Fishery Management Report No. 15-11

Alaska Peninsula–Aleutian Islands Herring Sac Roe and Food and Bait Fisheries Annual Management Report, 2013

by

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March 2015

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

Symbols and Abbreviations

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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)

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. 15-11

ALASKA PENINSULA–ALEUTIAN ISLANDS HERRING SAC ROE AND FOOD AND BAIT FISHERIES ANNUAL MANAGEMENT REPORT, 2013

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ABSTRACT

This report presents information concerning commercial Pacific herring *Clupea pallasii* sac roe and food and bait fisheries that occurred in the Alaska Peninsula–Aleutian Islands Management Area (Area M) in 2013. Area M is split into three subareas: North Alaska Peninsula, South Alaska Peninsula, and Aleutian Islands.

In 2013, a commercial herring sac roe fishery occurred in the North Alaska Peninsula. The total herring biomass estimated from aerial surveys on the North Peninsula was 2,500 tons. The North Peninsula herring sac roe fishery was open from May 24 to May 25 with a total of 230 tons of herring harvested. There was no commercial herring sac roe fishery in the South Alaska Peninsula or Aleutian Islands due to lack of industry interest. There were no aerial surveys conducted on the South Peninsula or in the Aleutian Islands Management Area in 2013.

In 2013, commercial herring food and bait fishery harvests occurred in the Aleutian Islands during seine gear fishing periods. The Aleutian Islands "Dutch Harbor" herring food and bait allocation was set at 2,262 tons, of which 1,845 tons were allocated to the seine fleet and 317 tons to the gillnet fleet. Due to an overharvest penalty based on the 2012 commercial herring season, the seine fleet allocation was reduced by 180 tons, resulting in an allowable allocation of 1,765 tons for the 2013 season. A total of 1,764 tons of herring were harvested in the seine fishery, but there was no participation by the gillnet fleet during the 2013 season.

Key words: Area M, Alaska Peninsula, Aleutian Islands, Clupea pallasii, 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 pallasii* sac roe and food and bait fisheries that occurred in the Alaska Peninsula–Aleutian Islands Management Area (Area M) during the 2013 season. This report is intended as a reference document and provides a description of harvest strategies and a summary of 2013 fishery management activities, as well as age, weight, and length (AWL) data collected from commercial harvests. For information and historical perspective concerning Area M commercial herring fisheries, please refer to *Alaska Peninsula-Aleutian Islands Herring Sac Roe and Food and Bait Fisheries Annual Management Report, 2010* (Bernard 2011). Harvest information was taken from the Alaska Department of Fish and Game (ADF&G) fish ticket database in December 2014. Data provided in this report supersedes any data previously published by ADF&G.

Area M herring fisheries are divided into three subareas: North Alaska Peninsula, South Alaska Peninsula, and Aleutian Islands (Figures 1–8). The North Alaska Peninsula area consists of Bering Sea waters extending west from Cape Menshikof to Cape Sarichef, encompassing the 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 the King Cove, Pavlof, and Sand Point districts (Figures 4 and 5). Finally, the Aleutian Islands area consists of 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 the Unimak, Akutan, Unalaska, Umnak, and Adak districts (Figure 1, 6, and 7; 5 AAC 27.605 and 27.600).

NORTH ALASKA PENINSULA SAC ROE FISHERY

HISTORICAL PERSPECTIVE

Herring biomass surveys have been conducted by ADF&G in the 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 the Port Heiden District (Figures 1–4 and Figure 8;

Table 1; 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 suitable aircraft.

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, ADF&G delayed the opening of the fishery in the 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 had opened to herring fishing prior to May 30, due to sufficient herring biomass (Tables 1 and 2). There was not a herring fishery in the North Peninsula area from 1999 through 2004 due to either low biomass estimates or the lack of industry interest in purchasing herring. In 2005, ADF&G 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 the Amak, Port Moller, and Port Heiden districts (Figures 2–4; 5 AAC 27.610). The guideline harvest level (GHL) for the Port Moller District is determined inseason 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 threshold of 1,000 tons is required prior to ADF&G opening the commercial fishery in the Port Moller District. Once ADF&G assures that a biomass threshold of 1,000 tons has been observed, ADF&G then 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 2,000 and 2,999 tons, allowable exploitation increases from 10 percent to 15 percent. ADF&G 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)).

2013 SEASON SUMMARY

In 2013, a commercial herring sac roe fishery occurred in the North Alaska Peninsula. A total biomass estimate of 2,500 tons of herring was observed during aerial surveys on the North Alaska Peninsula (Table 1). A commercial herring sac roe fishery occurred from May 23 through May 24 in the Port Moller District. During that period, 4 permit holders harvested 230 tons of herring (Tables 2 and 3). The entire North Alaska Peninsula harvest of herring occurred in the Herendeen Bay and Port Moller Bay sections and was below the 10-year average for the North Alaska Peninsula (Table 3).

ALEUTIAN ISLANDS "DUTCH HARBOR" HERRING FOOD AND BAIT FISHERIES

HISTORICAL PERSPECTIVE

The first documented herring fisheries in the eastern Aleutian Islands occurred from 1929 through 1938 and again in 1945 (Table 4). Another herring fishery did not occur again until 1981. Since 1981, the eastern Aleutian Islands herring fishery has occurred annually and is known as the "*Dutch Harbor Food and Bait Herring Fishery*." During the 1981 and 1982 seasons, there were no harvest restrictions (Schwarz 1988). From 1983 through 1985, the Alaska Board of Fisheries (BOF) implemented a harvest ceiling of 3,527 tons. In 1986, ADF&G was directed by BOF to reduce the harvest ceiling to 2,453 tons over concern for depressed western Alaska herring stocks. In 1988, BOF implemented the *Bering Sea Herring Fishery Management Plan* (5 AAC 27.060(c) and (d)), which established criteria for calculating the Dutch Harbor food and bait herring allocation. The plan directs ADF&G to manage the fishery so that the overall exploitation of a herring stock should not exceed 20% of the spawning biomass. The dominant 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 and spawn-on-kelp fisheries, and the Dutch Harbor food and bait fishery, was established to prevent harvest from exceeding 20% of observed spawning biomass (Appendix A1). 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, BOF 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 (Rowell et al. 1991). In 1998, BOF 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 was allowed to open as early as noon on June 24.

In 2004, BOF established a herring seine and pound fishery in the Alaska Peninsula-Aleutian Islands Management Area with an allocation of 100 tons (5 AAC 27.655(c)). In a 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 were placed into the pounds.

During the 2010 BOF meeting, BOF amended 5 AAC 27.655 (b), so that if the gillnet fishery has not harvested its allocation by July 25, the remaining allocation may be taken by either gear group. Additionally, if the seine group exceeds its allocation before July 25, then that amount shall be deducted from any remaining gillnet quota for that year after July 25. However, if the seine group exceeds the total allocation after July 25, then the seine group overage shall be deducted from the next year's seine allocation as stated in 5 AAC 27.655 (b).

HISTORICAL EFFORT

From 1929 through 1938 and in 1945, herring food and bait fisheries occurred in the vicinity of Unalaska Bay (Table 4; 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 through 1980, there was no commercial herring harvest.

When the fishery resumed in 1981, herring were harvested from Tigalda Island to Umnak Island (Figure 7). 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 through 2000, only purse seine gear was used to harvest herring in the Dutch Harbor food and bait fishery (Table 4). However, in 1987, 1989, and 1997, gillnet permit holders recorded landings. In 2001, BOF adopted a regulation that allocated 7% of the total Dutch Harbor GHL to the gillnet fleet. From 2001 through 2003, the number of gillnet fishermen increased from 6 to 13 vessels (Tables 5 and 6). In 2004, the gillnet harvest allocation was further increased to 14%. Since 2004, the 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)), inseason evaluation of the observed biomass, effort levels, and harvest.

In order for the Unimak, Akutan, Unalaska, or Umnak districts (Figures 4 and 6) to open to herring food and bait fishing, certain western Alaska herring stocks must surpass their respective BOF-mandated spawning biomass threshold (5 AAC 27.060 (c) and (h); Appendix A1). The biomass estimates are updated by ADF&G 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 until July 25. After July 25, if the gillnet fishery has not harvested its allocation, the remaining allocation may be taken by either group. Additionally, if the seine group exceeds its allocation before July 25, then that overage shall be deducted from any remaining gillnet quota for that year after July 25. However, if the seine group exceeds the total allocation after July 25, then the seine group overage shall be deducted from the next year's seine allocation as stated in 5 AAC 27.655 (b). 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. 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.

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

2013 SEASON SUMMARY

The Dutch Harbor food and bait fishery was allocated 2,262 tons of herring for the 2013 season (Table 6 and 7; Appendix A1). However, in 2012 the seine fleet exceeded the total 2012 Dutch Harbor food and bait fishery allocation, resulting in a 180-ton reduction to the 2013 seine fishery allocation. The final 2013 purse seine fishery allocation minus the overharvest penalty was 1,765 tons, and the 2013 gillnet fishery was allocated 317 tons of herring (Table 6). ADF&G did not conduct aerial surveys in 2013 to assess herring biomass in the Dutch Harbor area because of budget constraints and poor weather conditions.

Gillnet Fishery

In 2013, the Dutch Harbor food and bait herring commercial gillnet fishery occurred from July 15 through July 24, 2013 (Table 7; Appendix B1). There was no participation by the gillnet fleet in 2013 (Table 6).

Purse Seine Fishery

In 2013, Dutch Harbor food and bait seine fishery occurred from July 15 through July 21 within Unalaska and Akutan districts (Table 7; Appendix B1). Three vessels and three processors participated in this fishery. Over the course of the seine fishery, 12 deliveries were made for a total harvest of 1,764 tons of herring. Exvessel prices ranged from $300 to $550 per ton, which has stayed consistent with the exvessel price range over the past ten years. Total exvessel value of the 2013 purse seine fishery was an estimated $750,000 (Table 4).

