

2015 Southeast Alaska Herring Spawn-On-Kelp Pound Fishery Management Plan

by

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March 2015

Alaska Department of Fish and Game

Division of Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
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			base of natural logarithm	<i>e</i>
hectare	ha	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	catch per unit effort	CPUE
kilogram	kg			coefficient of variation	CV
kilometer	km			common test statistics	(F, t, χ^2 , etc.)
liter	L	at	@	confidence interval	CI
meter	m	compass directions:		correlation coefficient	
milliliter	mL	east	E	(multiple)	R
millimeter	mm	north	N	correlation coefficient	
		south	S	(simple)	r
		west	W	covariance	cov
Weights and measures (English)		copyright	©	degree (angular)	°
cubic feet per second	ft³/s	corporate suffixes:		degrees of freedom	df
foot	ft	Company	Co.	expected value	<i>E</i>
gallon	gal	Corporation	Corp.	greater than	>
inch	in	Incorporated	Inc.	greater than or equal to	≥
mile	mi	Limited	Ltd.	harvest per unit effort	HPUE
nautical mile	nmi	District of Columbia	D.C.	less than	<
ounce	oz	et alii (and others)	et al.	less than or equal to	≤
pound	lb	et cetera (and so forth)	etc.	logarithm (natural)	ln
quart	qt	exempli gratia		logarithm (base 10)	log
yard	yd	(for example)	e.g.	logarithm (specify base)	log ₂ , etc.
Time and temperature		Federal Information Code	FIC	minute (angular)	'
day	d	id est (that is)	i.e.	not significant	NS
degrees Celsius	°C	latitude or longitude	lat or long	null hypothesis	H _O
degrees Fahrenheit	°F	monetary symbols		percent	%
degrees kelvin	K	(U.S.)	\$, ¢	probability	P
hour	h	months (tables and figures): first three letters	Jan,...,Dec	probability of a type I error (rejection of the null hypothesis when true)	α
minute	min	registered trademark	®	probability of a type II error (acceptance of the null hypothesis when false)	β
second	s	trademark	™	second (angular)	"
Physics and chemistry		United States (adjective)	U.S.	standard deviation	SD
all atomic symbols		United States of America (noun)	USA	standard error	SE
alternating current	AC	U.S.C.	United States Code	variance	
ampere	A			population sample	Var
calorie	cal	U.S. state	use two-letter abbreviations (e.g., AK, WA)		var
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				

REGIONAL INFORMATION REPORT NO. 1J15-01

**2015 SOUTHEAST ALASKA HERRING SPAWN-ON-KELP POUND
FISHERY MANAGEMENT PLAN**

by

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ABSTRACT

This plan provides an overview of the management approach, permit requirements and regulations for the 2015 herring spawn-on-kelp pound fisheries in Southeast Alaska. A spawn-on-kelp pound fishery will only occur in Craig-Klawock. Staff biologists listed at the end of this document are available to answer questions regarding this plan. Pound operators are also advised to review the section of this plan that describes requirements of other agencies.

Key words: Pacific herring, *Clupea pallasii*, herring pound, *Macrocystis* kelp, allocation, management plan, spawn on kelp

INTRODUCTION

This plan provides an overview of the 2015 management approach, permit requirements, and regulations for the Southeast Alaska herring (*Clupea pallasii*) spawn-on-kelp fisheries. 5 AAC 27.185 *Management Plan for Herring Spawn on Kelp in Southeastern Alaska* establishes the regulatory framework for the Southeast Alaska spawn-on-kelp fisheries and provides for fisheries in Sections 3-B (Craig/Klawock), 12-A (Tenakee Inlet), 13-C (Hoonah Sound), and in District 7 (Ernest Sound).

A *closed-pound-fishery* involves releasing sexually mature herring into a net impoundment in which kelp is suspended. The herring are released from the pound after they spawn on the kelp, and the kelp with eggs is then sold. An *open-pound-fishery* involves suspending kelp from a floating frame structure in an area where herring are spawning. The herring are not impounded but instead are allowed to naturally spawn on the suspended kelp. The kelp blades with eggs are removed from the water then sold.

In the Southeast Alaska herring spawn-on-kelp (SOK) fisheries, a closed or an open pound may be operated by one or more Commercial Fisheries Entry Commission (CFEC) permit holders. To reduce the amount of gear on the fishing grounds and the associated handling and impoundment of herring, the Alaska Board of Fisheries (BOF) has provided an incentive for multiple permit pound operators by giving them a larger allocation of *Macrocystis* kelp blades or fronds.

The 2014–2015 herring guideline harvest level (GHL) for the Craig/Klawock area stock is 2,263 tons of herring. Forty percent (40%) or 905 tons is allocated to the SOK fishery plus any unharvested portion of the winter food and bait quota. The 2014–2015 winter food and bait harvest closed on February 28, 2015. The final kelp allocation will be dependent on the total winter food and bait harvest.

No fishery will occur in Ernest Sound during the 2014–2015 season. The 2014–2015 mature spawning biomass forecast for Ernest Sound is 1,991 tons of herring, which is below the 2,500 ton threshold necessary to conduct a commercial fishery.

No fishery will occur in Hoonah Sound during the 2014–2015 season. The 2014–2015 mature spawning biomass forecast for Hoonah Sound is 721 tons of herring, which is below the 2,000 ton threshold necessary to conduct a commercial fishery.

No fishery will occur in Tenakee Inlet during the 2014–2015 season. The 2014–2015 mature spawning biomass forecast for Tenakee Inlet is 927 tons of herring, which is below the 3,000 ton threshold necessary to conduct a commercial fishery.

The BOF has found that the use of test fish revenues to develop new commercial herring fisheries is consistent with the Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries Test Fishery Policy. The department conducted closed pound SOK test

fisheries in 2003, 2004, 2005, and 2008. In recent years budget increments approved by the legislature have provided sufficient funding for management of the fishery and no test fisheries have occurred.

HERRING STOCK STATUS AND HISTORICAL FISHERY PERFORMANCE

METHODS OF FORECASTING HERRING BIOMASS

The Biomass Accounting (BA) method of forecasting is used to determine the expected pre-fishery mature spawning biomass and to establish the fishery GHL in Hoonah Sound and Ernest Sound. The BA method uses the most recent year's spawn deposition estimate of eggs, the age composition of the spawning biomass, and weights-at-age to project the following year's return of mature herring. The Hoonah Sound projection uses the estimated survival and maturity estimates from the age-structured-analyses (ASA) for the nearby Sitka Sound herring stock. A median historical level of recruitment of age-3 herring specific to Hoonah Sound is also applied to forecast biomass. The Ernest Sound projection uses the estimated survival and maturity estimates from the ASA for the Craig herring stock and a median historical recruitment of age-3 herring specific to Ernest Sound is applied to forecast biomass.

This BA method is unlike the ASA method used for forecasting herring biomass for several of the larger stocks in Southeast Alaska, including Craig/Klawock and Tenakee Inlet. The ASA method also uses the spawn deposition estimate of the eggs and the age composition to project the following year's return of mature herring. However, the ASA model calculates survival and maturation rates specific to the spawning stock. The ASA model utilizes a long time series of spawn deposition and age composition information to provide an estimate of the most recent biomass, from which the forecast biomass for the next year is determined. ADF&G will continue to consider converting to use of the preferred ASA method for forecasting once there is an adequate time series of data to do so.

Once a forecast of the season's biomass is calculated, a variable harvest rate formula allows for a harvest rate of 10–20% of the forecast of mature spawning biomass. When the spawning biomass forecast for an area equals the threshold, the exploitation rate is 10% of the estimated spawning biomass. For each incremental increase in the spawning biomass equal to the threshold, the exploitation rate increases by 2%.

CRAIG-KLAWOCK (SECTION 3-B)

Winter food and bait herring fisheries have occurred in Section 3-B (in the Mears Passage and Bocas de Finas area) since the 1960s. Seasonal landings from the 1960s through 1985 were small, averaging approximately 210 tons. From the start of the herring SOK fishery in 1992, the Craig/Klawock herring GHLs have averaged 2,041 tons, ranging from a low of 626 tons in 2000 to a high of 6,847 tons in 2012 (Table 1). Spawn-on-kelp fishing effort, harvest, spawning dates, fishery dates, and product values are summarized in Table 2.

Annual harvest levels are based on a formula that allows for higher harvest rates as the herring population increases relative to the threshold level. No harvest is allowed if the biomass estimate for the stock is less than the threshold level. The established threshold level for the Craig/Klawock stock is 5,000 tons. The 2015 forecast for the Craig area is 15,803 tons. The 14.3% harvest rate will allow a combined quota of 2,263 tons for the winter food and bait and the SOK fisheries. The forecast anticipates a strong return of age-5 herring.

The GHL for the Section 3-B stock is allocated between both the winter food and bait fishery and the herring SOK fishery. Initially, the GHL allocation was 85% for the winter food and bait fishery and 15% for the SOK fishery. In 1998 the allocation was modified so that the winter food and bait fishery is allocated 60% of the GHL with the remaining 40% going to the herring SOK fishery. The 2014–2015 winter food and bait fishery closed on February 28, 2015. All unharvested winter food and bait quota remaining will be added to the GHL for the SOK fishery. The original GHL of 904 tons along with the remainder of the winter food and bait GHL will allow for the kelp allocation in the Section 3-B SOK fishery to fall within the maximum allocation of 1,000 or more tons.

Herring spawning normally occurs in the Craig/Klawock area between mid-March and early April. The earliest spawning observed since the mid-1970s was March 9 and the latest date of initial spawning occurred April 9, 2005. Traditionally, herring spawn on Fish Egg, Wadleigh, Clam, and Abbess Islands. However, spawning has also been recorded in the area of Portillo Channel, Port Real Marina, the northern and southern shores of San Fernando Island, San Juan Bautista Island, Blanquizar Island, and along the Prince of Wales Island shore at San Christoval Channel and Shinaku Inlet. Figure 1 shows the open area for the Craig/Klawock SOK fishery. Table 3 compares spawning dates in the Craig/Klawock area with dates for Ernest Sound.

ERNEST SOUND (DISTRICT 7)

The Ernest Sound SOK pound fishery was created in January, 2003, by the BOF. Additionally, the BOF created a herring bait pound fishery that is allocated 10% of the area's GHL and is similar to other herring fisheries in that its allocation is based upon the GHL remaining after the herring food and bait fisheries occur. Any remaining GHL from the winter food and bait fishery, or the bait pound fishery after March 15, is allocated to the SOK fishery. Winter food and bait herring fisheries have occurred intermittently at Deer Island and other locations in District 7 since 1969 (Table 4). Historically, major fishing effort in the district occurred near Deer Island with an average seasonal harvest of around 370 tons. The 2014–2015 winter food and bait fishery GHL failed to meet threshold requirements that would have allowed for a food and bait fishery. To date there has been no interest in the bait pound fishery.

