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**Summary of Pacific Salmon Escapement Goals in
Alaska with a Review of Escapements from 2005 to
2013**

by

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and

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June 2014

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient (simple)	r
		corporate suffixes:		covariance	cov
Weights and measures (English)		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft ³ /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	≥
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia	e.g.	less than or equal to	≤
pound	lb	(for example)		logarithm (natural)	ln
quart	qt	Federal Information Code	FIC	logarithm (base 10)	log
yard	yd	id est (that is)	i.e.	logarithm (specify base)	log ₂ , etc.
		latitude or longitude	lat or long	minute (angular)	'
Time and temperature		monetary symbols (U.S.)	\$, ¢	not significant	NS
day	d	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
degrees Celsius	°C	registered trademark	®	percent	%
degrees Fahrenheit	°F	trademark	™	probability	P
degrees kelvin	K	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	α
hour	h	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	β
minute	min	U.S.C.	United States Code	second (angular)	"
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
Physics and chemistry				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
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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WITH A REVIEW OF ESCAPEMENTS FROM 2005 TO 2013**

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and
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ABSTRACT

This report summarizes statewide Pacific salmon escapement goals in effect in 2013 and documents escapements for all species and stocks with goals from 2005 through 2013. Annual escapements are compared against escapement goals in place at the time to assess outcomes, with summaries by the Division of Commercial Fisheries regions. This report also lists methods used to enumerate escapements and to develop current escapement goals (with brief descriptions) for each monitored stock.

Key words: escapement, escapement goals, Chinook salmon, sockeye salmon, coho salmon, pink salmon, chum salmon, Alaska Board of Fisheries, statewide, Alaska

INTRODUCTION

Scientifically defensible Pacific salmon escapement goals are a central tenet of fisheries management in Alaska. Escapement goals are founded in the sustained yield principle highlighted in the State Constitution (Article VIII, section 4) and in state statute (AS 16.05.020). Several policies in Alaska Administrative Code also provide guidance for establishing escapement goals, including the policy for the management of sustainable salmon fisheries (5 AAC 39.222), the policy for statewide salmon escapement goals (5 AAC 39.223), and the policy for the management of mixed stock fisheries (5 AAC 39.220). These policies provide detailed definitions of specific escapement goal types, outline the responsibilities of the Alaska Department of Fish and Game (department) and the Alaska Board of Fisheries (board) in establishing goals, and provide general direction for development and application of escapement goals in Alaska. Currently, there are 296 active salmon stock escapement goals throughout the state of Alaska (Figure 1).

It is the responsibility of the department to document, establish, and review escapement goals, prepare scientific analyses in support of goals, notify the public when goals are established or modified, and notify the board of allocative implications associated with escapement goals. The foundation for this effort is regional or area escapement goal review teams assembled every three years to review goals, recommend changes, establish new goals, or eliminate goals. The teams encompass broad expertise in biological characteristics of salmon stocks and technical approaches for establishing goals. Scientific staff from headquarters may assist regional teams and address issues of general importance for escapement goal development and application in Alaska. A detailed regional report of escapement goal recommendations is presented to the board and the public at triannual board meetings for that region or area. Following the board meeting, recommended goals are presented to the directors of the divisions of Commercial Fisheries and Sport Fish for approval.

Although development of regional escapement goals are exhaustively detailed in regional reports and supporting documents, this statewide summary report allows readers to examine the goals and escapements for salmon stocks in a single document. It provides an overview of salmon stocks for which goals exist, including a numerical description of the goal, type of goal, year the current goal was first implemented, and recent years' escapement data for each stock. In addition, summary statistics documenting performance in achieving goals is presented, including a statewide summary of stocks with yield or management concerns, as recommended by the department and established by the board. Data presented in this document is the most recently available at the time of publication and supersedes data in previous annual statewide escapement reports. This report will be a useful resource for department staff, stakeholders, and the public.

METHODS

We reviewed department escapement goal reports and supporting documents to catalog current escapement goals in each region for all 5 species of Pacific salmon, including information on stock name, type of goal, numerical description of the goal, and the year it was implemented (i.e., the first season that the goal was used to manage escapements). Regional and area staff from the divisions of Commercial Fisheries and Sport Fish provided the most current escapement estimates from 2005 through 2013 for each stock with an established escapement goal. The escapement goals listed are those in effect during the 2013 spawning season, including escapement goals that were established or updated during the 2012/2013 board meeting cycle (Appendices A, B, and C) and outside of the normal board meeting cycle for their given area (Appendices D, E, and F).

Escapements from 2005 through 2013 were compared against escapement goals in place at the time of enumeration to assess outcomes in achieving goals. Escapements for a particular stock were classed as *Under* if escapement for a given year was less than the lower bound of the escapement goal. If escapement fell within the escapement goal range or was greater than a lower-bound goal, we considered the goal *Met*. Where escapement exceeded the upper bound of an escapement goal range, it was classed as *Over*. Where escapement goals or enumeration methods changed between 2005 and 2013 for a stock, we assessed outcomes by comparing escapement estimates with the goal and methods in place at the time of the fishery. Information on previous escapement goals and methods came from a detailed review of regional escapement goal reports, supporting documents, and conversations with regional and area biologists.

METHODS OF ESCAPEMENT GOAL DEVELOPMENT

A variety of methods are used to develop escapement goals in Alaska and brief descriptions of each are summarized below. The most commonly used methods are listed first, followed by less common methods.

Percentile Method: A method for establishing sustainable escapement goals (SEG) developed by Bue and Hasbrouck.¹ Contrast of the observed annual escapements (largest escapement divided by smallest escapement) and exploitation rate of the stock are used to select percentiles of observed escapements for estimating lower and upper bounds of the escapement goal.

Spawner–Recruit Analysis (SRA): Analysis of the relationship between escapement (number of spawners) and subsequent production of recruits (i.e., adults) in the next generation. There are several SRA models, but the Ricker production model (Ricker 1954) is almost exclusively used for salmon populations in Alaska.

Risk Analysis: Risks of management error (unneeded management action or mistaken inaction) in future years are estimated based on a precautionary reference point established using past observations of escapement (Bernard et al. 2009). This method is primarily used to guide establishment of a lower-bound SEG for nontargeted stocks of salmon.

¹ Bue, B. G., and J. J. Hasbrouck. Escapement goal review of salmon stocks of Upper Cook Inlet. Alaska Department of Fish and Game, Report to the Alaska Board of Fisheries, November 2001 (and February 2002), Anchorage, unpublished document.

Yield Analysis: Graphical or tabular examination of yields produced from observed escapement indices from which the escapement range with the greatest yields is identified in Hilborn and Walters (1992).

Theoretical Spawner–Recruit Analysis (Theoretical SRA): Used in situations with few or no stock-specific harvest estimates and/or age data. Information from nearby stocks, or generalizations about the species, are used in a spawner–recruit production model to estimate the number of spawners needed to achieve maximum sustained yield (e.g., Clark 2005).

Empirical Observation: Goal development methods classified as “Empirical Observation” generally are *ad hoc* methods for stocks with limited or sparse data. Goals are based on observed escapements over time and may be calculated as the average escapement or the value of a low escapement for which there is evidence that the stock is able to recover, e.g., Norton Sound pink salmon escapement goals (ADF&G 2004).

Zooplankton Model: This model estimates the number of sockeye salmon *Oncorhynchus nerka* smolt of a threshold or optimal size that a lake can support based upon measures of zooplankton biomass and surface area of the lake (Koenings and Kyle 1997). Adult production is then estimated from predicted smolt production by applying marine survival rates for a range of smolt sizes.

Spawning Habitat Model: Estimates of spawning capacity or number of spawners that produce maximum sustained yield are based on relationship with watershed area, available spawning habitat in a drainage, or stream length. Spawning habitat models have been developed for sockeye salmon (Burgner et al. 1969), coho salmon *O. kisutch* (Bradford et al. 1999; Bradford et al. 1997), and Chinook salmon *O. tshawytscha* (Parken et al. 2004).

Euphotic Volume (EV) Model: Measurement of the volume of a lake where enough light penetrates to support primary production (i.e., euphotic volume) is used to estimate sockeye salmon smolt biomass (Koenings and Burkett 1987) from which adult escapement is then estimated using marine survival rates.

Lake Surface Area: Similar to spawning habitat models, the relationship between the lake surface area and escapement are used to estimate adult sockeye salmon production (Honnold et al. 1996; Nelson et al. 2006).

Conditional Sustained Yield Analysis: Observed escapement indices and harvest are used to estimate whether, on average, surplus production (yield) results from a particular goal range (Nelson et al. 2005). Estimated expected yields are conditioned on extreme values of measurement error in the escapement indices.

Brood Interaction Simulation Model: This model simulates production using a spawner–recruit relationship that modifies the simulated production for the year of return using an age-structured submodel and estimates resulting catches and escapements under user-specified harvest strategies (Carlson et al. 1999). This is a hybrid of a theoretical SRA and yield analysis that has only been used to develop the escapement goal for Kenai River sockeye salmon.

RESULTS AND DISCUSSION

Summaries of estimated escapements and escapement goals for each monitored salmon stock from 2005 to 2013 are presented by region and species in Tables 1–4. Although most information was available through regional escapement goal reports, 2013 data were often

obtained directly from area and regional biologists. Data for 2013 are often preliminary estimates because complete data regarding subsistence and sport harvests are often not available immediately following the season.

During the 2012/2013 Board of Fisheries meeting cycle, Bristol Bay, Alaska Peninsula/Aleutian Islands, and Arctic-Yukon-Kuskokwim (AYK) management areas reviewed their escapement goals. Escapement goal changes for Bristol Bay included the elimination of three goals, revision of three goals, and establishment of two goals (Appendix A). The Chinook salmon escapement goals for Egegik and Togiak rivers and the sockeye salmon goal for Kulukak Bay were eliminated because of the inability to consistently assess escapements of these species in these systems. In addition, escapement goals were revised for Nushagak River Chinook, chum, and sockeye salmon and established for coho and pink salmon. The changes in escapement goals were a result of reassessment of escapement in terms of the current DIDSON system as opposed to the Bendix sonar system on which the previous goals were based.

In the Alaska Peninsula/Aleutian Islands management area, four lower-bound SEGs were eliminated (Appendix B). Thin Point Lake coho salmon and Unimak District chum salmon escapement goals were eliminated because there is little directed fishing effort on these stocks and the ability to assess escapement is limited. The odd- and even-year escapement goals for Bechevin Bay pink salmon were eliminated because escapement estimates were determined to be unreliable.

Escapement goal changes for the AYK Region included the establishment of one goal, revision of three goals, and elimination of two goals (Appendix C). A drainagewide escapement goal for Kuskokwim River Chinook salmon was established for the first time as a result of the completion of a run reconstruction for the system. The escapement goals for the George, Kogrukuk, and Kwethluk rivers (tributaries to the Kuskokwim River) were revised to be proportional to the drainagewide goal based on the proportion that each of these systems contributes to the total escapement of the system. Two other Kuskokwim River tributary goals for Chinook salmon were eliminated because of the inability to obtain consistent and reliable aerial survey escapement estimates. The Kanektok River chum salmon escapement goal was eliminated for the same reason as the Kuskokwim goals.

A number of goals were established or revised *out of cycle* in 2013. In Southeast Region, Chinook and sockeye salmon escapement goals for the Klukshu River (a tributary to the Alsek River) were revised and goals were established for both species for the Alsek River (Appendix D). Also in the Southeast Region, an escapement goal for Klawock coho salmon was established (Appendix E). In Central Region, escapement goals for early- and late-run Kenai River Chinook salmon were revised (Appendix F). These are interim goals that were established as the department transitions to assessment of Chinook salmon using DIDSON and future plans to relocate the assessment project.

A summary of escapement goal types for all species by region indicate that the majority of goals in Central, Westward, and AYK regions are SEGs, including lower-bound SEGs, with biological escapement goals (BEG) making up a smaller proportion of goals (Figure 1a). The reverse is true for Southeast Region, where most goals are BEGs. Escapement goals for sockeye and Chinook salmon compose over 50% of all escapement goals statewide, with the majority of goals for each species being SEGs (Figure 1b). Optimal escapement goals (OEG) and inriver goals imposed by

the board, management targets, and goals based upon international agreements collectively represent a small proportion of escapement goals in Alaska.

Use of different escapement goal types for each salmon species is summarized by Division of Commercial Fisheries regions (Figures 2–5). Among the four regions, there are some distinct differences in the distribution of goal types by salmon species. In Southeast Region, the majority of goals are BEGs, which include all but one pink salmon *O. gorbuscha* goal and all but one Chinook salmon goal, as well as over 60% of the coho salmon goals and 50% of the sockeye salmon goals (Figure 2). This is sharply contrasted with Central Region, where the majority of all goals are SEGs, with three sockeye salmon stocks representing the only BEGs (Figure 3). AYK Region has the only BEGs for chum salmon in the state, with additional BEGs for three Chinook and one sockeye salmon stock (Figure 4). All Chinook salmon stocks in Westward Region are BEGs, but compared to Southeast, a much smaller proportion of coho and sockeye salmon goals are BEGs (Figure 5). These are broad generalizations immediately apparent from our summary. There are many reasons that goal types would be different between regions, including fishery structure, stock assessment capacity, and technical approaches.

Summary comparisons of actual estimated escapements with escapement goals in place at the time are shown in Tables 5–8, highlighting whether the goal was exceeded, met, or not met. Numerous footnotes contain important information about changes in stock assessment methods or goal ranges during that time, and are essential for a thorough understanding of the escapement estimates and evaluations of outcomes against goals. Summaries of outcomes in achieving goals are presented by species (Tables 9–12) and region (Tables 13–16; Figures 6–9). Between 2005 and 2007, it was typical to observe greater than 85% success in achieving minimum escapement goals for all species in all regions (Figures 6–9; Tables 9–12). In recent years, the proportion of escapements falling below the lower bound of goals has increased in all regions (Figures 6–9; Tables 9–12). Statewide, the percentage of escapement goals within the goal range (or above the lower bound if a lower-bound SEG) has been between 40% and 59% since 2005 (Figure 10a). In recent years there has been an increase in the percentage of goals not achieved and a decrease in the percentage of goals exceeded, when compared to previous years (Figures 10b and 10c). Because meeting escapement goals is fundamental to department efforts to manage for sustainable salmon stock productivity, it is important to document outcomes for meeting these goals. Where escapements chronically (4–5 years) fail to meet expectations for harvestable yield or spawning escapements, the department may recommend—and the board may adopt—a *stock of concern* designation for those underperforming salmon stocks. The policy for the management of sustainable salmon fisheries (5 AAC 39.222) provides specific definitions for stocks of concern. Yield concerns arise from a chronic inability to maintain expected yields or harvestable surpluses above escapement needs. Management concerns are precipitated by a chronic failure to maintain escapements within the bounds or above the lower bound of the established goal. A conservation concern may arise from a failure to maintain escapements above a sustained escapement threshold (SET). Methods to develop stock-specific SETs, as defined in the sustainable salmon fisheries policy, are not well developed for Pacific salmon, and no SETs or stocks of conservation concern exist in Alaska. In 2013 there were 14 stocks of concern in the state (Table 17). Changes from 2012 include the listing of Sheep Creek Chinook salmon in Upper Cook Inlet as a stock of management concern and changing Goose Creek Chinook salmon (also Upper Cook Inlet) from a stock of yield concern to a stock of management concern.

The array of methods used to enumerate salmon for each of the stocks with escapement goals, as well as methods used to assist department staff in developing the escapement goal for a given stock, are summarized by region in Tables 18–21.

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TABLES

Table 1.—Southeast Region Chinook, chum, coho, pink, and sockeye salmon escapement goals and escapements, 2005 to 2013.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON^a													
Blossom River	150	300	BEG	2012	445	339	135	257	123	363	147	205	255
Keta River	175	400	BEG	2012	497	747	311	363	219	475	223	241	493
Unuk River	1,800	3,800	BEG	2009	4,742	5,645	5,668	3,104	3,157 ^b	3,835 ^b	3,195 ^b	956 ^c	1,135 ^c
Chickamin River	450	900	BEG	1997	924	1,330	893	1,111	611	1,156	853	444	468
Andrew Creek	650	1,500	BEG	1998	1,979	2,124	1,736	981	628	1,205	936	587	920
Stikine River	14,000	28,000	BEG	2000	39,833	24,405	14,560	18,352	12,803 ^b	15,116 ^b	14,480 ^b	22,327 ^b	16,735 ^b
King Salmon River	120	240	BEG	1997	143	150	181	120	109	158	192	155	94
Taku River	19,000	36,000	BEG	2009	38,599	42,296	14,749	26,645 ^b	29,797 ^b	28,769 ^b	27,523 ^b	19,429 ^b	18,002 ^b
Chilkat River	1,850	3,600	inriver ^d		3,366	3,039	1,445	2,905	4,429	1,815	2,688 ^b	1,744 ^b	1,730 ^b
	1,750	3,500	BEG	2003									
Klukshu (Alek) River	800	1,200	BEG	2013	1,034	568	676	466	1,466	2,159	1,667	693 ^b	1,261 ^b
Alek River ^e	3,500	5,300	BEG	2013	4,478	2,323	2,827	1,885	6,239	9,518	6,668	2,660 ^b	5,044 ^b
Situk River	450	1,050	BEG	2003	610	747	677	413	902	166 ^f	240	322	912
CHUM SALMON													
Southern Southeast Summer	54,000		lower-bound SEG	2012	66,000	76,000	132,000	13,000	41,000	47,000	157,000	144,000	84,000
Northern Southeast Inside Summer	119,000		lower-bound SEG	2012	185,000	282,000	149,000	99,000	107,000	77,000	125,000	177,000	278,000
Northern Southeast Outside Summer	19,000		lower-bound SEG	2009	77,000	57,000	34,000	46,000	15,000	24,000	23,000	28,000	18,000
Cholmondeley Sound Fall	30,000	48,000	SEG	2009	15,000	54,000	18,000	49,500	39,000	76,000	93,000	54,000	13,000
Port Camden Fall	2,000	7,000	SEG	2009	2,110	2,420	505	1,400	1,711	5,400	1,800	3,750	2,000
Security Bay Fall	5,000	15,000	SEG	2009	2,750	15,000	5,400	11,700	5,100	6,500	5,100	9,800	3,000
Excursion River Fall	4,000	18,000	SEG	2009	1,100	2,203	6,000	8,000	1,400	6,100	3,000	2,000	8,000
Chilkat River Fall	75,000	170,000	SEG	2009	202,000	681,000	320,000	437,000	326,000	88,000	356,000	284,000	165,000
COHO SALMON													
Hugh Smith Lake	500	1,600	BEG	2009	1,732	891	1,244	1,741	2,281	2,878	2,137	1,908	3,048
Klawock River	4,000	9,000	SEG	2013	9,876	6,800	NA	6,210	5,415	9,707	5,572	7,507	8,323
Taku River ^e	70,000		MT	2013	135,558	122,384	74,369	95,360 ^b	103,950 ^b	126,830 ^b	70,745 ^b	70,742 ^b	68,118 ^b
Auke Creek	200	500	BEG	1994	450	581	352	600	360	417	517	837	736
Montana Creek	400	1,200	SEG	2006	351	1,110	324	405	698	630	709	394	367
Peterson Creek	100	250	SEG	2006	139	439	226	660	123	467	138	190	126
Ketchikan Survey Index	4,250	8,500	BEG	2006	14,840	6,912	4,488	16,680	8,226	4,656	5,202	11,950	11,549
Sitka Survey Index	400	800	BEG	2006	1,668	2,647	1,066	1,117	1,156	1,273	2,222	1,157	1,414
Ford Arm Lake	1,300	2,900	BEG	1994	4,257	4,737	2,567	5,173	2,181	1,610	1,908	2,282	1,573
Berners River	4,000	9,200	BEG	1994	5,220	5,470	3,915	6,870	4,230	7,520	6,050	5,480	6,280
Chilkat River	30,000	70,000	BEG	2006	38,589	80,683	25,493	57,376	48,867	89,124	66,557	38,677	51,324

