

ALASKA PENINSULA AND ALEUTIAN ISLANDS MANAGEMENT AREA  
HERRING SAC ROE AND FOOD AND BAIT FISHERIES  
ANNUAL MANAGEMENT REPORT, 2002



By

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## ABSTRACT

In 2002, commercial Pacific herring *Clupea pallasii* sac roe harvests did not occur in South Alaska Peninsula, North Peninsula and Aleutian Islands waters due to a lack of industry interest. Total herring biomass estimates from aerial surveys in 2002 for the South Peninsula were 4,778 tons. Herring biomass estimates from aerial surveys in 2002 were documented for the North Peninsula in Herendeen Bay (85 tons) and Port Moller (255 tons). Observed herring biomass on the North Peninsula was below the 1,000 ton threshold required by the department to allow a commercial fishing period. There were no reports to the department of industry-conducted surveys in 2002.

In 2002, commercial herring food and bait fishery harvests occurred in the Aleutian Islands during both gillnet and seine gear fishing periods. The Alaska Peninsula and Aleutian Islands Area Dutch Harbor herring food and bait gillnet harvest was 137 tons which was 27 tons over the 110 ton allocation. The seine fishery harvest was 2,617 tons which was 1,148 tons over the 1,468 ton allocation. The price per ton for the fisheries ranged from \$300 to \$450, with a combined exvessel value of approximately \$1,119,200.

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

## INTRODUCTION

The goals and objectives of this report are to present: (1) historical information pertaining to Alaska Peninsula and Aleutian Islands Management Area Pacific herring *Clupea pallasii* fisheries; (2) information from the commercial harvest in the Alaska Peninsula and Aleutian Islands Management Area during 2002; (3) estimates of the age, sex composition, and mean length and weight of herring harvested in Alaska Peninsula and Aleutian Islands commercial herring fisheries; and (4) biomass estimates of herring within the management area. This information helps the department evaluate harvest rates, recruitment events, and refine management of these fisheries. This report is intended as a reference document; interpretation and discussion of the data are therefore limited.

### *Alaska Peninsula*

The Alaska Peninsula and Aleutian Islands Herring Management Area is described as Management Area M and is divided into three subareas; (1) the North Peninsula, consisting of Bering Sea waters extending west from Cape Menshikof to Cape Sarichef; (2) 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); and (3) 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 south side of Unimak Island near Cape Lazaref) to the International Date Line (Figures 1-8).

The North Peninsula is composed of three districts and 23 statistical areas (Figures 5-7), the South Peninsula includes three districts and 45 statistical areas (Figures 5 and 8), and the Aleutian Islands Area includes five districts and 41 statistical areas (Figure 3).

Herring have been reported since 1929, throughout North and South Peninsula waters, and in Unalaska Island and Adak Island waters of the Aleutian Islands. In the past, major concentrations of herring have been documented (Table 1) and herring sac roe fishing effort has occurred in North Peninsula waters of Port Heiden, Port Moller, and Herendeen Bays, and along the Bering Sea coast in nearshore waters from Entrance Point to Cape Seniavin (Table 2). Herring sac roe fishing typically begins in late May in both North Peninsula and South Peninsula waters and ends in mid to late June. In South Peninsula waters, most herring sac roe fishing effort has occurred in the Shumagin Islands, and Stepovak, Pavlof, and Canoe Bays (Table 3). Herring sac roe fishing has also occurred later in the season between Dolgoi Island and Lenard Harbor.

From 1981-1995, the Alaska Department of Fish and Game (ADF&G) collected harvest data and monitored the commercial herring sac roe fishery utilizing field crews in many locations on the Alaska Peninsula including Stepovak Bay, Canoe Bay, Port Heiden and Port Moller. Crews also collected herring samples, documented spawn areas, and mapped spawning substrate. Department personnel have conducted aerial surveys for herring in Alaska Peninsula waters since 1976. These surveys have provided limited information primarily due to the large area involved, poor weather conditions, budget constraints, turbidity of the water, and the sporadic and unpredictable arrival of the herring. Because of

these limitations, the management staff believes the surveys flown in 1989, 1991, and 1992 provide the best estimates of the total spawning biomass in peninsula waters.

### **North Peninsula**

The first commercial harvests of herring for sac roe in North Peninsula waters occurred in 1982 when 505.5 tons were harvested (Table 4). From 1992-2001, the harvests ranged from 0 to 3,969 tons and averaged 509.6 tons during the North Peninsula herring sac roe fishery. Since 1982, the majority of the harvest has been taken from Herendeen Bay and Port Moller except in 1986, 1989, and 1998 when most of the harvest was taken on the Bering Sea coast between Entrance Point and Cape Seniavin (Table 5) and in 1992, when over 40% of the North Peninsula harvest came from Port Heiden.

Prior to 1982, fishing vessels destined for, or returning from, the Togiak herring fishery frequently surveyed for herring in the Port Moller and Port Heiden Districts, but no harvest occurred. During the 1986-1988 seasons, an average of 52 vessels were present in the Port Moller District, but only a few permit holders actually harvested herring. Starting in 1986, fishing effort increased, targeting the earlier arriving (May) biomass. From 1989-1990, the department delayed the opening of the Port Moller District until May 30 in an attempt to shift fishing pressure from the earlier arriving to the later returning more abundant herring. The Port Moller District opened prior to May 30 from 1991-1995 and again in 1998 because the herring biomass was sufficient to warrant commercial harvests.

### **South Peninsula**

The South Peninsula herring sac roe fishery harvest and fishing effort has fluctuated since it began in 1979 (Table 4). During years in which commercial herring sac roe fishery harvests occurred in the South Peninsula (1979-1996), landings have been reported from 18 geographical locations. Of these, only Canoe Bay produced a consistent annual harvest (Table 3, Figure 8).

In South Peninsula waters, substantial harvest occurred in 1980 (453.8 tons), and harvest peaked in 1981 (797.6 tons, Table 4). The Alaska Board of Fisheries (BOF) closed the South Peninsula herring sac roe fishery in 1983, and changed the fishery to a winter herring food and bait fishery that, due to a lack of herring biomass in Stepovak Bay waters, failed to develop. From 1984-1991, 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 herring sac roe fishery (Burkey 2002a).

From 1981-2000, the effort levels and harvests generally decreased in South Peninsula waters. Many bays may have small harvestable quantities of herring but the cost of having fishing vessels, tenders, and airplanes available to harvest each section's guideline harvest level (GHL) has discouraged fishers. Since 1997, no herring have been harvested in South Peninsula waters primarily because of a lack of industry participation.

## *Aleutian Islands*

The Aleutian Islands herring food and bait season was established by regulation and extends annually from June 24 through February 28. Actual fishing time is established by emergency order (Appendix A) and is based on inseason evaluation of the observed biomass, effort levels, and harvest (Table 6). All districts from the Unimak District west to the Adak District were open by regulation, however open areas during the seine fishery have been limited to the vicinity of Unalaska and Akutan Islands. The department has implemented these area limitations while considering processing capabilities, herring concentrations, and logistical concerns with managing the fishery (Figure 2-4). Three management plans: (1) the Bering Sea Herring Fishery Management Plan (ADF&G 2001; 5 AAC 27.060) (2) the Bristol Bay Herring Management Plan (5 AAC 27.865) and (3) the Alaska Peninsula and Aleutian Islands Management Area Food and Bait Herring Management Plan (Burkey 2002b) were used to manage the fishery.

A herring food and bait fishery occurred in the vicinity of Unalaska Island from 1929-1938 and in 1945 with harvests that ranged from 75 to 2,510 tons (Table 7). This early fishery consisted of gillnet and purse seine harvests. In an attempt to improve product quality, holding pounds were utilized by the numerous small, shorebased hand-packing operations. A large portion of the harvest was brined or frozen as a food or bait product. Purse seine gear provided the bulk of the harvest. From 1946-1980 commercial herring harvest did not occur.

From 1981-1986 and 1990-2000 only purse seine gear was used and harvests ranged from 820 to 3,578 tons (Tables 6 and 7). During the 1987 and 1988 seasons, one gillnet permit holder harvested herring and in 1989 two gillnet permit holders recorded landings. From 1989 through 2000, only purse seine vessels participated in the fishery. Purse seine vessels average approximately 56 feet in length and deploy seines up to 250 fathoms in length and 25 to 45 fathoms in depth. In 2001, the BOF adopted a regulation establishing a gillnet fishery and allocated the gillnet fleet seven percent of the total Dutch Harbor fishery allocation

Prior to 1992 and during 1994-1996, purse seine fishing occurred at night using scanning sonar to locate herring schools. Fishers would conduct organized sonar searches over fairly large areas to find herring concentrations. In 1992-1993 and 1997-2002, the purse seine fishery occurred during daylight hours and spotter aircraft were used to locate herring. The change to daylight openings improved the department's ability to monitor and manage the fishery. During recent seasons, the number of spotter aircraft has increased from three in 1995 to a high of nine in 1997. Historical harvest locations have extended over approximately 90 miles, from Tigalda Island to Makushin Bay on Unalaska Island. However, in recent years, the majority of the harvest has occurred within a five mile radius of shorebased processing facilities in Unalaska Bay. In 1991, the BOF changed the opening date from August 15 to July 16 to reduce the chance of catching non-Togiak and North Alaska Peninsula herring stocks in the Dutch Harbor fishery. In 1998, the BOF changed the opening date again to NOON on July 15 due to aircraft safety concerns with the fishery being conducted in the dark.

Historically, quality concerns associated with feeding herring (i.e., belly burn) have occurred in the food and bait fishery. Feed problems were overcome in the past by using holding pounds, where seine caught

herring were held in pens until their stomachs emptied. Gillnet caught herring required special handling to prevent spoilage. Most feed-related spoilage problems have been eliminated in recent years by using ice and chilled seawater in conjunction with rapid processing.

The fishery timing and availability of herring in the Dutch Harbor area has changed in recent years. Aleutian Island herring were previously categorized into an early summer run (late June to late July) and a late summer run (late August to early September). Since 1980, herring have arrived in the Dutch Harbor area about July 1 and have been present through mid-September.

From 1991-1998, permit holders were paid \$300 per ton. In 1999, a high demand for bait herring in longline and pot fisheries resulted in permit holders receiving \$400 per ton on the grounds and, at one processor, \$600 per ton for herring delivered to the dock. During the 2002 fishery, exvessel prices were between \$300 and \$450 per ton (Table 7). The entire herring harvest from the 2002 Aleutian Islands food and bait fishery was processed for bait.

## **HARVEST STRATEGY**

Commercial herring fisheries are regulated by emergency order to achieve exploitation mandates by the BOF and to address problems with herring wastage. Management plans and other BOF directives set policies by which these fisheries are prosecuted (ADF&G 2001, Burkey 2002b).

### ***Dutch Harbor Food and Bait Allocation***

The harvest strategy for the Aleutian Islands Area Dutch Harbor herring food and bait fishery has changed since the fishery was re-established in 1981. During the 1981 and 1982 open seasons, there were no harvest restrictions. From 1983-1985, the department implemented a harvest ceiling of 3,527 tons per year due to biological concern over multiple exploitation of Eastern Bering Sea spawning stocks, specifically the Bristol Bay, Nelson Island, and Port Moller stocks. Scale pattern analysis studies identified some herring harvested during the Aleutian Islands herring food and bait fishery to be part of the Eastern Bering Sea herring biomass (Rogers and Schnepf 1985). In 1986, the department reduced the Dutch Harbor fishery harvest allocation by 30% to 2,453 tons in response to the BOF concern for the possible lack of recruitment in the contributing stocks (primarily Togiak, which is estimated to be the bulk of the Aleutian Island's fishery harvest). This reduction corresponded with the percent reduction of the observed Togiak herring spawning biomass between 1985 and 1986. The 1987 herring harvest allocation was 2,332 tons, which was proportional to the 1985 to 1987 reduction of the observed Togiak spawning biomass.

