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2012 Southeast Alaska Sac Roe Herring Fishery Management Plan

by

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and

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

Symbols and Abbreviations

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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)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

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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by

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The Regional Information Report Series was established in 1987 and was redefined in 2007 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as project operational plans, area management plans, budgetary information, staff comments and opinions to Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at: http://www.sf.adfg.ak.us/statewide/divreprots/htlm/intersearch.cfm.

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ABSTRACT

This report describes the Southeast Alaska herring sac roe fishery regulations, fishing areas, and Guideline Harvest Levels for 2012. Management plans for the 2012 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. A combined management plan for the northern and southern Southeast Alaska spawn-on-kelp pound fisheries will be available as a separate publication at local department area offices and on the department's web site by the middle of March. This management plan provides an overview of the 2012 sac roe herring fisheries for Southeast Alaska including expected harvest levels and management strategy.

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 three exclusive gillnet areas. An additional area in West Behm Canal will be open on alternate years for set gillnet or purse seine gear in years when the threshold level is met. Sac roe fishing areas are shown in Figure 1.

Approximately 19,779 tons of herring were harvested in commercial sac roe herring fisheries conducted in Southeast Alaska during 2011. A harvest of approximately 30,874 tons is anticipated for the 2012 fishing season.

REGULATIONS

Commercial herring fishing regulations are outlined by the Alaska Department of Fish and Game (ADF&G) in the 2011–2012 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 shall register all vessels employed in transporting and processing herring with ADF&G prior to commencing with those activities and 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 and 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 and purse seine 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 the 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 prespawning 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 three exclusive set gillnet sac roe fishing areas in Southeast Alaska: the Revilla Channel fishery in regulatory Section 1-F, the Seymour Canal fishery in Section 11-D, and the Hobart-Houghton fishery in District 10. 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 will operate on alternate years between purse seine and gillnet gear. 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 2011, the minimum threshold level was not reached in state managed waters and no fishery was permitted.

In 2011, there was less than one half mile of herring spawn observed in the Kah Shakes/Cat Island area. Therefore, no sac roe herring fishery will take place in 2012. 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 dive surveys will be conducted in state managed waters to estimate the spawning biomass. The population estimate determined in 2012 will be used to set the harvest level for 2013.

WEST BEHM CANAL

The gillnet fleet will not have an opportunity to fish in West Behm Canal in 2012 as per 5AAC 27.197(1). If the purse seine fleet fishes in 2012, then the gillnet fleet will have an opportunity to fish in West Behm Canal if the threshold is met in 2013.

The 2004 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 on-grounds 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 based on a re-assessment of the biomass accounting model due to re-aging of herring scales. A gillnet fishery occurred on April 11 but was unsuccessful due to the majority of spawn occurring in closed waters.

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 2012 ASA forecast of the mature spawning biomass for the Seymour Canal herring stock is 9,135 tons. Using the sliding scale harvest rate, this biomass allows a harvest rate of 14.1% of the mature population, and a **GHL of 1,287 tons** for the 2012 fishing season. The forecast

indicates that the spawning stock will consist of 9% age-3, 15% age-4, 20% age-5, 9% age-6, 25% age-7, and 21% 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 and 2011.

The 2012 BA forecast of mature spawning biomass for the Hobart/Houghton herring spawning stock is 599 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 2012–2013 season.

PURSE SEINE FISHERIES

There are two exclusive purse seine herring sac roe areas in Southeast Alaska: Lynn Canal and Sitka Sound. The West Behm Canal sac roe fishery alternates between purse seine and gillnet gear. Commercial fishing will be allowed only in Sitka Sound and West Behm Canal during the 2012 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, ADFG 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 2011 documented 6.2 nautical miles of spawn. No spawn deposition dive surveys were conducted for the Lynn Canal spawning stock in 2011 due to limited resources and expectations that the mature spawning biomass was below the 5,000 ton threshold. Therefore no mature spawning biomass estimate was developed for the Lynn Canal herring population. 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 2012.