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Table 1.–Page 2 of 2.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
Lost River	2,200		lower-bound SEG	2009	1,241	3,500	2,542	NA	3,581	2,393	1,221	2,200	2,593
Situk River	3,300	9,800	BEG	1994	2,514	7,950	5,763	NA	5,814	11,195	3,652	3,007	14,853
Tsiu/Tsivat Rivers	10,000	29,000	BEG	1994	16,600	14,500	14,000	25,200	28,000	11,000	21,000	11,000	47,000
PINK SALMON													
Southern Southeast	3,000,000	8,000,000	BEG	2009	9,400,000	4,330,000	10,590,000	6,290,000	7,200,000	5,940,000	5,500,000	6,470,000	14,450,000
Northern Southeast Inside	2,500,000	6,000,000	BEG	2009	6,680,000	3,960,000	4,740,000	1,470,000	3,650,000	3,210,000	6,030,000	2,110,000	5,400,000
Northern Southeast Outside	750,000	2,500,000	BEG	2009	3,840,000	1,960,000	2,310,000	1,730,000	1,820,000	2,010,000	2,730,000	2,470,000	5,340,000
Situk River (even-year)	eliminated			2012		114,779		1,232 ^h		89,301 ^h			
Situk River (odd-year)	eliminated			2012	281,135		229,033		62,787		169,908		
Situk River	33,000		lower-bound SEG	2012								30,548	133,656
SOCKEYE SALMON													
Hugh Smith Lake	8,000	18,000	OEG ⁱ	2003	23,872	42,112	33,743	3,588	9,483	15,646	22,029	13,353	5,946
	8,000	18,000	BEG	2003									
McDonald Lake	55,000	120,000	SEG	2009	61,043	31,357	29,086	20,700	51,000	72,500	113,000	57,000	15,400
Mainstem Stikine River	20,000	40,000	SEG	1987	34,788	27,606	20,865	16,802 ^b	24,575 ^b	25,185 ^b	33,569 ^b	32,752 ^b	32,689 ^b
Tahltan Lake ^j	18,000	30,000	BEG	1993	43,046	53,455	20,874	10,416	30,323	22,702	34,248	13,687	15,828
Speel Lake	4,000	13,000	BEG	2003	7,549	4,165	3,099	1,763	3,689	5,640	4,777	5,681	6,426
Taku River	71,000	80,000	SEG	1986	112,739	145,572	87,763	68,059	74,339	88,428 ^b	112,187 ^b	112,564 ^b	75,323 ^b
Redoubt Lake	7,000	25,000	OEG	2003	65,653	103,953	66,938	10,146	12,851	17,119	21,806	40,903	48,355
	10,000	25,000	BEG	2003									
Chilkat Lake	70,000	150,000	BEG	2009	84,000	73,000	68,000	71,735	150,033	61,906	63,628	107,723	110,979
Chilkoot Lake	38,000	86,000	SEG	2009	51,178	96,203	72,678	33,117	33,705	71,657	65,915	118,166	46,140
East Alsek-Doame River	13,000	26,000	BEG	2003	50,000	29,000	40,100	8,000	12,000	19,500	27,300	21,500	26,500
Klukshu River	7,500	11,000	BEG	2013	3,167	12,890	8,310	2,741	5,509	18,546	20,769	17,176	3,800
Alsek River ^k	24,000	33,500	BEG	2013									
Lost River	1,000		lower-bound SEG	2009	1,476	1,018	180	200	NA	1,525	1,006	453	587
Situk River	30,000	70,000	BEG	2003	66,476	90,351	61,799	22,520	83,959	47,865 ^f	89,943	62,500	118,635

Note: NA = data not available.

^a Goals are for large (≥ 660 mm MEF, or fish age 1.3 and older) Chinook salmon, except the goals for the Klukshu and Alsek rivers, which are germane to fish age 1.2 and older and can include fish < 660 mm MEF.

^b Preliminary data.

^c 2012 and 2013 Unuk River Chinook salmon escapement estimate based on expanded aerial survey index because mark-recapture studies failed.

^d Chilkat River Chinook salmon inriver goal accounts for inriver subsistence harvest that average <100 fish.

^e Klukshu River Chinook salmon escapement is the metric used to manage Chinook salmon for the Alsek River system, which includes the Klukshu River. Alsek River Chinook salmon escapement is estimated using an expansion of the Klukshu River escapement (expansion factor = 4.0, SE=1.98).

^f Incomplete weir count due to inseason problems with weir (e.g., breach of weir; TTC 2014).

^g For the Taku River coho salmon, the management intent of the U.S. is to ensure a minimum above border run (i.e., inriver run) of 70,000 fish as detailed in the 2013 Pacific Salmon Treaty management plan (TTC 2014).

^h Situk River weir was pulled well before peak of pink salmon run, so adequate assessment was not possible.

ⁱ Hugh Smith Lake sockeye salmon OEG includes wild and hatchery fish.

^j Tahltan sockeye salmon escapement count includes fish collected for broodstock.

^k Alsek River sockeye salmon run is not regularly assessed, so escapement numbers are not available. In 2013, Alsek River sockeye salmon were managed to meet Klukshu River escapement goal as per the 2013 management plan (TTC 2014).

Table 2.—Central Region (Bristol Bay, Cook Inlet, and Prince William Sound/Copper River) Chinook, chum, coho, pink, and sockeye salmon escapement goals and escapements, 2005 to 2013.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON													
<i>Bristol Bay</i>													
Nushagak River	55,000	120,000	SEG	2013	223,950	117,364	50,960	91,364	74,781	56,088	102,258	167,618	107,602
Togiak River	eliminated			2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naknek River	5,000		lower-bound SEG	2007	NS	NS	5,498	6,559	3,305 ^a	NS	NS	NS	NS
Alagnak River	2,700		lower-bound SEG	2007	5,084	4,278	3,455	1,825	1,957	NS	NS	NS	NS
Egegik River	eliminated			2013	335	196	458	162	350 ^b	NS	NS	NS	NS
<i>Upper Cook Inlet</i>													
Alexander Creek	2,100	6,000	SEG	2002	2,140	885	480	150	275	177	343	181	588
Campbell Creek	380		lower-bound SEG	2011	1,097	1,052	588	439	554	290	260	NS	NS
Chuitna River	1,200	2,900	SEG	2002	1,307	1,911	1,180	586	1,040	735	719	502	1,690
Chulitna River	1,800	5,100	SEG	2002	2,838	2,862	5,166	2,514	2,093	1,052	1,875	667	1,262
Clear (Chunilna) Creek	950	3,400	SEG	2002	1,924	1,520	3,310	1,795	1,205	903	512	1,177	1,471
Crooked Creek	650	1,700	SEG	2002	1,909	1,516	965	879	617	1,088	654	631	1,103
Deshka River	13,000	28,000	SEG	2011	37,725	31,150	18,714	7,533	11,967	18,594	19,026	14,010	18,531
Goose Creek	250	650	SEG	2002	468	306	105	117	65	76	80	57	62
Kenai River - Early Run	5,300	9,000	OEG	2005	16,650	13,270	9,856	6,570	6,163	6,393	8,448	5,044	2,148
	3,800	8,500	SEG	2013									
Kenai River - Late Run	15,000	30,000	SEG	2013	60,060	48,970	36,950	32,290	21,390	16,210	19,680	27,710	15,395
Lake Creek	2,500	7,100	SEG	2002	6,345	5,300	4,081	2,004	1,394	1,617	2,563	2,366	3,655
Lewis River	250	800	SEG	2002	441	341	0 ^c	120	111	56	92	107	61
Little Susitna River	900	1,800	SEG	2002	2,095	1,855	1,731	1,297	1,028	589	887	1,154	1,651
Little Willow Creek	450	1,800	SEG	2002	1,784	816	1,103	NC	776	468	713	494	858
Montana Creek	1,100	3,100	SEG	2002	2,600	1,850	1,936	1,357	1,460	755	494	416	1,304
Peters Creek	1,000	2,600	SEG	2002	1,508	1,114	1,225	NC	1,283	NC	1,103	459	1,643
Prairie Creek	3,100	9,200	SEG	2002	3,862	3,570	5,036	3,039	3,500	3,022	2,038	1,185	3,304
Sheep Creek	600	1,200	SEG	2002	760	580	400	NC	500	NC	350	363	NC
Talachulitna River	2,200	5,000	SEG	2002	4,406	6,152	3,871	2,964	2,608	1,499	1,368	847	2,285
Theodore River	500	1,700	SEG	2002	478	958	486	345	352	202	327	179	476
Willow Creek	1,600	2,800	SEG	2002	2,411	2,193	1,373	1,255	1,133	1,173	1,061	756	1,752
<i>Lower Cook Inlet</i>													
Anchor River	3,800	10,000	SEG	2011	11,156	8,945	9,622	5,806	3,455	4,449	3,545	4,509	4,388 ^d
Deep Creek	350	800	SEG	2002	1,076	507	553	205	483	387	696	447	475
Ninilchik River	550	1,300	SEG	2008	1,259	1,013	543	586	528	605	668	555	571 ^d
<i>Prince William Sound^f</i>													
Copper River	24,000		lower-bound SEG	2003	21,528	58,454	34,565	32,487	27,787	16,771	27,994	27,395	NA ^e

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Table 2.–Page 2 of 5.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
CHUM SALMON													
<i>Bristol Bay</i>													
Nushagak River	200,000		lower-bound SEG	2013	456,025	661,002	161,483	326,300	438,481	273,914	248,278	395,162	628,134
<i>Upper Cook Inlet</i>													
Clearwater Creek	3,800	8,400	SEG	2002	530	500	5,590	12,960	8,300	13,700	11,630	5,300	9,010
<i>Lower Cook Inlet</i>													
Port Graham River	1,450	4,800	SEG	2002	743	2,231	1,882	1,802	1,029	1,395	1,764	699	1,944
Dogfish Lagoon	3,350	9,150	SEG	2002	2,746	5,394	4,919	6,200	4,380	12,703	12,936	8,842	9,300
Rocky River	1,200	5,400	SEG	2002	6,060	11,200	1,600	3,763	2,500	1,271	4,480	3,165	8,148
Port Dick Creek	1,900	4,450	SEG	2002	4,848	2,786	2,753	11,774	5,592	2,439	7,087	8,400	4,133
Island Creek	6,400	15,600	SEG	2002	20,666	5,615	3,092	12,935	9,295	3,408	11,755	14,863	8,772
Big Kamishak River	9,350	24,000	SEG	2002	25,717	58,173	14,787	4,495	15,026	NS	5,532	12,400	3,280
Little Kamishak River	6,550	23,800	SEG	2002	12,066	42,929	15,569	21,265	4,213	18,414	19,310	30,250	6,744
McNeil River	24,000	48,000	SEG	2008	22,496	17,403	21,629	10,617	18,766	10,520	30,977	10,388	9,498
Bruin River	6,000	10,250	SEG	2002	21,208	7,000	3,055	17,535	10,071	6,200	3,486	16,795	8,942
Ursus Cove	6,050	9,850	SEG	2002	12,176	15,663	20,897	6,502	12,946	11,765	10,636	2,840	10,339
Cottonwood Creek	5,750	12,000	SEG	2002	17,914	13,243	12,522	11,561	19,405	15,848	4,730	4,111	5,206
Iniskin Bay	7,850	13,700	SEG	2002	16,461	15,640	5,340	20,042	30,821	19,252	16,522	3,049	5,928
<i>Prince William Sound^f</i>													
Eastern District	50,000		lower-bound SEG	2006	113,135	109,403	123,814	74,740	55,219	91,514	196,933	61,969	119,110
Northern District	20,000		lower-bound SEG	2006	30,657	52,039	49,669	38,791	37,358	38,207	52,474	14,680	34,240
Coghill District	8,000		lower-bound SEG	2006	11,979	15,900	14,052	39,660	36,724	51,589	16,368	10,281	11,369
Northwestern District	5,000		lower-bound SEG	2006	12,696	25,860	10,778	28,051	34,290	30,074	11,447	7,072	4,746
Southeastern District	8,000		lower-bound SEG	2006	25,547	26,739	60,464	21,614	16,453	85,138	91,218	20,467	35,942
COHO SALMON													
<i>Bristol Bay</i>													
Nushagak River	60,000	120,000	SEG	2013								329,946	207,222
<i>Upper Cook Inlet</i>													
Fish Creek (Knik)	1,200	4,400	SEG	2011	3,011 ^g	4,967 ^g	6,868 ^g	4,868 ^g	8,214	6,977	1,428 ^g	1,237	7,593
Jim Creek	450	700	SEG	2002	1,464	2,389	725	1,890	1,331	242	229	213	987
Little Susitna River	10,100	17,700	SEG	2002	16,839 ^h	8,786 ^h	17,573	18,485	9,523	9,214	4,826 ^h	6,779	13,583
<i>Lower Cook Inlet</i>													
There are no coho salmon stocks with escapement goals in Lower Cook Inlet													
<i>Prince William Sound</i>													
Copper River Delta	32,000	67,000	SEG	2003	101,082	89,270	53,820	76,892	41,294	41,077	38,495	37,010	34,680
Bering River	13,000	33,000	SEG	2003	44,542	33,192	33,062	28,932	22,141	21,311	18,890	15,605	18,820

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Table 2.–Page 3 of 5.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
PINK SALMON													
<i>Bristol Bay</i>													
Nushagak River	165,000		lower-bound SEG	2013								1,348,606	NA
<i>Upper Cook Inlet</i>													
There are no pink salmon stocks with escapement goals in Upper Cook Inlet.													
<i>Lower Cook Inlet</i>													
Humpy Creek	21,650	85,550	SEG	2002	93,756	48,368	53,989	90,870	5,207	70,686	1,670	67,934	6,749
China Poot Creek	2,900	8,200	SEG	2002	9,223	7,242	6,235	5,086	1,120	2,220	3,462	8,392	7,119
Tutka Creek	6,500	17,000	SEG	2002	133,600	25,824	5,664	14,144	3,770	2,141	21,974	10,436	9,541
Barabara Creek	1,900	8,950	SEG	2002	14,440	3,554	25,168	16,557	2,583	13,935	8,186	1,412	17,377
Seldovia Creek	19,050	38,950	SEG	2002	98,602	70,045	69,405	53,484	14,619	25,886	46,231	44,722	36,824
Port Graham River	7,700	19,850	SEG	2002	69,095	31,173	25,595	24,720	13,996	16,586	20,883	34,486	11,893
Port Chatham	7,800	21,000	SEG	2002	44,389	24,210	14,451	16,354	25,291	2,992	15,830	5,430	57,447
Windy Creek Right	3,350	10,950	SEG	2002	22,174	17,146	18,339	12,491	15,012	6,408	1,722	5,823	11,704
Windy Creek Left	3,650	29,950	SEG	2002	72,031	65,155	32,297	64,068	57,263	24,241	12,210	11,691	47,849
Rocky River	9,350	54,250	SEG	2002	198,671	67,840	189,992	90,876	173,583	27,045	22,706	15,684	75,791
Port Dick Creek	18,550	58,300	SEG	2002	122,236	51,500	44,170	34,228	41,681	41,090	16,868	18,057	55,828
Island Creek	7,200	28,300	SEG	2002	26,404	107,683	87,235	49,719	44,527	69,525	10,181	20,079	26,004
S. Nuka Island Creek	2,700	14,250	SEG	2002	11,199	5,100	6,645	12,300	19,934	NS	NS	1,250	8,442
Desire Lake Creek	1,900	20,200	SEG	2002	45,980	74,774	11,820	9,546	73,926	2,978	600	2,260	56,921
Bear & Salmon Creeks	eliminated			2011	34,452	9,033	NS	NS	NS	NS			
Thumb Cove	eliminated			2011	8,668	5,205	NS	NS	NS	NS			
Humpy Cove	eliminated			2011	14,586	1,905	NS	NS	NS	NS			
Tonsina Creek	eliminated			2011	9,922	6,453	NS	NS	NS	NS			
Bruin River	18,650	155,750	SEG	2002	98,346	515,114	350,420	150,717	1,067,351	40,256	4,534	31,800	15,020
Sunday Creek	4,850	28,850	SEG	2002	116,170	70,037	394,797	20,434	106,296	6,607	844	1,348	6,132
Brown's Peak Creek	2,450	18,800	SEG	2002	60,983	35,703	249,383	17,400	63,605	3,092	2,035	2,800	4,061
<i>Prince William Sound</i>													
All Districts Combined (even year) ¹	eliminated			2012		952,477		860,944		1,910,357			
All Districts Combined (odd year)	eliminated			2012	5,778,266		1,915,040		2,338,923		3,826,378		
Eastern District (even year)	250,000	580,000	SEG	2012								301,709	
Eastern District (odd year)	310,000	640,000	SEG	2012									1,266,783
Northern District (even year)	140,000	210,000	SEG	2012								106,544	
Northern District (odd year)	90,000	180,000	SEG	2012									328,896
Coghill District (even year)	60,000	150,000	SEG	2012								172,611	
Coghill District (odd year)	60,000	250,000	SEG	2012									640,414
Northwestern District (even year)	70,000	140,000	SEG	2012								117,795	
Northwestern District (odd year)	50,000	110,000	SEG	2012									203,444

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Table 2.–Page 4 of 5.

