Fishery Management Report No. 09-56

Alaska Peninsula-Aleutian Islands Management Area Herring Sac Roe and Food and Bait Fisheries Annual Management Report, 2008 and 2009

by

Aaron D. Poetter,

Alex C. Bernard,

and

Matthew D. Keyse

December 2009

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye to fork	MEF
mideye to tail fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

FISHERY MANAGEMENT REPORT NO. 09-56

ALASKA PENINSULA-ALEUTIAN ISLANDS MANAGEMENT AREA HERRING SAC ROE AND FOOD AND BAIT FISHERIES ANNUAL MANAGEMENT REPORT, 2008 AND 2009

by
Aaron D. Poetter,
Alex C. Bernard,
and
Matthew D. Keyse
Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

December 2009

The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm. This publication has undergone regional peer review.

Aaron D. Poetter,
Alex C. Bernard,
and
Matthew D. Keyse
Alaska Department of Fish and Game, Division of Commercial Fisheries,
211Mission Road, Kodiak, AK 99615, USA

This document should be cited as:
Poetter, A. D., A. C. Bernard, and M. D. Keyse. 2009. Alaska Peninsula-Aleutian Islands Management Area herring sac roe and food and bait fisheries annual management report, 2008 and 2009. Alaska Department of Fish and Game, Fishery Management Report No. 09-56, Anchorage.

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICIES

ABSTRACT

This report presents information concerning commercial Pacific herring *Clupea pallasi* sac roe and food and bait fisheries that occurred in Alaska Peninsula-Aleutian Islands Management Area (Area M) in 2008 and 2009. Area M is split into three sub-areas: North Alaska Peninsula, South Alaska Peninsula, and Aleutian Islands.

In 2008, there were no deliveries in North Alaska Peninsula, South Alaska Peninsula, or Aleutian Islands commercial herring sac roe fisheries due to lack of industry interest. Total herring biomass estimates from aerial surveys in 2008 for North Peninsula were 1,050 tons. There were no aerial surveys conducted in South Alaska Peninsula or in Aleutian Islands Management Area in 2008.

In 2008, commercial herring food and bait fishery harvests occurred in the Aleutian Islands during both gillnet and seine gear fishing periods. The Aleutian Islands "Dutch Harbor" herring food and bait allocation was set at 1,722 tons, of which 1,481 tons were allocated to the seine fleet, 241 tons to the gillnet fleet, and 100 tons were reserved for the experimental pound fishery. A total of 1,536 tons of herring were harvested in the seine fishery, negligible amounts of herring were harvested in the gillnet fishery, and no herring were harvested in the pound fishery.

In 2009, a commercial herring sac roe fishery occurred in the North Peninsula. The total herring biomass estimated from aerial surveys in the North Peninsula was 38,667 tons. The North Peninsula herring sac roe fishery was open from May 27- June 2, with a total recorded harvest of 3,027 tons of herring. As in 2008, there were no deliveries in the South Alaska Peninsula and Aleutian Islands commercial herring sac roe fisheries due to lack of industry interest. There were no aerial surveys conducted on the South Peninsula or in the Aleutian Islands Management Area in 2009.

In 2009, commercial herring food and bait fishery harvests occurred in Aleutian Islands during both gillnet and seine gear fishing periods. Aleutian Islands "Dutch Harbor" herring food and bait allocation was set at 1,600 tons, of which 1,323 tons were allocated to the seine fleet, 224 tons to the gillnet fleet, an 100 tons were reserved for the pound fishery. A total of 1,310 tons of herring were harvested in the seine fishery, a minimal amount of herring were harvested in the gillnet fishery, and no herring were harvested in the pound fishery for 2009.

Key words: Area M, Alaska Peninsula, Aleutian Islands, *Clupea pallasi*, Adak, herring, harvest, age, length, weight, sac roe, food, bait, combine, Dutch Harbor, Atka-Amlia, AMR.

INTRODUCTION

This report is a summary of commercial Pacific herring *Clupea pallasi* sac roe and food and bait fisheries that occurred in Alaska Peninsula-Aleutian Islands Management Area (Area M) for the years 2008 and 2009. This report is intended as a reference document and provides a regulatory history, historical harvest data by fishery, harvest strategies, and a summary of 2008 and 2009 fishery management activities, along with age, weight, and length (AWL) data collected from commercial harvests. Harvest information was taken from the Alaska Department of Fish and Game (department) fish ticket database in October 2009. Data provided in this report supersedes any data previously published by the department.

Area M herring fisheries are divided into three sub-areas: North Alaska Peninsula, South Alaska Peninsula, and Aleutian Islands (Figure 1). North Alaska Peninsula Area consists of Bering Sea waters extending west from Cape Menshikof to Cape Sarichef, encompassing Port Heiden, Port Moller and Amak districts (Figures 1-4). The South Alaska Peninsula Area consists of Pacific Ocean waters extending west of Kupreanof Point to a point on the south side of Unimak Island near Cape Lazaref (163° 30' W. long.) and includes King Cove, Pavlof, and Sand Point districts (Figures 4 and 5). Finally, Aleutian Islands Area consists of the Bering Sea waters extending west of Cape Sarichef and Pacific Ocean waters west of a point near Cape Lazaref (163°30' W. long.) to the International Date Line and includes Unimak, Akutan, Unalaska, Umnak, and Adak districts (Figures 1 and 4; Figures 6-9; 5 AAC 27.605 and 27.600).

NORTH ALASKA PENINSULA SAC ROE FISHERY

HISTORICAL PERSPECTIVE

The department has been conducting herring biomass surveys in Alaska Peninsula-Aleutian Islands waters since 1976. In that time, major concentrations of herring have been documented on the Bering Sea coast from Adak to Cape Seniavin (Figures 1-3; Shaul et al. 1987; Warner and Shafford 1979). However, these surveys have provided limited and variable information on herring abundance and distribution primarily because of limited aerial survey coverage due to the large area involved, inclement weather conditions, water turbidity, and lack of available staff and suitable aircraft (Table 1).

Prior to 1982, fishing vessels returning from the Togiak herring sac roe fishery frequently surveyed for herring in North Alaska Peninsula waters but no harvest occurred (Shaul et al. 1982). Beginning in 1986, fishermen started targeting the earlier (May) herring biomass effectively harvesting early run stocks. In 1989 through 1992, the department delayed the opening of the fishery in Port Moller District until May 30 in an attempt to shift fishing pressure to the later and more abundant herring stocks (Witteveen et al. 1998). In some years, the Port Moller District was open to herring fishing prior to May 30, due to sufficient herring biomass (Tables 1-4). There was not a herring fishery in North Peninsula from 1999 through 2004 due to either low biomass estimates or the lack of industry interest in purchasing herring. In 2005, the department opened the first sac roe fishery in North Alaska Peninsula waters since 1998, but there was little harvest due to limited market interest.

HARVEST STRATEGY

Herring may be commercially harvested each spring for their sac roe from April 15 through July 15 in Amak, Port Moller, and Port Heiden districts (Figures 2-4; 5 AAC 27.610). The guideline harvest level (GHL) for Port Moller District is determined in season and is based on observed herring biomass from aerial surveys. As established in the *Bering Sea Herring Fishery Management Plan* (5 AAC 27.060), a minimum herring biomass of 1,000 tons is required prior to the department opening by emergency order the commercial fishery in Port Moller District (Appendix A1 and A2). Once the department assures that a threshold of 1,000 tons have been observed, the department estimates an allowable harvest rate based on a sliding scale of the estimated mature biomass. At low biomass levels (1,001-1,999 tons), a conservative approach and exploitation rate of 10 percent will be allowed. If the observed biomass is between to 2,000 and 2,999 tons, allowable exploitation increases from 10 percent to 15 percent. The department shall manage the fishery so that the exploitation rate on eastern Bering Sea herring stocks does not exceed 20 percent of the biomass of those stocks when they reach an observed biomass of 3,000 tons or greater (5 AAC 27.060(b)).

CATCH SAMPLING

Commercial harvest samples are collected in the North Alaska Peninsula herring sac roe fishery. These samples provided age composition, sex, maturity status, weight-at-age, and length-at-age data from the commercial harvest (Table 5). Age is 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 ages were recorded and entered into a database.

Standard length measurements (lower jaw to the hypural plate) and fish weight are collected and entered into the herring database. Mean lengths (mm) and weights (g) are calculated for each year class and tabulated.

2008 SEASON SUMMARY

In 2008, no commercial herring sac roe fishery occurred in North Alaska Peninsula waters. On May 25 and 26, the department conducted aerial surveys from Herendeen Bay to Port Heiden and estimated a biomass of 1,050 tons of herring (Table 1). However, due to the lack of industry participation, no fishing periods occurred.

2009 SEASON SUMMARY

In 2009, a commercial herring sac roe fishery occurred in North Alaska Peninsula. A total biomass estimate of 38,667 tons of herring was observed during aerial surveys conducted from May 16 through June 2 (Table 1). The department opened the North Alaska Peninsula commercial herring sac roe fishery from May 27 through June 2 in Port Moller District. During that period, four permit holders made 46 landings for a total harvest of 3,027 tons of herring (Table 3). The majority of harvest, 2,297 tons, was caught in Port Moller Bay Section with 730 tons harvested in Bear River Bering Sea Coast Section (Table 4). The 2009 harvest was the largest since 1992 and the second largest harvest since 1979 in the North Alaska Peninsula (Table 4).

A total of 438 herring were sampled from Port Moller District commercial purse seine fishery (Table 5). The most abundant age classes in Port Moller District samples were age 5 (31.5%) and age 4 (31.3%) (Table 5; Figure 10). Average herring length in the sample was 270 mm, and average weight was 328 g (Table 5). Sex composition of the sample was 45% male and 55% female. No herring were sampled from Port Heiden and Amak districts in 2009.

SOUTH ALASKA PENINSULA SAC ROE FISHERY

HISTORICAL PERSPECTIVE

Harvest of herring sac roe has fluctuated in South Alaska Peninsula waters since it began in 1979 (Shaul et al. 1991; Tables 2 and 3). The majority of the fishing effort has occurred around Shumagin Islands, and Stepovak, Balboa, Pavlof, and Canoe bays (Table 6; Figures 4 and 5). Of these, only Canoe Bay (Figure 5) produced a consistent annual harvest (Table 6). Beginning in 1992, herring fishing effort and harvests gradually diminished in South Alaska Peninsula waters (Tables 2, 3, and 6). 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 small guideline harvest level has discouraged both fishermen and processors. There has been no commercial herring sac roe fishery in South Alaska Peninsula since 1996 (Table 6).

From 1981 to 1995 the department used field crews on Alaska Peninsula to observe herring sac roe fisheries (McCullough and Campbell 1996). Department personnel collected herring samples for age, weight, length, and sexual maturity. In addition, department personnel

documented spawning areas and mapped spawning substrate. In 1996, the department discontinued utilizing herring sac roe fishery field crews on Alaska Peninsula due to budget constraints.

HARVEST STRATEGY

Herring may be commercially harvested each spring for their sac roe from April 15 through July 15 in Sand Point, Pavlof, and King Cove districts (Figures 4 and 5; 5 AAC 27.610). Fishing openings are contingent on upon industry interest in harvesting herring from a specific area and department documentation of sufficient herring biomass. The South Alaska Peninsula herring sac roe fishery is opened by emergency order with individual sections assigned GHLs of no more than 25 tons, with the potential of additional harvest opportunity if warranted by department surveys (Poetter 2009).

THE 2008 AND 2009 SEASONS

In 2008 and 2009, no commercial herring fishery occurred in South Alaska Peninsula waters due to a lack of industry participation. No aerial surveys were conducted in South Alaska Peninsula waters due to budget constraints, inclement weather, and lack of industry interest.

ALEUTIAN ISLANDS SAC ROE FISHERY

HISTORICAL PERSPECTIVE

No herring sac roe has ever been harvested in Aleutian Islands Area due to lack of interest and limited available biomass.

HARVEST STRATEGY

Herring may be commercially harvested each spring for their sac roe from April 15 through June 24 in Unimak, Akutan, Unalaska, Umnak and Adak districts (Figures 1 and 6-8). The GHL for each individual section is determined in season based on observed herring biomass.

THE 2008 AND 2009 SEASONS

In 2008 and 2009, there was no sac roe herring commercially harvested in Aleutian Islands Area. No aerial surveys were conducted in Aleutian Island waters due to lack of industry interest.

ALASKA PENINSULA HERRING FOOD AND BAIT FISHERIES

HISTORICAL PERSPECTIVE

There has never been a herring food and bait fishery in North Alaska Peninsula waters. In 1983, the Alaska Board of Fisheries (board) closed the South Alaska Peninsula herring sac roe fishery and changed the fishery to a winter herring food and bait fishery (Burkey and Duesterloh 2003). However, due to a lack of herring biomass in Stepovak Bay, the fishery failed to develop. From 1984 to 1991, the board allocated 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 board allocated the entire harvest to the herring sac roe fishery (Burkey and Duesterloh 2003). Since 1996, there has not been a herring food and bait fishery in South Alaska Peninsula primarily because of lack of industry interest.

ALEUTIAN ISLANDS "DUTCH HARBOR" HERRING FOOD AND BAIT FISHERIES

Regulatory History

The first documented herring fisheries in the Eastern Aleutian Islands occurred from 1929 through 1938 and again in 1945. From 1939 through 1944 and again in 1946 through 1980 no herring fisheries took place. Since 1981 the Eastern Aleutian Islands herring fishery, now known as the Aleutian Islands "Dutch Harbor" herring food and bait fisheries, has occurred annually. During the 1981 and 1982 seasons, there were no harvest restrictions (Schwarz 1988). From 1983 to 1985 the board implemented a harvest ceiling of 3,527 tons. In 1986, the department modified the board's established harvest ceiling of 3,527 tons to 2,453 tons over concern for depressed western Alaska herring stocks. In 1988, the board implemented the *Bering Sea Herring Fishery Management Plan* (5 AAC 27.060(c) and (d)) that established the criteria for calculating the Dutch Harbor food and bait herring allocation. The plan directs the department to manage the fishery so that the overall exploitation of a herring stock should not exceed 20% of the spawning biomass. The dominate stock harvested in the Dutch Harbor food and bait fishery is from the Togiak spawning stock (Rowell et al. 1991). An allocation plan between the Togiak sac roe fishery and spawn on kelp fishery, and the Dutch Harbor food and bait fishery was established to prevent harvest from exceeding 20% of observed spawning biomass. The Dutch Harbor food and bait fishery was allocated 7% of Togiak District's harvestable biomass after deducting 1,500 tons for the Togiak District Spawn-on-kelp fishery (5 AAC 27.865 (b)(7)).

In 1990, the board changed the opening date of the food and bait fishery from July 16 to August 15 to reduce the chance of catching non-Togiak and North Alaska Peninsula herring stocks (Shaul et al. 1991). In 1998, the board changed the opening date of the purse seine fishery to noon on July 15 because of safety concerns with the fishery being conducted in the dark (5 AAC 27.610(e)(2)(B); Witteveen et al. 1999). The gillnet fishery may open as early as noon on June 24.

In 2004, the board established a herring seine and pound fishery in Alaska Peninsula-Aleutian Islands Management Area with an allocation of 100 tons (5 AAC 27.655(c)). In the pound fishery, seine-caught herring are transferred to a holding pound and retained for several days for gut clearance. The rationale for this was to minimize belly burn and achieve a high quality product suitable for food markets. However, no significant amounts of herring have been placed into the pounds

Historical Effort

From 1929 to 1938 and in 1945, herring food and bait fisheries occurred in the vicinity of Unalaska Bay (Table 7; Figures 6 and 7). During that time, a mixture of gillnet, seine gear, and holding pounds were used and there were numerous, small shore-based hand packing operations. A large portion of the catch was brined for either food or bait purposes. In those early years, seine gear provided the bulk of the herring harvest (Schwarz 1988). From 1946 to 1980, there was no commercial herring harvest.

When the fishery resumed in 1981, herring were harvested from Tigalda Island to Umnak Island (Figures 7 and 8). However, the majority of harvest occurred within several miles of shore-based processing facilities in Unalaska and Akutan bays. From 1981 through 1986, 1990 through 1996, and 1998 though 2000, only purse seine gear was used to harvest herring in the Dutch Harbor food and bait fishery (Table 7). However, in 1987, 1989, and 1997, gillnet permit holders recorded landings. In 2001, the board adopted a regulation that allocated 7% of the total Dutch Harbor GHL to the gillnet fleet. From 2001 to 2003, the number of gillnet fishermen increased from 6 to 13 vessels (Tables 8 and 9). In 2004, the gillnet harvest allocation was further increased to 14%. However, since 2004, Dutch Harbor food and bait herring gillnet harvest has been minor.

HARVEST STRATEGY

In recent years, three management plans, (1) the *Bering Sea Herring Fishery Management Plan* (5AAC 27.060); (2) the *Bristol Bay Herring Management Plan* (5 AAC 27.865 (b)(7)); and (3) the *Dutch Harbor Food and Bait Herring Allocation Plan* (5 AAC 27.655), have been used to manage the Aleutian Islands "Dutch Harbor" food and bait herring fishery. Fishing time is established by emergency order and is based on a 7 % allocation of remaining available Togiak biomass harvest (5 AAC 27.865 (b)(7)), the inseason evaluation of the observed biomass, effort levels, and harvest (Table 10).

In order for Unimak, Akutan, Unalaska, or Umnak districts (Figures 1 and 7) to open to herring food and bait fishing, each Western Alaska herring stock must surpass its respective board mandated spawning biomass threshold 5 AAC 27.060 (d); (Appendix B1 and B2). These fisheries include Port Moller, Togiak, Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, Nunivak Island, Cape Romonzof, and Norton Sound districts (Figure 1). The department updates biomass estimates for each stock as herring move into coastal waters during spawning migrations.

The Dutch Harbor herring food and bait allocation is divided between gear groups according to the *Dutch Harbor Food and Bait Herring Allocation Plan*, which allocates 86% to the seine fishery and 14% to the gillnet fishery. These allocations are considered independent of each other so that one gear group may not harvest herring allocated to the other gear group. f the harvest by a gear group in a given year is greater than the amount allocated to that fishery, the excess tonnage is subtracted from following year's allocation to that gear group. Furthermore, 100 tons may be reserved from the purse seine allocation for a herring pound fishery.