2013 Catch Sampling

A total of 285 herring were sampled from the Dutch Harbor food and bait purse seine fishery (Table 8). The most abundant age classes were ages 8 (25.3%) and 7 (17.5%), followed by ages 9 and 10 which represented 15.8% and 11.6%, respectively (Tables 8 and 9; Figure 9). Average herring length in the sample was 304.9 mm, and average weight was 485.6 g (Table 8). The sex composition of the sample was 48% male and 52% female. The most abundant age class in the Dutch Harbor commercial herring food and bait fishery over the past 10 years has been age 8 (20.4%; Table 9; Figure 10).

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TABLES AND FIGURES

Table 1.–Herring biomass estimates in tons for the North Alaska Peninsula, by area, 1984–2013.

	Port Moller District				Port Heiden District		Aerial Survey Date	
Date	Herendeen Bay	Port Moller Bay	Additional Biomass Harvested	Bear River to Strogonof Point	Port Heiden Bay Section	Total Biomass Estimate	First	Last
1984 [a]	2,000	1,500–1,900	0	0	0	3,500–3,900	May 9	Jul 31
1985	260	1,305	0	5,240	0	6,805	May 1	Jun 13
1986	1	28	0	0	0	29	May 16	Jun 7
1987	0	5,125	0	0	0	5,125	May 6	Jun 3
1988	1,737	442	0	8	0	2,187	May 17	Jun 15
1989	1,163	1,471	0	0	0	2,634	May 19	Jun 16
1990	155	387	0	0	0	542	May 21	Jun 14
1991	2,278 (250) [b]	4,651	0	1,471	0	8,400	May 17	Jun 26
1992	755	8,269	0	5,798	10,021	24,843	May 19	Jun 18
1993	775	2,878	0	33	0	3,686	May 4	Jun 9
1994	381	274	74	0	0	729	May 22	May 28
1995	60	477	200	0	0	737	May 13	Jun 2
1996	390 (390) [b]	986 (755) [b]	0	309	65	1,750	May 9	Jun 18
1997	160	45	0	0	0	205	May 22	Jun 12
1998	930	135	0	360 (200) [b]	0	1,425	May 11	Jun 3
1999	10	220	0	0	0	230	May 16	Jun 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	1,000	May 17	May 29
2004	0	0	0	0	0	0	Jun 2	Jun 10
2005	1,500 [c]	3,300	351	50	0	5,201	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

-continued-

Table 1.–Page 2 of 2.

	Port Moller District				Port Heiden District			
	Herendeen	Port Moller	Additional Biomass	Bear River to	Port Heiden	Total Biomass	Aerial Survey Date	
Date	Bay	Bay	Harvested	Strogonof Point	Bay Section	Estimate	First	Last
2009	1,692	36,610	0	365	0	38,667	May 16	Jun 2
2010	720	1,725	0	30,000	0	32,445	May 21	May 22
2011	70	662	0	4,110	0	4,842	May 18	May 19
2012	3,930	990	0	0	0	4,920	May 21	May 29
2013	0	0	0	2,500	0	2,500	May 15	Jun 5
2003–2012 Average	1,318	4,703	35	3,561	0	9,617		

[a] Surveys were conducted 1976–1983; however, biomass estimates were not calculated.

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

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

Table 2.–North Alaska Peninsula commercial sac roe herring harvest by time period and area, 1983–2013.

Year	Harvest (Tons)	Harvest Time Period
1983	627	May 9–May 29
1984	431	May 24–June 8
1985	710	May 24–June 4
1986	894	May 18–May 30
1987	514	May 9–June 5
1988	294	May 17–June 15
1989	729	May 28–June 23
1990	273	June 4–June 19
1991	1,313	May 17–July 4
1992	3,969	May 23–June 17
1993	536	May 8–June 9
1994	90	May 21–June 7
1995	337	May 29–June 20
1996	[b]	June 12–June 18
1997 [a]		
1998	[b]	May 21–June 3
1999 [a]		
2000 [a]		
2001 [a]		
2002 [a]		
2003 [a]		
2004 [a]		
2005	351	May 11–May 12
2006 [a]		
2007 [a]		
2008 [a]		
2009	3,027	May 27–June 2
2010	[b]	May 24–May 26
2011 [a]		
2012	[b]	May 27–May 29
2013	230	May 23–May 24
2003–2012 Average	366	

[a] No fishery.

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

Table 3.–North Alaska Peninsula commercial herring sac roe harvest by section, 1983–2013.

	Port Moller District					
Year	Deer Island Mud Bay Section	Herendeen Bay Section	Port Moller Bay Section	Bear River Bering Sea Coast	Port Heiden District	Total
1982[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[a]						
1997 [c]						
1998[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
2010[a]						
2011[c]						
2012[a]						
2013		142	88			
2003–2012 Average	7	3	282	73	0	366

[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 4.–Aleutian Islands Area (Dutch Harbor) commercial herring food and bait seine fishery historical summary, 1929–2013.

Year	Harvest in Tons	No. Vessels Making Landings	Number Landings	Tons Per Vessel	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]								
1945	75	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1946–1980[b]								
1981[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

-continued-

Table 4.–Page 2 of 2.

Year	Harvest in Tons	No. Vessels Making Landings	Number Landings	Tons Per Vessel	Tons Per Landing	Price Per Ton	Exvessel Value (Thousands)	Exvessel Value Per Vessel (Thousands)
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[d]	1,038	3	16	346	65	$100–500	$309	$103
2005[d]	1,159	3	7	386	166	$100–500	$370	$123
2006[d]	952	2	18	476	53	$100–500	$384	$192
2007[d]	1,248	2	12	624	104	$100–500	$437	$219
2008[d]	1,536	2	14	768	110	$300–490	$592	$296
2009[d]	1,310	2	12	655	109	$300–500	$519	$260
2010[d]	1,941	2	18	971	108	$100–500	$724	$362
2011[d]	1,795	2	15	898	120	$500	$898	$449
2012[d]	1,807	2	16	904	113	$100–500	$542	$271
2013	1,764	3	12	588	147	$300–550	$750	$250
1929–1938 Average	1,474	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2008–2012 Average	1,678	2	15	839	112	500	655	328
2003–2012 Average	1,417	3	14	626	103	500	512	233

[a] Information not available.

[b] No fishery.

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

[d] Several permit holders formed a cooperative and used one vessel.

Table 5.–Aleutian Islands Area (Dutch Harbor) commercial herring food and bait gillnet fishery historical summary, 2001–2013.

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)
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]	$11
2004	216	7	37	31	6	$300	$65	$9
2005[b]	0	0	0	0	0	$300	$0	$0
2006[c]								
2007[c]								
2008[c]								
2009[c]								
2010[d]								
2011[d]								
2012[d]								
2013[d]								
2008–2012 Average	[c]	[c]	[c]	[c]	[c]	$400	$11,850	[c]

[a] 20 of the 108 tons were not purchased due to spoilage.

[b] No participation by gillnet fleet.

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

[d] No participation by gillnet fleet.

Table 6.–Aleutian Islands Area (Dutch Harbor) herring food and bait fisheries allocations (tons), commercial harvest (tons), and effort by gear type, 1991–2013.

	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	1.0
1992	1,940	1,982	[a]	0	0	0	0	1,940	1,982	12	26	5.0
1993	2,193	2,824	[a]	0	0	0	0	2,193	2,824	14	33	2.0
1994	2,215	3,349	[a]	[b]	[b]	[b]	1	2,215	3,349	14	65	4.0
1995	1,982	1,705	[a]	[b]	[b]	[b]	1	1,982	1,705	15	23	1.0
1996	1,793	2,279	[a]	0	0	0	0	1,793	2,279	27	30	1.0
1997	1,645	1,950	[a]	[b]	[b]	[b]	1	1,645	1,950	26	63	5.0
1998	1,590	1,994	[a]	[b]	[b]	[b]	1	1,590	1,994	22	22	1.0
1999	2,082	2,437	[a]	0	0	0	0	2,082	2,437	22	72	4.0
2000	1,728	2,014	[a]	0	0	0	0	1,728	2,014	20	22	1.0
2001	1,572	1,437	110	105	8	25	9	1,462	1,332	14	29	2.0
2002	1,578	2,799	110	134	15	37	16	1,468	2,664	13	15	1.0
2003	1,662	1,487	116	88	18	23	5	1,546	1,379	6[c]	16	4.0
2004	1,899	1,255	266	216	12	37	13	1,533	1,038	3[c]	16	13.0
2005	1,365	1,159	191	0	9	0	11	1,174	1,154	3[c]	7	9.0
2006	1,715	954	240	[b]	[b]	[b]	2	1,375	952	2[c]	18	15.0
2007	1,779	1,254	249	[b]	[b]	[b]	2	1,530	1,248	2[c]	12	12.0
2008	1,722	1,575	241	[b]	[b]	[b]	7	1,481	1,536	2[c]	14	10.0
2009	1,600	1,334	224	[b]	[b]	[b]	28	1,321	1,310	2[c]	12	5.0
2010[d]	1,950	1,941	273	0	0	0	0	1,677	1,941	2[c]	18	14.5
2011	1,867	1,795	261	0	0	0	0	1,606	1,795	2[c]	15	6.5
2012	1,627	1,807	227	0	0	0	0	1,400	1,807	2[c]	16	5.5
2013	2,262[e]	1,764	317	0	0	0	0	1,765	1,764	3	12	5.0
Average												
2008–2012	1,753	1,690	245	[b]	[b]	[b]	7	1,497	1,678	2	15	8.0
2003–2012	1,719	1,456	229	51	7	10	7	1,464	1,416	3	14	9.0

[a] No allocation.

