

Fishery Management Report No. 08-18

**Kodiak Management Area Herring Sac Roe Fishery
Harvest Strategy for the 2008 Season**

by

Geoff Spalinger

and

Jeff Wadle

April 2008

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL			mid-eye-to-fork	MEF
gram	g	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid-eye-to-tail-fork	METF
hectare	ha			standard length	SL
kilogram	kg	all commonly accepted		total length	TL
kilometer	km				
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.		
meter	m			Mathematics, statistics	
milliliter	mL	at	@	<i>all standard mathematical signs, symbols and abbreviations</i>	
millimeter	mm	compass directions:		alternate hypothesis	H _A
		east	E	base of natural logarithm	<i>e</i>
		north	N	catch per unit effort	CPUE
Weights and measures (English)		south	S	coefficient of variation	CV
cubic feet per second	ft ³ /s	west	W	common test statistics	(F, t, χ^2 , etc.)
foot	ft	copyright	©	confidence interval	CI
gallon	gal	corporate suffixes:		correlation coefficient (multiple)	R
inch	in	Company	Co.	correlation coefficient (simple)	r
mile	mi	Corporation	Corp.	covariance	cov
nautical mile	nmi	Incorporated	Inc.	degree (angular)	°
ounce	oz	Limited	Ltd.	degrees of freedom	df
pound	lb	District of Columbia	D.C.	expected value	<i>E</i>
quart	qt	et alii (and others)	et al.	greater than	>
yard	yd	et cetera (and so forth)	etc.	greater than or equal to	≥
		exempli gratia	e.g.	harvest per unit effort	HPUE
Time and temperature		(for example)		less than	<
day	d	Federal Information Code	FIC	less than or equal to	≤
degrees Celsius	°C	id est (that is)	i.e.	logarithm (natural)	ln
degrees Fahrenheit	°F	latitude or longitude	lat. or long.	logarithm (base 10)	log
degrees kelvin	K	monetary symbols		logarithm (specify base)	log ₂ , etc.
hour	h	(U.S.)	\$. ¢	minute (angular)	'
hour	h	months (tables and figures): first three letters	Jan,...,Dec	not significant	NS
minute	min	registered trademark	®	null hypothesis	H ₀
second	s	trademark	™	percent	%
		United States (adjective)	U.S.	probability	P
Physics and chemistry		United States of America (noun)	USA	probability of a type I error (rejection of the null hypothesis when true)	α
all atomic symbols		U.S.C.	United States Code	probability of a type II error (acceptance of the null hypothesis when false)	β
alternating current	AC	U.S. state	use two-letter abbreviations (e.g., AK, WA)	second (angular)	"
ampere	A			standard deviation	SD
calorie	cal			standard error	SE
direct current	DC			variance	
hertz	Hz			population	Var
horsepower	hp			sample	var
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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Jeff Wadle

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

April 2008

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*Geoff Spalinger
and
Jeff Wadle*

*Alaska Department of Fish and Game, Division of Commercial Fisheries,
211 Mission Road, Kodiak, Alaska 99615, USA*

This document should be cited as:

Spalinger, G., and J. Wadle. 2008. Kodiak management area herring sac roe fishery harvest strategy, for the 2008 season. Alaska Department of Fish and Game, Fishery Management Report No. 08-18, Anchorage.

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ABSTRACT

This harvest strategy describes how the Alaska Department of Fish and Game (ADF&G) will manage the 2008 Kodiak Management Area (KMA) commercial Pacific herring *Clupea pallasii* sac roe fishery, and includes the 2008 guideline harvest levels (GHLs) by section, management changes from previous years, and reporting and registration requirements.

The 2008 KMA areawide GHL is 3,890 tons and individual GHLs have been established for 35 sections. The areawide GHL is divided by gear type due to a regulatory allocative management plan (5AAC 27.535). The purse seine GHL is 2,910 tons (74.8% of the areawide GHL) and the gillnet GHL is 980 tons (25.2% of the areawide GHL).

There will be two types of fishing periods in the Kodiak Management Area: Those that fall under the “standard” fishing schedule that is established in regulation (5 AAC 27.510), and those that occur in sections that are managed by emergency order (EO). Standard fishing periods for purse seiners from April 15 to May 7 are from NOON until 9:00 PM on odd-numbered days, and from 9:00 AM until NOON on even-numbered days and from May 8 through June 30, fishing periods are from NOON until 10:00 PM on odd-numbered days, and from 9:00 AM until NOON on even-numbered days. For gillnet permit holders fishing periods are from NOON on odd-numbered days until NOON on even-numbered days. Continuous fishing, by gillnet permit holders, announced by EO, may occur if participation and overharvest concerns are low.

In 2008, the Village Islands/Uganik Bay, Danger Bay, and Inner Uyak Bay sections will be managed to enhance the value of the landed product and control harvest rates. Fishing periods will be established by EO, herring will be sampled by purse seine test sets, and time and area restrictions may be used to target the effort on herring of the largest size and highest roe content. To prevent gear conflicts and ease management of the fisheries where both gear types have an allocation, fishing will occur by each gear type on alternating days.

Key Words: Sac roe, herring, *Clupea pallasii*, Kodiak, guideline harvest levels (GHL), Kodiak Management Area (KMA), harvest strategy, Fisheries Management Report (FMR)

INTRODUCTION

Pacific herring, *Clupea pallasii*, have been commercially harvested each spring for their sac roe since 1964 in the Kodiak Management Area (KMA; Table 1). This fishery was open-to-entry from 1964 to 1980, under a moratorium to new entries from 1981 to 1984, and was designated a limited entry fishery in 1985. Gear includes purse seines (80 permits) and gillnets (111 permits). Historical permit activity has been low and has continued to decline. On average, 29 purse seine and 8 gillnet permit holders have made landings from 1998 to 2007 (Table 2).

The KMA is divided into 13 districts that define geographical areas used in managing the herring sac roe fishery (Figure 1; Table 3). Each district is further divided into smaller areas called sections. There are 80 sections in the KMA which are intended to define a spawning area or to define a geographical harvest location. Since 1979, herring have been harvested within 63 sections. Current statistical charts, which illustrate districts and sections, are available at the Alaska Department of Fish and Game (ADF&G) office in Kodiak.

Guideline harvest levels (GHLs), are a desired level of harvest within each section (harvest projection), that are established by Kodiak ADF&G fishery management biologists annually (Table 3). After an annual review of stock status trends for the entire KMA, the department determines which sections will be open to commercial fishing and what level of harvest will be targeted. Each section’s GHL is set based on: 1) fishery performance during the preceding season or seasons (e.g., total harvest, timing, duration of fishery, average school size); 2) trends in age composition; 3) spawn and juvenile herring observations; 4) aerial surveys; and

5) hydroacoustic surveys. Ancillary data from commercial fishermen and spotter pilots are considered as well in setting a GHL.

Since 1979, areawide GHLs have ranged from a low of 1,495 tons (1999) to a high of 4,550 tons (1994; Table 2). GHLs are not guaranteed quotas and actual harvests may be more or less than the GHL. The recent 10-year average harvest (1998 to 2007) was 2,226 tons (range: 1,370 to 3,463 tons; Table 2).

