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2013 Southeast Alaska Sac Roe Herring Fishery Management Plan

by

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and

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March 2013

Alaska Department of Fish and Game **Division of Commercial Fisheries**

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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2013 SOUTHEAST ALASKA SAC ROE HERRING FISHERY MANAGEMENT PLAN

by

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ABSTRACT

This report describes the Southeast Alaska herring sac roe fishery regulations, fishing areas, and Guideline Harvest Levels for 2013. Management plans for the 2013 purse seine and gillnet fisheries are reviewed, including procedures for announcing fishery openings and closures, vessel registration, and catch reporting requirements. A review of herring stock status is presented by spawning area. Alaska Department of Fish and Game management contacts are listed.

Key words: Herring, sac roe, set gillnet, purse seine, management, guideline harvest levels, commercial herring, fishing regulations.

INTRODUCTION

Southeast Alaska commercial herring fisheries occur during the winter when herring are harvested for use primarily as bait, and during the spring when herring are harvested for their roe. The roe harvest includes the traditional sac roe fisheries and, in recent years, spawn-on-kelp pound fisheries. This management plan provides an overview of the 2013 sac roe herring fisheries for Southeast Alaska including expected harvest levels and management strategy. A combined management plan for the northern and southern Southeast Alaska spawn-on-kelp pound fisheries is available as a separate publication at local department area offices and on the department's web site (RIR 1J13-01).

Southeast Alaska roe herring are commercially harvested by purse seine and set gillnet gear types, both of which are included in the limited entry system. There are currently six sac roe herring fishing areas in Southeast Alaska, consisting of two exclusive purse seine and four exclusive gillnet areas. During the 2003 Alaska Board of Fisheries meeting in Sitka the board adopted a new sac roe fishery for West Behm Canal (Section 1-E and 1 F) that was to operate on alternate years between purse seine and gillnet gear. During the 2012 Alaska Board of Fisheries meeting in Ketchikan the board changed the West Behm Canal sac roe fishery to be exclusively a set gillnet fishery. Sac roe fishing areas are shown in Figure 1.

Approximately 13,231 tons of herring were harvested in commercial sac roe herring fisheries conducted in Southeast Alaska during 2012. A harvest of approximately 11,549 tons is anticipated for the 2013 fishing season.

REGULATIONS

Commercial herring fishing regulations are included in the Alaska Department of Fish and Game (ADF&G) in the 2012–2013 Statewide Commercial Herring Fishing Regulations pamphlet. Copies of the pamphlet may be obtained at any ADF&G office. Management plans which apply to the herring harvest in the sac roe fisheries include: statewide *Management Guidelines for Commercial Herring Sac Roe Fisheries* [5AAC 27.059], *Herring Management Plan for Southeast Alaska Area* [5AAC 27.190], the *Sitka Sound Commercial Sac Roe Herring Fishery Management Plan* [5AAC 27.195] and [5AAC 27.197] *Sections 1-E and 1-F Commercial Sac Roe Herring Fishery*.

ADF&G staff listed at the conclusion of this plan are available to provide further details.

VESSEL CHECK-IN, CHECK-OUT, AND REPORTING PROCEDURE

Buyers or buyer's agents must register all vessels employed in transporting and processing herring with ADF&G prior to commencing with those activities, and must make daily reports of herring purchased from fishers as specified by a local representative of ADF&G [5AAC

27.162(a)]. ADF&G requires that tenders and fishing vessels not previously registered through buyers or buyer's agents, check-in and check-out of the fishing areas with department personnel located on the fishing grounds to facilitate timely and complete assessment of herring landings.

Fish tickets must be provided to the CFEC permit holder at the time of delivery to the first buyer or buyer's agent [5 AAC 27.162(c)]. This means that there must be a separate fish ticket for each delivery to a tender before the tender leaves the fishing grounds to make a landing. At the request of the CFEC permit holder, on-the-grounds weight and estimated roe content shall both be recorded on the fish ticket. Operators who will transport fish out of Alaska before processing must submit a fish ticket to the department before departing the state [5 AAC 39.130(c)]. Fully completed fish tickets with updated accurate and final weights and roe percentages must be submitted to ADF&G within 10 days after the termination of buying operations, unless otherwise specified by ADF&G [5 AAC 27.162(a)(3)].

REPORTING PROCEDURES FOR FLOATING FISH PROCESSORS

Operators of floating fish processing vessels are required to report in person, by radio, or telephone, to the local department representative in the management area of intended operation before processing begins [5 AAC 39.130 (g)]. The report must include the location and dates of intended operation.

ANNOUNCEMENT OF OPENINGS AND CLOSURES

Fishery openings and closures will be implemented via department emergency order (EO). Announcements of EOs will be issued through normal news release channels and on the fishing grounds over VHF radio for the set gillnet sac roe fisheries. EOs concerning the Sitka Sound seine sac roe fishery are only announced over of the VHF radio. The VHF radio channel for receiving field announcements will be indicated on the fishing grounds. Harvesters should expect short notification of opening and closing times. Short notification is necessary to provide fishing opportunities prior to major spawning and to maintain the harvest at desired levels.

ADF&G will monitor herring in advance of the expected fishery opening dates. Fisheries will be placed on a two-hour notice prior to the first opening. During the Sitka fishery, ADF&G will try to give the industry a 36-hour advance warning of the time that the fishery goes on two-hour notice. Announcement of the time 2-hour notice goes into effect will be made by an ADF&G news release. However, if spawning is either earlier or heavier than anticipated and waiting 36 hours could result in loss of fishing opportunity, this much advance notice will not be given. During the Seymour Canal and West Behm Canal gillnet fisheries, ADF&G will provide the industry with a 12-hour advance notice of a possible decision to place the fishery on two-hour notice. The 12-hour notice helps limit the amount of time vessels must remain on the fishing grounds prior to the start of the fishery.

MANAGEMENT STRATEGY

The harvest strategy for Southeast Alaska herring sac roe fisheries is based on the availability and distribution of mature herring containing quality roe (at least 10% mature roe), mature spawning biomass estimates, population age structure, recruitment, size-at-age, and past spawning success.

Herring populations are assessed annually to determine whether individual spawning stocks are above threshold and to determine the appropriate harvest rate (see Sliding Scale Harvest Rate on

next page). As specified in 5AAC 27.190 *Herring Management Plan for Southeastern Alaska Area*, harvest of a particular spawning stock is not allowed unless an assessment of the abundance and general condition of that spawning stock has been conducted and the estimated biomass is above the minimum spawning biomass threshold level.

