

**2016 Southeast Alaska Herring Spawn-On-Kelp
Pound Fishery Management Plan**

by

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March 2016

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	e
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	at	@	common test statistics	(F, t, χ^2 , etc.)
liter	L	compass directions:		confidence interval	CI
meter	m	east	E	correlation coefficient	
milliliter	mL	north	N	(multiple)	R
millimeter	mm	south	S	correlation coefficient	
		west	W	(simple)	r
Weights and measures (English)		copyright	©	covariance	cov
cubic feet per second	ft ³ /s	corporate suffixes:		degree (angular)	°
foot	ft	Company	Co.	degrees of freedom	df
gallon	gal	Corporation	Corp.	expected value	E
inch	in	Incorporated	Inc.	greater than	>
mile	mi	Limited	Ltd.	greater than or equal to	≥
nautical mile	nmi	District of Columbia	D.C.	harvest per unit effort	HPUE
ounce	oz	et alii (and others)	et al.	less than	<
pound	lb	et cetera (and so forth)	etc.	less than or equal to	≤
quart	qt	exempli gratia		logarithm (natural)	ln
yard	yd	(for example)	e.g.	logarithm (base 10)	log
Time and temperature		Federal Information Code	FIC	logarithm (specify base)	log ₂ , etc.
day	d	id est (that is)	i.e.	minute (angular)	'
degrees Celsius	°C	latitude or longitude	lat or long	not significant	NS
degrees Fahrenheit	°F	monetary symbols		null hypothesis	H_0
degrees kelvin	K	(U.S.)	\$, ¢	percent	%
hour	h	months (tables and figures): first three letters	Jan, ..., Dec	probability	P
minute	min	registered trademark	®	probability of a type I error (rejection of the null hypothesis when true)	α
second	s	trademark	™	probability of a type II error (acceptance of the null hypothesis when false)	β
Physics and chemistry		United States (adjective)	U.S.	second (angular)	"
all atomic symbols		United States of America (noun)	USA	standard deviation	SD
alternating current	AC	U.S.C.	United States Code	standard error	SE
ampere	A	U.S. state	use two-letter abbreviations (e.g., AK, WA)	variance	
calorie	cal			population	Var
direct current	DC			sample	var
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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**2016 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 2016 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 2016 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 capturing sexually mature herring and releasing them 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 2015–2016 herring guideline harvest level (GHL) for the Craig/Klawock area stock is 1,590 tons of herring. Forty percent (40%) or 636 tons is allocated to the SOK fishery plus any unharvested portion of the winter food and bait quota. The 2015–2016 winter food and bait harvest closed on February 28, 2016. The final winter food and bait harvest was 898 tons. This puts the GHL for the Craig/Klawock spawn-on-kelp fishery at 692 tons, placing the fishery in the 600-799 ton kelp allocation range.

No fishery will occur in Ernest Sound during the 2015–2016 season. The 2015–2016 mature spawning biomass forecast for Ernest Sound is 1,207 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 2015–2016 season. The 2015–2016 mature spawning biomass forecast for Hoonah Sound is 313 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 2015–2016 season. The 2015–2016 mature spawning biomass forecast for Tenakee Inlet is 2,223 tons of herring, which is below the 3,000 ton threshold necessary to conduct a commercial fishery.

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 GHGs 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 2016 forecast for the Craig area is 12,303 tons. The 12.9% harvest rate will allow a combined quota of 1,590 tons for the winter food and bait and the SOK fisheries. The forecast anticipates a strong return of age-4 herring (59%).

The GHG for the Section 3-B stock is allocated between both the winter food and bait fishery and the herring SOK fishery. When the fishery was created, the GHG 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 2015–2016 winter food and bait fishery closed on February 28, 2016. All unharvested winter food and bait quota remaining will be added to the GHL for the SOK fishery. The original GHL of 636 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 600-799 ton range.

