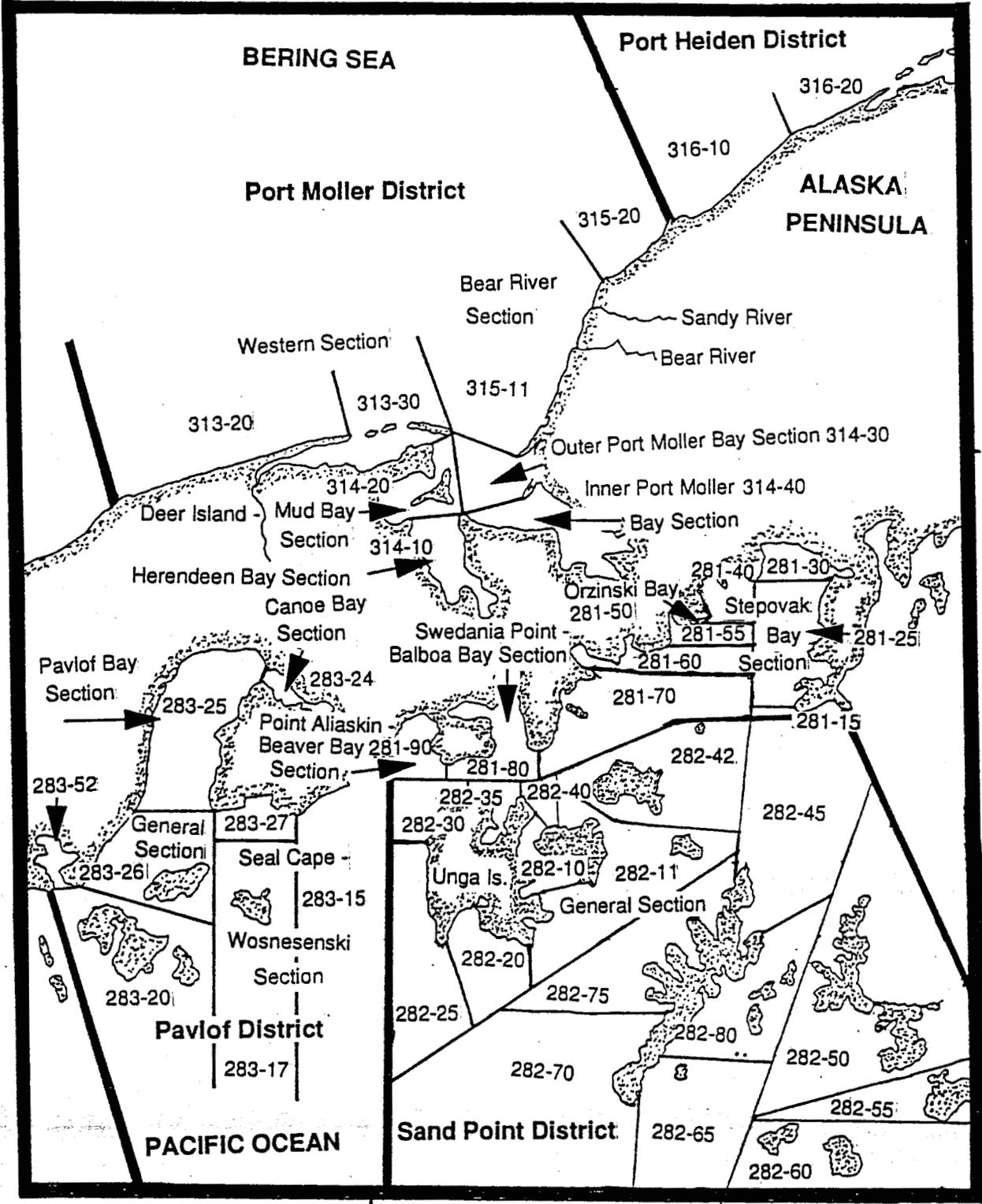


Figure 9. Map of the Alaska Peninsula Area from Bear Bay to Kupreanof Point with the statistical herring fishing areas shown.

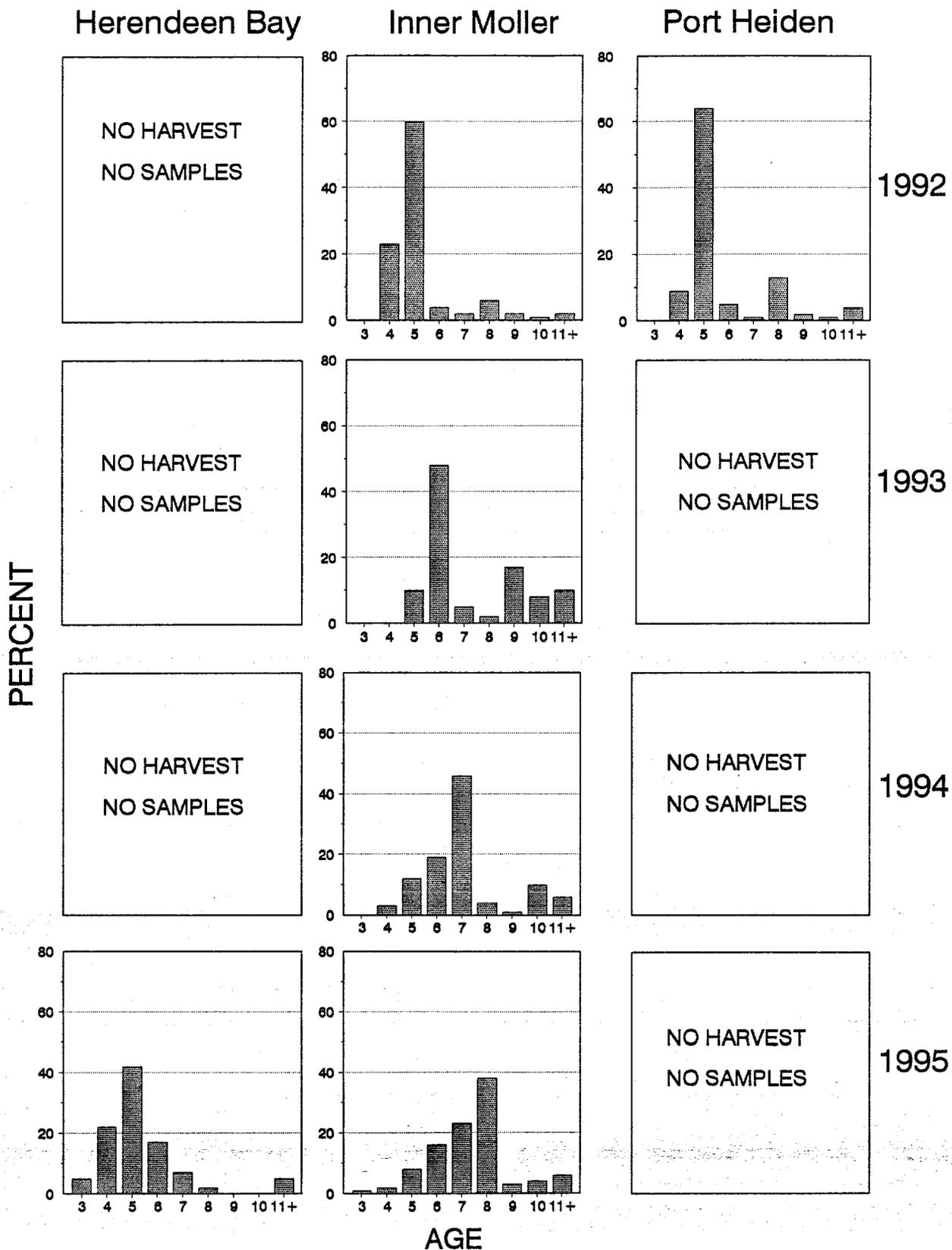


Figure 10. Age composition of annual sac roe herring harvest from Herendeen, Inner Moller, and Port Heiden Bays, 1992-95.