The threshold level is the herring biomass needed to meet minimum spawning and/or allocation requirements. The established threshold levels for the herring sac roe fishing areas are:

Fishing Area	**Threshold Level**
Seymour Canal	3,000 tons
Revilla Channel	6,000 tons
Lynn Canal	5,000 tons
Sitka Sound	25,000 tons
Hobart/Houghton	2,000 tons
West Behm Canal	6,000 tons

Varieties of methods have been used to assess the status of herring populations in Southeast Alaska. Before 1970, herring abundance was assessed through visual estimates made from vessels using depth sounders and sonar immediately prior to spawning or on wintering aggregations. In addition, miles of spawn were documented with aerial or skiff surveys. A computer-assisted hydro acoustic survey method was developed in the early 1970s and used extensively during the late 1970s to the mid-1980s. Spawn deposition surveys were first used in 1976 and continue to be a key component of current assessment methods. The spawn deposition method combines diver estimates of herring egg deposition on the spawning grounds along with estimates of total area receiving spawn, average fecundity, average weight-at-age, and age composition, to yield an estimate of spawning biomass. In past years, estimates of spawning biomass from one year were used as the forecast to set harvest quotas for individual spawning stocks for the following year.

Beginning in 1993, ADF&G began using age-structured analysis (ASA) to forecast abundance for selected spawning stocks with sufficient historic stock information. The ASA method relies on time series of estimated total egg deposition, spawner age composition, catch age composition, weight-at-age, and harvest. Estimates of fecundity are also included in the model. The method applies estimates of recruitment, growth, maturation, and natural mortality to an estimate of spawning biomass from one year to forecast biomass for the next year. The ASA model was an important development because gains in herring biomass due to recruitment, growth, and maturity are often not equal to the loss of biomass due to natural mortality, as was assumed when using the spawn deposition method for forecasting abundance. The ASA method is currently used to forecast herring abundance for the Sitka, and Seymour Canal sac roe fisheries.

Beginning in 1995, ADF&G began using a biomass accounting (BA) method to forecast abundance for stocks without sufficient historic stock information for ASA modeling. Spawn deposition estimates were obtained for these areas as an initial indication of the likelihood that the spawning biomass would be above the respective thresholds for each area. For those areas likely to be above their thresholds, biomass accounting was then used to forecast biomass. The

BA method uses the most recent year's spawn deposition estimate of eggs, the age composition of the spawning biomass, weight-at-age, and fecundity to project the following year's return of mature herring. It also uses survival and maturity-at-age estimated from ASA modeling of other stocks in the region. The median historical proportion of mature age-3 herring for each stock is used to forecast age-3 recruitment to the spawning biomass. The sac roe fishery areas for which the BA method is currently used to forecast herring abundance include West Behm Canal and Hobart/Houghton.

SLIDING SCALE HARVEST RATE

The allowable harvest is based on a graduated scale that allows for higher harvest rates as a herring population increases relative to the threshold level. This approach maintains annual harvest rates between 10% and 20% of the forecast spawning stock if the forecasted biomass is greater than established threshold levels. When the spawning stock biomass is at the threshold level, a 10% harvest is allowed. The allowable harvest increases an additional 2% for every spawning stock biomass increase of an amount equal to the threshold level and reaches a maximum of 20% when the population is six-times the threshold level.

The percent harvest rate for any multiple of the threshold level from one to six can be estimated from Figure 2, or by performing the following calculation:

$$Percent\ Harvest Rate = 8 + 2\left[\frac{Forecast\ Spawning\ Population\ Size}{Threshold\ Level}\right] \qquad (1)$$

An exception to the harvest rate formula now applies to the Sitka Sound sac roe herring fishery based on Board of Fisheries actions taken at the 1997 and 2009 meetings. For the Sitka fishery, the harvest rate is calculated using the following formula (Figure 3):

$$Percent\ Harvest Rate = 2 + 8\left[\frac{Forecast\ Spawning\ Population\ Size}{20{,}000}\right] \qquad (2)$$

Based on Board action during the 2009 meeting, the minimum harvest rate is 12%, the maximum harvest rate remains at 20%, and the minimum biomass threshold necessary to provide a commercial fishery was increased from 20,000 to 25,000 tons.

ROE QUALITY

Sac roe herring fisheries are managed in compliance with regulation 5 AAC 27.059 *Management Guidelines for Commercial Herring Sac Roe Fisheries*. This regulation outlines ways ADF&G can manage sac roe fisheries to enhance value. To determine the best time to fish, ADF&G samples pre-spawning herring populations in cooperation with harvesters and trained industry technicians. All test-fishing activities must be authorized by department biologists on the fishing grounds.

GILLNET FISHERIES

There are four exclusive set gillnet sac roe fishing areas in Southeast Alaska: the Revilla Channel fishery in regulatory Section 1-F, the West Behm Canal fishery in Section 1-E and 1-F, the Seymour Canal fishery in Section 11-D, and the Hobart-Houghton fishery in District 10. A summary of historical harvest and fishing time information for each fishery is shown in Table 1.

Gillnetters are reminded that regulations require identification tags, issued by ADF&G, to be placed on one buoy at each end of a herring set gillnet [5 AAC 27.131 (g)].

REVILLA CHANNEL

Set gillnet sac roe fisheries have occurred in the Revilla Channel area (Section 1-F) in state managed waters from 1976 to 1998 (Table 1). Seasonal landings have ranged from a low of 171 tons in 1978 to a high of 3,113 tons in 1983. In 1999, a Guideline Harvest Level (GHL) of 870 tons was established. However, due to on-grounds concern over the lack of herring located in state managed waters, the fishery was not opened and no herring were harvested. From 2000 through 2012, the minimum threshold level was not reached in state managed waters and no fishery was permitted.

In 2012, there was approximately 3.5 nautical miles of herring spawn observed in the Kah Shakes/Cat Island area. No spawn deposition survey was conducted; therefore no sac roe herring fishery will take place in 2013. ADF&G, however, will continue to monitor the status of the Revilla Channel herring both in state managed waters and around Annette Island. Spawning will be mapped, samples will be taken for age class distribution, and if warranted dive surveys will be conducted in state managed waters to estimate the spawning biomass.

WEST BEHM CANAL

A sac roe fishery was established in West Behm Canal (Section 1-E and 1 F) in 2003 by the Board of Fisheries that was to operate on alternate years between purse seine and gillnet gear.

In 2004 the BA forecast of mature spawning biomass for the West Behm Canal herring population established a GHL of 940 tons for the sac roe herring fishery, however, due to inseason concerns over the lack of herring in West Behm Canal, the fishery was not opened and no herring were harvested. The actual spawning biomass observed in 2004 was 443 tons, substantially lower than the forecast.

From 2005 to 2010 the threshold was not met and no fishery occurred. The 2011 BA forecast for West Behm Canal was set at 11,864 tons, which was above the threshold level of 6,000 tons allowing a gillnet sac roe herring fishery in West Behm Canal for 2011. This forecast established a GHL of 1,276 tons for the gillnet fleet. This GHL was set using the biomass accounting model following re-aging of herring scales. A gillnet fishery occurred on April 11 but was unsuccessful because the majority of herring spawning activity took place in closed waters.