System	2013 Goal Range		Type	Initial Year	Escapement									
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013	
Eshamy District (even year)	3,000	11,000	SEG	2012									1,052	
Eshamy District (odd year)	4,000	11,000	SEG	2012										12,145
Southwestern District (even year)	70,000	160,000	SEG	2012									85,384	
Southwestern District (odd year)	70,000	190,000	SEG	2012										348,012
Montague District (even year)	50,000	140,000	SEG	2012									77,756	
Montague District (odd year)	140,000	280,000	SEG	2012										411,373
Southeastern District (even year)	150,000	310,000	SEG	2012									258,047	
Southeastern District (odd year)	270,000	620,000	SEG	2012										1,472,633
SOCKEYE SALMON														
<i>Bristol Bay</i>														
Kvichak River ^j	2,000,000	10,000,000	SEG	2010	2,320,332	3,068,226	2,810,208	2,757,912	2,266,140	4,207,410	2,264,352	4,164,444	2,088,576	
Alagnak River	320,000		lower-bound SEG	2007	4,218,990	1,773,966	2,466,414	2,180,502	970,818	1,187,730	883,794	861,747	1,095,950	
Naknek River	800,000	1,400,000	SEG ^k	1983	2,744,622	1,953,228	2,945,304	2,472,690	1,169,466	1,463,928	1,177,074	900,312	938,160	
Egegik River	800,000	1,400,000	SEG	1995	1,621,734	1,465,158	1,432,500	1,259,568	1,146,276	927,054	961,200	1,233,900	1,113,630	
Ugashik River	500,000	1,200,000	SEG	1995	799,612	1,003,158	2,599,186	596,332	1,364,338	830,886	1,029,853	670,578	898,110	
Wood River	700,000	1,500,000	SEG	2001	1,496,550	4,008,102	1,528,086	1,724,676	1,319,232	1,804,344	1,098,006	764,202	1,183,348	
Igushik River	150,000	300,000	SEG	2001	365,712	305,268	415,452	1,054,704	514,188	518,040	421,380	193,770	387,036	
Nushagak River	260,000	760,000	OEG	2012	1,049,246	548,410	518,041	492,546	484,149	468,696	428,191	432,438	894,148	
	370,000	840,000	SEG	2013										
Kulukak Bay	eliminated			2013	NS	NS	NS	NS	NS	NS	NS	NS		
Togiak River	120,000	270,000	SEG	2007	149,178	312,126	269,646	205,680	313,946	188,298	190,970	203,148	128,000	
<i>Upper Cook Inlet</i>														
Crescent River	30,000	70,000	BEG	2005	125,623	92,533	79,406	62,029	NS	86,333	81,952	58,838	NS	
Fish Creek (Knik)	20,000	70,000	SEG	2002	14,215	32,562	27,948	19,339	83,480	126,836	66,678	18,813	18,912	
Kasilof River	160,000	390,000	OEG	2011	346,516	366,216	335,943	299,601	295,434	265,513	244,221	372,523	487,754	
	160,000	340,000	BEG	2011										
Kenai River ^l	700,000	1,400,000	OEG	2011	1,114,618	1,311,144	595,355	402,264	498,592	732,790	1,333,217	1,261,455	1,117,893	
	700,000	1,200,000	SEG	2011										
Packers Creek	15,000	30,000	SEG	2008	22,000	NS	46,637	25,247	16,473	NS	NA	NA	NA	
Russian River - Early Run	22,000	42,000	BEG	2011	52,903	80,524	27,298	30,989	52,178	27,074	29,129	24,115	35,776	
Russian River - Late Run	30,000	110,000	SEG	2005	59,473	89,160	53,068	46,638	80,088	38,848	41,529	54,911	31,364	
Yentna River ^m	eliminated			2009	36,921	92,045	79,901	90,180						
Chelatna Lake	20,000	65,000	SEG	2009		18,433	41,290	73,469	17,721	37,784	70,353	36,577	70,555	
Judd Lake	25,000	55,000	SEG	2009		40,633	58,134	54,304	44,616	18,361	39,997	18,303	14,088	
Larson Lake	15,000	50,000	SEG	2009	9,751	57,411	47,736	35,040	40,933	20,324	12,413	16,708	21,821	
<i>Lower Cook Inlet</i>														
English Bay	6,000	13,500	SEG	2002	7,574	16,533	16,487	11,996	18,176	12,253	9,920	3,574	10,891 ^f	

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Table 2.—Page 5 of 5.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
Delight Lake	7,550	17,650	SEG	2011	15,200	10,929	43,963	23,933	12,700	23,775	20,190	10,887	5,961
Desire Lake	8,800	15,200	SEG	2002	4,820	18,600	10,000	10,700	16,000	6,320	9,630	8,840	8,400
Bear Lake	700	8,300	SEG	2002	10,285	8,338	8,575	9,264	10,364	8,880	9,608	8,031	8,999
Aialik Lake	3,700	8,000	SEG	2002	5,250	4,760	5,370	4,200	3,100	5,315	3,480	2,140	3,530
Mikfik Lake	6,300	12,150	SEG	2002	5,970	17,700	11,190	5,560	15,130	11,330	395	3,141	4,042
Chenik Lake	3,500	14,000	SEG	2011	12,771	8,507	17,417	10,653	15,264	17,312	10,330	16,505	11,333
Amakdedori Creek	1,250	2,600	SEG	2002	1,710	300	3,830	3,200	2,160	1,210	3,412	770	1,540
<i>Prince William Sound</i>													
Upper Copper River	360,000	750,000	SEG	2012	515,599	579,552	612,083	480,597	468,725	502,995	607,657	954,272	NA ⁿ
Copper River Delta	55,000	130,000	SEG	2003	58,406	98,896	88,285	67,950	69,292	82,835	76,507	66,850	73,505
Bering River	15,000	33,000	SEG	2012	30,890	14,671	21,471	18,396	17,022	4,367	28,530	17,890	21,900
Coghill Lake	20,000	60,000	SEG	2012	30,313	24,157	70,001	29,298	19,293	24,312	102,359	72,678	17,231
Eshamy Lake	13,000	28,000	BEG	2009	23,523	41,823	16,646	18,495	24,025	16,291	20,565	NA ^o	NA ^o

Note: NA = data not available; NC = no count; NS = no survey.

^a In 2009, aerial surveys were only flown on Big Creek (2,834 Chinook salmon) and King Salmon River (471 Chinook salmon). Mainstem Naknek River and Paul's Creek were not surveyed in 2009.

^b Aerial surveys were conducted in the Egegik and King Salmon River systems on August 5, 2009, to provide escapement indices for Chinook and chum salmon. Resulting counts were 350 Chinook and 277 chum salmon. Water conditions were poor; high and turbid conditions prevented observation on most of the surveyed systems. Chinook escapement indices were well below average in streams surveyed but should be considered minimum counts due to the poor water conditions. Based on carcass distribution and observed presence, the survey was probably conducted after peak spawning.

^c Lewis River diverged into swamp 1/2 mi. below bridge. No water in channel.

^d Preliminary escapement estimates.

^e The Copper River Chinook salmon spawning escapement estimate is not available. An inriver estimate is generated from a mark-recapture project run by the Native Village of Eyak and LGL Consulting. The spawning escapement estimate is generated by subtracting the upper Copper River state and federal subsistence, state personal use, and sport fishery harvest estimates from the mark-recapture estimate of the inriver abundance. The estimates for the federal and state subsistence and the state personal use fishery harvests are generally not available for about six months after the fishery is closed. Additionally, the sport fishery harvest estimate is based on the mail-out survey and is generally available about 12 months after the fishery ends.

^f No estimates for chum salmon escapements are included for the Unakwik, Eshamy, Southwestern, or Montague districts because there are no escapement goals for those districts.

^g Incomplete counts for Fish Creek (Knik) in 2005–2008 and 2011 because the weir was pulled in mid-August.

^h Incomplete counts for Little Susitna River in 2005, 2006, and 2011 due to breach of weir.

ⁱ The estimates for pink salmon (odd year) do not include Unakwik District escapements, due to absence of an escapement goal and an average escapement estimate of a few thousand fish.

^j Prior to 2010 Kvichak River had a pre-peak/peak cycle escapement goal of 6–10 million sockeye and an off-peak escapement goal of 2–10 million fish. Between 2001 and 2009 only one year (2004) was classified as either a pre-peak or peak year.

^k Naknek River has an OEG of 800,000–2,000,000 sockeye salmon when the Naknek River Special Harvest Area is open to fishing.

^l Uses the best estimate of sport harvest upstream of sonar.

^m Yentna River sockeye salmon escapement goal was replaced by SEGs on Chelatna, Judd, and Larson lakes in early 2009.

ⁿ The 2013 upper Copper River sockeye salmon spawning escapement estimate is preliminary pending the estimates of personal use, subsistence, and sport fishery harvests; and final mark-recapture estimate of upper Copper River Chinook salmon.

^o The Eshamy River weir was not operated in 2012 or 2013. A pilot project to access the use of video for monitoring in 2013 did not provide a comparable total escapement estimate but did provide a minimum estimate of 4,500 sockeye salmon.

Table 3.—Arctic-Yukon-Kuskokwim Region Chinook, chum, coho, pink, and sockeye salmon escapement goals and escapements, 2005 to 2013.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON													
<i>Kuskokwim Area</i>													
North (Main) Fork Goodnews River	640	3,300	SEG	2005	NS	4,159	NS	2,155	NS	NS	853	382	NS
Middle Fork Goodnews River	1,500	2,900	BEG	2007	4,633	4,559	3,852	2,161	1,630	2,244	1,861	513	1,168
Kanektok River	3,500	8,000	SEG	2005	14,202	8,433	NS	3,659	NS	1,228	NS	NA	2,346
Kuskokwim River (entire area)	65,000	120,000	SEG	2013	275,598	214,004	174,943	128,978	118,478	49,073	72,097	76,074	47,315
Kogrukluk River	4,800	8,800	SEG	2013	22,000	19,414	13,029	9,730	9,702	5,690	6,891	NA	1,702
Kwethluk River	4,100	7,500	SEG	2013	NA	17,618	12,927	5,275	5,744	1,669	4,076	NA	NA
Tuluksak River	eliminated			2013	2,653	1,043	374	701	362	201	286	560	
George River	1,800	3,300	SEG	2013	3,845	4,357	4,883	2,698	3,663	1,500	1,571	2,267	1,121
Kisaralik River	400	1,200	SEG	2005	2,206	4,734	692	1,074	NS	235	NS	610	597
Aniak River	1,200	2,300	SEG	2005	NS	5,639	3,984	3,222	NS	NS	NS	NS	754
Salmon River (Aniak R)	330	1,200	SEG	2005	4,097	NS	1,458	589	NS	NS	79	49	154
Holitna River	970	2,100	SEG	2005	1,760	1,866	NS	NS	NS	587	NS	NS	670
Cheeneetnuk River (Stony R)	340	1,300	SEG	2005	1,155	1,015	NS	290	323	NS	249	229	138
Gagaryah River (Stony R)	300	830	SEG	2005	788	531	1,035	177	303	62	96	178	74
Salmon River (Pitka Fork)	470	1,600	SEG	2005	1,801	862	943	1,305	632	135	767	670	475
<i>Yukon River</i>													
East Fork Andreafsky River	2,100	4,900	SEG	2010	2,239	6,463	4,504	4,242	3,004	2,413	5,213	2,517	1,998
West Fork Andreafsky River	640	1,600	SEG	2005	1,492	824	976	NS	1,678	858	1,173	NS	1,090
Anvik River	1,100	1,700	SEG	2005	2,421	1,876	1,529	992	832	974	642	722	940
Nulato River (forks combined)	940	1,900	SEG	2005	553	1,292	2,583	922	2,260	711	1,401	1,373	1,118
Gisasa River	eliminated			2010	958	843	593	487	515				
Chena River	2,800	5,700	BEG	2001	NS	2,936	3,806	3,208	5,253	2,382	NS	2,200 ^a	1,859
Salcha River	3,300	6,500	BEG	2001	5,988	10,679	6,425	5,415	12,774	6,135	7,200 ^b	7,165	5,465
Canada Mainstem	42,500	55,000	agreement ^c	annual	67,985	62,630	34,904	33,883	65,278	31,818	46,017	32,456	28,500 ^d
<i>Norton Sound</i>													
Fish River/Boston Creek	100		lower-bound SEG	2005	46	NS	NS	NS	NS	NS	NS	NS	44
Kwiniuk River	300	550	SEG	2005	342	195	258	237	444	135	57	54	15
North River (Unalakleet R)	1,200	2,600	SEG	2005	1,015	906	1,948	903	2,355	1,256	864	996	564
Shaktoolik River	eliminated			2013	74 ^e	150 ^f	412	NS	NS	NS	106	NS	
Unalakleet/Old Woman River	550	1,100	SEG	2005	510 ^e	NS	821	NS	1,368	NS	105	NA	NS
CHUM SALMON													
<i>Kuskokwim Area</i>													
Middle Fork Goodnews River	12,000		lower-bound SEG	2005	26,690	54,699	49,285	44,699	19,715	26,687	19,974	10,723	27,673

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Table 3.–Page 2 of 4.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
Kanektok River	eliminated			2013	NS	NS	NS	NS	NS	NS	NS	NA	
Kogruklu River	15,000	49,000	SEG	2005	197,723	180,594	49,505	44,978	84,940	63,583	76,384	NA	64,826
Aniak River	220,000	480,000	SEG	2007	1,151,505	1,108,626	696,801	427,911	479,531	429,643	345,630	NA	NA
<i>Yukon River Summer Chum</i>													
East Fork Andreafsky River	40,000		lower-bound SEG	2010	20,127	102,260	69,642	57,259	8,770	72,839	100,473	56,680	61,234
Anvik River	350,000	700,000	BEG	2005	525,391	605,485	459,038	374,928	193,098	396,173	642,527	483,972	571,690
<i>Yukon River Fall Chum</i>													
Yukon River Drainage	300,000	600,000	SEG	2010	1,990,000	890,000	921,000	681,000	483,000	527,000	883,000	573,000	867,000
Tanana River ^s	61,000	136,000	BEG	2001	373,000	233,000	357,000	264,000	160,000	213,000	271,000	102,000	275,000
Delta River	6,000	13,000	BEG	2001	28,000	14,000	19,000	23,000	13,000	18,000	24,000	9,000	32,000
Toklat River	eliminated			2010	NA	NA	NA	NA	NA				
Upper Yukon River Tributaries	152,000	312,000	BEG	2001	1,178,000	436,000	327,000	248,000	NA	196,000	406,000	333,000	392,000
Chandalar River	74,000	152,000	BEG	2001	497,000	245,000	228,000	178,000	NA	158,000	295,000	206,000	253,000
Sheenjek River	50,000	104,000	BEG	2001	562,000	160,000	65,000	50,000	54,000	22,000	98,000	105,000	109,000 ^h
Fishing Branch River (Canada)	22,000	49,000	agreement	2008 ⁱ	119,000	31,000	32,000	20,000	26,000	16,000	13,000	22,000	30,000
Yukon R. Mainstem (Canada)	70,000	104,000	agreement	2010 ^j	438,000	221,000	255,000	176,000	94,000	118,000	206,000	138,000	200,000
<i>Norton Sound</i>													
Subdistrict 1 Aggregate	23,000	35,000	BEG	2001	38,808	87,222	76,940	32,177	21,368	97,798	66,122	51,459	108,120
Sinuk River	eliminated			2010	4,710	4,834	16,481	NS	2,232				
Nome River	2,900	4,300	OEG	2001	5,584	5,678	7,034	2,607	1,565	5,906	3,582	1,982	4,811
	2,900	4,300	SEG	2005									
Bonanza River	eliminated			2010	5,534	708	8,491	NS	6,744				
Snake River	1,600	2,500	OEG	2001	2,948	4,128	8,147	1,244	891	6,973	4,343	651	2,755
	1,600	2,500	SEG	2005									
Solomon River	eliminated			2010	1,914	2,062	3,469	NS	918				
Flambeau River	eliminated			2010	7,692	27,828	12,006	11,618	4,075				
Eldorado River	6,000	9,200	OEG	2001	10,426	41,985	21,312	6,746	4,943	42,612	16,227	13,393	26,121
	6,000	9,200	SEG	2005									
Niukluk River	23,000		lower-bound SEG	2010	25,598	29,199	50,994	12,078	15,879	48,561	23,607	19,576	NS
Kwiniuk River	11,500	23,000	OEG	2001	12,083	39,519	27,756	9,483	8,739	71,388	31,604	5,577	5,631
	10,000	20,000	BEG	2001									
Tubutulik River	9,200	18,400	OEG	2001	1,336	NS	7,045	NS	3,161	16,097	14,127	NS	NS
	8,000	16,000	BEG	2001									
Unalakleet/Old Woman River	2,400	4,800	SEG	2005	1,530	NS	1,902	NS	NS	NS	NS	NS	2,496
<i>Kotzebue Sound</i>													
Kotzebue Sound Aggregate	196,000	421,000	BEG	2007									
Noatak and Eli Rivers	42,000	91,000	SEG	2007	NS	39,785	NS	270,747	69,872	NS	NS	NS	NS
Upper Kobuk w/ Selby River	9,700	21,000	SEG	2007	NS	48,750	NS	42,622	45,155	NS	NS	NS	NS

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Table 3.–Page 3 of 4.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
Salmon River	3,300	7,200	SEG	2007	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tutuksuk River	1,400	3,000	SEG	2007	1,736	NS	NS	NS	NS	NS	NS	NS	NS
Squirrel River	4,900	10,500	SEG	2007	NS	NS	NS	NS	NS	NS	NS	NS	NS
COHO SALMON													
<i>Kuskokwim Area</i>													
Middle Fork Goodnews River	12,000		lower-bound SEG	2005	15,683	15,969	20,975	36,630	20,000	23,839	23,826	13,679	NA
Kogruklu River	13,000	28,000	SEG	2005	24,116	17,011	27,033	29,661	22,981	13,971	24,174	13,698	19,707
Kwethluk River	19,000		lower-bound SEG	2010	NS	25,664	19,473	49,973	21,911	NA	NA	19,960	NA
<i>Yukon River</i>													
Delta Clearwater River	5,200	17,000	SEG	2005	34,293	16,748	14,650	7,500	16,850	5,867 ^k	8,772	5,230	6,222
<i>Norton Sound</i>													
Kwiniuk River	650	1,300	SEG	2005	NS	NS	5,174	2,676	NS	2,925	1,331	NS	NS
Niukluk River ^l	2,400	7,200	SEG	2010	2,727	11,169	3,498	13,779	6,861	9,042	2,405	1,729	NS
North River (Unalakleet R.)	550	1,100	SEG	2005	1,963	NS	2,349	2,744	2,830	NS	898	NS	867
PINK SALMON													
<i>Kuskokwim Area</i>													
There are no escapement goals for pink salmon in the Kuskokwim Management Area.													
<i>Yukon River</i>													
There are no escapement goals for pink salmon in the Yukon River drainage.													
<i>Norton Sound</i>													
Nome River (odd year)	3,200		lower-bound SEG	2005	285,759		24,395		16,490		14,403		10,257
Nome River (even year)	13,000		lower-bound SEG	2005		578,555		1,186,554		171,760		149,119	
Kwiniuk River	8,400		lower-bound SEG	2005	341,048	1,347,090	54,255	1,444,213	42,962	634,220	30,913	393,302	13,212
Niukluk River	10,500		lower-bound SEG	2005	270,424	1,371,919	43,617	669,234	24,204	434,205	15,425	249,412	NA
North River	25,000		lower-bound SEG	2005	1,670,934	2,169,890	580,935	240,286	190,291	150,807	123,892	147,674	46,668
SOCKEYE SALMON													
<i>Kuskokwim Area</i>													
North (Main) Fork Goodnews River	5,500	19,500	SEG	2005	NS	78,100	NS	32,500	NS	NS	14,140	16,700	NS
Middle Fork Goodnews River	18,000	40,000	BEG	2007	113,809	126,772	72,282	50,459	25,465	35,762	17,946	30,472	23,029
Kanektok River	14,000	34,000	SEG	2005	110,730	382,800	NS	38,900	NS	16,950	NS	NA	64,802
Kogruklu River	4,440	17,000	SEG	2010	37,939	60,807	16,525	19,675	23,785	13,995	8,132	NA	7,558
<i>Yukon River</i>													
There are no escapement goals for Sockeye in the Yukon River drainage.													
<i>Norton Sound</i>													
Salmon Lake/Grand Central River	4,000	8,000	SEG	2005	42,250	41,780	20,612	11,672	322	762	5,144	5,830	6,781
Glacial Lake	800	1,600	SEG	2005	3,730	5,810	1,505	540	169	154	NS	NS	1,366

-continued-

Note: NA = data not available; NS = no survey.