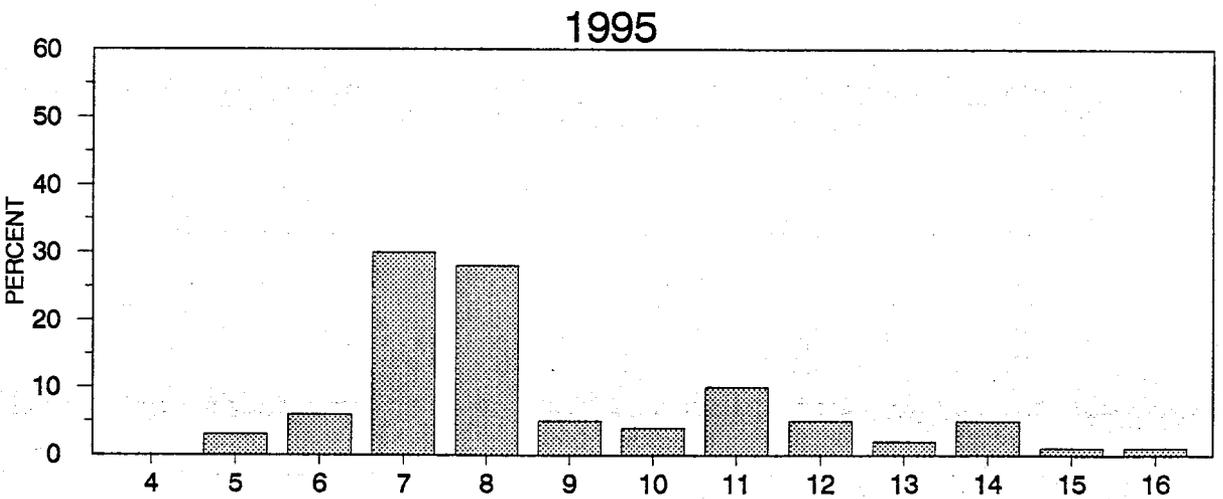
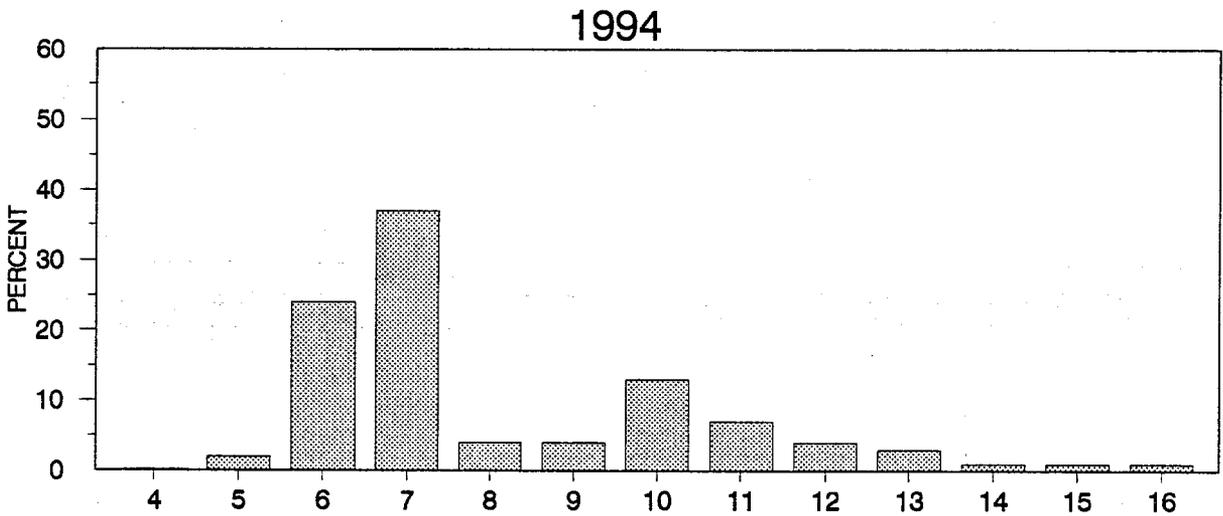
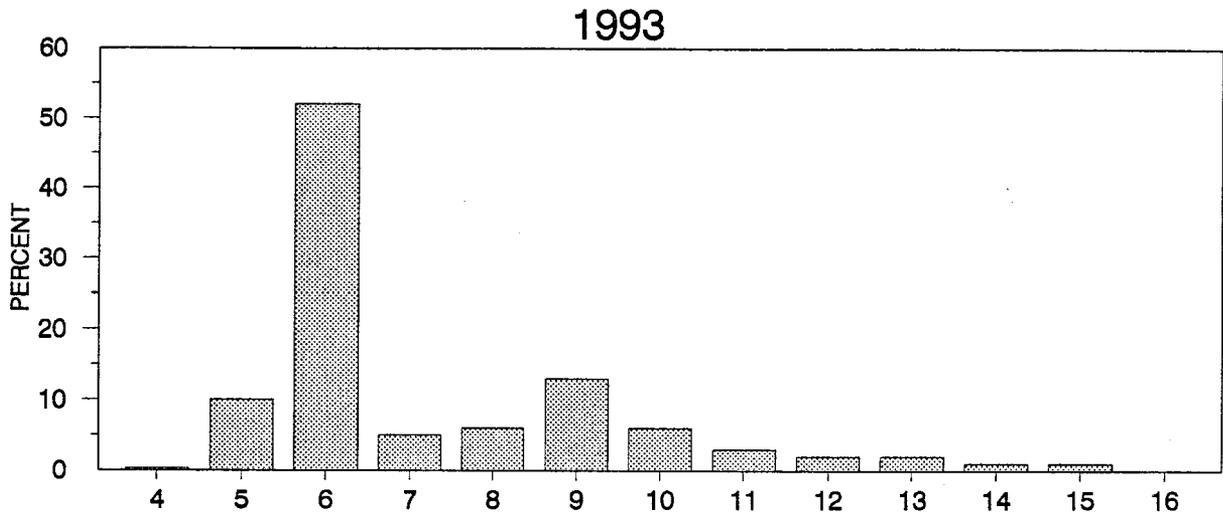


Figure 11. Age composition of annual food and bait herring catches from the Aleutian Islands "Dutch Harbor" Management Area, 1993-95.

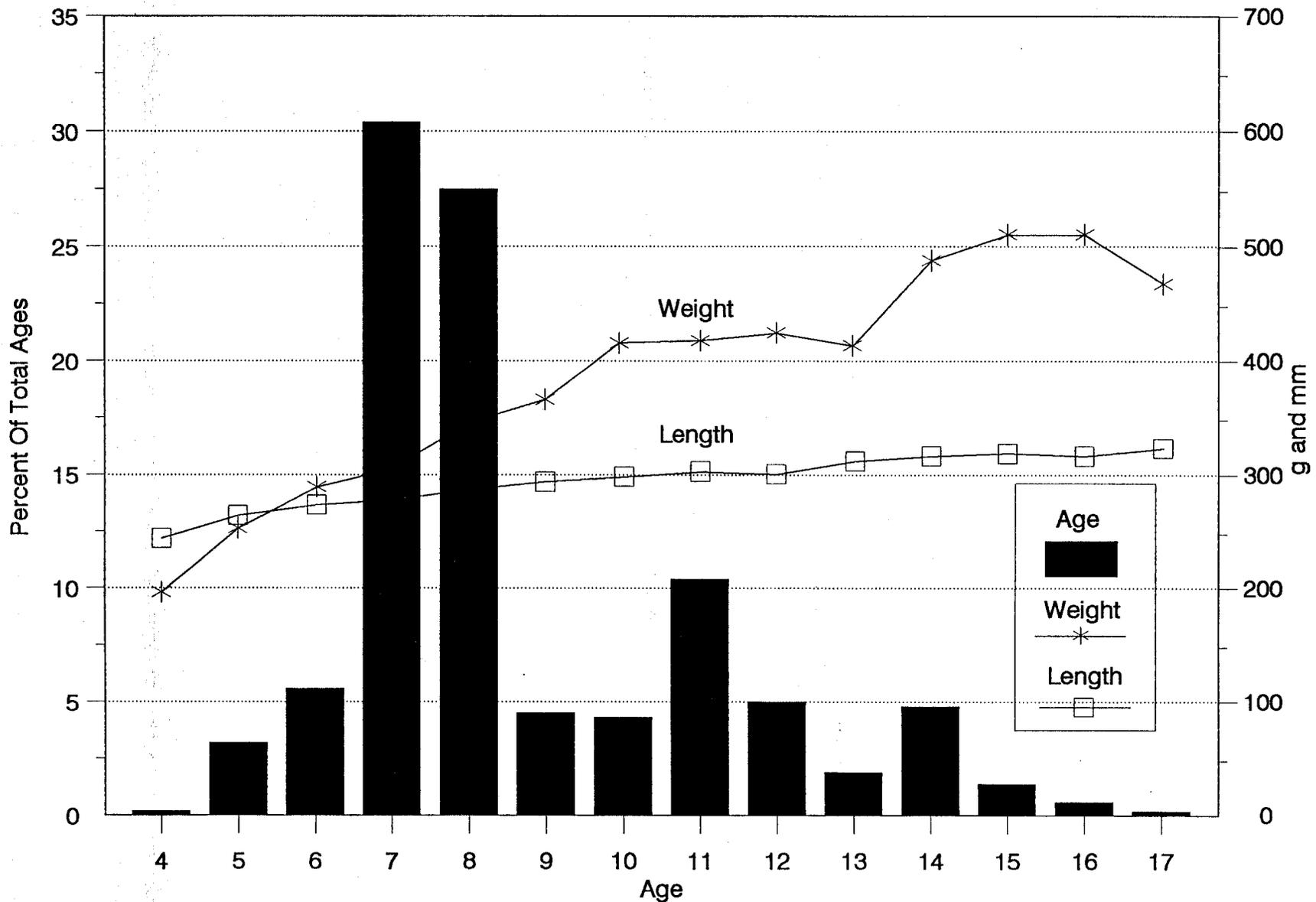


Figure 12. Length (mm), weight (g), and age composition of annual food and bait herring harvests from the Aleutian Islands "Dutch Harbor" Management Area, 1995.

**APPENDIX**

ALASKA PENINSULA MANAGEMENT AREA

EMERGENCY ORDER NO. 4-F-M-SP-01-95

EFFECTIVE DATE: April 15, 1995

EXPLANATION: This emergency order establishes weekly commercial sac roe herring fishing periods as follows for the Alaska Peninsula and Aleutian Islands Management Areas:

- (1) South Peninsula: Sand Point, Pavlof, and King Cove Districts.

April 15 through July 15 herring may be taken during Sunday through Saturday.

- (2) Aleutian Islands: Unimak, Akutan, Unalaska, Umnak, and Adak Districts.

April 15 through June 15 herring may be taken during Sunday through Saturday.

June 16 through July 15, no open fishing periods.

- (3) North Peninsula: Amak, Port Moller, and Port Heiden Districts.

- (a) Amak District.

April 15 through June 30 herring may be taken during Sunday through Saturday. July 1 through July 15, no open fishing period

- (b) Port Moller and Port Heiden Districts.

April 15 through June 30 herring may be taken only during periods established by subsequent emergency order(s). July 1 through July 15, no open fishing period.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Alaska Peninsula and Aleutian Islands Management Areas during the sac roe herring season. Effort is anticipated to be light in Aleutian and South Peninsula waters and the Amak District of the North Peninsula. Effort is anticipated to be heavy in the Port Moller and Port Heiden Districts. Therefore, until harvests indicate more conservative measures are needed, seven days per week

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can be allowed without causing stock conservation concerns in the Aleutian and South Peninsula waters and the Amak District while restricted fishing periods are needed in the Port Moller and Port Heiden Districts. The reason that portions of the area will remain closed during part of the sac roe herring season is as follows:

Unimak, Akutan, Unalaska, Umnak, and Adak Districts during June 16 through July 15:

These districts are managed on a food and bait herring fishery allocation during the food and bait season beginning July 16. The food and bait fishery is managed on the basis of 5 AAC 27.060 Bering Sea Herring Fishery Management Plan. During some years food and bait stocks (non local spawning stocks) are present in these areas by June 16. The closure from June 16 through July 15 will prevent food and bait herring being harvested prior to the food and bait season. If sac roe stocks are discovered during the June 16 through July 15 time period, appropriate locations can be opened for a sac roe herring harvest by subsequent emergency order(s).