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

[c] Several permit holders formed a cooperative and used one vessel.

[d] Starting in 2010, any remaining gillnet allocation after July 25 may be harvested by either purse seine or gillnet gear (5 AAC 27.655 (b)).

[e] An overharvest penalty of 180 tons for the 2012 seine fishery was applied to the allocation in 2013, resulting in an overall allocation of 2,082 tons.

Table 7.–Aleutian Islands Area (Dutch Harbor) commercial herring food and bait fisheries (all gear combined) summary, 1981–2013.

Year	Landing Date First	Landing Date Last	Days Fished	Togiak Forecast Tons	Dutch Harbor Allocation Tons	Dutch Harbor 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[f]
2005	Jul 15	Aug 20	11	105,029	1,365	1,159[e]	4[f]
2006	Jul 16	Jul 27	12	129,976	1,715	954[e]	4[f]
2007	Jul 16	Jul 27	12	134,566	1,779	1,254[e]	4[f]
2008	Jul 12	Jul 27	10	130,516	1,722	1,575[e]	3[f]
2009	Jun 24	Jul 25	28	121,800	1,600	1,334[e]	4[f]
2010[g]	Jul 15	Jul 29	14.5	146,775	1,950	1,941	2[f]

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Table 7.–Page 2 of 2.

Year	Landing Date First	Landing Date Last	Days Fished	Togiak Forecast Tons	Dutch Harbor Allocation Tons	Dutch Harbor Harvest Tons	Number Vessels Fishing
2011	Jul 15	Jul 22	6.5	140,860	1,867	1,795	2[f]
2012	Jul 15	Jul 27	5.5	123,745	1,627	1,807	2[f]
2013	Jul 15	Jul 21	5.0	169,094	2,262[h]	1,764	3
2008–2012 Average			12	140,455	1,825	1,827	3
2003–2012 Average			13	134,549	1,761	1,827	3

[a] No allocation.

[b] This information cannot 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] Several permit holders formed a cooperative and used one vessel.

[g] Starting in 2010, any remaining gillnet allocation after July 25 may be harvested by either purse seine or gillnet gear (5 AAC 27.655 (b)).

[h] An overharvest penalty of 180 tons for the 2012 seine fishery was applied to the allocation in 2013, resulting in an overall allocation of 2,082 tons.

Table 8.–Age, sex, weight, and length of herring harvested in the Aleutian Islands Area (Dutch Harbor) commercial food and bait fisheries, 2013.

Age (Years)	Sex				Percent of Total	Standard Length			Weight		
	Male	Female	Unknown	Total		Mean (mm)	Standard Dev.	Number Measured	Mean (g)	Standard Dev.	Number Weighed
3	0	0	0	0	0.0			0			0
4	1	0	0	1	0.4	311.0		1	472.0		1
5	3	2	0	5	1.8	288.4	11.5	5	391.8	58.6	5
6	6	19	0	25	8.8	284.8	14.9	25	392.6	67.9	25
7	28	22	0	50	17.5	289.0	19.0	50	394.7	55.4	50
8	35	37	0	72	25.3	290.4	12.5	72	411.3	55.1	72
9	21	24	0	45	15.8	299.1	13.7	45	440.5	80.8	45
10	18	15	0	33	11.6	304.7	13.3	33	473.8	67.3	33
11	16	15	0	31	10.9	310.2	10.2	31	505.4	48.3	31
12	6	8	0	14	4.9	315.9	11.2	14	534.1	63.0	14
13	3	3	0	6	2.1	315.2	14.7	6	533.0	43.6	6
14	0	1	0	1	0.4	327.0		1	684.0		1
15	0	1	0	1	0.4	324.0		1	640.0		1
Regen. [a]	0	1	0	1	0.4	304.0		1	439.0		1
Total	137	148	0	285	100.0	-	-	285	-	-	285
Average	-	-	-	-	-	304.9	13.5	-	485.6	60.0	-

[a] Age could not be determined due to regenerated scale.

Table 9.–Estimated age composition of Aleutian Islands Area (Dutch Harbor) commercial herring food and bait purse seine harvests, 1991–2013.

	Percent at Age (Years)														
Year	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
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
2010	2.2	11.1	25.9	27.8	16.2	8.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.7	10.5	28.7	34.3	18.2	2.8	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.4	2.4	16.3	28.6	22.2	16.7	7.1	2.4	2.0	2.0	0.0	0.0	0.0	0.0	0.0
2013	0.4	1.8	8.8	17.5	25.3	15.8	11.6	10.9	4.9	2.1	0.4	0.4	0.0	0.0	0.0
2003–2012 Average	1.2	6.0	13.5	19.3	20.4	14.8	9.6	5.5	2.9	2.5	1.0	0.9	0.5	0.3	0.0
2008–2012 Average	1.9	9.4	22.4	26.3	17.9	10.4	5.2	2.6	0.9	0.5	0.0	0.0	0.0	0.0	0.0

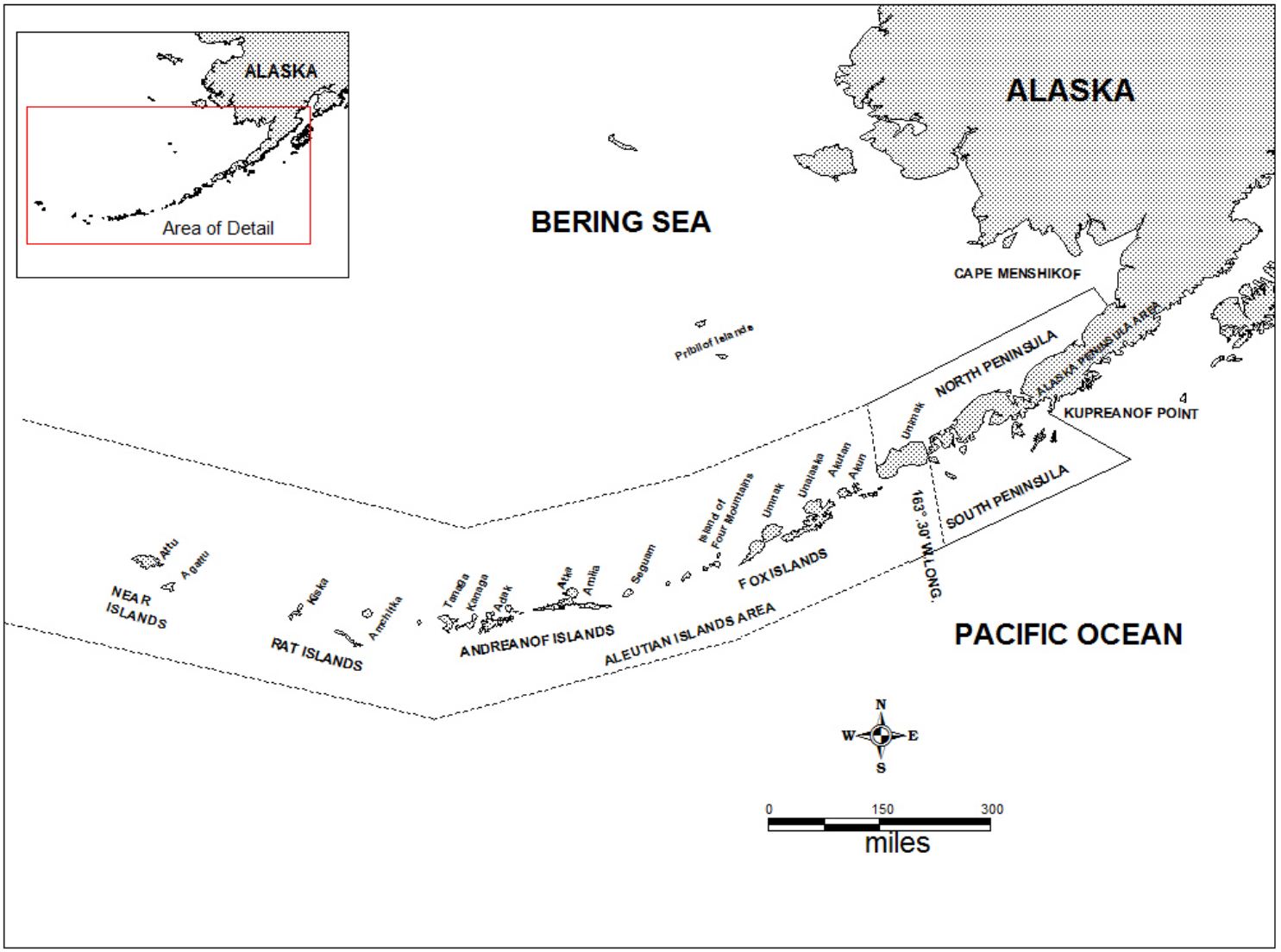

Figure 1.–Map of Bering Sea Management Plan (5 AAC 27.060) commercial herring districts.

