Fishery Management Report No. 09-16

Alaska Peninsula-Aleutian Islands Management Area Herring Food and Bait Fishery Management Plan, 2009

by

Aaron D. Poetter

April 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

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ABSTRACT

The commercial food and bait fishery for Pacific herring C*lupea pallasi* in the Alaska Peninsula-Aleutian Islands Herring Management Area (Area M) occurs within the Unimak, Akutan, Unalaska, Umnak, and Adak districts. The Dutch Harbor herring food and bait fishery takes place from June 24 until February 28 and is allocated 7 percent of the Togiak sac roe herring total allowable harvest (minus the Togiak spawn-on-kelp fishery fixed allocation). In 2008, the purse seine allocation was exceeded by 53 tons, which will be deducted from the 2009 seine allocation. The 2009 Dutch Harbor herring food and bait allocation is 1,600 tons, of which 224 (14%) tons is allocated to the gillnet fishery. The purse seine allocation will be 1,323 (accounting for the 2008 overharvest penalty), of which 100 tons is set aside for the experimental pound fishery. The Adak herring food and bait fishery is allocated 500 tons that may be harvested, from June 24 until February 28, with gillnet gear. This document describes how the fisheries will be managed, the industry requirements to participate in the fisheries, and how to contact and relay information to the Alaska Department of Fish and Game.

Key words: Pacific herring, *Clupea pallasi*, commercial food and bait fishery, Alaska Peninsula-Aleutian Islands, Dutch Harbor herring fishery, herring gillnet, herring seine, herring pound, Adak herring fishery, Fishery Management Report.

INTRODUCTION

This document is intended to provide commercial herring harvesters and buyers with information and guidelines for participating in the Alaska Peninsula-Aleutian Islands Management Area (Area M) Pacific herring C*lupea pallasi* food and bait fishery. Information on inseason management of the Alaska Peninsula-Aleutian Islands Management Area herring sac roe fisheries can be found in Poetter 2009.

The Alaska Peninsula-Aleutian Islands Herring Management Area consists of Bering Sea waters extending west of Cape Menshikof, and Pacific Ocean state waters extending west of Kupreanof Point, to the International Dateline (Figure 1; 5 AAC 27.600). Fishermen may only harvest herring food and bait in the Unimak, Akutan, Unalaska, Umnak and Adak districts (Figures 1-4).

There are two food and bait fisheries in Area M: the Dutch Harbor and the Adak herring fisheries. In recent years, three management plans have been used to manage the Dutch Harbor herring fishery: (1) the Bering Sea Herring Fishery Management Plan (5 AAC 27.060) establishes that in any district, if any of the southwest herring stocks are below their minimum threshold, the Dutch Harbor food and bait fishery will be closed for the season; (2) the Bristol Bay Herring Management Plan (5 AAC 27.865 (b)) establishes a 7% allocation of the Togiak Districts sac roe herring harvest to the Dutch Harbor food and bait fishery; and (3) the Dutch Harbor Food and Bait Herring Fishery Allocation Plan (5 AAC 27.655) which splits the 7% allocation by gear type, 86% for the purse seine and 14% for the gillnet fishery.

In 2004, the Alaska Board of Fisheries (BOF) created the Alaska Peninsula-Aleutian Islands Herring Management Plan (5 AAC 27.657), establishing a herring fishery in the Adak District (Figure 3) with a 500-ton allocation independent of the Dutch Harbor food and bait allocation. Since the plans inception, there has been no harvest in the Adak District.

ALASKA PENINSULA-ALEUTIAN ISLANDS (DUTCH HARBOR) FOOD AND BAIT FISHERY

The Alaska Peninsula-Aleutian Islands (Dutch Harbor) food and bait fishery began in 1929 (Rounsefell 1930) as a purse seine fishery and occurred annually through 1938 with total historical harvests averaging 1,474 tons (Table 1). During the years 1929 to 1938 catches ranged from 513 tons to 2,510 tons. No fishing occurred from 1939 through 1944 or from 1946 through

1980. From 1981 to 2000, catches ranged from 704 tons to 3,395 tons and came predominantly from the purse seine fishery (Table 2); although, starting in 1988 a few gillnet deliveries were made (Table 3). From 2004 to 2008, the purse seine fishery decreased to an average of 1,187 tons (Table 1).

In the past few years, permit holders have harvested the seine herring allocation in a combine fishery (Jackson 2008). Negligible gillnet harvest occurred during the 2006 and 2007 seasons due to the low abundance of herring in Unalaska Bay (Jackson 2008*;* Table 3).

FISHERY REQUIREMENTS AND HARVEST PROJECTION FOR 2009

In order for the Unimak, Akutan, Unalaska, or Umnak districts (Figure 2) to open to herring food and bait fishing, each Western Alaska herring biomass projection must surpass its BOF mandated district threshold (5 AAC 27.060). These fisheries include the Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, Nunivak Island, Cape Romonzof, and Norton Sound districts (Figure 1). The biomass of all the Bering Sea herring stocks are forecasted to be above their threshold levels and the probability of the 2009 Dutch Harbor food and bait fishery occurring is favorable (Appendix A1). However, processors and fishermen are advised that management of the 2009 fishery will be based on the estimated spawning biomass of each Bering Sea herring stock in 2009. The Alaska Department of Fish and Game (ADF&G) will update biomass estimates for each stock as herring move into coastal waters during spawning migrations.