The 2012 BA forecast was for 7,915 tons which was above the 6,000 ton threshold. This forecast established an 842 ton quota for a cooperative purse seine fishery. Due to inseason concern over lack of herring in West Behm Canal, no fishery was prosecuted and no herring were harvested. The actual spawning biomass observed in 2012 was 2,134 tons.

During the 2012 Board of Fisheries meeting in Ketchikan the board changed the West Behm Canal sac roe fishery to be exclusively a set gillnet fishery

The 2013 BA forecast of mature spawning biomass for the West Behm Canal herring spawning stock is 2,860 tons, below the 6,000 ton threshold to allow for a fishery. The department will monitor and document the spawning biomass to develop forecasts for the 2013–2014 season.

SEYMOUR CANAL

Set gillnet fisheries have occurred intermittently in Seymour Canal (Section 11-D) since the fishery was changed from a seine area to a gillnet area in 1980. Annual landings during years fished by gillnets have ranged from a low of 302 tons in 1987 to a high of 1,519 tons in 2003 (Table 1).

The 2013 ASA forecast of the mature spawning biomass for the Seymour Canal herring stock is 7,716 tons. Using the sliding scale harvest rate, this biomass allows a harvest rate of 13.1% of the mature population, and a **GHL of 1,014 tons** for the 2013 fishing season. The forecast indicates that the spawning stock will consist of 11% age-3, 28% age-4, 10% age-5, 15% age-6, 7% age-7, and 29% age-8+.

Opening dates for the Seymour Canal gillnet fishery have ranged from April 24 (in 2010) to May 16 (in 2002). Since 1980, spawning has started as early as April 19 and as late as May 15. Department personnel will begin to monitor the Seymour Canal area in mid-April. Initially, monitoring will be limited to aerial surveys. Depending on observed herring activity, vessels with department personnel will be on the fishing grounds by late April or early May.

Set gillnet buoy stickers must be obtained and placed on buoys prior to fishing. Identification stickers will be available free of charge from the Douglas and Petersburg Fish and Game offices prior to the time that ADF&G's vessel is on the fishing grounds; thereafter, identification stickers can only be obtained from ADF&G's vessel. The stickers will only be issued to valid permit holders and proper picture identification will be required. If during the course of the fishery a buoy sticker is lost, a replacement sticker must be obtained from ADF&G before fishing is resumed.

Legal gear is one 50-fathom net, except as noted under 5 AAC 27.131.(i) for persons fishing two permits on board which allows for one net not exceeding 75 fathoms. Gillnets must be anchored and buoyed on each end. The minimum mesh size is 2 1/8 inches stretched mesh and not greater than 2 ½ inches stretched mesh with a maximum depth of 120 meshes.

Regulations require a one-hour grace period for nets to be removed from the water following the announced closure time. No gillnet may be reset after the closure time. Additionally, ADF&G has been given the authority to open the fishery for one hour or less without a grace period. An opening of this nature could occur if, after the initial opening, a small but manageable amount of herring is left on the GHL. The department will announce if a grace period will not be allowed due to an opening of one hour or less.

HOBART/HOUGHTON

In January 1997, the Alaska Board of Fisheries adopted regulations that allocates unharvested GHL from the District 10 (Hobart/Houghton) winter food and bait fishery to the sac roe gillnet fishery [5 AAC 27.160 (f)]. Since the inception of sac roe fishery harvests have occurred in 1997 through 1999, 2005, 2008, 2009 and 2010. In 2000, the entire GHL was harvested during the winter bait fishery and no surplus GHL was available for the sac roe fishery (Table 1). Herring biomass estimates were not large enough to allow for fisheries in 2001 through 2004, 2006, 2007, 2011 and 2012.

The 2013 BA forecast of mature spawning biomass for the Hobart/Houghton herring spawning stock is 149 tons, well below the 2,000 ton threshold to allow for a fishery. The department will monitor and document the spawning biomass to develop forecasts for the 2013–2014 season.

PURSE SEINE FISHERIES

There are two exclusive purse seine herring sac roe areas in Southeast Alaska: Lynn Canal and Sitka Sound. Commercial fishing will be allowed only in Sitka Sound during the 2013 season. A summary of harvest and fishing time information for each fishery is shown in Table 2.

LYNN CANAL

The Lynn Canal herring sac roe fishing area encompasses regulatory Sections 15-B, 15-C, and that portion of Section 11-A north of the Shrine of St. Therese.

Although the Lynn Canal fishery has not been open since 1982, ADF&G continues to monitor this stock closely through aerial, skiff, and dive surveys. Additional funding from Coeur Alaska for monitoring this herring population became available in 2004–2009 through mitigation of the Kensington Gold Mine in Berners Bay and development of a dock at Cascade Point. This funding, in part, went to supporting herring spawn deposition dive surveys beginning in 2004 which enabled the department to more accurately estimate the mature spawning biomass. Aerial and on-the-grounds surveys conducted in Lynn Canal during the spring of 2012 documented 8.3 nautical miles of spawn. The spawning biomass estimate of 3,000 tons is below the 5,000 ton threshold. The long time series of observed production has been consistently below threshold and observed spawn deposition estimates have fluctuated widely in the last seven years with a low of 231 tons documented in 2005 to a recent high of 5,994 tons documented in 2010. The fishery will not open in 2013.

WEST BEHM CANAL

A sac roe fishery was established in West Behm Canal (Section 1-E and 1-F) in 2003 by the Board of Fisheries that was to operate on alternate years between purse seine and gillnet gear.

No fishery occurred from 2004–2010, but in 2011 a gillnet fishery was opened that was unsuccessful because the majority of herring spawning activity took place in closed waters.

The 2012 BA forecast was for 7,915 tons which was above the 6,000 ton threshold. This forecast established an 842 ton quota for a cooperative purse seine fishery. Due to on-grounds concern over lack of herring in West Behm Canal, no fishery was prosecuted and no herring were harvested. The actual spawning biomass observed in 2012 was 2,134 tons.

During the 2012 Board of Fisheries meeting in Ketchikan the board changed the West Behm Canal sac roe fishery to be exclusively a set gillnet fishery.

SITKA SOUND

The Sitka Sound sac roe fishing area encompasses the waters of Section 13-B north of the latitude of Aspid Cape and in Section 13-A south of the latitude of Point Kakul (Salisbury Sound).