The Ernest Sound SOK fishery first occurred in the spring of 2004 with a GHL of over 700 tons, which allowed for the maximum kelp allocation. Total harvest of SOK product was 112,286 pounds (56.14 tons) was split among 64 permit holders. Types of pounds fished included 51 single-closed, six double-closed, and one single-open. Like the 2004 fishery, the 2008 SOK GHL was greater than 700 tons allowing for the maximum kelp allocation; however, effort and harvest were minimal. The total harvest was 19,650 pounds (9.83 tons) of product harvested from six double-closed pounds and one single-closed pound. In 2009 the GHL was reduced to the 100–299 ton range after the winter food and bait harvest was subtracted from the total GHL of 529 tons. Four permit holders landed a total of 4,911 pounds (2.46 tons) of product from two double-permit closed pounds. In 2011, the SOK fishery opened with a GHL between 100–299 tons; however, there was no participation. In 2013, GHL remaining after the winter fisheries allowed for a SOK pound fishery with kelp blade allocations in the 100–299 ton range. A closed pound fishery occurred and 81 permits were active on the grounds and harvested 129,263 pounds (64.6 tons) of SOK. In 2014, GHL remaining after the food and bait fishery was over 700 tons, which allowed kelp allocations of 1,000 blades per single permit pound, 2,000 blades per permit for double permit pounds, and 1,000 blades per permit for triple permit pounds. Total harvest of SOK for 2014 remains confidential due to the number of buyers involved in the fishery. Effort in

2014 was greater than anticipated with 129 permits operating 76 closed pounds with the majority of the pounds used in 2014 being double permit pounds. This amount of effort was of concern to managers as the amount of herring required for the SOK fishery was likely to exceed Ernest Sound's GHL. In order to mitigate some potential harvest, the department opted to decrease the time allowed to introduce herring from four days to three days.

Ernest Sound has a threshold level of 2,500 tons for the stock. For 2015, Ernest Sound's forecast is 1,991 tons and is below the threshold to allow commercial herring fishing. The largest forecasted age class (other than age-3) is age-4, at 27%, as the 2010 brood year continues to move through the population. A substantial percentage of age-3 (37%) herring are also forecasted for 2015; however the age-3 forecast may include considerable uncertainty due to use of the median abundance of age-3 mature herring over the past 10 years.

Herring spawning normally occurs in Ernest Sound in early to mid-April. The earliest observed spawn since 1991 was April 5 and the latest date of initial spawning was April 26. In 2014, spawning started in Ernest Sound in the Vixen Inlet area along the Cleveland Peninsula on April 14 and continued until April 17, with a small final spot spawn occurring on April 19. The total shoreline that received spawn was 3.7 nmi. Traditionally, herring spawn along the Cleveland Peninsula shoreline between Union Bay and Emerald Bay. However, spawning has also been recorded south to Ship Island, north of Point Eaton, along the east side of Brownson Island, and around the islands on the southern end of Etolin Island. Figure 2 shows the open area for the Ernest Sound SOK fishery. Historical spawning biomass, forecast, GHLs, spawning dates, harvest, and fishery dates are summarized in Tables 3, 4, and 5.

TENAKEE INLET (SECTION 12-A)

The Tenakee Inlet stock has been utilized for the winter food and bait fishery since the 1978–1979 season. During seasons that the estimated spawning biomass was above the 3,000 ton threshold, the GHL has ranged from a low of 200 tons in the initial season to a peak of 1,700 tons in 1985–1986 (Table 5). Regulations adopted by the BOF in January, 2003, provide for a SOK fishery in Tenakee Inlet if sufficient GHL remains at the close of the winter food and bait fishery. The SOK fishery occurred for the first time in April, 2003. Summary results of the Tenakee Inlet SOK fisheries are presented in Table 6.

ADF&G has been conducting aerial surveys in Tenakee Inlet since the early 1970s documenting the total miles of spawn each season to provide an indication of herring stock size or biomass. Aerial surveys were supplemented with hydroacoustic surveys from 1979 through 1986, and spawn-deposition dive surveys have been used since 1987 as the most reliable and accurate means to assess the spawning biomass.

The Tenakee spawning stock has historically exhibited cycles of abundance. After a decade of fisheries, the stock declined below threshold in the early 1990's and no fisheries took place until 1996. Good recruitment led to nearly a decade of harvestable surplus until the forecasted biomass again declined below threshold in 2006. Aerial spawn surveys and spawn deposition dive surveys conducted in 2008 indicated a significant increase in spawning biomass to the levels seen in 1997–1999; however, recent surveys conducted since 2009 indicated once again a decreasing trend in mature spawning biomass. The average herring spawn mileage in the last three years is 4.0 nmi with only 2.0 nmi documented in 2014.

Spawning in Tenakee Inlet has generally occurred between the last week in April and the first week in May (Tables 5 and 7). Traditionally, herring spawn primarily along the south shoreline

of Tenakee Inlet between Saltery Bay and South Passage Point with the core areas centered east and west of the Kadashan River flats. In addition, spawn has been documented intermittently along the Chatham Strait shoreline from South Passage Point to Basket Bay.

The 2014 spawn, which occurred April 28–May 1, had only one day of a major spawning event (April 29) surrounded by a few days of mostly spot spawns. Spawning samples of herring were obtained with good spatial and temporal distribution and pre-spawning samples were obtained from the fishery. The second lowest spawn mileage observed in the last nineteen years (only 2011 was lower) contributed to a spawning biomass estimate of 927 tons of herring, far below the 3,000 ton threshold necessary to conduct a commercial fishery. Therefore, no commercial herring fisheries will occur in Tenakee Inlet during the Spring of 2015. Priority will again be placed on obtaining well-distributed samples from spawn occurring in 2015.

HOONAH SOUND (SECTION 13-C)

ADF&G began monitoring the Hoonah Sound herring population in 1971. Since that time the herring spawning stock has averaged 7.7 nmi of spawn and 4,216 tons of spawning biomass. Since 1990, the year the SOK fishery started, the stock has averaged 10.6 nmi of spawn and 6,394 tons of spawning biomass (Table 9). The highest recorded spawning biomass occurred in 2008 with an estimated 14.5 nmi of spawn and an escapement of 19,975 tons based on the spawn deposition survey.

In 1990, when Hoonah Sound became an SOK fishery the minimum threshold at which a fishery could occur was reduced from 2,000 tons to 1,000 tons. In 2015, to be more consistent with similar sized stocks around the region, the threshold in Hoonah Sound has been increased to 2,000 tons.

In 2014, 3.2 nmi of spawn was documented with an estimated escapement of 444 tons of mature herring. The biomass has been decreasing in this area since 2008. The reason for this decrease is not known, however there are many oceanographic and biological influences on herring populations that are not well understood. The 2015 forecast biomass is 721 tons, which is below the 2,000 ton threshold necessary to conduct a commercial fishery. Therefore no commercial fishery will occur in Hoonah Sound during the 2015 season.

Herring spawning normally occurs in Hoonah Sound during the last two weeks of April (Tables 8 and 9). The earliest recorded spawning occurred on April 13, 1990, and the latest recorded spawning was on May 17, 1971. During the 2014 season, spawning occurred from May 5 through May 8 and only 3.2 nmi of spawn was observed. Comparative spawn timing for Hoonah Sound and Tenakee Inlet is shown in Table 8. Traditionally, spawning occurs in Hoonah Sound around Vixen and Emmons Islands and the shoreline from Fick Cove to Ushk Point. Spawning has also been observed in Peril Strait along the Chichagof Island shoreline from Finger River to Broad Island, at False Island, and along the Baranof Island shoreline from Deadman Reach to Point Benham. The open fishing area for Hoonah Sound is shown in Figure 3.

CALENDAR OF EVENTS

The following is a calendar of events to be considered by pound operators for the 2015 fishing season.

- | | |
|----------------------|--|
| September 29 | News Release announcing the 2015 Ernest Sound closure. |
| October 29 | News Release announcing the 2015 Craig/Klawock GHL and the Tenakee Inlet closure. |
| December 2 | News Release announcing the 2015 Hoonah Sound closure. |
| No Specific Deadline | U.S. Forest Service special-use permit applications (for use of National Forest land above mean high tide) must be submitted to obtain a special-use permit. Special-use permits are required to camp or store gear on National Forest land in conjunction with this fishery. Please contact the USFS directly for applications at (907) 747-4220. |
| March 10 | Kelp permits will be available at ADF&G area offices. The department will issue a news release announcing the actual harvest of the bait herring fisheries and SOK kelp allocation for Craig/Klawock. |
| March 16 | 2015 Southeast Alaska Herring Spawn-On-Kelp Pound Fishery Management Plan will be available at all Southeast Alaska area offices. |
| March 17 | The Craig/Klawock fishery will be open to seining of herring for placement in pounds effective 12:00 noon. |
| May 31 | Pounds and all associated objects in support of the fishery must be completely removed from the waters of the herring pound fishing area in Section 3-B. This includes the area covered by extreme high tide. |

REGULATIONS

GENERAL SPAWN-ON-KELP REGULATIONS

The regulatory framework for the SOK fishery is found in 5 AAC 27.185. *Management Plan for Herring Spawn on Kelp in Pounds in Sections 3-B, 12-A, 13-C, and District 7*. The BOF met in Ketchikan on February 24–March 4, 2012, and adopted five regulatory changes to the spawn-on-kelp management plan. These changes included: defining the time when herring may be caught and transferred to closed pounds [5 AAC 27.185 (g)]; requiring that all floating objects used in support of the fishery to be marked with the CFEC permit number of participating permit holder [5 AAC 27.185 (k)(2)]; requiring all tow pounds to include a CFEC number of a permit holder along with previous marking requirements [5 AAC 27.185 (l)]; establishing a period when all pounds and equipment must be removed [5 AAC 27.185 (w)]; and a change of the circumstances when two pounds can be combined [5 AAC 27.185 (cc)]. These new regulations are explained in the following paragraphs.

Definition of a Closed Pound

A *closed-pound* is defined as a single, floating, rectangular frame structure with suspended webbing that is used to enclose herring for a period of time in order to produce spawn-on-kelp. The webbing of a closed pound may not have a mesh size of more than one and one-half inches. The opening of the closed pound must be rectangular at the water surface and may not exceed 800 square feet in area. Neither the vertical wall nor the near-vertical wall may exceed a depth below the water surface when the pound contains herring as follows:

<u>Surface square footage</u>	<u>Maximum depth</u>
Less than 400	30 feet
401–500	24 feet
501–600	20 feet
601–700	17 feet
701–800	15 feet

5 AAC 27.185(cc) allows two closed pounds as specified in 5 AAC 27.130(e) to be combined into one single pound structure with a maximum surface area of 800 square feet and maximum depth of 30 feet and may be operated by multiple permit holders, when kelp allocation is at a maximum. The kelp allocations per permit holder and other provisions specified in this section also apply to the combined pound; however, permit holders may transfer additional herring into the combined pound after the two are connected and become a single structure. A CFEC permit holder who intends to combine pounds under this new regulation must register with ADF&G before placing the pound in the water. This pound structure may not be connected to any other pound structure.

Units of Gear

For the purpose of this fishery, a closed pound is considered to be *fishing* once herring have been introduced into the closed pound structure; a closed pound is considered to have *stopped fishing* once all of the herring have been released and all SOK product has been removed from the closed pound structure. For the purpose of this fishery, an open pound is considered to be *fishing*

once kelp has been attached to the open pound structure; an open pound is considered to have *stopped fishing* once the entire SOK product has been removed from the open pound structure.

The Northern Southeast Alaska area includes Sections 12-A and 13-C and the Southern Southeast Alaska area includes Section 3-B and District 7. Since Northern and Southern Southeast Alaska have different limited entry permits a permit holder may have gear in the water in both areas but a permit holder must still be physically present at those times that the pound is actively fished as defined in 5 AAC 27.185. While the permit holder may have gear in both the Northern area and the Southern area at the same time, they may not fish multiple units of gear in either area.