^a 2012 Chena River Chinook salmon escapement estimate includes an expansion for missed counting days based on two DIDSON sonars used to assess Chinook salmon passage.

^b 2011 Salcha River Chinook escapement is based on an aerial survey because high water prevented tower counting most of the season; therefore, aerial survey represents best estimate of escapement for the year.

^c Canadian Yukon River Mainstem Chinook salmon IMEG (Interim Management Escapement Goal) of 42,500–55,000 was implemented for 2010–2013 seasons by the United States and Canada Yukon River Panel. Estimates from 2005–2013 represent escapement after subtraction of Canadian harvest.

^d Preliminary data.

^e 2005 Shaktoolik and Unalakleet River drainage surveys were conducted during peak spawning periods, but Chinook salmon counts are thought to be underestimated due to large numbers of pink salmon.

^f 2006 Shaktoolik River survey is not considered complete because it was conducted well before peak spawn. Survey was rated as acceptable, but the observer noted difficulty enumerating Chinook salmon due to large numbers of pink salmon.

^g Escapement estimated using mark–recapture 1995–2007, then based on relationship to either the Detla River or Mainstem Yukon River escapements from 2008 to present.

^h In 2013, Sheenjek River sonar was not operated and was estimated based on two bank operations relationship to Fishing Branch River escapements.

ⁱ Fishing Branch River fall chum salmon IMEG of 22,000–49,000 was implemented for 2008–2013 by Yukon River Panel. However, weir did not operate in 2013 and estimate was based on border sonar estimate minus community harvest assuming most fish migrate to Fishing Branch River.

^j Yukon River Mainstem fall chum salmon IMEG of 70,000–104,000 was implemented for 2010–2013 seasons by Yukon River Panel.

^k Delta Clearwater River coho salmon 2010 escapement index is not a peak count.

^l Niukluk River coho salmon numbers (all years) are actual tower counts and do not take into consideration upstream harvest.

Table 4.—Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas) Chinook, chum, coho, pink, and sockeye salmon escapement goals and escapements, 2005 to 2013.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON													
<i>AK Peninsula</i>													
Nelson River	2,400	4,400	BEG	2004	4,993	2,516	2,492	5,012	2,048	2,767	1,704	992	1,221 ^a
<i>Chignik</i>													
Chignik River	1,300	2,700	BEG	2002	6,037	3,175	1,675	1,620	1,590	3,845	2,490	1,404	1,170
<i>Kodiak</i>													
Karluk River	3,000	6,000	BEG	2011	4,684	3,673	1,697	752	1,306	2,917	3,420	3,197 ^b	1,824 ^b
Ayakulik River	4,000	7,000	BEG	2011	8,175	2,937	6,232	3,071	2,615	5,197	4,251	4,744	2,304
CHUM SALMON													
<i>AK Peninsula</i>													
Northern District	119,600	239,200	SEG	2007	103,675	382,583	243,334	228,537	154,131	145,310	96,952	140,418	137,251
Northwestern District	100,000	215,000	SEG	2007	192,965	193,460	335,450	241,750	84,460	144,100	151,400	140,000	92,800
Southeastern District ^c	106,400	212,800	SEG	1992	412,500	405,300	201,451	277,450	106,500	62,612	145,300	31,072	184,350
South Central District	89,800	179,600	SEG	1992	235,700	119,600	126,000	140,450	18,600	85,600	169,000	86,190	155,050
Southwestern District	133,400	266,800	SEG	1992	317,910	231,935	398,010	171,250	385,730	142,650	176,425	87,230	163,200
Unimak District	eliminated			2013	4,200	7,915	1,200	2,800	1,400	1,050	7,000	750	
<i>Chignik</i>													
Entire Chignik Area	57,400		lower-bound SEG	2008	308,700	93,489	238,216	197,259	214,959	177,220	278,145	210,973	335,907
<i>Kodiak</i>													
Mainland District	104,000		lower-bound SEG	2008	22,500	346,140	82,600	72,000	91,106	124,500	128,700	127,850	107,400
Kodiak Archipelago Aggregate	151,000		lower-bound SEG	2008	141,850 ^d	419,000 ^d	166,060 ^d	83,040	177,490	160,290	192,400	159,825	291,250
COHO SALMON													
<i>AK Peninsula</i>													
Nelson River	18,000		lower-bound SEG	2004	24,000	19,000	19,000	24,000	22,000	15,000	21,000	19,160	22,000
Thin Point Lake	eliminated			2013	17,500	9,750	9,000	3,200	900	NA ^e	200	1,500	
Ilulik River	9,000		lower-bound SEG	2010	NA	31,000	22,000	27,000	NA	19,600	22,000	14,800	13,000
<i>Chignik</i>													
There are no coho salmon stocks with escapement goals in Chignik Area													
<i>Kodiak</i>													
Pasagshak River	1,200		lower-bound SEG	2011	3,773	937	1,896	3,875	2,385	1,971	1,083	3,132	1,648
Buskin River	3,200	7,200	BEG	2005	16,235	12,560	8,375	8,176	9,583	6,239	5,298	4,906	4,459 ^f
Olds River	1,000		lower-bound SEG	2011	2,495	1,912	868	656	697	NA	1,003	624	2,145
American River	400		lower-bound SEG	2011	339	2,033	307	700	639	NA	1,061	427	841

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Table 4.–Page 2 of 3.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
PINK SALMON													
<i>AK Peninsula</i>													
Bechevin Bay Section (odd year)	eliminated			2013	8,720		16,800		72,000		2,400		
Bechevin Bay Section (even year)	eliminated			2013		116,075		11,900		13,600		7,603	
South Peninsula Total (odd year)	1,637,800	3,275,700	SEG	2007	6,165,634		2,680,213		3,067,000		2,494,950		2,320,790
South Peninsula Total (even year)	1,864,600	3,729,300	SEG	2007		2,862,250		3,338,370		742,912		478,910	
<i>Chignik</i>													
Entire Chignik Area (odd year)	500,000	800,000	SEG	2008	1,414,050		1,237,528		869,063		986,248		863,991
Entire Chignik Area (even year)	200,000	600,000	SEG	2008		356,425		863,031		330,570		302,699	
<i>Kodiak</i>													
Mainland District	250,000	1,000,000	SEG	2011	268,050	778,200	315,300	236,500	430,100	265,650	273,500	413,325	620,480
Kodiak Archipelago (odd year)	2,000,000	5,000,000	SEG	2011	3,688,158		2,208,678		4,707,894		2,506,714		4,450,711
Kodiak Archipelago (even year)	3,000,000	7,000,000	SEG	2011		5,086,372		2,924,708		3,378,483		5,111,049	
SOCKEYE SALMON													
<i>AK Peninsula</i>													
Cinder River	12,000	48,000	SEG	2007	141,000	101,100	142,000	129,800	133,600	108,900	106,000	76,620	95,000
Ilnik River	40,000	60,000	SEG	1991	154,000	88,000	93,000	44,300	66,000	59,000	43,000	61,000	51,000
Meshik River	25,000	100,000	SEG	2010	111,100	138,010	56,900	83,250	88,000	63,700	93,900	50,900	85,800
Sandy River	34,000	74,000	SEG	2007	101,000	48,000	44,700	32,200	36,000	37,000	37,500	27,100	42,000
Bear River Early Run	176,000	293,000	SEG	2004	332,248	262,995	206,233	125,526	216,237	226,534	207,451	173,158	219,074
Bear River Late Run	117,000	195,000	SEG	2004	221,752	182,005	224,767	195,474	133,263	142,966	132,549	116,442	196,926
Nelson River	97,000	219,000	BEG	2004	303,000	215,000	180,000	141,600	157,000	108,000	89,000	103,300	248,000
Christianson Lagoon	25,000	50,000	SEG	1980s	54,500	41,505	48,100	114,000	48,100	27,900	35,200	40,000	16,500
Swanson Lagoon	6,000	16,000	SEG	2007	2,400	376	9,200	5,500	1,000	1,700	1,000	3,500	3,000
North Creek	4,400	8,800	SEG	late 1980s	45,000	7,530	16,800	38,000	8,000	18,500	10,200	18,000	8,500
Orzinski Lake	15,000	20,000	SEG	1992	44,797	18,000	10,643	36,839	21,457	18,039	16,764	17,243	17,386
Mortensen Lagoon	3,200	6,400	SEG	late 1980s	21,703	14,688	6,200	5,600	25,000	6,600	500	5,000	4,000
Thin Point Lake	14,000	28,000	SEG	late 1980s	21,000	11,510	21,550	18,900	33,500	12,400	14,500	19,000	5,700
McLees Lake ^s	10,000	60,000	SEG	2010	12,097	12,936	21,428	8,661	10,120	32,842	36,602	15,111	15,687
<i>Chignik</i>													
Chignik River Early Run	350,000	400,000	SEG	2005	355,091	366,497	361,091	377,579	391,476	432,535	488,930	353,441	386,782
Chignik River Late Run ^h	200,000	400,000	SEG	2008	225,366	368,996	293,883	328,479	328,586	311,291	264,887	358,948	369,319

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Table 4.–Page 3 of 3.

System	2013 Goal Range		Type	Initial Year	Escapement								
	Lower	Upper			2005	2006	2007	2008	2009	2010	2011	2012	2013
<i>Kodiak</i>													
Malina Creek	1,000	10,000	SEG	2005	3,180 ⁱ	6,400	1,900	3,690	1,400	4,000	3,800	4,100	3,800
Afognak (Litnik) River	20,000	50,000	BEG	2005	21,577	22,933	21,070	26,874	31,358	52,255	49,193	41,553	42,153
Little River	3,000		lower-bound SEG	2008	3,000	3,500	8,500	2,300	1,500	3,200	3,900	6,300	17,600
Uganik Lake	24,000		lower-bound SEG	2008	7,500	26,700	35,000	64,700	53,700	30,700	37,900	22,200	26,000
Karluk River Early Run	110,000	250,000	BEG	2008	283,860	202,366	294,740	82,191	52,798	71,453	87,049	188,085	234,880
Karluk River Late Run	170,000	380,000	BEG	2005	498,102	288,007	251,835	164,299	277,280	276,649	230,273	314,605	336,479
Ayakulik River	eliminated			2011	251,906	87,780	283,042	162,888	315,184	262,327			
Ayakulik River Early Run	140,000	280,000	SEG	2011	139,246	59,315	169,596	96,912	200,648	201,933	177,480	213,501	214,969
Ayakulik River Late Run	60,000	120,000	SEG	2011	112,660	28,465	113,446	65,976	114,536	60,394	83,661	114,753	67,195
Upper Station River Early Run	25,000		OEG	1999	60,349	24,997	31,895	38,800	34,585	42,060	28,759	25,487	27,712
	43,000	93,000	BEG	2011									
Upper Station River Late Run	120,000	265,000	BEG	2005	156,401	153,153	149,709	184,856	161,736	141,139	101,893	149,325	125,573
Frazer Lake	75,000	170,000	BEG	2008	136,948	89,516	120,186	105,363	101,845	94,680	134,642	148,884	136,059
Saltery Lake ^j	15,000	35,000	BEG	2011	28,500 ^j	28,000 ^j	17,200 ^j	49,266	46,591	26,809	30,768	27,188	35,939
Pasagshak River	3,000		lower-bound SEG	2011	22,000	6,300	14,300	14,900	1,400	4,800 ^k	13,402 ^k	4,585 ^k	11,421 ^k
Buskin Lake	5,000	8,000	BEG	2011	15,468	17,734	16,502	5,900	7,757	9,800	11,982	8,565	16,189

Note: NA = data not available.

^a 2013 Nelson River Chinook salmon sportfishing was catch and release only so escapement is weir count.

^b 2012 and 2013 Karluk River Chinook salmon escapements are the weir count; no upriver harvest due to fishery closure.

^c Southeastern District chum salmon escapement goal includes Shumagin Islands Section and Southeastern District Mainland.

^d Kodiak chum salmon aggregate goal did not exist prior to 2008 (district goals summed: NW, SW, Alitak, Eastside, NE).

^e Poor survey conditions contributed to the zero aerial survey escapement index for Thin Point Lake coho salmon.

^f 2013 Buskin River coho salmon escapement is weir count minus an estimated 1,500 fish harvest above weir because statewide harvest survey data are not available yet.

^g McLees Lake sockeye salmon SEG will be in effect if a weir is in place; there will be no goal if a weir is not operated.

^h The Chignik late-run sockeye escapement objective includes the late-run sockeye salmon SEG (200,000–400,000) plus an additional 25,000 fish in August and 25,000 fish from September 1–15 to ensure inriver harvest opportunities above the weir.

ⁱ 2005 Malina Creek sockeye salmon escapements are weir counts. All other escapements are peak aerial survey indices.

^j Saltery Lake sockeye salmon escapements are weir counts minus fish removed for egg takes. The 2005–2007 escapements are peak aerial survey indices. All other escapements are weir counts.

^k 2010–2013 Pasagshak River sockeye salmon escapements are weir counts. All other escapements are peak aerial survey indices, on which the current goal is based.

Table 5.—Assessment of whether escapements met (Met), exceeded (Over), or did not meet (Under) the escapement goal in place at the time of enumeration for salmon stocks in Southeast Region.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
Chinook Salmon	Blossom River	Met	Met	Under	Met	Under	Met	Under	Met ^a	Met
	Keta River	Met	Over	Met	Met	Under	Met	Under	Met ^a	Over
	Unuk River	Met	Met	Met	Met	Met ^b	Over	Met	Under	Under
	Chickamin River	Over	Over	Met	Over	Met	Over	Met	Under	Met
	Andrew Creek	Over	Over	Over	Met	Under	Met	Met	Under	Met
	Stikine River	Over	Met	Met	Met	Under	Met	Met	Met	Met
	King Salmon River	Met	Met	Met	Met	Under	Met	Met	Met	Under
	Taku River	Met	Met	Under	Under	Met ^a	Met	Met	Met	Under
	Chilkat River	Met	Met	Under	Met	Over	Met	Met	Under	Under
	Klukshu (Alek) River	Under	Under	Under	Under	Met	Met	Met	Under	Over ^a
	Alek River									
Situk River	Met	Met	Met	Under	Met	Under	Under	Under	Under	Met
Chum Salmon	Southern Southeast Summer					Under	Under	Met	Met ^c	Met
	Northern Southeast Inside Summer					Under	Under	Under	Met ^c	Met
	Northern Southeast Outside Summer					Under	Met	Met	Met	Under
	Cholmondeley Sound Fall					Met	Over	Over	Over	Under
	Port Camden Fall					Under	Met	Under	Met	Met
	Security Bay Fall					Met	Met	Met	Met	Under
	Excursion River Fall					Under	Met	Under	Under	Met
	Chilkat River Fall					Over	Met	Over	Over	Met
Coho Salmon	Hugh Smith Lake	Over	Met	Over	Over	Over ^a	Over	Over	Over	Over
	Klawock									Met
	Taku River	Met	Met	Met	Met	Met	Met	Met	Met	Under ^d
	Auke Creek	Met	Over	Met	Over	Met	Met	Over	Over	Over
	Montana Creek	Met	Met ^a	Under	Met	Met	Met	Met	Under	Under
	Peterson Creek	Met	Over ^a	Met	Over	Met	Over	Met	Met	Met
	Ketchikan Survey Index		Met	Met	Over	Met	Met	Met	Over	Over
	Sitka Survey Index		Over	Over	Over	Over	Over	Over	Over	Over
	Ford Arm Lake	Over	Over	Met	Over	Met	Met	Met	Met	Met
	Berners River	Met	Met	Under	Met	Met	Met	Met	Met	Met
	Chilkat River		Over	Under	Met	Met	Over	Met	Met	Met
	Lost River	Under	Met	Met	NA	Met ^c	Met	Under	Met	Met
	Situk River	Under	Met	Met	NA	Met	Over	Met	Under	Over
Tsiu/Tsivat Rivers	Met	Met	Met	Met	Met	Met	Met	Met	Over	

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Table 5.–Page 2 of 2.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
Pink Salmon	Southern Southeast	Over	Met	Over	Met	Met ^f	Met	Met	Met	Over
	Northern Southeast Inside	Met	Met	Met	Under	Met ^f	Met	Over	Under	Met
	Northern Southeast Outside	Over	Over	Over	Met	Met ^f	Met	Over	Met	Over
	Situk River (even-year)		Over		NA ^g		NA ^g			
	Situk River (odd-year)	Over		Over		Met		Met		
	Situk River								Under ^h	Met
Sockeye Salmon	Hugh Smith Lake	Over	Over	Over	Under	Met	Met	Over	Met	Under
	McDonald Lake	Under	Under ^a	Under	Under	Under ^a	Met	Met	Met	Under
	Mainstem Stikine River	Met	Met	Met	Under	Met	Met	Met	Met	Met
	Tahltan Lake	Over	Over	Met	Under	Over	Met	Over	Under	Under
	Speel Lake	Met	Met	Under	Under	Under	Met	Met	Met	Met
	Taku River	Over	Over	Over	Under	Met	Over	Over	Over	Met
	Redoubt Lake	Over	Over	Over	Met	Met	Met	Met	Over	Over
	Chilkat Lake	Met	Under ⁱ	Under	Under	Over ^a	Under	Under	Met	Met
	Chilkoot Lake	Met	Over ^a	Met	Under	Under ^a	Met	Met	Over	Met
	East Alsek-Doame River	Over	Over	Over	Under	Under	Met	Over	Met	Over
	Klukshu River	Under	Met	Met	Under	Under	Over	Over	Over	Under ^j k
	Alsek River									
	Lost River	Met	Met	Under	Under	NA ^e	Met	Met	Under	Under
Situk River	Met	Over	Met	Under	Over	Met	Over	Met	Over	

Note: NA = data not available. Blank cells indicate that there was no official escapement goal for the stock in that particular year.