In 1988, the BOF implemented the Bering Sea Herring Fisheries Management Plan (ADF&G 2001; 5 AAC 27.060), which established the biological criteria for calculating the Dutch Harbor food and bait allocation (Burkey 2002a; Appendix B). To ensure conservation of herring stocks, the BOF adopted a regulation requiring 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 to prevent the harvest from exceeding 20% of the observed spawning biomass. The BOF also considered the number of fishermen involved and the value of the fishery when it established the allocations. The Dutch Harbor food and bait fishery is allocated seven percent of the Togiak District's harvestable biomass after deducting 1,500 tons for the Togiak District Spawn-on-Kelp fishery.

In 2001, the BOF established a herring food and bait gillnet fishery by adopting a regulation that requires division of the total Dutch Harbor food and bait allocation between gillnet and seine gear. This resulted in the 2002 total fishery allocation of 1,578 tons being further allocated to seven percent (110 tons) for gillnet gear and 93 percent (1,468 tons) for seine gear (5 AAC 27.655; Table 8).

### ***Sac Roe Guideline Harvest Levels***

The Guideline Harvest Level (GHL) for the Port Moller District of the North Peninsula is determined inseason. It is based on the application of observed herring biomass from department aerial surveys to the sliding scale exploitation rate established for the district in the Alaska Peninsula and Aleutian Islands Management Area Sac Roe Herring Management Plan (Burkey 2002a). As established in the Bering Sea Herring Fishery Management Plan (5 AAC 27.060), an expectation of a minimum herring biomass of 1,000 tons is assured prior to the department opening the commercial fishery in the Port Moller District. In 2002, the estimated herring biomass in the Port Moller District was 340 tons.

Prior to 2000, South Peninsula and Aleutian Islands waters were opened by emergency order with individual sections assigned either GHLs based on recent-year biomass estimation or set at 25 tons with the potential of additional harvest if department surveys warranted (Witteveen et al. 1999). During 2000, South Peninsula and Aleutian Islands waters remained closed to commercial fishing in order to prevent overharvest of individual spawning stocks. In 2001 and 2002, the department considered allowing harvest from individual stocks, if warranted, based on observed biomass.

### **CATCH DATA**

Department personnel compiled the commercial harvest data, which were based on computer tabulations originating from individual sale receipts (fish tickets) given to permit holders at the time of delivery. Fish tickets and computer-generated summaries were edited by department staff for errors and omissions. Fish ticket editing is usually required to finalize the data for any given year.

Commercial harvest samples were collected during the 2002 Dutch Harbor herring food and bait fishery. These samples provided age composition, weight-at-age, and length-at-age data from the commercial harvest (Tables 9 and 10). Age was determined by examining scales (Warner and Shafford 1979) taken from the preferred area located on the left side of the herring three scales posterior to the

center of the operculum. One scale was taken from each herring, and the ages were recorded and entered into a database.

Standard length measurements and fish weight were collected (lower jaw to the hypural plate) and entered into the herring database. Mean lengths and weights were calculated from an unweighted composite of the data collected from each location sampled (Tables 9 and 10).

## **SAC ROE FISHERY**

In 2002, a herring sac roe commercial harvest did not occur in the Alaska Peninsula and Aleutian Islands Management Area. Since 1996, because of poor market conditions, and or low observed herring biomass, herring harvests in the North Alaskan Peninsula have been absent or minor (Table 5). From 1997-1999, poor market conditions and low observed herring biomass contributed to the absence of commercial harvest from the South Alaska Peninsula Districts. This prompted the ADF&G to close the districts for the entire 2000 season in order to prevent overharvest of stocks with insufficient recent year biomass information.

Prior to 2000, and again in 2001, in areas open for exploration (all sections of Aleutian Islands districts, the Seal Cape-Wosnesenski Section of the Pavlof District and General Sections of the King Cove and Sand Point Districts) fishing time could be allowed to give fishermen the opportunity to locate and harvest herring. In areas with a GHL, inseason fishing time would be based on department biomass surveys. In 2001 and again in 2002, because of a lack of industry interest, South Peninsula waters were not opened to commercial herring fishing (Table 3).

### ***North Peninsula Sac Roe***

There are three commercial herring fishing districts in North Peninsula waters: Port Heiden, Port Moller, and Amak Districts (Figures 5 and 7). Purse seine and gillnet gear are permitted in North Peninsula waters and both gear types share common time and open areas. The department normally provides a minimum of six hours advanced notice prior to commercial fishing periods in the Port Moller and Port Heiden Districts.

Between May 15 and May 28, six aerial surveys for herring were flown in the Port Moller Area. The first aerial survey of the season was conducted on May 15, when no herring were spotted. By May 28, a total of 362 tons of herring were observed in the Port Moller District, however 22 tons of this total was estimated to have been documented during more than one survey. This resulted in an estimated total biomass of 340 tons of herring in the Port Moller District (Table 11). As established in the Bering Sea Herring Management Plan, a yearly threshold of 1,000 tons of observed herring biomass is required for the department to allow a fishing period. In 2002 this threshold was not met (Table 11). The total estimated herring biomass was well below the 1992-2001 average of 3,639 tons. A local pilot reported seeing approximately 3,000 tons of herring and herring spawn in Port Moller on May 9, but this was not verified by department personnel.

On May 15 one company registered to purchase herring in the Port Moller area. Three purse seine vessels arrived in Port Moller on May 15. On May 17, during commercial test fishing, a herring sample was obtained from one school. The company declined to purchase these fish because their average size (261g) was below their minimum size limits. The seine vessels subsequently left the area for the season on May 18.

A sample of 104 herring were taken from this set was used for age, sex, and size data. The sample was 58% females and had a roe content of 10.6%. Average length of fish in the sample was 256 mm and average weight was 261 g. The dominant age classes in the sample were age-six (53%) and age five (31%). Age nine and older herring comprised 12% of the sample (Appendix C).

The 2003 North Peninsula sac roe herring GHL is 0-150 tons. Considering historical herring biomass in North Peninsula waters, management of the North Peninsula sac roe herring fishery will again be very conservative in 2003. Historically, the previous years' North Peninsula herring biomass estimate has been a very poor indicator of herring returns in the following year. In 2003, the GHL will be adjusted inseason based on observed stock size (Appendix D).

### ***South Peninsula Sac Roe***

In 2002, herring fisheries did not occur in South Peninsula waters because of a lack of industry interest. The Swedania Point-Balboa Bay, Point Aliaksin-Beaver Bay, and General Sections of the Sand Point District, the Pavlof Bay, Seal Cape-Wosnesenski and General Sections of the Pavlof District, and the King Cove District could have opened for exploratory fishing if biomass estimates warranted commercial fishing and there was industry interest in harvesting herring. Prior to 2000, and again in 2001 and 2002, exploratory herring sac roe fisheries in South Peninsula waters were open from April 15 through July 15. Fishing periods were established by emergency order to open at NOON on odd number days of the month and close at NOON on even number days of the month, followed by 24-hour closed periods.

Between May 15 and June 11 the department conducted four aerial surveys in South Peninsula mainland waters from Pavlof Bay to Kupreanof Point. The total estimated biomass, not including herring observed during multiple surveys was 361 tons for Pavlof Bay, 1,512 tons for Beaver/Balboa Bay and 1,591 tons for Stepovak Bay (Table 12).

Between May 15 and June 11 the department conducted six aerial surveys in waters of the Shumagin Islands. During the Shumagin Islands surveys 1,905 tons of herring were observed. The total Shumagin Island estimated biomass, not including herring observed during multiple surveys was 1,314 tons (Table 12).

Other forage fish, possibly capelin *Mallotus villosus*, Pacific sand lance *Ammodytes hexapterus*, and juvenile pollock *Theragra chalcogramma* were observed during these surveys. The total forage fish biomass for both the South Peninsula mainland and the Shumagin Islands was estimated to be 2,098 tons (Table 12).

The historical age composition of South Peninsula commercial purse seine herring sac roe harvests by area and percent is presented in Appendix E.

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

### ***2001 Regulatory Changes***

In 2001, the BOF adopted regulations that allowed gillnet fishers a practical opportunity to harvest herring from the Dutch Harbor allocation given the short (usually less than one hour) open periods required to manage the purse seine fishery. The gillnet fishery was allowed to open by emergency order beginning NOON June 24 and could extend through the close of the food and bait season on February 28. The fishery was allocated seven percent of the total Dutch Harbor herring food and bait allocation (5 AAC 27.655).

Another regulation adopted in 2001 required that any herring harvest that exceeds the allocation during the Dutch Harbor fishery be deducted from the following year's allocation by gear type. If less than the herring allocation is harvested, the balance of the biomass is not added to the following year's allocation.

### ***Gillnet Fishery***

The 2002 Dutch Harbor herring commercial gillnet fishery occurred between June 24 and July 17, with 13 gillnet permit holders and one processor participating. At NOON on June 24, the Unimak, Akutan, Unalaska, Umnak, and Adak Districts opened to commercial herring fishing by gillnet gear for 24 hours. No herring were harvested. Two more 24-hour periods, starting at NOON on June 26, and at NOON July 1, resulted in no herring harvest. Fishing was allowed continuously from NOON July 5 until 8:00 PM July 12, and the fleet harvested approximately 72 tons. There was a four-hour opening from 4:00 PM July 13 until 8:00 PM July 13 when approximately eight tons of herring were harvested. The final gillnet fishing period lasted three hours on July 17, from 8:00 AM until 11:00 AM when an additional 54 tons of herring were harvested. The total harvest for the gillnet fishery was 134 tons, which exceeded the GHF by 24 tons. All vessels delivered to a local participating processor for an exvessel price of \$400 per ton, and a total exvessel value of approximately \$53,716.

A total of 372 herring were sampled from the gillnet harvest for length, weight, sex, and age composition. The most abundant age classes in the sample were age-9 (27.3%) and age-11 (25.0%) and age-12 (14.0%). The average herring length was 298 mm and the average weight was 438 g. (Table 10). Sex composition of the sample was 60% male and 40% female.

### ***Purse Seine Fishery***

A preseason meeting with fishermen, processors, and other interested parties was held on Sunday, July 14, 2002 to discuss the ADF&G management strategy, exchange information, register vessels, tenders, and processors for the purse seine fishery.

Effort consisted of 16 purse seine vessels, 11 tenders representing three processing companies, and three spotter aircraft. Processors wished to purchase as much herring as possible.

On July 14, the ADF&G conducted a test fishery to gather biological information from herring present in the bay and harvest herring to recover expenses incurred while administering the fishery. During the test fishery, approximately 45 tons of herring were harvested.

On July 15, two aerial surveys were conducted prior to the opening of the commercial fishing period. From these surveys, the department estimated that 2,500 tons of herring were present in Unalaska Bay, south of a line from the waterfall north of Broad Bay to Ulatka Head. Given the abundance of herring in Unalaska Bay, the department used the survey at 9:00 AM to identify two areas of Unalaska Bay to be considered for an open period during a subsequent survey. At 10:00 AM the fleet was placed on 2-hour notice. At 11:00 AM a survey was conducted and Captains and Broad Bays were selected as the area for the commercial fishery. At 11:30 AM the fleet was placed on 30-minute notice and directed towards Captains Bay.

The purse seine fishery consisted of one twenty-minute period starting at 12:30 PM. The area open to fishing was in Unalaska Bay, south of a line from the waterfall north of Broad Bay at 53° 58.95' N lat., 166° 36.36' W long. to Ulatka Head at 53° 55.47' N lat., 166° 30.55' W long. A total of 2,617 tons of herring were delivered by 11 vessels. This exceeded the 2002 GHF by 1,149 tons. The exvessel value of the purse seine fishery was an estimated \$855,762. Processors purchased all herring as bait for between \$300 to \$450 per ton.