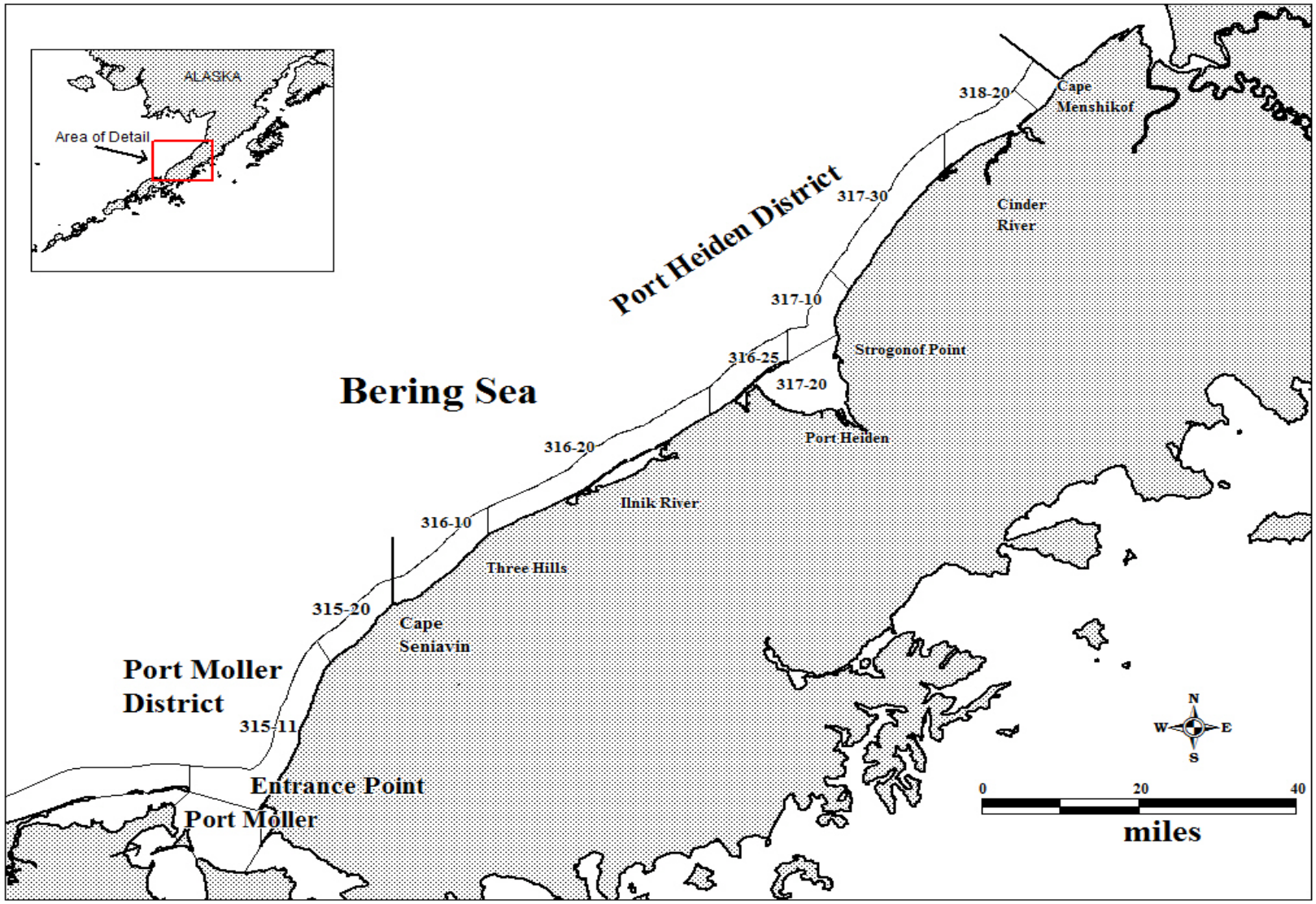

Figure 2.–Map of Port Heiden and Port Moller districts with commercial herring fishing statistical areas shown.

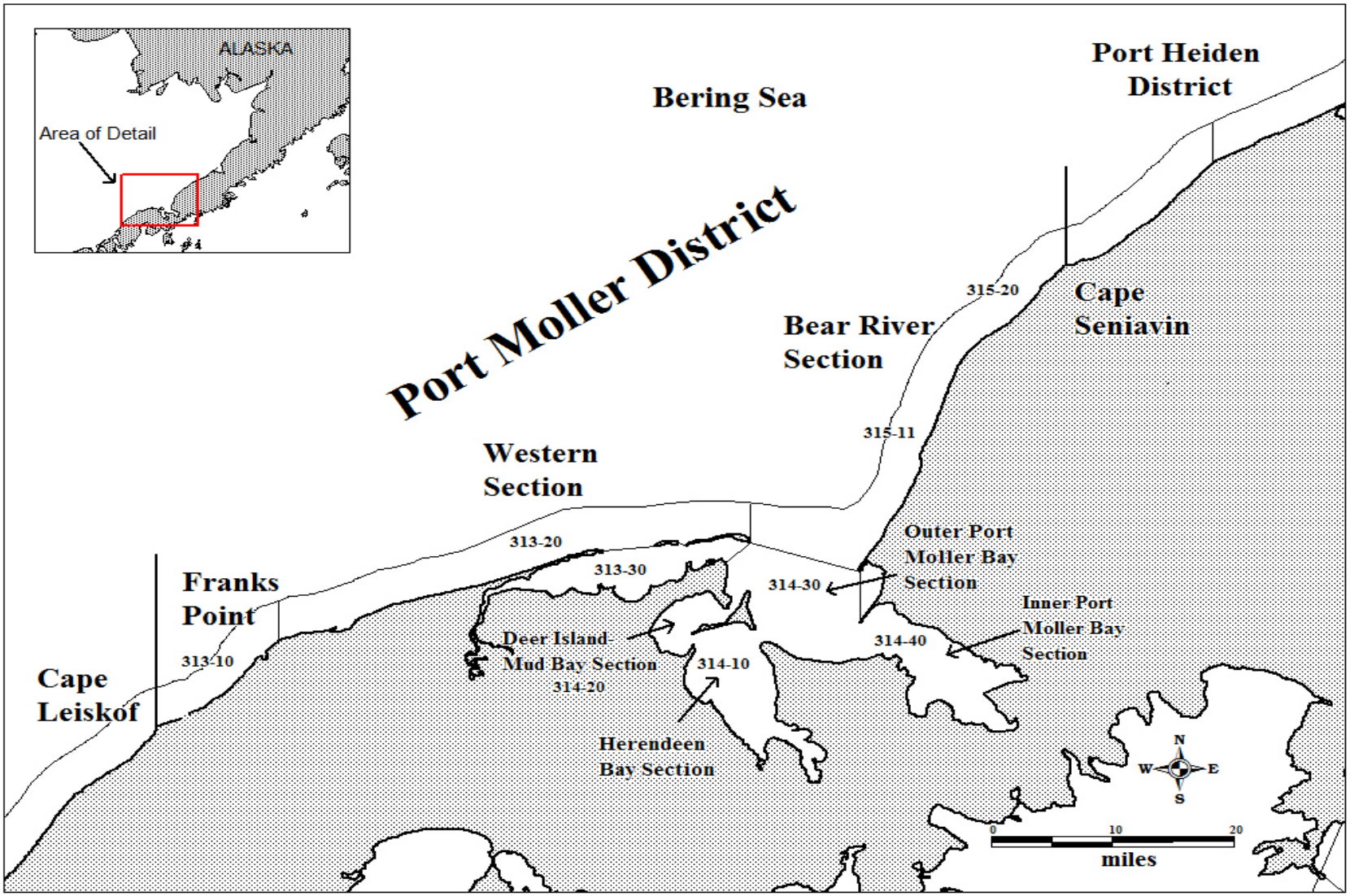

Figure 3.–Map of Port Moller District with commercial herring fishing statistical areas shown.

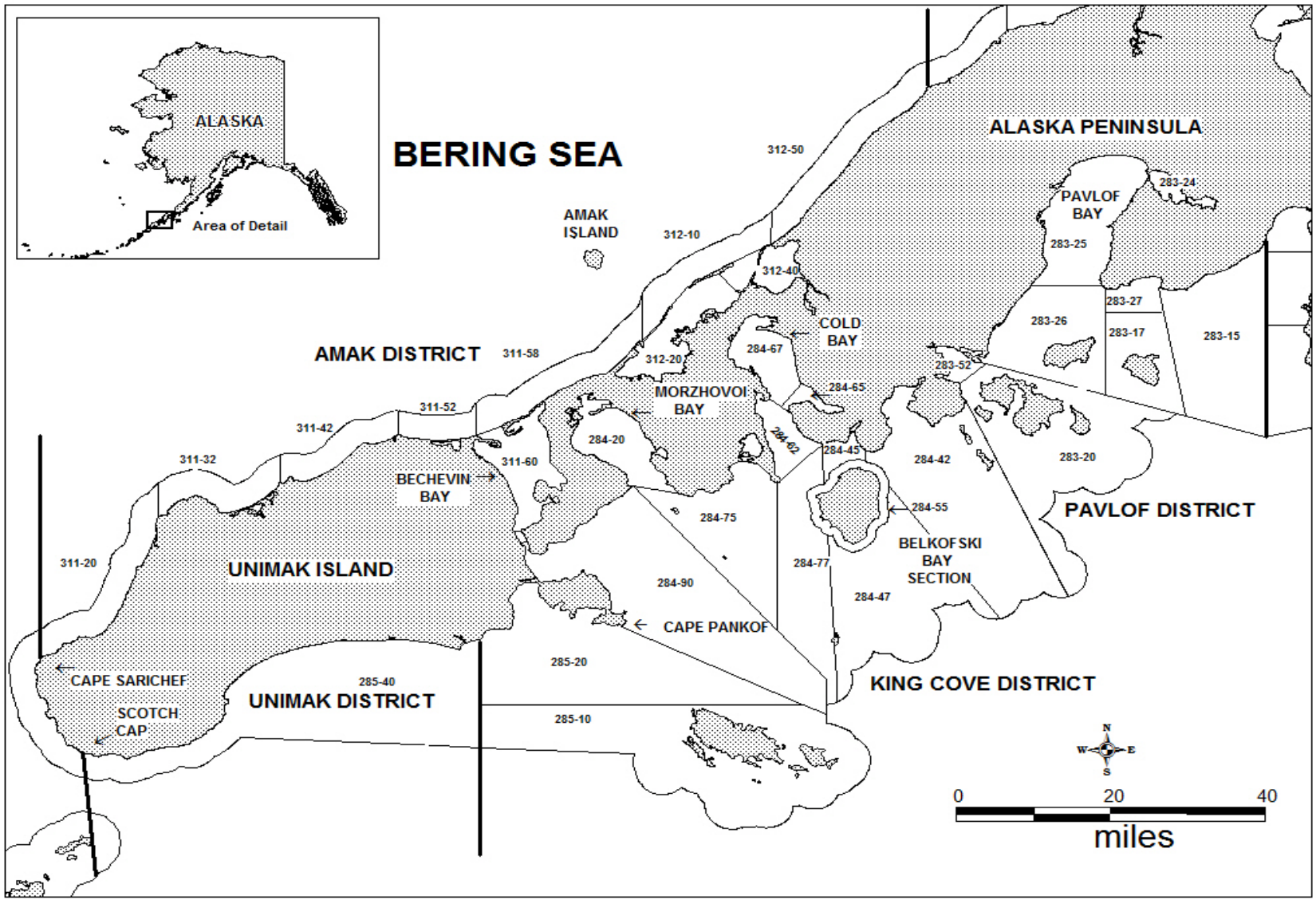

Figure 4.–Map of Amak, Unimak, King Cove, and Pavlof districts with commercial herring fishing statistical areas shown.

