

# **2016 Southeast Alaska Purse Seine Fishery Management Plan**

by

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April 2016

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

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

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**2016 SOUTHEAST ALASKA PURSE SEINE FISHERY MANAGEMENT  
PLAN**

by

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## ABSTRACT

The Southeast Alaska purse seine fishery is managed according to statute, regulations, emergency order authority, and in consultation with the public and industry through the Purse Seine Management Task Force process. The Alaska Department of Fish and Game issued a preseason forecast for a harvest of 34 million pink salmon for 2016. This forecast for pink salmon, together with historical escapement estimates, fishery performance data, private non-profit hatchery forecasts for chum salmon and other species, are used to establish the management plan. The management plan for the 2016 Southeast Alaska salmon purse seine fishery is described in detail, along with expected run sizes, harvest strategies, and related management issues.

Key words: Purse seine, management, pink salmon, chum salmon, coho salmon, sockeye salmon, king salmon, Fishery Management Plan

## INTRODUCTION

This plan describes how the Southeast Alaska salmon purse seine fishery will be managed during the 2016 season and includes expected run sizes, harvest strategies, and related management issues. The plan is based on the Alaska Department of Fish and Game (ADF&G) 2016 preseason pink salmon forecast, historical escapement data, fishery performance data, private non-profit hatchery forecasts, and input through the Purse Seine Management Task Force process. ADF&G area management biologists listed at the end of this document can provide further details regarding the implementation of the plan in their respective areas.

Regulations allow purse seine fishing in Districts 1 (Sections 1-C, 1-D, 1-E, and 1-F only), 2, 3, 4, 5, 6 (Sections 6-C and 6-D only), 7, 9, 10, 11 (Sections 11-A and 11-D only), 12, 13, and 14. Purse seine fishing is also allowed in hatchery terminal harvest areas (THA) at Neets Bay, Kendrick Bay, Anita Bay, Deep Inlet, and Hidden Falls. Although the areas specified above are designated purse seine fishing areas, specific open areas and fishing times are established inseason by emergency order.

Since statehood, 77% of the salmon harvested in Southeast Alaska commercial fisheries have been caught with purse seine gear. Pink salmon (*Oncorhynchus gorbuscha*) is the primary species targeted by the purse seine fleet; therefore, most management actions are based on the abundance of pink salmon stocks. Chum salmon (*O. keta*) are targeted in or near hatchery terminal areas and the majority of the chum salmon harvest originates from hatchery production. Other species of salmon are harvested incidentally to pink and chum salmon. Over the recent 10-year period, the species composition of the purse seine harvest has included 89% pink salmon, 9% chum salmon, 1% sockeye salmon (*O. nerka*), and 1% coho salmon (*O. kisutch*), and less than 1% king salmon (*O. tshawytscha*).

Tagging studies of adult pink salmon have demonstrated that the stocks in Southeast Alaska exhibit a distinct separation between the northern and southern portions of the region. For purposes of catch tabulation and management, Districts 1–8 are grouped as “Southern Southeast” and Districts 9–14 as “Northern Southeast.”

Inseason assessments of pink salmon run strength are determined primarily from spawning escapement information obtained from aerial surveys of terminal areas and streams, and from fishery performance data (catch and catch per unit effort, or CPUE). ADF&G staff use fishery performance data and associated information to make inseason evaluations of pink salmon harvests to Northern and Southern Southeast Alaska. ADF&G also charters purse seine vessels to conduct test fishing assessments of run strength in selected index areas and monitors pink salmon sex ratios in the commercial harvest to evaluate run timing.

## 2016 PINK SALMON FORECAST

The Southeast Alaska pink salmon harvest in 2016 is predicted to be in the *strong* range with a point estimate of **34 million fish (80% confidence interval: 13–55 million fish)**. The categorical ranges of pink salmon harvest in Southeast Alaska were formulated from the 20<sup>th</sup>, 40<sup>th</sup>, 60<sup>th</sup>, and 80<sup>th</sup> percentiles of historical harvest over the 51-year period 1960 to 2010:

Category	Range (millions)	Percentile
Poor	Less than 11	Less than 20 <sup>th</sup>
Weak	11 to 19	20 <sup>th</sup> to 40 <sup>th</sup>
Average	19 to 29	40 <sup>th</sup> to 60 <sup>th</sup>
Strong	29 to 48	60 <sup>th</sup> to 80 <sup>th</sup>
Excellent	Greater than 48	Greater than 80 <sup>th</sup>

The 2016 forecast was produced in two steps: 1) a forecast of the trend in harvest, and 2) the forecast trend adjusted using 2015 juvenile pink salmon abundance data. Juvenile pink salmon abundance data were provided by the National Oceanographic Atmospheric Administration (NOAA) Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratories (Joe Orsi, Auke Bay Laboratories, personal communication). These data were obtained from systematic surveys conducted annually in upper Chatham and Icy straits, in conjunction with NOAA's Southeast Coastal Monitoring Project, and are highly correlated with the harvest of adult pink salmon in the following year (Wertheimer et al. 2011<sup>1</sup>). This is the 10<sup>th</sup> year that the ADF&G forecast was adjusted using these data.

The 2016 harvest forecast of 34 million pink salmon is below the recent 10-year average harvest of 38 million pink salmon. The NOAA Auke Bay Lab's 2015 peak June–July juvenile pink salmon CPUE statistic from upper Chatham and Icy straits in northern Southeast Alaska ranked 13<sup>th</sup> out of the 19 years that they have collected juvenile salmon abundance information. Pink salmon harvests associated with juvenile indices similar to the 2015 index ( $\pm 20\%$ ) ranged from 12 to 45 million fish.

Perhaps the largest potential source of uncertainty regarding the 2016 pink salmon return are the anomalously warm sea surface temperatures that have persisted throughout the Gulf of Alaska since fall 2013. Pink salmon that went to sea in 2014 returned in numbers well below expectation in 2015, particularly in the southern half of the region. Pink salmon that went to sea in 2015 (and set to return in 2016) experienced similar above-average sea surface temperatures. There were also widespread reports of more southern species in the eastern Gulf of Alaska in 2015 (e.g., albacore, American shad, market squid, ocean sunfish, Pacific bonito, Pacific pompano, skipjack tuna, et al.), suggesting pink salmon may experience more competition or predation than normal. Another reason to expect the harvest could be below average in 2016 is the recent poor

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<sup>1</sup> We gratefully acknowledge the assistance and advice of Joe Orsi and Alex Wertheimer (retired) and their colleagues at the NOAA Auke Bay Laboratories. However, we accept responsibility for this forecast, and we accept sole responsibility for this use of their data.

performance of even-year returns to northern inside waters. The harvest averaged 3 million fish over the past five even years and was only one million fish in the two most recent even years. In addition, escapement indices were below management targets for 17 of 21 northern inside pink salmon stock groups in 2014, which may help perpetuate continued poor harvests in northern inside waters.

The department will manage the commercial purse seine fisheries *inseason* based on the strength of salmon runs. Aerial escapement surveys and fishery performance data will continue, as always, to be essential in making inseason management decisions.

The statewide harvest forecast, including a complete description of the Southeast Alaska pink salmon forecast, can be found online at:

<http://www.adfg.alaska.gov/FedAidPDFs/SP16-07.pdf>

The 2016 NOAA pink salmon forecast can be found online at:

[http://www.afsc.noaa.gov/ABL/EMA/EMA\\_PSF.htm](http://www.afsc.noaa.gov/ABL/EMA/EMA_PSF.htm)

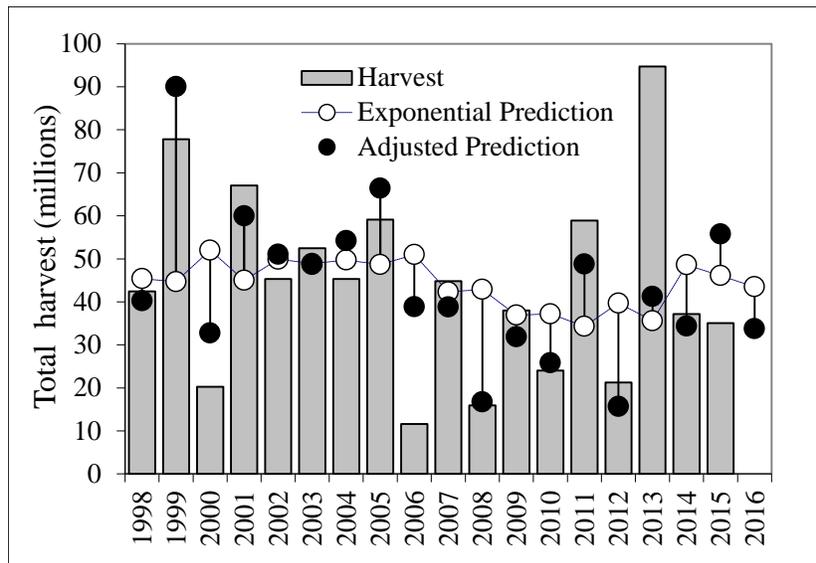


Figure 1.—Annual harvest of pink salmon in Southeast Alaska, 1998–2015, compared to the exponential smoothed hindcast predictions of the harvest adjusted using NOAA Auke Bay Laboratory juvenile pink salmon data.

Table 1.–Southeast Alaska pink salmon escapement indices (in millions) by district and subregion, compared to management target ranges by district, and biological escapement goal ranges by subregion for the 2016 parent-year of 2014.

