

## **Fishery Management Report 11-74**

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# **2012 Report to the Alaska Board of Fisheries: Southeast Alaska—Yakutat Herring Fisheries**

by

**Kyle Hebert**

December 2011

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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.

<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	$H_A$
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	$e$
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient (multiple)	R
milliliter	mL	west	W	correlation coefficient (simple)	r
millimeter	mm	copyright	©	covariance	cov
		corporate suffixes:		degree (angular)	$^\circ$
<b>Weights and measures (English)</b>		Company	Co.	degrees of freedom	df
cubic feet per second	ft <sup>3</sup> /s	Corporation	Corp.	expected value	$E$
foot	ft	Incorporated	Inc.	greater than	>
gallon	gal	Limited	Ltd.	greater than or equal to	$\geq$
inch	in	District of Columbia	D.C.	harvest per unit effort	HPUE
mile	mi	et alii (and others)	et al.	less than	<
nautical mile	nmi	et cetera (and so forth)	etc.	less than or equal to	$\leq$
ounce	oz	exempli gratia (for example)	e.g.	logarithm (natural)	ln
pound	lb	Federal Information Code	FIC	logarithm (base 10)	log
quart	qt	id est (that is)	i.e.	logarithm (specify base)	log <sub>2</sub> , etc.
yard	yd	latitude or longitude	lat. or long.	minute (angular)	'
		monetary symbols (U.S.)	\$, ¢	not significant	NS
<b>Time and temperature</b>		months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	$H_0$
day	d	registered trademark	®	percent	%
degrees Celsius	°C	trademark	™	probability	P
degrees Fahrenheit	°F	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
degrees kelvin	K	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
hour	h	U.S.C.	United States Code	second (angular)	"
minute	min	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
second	s			standard error	SE
<b>Physics and chemistry</b>				variance	
all atomic symbols				population sample	Var
alternating current	AC			sample	var
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				

***FISHERY MANAGEMENT REPORT NO. 11-74***

**2012 REPORT TO THE ALASKA BOARD OF FISHERIES: SOUTHEAST  
ALASKA—YAKUTAT HERRING FISHERIES**

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## **ABSTRACT**

Herring in Southeast Alaska and Yakutat are harvested for commercial bait, commercial sac roe, commercial spawn-on-kelp, subsistence spawn-on-kelp, and personal use fisheries and Alaska Department of Fish and Game test fisheries. Prior to 1967 a reduction fishery accounted for most of the harvest with a historic high of 78,749 tons during the 1929/30 season. A winter bait fishery has generally occurred every year since the turn of the century. The sac roe fisheries became the dominant fishery beginning in 1971. A wild spawn-on-kelp fishery occurred between 1963 and 1969 with a closed pound fishery authorized by the Board of Fisheries beginning in 1990. During the 2010/11 season, the total regional commercial harvest of herring, including herring estimated for commercial spawn on kelp, was 21,379 tons. The sac roe harvest and winter bait fishery totaled 19,778 tons and 730 tons, respectively. The commercial harvest of spawn on kelp product was 264 tons, resulting in an estimated 930 tons of herring mortality. Test fisheries accounted for approximately 60 tons of herring. No herring fishery occurred in Yakutat.

Keywords: commercial herring harvest, 2010/11 herring season, commercial bait, commercial sac roe, commercial spawn-on-kelp, subsistence, personal use fisheries, Southeast Alaska, Yakutat.

## **INTRODUCTION**

This report summarizes historical harvests and management actions for commercial herring fisheries in Region I through the 2010/11 season with an outlook for the 2011/12 season. The Southeast Alaska Region is a composite of two Registration Areas. Area A, the Southeast Alaska area, encompasses the waters south of Cape Fairweather and north of the International Boundary at Dixon Entrance. Area D, the Yakutat area, extends west from Cape Fairweather to Cape Suckling (Figure 1). Commercial winter bait, sac roe, spawn-on-kelp, and bait pound fisheries occur in only the Southeast Alaska area. Only a winter bait season is provided by regulation in the Yakutat area. Subsistence and personal use harvesting of herring and spawn on kelp occurs in both areas.

## **HISTORY OF THE HERRING FISHERY**

Pacific herring spawning aggregates are found throughout Southeast Alaska. Spawning aggregates vary greatly in size and productivity. In general, herring that spawn on the outer-coastal areas are more productive than those that spawn in the inside waters. Southeast Alaska herring have been commercially harvested since a salting operation was initiated in the 1880s. From the 1890s to the mid-1960s the catch was used primarily to supply herring for reduction to meal and oil. The reduction fishery occurred on mixed aggregates of feeding herring during the summer months. The reduction fishery peaked during the 1920s and 1930s when annual harvests commonly exceeded 50,000 tons (Table 1). The reduction industry was phased out in the mid 1960s due a decline in the abundance of herring and to the development of the Peruvian anchovy reduction industry.

Southeast Alaska herring have historically supplied most of the bait for Alaskan commercial long line and pot fisheries. This harvest occurs during the fall and winter months, a time when bait quality is best, on discrete wintering schools in major bays and inlets. All of the bait harvest is taken by purse seine gear. Relatively small quantities of herring have been harvested for fresh bait pounds. Existing regulations provide for a tray-pack bait fishery designed to produce a sport and commercial troll bait product; however, very little harvest has occurred for this purpose in recent years.

Currently, most of the annual herring harvest is taken in the spring sac roe fishery, which developed in the early 1970s. The sac roe fishery takes herring immediately prior to spawning

when egg maturity is highest. A wild, spawn-on-kelp fishery occurred during the 1960s; however, this fishery was phased out in 1969. A new herring spawn-on-kelp pound fishery was approved by the Alaska Board of Fisheries to begin in the spring of 1990 in Hoonah Sound. In 1992 the Alaska Board of Fisheries created a spawn-on-kelp fishery for the Craig/Klawock area and in 2003 created spawn-on-kelp fisheries in Ernest Sound and Tenakee Inlet.

Subsistence herring products have traditionally included spawn on kelp and herring spawn-on-hemlock branches. Commercial fishing regulations allow commercial fishers to harvest herring for their own bait.

The commercial utilization of Southeast Alaska herring resources has been historically controversial and that remains true today. The subsistence and personal use harvest levels are a minor portion of the total annual take, but are considered very important to the lifestyle and culture of local residents. Commercial harvesting is viewed by much of the public as having a great impact on the local availability of herring. Additionally, herring are a major forage fish and their abundance at fairly high levels is commonly viewed as necessary to ensure healthy populations of predatory fish such as salmon and halibut and associated marine life such as marine birds and several species of marine mammals.

## **MANAGEMENT STRATEGY**

The following management plan for Southeast Alaska commercial herring fisheries was formalized at the January 1994 Board of Fisheries meeting.

5 AAC 27.190. HERRING MANAGEMENT PLAN FOR SOUTHEASTERN ALASKA AREA. For the management of herring fisheries in the Southeastern Alaska Area, the Alaska Department of Fish and Game (ADF&G):

- (1) Shall identify stocks of herring on a spawning area basis;
- (2) Shall establish minimum spawning biomass thresholds below which fishing will not be allowed;
- (3) Shall assess the abundance of mature herring for each stock before allowing fishing to occur;
- (4) Except as provided elsewhere, may allow a harvest of herring at an exploitation rate between 10 percent and 20 percent of the estimated spawning biomass when that biomass is above the minimum threshold level;
- (5) May identify and consider sources of mortality in setting harvest guidelines;
- (6) By emergency order, may modify fishing periods to minimize incidental mortalities during commercial fisheries.

Section 16.05.940.(16) defines a stock as "...a species, subspecies, geographic grouping or other category of fish manageable as a unit" and is here synonymous with spawning aggregate.

A "threshold level" is the minimum herring biomass needed to allow sustained yield and maintain biological productivity. Threshold levels have been established for each of the winter bait, sac roe, and spawn-on-kelp pound spawning aggregates. Threshold levels are based on all



available data and may be evaluated and revised over time. Current threshold levels vary from 1,000 to 25,000 tons for the major sac roe, winter bait, and spawn-on-kelp fisheries (Table 3).

Herring aggregates with a spawning biomass of less than 2,000 tons, of which there are many, are not considered for harvesting in either the Southeast Alaska winter bait or sac roe fisheries. Under the current approach for setting seasonal harvest limits, herring aggregates of 2,000 tons of adult fish would allow for an annual harvest of 200 tons of herring. The region's current management capability prevents successful management of the winter bait or sac roe fisheries for harvests of less than 200 tons. The exceptions are the Hoonah Sound spawn-on-kelp fishery, and the Yakutat winter bait fishery (outside of Yakutat Bay, which is closed to commercial herring fishing), where the spawning threshold is 1,000 tons.

Annual harvest limits are based on a graduated scale that allows for higher harvest rates as the mature herring population increases relative to the threshold level (Figure 2). The approach allows for an annual harvest rate of between 10 to 20% (for Sitka Sound 12%-20%) when the forecasted spawning biomass is at or above established threshold levels. No commercial harvest is allowed if the forecasted spawning biomass is less than the threshold. For all areas, except Sitka Sound, when the forecasted spawning biomass is at the threshold level, a 10% harvest is allowed and the harvest rate increases 2% for each increase in spawning biomass of an amount equal to the threshold level. The harvest rate reaches a maximum of 20% when the stock is six times the threshold level. For Sitka Sound, when the spawning stock is forecasted to be at the threshold of 25,000 tons, the harvest rate is 12%, which increases by 8% with each increase in spawning biomass of an amount equal to the threshold level. This results in maximum harvest rate of 20% when the forecasted spawning biomass is twice the threshold. A more rapidly increasing graduated harvest rate is used for Sitka Sound because the stock is substantially larger and more stable than other herring stocks in the region.