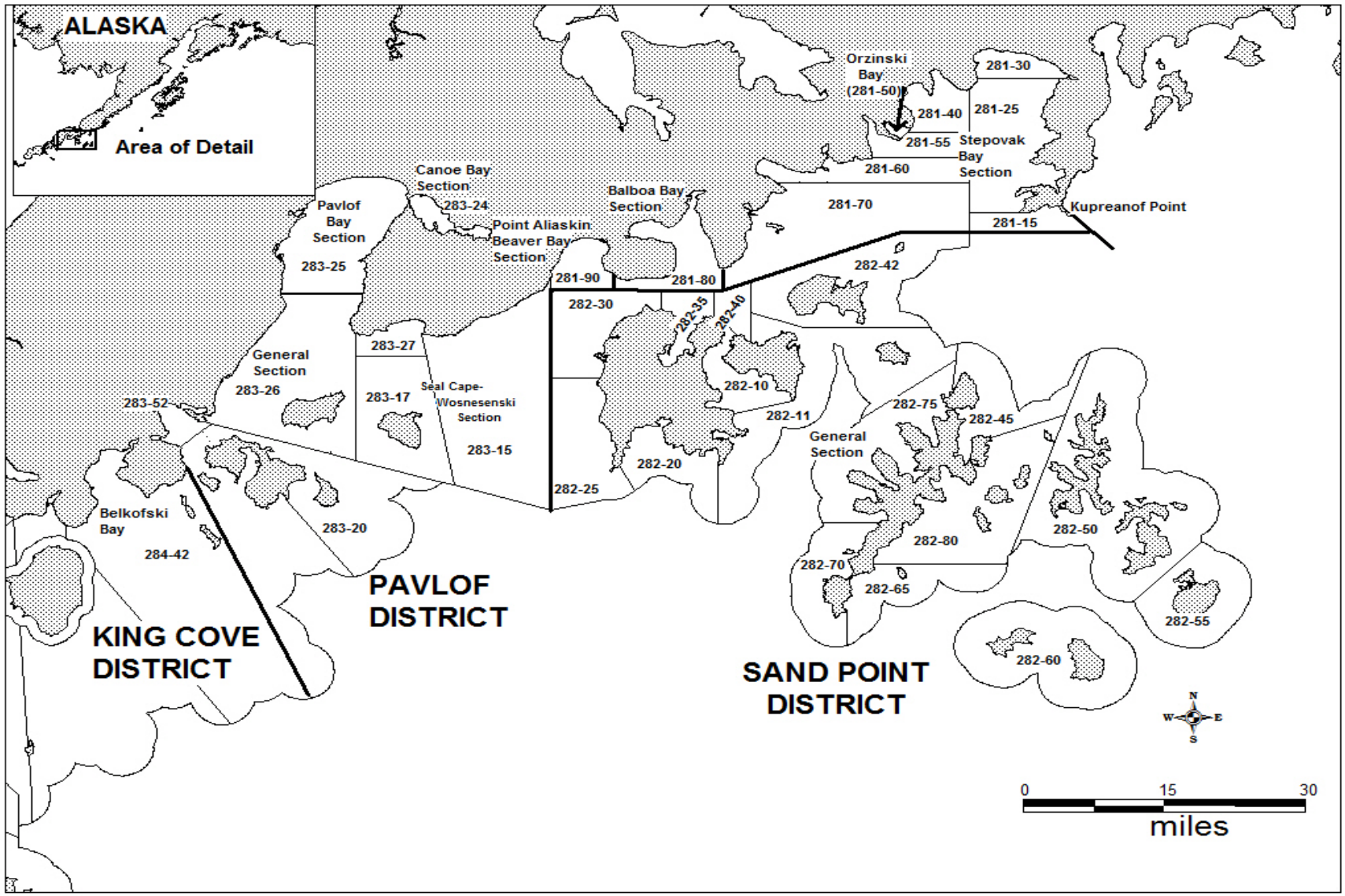

Figure 5.–Map of Pavlof and Sand Point districts with commercial herring fishing statistical areas shown.

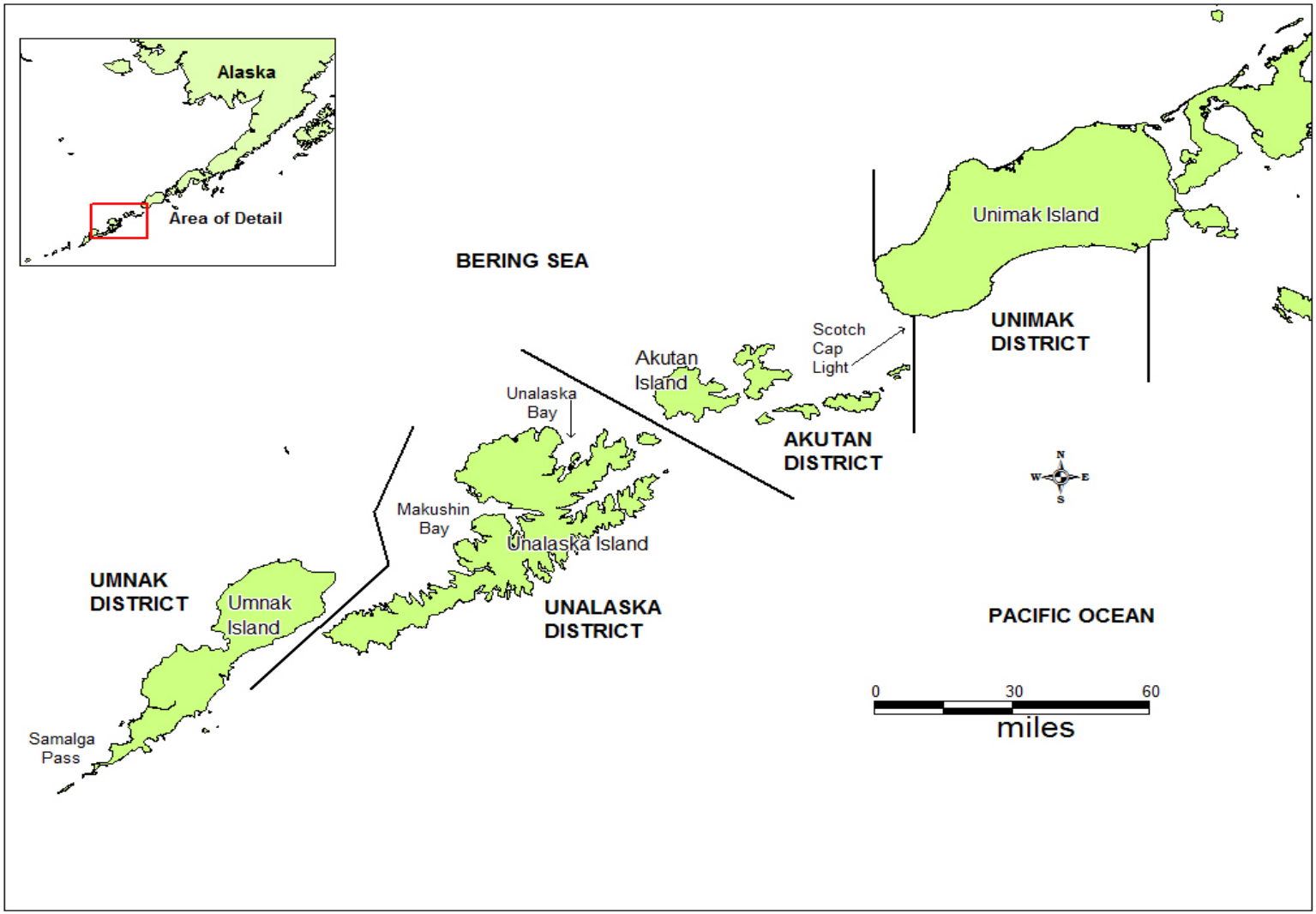

Figure 6.–Map of Aleutian Islands from Samalga Pass to Unimak Island with commercial herring fishing districts shown.