WEST BEHM CANAL

The Alaska Board of Fisheries passed regulations in January 2003 to open the West Behm Canal area (Section 1-E and portions of Section 1-F) for sac roe herring fishing and bait pound operation. Elements of the commercial herring fishery plan include:

1. Annual, alternating fishing schedule between set gillnet and purse seine gear in years which the threshold level is met with the first fishery being set gillnet;
2. An equal share quota (ESQ) purse seine fishery in years when the purse seine fishing gear is allowed;
3. Closed waters in Clover Passage and Tongass Narrows, and;
4. The establishment of a bait pound fishery, which is allocated 10% of the GHL for the West Behm Canal spawning population (5AAC 27.160 (b)(4)).

The purse seine fleet will have the opportunity to fish in West Behm Canal in 2012 as per 5AAC 27.197(1).

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

The Sections 1-E and 1-F sac roe herring management plan (5 AAC 27.197) directs the department to determine the ESQ by dividing the annual harvest objective by the maximum number of CFEC permits eligible to be fished in the fishery. There are currently 48 southeast sac roe seine permits holders in southeast Alaska.

The Department has determined that only those permits held by purse seine fishermen present in West Behm Canal when the fishery is opened will be eligible to participate in the fishery. Fishermen who are interested in participating in the West Behm Canal purse seine fishery must register with the department when they arrive on the grounds to be eligible to obtain an ESQ and participate in the fishery.

Spawning dates for the West Behm Canal sac roe fishery have ranged from April 2 to April 26. Department personnel will begin to monitor the West Behm Canal area in late-March. Monitoring will be limited to aerial and skiff surveys.

The department will announce a 12-hour notice that the West Behm Canal fishery may be placed on 2-hour notice. This will be the last opportunity for permit holders to register with the department. The ESQ will be determined by the 748 ton GHL divided by the number of eligible purse seine fishermen that have registered with the department at the time of the issuance of the 2-hour notice. The ESQ for the fishery will then be announced by VHF to the fleet at least one hour before the fishery starts.

According to 5 AAC 27.197 (b) the department is authorized to impose other conditions that are necessary for an orderly and manageable fishery. These additional conditions for this fishery are as follows:

- Fishermen may register with the department by contacting ADF&G biologists on the grounds by VHF radio or calling the Ketchikan ADF&G office in Ketchikan. Ketchikan biologists will be monitoring VHF channel 10 and 16 from a vessel when on the grounds.
- Fishermen that have not registered by the time of the 2-hour notice may not participate in the West Behm Canal sac roe fishery.
- The ESQ from any permit holder that checked in with the department but does not participate in the fishery will be left un-harvested.
- Fishermen will be required to contact the department on the VHF on channel 10 or 16 immediately after each set is made with the time, location and estimated amount of herring. A follow up call must be made once fish are onboard the vessel or tender. Fishermen may use an industry liaison for these calls, providing the process is approved by the department prior to the fishery.
- Any amount of herring overages above the ESQ must **be landed and reported on a fish ticket** and all proceeds from the sale of amounts in excess of the ESQ shall be surrendered to the State of Alaska.

The open area for the West Behm Canal herring fishery is those waters of Section 1-E and 1-F north of the latitude of South Vallenar Point located at 55°22.88' N. latitude, 131°52.75' W. longitude with the following restriction:

> All waters of Clover Passage, Tongass Narrows, Moser Bay, Naha Bay, will be closed south and east of a line from Indian Point located at 55°36.85' N. latitude, 131°42.03' W. longitude, to the northeastern tip of Betton Island located at 55°32.56' N. latitude, 131°47.66' W. longitude, to the southwest tip of Betton Island located at 55°30.22' N. latitude, 131°50.32' W. longitude, to Guard Island Light, to Vallenar Point located at 55°25.58' N. latitude, 131°51.09' W. longitude.