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 was April 9. Traditionally, herring spawn on Fish Egg, Wadleigh, Clam, and Abess 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 for those permit holders who plan on participating in both fisheries when there is an available GHL.

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. SOK fisheries in Ernest Sound have occurred intermittently and at various levels of effort and harvest since the first fishery occurred in 2004. From 2004 through 2015 there have been SOK GHLs in 6 years. Effort has varied from 0 participants in 2011 to 129 in 2014 (Table 5).

Ernest Sound has a threshold level of 2,500 tons for the stock. For the 2015–2016 season, Ernest Sound's forecast is 1,207 tons and is below the threshold to allow for commercial herring fisheries. The forecast is predominantly comprised of age-3 herring (91%). 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. 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. The ADF&G will monitor herring spawn and collect samples of spawning herring in 2016. In addition, it is likely the department will conduct spawn deposition surveys and develop forecasts of mature herring biomass for the 2016–2017 season.

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 3.2 nmi with approximately 2.0 nmi documented in both 2014 and 2015.

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 2015 spawn, which occurred April 22–25, had three days of fairly significant spawning events preceded by one day of spot spawns. Although the total mileage was relatively small in 2015, only 2011 and 2014 were lower in the last twenty years, multiple days of spawning resulted in a spawning biomass forecast of 2,223 tons, more than double that of 2014 even though there was similar total mileage. The 2015 spawning event occurred from Finn Cove nearly to South Passage Point, with Trap Bay at the center. This was a substantial shift to the east compared to the previous several years with the core areas on either side of the Kadashan River flats. Spawning samples of herring were obtained in 2015 with good spatial and temporal distribution over the major spawning event. A much smaller spawning event was observed in the first week of May consisting of several spot spawns inside Basket Bay and another just to the north near Passage Point Creek. No commercial herring fisheries will occur in Tenakee Inlet during the Spring of 2016. Priority will again be placed on obtaining well-distributed samples from spawn occurring in 2016.

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 7.6 nmi of spawn and 4,125 tons of spawning biomass. Since 1990, the year the SOK fishery started, the stock has averaged 10.3 nmi of spawn and 6,160 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 was increased to 2,000 tons.

In 2015, 4.2 nmi of spawn was documented with an estimated escapement of 23 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 2016 forecast biomass is 313 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 2016 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 2015 season, spawning occurred from April 24 through May 6 and only 4.2 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 2016 fishing season.

- October 5 News Release announcing the 2016 Ernest Sound closure and the 2016 Craig/Klawock GHL.
- October 28 News Release announcing the 2016 Hoonah Sound and Tenakee Inlet closures.
- No Specific 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.
- Deadline
- March 4 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 2016 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 equipment 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 Sitka on February 21–March 2, 2015, and adopted four regulatory changes to the SOK management plan. These changes included: a reworking of the kelp allocation table [5AAC 27.185 (c)]; removing the restriction on fishermen adding herring to two joined pound structures and clarification on how far the web between the pounds can be lowered between the structures [5AAC 27.185 (r)]; redefining the time when herring may be released from a closed pound [5AAC 27.185 (s)]. These new regulations are explained in the following paragraphs.

Kelp allocation tables for Southeast Alaska

The following kelp allocation table was newly adopted. It combines the two southern Southeast SOK fisheries into one table and the two northern Southeast SOK fisheries into one table. The blade allocation was lowered when the GHL is lower, an additional tier was added when the GHL is at the upper end, and an additional quadruple permit or more tier was added to further incentivize multiple permits into one pound structure.