The ADF&G will attempt to manage the Dutch Harbor food and bait fishery so that the harvest remains within the allocated 7% of the remaining allowable Togiak District herring sac roe harvest (Appendix B1). A "rollover" provision was adopted during the 2001 BOF meeting (5 AAC 27.655 (b)), as an incentive to conduct a fishery that stays within the allocation. During years when herring harvest exceeds the allocation, the amount of harvest over the allocation shall be deducted from the next year's allocation, by gear group. In 2008, the purse seine allocation was exceeded by 53 tons, which will be deducted from the 2009 seine allocation (Table 4).

The Dutch Harbor food and bait allocation is divided between gear groups: 86% is allocated 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. Furthermore, 100 tons may be reserved from the purse seine allocation for an experimental herring pound fishery (5 AAC 27.655(c)). Since the 2008 purse seine harvest was 53 tons more than the allocation, the 2009 harvest allocations for the purse seine fishery is 1,223 tons, 100 tons for the seine pound fishery, and 224 tons for the gillnet fishery (Table 4).

Inseason news releases will be broadcasted on VHF channel 12 in Dutch Harbor, which will serve as the designated department channel for communications during the herring fishery. Fishermen, tenders, and processors should monitor this channel.

All processors must make daily reports of all herring purchased from fishermen, and other processing records as specified by the department (5 AAC 27.662 (a)(2)). These daily reports can be provided to the ADF&G by VHF, SSB, phone, fax, or e-mail. The following ADF&G offices can be contacted for information concerning the Dutch Harbor and Adak herring food and bait fisheries:

Sand Point:

Alaska Department of Fish and Game
P.O. Box 129
Sand Point, AK 99661

Phone: (907) 383-2066
Fax: (907) 383-2606
VHF channels 6 & 72
Single Side Band 3.230 MHz
KWB 362 (call sign)

Dutch Harbor:

Alaska Department of Fish and Game
P.O. Box 920587
Dutch Harbor, AK 99692

Phone: (907) 581-1239
Fax: (907) 581-1572
VHF 12
Single Side Band 4.125 MHz
WIM 76 (call sign)

REGISTRATION REQUIREMENTS FOR PERMIT HOLDERS, TENDERS, AND PROCESSORS

Prior to catching, tendering, buying, or processing any herring, permit holders must register at the ADF&G office in Dutch Harbor. Even if no herring are harvested or vessels are not actively fishing, each permit holder, tender and processor must still report daily by 10:00 AM or until registration from the fishery is withdrawn. If conditions arise which require additional time for permit holders to report herring harvests, the department must be informed of the situation prior to fishing operations. Catch reporting instructions will be explained in detail during registration.

FISH TICKETS

Permit holders must provide specific harvest locations (statistical area and specific landmark) to buyers, so that they can be recorded on fish tickets. **Fish tickets must be delivered, by mail or in person, to the Dutch Harbor ADF&G office within ten days after the closure of the fishery** (5 AAC 27.662 (3)). If 10 days are insufficient time to submit fish tickets, other arrangements must be made by contacting the ADF&G in Sand Point.

FISHING PERIODS

The herring gillnet fishery can open by emergency order beginning NOON June 24 and may be extended until the allocation is reached, the department decides that an additional fishing period might exceed the allocation, or until the season ends on February 28 (5AAC 27.610 (e)(2)(A)). It is the intention of the department to begin the fishery no later than July 1. Effort levels and harvest rates will be considered when establishing fishery openings. If possible, the fishery will be conducted in the waters of Unalaska Bay (Figure 4).

The initial purse seine herring fishing period may occur as early as NOON on July 15 (5 AAC 27.610 (e)(2)(B)). Unless harvesters form a combine, the department anticipates that purse seine fishing periods will be short in duration and the fishery will be conducted within portions of Unalaska Bay. Openings over several days may be required to prevent exceeding the allocation. Generally, there will be a 12-hour closure between fishing periods to allow permit holders an opportunity to deliver their catch and the department to assess the harvest and processing capacity. A shorter closed period may be allowed if the department receives harvest reports promptly from all permit holders. The department may cancel or extend a fishing period with little notice.

In the past, widespread overharvesting has occurred in the Dutch Harbor food and bait fishery. To avoid potential overharvest issues, the department instituted the following policy; if the

average allocation per vessel fished (total allocation/number of vessels registered) is less than 150 tons per registered vessel, the department will drastically limit both the length of the fishing periods and the size of the area open to commercial herring fishing.

Harvesters and spotter pilots are encouraged to relay biomass information to the department prior to the opening. Past cooperation between the department and the fishing industry has proven valuable in gaining information critical to management. The department will try to assess herring biomass in the area prior to opening the fishery.

HERRING SEINE POUND FISHERY

In 2004, the BOF established a herring seine pound fishery as part of the Dutch Harbor food and bait fishery (5 AAC 27.655(c)). One hundred tons of herring were allocated to this fishery which is deducted from the purse seine allocation. A person planning to operate a pound must check in with the department and include detailed plans describing the design and operation of the pound, including exact location and timing of pound operation. These plans must be received by the department in a timely manner to allow preparation of a Commissioner's permit for pound operation. A permit holder intending to operate a pound is encouraged to register with the department in Dutch Harbor or Sand Point no later than 4:30 PM June 30, 2009.

Herring for pounding may be harvested during purse seine fishery openings. If the herring pound allocation is not harvested, it will then be rolled over into the seine allocation. If the seine fishery exceeds the allocation, the penalty provision (5 AAC 27.655(b)) will be applied to the next year's total allocation. If two or more permit holders register for the pound fishery, the pound allocation is divided equally among them.