<b>Subregion</b>	<b>District</b>	<b>2014 Index</b>	<b>Lower Management Target</b>	<b>Upper Management Target</b>
Southern	101	4.42	1.02	2.71
Southern	102	1.29	0.29	0.77
Southern	103	2.72	0.95	2.54
Southern	105	0.30	0.25	0.66
Southern	106	0.47	0.21	0.57
Southern	107	0.43	0.26	0.69
Southern	108	0.01	0.02	0.06
Northern Inside	109	0.67	0.63	1.50
Northern Inside	110	0.33	0.59	1.41
Northern Inside	111	0.08	0.27	0.65
Northern Inside	112	0.18	0.53	1.26
Northern Inside	Inside 113	0.09	0.32	0.76
Northern Inside	114	0.02	0.15	0.35
Northern Inside	115	0.00	0.03	0.07
Northern Outside	Outside 113	2.75	0.75	2.50
<b>Biological Escapement Goals by Subregion</b>		<b>Total 2014 Index</b>	<b>Lower Escapement Goal</b>	<b>Upper Escapement Goal</b>
Southern		9.6	3.00	8.00
Northern Inside		1.4	2.50	6.00
Northern Outside		2.7	0.75	2.50

## GENERAL MANAGEMENT GOALS

The primary management goals for the 2016 Southeast Alaska purse seine fishery are as follows:

1. Obtain overall pink salmon spawning BEGs by subregion, and within subregions; obtain escapements consistent with district and stock group management targets to ensure that spawning escapements are well distributed.
2. Obtain overall adequate chum salmon spawning escapements and ensure that spawning escapements are well distributed.
3. Provide for an orderly fishery while harvesting fish in excess of spawning escapement needs.
4. Minimize, to the extent possible, the harvest of salmon destined for fishing districts where weak returns are expected.
5. Promote a harvest of good quality fish within constraints dictated by run size and timing.
6. Manage the District 4 purse seine fishery consistent with the provisions of the U.S./Canada Pacific Salmon Treaty.
7. Restrict the total purse seine harvest of Treaty king salmon (28 inches or larger) to no more than 4.3% of the all-gear Treaty king salmon catch ceiling established for the 2016 season. The 2016 pre-season abundance index is 2.06 producing a purse seine Treaty quota of 15,291 fish.

8. Manage the purse seine fishery in the waters of District 12, and in Section 14-C north of the latitude of Porpoise Islands, consistent with the *Northern Southeast seine salmon fishery management plans* (5 AAC 33.366).

## **REGIONAL MANAGEMENT PLAN**

### **EXPECTED FISHING REGIME**

ADF&G will manage the 2016 purse seine fishery inseason based on aerial survey observations and fishery performance data. The first openings will be on June 19 and will consist of a portion of lower District 2 along the Prince of Wales Island shoreline near Kendrick Bay from McLean Point Light to Polk Island and will open for four days. The first 15-hour openings will also occur on Sunday, June 19, at Hidden Falls and Point Augusta. The first openings in Section 13-C will occur Sunday, June 28. Initial openings in Districts 1 and 4 can be expected on Sunday, July 3. Other areas around the region will open as described in this plan, subject to inseason information. The ADF&G pink salmon harvest forecast is 34 million fish, with an 80% confidence interval range of 13–55 million. This forecast is slightly higher than the NOAA harvest forecast of 30.4 million. As always, the department will carefully monitor inseason information and will manage the fishery to ensure escapement goals are met, obtain district and stock group escapement targets, and distribute escapements.

During 2014, the pink salmon parent year, the common property purse seine harvest of 33.5 million pink salmon was the 21<sup>st</sup> largest for the period 1960–2014 and below the recent 10-year average (2005–2014) of 37.4 million. Escapements in 2014 were below the BEG range in the Northern Southeast Inside Sub-region and above the BEG range in the Southern Southeast and Northern Southeast Outside Sub-regions. Management targets were met or exceeded in 7 of 15 districts and 26 of 46 stock groups in the region. The department is prepared to provide additional fishing opportunity when appropriate to harvest surplus returns. The department may expand fishing opportunity from one to two 15-hour periods per week, to 39-hour periods, to 2-days-on/2-days-off, or even to a 5-day fishing cycle as run strength and fleet distribution allows. Specific areas may warrant more or less fishing time than the regional schedule depending on run strength and fleet distribution.

### **EFFORT LEVELS**

The size of the purse seine fleet will have some impact on management decisions as the season progresses. Effort in 2016 should be similar to the 277 permits that fished in 2015. In 2014, 260 permits fished. Since 2007, the number of total permits has decreased from 415 to 315 due to the permit buy-back program. The recent 10-year average effort in the purse seine fishery from 2005–2014 is 241 permits.

### **DAILY START TIMES**

For the 2016 season the fishery opening and closing times will be as follows:

1. From the start of the purse seine season (June 19) through approximately August 15: 5:00 a.m. to 8:00 p.m.
2. From approximately August 16 through the end of the pink salmon season: 6:00 a.m. to 9:00 p.m.
3. From the start of the fall chum salmon season until the season closes: 7:00 a.m. to 7:00 p.m.

## REGULATION MARKERS

Closed waters, stream markers defining closures around salmon streams, and salmon streams (that may not have markers) have been a topic at Purse Seine Task Force meetings over the years and were again discussed at the most recent meeting. Fish and Game Regulation 5 AAC 33.350 lists all closed waters in Southeast Alaska. Statewide regulation 5 AAC 39.290 was amended at the 2013 statewide meeting of the Alaska Board of Fisheries (BOF) to read:

- (a) **Except as otherwise provided in this title, commercial fishing for salmon is prohibited at all times in the waters of Alaska that are**
- (1) **within the streams and rivers of this state;**
  - (2) **within 500 yards of the fresh waters of any salmon stream; and**
  - (3) **over the beds or channels of streams and rivers of this state during all stages of the tide.**

Also in this regulation the following was adopted:

- (e) **The points established for stream mouths listed in the *Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* under 5 AAC 95.011 do not apply to enforcement of this section or other regulations limiting the distance that commercial fishing may occur from the fresh waters of any salmon stream.**

The regulation in (e) above was added to clarify that fishing is prohibited within 500 yards of fresh water of salmon streams, and not 500 yards from the midpoint of the river mouth as listed in the *Anadromous Waters Catalog*.

The *Anadromous Waters Catalog* has maps identifying the locations of salmon streams and is available online on the department's web site at: <http://www.adfg.alaska.gov/sf/SARR/AWC/>, and copies are available for reviewing at ADF&G area offices.

An additional measure adopted at the 2013 statewide Board of Fisheries meeting was amendment of the definition of a salmon stream in 5 AAC 39.975. Definitions:

- (1) **“salmon stream” means any stream used by salmon, at any stage of life, for spawning, rearing, presence, or migration.**

5 AAC 39.290(b) provides that the department may post closed areas by appropriate markers. If posted, the department shall place appropriate markers for any stream as close as practically possible to the distance or location specified by the applicable regulation or emergency order. Often these markers will be more than 500 yards from the mouth of the stream at mean lower low water (MLLW) in order to provide additional protection to fish accumulated near streams or because markers are placed where they can be seen and where they can be attached to a tree. Each stream has a different shoreline configuration. Some streams are in bays and the 500-yard markers can be connected by a straight line between the two markers because the location where the stream channel ends at MLLW is 500 yards or more from the straight line between the two markers. Other streams are located along straight shorelines and 500 yards from the stream channel at MLLW is defined by an “arc” or half of a circle originating from the two regulation markers with the arc being at least 500 yards from any part of the stream channel at MLLW. The most important thing to remember is the shoreline around every stream, and the stream channel at low tide in every stream, are different. Fishermen must always fish outside the markers,

despite their distance from the stream and must always fish 500 yards from where the stream channel ends at low tide, they should fish outside of the arc defined by the two stream markers. This will ensure that they are outside of the 500-yard stream closure.

## **NEWS RELEASE INFORMATION**

ADF&G will announce each fishery opening by news release. Announcements, in general, will be made more than one full day in advance of the opening to provide a fair start, unless an announcement with a shorter notice is needed to prevent the loss of a fishery. In the uncommon situation where the department has announced a fishery inside normal markers and additional line changes are needed during an opening, the department may make those additional changes with less than 24 hours notice and will notify processors and fishermen in the vicinity by field announcement. Line changes and time changes differing from prior announcements will be indicated in bold type to highlight those changes. News releases will be available at ADF&G offices throughout Southeast Alaska, posted on the ADF&G web site, and will be available at fish buying locations or other prominent locations throughout the region. News releases can automatically be sent to any email address by subscribing for this service at this site: <http://www.adfg.alaska.gov/index.cfm?adfg=cfnews.main>. ADF&G area office contact numbers will be listed in the footer at the end of each news release. The department is discontinuing the telephone message recording system for purse seine news releases because of the difficulty providing lengthy and detailed information, typical of purse seine news releases, on a telephone message recording.

News releases are organized in numerical order by district, then within a district from the shortest duration opening to the longest duration opening, followed by the current king salmon landing restrictions, information and comments, and a harvest report from the previous fishing period.

## **TERMINAL PINK SALMON FISHERIES**

In recent years, terminal fisheries have been opened inside normal markers or stream markers at various locations throughout the region. These areas were opened to harvest buildups of pink salmon in excess of escapement needs, not at the request of processors as prior fisheries were. These fisheries were conducted at the discretion of the area management biologists in consideration of providing an orderly harvest that does not compromise escapement needs and budgetary constraints.