CATCH SAMPLING

Commercial harvest samples were collected in the Aleutian Islands "Dutch Harbor" food and bait fishery. These samples provided age composition, sex, maturity status, weight-at-age, and length-at-age data from the commercial harvest (Tables 11-13). Age is 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 is taken from each herring and the ages are recorded and entered into a database.

Standard length measurements (lower jaw to the hypural plate) and fish weight are collected and entered into the herring database. Mean lengths (mm) and weights (g) are calculated for each year class and tabulated.

THE 2008 SEASON

The 2008 Togiak herring spawning biomass was projected to be 130,516 tons (Table 10; Appendix C1). The harvest allocation for the 2008 Dutch Harbor herring food and bait fishery was 1,722 tons (Appendix C1). This allocation was derived using 7% of remaining Togiak biomass according to the *Bering Sea and Bristol Bay Herring Management Plans*. For the 2008 season, this resulted in a harvest allocation of 1,381 tons for the purse seine fishery, 100 tons for the seine pound fishery, and 241 tons for the gillnet fishery (Table 9; Appendix C1). The department did not conduct aerial surveys in 2008 to assess herring biomass in the Dutch Harbor area because of budget constraints and poor weather conditions.

Gillnet Fishery

In 2008, the Dutch Harbor food and bait commercial gillnet fishery occurred from July 3 through July 27. The gillnet fishery was allocated 241 tons of herring. Four permit holders and one processor registered in this fishery. At 4:00 PM on July 3, Unalaska Bay Section of the Alaska Peninsula-Aleutian Islands Herring Management Area opened to commercial herring fishing by gillnet gear for 48 hours (Appendix D1). From July 3 through July 27 the commercial herring gillnet fishery was open continually in Unalaska Bay resulting in a total of 10 gillnet fishing periods. In 2008, 39 tons were harvested in the gillnet fishery (Table 8).

Purse Seine Fishery

In 2008, Dutch Harbor food and bait seine fishery occurred from July 15 to July 27 within Unalaska and Akutan districts (Figures 6, 7, and 9). Two vessels and three processors registered to participate in this fishery. One seine permit holder represented a combine of 12 permit holders, while the other seine permit holder represented an independent market. The fishery was open simultaneously in Akutan District west of the longitude of Billings Head at 165° 28.67’ W., Unalaska Bay Section and that portion of Kalekta Bay south of a line running from Erskine Point to Cape Kalekta (Figure 9; Appendix D1). Over the course of the seine fishery, 14 deliveries were made for a total harvest of 1,536 tons of herring (Table 7 and 9). Since the total harvest was above the seine allocation of 1,481, 55 tons was subtracted from the 2009 seine allocation (5 AAC 27.655 (2)(b)).

Exvessel prices ranged from $300 to $490 per ton, which has stayed consistent with the exvessel price range over that past ten years. Total exvessel value of the 2008 purse seine fishery was an estimated $592,000 (Table 7).

2008 Catch Sampling

A total of 421 herring were sampled from the Unalaska District commercial purse seine fishery (Table 11). The most abundant age classes in Unalaska District samples were age 9 (18.3%), ages 6 and 7 (17.6%), and age 8 (17.1%; Table 11; Figure 11). Average herring length in the sample was 290 mm, and average weight was 445 g (Table 11). Sex composition of the sample was 45% male and 55% female. No herring were sampled from the Akutan District purse seine harvest in 2008. The most abundant age class in the Dutch Harbor commercial herring food and bait purse seine fishery over the past 10 years has been 8 year old fish, (20.5%; Table 13; Figure 14).

Pound Fishery

In 2008, only one CFEC permit holder registered with the department; however, no herring pounds were utilized.

THE 2009 SEASON

The Dutch Harbor food and bait fishery was allocated 1,600 tons herring for the 2009 season (Table 10; Appendix C2). The purse seine fishery was allocated 1,376 tons, of which 100 tons were allocated to the pound fishery. However, due to the overharvest of 55 tons in the 2008 purse seine season, the 2009 allocation was reduced to 1,321 tons per 5 AAC 27.655(b) (Table 9). The 2009 set gillnet fishery was allocated 224 tons of herring (Table 9). The department did not conduct aerial surveys in 2009 to assess herring biomass in the Dutch Harbor area because of budget constraints and poor weather conditions.

Gillnet Fishery

In 2009, the Dutch Harbor food and bait herring commercial gillnet fishery occurred from June 24 through July 25 (Table 10). The gillnet fishery was allocated 224 tons of herring for the 2009 season. A confidential number of permit holders and one processor registered in this fishery. At noon on June 24, the Unalaska Bay Section of the Alaska Peninsula-Aleutian Islands Herring Management Area opened to commercial herring fishing by gillnet gear for 72 hours (Appendix D2). From June 24 through July 25 the commercial herring gillnet fishery was open continually in Unalaska Bay resulting in a total of 10 gillnet fishing periods. In 2009 24 tons of herring were harvested in the gillnet fishery (Table 8).

Purse Seine Fishery

In 2009, Dutch Harbor food and bait seine fishery occurred from July 15 through July 20 within Unalaska and Akutan districts (Figure 6, 7, and 9). The fishery was allocated 1,376 tons of herring; however due to an overharvest in 2008 of 55 tons the allocation was reduced to 1,321 tons of herring (Table 9). Thirteen vessels and two processors registered to participate in this fishery. One seine permit holder represented a combine of a confidential number of fishermen, while the other seine permit holder represented an independent market. The fishery was open simultaneously in Akutan District west of the longitude of Billings Head 165° 28.67’ W., Unalaska Bay Section and that portion of Kalekta Bay south of a line running from Erskine Point to Cape Kalekta (Figure 9). Over the course of the seine fishery, 12 deliveries were made for a total harvest of 1,310 tons of herring, of which the majority of herring was captured in Akutan District (Tables 7 and 9).

Exvessel prices ranged from $300 to $500 per ton, which has stayed consistent with the exvessel price range over that past ten years. Total exvessel value of the 2009 purse seine fishery was an estimated $519,000 (Table 7).

2009 Catch Sampling

A total of 107 herring were sampled from Akutan District commercial purse seine fishery (Table 12). The most abundant age classes in Unalaska District samples were ages 6 and 7 (Table 12; Figure 13). They were represented equally at 23.4%, and followed closely by ages 5 and 8 represented equally at 15.9% (Table 12; Figure 13). Average herring length in the sample was 294 mm, and average weight was 439 g (Table 12). The sex composition of the sample was 70%

male and 30% female. The most abundant age class in the Dutch Harbor commercial herring food and bait purse seine fishery over the past 10 years has been age 8, (19.9%; Table 13; Figure 14).

Pound Fishery

In 2009 no fishermen registered for the pound fishery.

ALEUTIAN ISLANDS "ADAK" HERRING FOOD AND BAIT FISHERIES

HISTORICAL PERSPECTIVE

In 2004, the board enacted the *Alaska Peninsula-Aleutian Islands Herring Management Plan* (5 AAC 27.657). This plan established a herring gillnet fishery in Adak Island area (Figure 8) with a 500 ton allocation independent of the Dutch Harbor food and bait allocation. Herring can be harvested as food and bait and the fishery occurs annually from June 24 until February 28. This fishery is managed in compliance with the terms of a commissioner's permit.

THE 2008 AND 2009 SEASONS

Due to lack of industry interest, there was no herring fishery in the Adak area in 2008 or 2009. No effort has occurred in this fishery since it was established in 2004.

REFERENCES CITED

Burkey C. and S. Duesterloh. 2003. Alaska Peninsula-Aleutian Islands Management Area herring sac roe and food and bait fisheries annual management report, 2003. Alaska Department of Fish and Game, Regional Information Report 4K03-63, Kodiak.

McCullough, J. N. and R. D. Campbell. 1996. Alaska Peninsula - Aleutian Islands Management Areas sac roe herring report and the Aleutian Islands Management Area food and bait herring report. Alaska Department of Fish and Game, Commercial Fisheries Division, Regional Information Report 4K96-12, Kodiak.

Poetter, A. P. 2009. Alaska Peninsula – Aleutian Islands Management Area herring sac roe fishery management plan. Alaska Department of Fish and Game, Fishery Management Report No. 09-14, Anchorage.

Rowell, K. A., H. J. Geiger, and B. G. Bue. 1991. Stock Identification of Pacific herring in the eastern Bering Sea trawl bycatch and the Dutch Harbor directed food and bait fishery. Proceedings of the International Herring Symposium. Alaska Sea Grant Report, AK-SG-91-01, Fairbanks.

Schwarz, L. 1988. Peninsula/Aleutians herring sac-roe fishery report to the Board of Fisheries. Alaska Department of Fish and Game, Commercial Fisheries Division, Regional Information Report 4K88-3, Kodiak.

Shaul, A. R., T. R. Gilmer, J. N. McCullough, and L. M. Malloy. 1982. 1982 fin fisheries annual report Alaska Peninsula- Aleutian Islands Areas. Alaska Department of Fish and Game, Division of Commercial Fisheries, Area Management Report. Kodiak

Shaul, A. R., L. J. Schwarz, J. N. McCullough, L. M. Malloy, and S. J. Theis. 1987. 1986 Alaska Peninsula and Aleutian Islands Area annual finfish management report. Alaska Department of Fish and Game Division of Commercial Fisheries, Finfish Management Report 3-87.

Shaul, A. R., J. N. McCullough, A. J. Quimby, R. S. Berceli, and M. E. Stopha. 1991. 1990 Alaska Peninsula–Aleutian Islands Areas salmon and herring annual management report. Alaska Department of Fish and Game, Dvision of Commercial Fisheries, Regional Information Report 4K91-12, Kodiak.

REFERENCES CITED (Continued)

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, R. L. Murphy. 1998. Alaska Peninsula and Aleutian Islands Management Areas sac roe report and the Aleutian Islands Management Area food and bait herring report. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K98-14, Kodiak.

Witteveen, M. J., R. D. Campbell, R. L. Murphy. 1999. Alaska Peninsula and Aleutian Islands Management Areas sac roe report and the Aleutian Islands Management Area food and bait herring report. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report. 4K99-23, Kodiak.

TABLES AND FIGURES

Table 1.–Herring biomass estimates in tons for the North Alaska Peninsula, by area, 1984-2009.

	Port Moller District				Port Heiden District			
Date	Herendeen Bay	Port Moller Bay	Additional Biomass Harvested	Bear River to Strogonof Point	Port Heiden Bay Section	Total Biomass Estimate	Aerial Survey Dates Begin	End
1984 [c]	2,000	1,500-1,900	0	0	0	3,500-3,900	May 9	July 31
1985	260	1,305	0	5,240	0	6,805	May 1	June 13
1986	1	28	0	0	0	29	May 16	June 7
1987	0	5,125	0	0	0	5,125	May 6	June 3
1988	1,737	442	0	8	0	2,187	May 17	June 15
1989	1,163	1,471	0	0	0	2,634	May 19	June 16
1990	155	387	0	0	0	542	May 21	June 14
1991	2,278 (250)[a]	4,651	0	1,471	0	8,400	May 17	June 26
1992	755	8,269	0	5,798	10,021	24,843	May 19	June 18
1993	775	2,878	0	33	0	3,686	May 4	June 9
1994	381	274	74	0	0	729	May 22	May 28
1995	60	477	200	0	0	737	May 13	June 2
1996	390 (390)[a]	986 (755)[a]	0	309	65	1,750	May 9	June 18
1997	160	45	0	0	0	205	May 22	June 12
1998	930	135	0	360 (200)[a]	0	1,425	May 11	June 3
1999	10	220	0	0	0	230	May 16	June 14
2000	115	350	0	0	0	465	May 15	May 28
2001	335	1,980	0	0	0	2,315	May 14	May 22
2002	85	255	0	0	0	340	May 15	May 28
2003	400	100	0	500	0	800	May 17	May 29
2004	0	0	0	0	0	0	June 2	June 10
2005	1,500 [b]	3,300	351	50	0	3,300	May 8	May 24
2006	4,500	1,150	0	585	0	6,235	May 26	May 28
2007	290	1,515	0	0	0	1,805	May 19	May 20
2008	75	975	0	0	0	1,050	May 25	May 26
2009	1,692	36,610	0	365	0	38,667	May 16	June 2
2000-2009 Average	899	4,624	35	150	0	5,498		

[a] Biomass estimates (tons) conducted by commercial spotter pilots are enclosed in parenthesis ( ); these estimates are included in the total biomass estimates. They may not be comparable to the department estimates.

[b] Biomass estimates (tons) conducted by both commercial spotter pilots and department biologists.

[c] Surveys were conducted from 1976-1983; however biomass estimates were not calculated.

Table 2.–Alaska Peninsula herring sac roe fishery harvest, number of landings, and permits fished by year, 1979-2009.

	North Peninsula			South Peninsula			Total		
Year	Tons	Landings	Permits	Tons	Landings	Permits	Tons	Landings	Permits
1979	[a]	[a]	[a]	10	[b]	[b]	[b]	[b]	[b]
1980	[a]	[a]	[a]	454	15	6	454	15	6
1981	[a]	[a]	[a]	798	93	56	797	93	56
1982	[b]	[b]	[b]	176	13	4	[b]	[b]	[b]
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	[b]	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	[b]	[b]	[b]	[b]	[b]	[b]
1994	90	7	5	[b]	[b]	[b]	[b]	[b]	[b]
1995	337	37	12	[b]	[b]	[b]	[b]	[b]	[b]
1996	[b]	[b]	[b]	117	8	4	[b]	[b]	[b]
1997 [a]									
1998	[b]	[b]	[b]	[a]	[a]	[a]	[b]	[b]	[b]
1999 [a]									
2000 [a]									
2001 [a]									
2002 [a]									
2003 [a]									
2004 [a]									
2005	351	12	4	[a]	[a]	[a]	351	12	4
2006 [a]									
2007 [a]									
2008 [a]									
2009	3,027	46	4	0	0	0	3,027	46	4

[a] No fishery.

[b] Harvest numbers cannot be released due to state confidentiality requirements.

Table 3.–Alaska Peninsula Area commercial herring sac roe fishery harvest by time period, 1980-2009.

	North Peninsula		South Peninsula		
Year	Harvest (Tons)	Harvest Time Period	Harvest (Tons)	Harvest Time Period	Total
1979	[a]	[a]	[b]	July 4-July 4	[b]
1980	[a]	[a]	454	May 18-July 14	454
1981	[a]	[a]	798	May 9-June 23	798
1982	[b]	May 31-June 12	176	May 31-June 14	[b]
1983	627	May 9-May 29	[c]		627
1984	431	May 24-June 8	210	May 13-June 1	642
1985	710	May 24-June 4	288	June 1-June 11	998
1986	894	May 18-May 30	282	June 7-June 14	1,176
1987	514	May 9-June 5	319	June 8-June 19	833
1988	294	May 17-June 15	377	May 31-June 20	671
1989	729	May 28-June 23	310	May 13-June 19	1,039
1990	273	June 4-June 19	312	May 14-June 14	585
1991	1,313	May 17-July 4	157	May 16-June 11	1,470
1992	3,969	May 23-June 17	180	June 4-June 7	4,149
1993	536	May 8-June 9	[b]	May 27-June 9	[b]
1994	90	May 21-June 7	[b]	June 2-June 3	[b]
1995	337	May 29-June 20	[b]	June 6-June 17	[b]
1996	[b]	June 12-June 18	117	May 10-June 27	[b]
1997	[a]	a	[a]	[a]	-
1998	[b]	May 21-June 3	[a]	[a]	[b]
1999	[a]	[a]	[a]	[a]	-
2000	[a]	[a]	[a]	[a]	-
2001	[a]	[a]	[a]	[a]	-
2002	[a]	[a]	[a]	[a]	-
2003	[a]	[a]	[a]	[a]	-
2004	[a]	[a]	[a]	[a]	-
2005	351	May 11-May 12	[a]	[a]	351
2006	[a]	[a]	[a]	[a]	-
2007	[a]	[a]	[a]	[a]	-
2008	[a]	[a]	[a]	[a]	-
2009	3,027	May27- June 2	[a]	[a]	3,027

[a] No fishery.

[b] This information cannot be released due to confidentiality requirements.

[c] Fishery closed.

Table 4.–North Alaska Peninsula commercial herring sac roe fishery harvest in tons by section, 1982-2009.

	Port Moller District				Port Heiden District	
Year	Deer Island Mud Bay Section	Herendeen Bay Section	Port Moller Bay Section	Bear River Bering Sea Coast	Port Heiden Bay Section	Total
1982	0	[a]	[a]	[a]	0	[a]
1983	0	509	37	81	0	627
1984	0	181	250	0	0	431
1985	0	173	256	281	0	710
1986	0	156	255	484	0	894
1987	0	157 [b]	350	7	0	514
1988	0	8	286	0	0	294
1989	0	67	247	416	0	729
1990	0	156	117	0	0	273
1991	156	167	690	300	0	1,313
1992	18	0	2,351	0	1,600	3,969
1993	0	107	371	58	0	536
1994	7	0	83	0	0	90
1995	3	146	188	0	0	337
1996	0	[a]	[a]	0	0	[a]
1997 [c]						
1998	0	0	[a]	[a]	0	[a]
1999 [c]						
2000 [c]						
2001 [c]						
2002 [c]						
2003 [c]						
2004 [c]						
2005	0	0	351	0	0	351
2006 [c]						
2007 [c]						
2008 [c]						
2009	0	0	2,297	730	0	3,027

[a] This information cannot be released due to confidentiality requirements.

[b] At least 11 tons were caught in the Deer Island-Mud Bay Section.

[c] No fishery

.