GEAR TESTING

Prior to opening the fishery, purse seine gear may be tested during daylight hours until 5:00 PM July 14. Gear testing will only be allowed at a time and place designated by the department. Permit holders must contact the department in Dutch Harbor on VHF channel 12 or in person prior to setting gear. In addition, any fish caught during gear testing must immediately be released unharmed. After the fishery has been closed and all herring on the vessel have been offloaded, participants may, after notifying the department, set their net to straighten, clean, and organize their gear at a time and place designated by the department.

COMMERCIAL HARVEST SAMPLING

Cooperation from harvesters, tender operators, and processors will be appreciated when ADF&G personnel request herring samples from the commercial catch. These samples will be used to monitor age, sex, and size composition of the stock.

ALASKA PENINSULA-ALEUTIAN ISLANDS (ADAK) FOOD AND BAIT FISHERY

Beginning in 2004, the BOF authorized a herring set gillnet fishery in the Adak District (Figure 3) with a 500-tons allocation. This allocation is independent of the Dutch Harbor food and bait allocation. Herring can be harvested in this fishery as either food and bait or sac roe (Poetter 2009). The department has no information about the size, timing, or condition of herring stocks in the Adak area. The department may station a representative in Adak to manage this fishery and collect herring samples.

COMMISSIONER'S PERMIT

Each permit holder, tender operator, and buyer must register and obtain a Commissioner's permit for the Adak herring fishery at the ADF&G office in Sand Point or Dutch Harbor prior to catching, tendering, buying, or processing herring. The buyer and tender reporting requirements are described in 5AAC 27.662. Permit holders are encouraged to check with their markets prior to fishing to determine which products are acceptable.

FISHING SEASONS, AREA, AND GEAR OPERATION

In that portion of the Adak District, 175° 30' W. long. to 177° W. long., herring may be taken in the food and bait fishery, from June 24 through February 28 (5 AAC 27.657; Figure 3).

The permit holder must be physically present while the set gillnet is being fished. Each set gillnet in operation must be anchored and buoyed at both ends. Each buoy must be plainly and legibly marked with the permanent vessel license plate number (ADF&G number) of the vessel operating the gear. The numbers must be painted on the top one-third of the buoy in numerals at least four inches in height, one-half inch in width and in a color contrasting to that of the buoy. The buoy markings must be visible above the water surface.

REFERENCES CITED

Jackson, J. V. 2008. Alaska Peninsula-Aleutian Islands Management Area herring sac roe and food and bait fisheries annual management report, 2006. Alaska Department of Fish and Game, Fishery Management Report No. 08-60, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr08-60.pdf

Poetter, A. D. 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. http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr09-14.pdf

Rounsefell, G. A. 1930. Contribution to the biology of the Pacific herring, *Clupea pallasi*, and the condition of the fishery in Alaska. U.S. Bur. Fish. Bull. 45: 227-320.

TABLES AND FIGURES

Table 1.–Alaska Peninsula-Aleutian Islands Area Dutch Harbor herring food and bait fisheries historical summary for the purse seine fishery, 1929-2008.

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				ND			
1930	1,916				ND			
1931	1,056	26			ND			
1932	2,510	30			ND			
1933	1,585	38			ND			
1934	1,533				ND			
1935	2,412				ND			
1936	1,379				ND			
1937	579				ND			
1938	513				ND			
1939-1944	[a]							
1945	75				ND			
1946-1980	[a]							
1981	704	[b]		[b]			[b]	
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	7	50	283	40	252	505	72
1989	3,079	7	67	440	46	283	873	125
1990	820	7	15	117	55	350	287	41
1991	1,794	14	34	128	53	300	398	28
1992	2,002	19	36	105	56	300	573	30
1993	2,824	14	33	202	86	300	837	60
1994	3,350	15	66	223	51	300	1,005	67
1995	1,705	15	23	114	74	300	524	35
1996	2,279	26	29	88	79	300	684	26
1997	1,950	26	63	75	31	300	585	23
1998	2,025	24	27	84	75	300	598	25
1999	2,437	22	72	111	34	400-600	1,038	47
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	13	15	205	178	300-450	909	70
2003	1,379	6	16	230	86	50-400	342	57
2004	1,045	4	17	261	61	100-500	309	103
2005	1,154	2 [c]	4	577	289	100-500	370	123
2006	953	2 [c]	18	477	53	100-500	384	128
2007	1,248	2 [c]	12	624	104	100-500	437	146
2008	1,534	2 [c]	14	767	110	100-500	567	189

-continued-

Table 1.–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	Information not Available						
2004-2008 Average	1,187	2	13	541	123	100-500	413	138
1999-2008 Average	1,576	9	22	345	105	100-500	543	93

[a] Fishery was closed.

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

[c] A combine was formed by seine permit holders interested in harvesting herring, and a limited number of vessels were used during the fishery.

Table 2.–Alaska Peninsula-Aleutian Islands Area Dutch Harbor (all gear combined) commercial herring food and bait fishery, including fishing dates, days fished, preseason Togiak spawning biomass, guideline harvest level, harvest, and number of vessels fishing, 1981-2008.