Historically, there have been two direct observation methods for estimating herring biomass in Southeast Alaska: (1) egg deposition dive surveys and (2) vessel hydroacoustic surveys. In cases where egg deposition surveys are used, the biomass estimate is based on data only from mature herring that spawned that season. Acoustic surveys have not been used to estimate biomass since the 1993/94 season, because the method is thought to be less reliable than egg deposition estimation. Beginning in 1994, ADF&G modified the primary method of forecasting herring abundance for major spawning aggregates in Southeast Alaska. Age Structured Analysis (ASA), which relies on a time series of herring population assessment data, was used to forecast herring biomass for those spawning aggregates with adequate historical data (Kah Shakes/Cat Island, Craig, Sitka Sound, Tenakee Inlet, and Seymour Canal). ASA uses estimates of recruitment, age, growth, maturation, natural mortality, weight-at-age, and spawning escapement to forecast herring abundance. Age and growth information is obtained by samples collected from test fishing, commercial harvests, mid-water trawling (department survey), and sampling on the spawning grounds by the department. Forecasts for herring in other areas are currently computed using a biomass accounting method where the observed spawning biomass and age composition from one year is modified by estimates of growth and mortality to produce a subsequent year's biomass forecast.

In the future, ASA-based forecasts may be applied to other areas as the time series of data for those areas becomes sufficient. ADF&G plans to use this tool in additional areas where there is regular, annual collection of relevant age composition and abundance data. The ASA method is also used to forecast spawning biomass of herring in Southcentral Alaska, the Eastern Bering

Sea, and British Columbia. Different forms of ASA models are also integral parts of the biomass assessment for most groundfish stocks in the Bering Sea and the Gulf of Alaska.

## **2010/11 SEASON SUMMARY**

The 2010/11 season commercial herring catch totaled approximately 21,379 tons of herring and herring equivalents (for spawn-on-kelp fisheries where mature herring are not harvested; Tables 1 and 2). The catch included 730 tons of winter bait herring and 19,778 tons of sac roe herring. The “equivalent” of 930 tons of herring was harvested in spawn-on-kelp fisheries. Herring equivalents are estimates of herring mortality resulting from handling during capture and impoundment. Although herring are released from pounds after spawn-on-kelp fisheries, a mortality rate of 75% is assumed. Approximately 60 tons of bait herring were caught in a test fishery conducted in Sitka Sound.

Six sac roe herring fisheries are established by regulation. They include two exclusive purse seine areas (Sitka Sound and Lynn Canal) and two exclusive set gillnet areas (Kah Shakes/Cat Island and Seymour Canal). Regulations for the Hobart Bay/Port Houghton area provide for a herring gillnet fishery if the winter bait fishery does not harvest the entire guideline harvest level (Figure 4). West Behm Canal provides for a commercial sac roe fishery such that set gillnet and purse seine fisheries alternate fisheries (5 AAC 27.197). Both gear types are under a limited entry system. Sac roe fisheries opened in Sitka Sound, Seymour Canal, and West Behm Canal areas in spring 2011. The Kah Shakes/Cat Island area has remained below threshold since the 1998/99 season. Lynn Canal was both below threshold for 2010/11 season and has been since late 1970s.

Spawn-on-kelp fisheries were conducted in Craig and Hoonah Sound during 2011. The winter bait fishery was opened in Craig and Ernest Sound.

## **2010/11 WINTER FOOD AND BAIT FISHERY**

Winter herring fishing for food and bait is allowed by regulation in Districts and/or Sections 1-10, 11-B, 11-C, 12, 13-A, 13-B (only south of the latitude of Aspid Cape), 14, 15-A, and 16 in Southeast Alaska. In the Yakutat area, Yakutat Bay is closed to herring fishing.

The fishing season is set by regulation from October 1 through February 28. In Southeast Alaska, regulations specify that open fishing periods be established by emergency order. Although the existing regulations specify purse seines and set gillnets as legal allowable gear, only purse seine gear has been fished in recent years.

Two spawning aggregates were identified as having harvestable quantities of bait herring during the 2010/11 winter season (Figure 3): the Craig/Klawock area with a bait guideline harvest level (GHL) of 1,140 tons, and the Ernest Sound fishery with a GHL of 476 tons. Both fisheries were open to the commercial harvest of herring December 1, 2010 and closed by regulation February 28, 2011. A total of 670 tons of bait was harvested from the Craig/Klawock area and Ernest Sound (308 tons and 362 tons, respectively, Table 4). The other bait areas, Hobart/Houghton and Tenakee Inlet, were not opened during the 2010/11 season as the forecast of returning biomass was below threshold.

## **2010/11 TEST FISHERIES**

One test fisheries were conducted in Southeast Alaska during the 2010/11 season. The test fishery was conducted in Sitka Sound, where 60 tons of winter bait was harvested. The funds generated were used to obtain data on age structure, spawn timing, and abundance of herring spawning populations. Revenues were also used to defray costs for managing and assessing herring populations.

## **2010/11 SAC ROE FISHERY**

The sac roe harvest was comprised of purse-seine catch of 19,419 from Sitka Sound, and gillnet catch from both Seymour Canal and West Behm Canal which is confidential for both areas due to fewer than three processor participating in those fisheries (Table 5). Abundance forecasts were below minimum population threshold levels for Lynn Canal, Kah Shakes/Cat Island, and Hobart/Houghton, and no fisheries were allowed in these areas during the 2010/11 season.

The Sitka Sound 2011 spawning biomass forecast resulted in a GHF of 19,490 tons. The Sitka Sound sac roe fishery went on two-hour notice effective 0800, March 24, 2008. A total of 14,386 tons was harvested during three openings (March 25, 26, and 41<sup>st</sup> for a total of 9.5 hr). The average roe percentage for all three openings was 11.6%. Fifty permit holders were registered for the fishery and 48 reported landing product.

The 2011 forecast of the mature spawning biomass for Seymour Canal herring was 6,697 tons. The sliding scale harvest rate allowed a 12.5% harvest rate for this biomass and a GHF of 835 tons for the 2010/11 season. The Seymour Canal gillnet sac-roe fishery went on 12-hour notice effective 1800, April 26, 2011. The fishery opened April 26 at 2000 and fishing ended April 27 at 2000. A significant amount of the GHF was not harvested. Twelve permit holders and one processor participated in the fishery.

The biomass for the West Behm Canal spawning aggregate was very small in the 1970s through the early 1990s. From approximately 1993 through 2003 the spawning biomass forecast increased from an estimated 283 tons in 1991 to a maximum forecast of 15,968 tons in 1999. The 2004 forecast was for 9,366 tons of mature spawning herring. In 2003 the threshold for West Behm Canal was increased from 2,000 tons to 6,000 tons. During the January 2000 Board of Fisheries meeting the herring committee recommended opposing, and the Board voted against, creating commercial herring fisheries in West Behm Canal. At its 2003 meeting in Sitka, the Alaska Board of Fisheries authorized a commercial herring sac roe fishery in Behm Canal. The fishery is to be managed (5 AAC 27.197.) such that in years when the threshold level is forecast to be met, fishing gear groups will alternate between set gillnet and purse seine. The West Behm Canal forecast for 2004 was 9,366 tons which would have allowed for a GHF of 940 tons for the gillnet sac roe fishery and 100 tons for the bait pound fishery. This was the first time a sac-roe fishery was to have been opened since the mid 1970s. Actual returns for West Behm Canal in 2004 were estimated at only 443 tons, much lower than forecast. Due to the much lower than expected return, there was no commercial fishery on West Behm Canal herring in 2004. The forecast for 2011 was a mature spawning biomass of 11,864 tons which corresponded to an allowable harvest rate of 12% and a sac roe GHF of 1,276 tons, using set gillnet gear. This fishery was opened on April 11, 2011 at 1030 and closed on April 14, 2011 at 1330.

## **2010/11 HERRING POUND FISHERIES**

There are three types of herring impoundment or “pound” fisheries in Southeast Alaska: tray pack bait, fresh bait, and spawn on kelp. The tray pack pound fishery was created in 1979 when the Board of Fisheries allocated a harvest of up to 100 tons. Fresh bait pounds have historically been allowed by regulation under a permit system in several areas (Figure 5). The conduct and management of the fresh bait and tray pack pound fisheries are essentially the same in that herring are impounded in net pens for a period of time to be sold as bait and both require a commissioner’s permit. During the 2003 Board of Fisheries meeting the two were combined under one management plan, 5 AAC 27.180. and 5 AAC 27.160.(b). In recent years there has been relatively little participation in either of the fresh bait pound fisheries (Table 6).

There are four spawn-on-kelp pound fisheries in Southeast Alaska: Craig/Klawock and Ernest Sound in Southern Southeast, and Hoonah Sound and Tenakee Inlet in Northern Southeast (Figure 7). The spawn-on-kelp fishery for the Craig/Klawock area was initiated in the spring of 1992. The harvest limit of herring is shared with the bait fishery with 40% of the total guideline harvest allocated to the spawn-on-kelp fishery and 60% allocated to the bait fishery. The 40:60% allocation split was new as of the 1997/98 season due to Board of Fisheries action (at the January 1997 meeting) which changed the previous allocation of 15% for spawn-on-kelp and 85% for bait. For the 2010/11 season, the original spawn-on-kelp herring allocation (1,084 tons or 40%) was increased by an amount remaining on the bait fishery allocation; however it is confidential due to fewer than three participants in the winter bait harvest, and the spawn-on-kelp GHL was announced as “above 1,000 tons”, which allowed for the maximum kelp allocation. There were 15 single-closed pound and 19 double-closed pounds on the grounds during the 2010/11 season and 70 tons of spawn-on-kelp product were landed (Table 7).