In 2000, an allocative harvest strategy was implemented by the Alaska Board of Fisheries (BOF) to provide opportunities for gillnet permit holders to harvest approximately 25% of the total preseason GHL and purse seine permit holders to harvest approximately 75% of the total preseason GHL (5AAC 27.535 (e)). With few exceptions, this is accomplished by assigning sections to only purse seine gear or only gillnet gear. For each district, the sum of all purse seine section GHLs should be 70% to 80% of the areawide GHL and the sum of all gillnet section GHLs should be 20% to 30% of the areawide GHL (5AAC 27.535 (e)(2)(D)). Assignment of a section to a particular gear type is based on: 1) the estimated biomass and age composition of the stock(s) within a section; 2) historical harvest by gear from that section; 3) historical harvest timing; 4) fishery manageability concerns; and 5) determining allocative percentages. Input from fishery participants is solicited prior to final section assignments.

The 2007 fishery consisted of 21 purse seine and 3 gillnet permit holders harvesting 2,546 tons of herring (4,000 ton GHL; Table 2). Purse seine gear accounted for 2,510 tons (99% of the total harvest) and gillnet gear accounted for 36 tons (1% of the total harvest), with a total exvessel value of approximately \$1,018,400 dollars (Table 2).

The ADF&G Commercial Fisheries Division staff in Kodiak will manage the 2008 Kodiak herring sac roe fishery. The Kodiak herring sac roe fishery is intended to occur in an orderly fashion, with minimal waste of resource and within conservation limits as determined by the department, while striving for the highest quality product (5AAC 27.535 (e)(6)). In addition, the fishery will be managed in accordance with general statewide herring guideline harvest policies, which provide for catches in traditional inshore areas, management for the greatest value, and exploitation (harvest) not to exceed 20% of the available spawning biomass. Due to the uncertainty in estimating individual section populations, GHLs will error on the side of conservation of the resource.

This report presents the harvest strategy for the 2008 KMA herring sac roe fishery, including the GHLs by section, section assignment by gear, changes in management, and reporting and registration requirements for the 2008 fishery.

2008 HARVEST STRATEGY

2008 REGULATION CHANGES

During the January 2008 BOF meeting in Kodiak, there were some changes that affect the management plan of the Kodiak herring sac roe fishery, which included:

- Preseason registration: All permit holders intending to participate in the fishery must register between April 1 and April 14.
- Section lines in the Alitak District that had been modified by emergency order (EO) during the 2007 season have been placed into regulation.

- New language was added to regulations that allow the department, based on their assessment of effort or harvest to allow one gear type to operate in an area during any open period without regard to the allocation.

Certain sections may be reassigned to allow purse seine gear to fish in a section that was designated a gillnet area preseason. When gillnetters register, they will disclose which areas they intend to fish during the 2008 season. Areas where no gillnet fishermen intend to fish may be reassigned to a purse seine area. Reassigned areas will remain designated to that gear type for the entire 2008 season. Areas that gillnetters disclose, signifying intent, will remain a gillnet area for the entire season. At the discretion of the department, areas with small GHGs may not be reassigned to purse seine areas. ADF&G staff will issue an EO describing sections that will be reassigned from gillnet to purse seine areas.

GUIDELINE HARVEST LEVELS

For the 2008 season, GHGs have been established for 35 sections (Table 3). A total of 14 sections had little or no harvest during the last 10 years and are designated as exploratory in 2008 (exploratory areas are open to both gear types and have no set GHG). The remaining 31 sections will remain closed, based on either low abundance or lack of herring sac roe harvests.

The 2008 GHG of 3,890 tons (Table 3), is a decrease of about 2.8% from the 2007 GHG of 4,000 tons (Table 2).

SECTION ASSIGNMENTS

Based on the 2005 BOF changes to regulations governing the KMA herring fisheries, adjacent sections may be combined and managed as a single section (5AAC 27.535. (e)(1)(A)). The following sections will be combined and managed as single sections in 2008:

- Izhut Bay, Kitoi Bay, and MacDonald Lagoon
- Village Islands, Northeast Arm Uganik, East Arm Uganik, and South Arm Uganik bays
- Outer Deadman Bay and Inner Deadman Bay

Also, both purse seine and gillnet gear may be assigned to fish within the same section, in order to achieve the allocative split by gear type within a district.

- The combined Village Islands/Uganik Bay sections and the Danger Bay Section will be opened to both gear types in 2008; with each gear type assigned a portion of the GHG.

The remaining sections will be assigned as follows:

<u>Purse Seine Only</u>	<u>Gillnet Only*</u>	<u>Exploratory (both gear)</u>
Tonki Bay	Malina Bay	Perenosa Bay
Izhut/Kitoi/MacDonald	Raspberry Strait	Blue Fox/Devils Inlet
Outer Uyak Bay	Viekoda Bay	Geese/Two Headed
Inner Alitak	Terror Bay	Kaiugnak Bay
Inner/Outer Deadman Bay	West Uganik Passage	SW. Sitkalidak Strait
E. Upper Olga Bay	Browns Lagoon	Three Saints Bay
W. Upper Olga Bay	Spiridon Bay	Newman Bay
West Sitkalidak Strait	Zachar Bay	Tanginak Anchorage
Barling Bay	Sulua Bay	Inner Kukak Bay
East Sitkalidak Strait	Lower Olga Bay	Inner Katmai Bay
Outer Kiliuda Bay	Shearwater Bay	Alinchak Bay
Outer Ugak Bay	Inner Kiliuda Bay	Puale Bay
Kizhuyak Bay	Inner Ugak Bay	Portage Bay
	Womens Bay	Wide Bay

* Gillnet sections may be reassigned to purse seine sections if gillnetters do not intend to fish certain sections.

Of the total GHL, 2,910 tons of herring (74.8%) will be assigned to purse seine permit holders and 980 tons (25.2%) will be assigned to gillnet permit holders (Table 3; Figure 1).

FISHING PERIODS

Standard Daily Fishing Periods for Most Purse Seine and Gillnet Sections

For many years, there has been a “standard” fishing schedule for purse seine and gillnet permit holders, established in regulation (5AAC 27.510). For most of the KMA, this daily fishing schedule for purse seine and gillnet gear will still be in effect with some sections managed by emergency order (EO).

Unless otherwise specified in an EO, herring may be taken during the sac roe season from April 15 through June 30, as follows:

- **FOR PURSE SEINE PERMIT HOLDERS:** From April 15 through May 7, fishing periods for purse seine permit holders are from NOON until 9:00 PM on odd-numbered days, and from 9:00 AM until NOON on even-numbered days, if a harvestable surplus is available. From May 8 through June 30, fishing periods are from NOON until 10:00 PM on odd-numbered days, and from 9:00 AM until NOON on even-numbered days, if a harvestable surplus is available.
- **FOR GILLNET PERMIT HOLDERS:** From April 15 through June 30, the fishing periods for gillnet permit holders are from NOON on odd-numbered days until NOON on even-numbered days. Continuous fishing, announced by EO, may occur if participation and overharvest concerns are low.