Port Moller and Port Heiden Districts during April 15 through June 30.

These districts are managed on local sac roe herring stocks. During recent years, fishing effort has increased to the point where most of the allowable harvest occurs during one to three 20 minute fishing periods. These districts should remain closed until a large biomass of herring is observed, fishing vessels are on the grounds, and tender capacity sufficient to transport the harvest are on the grounds.

Port Heiden, Port Moller, and Amak District during July 1 through July 15:

These districts are managed on local sac roe herring stocks. During some years non-local, spawned-out herring are present in coastal waters by July 1. The closure from July 1 through July 15 will prevent the harvested of any non-local, spawned-out herring. If sac roe stocks are discovered during the July 1 through July 15 time period, appropriate locations can be opened for a sac roe herring harvest by subsequent emergency order(s).

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EMERGENCY ORDER NO. 4-F-M-SP-02-95

EFFECTIVE DATE: 9:30 p.m., Wednesday, May 17, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 9:30 p.m., Wednesday, May 17, 1995 until 10:30 p.m., Wednesday, May 17, 1995 in the Port Moller District.

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**JUSTIFICATION:** Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 9:30 p.m. until 10:30 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-03-95

EFFECTIVE DATE: 1:00 p.m., Thursday, May 18, 1995

**EXPLANATION:** This emergency order allows a one hour commercial herring fishing period from 1:00 p.m., Thursday, May 18, 1995 until 2:00 p.m., Thursday, May 18, 1995 in the Port Moller District.

**JUSTIFICATION:** Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 1:00 p.m. until 2:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-04-95

EFFECTIVE DATE: 9:00 p.m., Thursday, May 18, 1995

**EXPLANATION:** This emergency order allows a one hour commercial herring fishing period from 9:00 p.m., Thursday, May 18, 1995 until 10:00 p.m., Thursday, May 18, 1995 in the Port Moller District.

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**JUSTIFICATION:** Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 9:00 p.m. until 10:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-05-95

EFFECTIVE DATE: 2:30 p.m., Friday, May 19, 1995

**EXPLANATION:** This emergency order allows a one hour commercial herring fishing period from 2:30 p.m., Friday, May 19, 1995 until 3:30 p.m., Friday, May 19, 1995 in the Port Moller District.

**JUSTIFICATION:** Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 2:30 p.m. until 3:30 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-06-95

EFFECTIVE DATE: 12:00 a.m., Saturday, May 20, 1995

**EXPLANATION:** This emergency order changes the required six hour notice to a two hour notice given prior to commercial herring fishing periods in the Port Moller and Port Heiden Districts.

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JUSTIFICATION: Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

Recent aerial surveys have not indicated any substantial biomass of herring moving into either Port Moller or Port Heiden Districts. No commercial harvest has occurred. A reduction in the required advanced notice time may aid fishers in harvesting the preseason guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-07-95

EFFECTIVE DATE: 10:30 a.m., Sunday, May 21, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Sunday, May 21, 1995 until 11:30 a.m., Sunday, May 21, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-08-95

EFFECTIVE DATE: 2:00 p.m., Monday, May 22, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 2:00 p.m., Monday, May 22, 1995 until 3:00 p.m., Monday, May 22, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-09-95

EFFECTIVE DATE: 10:30 a.m., Thursday, May 25, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Thursday, May 25, 1995 until 11:30 a.m., Thursday, May 25, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. During the past two days, poor weather has prevented aerial surveys and fishing effort. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-10-95

EFFECTIVE DATE: 4:00 p.m., Thursday, May 25, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 4:00 p.m., Thursday, May 25, 1995 until 5:00 p.m., Thursday, May 25, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 4:00 p.m. until 5:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-11-95

EFFECTIVE DATE: 10:30 a.m., Friday, May 26, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Friday, May 26, 1995 until 11:30 a.m., Friday, May 26, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-12-95

EFFECTIVE DATE: 9:00 p.m., Friday, May 26, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 9:00 p.m., Friday, May 26, 1995 until 10:00 p.m., Friday, May 26, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 9:00 p.m. until 10:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-13-95

EFFECTIVE DATE: 10:30 a.m., Saturday, May 27, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Saturday, May 27, 1995 until 11:30 a.m., Saturday, May 27, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-14-95

EFFECTIVE DATE: 5:00 p.m., Saturday, May 27, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 5:00 p.m., Saturday, May 27, 1995 until 6:00 p.m., Saturday, May 27, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 5:00 p.m. until 6:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-15-95

EFFECTIVE DATE: 10:30 a.m., Sunday, May 28, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Sunday, May 28, 1995 until 11:30 a.m., Sunday, May 28, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-16-95

EFFECTIVE DATE: 7:00 p.m., Sunday, May 28, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 7:00 p.m., Sunday, May 28, 1995 until 8:00 p.m., Sunday, May 28, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 7:00 p.m. until 8:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-17-95

EFFECTIVE DATE: 10:30 a.m., Monday, May 29, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Monday, May 29, 1995 until 11:30 a.m., Monday, May 29, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-18-95

EFFECTIVE DATE: 7:00 p.m., Monday, May 29, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 7:00 p.m., Monday, May 29, 1995 until 8:00 p.m., Monday, May 29, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 7:00 p.m. until 8:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-19-95

EFFECTIVE DATE: 8:00 p.m., Monday, May 29, 1995

EXPLANATION: This emergency order extends the commercial herring fishing period two hours from 8:00 p.m., Monday, May 29, 1995 until 10:00 p.m., Monday, May 29, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A two hour fishing period extension from 8:00 p.m. until 10:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest. Spotter pilots during the current fishing period requested an extension believing that herring were moving into the fishery.

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EMERGENCY ORDER NO. 4-F-M-SP-20-95

EFFECTIVE DATE: 10:30 a.m., Tuesday, May 30, 1995

EXPLANATION: This emergency order allows a two hour commercial herring fishing period from 10:30 a.m., Tuesday, May 30, 1995 until 12:30 p.m., Tuesday, May 30, 1995 in the Port Moller District.

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**JUSTIFICATION:** Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A two hour fishing period from 10:30 a.m. until 12:30 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, there is no reported commercial herring harvest.

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EMERGENCY ORDER NO. 4-F-M-SP-21-95

EFFECTIVE DATE: 7:00 p.m., Tuesday, May 30, 1995

**EXPLANATION:** This emergency order allows a one hour commercial herring fishing period from 7:00 p.m., Tuesday, May 30, 1995 until 8:00 p.m., Tuesday, May 30, 1995 in the Port Moller District.

**JUSTIFICATION:** Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 7:00 p.m. until 8:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated twenty eight tons.

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EMERGENCY ORDER NO. 4-F-M-SP-22-95

EFFECTIVE DATE: 10:30 a.m., Wednesday, May 31, 1995

**EXPLANATION:** This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Wednesday, May 31, 1995 until 11:30 a.m., Wednesday, May 31, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated twenty eight tons.

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EMERGENCY ORDER NO. 4-F-M-SP-23-95

EFFECTIVE DATE: 7:00 p.m., Wednesday, May 31, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 7:00 p.m., Wednesday, May 31, 1995 until 8:00 p.m., Wednesday, May 31, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 7:00 p.m. until 8:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 51 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-24-95

EFFECTIVE DATE: 10:30 a.m., Thursday, June 1, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Thursday, June 1, 1995 until 11:30 a.m., Thursday, June 1, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 51 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-25-95

EFFECTIVE DATE: 8:00 p.m., Thursday, June 1, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 8:00 p.m., Thursday, June 1, 1995 until 9:00 p.m., Thursday, June 1, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 8:00 p.m. until 9:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 51 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-26-95

EFFECTIVE DATE: 10:30 a.m., Friday, June 2, 1995

EXPLANATION: This emergency order allows a two hour commercial herring fishing period from 10:30 a.m., Friday, June 2, 1995 until 12:30 p.m., Friday, June 2, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A two hour fishing period from 10:30 a.m. until 12:30 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-27-95

EFFECTIVE DATE: 8:00 p.m., Friday, June 2, 1995

EXPLANATION: This emergency order allows a two hour commercial herring fishing period from 8:00 p.m., Friday, June 2, 1995 until 10:00 p.m., Friday, June 2, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A two hour fishing period from 8:00 p.m. until 10:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-28-95

EFFECTIVE DATE: 10:30 a.m., Saturday, June 3, 1995

EXPLANATION: This emergency order allows a one hour commercial herring fishing period from 10:30 a.m., Saturday, June 3, 1995 until 11:30 a.m., Saturday, June 3, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A one hour fishing period from 10:30 a.m. until 11:30 a.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-29-95

EFFECTIVE DATE: 9:30 p.m., Saturday, June 3, 1995

EXPLANATION: This emergency order allows a 1-1/2 hour commercial herring fishing period from 9:30 p.m., Saturday, June 3, 1995 until 11:00 p.m., Saturday, June 3, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A 1-1/2 hour fishing period from 9:30 p.m. until 11:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons. Poor weather prevented fishing during this mornings fishing period.

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EMERGENCY ORDER NO. 4-F-M-SP-30-95

EFFECTIVE DATE: 12:30 p.m., Sunday, June 4, 1995

EXPLANATION: This emergency order allows a two hour commercial herring fishing period from 12:30 p.m., Sunday, June 4, 1995 until 2:30 p.m., Sunday, June 4, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A two hour fishing period from 12:30 p.m. until 2:30 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons. Poor weather prevented fishing during both June 3 fishing periods.