Year	Landing Date First	Landing Date Last	Days Fished	Preseason Togiak Spawning Biomass Tons	Allocation Tons	Food & Bait Harvest Tons	Number Vessels Fishing
1981	Aug 3	Aug 23	21	159,000	None	704	[a]
1982	Aug 5	Sep 12	39	98,000	None	3,565	7
1983	Jul 23	Sep 6	46	142,000	3,525 [b]	3,567	8
1984	Jul 17	Jul 27	11	115,000	3,525 [b]	3,578	9
1985	Jul 17	Aug 11	26	132,000	3,525 [b]	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	1,794	14
1992	Jul 16	Jul 28	5	60,214	1,940	2,802	19
1993	Jul 16	Jul 16	<1	164,135	2,193	2,824	14
1994	Jul 16	Jul 19	4	165,747	2,215	3,395	16
1995	Jul 16	Jul 16	<1	149,093	1,982	1,748	16
1996	Jul 16	Jul 16	<1	135,585	1,793	2,279	26
1997	Jul 15	Jul 19	5	125,000	1,645	1,990	27
1998	Jul 16	Jul 16	<1	121,054	1,590	2,085	25
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[c]	Jun 25	Jul 16	10	119,818	1,572	1,437	22
2002	Jun 25	Jul 16	17	120,196	1,578	2,798	28
2003	Jun 24	Jul 19	7	126,213	1,662	1,467	24
2004	Jul 1	Aug 2	26	143,124	1,899	1,261	16
2005	Jul 1	Aug 26	11	105,029	1,365	1,154	2
2006	Jul 1	Aug 31	15	129,976	1,715	954	4
2007	Jul 16	Jul 27	11	134,566	1,779	1,254	4
2008	Jul 4	Jul 27	23	130,516	1,722	1,573	3
2004-2008 Average			17	128,642	1,696	1,239	6
1999-2008 Average			14	129,654	1,710	1,635	15

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

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

[c] In 2001 a gillnet fishery was established.

Table 3.–Aleutian Islands area Dutch Harbor herring food and bait fisheries historical summary for the gillnet fishery, 1988-2008.

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)
1988 [a]								
1989 [b]								
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994 [b]								
1995 [b]								
1996	0	0	0	0	0			
1997 [b]								
1998 [b]								
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
2001	105	6	25	4	4	300-500	53	9
2002	134	13	37	4	4	400	54	4
2003	88	13	23	4	4	400	35	3
2004	216	7	37	6	6	300	65	9
2005	0	0	0	0	0	0	0	0
2006 [b]								
2007 [b]								
2008 [b]								
2001-2008 Average	74	6	17	7	3	314	287	135

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

[b] In 2004, 12 permit holders used 7 of the 9 registered vessels; exvessel values are reported per permit holder.

Table 4.–Harvest allocation of the 2009 forecasted Pacific herring run biomass, Togiak District, Bristol Bay.

	Biomass (Tons)	Harvest (Tons)
2009 Togiak District Forecasted Biomass Exploitation at maximum 20%	121,800	
Total Allowable Harvest		24,360
Togiak Spawn on Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		22,860
Dutch Harbor Food/Bait Allocation [a]		1,600
Purse Seine Allocation (86%) [b]		1,276
Overharvest penality from previous year.		53
2009 Seine Allocation		***1,223***
Pound Fishery Allocation		100
Overharvest penality from previous year.		0
Gillnet Allocation (14%) [c]		224
Overharvest penality from previous year.		0
2009 Gillnet Allocation		***224***

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

[b] The purse seine allocation for 2009 is 86% of the Dutch Harbor allocation minus the pound fishery allocation of 100 tons.

[c] The gillnet allocation for 2009 is 14% of the Dutch Harbor allocation.