For the Hoonah Sound spawn-on-kelp fishery 2010/11 season, the GHL was 3,015 tons of herring. There were 86 single-closed pounds, 2 double-closed pounds, and 1 experimental pound on the fishing grounds. A total of 194 tons of spawn-on-kelp product was harvested during the fishery (Table 7).

During its meeting in January 2003, the Board of Fisheries created two new herring spawn-on-kelp fisheries in Southeast Alaska: District 7 (Ernest Sound) and Section 12-A (Tenakee Inlet). The Ernest Sound fishery is considered part of the Southern Southeast spawn-on-kelp limited entry fishery and Tenakee Inlet is considered part of the Northern Southeast spawn-on-kelp limited entry fishery. In Ernest Sound, a spawn-on-kelp fishery is allocated any remaining GHL that is not harvested by the winter food and bait fishery or the bait pound fishery. During the 2011/11 season, the remaining GHL for the spawn-on-kelp fishery was within the 100-299 range. The harvest from the winter bait fishery is confidential due to fewer than three participants in the fishery. Although the fishery was opened April 1, there was no participation in the fishery and no harvest. No spawn-on-kelp fishery occurred in Tenakee Inlet in 2010/11 as the stock was determined to be below threshold.

## **HERRING SPAWN-ON-KELP SUBSISTENCE FISHERY**

The harvest of "wild" herring spawn on kelp has occurred traditionally throughout the region. The Southeast Alaska fishery is regulated solely through the issuance of subsistence spawn-on-kelp permits at local ADF&G offices, while no permit is required for the Yakutat area. The permits specify times, areas, and amounts of spawn on kelp allowed. The annual possession limit

for herring spawn-on-kelp is 32 pounds for an individual or 158 pounds for a household of two or more persons. Additional permits for herring spawn-on-kelp above the annual possession limit is allowed at the department's discretion.

Subsistence spawn-on-kelp harvests generally occur in March and April near Craig, Hydaburg, and Sitka where major herring spawning populations are found (Figure 6). *Macrocystis* kelp is the preferred species of kelp. In 2011, based on department permits, an estimated combined total of 12,977 pounds (Table 8) of wild spawn-on-kelp product was harvested in these areas.

## **HISTORICAL VALUE**

Exvessel value data was obtained September 29, 2008 from the Commercial Fisheries Entry Commission's (CFEC) web site at <http://www.cfec.state.ak.us/bit/mnuherr.htm> for 1977 through 2007. Data for 2008 from CFEC is not expected to be available until late 2009 and 2007 data is preliminary. Data is not inflation adjusted. Questions, definitions, and additional information concerning exvessel value may be directed to the above web site and CFEC, and is reproduced here for convenience (Table 9). CFEC data is collected and recorded on an annual basis. Consequently, winter bait fishery values do not reflect the seasonal but the annual values of a fishery.

From 1990 through 2010, commercial exvessel values have ranged from a low of \$1,971,960 in 1991 to a high of \$21,002,000 in 2008. Generally, the largest percentage of the total value occurs in the seine sac roe fishery.

## **2011/12 SEASON OUTLOOK**

There are several areas where GHLS may be available the commercial bait pound fishery (Figure 5). In District 7 and Tenakee Inlet, any remaining, unharvested GHLS will be allocated to the District 7 and/or the Tenakee Inlet spawn-on-kelp fisheries. After the spawn-on-kelp fishery has closed, any remaining unharvested portion of the GHLS will be allocated to the bait pound fishery (5 AAC 27.160(b)(6) and (9)).

The winter food and bait herring fisheries opened in Southeast Alaska November 25, 2011 in two areas with a combined GHLS of 4,353 tons. The Craig/Klawock winter food and bait GHLS of 4,108 tons is 60% of the total GHLS of 6,847 tons. The remaining 40%, and any portion not harvested during the winter bait fishery, is allocated to the spawn-on-kelp fishery. The Ernest Sound winter food and bait GHLS of 245 tons is 90% of the total Ernest Sound GHLS of 272 tons. Any portion of the Ernest Sound GHLS not taken by the winter bait fishery will be allocated to the herring spawn-on-kelp fishery; if the remaining GHLS is less than 50 tons, there will be no spawn-on-kelp pound fishery (5 AAC 27.185(i)).

The 2012 GHLS for the Hoonah Sound spawn-on-kelp fishery is 2,139 tons. The kelp allocation for 2012 will be the same as 2011, which is the maximum allowed in regulation (5 AAC 27.185(c)).

The 2012 preliminary forecast for Sitka Sound is 145,042 tons with a preliminary GHLS of 29,008 tons. The Sitka Sound spawning aggregate age composition forecast is: 13% age-3, 24% age-4, 25% age-5, 14% age-6, 11% age-7, and 13% age-8 and older herring. Samples to estimate mean weight will be collected from the scheduled winter bait test fishery in Sitka Sound to update the forecast.

The Seymour Canal forecast was not available by the time this report was published.

The 2012 forecast for West Behm Canal is 7,915 tons of mature herring. This allows a harvest rate of 10.6%, for a total GHL of 842 tons. By regulation (5 AAC 27.160), 10 percent of the GHL is allocated to the bait pound fishery on an annual basis. Therefore, the GHL for the 2012 West Behm Canal sac roe fishery is 758 tons. The forecast indicates that the spawning stock will consist of 28% age-3, 28% age-4, 34% age-5, 5% age-6, 4% age-7, and 2% age-8 and older herring.

Stocks that are below threshold for the 2011/12 season in clued Hobart Bay/Port Houghton, Tenakee Inlet, and Lynn Canal, and no commercial fisheries will be conducted in these areas. No commercial harvest has occurred in the Lynn Canal area since the 1981/82 season.

Similarly, relatively little to no spawning has occurred in recent years in the Kah Shakes/Cat Island area. Average nautical miles of spawn for the Kah Shakes/Cat Island area from 1974 through 1998 (latest year a commercial harvest occurred) was approximately 10.9 nmi.

## **TABLES AND FIGURES**

Table 1.—Southeast Alaska herring harvests in tons, 1900/01 to 2010/11.

Season	Total harvest <sup>a,b</sup>	Season	Total harvest <sup>a,b</sup>	Season	Total harvest <sup>a,b</sup>	Season	Total harvest <sup>a,b</sup>
1900/01	1,194	1928/29	53,007	1956/57	22,819	1984/85	11,079
1901/02	1,250	1929/30	78,749	1957/58	24,745	1985/86	9,792
1902/03	812	1930/31	70,855	1958/59	38,797	1986/87	8,369
1903/04	1,494	1931/32	44,857	1959/60	49,866	1987/88	16,152
1904/05	1,521	1932/33	49,786	1960/61	38,906	1988/89	16,191
1905–06	1,309	1933/34	61,588	1961/62	24,709	1989/90	8,194
1906/07	1,005	1934/35	66,842	1962/63	16,959	1990/91	6,034
1907/08	1,382	1935/36	58,155	1963/64	15,703	1991/92	9,975
1908/09	1,711	1936/37	36,713	1964/65	23,553	1992/93	12,253
1909/10	1,075	1937/38	50,334	1965/66	12,390	1993/94	7,514
1910/11	6,867	1938/39	22,356	1966/67	5,670	1994/95	5,104
1911/12	12,057	1939/40	20,028	1967/68	3,214	1995/96	9,854
1912/13	16,067	1940/41	3,137	1968/69	1,852	1996/97	14,729
1913/14	13,496	1941/42	6,230	1969/70	2,644	1997/98	10,590
1914/15	8,318	1942/43	3,691	1970/71	5,015	1998/99	12,903
1915/16	6,964	1943/44	6,235	1971/72	3,867	1999/00	6,451
1916/17	11,194	1944/45	16,801	1972/73	6,307	2000/01	14,706
1917/18	12,445	1945/46	24,126	1973/74	7,837	2001/02	13,671
1918/19	17,825	1946/47	37,564	1974/75	7,985	2002/03	11,950
1919/20	10,962	1947/48	41,829	1975/76	7,942	2003/04	17,015
1920/21	16,452	1948/49	16,125	1976/77	8,640	2004/05	18,410
1921/22	6,012	1949/50	14,279	1977/78	6,071	2005/06	14,287
1922/23	16,950	1950/51	13,411	1978/79	6,532	2006/07	16,014
1923/24	21,240	1951/52	10,652	1979/80	9,217	2007/08	21,520
1924/25	29,395	1952/53	16,020	1980/81	8,393	2008/09	22,308
1925/26	57,782	1953/54	12,435	1981/82	8,723	2009/10	24,779
1926/27	73,843	1954/55	6,446	1982/83	9,764	2010/11	23,805
1927/28	45,310	1955/56	11,368	1983/84	9,076	-	-

<sup>a</sup> Harvests include the fresh bait pound harvest and test fishery harvests.

<sup>b</sup> Includes spawn-on-kelp harvests converted to herring equivalents at 12.5 to 1 ratio.



Table 2.—Southeast Alaska annual herring catch (tons) by fishery, 1960/61 through 2010/11 seasons.