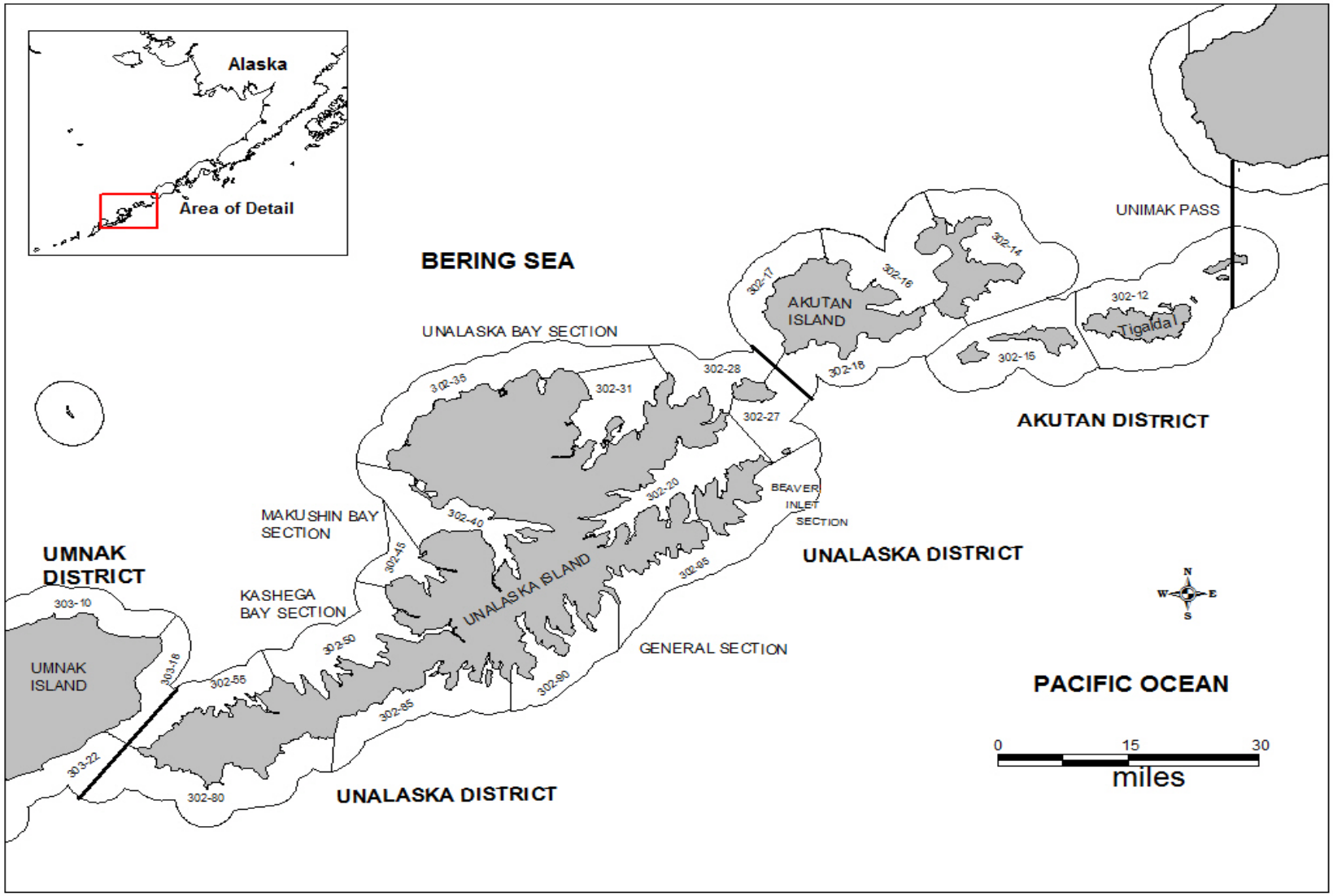

Figure 7.–Map of Aleutian Islands from Unimak Island to Umnak Island with commercial herring fishing statistical areas shown.

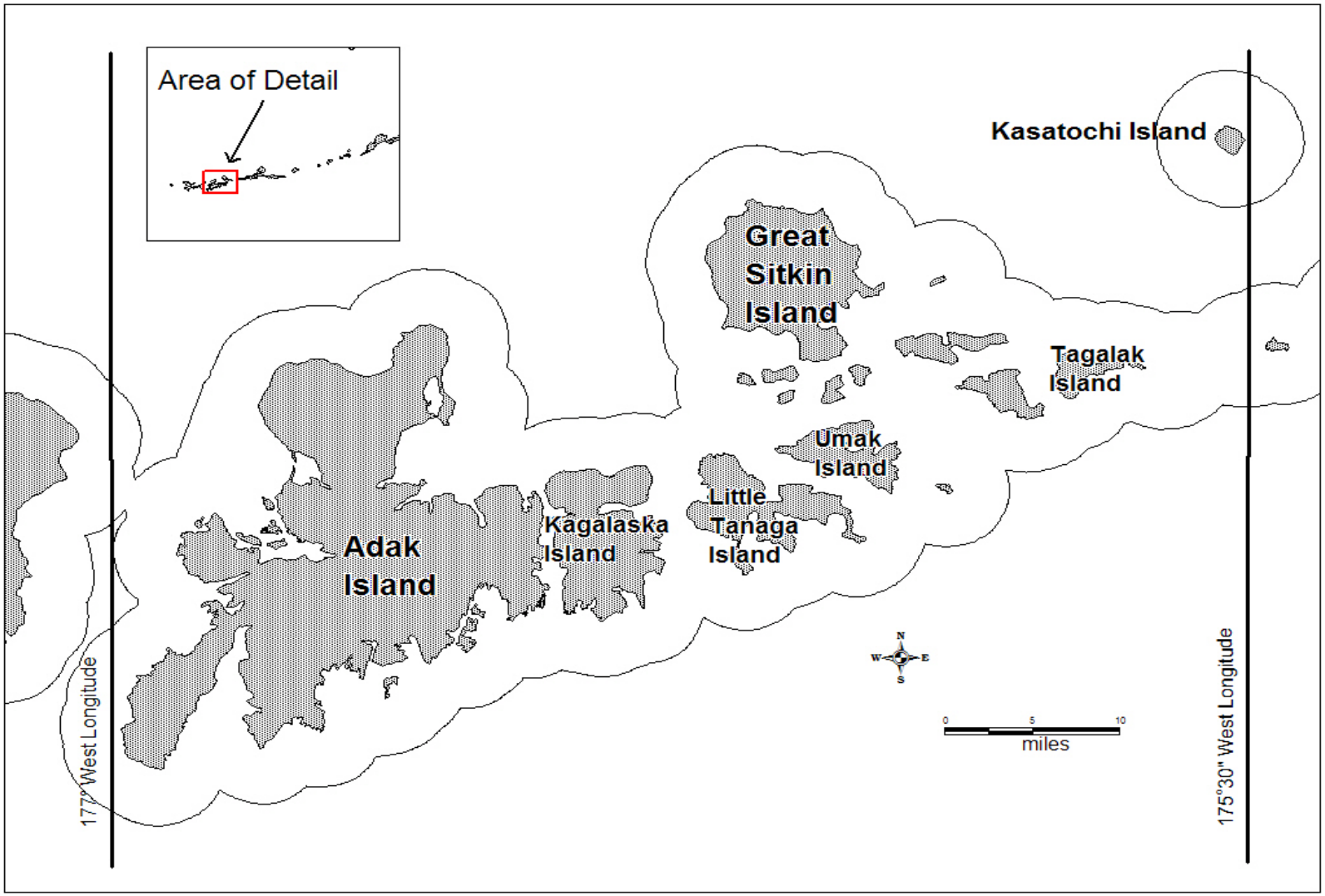

Figure 8.–Map of Adak Island area with boundaries of exploratory herring fishery defined.

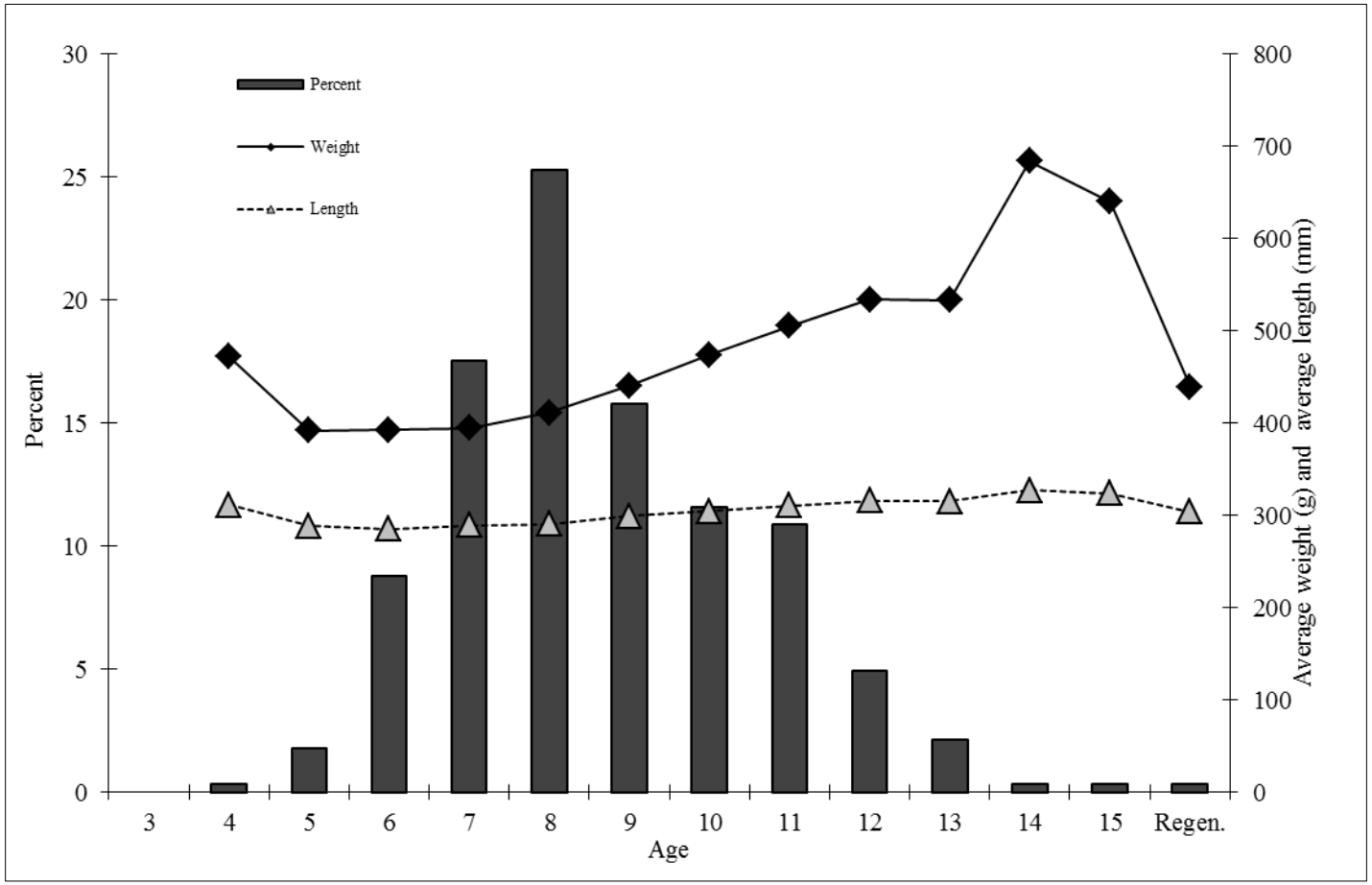

Figure 9.–Estimated average length-at-age (mm), average weight-at-age (g), and age composition of herring harvested in the Aleutian Islands Area (Dutch Harbor) commercial food and bait fisheries, 2013.