Table 5.–Age, sex, weight and length of herring harvested by purse seine gear in North Alaska Peninsula, 2009

Age (Years)	Sex				Percent of Total	Weight			Standard Length		
	Male	Female	Unknown	Total		Mean (g)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
2	2	1	0	3	0.7	190.3	14.0	3	233.3	12.6	3
3	19	30	0	49	11.2	172.8	38.4	49	231.6	17.1	49
4	63	74	0	137	31.3	202.5	47.9	137	237.4	18.8	137
5	65	73	0	138	31.5	244.4	65.6	138	250.1	19.2	138
6	25	43	0	68	15.5	280.5	67.9	68	257.2	22.8	68
7	14	12	0	26	5.9	303.2	83.6	26	269.8	29.8	26
8	5	3	0	8	1.8	382.1	91.1	8	293.8	11.9	8
9	3	2	0	5	1.1	487.2	47.2	5	304.6	11.4	5
10	0	3	0	3	0.7	483.3	118.2	3	289.4	20.2	3
11	0	1	0	1	0.2	538.0	0.0	1	328.0	0.0	1
Total	196	242	0	438	100.0	-	-	438	-	-	438
Average	-	-	-	-	-	328	57.4	-	270	16.4	-

Table 6.–South Alaska Peninsula commercial herring sac roe fishery harvest in tons by geographic area, 1979-2009.

Year	Stepovak Bay[a]	Balboa Bay	Pavlof Bay	Canoe Bay	Volcano-Dolgoi	Belkofski Bay	Lenard Harbor	Dolgoi Harbor	Shumagin Islands	Total
1979	0	0	0	0	0	10	0	0	0	10
1980	196	132	114	12	0	0	0	0	0	454
1981	129	36	263	168	65	16	122	0	0	798
1982	0	5	0	171	0	0	0	0	0	176
1983[b]	0	0	0	0	0	0	0	0	0	0
1984	29	25	0	156	0	0	0	0	0	210
1985	11	0	38	239	0	0	0	0	0	288
1986	0	0	61	141	13	8	59	0	0	282
1987	0	0	92	118	0	38	60	12	0	319
1988	0	11	69	237	17	12	31	0	0	377
1989	39	18	53	148	0	0	9	5	39	310
1990	72	21	0	120	0	3	6	0	90	312
1991	19	19	0	78	0	0	0	0	41	157
1992	0	0	0	180	0	0	0	0	0	180
1993	5	0	0	92	0	0	0	0	0	97
1994	0	0	0	8	0	0	0	0	0	8
1995	0	10	0	53	0	0	0	0	0	63
1996	21	4	0	77	0	0	0	0	16	117
1997-2009[c]										

[a] The 1984-1988 catches came from Ramsey Bay; the 1989 and 1993 catch came from Granville Bay.

[b] In 1983 the South Alaska Peninsula sac roe fishery was closed; all herring catches were allocated to a food and bait fishery that did not develop.

[c] No fishery.

Table 7.–Aleutian Islands Area Dutch Harbor herring food and bait fisheries historical summary for the purse seine fishery, 1929-2009.

Year	Harvest in Tons	No. Vessels Making Landings	Number Landings	Tons Per Boat	Tons Per Landing	Price ($) Per Ton	Exvessel Value ($) (Thousands)	Exvessel Value Per Vessel (Thousands)
1929	1,259	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1930	1,916	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1931	1,056	26	[a]	[a]	[a]	[a]	[a]	[a]
1932	2,510	30	[a]	[a]	[a]	[a]	[a]	[a]
1933	1,585	38	[a]	[a]	[a]	[a]	[a]	[a]
1934	1,533	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1935	2,412	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1936	1,379	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1937	579	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1938	513	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1939-1944	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
1945	75	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1946-1980	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
1981	704	[c]	16	[c]	44	$300	$211	[c]
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	3,554	6	68	592	52	$162	$564	$94
1986	2,394	7	54	342	44	$254	$600	$86
1987	2,485	8	44	311	56	$300	$751	$94
1988	1,983	8	50	248	40	$252	$505	$63
1989	3,079	9	67	342	46	$283	$873	$97
1990	820	7	15	117	55	$350	$287	$41
1991	1,325	8	18	166	74	$300	$398	$50
1992	1,982	11	27	180	73	$300	$573	$52
1993	2,824	13	33	217	86	$300	$837	$64
1994	3,349	14	65	239	52	$300	$1,005	$72
1995	1,705	14	23	122	74	$300	$524	$37
1996	2,279	24	30	95	76	$300	$684	$28
1997	1,950	26	63	75	31	$300	$585	$23
1998	1,994	22	22	91	91	$300	$598	$27
1999	2,437	21	72	116	34	$400-600	$1,038	$49
2000	2,014	20	22	101	92	$300-500	$671	$34
2001	1,332	14	29	95	46	$300-500	$406	$29
2002	2,664	12	15	222	178	$300-450	$909	$76
2003 [d]	1,379	6	16	230	86	$50-400	$342	$57
2004 [e]	1,038	3	16	346	65	$100-500	$309	$103
2005 [f]	1,159	3	7	386	166	$100-500	$370	$123
2006 [g]	952	2	18	476	53	$100-500	$384	$192
2007 [g]	1,248	2	12	624	104	$100-500	$437	$219
2008 [g]	1,536	2	14	768	110	$300-490	592	296
2009 [g]	1,310	2	12	655	109	$300-500	519	260

-continued-

Table 7.–Page 2 of 2.

Year	Harvest in Tons	No. Vessels Making Landings	Number Landings	Tons Per Boat	Tons Per Landing	Price ($) Per Ton	Exvessel Value ($) (Thousands)	Exvessel Value Per Vessel (Thousands)
1929-1938 Average	1,474	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2005-2009 Average	1,241	2	13	582	108	$100-500	460	218
2000-2009 Average	1,463	7	16	390	101	$225-460	494	139

[a] Information not available.

[b] No fishery.

[c] This information can not be released due to state confidentiality requirements.

[d] Fishery was conducted by a cooperative fishery of 14 permit holders using six vessels.

[e] A cooperative fishery of 13 permit holders used one boat.

[f] Eleven permit holders used three vessels in a cooperative fishery; one CFEC permit holder did not join this fishery.

[g] Twelve CFEC permit holders formed a combine fishery, one CFEC permit holder did not join the combine.

Table 8.–Aleutian Islands Area Dutch Harbor herring food and bait gillnet historical summary, 2001-2009.

Year	Harvest in Short Tons	No. Vessels Making Landings	Number Landings	Tons Per Boat	Tons Per Landing	Price Per Ton	Exvessel Value (Thousands)	Exvessel Value Per Vessel (Thousands)
2001	105	6	25	18	4	$300-500	$53	$9
2002	134	13	37	10	4	$400	$54	$4
2003	108	13	23	8	5	$400	$35 [a]	$3
2004	216	7	37	31	6	$300	$65	$9
2005	0	0	0	0	0	$300	$0	$0
2006 [b]	1.2	[b]	[b]	[b]	[b]	$300	$0	$0
2007 [b]	6	[b]	[b]	[b]	[b]	$300	$1,800	$900
2008 [b]	39	[b]	[b]	[b]	[b]	$300	$11,700	$11,700
2009 [b]	24	[b]	[b]	[b]	[b]	$500	$12,000	$6,000
2005-2009 Average	14	[b]	[b]	[b]	[b]	$340	$5,100	$3,720

[a] Twenty of the 108 tons were not purchased because of spoilage.

[b] This information can not be released due to state confidentiality requirements.

Table 9.–Aleutian Islands Area herring food and bait fisheries allocations (tons), commercial harvest (tons), and effort by gear type, 1991-2009.

	All Gear Types		Gillnet Fishery					Seine Fishery				
Year	Allocation	Harvest	Allocation	Harvest	Permits	Landings	Days Fished	Allocation	Harvest	Permits	Landings	Days Fished
1991	931	1,325	[a]	0	0	0	0	931	1,325	8	18	1
1992	1,940	1,982	[a]	0	0	0	0	1,940	1,982	11	26	5
1993	2,193	2,824	[a]	0	0	0	0	2,193	2,824	13	32	1
1994	2,215	3,349	[a]	0	0	0	0	2,215	3,349	14	65	4
1995	1,982	1,705	[a]	0	0	0	0	1,982	1,705	14	24	1
1996	1,793	2,279	[a]	0	0	0	0	1,793	2,279	24	29	1
1997	1,645	1,950	[a]	0	0	0	0	1,645	1,950	26	63	5
1998	1,590	1,994	[a]	0	0	0	0	1,590	1,994	22	22	1
1999	2,082	2,437	[a]	0	0	0	0	2,082	2,437	21	21	4
2000	1,728	2,014	[a]	0	0	0	0	1,728	2,014	23	28	1
2001	1,572	1,437	110	105	6	25	9	1,462	1,332	14	16	2
2002	1,578	2,799	110	134	13	37	16	1,468	2,664	16	14	1
2003	1,662	1,487	116	108	13	23	5	1,546	1,379	14 [b]	16	4
2004	1,899	1,255	266	216	12	37	13	1,533	1,038	15 [c]	17	13
2005	1,365	1,159	191	0	9	0	11	1,174	1,159	12 [d]	7	9
2006	1,715	954	240	[e]	[e]	[e]	2	1,375	952	2 [f]	18	15
2007	1,779	1,254	249	[e]	[e]	[e]	2	1,530	1,248	2 [f]	12	12
2008	1,722	1,575	241	[e]	[e]	[e]	7	1,481	1,536	2 [f]	14	10
2009	1,600	1,334	224	[e]	[e]	[e]	28	1,323	1,310	2 [f]	12	5
Average 2005-2009	1,636	1,255	229	14	3	3	10	1,377	1,241	4	13	10
2000-2009	1,662	1,527	194	63	6	14	9	1,462	1,463	10	15	7

[a] No allocation.

[b] Fourteen permit holders used six vessels in a cooperative fishery.

[c] Thirteen permit holders used one vessel in a cooperative fishery.

[d] Eleven permit holders used three vessels in a cooperative fishery, one CFEC permit holder did not join the cooperative fishery.

[e] This information can not be released due to state confidentiality requirements.

[f] Twelve CFEC permit holders formed a combine fishery, one CFEC permit holder did not join the combine.

Table 10.–Aleutian Islands Area, Dutch Harbor commercial herring food and bait fishery (all gear combined) summary, 1981-2009.

Year	Landing Date First	Landing Date Last	Days Fished	Preseason Togiak Spawning Biomass Tons	GHLs Tons	Food & Bait Harvest Tons	Number Vessels Fishing
1981	Aug 3	Aug 23	21	159,000	[a]	[b]	[b]
1982	Aug 5	Sep 12	39	98,000	[a]	3,565	7
1983	Jul 23	Sep 6	46	142,000	3,525 [c]	3,567	8
1984	Jul 17	Jul 27	11	115,000	3,525 [c]	3,578	9
1985	Jul 17	Aug 11	26	132,000	3,525 [c]	3,554	6
1986	Jul 16	Jul 28	13	96,000	2,453	2,394	7
1987	Jul 16	Jul 23	4	88,000	2,332	2,485	9
1988	Jul 16	Sep 18	21	132,000	3,100	1,999	9
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	1,982	12
1993	Jul 16	Jul 16	<1	164,135	2,193	2,824	14
1994	Jul 16	Jul 19	4	165,747	2,215	3,349	14
1995	Jul 16	Jul 16	<1	149,093	1,982	1,705	15
1996	Jul 16	Jul 16	<1	135,585	1,793	2,279	27
1997	Jul 15	Jul 19	5	125,000	1,645	1,950	27
1998	Jul 16	Jul 16	<1	121,054	1,590	1,994	22
1999	Jul 16	Jul 20	4	156,200	2,082	2,437	22
2000	Jul 15	Jul 15	<1	130,904	1,728	2,014	20
2001[d]	Jun 25	Jul 16	10	119,818	1,572	1,437 [e]	22
2002	Jun 25	Jul 16	17	120,196	1,578	2,799 [e]	28
2003	Jun 24	Jul 19	7	126,213	1,662	1,487 [e]	24 [f]
2004	Jul 15	Jul 29	26	143,124	1,899	1,038 [e]	15 [g]
2005	Jul 15	Aug 20	11	105,029	1,365	1,159 [e]	4 [h]
2006	Jul 16	Jul 27	12	129,976	1,715	954 [e]	4 [i]
2007	Jul 16	Jul 27	12	134,566	1,779	1,254 [e]	4 [i]
2008	Jul 12	Jul 27	10	130,516	1,722	1,575 [e]	3 [i]
2009	Jun 24	Jul 25	28	121,800	1,600	1,334 [e]	4 [i]
2005-2009 Average			15	124,377	1,636	1,255	4
2000-2009 Average			15	126,214	1,662	1,505	13

[a] No allocation.

[b] Numbers may not be released due to state confidentiality requirements.

[c] Harvest ceiling of 3,525 established by Alaska Board of Fisheries.

[d] In 2001, a gillnet fishery was established.

[e] Includes both gillnet and seine harvest.

[f] Fourteen purse seine permit holders used six vessels in a cooperative fishery.

[g] In 2004, the purse seine fishery operated under a cooperative agreement and 13 seine permit holders used one vessel.

[h] In 2005, the gillnet fishery did not harvest any fish, and 11 seine permit holders formed a cooperative using three seine vessels; one CFEC permit holder did not join the cooperative fishery.

[i] Twelve CFEC seine permit holders formed a cooperative using only one seine vessel; one CFEC seine permit holder did not join the cooperative fishery.

Table 11.–Age, sex, weight and length of herring harvested by purse seine gear in Unalaska District, 2008.

Age	Sex				Percent	Weight			Standard Length		
					of	Mean	Standard	Number	Mean	Standard	Number
(Years)	Male	Female	Unknown	Total	Total	(g)	Dev.	Weighed	(mm)	Dev.	Measured
4	2	1	0	3	0.7	336	9.0	3	261	10.0	3
5	16	13	0	29	6.9	332	36.8	29	263	11.9	29
6	35	39	0	74	17.6	356	57.1	74	275	30.3	74
7	28	46	0	74	17.6	405	64.7	74	281	19.8	74
8	36	36	0	72	17.1	424	69.3	72	287	14.3	72
9	32	44	1	77	18.3	457	70.5	77	293	13.1	77
10	24	29	2	55	13.1	474	60.5	55	295	13.7	55
11	8	13	0	21	5.0	491	77.3	21	298	15.5	21
12	3	8	0	11	2.6	510	74.7	11	304	13.8	11
13	2	1	0	3	0.7	549	43.5	3	318	4.3	3
14	0	1	0	1	0.2	415	0.0	1	287	0.0	1
15	0	1	0	1	0.2	591	0.0	1	315	0.0	1
Total	186	232	3	421	100.0	-	-	421	-	-	421
Average	-	-	-	-	-	445	47.0	-	290	12.2	-

Table 12.–Age, sex, weight and length of herring harvested by purse seine gear in Unalaska District, 2009.

Age	Sex				Percent	Weight			Standard Length		
(Years)	Male	Female	Unknown	Total	of Total	Mean (g)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
3	1	1	0	2	1.9	337	28.3	2	265	0.0	2
4	2	4	0	6	5.6	348	89.8	6	268.33	24.0	6
5	9	8	0	17	15.9	408	61.1	17	287.06	13.4	17
6	22	3	0	25	23.4	417	77.9	25	292.4	18.1	25
7	16	9	0	25	23.4	458	87.7	25	296.2	15.9	25
8	14	3	0	17	15.9	452	78.1	17	307.65	47.8	17
9	3	3	0	6	5.6	517	34.9	6	312.5	14.4	6
10	4	0	0	4	3.7	488	96.5	4	305	5.8	4
11	4	1	0	5	4.7	528	60.2	5	310	10.0	5
Total	75	32	0	107	100.0	-	-	107	-	-	107
Average	-	-	-	-	-	439	68.3	-	294	16.6	-

Table 13.–Estimated age composition of Aleutian Islands commercial herring food and bait purse seine harvests, 1991-2009.

	Percent at Age (Years)														
Year	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Purse Seine															
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	25.3	26.0	8.5	14.6	8.4	0.5	1.4	0.3	0.0	0.1	0.1	0.0
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
2003	0.0	0.0	3.0	27.4	16.8	7.5	15.6	9.9	5.4	6.6	3.3	2.7	0.9	0.6	0.0
2004	0.0	0.0	0.0	18.8	39.3	8.4	3.9	14.6	3.4	5.9	1.9	0.7	1.4	1.2	0.0
2005	1.1	2.5	1.4	4.3	40.0	27.2	5.6	5.1	6.4	1.9	1.2	1.4	0.8	0.3	0.0
2006	0.4	5.9	6.2	3.5	5.2	32.0	23.9	3.4	4.7	5.3	2.9	3.1	1.3	1.0	0.4
2007	0.5	5.2	12.2	7.8	12.8	21.6	20.7	9.3	4.6	2.3	0.8	0.8	0.2	0.2	0.0
2008	0.7	6.9	17.6	17.6	17.1	18.3	13.1	5.0	2.6	0.7	0.2	0.2	0.0	0.0	0.0
2009	5.6	15.9	23.4	23.4	15.9	5.6	3.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005-2009 Average															
	1.7	7.3	12.2	11.3	18.2	20.9	13.4	5.5	3.7	2.0	1.0	1.1	0.5	0.3	0.1
1999-2008 Average															
	0.3	2.4	5.8	12.0	20.5	18.7	13.1	9.3	6.3	5.3	3.0	1.7	0.6	0.6	0.2
2000-2009 Average															
	0.8	4.0	7.0	13.5	19.9	17.1	12.5	8.2	5.8	5.1	2.9	1.6	0.6	0.6	0.2