An ASA model has been used to forecast the mature herring biomass in Sitka Sound since 1993. The forecast of the 2013 mature spawning biomass for Sitka Sound is 76,988 tons. The age structured analysis (ASA) model forecast of 76,988 tons accounts for changes in the Sitka herring biomass through 2012. Due to substantial decreases in herring biomass observed in Sitka and at several other spawning locations in Southeast Alaska between 2011 and 2012, and because there may be factors affecting the herring population that cannot be incorporated into the model yet, the department has chosen to set **a precautionary guideline harvest level of 11,549**

tons for 2013. The 2013 GHL was calculated by reducing the ASA derived GHL by 25%, which approximates the harvest level that would be available if the survival between 2012 and 2013 is similar to a survival rate estimated by the ASA model for the period 1980–1998. This accounts for the possibility that survival rates have declined from higher survival rates estimated for the period 1999–2012. The forecast indicates that the spawning stock in 2013 will consist of 16% age-3, 18% age-4, 13% age-5, 17% age-6, 12% age-7, and 24% age-8 and older herring.

Herring distribution and roe quality will be monitored prior to and during the fishing periods. Monitoring methods for 2013 will include aerial surveys, vessel sonar surveys, and test fishing. In 2013, ADF&G will continue to coordinate the test boat program through a fisherman-coordinator who will assign daily test fishing boats requested by ADF&G. Prior to making test sets, the identified test boats will contact ADF&G biologists on the grounds to monitor set locations and to plan for transport of herring samples to a central location for analysis by industry technicians. The areas open to fishing will depend on the distribution of herring, the need to provide for a fishery that will harvest good quality herring, and the need to provide a reasonable opportunity for subsistence.

The Alaska Board of Fisheries, at the February 2012 meeting in Ketchikan, adopted regulations closing an area of Sitka Sound to the commercial harvest of herring (Figure 4). The closed area encompasses waters that are heavily used to harvest subsistence herring eggs and is intended to reduce perceived conflict between the commercial fishery and the subsistence fishery. The closed waters are described as the waters of Sitka Sound north and west of the Eliason Harbor breakwater and Makhnati Island Causeway from the westernmost tip of Makhnati Island to the easternmost point on Belie Rock to the southernmost tip of Gagarin Island to a point on the eastern shore of Crow Island at 57° 06.43' N. lat., 135° 28.27' W. long. to a point on the western shore of Middle Island at 57° 06.41' N. lat., 135° 28.11' W. long. to a point on the southeastern shore of Middle Island at 57° 05.56' N .lat., 135° 26.23' W. long. to the green navigation marker northeast of Kasiana Island, to the Baranof Island shore at 57° 05.26' N. lat., 135° 22.95' W. long. Along with this closure, the department intends to continue to manage the commercial sac roe fishery in consideration of the subsistence fishery consistent with 5 AAC 27.195. *Sitka Sound Commercial Sac Roe Herring Fishery Management Plan*. To the extent that the commercial harvest can affect subsistence opportunities the department is determined to act on opportunities for openings outside of the high use subsistence areas as they arise and limit harvest in the highest frequency spawning area along the Halibut Point Road shoreline in proportion to historical use patterns established by past commercial competitive fisheries. The department recognizes that fishing within the high use subsistence area may be necessary in order to provide an opportunity for the commercial fishery to harvest and to reach the season's GHL.

In lieu of using a permit system to estimate the subsistence herring roe harvest, beginning with the 2002 season, the STA and ADF&G Subsistence Division have worked collaboratively to develop a methodology using a household survey to estimate harvest. Following each season, the Sitka Tribe of Alaska conducts a "census" type survey whereby all known participants in the subsistence fishery are contacted to determine the results of the subsistence harvest. The list of participants is changed each season to reflect newly identified participants and to remove past participants who have either moved or passed away. The survey information is used to determine the amount and quality of the subsistence harvest, and would indicate whether the amount reasonably necessary for subsistence had been successfully harvested. For the period 2002–2012

the subsistence roe harvest estimate has ranged from 71,936 to 381,226 pounds and averaged 167,000 pounds. The amount necessary for subsistence is a range of 136,000–227,000 pounds.

ADF&G held a Southeast Alaska sac roe fisheries pre-season planning meeting in Sitka on February 28, 2013. There was not a consensus among industry representatives of the harvest amount to target for each opening, though there was a general agreement that the fishery should be prosecuted over three openings. The total daily processing capacities for the 2013 season will not be determined until immediately prior to the fishery, but with expected capacities similar to last season, harvesting 3,000–4,000 tons during an opening would require at least one day off between openings and with harvest above 4,000 tons would require at least two days before adequate tendering and processing capacities would be available for additional harvest. Depending on the final preferred harvesting strategy, it can be expected that it will take approximately 5 to 6 days to harvest the season's GHL. It will be necessary to remain flexible and adapt specific opening target harvest levels in consideration of in-season assessment of herring distribution and quality, changes in available processing and tendering capacity, input from industry representatives, progression of spawn and dispersing the harvest by time and area away from traditional subsistence harvesting areas. A general pre-fishery meeting will be held in Sitka immediately prior to the fishery for the purpose of reviewing stock assessment, enforcement issues and harvesting plans for the fishery.

In recent years the United States Coast Guard (USCG) has been closely monitoring fishery openings for violations of "Rules of the Road" during the conduct of the fishery. For further information regarding the application of "Rules of the Road" during the conduct of the fishery, contact the USCG Marine Safety Detachment at 966-5454.

The Magnuson-Stevens Fishery Conservation and Management Act restricts the use of foreign vessels outside of internal waters and the port of Sitka. Fishery openings outside of internal waters and the port of Sitka are possible. Operators of foreign vessels wanting to participate in the Sitka Sound herring sac roe fishery are encouraged to contact the National Marine Fisheries Service at (907) 747-6940 for more details.

LIST OF MANAGEMENT CONTACTS

The following ADF&G, Division of Commercial Fisheries personnel may be contacted regarding this management plan:

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TABLES AND FIGURES

Table 1.–Southeast Alaska gillnet sac roe herring fisheries information summary, 1976–2012.