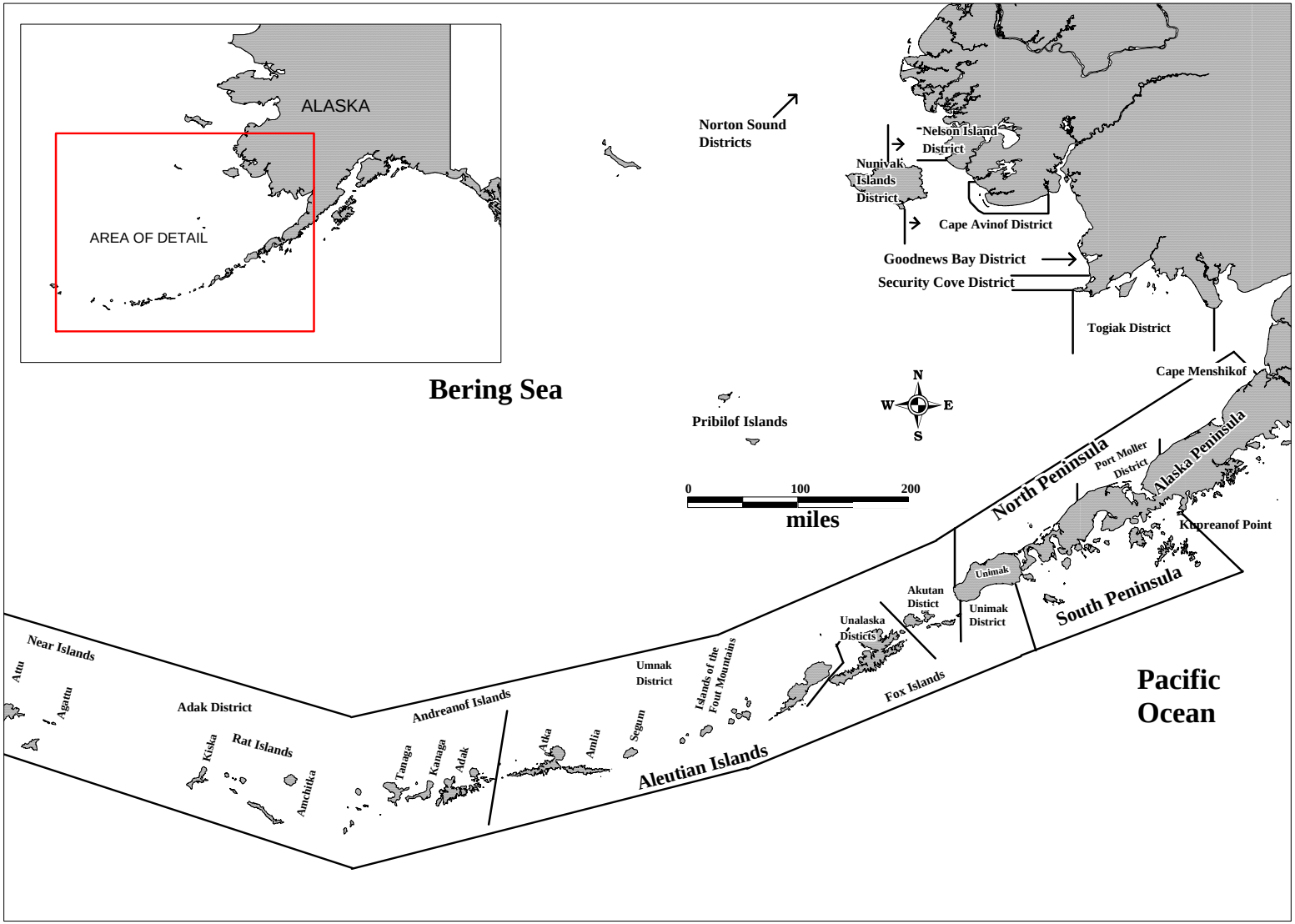

Figure 1.–Map of the Bering Sea Management Plan (5 AAC 27.060) commercial herring districts.

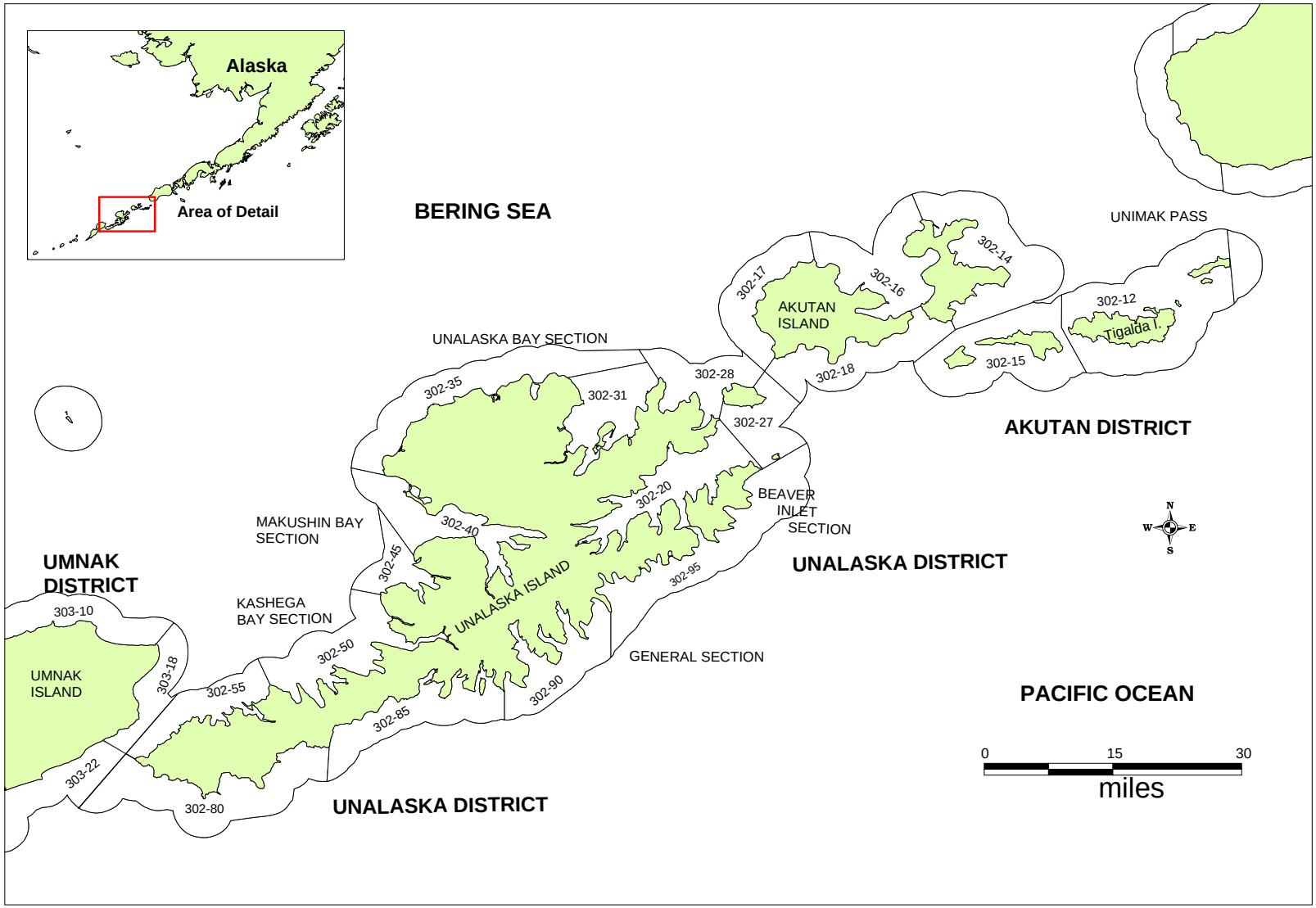

Figure 2.–Map of the Aleutian Islands from Tigalda Island to Umnak Island illustrating the herring fishing district boundaries and statistical areas.