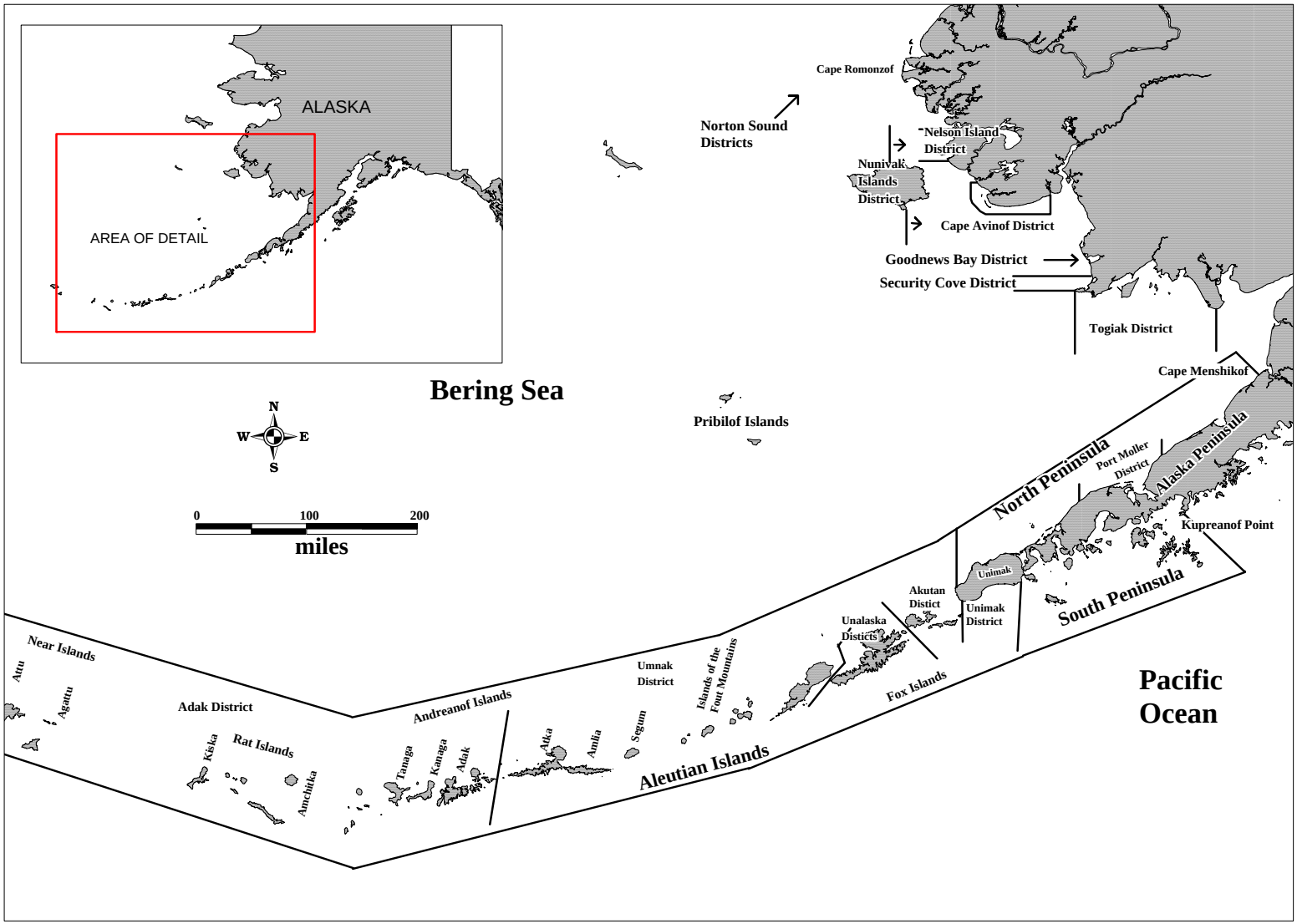

Figure 1.–Map of Bering Sea Management Plan (5 AAC 27.060) commercial herring districts.

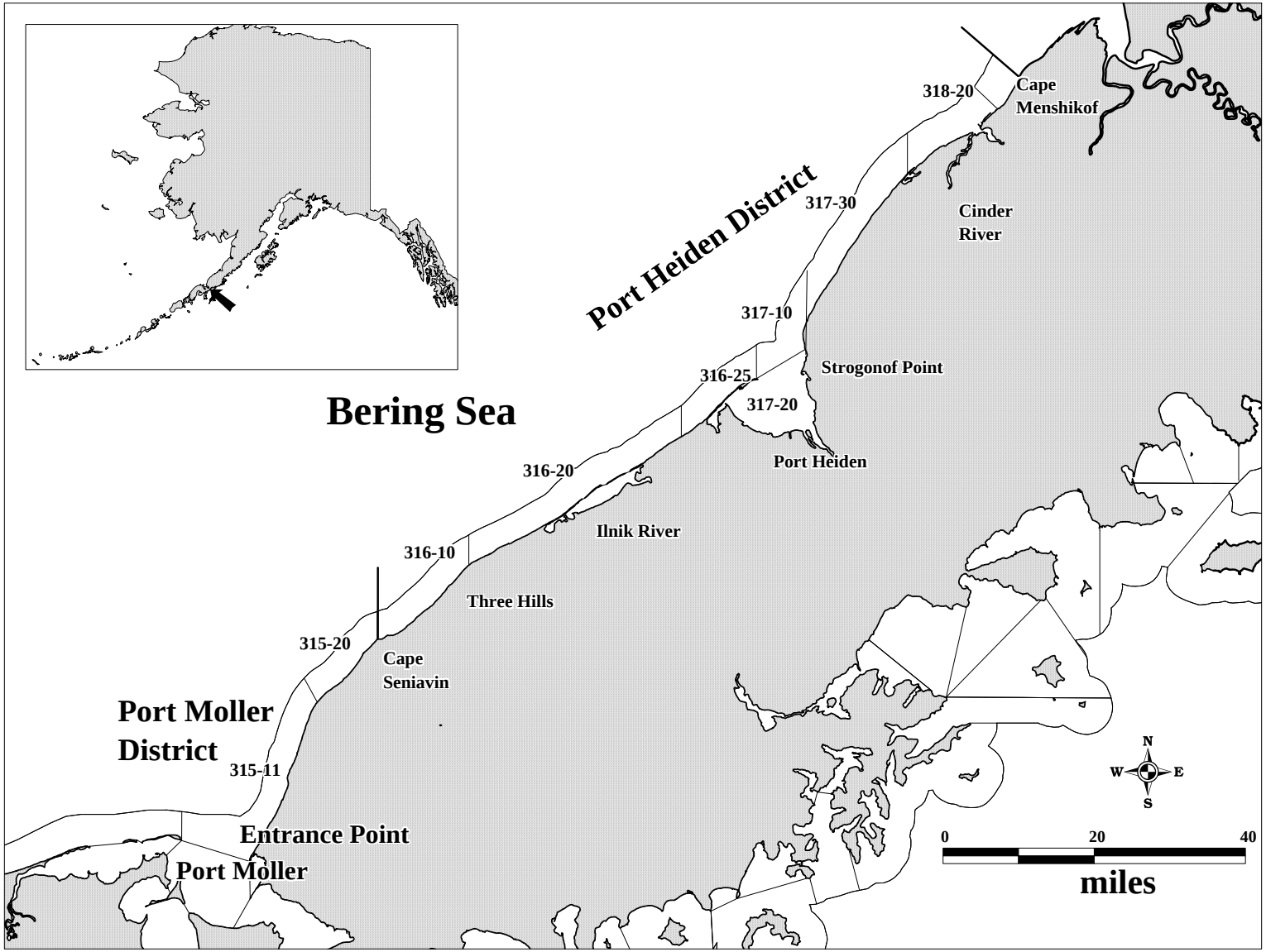

Figure 2.–Map of Port Heiden and Port Moller Districts with commercial herring fishing statistical areas shown.

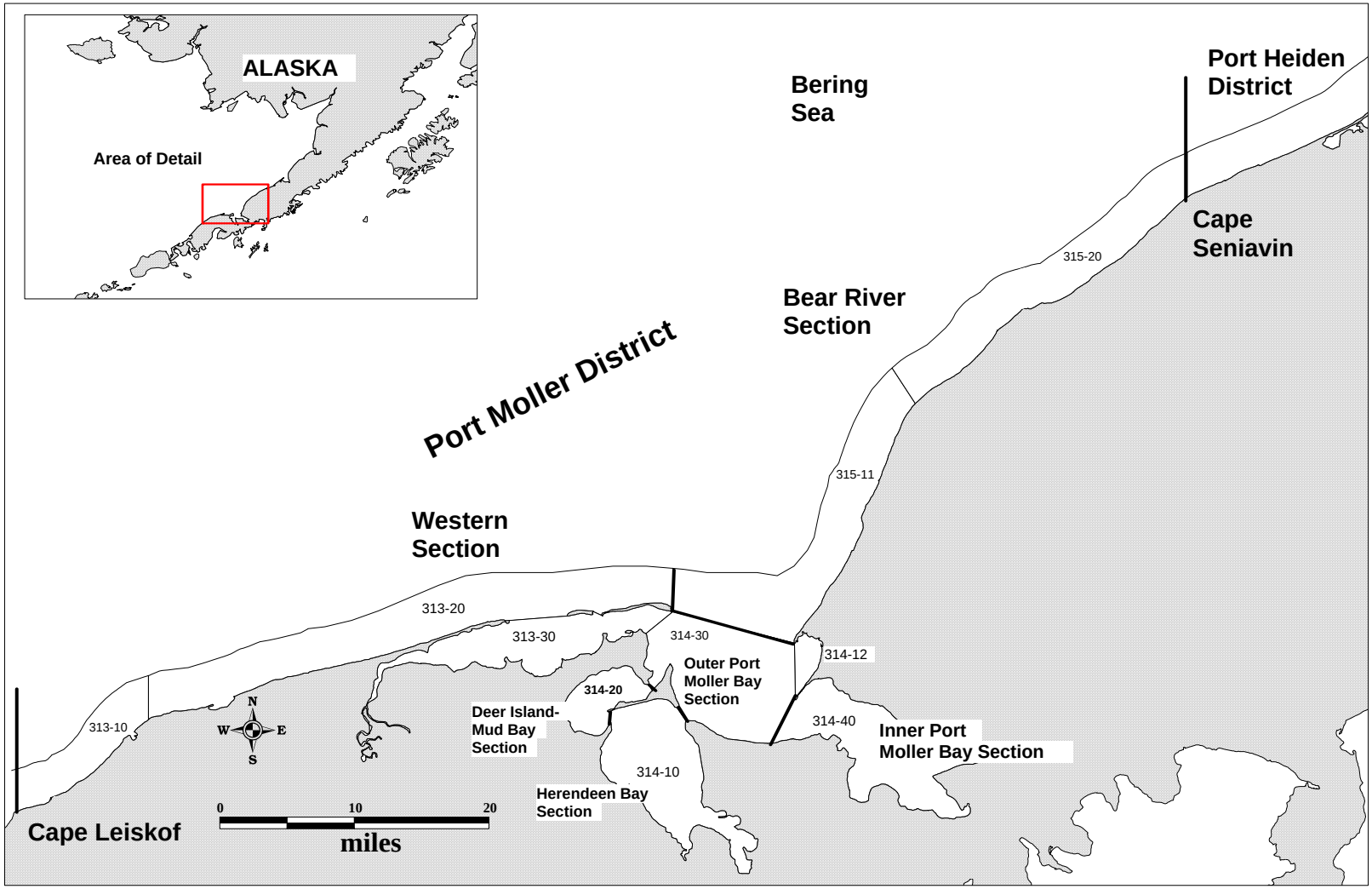

Figure 3.–Map of Port Moller District with commercial herring fishing statistical areas shown.

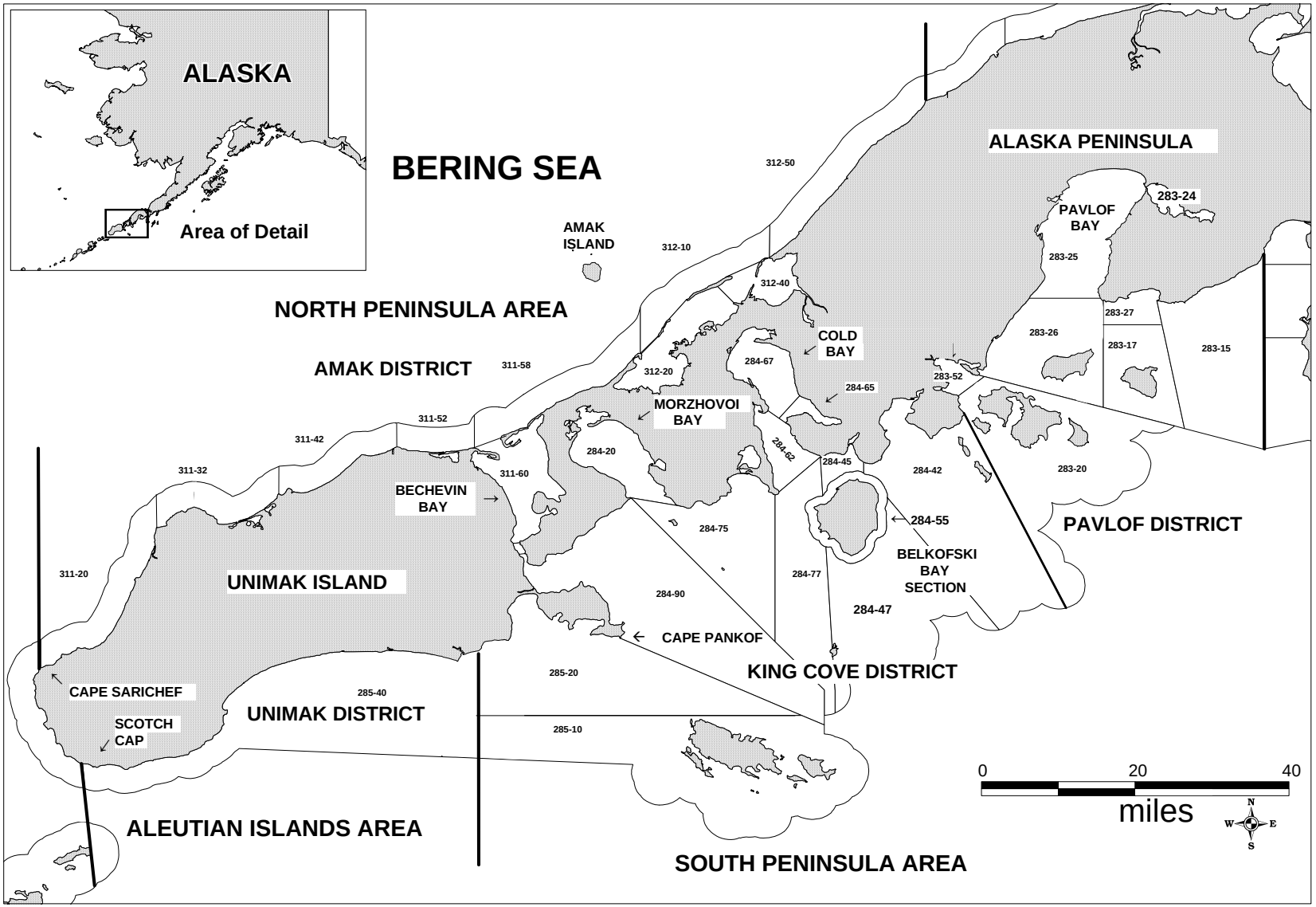

Figure 4.–Map of Amak, Unimak, King Cove, and Pavlof Districts with commercial herring fishing statistical areas shown.

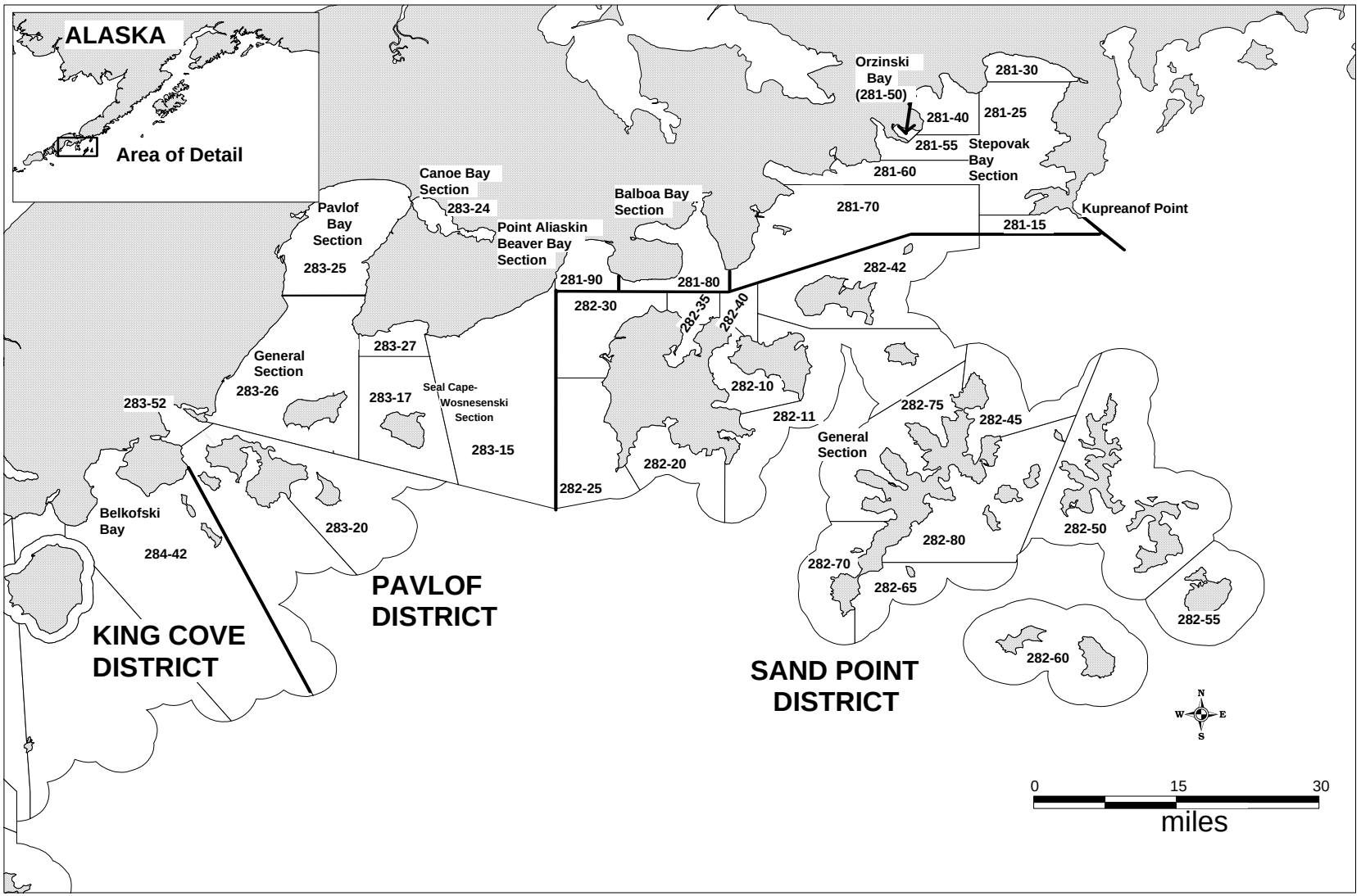

Figure 5.–Map of Pavlof and Sand Point districts with commercial herring fishing statistical areas shown.