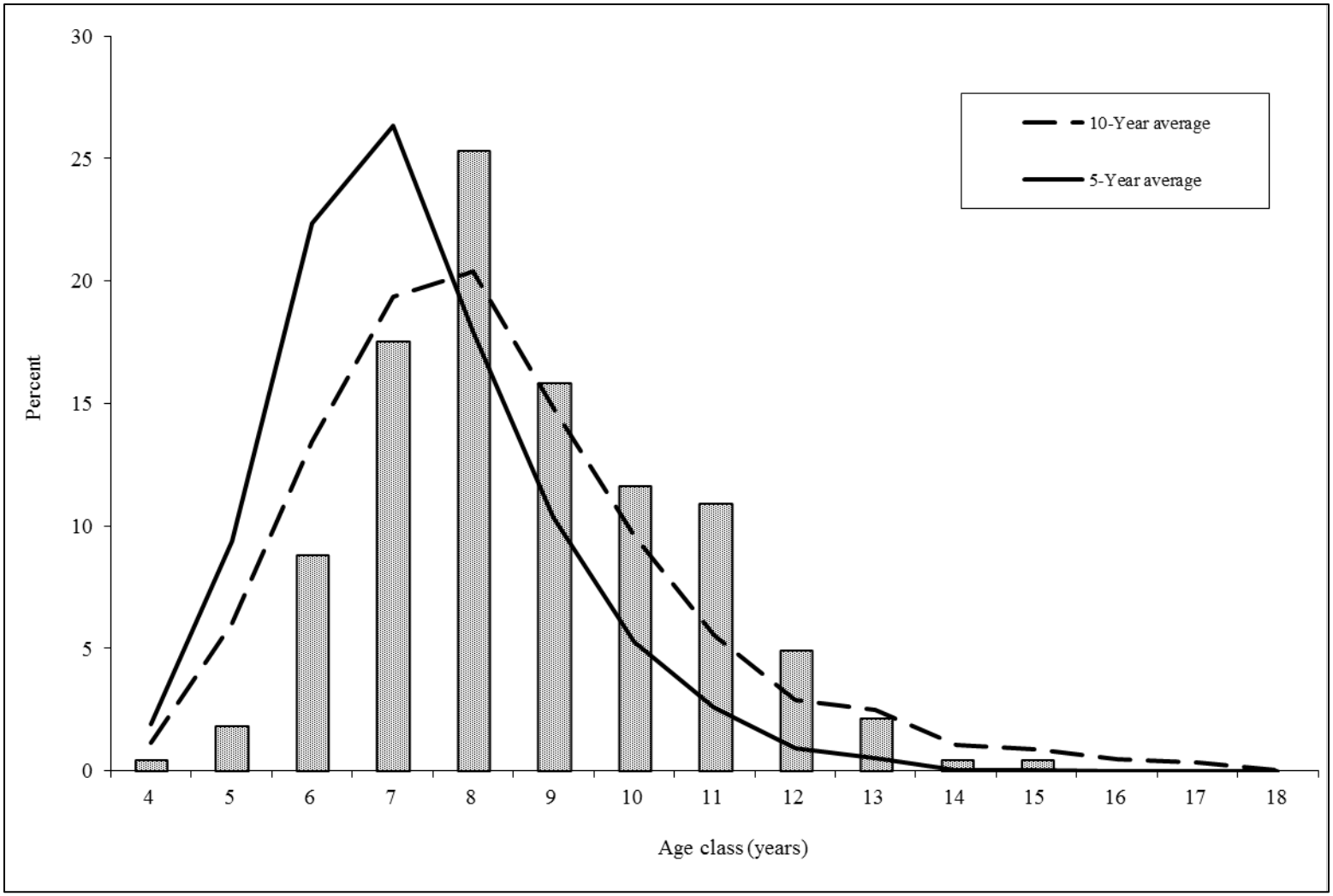

Figure 10.–Estimated 2013 age composition of the Aleutian Islands Area (Dutch Harbor) commercial herring food and bait fisheries, with five- and ten-year averages.

APPENDIX A. ALEUTIAN ISLANDS AREA DUTCH HARBOR HERRING FOOD AND BAIT FORECASTS

Appendix A1.–Forecasted harvest allocation for Togiak sac roe and Dutch Harbor herring food and bait fisheries, 2013.

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

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Date Issued: October 16, 2012
Time: 4:00 p.m.

2013 TOGIAK HERRING FORECAST

The 2013 Togiak herring forecast and harvest allocation are listed below for the Togiak District sac roe and spawn-on-kelp fishery, and the Dutch Harbor food and bait fishery, given a maximum 20% exploitation rate of the projected run biomass (Bristol Bay Herring Management Plan 5 AAC 27.865):

Harvest Allocation of the 2013 Forecasted Pacific Herring Run Biomass, Togiak District, Bristol Bay

	Biomass (Short Tons)	Harvest (Short Tons)
Forecasted Biomass	169,094	
Total Allowable Harvest (20% exploitation rate)		33,819
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		32,319
Dutch Harbor Food/Bait Allocation (7.0% of the remaining allocation)		2,262
Remaining Allowable Harvest for Togiak District Sac Roe Fishery:		30,056
Purse Seine Allocation 70.0%		21,040
Gill Net Allocation 30.0%		9,017

2013 TOGIAK HERRING FORECAST SUMMARY

The Pacific herring spawning biomass in the Togiak District was estimated at 167,738 tons in 2012 and is forecast to be 169,094 tons in 2013 (Figure 1). Age 7–8 herring returning from the 2006 and 2007 year classes are expected to comprise 46.9% of the biomass in 2013 (Figure 2). The remainder of the run is expected to be comprised of herring ages 4–6 (26.4%), ages 9–11 (22.6%) and ages 12+ (4.1%) by weight. The forecasted individual average weight of herring in the harvest biomass is 317 g.

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A run biomass of 169,094 tons would be ~113% of the recent 10-year average. A biomass of this size has the potential to produce an overall harvest of 33,819 tons in all fisheries and 30,056 tons in the Togiak sac roe fisheries (purse seine and gillnet). A harvest of this size in the Togiak sac roe fisheries would be ~146% of the recent 10-year average harvest.

An age-structured analysis (ASA) model is used to forecast the Togiak herring population. This model utilizes catch and age composition data as well as total run biomass estimates. Currently, the ASA model integrates data from purse seine fishery age compositions (1978–2012), total run age compositions (1978–1995, 1997, 1999, 2001, 2005–2010, and 2012), and aerial survey biomass estimates (1981, 1983, 1992–1994, 1997, 1999-2001, 2005–2010, and 2012). Samples from non-selective gear (commercial purse seine) are used to assess age composition of the total run biomass when a total run biomass is estimated. Commercial purse seine catch samples from 2012 ranged from age-3 to age-16. The average weight of age-4 herring for 2013 is estimated as the most recent four-year average while simple linear regression models of historical trends are used to forecast average weights of remaining age classes.

A temporal change in age composition from older to younger herring typically occurs during this fishery. However, the 2012 inshore spawning biomass age composition was fairly stable and consisted largely of age-7 herring. This age class accounted for 36% of the total commercial purse seine harvest and 32% of the total harvest by weight.

The biomass of the Togiak herring spawning population has been estimated with aerial surveys since the late 1970s, concurrent with development of the sac-roe fishery. Estimating the peak inshore biomass is a necessary precondition for estimating total run biomass. Surveys were flown between 27 April and 26 May 2012 with most of the biomass observed in the center of Togiak Bay with smaller concentrations to the east and smaller still to the west (Figure 3).

Herring become visible to our sampling effort when they recruit into the fishery; a process that we believe begins around age-4. Large recruitments in this population generally occur every eight to ten years. The last recruitment event experienced by Togiak herring was observed as relatively large numbers of age-4 herring in 2008 and 2009. It should be noted that measuring contributions of age classes less than three to the spawning biomass is difficult because these fish are not fully recruited (vulnerability to the gear) and they often arrive on the spawning grounds after older fish when sampling has ceased, unlike the post-fishery sampling that occurred in the 1980s.

There is always uncertainty in forecasting the Togiak District herring biomass. The forecasted mean percent error (MPE) has been relatively stable at ~20% for years with reliable total run biomass estimates (Figure 1). The historical forecast accuracy or mean absolute percent error (MAPE) using the ASA model is 19.6%. Using this historical forecast error, the forecast range for 2013 is between 135,994 tons and 202,194 tons. We consider this population to be healthy and sustainable.