A total of 300 herring were sampled from the commercial and test purse seine fishery. The most abundant age classes in the sample were age-9 (25.3%), age-12 (13.3%), and age-10 (11.6%; Table 13; Figure 9). The average herring length in the sample was 300 mm, and the average weight was 463 g (Table 9). The sex composition of the sample was 46% male and 54% female.

## LITERATURE CITED

- ADF&G (Alaska Department of Fish and Game). 2001. 2001-2002 Commercial herring fishing regulations, 2001 edition. Alaska Department of Fish and Game, Commercial Fisheries Division, Juneau.
- Burkey, C, Jr. 2002a. Alaska Peninsula and Aleutian Islands Management Area Sac Roe Herring Management Plan, 2002. Alaska Department of Fish and Game, Commercial Fisheries Division, Regional Information Report 4K02-17, Kodiak.
- Burkey, C, Jr. 2002b. Alaska Peninsula-Aleutian Islands Management Area Food and Bait Herring Management Plan, 2002. Alaska Department of Fish and Game, Commercial Fisheries Division, Regional Information Report 4K02-24, 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.
- Witteveen, M.J., R.D. Campbell, and R.L. Murphy, 1999. Alaska Peninsula and Aleutian Islands Management Areas Sac Roe Herring Management Plan, 1999. Alaska Department of Fish and Game, Commercial Fisheries Division. Regional Information Report 4K99-4, Kodiak.

Table 1. North Peninsula herring biomass aerial surveys (tons), historical summary, 1984-2002.

Date	Port Moller District			Port Heiden District		Total Biomass Estimate	Aerial Survey Dates	
	Herendeen Bay	Port Moller Bay	Additional Biomass Harvested	Bear River to Strogonof Point	Port Heiden Bay Section		Begin	End
1984	2,000	1,500-1,900				3,500-3,900	May 9 - July 31	
1985	260	1,305		5,240		6,805	May 1 - June 13	
1986	1	28		0		29	May 16 - June 7	
1987	0	5,125		0		5,125	May 6 - June 3	
1988	1,737	442		8		2,187	May 17 - June 15	
1989	1,163	1,471				2,634	May 19 - June 16	
1990	155	387				542	May 21 - June 14	
1991	2,278 (250) <sup>a</sup>	4,651		1,471		8,400	May 17 - June 26	
1992	755	8,269		5,798	10,021	24,843	May 19 - June 18	
1993	775	2,878		33	0	3,686	May 4 - June 9	
1994	381	274	74	0		729	May 22 - May 28	
1995	60	477	200	0		737	May 13 - June 2	
1996	390 (390) <sup>a</sup>	986 (755) <sup>a</sup>		309	65	1,750	May 9 - June 18	
1997	160	45		0		205	May 22 - June 12	
1998	930	135		360 (200) <sup>a</sup>		1,425	May 11 - June 3	
1999	10	220		0		230	May 16 - June 14	
2000	115	350		0		465	May 15 - May 28	
2001	335	1,980		0	0	2,315	May 14 - May 22	
2002	85	255		0	0	340	May 15 - May 28	
<hr/>								
1992-2001								
Average	391	1,561	137	650	2,522	3,639		

<sup>a</sup> Biomass estimates (tons) conducted by commercial spotter pilots are enclosed in parenthesis ( ); these estimates are included in the total biomass estimate. They may not be comparable to ADF&G estimates.

Table 2. Alaska Peninsula herring sac roe fishery harvest, number of landings and permits fished by year, 1979-2002.

Year	North Peninsula			South Peninsula			Total		
	Tons	Landings	Permits	Tons	Landings	Permits	Tons	Landings	Permits
1979		No Harvest		10	a	a	10	a	a
1980		No Harvest		454	15	6	454	15	6
1981		No Harvest		797	93	56	797	93	56
1982	a	a	a	138	13	4	a	a	a
1983	627	47	23	0	0	0	627	47	23
1984	431	20	11	210	20	5	642	40	15
1985	710	31	17	288	8	5	998	39	20
1986	894	116	50	282	14	6	1,176	130	51
1987	514	46	27	319	8	a	833	54	27
1988	294	21	9	377	22	10	671	43	19
1989	729	24	10	310	31	13	1,039	55	19
1990	273	23	5	312	31	6	585	54	9
1991	1,313	59	11	157	26	10	1,470	85	18
1992	3,969	100	24	180	11	7	4,149	112	29
1993	536	44	16	a	a	a	a	a	a
1994	90	7	5	a	a	a	a	a	a
1995	337	37	12	a	a	a	a	a	a
1996	a	a	a	124	8	4	a	a	a
1997		No Harvest	0		No Harvest	0	0	0	0
1998	a	a	a		No Harvest	0	a	a	a
1999		No Harvest	0		No Harvest	0	0	0	0
2000		No Harvest	0		Closed	0	0	0	0
2001		No Harvest	0		No Harvest	0	0	0	0
2002		No Harvest	0		No Harvest	0	0	0	0
1992-2001									
Average	510	20	6	47	4	2	557	25	7

<sup>a</sup> Harvest numbers can not be released due to state confidentiality requirements.

Table 3. South Peninsula commercial herring sac roe fishery harvest by geographic area, 1979-2002.

Year	Area									Total
	Stepovak Bay <sup>a</sup>	Balboa Bay	Pavlof Bay	Canoe Bay	Volcano-Dolgoi	Belkofski Bay	Lenard Harbor	Dolgoi Harbor	Shumagin Islands	
1979	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0	0.0	10.1
1980	196.0	132.0	113.8	12.0	0.0	0.0	0.0	0.0	0.0	453.8
1981	128.6	35.7	263.1	168.1	64.8	15.7	121.6	0.0	0.0	797.6
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	28.9	25.1	0.0	156.2	0.0	0.0	0.0	0.0	0.0	210.2
1985	10.9	0.0	38.0	238.8	0.0	0.0	0.0	0.0	0.0	287.7
1986	0.0	0.0	61.0	140.6	13.0	8.0	59.3	0.0	0.0	281.9
1987	0.0	0.0	91.7	117.7	0.0	37.8	59.5	12.3	0.0	319.0
1988	0.3	11.0	69.2	236.5	17.0	12.0	30.7	0.0	0.0	376.7
1989	39.2	17.7	52.8	148.3	0.0	0.0	8.6	5.2	38.5	310.3
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	92.4	0.0	0.0	0.0	0.0	0.0	97.0
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
1996	20.7	3.9	0.0	77.1	0.0	0.0	0.0	0.0	15.6	117.3
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992-2001										
Average	2.5	1.4	0.0	41.1	0.0	0.0	0.0	0.0	1.6	46.6

<sup>a</sup> The 1984-88 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.

Table 4. Alaska Peninsula area commercial herring sac roe fishery harvest by time period, 1979-2002.

Year	North Peninsula		South Peninsula		Total
	Harvest (Tons)	Harvest Time Period	Harvest (Tons)	Harvest Time Period	
1979	0.0	-	10.1	July 4- July 4	10.1
1980	0.0	-	453.8	May 18-July 14	453.8
1981	0.0	-	797.6	May 9-June 23	797.6
1982	505.5	May 31-June 12	176.2	May 31-June 14	681.7
1983	627.0	May 9-May 29	0.0	-	627.0
1984	431.2	May 24-June 8	210.2	May 13-June 1	641.4
1985	710.2	May 24-June 4	287.7	June 1-June 11	997.9
1986	894.4	May 18-May 30	281.9	June 7-June 14	1,176.3
1987	513.7	May 9-June 5	319.0	June 8-June 19	832.7
1988	294.3	May 17-June 15	376.7	May 31-June 20	671.0
1989	729.0	May 28-June 23	310.3	May 13-June 19	1,039.3
1990	272.8	June 4-June 19	312.2	May 14-June 14	585.0
1991	1,313.0	May 17-July 4	157.4	May 16-June 11	1,470.4
1992	3,969.0	May 23-June 17	180.4	June 4-June 7	4,149.4
1993	535.9	May 8-June 9	97.0	May 27-June 9	632.9
1994	89.8	May 21-June 7	8.2	June 2-June 3	98.0
1995	337.3	May 29-June 20	62.7	June 6-June 17	400.0
1996	<sup>a</sup>	June 12-June 18	117.3	May 10-June 27	<sup>a</sup>
1997	0.0	-	0.0	-	0.0
1998	<sup>a</sup>	May 21-June 3	0.0	-	<sup>a</sup>
1999	0.0	-	0.0	-	0.0
2000	0.0	-	0.0	<sup>b</sup>	0.0
2001	0.0	-	0.0	-	0.0
2002	0.0	-	0.0	-	0.0
1992-2001 Average	509.6		46.6		556.1

<sup>a</sup> This information cannot be released due to confidentiality requirements.

<sup>b</sup> The South Peninsula exploratory sac roe herring fishery was closed during the 2000 season.

Table 5. North Peninsula commercial herring sac roe fishery harvest by section, 1982-2002.

Year	Port Moller District			Bear River Bering Sea Coast	Port Heiden District	Total
	Deer Island Mud Bay Section	Herendeen Bay Section	Port Moller Bay Section		Port Heiden Bay Section	
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	513.7
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
1996	0.0	b	b	0.0	0.0	b
1997	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	b	b	0.0	b
1999	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0
1992-2001 Average	2.9	32.6	304.6	9.5	160.0	509.6

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

<sup>b</sup> This information cannot be released due to confidentiality requirements.

Table 6. Aleutian Islands Area Dutch Harbor commercial herring food and bait fishery summary, including landing date, days fished, preseason Togiak spawning biomass, guideline harvest level, harvest, and number of vessels fishing, 1981-2002.

Year	Landing Date		Days fished	Preseason	GHLs Short Tons	Food & Bait	Number Vessels Fishing
	First	Last		Spawning Biomass Short Tons		Harvest Short Tons	
1981	Aug 3	Aug 23	21	159,000	None	a	a
1982	Aug 5	Sep 12	39	98,000	None	3,565	7
1983	Jul 23	Sep 6	46	142,000	3,525 <sup>b</sup>	3,567	8
1984	Jul 17	Jul 27	11	115,000	3,525 <sup>b</sup>	3,578	9
1985	Jul 17	Aug 11	26	132,000	3,525 <sup>b</sup>	3,480	6
1986	Jul 16	Jul 28	13	96,000	2,453	2,394	7
1987	Jul 16	Jul 23	4	88,000	2,332	2,503	9
1988	Jul 16	Sep 18	21	132,000	3,100	2,004	8
1989	Jul 16	Aug 5	19	100,108	3,100	3,081	9
1990	Aug 15	Aug 15	<1	72,000	903	820	7
1991	Jul 17	Jul 17	<1	83,229	931	1,325	8
1992	Jul 16	Jul 28	5	60,214	1,940	1,949	11
1993	Jul 16	Jul 16	<1	164,135	2,193	2,790	13
1994	Jul 16	Jul 19	4	165,747	2,215	3,349	16
1995	Jul 16	Jul 16	<1	149,093	1,982	1,748	18
1996	Jul 16	Jul 16	<1	135,585	1,793	2,239	25
1997	Jul 15	Jul 19	5	125,000	1,645	1,950	26
1998	Jul 16	Jul 16	<1	121,054	1,590	1,994	22
1999	Jul 16	Jul 20	4	156,200	2,082	2,398	22
2000	Jul 15	Jul 15	<1	130,904	1,728	2,014	23
2001 <sup>c</sup>	Jun 25	Jul 16	10	119,818	1,572	1,439	20
2002	Jun 25	Jul 16	17	120,196	1,578	2,751	27
1992-2001	Average		8	138,773	1,838	2,263	21

<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> In 2001 a gillnet fishery was established

Table 7. Aleutian Islands Area Dutch Harbor herring food and bait fisheries historical summary, 1929-2002.