Year	Seymour Canal[a]				Revilla Channel			
	Guideline Harvest Level (Tons)	Harvest[b] (Tons)	Date 2-Hour Notice Effective	Opening Dates	Guideline Harvest Level (Tons)	Harvest[c] (Tons)	Date 2-Hour Notice Effective	Opening Dates
1976	200	195	–	May 9	300	494	March 23	April 2
1977	500	485	May 4	May 9	800	776	March 29	April 1
1978	500	729	May 2	May 8	680	171	March 26	April 4
1979	250	269	May 3	May 3	585	524	March 28	March 29
1980	–	–	No Fishery	–	1,100	1,149	March 25	March 25
1981	600	615	April 28	April 28	1,550	1,871	March 20	March 20
1982	–	–	No Fishery	–	1,700	2,319	March 20	March 26
1983	–	–	No Fishery	–	2,500	3,113	March 23	March 24
1984	375	499	April 20	April 26	2,100	2,177	March 20	March 29
1985	–	–	No Fishery	–	2,300	2,159	March 28	March 29
1986	300	392	May 5	May 10	1,100	1,530	March 29	March 31
1987	419	302	May 1	May 5, 6	1,200	1,452	March 24	March 26, 27
1988	530	586	April 20	April 26–May 1	953	1,145	March 24	March 25
1989	332	547	April 21	April 28	647	595	March 20	March 20, 21
1990	312	359	April 21	April 28–29	–	–	–	–
1991	–	–	No Fishery	–	680	660	March 28	April 8–11
1992	–	–	No Fishery	–	1,200	1,246	April 1	April 3
1993	–	–	No Fishery	–	717[d]	737	March 31	April 10
1994	368	374	April 28	April 29	880[d]	730	April 9	April 9,11
1995	316	319	April 30	May 14	630	610	April 11	April 12
1996	–	–	No Fishery	–	871	601	April 8	April 10
1997	–	–	No Fishery	–	912	1,159	April 6	April 6
1998	633	585	April 30	May 1–4	620	616	April 1	April 1, 2
1999	595	706	April 30	April 30	870	0	No Fishery	Fishery Not Opened
2000	346	421	May 3	May 5	0	0	No Fishery	Fishery Not Opened
2001	474	620	May 6	May 11–12	0	0	No Fishery	Fishery Not Opened
2002	1,096	1,066	May 12	May 16–17	0	0	No Fishery	Fishery Not Opened
2003	1,712	1,519	Apr 28	Apr 29–May 2	0	0	No Fishery	Fishery Not Opened
2004	838	804	May 1	May 3	0	0	No Fishery	Fishery Not Opened
2005	894	945	April 26	May 1	0	0	No Fishery	Fishery Not Opened
2006	1,508	1,187	April 28	May 4–7	0	0	No Fishery	Fishery Not Opened
2007	1,292	1,107	May 8	May 13–14	0	0	No Fishery	Fishery Not Opened
2008	1,205	1,208	May 6	May 10–11	0	0	No Fishery	Fishery Not Opened
2009	1,471	866	April 29	April 30–May 2	0	0	No Fishery	Fishery Not Opened
2010	657	711	April 24	April 24–25	0	0	No Fishery	Fishery Not Opened
2011	835	Confidential	April 25	April 26	0	0	No Fishery	Fishery Not Opened
2012	1,287	0	April 23	Fishery Not Opened	0	0	No Fishery	Fishery Not Opened

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Table 1.–Continued (page 2 of 2)

	Hobart-Houghton					West Behm Canal			
Year	Guideline Harvest Level (Tons)[e]	Harvest (Tons)[f] Bait	Harvest (Tons)[f] Sac Roe	Date 2-Hour Notice Effective	Opening Dates Bait/Sac Roe	Guideline Harvest Level (Tons)	Harvest (Tons)	Date 2-Hour Notice Effective	Opening Dates
1977	0	40	0	–	October 1	–	–	–	–
1978	0	0	0	–	Fishery Not Open	–	–	–	–
1979	0	0	0	–	Fishery Not Open	–	–	–	–
1980	0	0	0	–	Fishery Not Open	–	–	–	–
1981	0	0	0	–	Fishery Not Open	–	–	–	–
1982	0	0	0	–	Fishery Not Open	–	–	–	–
1983	0	0	0	–	Fishery Not Open	–	–	–	–
1984	0	0	0	–	Fishery Not Open	–	–	–	–
1985	0	0	0	–	Fishery Not Open	–	–	–	–
1986	0	0	0	–	Fishery Not Open	–	–	–	–
1987	0	0	0	–	Fishery Not Open	–	–	–	–
1988	0	0	0	–	Fishery Not Open	–	–	–	–
1989	0	0	0	–	Fishery Not Open	–	–	–	–
1990	0	0	0	–	Fishery Not Open	–	–	–	–
1991	0	0	0	–	Fishery Not Open	–	–	–	–
1992	200	0	0	–	January 13, 1992	–	–	–	–
1993	500	0	0	–	January 12, 1993	–	–	–	–
1994	230	140	0	–	October 17, 1993	–	–	–	–
1995	250	229	0	–	October 1, 1994	–	–	–	–
1996	700	230	0	–	October 15, 1995	–	–	–	–
1997	550	104	442	April 19	October 1, 1996–April 28	–	–	–	–
1998	260	0	351	April 19	October 1,1997–April 20	–	–	–	–
1999	436	0	506	April 25	October 14, 1998–April 26	–	–	–	–
2000	418	432	0	No Fishery	December 1, 1999–February 28	–	–	–	–
2001	0	0	0	No Fishery	Fishery Not Opened	–	–	–	–
2002	0	0	0	No Fishery	Fishery Not Opened	–	–	–	–
2003	0	0	0	No Fishery	Fishery Not Opened	First fishery set for 2004 by Board of Fisheries			
2004	0	0	0	No Fishery	Fishery Not Opened	940	0	No Fishery	Fishery Not Opened
2005	223	0	204	April 24	April 24	0	0	No Fishery	Fishery Not Opened
2006	0	0	0	No Fishery	Fishery Not Opened	0	0	No Fishery	Fishery Not Opened
2007	0	0	0	No Fishery	Fishery Not Opened	0	0	No Fishery	Fishery Not Opened
2008	462	0	302	May 2	May 8–May 9	0	0	No Fishery	Fishery Not Opened
2009	376	0	341	April 29	May 2–May 3	0	0	No Fishery	Fishery Not Opened
2010	345	0	302	April 22	April 23–April 24	0	0	No Fishery	Fishery Not Opened
2011	0	0	0	No Fishery	Fishery Not Opened	1,276	confidential	April 11	April 11–April 14
2012	0	0	0	No Fishery	Fishery Not Opened	758	0	April 5	Fishery Canceled

[a] Seymour Canal was a purse seine fishing area prior to 1980. [b] Seymour Canal harvest includes all herring for sac roe including confiscated and test fishery catch based on IFDB query March, 2007.

[c] Revilla Channel harvest includes all herring for sac roe based on IFDB query March, 2007. [d] Revilla Channel GHL reduced by 150 tons as an allocation for the Annette Island sac roe harvest.

[e] Hobart Bay was opened to Gillnet Sac Roe Fishing in 1997. [f] Gillnet quota is the portion left after the winter bait fishery is completed.

Table 2.–Southeast Alaska purse seine sac roe herring fisheries information summary, 1976–2012.