^a Escapement goal reevaluated, goal range changed.

^b Prior to 2009, goal was based on index count of escapements.

^c Escapement goal reevaluated and lower-bound goal changed.

^d Management target revised.

^e Escapement goal reevaluated, upper-bound goal eliminated, lower-bound goal remained the same.

^f Expansion factor was removed from escapement estimates, and escapement goal was reevaluated.

^g Situk River weir was pulled well before peak of pink salmon run; therefore, a valid assessment of whether the goal was met is not possible.

^h Escapement goal reevaluated; odd- and even-year goals replaced by single goal; goal range changed to lower-bound goal.

ⁱ Prior to 2005, escapement goal was based on weir counts. After 2005, escapements and escapement goal were based on mark–recapture estimates (DerHovansian and Geiger 2005).

^j Escapement goal reevaluated and upper-bound goal changed.

^k Alsek River sockeye salmon run is not regularly assessed, so escapement numbers are not available. Alsek River sockeye salmon are managed to meet Klukshu River escapement goal.

Table 6.—Assessment of whether escapements met (Met), exceeded (Over), or did not meet (Under) the escapement goal in place at the time of enumeration for salmon stocks in Central Region (Bristol Bay, Cook Inlet, and Prince William Sound/Copper River).

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Chinook salmon	<i>Bristol Bay</i>										
	Nushagak River	Over	Over	Met ^a	Over	Met	Met	Met	Over	Met ^b	
	Togiak River	NS	NS	NS ^c	NS	NS	NS	NS	NS	eliminated	
	Naknek River	NS	NS	Met ^c	Met	Under	NS	NS	NS	NS	
	Alagnak River			Met	Under	Under	NS	NS	NS	NS	
	Egegik River			Met	Under	Under	NS	NS	NS	eliminated	
	<i>Upper Cook Inlet</i>										
	Alexander Creek	Met	Under	Under	Under	Under	Under	Under	Under	Under	Under
	Campbell Creek		eliminated		Met ^d	Met	Met	Under	NS	NS	
	Chuitna River	Met	Met	Under	Under	Under	Under	Under	Under	Met	
	Chulitna River	Met	Met	Over	Met	Met	Under	Met	Under	Under	
	Clear (Chunilna) Creek	Met	Met	Met	Met	Met	Under	Under	Met	Met	
	Crooked Creek	Over	Met	Met	Met	Under	Met	Met	Met	Under	Met
	Deshka River	Over	Over	Met	Under	Under	Met	Met	Met	Met	
	Goose Creek	Met	Met	Under	Under	Under	Under	Under	Under	Under	Under
	Kenai River - Early Run	Over ^e	Over	Over	Over	Over	NA ^f	NA ^f	NA ^f	NA ^f	Under ^g
	Kenai River - Late Run	Met	Met	Met	Met	Under	NA ^f	NA ^f	NA ^f	NA ^f	Met ^g
	Lake Creek	Met	Met	Met	Under	Under	Under	Met	Under	Under	Met
	Lewis River	Met	Met	Under	Under	Under	Under	Under	Under	Under	Under
	Little Susitna River	Over	Over	Met	Met	Met	Under	Under	Under	Met	Met
	Little Willow Creek	Met	Met	Met	NC	Met	Met	Met	Met	Met	Met
	Montana Creek	Met	Met	Met	Met	Met	Under	Under	Under	Under	Met
	Peters Creek	Met	Met	Met	NC	Met	NC	Met	Under	Under	Met
	Prairie Creek	Met	Met	Met	Under	Met	Under	Under	Under	Under	Met
	Sheep Creek	Met	Under	Under	NC	Under	NC	Under	Under	Under	NC
	Talachulitna River	Met	Over	Met	Met	Met	Under	Under	Under	Under	Met
	Theodore River	Under	Met	Under	Under	Under	Under	Under	Under	Under	Under
	Willow Creek	Met	Met	Under	Under	Under	Under	Under	Under	Under	Met
	<i>Lower Cook Inlet</i>										
	Anchor River		eliminated		Met	Under	Under	Under ^h	Met	Met	Met
	Deep Creek	Over	Met	Met	Under	Met	Met	Met	Met	Met	Met
	Ninilchik River	Met	Met	Met	Met ⁱ	Under	Met	Met	Met	Met	Met
<i>Prince William Sound</i>											
Copper River	Under	Met	Met	Met	Met	Under	Met	Met	Met	NA	
Chum salmon	<i>Bristol Bay</i>										
	Nushagak River			Under	Met	Met	Met	Met	Met	Met	Met ^b

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Table 6.–Page 2 of 5.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	<i>Upper Cook Inlet</i>									
	Clearwater Creek	Under	Under	Met	Over	Met	Over	Over	Met	Over
	<i>Lower Cook Inlet</i>									
	Port Graham River	Under	Met	Met	Met	Under	Under	Met	Under	Met
	Dogfish Lagoon	Under	Met	Met	Met	Met	Over	Over	Met	Over
	Rocky River	Over	Over	Met	Met	Met	Met	Met	Met	Over
	Port Dick Creek	Over	Met	Met	Over	Over	Met	Over	Over	Met
	Island Creek	Over	Under	Under	Met	Met	Under	Met	Met	Met
	Big Kamishak River	Over	Over	Met	Under	Met	NS	Under	Met	Under
	Little Kamishak River	Met	Over	Met	Met	Under	Met	Met	Over	Met
	McNeil River	Met	Met	Met	Under ⁱ	Under	Under	Met	Under	Under
	Bruin River	Over	Met	Under	Over	Met	Met	Under	Over	Met
	Ursus Cove	Over	Over	Over	Met	Over	Over	Over	Under	Over
	Cottonwood Creek	Over	Over	Over	Met	Over	Over	Under	Under	Under
	Iniskin Bay	Over	Over	Under	Over	Over	Over	Under	Under	Under
	<i>Prince William Sound</i>									
	Eastern District	Met	Met ^k	Met	Met	Met	Met	Met	Met	Met
	Northern District	Met	Met ^k	Met	Met	Met	Met	Met	Under	Met
	Coghill District	Met	Met ^k	Met	Met	Met	Met	Met	Met	Met
	Northwestern District	Met	Met ^k	Met	Met	Met	Met	Met	Met	Under
	Southeastern District	Over	Met ^k	Met	Met	Met	Met	Met	Met	Met
Coho salmon	<i>Bristol Bay</i>									
	Nushagak River									Over
	<i>Upper Cook Inlet</i>									
	Fish Creek (Knik)	eliminated						Met ^d	Met	Over
	Jim Creek	Over	Over	Over	Over	Over	Under	Under	Under	Over
	Little Susitna River	Met	NA	Met	Over	Under	Under	Under	Under	Met
	<i>Prince William Sound</i>									
	Copper River Delta	Over	Over	Met	Over	Met	Met	Met	Met	Met
	Bering River	Over	Over	Over	Met	Met	Met	Met	Met	Met
Pink salmon	<i>Bristol Bay</i>									
	Nushagak River									NA
	<i>Lower Cook Inlet</i>									
	Humpy Creek	Over	Met	Met	Over	Under	Met	Under	Met	Under
	China Poot Creek	Over	Met	Met	Met	Under	Under	Met	Over	Met

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Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Tutka Creek	Over	Over	Under	Met	Under	Under	Over	Met	Met
	Barabara Creek	Over	Met	Over	Over	Met	Over	Over	Under	Over
	Seldovia Creek	Over	Over	Over	Over	Under	Met	Over	Over	Met
	Port Graham River	Over	Over	Over	Over	Met	Met	Over	Over	Met
	Port Chatham	Over	Over	Met	Met	Over	Under	Met	Under	Over
	Windy Creek Right	Over	Over	Over	Over	Over	Met	Under	Met	Over
	Windy Creek Left	Over	Over	Met	Over	Over	Met	Met	Met	Over
	Rocky River	Over	Over	Over	Over	Over	Met	Met	Met	Over
	Port Dick Creek	Over	Met	Met	Met	Met	Met	Under	Under	Met
	Island Creek	Met	Over	Over	Over	Over	Over	Met	Met	Met
	S. Nuka Island Creek	Met	Met	Met	Met	Over	NS	NS	Under	Met
	Desire Lake Creek	Over	Over	Met	Met	Over	Met	Under	Met	Over
	Bear & Salmon Creeks	Over	Met	NS	NS	NS	NS	eliminated		
	Thumb Cove	Met	Met	NS	NS	NS	NS	eliminated		
	Humpy Cove	Over	Met	NS	NS	NS	NS	eliminated		
	Tonsina Creek	Over	Over	NS	NS	NS	NS	eliminated		
	Bruin River	Met	Over	Over	Met	Over	Met	Under	Met	Under
	Sunday Creek	Over	Over	Over	Met	Over	Met	Under	Under	Met
	Brown's Peak Creek	Over	Over	Over	Met	Over	Met	Under	Met	Met
	<i>Prince William Sound</i>									
	All Districts Combined (even year)		Under		Under		Met		eliminated	
	All Districts Combined (odd year)	Over		Met		Met		Over	eliminated	
	Eastern District (even year)								Met	
	Eastern District (odd year)									Over
	Northern District (even year)								Under	
	Northern District (odd year)									Over
	Coghill District (even year)								Over	
	Coghill District (odd year)									Over
	Northwestern District (even year)								Met	
	Northwestern District (odd year)									Over
	Eshamy District (even year)								Under	
	Eshamy District (odd year)									Over
	Southwestern District (even year)								Met	
	Southwestern District (odd year)									Over
	Montague District (even year)								Met	
	Montague District (odd year)									Over
	Southeastern District (even year)								Met	

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Table 6.–Page 4 of 5.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Southeastern District (odd year)									Over
Sockeye salmon	<i>Bristol Bay</i>									
	Kvichak River	Met	Met	Met	Met	Met	Met	Met	Met	Met
	Alagnak River	Over	Over	Met ^l	Met	Met	Met	Met	Met	Met
	Naknek River	Over	Over	Over	Over	Met	Over	Met	Met	Met
	Egegik River	Over	Over	Over	Met	Met	Met	Met	Met	Met
	Ugashik River	Met	Met	Over	Met	Over	Met	Met	Met	Met
	Wood River	Met	Over	Over	Over	Met	Over	Met	Met	Met
	Igushik River	Over	Over	Over	Over	Over	Over	Over	Met	Over
	Nushagak River	Over	Met	Met	Met	Met	Met	Met	Met	Over ^b
	Kulukak Bay	NS	NS	NS	NS	NS	NS	NS	NS	eliminated
	Togiak River	Met	Over	Met ^e	Met	Over	Met ^m	Met	Met	Met
	<i>Upper Cook Inlet</i>									
	Crescent River	Over ^e	Over	Over	Met	NS	Over	Over	Met	NS
	Fish Creek (Knik)	Under	Met	Met	Under	Over	Over	Met	Under	Under
	Kasilof River	Over	Over	Over	Met	Met	Met	Met	Met	Over
	Kenai River	Over	Over	Met	Under	Under	Met	Met	Met	Met
	Packers Creek		eliminated		Met ^d	Met	NS	NA	NA	NA
	Russian River - Early Run	Over ^m	Over	Met	Met	Over	Met	Met	Met	Met
	Russian River - Late Run	Met ^e	Met	Met	Met	Met	Met	Met	Met	Met
	Yentna River	Under	Met	Under	Met					
	Chelatna Lake					Under	Met	Over	Met	Over
	Judd Lake					Met	Under	Met	Under	Under
	Larson Lake					Met	Met	Under	Met	Met
	<i>Lower Cook Inlet</i>									
	English Bay	Met	Over	Over	Met	Over	Met	Met	Under	Met
	Delight Lake	Over	Met	Over	Over	Over	Over	Over	Met	Under
	Desire Lake	Under	Over	Met	Met	Over	Under	Met	Met	Under
	Bear Lake	Over	Over	Over	Over	Over	Over	Over	Met	Over
	Aialik Lake	Met	Met	Met	Met	Under	Met	Under	Under	Under
	Mikfik Lake	Under	Over	Met	Under	Over	Met	Under	Under	Under
	Chenik Lake	Over	Over	Over	Over	Over	Over	Met	Over	Met
	Amakdedori Creek	Met	Under	Over	Over	Met	Under	Over	Under	Met
	<i>Prince William Sound</i>									
	Upper Copper River	Over	Over	Over	Met	Met	Over	Over	Over ^e	NA
	Copper River Delta	Met	Met	Met	Met	Met	Met	Met	Met	Met

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Table 6.–Page 5 of 5.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Bering River	Met	Under	Met	Under	Under	Under	Met	Met ^e	Met
	Coghill Lake	Met	Met ^m	Over	Met	Under	Met	Over	Over ^e	Under
	Eshamy Lake	Met	Over	Under	Under	Met ^e	Met	Met	NA	NA

Note: NA = data not available; NC = no count; NS = no survey. There are no escapement goals for coho salmon in Bristol Bay or Lower Cook Inlet and there are no pink salmon escapement goals in Bristol Bay or Upper Cook Inlet.

^a Escapement goal reevaluated, point goal changed to a range.

^b Escapement goal reevaluated and historic escapements converted from Bendix counts to DIDSON equivalents. Escapements in Table 2 are based on DIDSON counts.

^c Escapement goal reevaluated, point goal changed to a lower-bound goal.

^d Previous escapement goal reinstated.

^e Escapement goal reevaluated, goal range changed.

^f Target strength based escapement estimate deemed unreliable or not available.

^g Escapements and escapement goal reevaluated, goal range changed. Escapement estimates in Table 2 are based on new methodology.

^h Escapement goal reevaluated, lower-bound goal changed to a range.

ⁱ Escapement goal reevaluated, current goal based on escapement count over longer period during spawning season, escapement numbers in Table 2 are based on longer counting time.

^j Escapement goal reevaluated, and escapement goal in place prior to 2002 was reinstated. Escapement goal in place from 2002 to 2007 was based on escapement estimates using a different aerial survey index expansion method (Otis and Szarzi 2007).

^k Escapement goal reevaluated, upper-bound goal eliminated, lower-bound goal remained the same.

^l Escapement goal reevaluated, goal range changed to a lower-bound goal.

^m Escapement goal reevaluated, goal type changed but goal range remained the same.

Table 7.—Assessment of whether escapements met (Met), exceeded (Over), or did not meet (Under) the escapement goal in place at the time of enumeration for salmon stocks in Arctic-Yukon-Kuskokwim Region.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Chinook salmon	<i>Kuskokwim Area</i>										
	North (Main) Fork Goodnews River	NS ^a	Over	NS	Met	NS	NS	Met	Under	NS	
	Middle Fork Goodnews River	Over ^a	Over	Over ^b	Met	Met	Met	Met	Under	Under	
	Kanektok River	Over ^a	Over	NS	Met	NS	Under	NS	NA	Under	
	Kuskokwim Area (entire area)										
	Kogruklu River	Over ^a	Over	Met	Met	Met	Met	Met	Met	NA	Under ^b
	Kwethluk River	Over	NA	Over ^c	Under	Under	Under	Under	Under	NA	NA ^b
	Tuluksak River			Under	Under	Under	Under	Under	Under	Under	eliminated
	George River			Met	Under	Met	Under	Under	Under	Under	Under ^b
	Kisaralik River	Over ^a	Over	Met	Met	NS	Under	NS	Met	Met	
	Aniak River	NS ^a	Over	Over	Over	NS	NS	NS	NS	NS	Under
	Salmon River (Aniak R)	Over ^a	NS	Over	Met	NS	NS	Under	Under	Under	
	Holitna River	Over ^a	Over	NS	Under	NS	Under	NS	NS	NS	Under
	Cheeneetnuk River (Stony R)	Met	Met	NS	Under	Under	NS	Under	Under	Under	Under
	Gagaryah River (Stony R)	Met	Met	Over	Under	Met	Under	Under	Under	Under	Under
	Salmon River (Pitka Fork)	Over ^a	Met	Met	Met	Met	Under	Met	Met	Met	
	<i>Yukon River</i>										
	East Fork Andreafsky River	Over ^a	Under	Over	Under	Under	Met ^c	Over	Met	Under	
	West Fork Andreafsky River	Met ^a	Met	Met	NS	Over	Met	Met	NS	Met	
	Anvik River	Over ^a	Over	Met	Under	Under	Under	Under	Under	Under	
Nulato River (forks combined)	Under ^a	Met	Over	Under	Over	Under	Met	Met	Met		
Gisasa River	Met ^a	Met	Met	Met	Met	eliminated					
Chena River	NS	Met	Met	Met	Met	Under	NS	Under	Under		
Salcha River	Met	Over	Met	Met	Over	Met	Over	Over	Met		
Canada Mainstem	Met	Met	Met ^d	Under ^d	Met	Under ^d	Met	Under	Under		
<i>Norton Sound</i>											
Fish River/Boston Creek	Under ^e	NS	NS	NS	NS	NS	NS	NS	NS	Under	
Kwiniuk River	Met ^f	Under	Under	Under	Met	Under	Under	Under	Under		
North River (Unalakleet R)	Under ^b	Under	Met	Under	Met	Met	Under	Under	Under		
Shaktoolik River	Under ^f	Under	Met	NS	NS	NS	Under	NS	eliminated		
Unalakleet/Old Woman River	Under ^f	NS	Met	NS	Over	NS	Under	NA	NS		
Chum salmon	<i>Kuskokwim Area</i>										
	Middle Fork Goodnews River	Met ^b	Met	Met	Met	Met	Met	Met	Under	Met	
	Kanektok River	NS ^b	NS	NS	NS	NS	NS	NS	NA	eliminated	