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. In November of 2010, inconsistencies were discovered in methods used to age scales since 1999 compared to methods used prior to 1999. This brought into question the reliability of herring ages needed to run an ASA model to forecast the 2011 Sitka Sound return and the biomass accounting method was used instead. Since then, archived Sitka Sound herring scale samples from 1999–2010 were re-aged using consistent methods and the ASA model was used to forecast the 2012 mature herring biomass. The forecast of the 2012 mature spawning biomass for Sitka Sound is 144,143 tons. At a 20% harvest rate, the **GHL for the 2012 sac roe herring fishery is 28,829 tons**. The forecast indicates that the spawning stock will consist of 13% age-3, 24% age-4, 25% age-5, 14% age-6, 11% age-7, and 13% age-8+ fish.

Herring distribution and roe quality will be monitored prior to and during the fishing periods. Monitoring methods for 2012 will include aerial surveys, vessel sonar surveys, and test fishing. In 2012, 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 department intends to manage the commercial sac roe fishery in consideration of the subsistence fishery by dispersing the commercial harvest 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 2002–2011 the subsistence roe harvest estimate has ranged from 71,936 to 381,226 pounds and averaged

172,601 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 Ketchikan on February 24, 2012. There was not a consensus among industry representatives of the amount of harvest to target for each opening. There was a general agreement that on any given day the target harvest level should be at least 4,500–5,000 tons with some processors advocating for higher single-day harvests. Given the large GHL it was generally agreed that progress would need to begin early in the season and that opportunities to harvest sac roe herring before reaching peak roe recovery will be necessary to achieve the season GHL. The total daily processing capacities for the 2012 season will not been determined until immediately prior to the fishery, but with expected capacities similar to last season, harvesting 5,000 tons during an opening would require at least two days off between openings before adequate tendering and processing capacities would be available for additional harvest. If this is determined to be the preferred strategy it can be expected that it will take approximately 15 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, 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, 1976–2011.

	Seymour Canal[a]				Revilla Channel			
Year	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	–	–	Fishery Not	–	1,100	1,149	March 25	March 25
1981	600	615	April 28	April 28	1,550	1,871	March 20	March 20
1982	–	–	Fishery Not	–	1,700	2,319	March 20	March 26
1983	–	–	Fishery Not	–	2,500	3,113	March 23	March 24
1984	375	499	April 20	April 26	2,100	2,177	March 20	March 29
1985	–	–	Fishery Not	–	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	–	–	Fishery Not	–	680	660	March 28	April 8–11
1992	–	–	Fishery Not	–	1,200	1,246	April 1	April 3
1993	–	–	Fishery Not	–	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	–	–	Fishery Not	–	871	601	April 8	April 10
1997	–	–	Fishery Not	–	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	April30-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

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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

[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, 1976–2011.

Year	Juneau[a]-Lynn Canal						Sitka Sound			
	Guideline Harvest Level (Tons)	Harvest[b] (Tons) by Gear Type		Date 2-Hour Notice Was Effective	Opening Dates by Gear Type		Guideline Harvest Level (Tons)	Harvest (Tons)[c]	Date 2-Hour Notice Was Effective	Opening Dates
		Seine	Gillnet		Seine	Gillnet				
1976	750	432	124	–	April 26	April 29	780	800	April 10	April 16
1977	875	709	211	–	April 19	April 20	–	–	Fishery Not Open	–
1978	500	602	363	April 19	April 20	April 21	250	175	April 4	April 5
1979	–	–	–	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	375	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 (Tons)	Harvest[b] (Tons)	Date 2-Hour Notice Was Effective	Opening Dates	Guideline Harvest Level (Tons)	Harvest[c] (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

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

[b] The Lynn Canal Catch includes all herring for sac roe, by gear based on IFDB query March, 2007.