Year	Reduction	Winter Bait	Spawn on Kelp <sup>a</sup>	Sac Roe	Test <sup>b</sup>	Bait Pound	Total <sup>b</sup>
1960/61	36,790	2,116	-	-	-	-	38,906
1961/62	22,869	1,840	-	-	-	-	24,709
1962/63	13,765	3,172	22	-	-	-	16,959
1963/64	13,539	2,064	100	-	-	-	15,703
1964/65	21,397	1,957	199	-	-	-	23,553
1965/66	10,062	2,094	234	-	-	-	12,390
1966/67	2,918	2,422	330	-	-	-	5,670
1967/68	-	3,025	189	-	-	-	3,214
1968/69	-	1,816	36	-	-	-	1,852
1969/70	-	2,644	-	-	-	-	2,644
1970/71	-	3,324	-	1,691	-	-	5,015
1971/72	-	2,045	-	1,822	-	-	3,867
1972/73	-	3,954	-	2,353	-	-	6,307
1973/74	-	5,856	-	1,981	-	-	7,837
1974/75	-	5,910	-	2,075	-	-	7,985
1975/76	-	5,688	-	2,254	-	-	7,942
1976/77	-	6,409	-	2,231	-	-	8,640
1977/78	-	4,042	-	2,029	-	-	6,071
1978/79	-	3,485	-	3,047	-	-	6,532
1979/80	-	2,717	-	6,500	-	-	9,217
1980/81	-	1,671	-	6,722	-	-	8,393
1981/82	-	1,530	-	7,193	-	-	8,723
1982/83	-	1,030	-	8,713	-	21	9,764
1983/84	-	620	-	8,411	-	45.2	9,076
1984/85	-	1,406	-	9,636	-	37	11,079
1985/86	-	2,442	-	7,319	-	31	9,792
1986/87	-	2,347	-	5,957	-	65	8,369
1987/88	-	4,016	-	11,246	-	17	15,279
1988/89	-	3,155	-	12,970	-	66	16,191
1989/90	-	3,843	12	4,163	-	38	8,194
1990/91	-	3,273	13.3	2,514	-	81	6,034
1991/92	-	2,719	48.8	6,614	-	32.3	9,975
1992/93	-	1,052	19.7	10,955	-	*	12,253
1993/94	-	879	49.2	5,884	136	0	7,514
1994/95	-	464	54.4	3,850	109.8	0	5,104
1995/96	-	484	37.3	8,749	154.5	0	9,854
1996/97	-	727	88	12,726	176	0	14,729
1997/98	-	840	108.4	8,233	162	0	10,590
1998/99	-	1,033	108	10,348	172	0	12,903
1999/00	-	926	36	4,966	109	*	6,451
2000/01	-	775	92.2	12,654	124	0	14,706
2001/02	-	355	171.9	10,854	306.4	6.8	13,671
2002/03	-	*	263.4	8,570	86.5	0.6	11,950
2003/04	-	*	447.4	11,296	231	7.3	17,015
2004/05	-	553	392.2	12,515	440.1	*	18,410
2005/06	-	689	191.1	11,155	55.0	0	14,287
2006/07	-	576	203.9	12,790	99.0	0	16,014
2007/08	-	655	386.5	15,900	133.8	0	21,520
2008/09	-	804	438.5	15,963	60	0	22,308
2009/10	-	1,021	407.0	18,615	55	0	24,779
2010/11	-	670	263.7	19,778	60	0	23,805

Note: \* When number of permits is less than three, information is considered confidential.

<sup>a</sup> A spawn-on-kelp pound fishery was implemented in the spring of 1990; prior harvests were from the “wild” spawn-on-kelp fishery. Harvest is tons of spawn-on-kelp product.

<sup>b</sup> Includes spawn-on-kelp product converted to herring equivalents at 12.5 to 1 ratio.

Table 3.—Herring spawning threshold levels for major herring aggregates in Southeast Alaska and Yakutat.

Area	Threshold Level (tons)
Hoonah Sound	1,000
Yakutat Bay	1,000
Ernest Sound	2,500
Anita Bay	2,500
Port Camden	2,500
Hobart Bay/Port Houghton	2,000
Lisianski Inlet	2,500
Seymour Canal	3,000
Tenakee Inlet	3,000
Tongass Narrows and George and Carroll Inlets	3,500
Craig/Klawock	5,000
Kah Shakes and Cat Island	6,000
Lynn Canal	5,000
Sitka Sound	25,000
West Behm Canal	6,000
Other aggregates not included above	2,000

Table 4.–Southeast Alaska winter food and bait herring harvest in tons, by fishing area and season, 1982/83 through 2010/11.

Year	Craig / Klawock	Anita Bay	Earnest Sound	Hobart Bay / Houghton	Port Camden	Tenakee Inlet	Lisianski Inlet	Whale/ Necker Bay	Scow Bay	Slocum Arm	Total
1982/83	140	124	0	0	0	749	0	0	17	0	1,030
1983/84	0	0	0	0	42	619	0	0	0	0	661
1984/85	0	0	0	0	0	1,406	0	0	0	0	1,406
1985/86	302	0	0	0	0	2,040	0	0	0	0	2,342
1986/87	1,231	0	0	0	0	1,275	0	0	0	0	2,506
1987/88	2,014	0	0	0	0	1,577	280	0	0	257	4,128
1988/89	1,730	0	0	0	0	655	770	0	0	0	3,155
1989/90	3,221	0	0	0	0	595	27	0	0	0	3,843
1990/91	3,272	0	0	0	0	0	0	0	0	0	3,272
1991/92	2,295	0	0	0	0	0	353	0	0	0	2,648
1992/93	629	0	8	0	0	0	239	176	0	0	1,052
1993/94	636	0	0	140	0	0	0	103	0	0	879
1994/95	124	0	111	229	0	0	0	0	0	0	464
1995/96	34	0	220	230	0	0	0	0	0	0	264
1996/97	525	0	6	104.4	0	98	0	0	0	0	727
1997/98	254	0	0	0	0	586	0	0	0	0	840
1998/99	102	0	96	0	0	835	0	0	0	0	1,033
1999/00	*	0	0	432	0	494	0	0	0	0	926
2000/01	*	0	0	0	0	775	0	0	0	0	775
2001/02	*	0	0	0	0	355	0	0	0	0	355
2002/03	*	0	0	0	0	*	0	0	0	0	*
2003/04	*	0	*	0	0	*	0	0	0	0	*
2004/05	553	0	0	0	0	0	0	0	0	0	553
2005/06	689	0	0	0	0	0	0	0	0	0	689
2006/07	576	0	0	0	0	0	0	0	0	0	576
2007/08	565	0	90	0	0	0	0	0	0	0	655
2008/09	143	0	*	0	0	*	0	0	0	0	804
2009/10	*	0	*	0	0	*	0	0	0	0	1,021
2010/11	*	0	*	0	0	0	0	0	0	0	670

Note: \* Data considered confidential with fewer than three permits.

Table 5.—Annual Southeast Alaska sac roe herring harvest by area, in tons, 1971 through 2011.

Season	Sitka Sound	Lynn Canal	Seymour	Revillagigedo	Other Areas	All Areas
			Canal	Channel		
1970/71	748	688	35	0	220 <sup>a</sup>	1,691
1971/72	602	524	495	0	201 <sup>b</sup>	1,822
1972/73	597	798	506	0	452 <sup>c</sup>	2,353
1973/74	681	396	904	0	0	1,981
1974/75	1,517	558	0	0	0	2,075
1975/76	800	630	195	426	203 <sup>d</sup>	2,254
1976/77	0	926	485	820	0	2,231
1977/78	175	954	729	171	0	2,029
1978/79	2,250	0	269	528	0	3,047
1979/80	4,385	975	0	1,140	0	6,500
1980/81	3,506	761	615	1,840	0	6,722
1981/82	4,363	551	0	2,279	0	7,193
1982/83	5,450	0	0	3,250	0	8,713
1983/84	5,830	0	518	2,182	0	8,411
1984/85	7,475	0	0	2,161	0	9,636
1985/86	5,443	0	339	1,537	0	7,319
1986/87	4,216	0	302	1,439	0	5,957
1987/88	9,575	0	586	1,087	0	11,246
1988/89	12,135	0	547	592	0	12,970
1989/90	3,804	0	359	0	0	4,163
1990/91	1,908	0	0	660	0	2,514
1991/92	5,368	0	0	1,246	0	6,614
1992/93	10,186	0	0	737	0	10,953
1993/94	4,758	0	382	749	0	5,884
1994/95	2,908	0	319	626	0	3,853
1995/96	8,144	0	0	605	0	8,749
1996/97	11,147	0	0	1,137	442 <sup>e</sup>	12,726
1997/98	6,705	0	586	616	351 <sup>e</sup>	8,233
1998/99	9,136	0	706	0	506 <sup>e</sup>	10,348
1999/00	4,813	0	389	0	0	4,966
2000/01	11,972	0	620	0	0	12,654
2001/02	9,789	0	1,066	0	0	10,854
2002/03	7,051	0	1,519	0	0	8,570
2003/04	10,492	0	804	0	0	11,296
2004/05	11,366	0	945	0	204 <sup>e</sup>	12,515
2005/06	9,967	0	1,187	0	0	11,155
2006/07	11,571	0	1,219	0	0	12,790
2007/08	14,386	0	1,208	0	306 <sup>e</sup>	15,900
2008/09	14,755	0	867	0	341 <sup>e</sup>	15,962
2009/10	17,602	0	710	0	302 <sup>e</sup>	18,615
2010/11	19,419	0	*	0	* <sup>f</sup>	*

<sup>a</sup> Washington Bay (76 tons), Lisianski Inlet (100 tons).

<sup>b</sup> Lisianski Inlet.

<sup>c</sup> Yakutat Bay (158 tons), Helm Bay (194 tons), and Lisianski Inlet (100 tons).

<sup>d</sup> Helm Bay (26 tons), Chaik Bay (40 tons), Pybus Bay (22 tons), Gambier Bay (8 tons), and Kasaan Bay (107 tons).

<sup>e</sup> Hobart Bay/Port Houghton commercial sac roe gillnet fishery harvest, not including test fishery harvest.