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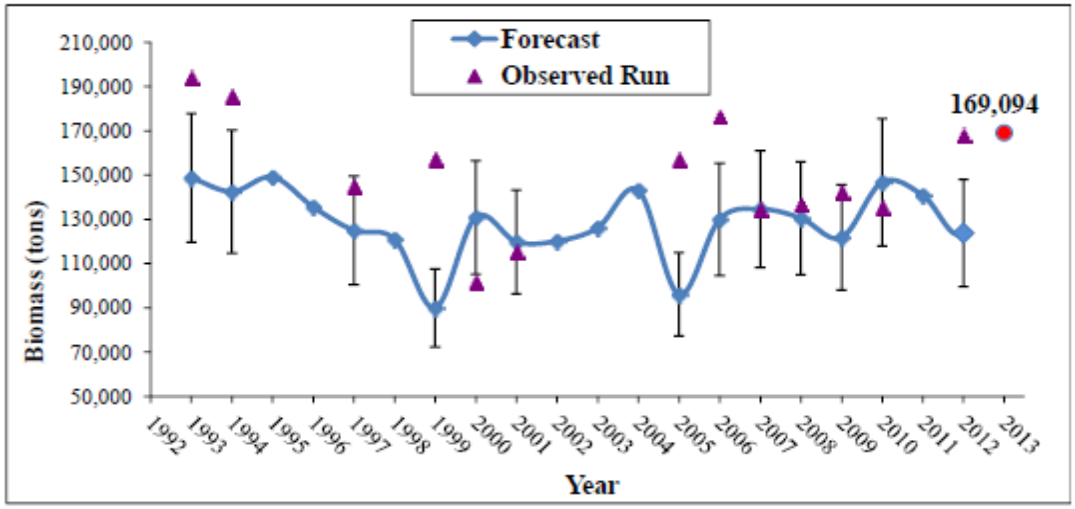

Figure 1.–Annual observed Togiak herring total run biomass estimates and preseason forecasts based on the ASA model. Mean absolute percent error (MAPE) of 20% around the forecast is also shown for years with a reliable total run biomass estimate.

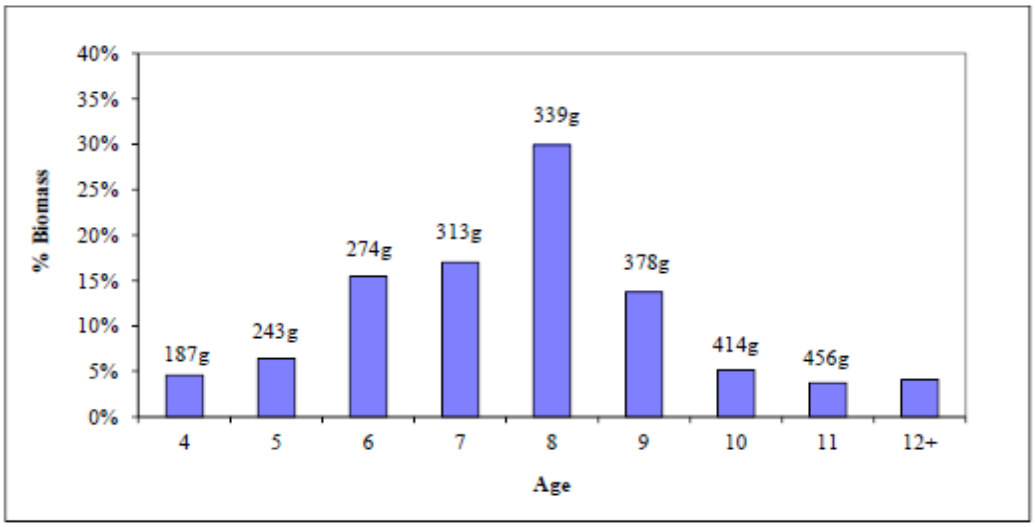

Figure 2.–Forecasted age composition by weight (grams) for the 2013 Togiak herring return. Forecast average weight shown for each age.

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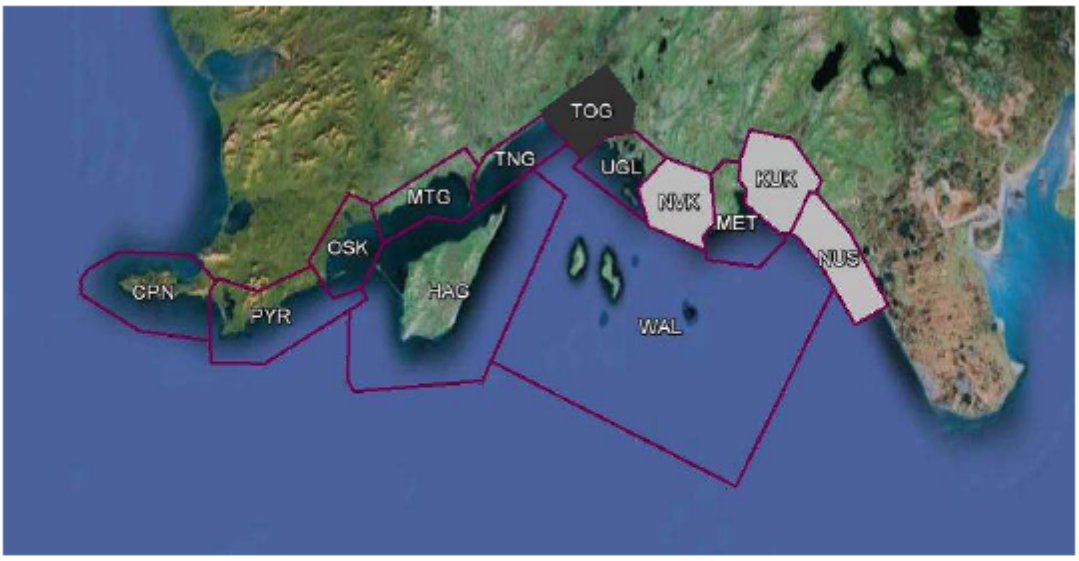

Note: NUS = Nushagak Peninsula; KUK = Kulukak; MET = Metervik; NUK = Nunavachak; UGL = Ungalikthluk/Togiak; TOG = Togiak; TNG = Tongue Pt.; MTG = Matogak; HAG = Hagemeister; OSK = Osviak; PYR = Pyrite Point; CPN = Cape Newenham; WAL = Walrus Islands.

Figure 3.–Herring distribution observed during aerial surveys conducted during 2012. Survey section shaded in black recorded roughly 50% of the cumulative biomass measured across all surveys while sections with 6+% of the cumulative recorded biomass are shaded grey. Herring were observed in all survey sections during 2012 except Cape Newenham.

APPENDIX B. ALASKA PENINSULA AND ALEUTIAN ISLANDS SAC ROE AND FOOD AND BAIT HERRING FISHERY EMERGENCY ORDER SUMMARY

Appendix B1.–Alaska Peninsula and Aleutian Islands sac roe and food and bait herring fishery emergency order summary, 2013.

EMERGENCY ORDER NO. 4-FH-M-PM-01-13

EFFECTIVE DATE: 2:30 PM Thursday, May 23, 2013

EXPLANATION: This emergency order establishes a commercial herring fishing period in the Port Moller District for 6 hours from 3:15 PM Thursday, May 23 until 9:15 PM Thursday, May 23, 2013.

EMERGENCY ORDER NO. 4-FH-M-PM-02-13

EFFECTIVE DATE: 8:00 PM Thursday, May 23, 2013

EXPLANATION: This emergency order extends the current commercial herring fishing period in the Port Moller District for 12 hours from 9:15 PM Thursday, May 23 until 9:15 AM Friday, May 24, 2013.

EMERGENCY ORDER NO. 4-FH-M-PM-03-13

EFFECTIVE DATE: 8:30 AM Friday, May 24, 2013

EXPLANATION: This emergency order extends the current commercial herring fishing period in the Port Moller District for 12 hours from 9:15 AM Friday, May 24 until 9:15 PM Friday, May 24, 2013.

EMERGENCY ORDER NO. 4-FH-M-PM-04-13

EFFECTIVE DATE: 6:30 PM Friday, May 24, 2013

EXPLANATION: This emergency order extends the current commercial herring fishing period in the Port Moller District from 9:15 PM Friday, May 24 until 11:59 PM Friday, May 24, 2013.

EMERGENCY ORDER NO. 4-FH-M-SP-01-13

EFFECTIVE DATE: 3:00 PM Saturday, July 13, 2013

EXPLANATION: This emergency order establishes a commercial herring fishing period in the Unalaska and Akutan district for 24 hours from NOON Monday, July 15 until NOON Tuesday, July 16, 2013.

EMERGENCY ORDER NO. 4-FH-M-SP-02-13

EFFECTIVE DATE: 10:00 AM Tuesday, July 16, 2013

EXPLANATION: This emergency order extends the current commercial herring fishing period in the Unalaska and Akutan district for 48 hours from NOON Tuesday, July 16 until NOON Thursday, July 18, 2013.

EMERGENCY ORDER NO. 4-FH-M-SP-03-13

EFFECTIVE DATE: 10:30 AM Thursday, July 18, 2013

EXPLANATION: This emergency order extends the current commercial herring fishing period in the Unalaska and Akutan district for 24 hours from NOON Thursday, July 18 until NOON Friday, July 19, 2013.

EMERGENCY ORDER NO. 4-FH-M-SP-04-13

EFFECTIVE DATE: 10:00 AM Saturday, July 20, 2013

EXPLANATION: This emergency order establishes a commercial herring fishing period for vessels using purse seine gear in the Unalaska and Akutan district for 24 hours from NOON Saturday, July 20 until NOON Sunday, July 21, 2013. This emergency order also establishes a commercial herring fishing period for vessels using gillnet gear for 96 hours from NOON Saturday, July 20 until NOON Wednesday, July 24, 2013.