Year	Harvest in Short Tons	No. Vessels		Tons Per Boat	Tons Per Landing	Price Per Ton	Exvessel Value (Thousands)	Exvessel Value Per Vessel (Thousands)
		Making Landings	Number Landings					
<b><i>Purse seine fishery</i></b>								
1929	1,259							Information not Available
1930	1,916							Information not Available
1931	1,056	26						Information not Available
1932	2,510	30						Information not Available
1933	1,585	38						Information not Available
1934	1,533							Information not Available
1935	2,412							Information not Available
1936	1,379							Information not Available
1937	579							Information not Available
1938	513							Information not Available
1939-44	No Fishery							
1945	75							Information not Available
1946-80	No Fishery							
1981	704	a	16	352	44	300	211	a
1982	3,565	7	95	509	38	300	1,020	146
1983	3,567	8	96	446	37	232	828	104
1984	3,578	9	61	398	59	210	751	83
1985	3,480	6	78	560	45	162	564	94
1986	2,394	7	53	342	45	254	600	86
1987	2,503	8	45	373	56	300	751	94
1988	2,004	8	59	251	34	252	505	63
1989	3,081	9	69	342	45	283	873	97
1990	820	7	8	117	103	350	287	41
1991	1,325	8	18	166	74	300	398	50
1992	1,949	11	26	177	75	300	573	52
1993	2,790	13	32	215	87	300	837	64
1994	3,349	14	65	239	52	300	1,005	72
1995	1,748	14	24	125	73	300	524	37
1996	2,239	24	29	93	77	300	672	28
1997	1,950	26	63	75	31	300	585	23
1998	1,994	22	22	91	91	300	598	27
1999	2,398	21	71	109	34	400-600	1,038	49
2000	2,014	20	28	88	72	300-500	671	34
2001	1,332	14	16	95	83	300-500	406	29
2002	2,617	12	14	218	187	300-450	909	76
1929-1938								
Average	1,474							Information not Available
1992-2001								
Average	2,176	18	38	131	67	340	691	42
<b><i>Gillnet fishery</i></b>								

Table 8. Aleutian Islands Area Dutch Harbor herring food and bait fishery allocations, commercial harvest, and effort by gear type, 2001-2002.

Preseason Togiak Spawning													
Year	Biomass <sup>a</sup>	All Gear Types		Gillnet Fishery					Seine Fishery				
		Allocation <sup>a</sup>	Harvest <sup>a</sup>	Allocation <sup>a</sup>	Harvest <sup>a</sup>	Vessels	Landings	Days Fished	Allocation <sup>a</sup>	Harvest <sup>a</sup>	Vessels	Landings	Days Fished
2001	119,818	1,572	1,439	110	107	6	25	9	1,462	1,332	14	16	2
2002	120,196	1,578	2,751	110	134	13	37	16	1,468	2,617	16	14	1

Table 9. Age, sex, weight and length of herring harvested during the Aleutians Islands area Dutch Harbor commercial purse seine herring food and bait fishery 2002.

Age (Years)	Sex			Total	Percent of Total	Weight			Standard Length		
	Male	Female	Unk			Mean (gm)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
5			0	0	0.0						
6	4	5	0	9	3.0	323	48.4	9	274	10.6	9
7	10	9	0	19	6.3	334	26.7	19	270	7.4	19
8	6	7	0	13	4.3	379	48.8	13	284	7.1	13
9	33	43	0	76	25.3	442	44.4	76	295	7.7	76
10	20	15	0	35	11.7	447	49.9	35	296	9.1	35
11	12	16	0	28	9.3	487	49.5	28	305	7.2	28
12	17	20	0	37	12.3	504	61.6	37	307	10.4	37
13	13	14	0	27	9.0	507	35.6	27	309	6	27
14	14	22	0	36	12.0	531	47.4	36	314	8.9	36
15	6	9	0	15	5.0	557	49.2	15	317	9.2	15
16	0	0	0	0	0.0						
17	1	2	0	3	1.0	540	55.9	3	321	5	3
18	1	1	0	2	0.7	506	12	2	314	2.8	2
Total	137	163	0	300	100			300			300

Table 10. Age, sex, weight and length of herring harvested during the Aleutians Islands area Dutch Harbor commercial gillnet herring food and bait fishery, 2002.

Age (Years)	Sex			Total	Percent of Total	Weight			Standard Length		
	Male	Female	Unk			Mean (gm)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
5	2	0	0	2	0.7	314	41.7	2	265	13.4	2
6	12	6	0	18	6.0	326	31.8	18	274	5.9	18
7	8	4	0	12	4.0	345	50.1	12	275	10.9	12
8	8	5	0	13	4.3	375	32.0	13	286	7.9	13
9	46	36	0	82	27.3	416	46.6	82	294	8.8	82
10	19	16	0	35	11.7	438	62.4	35	299	9.1	35
11	39	36	0	75	25.0	452	44.8	75	301	7.3	75
12	31	11	0	42	14.0	459	54.6	42	303	7.3	42
13	21	12	0	33	11.0	508	50.7	33	311	7.6	33
14	25	13	0	38	12.7	496	65.8	38	312	8.0	38
15	8	8	0	16	5.3	533	48.0	16	317	6.9	16
16	3	1	0	4	1.3	490	40.6	4	311	6.2	4
17			0	0	0.0						
18	1	1	0	2	0.7	547	4.9	2	324	9.1	2
<b>Total</b>	<b>223</b>	<b>149</b>	<b>0</b>	<b>372</b>	<b>124</b>			<b>372</b>			<b>372</b>

Table 11. North Peninsula herring biomass aerial surveys, 2002.

Date	Port Moller District				Port Heiden District				Total (Tons)	Surveyor
	Herendeen Bay		Port Moller Bay		Bear River to Strogonof Point		Port Heiden Bay Section			
	Tons	Rating <sup>a</sup>	Tons	Rating <sup>a</sup>	Tons	Rating <sup>a</sup>	Tons	Rating <sup>a</sup>		
May 15	0	4	0	4	0	4	Not Surveyed		0	Murphy
May 16	0	2	0	2	Not Surveyed		Not Surveyed		0	Murphy
May 17	60	2	190	2	Not Surveyed		Not Surveyed		250	Murphy
May 21	22	4	0	4	0	4	Not Surveyed		22	Witteveen
May 28	0	2	0	2	Not Surveyed		Not Surveyed		0	Murphy
May 28	25	2	65	2	Not Surveyed		Not Surveyed		90	Murphy
Total Biomass Observed <sup>b</sup>										
	107		255		0		0		362	
Estimated 2002 Biomass (Does not include herring observed during multiple surveys)										
	85		255		0		0		340	

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

<sup>b</sup> Observed biomass includes herring documented during multiple surveys. The actual total biomass during May 14 - 22 is estimated at 340 tons.

Table 12. South Peninsula herring biomass aerial surveys, 2002.

Date	Pavlof Bay <sup>a</sup>		Beaver/Balboa Bay <sup>b</sup>		Stepovak Bay <sup>c</sup>		Shumagin Is.		Total (Tons)	Other Forage fish (st)	Surveyor
	Tons	Rating <sup>d</sup>	Tons	Rating <sup>d</sup>	Tons	Rating <sup>d</sup>	Tons	Rating <sup>d</sup>			
May 15	18	3	0	4	191	4	0	3	209		Burkey
May 21	Not Surveyed		Not Surveyed		Not Surveyed		414	3	414		Burkey/Ford
May 29	0	4	85	4	Not Surveyed		0	4	85		Burkey/Ford
June 04	271	3	1,236	2	784	3	390	2	2,681	1,084	Burkey/Ford
June 06	Not Surveyed		Not Surveyed		Not Surveyed		700	3	700	412	Burkey/Ford
June 11	72	4	276	3	616	3	401	3	1,365	602	Burkey/Ford
Total Biomass Observed <sup>e</sup>											
	361		1,597		1,591		1,905		5,454	2,098	
Estimated 2002 Biomass (Does not include herring observed during multiple surveys)											
	361		1,512		1,591		1,314		4,778	2,098	

<sup>a</sup>Pavlof Bay biomass estimates include herring observed from Pavlof Bay to McGinty Point.

<sup>b</sup>Beaver/Balboa Bay biomass estimates include herring observed from Beaver Bay to Dorenoi Bay.

<sup>c</sup>Stepovak Bay biomass estimates include herring observed from Chicagof Bay to Kupreanof Point.

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

<sup>e</sup> Observed biomass includes herring documented during multiple surveys. The actual total biomass during May 14 - 22 is estimated at 4,778 tons.

Table 13. Estimated age composition of Aleutian Islands commercial herring food and bait harvests, in percent, 1991-2002.

Year	Percent at Age (Years)														
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b><i>Purse Seine</i></b>															
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	0.0
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	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	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	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	0.0
1996	0.0	0.7	8.2	16.1	35.8	25.8	3.3	2.9	2.7	1.6	1.5	0.8	0.4	0.2	0.0
1997	0.0	3.2	15.2	31.3	9.3	21.2	9.5	1.8	4.5	1.6	1.2	0.5	0.1	0.0	0.0
1998	0.0	6.5	7.9	25.4	26.1	8.5	14.6	11.1 <sup>a</sup>							
1999	0.2	0.2	12.2	8.2	21.8	21.1	10.2	15.6	5.6	2.2	0.9	1.3	0.4	0.0	0.0
2000	0.0	0.0	0.7	19.8	16.6	12.4	14.5	10.8	12.4	8.2	2.3	1.3	0.5	0.0	0.0
2001	0.0	3.5	2.1	6.4	31.4	12.8	11.9	9.7	5.7	10.7	4.0	0.9	0.4	0.0	0.0
2002	0.0	0.0	3.0	6.3	4.3	25.3	11.6	9.3	12.3	9.0	12.0	5.0	0.0	3.0	2.0
<b><i>Gillnet</i></b>															
2002	0.0	0.5	4.8	3.2	3.4	22.0	9.4	20.1	11.2	8.8	10.2	4.3	1.0	0.0	0.5

<sup>a</sup> Age determination in 1998 calculated the proportion of 11 and older aged fish in one category.