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EMERGENCY ORDER NO. 4-F-M-SP-31-95

EFFECTIVE DATE: 10:00 a.m., Monday, June 5, 1995

EXPLANATION: This emergency order allows a three hour commercial herring fishing period from 10:00 a.m., Monday, June 5, 1995 until 1:00 p.m., Monday, June 5, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A three hour fishing period from 10:00 a.m. until 1:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons. Poor weather prevented fishing during both June 3 and the June 4 fishing periods.

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EMERGENCY ORDER NO. 4-F-M-SP-32-95

EFFECTIVE DATE: 11:30 a.m., Tuesday, June 6, 1995

EXPLANATION: This emergency order allows a three hour commercial herring fishing period from 11:30 a.m., Tuesday, June 6, 1995 until 2:30 p.m., Tuesday, June 6, 1995 in the Port Moller District.

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JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A three hour fishing period from 11:30 a.m. until 2:30 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 88 tons. Poor weather prevented fishing during the last several fishing periods.

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EMERGENCY ORDER NO. 4-F-M-SP-33-95

EFFECTIVE DATE: 12:00, a.m., Wednesday, June 7, 1995

EXPLANATION: This emergency order allows a three hour commercial herring fishing period from 12:00 Noon, Wednesday, June 7, 1995 until 3:00 p.m., Wednesday, June 7, 1995 in the Port Moller District.

This emergency order also changes the required two hour notice to no advanced notice given prior to commercial herring fishing periods in the Port Moller and Port Heiden Districts.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A three hour fishing period from 12:00 Noon until 3:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 118 tons. A reduction in the required advanced notice time may aid fishers in harvesting the preseason guideline harvest level.

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EMERGENCY ORDER NO. 4-F-M-SP-34-95

EFFECTIVE DATE: 3:00, p.m., Wednesday, June 7, 1995

EXPLANATION: This emergency order extends the commercial herring fishing period three hours from 3:00 p.m., Wednesday, June 7, 1995 until 6:00 p.m., Wednesday, June 7, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

A three hour fishing period extension from 3:00 p.m. until 6:00 p.m. should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered companies or the guideline harvest level. Currently, the total harvest in the Port Moller District is an estimated 118 tons. Spotter pilots during the current fishing period requested an extension believing that herring were moving into the fishery.

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EMERGENCY ORDER NO. 4-F-M-SP-35-95

EFFECTIVE DATE: 12:00, a.m., Thursday, June 8, 1995

EXPLANATION: This emergency order opens the commercial herring fishing period from 12:00 Noon, Thursday, June 8, 1995 until 12:00 Midnight, Friday, June 30, 1995 in the Port Moller District.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Port Moller District during the sac roe herring season. Historically, herring have been observed in the Port Moller District within 2 to 4 days of the arrival of herring at Togiak. ADF&G is assuming that because of the late arrival of industry to the Port Moller District the peak of the herring run has been missed; therefore ADF&G will manage the fishery for the 1,100 ton preseason guideline harvest level.

Effort in the Port Moller District has decreased to four fishing vessels, one tender, and one floating processor with a daily processing capacity of about 50 tons. A continuous commercial herring fishing period until June 30 should give fishers the opportunity to catch available herring. Currently, the total harvest in the Port Moller District is an estimated 118 tons.

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EMERGENCY ORDER NO. 4-F-M-SP-36-95

EFFECTIVE DATE: 12:00, a.m., Friday, June 9, 1995

EXPLANATION: This emergency order establishes South Peninsula commercial herring fishing periods during the remainder of the sac roe season (June 9 through July 15). Commercial herring fishing periods will begin at 12:00 Noon on every odd numbered day and end at 12:00 Noon on the following even numbered day. The first period concerning this schedule will begin at 12:00 Noon, June 9 and end at 12:00 Noon, June 10 and henceforth on all odd numbered days separated by 24 hour closures until 12:00 Midnight, July 15.

JUSTIFICATION: Regulations adopted by the Alaska Board of Fisheries established that fishing periods for herring in South Peninsula waters would be announced by emergency order.

During the sac roe season herring stocks are concentrated and are vulnerable to over exploitation. The 24 hour on and 24 hour off fishery will reduce the time that stocks are subject to exploitation and will allow the department more time to collect catch information and assess the situation(s).

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EMERGENCY ORDER NO. 4-F-M-SP-51-95

EFFECTIVE DATE: 12:00, a.m., Sunday, June 18, 1995

EXPLANATION: This emergency order extends the current commercial herring fishing period twelve hours from 12:00 Noon, Sunday, June 18, 1995 until 12:00 Midnight, Sunday, June 18, 1995 in the Canoe Bay Section.

JUSTIFICATION: Fishing time is needed to allow sac roe herring harvests in the Canoe Bay Section during the sac roe herring season. Due to the late arrival of herring in Canoe Bay, ADF&G is currently unable to assess the biomass; therefore ADF&G will manage the fishery for the 100 ton preseason guideline harvest level.

A twelve hour fishing period extension from noon until midnight should give fishers the opportunity to catch herring without exceeding the processing capacity of the registered company or the guideline harvest level. Fishing effort is light with only one vessel and single tender with a 90 to 100 ton capacity.

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**ALEUTIAN ISLANDS MANAGEMENT AREA**

EMERGENCY ORDER NO. 4-F-M-SP-72-95

EFFECTIVE DATE: 12:30 a.m., Sunday, July 16, 1995

EXPLANATION: This emergency order allows a 20 minute commercial food and bait herring fishing period in the Unalaska District of the Aleutian Islands Management Area, from 12:30 a.m., Sunday, July 16, 1995 until 12:50 a.m., Sunday, July 16, 1995 in all waters of Unalaska Bay south of a line from Eider Point (53°57'40" N. lat., 166°35'30" W. long.) to Ulakta Head (53°55'28" N. lat., 166°30'33" W. long.), and south of the bridge connecting Dutch Harbor with Unalaska.

JUSTIFICATION: The "Dutch Harbor" food and bait fishery is managed on the basis of the Togiak herring biomass as described under 5 AAC 27.060, the Bering Sea Herring Fishery Management Plan.

Fishing time is needed to allow food and bait herring harvests in the "Dutch Harbor" fishery. The allocation for this herring fishery is 1,982 tons. Effort consists of 18 permit holders- purse seine vessels, 12 tenders representing 6 processing companies, and 3 aircraft. The initial holding capacity for both tenders and purse seiners is an estimated 3,300 tons. Herring are present in the Unalaska Bay Section; a 20 minute opening should allow for a harvest while not exceeding the allocation.

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APPENDIX B. PARTIAL LISTING OF HERRING REGULATIONS, 1995

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ARTICLE 2. - GENERAL SPECIFICATIONS.

5 AAC 27.060. BERING SEA HERRING FISHERY MANAGEMENT PLAN.

- (a) The department shall follow the directives of the Bering Sea Herring Management Plan, as well as the regulations that govern the individual herring fisheries, when managing the commercial herring fisheries that take place in the Bering Sea.
- (b) Unless otherwise specified in this chapter, the department shall manage the fisheries so that the exploitation rate on eastern Bering Sea herring stocks does not exceed 20 percent of the biomass of those stocks.
- (c) The following thresholds are minimum biomass levels for each herring fishing district. When the department estimates, in season, that the biomass in a district is below its threshold, the department may not allow a commercial harvest of herring in that district.

<u>District</u>	<u>Thresholds (s.t.)</u>
Port Moller	1,000
Togiak	35,000
Security Cove	1,200
Goodnews Bay	1,200
Cape Avinof	500
Nelson Island	3,000
Nunivak Island	1,500
Cape Romanzof	1,500
Norton Sound	7,000

- (d) The department shall manage the food and bait herring fishery that takes place in the Unimak, Akutan, and Unalaska Districts and that portion of the Umnak District east of Samalga Pass (Dutch Harbor fishery) so that it is allocated seven percent of the allowable Togiak District sac roe herring harvest determined under the provisions of the Bristol Bay Herring Management Plan (5 AAC 27.865).
- (g) When the Togiak District is below its threshold, the Dutch Harbor fishery will be closed for that season.
- (h) When any of the southwest Alaska herring stocks, from Security Cove to Port Clarence, is below its threshold, identified in (c) of this section, the department shall close the Dutch Harbor food and bait herring fishery for that season. For the purpose of determining the need for this closure, the threshold level for the Nelson Island herring stock is 2,000 short tons. If the department determines it necessary to close the Dutch Harbor food and bait herring fishery under this subsection, the department shall not reallocate the herring harvest set for the Dutch Harbor food and bait herring fishery, under 5 AAC 27.865 (b)(7), to the Togiak sac roe herring fishery.

ARTICLE 12. - STATISTICAL AREA T; BRISTOL BAY AREA

5 AAC 27.865. BRISTOL BAY HERRING MANAGEMENT PLAN.

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- (a) When managing the Bristol Bay commercial herring fishery, the primary objectives of the department will be to prosecute an orderly and manageable fishery, while striving for the highest level of product quality with a minimum of waste.
- (b) To ensure that no gear group is totally disadvantaged, the Board of Fisheries directs the department to take the following actions given the specified circumstances.
  - (1) When circumstances preclude the department from adequately assessing the biomass, the fishery shall be managed for an exploitation based on the pre-season projected return.
  - (3) Whenever possible, openings for both gear types must begin during the hours of daylight, and special consideration will be given to afford the maximum amount of daylight.
  - (4) The department may allow only one gear type to operate in an area during any open period.
  - (7) The maximum exploitation rate for the Bristol Bay herring stock is 20 percent. Before opening the sac roe fishery, the department shall set aside approximately 1,500 short tons for the Togiak district herring spawn-on-kelp fishery, and seven percent of the remaining available harvest for the Dutch Harbor food and bait fishery.
  - (8) After the spawn-on-kelp harvest and the Dutch Harbor food and bait fishery have been subtracted, the remaining harvestable surplus is allocated to the sac roe fishery. The department shall manage for a removal of 25 percent of that surplus by the gillnet fleet and 75 percent by the purse seine fleet.
  - (9) If a manageable separation of the year classes occurs, an exploitation rate of up to 20 percent may be allowed on the younger age herring (4 years or less), and no fishery will be considered if this recruit population is less than 20,000 short tons.
  - (10) Late season (post-peak) sac roe openings must be based on one or more of the following criteria:
    - (A) a definable increase in the biomass of herring present on the fishing grounds;
    - (B) a major shift in the age composition of the herring in a definable biomass that is large enough to allow a harvest; and
    - (C) a major improvement in the roe maturity of fish sampled over a broad area, indicating the arrival of a quantity of new herring.