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

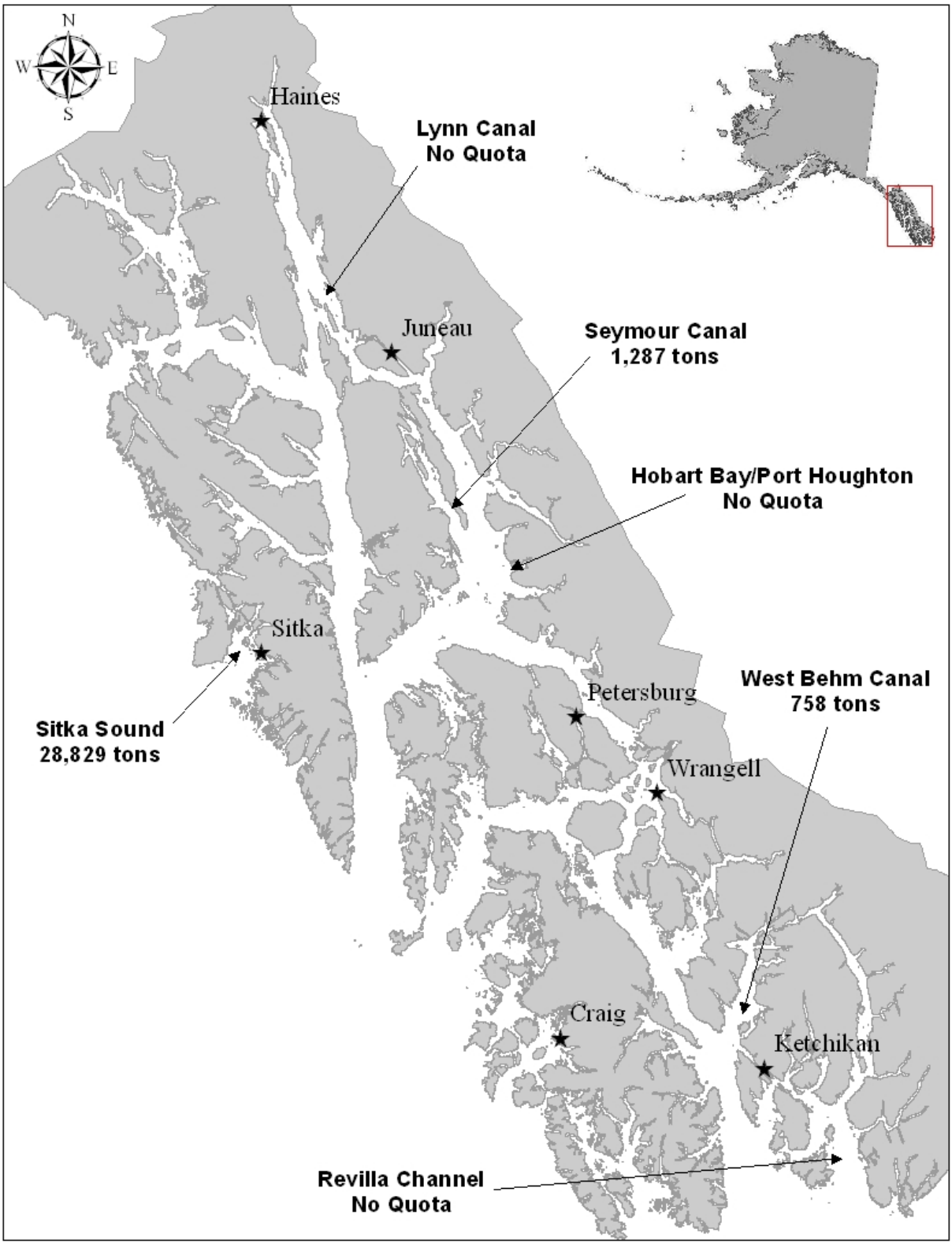

Figure 1.–Southeast Alaska sac roe herring areas and Guideline Harvest Levels for 2012.