Regulations stipulate a 24-hour closed period for both gear types, from NOON on even-numbered days until NOON on odd-numbered days. This “day-on, day-off” schedule applies to most sections allocated to seine gear, except for those to be managed under EO authority. It is

anticipated that gillnet effort will again be low in 2008, due to poor market conditions. As a result, gillnet only sections will likely be extended by EO after the initial opening until further notice. If effort is higher than anticipated, the EO provision will be rescinded and fishing periods in gillnet only sections will fall back to the schedule in regulation.

The department may use EO authority to restrict fishing time and open areas in any section if overharvest concerns exist during the season.

The department may also use EO authority to close sections late in the season if resources are no longer available to monitor the fishery.

Emergency Order Fishing Areas and Management for Enhanced Value

The Outer Ugak Bay Section will not open by regulation on April 15. This section will open by EO when an ADF&G field crew is available to be stationed there.

Three other areas will not follow the standard fishing schedule, but will instead be managed inseason by EO. In 2008, Kodiak area management biologists will actively manage the fisheries within these sections to enhance the value of the landed product and control harvest rates.

- Danger Bay Section of the South Afognak District
- Village Islands/Uganik Bay sections of the Uganik District
- Inner Uyak Bay Section of the Uyak District

The intent is to time the fisheries so that the mature roe content of the catch is the highest possible and direct the fishery into areas where the catch is composed of large herring (5 AAC 27.059). These sections have relatively large spawning biomass, early spawn timing, and generally experience high effort levels by fishermen. Also, large numbers of small, recruit-age herring may be present in these fisheries. Management biologists will attempt to minimize the harvest of small, young herring. Combined, these three areas comprise 2,100 tons, or 54%, of the total KMA GHL in 2008 (Table 3).

When marketable herring are found, the department will, as necessary, use EO authority to control overharvest by limiting the duration of fishing periods and/or the area fished. As much advance notice as possible will be given prior to any potential fishing period. Fishing periods in actively managed sections may be short, followed by a closed period to allow time to assess the harvest and roe percentage before allowing additional fishing. EO announcements concerning opening time, fishing period duration, and open area, will be made on VHF channel 6.

The department may also restrict the amount of herring harvested in a short period areawide, due to processor quality and capacity concerns. Early in the season, the potential exists for having a large amount of herring caught and delivered to processing plants in a single day. Product quality problems may occur if fishermen must wait to unload their catch for processing.

The department will manage the Danger Bay, Village Islands/Uganik Bays, and Inner Uyak Bay sections based on the size of their GHLs, the observed biomass in these fishing areas, commercial fishing effort, and the spawn timing of these stocks. In the Danger Bay and Village Islands/Uganik Bays sections, both gear types will fish within the same section, and additional restrictions will apply (see below). The department, fishermen, and buyers must work closely inseason to control harvest rates and target high quality roe herring.

It is expected that fisheries will be restricted to small areas and short periods, depending on the available biomass, the amount of fishing effort, and the results from samples collected during the test fishery. At the discretion of the management biologist, test fisheries will be conducted daily until high quality herring (approximately 11% roe recovery) are located. Fishery openings will occur in locations where roe testing has shown high quality herring are abundant. Once commercial fisheries begin, additional test fisheries may be needed to identify the best quality fish for subsequent openings. The department will strive to coordinate the three EO purse seine fisheries with the regulatory fishing periods for purse seine gear in the remainder of the KMA.

Test Fishing

ADF&G would like to enlist the help of Kodiak herring sac roe fishermen within the EO fisheries. Conducting test sets prior to fishery openings will allow sampling for fish size and roe quality.

Prior to any fishery in the Danger Bay, Village Islands/Uganik Bays, and the Inner Uyak Bay sections, the management biologist on the grounds will seek volunteer fishermen to conduct the test sets. The boats chosen to make test fishing sets will be determined by the management biologist. In some circumstances, there may be a need to select more than one boat to make a test set. All test fishing will be coordinated and directed by the ADF&G management biologist on the grounds. No test set will be allowed without consulting with the management biologist, either in person or via VHF radio channel 6.

Small amounts of herring from each test set will be kept for roe and size testing by industry personnel. From 75 to 150 pounds of herring should be randomly selected from each set to be tested for mature roe recovery (%) and average weight (grams). Sampling will occur onboard the fishing vessel or may be transported to a central fishing boat or tender for later testing.

ADF&G staff will not conduct roe recovery testing; industry personnel (processor technicians, fishermen, or tendermen) are expected to determine roe quality. Instructions on how to determine roe quality and recovery percentages may be available from buyers and processors. Additionally, processors establish minimum size requirements (average weights) for the herring that they will purchase. All fishermen are urged to check with their buyer to determine what roe recovery and size limits will be required. Management biologists will attempt to manage fisheries so that industry roe recovery and size requirements are met or exceeded. ADF&G will broadcast test fishery results on VHF channel 6, as they become available.

Danger Bay Section Management

The Danger Bay Section has a GHL of 200 tons and both gillnet and purse seine gear will be allowed to fish this section in 2008 (Table 3). For purse seine permit holders, the GHL is 140 tons and the gillnet permit holders GHL is 60 tons.

Due to the potential of overharvest of herring, a management biologist will manage the Danger Bay Section for roe quality and size of herring. The department vessel *RV Resolution* will be stationed in Danger Bay on April 15 and the management biologist onboard will manage the fishery by EO. Permit holders wishing to fish in the Danger Bay Section are urged to meet with the management biologist at 10:00 AM Tuesday, April 15, aboard the *RV Resolution* to volunteer for test fishing and discuss how the fishery will be managed. What portion of these sections will open and the duration of each fishing period will be determined by the ADF&G management biologist on the grounds aboard the *RV Resolution*. Test fishing will begin no earlier than NOON

on Tuesday, April 15. The department will attempt to target the fishery on herring with approximately 11% roe recovery on the grounds.

To alleviate the potential for gear conflicts, it is expected that Danger Bay fisheries for will be separated by date and by gear type. The department will attempt to prosecute purse seine fisheries on odd-numbered days of the month of April and fishing time will likely begin at NOON and is unlikely to continue after 9:00 PM.

For gillnet gear, fishing periods will likely begin at 9:00 AM on even-numbered days of April and close by 9:00 AM the following odd-numbered day (24-hour open period). Only a portion of the Danger Bay Section will be open to either gear type and EO announcements will be made to define the area open to fishing. This is a general framework within which EO openings may occur. It is not expected that gillnet fishing periods will begin until after at least one successful purse seine fishing period has occurred. This should ensure that high quality herring are present on the grounds.

If no gillnetters are present the day following a purse seine opening, the department biologist on the grounds may allow another day of purse seine fishing.

Once the GHL for one gear group has been met, the fishing time for the other gear type that has not met its allocation could occur on any day.

Village Islands/Uganik Bays Section Management

The Village Islands, Northeast Arm Uganik, East Arm Uganik, and South Arm Uganik sections will be managed as one section, with a GHL of 1,700 tons (Table 3). In order to properly allocate herring within the Uganik District, both purse seine and gillnet gear will be allowed to fish within these combined sections. For the Village Islands/Uganik Bays Section, the purse seine permit holders GHL is 1,350 tons and the gillnet permit holders GHL is 350 tons (Table 3).