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Table 7.–Page 2 of 3.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Kogrukluk River	Over ^a	Over	Over	Met	Over	Over	Over	NA	Over
	Aniak River	Over ^a	Over	Over ^g	Met	Met	Met	Met	NS	NA
	<i>Yukon River Summer Chum</i>									
	East Fork Andreafsky River	Under	Met	Met	Under	Under	Met ^e	Met	Met	Met
	Anvik River	Met ^b	Met	Met	Met	Under	Met	Met	Met	Met
	<i>Yukon River Fall Chum</i>									
	Yukon River Drainage	Over	Over	Over	Met	Met	Met ^f	Over	Met	Over
	Tanana River	Over	Over	Over	Over	Over	Over	Over	Met	Over
	Delta River	Over	Over	Over	Over	Met	Over	Over	Met	Over
	Toklat River	NA	NA	NA	NA	NA	eliminated			
	Upper Yukon River Tributaries	Over	Over	Over	Met	NA	Met	Over	Over	Over
	Chandalar River	Over	Over	Over	Over	NA	Over	Over	Over	Over
	Sheenjek River	Over	Over	Met	Met	Met	Under	Met	Over	Over
	Fishing Branch River (Canada)	Over	Under	Under	Under ^d	Met	Under	Under	Met	Met
	Yukon R. Mainstem (Canada)	Met	Met	Met	Met	Met	Over ^d	Over	Over	Over
	<i>Norton Sound</i>									
	Subdistrict 1 Aggregate	Over	Over	Over	Met	Under	Over	Over	Over	Over
	Sinuk River	Met ^f	Met	Over	NS	Under	eliminated			
	Nome River	Over ^f	Over	Over	Under	Under	Over	Met	Under	Over
	Bonanza River	Over ^f	Under	Over	NS	Over	eliminated			
	Snake River	Over ^f	Over	Over	Under	Under	Over	Over	Under	Over
	Solomon River	Over ^f	Over	Over	NS	Under	eliminated			
	Flambeau River	Over ^f	Over	Over	Over	Under	eliminated			
	Eldorado River	Over ^f	Over	Over	Met	Under	Over	Over	Over	Over
	Niukluk River	Under	Under	Met	Under	Under	Met ^b	Met	Under	NS
	Kwiniuk River	Met	Over	Over	Under	Under	Over	Over	Under	Under
	Tubutulik River	Under	NS	Under	NS	Under	Met	Met	NS	NS
	Unalakleet/Old Woman River	Under ^f	NS	Under	NS	NS	NS	NS	NS	Met
	<i>Kotzebue Sound</i>									
	Kotzebue Sound Aggregate									
	Noatak and Eli Rivers	NS ^f	Under	NS ^b	Over	Met	NS	NS	NS	NS
	Upper Kobuk w/ Selby River	NS ^f	Over	NS ^b	Over	Over	NS	NS	NS	NS
	Salmon River	NS ^f	NS	NS ^b	NS	NS	NS	NS	NS	NS
	Tutuksuk River	Met ^f	NS	NS ^b	NS	NS	NS	NS	NS	NS
	Squirrel River	NS ^f	NS	NS ^b	NS	NS	NS	NS	NS	NS

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Table 7.–Page 3 of 3.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Coho salmon	<i>Kuskokwim Area</i>										
	Middle Fork Goodnews River	Met	Met	Met	Met	Met	Met	Met	Met	Met	NA
	Kogruklu River	Met ^a	Met	Met	Over	Met	Met	Met	Met	Met	Met
	Kwethluk River						NA	NA	Met	NA	
	<i>Yukon River</i>										
	Delta Clearwater River	Over ^a	Met	Met	Met	Met	Met	Met	Met	Met	Met
	<i>Norton Sound</i>										
	Kwiniuk River	NS ^f	NS	Over	Over	NS	Over	Over	NS	NS	NS
Niukluk River	NS	NS	Met ^h	Over	Over	Over ^b	Met	Under	NS	NS	
North River (Unalakleet R.)	Over ^f	NS	Over	Over	Over	NS	Met	NS	Met	Met	
Pink salmon	<i>Norton Sound</i>										
	Nome River (odd year)	Met		Met		Met		Met			Met
	Nome River (even year)	ⁱ	Met		Met		Met		Met		Met
	Kwiniuk River	Met ⁱ	Met	Met	Met	Met	Met	Met	Met	Met	Met
	Niukluk River	Met ⁱ	Met	Met	Met	Met	Met	Met	Met	Met	NA
	North River	Met ⁱ	Met	Met	Met	Met	Met	Met	Met	Met	Met
Sockeye salmon	<i>Kuskokwim Area</i>										
	North (Main) Fork Goodnews River	NS ^a	Over	NS	Over	NS	NS	Met	Met	NS	NS
	Middle Fork Goodnews River	Over ^a	Over	Over ^b	Over	Met	Met	Under	Met	Met	Met
	Kanektok River	Over ^a	Over	NS	Over	NS	Met	NS	NA	Over	Over
	Kogruklu River						Met	Met	NA	Met	Met
	<i>Norton Sound</i>										
	Salmon Lake/Grand Central River	Over ^f	Over	Over	Over	Under	Under	Met	Met	Met	Met
Glacial Lake	Over ^f	Over	Met	Under	Under	Under	NS	NS	Met	Met	

Note: NA = data not available; NS =no survey; ND = not determined yet. There are no escapement goals for pink salmon in Kuskokwim Area and Yukon River, and there are no escapement goals for sockeye salmon in Yukon River.

^a Escapement goal reevaluated, lower-bound goal changed to a range.

^b Escapement goal reevaluated, goal value changed.

^c Previous escapement goal was based on aerial surveys; replaced with escapement goal based on weir counts. Escapements in Table 3 are weir counts.

^d Escapement goal revised by The United States and Canada Yukon River Panel.

^e Escapement goal reevaluated, goal range changed to a lower-bound goal.

^f Escapement goal reevaluated, goal type changed but goal value remained the same.

^g Previous escapement goal was based on Bendix and Biosonics sonar counts, replaced with escapement goal based on DIDSON sonar counts. Escapements in Table 3 are in DIDSON units (Molyneaux and Brannian 2006).

^h Prior to 2007 escapement goal was based on escapements enumerated by aerial surveys of Niukluk and Ophir rivers. Escapements in Table 3 are weir counts.

ⁱ Escapement goal reevaluated, point goal changed to a lower-bound goal.

Table 8.—Assessment of whether escapements met (Met), exceeded (Over), or did not meet (Under) the escapement goal in place at the time of enumeration for salmon stocks in Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas).

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
Chinook salmon	<i>AK Peninsula</i>									
	Nelson River	Over	Met	Met	Over	Under	Met	Under	Under	Under
	<i>Chignik</i>									
	Chignik River	Over	Over	Met	Met	Met	Over	Met	Met	Under
	<i>Kodiak</i>									
	Karluk River	Met	Met	Under	Under	Under	Under	Met ^a	Met	Under
	Ayakulik River	Met	Under	Met	Under	Under	Met	Met ^a	Met	Under
Chum salmon	<i>AK Peninsula</i>									
	Northern District	Under	Over	Over ^b	Met	Met	Met	Under	Met	Met
	Northwestern District	Met	Met	Over ^b	Over	Under	Met	Met	Met	Under
	Southeastern District	Over	Over	Met	Over	Met	Under	Met	Met	Met
	South Central District	Over	Met	Met	Met	Under	Under	Met	Under	Met
	Southwestern District	Over	Met	Over	Met	Over	Met	Met	Under	Met
	Unimak District	Met	Met	Met ^c	Met	Met	Met	Met	Under	eliminated
	<i>Chignik</i>									
	Entire Chignik Area				Met ^d	Met	Met	Met	Met	Met
	<i>Kodiak</i>									
Mainland District	Under ^e	Met	Under	Under ^f	Under	Met	Met	Met	Met	
	Kodiak Archipelago Aggregate				Under ^d	Met	Met	Met	Met	
Coho salmon	<i>AK Peninsula</i>									
	Nelson River	Met	Met	Met	Met	Met	Under	Met	Met	Met
	Thin Point Lake	Met	Met	Met	Met	Under	NA	Under	Under	eliminated
	Ilnik River						Met ^g	Met	Met	Met
	<i>Kodiak</i>									
	Pasagshak River	Over ^a	Under	Met	Over	Met	Met	Under ^c	Met	Met
	Buskin River	Over ^a	Over	Over	Over	Over	Met	Met	Met	Met
	Olds River	Over ^a	Met	Under	Under	Under	NA	Met ^c	Under	Met
	American River	Under ^a	Over	Under	Met	Met	NA	Met ^c	Met	Met
Pink salmon	<i>AK Peninsula</i>									
	Bechevin Bay Section (odd year)	Met		Met		Met		Met		eliminated
	Bechevin Bay Section (even year)		Met		Under		Under		Under	eliminated

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Table 8.—Page 2 of 3.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	South Peninsula Total (odd year)	Over		Met ^b		Met		Met		Met
	South Peninsula Total (even year)		Met	^b	Met		Under		Under	
	<i>Chignik</i>									
	Entire Chignik Area (odd year)	Over ^d		Over	^a	Over		Over		Over
	Entire Chignik Area (even year)	^d	Met		Over ^a		Met		Met	
	<i>Kodiak</i>									
	Mainland District	Met ^h	Over	Met	Under	Met	Met	Met ⁱ	Met	Met
	Kodiak Archipelago (odd year)	Met ^d		Met		Met		Met ^j		Met
	Kodiak Archipelago (even year)		Over		Met		Met	^j	Met	
Sockeye salmon	<i>AK Peninsula</i>									
	Cinder River	Over	Over	Over ^a	Over	Over	Over	Over	Over	Over
	Ilnik River	Over	Over	Over	Met	Over	Met	Met	Over	Met
	Meshik River	Over	Over	Met ^a	Over	Over	Met ^a	Met	Met	Met
	Sandy River	Over	Met	Met ^a	Under	Met	Met	Met	Under	Met
	Bear River Early Run	Over	Met	Met	Under	Met	Met	Met	Under	Met
	Bear River Late Run	Over	Met	Over	Over	Met	Met	Met	Under	Over
	Nelson River	Over	Met	Met	Met	Met	Met	Under	Met	Over
	Christianson Lagoon	Over	Met	Met	Over	Met	Met	Met	Met	Under
	Swanson Lagoon	Under	Under	Met ^a	Under	Under	Under	Under	Met	Under
	North Creek	Over	Met	Over	Over	Met	Over	Over	Over	Met
	Orzinski Lake	Over	Met	Under	Over	Over	Met	Met	Met	Met
	Mortensen Lagoon	Over	Over	Met	Met	Over	Over	Under	Met	Met
	Thin Point Lake	Met	Under	Met	Met	Over	Under	Met	Met	Under
	McLees Lake						Met ^g	Met	Met	Met
	<i>Chignik</i>									
	Chignik River Early Run	Met ^b	Met	Met	Met	Met	Over	Over	Met	Met
	Chignik River Late Run	Met	Over	Over	Met ^a	Met	Met	Met	Met	Met
	<i>Kodiak</i>									
	Malina Creek	Met ^a	Met	Met	Met	Met	Met	Met	Met	Met
	Afognak (Litnik) River	Met ^a	Met	Met	Met	Met	Over	Met	Met	Met
	Little River		eliminated		Under ^k	Under	Met	Met	Met	Met
	Uganik Lake		eliminated		Met ^k	Met	Met	Met	Under	Met
	Karluk River Early Run	Over ^a	Met	Over	Under ^a	Under	Under	Under	Met	Met
	Karluk River Late Run	Over ^a	Met	Met	Under	Met	Met	Met	Met	Met

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Table 7.–Page 3 of 3.

Species	System	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Ayakulik River	Met	Under	Met	Under	Met	Met			
	Ayakulik River Early Run							Met ^l	Met	Met
	Ayakulik River Late Run							Met ^l	Met	Met
	Upper Station River Early Run	Met ^a	Under	Met	Met	Met	Met	Met	Met	Met
	Upper Station River Late Run	Met ^a	Met	Met	Met	Met	Met	Under	Met	Met
	Frazer Lake	Met ^a	Met	Met	Met ^a	Met	Met	Met	Met	Met
	Saltery Lake	Met	Met	Met	Over	Over	Met	Under ⁱ	Met	Over
	Pasagshak River	Over ^a	Met	Over	Over	Under	Met	Met ^c	Met	Met
	Buskin Lake	Over	Over	Over	Under	Under	Met	Over ^m	Over	Over

Note: There are no coho salmon escapement goals in Chignik Area.

^a Escapement goal reevaluated, goal range changed.

^b Escapement goal reevaluated, goal type changed but goal range remained the same.

^c Escapement goal reevaluated, upper-bound goal eliminated, lower-bound goal remained the same.

^d Aggregate goal established to replace individual district level goals.

^e Escapement goal reevaluated, goal range changed to a lower-bound goal.

^f Escapement goal reevaluated, lower-bound goal changed.

^g Goal reestablished. New analysis.

^h Separate odd- and even-year goals were discontinued and a single goal established.

ⁱ Escapement goal reevaluated, upper bound of goal changed.

^j Single escapement goal was separated into odd- and even-year escapement goals.

^k Previous escapement goal reestablished.

^l Single escapement goal was changed to separate early- and late-run escapement goals.

^m Escapement goal reevaluated, goal type and range changed.

Table 9.—Southeast Region Chinook, chum, coho, pink, and sockeye salmon escapements compared to escapement goals for the years 2005 to 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON									
Number Below	1	1	4	3	5	1	3	6	4
Number Met	7	7	6	7	5	8	8	5	6
Number Above	3	3	1	1	1	2	0	0	2
% Below	9	9	36	27	45	9	27	55	33
% Met	64	64	55	64	45	73	73	45	50
% Above	27	27	9	9	9	18	0	0	17
CHUM SALMON									
Number Below					5	2	3	1	3
Number Met					2	5	3	5	5
Number Above					1	1	2	2	0
% Below					63	25	38	13	38
% Met					25	63	38	63	63
% Above					13	13	25	25	0
COHO SALMON									
Number Below	2	0	3	0	0	0	1	2	2
Number Met	6	8	8	5	11	8	9	7	6
Number Above	2	5	2	6	2	5	3	4	6
% Below	20	0	23	0	0	0	8	15	14
% Met	60	62	62	45	85	62	69	54	43
% Above	20	38	15	55	15	38	23	31	43
PINK SALMON									
Number Below	0	0	0	1	0	0	0	2	0
Number Met	1	2	1	2	4	3	2	2	2
Number Above	3	2	3	0	0	0	2	0	2
% Below	0	0	0	33	0	0	0	50	0
% Met	25	50	25	67	100	100	50	50	50
% Above	75	50	75	0	0	0	50	0	50
SOCKEYE SALMON									
Number Below	2	2	4	12	5	1	1	2	5
Number Met	6	4	5	1	4	10	6	7	5
Number Above	5	7	4	0	3	2	6	4	3
% Below	15	15	31	92	42	8	8	15	38
% Met	46	31	38	8	33	77	46	54	38
% Above	38	54	31	0	25	15	46	31	23

Note: Blank cells indicate that there were no official escapement goals for that species in those particular years.

Table 10.—Central Region (Bristol Bay, Cook Inlet, Prince William Sound/Copper River) Chinook, chum, coho, pink, and sockeye salmon escapements compared to escapement goals for the years 2005 to 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON									
Number Below	2	2	7	12	16	15	14	14	6
Number Met	16	17	18	12	12	7	10	8	17
Number Above	6	5	2	2	1	0	0	1	0
% Below	8	8	26	46	55	68	58	61	26
% Met	67	71	67	46	41	32	42	35	74
% Above	25	21	7	8	3	0	0	4	0
CHUM SALMON									
Number Below	3	2	4	2	3	3	4	6	5
Number Met	6	10	13	13	12	10	11	10	10
Number Above	9	6	2	4	4	5	4	3	4
% Below	17	11	21	11	16	17	21	32	26
% Met	33	56	68	68	63	56	58	53	53
% Above	50	33	11	21	21	28	21	16	21
COHO SALMON									
Number Below	0	0	0	0	1	2	2	2	0
Number Met	1	0	2	1	2	2	3	3	3
Number Above	3	3	2	3	1	0	0	0	3
% Below	0	0	0	0	25	50	40	40	0
% Met	25	0	50	25	50	50	60	60	50
% Above	75	100	50	75	25	0	0	0	50
PINK SALMON									
Number Below	0	1	1	1	4	3	7	7	2
Number Met	4	8	8	9	4	12	5	14	9
Number Above	18	13	9	8	10	2	5	4	14
% Below	0	5	6	6	22	18	41	28	8
% Met	18	36	44	50	22	71	29	56	36
% Above	82	59	50	44	56	12	29	16	56
SOCKEYE SALMON									
Number Below	4	2	2	5	5	4	3	6	7
Number Met	12	10	13	18	15	18	20	21	16
Number Above	13	17	14	7	11	9	8	3	5
% Below	14	7	7	17	16	13	10	20	25
% Met	41	34	45	60	48	58	65	70	57
% Above	45	59	48	23	35	29	26	10	18

Table 11.—Arctic-Yukon-Kuskokwim Region Chinook, chum, coho, pink, and sockeye salmon escapements compared to escapement goals for the years 2005 to 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON									
Number Below	5	4	2	12	5	13	10	11	17
Number Met	7	8	13	10	10	7	7	4	5
Number Above	10	9	7	1	4	0	3	1	0
% Below	23	19	9	52	26	65	50	69	77
% Met	32	38	59	43	53	35	35	25	23
% Above	45	43	32	4	21	0	15	6	0
SUMMER CHUM SALMON									
Number Below	3	3	2	4	10	0	0	1	1
Number Met	4	2	2	5	3	4	5	4	2
Number Above	9	10	11	3	3	6	5	4	5
% Below	19	20	13	33	63	0	0	11	13
% Met	25	13	13	42	19	40	50	44	25
% Above	56	67	73	25	19	60	50	44	63
YUKON RIVER SUMMER CHUM SALMON									
Number Below	1	0	0	1	2	0	0	0	0
Number Met	1	2	2	1	0	2	2	2	2
Number Above	0	0	0	0	0	0	0	0	0
% Below	50	0	0	50	100	0	0	0	0
% Met	50	100	100	50	0	100	100	100	100
% Above	0	0	0	0	0	0	0	0	0
YUKON RIVER FALL CHUM SALMON									
Number Below	0	1	1	1	0	2	1	0	0
Number Met	1	1	2	4	5	2	1	4	1
Number Above	7	6	5	3	1	4	6	4	7
% Below	0	13	13	13	0	25	13	0	0
% Met	13	13	25	50	83	25	13	50	13
% Above	88	75	63	38	17	50	75	50	88
COHO SALMON									
Number Below	0	0	0	0	0	0	0	1	0
Number Met	2	3	4	2	3	3	5	4	3
Number Above	2	0	2	4	2	2	1	0	0
% Below	0	0	0	0	0	0	0	20	0
% Met	50	100	67	33	60	60	83	80	100
% Above	50	0	33	67	40	40	17	0	0