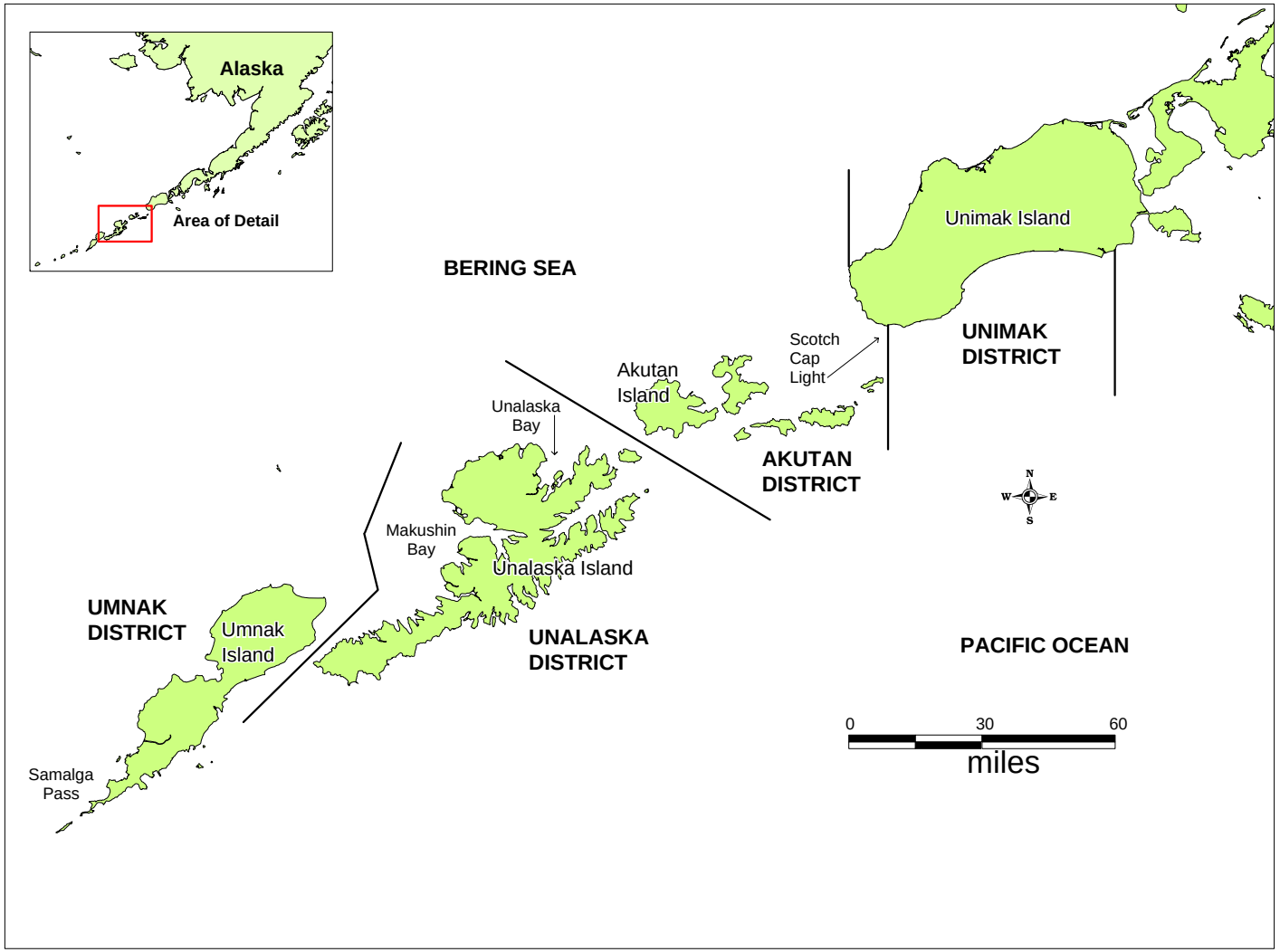

Figure 6.–Map of Aleutian Islands from Samalga Pass to Unimak Island with herring fishing districts shown.

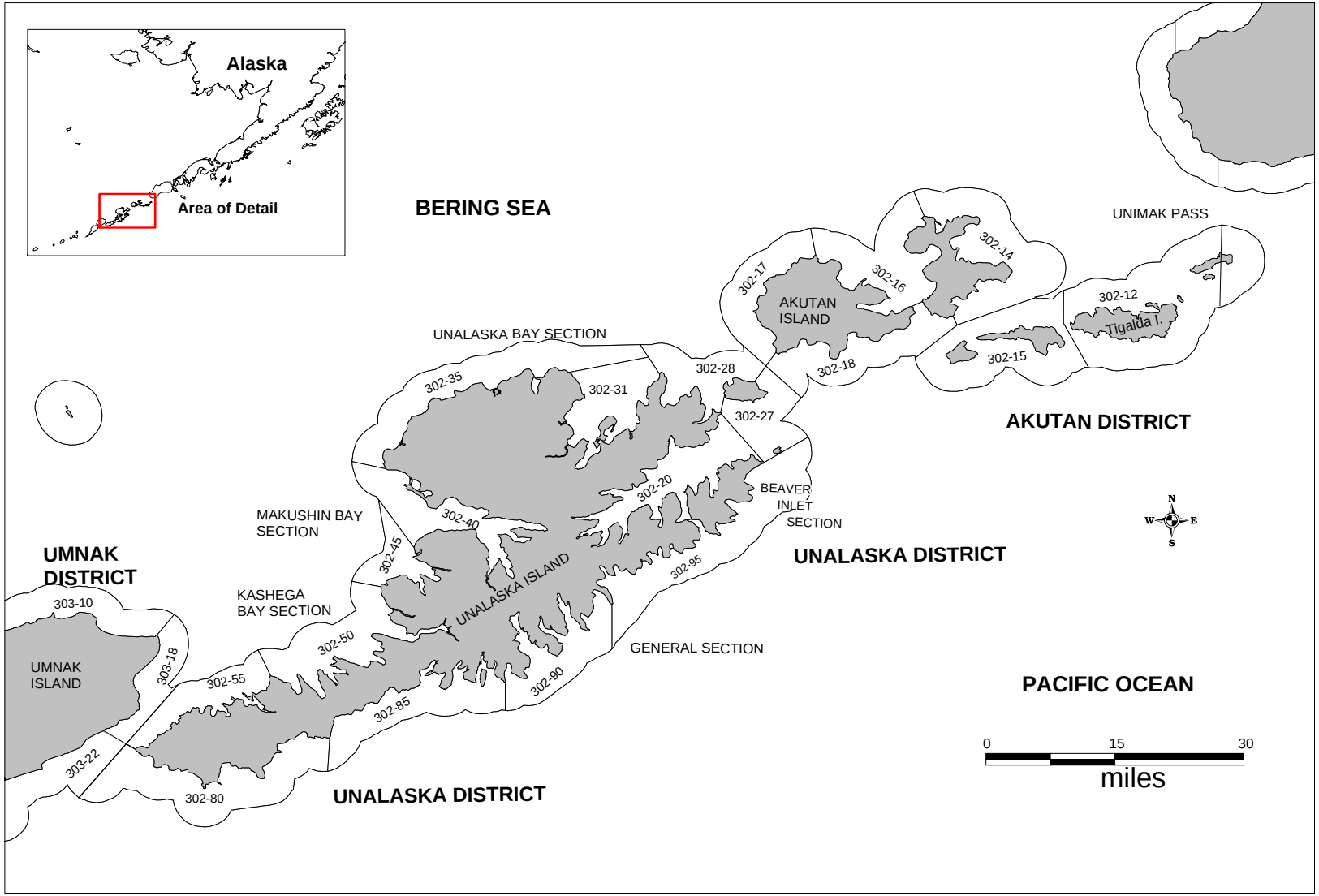

Figure 7.–Map of Aleutian Islands from Unimak Island to Umnak Island with statistical herring fishing areas shown.

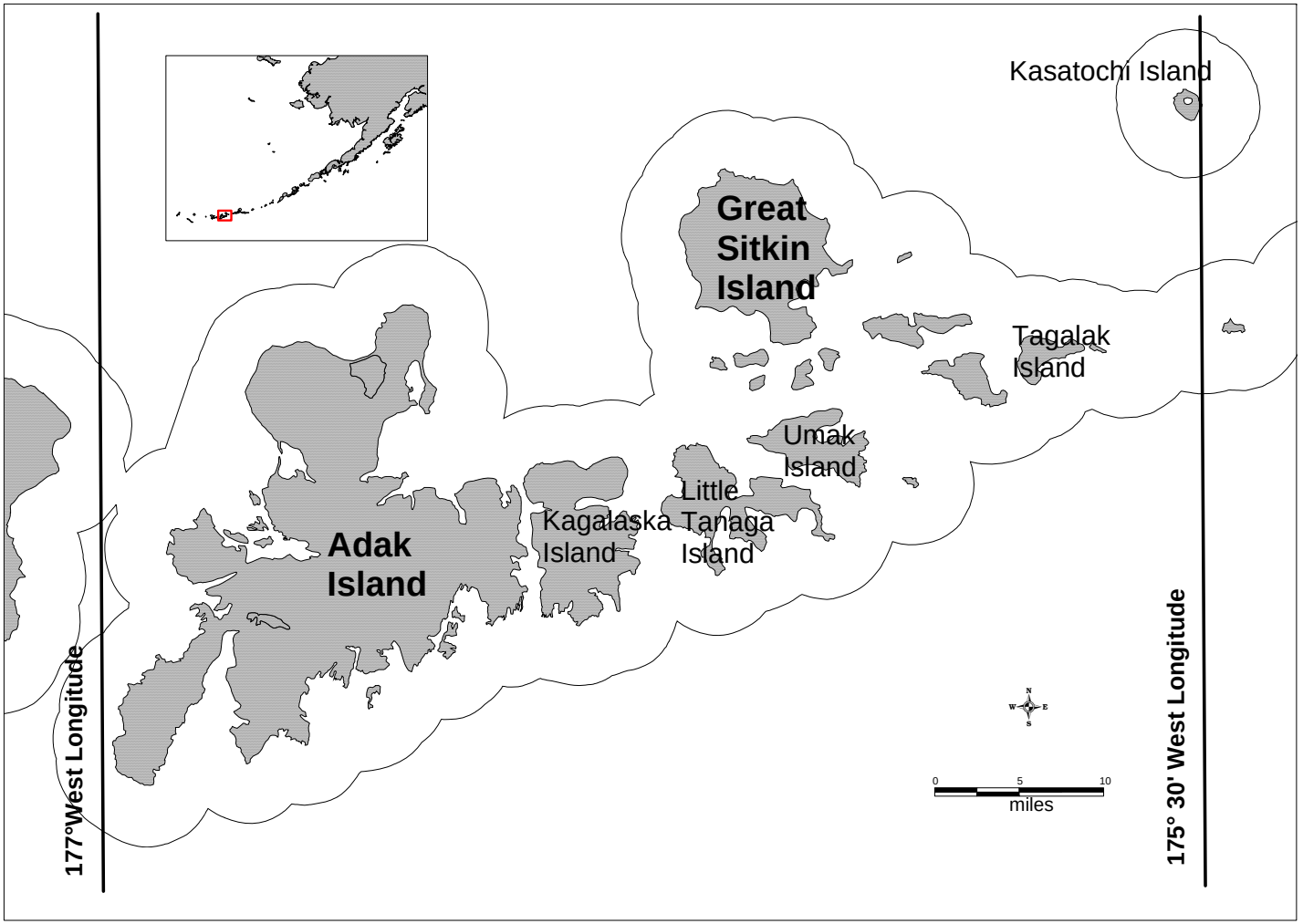

Figure 8.–Map of Adak Island area with boundaries of exploratory herring fishery defined.

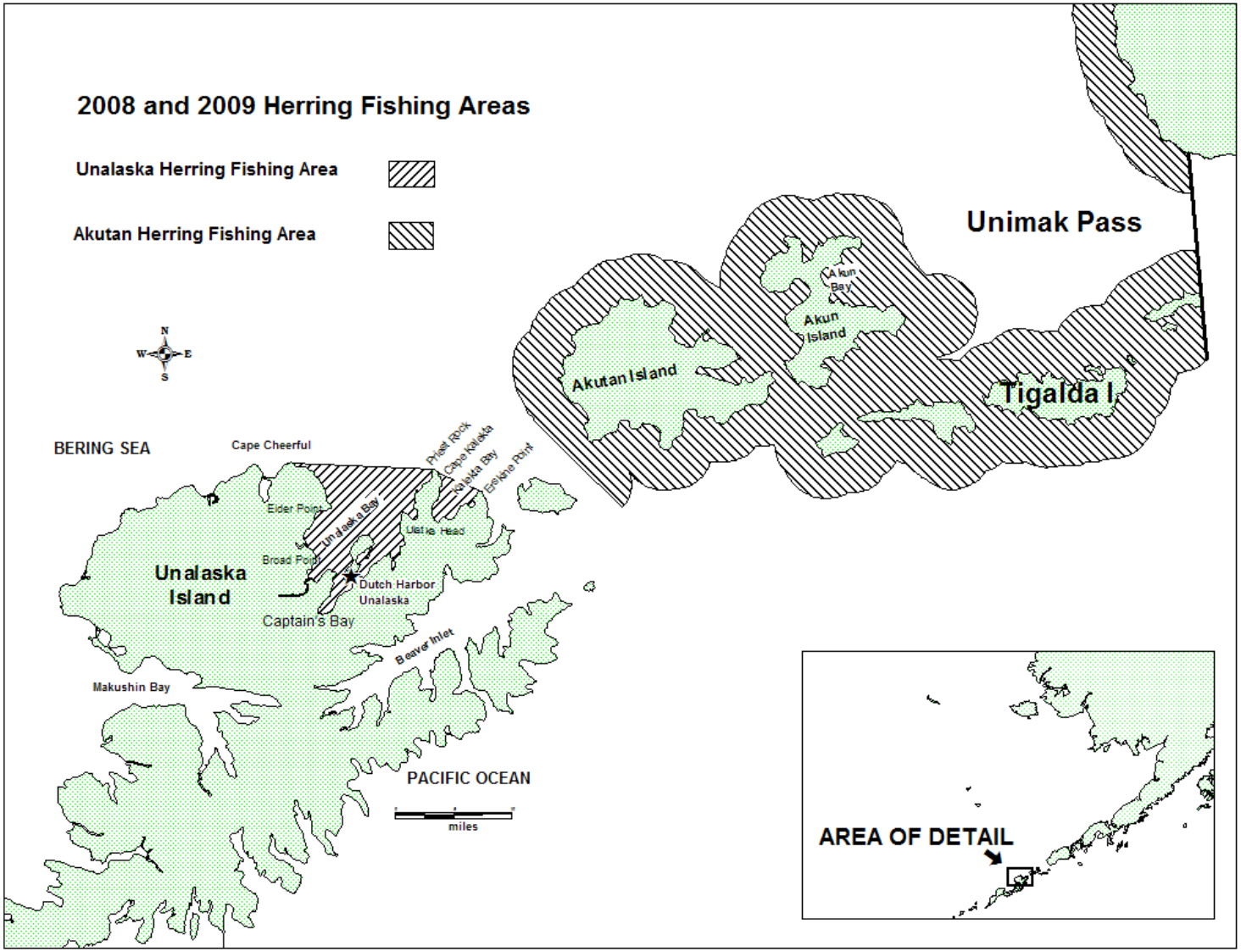

Figure 1.–Map of Akutan and Unalaska islands from Akun Bay to Spray Cape, with the 2008 and 2009 commercial herring fishery open areas shown.

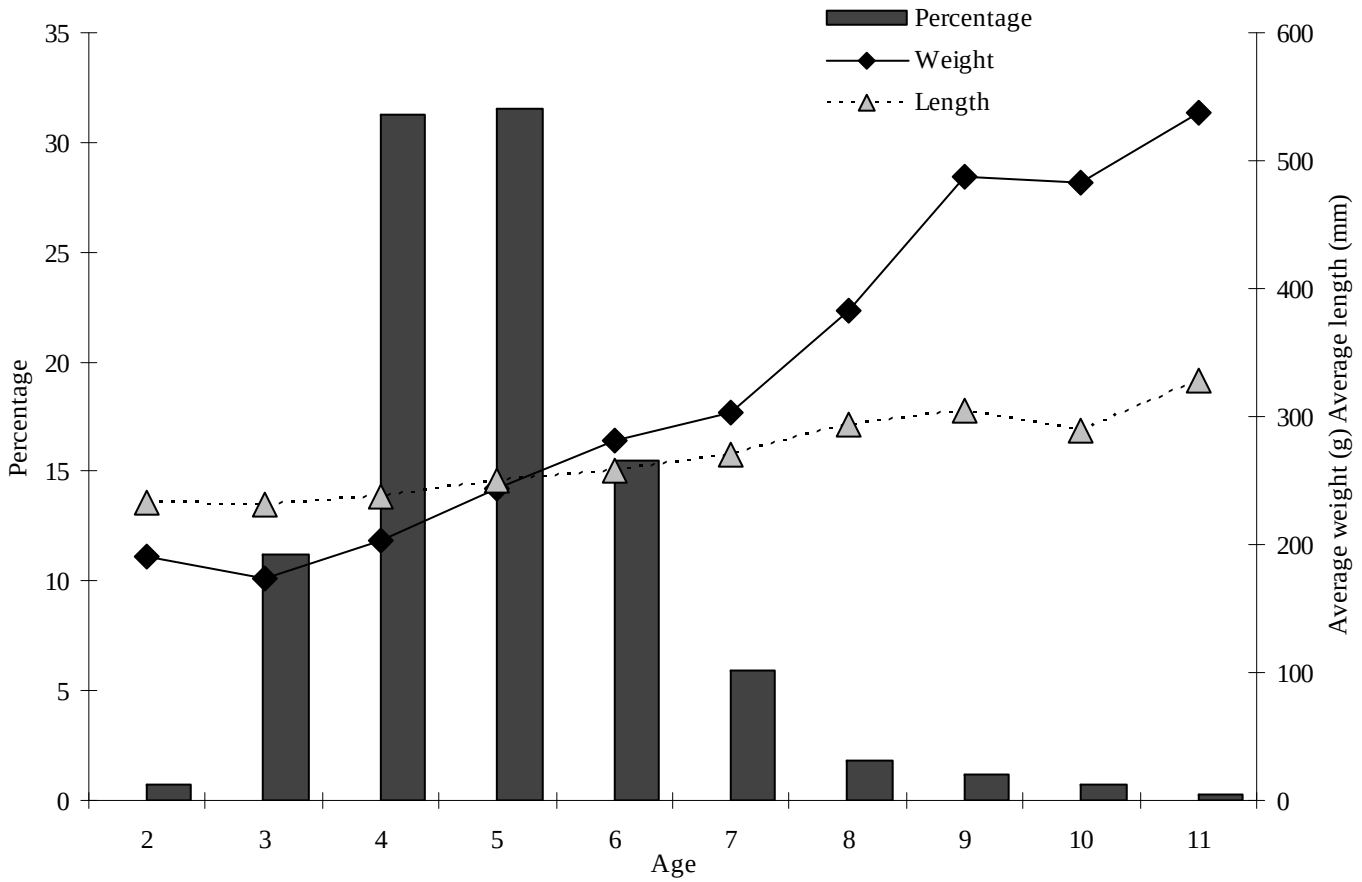

Figure 10.–Estimated average length-at-age (mm), average weight-at-age (g), and age composition of herring harvested in North Alaska Peninsula, 2009 (sample size = 438).