These sections will be actively managed by EO by the ADF&G management biologist present aboard the ADF&G *R/V K-Hi-C*. Permit holders wishing to fish in these sections are urged to meet with the management biologist at 10:00 AM Tuesday, April 15, aboard the *R/V K-Hi-C* to volunteer for test fishing and discuss how the fishery will be managed.

To alleviate the potential for gear conflicts, it is expected that Village Islands/Uganik Bays fisheries for each gear type will be separated by date. The department will attempt to prosecute purse seine fisheries on odd-numbered days of the month of April and fishing time will likely begin at NOON and is unlikely to continue after 9:00 PM

For gillnet gear, fishing periods will likely begin at 9:00 AM on even-numbered days of April and close by 9:00 AM the following odd-numbered day (24-hour open period). Only a portion of the Village Islands/Uganik Bays Section will be open to either gear type and EO announcements will be made to define the area open to fishing. This is a general framework within which EO openings may occur. It is not expected that gillnet fishing periods will begin until after at least one successful purse seine fishing period has occurred. This should ensure that high quality herring are present on the grounds.

If no gillnetters are present the day following a purse seine opening, the department biologist on the grounds may allow another day of purse seine fishing.

Once the GHL for one gear group has been met, the fishing time for the other gear type that has not met its allocation could occur on any day.

Inner Uyak Bay Section Management

The Inner Uyak Bay Section has a GHL of 200 tons and will be open to purse seine gear only in 2008 (Table 3). The Inner Uyak Bay Section will be managed for roe quality and size of herring. The department will attempt to target the fishery on herring with approximately 11% roe recovery on the grounds. The department vessel *R/V Resolution* will be stationed in Uyak Bay to manage the fishery; however, the vessel and biologist will not be available to manage the fishery on April 15. The *R/V Resolution* will initially manage the Danger Bay Section in the South Afognak District; once that section is closed, the vessel may travel directly to Uyak Bay. The department will issue a News Release with at least 24 hours advanced notice for a potential fishing period for the Inner Uyak Bay Section. Once the *R/V Resolution* is in the Inner Uyak Bay Section, the department will seek test fish volunteers.

Permit holders wishing to fish in this section are urged to meet with the management biologist aboard the *R/V Resolution*, to volunteer for test fishing and discuss how the fishery will be managed.

Alitak District Changes in Section Descriptions and Management

Regulation changes by the BOF in 2008 changed the description of several section lines in the Alitak District (Figure 2).

The regulation changes are as follows:

AL 20 – Inner Alitak Bay Section: all waters enclosed by a line from Cape Alitak to Cape Trinity, south of a line across Olga Narrows at 57°03.38' N. lat., south of 56°58.02' N. lat. in Alitak Bay and west of 153°57.90' W. long. at Portage Bay.

AL 30 – Sulua Bay Section: all waters of Sulua and Portage Bays east of 153°57.90' W. long.

AL 40 – Lower Olga Bay: all waters of Lower Olga Bay north of a line across the Olga narrows at 57°03.38' N. Lat. and south of a line across the entrance of Upper Olga Bay at 57°07.30' N. lat.

AL 41 – East Upper Olga Bay: all waters of Upper Olga Bay north of a line across the entrance of Upper Olga Bay at 57°07.30' N. lat. and east of a line across Upper Olga Bay at 154°16.06' W. long.

AL 50 – West Upper Olga Bay: all waters of Upper Olga Bay west of a line across Upper Olga Bay at 154°16.06' W. long.

AL 31 – Portage Bay; this section has been eliminated.

The 2008 KMA Herring Statistical Charts and Figure 2 show these changes in section line boundaries.

The sum of the Alitak District sections with established GHLS is 525 tons for 2008 (Table 3). The sections within the Alitak District with established GHLS will be assigned to each gear group and the “standard” fishing period schedule for the respective gear types will begin on April 15.

ADF&G AND INDUSTRY COOPERATION

Management of the herring sac roe fishery relies primarily on harvest data collected by ADF&G field crews. Timely harvest information is essential to fishery management. In addition to the management biologists aboard the *R/V Resolution* and *R/V K-Hi-C*, ADF&G will station crews in mobile field camps in sections where the highest fishing activity is expected (Table 4). Field crews will initially be stationed at Ameer Bay and either in Kiliuda Bay or Kitoi Bay. On-the-grounds monitoring of fisheries is limited in some sections, and may occur incidental to monitoring efforts in adjacent sections. Department staff will make frequent contact with permit holders to collect harvest data, fleet movement information, spawn observations, and observations of juvenile and adult herring concentrations.

Permit holders and tender operators are encouraged to keep ADF&G field crews aware of herring harvests. In exploratory sections and all sections where a field crew is not present, if a harvest does occur, fishermen, tenders, or buyers should immediately contact area management biologists in Kodiak or onboard the *R/V Resolution* and *R/V K-Hi-C*. Past cooperation between the department, the fishing fleet, and buyers has been excellent, and it is hoped that this trend will continue. If cooperation is lacking, closure of sections for the remainder of the season may be necessary, and future openings will be closely evaluated. Fishermen are strongly encouraged to sample catches prior to landing in order to harvest the highest value product possible.

Permit holders and spotter pilots are encouraged to provide biomass estimates, juvenile herring observations, and spawn observations to the department field crews or management staff. Past cooperation has helped evaluate stock status and gain critical management information. All information from fishermen and spotter pilots will remain confidential. Of particular interest are any observations of herring in closed management sections. Timely information will be used by management staff to conduct aerial or hydroacoustic surveys to assess herring abundance.

Samples from the commercial herring harvests need to be collected by ADF&G field crews and management biologists. Once again, industry cooperation is greatly appreciated. Department staff will also collect samples of juvenile herring. Samples are primarily used to monitor age composition and, when used with other stock performance indicators, will assist in determining stock status. Support and assistance from the industry is necessary for this style of fishery management to be successful. This support should result in a more manageable fishery, greater economic benefit to the permit holders, and ensure the long-term health of the KMA herring stocks.

CATCH REPORTING FOR BUYERS AND TENDERS

Processors and independent tender operators are required to provide timely daily catch reports by section. Herring onboard tenders that have not yet been delivered to a processing facility must also be reported. Timely and accurate harvest reports received from field crews, permit holders, tender operators, spotters, and processors are critical in the assessment of herring harvests and guide the management of the fishery. Inaccurate or late information could result in premature area closures or overharvest. Catch reporting procedures and ADF&G contact information is listed on the registration permit.

REGISTRATION PERMIT

Each KMA tender operator and buyer must obtain a registration permit from the ADF&G in the Kodiak office, either in person or through an authorized agent (5AAC 27.540). A registration permit is required prior to taking fish onboard the tender or taking fish at the processing plant. Tenders are required to complete ADF&G fish tickets for each delivery. The fish ticket must have the fisherman's permit information legibly recorded, and must show how many pounds of fish were harvested (the on-the-grounds weight), date of harvest, and section from which the fish were harvested.

PERMIT HOLDER REGISTRATION.

Between April 1 and April 14, all KMA herring sac roe permit holders are required to register with the department and must have a registration permit aboard in order to participate in the herring sac roe fishery (5 AAC 27.510 (a)(4)). After May 8, it is the responsibility of the permit holders to keep the department informed of fishing activity and report herring harvests daily. The registration permit will outline reporting requirements by gear type.