ADF&G will strive to open fisheries so that fish of the best possible quality can be harvested in existing traditional fisheries. If substantial buildups of pink salmon occur inside normal closed waters, in excess of spawning needs, openings to target these fish may occur, most likely in late August and early September. Openings of this nature will be announced via standard news releases.

## **KING SALMON HARVEST**

ADF&G is required to manage the Southeast Alaska purse seine fishery for a maximum harvest of 4.3% of the annual all-gear king salmon harvest ceiling determined under the terms of the Pacific Salmon Treaty [5 AAC 29.060 (b)(1)]. Prior to 1997, the purse seine fishery was limited to a fixed quota of 11,400 king salmon (not including Alaska hatchery-produced fish). The purpose of the 1997 regulation was to make management of the purse seine harvest of king salmon more consistent with the abundance-based management approach. The king salmon all-

gear harvest ceiling is driven by the preseason abundance index that is determined by the Chinook Technical Committee. For 2016, the abundance index is 2.06 and the corresponding purse seine king salmon allocation will be **15,291 fish**.

The BOF has adopted size limits [5 AAC 33.392] and directed ADF&G to manage the purse seine fishery such that incidental mortality from catch and release is minimized. The specific provisions for management of the purse seine fishery harvest of king salmon are as follows:

1. King salmon taken in the purse seine fishery that are less than 28 inches in length (as measured from the tip of the snout to the tip of the tail) will not be counted against the king salmon harvest quota.
2. King salmon greater than 21 inches and less than 28 inches in length may be harvested by purse seine fishermen but not sold.
3. Purse seine fishermen may possess and sell king salmon that are less than 21 inches (approximately 5 pounds or less).

### **KING SALMON IMPLEMENTATION PLAN**

Non-retention of 28-inch and larger king salmon has been the primary management measure for maintaining the harvest limit. With the large purse seine allocation in 2016 of 15,291 Treaty king salmon, fishermen may retain king salmon from the beginning of the season. If the harvest of Treaty king salmon approaches the quota inseason, non-retention regulations will be implemented by emergency order.

There may be specific terminal areas in which all king salmon may be, or must be, retained. ADF&G intends to implement full retention (5 AAC 39.265) from the beginning of the season for net fisheries in the Deep Inlet THA. Due to expectations of high enhanced king salmon harvests from the Hidden Falls THA, retention will be allowed during the initial openings of the Hidden Falls THA until mid-late July when chum harvests in the THA generally decline. Specific retention and non-retention periods will be announced in each purse seine fishery news release. Additional areas may also be announced via news release.

During periods of non-retention, purse seine fishermen are encouraged to avoid fishing in areas with high concentrations of king salmon and to quickly release those caught in a manner that minimizes mortality. To ensure small (less than 21 inches) king salmon are not counted against the quota, ADF&G needs the cooperation of the fishing industry. To accomplish this, all king salmon sold that are 28 inches or longer must be specified on fish tickets as species code 410; this is pre-printed on each fish ticket. King salmon 21 inches or less should be indicated on fish tickets as species code 411. This code will need to be handwritten on the fish ticket at the time of sale if it is not pre-printed.

### **REPORTING OF PERSONAL USE HARVEST**

Fishermen and processors should be aware that all salmon commercially harvested but retained for personal use and not sold must be reported on fish tickets at the time other fish from an opening are delivered.

### **TEST FISHERIES**

Test fisheries to assess run strength and timing of pink and chum salmon and to generate revenue for fisheries management will again occur in 2016. The Point Gardner test fishery begins in late June and runs through the end of July. The Kingsmill Point test fishery begins the first week of

July and runs through the end of July. Both of these test fisheries are useful in determining the run strength and timing of pink and chum salmon returning to Section 9-B and District 10. The Hawk Inlet test fishery begins the last week of June and runs through mid-July and is useful in determining the run strength and timing of pink salmon entering Districts 11 and 15. New in 2016, will be a test fishery that could occur in various seine areas throughout the region. The primary intent of this test fishery will be for generating revenue for the department to assist in managing the purse seine fishery. In addition, the test fishery will also be structured to gain information on pink salmon run strength in areas where further evaluation may be needed before common property fisheries could occur. The department will be soliciting bids for these test fisheries in May and June.

## **SEASON END**

Concern has been expressed at past purse seine task force meetings regarding the potential loss of fishing opportunity after the department has announced the closure of the purse seine fishing season. The department agreed that the end of the season would be announced following review of catch and escapement data from the final opening. If there are areas needing additional escapement adjacent to areas with adequate escapement, the department could consider closure lines, if appropriate, as a means to provide harvest opportunities on fish returning to areas where escapements have been met. The department did caution fishermen regarding implementation of this plan that the season closure is based on several factors including providing good overall distribution of escapements, higher concentrations of females at the end of the run, incomplete escapement information at the end of the season, and consideration for harvest rates of other species.

## **SOUTHERN DISTRICTS PURSE SEINE FISHERY**

### **2014 PINK SALMON RETURNS**

The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 1–8). The escapement index value of 9.6 million in 2014 was above the escapement goal range of 3.0 to 8.0 million index fish and was the 9<sup>th</sup> largest index in the time series, 1960–2014. Escapement indices were within or exceeded management targets for 6 of 7 districts and for 15 of 18 pink salmon stock groups within this subregion.

### **MANAGEMENT CONCERNS**

Uncertainties about fleet size, distribution, and the department's reaction to those can only be addressed inseason. ADF&G and the fishing industry will have to be flexible and be able to react quickly to changes from historical fishing patterns. Above all, meeting escapement goals will continue to be the primary objective of the department. Within that conservation mandate, the department will attempt to work with industry to provide a stable supply of fresh fish.

### **McDonald Lake Sockeye Salmon**

McDonald Lake sockeye salmon were designated a stock of management concern by the BOF in February 2009, due to a long-term decline in escapements. In February 2012, this stock of concern status was removed due to improved adult escapements and rearing fall fry estimates. The escapement of 72,000 sockeye salmon in 2010 was the largest escapement since 2003, and was followed by escapements of 113,000 sockeye salmon in 2011 and 57,000 sockeye salmon in 2012. The escapement of 15,400 sockeye salmon in 2013 however, was the lowest estimated escapement in the time series for McDonald Lake and the escapement of 43,400 in 2014 was

also below goal. In 2015, the estimated escapement of 70,200 sockeye salmon was again within the escapement goal range. The sustainable escapement goal of 55,000–120,000 fish was not reached in two of the last three years and the department will closely monitor the run in 2016.

Very little inseason information will be available in 2016 to indicate the strength of the McDonald Lake sockeye salmon run. In the case of severely depressed sockeye salmon harvest rates in Districts 1, 2, 5, 6, and 7, the department may consider restrictions to the Southern Southeast purse seine, gillnet, and personal use fisheries in an effort to meet the McDonald Lake sockeye salmon escapement goal. Specific management actions for the purse seine fishery would be similar to actions taken during the 2009 through 2011 fisheries in Districts 1, 2, 5, 6, and 7.

Management actions that *may be* instituted consist of the following:

- The Gravina Island shoreline may be closed north of the latitude of Cone Island during statistical weeks 29, 30, and 31;
- Purse seine fisheries in West Behm Canal, which have not been significant in recent years, may be limited in 2016;
- The District 6 gillnet fishery may be limited to a maximum fishing time of two days per week during statistical weeks 29, 30, and 31;
- The District 2, 5, 6, and 7 purse seine fisheries may have reduced fishing time during key weeks of the McDonald Lake sockeye salmon run.

ADF&G will continue to estimate the sockeye salmon escapement at McDonald Lake through extensive surveys of the spawning grounds from late August through late September.

## **MANAGEMENT PLAN**

The Southern Southeast Alaska purse seine management plan consists of separate segments which include the District 4 fishery, the inside districts pink salmon fishery, the fall chum salmon fishery in Cholmondeley Sound, and the THA fisheries.

### **District 4**

The early portion of the District 4 purse seine fishery will be managed to comply with the Pacific Salmon Treaty. The agreement calls for managing the Alaska District 4 purse seine fishery before statistical week 31 to:

1. Achieve an annual harvest share of the Nass and Skeena Rivers sockeye salmon of 2.45% of the Annual Allowable Harvest (AAH) of the Nass and Skeena Rivers sockeye salmon stocks in that year.
2. Carry forward from year to year annual deviations from the harvest share arrangement.

The AAH each year will be calculated as the combined total run of adult Nass and Skeena Rivers sockeye salmon in that year less the combined Nass and Skeena escapement target of 1.1 million fish. In the event the actual Nass and Skeena spawning escapement for the season is below the target level, the actual spawning escapement will be used in the AAH calculation.

The total run calculation includes the harvests of Nass and Skeena River sockeye salmon in the principal boundary area fisheries and the spawning escapements to the Nass and Skeena watersheds. This includes the harvest of Nass and Skeena sockeye salmon in Alaska Districts 1,

2, 3, 4, and 6 net fisheries, Canadian Areas 1, 3, 4, and 5 net fisheries, and Canadian Nass and Skeena in-river fisheries. Harvests in other boundary area fisheries may be included as jointly agreed by the Northern Boundary Technical Committee (NBTC).

Although the management intent shall be to harvest salmon at the AAH, it is recognized that overages and underages will occur and an accounting mechanism is required. The management intent for each fishery shall be to return any overages to a neutral or negative balance as soon as possible. After five years of consecutive overages, a management plan must be provided to the Northern Panel with specific management actions that will eliminate the overage. The accrual of underages is not intended to allow either Alaska or Canada to modify its fishing behavior in any given year to harvest the accrued underage.