ARTICLE 10. - STATISTICAL AREA M; ALASKA PENINSULA-ALEUTIAN ISLANDS AREA.

5 AAC 27.600. DESCRIPTION OF AREA. Statistical area M includes all waters bound on the east by a line extending southeast (135°) from the southernmost tip of Kupreanof Point, on the west by the International Date Line, and on the north by a line extending west from the westernmost tip of Cape Menshikof.

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5 AAC 27.605. DESCRIPTION OF DISTRICTS AND SECTIONS.

- (a) Sand Point District: all waters on the south (Pacific) side of the Alaska Peninsula west of a line extending from 135° from Kupreanof Point (55°34' N.lat, 159°36' W.long.), and east of 160°59' W.long. (longitude of McGinty Point). Sections are as follows:
- (1) Stepovak Bay Section: all waters of the Sand Point District located west of a line extending 135° from Kupreanof Point 55°34' N.lat., 159°36' W.long., north of a line from approximately two nautical miles south of 135° from Kupreanof Point, west to 55°32'12" N.lat., 160°02'36" W.long., (approximately one nautical mile north of Karpa Island), and west to 55°26' N.lat, 160°31'30" W.long., (approximately two nautical miles south of the longitude of Swedania Point 160°31'30" W.long.).
  - (2) Swedania Point-Balboa Bay Section: all waters of the Sand Point District located between 160°31'30" W.long. and 160°49' W.long., and north of 55°26' N.lat.
  - (3) Point Aliaksin-Beaver Bay Section: all waters of the Sand Point District located between 160°49' W.long. and 160°59' W.long., and north of 55°26' N.lat.
  - (4) General section: all other waters of the Sand Point District.
- (b) Pavlof District: all waters on the south (Pacific) side of the Alaska Peninsula between 160°59' W.long. and a line extending 150° from 55°05'54" N.lat., 161°59' W.long. through Inner and Outer Iliasik Islands, including Bear and Volcano Bays.
- (1) Canoe Bay Section: all waters of Canoe Bay east of 161°21'45" W.long.
  - (2) Pavlof Bay Section: all waters of Pavlof Bay north of 55°21'42" N.lat. (latitude of Cape Tolstoi), excluding the Canoe Bay and Seal Cape-Wosnesenski Sections.
  - (3) Seal Cape-Wosnesenski Section: all waters of the Pavlof District located between 160°59' W.long. and 161°30" W.long. (longitude of Cape Tolstoi).
  - (4) General section: all other waters of the Pavlof District.
- (c) King Cove District: all waters of the south (Pacific) side of the Alaska Peninsula between a line extending 150° from 55°05'54" N.lat., 161°59' W.long. through Inner and Outer Iliasik Islands and 163°30' W.long., including waters of Isanotski Strait south of a line from Nichols Point to the False Pass dock.
- (1) Belkofski Section: all waters of the King Cove District east of 162°15' W.long. (longitude of Bold Cape).
  - (2) Deer Passage Section: all waters of the King Cove District between 162°15' W.long. (longitude of Bold Cape) and 162°25' W.long. (longitude of Vodapoini Point), and north of 54°55' N.lat., excluding all waters of Lenard Harbor.

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- (3) Cold Bay Section: all waters of the King Cove District bounded by a line from Thin Point to Vodapoini Point.
- (4) General section: all other waters of the King Cove District.
- (d) Unimak District: all waters on the southside of Unimak Island between 163°30' W.long. and the longitude of Scotch Cap Light.
- (e) Akutan District: all waters extending west of Unimak Island to and including Akutan Pass.
- (f) Unalaska District: all waters west of Akutan Pass to and including Umnak Pass.
  - (1) Unalaska Bay Section: all waters of the Unalaska Bay District enclosed by a line from Priest Rock at 54°00'24" N.lat., 166°22'42" W.long. to Cape Cheerful at 54°00'33" N.lat., 166°37'45" W.long.
  - (2) General Section: all waters of the Unalaska District not included in the Unalaska Bay Section.
- (g) Umnak District: all waters west of Umnak Pass to and including Atka Pass.
- (h) Adak District: all waters west of Atka Pass to the terminus of the Aleutian Islands.
- (i) Amak District: all Bering Sea waters south and west of Cape Lieskof (55°47' N.lat., 162°04' W.long.) to the longitude of Cape Sarichef Light, including all waters of Bechevin Bay and Isanotski Strait north of a line from the False Pass Cannery dock to the tip of Nichols Point.
- (j) Port Moller District: all Bering Sea waters between the latitude of Cape Lieskof and the latitude of Cape Seniavin (56°24' N.lat.).
  - (1) Western Section: all waters of the Port Moller District west of the longitude of Wolf Point on Walrus Island, excluding the waters of Herendeen Bay and Deer Island - Mud Bay Sections.
  - (2) Deer Island - Mud Bay Section: all waters of the Port Moller District bounded by a line from the northernmost tip of Point Edward to the southernmost tip of Wolf Point on Walrus Island to Point Divide (55°53'10" N.lat., 160°47' W.long.) to the northernmost tip of Black Point.
  - (3) Herendeen Bay Section: all waters of Herendeen Bay south of a line from the northernmost tip of Black Point to Point Divide (55°53'10" N.lat., 160°47' W.long.).
  - (4) Inner Port Moller Section: all waters of Port Moller Bay enclosed by a line from Point Divide (55°53'10" N.lat., 160°47' W.long), to Harbor Point (55°55' N.lat., 160°34'30" W.long.).
  - (5) Outer Port Moller Bay Section: all waters of the Port Moller District south and east of a line from Point Divide (55°53'10" N.lat., 160°47' W.long.) to the southernmost tip of Wolf Point on Walrus Island to the southernmost tip of Entrance Point (55°59'30" N.lat., 160°34' W.long.).

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(6) Bear River Section: all Bering Sea waters between the longitude of Wolf Point on Walrus Island and Cape Seniavin Light, excluding the waters of the Herendeen Bay, Deer Island - Mud Bay, Outer Port Moller Bay, and Inner Port Moller Bay Sections.

(k) Port Heiden District: all waters between the latitude of Cape Seniavin (56°24' N.lat.) and the latitude of Cape Menshikof (57°31'20" N.lat.).

5 AAC 27.610. FISHING SEASONS AND PERIODS.

(a) In the Sand Point, Pavlof, King Cove, Amak, Port Moller, and Port Heiden Districts, herring may be taken from April 15 through July 15 (sac roe season).

(d) Herring may be taken only during periods established by emergency order.

(e) In the Unimak, Akutan, Unalaska, Umnak, and Adak Districts, herring may be taken from April 15 through July 15 (sac roe season) and from July 16 through February 28 (food and bait season).

5 AAC 27.630. GEAR. Herring may be taken only by purse seines and gillnets.

5 AAC 27.631. GILLNET SPECIFICATIONS AND OPERATIONS.

(a) During the herring sac roe season, the aggregate length of herring gillnets in use by a herring CFEC permit holder may not exceed 150 fathoms.

(b) The interim-use or entry permit holder must be physically present while the gillnet is being fished.

(c) Each drift gillnet in operation must have a buoy at one end and the opposite end must be attached to the fishing vessel. Each set gillnet in operation must be anchored and buoyed at both ends. Each buoy must be plainly and legibly marked with the permanent vessel license plate number (ADF&G number) of the vessel operating the gear. The buoy may bear only a single number and this number must be that of the vessel used in operating the gear. The numbers must be painted on the top one-third of the buoy in numerals at least four inches in height, one-half inch in width and in a color contrasting to that of the buoy. The buoy markings must be visible on the buoy above the water surface.

5 AAC 27.632. SEINE SPECIFICATIONS AND OPERATIONS. During the sac roe herring season, no purse seine may be more than 1,000 meshes in depth and more than 100 fathoms in length. During the food and bait herring season, no purse seine may be more than 250 fathoms in length.

5 AAC 27.650. WATERS CLOSED TO HERRING FISHING.

(a) Herring may not be taken from June 25 through September 30 in any waters closed to salmon fishing.

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5 AAC 27.662. BUYER AND TENDER REPORTING REQUIREMENTS. In addition to the requirements of 5 AAC 39.130(f) each tender operator and each buyer or his agents shall report in person to and register with a local representative of the department upon arrival in the statistical area before commencing operations and before changing location of the operation. Each buyer shall:

- (1) identify all vessels to be employed in transporting or processing herring and shall register such vessels with a local representative of the department located in the statistical area before transporting or processing of herring;
  - (2) make daily reports of all herring purchased from fishermen, and other processing records as specified by a local representative of the department; and
  - (3) submit fish tickets before departure from the area and no later than 10 days after termination of buying operations in the area, or as otherwise specified by a local representative of the department.
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APPENDIX C: ALASKA PENINSULA TIDES FOR 1995.

Appendix C.1. Port Moller tides, 1995.