Herring Pound Marking Requirements

Permit holders are required to mark the pound with a sign that has on it the permit holder's first and last name and the five-digit CFEC permit number in letters and numbers that are six inches in height and a minimum of one half inch wide and which contrast with the background. If the pound is being operated by multiple permit holders, the sign must have the first and last name and five-digit CFEC number of each permit operating the pound on a single sign. The sign must be vertical and the markings must be clearly visible and above the surface of the water at all times (Figure 4). The sign must be left on the pound structure or the net support system the entire time any part of the pound system is in the water. Additionally, starting in 2013, all floats and floating objects used in support of the fishery must be legibly marked with a CFEC number of a participating permit holder (5 AAC 27.185 (k)(2)) and permit holders using tow pounds must affix a horizontal sign that states "Tow Pound" and include a CFEC permit number of a permit holder in letters and numbers that are at least six inches in height and a minimum of one-half inch wide and which contrast with the background to the top surface of the tow pound (5 AAC 27.185 (l)).

All lines or structures used to suspend kelp must have legible tags affixed above the water surface that state the number of blades or fronds on that line or structure along with the permit holder's first and last name. In a multiple permit pound, each permit holder must keep their kelp on lines or structures separate from lines or structures that support kelp belonging to other permit holders.

Placement and Release of Herring in Pounds

Herring may be placed in or added to a pound for four days starting with the initial placement of herring in a pound. After 11:59 p.m. on the fourth day, no additional herring may be added to the pound (5 AAC 27.185 (q)) and those herring in the pound must be released by 11:59 p.m. on the sixth day after the initial placement of herring in a pound (5 AAC 27.185 (s)). Under 5 AAC 27.185 (s) the "*first day*" is defined as the day herring are first placed into a pound. The "*first day*" under 5 AAC 27.185 (q), is the day that herring are first put into the pound. Once herring have been released or SOK product has been harvested no additional herring or kelp may be introduced into a pound (5 AAC 27.185 (q)). When releasing herring at least one full side of the pound's webbing must be lowered a minimum of six feet below the surface of the water (5 AAC 27.185 (s)). These regulations are fundamental to the health of the herring spawning stocks and, along with gear size and kelp allocation limits, provide for sustainable use by limiting the harvest of herring by the fishery. Fishermen must take responsibility to ensure that when adding herring to a pound that herring are not at the same time swimming out of the pound as this would be a violation of 5 AAC 27.185 (q).

Connection of Herring Pounds

After the last herring has been placed into the pounds and the permit holders have notified an ADF&G representative, two pounds of two or more permit holders may drop a wall of their respective pounds to allow herring to swim between two connected pounds. Additional herring may not be transferred into the pounds once the two of them are joined. This does not change the definition of pounds as found in 5 AAC 27.130. *Lawful Gear for Southeastern Alaska Area*. (e)(1) which states that webbing of a closed pound may not be part of the webbing of another closed pound. Therefore, after fishing operations have ended two pounds may be joined, but they must remain up to that point a single unit of gear. If two pounds are joined the regulation that allows for retention of herring for six days will be enforced on the pound which first had herring placed into the structure. Under this regulation only two pounds can be joined together.

Presence of Permit Holders Required

A permit holder must be physically present at the permit holder's pound site during the operation of the pound as defined in sections (o) and (p) of 5 AAC 27.185 *Management Plan for Herring Spawn on Kelp in Pounds in Southeastern Alaska Area*.

Post-Harvest Requirements

After a permit holder releases herring and harvests product from the pound, the permit holder must maintain the webbing in place for at least four weeks. To optimize hatching success, the permit holder must position egg-covered webbing in the original size and configuration of the pound structure with adequate water circulation on all sides. The webbing support system must be above the surface of the water and clearly marked as per 5 AAC 27.185 (k).

Harvest and Production

Each permit holder's SOK blades must remain separate from other permit holder's SOK blades until after processing and grading is completed. Permit holders will be allowed to harvest all spawn on kelp produced in their pounds. A permit holder's fish ticket must report only the spawn on kelp they harvested from their pound. Each permit holder fishing a jointly operated pound shall be issued a fish ticket and the sum of the weights of those tickets shall equal the total weight of product produced in the jointly operated pound. All permit holders and any vessel carrying commercial SOK product from the fishing grounds must first contact ADF&G with the estimated amount of SOK product harvested and indicate the intended time and location of the delivery. For any product that has been delivered on the grounds to a licensed processor, the processor (not the permit holder) will be required to contact the department with delivery weight for each landing on board.

Requirements for Buyers

Reporting requirements for buyers and processors of SOK product from Southeast Alaska SOK fisheries can be found in 5 AAC 27.187 *Buyer and Processors Reporting Requirements for Spawn-On-Kelp in Pounds for the Southeastern Alaska Area*. Buyers, processors, and permit holders should read and become familiar with these reporting requirements.

Operators of floating processing vessels, tender vessels, and catcher-processors will be required to report in person, by VHF radio, or by telephone, to the local ADF&G office or directly to department area management biologists on the grounds before the start of processing operations

in Southeast Alaska. These reporting requirements are specified by regulation 5 AAC 39.130 (f) and (g).

Other Regulations

Additional regulations pertaining to the Craig, Ernest Sound, Hoonah Sound and Tenakee Inlet pound fisheries can be found in the 2013/2014 Statewide Commercial Herring Fishing Regulations booklet under CHAPTER 27, ARTICLE 4, SOUTHEAST ALASKA AREA under the following sections: 5 AAC 27.110 *Fishing Seasons for Southeastern Alaska Area* (f), 5 AAC 27.130 *Lawful Gear for Southeastern Alaska Area* (d), and (e); 5 AAC 27.185 *Management Plan for Herring Spawn on Kelp in Pounds* (a) through (dd); 5 AAC 27.187 *Buyer and Processors Reporting Requirements for Spawn on Kelp in Pounds for the Southeastern Alaska Area*; harvesting requirements for *Macrocystis* kelp in 5 AAC 37.100 *Permits*; and 5 AAC 37.300 *Harvesting Requirements for Macrocystis*.

It is the responsibility of permit holders to carefully review and follow these regulations.

SECTION 3-B REGULATIONS

Open Waters

The open waters for Section 3-B include: the waters of San Alberto Bay, Shinaku Inlet, and San Christoval Channel north of a line from Entrance Point to the southernmost tip of Clam Island to the southernmost tip of Fern Point and East of 133° 20' W. longitude (Figure 1).

In Section 3-B (Craig/Klawock) herring may be captured for placement in closed pounds starting at 12:00 noon, March 17 until 12:00 noon, May 10 unless closed earlier by emergency order.

Closed Waters

In Section 3-B certain areas are closed to the operation of herring pounds and seines for taking of herring for placement in pounds. Those areas are shown in Figure 1 and include:

- Klawock Inlet and Big Salt Lake;
- Those waters of San Christoval Channel in the main channel enclosed by a line from 55° 35.62' N. latitude, 133° 20' W longitude to 55° 35.17' N. latitude, 133° 20' W longitude to 55° 33.37' N. latitude, 133° 17.52' W. longitude to 55° 33.50' N. latitude, 133° 17.28' W. longitude;
- Those waters of Fish Egg and Ballena Islands south of 55° 31' N. latitude and north of the southernmost tip of Cape Suspiro and east of the longitude of Ballena Island Shoal Light.

DISTRICT 7 REGULATIONS

Open Waters

The waters open for the District 7 (Ernest Sound) fishery include: the waters of Ernest Sound east of a line from Point Eaton to Lemesurier Point (Figure 2).

In open waters of District 7 herring may be captured for placement in closed pounds starting at 12:00 noon April 1 until 12:00 noon May 10 unless closed earlier by emergency order.

SECTION 12-A REGULATIONS

Open Waters

The open waters for Section 12-A include: the waters of Chatham Strait and Tenakee Inlet south of 57°46.00' N. latitude, north of the latitude of Peninsular Point at 57°30.30' N. latitude, and west of 134°50.00' W. longitude (Figure 3).

SECTION 13-C REGULATIONS

Open Waters

The waters open for the Hoonah Sound fishery include: the waters of Hoonah Sound north and west of a line from Point Marie to a point on the northern shore of Hoonah Sound at 57° 37.38' N. latitude, 135° 27' W. longitude (Figure 3).

EXPERIMENTAL GEAR PERMITS

ADF&G has the authority to provide experimental gear permits under AS 16.05.050(10). The issuance of experimental gear permits in past years has played a significant role in the enhancement and development of SOK fisheries in Southeast Alaska. The department will continue to carefully consider requests for experimental gear permits on a case by case basis. The department must be provided a detailed plan that demonstrates innovation and the potential to increase SOK product quality and/or quantity without increasing the use of herring.

HARVEST AND ALLOCATION OF KELP FOR 2015

A permit issued by ADF&G is required to harvest kelp for use in pounds (5 AAC 37.900). Kelp harvest permits may be obtained from local department offices. Kelp blades will be allocated equally among permit holders fishing the same type of gear. The amount of kelp allowed for harvest for each permit holder is based on the kelp allocation table as indicated under regulation 5 AAC 27.185 (d) plus an allowance for breakage and loss during transport. Specific allocation limits are for individual permit holders and are dependent upon the herring GHJ and the type of gear to be used and will be formally announced following closure of the winter food and bait fishery on February 28, 2015. The Craig/Klawock kelp allocations for the 2015 season are listed below and are based on a GHJ of 800 - 999 tons of herring. However, kelp allocations may increase depending upon the amount of herring harvested in the winter bait fishery.

Section 3-B (Craig/Klawock):

- Single permit closed pounds—400 blades of *Macrocystis* kelp;
- Double permit closed pounds—600 blades of *Macrocystis* kelp (per permit holder);
- Triple permit closed pounds—900 blades of *Macrocystis* kelp (per permit holder);
- Single permit open pounds—2,000 blades or 200 fronds of *Macrocystis* kelp;
- Multiple permit open pounds—6,000 blades or 600 fronds of *Macrocystis* kelp.

FISHERY CONDUCT AND MANAGEMENT

The Craig/Klawock herring pound fishery will be the only SOK fishery prosecuted for 2015. Suitable sites for pounds in the Craig/Klawock area are limited. To avoid herring mortality and damage to the pounds, permit holders should locate their pounds in an area with minimal exposure to wind and wave action, with a relatively deep bottom. The distance between the locations where herring are captured and where the pound will be anchored should be minimized since long towing distances can cause stress induced spawning, egg loss, de-scaling, and mortality of herring.

All permit holders involved in the operation of a pound, whether a single or a multiple permit pound, must be physically present at their pound fishing site at all times during the *operation of the pound*. *Operation of the pound* is defined as:

1. The capture and transfer of herring into the pound;
2. When an open pound is being moved;
3. The collection and sale of herring SOK product produced in the pound;
4. All permit holders must be present when two pounds are joined together.

For multiple permit closed pounds, all permit holders assigned to the pound must be present at their pound site when herring are introduced into the pound. If only one permit holder is present at this time then that pound must be operated for the remainder of the season as a single permit closed pound and no more than the number of blades of kelp allocated to a single closed pound may be harvested.