Over past years, the bilateral NBTC has worked to finalize the total run reconstructions for the Nass and Skeena Rivers. In January of 2015, the NBTC finalized the run reconstructions for 2013 and 2014 and presented the preliminary run reconstruction for 2015 to the bilateral Northern Panel. Information in Table 2 reflects the performance of the District 4 fishery from 1999 through 2015, preliminary numbers for the 2015 season, and a 2016 forecast.

The Department of Fisheries and Oceans Canada (DFO) has a preseason expectation of approximately 1,959,000 sockeye salmon to the Nass/Skeena Rivers in 2016. This is a combined forecast of 1,280,000 Skeena River sockeye and 679,000 Nass River sockeye. If the 2016 forecast is accurate, the AAH for District 4 will be approximately 21,046 Nass/Skeena sockeye salmon (Table 2).

Table 2.–Sockeye salmon allocations for the District 4 purse seine fishery based on Nass and Skeena Rivers allocation calculations, 1999 to 2015.

Year	Nass/Skeena Total Return	Nass/Skeena Escapement	Allowable Nass/ Skeena AAH	Allowable D4 Harvest (2.45%)	Total Pre-Week 31 Sockeye Harvest	Actual Nass/Skeena Harvest	Overage/ Underage Per Year	Cumulative Overage/ Underage
1999	1,771,048	936,705	834,343	20,441	7,664	3,232	-17,209	-17,209
2000	5,318,228	1,100,000	4,218,228	103,347	48,969	29,221	-74,126	-91,335
2001	4,965,291	1,100,000	3,865,291	94,700	203,090	167,854	73,154	-18,180
2002	2,776,502	1,051,333	1,725,169	42,267	26,554	18,627	-23,640	-41,820
2003	3,306,520	1,100,000	2,206,520	54,060	84,742	44,258	-9,802	-51,622
2004	2,621,000	1,100,000	1,521,000	37,265	30,758	19,233	-18,032	-69,653
2005	1,770,474	1,000,144	770,330	18,873	35,690	19,442	569	-69,084
2006	3,650,525	1,100,000	2,550,525	62,488	89,615	68,940	6,452	-62,632
2007	2,752,074	1,100,000	1,652,074	40,476	112,135	75,615	35,139	-27,493
2008	2,531,701	1,100,000	1,431,701	35,077	6,262	4,880	-30,197	-57,690
2009	1,602,959	1,053,858	549,101	13,453	15,971	10,128	-3,325	-61,015
2010	1,395,616	956,954	438,662	10,747	4,617	1,091	-9,656	-70,671
2011	2,487,985	1,100,000	1,387,985	34,006	25,280	16,599	-17,407	-88,078
2012	2,737,173	1,100,000	1,637,173	40,111	18,300	9,598	-30,513	-118,590
2013	981,476	642,461	339,015	8,306	13,102	4,228	-4,078	-122,668
2014	3,824,537	1,100,000	2,724,537	66,751	114,375	74,005	7,254	-115,415
2015 <sup>1</sup>	4,227,000	1,100,000	3,127,000	46,924	43,873	21,433	-25,491	-140,905
2016 <sup>2</sup>	1,959,000	1,100,000	859,000	21,046				

<sup>1</sup> Data for 2015 is preliminary

<sup>2</sup> 2016 is based on forecasted returns.

In 2016, the District 4 purse seine fishery will start on Sunday, July 3 by regulation. District 4 will be managed under the Pacific Salmon Treaty annex through July 23, 2016 (statistical weeks

28, 29, and 30). It is anticipated that the initial opening on July 5 will be 12 hours in length. The duration of following openings will be based on sockeye salmon abundance and pink salmon run strength. The amount of effort in the district will also be monitored to stay within Pacific Salmon Treaty sockeye allocations. ADF&G will communicate with DFO on a weekly basis to follow the returns to the Skeena and Nass Rivers so inseason adjustments can be made to the sockeye cap. Starting on Sunday, July 24, 2016, the district will be managed on the strength of returning Southern Southeast Alaska wild salmon.

Regardless of the strength of pink salmon returns after statistical week 30, it is the department's intent to manage the district in terms of boat-days of overall effort similar to levels since the signing of the Pacific Salmon Treaty. Weekly fishing periods in August will be decided only after the department assesses the distribution of the fleet and the run strength of pink salmon. In recent years, District 4 was opened for the same amount of time as inside waters after the treaty period; however, that may not be the case in 2016.

### **Inside Fishing Areas**

As in past years, aerial surveys of early-run pink salmon producing areas, primarily Boca de Quadra, East Behm Canal, and Ernest Sound, will begin in late June. Seining is expected to begin initially in a portion of District 2 on Sunday, June 19 to target returning enhanced chum salmon to the Kendrick Bay THA.

### **Kendrick Bay Spring Fishery**

ADF&G will open a portion of lower District 2 outside of the Kendrick Bay THA to target Kendrick Bay summer chum salmon at a time when few wild stock chum salmon are available, and to maximize the quality of Kendrick Bay terminal chum salmon. This preseason fishery is timed to occur prior to the return of pink salmon to the area.

The department modified the open area and fishing time in 2014 due to an increase in the harvest of wild chum, sockeye, and coho salmon. This catch of other salmon species has become a concern due to recent increases in effort, forcing boats to fish further offshore. For 2016, the department will continue to open a fishing area that includes waters within two nautical miles of the shoreline. The first week (statistical week 26) will be open for 4 days. The department will monitor effort levels and wild chum, sockeye, and coho salmon harvests to minimize harvest of these species by adjusting fishing time. The department's response may include reduced fishing time in subsequent weeks and not fishing from Monday, July 6 through Wednesday, July 8 (statistical week 28) in District 2.

### **Traditional Fishery Openings**

The traditional purse seine fishery will begin on Sunday, July 3 (statistical week 28). The initial fishing period will be for 15 hours and will be confined to the southeast portion of Section 1-F, the southern portion of District 2, and possibly portions of Section 7-A (Anan).

Fishing time will likely begin with a series of 15-hour openings. If returns are strong enough to warrant additional fishing time, the fisheries will go from 15-hour to 39-hour openings on a 2-days-on/2-days-off, or a more continuous opening schedule. However, extensive openings will not occur if the pink salmon returns are weak. Areas may be opened and closed where additional fishing time is warranted or where a more conservative management strategy is needed.

In District 1, the area from Cone Island to Foggy Point will be managed to reflect recent harvest patterns, effort levels, returns to Boca de Quadra and East Behm Canal river systems, and fishing time. Other areas in District 1, such as the Gravina Island shoreline, will also be managed to take into account other user groups, McDonald Lake sockeye salmon concerns, and the need to achieve evenly distributed escapements into the Back Behm and West Behm Canal systems.

In District 2, purse seining will be limited to the southern portion of the district until escapements of pink salmon to northern Clarence Strait, Ernest Sound, Cholmondeley Sound, and Kasaan Bay can be adequately assessed. Additionally, no purse seining should be expected in middle Clarence Strait, along the Ship Island and Tolstoi Bay shorelines, until run strength of pink salmon returns to West Behm Canal, Thorne Bay, District 6, and Section 7-B are determined. Also in District 2, the fishing pattern along the Ship Island shore and near Thorne Bay will be managed to reflect historical fishing patterns to take into account other user groups and the need to achieve escapement to Thorne River, McDonald Lake (sockeye salmon), and Back Behm and West Behm Canal systems.

Returns of pink salmon to District 3 are expected to be strong based on parent-year escapements. Portions of Section 3-A will open in mid to late July if pink salmon harvest in the early District 4 fishery indicates run strength is sufficient. By late July or early August, Sections 3-B and 3-C may also open. Due to several years of below average returns in portions of Section 3-C, initial fishing will most likely be delayed and will occur on the eastern portion of the section until the run strength can be determined.

### **Districts 5, 6, and 7**

Pink salmon runs to Districts 5, 6, and 7 are expected to be moderate to good based on parent-year escapements. In District 5 (Sumner Strait), seine openings can be expected to occur starting around August 6. Parent-year escapements were poor to the western portion of District 5, but were generally good to Kuiu systems in the eastern portion. In District 6, the parent-year escapements were mixed; two of the four stock groups were above management targets, one within, and one below. Openings in District 6 are not expected to begin until the first week of August and more extensive openings are not expected until the second week of August. The pink salmon return to Section 7-A is not expected to be good. Despite the parent-year escapements being within management targets in 2014, they were highly variable and a few of the primary systems received escapements below desired levels. The parent year escapement to Anan Creek was good; however fish had difficulties passing the second falls to the prime spawning habitat in the upper reaches of the system. Therefore, openings will be dependent on observations of pink salmon escapement to Anan Creek and are not expected to occur before July 3. Openings in the northern portion of Section 7-B may begin during the last week of July based on strong parent-year escapement. The lower portion of Section 7-B, Union Bay area, will likely not open prior to July 30.

### **Fall Chum Salmon Fisheries**

Some watersheds along the eastern shoreline of Prince of Wales Island in District 2 produce late run chum salmon that have traditionally supported fall purse seine fisheries, including a directed fishery inside of Cholmondeley Sound.