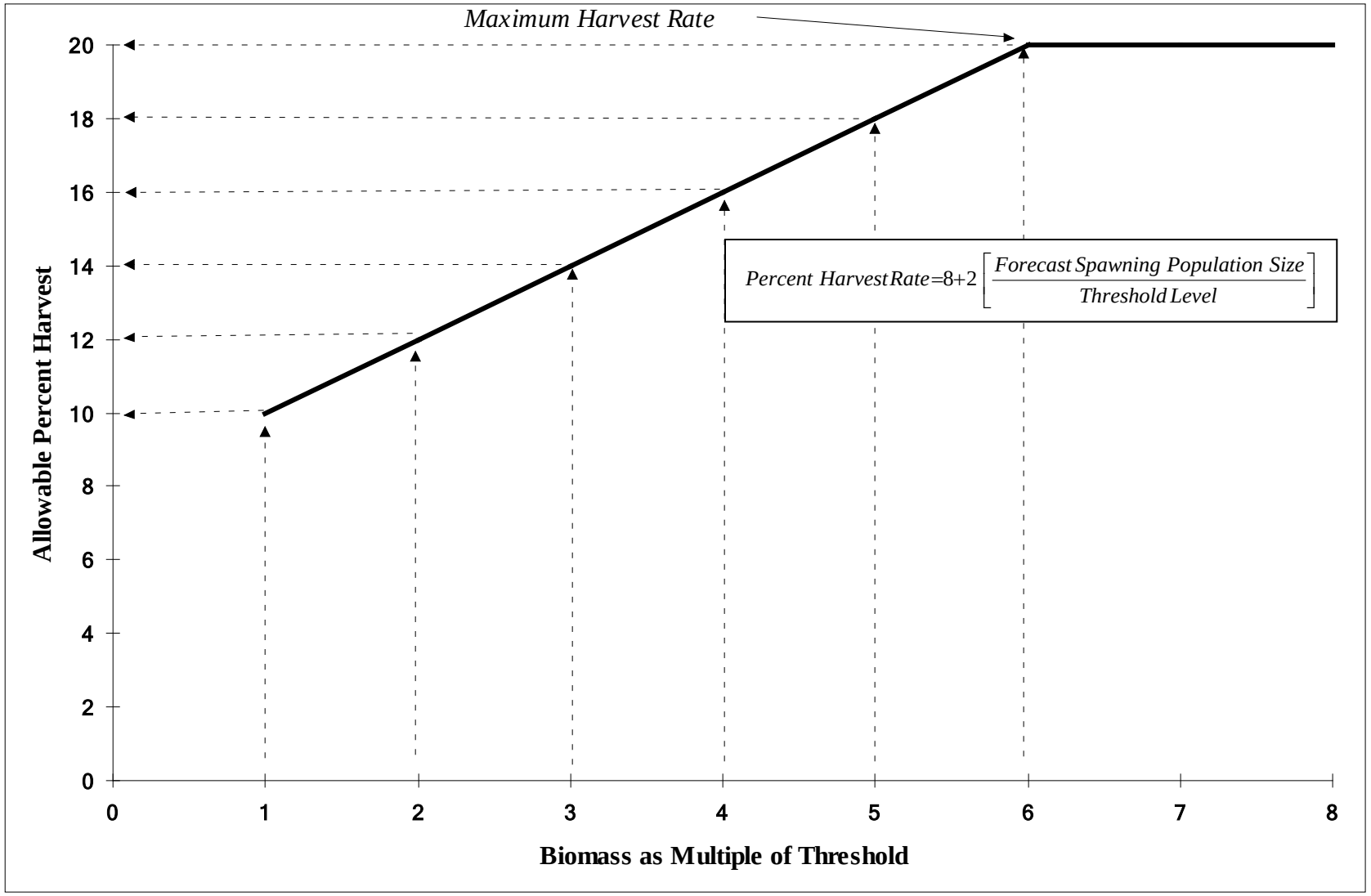

Figure 2.–Generalized harvest strategy for Southeast Alaska herring (excluding Sitka Sound). The allowable percent annual harvest is plotted against the estimated biomass of mature herring expressed as a multiple of the established harvest threshold level.