Date	---HIGH TIDE---		---HIGH TIDE---		---LOW TIDE---		---LOW TIDE---		
	Time	Feet	Time	Feet	Time	Feet	Time	Feet	
May	1	1 : 24 AM	10.8	12 : 56 PM	7.8	7 : 06 AM	5.9	6 : 49 PM	1.1
	2	2 : 06 AM	10.8	1 : 37 PM	7.5	7 : 53 AM	6.0	7 : 30 PM	1.4
	3	2 : 46 AM	10.8	2 : 18 PM	7.4	8 : 38 AM	6.1	8 : 11 PM	1.7
	4	3 : 25 AM	10.7	3 : 00 PM	7.3	9 : 21 AM	6.0	8 : 53 PM	2.0
	5	4 : 02 AM	10.7	3 : 44 PM	7.3	10 : 04 AM	5.7	9 : 35 PM	2.4
	6	4 : 40 AM	10.7	4 : 30 PM	7.5	10 : 45 AM	5.3	10 : 19 PM	2.7
	7	5 : 17 AM	10.6	5 : 18 PM	7.7	11 : 26 AM	4.8	11 : 06 PM	3.2
	8	5 : 55 AM	10.5	6 : 10 PM	8.0	12 : 07 PM	4.1	11 : 54 PM	3.7
	9	6 : 33 AM	10.4	7 : 03 PM	8.5	:	:	12 : 48 PM	3.2
	10	7 : 13 AM	10.2	7 : 58 PM	9.1	0 : 46 AM	4.2	1 : 30 PM	2.1
	11	7 : 55 AM	10.0	8 : 54 PM	9.8	1 : 40 AM	4.6	2 : 12 PM	0.9
	12	8 : 39 AM	9.8	9 : 50 PM	10.6	2 : 36 AM	5.0	2 : 57 PM	-0.2
	13	9 : 27 AM	9.7	10 : 46 PM	11.4	3 : 34 AM	5.2	3 : 44 PM	-1.4
	14	10 : 18 AM	9.5	11 : 42 PM	12.1	4 : 32 AM	5.3	4 : 34 PM	-2.4
	15	11 : 13 AM	9.4	:	:	5 : 31 AM	5.1	5 : 26 PM	-3.2
	16	0 : 38 AM	12.6	12 : 11 PM	9.4	6 : 29 AM	4.7	6 : 20 PM	-3.6
	17	1 : 34 AM	13.0	1 : 12 PM	9.4	7 : 26 AM	4.1	7 : 16 PM	-3.5
	18	2 : 28 AM	13.2	2 : 15 PM	9.4	8 : 23 AM	3.4	8 : 14 PM	-3.0
	19	3 : 23 AM	13.2	3 : 20 PM	9.4	9 : 20 AM	2.5	9 : 12 PM	-2.2
	20	4 : 16 AM	13.0	4 : 26 PM	9.5	10 : 16 AM	1.6	10 : 11 PM	-1.0
	21	5 : 09 AM	12.7	5 : 32 PM	9.6	11 : 10 AM	0.8	11 : 11 PM	0.3
	22	6 : 01 AM	12.2	6 : 39 PM	9.8	:	4.6	12 : 04 PM	0.0
	23	6 : 52 AM	11.6	7 : 44 PM	10.0	0 : 11 AM	1.8	12 : 57 PM	-0.4
	24	7 : 43 AM	10.9	8 : 47 PM	10.3	1 : 11 AM	3.2	1 : 48 PM	-0.7
	25	8 : 32 AM	10.1	9 : 46 PM	10.5	2 : 11 AM	4.4	2 : 37 PM	-0.8
	26	9 : 20 AM	9.4	10 : 41 PM	10.7	3 : 10 AM	5.3	3 : 24 PM	-0.6
	27	10 : 06 AM	8.8	11 : 32 PM	10.8	4 : 08 AM	6.0	4 : 09 PM	-0.3
	28	10 : 50 AM	8.2	:	:	5 : 03 AM	6.5	4 : 52 PM	0.0
	29	0 : 19 AM	10.9	11 : 33 AM	7.7	5 : 55 AM	6.8	5 : 34 PM	0.4
	30	1 : 01 AM	10.9	12 : 15 PM	7.4	6 : 44 AM	6.8	6 : 14 PM	0.9
	31	1 : 40 AM	10.9	12 : 57 PM	7.1	7 : 29 AM	6.8	6 : 55 PM	1.3
June	1	2 : 17 AM	10.9	1 : 40 PM	7.0	8 : 13 AM	6.6	7 : 35 PM	1.7
	2	2 : 53 AM	10.9	2 : 24 PM	7.0	8 : 55 AM	6.2	8 : 16 PM	2.2
	3	3 : 28 AM	10.8	3 : 11 PM	7.1	9 : 35 AM	5.7	8 : 59 PM	2.7
	4	4 : 02 AM	10.8	4 : 00 PM	7.3	10 : 14 AM	4.9	9 : 43 PM	3.3
	5	4 : 37 AM	10.7	4 : 52 PM	7.7	10 : 53 AM	4.1	10 : 30 PM	3.9
	6	5 : 12 AM	10.6	5 : 45 PM	8.2	11 : 32 AM	3.0	11 : 21 PM	4.5
	7	5 : 50 AM	10.5	6 : 41 PM	8.9	:	:	12 : 12 PM	1.8
	8	6 : 30 AM	10.3	7 : 37 PM	9.6	0 : 15 AM	5.1	12 : 54 PM	0.4
	9	7 : 13 AM	10.2	8 : 34 PM	10.4	1 : 12 AM	5.6	1 : 39 PM	-0.9

-Continued-

Appendix C.1. (page 2 of 3)

Date	---HIGH TIDE---		---HIGH TIDE---		---LOW TIDE---		---LOW TIDE---			
	Time	Feet	Time	Feet	Time	Feet	Time	Feet		
June	10	8 : 01 AM	10.0	9 : 30 PM	11.2	2 : 10 AM	5.9	2 : 26 PM	-2.1	
	11	8 : 52 AM	9.8	10 : 27 PM	11.9	3 : 10 AM	6.0	3 : 16 PM	-3.2	
	12	9 : 48 AM	9.7	11 : 23 PM	12.5	4 : 09 AM	5.9	4 : 08 PM	-3.9	
	13	10 : 47 AM	9.6	:	:	5 : 09 AM	5.4	5 : 03 PM	-4.3	
	14	0 : 19 AM	13.0	11 : 49 AM	9.5	6 : 08 AM	4.8	5 : 59 PM	-4.2	
	15	1 : 14 AM	13.2	12 : 54 PM	9.5	7 : 06 AM	3.9	6 : 57 PM	-3.6	
	16	2 : 08 AM	13.3	2 : 00 PM	9.5	8 : 03 AM	2.9	7 : 55 PM	-2.6	
	17	3 : 01 AM	13.2	3 : 07 PM	9.5	8 : 59 AM	1.8	8 : 53 PM	-1.3	
	18	3 : 53 AM	12.8	4 : 14 PM	9.6	9 : 54 AM	0.8	9 : 52 PM	0.1	
	19	4 : 44 AM	12.4	5 : 21 PM	9.7	10 : 48 AM	0.0	10 : 52 PM	1.7	
	20	5 : 34 AM	11.8	6 : 26 PM	9.9	11 : 40 AM	-0.6	11 : 51 PM	3.2	
	21	6 : 23 AM	11.1	7 : 29 PM	10.2	:	:	12 : 31 PM	-1.0	
	22	7 : 11 AM	10.4	8 : 29 PM	10.4	0 : 50 AM	4.5	1 : 20 PM	-1.1	
	23	7 : 58 AM	9.7	9 : 25 PM	10.5	1 : 49 AM	5.6	2 : 07 PM	-1.0	
	24	8 : 44 AM	9.1	10 : 18 PM	10.6	2 : 46 AM	6.4	2 : 53 PM	-0.8	
	25	9 : 28 AM	8.5	11 : 06 PM	10.7	3 : 41 AM	6.9	3 : 37 PM	-0.4	
	26	10 : 12 AM	8.0	11 : 50 PM	10.8	4 : 34 AM	7.2	4 : 20 PM	0.0	
	27	10 : 55 AM	7.6	:	:	5 : 25 AM	7.3	5 : 02 PM	0.3	
	28	0 : 31 AM	10.8	11 : 38 AM	7.4	6 : 12 AM	7.3	5 : 43 PM	0.8	
	29	1 : 09 AM	10.8	12 : 22 PM	7.2	6 : 57 AM	7.0	6 : 24 PM	1.3	
	30	1 : 45 AM	10.8	1 : 08 PM	7.1	7 : 40 AM	6.6	7 : 05 PM	1.9	
	July	1	2 : 19 AM	10.7	1 : 55 PM	7.2	8 : 21 AM	6.0	7 : 47 PM	2.4
		2	2 : 52 AM	10.7	2 : 44 PM	7.3	9 : 01 AM	5.3	8 : 30 PM	3.1
		3	3 : 25 AM	10.6	3 : 36 PM	7.7	9 : 39 AM	4.3	9 : 16 PM	3.7
		4	3 : 59 AM	10.6	4 : 29 PM	8.2	10 : 17 AM	3.2	10 : 05 PM	4.4
		5	4 : 35 AM	10.5	5 : 23 PM	8.8	10 : 57 AM	1.9	10 : 57 PM	5.0
		6	5 : 14 AM	10.4	6 : 19 PM	9.5	11 : 38 AM	0.5	11 : 52 PM	5.6
		7	5 : 56 AM	10.3	7 : 16 PM	10.2	:	:	12 : 23 PM	-0.8
		8	6 : 43 AM	10.2	8 : 136PM	10.9	0 : 49 AM	6.0	1 : 10 PM	-2.1
		9	7 : 34 AM	10.1	9 : 10 PM	11.6	1 : 48 AM	6.1	2 : 01 PM	-3.2
10		8 : 29 AM	10.0	10 : 07 PM	12.1	2 : 48 AM	6.1	2 : 54 PM	-3.9	
11		9 : 28 AM	9.9	11 : 03 PM	12.5	3 : 47 AM	5.7	3 : 49 PM	-4.2	
12		10 : 31 AM	9.8	11 : 58 PM	12.8	4 : 47 AM	5.1	4 : 45 PM	-4.1	
13		11 : 36 AM	9.7	:	:	5 : 45 AM	4.3	5 : 42 PM	-3.5	
14		0 : 52 AM	12.8	12 : 42 PM	9.7	6 : 43 AM	3.3	6 : 40 PM	-2.6	
15		1 : 45 AM	12.8	1 : 48 PM	9.7	7 : 39 AM	2.2	7 : 38 PM	-1.3	
16		2 : 37 AM	12.5	2 : 55 PM	9.8	8 : 35 AM	1.2	8 : 36 PM	0.0	
17		3 : 28 AM	12.1	4 : 00 PM	9.9	9 : 28 AM	0.3	9 : 34 PM	1.5	
18		4 : 17 AM	11.6	5 : 03 PM	10.0	10 : 20 AM	-0.2	10 : 32 PM	2.9	
19		5 : 05 AM	11.0	6 : 05 PM	10.1	11 : 11 AM	-0.6	11 : 29 PM	4.1	
20		5 : 53 AM	10.4	7 : 03 PM	10.2	:	:	12 : 00 PM	-0.8	
21		6 : 39 AM	9.8	7 : 59 PM	10.3	0 : 26 AM	5.2	12 : 47 PM	-0.7	
22		7 : 24 AM	9.3	8 : 52 PM	10.4	1 : 21 AM	6.0	1 : 34 PM	-0.6	
23		8 : 08 AM	8.8	9 : 42 PM	10.4	2 : 15 AM	6.7	2 : 19 PM	-0.3	