ADF&G will be closely monitoring herring activity using vessel and aerial surveys. Prior to the onset of active fishing the results of aerial surveys will be announced by department news release or in fishery updates. This information will also be available by recorded message at 907-225-6870 (Ketchikan office) for Section 3-B (Craig/Klawock); 907-772-3700 (Petersburg office) for District 7 (Ernest Sound); 907-465-8905 (Juneau Office) for Section 12-A (Tenakee Inlet).

In 2015, ADF&G will continue to monitor the practice of *top-off-fishing*. Regulation 5 AAC 27.185 (q) prevents a permit holder from releasing any herring from their pound when they are adding fresh herring.

To avoid mortality, the transport of herring to the pound site should be done with the pound itself or a pushable/towable net pen. Towable net pens used only for transporting herring must be marked "Tow Pound" and include the CFEC permit number of a participating permit holder. Transporting with a purse seine is discouraged except for very short distances. Pound operators should slowly push pounds or tow the pound alongside to avoid prop wash and prevent crushing herring against the net. Pound operators are also advised to minimize the distance herring are towed to avoid stressing the herring or causing egg loss, which can result in poorer quality product. Permit holders are asked to avoid making and holding large sets intended to fill multiple pounds to avoid herring mortality and stress. ADF&G may close the fishery or limit fishing to daylight hours to minimize stress and mortality, to reduce potential set size, or to better monitor the fishery.

Although regulations determine the maximum allowable number of kelp blades that can be harvested and placed in each permit holder's pound, fishermen are encouraged to fish the number of blades which will provide the maximum overall quality and value of their product

rather than simply to fish the total amount allowed. Other measures have successfully been used in the fishery that may be considered when trying to maximize spawn on kelp quality and value includes the following:

- 1) Pound nets may be shaped with internal frames to provide the full net volume;
- 2) The kelp depths in the pound may be matched with the depth of active spawning by testing spawn deposition with a weighted string;
- 3) Fishing and transferring herring to pounds should only occur once herring are fully mature;
- 4) Small top-off sets may be added over a 2–3 day period;
- 5) The herring density in the net should be limited since spawning is retarded by excessive crowding;
- 6) Web depth adjustments may be adjusted (consistent with specifications under 5 AAC 27.130 (e)(1)(C) or 5 AAC 27.185(cc)) to provide good water exchange;
- 7) Working in a small group of permit holders may help to provide adequate time for harvesting herring and tending pounds.

The SOK fisheries take place in high-use subsistence, recreational, and commercial use areas valued for their fish and wildlife resources as well as their wilderness character. Under 5 AAC 27.185 (w) all pounds and associated equipment used in these fisheries must be removed from the water by a specific date for a specific period of time. A regulation was adopted at the 2012 Alaska Board of Fisheries meeting that further specifies gear marking and removal requirements.

ADF&G and AWT are advising permit holders that any pounds, nets, buoys, lines, and anchors left on the grounds will be removed and impounded or destroyed.

OTHER AGENCY REQUIREMENTS

Prospective pound operators are advised to consider other agency requirements for constructing and operating pounds in Craig/Klawock, Ernest Sound, Tenakee Inlet, and Hoonah Sound. Pound operators are urged to contact the Alaska Department of Natural Resources, U.S. Forest Service, the U.S. National Marine Fisheries Service, and the U.S. Coast Guard to determine other regulations and requirements. Phone numbers for those agencies are listed below.

ALASKA DEPARTMENT OF NATURAL RESOURCES

The Alaska Department of Natural Resources (907-465-3400) manages the use of tidelands and submerged lands seaward of mean high water.

U.S. FOREST SERVICE

In the Hoonah Sound and Tenakee Inlet areas, the U.S. Forest Service has jurisdiction over and manages most of the lands above mean high tide. People who plan to use National Forest land in connection with the fishery must apply for a special use permit from the U.S. Forest Service prior to any occupancy. Special use permit applications are available at the Sitka Ranger District Office, 204 Siginaka Way, Sitka, Alaska 99835, (907-747-6671). Completed applications should be submitted to the Sitka Ranger District well in advance of operations to ensure that a permit is received in time for the fishery. Examples of use needing a permit include (but are not limited

to): camping on National Forest land in conjunction with the commercial fishery, and storage of gear on the National Forest.

U.S. NATIONAL MARINE FISHERIES SERVICE

The U.S. National Marine Fisheries Service (907-747-6940) regulates activities that might harm marine mammals.

U.S. COAST GUARD

Structures such as floating fish pens are subject to the requirements of the Code of Federal Regulations, Title 33, Part 64. This regulation requires an owner to apply for a U.S. Coast Guard permit and to install and maintain a light or other private aid to navigation if the U.S. Coast Guard determines it to be necessary to protect maritime navigation.

Herring pounds used in the SOK pound fishery do not require permits for private aids to navigation at this time, provided the owners:

Place two signs on opposite corners of the structure. These signs will be worded “Danger, Fish Pens” (Figure 5).

Place a single, all-points white light on one corner of structures less than 400 square feet in size.

Place a single, all-points white light on every corner of structures larger than 400 square feet in size.

Anchor fish pens within the boundary areas specified in ADF&G regulation 5 AAC 27.185 (f) (Figures 1–3).

If all these conditions are not met, the permit holder must apply to the U.S. Coast Guard for an individual “Private Aids to Navigation Permit.” If you have questions, call the U.S. Coast Guard Aids to Navigation office, at (907) 463-2254.

PRIVATE LANDS

Some of the area in which pounds may be operated is adjacent to privately owned lands. Pound operators should contact the landowners if they intend to use any of that land above mean high tide. Private land owners in the Craig/Klawock area include the Klawock/Heenya Corporation, Shaan-Seet Corporation, Sealaska Corporation, and private individuals. Figure 6 shows the approximate areas of privately held lands in the Craig/Klawock area.

LIST OF MANAGEMENT CONTACTS

Following are ADF&G Division of Commercial Fisheries contacts regarding this management plan:

Name and Title	Address and Phone Number
Lowell Fair Region I Supervisor	1108 F Street Juneau, Alaska 99801 (907) 465-4250
Dan Gray Region I Management Biologist	304 Lake St., Rm. 103 Sitka, Alaska 99835 (907) 747-6688
Kyle Hebert Herring Research Biologist	1108 F Street Juneau, Alaska 99801 (907) 465-4250
Scott Walker Area Management Biologist	2030 Sea Level Dr. Ste. 205 Ketchikan, Alaska 99901 (907) 225-5195
Bo Meredith or Justin Breese Assistant Management Biologists	
Troy Thynes Area Management Biologist	16 Sing Lee Alley Petersburg, AK 99833 USA (907) 772-3801
Kevin Clark Assistant Management Biologist	
Tom Kowalske Assistant Management Biologist	215 Front Street Wrangell, AK 99929-0200 (907) 874-3822
Dave Gordon Area Management Biologist	304 Lake St., Rm. 103 Sitka, Alaska 99835 (907) 747-6688
Eric Coonradt Assistant Management Biologist	
Dave Harris Area Management Biologist	1108 F Street Juneau, Alaska 99801 (907) 465-4250
Scott Forbes Assistant Management Biologist	

TABLES AND FIGURES

Table 1.—Craig/Klawock stock size and winter food and bait harvests, 1987–2014.

Year	Miles Spawn^a	Forecasted Pre- fishery Biomass^b	Total GHL Bait and SOK^c(Tons)	Bait Quota (Tons)	Bait Harvest (Tons)
87–88 ^d	27	16,550	N/A	2,200	2,014
88–89	31.7	16,350	N/A	1,810	1,730
89–90	30	19,800	N/A	3,150	3,221
90–91	22	18,350	N/A	2,841	3,272
91–92	23	17,800	2,684	2,281	2,295
92–93 ^e	8.4	12,350	1,602	1,362	623
93–94	8	7,996	895	760	636
94–95	5.5	6,778	725	617	124
95–96	9.9	6,262	658	558	4
96–97	13.2	6,755	715	615	517
97–98 ^f	11	7,018	755	455	254
98–99	15.4	6,951	750	450	102
99–00	12.9	6,013	626	376	346
00–01	16.7	9,091	1,058	635	145
01–02	18	8,387	952	571	92
02–03	11.2	6,045	630	378	145
03–04	12	13,204	1,754	1,052	157
04–05	18	15,577	2,217	1,330	553
05–06	8.2	14,262	1,955	1,173	689
06–07	22.3	13,768	1,860	1,116	576
07–08	11.0	14,213	1,945	1,167	565
08–09	17.0	14,213	1,945	1,167	142
09–10	18.7	14,870	2,074	1,244	confidential
10–11	14.8	17,886	2,710	1,140	confidential
11–12	14.9	34,235	6,847	4,060	confidential
12–13	15.3	23,391	4,060	2,436	confidential
13–14	13.6	15,803	2,263	1,358	964
Average	15.9	13,478	1,812	1,345	827

^a Spawn year is beginning year of regulatory season listed in the adjacent year column.

^b Forecasted pre-fishery biomass values were estimated with hydroacoustics for 86/87, spawn deposition surveys for 87/88 to 92/93, and age-structured models for 93/94 to 07/08.

^c Spawn On Kelp (SOK)

^d Reduced to 1,600 tons on the grounds.

^e First year bait quota was split between pound fishery 85%:15%.

^f Herring allocation changed to 60% for the winter food and bait fishery, 40% to the pound fishery.

^g Updated forecast based on updated scale ages.

Table 2.—Craig/Klawock herring spawn-on-kelp fishery summary, 1997–2014.

Statistic	1997	1998	1999	2000	2001	2002
Herring Quota (tons)	200	500	650	280	914	852
Total harvest SOK (tons)	21.9	22.4	36	0	26.9	41.7
Exvessel value	\$270,306	\$152,203	\$212,121	\$0	\$146,859	\$218,700
Average Price/lb	\$6.00	\$3.39	\$2.94	\$0.00	\$2.70	\$3.10
Average Income	\$1,890	\$1,072	\$2,060	\$0	\$2,880	\$2,460
Number of pounds	119	112	70	50	31	50
Number of landings	143	148	103	0	51	89
Blade allocation	a	b	c	d	e	e
Total kelp harvest (tons)	3.2	3.5	2.9	2.0	3.2	8.2
Herring spawning dates	4/7–4/14	3/19–4/8	3/23–3/28	3/22–4/5	4/1–4/7	3/31–4/7
Miles of spawn	13.2	12.5	15.4	12.9	16.7	18.4
Forecasted Pre-Fishery biomass (tons)	6,755	7,018	6,951	9,951	8,042	8,387
	2003	2004	2005	2006	2007	2008
Herring Quota (tons)	528	1579	1667	1266	1,284	1,380
Total harvest SOK (tons)	69.2	50	115.2	28.9	44.5	148.5
Exvessel value	\$423,000	\$325,000	\$603,723	\$298,575	\$1,087,532	\$3,066,788
Average Price/lb	\$3	\$3.25	\$2.62	\$5.15	\$12.08	\$10.33
Average Income	\$3,385	\$3,420	\$9,011	\$8,782	\$23,139	\$25,138
Number of pounds	61	50	42	50	52	66
Number of landings	118	95	67	34	47	122
Blade allocation	e	d	f	g	g	g
Total kelp harvest (tons)	7.5	14.0	4.9	4.6	5.6	12.2
Herring spawning dates	3/31–4/7	3/26–4/7	4/9–4/14	3/30–4/3	4/3–4/12	4/3–4/12
Miles of spawn	11.2	12.0	18.0	8.2	22.3	11.0
Forecasted Pre-Fishery biomass (tons)	6,045	13,204	15,577	14,262	13,768	14,213
	2009	2010	2011	2012	2013	2014
Herring Quota (tons)	1,802	1,953	2,710	6,847	4,060	4,808
Total harvest SOK (tons)	137.3	116.7	70	98.1	137.7	confidential
Exvessel value	\$1,256,777	\$884,715	\$728,147	\$2,099,002	\$3,099,002	confidential
Average Price/lb	\$4.58	\$3.80	\$5.13	\$10.69	\$12.00	confidential
Average Income	\$9,107	\$8,268	\$14,003	\$32,795	\$23,656	confidential
Number of pounds	96	63	34	35	80	confidential
Number of landings	137	107	52	64	131	confidential
Blade allocation	g	g	g	g	g	g
Total kelp harvest (tons)	7.3	8.2	4.6	5.3	9.3	19.2
Herring spawning dates	4/3–4/10	4/5–4/14	4/1–4/7	4/3–4/8	3/31–4/3	4/1–4/5
Miles of spawn	17.0	18.7	14.8	14.9	15.3	13.6
Forecasted Pre-Fishery biomass (tons)	14,213	14,870	17,886	34,235	23,391	15,803

^a 100 blades for single-closed pound, 150 blades for multiple pound permit holder, and 300 blades for open pound permits.