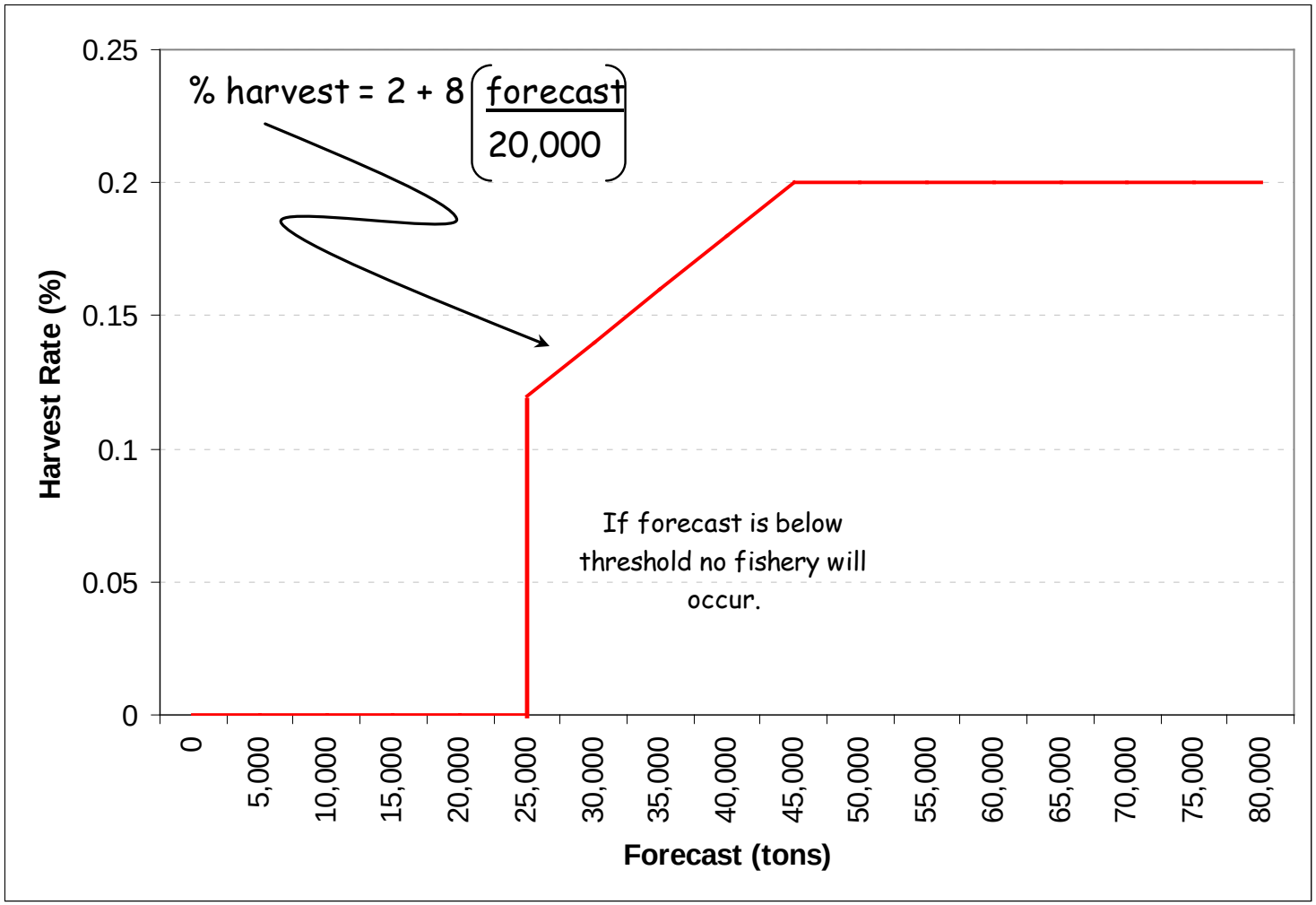

Figure 3.–Harvest rate and formula for Sitka Sound under 25,000 ton minimum threshold level [5 AAC 27.160 (g)].