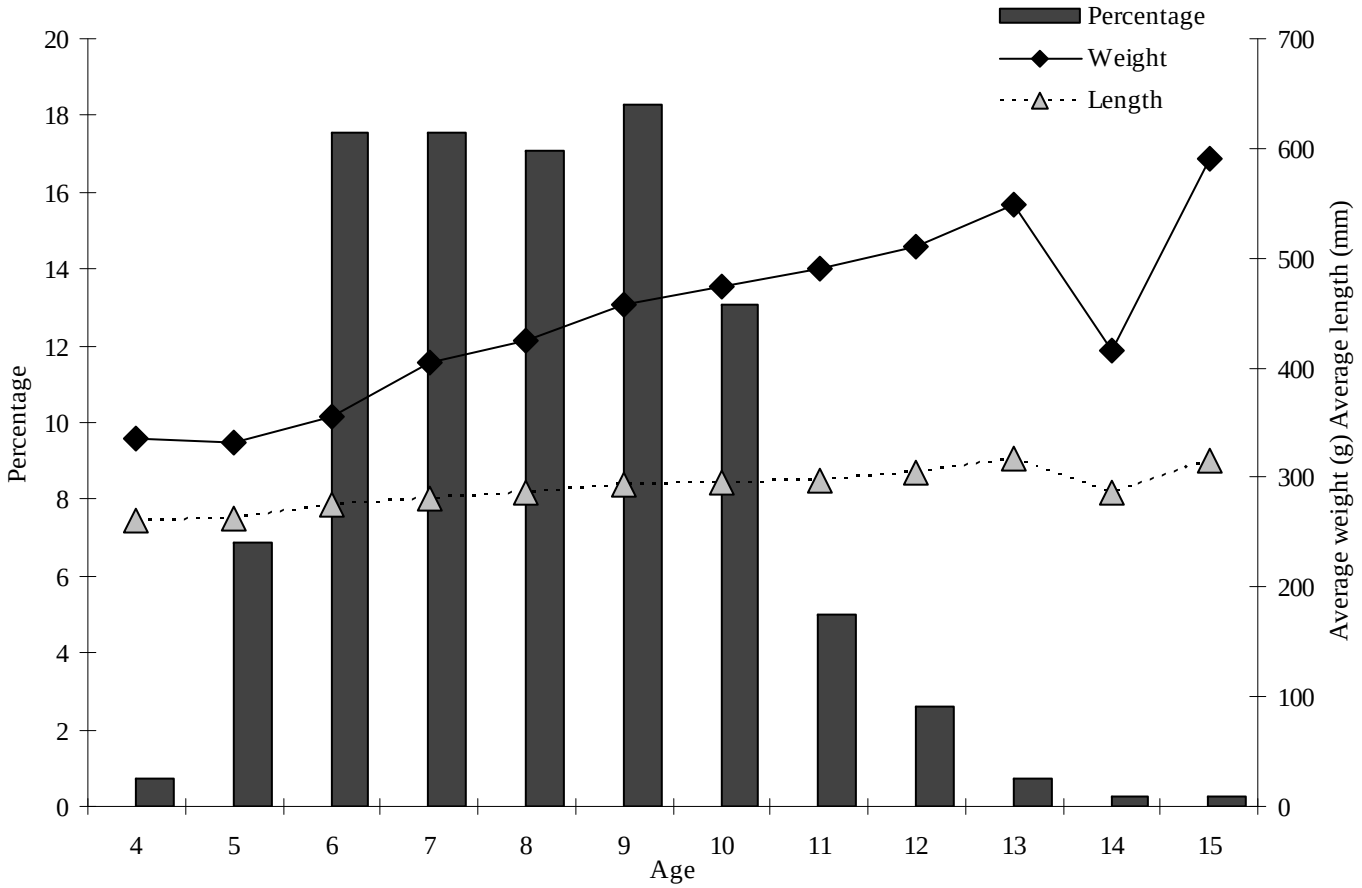

Figure 11.–Estimated average length-at-age (mm), average weight-at-age (g), and age composition of herring harvested in Unalaska District, 2008 (sample size = 421).

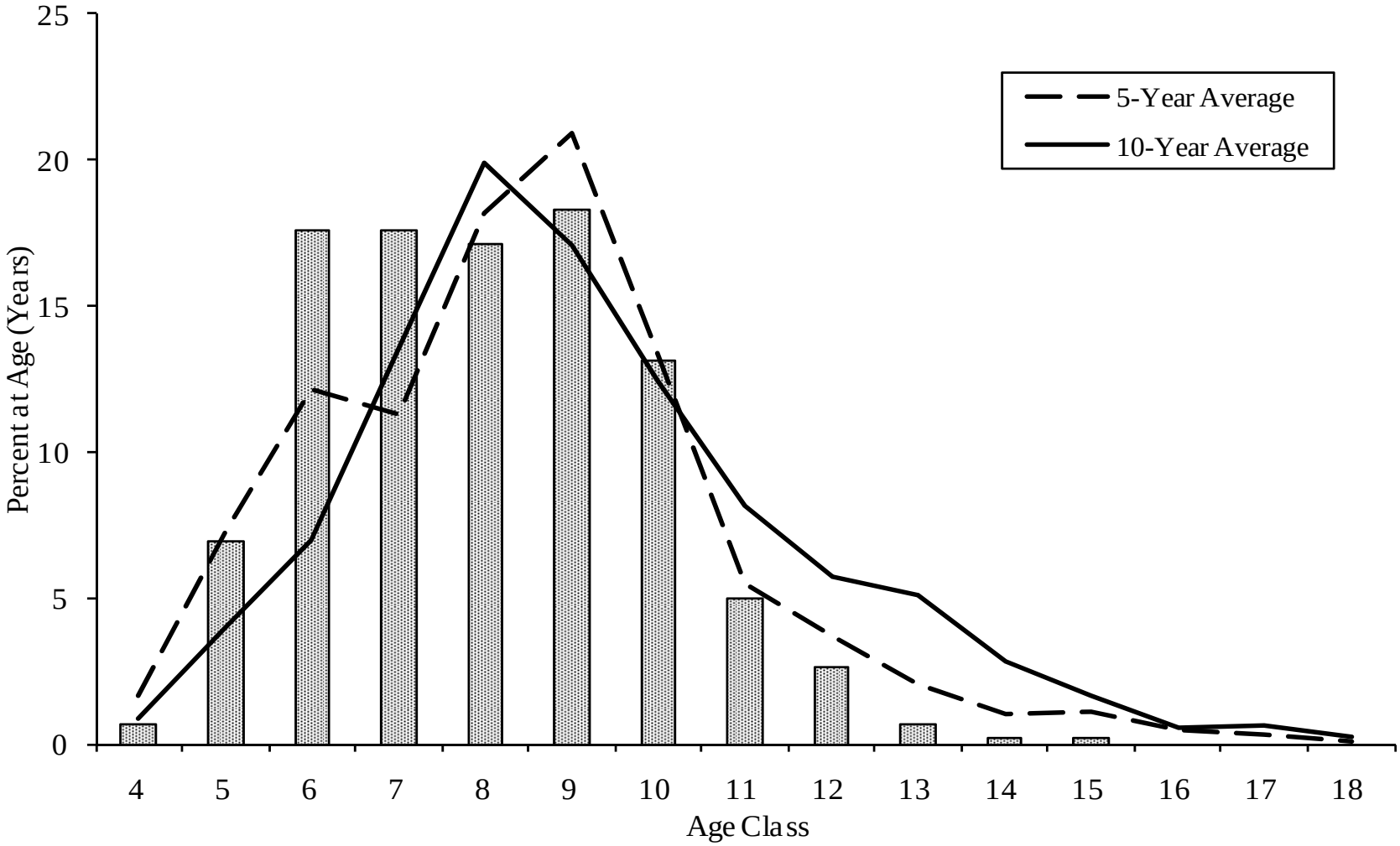

Figure 12.–Estimated 2008 percent age composition of Aleutian Islands commercial herring food and bait fishery, with five and ten year averages.

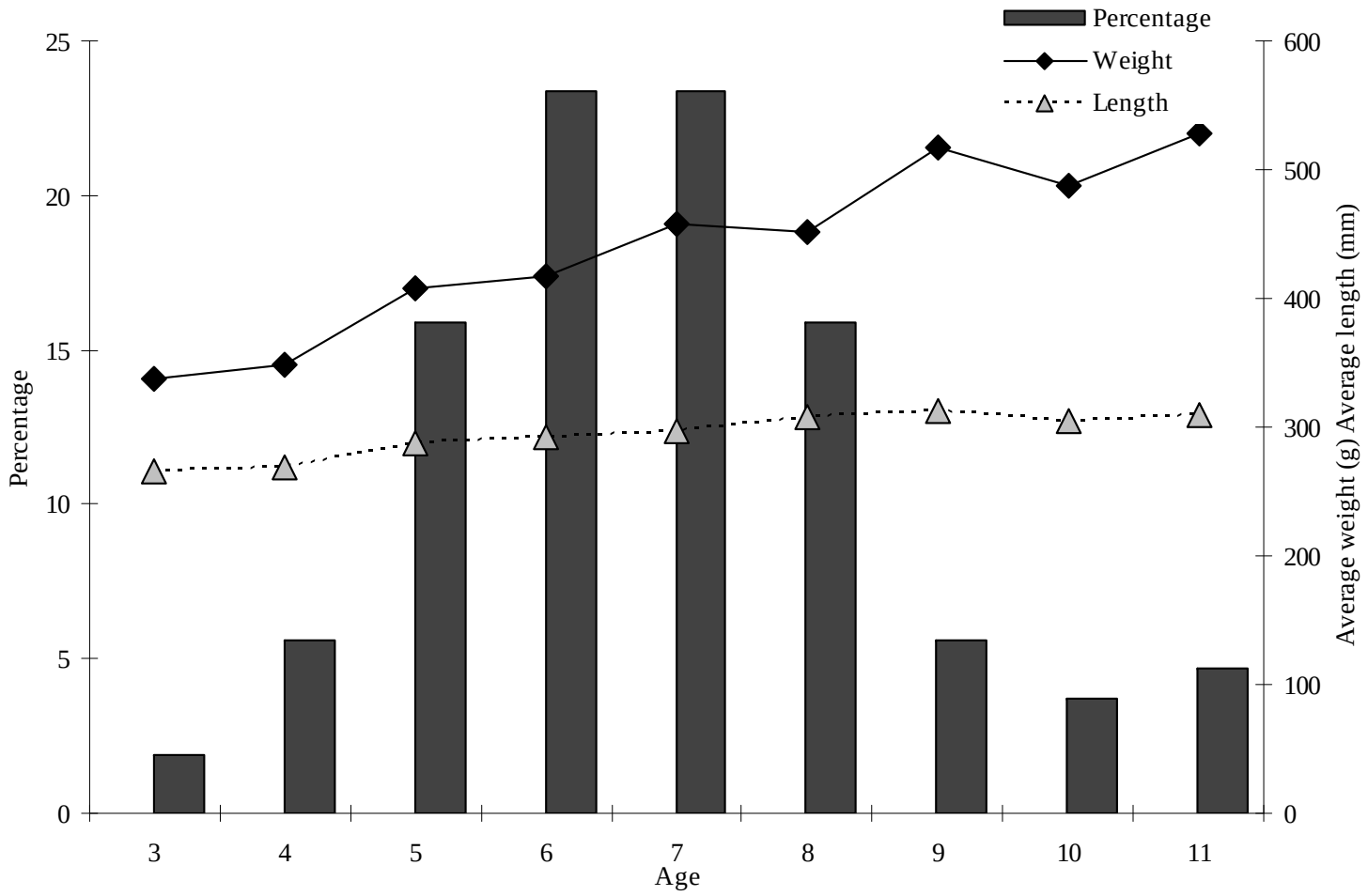

Figure 13.–Estimated average length-at-age (mm), average weight-at-age (g), and age composition of herring harvested in Akutan District, 2009 (sample size = 107).

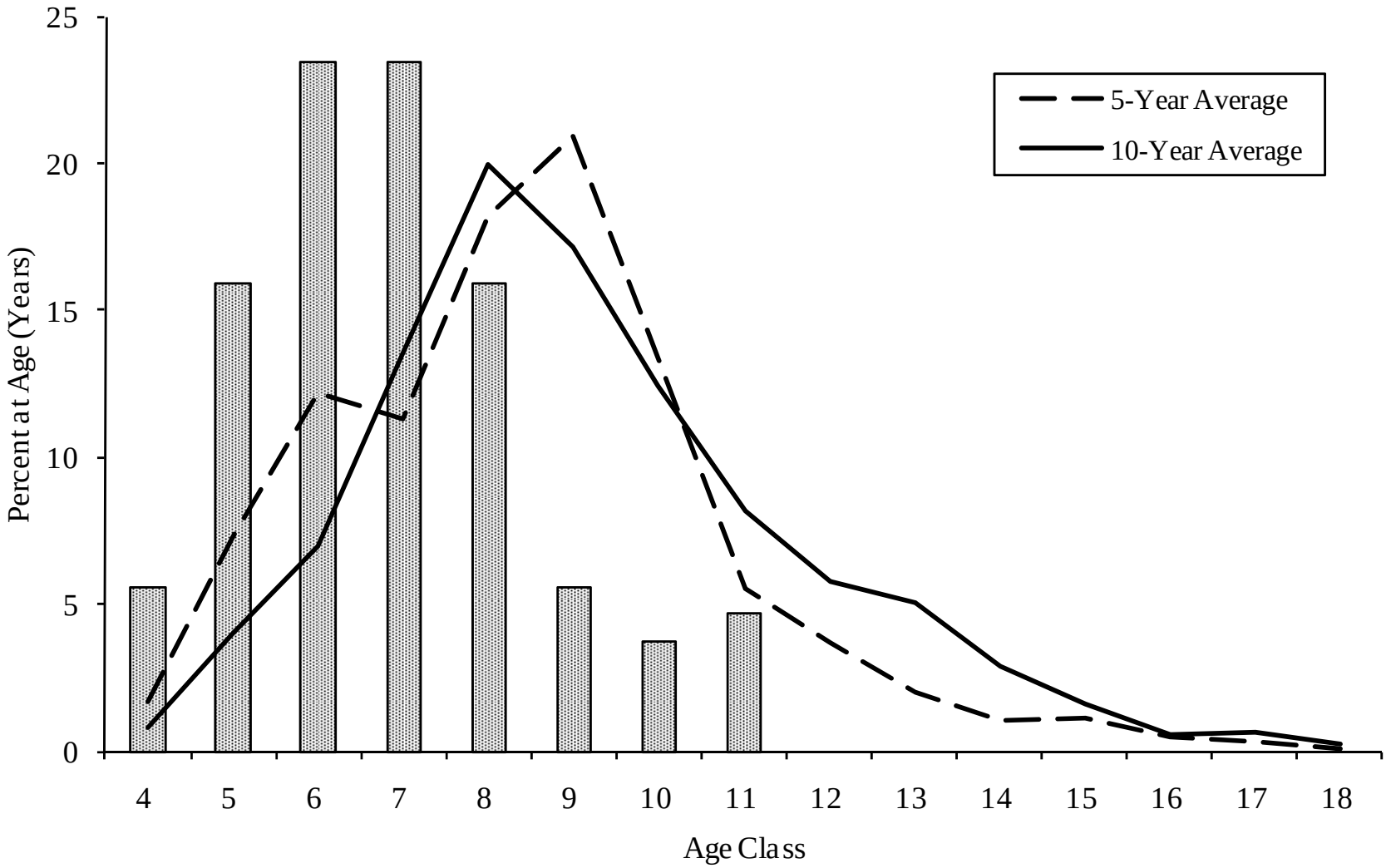

Figure 14.–Estimated 2009 percent age composition of Aleutian Islands commercial herring food and bait fishery, with five and ten year averages.

APPENDIX A: ALASKA PENINSULA HERRING SAC ROE FISHERY HARVEST PROJECTIONS

Appendix A1.–Alaska Peninsula herring sac roe fishery harvest projection, 2008.

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 herring sac roe harvests, or the Port Heiden District.

The North Alaska Peninsula herring sac roe GHL is 100 to 150 tons. Considering historical herring biomass estimates in the North Alaska Peninsula waters, management of the North Alaska Peninsula herring sac roe fishery will again be conservative in 2008. Historically, the previous year's North Alaska Peninsula herring biomass estimate has been a poor indicator of herring returns in the following year. In 2008, the GHL will be adjusted in season based on the observed stock size. The following table shows the sliding scale allowable harvest on the estimated mature biomass when the threshold of 1,000 tons is assured.