^b 120 blades for a single closed pound, 180 blades for a multiple pound permit holder, 360 blades for single open pound.

^c 155 blades for a single closed pound, 235 blades for a multiple pound permit holder, 470 blades for a single open pound.

^d 70 blades for a single closed pound, 210 for a multiple pound permit holder.

^e 200 blades for a single closed pound, 600 blades for a multiple pound permit holder

^f 350 blades for a single closed pound, 750 blades for a double closed pound, 1,125 blades for a triple closed pound.

^g 600 blades for a single closed pound, 750 blades for a double closed pound, 1,125 blades for a triple closed pound

Table 3.—A comparison of Craig and Ernest Sound herring spawning dates for years 1994–2014.



Note: Black bars indicate dates of active spawning for the Craig stock and gray bars indicate dates of active spawning for the Ernest Sound stock.

Table 4.—Ernest Sound miles of spawn, stock size and harvest, 1969–2014.

Season	Date of first spawn ^a	Nautical miles of spawn ^b	Forecast Used for GHJ Determination ^c (tons)	Spawning Biomass (tons) ^d	Guideline Harvest Level (tons) ^e	Bait harvest (tons) ^f	SOK Harvest (lbs)	Sac Roe Harvest (tons)	Remaining GHJ (tons)
1969/1970	--	--	--	--	--	17	--	--	--
1970/1971	--	3	--	13,100	--	206	--	--	--
1971/1972	--	--	13,100	3,650	--	967	--	--	--
1972/1973	--	--	3,650	450	--	775	--	--	--
1973/1974	--	--	450	400	--	535	--	--	--
1974/1975	--	--	400	2,900	--	593	--	--	--
1975/1976	--	3	2,900	4,350	580	708	--	--	0
1976/1977 ^g	--	3	4,350	3,035	870	901	--	49	0
1977/1978	3-May	--	3,035	1,505	455	340	--	--	115
1978/1979	16-Apr	2.6	1,505	255	--	--	--	--	--
1979/1980	2-May	4	255	500	--	--	--	--	--
1980/1981	--	3.5	500	410	--	--	--	--	--
1981/1982	--	--	410	160	--	--	--	--	--
1982/1983	--	--	160	1,640	--	--	--	--	--
1983/1984	11-Apr	--	1,640	1,000	--	--	--	--	--
1984/1985	--	4.5	1,000	1,000	--	--	--	--	--
1985/1986	--	--	1,000	1,000	--	--	--	--	--
1986/1987	--	1	1,000	--	--	--	--	--	--
1987/1988	21-Apr	2	--	--	--	--	--	--	--
1988/1989	17-Apr	2.4	--	500	--	--	--	--	--
1989/1990	--	2.1	500	1,000	--	--	--	--	--
1990/1991	--	--	1,000	3,000	--	--	--	--	--
1991/1992	16-Apr	9.1	3,000	2,650	--	--	--	--	--
1992/1993	23-Apr	9	2,650	684	200	8	--	--	192
1993/1994	26-Apr	8.4	684	2,544	0	--	--	--	--
1994/1995	25-Apr	6.5	2,544	2,470	255	111	--	--	144
1995/1996	16-Apr	6.9	2,744	2,665	280	220	--	--	60
1996/1997	16-Apr	0	4,852	0	377	6	--	--	371
1997/1998	9-Apr	11.8	--	5,998	0	--	--	--	--
1998/1999	5-Apr	1.8	5,381	No survey	662	96	--	--	566
1999/2000	8-Apr	9.1	--	920	0	--	--	--	--
2000/2001	11-Apr	6.9	--	2,052	0	--	--	--	--
2001/2002	15-Apr	4.8	1,653	2,406	0	--	--	--	--

-continued-

Note: Table footnotes are at the bottom of the following page.

Table 4.—continued (page 2 of 2)

Season	Date of first spawn ^a	Nautical miles of spawn ^b	Forecast Used for GHL Determination ^c (tons)	Spawning Biomass (tons) ^d	Guideline Harvest Level (tons) ^e	Bait harvest (tons) ^f	SOK Harvest (lbs)
2002/2003	10-Apr	8.5	2,407	5,509	0	--	--
2003/2004	11-Apr	7.1	6,592	2,413	875	44	112,286
2004/2005	22-Apr	10.1	1,906	3,268	0	--	--
2005/2006	6-Apr	7.9	2,284	2,538	0	--	--
2006/2007	19-Apr	11.3	1,955	7,353	0	--	--
2007/2008	20-Apr	15.4	9,060	4,846	1,382	**	19,650
2008/2009	17-Apr	6.6	4,545	2,862	529	**	4,911
2009/2010	14-Apr	7.8	2,879	3,523	297	**	--
2010/2011	17-Apr	8.1	5,080	2,559	476	**	--
2011/2012	16-Apr	8.9	2,682	3,193	272	**	0
2012/2013	16-Apr	9.7	3,509	7,556	379	**	129,265
2013/2014	14-Apr	3.7	7,613	2,631	1,073	**	**
10yr Average	16-Apr	6.3	2,918	2,435	358	363	**
Total Average	16-Apr	7.8	3,572	3,202	321	187	**

Note: ** indicates data is confidential.

^a Since 1997/1998 the first spawn and the major spawn have been within five days of each other.

^b 1996/1997 No survey, fish all spawned (7.5 miles) along Ship Island; 1998/1999 No survey, only 1.8 miles of spawn observed, surveys probably missed main spawn; spawn year is the beginning year of regulatory season.

^c 1971/1972 through 1984/1985 forecasts were based on hydroacoustical-computer generated estimates; 1985/1986 through 1991/1992 forecasts were based on visual estimates; 1992/1993 through 1994/1995 were based on spawn deposition estimates; 1995/1996 through 2006/2007 were biomass accounting forecasts.

^d 1969/1970 through 1983/1984 biomass estimates were hydroacoustical-computer generated estimates; 1984/1985 through 1990/1991 were visual estimates; and 1991/1992 through 2005/2006 were spawn deposition estimates. 1975/1976 & 1976/1977 GHLs are based upon 20% of the acoustical estimate. 1977/1978 GHL is based upon 15% of the acoustical estimate.

^e 2003/2004 GHL includes 90 tons rolled over from the bait pound fishery.

^f 1973/1974, 1974/1975, 1976/1977 also include harvests from Fools and Menefee Inlets. Does not include harvests from statistical area 107-40.

^g Since 1976/1977 season the threshold for a fishery has been 2,500 tons.

Table 5.—Ernest Sound herring SOK fishery summary, 2004, 2008-2009, 2011, and 2013-2014.

Statistic	2004	2008	2009
Ernest Sound GHL (tons)	875	1,382	529
GHL Available for SOK (tons)	775	**	**
SOK Harvest (tons)	56.1	9.8	2.5
Exvessel Value	\$514,912	\$131,059	\$18,359
Average Price/lb	\$4.59	\$6.87	\$3.67
Average Income/permit	\$8,046	\$10,091	\$4,590
Number of Permits participating	64	13	4
Number of Pounds	51/6/0/1 ^a	5/3/0/0 ^a	0/2/0/0 ^a
Number Permits Landing Product	64	13	4
Kelp Allocation (blades)	c	d	e
Kelp Blade Harvest (lbs)	4,600	29,400	2,400
Fishery Open—Closed	4/1–5/10	4/1–5/10	4/1–5/10
Fishing Occurred	4/10–4/17	4/16–4/24	4/17–4/21
Harvest Occurred	4/14–1/17	24-Apr	21-Apr
Statistic	2011	2013	2014
Ernest Sound GHL (tons)	476	379	1,073
GHL Available for SOK (tons)	**	**	**
SOK Harvest (tons)	0	64.3	**
Exvessel Value	\$0	\$1,574,729	**
Average Price/lb	\$0	\$12.25	**
Average Income/permit	\$0	\$19,441	**
Number of Permits participating	0	81	129
Number of Pounds	0	1/5/1/22/0 ^d	25/51/0 ^a
Number Permits Landing Product	0	81	129
Kelp Allocation (blades)	e	e	d
Kelp Blade Harvest (lbs)	0	6,400	29,000
Fishery Open—Closed	4/1–5/10	4/1–5/10	4/1–5/10
Fishing Occurred	NA	4/10–4/16	4/12–4/20
Harvest Occurred	NA	4/15–4/16	4/18–4/20

Note: ** indicates data is confidential.

^a single/double/triple/open

^b single/double/combined double/triple/open

^c 1,000 blades single-closed/1,000 blades double-closed/1,000 blades triple-closed/2,500 blades single-open/7,500 multiple-permit-open

^d 1,000 blades single-closed/2,000 blades double-closed/1,000 blades triple-closed/2,500 blades single-open/7,500 multiple-permit-open

^e 200 blades single-closed/400 blades double-closed/500 blades triple-closed/1,500 blades single-open/4,500 multiple-permit-open

Table 6.–Tenakee Inlet herring seasonal spawning dates and mileage, biomass estimate, and harvest.