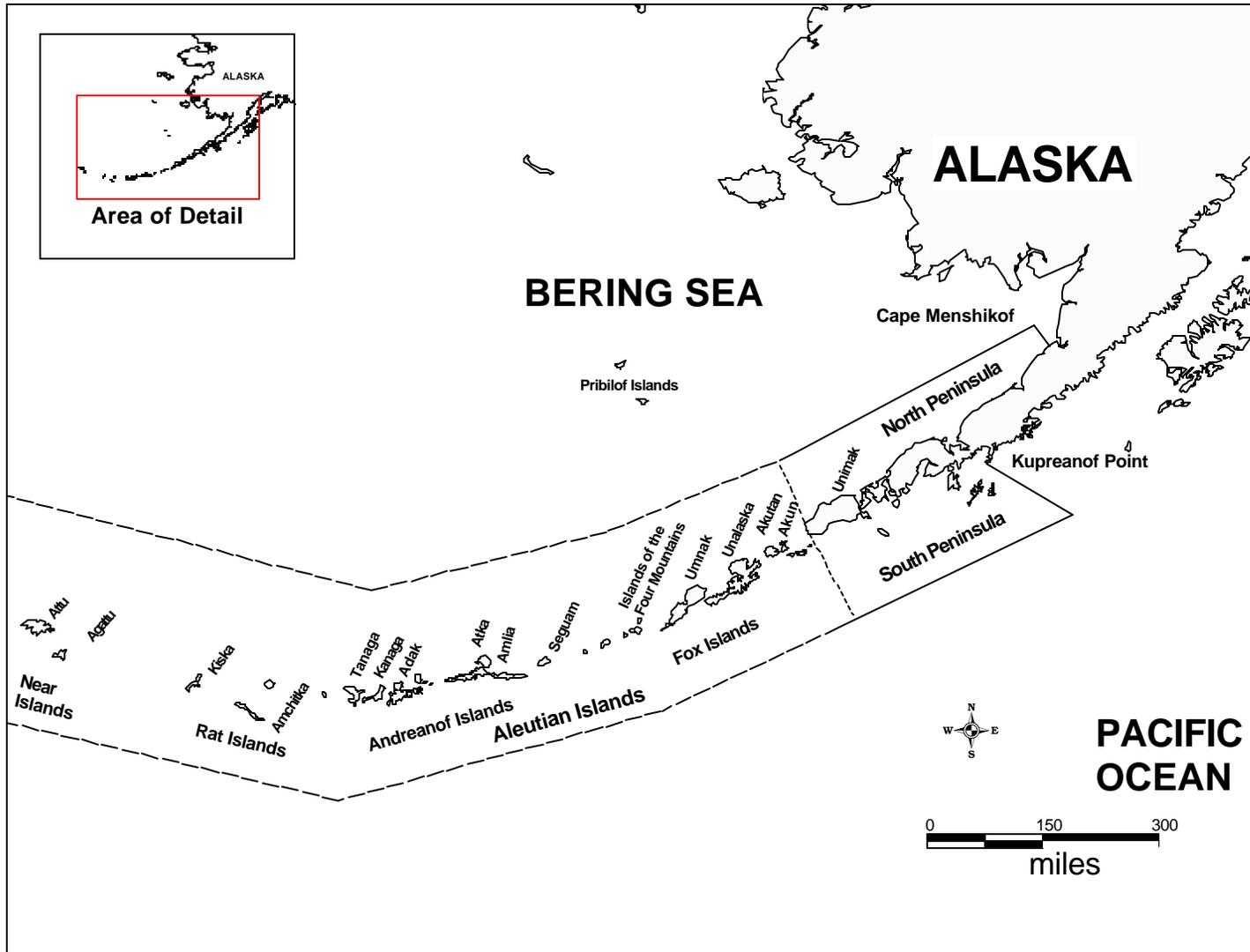


Figure 1. Map of the Alaska Peninsula and Aleutian Islands Herring Management Area.

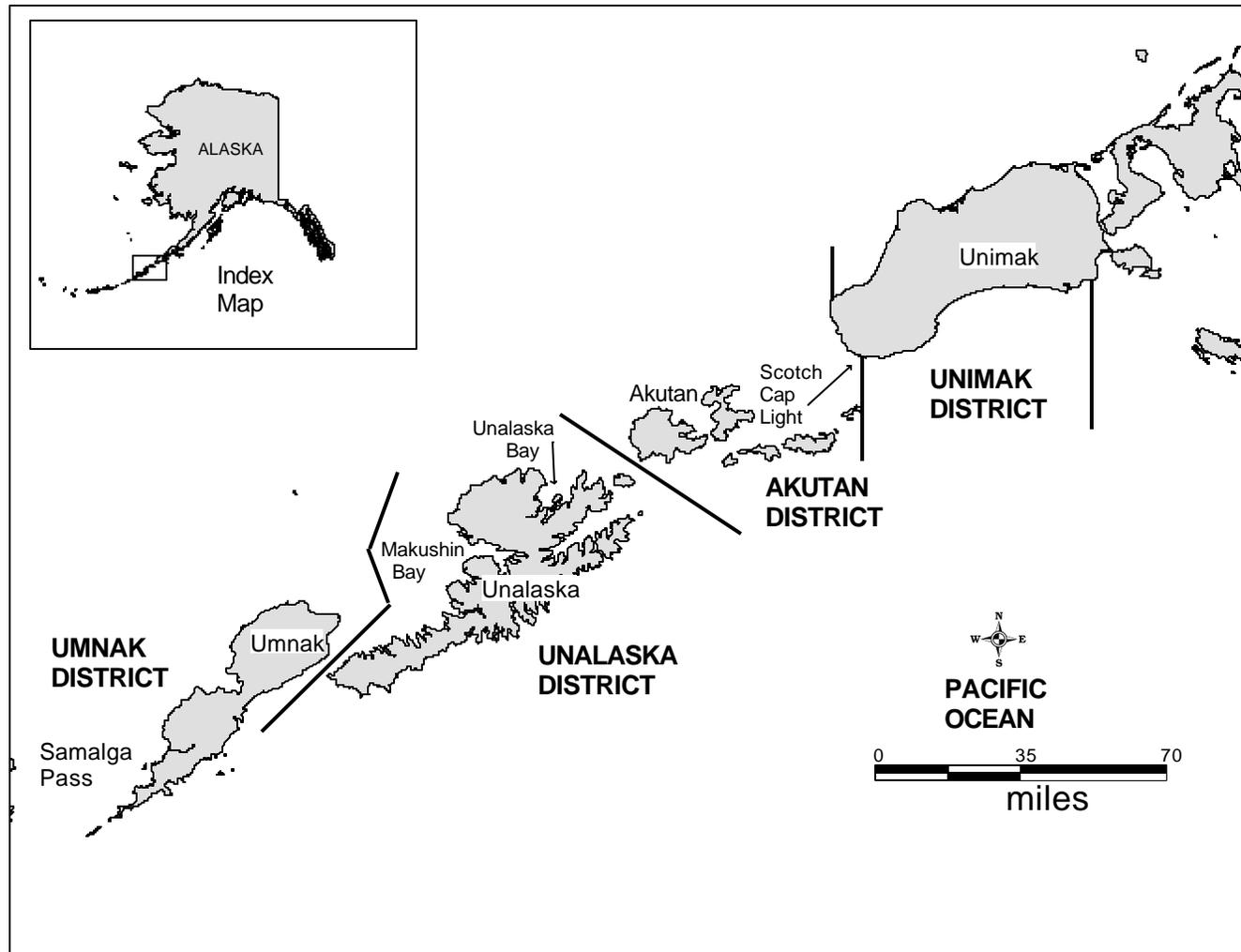


Figure 2. Map of the eastern Aleutian Islands from Samalga Pass to Unimak Island with herring fishing districts shown.

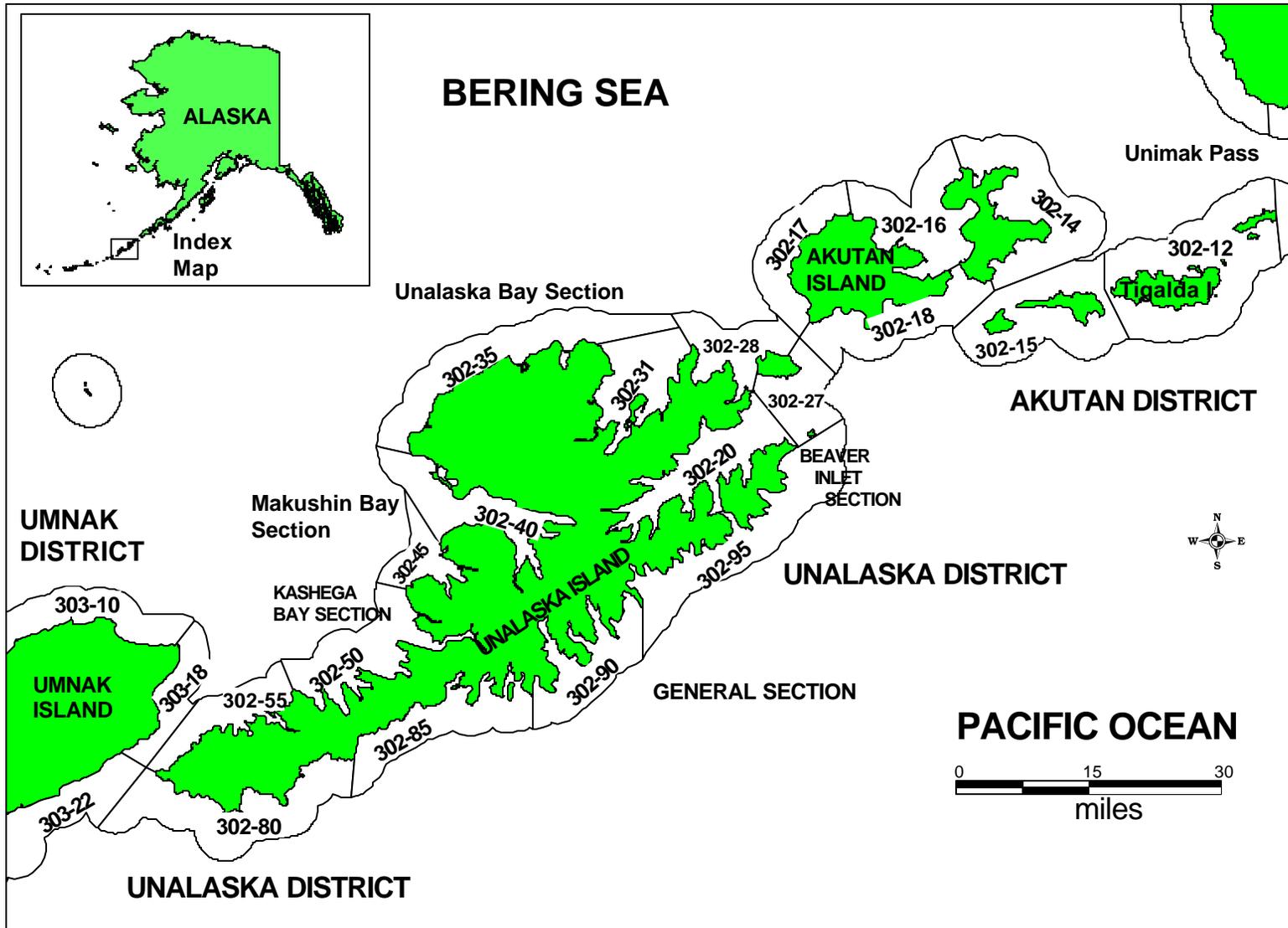


Figure 3. Map of the eastern Aleutian Islands from Tigalda Island to Umnak Island with the statistical herring fishing areas shown.