The Cholmondeley Sound fishery is supported by major runs of fall chum salmon at Disappearance and Lagoon Creeks, as well as several smaller creeks distributed throughout the sound. No formal forecasts are made for these stocks and parent-year escapements do not always

provide an indication of potential run strength. The SEG range for the Cholmondeley Sound fall chum salmon is 30,000–48,000 fish based on aggregate peak aerial survey counts for Disappearance and Lagoon Creeks. Escapements were within or above the escapement goal range in four of the past five years.

ADF&G will keep Cholmondeley Sound closed to the harvest of chum salmon for all gear groups until a determination has been made that the return for 2016 will provide a harvestable surplus. Waters of Cholmondeley Sound south of 55°15.47' N. latitude (located approximately one nautical mile south of Chasina Island) will be closed to seining, and closed to the retention of chum salmon by trollers from August 15 until around September 8, when the first fall chum opening occurs. If pink or chum salmon surpluses occur that would otherwise not be harvested, openings prior to September 8 may occur.

Chum salmon harvests by the purse seine and troll fleets in District 2 during late August pink salmon openings will be closely monitored as an early indication of run strength. Initial aerial surveys of Cholmondeley Sound chum salmon will begin near the end of August.

Approximately 7–10 days after the closure of the directed pink salmon purse seine fishery in District 2, the department will provide a purse seine opening for chum salmon in waters of Clarence Strait outside of Cholmondeley Sound. If chum harvests in late August are estimated to be near normal levels, the department may enlarge this initial open area to include some waters inside of Cholmondeley Sound. Fishing inside of the sound may give a better indication of fall chum salmon returns. This initial opening is expected to occur on or around September 8, unless aerial observations warrant an earlier opening. The opening is expected to be 12 or 24 hours in duration. The area that will be open to the purse seine fleet is open continuously for the troll fleet under summer troll regulations.

Additional openings will likely be one or two days in length, depending upon the strength of the run and expected effort levels. Waters inside Cholmondeley Sound will be opened for both gear groups provided adequate numbers of chum salmon are observed in the South and West Arms of Cholmondeley Sound. When Cholmondeley Sound is opened, Sunny Cove and waters of Cholmondeley Sound proper will be closed south of Hump Island. These closures are needed to protect chum salmon escapements in Lancaster, Dora Bay, and Kitkun systems, and closure lines may be moved further north than the closures listed in regulations.

Once it is appropriate to initiate fishing inside Cholmondeley Sound, a rotation will be instituted that will include both gear groups. When the purse seine fleet is allowed to fish for one day, the troll fleet will be given one day. If the purse seine fleet is given two days the troll fleet will be given two days. Around September 15, a second opening will occur if aerial surveys indicate that chum salmon run strength is sufficient to allow harvest. Around September 22, a third opening will occur if aerial surveys indicate that chum salmon run strength is sufficient.

The summer troll fishing season may be extended from September 21 through September 30, based on coho salmon abundance. During any troll fishery extension in District 2, trolling inside Cholmondeley Sound will be limited to the same number of days as provided for the purse seine fishery.

### **Terminal Hatchery Fisheries**

For the 2016 season, THA purse seine fisheries will occur at Neets Bay, Anita Bay, and Kendrick Bay to harvest fish returning to Southern Southeast Regional Aquaculture Association

(SSRAA) enhancement facilities. These THA fisheries will be managed jointly with SSRAA and in accordance with existing BOF approved management plans. Details regarding the open fishing periods by gear type in each area will be announced via commercial fishery news releases. Table 3 summarizes the expected returns to each SSRAA release location.

Fishermen are requested to ensure fish caught in THAs are reported correctly on fish tickets. This will enable accurate otolith-mark sampling and documentation of fish taken from THAs.

### **Terminal Area–Neets Bay [5 AAC 33.370]**

ADF&G, in consultation with SSRAA, will manage Neets Bay to include those waters of Neets Bay from the easternmost point of Bug Island to the closed waters at the head of the bay. Details of the Neets Bay THA fisheries are provided in a news release issued April 13, 2016.

In 2016, SSRAA is expecting a total run of 1,237,000 summer chum, 250,000 fall chum, 254,800 coho, and 17,500 king salmon to return to Neets Bay.

Neets Bay will be open continuously to purse seine and drift gillnet from May 1 to June 10 at noon unless closed by emergency order. There will be a rotational fishery for purse seine and gillnet gear from June 12 at noon through July 4 at noon. Troll gear will be allowed continuously during this period. From July 3 to November 15, no gillnet or purse seine openings are scheduled so that cost recovery can take place. If openings can be scheduled, they will be announced by news release.

### **Neets Bay THA Calendar**

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April 15-May 1, 2016

Troll open continuously.

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May 1–June 10, 2016

Open continuously to purse seine, and drift gillnet unless closed by emergency order. Troll open continuously.

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June 12–July 2, 2016

Rotational fishery for drift gillnet and purse seine. Troll open continuously.

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July 3–November 15, 2015

No gillnet or purse seine openings are scheduled during this time so that cost recovery can take place. If openings can be scheduled, they will be announced by news release in September or once cost recovery has been completed.

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### **Terminal Area–Anita Bay [5 AAC 33.383]**

The Anita Bay THA in District 7 consists of the waters of Anita Bay west of a line from Anita Point at 56°13.69' N. latitude, 132°22.50' W. longitude to 56°14.26' N. latitude, 132°23.92' W. longitude.

From June 15 through July 10, the waters within one-quarter mile of the northern shoreline of Anita Bay west of a line from 56°12.31' N. latitude, 132°26.22' W. longitude to 56°12.06' N. latitude, 132°26.22' W. longitude and east of a line from 56°11.96' N. latitude, 132°29.58' W. longitude to 56°11.73' N. latitude, 132°29.36' W. longitude will be open.

Waters south and west of the waters specified in the above description will be closed to the harvest of salmon as follows:

- (1) From June 15 through June 25, waters of the Anita Bay THA that are west of 132°26.22' W. longitude will be closed to the harvest of salmon;
- (2) From June 26 through July 1, waters of the Anita Bay THA that are west of 132°26.98' W. longitude will be closed to the harvest of salmon;
- (3) From July 2 through July 10, waters of the Anita Bay THA that are west of 132°28.00' W. longitude will be closed to the harvest of salmon.

In 2016, SSRAA is expecting total returns of 387,000 summer chum, 16,500 king, and 15,000 coho salmon to Anita Bay. It is anticipated that approximately 193,500 chum, 11,500 king, and 2,300 coho salmon will return to the terminal area and be available for harvest.

Details of the Anita Bay THA rotational gear fisheries are provided in a news release issued April 13, 2016.

### **Anita Bay THA Calendar**

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May 1–June 12, 2016

Beginning 12:01 a.m., Sunday, May 1 through 12:00 noon, Sunday, June 12: open continuously to purse seine, drift gillnet, and troll unless closed by emergency order.

June 13–August 31, 2016

Rotational fisheries for drift gillnet and purse seine.

September 1–November 10, 2016

Beginning 12:01 a.m., Thursday, September 1, the Anita Bay THA will be open to the harvesting of salmon concurrently by drift gillnet, purse seine, and troll gear. The Anita Bay THA will close for the season at 12:00 noon, Thursday, November 10.

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### **Kendrick Bay THA–[5 AAC 33.377]**

The Kendrick Bay THA, which includes the waters of Kendrick Bay west of 131°59.00' W. longitude, and the waters of McLean Arm west of 131°57.80' W. longitude, will be open on a continual basis beginning June 15 through September 30, 2016. For 2016, SSRAA is expecting a return of 868,000 summer chum salmon. Peak catches are expected to occur during statistical weeks 27–29.

Table 3.–Expected 2016 returns to SSRAA enhancement projects by release location.

Species/Run	Release Location	Common property Harvest	Terminal	Total Return
Coho	Herring Cove/Whitman	17,400	5,800	23,200
Coho	Nakat Inlet	20,700	2,300	23,000
Coho	Anita Bay	12,800	2,300	15,100
Coho	Neets Bay	244,100	10,700	254,800
Coho	Crystal Lake	500	600	1,100
Summer Coho	Burnett Inlet	10,300	11,600	21,900
Summer Coho	Neck Lake	30,750	30,750	61,500
King	Whitman Lake	5,700	13,300	19,000
King	Anita Bay	5,000	11,500	16,500
King	Neets Bay	5,250	12,250	17,500
King	Crystal Lake	1,800	1,800	3,600
Summer Chum	Neets Bay	333,990	903,010	1,237,000
Summer Chum	Anita Bay	193,500	193,500	387,000
Summer Chum	Kendrick Bay	607,600	260,400	868,000
Summer Chum	Nakat Inlet	130,000	130,000	260,000
Fall Chum	Nakat Inlet	28,980	53,820	82,800
Fall Chum	Neets Bay	62,500	187,500	250,000

## NORTHERN DISTRICTS PURSE SEINE FISHERY

### 2014 PINK SALMON RETURNS

For the Northern Southeast Inside Subregion, the escapement index value of 1.4 million was below the escapement goal range of 2.5 to 6.0 million index fish. Escapement indices were below management targets for 6 of 7 districts and for 17 of 21 pink salmon stock groups within this subregion. For the Northern Southeast Outside Subregion, which includes Sections 13-A and 13-B, the escapement index value of 2.75 million exceeded the escapement goal range of 0.75 to 2.50 million index fish and ranked 6<sup>th</sup> since 1960. Escapement indices were within or exceeded management targets for all 7 pink salmon stock groups within this subregion.