Purse seine permit holders are reminded that they may use only one purse seine vessel to harvest herring – either the vessel identified on the permit card or a replacement vessel. If a Kodiak sac roe seine permit holder intends to fish with a different vessel than is listed on their permit card, they must register the replacement vessel with Kodiak management staff (5 AAC 27.525 (d)).

TRANSPORTER PERMITS

All KMA herring sac roe permit holders that intend to transport herring, other than their own commercially harvested herring, are required to have in their possession a Fish Transporter Permit (AS 16.05.671). Permit applications are available at the Kodiak ADF&G office.

EMERGENCY ORDER ANNOUNCEMENTS

Two types of EOs may be issued in season by the ADF&G for the KMA herring sac roe fishery: 1) announcements of short commercial fishing periods in the Danger Bay, Village Islands/Uganik Bays, Inner Uyak Bay sections; and 2) announcements of in-period fishery closures in all other sections, which follow the standard fishing periods. When a preseason GHl for a section is approached or achieved, that section will be closed for the remainder of the season. Due to the rapid pace of the harvest in certain locations, in-period closures are likely. When in-period closures are necessary, there may be as little as five minutes advanced notice prior to the closure time, or less if practical. In-period closures will be announced on VHF channel 6. Fishermen and tender operators should monitor VHF channel 6 to remain aware of section closures.

At any time during the season, if the department determines that herring stock abundance is below preseason expectations, sections may be closed prior to reaching their GHl.

A news release will be issued to announce fishery decisions such as openings, closures, area restrictions, etc. News releases are distributed to processors, local radio stations and newspapers, and other interested parties. Contact the Kodiak herring area management biologists at the Kodiak ADF&G office to become part of the fax or email distribution lists for herring news releases.

All permit holders, tender operators, and processors are responsible for staying updated on section closures as they occur in season. To accomplish this:

- 1) Contact the herring management staff in the Kodiak office, in person, by telephone at 486-1830, using Matrix AlaskaNet Satellite Dispatch at #7410, or by the department cell phone 539-5495.
- 2) Contact department field personnel on VHF channel 6 or using Matrix Alaska Net Satellite Dispatch (*R/V Resolution* - #7411, and *R/V K-Hi-C* - #7412).
- 3) Contact any local herring processor for the latest Kodiak herring news release.
- 4) Call the ADF&G 24-hour recorded message phone at 486-4559.
- 5) Obtain a copy of the most recent news release from the Kodiak ADF&G office at 211 Mission Road (copies are available 24 hours per day in a bin located outside the main entrance to the building).
- 6) Listen to the ADF&G reports broadcast over the local AM and FM radio stations (consult stations for broadcast times).
- 7) News releases may also be found on the web at:
<http://www.cf.adfg.state.ak.us/region4/finfish/herring/herrhom4.php>

HERRING TEST FISHERY PROGRAM

A herring test fishery program is proposed for the 2008 season to generate funds to be used for Kodiak herring fishery management and research projects. However, herring prices may be too low to warrant test fishing. The department may request bids from processors and/or fishermen for the harvest and purchase of herring if prices approach \$400/ton. Interested skippers should contact a Kodiak herring management biologist at the ADF&G office for more details.

TABLES AND FIGURES

Table 1.—Historical harvest data for the commercial herring sac roe and food/bait fisheries and percent of the total annual herring harvest that occurs by fishery, Kodiak Management Area, 1964 to 2007.

Year	Sac Roe Harvest (Tons)	Food/Bait Harvest (Tons)	Total Herring Harvest (Tons)	Sac Roe Fishery Percent of Total Harvest (%)	Food/Bait Fishery Percent of Total Harvest (%)
1964	568	310	878	65%	35%
1965	657	35	692	95%	5%
1966	2,769	198	2,967	93%	7%
1967	1,662	300	1,962	85%	15%
1968	2,001	15	2,016	99%	1%
1969	1,130	11	1,141	99%	1%
1970	342	8	350	98%	2%
1971	284	44	328	87%	13%
1972	215	50	265	81%	19%
1973	831	178	1,009	82%	18%
1974	868	40	908	96%	4%
1975	8	5	13	62%	38%
1976	5	0	5	100%	0%
1977	338	0	338	100%	0%
1978	904	399	1,303	69%	31%
1979	1,735	125	1,860	93%	7%
1980	2,383	381	2,764	86%	14%
1981	2,065	18	2,083	99%	1%
1982	1,771	326	2,097	84%	16%
1983	2,318	33	2,351	99%	1%
1984	2,163	123	2,286	95%	5%
1985	1,968	102	2,070	95%	5%
1986	1,558	213	1,771	88%	12%
1987	2,146	217	2,363	91%	9%
1988	2,171	340	2,511	86%	14%
1989	2,249	345	2,594	87%	13%
1990	2,347	313	2,660	88%	12%
1991	2,432	215	2,647	92%	8%
1992	4,283	312	4,595	93%	7%
1993	4,929	837	5,766	85%	15%
1994	5,893	677	6,570	90%	10%
1995	4,604	507	5,111	90%	10%
1996	3,386	651	4,037	84%	16%
1997	3,235	756	3,991	81%	19%
1998	2,057	151	2,208	93%	7%
1999	1,651	0	1,651	100%	0%
2000	1,370	0	1,370	100%	0%
2001	1,694	115	1,809	94%	6%
2002	1,677	135	1,812	93%	7%
2003	1,992	199	2,191	91%	9%
2004	3,167	190	3,357	94%	6%
2005	3,463	168	3,631	95%	5%
2006	2,643	169	2,812	94%	6%
2007	2,546	154	2,700	94%	6%
Average					
1964 to 2007	2,011	213	2,224	90%	10%
10 Year Average					
1998 to 2007	2,226	128	2,354	95%	5%
5 Year Average					
2003 to 2007	2,762	176	2,938	94%	6%

Table 2.—Herring sac roe fishery summary of season length, guideline harvest levels (GHL), harvest data by gear type, percentage of harvest by gear type, number of landings, and estimated exvessel earnings, Kodiak Management Area, 1979 to 2007.