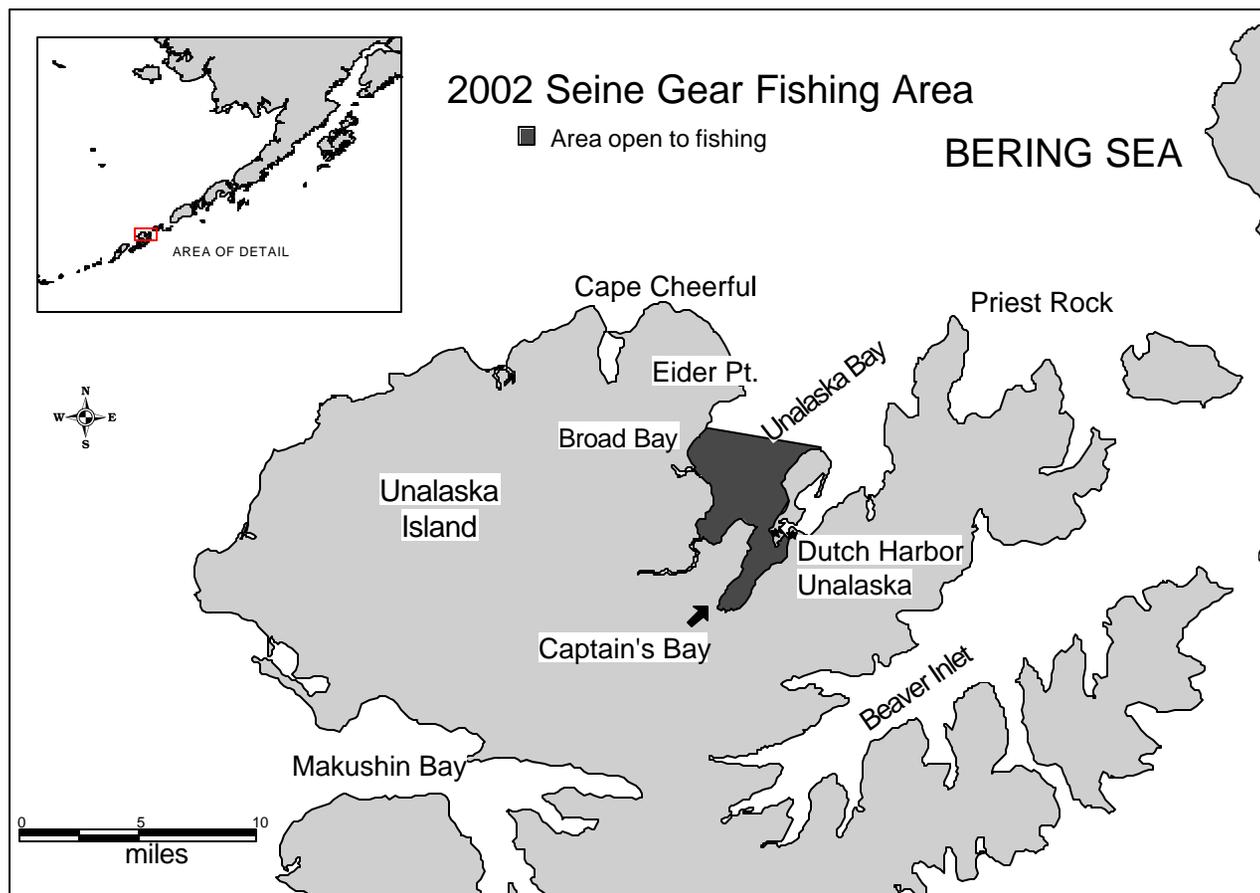


Figure 4. Map of Unalaska Island from Beaver Inlet to Makushin Bay, with the 2002 seine fishery open area defined.



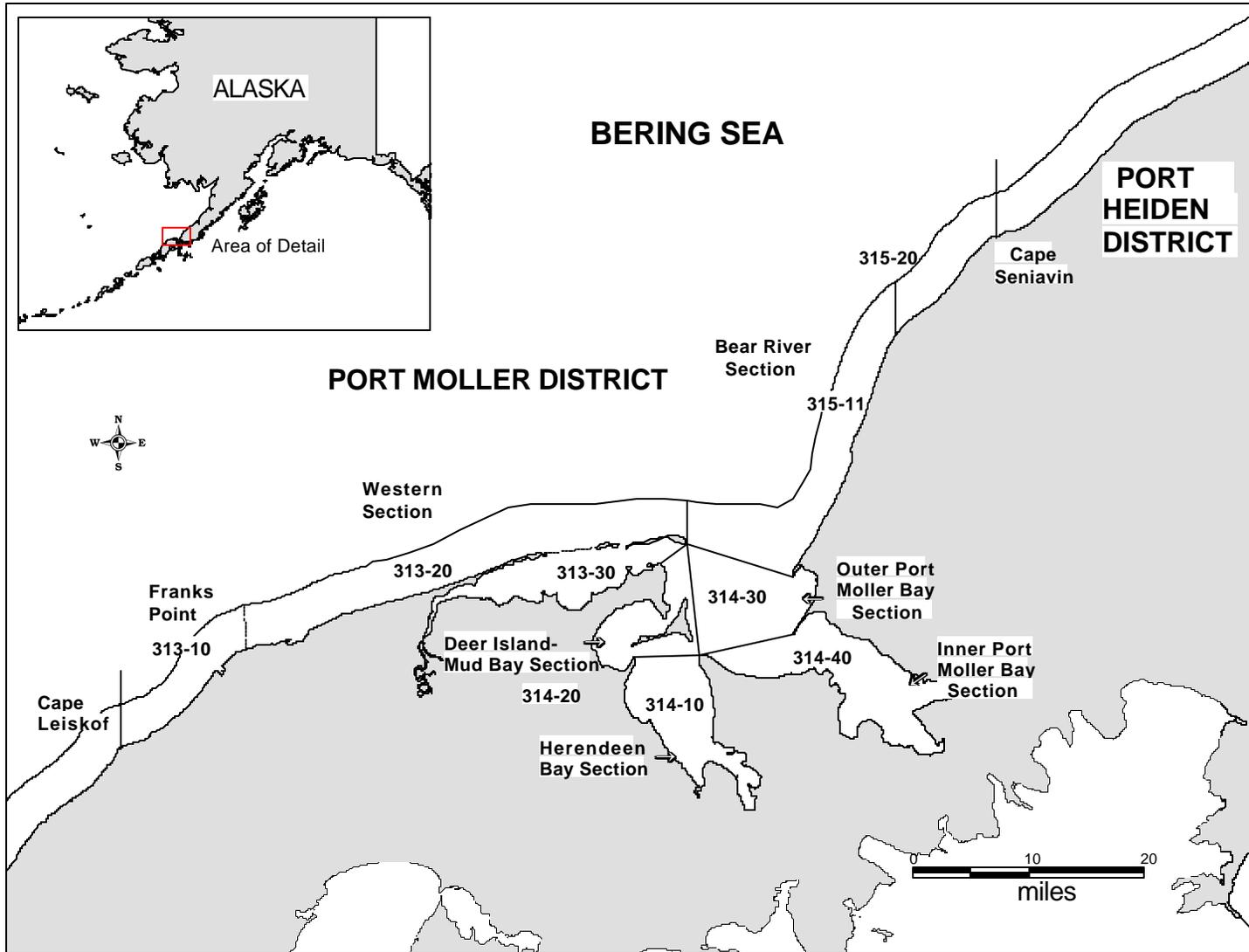


Figure 6. Map of the Port Moller District with commercial herring fishing statistical areas shown.

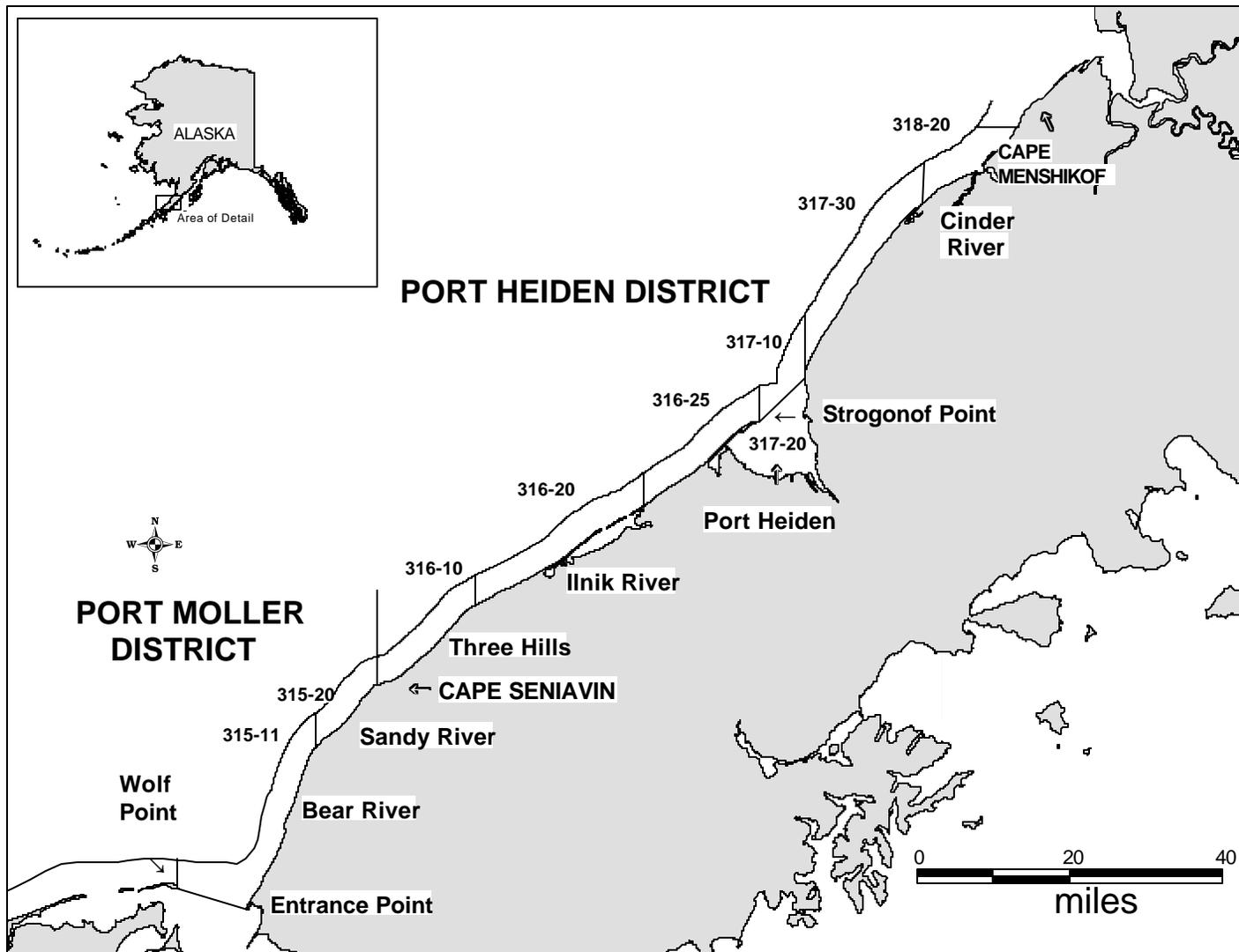


Figure 7. Map of the Alaska Peninsula from Entrance Point to Cape Menshikof with commercial herring fishing statistical areas shown.