5AAC 27.185 (c) In Section 3-B and District 7, the kelp allocation per permit holder is as follows:

Guideline Harvest Range for Herring (tons)	Single-Permit Closed Pounds	Double-Permit Closed Pounds	Triple-Permit Closed Pounds	Quadruple-Permit or more Closed Pounds	Single-Permit Open Pound	Multiple-Permit Open Pound
50-249	None	None	None	None	750 blades	2,000 blades
250-399	100 blades	200 blades	300 blades	500 blades	1,000 blades	3,000 blades
400-599	200 blades	300 blades	600 blades	700 blades	1,000 blades	3,000 blades
600-799	300 blades	400 blades	700 blades	800 blades	1,500 blades	4,500 blades
800-999	400 blades	500 blades	800 blades	1,000 blades	2,000 blades	6,000 blades
1,000-1,499	500 blades	750 blades	1,000 blades	1,000 blades	2,500 blades	7,500 blades
1,500 or more	600 blades	900 blades	1,000 blades	1,000 blades	3,000 blades	9,000 blades

(d) In Section 12-A and Section 13-C, the kelp allocation per permit holder is as follows:

Guideline Harvest Range for Herring (tons)	Single-Permit Closed Pounds	Double-Permit Closed Pounds	Triple-Permit Closed Pounds	Quadruple-Permit or more Closed Pounds	Single-Permit Open Pound	Multiple-Permit Open Pound
0-299	None	None	None	None	300 blades	400 blades
300-499	100 blades	200 blades	300 blades	600 blades	600 blades	700 blades
500-699	200 blades	300 blades	500 blades	800 blades	900 blades	1,000 blades
700-899	300 blades	500 blades	700 blades	900 blades	1,000 blades	1,200 blades
900-1,399	400 blades	700 blades	900 blades	1,000 blades	1,200 blades	1,500 blades
1,400 or more	700 blades	900 blades	1,000 blades	1,000 blades	1,200 blades	1,500 blades

Operation of two separate closed pounds

Permit holders operating two separate closed pounds must now **register** with the department before connecting the permit holder's pounds. No more than two pounds may be connected into a combined structure. After the permit holders have connected the two pounds, the permit holders may now transfer additional herring into the combined pound. This does not change the four-day herring transfer period, as described in 5 AAC 27.185 (r) of this section, and the retention period begins on the first day herring are placed into either one of the connected closed pounds. Additionally, when the two pounds are connected in this manner, under this subsection, the permit holders may drop the wall that connects the pounds no more than **three feet from the surface of the water** so that herring may swim between the connected pounds.

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 new for 2016 all herring in the pound must be released by **12:00 noon** on the **seventh 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 placed into a 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 **two** feet below the surface of the water (5 AAC 27.185 (s)). 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).

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 2015/2016 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 2016

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 GHL 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, 2016. The Craig/Klawock kelp allocations for the 2016 season are listed below and are based on a GHL of 600 - 799 tons of herring.

Section 3-B (Craig/Klawock):

- Single permit closed pounds—300 blades of *Macrocystis* kelp;
- Double permit closed pounds—400 blades of *Macrocystis* kelp (per permit holder);
- Triple permit closed pounds—700 blades of *Macrocystis* kelp (per permit holder);
- Quadruple permit closed pounds—800 blades of *Macrocystis* kelp (per permit holder);

- Single permit open pounds—1,500 blades of *Macrocystis* kelp;
- Multiple permit open pounds—4,500 blades of *Macrocystis* kelp.

FISHERY CONDUCT AND MANAGEMENT

The Craig/Klawock herring pound fishery will be the only SOK fishery prosecuted for 2016. 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 2016, 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. 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 including 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	802 3rd Street Douglas, Alaska 99824 (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	802 3rd Street Douglas, Alaska 99824 (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	802 3rd Street Douglas, Alaska 99824 (907) 465-4250
Scott Forbes Assistant Management Biologist	

TABLES AND FIGURES

Table 1.—Craig/Klawock stock size and winter food and bait harvests, 1987–2015.

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 ^g	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	26,085	4,808	2,884	confidential
14–15	11.5	15,803	2,362	1,367	905
Average	15.9	13,478	2,035	1,420	747

^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 14/15.

^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, 1998–2015.