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	2005	2006	2007	2008	2009	2010	2011	2012	2013
PINK SALMON	0	0	0	0	0	0	0	0	0
Number Below	4	4	4	4	4	4	4	4	3
Number Met	0	0	0	0	0	0	0	0	0
Number Above	0	0	0	0	0	0	0	0	0
% Below	100	100	100	100	100	100	100	100	100
% Met	0	0	0	0	0	0	0	0	0
% Above									
SOCKEYE SALMON	0	0	0	1	2	2	1	0	0
Number Below	0	0	1	0	1	3	3	3	4
Number Met	4	5	2	4	0	0	0	0	1
Number Above	0	0	0	20	67	40	25	0	0
% Below	0	0	33	0	33	60	75	100	80
% Met	100	100	67	80	0	0	0	0	20
% Above	0	0	0	0	0	0	0	0	0

Table 12.–Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas) Chinook, chum, coho, pink, and sockeye salmon escapements compared to escapement goals for the years 2005 to 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
CHINOOK SALMON									
Number Below	0	1	1	2	3	1	1	1	4
Number Met	2	2	3	1	1	2	3	3	0
Number Above	2	1	0	1	0	1	0	0	0
% Below	0	25	25	50	75	25	25	25	100
% Met	50	50	75	25	25	50	75	75	0
% Above	50	25	0	25	0	25	0	0	0
CHUM SALMON									
Number Below	2	0	1	1	3	2	1	3	1
Number Met	2	5	3	6	5	7	8	6	7
Number Above	3	2	3	2	1	0	0	0	0
% Below	29	0	14	11	33	22	11	33	13
% Met	29	71	43	67	56	78	89	67	88
% Above	43	29	43	22	11	0	0	0	0
COHO SALMON									
Number Below	1	1	2	1	2	1	2	2	0
Number Met	2	3	3	3	3	3	5	5	6
Number Above	3	2	1	2	1	0	0	0	0
% Below	17	17	33	17	33	25	29	29	0
% Met	33	50	50	50	50	75	71	71	100
% Above	50	33	17	33	17	0	0	0	0
PINK SALMON									
Number Below	0	0	0	2	0	2	0	2	0
Number Met	3	3	4	2	4	3	4	3	3
Number Above	2	2	1	1	1	0	1	0	1
% Below	0	0	0	40	0	40	0	40	0
% Met	60	60	80	40	80	60	80	60	75
% Above	40	40	20	20	20	0	20	0	25
SOCKEYE SALMON									
Number Below	1	4	1	8	5	3	6	4	3
Number Met	10	16	17	12	16	21	20	22	22
Number Above	15	6	8	8	7	5	4	4	5
% Below	4	15	4	29	18	10	20	13	10
% Met	38	62	65	43	57	72	67	73	73
% Above	58	23	31	29	25	17	13	13	17

Table 13.—Summary of Southeast Region salmon escapements compared against escapement goals for the years 2005 to 2013.

Southeast Region		2005	2006	2007	2008	2009	2010	2011	2012	2013
Stocks with Escapement Data		37	38	41	41	38	48	48	49	49
Below Lower Goal										
	Number	5	3	11	16	15	4	8	13	14
	Percent	13%	7%	27%	42%	31%	8%	16%	27%	27%
Goal Met										
	Number	20	21	20	15	26	34	28	26	24
	Percent	53%	51%	49%	39%	54%	71%	57%	53%	47%
Above Upper Goal										
	Number	13	17	10	7	7	10	13	10	13
	Percent	34%	41%	24%	18%	15%	21%	27%	20%	25%

Table 14.—Summary of Central Region (Bristol Bay, Cook Inlet, Prince William Sound/Copper River) salmon escapements compared against escapement goals for the years 2005 to 2013.

Central Region		2005	2006	2007	2008	2009	2010	2011	2012	2013
Stocks with Escapement Data		100	97	96	97	97	101	92	96	102
Below Lower Goal										
	Number	9	7	14	20	29	27	30	35	20
	Percent	9%	7%	14%	21%	29%	29%	31%	34%	20%
Goal Met										
	Number	39	45	54	53	45	49	49	56	55
	Percent	40%	47%	56%	55%	45%	53%	51%	55%	54%
Above Upper Goal										
	Number	49	44	29	24	27	16	17	11	26
	Percent	51%	46%	30%	25%	27%	17%	18%	11%	26%

Table 15.—Summary of Arctic-Yukon-Kuskokwim Region salmon escapements compared against escapement goals for the years 2005 to 2013.

AYK Region	2005	2006	2007	2008	2009	2010	2011	2012	2013
Stocks with Escapement Data	62	60	58	60	60	55	54	54	47
Below Lower Goal									
Number	9	8	5	19	19	17	12	13	18
Percent	15%	14%	8%	32%	35%	31%	22%	28%	35%
Goal Met									
Number	19	20	28	26	26	25	27	25	20
Percent	32%	34%	47%	43%	47%	46%	50%	53%	39%
Above Upper Goal									
Number	32	30	27	15	10	12	15	9	13
Percent	53%	52%	45%	25%	18%	22%	28%	19%	25%

Table 16.—Summary of Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas) salmon escapements compared against escapement goals for the years 2005 to 2013.

Westward Region	2005	2006	2007	2008	2009	2010	2011	2012	2013
Stocks with Escapement Data	48	48	48	48	52	52	51	55	55
Below Lower Goal									
Number	4	6	5	14	13	9	10	12	8
Percent	8%	13%	10%	27%	25%	18%	18%	22%	15%
Goal Met									
Number	19	29	30	24	29	36	40	39	38
Percent	40%	60%	63%	46%	56%	71%	73%	71%	73%
Above Upper Goal									
Number	25	13	13	14	10	6	5	4	6
Percent	52%	27%	27%	27%	19%	12%	9%	7%	12%

Table 17.—Statewide summary of salmon stocks of concern in Alaska.

Region	System	Species	Year Designated ^a	Level of Concern	Year Last Reviewed ^a
Central	Susitna (Yentna) River	sockeye	2007	Yield	2010
	Chuitna River	Chinook	2010	Management	2010
	Theodore River	Chinook	2010	Management	2010
	Lewis River	Chinook	2010	Management	2010
	Alexander Creek	Chinook	2010	Management	2010
	Willow Creek	Chinook	2010	Yield	2010
	Goose Creek ^b	Chinook	2010	Management	2013
	Sheep Creek ^c	Chinook	2013	Management	2013
Westward	Karluk River	Chinook	2010	Management	2010
	Swanson Lagoon	sockeye	2012	Management	2012
AYK	Yukon River	Chinook	2000	Yield	2012
	Norton Sound Subdistrict 5 & 6	Chinook	2003	Yield	2012
	Norton Sound Subdistrict 2 & 3	chum	2000	Yield	2012
	Norton Sound Subdistrict 1	chum	2006	Yield	2012

^a Indicates start of Board of Fisheries cycle in which stock of concern was designated or last reviewed (e.g. 2011/2012 BOF cycle = 2011).

^b The stock of concern designation for Goose Creek was revised from a stock of yield concern to a stock of management concern at the December 2013 Upper Cook Inlet Board of Fisheries Meeting.

^c Sheep Creek was designated as a stock of concern at the December 2013 Upper Cook Inlet Board of Fisheries Meeting.

Table 18.—Methods used to enumerate and develop escapement goals for Southeast Region Chinook, chum, coho, pink, and sockeye salmon stocks.

System	Enumeration Method	Goal Development Method	References
CHINOOK SALMON			
Blossom River	Peak Aerial Survey ^a	SRA	Fleischman et al. 2011
Keta River	Peak Aerial Survey	SRA	Fleischman et al. 2011
Unuk River	Mark–Recapture	SRA	Hendrich et al. 2008
Chickamin River	Peak Aerial Survey	SRA	McPherson and Carlile 1997
Andrew Creek	Peak Aerial Survey (Expanded)	SRA	Clark et al. 1998
Stikine River	Mark–Recapture	SRA	Bernard et al. 2000
King Salmon River	Peak Aerial Survey (Expanded)	SRA	McPherson and Clark 2001
Taku River	Mark–Recapture	SRA	McPherson et al. 2010
Chilkat River	Mark–Recapture	Theoretical SRA	Ericksen and McPherson 2004; inriver:5AAC 33.384
Klukshu (Alek) River	Weir Count	SRA	Bernard and Jones (2010)
Alek River	Weir Count	SRA	Bernard and Jones (2010)
Situk River	Weir Count	SRA	McPherson et al. 2005
CHUM SALMON			
Southern Southeast Summer	Peak Aerial Survey	Percentile	Piston and Heintl 2011a
Northern Southeast Inside Summer	Peak Aerial Survey	Percentile	Piston and Heintl 2011a
Northern Southeast Outside Summer	Peak Aerial Survey	Percentile	Eggers and Heintl 2008
Cholmondeley Sound Fall	Peak Aerial Survey	Percentile	Eggers and Heintl 2008
Port Camden Fall	Peak Aerial Survey	Risk Analysis	Eggers and Heintl 2008
Security Bay Fall	Peak Aerial Survey	Percentile	Eggers and Heintl 2008
Excursion River Fall	Peak Aerial Survey	Percentile	Eggers and Heintl 2008
Chilkat River Fall	Mark–Recapture, Fish Wheel	SRA	Eggers and Heintl 2008
COHO SALMON			
Hugh Smith Lake	Weir Count	SRA	Shaul et al. 2009
Klawock River	Weir Count	Theoretical SRA	Der Hovanisian (2013)
Taku River	Mark–Recapture	Agreement ^b , SRA	TTC (2014)
Auke Creek	Weir Count	SRA	Clark et al. 1994
Montana Creek	Foot Survey	Theoretical SRA	Clark 2005
Peterson Creek	Foot Survey	Theoretical SRA	Clark 2005
Ketchikan Survey Index	Peak Aerial Survey	Theoretical SRA	Shaul and Tydingco 2006
Sitka Survey Index	Foot Survey	Theoretical SRA	Shaul and Tydingco 2006
Ford Arm Lake	Weir Count	SRA	Clark et al. 1994

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System	Enumeration Method	Goal Development Method	References
Berners River	Mark–Recapture	SRA	Clark et al. 1994
Chilkat River	Mark–Recapture, Foot Survey	SRA	Ericksen and Fleischman 2006
Lost River	Foot Survey, Boat Survey	SRA	Clark and Clark 1994
Situk River	Boat Survey	SRA	Clark and Clark 1994
Tsiu/Tsivat Rivers	Peak Aerial Survey	SRA	Clark and Clark 1994
PINK SALMON			
Southern Southeast	Peak Aerial Survey	Yield Analysis	Heinl et al. 2008
Northern Southeast Inside	Peak Aerial Survey	Yield Analysis	Heinl et al. 2008
Northern Southeast Outside	Peak Aerial Survey	Yield Analysis	Heinl et al. 2008
Situk River	Weir Index	Percentile	Piston and Heinl 2011b
SOCKEYE SALMON			
Hugh Smith Lake	Weir Count	Risk Analysis, Theoretical SRA	Geiger et al. 2003; OEG: 5 AAC 33.390
McDonald Lake	Expanded Foot Survey	SRA	Eggers et al. 2009a
Mainstem Stikine River	Run Reconstruction	Professional Judgement ^b	TTC 1987; TTC 1990
Tahltan Lake	Weir Count	SRA	Humphreys et al. 1994; TTC 1993
Speel Lake	Weir Count	SRA	Riffe and Clark 2003
Taku River	Mark–Recapture	Professional Judgement ^b	TTC 1986
Redoubt Lake	Weir Count	SRA	Geiger 2003; OEG: 5 AAC 01.760 (a)
Chilkat Lake	Sonar, Mark–Recapture	SRA	Eggers et al. 2010
Chilkoot Lake	Weir Count	SRA	Eggers et al. 2009b
East Alsek-Doame River	Peak Aerial Survey	SRA	Clark et al. 2003
Klukshu River	Weir Count	SRA	Eggers and Bernard (2011)
Alsek River	Weir Count	SRA	Eggers and Bernard (2011)
Lost River	Foot/Boat Survey	Percentile	Eggers et al. 2008
Situk River	Weir Count	SRA	Clark et al. 2002

Note: SRA = Spawner–recruit analysis.

^a One or more aerial surveys are attempted during the peak of the run. Peak count is used to index the escapement.

^b Transboundary Technical Committee, Pacific Salmon Commission

Table 19.—Methods used to enumerate and develop escapement goals for Central Region (Bristol Bay, Cook Inlet, and Prince William Sound/Copper River) Chinook, chum, coho, pink, and sockeye salmon stocks.

System	Enumeration Method	Goal Development Method	References
CHINOOK SALMON			
<i>Bristol Bay</i>			
Nushagak River	Sonar	SRA, Yield Analysis	Fair et al. (2013)
Naknek River	Single Aerial Survey ^a	Risk Analysis	Baker et al. 2006; Fair et al. 2004
Alagnak River	Single Aerial Survey	Risk Analysis	Baker et al. 2006; Fair et al. 2004
<i>Upper Cook Inlet</i>			
Alexander Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Campbell Creek	Single Foot Survey	Risk Analysis	Fair et al. 2010
Chuitna River	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Chulitna River	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Clear (Chunilna) Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Crooked Creek	Weir Count	Percentile	Bue and Hasbrouck ^b
Deshka River	Weir Count	SRA	Bue and Hasbrouck ^b ; Fair et al. 2010
Goose Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Kenai River - Early Run	Sonar	SRA	McKinley and Fleischman 2013; OEG: 5 AAC 57.160 (b)
Kenai River - Late Run	Sonar	SRA	Fleischman and McKinley 2013
Lake Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Lewis River	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Little Susitna River	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Little Willow Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Montana Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Peters Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Prairie Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Sheep Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Talachulitna River	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Theodore River	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Willow Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
<i>Lower Cook Inlet</i>			
Anchor River	Sonar, Weir Count	SRA	Otis et al. 2010; Szarzi et al. 2007
Deep Creek	Single Aerial Survey	Percentile	Bue and Hasbrouck ^b
Ninilchik River	Weir Count	Percentile	Otis and Szarzi 2007
<i>Prince William Sound</i>			
Copper River	Mark–Recapture	Empirical Observation	Savereide 2001;Bue et al. 2002

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Table 19.–Page 2 of 5.

System	Enumeration Method	Goal Development Method	References
CHUM SALMON			
<i>Bristol Bay</i>			
Nushagak River	Sonar	Risk Analysis	Fair et al. (2013)
<i>Upper Cook Inlet</i>			
Clearwater Creek	Peak Aerial Survey ^c	Percentile	Bue and Hasbrouck ^b
<i>Lower Cook Inlet</i>			
Port Graham River	Multiple Foot Surveys ^d	Percentile	Otis 2001
Dogfish Lagoon	Multiple Foot Surveys	Percentile	Otis 2001
Rocky River	Multiple Foot Surveys	Percentile	Otis 2001
Port Dick Creek	Multiple Aerial or Foot Surveys	Percentile	Otis 2001
Island Creek	Multiple Aerial or Foot Surveys	Percentile	Otis 2001
Big Kamishak River	Multiple Aerial Surveys	Percentile	Otis 2001
Little Kamishak River	Multiple Aerial Surveys	Percentile	Otis 2001
McNeil River	Multiple Aerial Surveys	Percentile	Otis and Szarzi (2007)
Bruin River	Multiple Aerial Surveys	Percentile	Otis 2001
Ursus Cove	Multiple Aerial Surveys	Percentile	Otis 2001
Cottonwood Creek	Multiple Aerial Surveys	Percentile	Otis 2001
Iniskin Bay	Multiple Aerial Surveys	Percentile	Otis 2001
<i>Prince William Sound</i>			
Eastern District	Multiple Aerial Surveys	Risk Analysis	Evenson et al. 2008
Northern District	Multiple Aerial Surveys	Risk Analysis	Evenson et al. 2008
Coghill District	Multiple Aerial Surveys	Risk Analysis	Evenson et al. 2008
Northwestern District	Multiple Aerial Surveys	Risk Analysis	Evenson et al. 2008
Southeastern District	Multiple Aerial Surveys	Risk Analysis	Evenson et al. 2008
COHO SALMON			
<i>Bristol Bay</i>			
Nushagak River	Sonar	SRA	Fair et al. (2013)
<i>Upper Cook Inlet</i>			
Fish Creek (Knik)	Weir Count	Percentile	Bue and Hasbrouck ^b ; Fair et al. 2010
Jim Creek	Single Foot Survey	Percentile	Bue and Hasbrouck ^b
Little Susitna River	Weir Count	Percentile	Bue and Hasbrouck ^b
<i>Lower Cook Inlet</i>			
There are no coho salmon stocks with escapement goals in Lower Cook Inlet			

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Table 19.–Page 3 of 5.