Table 6.–Fresh herring bait pound harvests in tons by area, 1983 through 2011.

Year	Scow Bay	Farragut Bay	Sitka Sound	Tee Harbor	Indian Cove	Lisianski Inlet	West Behm Canal	Total Harvest
1982/83	7	14	0 <sup>a</sup>	0	0	0	-	21
1983/84	0	10.2	35	0	0	0	-	45.2
1984/85	0	4.3	33	0	0	0	-	37.3
1985/86	0	5	26	0	0	0	-	31
1986/87	0	3	62	0	0	0	-	65
1987/88	0	0	17	0	0	0	-	17
1988/89	0	0	66	0	0	0 <sup>a</sup>	-	66
1989/90	0	0	38	0	0	0	-	38
1990/91	0	16	65	0	0	0	-	81
1991/92	0	15	17	0	0	0	-	32
1992/93	0	0	*	0	0	0	-	*
1993/94	0	0	*	0	0	0	-	*
1994/95	0	0	0	0	0	0	-	0
1995/96	0	0	0	0	0	0	-	0
1996/97	0	0	0	0	0	0	-	0
1997/98	0	0	0	0	0	0	-	0
1998/99	0	0	0	0	0	0	-	0
1999/00	0	0	*	0	0	0	-	*
2000/01	0	0	0	0	0	0	-	0
2001/02	0	0	6.8	0	0	0	-	6.8
2002/03	0	0	*	0	0	0	0.6	0.6
2003/04	0	0	7.3	0	0	0	0	7.3
2004/05	0	0	*	0	0	0	0	*
2005/06	0	0	0	0	0	0	0	0
2006/07	0	0	0	0	0	0	0	0
2007/08	0	0	0	0	0	0	0	0
2008/09	0	0	0	0	0	0	0	0
2009/10	0	0	0	0	0	0	0	0
2010/11	0	0	0	0	0	0	0	0

Note: \* When number of permits are less than three, information is confidential.

<sup>a</sup> Pounds were allowed by regulation in Sitka Sound in 1983 and in Lisianski Inlet in 1989.

Table 7.—Herring spawn-on-kelp (SOK) pound fishery in tons of SOK product, 1990 through 2011.

Year	Craig / Klawock	Hoonah Sound	Ernest Sound	Tenakee Inlet	Total
1989/90	-	11.9	-	-	11.9
1990/91	-	13.2	-	-	13.2
1991/92	25.7	23.1	-	-	48.8
1992/93	5.7	14	-	-	19.7
1993/94	16.5	32.7	-	-	49.2
1994/95	25.4	29	-	-	54.4
1995/96	37.2	0	-	-	37.2
1996/97	23	65	-	-	88
1997/98	22.4	86	-	-	108.4
1998/99	36	71.6	-	-	107.6
1999/00	0.0 <sup>a</sup>	35.7	-	-	35.7
2000/01	27.2	66.2	-	-	93.4
2001/02	41.7	136.6	-	-	178.3
2002/03	69.2	146.6	No Quota	47.6	263.4
2003/04	49.3	243.3	56.1	98.7	447.4
2004/05	115.2	183.3	No Quota	93.7	392.2
2005/06	29	162.1	No Quota	No Quota	191.1
2006/07	44.5	159.4	No Quota	No Quota	203.9
2007/08	148.5	228.1	9.8	No Quota	386.5
2008/09	137.3	234.7	2.5	64.1	438.5
2009/10	116.7	290.4	No Quota	No Quota	407.0
2010/11	70.0	193.7	No Quota	No Quota	263.7

<sup>a</sup> Craig/Klawock 2000 pound GHLL was 280 tons of herring. Estimated Craig spawning biomass was 9,591 tons. No product was landed.

Table 8.—Herring spawn-on-kelp subsistence estimated harvest (lb), 1965 through 2011.

Year	CRAIG-KLAWOCK-HYDABURG			SITKA			KAH SHAKES			Other		
	Permits			Permits			Permits			Permits		
	Issued	Returned	Estimated Harvest *	Issued	Returned	Estimated Harvest *	Issued	Returned	Estimated Harvest *	Issued	Returned	Estimated Harvest *
1967	201	130	3,368	-	-	-	-	-	-	-	-	-
1968	130	95	2,260	-	-	-	-	-	-	-	-	-
1969	80	61	2,858	-	-	-	-	-	-	-	-	-
1966	145	86	5,200	-	-	-	-	-	-	-	-	-
1970	103	60	3,213	-	-	-	-	-	-	-	-	-
1971	81	66	2,643	-	-	-	-	-	-	-	-	-
1972	102	44	4,250	-	-	-	-	-	-	-	-	-
1973	31	9	1,209	-	-	-	-	-	-	-	-	-
1974	159	39	3,087	-	-	-	-	-	-	-	-	-
1975	92	34	1,640	-	-	-	-	-	-	-	-	-
1976	54	12	1,728	-	-	-	-	-	-	-	-	-
1977	34	7	352	-	-	-	-	-	-	-	-	-
1978	109	83	3,521	-	-	-	11	8	122	-	-	-
1979	102	81	1,268	21	10	137	16	6	0	-	-	-
1980	309	189	3,721	19	13	145	33	24	75	-	-	-
1981	157	87	6,148	26	19	192	6	5	12	-	-	-
1982	187	81	5,485	36	25	886	30	18	342	-	-	-
1983	302	189	5,945	69	48	1,991	33	24	103	-	-	-
1984	261	159	4,972	50	40	1,281	14	6	116	-	-	-
1985	233	168	9,553	71	45	3,963	19	10	0	-	-	-
1986	241	142	5,565	90	82	3,929	5	2	0	-	-	-
1987	263	158	15,038	97	59	8,827	5	4	0	-	-	-
1988	191	124	6,354	127	77	6,146	6	6	68	-	-	-
1989	221	117	11,699	70	53	962	10	9	0	-	-	-
1990	245	172	10,158	71	63	4,022	7	0	0	-	-	-
1991	274	142	12,627	75	61	5,925	4	4	60	-	-	-
1992	407	304	16,677	118	90	7,151	8	7	75	-	-	-
1993	290	167	5,592	61	47	5,307	8	3	0	-	-	-
1994	293	161	5,376	81	63	3,078	9	6	0	-	-	-
1995	201	80	3,446	57	46	2,182	3	1	0	-	-	-
1996	261	164	11,443	100	76	6,000	4	3	0	-	-	-
1997	226	166	8,247	87	60	4,837	0	0	0	-	-	-
1998	213	88	5,670	60	42	3,079	0	0	0	-	-	-
1999	185	120	6,420	58	39	3,746	1	1	40	-	-	-
2000	116	77	820	47	46	2,759	0	0	0	-	-	-
2001	118	50	7,054	52	46	910	0	0	0	-	-	-
2002	111	35	7,164	47	41	4,111	1	0	0	-	-	-
2003	144	100	9,698	40	32	3,139	2	1	0	2 <sup>b</sup>	1	0
2004	95	57	5,685	52	36	10,412	6	5	0	7 <sup>b</sup>	6	0
2005	140	90	9,770	41	28	2,196	3	3	0	1 <sup>b</sup>	1	0
2006	92	82	6,074	32	31	3,399	0	0	0	0	0	0
2007	109	81	3,505	42	37	2,403	0	0	0	0	0	0
2008	117	57	7,043	41	39	1,741	0	0	0	0	0	0
2009	131	63	10,584	67	59	4,080	0	0	0	0	0	0
2010	102	51	7,288	60	55	5,784	0	0	0	0	0	0
2011	125	70	10,395	55	45	3,377	0	0	0	0	0	0

<sup>a</sup> Total harvest extrapolated from harvests reported on returned permits to include an estimate of unreported harvests.

<sup>b</sup> West Behm Canal.

Table 9.—Southeast Alaska commercial herring fisheries total gross earnings (in thousands), 1977 through 2011, by calendar year. All values obtained from CFEC.

Year	Winter Bait	Seine Sac Roe	Gillnet Sac Roe	SOK -Southern	SOK -Northern	Total
1977	\$507	\$695	-	-	-	\$1,202
1978	-	\$1,422	-	-	-	\$1,422
1979	-	\$9,052	-	-	-	\$9,052
1980	-	\$2,132	\$312	-	-	\$2,444
1981	\$343	\$2,376	\$1,246	-	-	\$3,965
1982	\$558	\$1,663	\$602	-	-	\$2,823
1983	\$166	\$5,032	\$2,949	-	-	\$8,147
1984	\$128	\$3,729	\$2,327	-	-	\$6,184
1985	\$321	\$7,883	\$3,186	-	-	\$11,390
1986	\$548	\$7,413	\$2,636	--	-	\$10,597
1987	\$586	\$4,396	\$2,547	-	-	\$7,529
1988	\$1,010	\$4,169	\$3,108	-	-	\$8,287
1989	\$900	\$1,182	\$1,379	-	-	\$3,461
1990	\$1,030	\$1,950	\$260	-	\$199	\$3,439
1991	\$916	\$206	\$624	-	\$226	\$1,972
1992	\$720	\$1,373	\$1,777	-	\$529	\$4,399
1993	\$471	\$3,484	\$1,300	-	\$417	\$5,672
1994	\$125	\$3,626	\$1,768	-	\$1,823	\$7,342
1995	\$147	\$3,933	\$1,864	\$999	\$1,476	\$8,419
1996	-	\$14,350	\$1,665	\$1,328	Confidential	\$17,343
1997	\$175	\$4,726	\$990	\$282	\$1,082	\$7,255
1998	\$526	\$1,646	\$613	\$69	\$169	\$3,023
1999	\$397	\$4,906	\$713	\$374	\$1,244	\$7,634
2000	\$236	\$2,667	\$226		\$596	\$3,725
2001	\$131	\$5,794	\$254	\$342	\$1,017	\$7,538
2002	\$110	\$4,441	\$614	\$352	\$1,733	\$7,250
2003	Confidential	\$3,201	\$784	\$759	\$2,288	\$7,032
2004	Confidential	\$5,162	\$497	\$653	\$2,880	\$9,192
2005	Confidential	\$6,118	\$408	\$625	\$1,566	\$8,717
2006	Confidential	\$2,645	\$389	\$289	\$2,013	\$5,336
2007	Confidential	\$5,693	\$570	\$1,090	\$4,491	\$11,844
2008	\$232	\$10,732	\$1,426	\$3,493	\$5,119	\$21,002
2009	Confidential	\$12,678	\$1,064	\$1,277	\$2,890	\$17,909
2010 <sup>a</sup>	Confidential	\$12,146	\$546	\$756	\$2,256	\$15,704
Recent 10-yr (2001–2010) Average						
	\$158	\$6,861	\$655	\$964	\$2,625	\$11,152
Recent 5-yr (2006–2010) Average						
	\$232	\$8,779	\$799	\$1,381	\$3,354	\$14,359

<sup>a</sup> Preliminary data from Commercial Fisheries Entry Commission (CFEC).