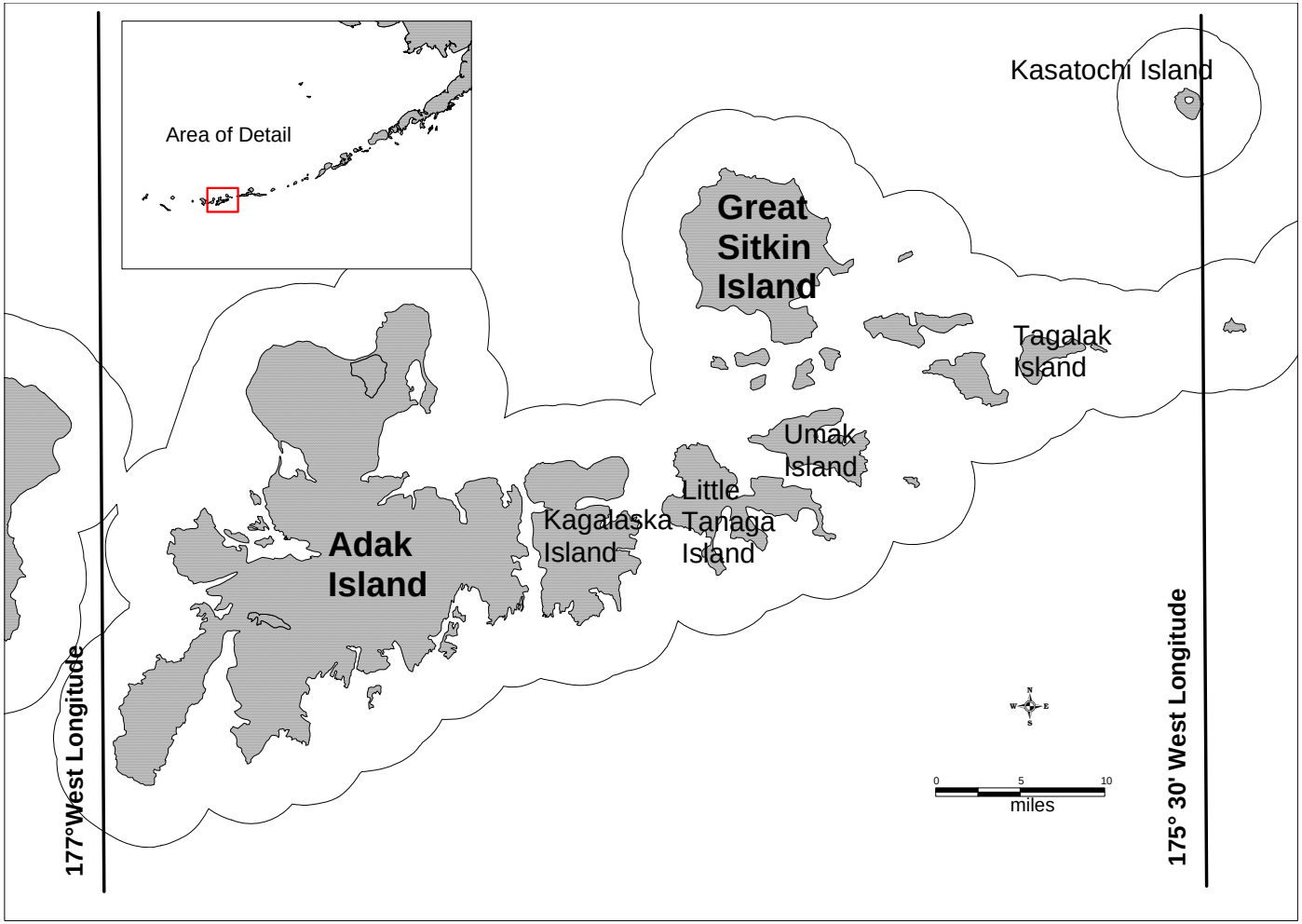

Figure 3.–Map of the Adak District illustrating the herring fishery boundaries.