Stock Size (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 Alaska Peninsula herring that may contribute to the Dutch Harbor food and bait fishery. Rowell et. al. (1991) 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 Alaska 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. The Alaska Board of Fisheries has established a maximum exploitation rate of 20% of the spawning biomass of those stocks. The forecast does not include the Port Heiden District where commercial fishing occurred only during 1992.

Confidence in the North Alaska Peninsula harvest projection 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, aerial surveys were conducted but there was no threshold requirement.

The 2008 South Alaska Peninsula forecasted sac roe harvest is 0 tons, based on the belief that industry will not be interested in harvesting herring in South Alaska Peninsula waters.

Appendix A2.–Alaska Peninsula herring sac roe fishery harvest projection, 2009.

This forecast is for North and South Alaska Peninsula areas with guideline harvest levels (GHL), 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 herring sac roe harvests, or the Port Heiden District.

Considering historical herring biomass estimates in the North Alaska Peninsula waters, management of the North Alaska Peninsula herring sac roe fishery will again be conservative in 2009. Historically, the previous year's North Alaska Peninsula herring biomass estimate has been a poor indicator of herring returns in the following year. The GHL will be adjusted in season based on the observed herring biomass. The following table shows the sliding scale allowable harvest on the estimated mature biomass when the threshold of 1,000 tons is assured.

Stock Size (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 Alaska Peninsula herring that may contribute to the Dutch Harbor food and bait fishery. Rowell et. al. (1991) 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 Alaska 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. The Alaska Board of Fisheries has established a maximum exploitation rate of 20% of the spawning biomass of those stocks. The forecast does not include the Port Heiden District where commercial fishing occurred only during 1992.

Confidence in the North Alaska Peninsula harvest projection 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, aerial surveys were conducted but there was no threshold requirement.

The 2009 South Alaska Peninsula forecasted sac roe harvest is 0 tons, based on the belief that industry will not be interested in harvesting herring in South Alaska Peninsula waters.

APPENDIX B: ARCTIC-YUKON-KUSKOKWIM HERRING OUTLOOK AND MANAGEMENT STRATEGIES

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Contact:
Jim Menard, Nome Area Manager (907) 443-5167
Steve Hayes, Yukon Area Manager (907) 267-2383
John Linderman, Kuskokwim Area Manager (907) 267-2303
Fax: (907) 267-2442

Anchorage Area Office
333 Raspberry Road
Anchorage, AK, 99518
Date Issued: Dec. 17, 2007

Arctic-Yukon-Kuskokwim Herring Outlook and Management Strategy for 2008

Projections from postseason escapement estimates suggest that the 2008 spawning biomass for northeastern Bering Sea herring stocks (Security Cove to Norton Sound Districts) will be 58,891 tons, with an anticipated allowable harvest of 11,703 tons. If the return is as expected, a small reduction in biomass will be observed in most districts. The most abundant age classes expected to occur in the herring biomass are age 6 (35%), age 11 (22%), and age 7 (8%). Age 9 and older herring are expected to comprise 41% of the returning biomass.

The department does not anticipate a commercial herring fishery in the AYK Region in 2008 because of a lack of commercial herring market and processor interest. Similar market conditions existed in 2007 resulting in no sac-roe harvest and only a small harvest of 33 tons of bait in the Norton Sound District. This news release is to inform fishers of projected biomass and guideline harvest levels and the strategies employed if commercial fishing does occur.

Variability in the quality of aerial survey assessments of biomass and deviations from the assumed survival or recruitment rates may result in the observed biomass being either above or below these projections. Therefore, guideline harvest levels may be adjusted during the season according to observed herring spawning biomass. If determining herring abundance using aerial survey methods is not possible, stock abundance will be assessed using information from the projected biomass, test, and commercial catches, and spawn deposition observations. In accordance with the AYK Region harvest strategy, the commercial fishery will not target newly recruited age classes (age 2 through age 5 herring). If market conditions improve to allow for commercial herring fishing activity, the department will work cooperatively with fishers and buyers to optimize roe recovery. In each district, the occurrence and length of fishing periods and harvests depend on inseason biomass estimates, roe quality, spawning activity, weather conditions, fishing effort, and processor input.

Security Cove District

The 2008 projected return to the Security Cove District is 6,442 tons. A 20% exploitation rate would result in a harvest of 1,288 tons. Commercial fishing will not be allowed until the observed biomass reaches 1,200 tons, or significant spawning activity is observed. Ages 6, 7, and 11 are

-continued-

expected to comprise 59% of the returning biomass (29%, 14%, and 16%, respectively). Age 9 and older herring are expected to comprise 40 % of the biomass.

Goodnews Bay District

The management strategy for the Goodnews Bay District will be similar to that planned for Security Cove. The season will open and close by emergency order when a biomass of 1,200 tons or significant spawning activity is observed. The 2008 projected return of herring to the Goodnews Bay District is 3,259 tons. A 20% exploitation rate would result in a harvest of 652 tons. Ages 6, 7, and 11 herring are expected to comprise 56% the biomass (23%, 16%, and 17% respectively). Age 9 and older herring are expected to comprise 45% of the biomass.

Cape Avinof District

Either significant spawning activity or a biomass of 500 tons must be observed before the commercial herring season can be opened. The 2008 projected biomass for the Cape Avinof District is 806 tons. The exploitation rate will be no greater than 15% because of the limited database for this area and to ensure the subsistence fishing priority. A 15% commercial exploitation rate would result in a harvest of 121 tons. Ages 6, 7, and 11 are expected to comprise 59% of the returning biomass (29%, 14%, and 16% respectively). Age 9 and older herring are expected to comprise 40% of the biomass.

Nelson Island District

In the Bering Sea Herring Fishery Management Plan, the Alaska Board of Fisheries set a minimum biomass threshold of 3,000 tons for the Nelson Island District. The inseason estimate of herring biomass must exceed the threshold level before a commercial fishery can be allowed. The spawning biomass projected to return in 2008 to the Nelson Island District is 3,424 tons. At a total exploitation rate of 20%, minus 200 tons (6%) for subsistence harvest, the commercial harvest guideline will be 485 tons. Ages 6, 7, and 11 are expected to constitute 64% of the returning population, contributing 38%, 11%, and 15%, respectively. Age 9 and older herring are expected to comprise 33% of the biomass.

Nunivak Island District

The biomass of herring projected to return to the Nunivak Island District in 2008 is 3,688 tons. A 20% exploitation rate would result in a harvest of 738 tons. The commercial season will open when the biomass reaches 1,500 tons or when significant spawning is observed. Ages 6, 7, and 11 are expected to comprise 59% of the returning biomass (29%, 14%, and 16%, respectively). Age 9 and older herring are expected to comprise 40% of the biomass.

Cape Romanzof District

The projected biomass of herring to return to Cape Romanzof District in 2008 is expected to be 3,871 tons. At a 20% exploitation rate, the allowable harvest is expected to be 774 tons and will be based on inseason indicators of abundance. Since water turbidity in the Cape Romanzof area generally prevents aerial observations of herring, spawn deposition and test and commercial catch

-continued-

rates will be used to determine the timing and duration of commercial fishing periods. Ages 6, 10, and 11 are expected to comprise 64% of the returning biomass (27%, 14%, and 23%, respectively). Age 9 and older herring are expected to comprise 52% of the biomass.

Norton Sound District

The biomass of herring projected to return in 2008 to Norton Sound is 37,401 tons. A 20% exploitation rate would result in a harvest guideline of 7,480 tons. A maximum of 320 tons of herring are reserved to allow for the pound fishery to harvest a maximum of 90 tons of product (combined weight of herring roe and kelp). This leaves 7,160 tons for sac roe harvest. The beach seine harvest is, by regulation, 10% of the sac roe projected harvest, or 716 tons. The 2008 herring fishery will be opened by emergency order and the fishery will close by emergency order when up to 20% of the available herring biomass has been harvested. Varied harvest rates may be applied to individual subdistricts based on biomass distribution, roe quality, weather, and sea ice conditions. Ages 5, 6, and 11 are expected to dominate the returning population, contributing 7%, 38%, and 24%, respectively. Age 9 and older herring are expected to comprise 41% of the biomass.

Port Clarence District

Generally, the department does not project an outlook for the Port Clarence fishery because of the lack of data for Port Clarence herring and the limited scope of the fishery. The guideline harvest of 165 tons established by the Alaska Board of Fisheries in 1981 will determine the allowable harvest in 2008. This harvest guideline is based on 2 years of research conducted by the department in both the Port Clarence and Kotzebue Districts. Even though this guideline has not appeared in the regulation book since 1984, it still represents the best estimate of harvestable biomass.

Table 1. Projections of Pacific herring spawning biomass and harvest guideline for commercial fishing districts in the northeastern Bering Sea, Alaska, 2008.

District	Threshold	2007 Observed Biomass (tons)	2008 Projected Biomass (tons)	Exploitation Rate (%)	2008 Harvest Guideline (tons)
Security Cove	1,200	7,081 [a]	6,442	20	1,288
Goodnews Bay	1,200	3,683 [a]	3,259	20	652
Cape Avinof	500	878 [a]	806	15	121
Nelson Island [b]	3,000	3,614 [a]	3,424	14	485
Nunivak Island	1,500	4,054 [a]	3,688	20	738
Cape Romanzof	1,500	4,489 [a]	3,871	20	774
Norton Sound	7,000	38,415 [a]	37,401	20	7,480
Port Clarence	-	-	-	-	165
Totals			58,891	20	11,703

[a] Represents the projected biomass for 2007. Aerial surveys were incomplete or adveresely affected by weather.

[b] Nelson Island commercial harvest is 20% of projected biomass minus 200 st for subsistence harvest.

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Contact:
Jim Menard, Nome Area Manager (907) 443-5167
Steve Hayes, Yukon Area Manager (907) 267-2383
Kevin Clark, Acting Kuskokwim Area Manager (907) 267-2379
Fax: (907) 267-2442

Anchorage Area Office
333 Raspberry Road
Anchorage, AK 99518
Date Issued: Dec. 1, 2008

Arctic-Yukon-Kuskokwim Herring Outlook and Management Strategy for 2009

Projections from postseason escapement estimates suggest that the 2009 spawning biomass for northeastern Bering Sea herring stocks (Security Cove to Norton Sound Districts) will be 63,735 tons, with an anticipated allowable harvest of 12,600 tons. If the return is as expected, a small reduction in biomass will be observed in most districts. The most abundant age classes expected to occur in the herring biomass are age 7 (37%), age 5 (16%), and age 6 (13%). Age 9 and older herring are expected to comprise 29% of the returning biomass.

At this time, the department does not anticipate a commercial herring fishery in the AYK Region in 2009 because of a lack of a herring market and processor interest. Similar market conditions existed in 2008 resulting in no sac-roe harvest and a small harvest of 90 tons in Norton Sound for bait. This news release is to inform fishers of projected biomass, guideline harvest levels, and the strategies to be employed if commercial fishing does occur.

Variability in the quality of aerial survey assessments of biomass and deviations from the assumed survival or recruitment rates may result in the observed biomass being either above or below these projections. Therefore, guideline harvest levels may be adjusted during the season according to observed herring spawning biomass. If determining herring abundance using aerial survey methods is not possible, stock abundance will be assessed using information from the projected biomass, test, and commercial catches, and spawn deposition observations. In accordance with the AYK Region harvest strategy, the commercial fishery will not target newly recruited age classes (age 2 through age 5 herring). If market conditions improve, the department will work cooperatively with fishers and buyers to optimize roe recovery. In each district, the occurrence, period duration, and harvests depend on inseason biomass estimates, roe quality, spawning activity, weather conditions, fishing effort, and processor interest.

Security Cove District

The 2009 projected return to the Security Cove District is 6,442 tons. A 20% exploitation rate would result in a harvest of 1,137 tons. Commercial fishing will not be allowed until the observed biomass reaches 1,200 tons, or significant spawning activity is observed. Ages 5, 7, and 11 are

-continued-

expected to comprise 50% of the returning biomass (16%, 18%, and 16%, respectively). Age 9 and older herring are expected to comprise 43 % of the biomass.

Goodnews Bay District

The management strategy for the Goodnews Bay District will be similar to that planned for Security Cove. The season will open and close by emergency order when a biomass of 1,200 tons or significant spawning activity is observed. The 2009 projected return of herring to the Goodnews Bay District is 5,736 tons. A 20% exploitation rate would result in a harvest of 1,147 tons. Ages 5, 7, and 11 herring are expected to comprise 50% the biomass (16%, 18%, and 16% respectively). Age 9 and older herring are expected to comprise 43% of the biomass.

Cape Avinof District

Either significant spawning activity or a biomass of 500 tons must be observed before the commercial herring season can be opened. The 2009 projected biomass for the Cape Avinof District is 2,251 tons. The exploitation rate will be no greater than 15% because of the limited database for this area and to ensure the subsistence fishing priority. A 15% commercial exploitation rate would result in a harvest of 338 tons. Ages 5, 7, and 11 are expected to comprise 50% of the returning biomass (16%, 18%, and 16% respectively). Age 9 and older herring are expected to comprise 43% of the biomass.

Nelson Island District

In the Bering Sea Herring Fishery Management Plan, the Alaska Board of Fisheries set a minimum biomass threshold of 3,000 tons for the Nelson Island District. The inseason estimate of herring biomass must exceed the threshold level before a commercial fishery can be allowed. The spawning biomass projected to return in 2009 to the Nelson Island District is 5,152 tons. At a total exploitation rate of 20%, minus 200 tons (6%) for subsistence harvest, the commercial harvest guideline will be 830 tons. Ages 5, 7, and 11 are expected to constitute 50% of the returning population, contributing 16%, 18%, and 16%, respectively. Age 9 and older herring are expected to comprise 43% of the biomass.

Nunivak Island District

The biomass of herring projected to return to the Nunivak Island District in 2009 is 3,141 tons. A 20% exploitation rate would result in a harvest of 628 tons. The commercial season will open when the biomass reaches 1,500 tons or when significant spawning is observed. Ages 5, 7, and 11 are expected to comprise 50% of the returning biomass (16%, 18%, and 16%, respectively). Age 9 and older herring are expected to comprise 43% of the biomass.

Cape Romanzof District

The projected biomass of herring to return to Cape Romanzof District in 2009 is expected to be 4,852 tons. At a 20% exploitation rate, the allowable harvest is expected to be 970 tons and will be based on inseason indicators of abundance. Since water turbidity in the Cape Romanzof area generally prevents aerial observations of herring, spawn deposition, test fishing and commercial catch rates, and the amount of fishing effort will be used to determine the timing and duration of

-continued-

commercial fishing periods. Ages 5, 6, and 7 are expected to comprise 77% of the returning biomass (16%, 14%, and 47%, respectively). Age 9 and older herring are expected to comprise 20% of the biomass.

Norton Sound District

The biomass of herring projected to return in 2009 to Norton Sound is 36,917 tons. A 20% exploitation rate would result in a harvest guideline of 7,383 tons. A maximum of 320 tons of herring are reserved to allow for the pound fishery to harvest a maximum of 90 tons of product (combined weight of herring roe and kelp). This leaves 7,063 tons for sac roe harvest. The beach seine harvest is, by regulation, 10% of the sac roe projected harvest, or 706 tons. The 2009 herring fishery will be opened by emergency order and the fishery will close by emergency order when up to 20% of the available herring biomass has been harvested. Varied harvest rates may be applied to individual subdistricts based on biomass distribution, roe quality, weather, and sea ice conditions. Ages 5, 6, and 7 are expected to dominate the returning population, contributing 15%, 14%, and 46%, respectively. Age 9 and older herring are expected to comprise 22% of the biomass.

Port Clarence District

Generally, the department does not project an outlook for the Port Clarence fishery because of the lack of data for Port Clarence herring and the limited scope of the fishery. The guideline harvest of 165 tons established by the Alaska Board of Fisheries in 1981 will determine the allowable harvest in 2009. This harvest guideline is based on two years of research conducted by the department in both the Port Clarence and Kotzebue Districts. Even though this guideline has not appeared in the regulation book since 1984, it still represents the best estimate of harvestable biomass.

Table 1. Projections of Pacific herring spawning biomass and harvest guideline for commercial fishing districts in the northeastern Bering Sea, Alaska, 2009.

District	Threshold	2008 Observed Biomass (st)	2009 Projected Biomass (st)	Exploitation Rate (%)	2009 Harvest Guideline
Security Cove	1,200	6,442 [d]	5,686	20	1,137
Goodnews Bay	1,200	6,479 [b]	5,736	20	1,147
Cape Avinof	500	2,536 [c]	2,251	15	338
Nelson Island [a]	3,000	5,827 [c]	5,152	16	830
Nunivak Island	1,500	3,559 [c]	3,141	20	628
Cape Romanzof	1,500	4,998 [c]	4,852	20	970
Norton Sound	7,000	37,401 [d]	36,917	20	7,383
Port Clarence	-	-	-	-	165
Totals			63,735	20	12,600

[a] Nelson Island commercial harvest is 20% of projected biomass minus 200 st for subsistence harves

[b] Good aerial survey estimates from 2008 were used to estimate the biomass.

[c] Baysian techniques were used when both 2008 aerial survey estimates and biomass projections were unavailable.

[d] Biomass projections from 2008 were available.

APPENDIX C: ALEUTIAN ISLANDS AREA DUTCH HARBOR HERRING FOOD AND BAIT FORECASTS

Appendix C1.–Forecasted harvest allocation for Togiak sac roe and Dutch Harbor herring food and bait fisheries, 2008.

This forecast is for the "Dutch Harbor": Unimak, Akutan, and Unalaska Districts and that portion of the Umnak District located east of Samalga Pass, and west of the Adak line at 177° W long, herring food and bait fishery (Chuck Brazil and Fred West, ADF&G, Anchorage, memo November 9, 2007).

Harvest Allocation of the 2008 Forecasted Pacific Herring Run Biomass, Togiak District, Bristol Bay

Herring Run Biomass, Togiak District, Bristol Bay		
	Biomass (Tons)	Harvest (Tons)[d]
2008 Forecasted Biomass	130,516	
Exploitation at maximum 20%		
For Total Allowable Harvest		26,103
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		24,603
Dutch Harbor Food/Bait Allocation [a]		***1,722***
Purse Seine Allocation [b]		***1,381***
Pound Fishery Allocation		***100***
Gillnet Allocation [c]		***241***

[a] The Dutch Harbor Food/Bait allocation is 7% of the remaining allowable harvest.