<sup>a</sup> Preliminary CFEC data.

<sup>b</sup> Preliminary Division of Commercial Fishery manager estimates.



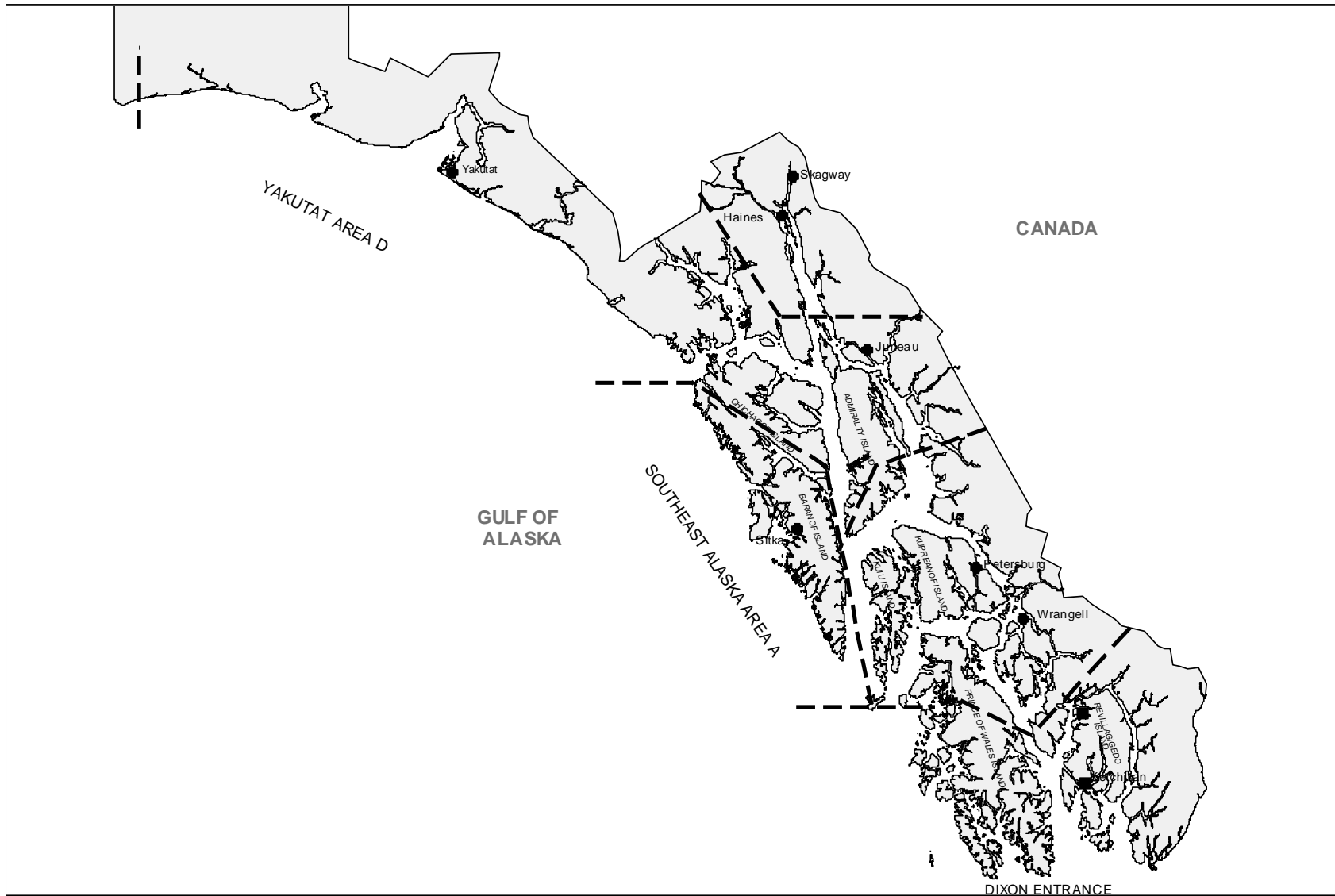


Figure 1.—Southeast Alaska Region (Region 1) herring registration areas (Southeast Alaska Area A and Yakutat Area D) and management area boundaries.

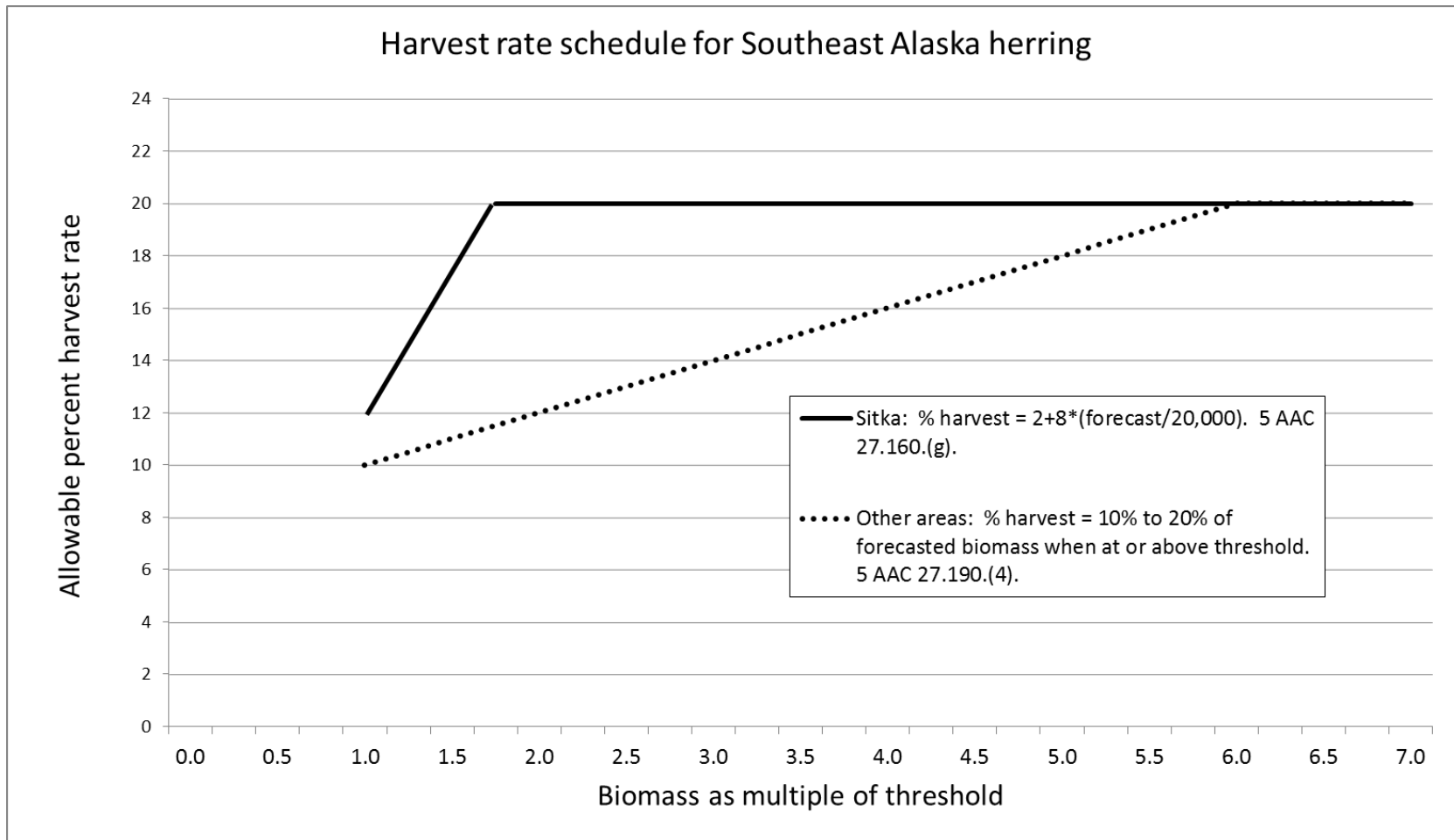


Figure 2.—Generalized harvest strategy for Southeast Alaska herring showing allowable percent annual exploitation rate as related to estimated biomass of mature herring, expressed as a multiple of the threshold level. No fishery occurs if below threshold and the maximum harvest rate is 20%.