Season	Major Spawning Dates	Nautical Miles of Spawn (nmi)	Spawning Biomass ^a (tons)	Food/Bait GHJ (tons)	Food/Bait Harvest (tons)
1978/1979	5/9–5/11	3.3	2,500	200	0
1979/1980	4/28–5/2	3.9	4,485	400	504
1980/1981	4/27–5/5	9.3	7,500	750	847
1981/1982	4/25–5/7	11.1	6,650	650	687
1982/1983	4/25–5/6	13.1	8,870	875	749
1983/1984	4/20–4/26	8.3	12,100	850	619
1984/1985	4/24–5/1	9.9	11,000	1,400	1,406
1985/1986	4/27–5/1	8.3	12,500	1,700	2,040
1986/1987	4/22–4/30	7.9	6,600	800	1,275
1987/1988	4/22–4/27	9.1	6,000	1,450	1,577
1988/1989	4/26–4/29	10.3	5,360	720	655
1989/1990	4/25–5/6	2.9	2000	650	595
1990/1991	4/25–5/4	2.1	400		No fishery
1991/1992	5/5	trace	200		No fishery
1992/1993	4/21–4/23	6.4	904		No fishery
1993/1994	4/24–4/26	0.25	400		No fishery
1994/1995	4/26	0.05	200		No fishery
1995/1996	5/4–5/14	18.1	4,560		No fishery
1996/1997	4/26–5/7	14.4	9,926	300	98
1997/1998	4/24–4/29	12.4	10,419	825	586
1998/1999	4/25–4/28	11.0	11,049	1,023	835
1999/2000	4/26–5/3	13.8	9,425	542	494
2000/2001	4/21–5/1	12.2	7,576	906	775
2001/2002	4/23–4/27	15.4	4,084	840	355
2002/2003	4/25–4/28	12.2	3,529	528	328
2003/2004	4/28–5/3	13.0	4,728	399	confidential
2004/2005	4/26–5/2	8.9	3,036	476	0
2005/2006	5/2–5/6	5.9	5,110		No fishery
2006/2007	4/23–4/26	4.4	3,346		No fishery
2007/2008	4/30; 5/7–5/8	11.4	11,252		No fishery
	4/25–4/26; 4/29–				
2008/2009	4/30	6.9	5,283	875	254
2009/2010	5/7–5/9	2.7	1,437	583	confidential
2010/2011	5/9	1.0	N/A		No fishery
2011/2012	4/20–4/23	4.6	5,119		No fishery
2012/2013	5/7–5/10	5.4	4,936		No fishery
2013/2014	4/29	2.0	927	557	confidential

^a Spawning biomass estimates were calculated from hydro-acoustical surveys from 1979 through 1986, and from spawn deposition surveys from 1987 through 2014 – bolded values were derived from ASA models.

Table 7.—Tenakee Inlet herring spawn-on-kelp fishery summary, 2003–2005, 2009, and 2014.

Statistic	2003	2004	2005
Tenakee Inlet GHL (tons)	528	399	476
GHL Available for SOK (tons)	180	confidential	476
SOK Harvest (tons)	47.6	100.7	101.4
Exvessel Value	\$580,500	\$981,464	\$512,900
Average Price/lb	\$6.10	\$4.68	\$2.53
Average Income/permit	\$10,555	\$11,684	\$5,636
Number of Permits participating	55	85	98
Number of Pounds	1/15/8/0 ^a	1/32/6/2/2 ^b	1/29/13/3 ^a
Number Permits Landing Product	55	85	91
Kelp Allocation (blades)	200/400/550/0 ^a	300/500/500/2000 ^a	300/500/500/2000 ^a
Kelp Blade Harvest (lbs)	35,375	39,000	53,850
Fishery Open—Closed	4/6–5/6	4/6–5/6	4/6–5/5
Fishing Occurred	4/25–4/28	4/28–5/1	4/27–4/30
Harvest Occurred	4/30–5/4	5/3–5/6	5/2–5/4
Statistic	2009	2014	
Tenakee Inlet GHL (tons)	875	557	
GHL Available for SOK (tons)	621	confidential	
SOK Harvest (tons)	64.1	84.4	
Exvessel Value	\$558,900	\$1,155,276	
Average Price/lb	\$4.36	\$6.85	
Average Income/permit	\$6,499	\$16,271	
Number of Permits participating	86	78	
Number of Pounds	11/27/7/0 ^a	2/25/5/1 ^c	
Number Permits Landing Product	86	71	
Kelp Allocation (blades)	400/500/500/0 ^a	300/500/500/0 ^a	
Kelp Blade Harvest (lbs)	42,600	41,250	
Fishery Open—Closed	4/6–5/5	4/6–5/4	
Fishing Occurred	4/28–5/1	4/27–5/1	
Harvest Occurred	5/2–5/5	5/2–5/4	

Note: No fishery occurred from 2006–2008 since the biomass forecast was below the 3,000-ton threshold.

^a single/double/triple/test

^b single/double/triple/long line/test

^c single/double/triple/quadruple

Table 8.—A comparison of Hoonah Sound and Tenakee Inlet herring spawn dates for years 1993–2014.

Year	Location	April													May														
		18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1995	Hoonah Sound																												
	Tenakee																												
1996	Hoonah Sound																												
	Tenakee																												
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2011	Hoonah Sound																												
	Tenakee																												
2012	Hoonah Sound																												
	Tenakee																												
2013	Hoonah Sound																												
	Tenakee																												
2014	Hoonah Sound																												
	Tenakee																												

Note: Black bars indicate spawning dates for Hoonah Sound and gray bars indicate spawning dates for Tenakee Inlet.

Table 9.–Hoonah Sound herring spawning stock and fishery performance, 1971–2014.

Year	Spawn Dates	Nautical Miles Spawn	Estimated Escapement*	SOK Harvested (tons)
1971	5/10–5/17	2.5	833	--
1972	5/11–5/12	1.5	666	--
1973	N/A	1.0	333	--
1974	14-May	3.0	999	--
1975	N/A	N/A		--
1976	5-May	1.0	333	--
1977	N/A	3.5	1,166	--
1978	N/A	5.3	1,765	--
1979	N/A	0.5	167	--
1980	N/A	N/A	--	--
1981	4/30–5/01	2.3	750	--
1982	4/29–5/01	1.5	500	--
1983	1-May	1.0	333	--
1984	4/26–5/01	3.0	540	--
1985	5/01–5/03	3.5	1,166	--
1986	4/28–5/01	3.8	1,249	--
1987	4/28–5/02	3.8	740	--
1988	4/30–5/01	5.0	1,665	--
1989	4/16–4/20	17.0	4,000	--
1990	4/13–4/28	10.0	2,350	11.9
1991	4/19–4/24	8.7	2,175	13.3
1992	4/22–4/24	10.8	5,714	23.1
1993	4/27–4/29	5.7	1,099	14.0
1994	4/21–4/23	9.0	2,450	32.7
1995	4/20–4/21	4.5	274	27.4
1996	5/02–5/9	10.1	4,023	--
1997	4/25–4/28	14.5	5,884	65.2
1998	4/23–4/27	14.5	6,472	85.6
1999	4/27–5/1	13.8	4,426	71.6
2000	4/27–4/30	13.0	3,635	35.7
2001	4/27–5/1	13.7	8,538	66.2
2002	4/25–4/27	11.9	4,936	136.6
2003	4/23–4/27	16.7	9,423	141.5
2004	4/22–4/29	11.1	7,502	237.4
2005	4/18–4/25	10.3	6,924	190.6
2006	4/23–4/26	9.0	6,028	162.1
2007	4/46–5/2	16.5	10,946	159.4
2008	4/23–4/30	14.5	19,975	202.3
2009	4/22–4/27	10.3	15,829	234.7
2010	4/22 – 4/28	12.4	15,264	290.4
2011	4/20 – 5/5	12.6	14,215	193.7
2012	4/20 – 4/23	4.2	923	186.0
2013	5/7 – 5/9	2.4	412	0.0
2014	5/5 – 5/8	3.2	444	0.0
Average	1971–2014	7.7	4,216	NA
Average	1990–2014	10.6	6,394	104.9

Note: Shaded estimated escapements are based on average spawn density from years 1989–2002.

Table 10.—Hoonah Sound herring spawn-on-kelp fishery summary, 1997–2014.

Statistic	1997	1998	1999	2000	2001	2002
Herring Quota (tons)	1,421	700	778	359	366	1,264
Harvest Quota (tons)	114	56	62	29	NA	NA
Harvest (tons)	65.2	85.9	71.6	35.7	66.2	136.6
Exvessel Value	\$920,000	\$1,160,523	\$1,005,529	\$587,568	\$1,006,000	\$1,970,000
Average Price/lb	\$7.05	\$6.75	\$7.02	\$8.23	\$7.60	\$7.32
Average Income	\$6,694	\$10,092	\$11,692	\$6,251	\$11,559	\$20,408
Number of Applicants	139	133	106	106	NA	NA
Number of Pounds	0/113/18 ^a	115	96	46/2/0 ^a	42/3/1 ^a	106/0/2 ^a
Number Selling Product	112/12 ^b	115	86	84	87	98
Kelp Allocation (blades)	430/860 ^b	400/800 ^b	400/800 ^b	110/300 ^b	120/300 ^b	1,000/3,600 ^b
Kelp Blade Harvest	68,755	54,275	42,025	29,820	29,966	113,713
Fishery Open—Closed	4/6–4/29	4/6–4/27	4/6–5/3	4/6–5/3	4/6–5/3	4/6–5/1
Fishing Occurred	4/22–4/29	4/18–4/26	4/29–5/2	4/27–4/29	4/25–4/28	4/24–4/27
Harvest Occurred	4/27–5/3	4/25–4/27	5/3–5/5	5/2–5/4	4/30–5/2	4/28–5/1
Statistic	2003	2004	2005	2006	2007	2008
Herring Quota (tons)	427	1,207	728	669	681	2,238
Harvest Quota (tons)	NA	NA	NA	NA	NA	NA
Harvest (tons)	141.6	237.4	190.6	162.1	144.5	223
Exvessel Value	\$1,922,50	\$2,071,347	\$1,117,568	\$1,943,422	\$4,491,070	\$5,115,459
Average Price/lb	\$6.79	\$4.36	\$2.93	\$6.00	\$14.09	\$11.47
Average Income/Landing	\$17,800	\$19,541	\$11,889	\$24,600	\$49,352	\$51,155
Number of Applicants	NA	NA	NA	NA	NA	NA
Number of Pounds	49/1/3 ^d	92/12/2 ^a	81/5/3 ^c	17/45 ^d	67/12 ^d	98/3 ^d
Number Selling Product	108	106	94	79	91	100
Kelp Allocation (blades)	500/300/750 ^d	1,000/1,000/ 3,000 ^a	1,000/1,000/ 1,500 ^d	2,500/1,000/ 1,500 ^d	2,500/1,000/ 1,500 ^d	3,000/2,000/ 1,500 ^d
Kelp Blade Harvest	60,301	126,000	118,450	136,698	122,565	201,262
Fishery Open—Closed	4/6–4/25	4/6–4/28	4/6–4/28	4/6–4/27	4/6–5/4	4/6–5/02
Fishing Occurred	4/19–4/24	4/20–4/25	4/19–4/28	4/18–4/23	4/23–4/29	4/22–4/27
Harvest Occurred	4/24–4/27	4/26–4/28	4/25–4/28	4/23–4/27	4/30–5/4	4/27–5/1
Statistic	2009	2010	2011	2012	2013	2014
Herring Quota (tons)	2,238	3,182	3,015	2,139	130	0
Harvest Quota (tons)	NA	NA	NA	NA	NA	NA
Harvest (tons)	234.7	290.4	193.7	186.5	0	0
Exvessel Value	\$2,332,51	\$2,580,517	\$1,820,952	\$4,033,078	\$0	\$0
Average Price/lb	\$4.97	\$4.44	\$4.70	\$10.81	\$0	\$0
Average Income/Landing	\$23,094	\$25,550	\$20,460	\$55,248	\$0	\$0
Number of Applicants	NA	NA	NA	NA	NA	NA
Number of Pounds	99/4 ^d	97/2 ^d	85/4 ^d	83/4 ^d	3 open	0
Number Selling Product	101	101	89	73	0	0
Kelp Allocation (blades)	3,000/2,000/ 1,500 ^d	3,000/2,000/ 1,500 ^d	3,000/2,000/ 1,500 ^d	3,000/2,000/ 1,500 ^d	600 open	0
Kelp Blade Harvest	196,492	178,898	169,922	155,104	7,940	0
Fishery Open—Closed	4/6–4/30	4/6–4/30	4/6–4/30	4/6–5/15	4/6–5/15	NA
Fishing Occurred	4/22–4/25	4/21–4/25	4/20–4/24	4/19–4/21	NA	NA
Harvest Occurred	4/26–4/29	4/22–4/28	4/26–4/29	4/26–4/27	NA	NA

Note: No fishery occurred in 1996 since the biomass forecast was below the 1,000-ton threshold

^a Double closed pounds/single closed pounds/open pounds.