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Appendix C.1. (page 3 of 3)

Date	---HIGH TIDE---		---HIGH TIDE---		---LOW TIDE---		---LOW TIDE---		
	Time	Feet	Time	Feet	Time	Feet	Time	Feet	
July	24	8 : 53 AM	8.4	10 : 28 PM	10.4	3 : 07 AM	7.1	3 : 03 PM	0.0
	25	9 : 37 AM	8.1	11 : 11 PM	10.4	3 : 57 AM	7.2	3 : 47 PM	0.3
	26	10 : 22 AM	7.8	11 : 52 PM	10.4	4 : 46 AM	7.2	4 : 30 PM	0.7
	27	11 : 07 AM	7.7	:		5 : 32 AM	7.0	5 : 13 PM	1.2
	28	0 : 30 AM	10.4	11 : 55 AM	7.6	6 : 17 AM	6.6	5 : 56 PM	1.7
	29	1 : 06 AM	10.4	12 : 43 PM	7.7	7 : 00 AM	6.0	6 : 40 PM	2.3
	30	1 : 40 AM	10.3	1 : 32 PM	7.8	7 : 40 AM	5.3	7 : 24 PM	2.9
	31	2 : 14 AM	10.3	2 : 23 PM	8.1	8 : 20 AM	4.4	8 : 10 PM	3.6

Tidal Station Location: Port Moller (Entrance Point) 55 59'N., 160 34'W.  
 Port Heiden 56 56'N., 158 44'W.

Note: To correct the time and height for high and low tides for Port Heiden add time and feet from the Port Moller tide table.

Port Heiden:	Time		Feet	
	High	Low	High	Low
	1:30	2:04	0.6	0.8

Appendix C.2. Kodiak tides, 1995.

Date	---HIGH TIDE---		---HIGH TIDE---		---LOW TIDE---		---LOW TIDE---		
	Time	Feet	Time	Feet	Time	Feet	Time	Feet	
May	1	3:15 AM	9.2	4:16 PM	7.3	9:52 AM	-0.6	9:42 PM	2.0
	2	3:46 AM	9.0	4:50 PM	7.0	10:25 AM	-0.5	10:15 PM	2.3
	3	4:19 AM	8.7	5:27 PM	6.7	11:01 AM	-0.2	10:50 PM	2.6
	4	4:54 AM	8.3	6:08 PM	6.3	11:38 AM	0.1	11:29 PM	2.9
	5	5:33 AM	7.8	6:55 PM	6.1	:		12:21 PM	0.4
	6	6:19 AM	7.3	7:50 PM	5.9	0:16 AM	3.2	1:08 PM	0.8
	7	7:16 AM	6.7	8:50 PM	6.0	1:16 AM	3.3	2:03 PM	1.1
	8	8:26 AM	6.3	9:51 PM	6.4	2:30 AM	3.2	3:05 PM	1.3
	9	9:44 AM	6.2	10:44 PM	7.0	3:51 AM	2.7	4:07 PM	1.3
	10	10:59 AM	6.3	11:32 PM	7.8	5:02 AM	1.8	5:04 PM	1.2
	11	:		12:06 PM	6.7	5:59 AM	0.8	5:55 PM	1.1
	12	0:16 AM	8.6	1:04 PM	7.2	6:49 AM	-0.2	6:43 PM	1.0
	13	0:59 AM	9.4	1:56 PM	7.6	7:36 AM	-1.2	7:30 PM	1.0
	14	1:42 AM	10.1	2:46 PM	7.8	8:22 AM	-1.9	8:15 PM	0.9
	15	2:26 AM	10.5	3:34 PM	7.9	9:08 AM	-2.4	9:01 PM	1.0
	16	3:11 AM	10.6	4:24 PM	7.9	9:55 AM	-2.5	9:49 PM	1.2
	17	3:58 AM	10.4	5:14 PM	7.7	10:42 AM	-2.3	10:39 PM	1.5
	18	4:47 AM	9.9	6:07 PM	7.4	11:32 AM	-1.8	11:33 PM	1.8
	19	5:40 AM	9.1	7:04 PM	7.2	:		12:24 PM	-1.1
	20	6:38 AM	8.1	8:06 PM	7.1	0:35 AM	2.1	1:20 PM	-0.4
	21	7:46 AM	7.2	9:10 PM	7.2	1:48 AM	2.3	2:20 PM	0.3
	22	9:04 AM	6.5	10:12 PM	7.4	3:12 AM	2.1	3:24 PM	0.9
	23	10:29 AM	6.1	11:06 PM	7.8	4:34 AM	1.7	4:27 PM	1.3
	24	11:45 AM	6.1	11:53 PM	8.1	5:40 AM	1.1	5:23 PM	1.6
	25	:		12:47 PM	6.3	6:33 AM	0.5	6:12 PM	1.8
	26	0:33 AM	8.5	1:37 PM	6.5	7:16 AM	0	6:55 PM	2.0
	27	1:09 AM	8.7	2:20 PM	6.7	7:54 AM	-0.3	7:34 PM	2.1
	28	1:43 AM	9	2:57 PM	6.9	8:29 AM	-0.6	8:10 PM	2.2
	29	2:15 AM	9.1	3:32 PM	7.0	9:02 AM	-0.7	8:45 PM	2.3
	30	2:48 AM	9.1	4:05 PM	7.0	9:35 AM	-0.8	9:19 PM	2.4
	31	3:22 AM	9.0	4:38 PM	6.9	10:07 AM	-0.7	9:55 PM	2.5
June	1	3:56 AM	8.8	5:13 PM	6.8	10:41 AM	-0.6	10:32 PM	2.6
	2	4:32 AM	8.4	5:50 PM	6.7	11:16 AM	-0.3	11:12 PM	2.7
	3	5:11 AM	8.0	6:30 PM	6.6	11:54 AM	0.0	11:58 PM	2.8
	4	5:54 AM	7.4	7:14 PM	6.6	:		12:34 PM	0.2
	5	6:46 AM	6.8	8:02 PM	6.8	0:53 AM	2.8	1:19 PM	0.6
	6	7:48 AM	6.2	8:54 PM	7.1	1:58 AM	2.6	2:10 PM	1.0
	7	9:02 AM	5.9	9:48 PM	7.6	3:11 AM	2.2	3:08 PM	1.3
	8	10:23 AM	5.8	10:42 PM	8.3	4:25 AM	1.4	4:09 PM	1.6
	9	11:40 AM	6.0	11:35 PM	9.0	5:30 AM	0.4	5:10 PM	1.7
	10	:		12:47 PM	6.5	6:27 AM	-0.5	6:08 PM	1.7
	11	0:27 AM	9.7	1:45 PM	6.9	7:19 AM	-1.4	7:02 PM	1.5
	12	1:17 AM	10.3	2:37 PM	7.4	8:08 AM	-2.1	7:54 PM	1.4
	13	2:06 AM	10.6	3:26 PM	7.7	8:56 AM	-2.6	8:45 PM	1.2