[b] The purse seine allocation for 2008 is 86% of the Dutch Harbor allocation minus the pound fishery allocation of 100 tons.

[c] The gillnet allocation for 2008 is 14% of the Dutch Harbor allocation.

[d] Tons = 2000 lbs

Appendix C2.–Forecasted harvest allocation for Togiak sac roe and Dutch Harbor herring food and bait fisheries, 2009.

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Denby S. Lloyd, Commissioner
John Hilsinger, Director

Contacts:
Greg Buck & Fred West, Asst. Area Research Biologists
Tim Baker, Area Research Biologist
Phone: (907) 267-2355
Fax: (907) 267-2442

Anchorage Regional Office
333 Raspberry Road
Anchorage, AK 99518

Date Issued: 11/16/2008
Time: 1:00 p.m.

2009 TOGIAK HERRING FORECAST

The 2009 Togiak herring forecast and harvest allocation is shown below for the Togiak District sac roe fishery and the Dutch Harbor food and bait fishery, given a maximum 20% exploitation rate of the projected run biomass:

Harvest Allocation of the 2009 Forecasted Pacific Herring Run Biomass, Togiak District, Bristol Bay

	Biomass (Short Tons)	Harvest (Short Tons)
Forecasted Biomass for 2009	121,800	
Total Allowable Harvest (20% exploitation rate)		24,360
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		22,860
Dutch Harbor Food/Bait Allocation (7.0% of the remaining allocation)		1,600
Remaining Allowable Harvest for Togiak District Sac Roe Fishery:		21,260
Purse Seine Allocation 70.0%		14,882
Gill Net Allocation 30.0%		6,378

2009 TOGIAK HERRING FORECAST SUMMARY

The Pacific herring population is forecasted to be 121,800 tons in the Togiak District during 2009 (Figure 1). Herring returning from the 2002 and 2001-year classes (age-7 and -8) are expected to comprise 34.8% of the biomass (Figure 2). Age-6 and under are expected to comprise 38.6% of the population while ages 9-11 and 12+ are forecasted to comprise 14.0% and

-continued-

12.6% of the population respectively. The forecasted individual average weight of herring in the harvest biomass is 354 g.

We used an age-structured analysis (ASA) model to forecast the Togiak herring population using catch and age composition data and total run survey biomass estimates. The ASA model integrates data from purse seine fishery age compositions (1978-2008), total run age compositions (1978-1995, 1997, 1999, 2001, and 2005-2008), and aerial survey biomass estimates (1981, 1983, 1992-1994, 1997, 1999-2001, and 2005-2008). The model estimates were generated and compared to observed data. Samples from non-selective gear (commercial purse seine) were used to assess the age composition of the total run biomass. Commercial purse seine catch samples ranged from age-3 to age-17. Age-4 herring weight for 2008 was predicted using the recent 4 year average. Simple linear regression models were used to forecast the weight of age-5 through age-15 herring based on their weight the previous year.

A temporal change in age composition from older to younger herring typically occurs throughout the fishery each year. Age-6, -7 and -11 herring predominated in 2008, comprising 15.3%, 17.8% and 17.0% of the total commercial purse seine harvest by weight respectively. As the season progressed, the younger age-6 and -7 herring began to replace the age-11 herring as a major portion of the daily commercial purse seine harvest. The relatively high abundance (5.9% by number of fish) of rarely spotted age-4 herring in the purse seine harvest may signal new recruitment in the years ahead. However, assessing younger age classes of herring is difficult as they typically do not show up until late in the fishery. To complicate matters, the department no longer conducts post-fishery sampling as was typical during the 1980s.

The Togiak District herring biomass was estimated to be 136,495 tons in 2008. This was the sum of aerial surveys conducted on the peak biomass on 28 May (82,557 tons) and a survey on 18 May that detected 53,938 (tons). Herring were first observed in the district on 15 May, when approximately 1,014 tons were documented. The biomass steadily increased through 18 May, with a majority (94.5%) of the herring concentrated in Togiak Bay and areas immediately to the west (Figure 3). The spawning biomass shifted slightly to the east by the time of the peak survey on 28 May but remained concentrated in the Togiak Bay area (Figure 4). The biomass of the Togiak herring spawning population has been estimated with aerial surveys since the late 1970s, concurrent with the development of the sac-roe fishery. Large recruitment events are typical every eight to ten years in this herring population with the most recent events occurring from the 1996 and 1997-year classes. Herring typically recruit into this fishery at around age-5.

There is always uncertainty in forecasting the Togiak District herring biomass and predicting the 2009 run is no different than previous years. The performance of the ASA model has had a tendency to forecast low since its inception in 1993. However, the model produced a fairly accurate forecast of the 2008 run (134,516 tons forecast and 136,495 tons observed). The mean percent error (MPE) was -22.8% for years with reliable total run biomass estimates (Figure 1). The accuracy or mean absolute percent error (MAPE) of the ASA model has been 20.5%. The forecast range for 2009 is from 91,350 tons to 152,251 tons based on a MAPE of ~25%. We consider the Togiak herring population to be healthy and sustainable.

Greg Buck, Fred West and Tim Baker
Bristol Bay Fishery Research Staff
Anchorage

-continued-

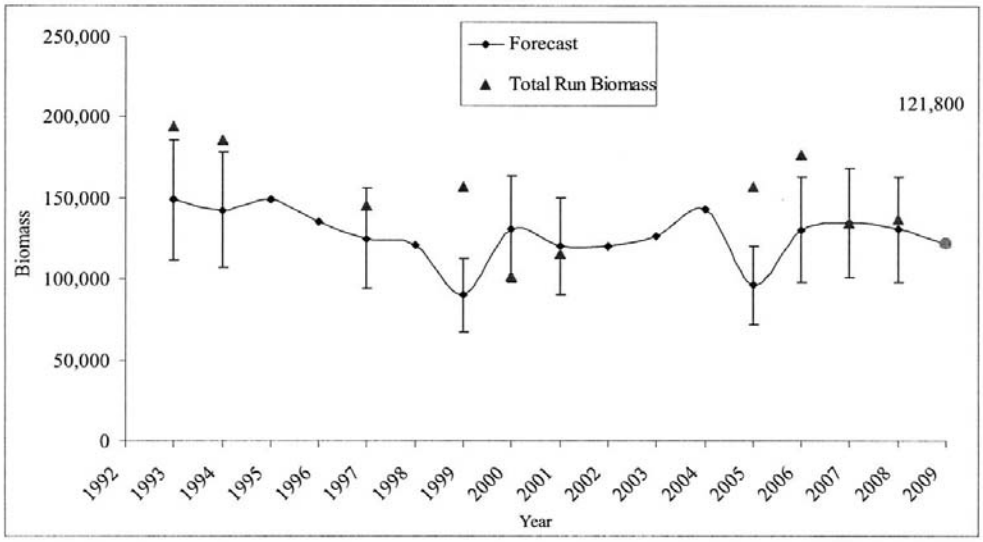

Figure 1.–Annual observed Togiak herring total run biomass estimates and preseason forecasts based on the ASA model. Mean absolute percent error (MAPE) of 25% around the forecast is also shown for years with a reliable total run biomass estimate.

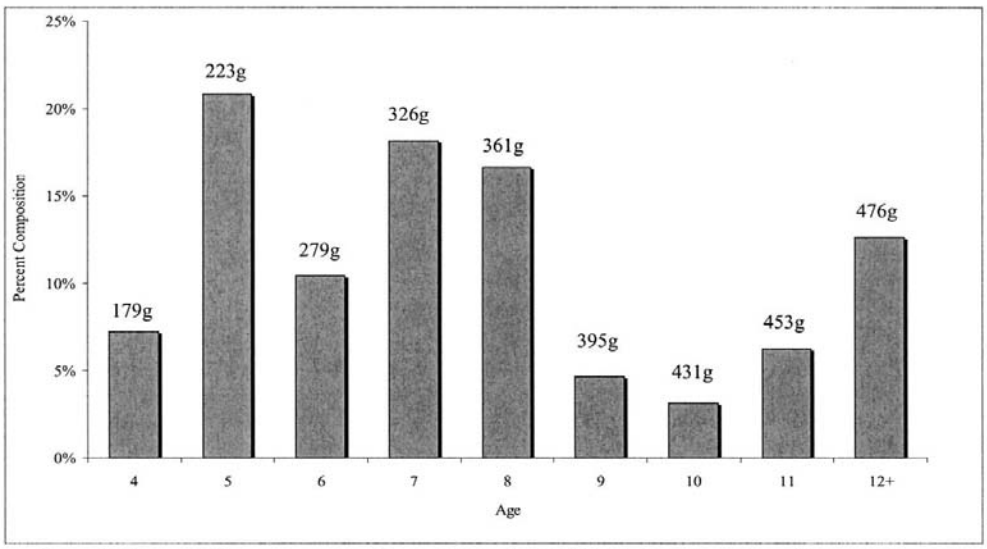

Figure 2.–Forecasted age composition by weight for the 2009 Togiak herring return. Forecasted average weight (grams) by age are shown for each age category.

-continued-

Figure 3.–Herring spawning distribution observed during aerial survey conducted on 18 May 2008. This survey estimated 53,938 tons. Green circles represent the relative contribution of each survey section (outlined in red) to the overall biomass estimate.

-continued-

Figure 4.–Herring spawning distribution observed during aerial survey conducted on 28 May 2008. This survey occurred on the peak biomass and was estimated at 82,557 tons. Green circles represent the relative contribution of each survey section (outlined in red) to the overall biomass estimate.

APPENDIX D: ALEUTIAN ISLANDS FOOD AND BAIT HERRING FISHERY EMERGENCY ORDER SUMMARY

Appendix D1.–Emergency order summary, 2008.

EMERGENCY ORDER NO. 4-FH-M-SP-01-08

EFFECTIVE DATE: 4:00 PM Thursday, July 3, 2008

EXPLANATION: Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area will open to commercial herring fishing with gillnet gear for 48 hours from 4:00 PM July 3 until 4:00 PM July 5.

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

EFFECTIVE DATE: 4:00 PM Saturday, July 5, 2008

EXPLANATION: Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area will remain open to commercial herring fishing with gillnet gear for 72 hours from 4:00 PM July 5 until 4:00 PM July 8.

EMERGENCY ORDER NO. 4-FH-M-SP-03-08

EFFECTIVE DATE: 4:00 PM Tuesday, July 8, 2008

EXPLANATION: The Unalaska Bay Section of the Alaska Peninsula-Aleutian Islands Herring Management Area will remain open to commercial herring fishing with gillnet gear for 72 hours from 4:00 PM July 8 until 4:00 PM July 11.

EMERGENCY ORDER NO. 4-FH-M-SP-04-08

EFFECTIVE DATE: 4:00 PM Friday, July 11, 2008

EXPLANATION: Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area will remain open to commercial herring fishing with gillnet gear for an additional 72 hours from 4:00 PM July 11 until 4:00 PM July 14.

EMERGENCY ORDER NO. 4-FH-M-SP-05-08

EFFECTIVE DATE: 12:00 NOON Tuesday, July 15, 2008

EXPLANATION: That portion of Akutan District west of the longitude of Billings Head at 165° 28.67 W. long., Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area and that portion of Kalekta Bay south of a line running from Erskine Point at 53° 58.92’ N. lat., 166° 16.5’ W. long. to Cape Kalekta at 54° N. lat., 166° 22’ W. long. will remain open to commercial herring fishing with purse seine and gillnet gear for 48 hours from 12:00 NOON July 15 until 12:00 NOON July 17.

EMERGENCY ORDER NO. 4-FH-M-SP-06-08

EFFECTIVE DATE: 12:00 NOON Thursday, July 17, 2008

EXPLANATION: That portion of Akutan District west of the longitude of Billings Head at 165° 28.67 W. long., Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area and that portion of Kalekta Bay south of a line running from Erskine Point at 53° 58.92’ N. lat., 166° 16.5’ W. long. to Cape Kalekta at 54° N. lat., 166° 22’ W. long. will remain open to commercial herring fishing with purse seine and gillnet gear for 72 hours from 12:00 NOON July 17 until 12:00 NOON July 20.

-continued-

EMERGENCY ORDER NO. 4-FH-M-SP-07-08

EFFECTIVE DATE: 12:00 NOON Sunday, July 20, 2008

EXPLANATION: That portion of Akutan District west of the longitude of Billings Head at 165° 28.67 W. long., Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area and that portion of Kalekta Bay south of a line running from Erskine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. will remain open to commercial herring fishing with purse seine and gillnet gear for an additional 72 hours from 12:00 NOON July 20 until 12:00 NOON July 23.

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

EFFECTIVE DATE: 12:00 NOON Wednesday, July 23, 2008

EXPLANATION: That portion of the Akutan District west of the longitude of Billings Head at 165° 28.67 W. long., Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area, and that portion of Kalekta Bay south of a line running from Erskine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. will remain open to commercial herring fishing with purse seine and gillnet gear for an additional 48 hours from 12:00 NOON July 23 until 12:00 noon July 25.

EMERGENCY ORDER NO. 4-FH-M-SP-09-08

EFFECTIVE DATE: 12:00 NOON Friday, July 25, 2008

EXPLANATION: That portion of Akutan District west of the longitude of Billings Head at 165° 28.67 W. long., Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area, and that portion of Kalekta Bay south of a line running from Erskine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. will remain open to commercial herring fishing with purse seine and gillnet gear for an additional 48 hours from 12:00 NOON July 25 until 12:00 NOON July 27.

EMERGENCY ORDER NO. 4-FH-M-SP-10-08

EFFECTIVE DATE: 12:00 NOON Sunday, July 27, 2008

EXPLANATION: That portion of Akutan District west of the longitude of Billings Head at 165° 28.67 W. long., Unalaska Bay Section of Alaska Peninsula-Aleutian Islands Herring Management Area, and that portion of Kalekta Bay south of a line running from Erskine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. will remain open to commercial herring fishing with purse seine and gillnet gear for an additional 24 hours from 12:00 NOON July 27 until 12:00 NOON July 28.

Appendix D2.–Emergency order summary, 2009.

EMERGENCY ORDER NO. 4-FH-M-SP-01-09

EFFECTIVE DATE: 12:00 noon Wednesday, June 24, 2009

EXPLANATION: Unalaska Bay Section will open to commercial herring fishing with gillnet gear for 72 hours from 12:00 noon June 24 until 12:00 noon June 27, 2009.

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

EFFECTIVE DATE: 12:00 noon Saturday, June 27, 2009

EXPLANATION: This emergency order extends the current commercial herring fishing period for gillnet gear in Unalaska Bay Section for an additional 72 hours from 12:00 noon June 27 until 12:00 noon June 30, 2009.

EMERGENCY ORDER NO. 4-FH-M-SP-03-09

EFFECTIVE DATE: 12:00 noon Tuesday, June 30, 2009

EXPLANATION: This emergency order extends the current commercial herring fishing period for gillnet gear in Unalaska Bay Section for an additional 6 days from 12:00 noon June 30 until 12:00 noon July 6, 2009.

EMERGENCY ORDER NO. 4-FH-M-SP-04-09

EFFECTIVE DATE: 12:00 noon Monday, July 6, 2009

EXPLANATION: This emergency order extends the current commercial herring fishing period for gillnet gear in Unalaska Bay Section for an additional 72 hours from 12:00 noon July 6 until 12:00 noon July 9, 2009.

EMERGENCY ORDER NO. 4-FH-M-SP-05-09

EFFECTIVE DATE: 12:00 noon Thursday, July 9, 2009

EXPLANATION: This emergency order extends the current commercial herring fishing period for gillnet gear in Unalaska Bay Section for an additional 72 hours from 12:00 noon July 9 until 12:00 noon July 12, 2009.

EMERGENCY ORDER NO. 4-FH-M-SP-06-09

EFFECTIVE DATE: 12:00 noon Sunday, July 12, 2009

EXPLANATION: This emergency order extends the current commercial herring fishing period for gillnet gear in Unalaska Bay Section for an additional 72 hours from 12:00 noon July 12 until 12:00 noon July 15, 2009.

EMERGENCY ORDER NO. 4-FH-M-SP-07-09

EFFECTIVE DATE: 6:00 p.m. Wednesday, July 15, 2009

EXPLANATION: This emergency order establishes a commercial herring fishery for Akutan District west of the longitude of Billings Head at 165° 28.67' W. long., Unalaska Bay Section, and that portion of Kalekta Bay south of a line running from Erksine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. for 48 hours from 6:00 p.m. July 15 until 6:00 p.m. July 17, 2009 for purse seine, gillnet, and pound gear.

-continued-

EMERGENCY ORDER NO. 4-FH-M-SP-08-09

EFFECTIVE DATE: 6:00 p.m. Friday, July 17, 2009

EXPLANATION: This emergency order extends the current commercial herring fishery in Akutan District west of the longitude of Billings Head at 165° 28.67' W. long., Unalaska Bay Section, and that portion of Kalekta Bay south of a line running from Erksine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. for 48 hours from 6:00 p.m. July 17 until 6:00 p.m. July 19, 2009 for purse seine, gillnet, and pound gear.

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

EFFECTIVE DATE: 6:00 p.m. Sunday, July 19, 2009

EXPLANATION: This emergency order extends the current commercial herring fishery in Akutan District west of the longitude of Billings Head at 165° 28.67' W. long., Unalaska Bay Section, and that portion of Kalekta Bay south of a line running from Erksine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. for 24 hours from 6:00 p.m. July 19 until 6:00 p.m. July 20, 2009 for purse seine, gillnet, and pound gear.

EMERGENCY ORDER NO. 4-FH-M-SP-10-09

EFFECTIVE DATE: 12:00 noon Thursday, July 23, 2009

EXPLANATION: This emergency order establishes a commercial herring fishery in Akutan District west of the longitude of Billings Head at 165° 28.67' W. long., Unalaska Bay Section, and that portion of Kalekta Bay south of a line running from Erksine Point at 53° 58.92' N. lat., 166° 16.5' W. long. to Cape Kalekta at 54° N. lat., 166° 22' W. long. for 48 hours from 6:00 p.m. July 19 until 6:00 p.m. July 20, 2009 for gillnet.