^b Closed pound/Open Pound.

^c Single-permit closed pound/double-permit closed pound/triple-permit closed pounds.

^d Double closed pounds/single closed pounds/triple closed pounds.

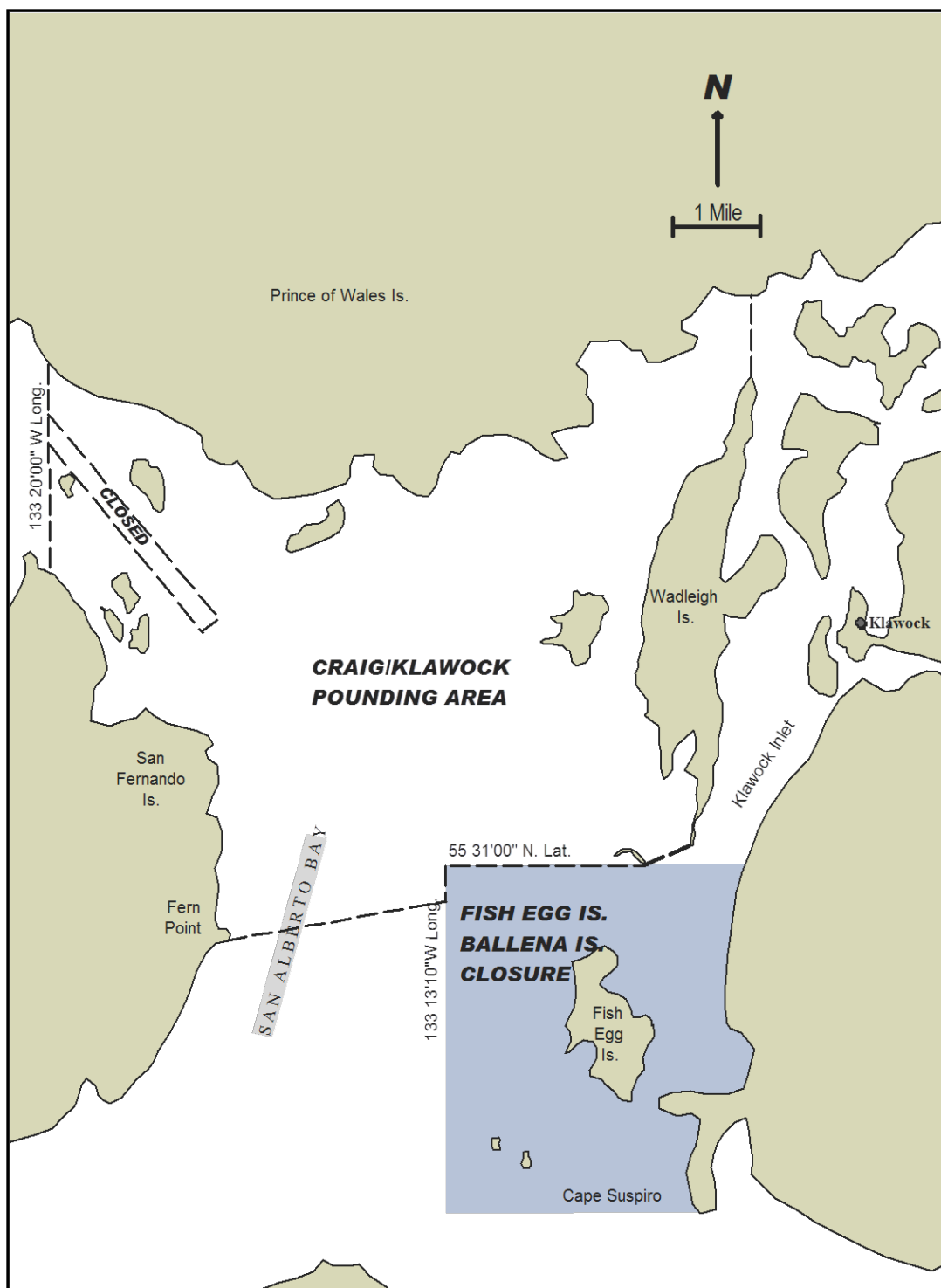


Figure 1.—Open area for Craig/Klawock (Section 3-B) herring SOK fishery.

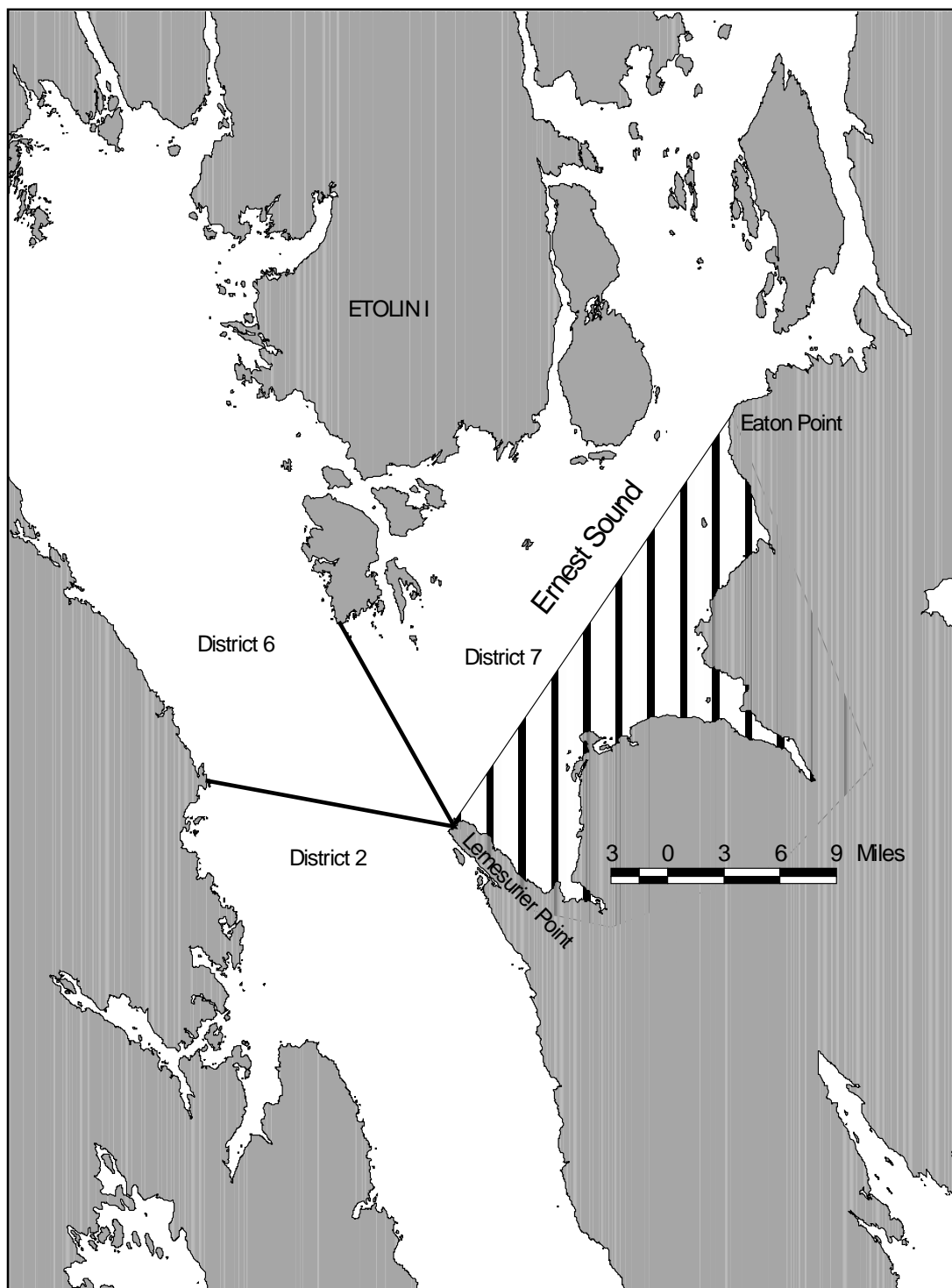


Figure 2.—Open area for Ernest Sound (District 7) herring SOK fishery.

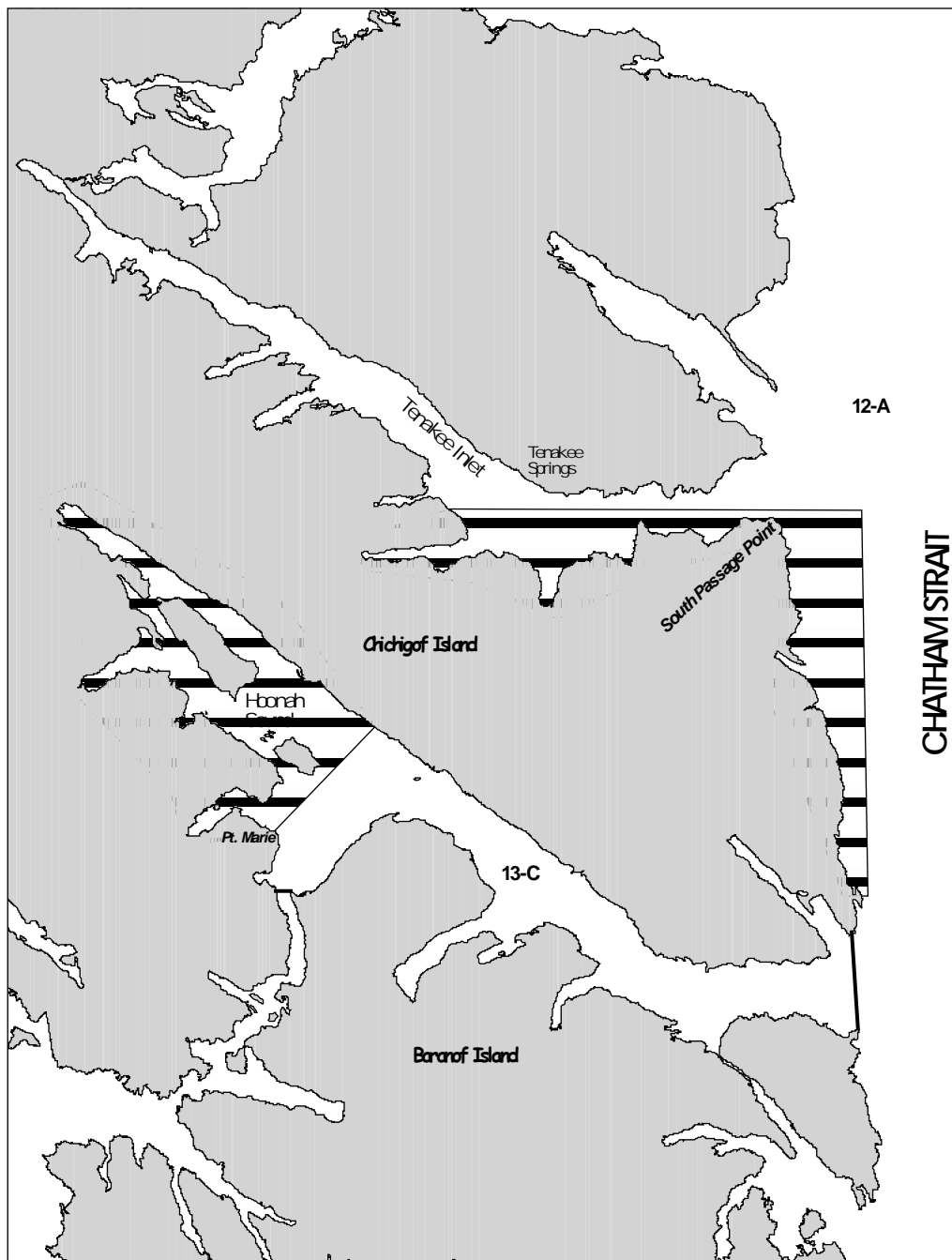


Figure 3.—Open area for Hoonah Sound (Section 13-C) and Tenakee Inlet (Section 12-A) herring SOK fisheries.