Year	Season Length (Days)	GHL (Tons)	Total Harvest (Tons)	Harvest by Gear Type		Percent Harvest by Gear Type		Number of Landings by Gear Type		Units of Gear Fished		Average Catch by Gear		Estimated Average Earnings ^a		Price per Ton ^a (\$)	Estimated Exvessel Total Value ^a (\$)
				Seine (Tons)	Gillnet (Tons)	Seine	Gillnet	Seine	Gillnet	Seine	Gillnet	Seine (Tons)	Gillnet (Tons)	Seine (\$)	Gillnet (\$)		
1979	36	2,400	1,735	1,457	278	84%	16%	-	-	57	125	26	2	\$38,342	\$3,336	\$1,500	\$2,602,500
1980	35	2,400	2,383	2,009	374	84%	16%	-	-	92	109	22	3	\$15,068	\$2,368	\$690	\$1,644,270
1981	48	2,400	2,065	1,596	469	77%	23%	207	406	79	114	20	4	\$14,647	\$2,983	\$725	\$1,497,125
1982	59	2,400	1,771	1,447	324	82%	18%	138	191	45	67	32	5	\$17,686	\$2,660	\$550	\$974,050
1983	51	2,400	2,319	1,797	522	77%	23%	164	284	41	64	44	8	\$35,063	\$6,525	\$800	\$1,855,200
1984	54	2,400	2,163	1,691	472	78%	22%	138	212	39	69	43	7	\$34,687	\$5,472	\$800	\$1,730,400
1985	59	2,000	1,968	1,244	724	63%	37%	118	348	34	81	37	9	\$32,929	\$8,044	\$900	\$1,771,200
1986	61	1,690	1,558	1,110	448	71%	29%	132	385	31	71	36	6	\$34,016	\$5,994	\$950	\$1,480,100
1987	61	1,640	2,146	1,591	554	74%	26%	122	411	29	62	55	9	\$54,862	\$8,935	\$1,000	\$2,146,000
1988	59	2,065	2,171	1,304	867	60%	40%	169	555	33	76	40	11	\$51,370	\$14,830	\$1,300	\$2,822,300
1989	76	2,415	2,249	1,513	736	67%	33%	171	627	37	83	41	9	\$34,758	\$7,537	\$850	\$1,911,650
1990	75	2,375	2,347	1,644	703	70%	30%	156	544	27	63	61	11	\$51,756	\$9,485	\$850	\$1,994,950
1991	83	2,510	2,432	1,697	735	70%	30%	169	587	32	64	53	11	\$45,077	\$9,762	\$850	\$2,067,200
1992	77	2,720	4,283	3,260	1,023	76%	24%	185	706	40	74	82	14	\$40,750	\$6,912	\$500	\$2,141,500
1993	77	3,525	4,929	4,203	726	85%	15%	237	294	41	86	103	8	\$56,382	\$4,643	\$550	\$2,710,950
1994	71	4,550	5,893	4,976	917	84%	16%	285	485	66	57	75	16	\$60,315	\$12,870	\$800	\$4,714,400
1995	73	4,480	4,604	3,837	768	83%	17%	280	642	73	71	53	11	\$66,858	\$13,759	\$1,272	\$5,856,288
1996	69	4,180	3,386	2,322	1,064	69%	31%	202	890	57	74	41	14	\$81,474	\$28,757	\$2,000	\$6,772,000
1997	49	3,435	3,235	2,629	606	81%	19%	183	418	64	59	41	10	\$20,539	\$5,136	\$500	\$1,617,500
1998	50	2,030	2,057	1,954	103	95%	5%	110	26	35	7	56	15	\$27,914	\$7,357	\$500	\$1,028,500
1999	38	1,495	1,651	1,589	62	96%	4%	94	16	31	5	51	12	\$33,984	\$8,221	\$663	\$1,094,613
2000 ^b	37	1,735	1,370	1,290	80	94%	6%	57	23	31	10	42	8	\$29,129	\$5,600	\$700	\$959,000
2001	47	1,540	1,694	1,412	282	83%	17%	67	37	33	9	43	31	\$21,394	\$15,667	\$500	\$847,000
2002	46	1,860	1,677	1,274	403	76%	24%	37	50	30	14	42	29	\$21,233	\$14,393	\$500	\$838,500
2003	42	2,600	1,992	1,738	254	87%	13%	59	45	31	11	56	23	\$28,032	\$11,545	\$500	\$996,000
2004	42	2,850	3,167	2,894	273	91%	9%	95	36	27	11	107	25	\$53,593	\$12,409	\$500	\$1,583,500
2005	31	3,475	3,463	2,932	531	85%	15%	134	61	32	12	92	44	\$45,813	\$22,125	\$500	\$1,731,500
2006	34	3,705	2,643	2,617	26	99%	1%	86	*	21	*	125	*	\$34,270	*	\$275	\$726,825
2007	28	4,000	2,546	2,510	36	99%	1%	105	8	21	3	120	12	\$47,810	\$4,800	\$400	\$1,018,400
Average																	
1979 to 2007	54	2,665	2,617	2,122	495	81%	19%	144	319	42	55	56	13	\$38,957	\$9,162	\$773	\$2,039,083
10 Year Avg.																	
1998 to 2007	40	2,529	2,226	2,021	205	91%	9%	84	34	29	8	73	21	\$34,317	\$10,569	\$504	\$1,082,384
5 Year Avg.																	
2003 to 2007	35	3,326	2,762	2,538	224	92%	8%	96	38	26	8	100	23	\$41,903	\$10,891	\$435	\$1,211,245

^a Exvessel values are based on dock delivered herring and inseason data.

^b Beginning in 2000, an allocative harvest strategy was in effect.

* Confidentiality requirements prohibit the release of this information.

Table 3.—List of districts and management sections, guideline harvest levels (GHLs), closed sections, and district allocation percentages for the herring sac roe fishery, Kodiak Management Area, 2008.

Statistical Area	Management Section	2008 Guideline		
		Harvest Level Tons	Purse Seine Tons	Gillnet Tons
<i>NORTH AFOGNAK DISTRICT</i>				
NA10	Shuyak Island	CLOSED	-	-
NA20	Delphin Bay	CLOSED	-	-
NA30	Perenosa Bay	EXPLORATORY	EXPLORATORY	EXPLORATORY
NA40	Seal Bay	CLOSED	-	-
NA50	Tonki Bay	20	20	CLOSED
<i>WEST AFOGNAK DISTRICT</i>				
WA10	Raspberry Strait	10	CLOSED	10
WA20	Malina Bay	10	CLOSED	10
WA31	Paramanof Bay	CLOSED	-	-
WA32	Foul Bay	CLOSED	-	-
WA40	Blue Fox/Devil's Inlet	EXPLORATORY	EXPLORATORY	EXPLORATORY
WA50	Offshore W. Afognak	CLOSED	-	-
<i>SOUTH AFOGNAK DISTRICT</i>				
SA10	Izhut Bay	40	40	CLOSED
SA20	Kitoy Bay	* Note: SA10, SA20, and SA30 will be managed as one section.		
SA30	MacDonalds Lagoon	* Note: SA10, SA20, and SA30 will be managed as one section.		
SA40	Danger Bay	200	140	60
SA50	Litnik	CLOSED	-	-
SA60	Duck Bay	CLOSED	-	-
<i>TOTAL ALL AFOGNAK DISTRICTS</i>		280	200	80
<i>DISTRICT ALLOCATION PERCENTAGE</i>			71.4%	28.6%
<i>UGANIK DISTRICT</i>				
UG10	Kupreanof	CLOSED	-	-
UG20	Viekoda Bay	25	CLOSED	25
UG21	Terror Bay	30	CLOSED	30
UG30	Village Islands	1,700	1,350	350
UG31	West Uganik Passage	40	-	40
UG32	NE Arm Uganik Bay	* Note: UG30, UG32, UG33, and UG34 will be managed as one section with 1,350 ton GHL for purse seine gear and 350 ton GHL for gillnet gear.		
UG33	East Arm Uganik Bay			
UG34	South Arm Uganik Bay			
UG40	Offshore Uganik	CLOSED	-	-
<i>DISTRICT TOTAL</i>		1,795	1,350	445
<i>DISTRICT ALLOCATION PERCENTAGE</i>			75.2%	24.8%
<i>UYAK DISTRICT</i>				
UY10	Offshore Uyak	CLOSED	-	-
UY20	Harvester Island	CLOSED	-	-
UY30	Inner Uyak	200	200	CLOSED
UY32	Browns Lagoon	30	CLOSED	30
UY31	Larsen Bay	CLOSED	-	-
UY40	Zachar Bay	30	CLOSED	30
UY50	Spiridon Bay	10	CLOSED	10
<i>DISTRICT TOTAL</i>		270	200	70
<i>DISTRICT ALLOCATION PERCENTAGE</i>			74.1%	25.9%

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Table 3.–Page 2 of 3.