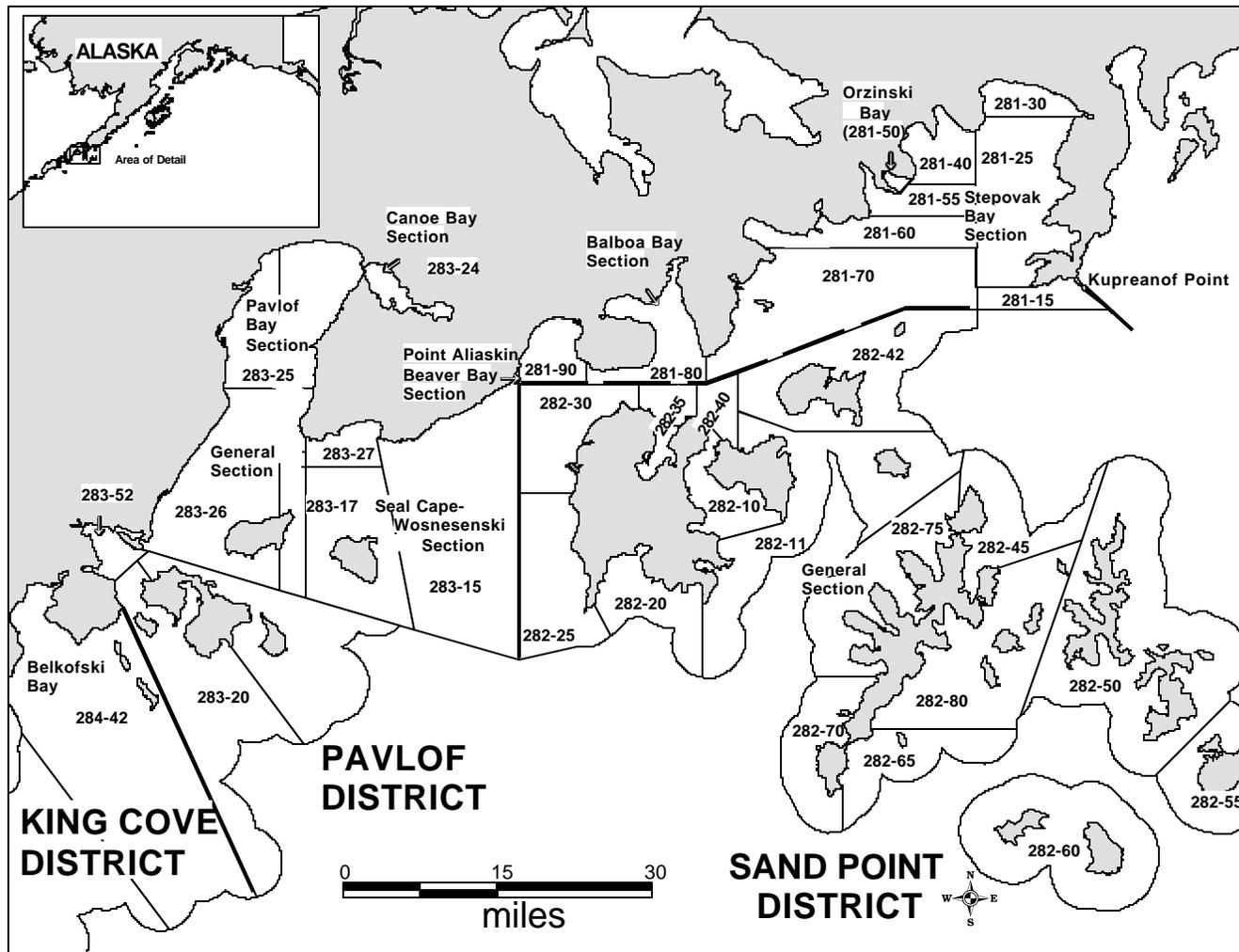


Figure 8. Map of the South Alaska Peninsula from Belkofski Bay to Kupreanof Point with commercial herring fishing statistical areas shown.

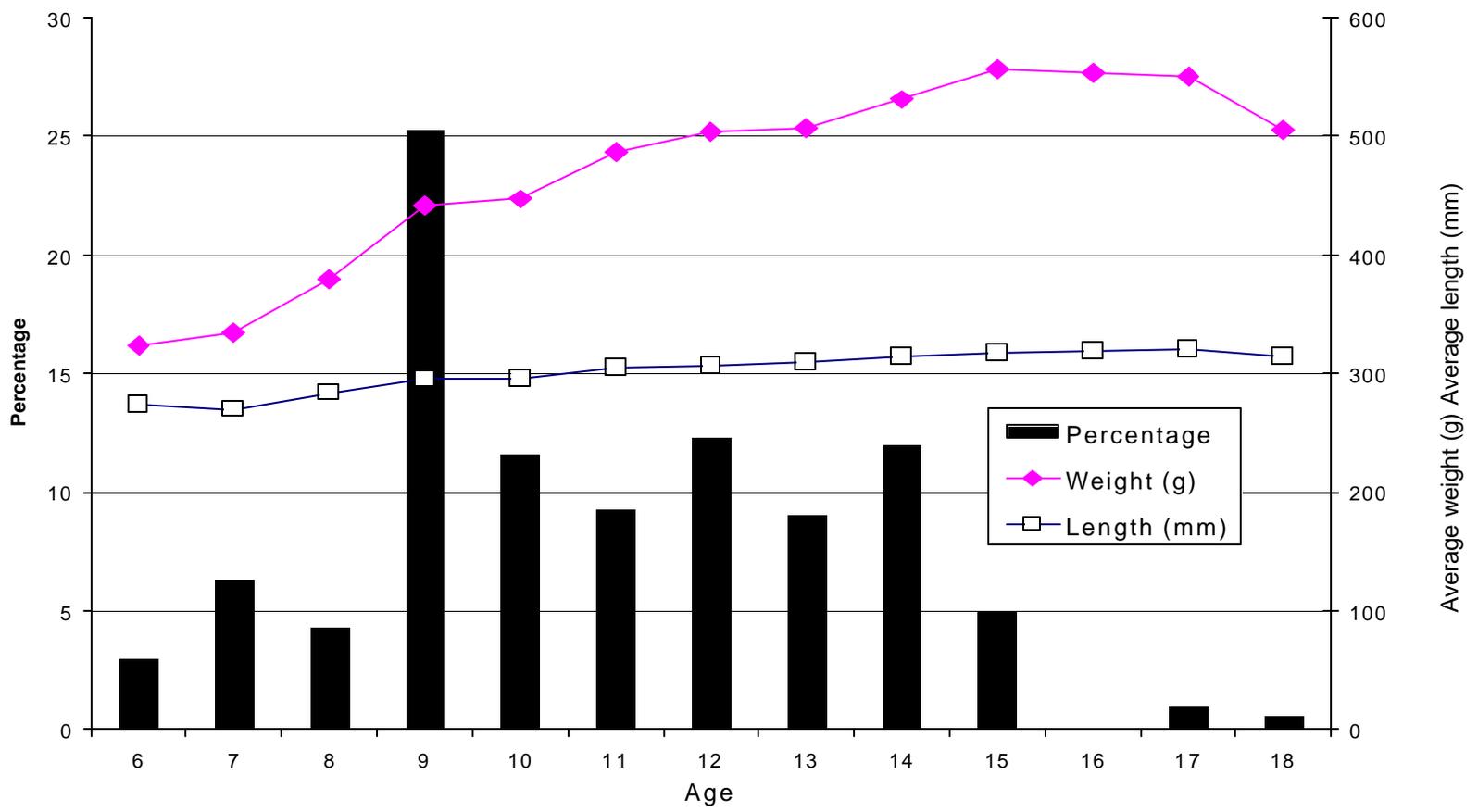


Figure 9. Average length at age (mm), average weight at age (g), and percent by age class in the Aleutian Islands Management Area, purse seine herring food and bait fishery, 2002.

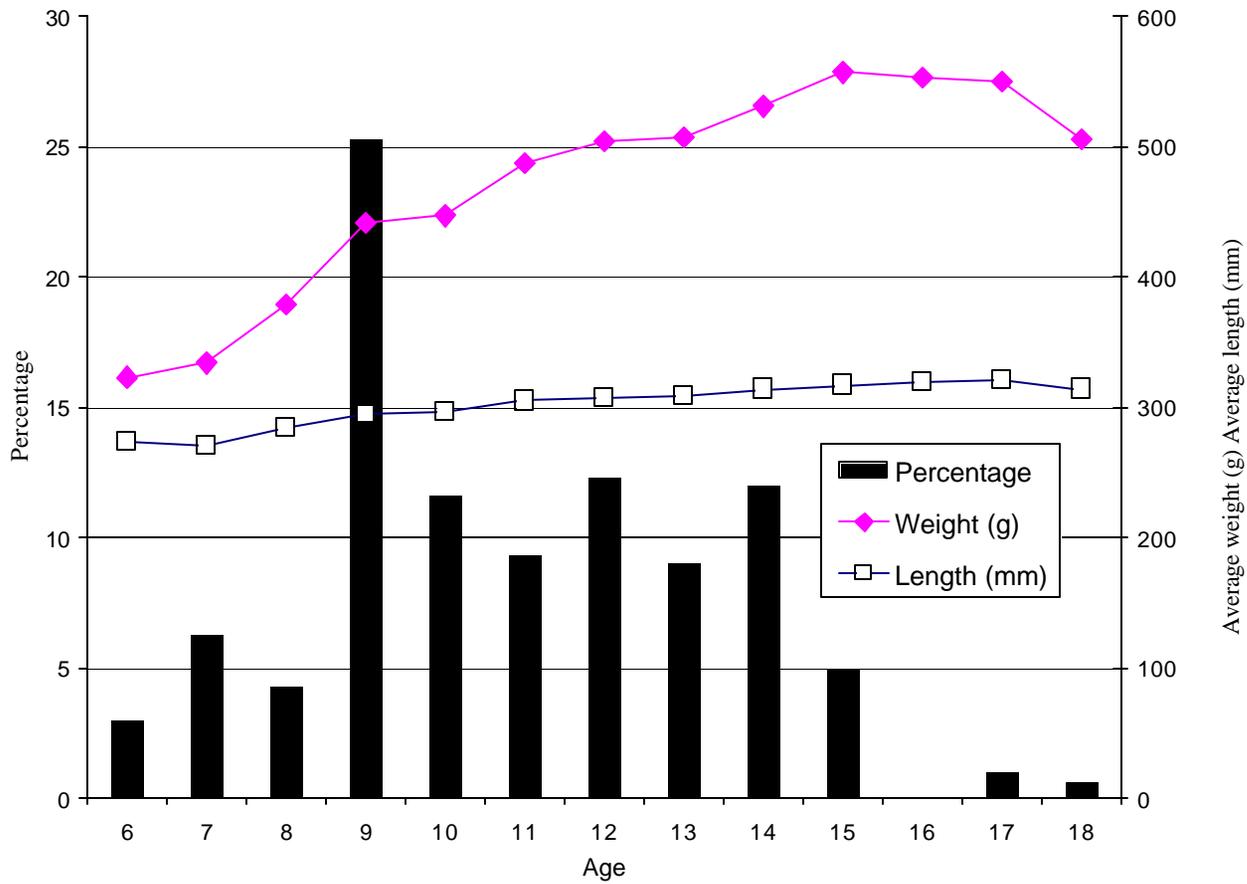


Figure 10. Average length at age (mm), average weight at age (g), and age composition of herring harvested in the Aleutian Islands Management Area, gillnet food and bait herring fishery, 2002.

## **APPENDIX**

Appendix A. Emergency order summary, 2002.

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EMERGENCY ORDER NO. 4-FH-M-SP-01-02

EFFECTIVE DATE: NOON Monday, June 24, 2002

EXPLANATION: This emergency order allows commercial herring fishing by gillnet gear in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON June 24 until NOON June 25, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulations allowing for a commercial herring food and bait fishing season specific to gillnet gear. Regulation 5 AAC 27.610 (e)(2)(A) established a commercial herring fishing season, by gillnet gear beginning June 24. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Nine permit holders and one processor are currently registered for the gillnet fishery.

A commercial herring fishing period for gillnet gear will allow fisherman to harvest herring toward the 2002 allocation of 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-02-02

EFFECTIVE DATE: NOON Wednesday, June 26, 2002

EXPLANATION: This emergency order allows commercial herring fishing by gillnet gear in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON June 26 until NOON June 27, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulations allowing for a commercial herring food and bait fishing season specific to gillnet gear. Regulation 5 AAC 27.610 (e)(2)(A) established a commercial herring fishing season, by gillnet gear beginning June 24. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

No deliveries were made during the 24-hour commercial fishing period on June 24.

Twelve permit holders and one processor are currently registered for the gillnet fishery.

A commercial herring fishing period for gillnet gear will allow fisherman to harvest herring toward the 2002 allocation of 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-03-02

EFFECTIVE DATE: NOON Monday, July 1, 2002

EXPLANATION: This emergency order allows a 24-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON Monday July 1, 2002 until NOON Tuesday July 2, 2002.