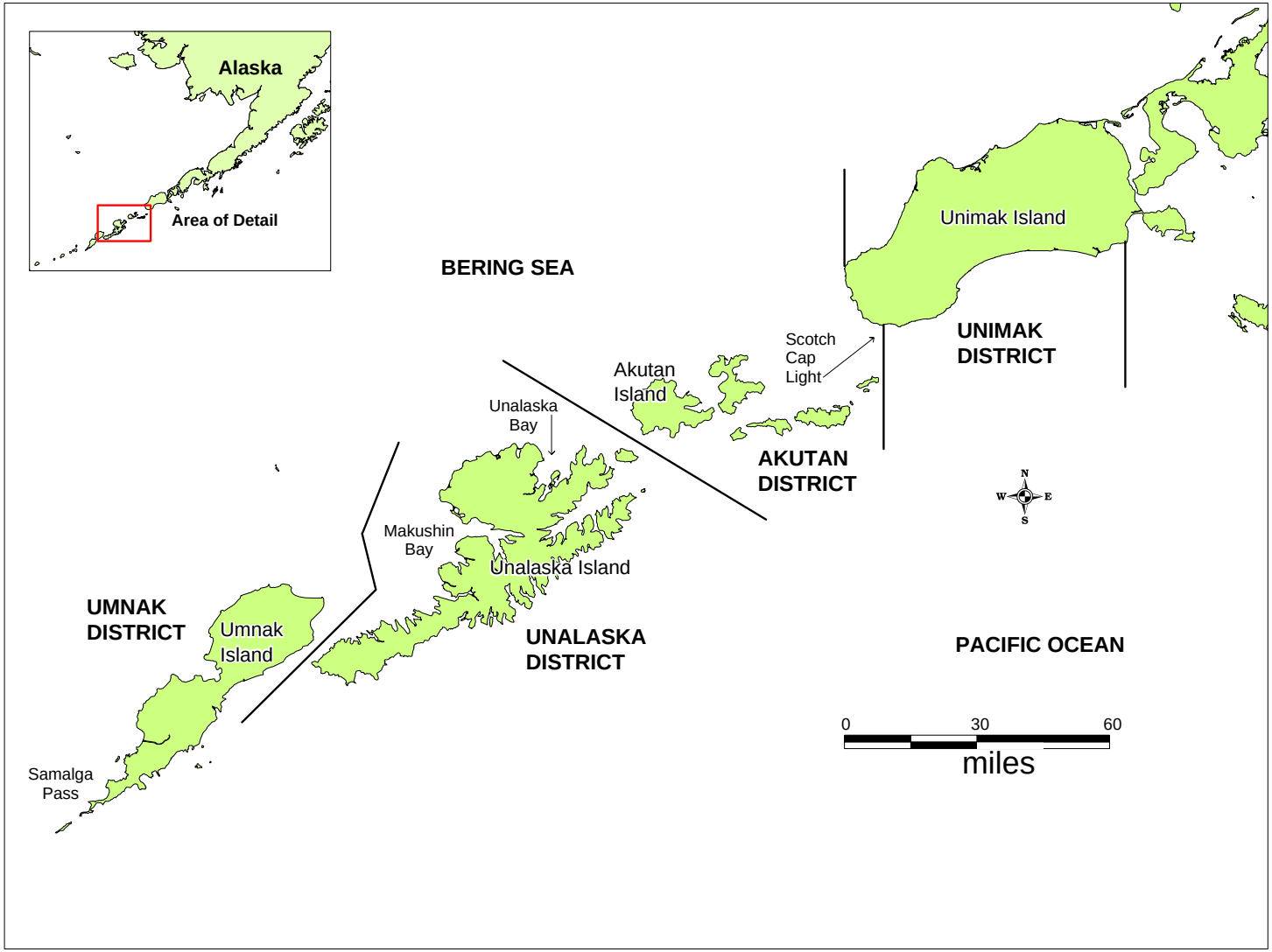

Figure 4.–Map of the eastern Aleutian Islands from Samalga Pass to Unimak Island illustrating the herring fishing district boundaries.

APPENDIX A: BRISTOL BAY AND ARCTIC-YUKON-KUSKOKWIM HERRING OUTLOOK AND MANAGEMENT STRATEGY FOR 2009

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

Denby S. Lloyd, Commissioner
John Hilsinger, Director

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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

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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.

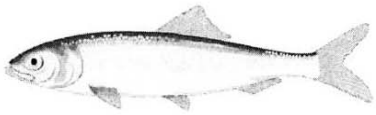
[d] Biomass projections from 2008 were available.

APPENDIX B: FORECASTED HARVEST ALLOCATION FOR TOGIAK SAC ROE AND DUTCH HARBOR HERRING FOOD AND BAIT FISHERIES, 2009

Appendix B1.–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



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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

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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

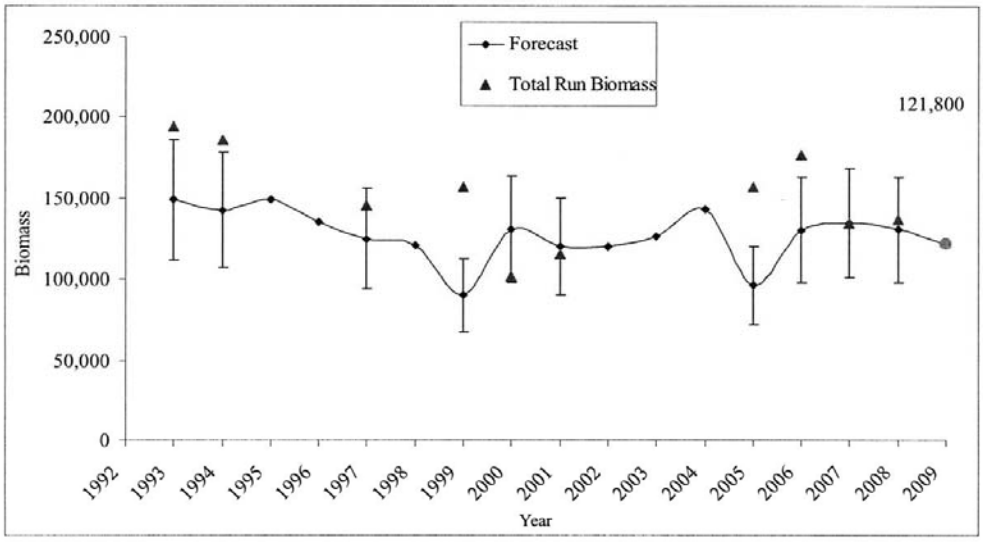

Figure 1.–Annual observed Togiak herring total run biomass estimates and preseason forecasts based on the ASA model. Mean absolute percent error (MAPE) of 25% around the forecast is also shown for years with a reliable total run biomass estimate.