Statistical Area	Management Section	2008 Guideline		
		<u>Harvest Level</u> Tons	<u>Purse Seine</u> Tons	<u>Gillnet</u> Tons
<i>ALITAK DISTRICT</i>				
AL10	Outer Alitak	CLOSED	-	-
AL20	Inner Alitak	100	100	CLOSED
AL21	Inner Deadman Bay	200	200	CLOSED
AL22	Outer Deadman Bay	*AL21 and AL22 will be managed as one section.		
AL30	Sulua Bay	75	CLOSED	75
AL40	Lower Olga	50	CLOSED	50
AL41	East Upper Olga Bay	50	50	CLOSED
AL50	West Upper Olga Bay	50	50	CLOSED
AL60	Geese/Twoheaded	EXPLORATORY	EXPLORATORY	EXPLORATORY
<i>DISTRICT TOTAL</i>		525	400	125
<i>DISTRICT ALLOCATION PERCENTAGE</i>			76.2%	23.8%
<i>STURGEON/HALIBUT DISTRICT</i>				
SH10	Sturgeon/Halibut	CLOSED	CLOSED	CLOSED
<i>EASTSIDE DISTRICT</i>				
EA10	Kaiugnak	EXPLORATORY	EXPLORATORY	EXPLORATORY
EA20	SW. Sitkalidak	EXPLORATORY	EXPLORATORY	EXPLORATORY
EA21	Three Saints Bay	EXPLORATORY	EXPLORATORY	EXPLORATORY
EA22	Newman Bay	EXPLORATORY	EXPLORATORY	EXPLORATORY
EA23	W. Sitkalidak Strait	125	125	CLOSED
EA24	Barling Bay	75	75	CLOSED
EA30	E. Sitkalidak Strait	150	150	CLOSED
EA31	Tanginak Anchorage	EXPLORATORY	EXPLORATORY	EXPLORATORY
EA40	Outer Sitkalidak	CLOSED	-	-
EA41	Boulder Bay	CLOSED	-	-
EA42	Shearwater Bay	40	CLOSED	40
EA43	Outer Kiliuda Bay	100	100	CLOSED
EA44	Inner Kiliuda Bay	40	CLOSED	40
EA50	Outer Ugak Bay	250	250	CLOSED
EA51	Inner Ugak Bay	150	CLOSED	150
EA52	Pasagshak Bay	CLOSED	-	-
<i>DISTRICT TOTAL</i>		930	700	230
<i>DISTRICT ALLOCATION PERCENTAGE</i>			75.3%	24.7%
<i>NORTHEAST DISTRICT</i>				
NE10	Womens Bay	30	CLOSED	30
NE20	Kalsin Bay	CLOSED	-	-
NE30	Middle Bay	CLOSED	-	-
NE40	Inshore Chiniak	CLOSED	-	-
NE50	Offshore Chiniak	CLOSED	-	-
<i>DISTRICT TOTAL</i>		30	CLOSED	30
<i>DISTRICT ALLOCATION PERCENTAGE</i>			0%	100%

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Table 3.–Page 3 of 3.

Statistical Area	Management Section	2008 Guideline	Purse Seine Tons	Gillnet Tons
		<u>Harvest Level</u> Tons		
<i>INNER MARMOT DISTRICT</i>				
IM10	Monashka Bay	CLOSED	-	-
IM20	Anton Larsen Bay	CLOSED	-	-
IM30	Sharatin Bay	CLOSED	-	-
IM40	Kizhuyak Bay	60	60	CLOSED
IM50	Spruce Island	CLOSED	-	-
<i>DISTRICT TOTAL</i>		60	60	0
<i>DISTRICT ALLOCATION PERCENTAGE</i>			100.0%	0.0%
<i>NORTH MAINLAND DISTRICT</i>				
NM10	Hallo Bay	CLOSED	-	-
NM20	Inner Kukak	EXPLORATORY	EXPLORATORY	EXPLORATORY
NM30	Outer Kukak	CLOSED	-	-
NM40	Missak Bay	CLOSED	-	-
<i>MID MAINLAND DISTRICT</i>				
MM10	Inner Katmai	EXPLORATORY	EXPLORATORY	EXPLORATORY
MM20	Outer Katmai	CLOSED	-	-
MM30	Alinchak	EXPLORATORY	EXPLORATORY	EXPLORATORY
MM40	Puale Bay	EXPLORATORY	EXPLORATORY	EXPLORATORY
MM50	Portage Bay	EXPLORATORY	EXPLORATORY	EXPLORATORY
MM60	Outer Portage	CLOSED	-	-
<i>SOUTH MAINLAND DISTRICT</i>				
SM10	Wide Bay	EXPLORATORY	EXPLORATORY	EXPLORATORY
SM20	Lower Shelikof	CLOSED	-	-
<i>MAINLAND DISTRICTS TOTAL</i>		0	0	0
<i>DISTRICT ALLOCATION PERCENTAGE</i>			0.0%	0.0%
<i>GRAND TOTAL</i>		3,890	2,910	980
<i>ALLOCATION PERCENTAGE ALL DISTRICTS</i>			74.8%	25.2%

Table 4.—Alaska Department of Fish and Game, Division of Commercial Fisheries management staff, Kodiak Management Area, 2008.

Office:	
Regional Supervisor	Jim McCullough
Regional Management Finfish Supervisor	Dave Sterritt
Area Management Biologist	Jeff Wadle
Assistant Area Management Biologist	Geoff Spalinger
Assistant Area Management Biologist	Joe Dinnocenzo
Fishery Biologist	Iris Caldentey

Field Staff:	
R/V K-Hi-C:	
Boat Officer	Danny Wilson
Management Biologists	Jeff Wadle/Geoff Spalinger
R/V Resolution:	
Boat Officer	Denis Cox
Management Biologist	Joe Dinnocenzo
Field Crews:	
Fishery Technician (crew leader)	Jon Becker
Fishery Technician (crew leader)	Tim Chiles
Fishery Technician	Vacant
Fishery Technician	David Goodie