Year	Juneau[a]-Lynn Canal						Sitka Sound			
	Guideline Harvest Level[b] (Tons)	Harvest[c] (Tons) by Gear Type		Date 2-Hour Notice Was Effective	Opening Dates by Gear Type		Guideline Harvest Level (Tons)	Harvest (Tons)[d]	Date 2-Hour Notice Was Effective	Opening Dates
		Seine	Gillnet		Seine	Gillnet				
1976	650	432	124	–	April 26	April 29	780	800	April 10	April 16
1977	875	709	211	–	April 19	April 20	–	–	Fishery Not Open	–
1978	820	602	363	April 19	April 20	April 21	250	175	April 4	April 5
1979	120	–	–	Fishery Not Open	–	–	2,000	2,559	April 7	April 12
1980	600	975	–	April 13	April 26	–	4,000	4,385	April 4	April 4, 5
1981	725	775	–	April 17	April 23	–	2,700	3,506	March 23	March 24, 26
1982	400	551	–	April 30	April 30	–	3,000	4,445	March 26	March 30
1983	–	–	–	Fishery Not Open	–	–	5,500	5,449	March 23	March 26, 29
1984	–	–	–	Fishery Not Open	–	–	5,000	5,771	March 22	March 26, 27, 28
1985	–	–	–	Fishery Not Open	–	–	7,700	7,475	March 24	March 29, April 1, 5
1986	–	–	–	Fishery Not Open	–	–	5,029	5,443	March 28	April 2, 8
1987	–	–	–	Fishery Not Open	–	–	3,600	4,216	March 23	March 31
1988	–	–	–	Fishery Not Open	–	–	9,200	9,390	March 25	April 4–14
1989	–	–	–	Fishery Not Open	–	–	11,700	11,714	March 23	March 31–April 8
1990	–	–	–	Fishery Not Open	–	–	4,146	3,804	April 4	April 5, 6
1991	–	–	–	Fishery Not Open	–	–	3,200	1,838	March 29	April 10–April 13
1992	–	–	–	Fishery Not Open	–	–	3,356	5,368	March 30	April 6
1993	–	–	–	Fishery Not Open	–	–	9,691	10,186	March 26	March 27–April 3
1994	–	–	–	Fishery Not Open	–	–	4,432	4,758	March 28	March 29, 31
1995	–	–	–	Fishery Not Open	–	–	2,609	2,908	March 23	March 25, 27
1996	–	–	–	Fishery Not Open	–	–	8,144	8,144	March 23	March 23, March 31–Apr. 9

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Table 2–Continued (page 2 of 2)

Year	Juneau[a]-Lynn Canal				Sitka Sound			
	Guideline Harvest Level[b] (Tons)	Harvest[c] (Tons)	Date 2-Hour Notice Was Effective	Opening Dates	Guideline Harvest Level (Tons)	Harvest[d] (Tons)	Date 2-Hour Notice Was Effective	Opening Dates
1997	–	–	Fishery Not Open	–	10,900	11,147	March 18	March 18–23
1998	–	–	Fishery Not Open	–	6,900	6,638	March 16	March 16, 18, 19
1999	–	–	Fishery Not Open	–	8,476	9,218	March 19	March 22, 24, 26–27
2000	–	–	Fishery Not Open	–	5,120	4,675	March 13	March 19, 22
2001	–	–	Fishery Not Open	–	10,597	12,034	March 15	March 22, 26, 27
2002	–	–	Fishery Not Open	–	11,042	9,885	March 25	March 27, 29, 31, April 2, April 12–15
2003	–	–	Fishery Not Open	–	6,969	7,069	March 20	March 22, 23, 26
2004	–	–	Fishery Not Open	–	10,618	10, 569	March 19	March 21, 25, 27
2005	–	–	Fishery Not Open	–	11,192	11, 425	March 20	March 23, 25, 27–29
2006	–	–	Fishery Not Open	–	10,412	9,967	March 23	March 24, 26, 27, 29
2007	–	–	Fishery Not Open	–	11,904	11,571	March 24	March 26, 30, April 1, 3
2008	–	–	Fishery Not Open	–	14,723	14,412	March 24	March 25, 26, 31
2009	–	–	Fishery Not Open	–	14,508	14,776	March 22	March 22, 24, 28, 31 April 1
2010	–	–	Fishery Not Open	–	18,293	17,602	March 19	March 24, 27, 30, April 2
2011	–	–	Fishery Not Open	–	19,490	19,419	March 28	March 31, April 1,4,7,9
2012	–	–	Fishery Not Open	–	28,829	13,231	March 27	March 31, April 2, 7

[a] The Juneau-Lynn Canal fishery was seine, gillnet and bait pound area prior to 1980.

[b] The Lynn Canal GHL includes combined seine, gillnet, and bait pound from 1976–1978, bait pound for 1979, and seine and bait pound for 1980–1982. The GHL for 1977 was estimated.

[c] The Lynn Canal Catch includes all herring for sac roe, by gear based on IFDB query March, 2007. Bait pound harvests are confidential, so are not included.

[d] The Sitka catch includes all herring for sac roe including confiscated catch and test fishery harvest based on IFDB query March, 2011.