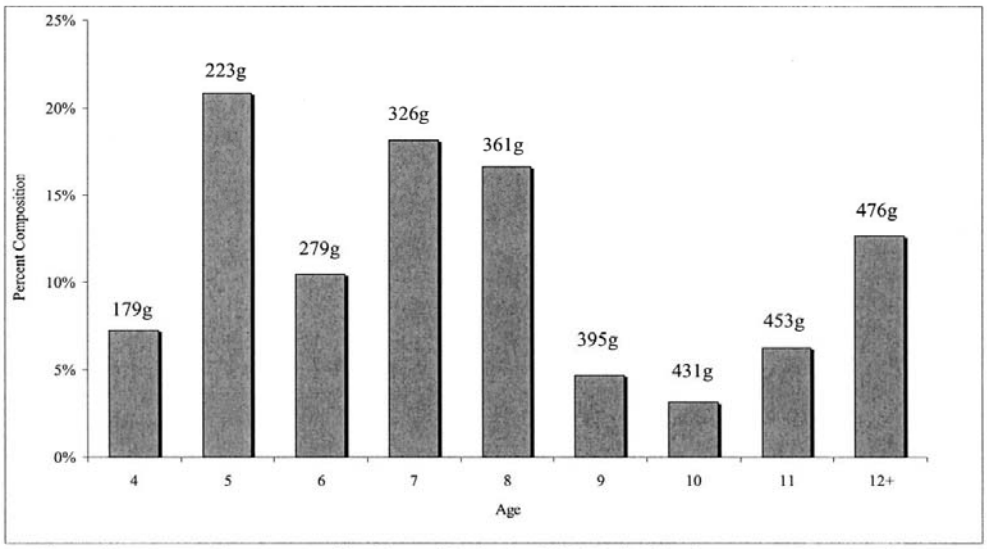

Figure 2.–Forecasted age composition by weight for the 2009 Togiak herring return. Forecasted average weight (grams) by age are shown for each age category.

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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.

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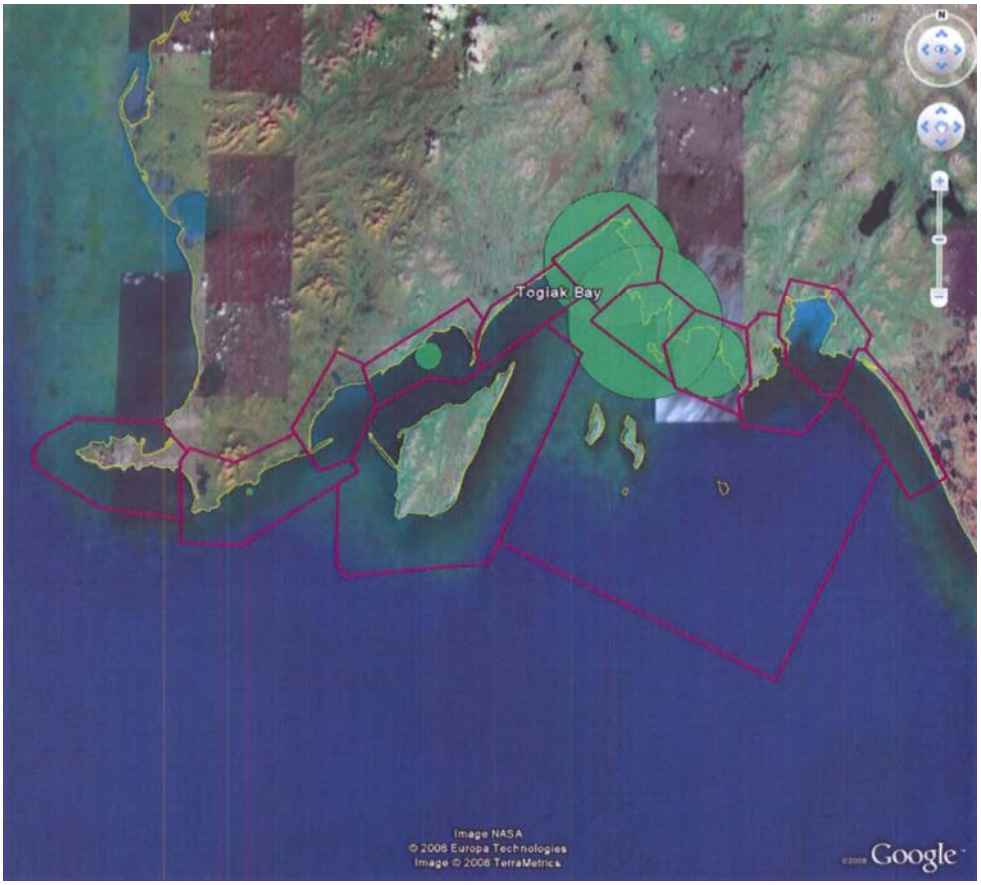

Figure 4.–Herring spawning distribution observed during aerial survey conducted on 28 May 2008. This survey occurred on the peak biomass and was estimated at 82,557 tons. Green circles represent the relative contribution of each survey section (outlined in red) to the overall biomass estimate.