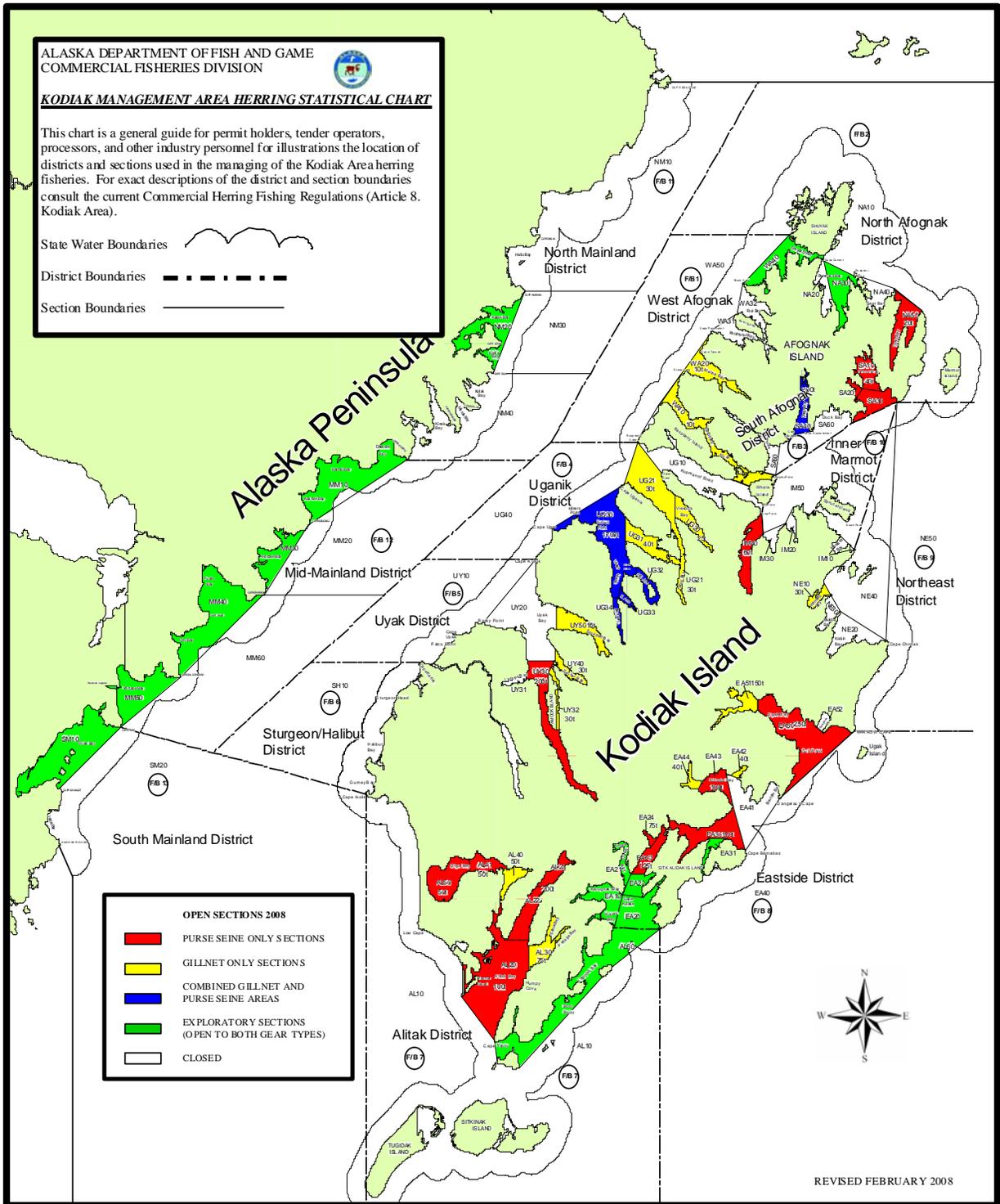


Figure 1.—Map of the Kodiak herring sac roe fishery by harvest areas, 2008.

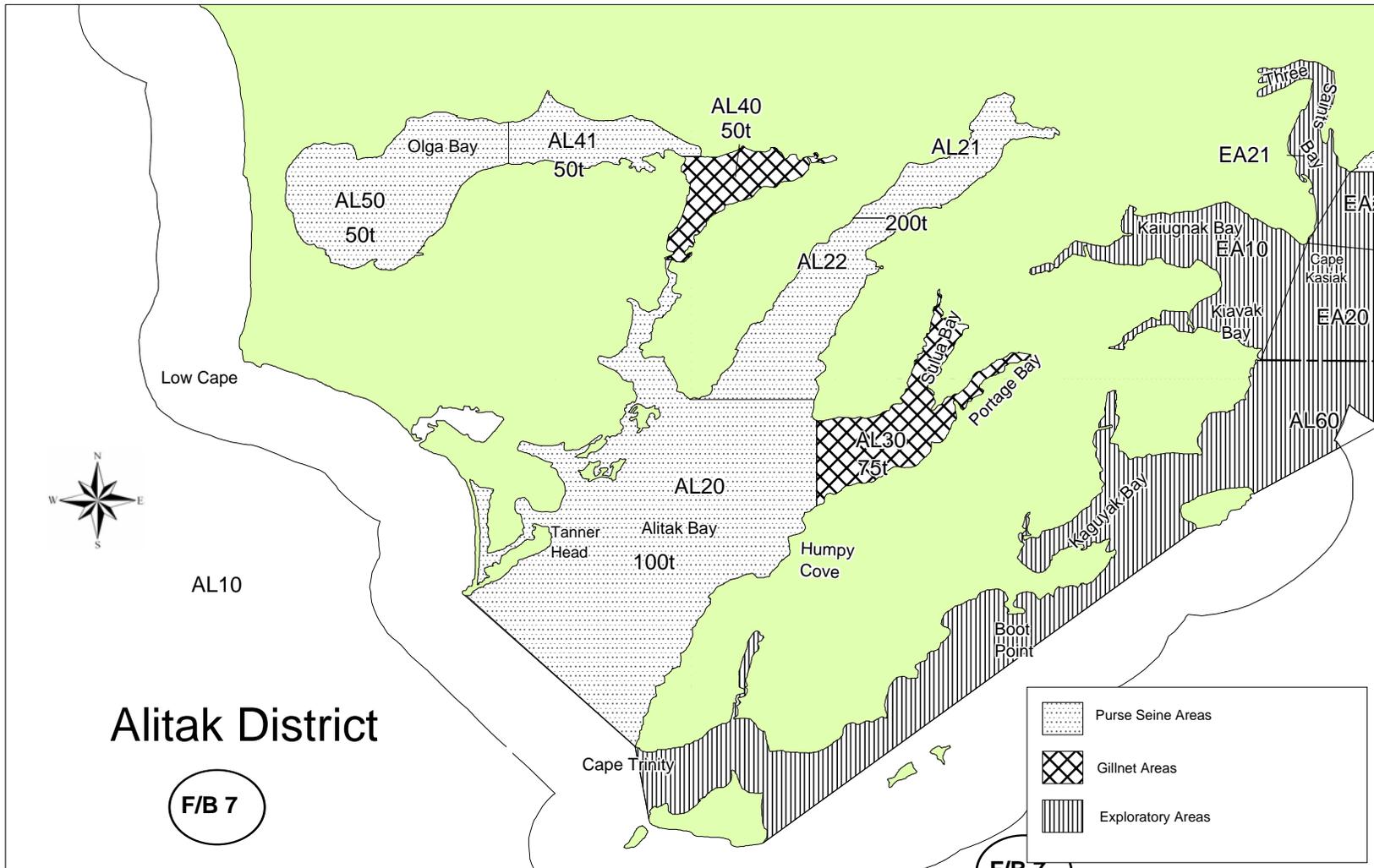


Figure 2.—Map showing the boundary line changes in the Alitak District.