JUSTIFICATION: During the 2001 Alaska Board of Fisheries meeting regulations were adopted allowing a commercial herring food and bait fishing season specific to gillnet gear. Regulation 5 AAC 27.610 (e)(2)(A) established a commercial herring fishing season, by gillnet gear beginning June 24. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on June 26 no herring were harvested. To date no herring have been harvested in the Dutch Harbor herring food and bait fishery.

The 2002 herring food and bait allocation for gillnet gear is 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-04-02

EFFECTIVE DATE: NOON Friday, July 5, 2002

EXPLANATION: This emergency order allows a 24-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON Friday July 5, 2002 until NOON Saturday July 6, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on July 1 no herring were harvested. To date no herring have been harvested in the Dutch Harbor herring food and bait fishery.

The 2002 herring food and bait allocation for gillnet gear is 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-05-02

EFFECTIVE DATE: NOON Saturday, July 6, 2002

EXPLANATION: This emergency order allows a 48-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON Saturday July 6, 2002 until NOON Monday July 8, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on July 5 no herring were harvested. To date no herring have been harvested in the Dutch Harbor herring food and bait fishery.

The 2002 herring food and bait allocation for gillnet gear is 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-06-02

EFFECTIVE DATE: NOON Monday, July 8, 2002

EXPLANATION: This emergency order allows a 48-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON Monday July 8, 2002 until NOON Wednesday July 10, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on July 7 no herring were harvested. To date no herring have been harvested in the Dutch Harbor herring food and bait fishery.

The 2002 herring food and bait allocation for gillnet gear is 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-07-02

EFFECTIVE DATE: NOON Wednesday, July 10, 2002

EXPLANATION: This emergency order allows a 48-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON Wednesday July 10, 2002 until NOON Friday July 12, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on July 9 no herring were harvested. To date no herring have been harvested in the Dutch Harbor herring food and bait fishery.

The 2002 herring food and bait allocation for gillnet gear is 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-08-02

EFFECTIVE DATE: NOON Friday, July 12, 2002

EXPLANATION: This emergency order allows a 8-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from NOON Friday July 12, 2002 until 8 PM Friday July 12, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2).

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on July 11 approximately 50 tons of herring were harvested.

The 2002 herring food and bait allocation for gillnet gear is 110 tons.

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EMERGENCY ORDER NO. 4-FH-M-SP-09-02

EFFECTIVE DATE: 4 PM Saturday July 13, 2002

EXPLANATION: This emergency order allows a 4 hour opening of the commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from 4 PM Saturday July 13, 2002 until 8 PM Saturday July 13, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2). The 2002 herring food and bait allocation for gillnet gear is 110 tons.

Twelve permit holders and one processor are currently registered for the fishery. During the fishing period on July 11 and 12 approximately 72 tons of herring were harvested. Approximately 38 tons remain to be harvested by gillnet gear.

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EMERGENCY ORDER NO. 4-FH-M-SP-10-02

EFFECTIVE DATE: 12:30 PM Monday, July 15, 2002

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 PM to 12:50 PM, Monday, July 15, 2002 in all waters of Unalaska Bay south of a line from the waterfall north of Broad Bay at 53°58.95' N. lat., 166°36.36' W. long. to Ulatka Head at 53°55.47' N. lat., 166°30.55' W. long.

JUSTIFICATION: The Dutch Harbor food and bait herring fishery is managed on the basis of the Togiak herring biomass as described under 5 AAC 27.060, the Bering Sea Herring Management Plan. The department shall manage the Dutch Harbor fishery so that it is allocated seven percent of the allowable Togiak District herring sac roe harvest determined under the provisions of the Bristol Bay Herring Management Plan (5 AAC 27.865).

The 2002 Dutch Harbor food and bait herring allocation is 1,468 tons. There are 16 purse seine vessels, and 11 tenders representing 3 processing companies. The holding capacity of the tenders is 2365 tons. Based on department aerial surveys and vessel sonar reports, herring are present in the Unalaska Bay Section. A 20 minute opening in the described waters will allow the fleet the opportunity to harvest herring toward the Dutch Harbor food and bait allocation.

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EMERGENCY ORDER NO. 4-FH-M-SP-11-02

EFFECTIVE DATE: 8:00 AM Wednesday July 17, 2002

EXPLANATION: This emergency order allows an 3-hour commercial herring gillnet fishing period in the Unimak, Akutan, Unalaska, Umnak, and Adak Districts of the Alaska Peninsula-Aleutian Islands Herring Management Area from 8:00 AM Wednesday July 17, 2002 until 11:00 AM Wednesday July 17, 2002.

JUSTIFICATION: In 2001, the Alaska Board of Fisheries adopted regulation 5 AAC 27.610 (e)(2)(A) establishing a commercial herring fishing season, for gillnet gear. Gillnet gear is allocated seven percent of the total Dutch Harbor herring food and bait allocation as established under 5 AAC 27.655 (a)(2). The 2002 herring food and bait allocation for gillnet gear is 110 tons.

Ten permit holders and one processor are currently registered for the fishery. During previous fishing periods approximately 80 tons of herring were harvested. Approximately 30 tons remain to be harvested by gillnet gear.

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Appendix B. Aleutian Islands Area Dutch Harbor herring food and bait forecast, 2002.

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 (Frederick West, ADF&G, Anchorage, memo December 10, 2001).

A 1,578 ton allocation for the Dutch Harbor food and bait herring fishery for 2002 using the Bering Sea Herring Management Plan allocation formula, as follows, given the maximum 20% exploitation rate of the projected biomass:

Harvest Allocation of the 2002 Forecasted Pacific  
Herring Run Biomass, Togiak District, Bristol Bay

	Biomass (Short Tons)	Harvest (Short Tons)
2002 Forecasted Biomass	120,196	
Exploitation @ maximum 20% For Total Allowable Harvest		24,039
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		22,539
<b>Dutch Harbor Food/Bait Allocation (7.0% of the remaining allocation)</b>		<b>1,578</b>
<b>Purse seine Allocation (97%)</b>		<b>1,468</b>
<b>Gillnet Allocation (7%)</b>		<b>110</b>
Remaining Allowable Harvest for Togiak District Sac Roe Fishery		20,961
Purse Seine Allocation 70.0%		14,673
Gillnet Allocation 30.0%		6,288

Appendix C. Estimated age composition of North Peninsula commercial purse seine herring sac roe fishery harvests by area and percent, 1985-2002.

Area	Year	Percent at age (Years)									
		2	3	4	5	6	7	8	9	10	11+
<b>Herendeen Bay Section</b>											
	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 harvest in this section									
	1994	No harvest in this section									
	1995	0	5	22	42	17	7	2	0	0	5
	1996	1	60	20	7	7	4	1	0	0	0
	1997-2002	No harvest in this section									
<b>Deer Island-Mud Bay Sections</b>											
	1991	0	1	65	7	3	18	5	0	1	1
	1992	0	0	17	64	5	2	6	3	2	2
	1993-2002	No harvest in this section									
<b>Inner Port Moller Bay Section</b>											
	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
	1996	No harvest in this section									
	1997	No harvest in this section									
	1998	0	0	6	65	5	12	6	3	3	0
	1999-2001	No harvest in this section									
	2002 <sup>a</sup>	0	0	0	31	53	3	2	7	3	2

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**Outer Port Moller Bay**

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
1990 <sup>b</sup>	90	10	0	0	0	0	0	0	0	0
1991	0	3	74	6	1	11	2	1	1	0
1992	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							
1996 <sup>b</sup>	0	50	28	14	5	0	3	0	0	0
1997			No harvest in this section							
1998	1	1	4	41	13	18	10	4	4	3
1999-2002			No harvest in this section							

**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							
1994-97			No harvest in this section							
1998	0	0	0	68	5	16	3	3	5	0
1999-2002			No harvest in this section							

**Cape Kutuzof area**

1991	0	0	37	10	0	40	9	2	2	2
1992-2002			No harvest in this section							

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**Port Heiden Bay Section**

1992	0	0	9	64	5	1	13	2	1	4
1993-2002			No harvest in this section							

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<sup>a</sup> Commercial purse seine test fishery

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

Appendix D. Alaska Peninsula herring sac roe fishery forecast, 2003.

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This forecast is for North and South Alaska 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, or the Port Heiden District, which had a commercial harvest only during 1992.

The 2003 North Peninsula forecasted harvest between 0 and 150 tons is expected to be taken in the Port Moller District. This forecast is based on the 2002 biomass estimate. A sliding scale exploitation rate is applied to the estimate while considering historic harvests in the district. Six aerial surveys in 2002 resulted in an observed biomass of 340 tons. Adjustments to the guideline harvest level will be made inseason once herring biomass is quantified. The following table shows the sliding scale allowable harvest on the estimated mature biomass when it is assumed the threshold of 1,000 tons will be reached.

Stock Size (Short Tons)	Sliding Scale Allowable Exploitation Rate	Harvest
Less than 1,000	0%	0
1,001-1,500	10%	100-150
1,501-1,999	10%	150-200
2,000-2,500	15%	300-375
2,501-3,000	15%	375-450
> 3,000	20%	> 450

At low biomass levels, a conservative approach will be taken to allow the local stocks to rebuild and to account for North Peninsula herring that may contribute to the Dutch Harbor food and bait fishery. Rowell et. al. (1990) estimated that up to 22% of the Dutch Harbor food and bait harvest may be non-Togiak herring. Based on estimated travel time of eastern Bering Sea herring stocks to Dutch Harbor and the fishery opening date of July 16, North Peninsula stocks may compose a portion of the non-Togiak component. During periods when large biomass levels are observed a higher harvest rate will be allowed. Based on Alaska Board of Fisheries findings, exploitation rate may not exceed 20% of the mature biomass of those stocks. The forecast does not include the Port Heiden District where commercial fishing occurred only during 1992. Age class data from a commercial purse seine test fishing sample in Port Moller were 31% age-3-5, 58% age-6-8, and 11% age-9+ herring (Appendix C). Nearly 53% of the sample consisted of 6-year-old herring.

Confidence in the North Peninsula forecast is only fair. In the Port Moller District, a 1,000 ton threshold of mature herring is required before the department may allow a commercial harvest in that district. Prior to 1996, it was assumed that the threshold requirements were achieved before aerial surveys were conducted.

The 2003 South Peninsula forecasted sac roe harvest is 0 tons, based on the anticipation that industry will not be interested in harvesting herring in South Peninsula waters in 2003. Six aerial surveys in 2002 resulted in an observed biomass estimate of 4,778 tons. No age class data were available in 2002, so it is unknown what age classes will dominate the 2003 stocks.

Appendix E. Estimated age composition of South Peninsula commercial purse seine herring sac roe fishery harvests by area and percent, 1985-2002.

Year	Percent at age (Years)									
	2	3	4	5	6	7	8	9	10	11
<b>Stepovak Bay</b>										
1985	No samples									
1986-87	No Harvest in this section									
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 Harvest in this section									
1993 <sup>a</sup>	No samples									
1994-95	No Harvest in this section									
1996	No samples									
1997-2002	No Harvest in this section									
<b>Balboa</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 Harvest in this section									
1995	No samples									
1996	No samples									
1997-2002	No Harvest in this section									
<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 Harvest in this section									
1996	0	0	16	73	8	3	0	0	0	0
1997-2002	No Harvest in this section									

-Continued-

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Year	Percent at age (Years)									
	2	3	4	5	6	7	8	9	10	11
<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									
1996 <sup>b</sup>	0	0	0	29	26	5	12	5	3	20
1997-2002	No Harvest in this section									
<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 Harvest in this section									
1996 <sup>b</sup>	0	0	0	29	26	5	12	5	3	20
1997-2002	No Harvest in this section									
<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
1991-2002	No Harvest in this section									

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

<sup>b</sup> The samples from Canoe Bay and Pavlof Bay were mixed.

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