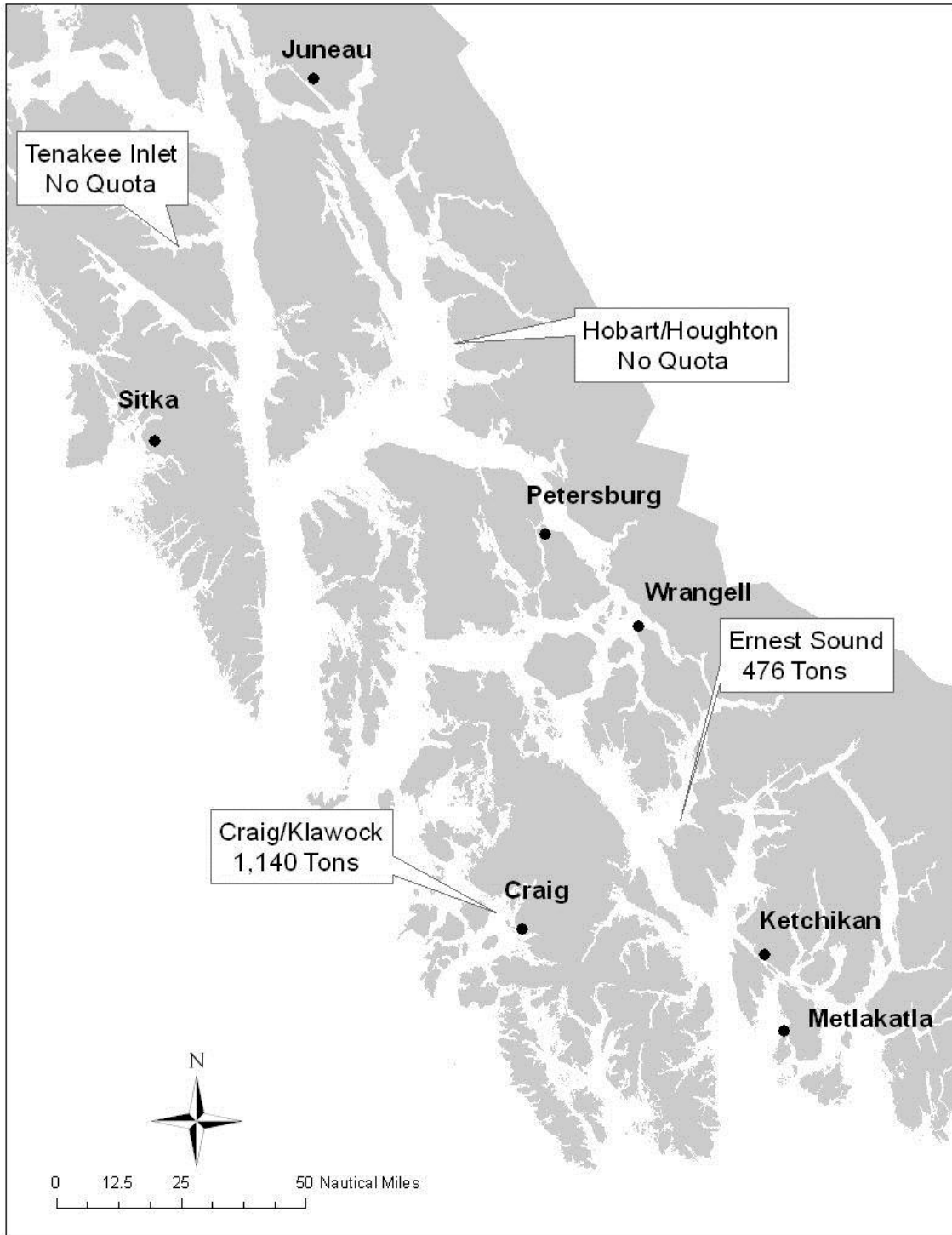


Figure 3.—Food and bait fishing areas and guideline harvest levels, 2010/11 season.

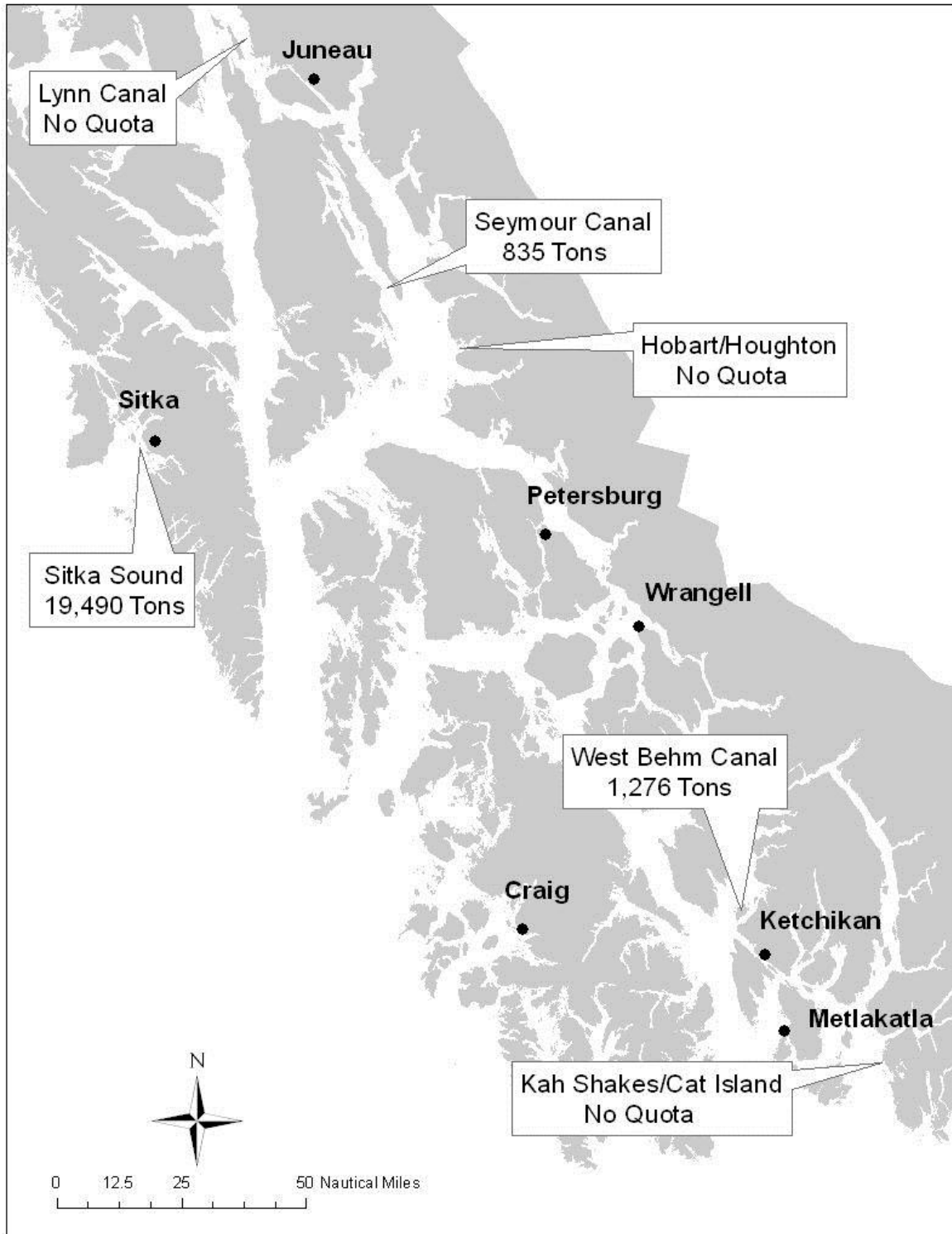


Figure 4.—Sac-roe fishing areas and guideline harvest levels, 2010/11 season.