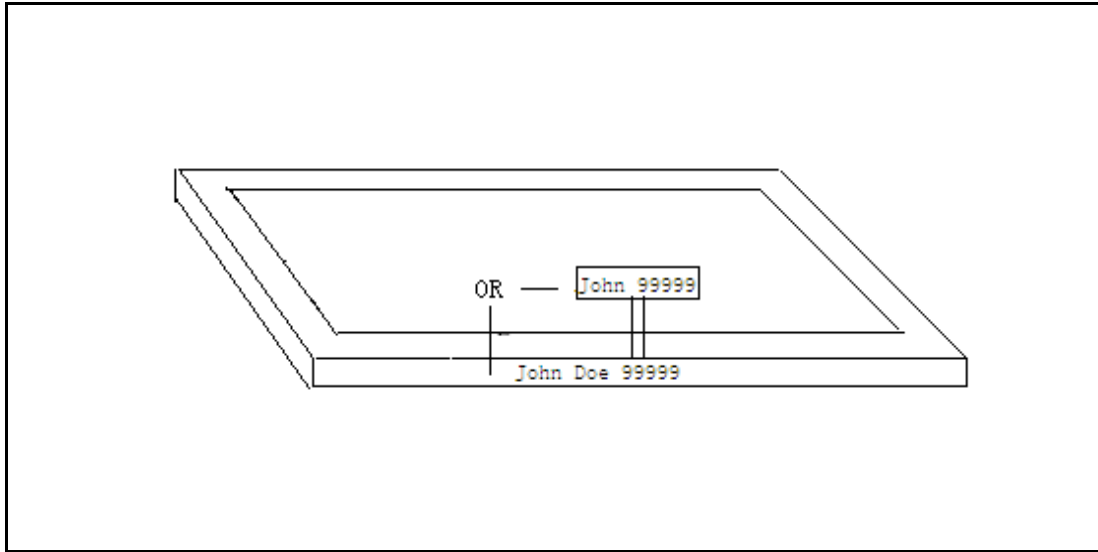


Figure 4.—Diagram of a herring pound showing two alternatives methods of marking herring pounds.

Note: Regulations require vertical signs with the permit holder's first and last name and five-digit CFEC permit number (5 AAC 27.185(k)). Letters and numbers must be at least six inches high and at least one-half inch wide and must contrast with the background.

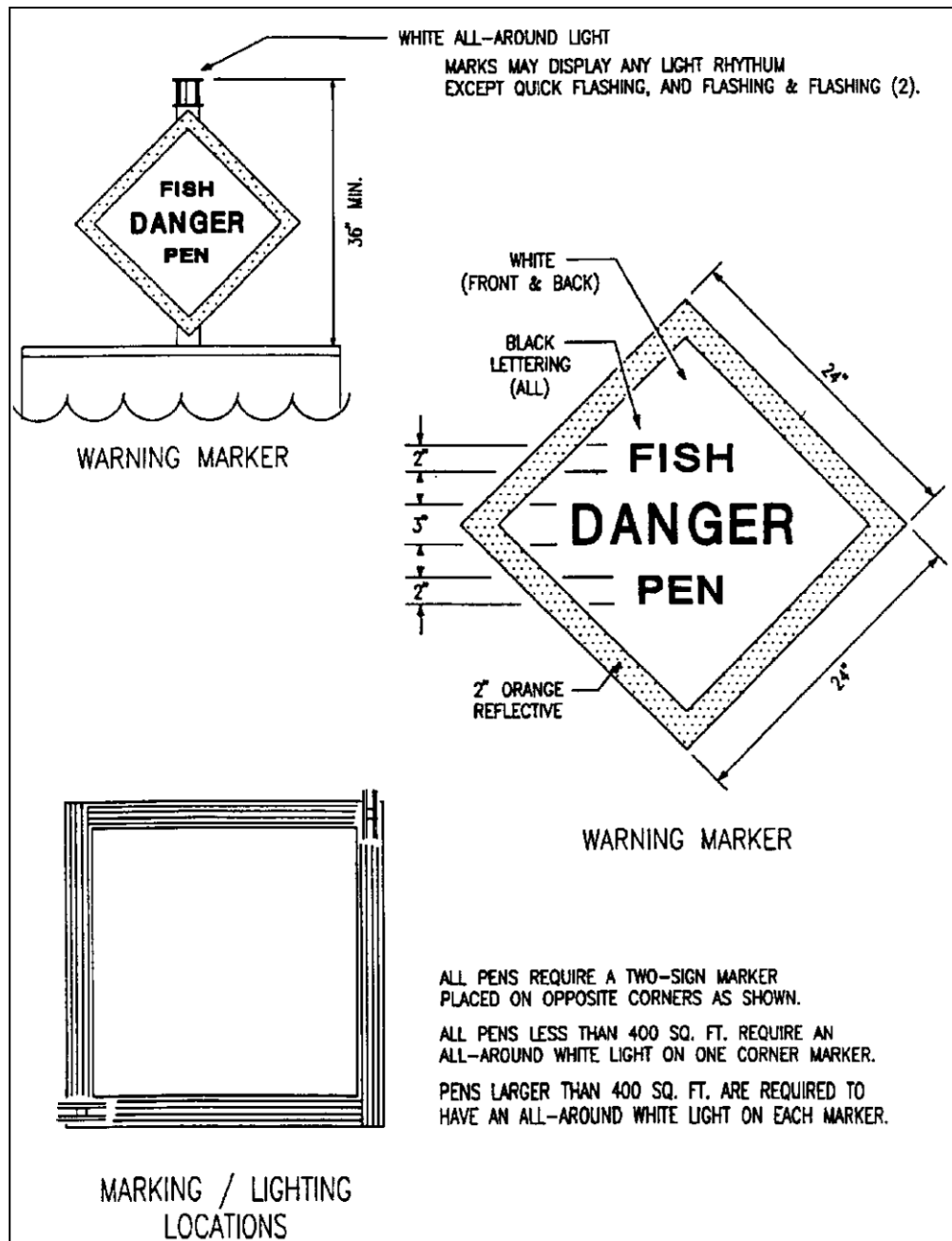


Figure 5.—Coast Guard Requirements for marking ponds.

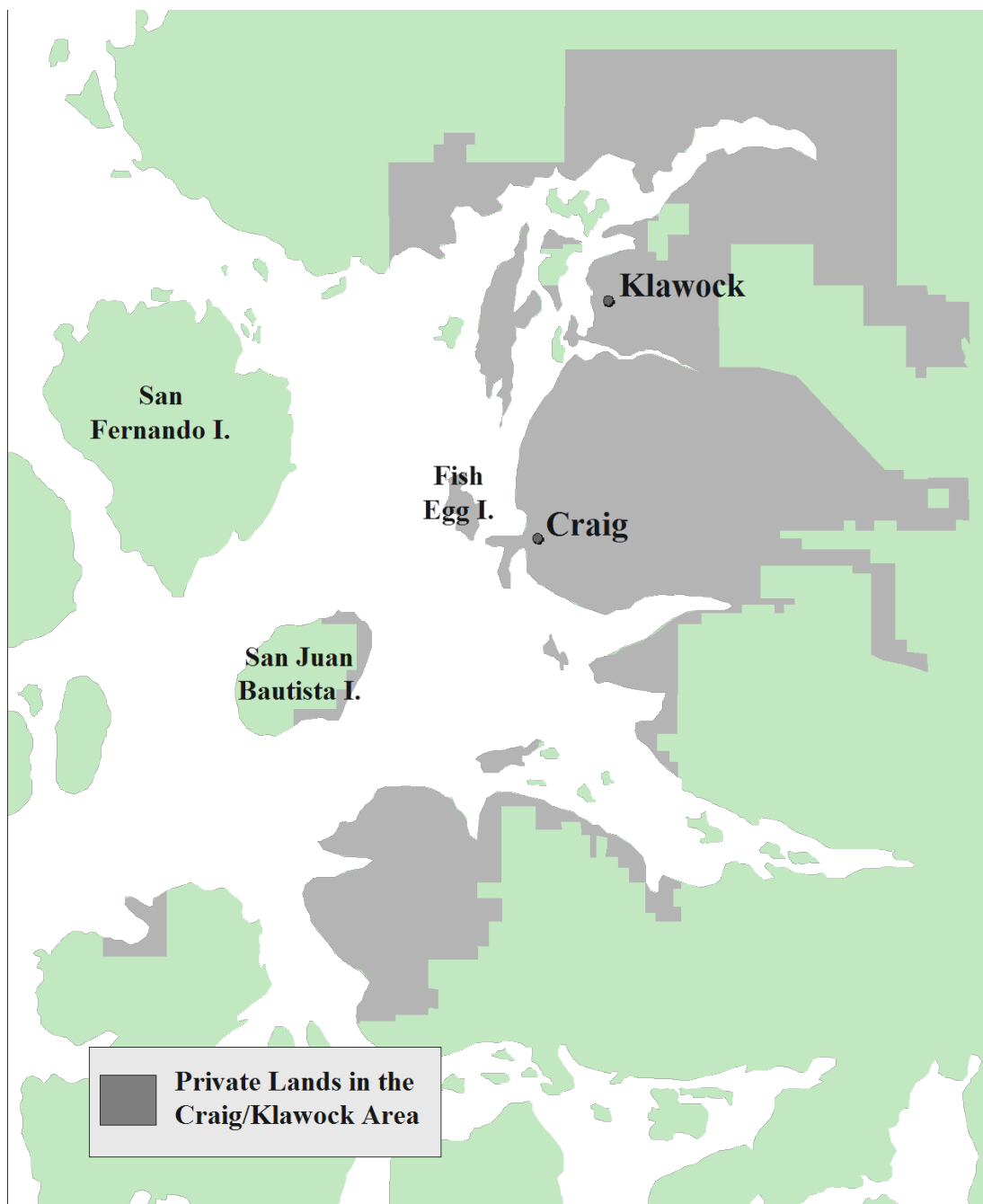


Figure 6.—Private lands in the Craig/Klawock area.