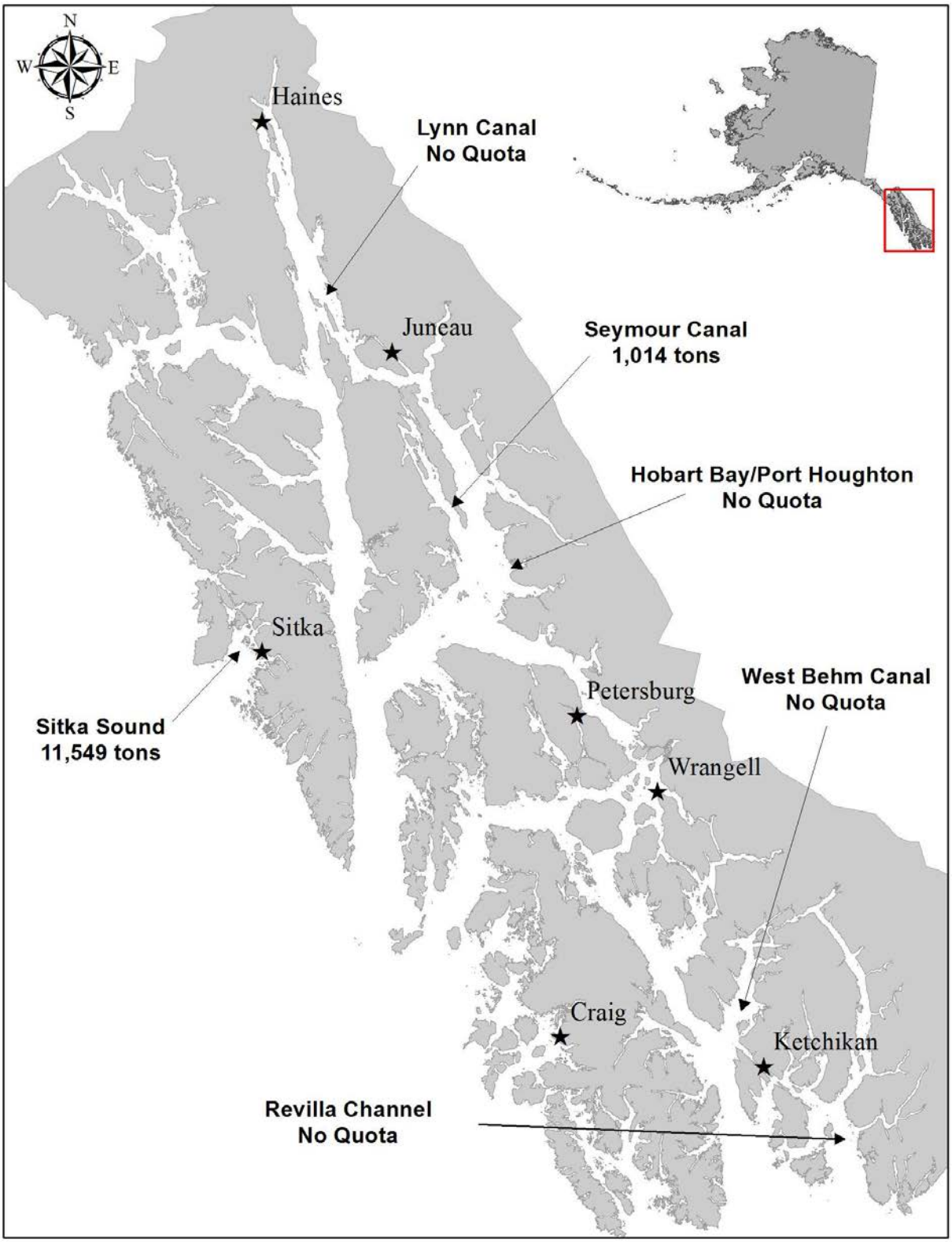

Figure 1.–Southeast Alaska sac roe herring areas and Guideline Harvest Levels for 2013.

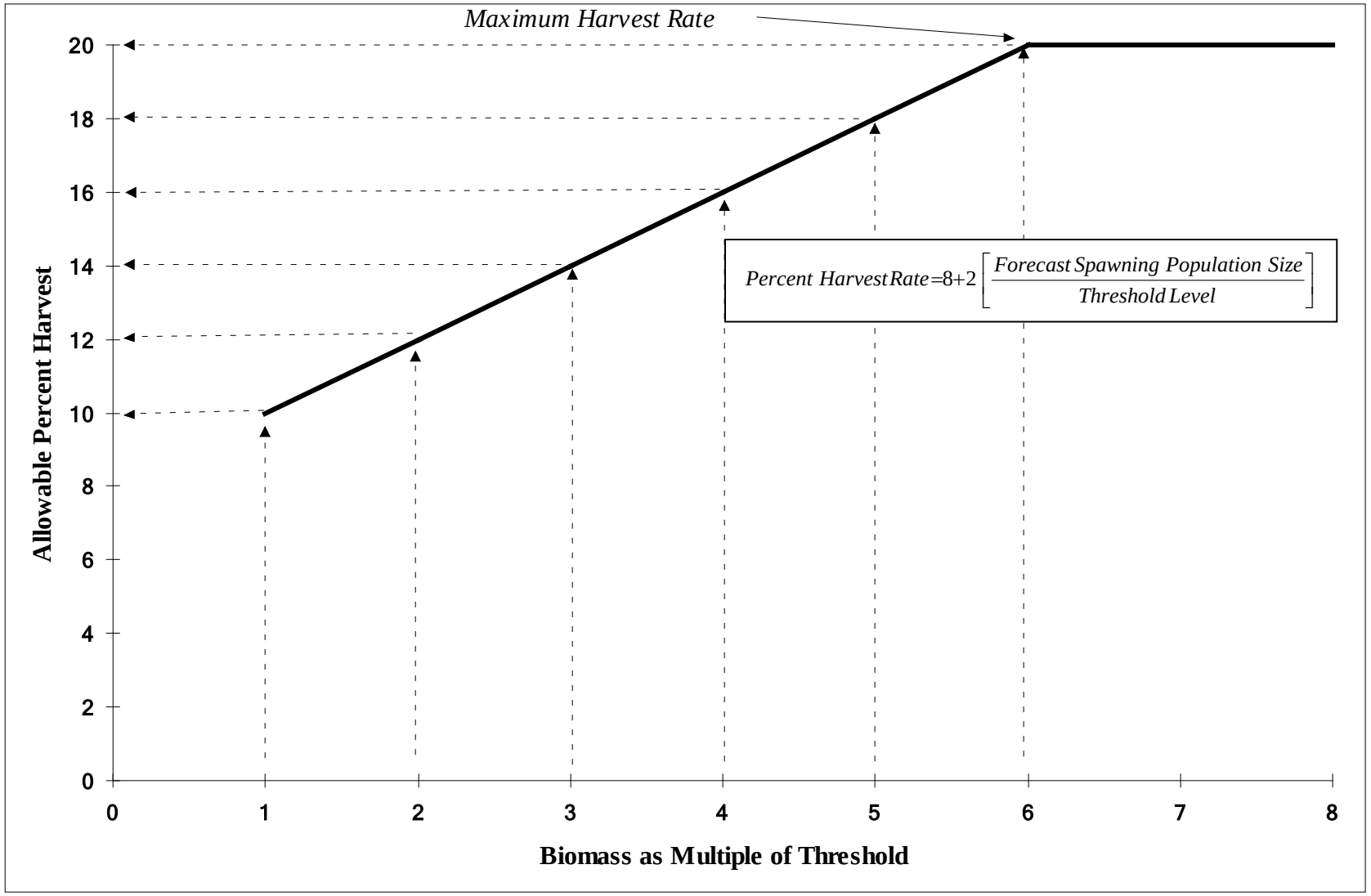

Figure 2.–Generalized harvest strategy for Southeast Alaska herring (excluding Sitka Sound). The allowable percent annual harvest is plotted against the estimated biomass of mature herring expressed as a multiple of the established harvest threshold level.