### MANAGEMENT CONCERNS

Pink salmon escapements to northern Southeast Alaska Inside waters during the 2014 parent year were below the management target range in 6 of 7 districts, with the Juneau Management area having the lowest aggregate escapement index since statehood. The department will use inseason assessments, including aerial observation of salmon abundance, Point Augusta Index area and Hawk Inlet test fishery catch rates to determine potential fishing opportunities while achieving the department's primary objective of meeting escapement goals.

### Summer Chum Salmon

In 2009, ADF&G adopted a lower-bound SEG of 149,000 index spawners for summer chum salmon in the Northern Southeast Inside Subregion. This goal was based on aggregate peak aerial survey counts for 63 index streams in northern Southeast Alaska inside waters. Escapements of summer chum salmon were below this escapement goal threshold from 2008 to 2011. In 2012, the escapement goal was revised downward, based on an analysis that incorporated two decades of additional data, to 119,000 index spawners (Piston and Heinel 2011).

Escapements of summer chum salmon have met the current escapement goal in 4 of the past 5 years.

## **MANAGEMENT PLAN**

The Northern Southeast Alaska purse seine fishery management plan consists of separate segments for the outside areas (Sections 13-A and 13-B), the inside areas, the fall chum salmon fishery, the Hidden Falls and Deep Inlet Hatchery THAs, and the Amalga Harbor Special Harvest Area (SHA) fisheries.

### **Fishing Regime Implementation**

If run strengths are sufficient to warrant additional fishing time, the fisheries will go from 15-hour and 39-hour openings to 2-days-on/2-days-off or more continuous openings.

### **Inside Fishing Areas, Early Runs**

The 2016 purse seine season will begin on Sunday, June 19, with initial open periods of 15 hours to harvest hatchery summer chum and to index the strength of early pink salmon returns. During the first open period, seining will be allowed in the Point Augusta Index area in Chatham Strait; the opening will be in conjunction with the first opening at the Hidden Falls Terminal Harvest Area.

Escapements of summer chum salmon for the 2011 and 2012 parent years in Tenakee Inlet were below average. Although no formal forecasts are made for these stocks, some expectations can be based on parent-year escapements. Escapements in 2011 were generally weaker than the main parent year of 2012 and were 30% and 43% respectively of the previous ten-year average.

The 2014 parent-year pink salmon escapement index for Tenakee Inlet of 0.10 million fish is below the lower bound of the management target range of 0.21 million and the even-year average index count of 0.14 million fish. In 2016, purse seine opportunity in Tenakee Inlet will depend on the observed development of escapements to local streams. Portions of the Basket Bay shoreline may be opened to harvest pink salmon returns to Tenakee Inlet and Peril Strait if salmon escapements to local streams are adequate, including escapement of Kook Lake sockeye.

The 2014 parent-year escapement index for Section 13-C was 0.08 million, well below the lower bound of the management target range of 0.32 million. Due to weak pink escapements to a number of systems in Section 13-C in 2014, no openings are scheduled in 2016. Openings in Section 13-C will occur only if inseason assessment indicates a surplus. If openings occur at all, they will most likely be in small areas targeted at specific systems where surplus abundance has been observed. Parent-year summer chum salmon escapements to Saook Bay and Rodman Bay, were mixed with 2012 escapements consistent with long term averages, and 2011 escapements below long term averages. Seine openings to target chum salmon will be based on inseason assessment of abundance. Chum salmon openings will likely be very restrictive in time and area, and will occur only if pink salmon escapements will not be negatively impacted.

The parent-year escapement index for District 10 was 0.33 million pink salmon, below the management target range of 0.59–1.45 million fish. Escapement was uniformly poor throughout most of the district with 3 of the 4 stock groups being below respective target ranges. Openings in District 10 will be based on observations of pink salmon abundance and results of the Point Gardner Test Fishery. The parent-year escapement index for Seymour Canal (Section 11-D) of 0.32 million pink salmon is within the management target range of 0.16–0.40 million and above

average. Openings in lower Seymour Canal may occur depending on the development of escapements to local streams.

Directed commercial seining on early-run pink salmon will be based on aerial survey and fishery performance assessments of run strength. Aerial surveys to evaluate run strength will begin in late June for the northern inside fishing districts. To provide an additional assessment of incoming run strength of early-run pink salmon, the department will open a one-mile area along the Point Augusta shoreline in District 12 in conjunction with other weekly openings. Test fishing will be conducted at Point Gardner and Kingsmill Point to assess the strength and timing of the pink salmon returns entering Frederick Sound. The Point Gardner test fishery will start on or about June 29 and the Kingsmill Point test fishery will start on or about July 6. Both test fisheries are scheduled to occur weekly through the month of July. Test fishing will also occur along the Hawk Inlet Shoreline beginning on or about June 24 to assess the strength of pink salmon returns entering the northern inside waters of Districts 11 and 15. Incidental harvest of pink salmon at the Hidden Falls Hatchery terminal fishery during the first three weeks of the season will also be monitored as an indicator of pink salmon run strength.

In District 12, based on a well-defined evaluation of run strength and timing, the Hawk Inlet shoreline fishery may be opened in July to provide access to harvestable surpluses of northbound pink salmon stocks that would otherwise not be harvested. This fishery is managed according to the Northern Southeast seine salmon fishery management plans (5 AAC 33.366) and is described in detail in a subsequent section of this plan.

### **Inside Fishing Areas—Middle and Late Runs**

Middle-run pink salmon should begin entering the inside waters of the northern districts during July. Seining in District 12 along the west Admiralty Island shoreline typically expands in late July, depending on the observed run strength of pink salmon stocks in Districts 10 and 11, and continues as long as Chatham Strait and Fredrick Sound escapements develop satisfactorily. Southern boundaries for the fishery are typically extended into statistical area 112-17, from Point Hepburn to Fishery Point and then to Parker Point, in either the last week of July or in early August. At the 2015 BOF meeting in Sitka, the *Northern Southeast seine salmon fishery management plans* was amended regarding openings along the west Admiralty shoreline: the portion of the Admiralty shoreline between Point Hepburn and Fishery Point may not open before July 17; and the portion of shoreline between Fishery Point and Parker Point may not open before July 21. Parent-year pink salmon escapements were well below management targets for the northern Chatham Strait stock groups and openings in this area will depend on developing returns of local stocks as well as Peril Strait and Tenakee Inlet stocks. Openings may occur in this area in mid to late July depending on the observed run strength.

In Section 9-A, seine openings can occur along the Baranof Island shoreline north of Red Bluff Bay beginning in mid to late-July and along southeast Baranof Island south of Patterson Point beginning mid to late-August. The 2014 parent-year pink salmon escapement to Red Bluff Bay was below the lower management target range. Conservative management can be expected in the Red Bluff Bay area of Section 9-A, and seine openings will be based on inseason assessment of run strength. Openings provided in July will include only the shoreline north of Red Bluff Bay in order to provide for escapement needs as well as subsistence uses at Falls Lake. Openings to the south of Red Bluff Bay may begin in early August, depending upon pink salmon abundance. If pink salmon escapements into Red Bluff Bay are sufficient, openings inside of the bay may occur to harvest pink salmon surplus to escapements. The southeast Baranof Island pink salmon

stock group escapement was within the management target range. Pink salmon returns to southeast Baranof normally begin after the first week of August and openings will be based on inseason assessment of run strength.

Parent-year escapements of pink salmon were generally poor throughout Section 9-B with only one stock group within management targets. Parent-year escapements were mediocre to the lower Kuiu Island systems including Tebenkof Bay, generally poor to the upper Kuiu Island systems, and poor to the southeast Admiralty Island systems. Limited openings can be expected to start around August 6 and will likely be focused in lower Section 9-B. The escapement index for District 9 was 0.67 million fish and within the 0.63 to 1.50 million management target range.

Pink salmon escapements in District 14 were well below the management target range in 2014. As a result, openings to harvest local stocks at Idaho Inlet and Port Althorp in late July or early August may occur only if returns in excess to escapement needs are observed inseason. The Whitestone shoreline area in District 14 may be open in late July or early August with opening times and areas dependent upon observed strengths of local pink salmon stocks. ADF&G will also monitor pink salmon escapements in streams adjacent to Porpoise Islands along Homeshore, and will consider purse seine openings in this area if there are harvestable pink salmon surplus to escapement needs.

Openings in District 12 along the Catherine Island shoreline and in portions of Kelp Bay, may occur beginning from mid-July to early August to harvest surplus pink or chum salmon returning to Kelp Bay streams, or to harvest surplus chum salmon returning to Hidden Falls if wild chum and pink salmon escapements are being met. The parent year escapement index of pink salmon to Kelp Bay streams was only 10,500 fish, well below the 60,000 lower management target range. Because of the poor pink salmon escapements, seine openings in Kelp Bay or on the Catherine Island shoreline in 2016 are not expected. Any openings to harvest pink salmon will be based on inseason assessment of run strength. Chum salmon escapements to Clear River in South Arm have been well below historical averages since 2002, and chum salmon escapements to Ralph's Creek in Middle Arm Kelp Bay streams have generally been consistent with long term averages. If strong returns of chum salmon are observed in Middle Arm, openings directed at chum salmon are possible but only if openings will not impact pink salmon escapements.