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Date	---HIGH TIDE---		---HIGH TIDE---		---LOW TIDE---		---LOW TIDE---		
	Time	Feet	Time	Feet	Time	Feet	Time	Feet	
June	14	2:56 AM	10.7	4:14 PM	7.9	9:42 AM	-2.7	9:36 PM	1.2
	15	3:45 AM	10.4	5:02 PM	7.9	10:29 AM	-2.4	10:29 PM	1.2
	16	4:35 AM	9.8	5:50 PM	7.9	11:15 AM	-1.9	11:23 PM	1.4
	17	5:26 AM	8.9	6:39 PM	7.8	:		12:01 PM	-1.2
	18	6:21 AM	7.9	7:30 PM	7.8	0:22 AM	1.6	12:49 PM	-0.4
	19	7:21 AM	6.9	8:24 PM	7.7	1:27 AM	1.8	1:39 PM	0.4
	20	8:31 AM	6.1	9:20 PM	7.7	2:41 AM	1.8	2:33 PM	1.2
	21	9:54 AM	5.5	10:15 PM	7.8	4:00 AM	1.6	3:31 PM	1.9
	22	11:19 AM	5.4	11:07 PM	8.0	5:11 AM	1.2	4:32 PM	2.3
	23	12:29 PM	5.6	11:54 PM	8.2	6:09 AM	0.7	5:30 PM	2.6
	24	:		1:24 PM	5.9	6:56 AM	0.2	6:21 PM	2.7
	25	0:36 AM	8.5	2:07 PM	6.2	7:37 AM	-0.1	7:06 PM	2.7
	26	1:15 AM	8.7	2:45 PM	6.5	8:12 AM	-0.4	7:47 PM	2.6
	27	1:52 AM	8.9	3:18 PM	6.8	8:46 AM	-0.6	8:24 PM	2.5
	28	2:28 AM	9.0	3:49 PM	6.9	9:17 AM	-0.8	9:01 PM	2.4
	29	3:03 AM	9.0	4:19 PM	7.0	9:49 AM	-0.8	9:37 PM	2.3
	30	3:39 AM	8.9	4:50 PM	7.1	10:20 AM	-0.8	10:15 PM	2.2
July	1	4:15 AM	8.6	5:23 PM	7.2	10:52 AM	-0.6	10:55 PM	2.1
	2	4:53 AM	8.1	5:57 PM	7.3	11:26 AM	-0.4	11:39 PM	2.1
	3	5:34 AM	7.5	6:35 PM	7.4	:		12:02 PM	0.0
	4	6:22 AM	6.9	7:18 PM	7.6	0:29 AM	2.0	12:42 PM	0.4
	5	7:20 AM	6.2	8:07 PM	7.8	1:28 AM	1.9	1:27 PM	1.0
	6	8:30 AM	5.7	9:02 PM	8.1	2:36 AM	1.6	2:22 PM	1.5
	7	9:54 AM	5.4	10:03 PM	8.5	3:52 AM	1.0	3:25 PM	2.0
	8	11:22 AM	5.5	11:05 PM	9.0	5:05 AM	0.3	4:35 PM	2.2
	9	:		12:36 PM	6.0	6:10 AM	-0.5	5:43 PM	2.1
	10	0:05 AM	9.6	1:36 PM	6.6	7:06 AM	-1.4	6:45 PM	1.8
	11	1:01 AM	10.1	2:26 PM	7.2	7:56 AM	-2.0	7:42 PM	1.4
	12	1:54 AM	10.4	3:12 PM	7.7	8:43 AM	-2.4	8:35 PM	1.1
	13	2:45 AM	10.4	3:56 PM	8.1	9:27 AM	-2.4	9:26 PM	0.8
	14	3:34 AM	10.2	4:39 PM	8.3	10:10 AM	-2.2	10:16 PM	0.7
	15	4:22 AM	9.6	5:21 PM	8.4	10:51 AM	-1.7	11:06 PM	0.8
	16	5:10 AM	8.7	6:03 PM	8.3	11:32 AM	-0.9	11:59 PM	1.0
	17	5:59 AM	7.8	6:46 PM	8.2	:		12:13 PM	-0.1
18	6:52 AM	6.8	7:32 PM	8.0	0:55 AM	1.3	12:55 PM	0.8	
19	7:53 AM	5.9	8:22 PM	7.7	1:58 AM	1.5	1:42 PM	1.6	
20	9:10 AM	5.2	9:18 PM	7.6	3:12 AM	1.6	2:36 PM	2.4	
21	10:46 AM	5.0	10:18 PM	7.6	4:30 AM	1.5	3:40 PM	2.9	
22	12:08 PM	5.2	11:16 PM	7.8	5:39 AM	1.1	4:51 PM	3.1	
23	:		1:05 PM	5.6	6:32 AM	0.7	5:53 PM	3.1	
24	0:08 AM	8.1	1:48 PM	6.0	7:15 AM	0.2	6:44 PM	2.9	
25	0:53 AM	8.4	2:22 PM	6.4	7:51 AM	-0.1	7:27 PM	2.5	
26	1:33 AM	8.7	2:52 PM	6.8	8:24 AM	-0.4	8:06 PM	2.2	
27	2:11 AM	8.9	3:21 PM	7.1	8:54 AM	-0.7	8:43 PM	1.9	

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Date	---HIGH TIDE---		---HIGH TIDE---		---LOW TIDE---		---LOW TIDE---		
	Time	Feet	Time	Feet	Time	Feet	Time	Feet	
July	28	2 : 47 AM	9.0	3 : 49 PM	7.4	9 : 24 AM	-0.8	9 : 20 PM	1.6
	29	2 : 23 AM	8.9	4 : 17 PM	7.7	9 : 54 AM	-0.8	9 : 57 PM	1.4
	30	2 : 59 AM	8.6	4 : 48 PM	7.9	10 : 24 AM	-0.6	10 : 36 PM	1.2
	31	3 : 37 AM	8.2	5 : 20 PM	8.0	10 : 57 AM	-0.3	11 : 18 PM	1.1

Note: To correct tables for local areas add or subtract time for high and low tides and feet for high and low tides.

Note: X Multiply height of district tide by ratio to result, add given correction for total height correction.

	Time		Feet	
	High	Low	High	Low
Alaska Peninsula:				
Fox Bay, Kupreanof Peninsula	+0:22	+0:36	X0.89	X0.89
Dent Point, Stepovak Bay	+0:21	+0:36	X0.89	X0.89
Albatross Anchorage,				
Balboa Bay	+0:32	+0:43	X0.91	X0.91
Beaver Bay	+0:37	+0:42	X0.87	X0.87
Seal Cape, Coal Bay	+0:34	+0:45	X0.84	X0.84
Ukolnoi Island	+0:41	+0:40	X0.83	X0.83
Dolgoi Harbor, Dolgoi Island	+0:44	+0:40	X0.79	X0.79
Settlement Point, Pavlof Bay	+0:43	+0:48	X0.84	X0.84
Canoe Bay, Pavlof Bay	+1:36	+1:30	X0.76	X0.76
King Cove	+0:40	+0:42	X0.80	X0.80
Lenard Harbor, Cold Bay	+0:46	+0:57	X0.85	X0.85
Cold Bay	+0:49	+1:03	X0.84	X0.84
Morzhovoi Bay	+0:50	+0:43	X0.80	X0.80
Shumagin Islands				
Korovin Island (east side)	+0:26	+0:52	X0.92	X0.92
Sanborn Harbor, Nagai Island	+0:37	+0:37	X0.86	X0.86
Mist Harbor, Nagai Island	+0:35	+0:38	X0.83	X0.83
Pirate Cove, Popof Island	+0:42	+0:43	X0.88	X0.88
Sand Point, Popof Island	+0:30	+0:42	X0.87	X0.87
Zachary Bay, Unga Island	+0:34	+0:49	X0.88	X0.88
Sanak Islands				
Peterson Bay	+0:29	+0:32	X0.73	X0.73
Sanak Harbor	+0:48	+0:43	X0.78	X0.78
Unimak Island				
Dora Harbor	+0:49	+0:55	X0.77	X0.77
Ikatan Bay	+0:43	+0:45	X0.78	X0.78

APPENDIX D: ALASKA PENINSULA SAC ROE HERRING FORECAST, 1996

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This forecast is for North and South Peninsula areas with guideline harvest levels, excluding those areas open for exploration such as the General Section of the Sand Point District, Seal Cape-Wosnesenski Section, the General Section of the King Cove District, Amak District, and the Western Section of the Port Moller District. This forecast does not include the Aleutian Islands Management Area, which has no history of sac roe herring harvests, nor the Port Heiden District which had a commercial harvest only during 1992.

The 1996 North Peninsula forecasted harvest is 750 tons. The forecast is based on the five year (1991-95) Port Moller District average harvest of 929 tons. The forecast has been reduced by 179 tons to account for North Peninsula herring that are probably harvested during the Dutch Harbor food and bait herring fishery. Non-Togiak herring stocks comprise about 22% of the Dutch Harbor herring catch; due to the July 16 opening date of the food and bait fishery, North Peninsula herring stocks should comprise the majority of the non-Togiak herring component. Using a non-Togiak component mid point estimate of 11%, the North Peninsula guideline harvest level should be reduced during the sac roe fishery to insure that North Peninsula herring stocks are not harvested beyond a 20% exploitation rate. Age class data from the 1995 harvest indicates that in 1996 ages 6, 7, 8, and 9 herring should all contribute nearly equally to Port Moller Bay harvests. The forecast does not include the Port Heiden District where commercial fishing occurred only during 1992.

Confidence in the North Peninsula forecast is only fair. The harvest of North Peninsula sac roe herring appears to be dependent upon industry moving into the area within 2-4 days after the peak herring biomass is observed in Togiak. During the 1993-95 fisheries, industry moved into North Peninsula waters well after the Togiak biomass peak; this was likely the major cause of the total harvest being well below the forecast.

The 1996 South Peninsula forecasted sac roe catch is 100 tons. The forecast is based on the 1991-95 average sac roe herring harvest of 101.1 tons. No age class data was collected from the 1995 harvest, industry average weight data indicates that the 1995 harvest was likely age-4 or age-5 herring. In 1996, age-6 or age-7 herring should dominate Canoe Bay harvests, no other samples were collected in South Peninsula waters.

Confidence in the South Peninsula forecast is only fair.

APPENDIX E: ALEUTIAN ISLANDS "DUTCH HARBOR" FOOD AND BAIT HERRING FORECAST, 1996.

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This forecast is for the "Dutch Harbor": Unimak, Akutan, and Unalaska Districts and that portion of the Umnak District located east of Samalga Pass, food and bait herring fishery (personal communication, Kathy Rowell, ADF&G, Anchorage, memo January 4, 1996).

A 1,793 ton quota was allocated for the "Dutch Harbor" food and bait herring fishery for 1996 using the Bering Sea Herring Management Plan allocation formula, as follows, given the maximum 20% exploitation rate of the projected biomass:

1995 Togiak Spawning Biomass	135,585 Tons
<u>@ 20% Maximum Exploitation</u>	
Total Allowable Catch	27,117 Tons
<u>Togiak Spawn on Kelp Allocation</u>	1,500 Tons
Remainder of Allowable Catch	25,617 Tons
<u>Dutch Harbor Allocation</u>	7.0%
Dutch Harbor Quota	1,793 Tons
Togiak District Sac Roe Harvest	23,826 Tons

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