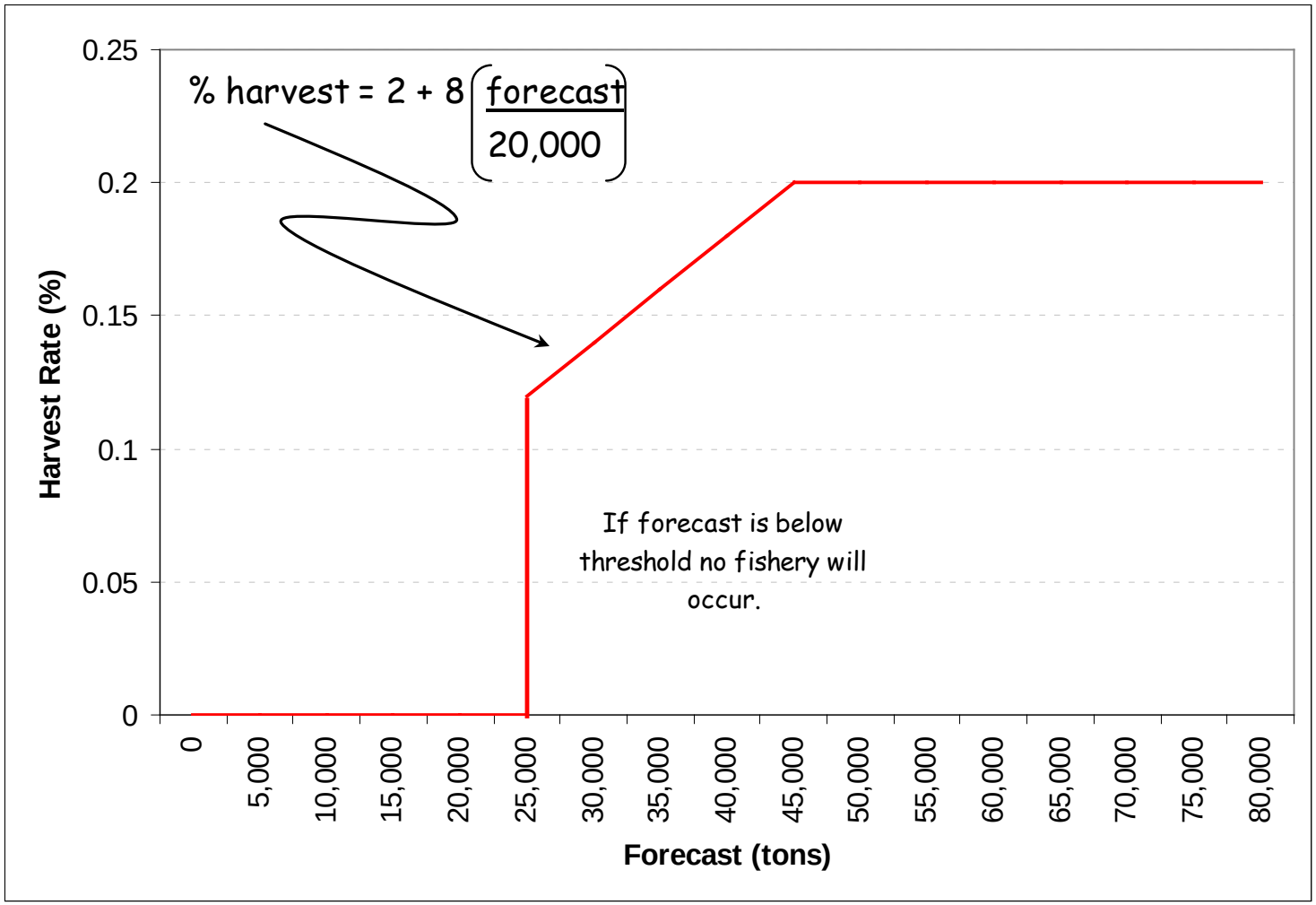

Figure 3.–Harvest rate and formula for Sitka Sound under 25,000 ton minimum threshold level [5 AAC 27.160 (g)].

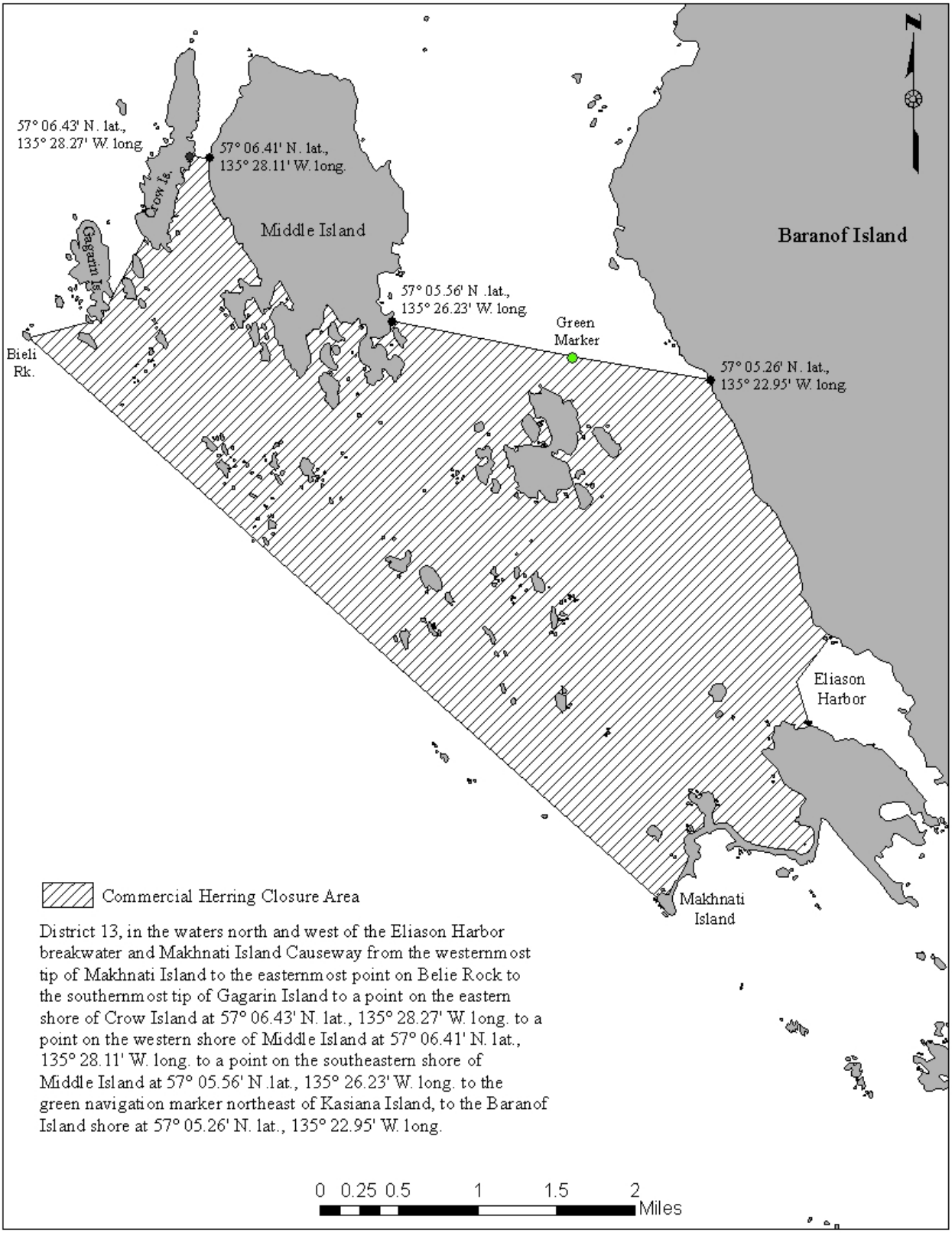

Figure 4.–Map showing area in Sitka Sound closed to commercial herring harvest.