### **Hawk Inlet Shore Fishery**

The Admiralty Island shoreline between Funter Bay and Point Marsden in Chatham Strait is known as the Hawk Inlet shoreline. Purse seine openings may occur in this area to harvest pink salmon stocks migrating northward to Taku River, Lynn Canal, and Stephens Passage. During July, the department will manage the Hawk Inlet Shore fishery in accordance with the *Northern Southeast seine fishery salmon management plans*. This plan stipulates that any portion of the area north of Point Marsden may be opened when a harvestable surplus of pink salmon is observed. Openings must also consider the conservation of all salmon species, and the area must be closed in July after 15,000 wild sockeye salmon have been harvested. All wild sockeye salmon harvested by any purse seine boat the department identifies as fishing north of Point Marsden in District 12 during any July fishing period when other nearby areas (Point Marsden to Point Hepburn, Whitestone Shore, or the Point Augusta Test Fishery) are open concurrently, will be counted against the 15,000 wild sockeye salmon limit for the Hawk Inlet fishery. During openings, the department will utilize fishery overflights, on-the-grounds sampling, interviews, and fish tickets to estimate the sockeye salmon harvest north of Point Marsden. Otolith analysis will be utilized to determine the enhanced sockeye salmon component in the harvest. At the 2015

BOF meeting, the *Northern Southeast seine salmon fishery management plans* was amended to include wild sockeye salmon harvested in common property fisheries in the Amalga Harbor SHA in the 15,000 wild sockeye salmon limit for the Hawk Inlet fishery. Up to 2,000 wild sockeye salmon harvested in the Amalga Harbor SHA fisheries will be included in the 15,000 wild fish July harvest limit only if the entire common property harvest area is opened. This regulation will sunset after the 2017 season.

During August, openings along the Hawk Inlet shore may extend northward to the latitude of Hanus Reef Light or Point Couverden, if north-migrating pink salmon stocks are strong. If north-migrating salmon returns are poor, and south-migrating returns are strong, seining will be allowed only south of Point Marsden.

Openings along the Hawk Inlet shore north of Point Marsden are based on the observed run strength of north-migrating stocks of pink salmon. The assessment methods used by the department to determine if run strengths are adequate and a harvestable surplus of pink salmon is available for harvest include:

1. Parent-year escapement of pink salmon stocks for Lynn Canal, Stephens Passage, and Taku River: Lynn Canal and Stephens Passage escapements were well below their management target ranges. Of the three stocks in this area, Lower Lynn Canal and Upper Lynn Canal escapement indices were 4% and 5% of the recent even year average and Stephens Passage was 25% of the even-year average. The 2014 Taku River fish wheel pink salmon catch was 25% of the recent even-year average.
2. Inseason test fishing at designated locations along the Admiralty Island shoreline north of Point Marsden.
3. Inseason aerial assessments of pink salmon abundance along the Admiralty Island Shoreline north of Point Marsden.
4. 2016 pink salmon catches in the department's Taku River fish wheels.
5. 2016 pink salmon marine sport fish catch rates in the Juneau area (lower Lynn Canal and upper Stephens Passage).
6. 2016 fishery performance of Districts 11 and 15 drift gillnet fisheries.

### **Outside Fishing Areas (Sections 13-A and 13-B)**

Management of Sections 13-A and 13-B, along the outer coasts of Baranof and Chichagof Islands, is distinct from the management of the northern inside areas. Salmon returning to these areas enter directly from the ocean and do not pass through major inside migration corridors. In Section 13-A, parent-year pink salmon escapement indices were above management target ranges for Portlock Harbor and Slocum Arm stock groups, and within the management target range for the Lisianski and Salisbury Sound stock groups. Openings can be expected to begin around the third week in July depending upon observed pink salmon abundance. In Section 13-B, parent-year pink salmon escapement indices for Sitka Sound, Whale Bay, and West Crawfish Inlet were above their management target ranges. Purse seine fisheries can be expected in all of these areas depending on inseason observations. Purse seine openings could begin as early as mid-July.

Extended or continuous fishing opportunities may be provided on specific stock groups in Sections 13-A and 13-B if run size and fleet distribution allow for it. Consecutive 15-hour openings will also be considered as a management option to 39-hour or continuous openings at intermediate run sizes in order to ensure escapement needs will be met.

Summer chum salmon returns will be monitored to determine run strengths beginning in early July. If harvestable surpluses can be identified, purse seiners may expect portions of Sections 13-A and 13-B to be open by mid-July. Openings are possible in Whale Bay, West Crawfish Inlet, Slocum Arm, and Portlock Harbor.

Short purse seine openings to harvest sockeye salmon along the outer coast of Baranof Island may occur in early July to target fish returning to Necker Bay, and in early August to target returns to Redfish Bay. Openings will be dependent on inseason observations of run strength and a cautious approach will be used to ensure that escapement needs and subsistence fishery needs are met. Targeted sockeye salmon openings are also a possibility at Redoubt Bay beginning around mid-July provided that the inseason forecast, based on historic run timing and inseason enumeration of sockeye salmon through a weir operated by the United States Forest Service, indicates that an escapement greater than 40,000 will occur.

### **Fall Chum Salmon Fisheries**

Portions of Northern Southeast Alaska support returns of fall-run chum salmon that are harvested by purse seine gear. Fishing in Security Bay and Port Camden typically occurs the first several weeks in September. Openings targeting fall chum salmon will be based on observed run strength. Fishing opportunities in Excursion Inlet may occur in late August or early September dependent on run strength. Parent-year escapements to Excursion River were below the SEG range of 4,000–18,000 spawners in 2011 and 2012. Escapements in 2011 were 48% of average and the primary brood year of 2012 was 32% of the previous 10-year average. Southwest Admiralty Island streams do not have a good time series of survey data relating to fall chum salmon escapement. These systems will be monitored, and targeted purse seine fisheries can occur if harvestable surpluses are identified. In Section 13-B, targeted fall chum salmon openings may occur in Nakwasina Sound and Katlian Bay; however, opportunities are most often concurrent with pink salmon fisheries in Sitka Sound. Fall chum salmon fisheries will be managed based on observations of run strength in the bays beginning in mid-August and continuing through September.

### **Hidden Falls Terminal Hatchery Fishery**

The Hidden Falls Hatchery, operated by the Northern Southeast Regional Aquaculture Association (NSRAA), expects a run of 1,433,000 chum salmon in 2016. NSRAA needs 190,000 chum salmon for broodstock leaving 1,243,000 chum salmon available for common property harvests. NSRAA intends to use a tax assessment on the common property harvest of chum salmon to satisfy cost recovery needs as provided under AS 16.10.455. In 2014, the law was amended to allow NSRAA to recommend either an assessment based on the percentage of value or to assess a fixed amount on a per pound basis of chum salmon landed. For the 2016 season, the NSRAA Board has recommended to the Department of Revenue an assessment rate of ten cents (\$0.10) per pound of harvested chum salmon. The *Hidden Falls Hatchery Terminal Harvest Area Salmon Management Plan* (5 AAC 33.374(f)) stipulates that the department may, by emergency order, open a joint common property/cost recovery special assessment fishery for chum salmon as specified in AS 16.10.455 within an area defined as the waters of Section 12-A

south of 57°27.00' N. latitude, north of 57°01.00' N. latitude, and west of a line from 57°27.00' N. latitude, 134°45.50' W. longitude to 57°01.00' N. latitude, 134°41.50' W. longitude, from June 15 through July 31. In other words, all chum salmon that are landed by a vessel that reports on a fish ticket, all or a portion of the harvest was from Subsections 112-11, 112-21, or 112-22, between the dates of June 15 and July 31, will be assessed the tax. Fish ticket reporting requirements will be strictly monitored and enforced to ensure compliance with the tax assessment program. NSRAA will deploy observers on the grounds to document participating vessels to further facilitate enforcement.

The first purse seine opening at Hidden Falls is scheduled for June 19. In the event that a large abundance of chum salmon develops early, the Hidden Falls THA may open prior to June 19. As usual, purse seiners are advised that openings at Hidden Falls during the 2016 season may be announced with a minimum 24-hour notice, if necessary, in order to maximize fish quality. Under the tax assessment plan, mid-week openings can be expected throughout the run unless closures are necessary to meet broodstock requirements.

The *Hidden Falls Hatchery Terminal Harvest Area Salmon Management Plan* provides guidelines for allocation of hatchery produced chum and king salmon in the Hidden Falls THA. The management plan describes different management approaches through June 30 and beginning July 1. If it becomes necessary to close a purse seine fishery to chum salmon that is scheduled in this plan in June, in order to achieve broodstock goals, then troll retention of chum salmon in the THA will be prohibited as long as at least seven days remain until July 1. Also, provided that some trollers are present, in order to allow increased troll access to king salmon, Kasnyku Bay will be closed to purse seining in June, west of a line from North Point to the westernmost tip of Round Island and north of the latitude of the westernmost tip of Round Island. Beginning July 1, areas within the THA may be closed to protect chum or king salmon broodstock and trollers may only retain chum salmon in numbers not exceeding the total number of king salmon on board.