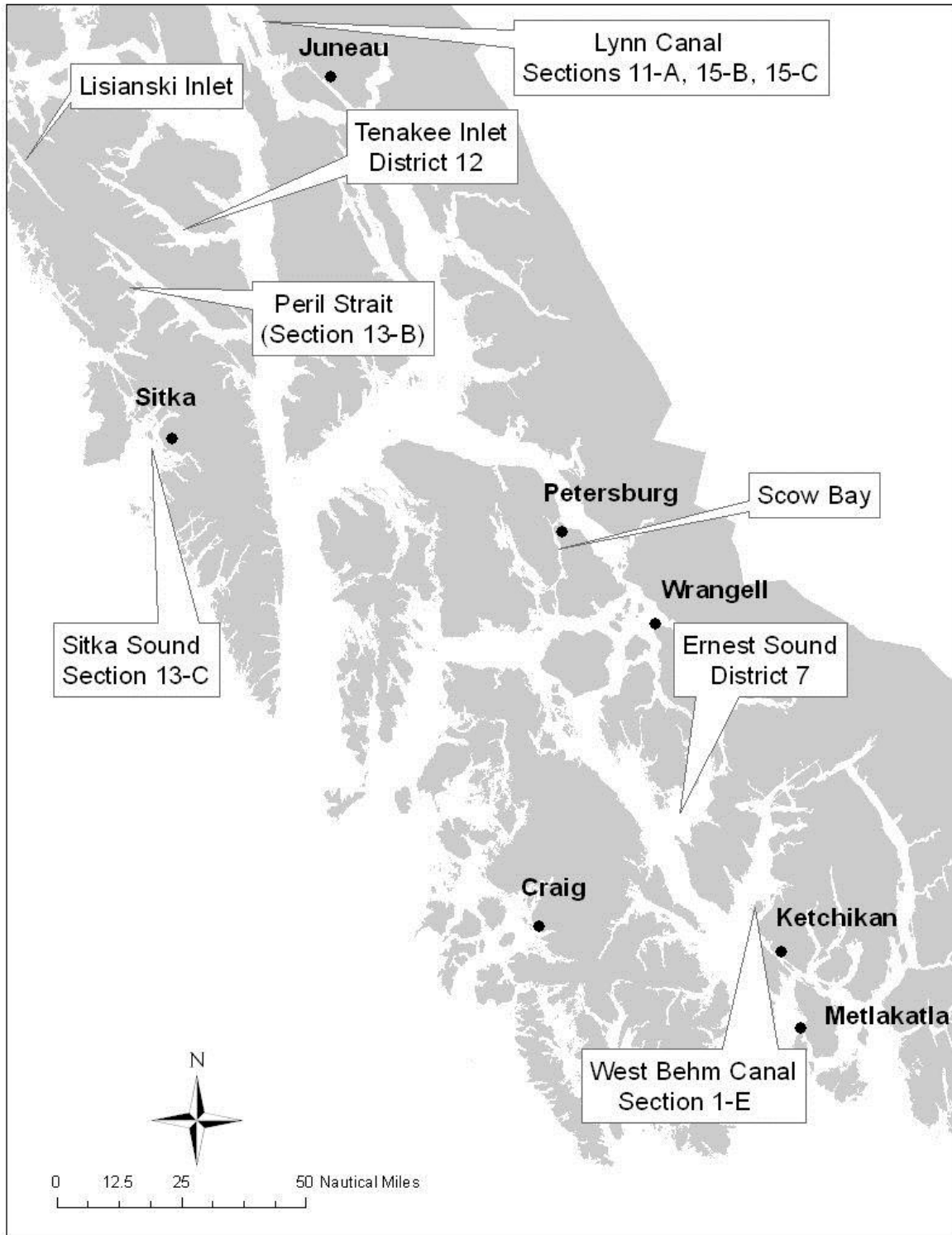


Figure 5.—Fresh bait pound fishing areas.

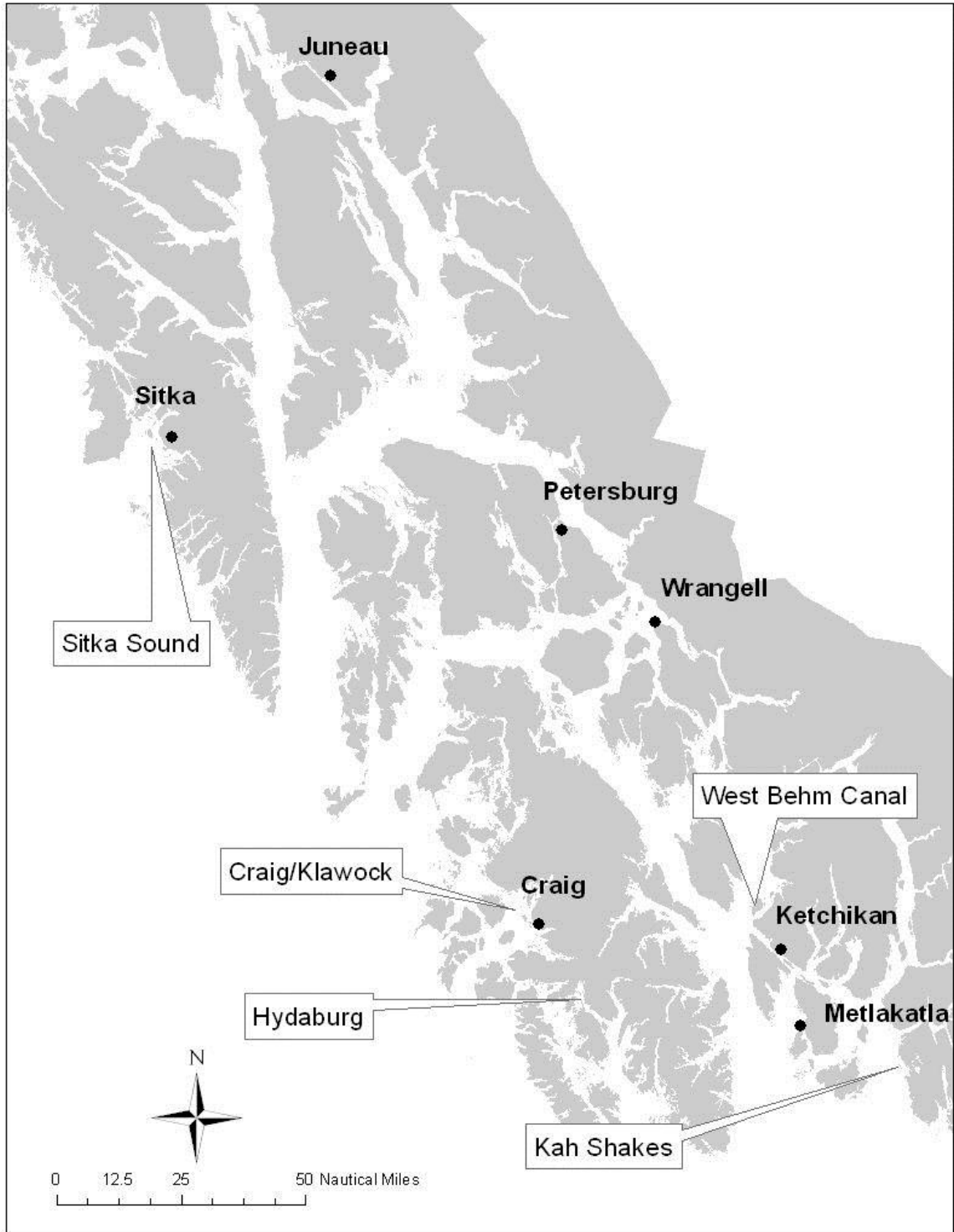


Figure 6.—Major Southeast Alaska spawn-on-kelp subsistence fishery areas.

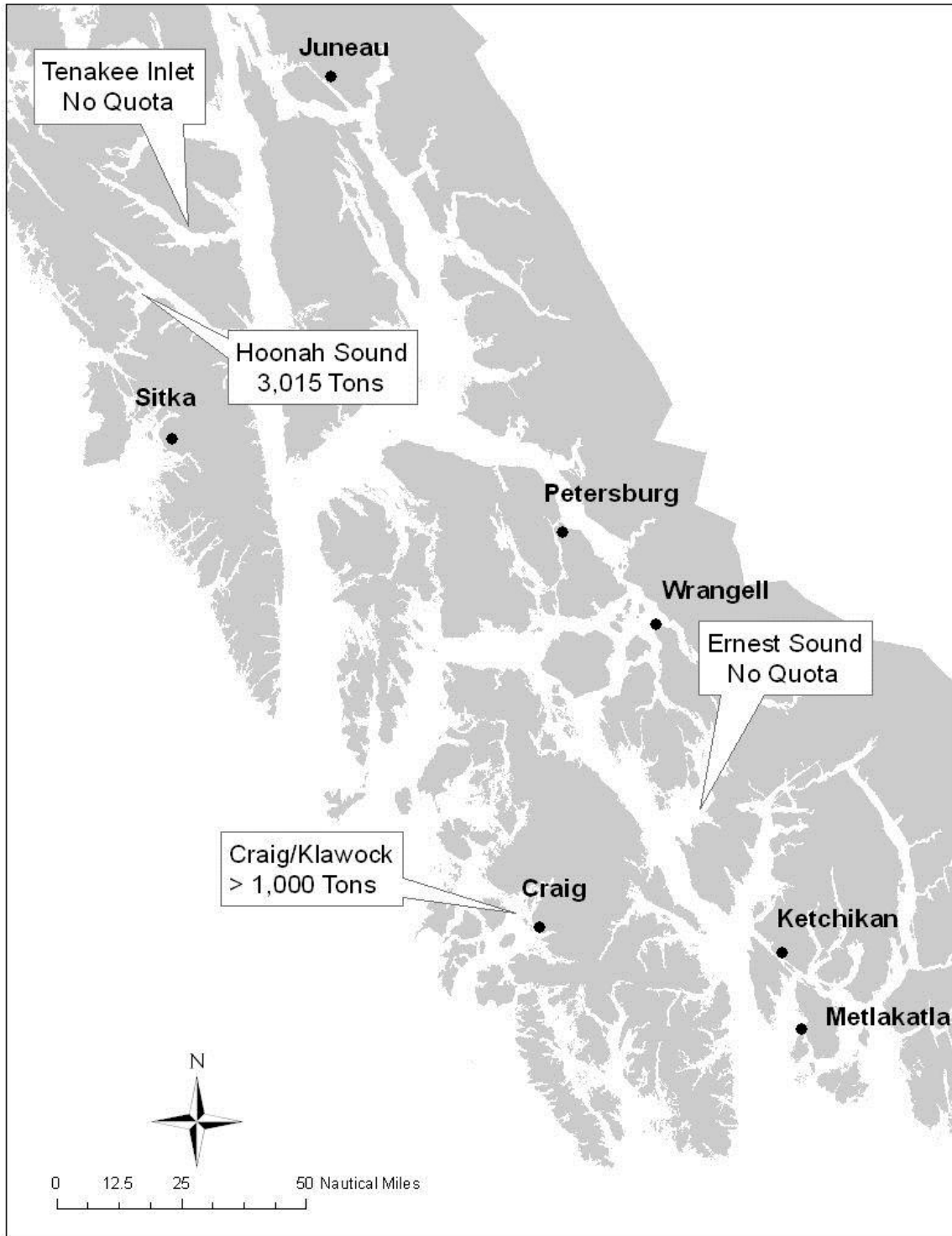


Figure 7.—Spawn-on-kelp fishing areas and guideline harvest levels (tons of herring), 2010/11 season. The Craig/Klawock GHL was announced as “above 1,000 tons” due confidential harvest from the winter bait allocation, where the unharvested amount is added to the spawn-on-kelp fishery GHL.