Statistic	1998	1999	2000	2001	2002	2003
Herring Quota (tons)	500	650	280	914	852	528
Total harvest SOK (tons)	22.4	36	0	26.9	41.7	69.2
Exvessel value	\$152,203	\$212,121	\$0	\$146,859	\$218,700	\$423,000
Average Price/lb	\$3.39	\$2.94	\$0.00	\$2.70	\$3.10	\$3
Average Income	\$1,072	\$2,060	\$0	\$2,880	\$2,460	\$3,385
Number of pounds	112	70	50	31	50	61
Number of landings	148	103	0	51	89	118
Blade allocation	a	b	c	d	d	d
Total kelp harvest (tons)	3.5	2.9	2.0	3.2	8.2	7.5
Herring spawning dates	3/19–4/8	3/23–3/28	3/22–4/5	4/1–4/7	3/31–4/7	3/31–4/7
Miles of spawn	12.5	15.4	12.9	16.7	18.4	11.2
Forecasted Pre-Fishery biomass (tons)	7,018	6,951	9,951	8,042	8,387	6,045
	2004	2005	2006	2007	2008	2009
Herring Quota (tons)	1579	1667	1,266	1,284	1,380	1,802
Total harvest SOK (tons)	50	115.2	28.9	44.5	148.5	137.3
Exvessel value	\$325,000	\$603,723	\$298,575	\$1,087,532	\$3,066,788	\$1,256,777
Average Price/lb	\$3.25	\$2.62	\$5.15	\$12.08	\$10.33	\$4.58
Average Income	\$3,420	\$9,011	\$8,782	\$23,139	\$25,138	\$9,107
Number of pounds	50	42	50	52	66	96
Number of landings	95	67	34	47	122	137
Blade allocation	c	e	f	f	f	f
Total kelp harvest (tons)	14.0	4.9	4.6	5.6	12.2	7.3
Herring spawning dates	3/26–4/7	4/9–4/14	3/30–4/3	4/3–4/12	4/3–4/12	4/3–4/10
Miles of spawn	12.0	18.0	8.2	22.3	11.0	17.0
Forecasted Pre-Fishery biomass (tons)	13,204	15,577	14,262	13,768	14,213	14,213
	2010	2011	2012	2013	2014	2015
Herring Quota (tons)	1,953	2,710	6,847	4,060	4,808	2,362
Total harvest SOK (tons)	116.7	70	98.1	137.7	***	***
Ex-vessel value	\$884,715	\$728,147	\$2,099,002	\$3,099,002	***	***
Average Price/lb	\$3.80	\$5.13	\$10.69	\$12.00	***	***
Average Income	\$8,268	\$14,003	\$32,795	\$23,656	***	***
Number of pounds	63	34	35	80	***	***
Number of landings	107	52	64	131	***	***
Blade allocation	f	f	f	f	f	f
Total kelp harvest (tons)	8.2	4.6	5.3	9.3	10.4	10.6
Herring spawning dates	4/5–4/14	4/1–4/7	4/3–4/8	3/31–4/3	4/1–4/5	3/27–4/1
Miles of spawn	18.7	14.8	14.9	15.3	13.6	11.5
Forecasted Pre-Fishery biomass (tons)	14,870	17,886	34,235	23,391	26,085	15,803

Note: *** indicates data is confidential.

- ^a 120 blades for a single closed pound, 180 blades for a multiple pound permit holder, 360 blades for single open pound.
- ^b 155 blades for a single closed pound, 235 blades for a multiple pound permit holder, 470 blades for a single open pound.
- ^c 70 blades for a single closed pound, 210 for a multiple pound permit holder.
- ^d 200 blades for a single closed pound, 600 blades for a multiple pound permit holder
- ^e 350 blades for a single closed pound, 750 blades for a double closed pound, 1,125 blades for a triple closed pound.
- ^f 600 blades for a single closed pound, 750 blades for a double closed pound, 1,125 blades for a triple closed pound.