The Hidden Falls THA boundary definition has been modified to provide for easier enforcement and compliance with the THA boundaries. Rather than the use of range markers at the northern and southern boundaries, these boundaries will be defined by points indicated by markers on the Baranof Island shoreline to offshore coordinates. A line between the two offshore coordinates will also define the outer boundary as a straight line approximately two miles offshore of Baranof Island. The new definition will describe the Hidden Falls THA as the waters of Chatham Strait, Kasnyku Bay, and Takatz Bay, within the boundaries of a line from South Point, as indicated by a marker at 57°16.28' N. latitude, 134°51.78' W. longitude to a point offshore at 57°16.28' N. latitude, 134°48.00' W. longitude, then running south to a point at 57°06.76' N. latitude, 134°43.00' W. longitude then due west to a point on the Baranof Island shoreline approximately one mile south of Takatz Bay at 57°06.76' N. latitude, 134°47.50' W. longitude. During some years, the boundary of the Hidden Falls THA has been extended north to include Kelp Bay and the Catherine Island shoreline south of the Point Lull Light when wild chum salmon escapements to Kelp Bay streams have been strong and there are indications of good pink salmon abundance in the Chatham Strait corridor. A contraction of the offshore boundary of the Hidden Falls THA to less than two miles off the Baranof Island shoreline may occur if pink salmon escapements to neighboring areas are lacking and are unlikely to meet escapement goals. Any boundary expansions or area contractions will be determined based on inseason observations of run strength.

## **Deep Inlet Terminal Hatchery Fishery**

The terminal hatchery fishery at Deep Inlet will be managed jointly with NSRAA and according to regulatory management plans. The open purse seine and gillnet fishing times and any modifications of the terminal fishing area will be announced by ADF&G news release prior to and during the fishing season.

### **Terminal Area–Deep Inlet [5 AAC 33.376]**

NSRAA expects runs of 1,782,000 chum, 31,200 king, and 62,000 coho salmon to the Deep Inlet remote release site and the Medvejie Hatchery in 2016. This season 90,000 chum salmon are needed for broodstock, and up to 400,000 chum salmon are needed for cost recovery, depending on price. NSRAA anticipates a closure of the THA in early August will be necessary to complete cost recovery needs. The majority of the common property harvest can be expected to take place in the Deep Inlet THA by drift gillnet and purse seine gear, but some harvest is likely to occur outside the THA by troll and purse seine gear as well.

The Deep Inlet THA fishery will be managed in accordance with the *District 13: Deep Inlet Terminal Harvest Area Salmon Management Plan* (5 AAC 33.376). The plan provides for distributing the harvest of hatchery-produced salmon between the purse seine and drift gillnet fleets. The BOF, during its March 2015 meeting, passed regulations requiring the time ratio for drift gillnet openings to purse seine openings as 2:1 for the 2015 – 2017 seasons; except from the third Sunday in June through statistical week 30, the time ratio for drift gillnet openings to purse seine openings is 1:1. However, if the postseason preliminary enhanced salmon harvest value data from the previous season indicates the purse seine gear group is within its enhanced salmon allocation percentage range, based on the five-year rolling average as described in 5 AAC 33.364, the time ratio for drift gillnet openings to purse seine openings is 2:1 for the entire season. The BOF also allowed trolling to occur when net fisheries are closed.

During king salmon management (May 29 to June 18), drift gillnet fishing is scheduled on Mondays, Tuesdays, Thursdays, and Fridays, and purse seine fishing is scheduled on Sundays and Wednesdays. During the first portion of chum salmon management (June 19 thru July 23) drift gillnet fishing is scheduled on Mondays, Tuesdays, and Wednesdays, and purse seine fishing is scheduled on Sundays, Thursdays, and Fridays. During the second portion of chum management (July 24 thru October 1), drift gillnet fishing is scheduled on Mondays, Tuesdays, Thursdays, and Fridays, and purse seine fishing is scheduled on Sundays and Wednesdays. Details of the rotational fishery schedule for Deep Inlet were announced in an ADF&G news release on April 7, 2016. When changes are necessary the revised schedule will be issued in a subsequent news release.

The terminal harvest area during the 2016 season will be as follows:

**Deep Inlet THA:** Deep Inlet, Aleutkina Bay, and contiguous waters south of a line from a point west of Pirates Cove at 56°59.35' N. latitude, 135°22.63' W. longitude, to the westernmost tip of Long Island to the easternmost tip of Long Island to the westernmost tip of Emgeten Island to the westernmost tip of Error Island to the westernmost tip of Berry Island to the southernmost tip of Berry Island to the westernmost tip of the southernmost island in the Kutchuma Island group to the easternmost tip of the southernmost island in the Kutchuma Island group to the westernmost tip of an unnamed island at 57°00.30' N. latitude, 135°17.67' W. longitude, to a point on the southern side of the unnamed island at 57°00.08' N. latitude, 135°16.78' W. longitude, and then to a point

on the Baranof Island Shore at 56°59.93' N. latitude, 135°16.53' W. longitude, with the following restrictions:

**Sandy Cove:** will be closed.

During the 2016 season, the boundaries of the Deep Inlet THA may be changed by NSRAA and ADF&G to help resolve conflicts between fishermen and local private landowners in the area if they occur. Conflicts can be avoided by reducing boat wakes in areas near private docks, by reducing excessive noise and lights prior to openings, and by anchoring well away from private residences.

In order to promote full utilization of salmon, to prevent waste of salmon, to determine harvest patterns of incidentally harvested coho and sockeye salmon, and to allow full and accurate reporting of returns, the Deep Inlet THA fishery will be managed in 2016 by emergency order under authority of 5 AAC 39.265 *Full Retention and Utilization of Salmon*. This requires that all salmon harvested in net fisheries are retained, utilized, and reported on fish tickets whether they are sold or retained for personal use.

In early September, the Deep Inlet THA boundaries may be adjusted by ADF&G to reduce harvest of wild coho salmon returning to Salmon Lake or hatchery coho salmon returning to Medvejie Hatchery needed for broodstock. THA boundary adjustments to protect coho salmon will be based on historical run timing and inseason observations of abundance. Since voluntary compliance with reporting of coho salmon in the Deep Inlet THA fishery has in the past been poor and the department needs detailed information on coho and sockeye salmon harvest patterns, personnel from ADF&G or Alaska Wildlife Troopers may board some vessels and conduct hold inspections to ensure compliance.

### **Gunnuk Creek Hatchery Returns**

Chum salmon returns to Gunnuk Creek Hatchery at Kake and Southeast Cove on northeast Kuiu Island in Keku Strait have been generally poor in recent years. These returns occur primarily in July and are taken incidentally in purse seine fisheries in Chatham Strait and western Frederick Sound during that time period. Forecasts of hatchery fish returning to Southeast Cove and Gunnuk Creek have generally been unreliable and runs have been much lower than forecasted. Only a partial forecast is available for 2016 since the Kake Non-Profit Hatchery Association ceased operations in 2014. Also since the Gunnuk Creek hatchery is no longer operating, 100% of the hatchery produced salmon returning to Southeast Cove and Gunnuk Creek will be harvested for cost recovery. NSRAA has assumed responsibilities for releasing chum salmon at Southeast Cove. The first returns of NSRAA released chum salmon will occur in 2016 with an expected total run of 167,000 fish.

### **Amalga Harbor Special Harvest Area Fishery**

In order to increase the common property share of enhanced chum salmon production, Douglas Island Pink and Chum, Inc. (DIPAC) anticipates continuing with common property purse seine opportunities in the Amalga Harbor SHA in 2016. Decisions about these openings will be based on run strength of enhanced chum, progress toward DIPAC cost recovery goals, expected effort levels, and considerations for nontarget species. Openings may occur in Section 11-A, and will be limited to a portion of the Amalga Harbor SHA, Subdistrict 111-55. These openings may occur in July, will only be on Thursdays, and will be limited to 6 hours (9:00 a.m.–3:00 p.m.). If there are conservation concerns for nontarget species in nearby systems, the open area or time

may be reduced. Details of the open area and times will be included in the normal purse seine news release at the appropriate time.

Table 4.—Expected 2016 returns to Northern Southeast Alaska area enhancement projects by hatchery organization and release location.

Species	Release Location	Common Property Harvest	Cost Recovery	Broodstock	Total Return
<b>NSRAA</b>					
Chum	Medvejie/Deep Inlet	1,372,000	320,000	90,000	1,782,000
Chum	Hidden Falls	1,243,000	0	190,000	1,433,000
Chum	SE Cove	25,000	141,000	0	166,000
King	Medvejie/Deep Inlet	18,408	8,792	4,000	31,200
King	Hidden Falls	3,400	0	2,000	5,400
Coho	Hidden Falls	77,300	106,700	10,000	187,000
Coho	Deer Lake (Mist Cove)	82,500	67,500	NA	145,000
Coho	Deep Inlet/Medvejie	59,280	NA	2,720	62,000
<b>Armstrong Keta, Inc.</b>					
Pink	Port Armstrong	Unavailable	Unavailable	Unavailable	1,419,000
Chum	Port Armstrong	Unavailable	Unavailable	Unavailable	519,000
Coho	Port Armstrong	Unavailable	Unavailable	Unavailable	194,000
King	Port Armstrong	Unavailable	Unavailable	Unavailable	3,200
<b>Sitka Sound Science Center</b>					
Pink	Crescent Bay	41,000	20,000	5,000	66,000
Chum	Crescent Bay	17,000	7,400	3,600	28,000
Chum	Deep Inlet	130,000	87,000	0	217,000
Coho	Crescent Bay	2,000	1,200	200	3,400
<b>Gunnuk Creek Hatchery</b>					
Chum	SE Cove	Unavailable	Unavailable	0	Unavailable
Chum	Kake	Unavailable	Unavailable	0	Unavailable
<b>DIPAC</b>					
Chum	Lynn Canal/Amalga	1,208,000	420,000	0	1,628,000
Chum	Taku/Stephens Passage	459,000	294,000	140,000	893,000

(Note: Common property harvest estimates of king and coho salmon include sport harvest).

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