System	Enumeration Method	Goal Development Method	References
<i>Prince William Sound</i>			
Copper River Delta	Peak Aerial Survey	Percentile	Bue et al. 2002
Bering River	Peak Aerial Survey	Percentile	Bue et al. 2002
PINK SALMON			
<i>Bristol Bay</i>			
Nushagak River	Sonar	Percentile	Fair et al. (2013)
<i>Upper Cook Inlet</i>			
There are no pink salmon stocks with escapement goals in Upper Cook Inlet			
<i>Lower Cook Inlet</i>			
Humpy Creek	Multiple Foot Surveys	Percentile	Otis 2001
China Poot Creek	Multiple Foot Surveys	Percentile	Otis 2001
Tutka Creek	Multiple Foot Surveys	Percentile	Otis 2001
Barabara Creek	Multiple Foot Surveys	Percentile	Otis 2001
Seldovia Creek	Multiple Foot Surveys	Percentile	Otis 2001
Port Graham River	Multiple Foot Surveys	Percentile	Otis 2001
Port Chatham	Multiple Foot Surveys	Percentile	Otis 2001
Windy Creek Right	Multiple Foot Surveys	Percentile	Otis 2001
Windy Creek Left	Multiple Foot Surveys	Percentile	Otis 2001
Rocky River	Multiple Foot Surveys	Percentile	Otis 2001
Port Dick Creek	Multiple Aerial or Foot Surveys	Percentile	Otis 2001
Island Creek	Multiple Aerial or Foot Surveys	Percentile	Otis 2001
S. Nuka Island Creek	Multiple Aerial or Foot Surveys	Percentile	Otis 2001
Desire Lake Creek	Multiple Aerial Surveys	Percentile	Otis 2001
Bruin River	Multiple Aerial Surveys	Percentile	Otis 2001
Sunday Creek	Multiple Aerial Surveys	Percentile	Otis 2001
Brown's Peak Creek	Multiple Aerial Surveys	Percentile	Otis 2001
<i>Prince William Sound</i>			
Eastern District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Eastern District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Northern District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Northern District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Coghill District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Coghill District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Northwestern District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Northwestern District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011

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System	Enumeration Method	Goal Development Method	References
Eshamy District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Eshamy District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Southwestern District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Southwestern District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Montague District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Montague District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Southeastern District (even year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
Southeastern District (odd year)	Multiple Aerial Surveys	Percentile	Fair et al. 2011
SOCKEYE SALMON			
<i>Bristol Bay</i>			
Kvichak River	Tower Count	SRA, Yield Analysis	Baker et al. 2009
Alagnak River	Tower Count	Risk Analysis	Baker et al. 2006
Naknek River	Tower Count	SRA, Yield Analysis	Fried 1984; OEG: 5 AAC 06.360 (f)
Egegik River	Tower Count	SRA, Yield Analysis	Cross 1994
Ugashik River	Tower Count	SRA, Yield Analysis	Cross 1994
Wood River	Tower Count	SRA, Yield Analysis	Baker et al. 2006; Fair 2000
Igushik River	Tower Count	SRA, Yield Analysis	Baker et al. 2006; Fair 2000
Nushagak River	Sonar	SRA, Yield Analysis	Fair et al. (2013); OEG: 5 AAC 06.358 (c) (1) (B)
Togiak River	Tower Count	SRA, Yield Analysis	Baker et al. 2009; Fair et al. 2004
<i>Upper Cook Inlet</i>			
Crescent River	Sonar	SRA	Hasbrouck and Edmundson 2007
Fish Creek (Knik)	Weir Count	Percentile	Bue and Hasbrouck ^b
Kasilof River	Sonar	SRA	Fair et al. 2010; OEG: 5 AAC 21.365 (b)
Kenai River	Sonar	Brood Interaction Simulation Model	Carlson et al. 1999; Clark et al. 2007; Fair et al. 2010 OEG: 5 AAC 21.360 (b) (1)
Packers Creek	Weir Count	Percentile	Fair et al. 2007; Hasbrouck and Edmundson 2007
Russian River - Early Run	Weir Count	SRA	Fair et al. 2010
Russian River - Late Run	Weir Count	Percentile	Hasbrouck and Edmundson 2007
Chelatna Lake	Weir Count	Percentile	Fair et al. 2009
Judd Lake	Weir Count	Percentile	Fair et al. 2009
Larson Lake	Weir Count	Percentile	Fair et al. 2009
<i>Lower Cook Inlet</i>			
English Bay	Peak Aerial Survey, Weir Count	Percentile	Otis 2001
Delight Lake	Peak Aerial Survey, Weir Count	Percentile	Otis et al. 2010
Desire Lake	Peak Aerial Survey	Percentile	Otis 2001

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Table 19.–Page 5 of 5.

System	Enumeration Method	Goal Development Method	References
Bear Lake	Weir Count	Percentile	Otis 2001
Aialik Lake	Peak Aerial Survey	Percentile	Otis 2001
Mikfik Lake	Peak Aerial Survey, Video	Percentile	Otis 2001
Chenik Lake	Peak Aerial Survey, Video	Percentile	Otis et al. 2010
Amakdedori Creek	Peak Aerial Survey	Percentile	Otis 2001
<i>Prince William Sound</i>			
Upper Copper River	Sonar	Percentile	Fair et al. 2011
Copper River Delta	Peak Aerial Survey	Percentile	Bue et al. 2002
Bering River	Peak Aerial Survey	Percentile	Fair et al. 2011
Coghill Lake	Weir Count	SRA	Fair et al. 2011
Eshamy Lake	Weir Count	SRA	Fair et al. 2008

Note: SRA = Spawner-recruit analysis.

^a Single survey done around time of presumed peak of the run with no expansion of counts.

^b Bue, B. G., and J. J. Hasbrouck. Escapement goal review of salmon stocks of Upper Cook Inlet. Alaska Department of Fish and Game, Report to the Alaska Board of Fisheries, November 2001 (and February 2002), Anchorage, unpublished document.

^c Multiple aerial surveys are attempted throughout the run. Peak count is used to index the escapement.

^d Multiple surveys throughout run (at least 1 per week). Area under the curve method used to estimate annual escapement.

Table 20.—Methods used to enumerate and develop escapement goals for Arctic-Yukon-Kuskokwim Region Chinook, chum, coho, pink, and sockeye salmon stocks.

System	Enumeration Method	Goal Development Method	References
CHINOOK SALMON			
<i>Kuskokwim Area</i>			
North (Main) Fork Goodnews River	Single Aerial Survey ^a	Percentile	ADF&G 2004
Middle Fork Goodnews River	Weir Count	SRA	Brannian et al. 2006; Molyneaux and Brannian 2006
Kanektok River	Single Aerial Survey	Percentile	ADF&G 2004
Kuskokwim River (entire area)	Run Reconstruction ^b	SRA	Hamazaki et al. (2012)
Kogruklu River	Weir Count	Proportion of Kuskokwim River goal	Hamazaki et al. (2012)
Kwethluk River	Weir Count	Proportion of Kuskokwim River goal	Hamazaki et al. (2012)
George River	Weir Count	Proportion of Kuskokwim River goal	Hamazaki et al. (2012)
Kisaralik River	Single Aerial Survey	Percentile	ADF&G 2004
Aniak River	Single Aerial Survey	Percentile	ADF&G 2004
Salmon River (Aniak R)	Single Aerial Survey	Percentile	ADF&G 2004
Holitna River	Single Aerial Survey	Percentile	ADF&G 2004
Cheeneetnuk River (Stony R)	Single Aerial Survey	Percentile	ADF&G 2004
Gagarayah River (Stony R)	Single Aerial Survey	Percentile	ADF&G 2004
Salmon River (Pitka Fork)	Single Aerial Survey	Percentile	ADF&G 2004
<i>Yukon River</i>			
East Fork Andreafsky River	Weir Count	Percentile	Volk et al. 2009
West Fork Andreafsky River	Peak Aerial Survey ^c	Percentile	ADF&G 2004
Anvik River	Peak Aerial Survey	Percentile	ADF&G 2004
Nulato River (forks combined)	Peak Aerial Survey	Percentile	ADF&G 2004
Chena River	Tower, Mark–Recapture	SRA	Evenson 2002
Salcha River	Tower, Mark–Recapture	SRA	Evenson 2002
Canada Mainstem	Sonar	Agreement (U.S./Canada Joint Technical Committee)	JTC 2010; JTC 2013
<i>Norton Sound</i>			
Fish River/Boston Creek	Peak Aerial Survey	Percentile	ADF&G 2004
Kwiniuk River	Tower Count	SRA	Fair et al. 1999 ^d ; ADF&G 2004
North River (Unalakleet R)	Tower Count	Percentile	ADF&G 2004
Unalakleet/Old Woman River	Peak Aerial Survey	Theoretical SRA	ADF&G 2004

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Table 20.–Page 2 of 4.

System	Enumeration Method	Goal Development Method	References
CHUM SALMON			
<i>Kuskokwim Area</i>			
Middle Fork Goodnews River	Weir Count	Percentile	ADF&G 2004
Kogruklu River	Weir Count	Percentile	ADF&G 2004
Aniak River	Sonar	Percentile	Brannian et al. 2006; Molyneaux and Brannian 2006
<i>Yukon River Summer Chum</i>			
East Fork Andreafsky River	Weir Count	SRA	Volk et al. 2009; Fleischman and Evenson 2010
Anvik River	Sonar	SRA	ADF&G 2004
<i>Yukon River Fall Chum</i>			
Yukon River Drainage	Calculated - Multiple Surveys	SRA	Fleischman and Borba 2009; Volk et al. 2009
Tanana River	Mark–Recapture	SRA	ADF&G 2004; Eggers 2001
Delta River	Multiple Foot Surveys	Proportion of Tanana River Goal	ADF&G 2004; Eggers 2001
Upper Yukon River Tributaries	Sonar & Weir Count	SRA	ADF&G 2004; Eggers 2001
Chandalar River	Sonar	Proportion of Upper Yukon River Tributaries Goal	ADF&G 2004; Eggers 2001
Sheenjok River	Sonar	Proportion of Upper Yukon River Tributaries Goal	ADF&G 2004; Eggers 2001
Fishing Branch River (Canada)	Weir Count	Agreement (U.S./Canada Joint Technical Committee) IMEG Percentile	JTC 2008; JTC 2013
Yukon R. Mainstem (Canada)	Mark–Recapture	Agreement (U.S./Canada Joint Technical Committee) IMEG SRA	JTC 2010; JTC 2013
<i>Norton Sound</i>			
Subdistrict 1 Aggregate	Calculated - Multiple Surveys	SRA	Clark 2001a
Nome River	Weir Count	Proportion of Aggregate Goal	ADF&G 2004; Clark 2001a; OEG: 5 AAC04.358 (a) (2)
Snake River	Tower/Weir Count	Proportion of Aggregate Goal	ADF&G 2004; Clark 2001a; OEG: 5 AAC04.358 (a) (1)
Eldorado River	Peak Aerial Survey (Expanded)	Proportion of Aggregate Goal	ADF&G 2004; Clark 2001a; OEG: 5 AAC04.358 (a) (3)
Niukluk River	Tower Count	Risk Analysis	Volk et al. 2009
Kwiniuk River	Tower Count	SRA	ADF&G 2004; Clark 2001b; OEG: 5 AAC 04.390 (b) (1) (A) (i)
Tubutulik River	Peak Aerial Survey (Expanded)	SRA	ADF&G 2004; Clark 2001b OEG: 5 AAC 04.390 (b) (1) (A) (ii)
Unalakleet/Old Woman River	Peak Aerial Survey	Empirical Observation	ADF&G 2004
<i>Kotzebue Sound</i>			
Kotzebue Sound Aggregate	Peak Aerial Survey (Expanded)	SRA	Brannian et al. 2006; Eggers and Clark 2006
Noatak and Eli Rivers	Peak Aerial Survey	Proportion of Aggregate Goal	Brannian et al. 2006; Eggers and Clark 2006
Upper Kobuk w/ Selby River	Peak Aerial Survey	Proportion of Aggregate Goal	Brannian et al. 2006; Eggers and Clark 2006

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Table 20.–Page 3 of 4.

System	Enumeration Method	Goal Development Method	References
Salmon River	Peak Aerial Survey	Proportion of Aggregate Goal	Brannian et al. 2006; Eggers and Clark 2006
Tutuksuk River	Peak Aerial Survey	Proportion of Aggregate Goal	Brannian et al. 2006; Eggers and Clark 2006
Squirrel River	Peak Aerial Survey	Proportion of Aggregate Goal	Brannian et al. 2006; Eggers and Clark 2006
COHO SALMON			
<i>Kuskokwim Area</i>			
Middle Fork Goodnews River	Weir Count	Percentile	ADF&G 2004
Kogrukluk River	Weir Count	Percentile	ADF&G 2004
Kwethluk River	Weir Count	Empirical Observation	Volk et al. 2009
<i>Yukon River</i>			
Delta Clearwater River	Boat Survey	Percentile	ADF&G 2004
<i>Norton Sound</i>			
Kwiniuk River	Peak Aerial Survey	Theoretical SRA	Fair et al. 1999 ^d ; ADF&G 2004
Niukluk River	Tower Count	Percentile	Volk et al. 2009
North River (Unalakleet R.)	Peak Aerial Survey	Theoretical SRA	Fair et al. 1999 ^d ; ADF&G 2004
PINK SALMON			
<i>Kuskokwim Area</i>			
There are no escapement goals for pink salmon in the Kuskokwim Management Area.			
<i>Yukon River</i>			
There are no escapement goals for pink salmon in the Yukon River drainage.			
<i>Norton Sound</i>			
Nome River (odd year)	Weir Count	Empirical Observation	ADF&G 2004
Nome River (even year)	Weir Count	Empirical Observation	Fair et al. 1999 ^d ; ADF&G 2004
Kwiniuk River	Tower Count	Empirical Observation	ADF&G 2004
Niukluk River	Tower Count	Empirical Observation	ADF&G 2004
North River	Tower Count	Empirical Observation	ADF&G 2004
SOCKEYE SALMON			
<i>Kuskokwim Area</i>			
North (Main) Fork Goodnews River	Single Aerial Survey	Percentile	ADF&G 2004
Middle Fork Goodnews River	Weir Count	SRA	Brannian et al. 2006; Molyneaux and Brannian 2006
Kanektok River	Single Aerial Survey	Percentile	ADF&G 2004
Kogrukluk River	Weir Count	Percentile	Volk et al. 2009

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Table 20.–Page 4 of 4.

System	Enumeration Method	Goal Development Method	References
<i>Yukon River</i>			
There are no escapement goals for Sockeye in the Yukon River drainage.			
<i>Norton Sound</i>			
Salmon Lake/Grand Central River	Peak Aerial Survey	Empirical Observation	Fair et al. 1999 ^d ; ADF&G 2004
Glacial Lake	Peak Aerial Survey	Empirical Observation	Fair et al. 1999 ^d ; ADF&G 2004

Note: SRA = Spawner–recruit analysis.

^a Typically single survey done around time of presumed peak of the run with no expansion of counts.

^b Bue et al. (2012).

^c One or more aerial surveys are attempted during the peak of the run. Peak count is used to index the escapement.

^d Fair, L., C. Lean, F. DeCicco, J. Magdanz, and R. McLean. Proposed Salmon BEG's for Norton Sound and Kotzebue Sound. Alaska Department of Fish and Game, Memorandum, March 24, 1999.

Table 21.—Methods used to enumerate and develop escapement goals for Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas) Chinook, chum, coho, pink, and sockeye salmon stocks.

System	Enumeration Method	Goal Development Method	References
CHINOOK SALMON			
<i>AK Peninsula</i>			
Nelson River	Weir, Peak Aerial Survey ^a	Spawning Habitat Model, SRA	Nelson et al. 2006
<i>Chignik</i>			
Chignik River	Weir Count	SRA	Witteveen et al. 2005; Hasbrouck and Clark ^b
<i>Kodiak</i>			
Karluk River	Weir Count	SRA	Nemeth et al. 2010
Ayakulik River	Weir Count	SRA	Nemeth et al. 2010
CHUM SALMON			
<i>AK Peninsula</i>			
Northern District	Peak Aerial Survey	SRA	Honnold et al. 2007b; Nelson et al. 2006; Nelson and Lloyd 2001
Northwestern District	Peak Aerial Survey	SRA	Honnold et al. 2007b; Nelson et al. 2006
Southeastern District	Peak Aerial Survey	Percentile	Nelson and Lloyd 2001; Nelson et al. 2006
South Central District	Peak Aerial Survey	Percentile	Nelson and Lloyd 2001; Nelson et al. 2006
Southwestern District	Peak Aerial Survey	Percentile	Nelson and Lloyd 2001; Nelson et al. 2006
<i>Chignik</i>			
Entire Chignik Area	Peak Aerial Survey	Risk Analysis	Witteveen et al. 2007
<i>Kodiak</i>			
Mainland District	Peak Aerial Survey	Percentile, Risk Analysis	Honnold et al. 2007a
Kodiak Archipelago Aggregate	Peak Aerial Survey	Percentile	Honnold et al. 2007a
COHO SALMON			
<i>AK Peninsula</i>			
Nelson River	Peak Aerial Survey	Risk Analysis	Nelson et al. 2006
Ilnik River	Peak Aerial Survey	Risk Analysis	Witteveen et al. 2009
<i>Chignik</i>			
There are no coho salmon stocks with escapement goals in Chignik Area			
<i>Kodiak</i>			
Pasagshak River	Foot Survey	Theoretical SRA	Nemeth et al. 2010
Buskin River	Weir Count	SRA	Nelson et al. 2005
Olds River	Foot Survey	Theoretical SRA	Nemeth et al. 2010

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Table 21.–Page 2 of 3.

System	Enumeration Method	Goal Development Method	References
American River	Foot Survey	Theoretical SRA	Nemeth et al. 2010
PINK SALMON			
<i>AK Peninsula</i>			
South Peninsula Total (odd year)	Peak Aerial Survey	SRA	Honnold et al. 2007b, Nelson and Lloyd 2001
South Peninsula Total (even year)	Peak Aerial Survey	SRA	Honnold et al. 2007b, Nelson and Lloyd 2001
<i>Chignik</i>			
Entire Chignik Area (odd year)	Peak Aerial Survey, Weir Count	Yield Analysis	Witteveen et al. 2007
Entire Chignik Area (even year)	Peak Aerial Survey, Weir Count	Yield Analysis	Witteveen et al. 2007
<i>Kodiak</i>			
Mainland District	Peak Aerial Survey	SRA	Nemeth et al. 2010
Kodiak Archipelago (odd year)	Peak Aerial Survey	SRA	Nemeth et al. 2010
Kodiak Archipelago (even year)	Peak Aerial Survey	SRA	Nemeth et al. 2010
SOCKEYE SALMON			
<i>AK Peninsula</i>			
Cinder River	Peak Aerial Survey	Percentile	Honnold et al. 2007b
Ilnik River	Weir Count	Percentile, Euphotic Volume Model, Zooplankton Model	Nelson and Lloyd 2001; Nelson et al. 2006
Meshik River	Peak Aerial Survey	Percentile	Witteveen et al. 2009
Sandy River	Weir Count	Percentile	Honnold et al. 2007b
Bear River Early Run	Weir Count	Spawning Habitat Model, Percentile, Euphotic Volume Model, Zooplankton Model, Lake Surface Area	Nelson et al. 2006
Bear River Late Run	Weir Count	Spawning Habitat Model, Percentile, Euphotic Volume Model, Zooplankton Model, Lake Surface Area	Nelson et al. 2006
Nelson River	Weir Count	SRA	Nelson et al. 2006
Christianson Lagoon	Peak Aerial Survey	Spawning Habitat Model	Nelson and Lloyd 2001; Nelson et al. 2006
Swanson Lagoon	Peak Aerial Survey	Percentile	Honnold et al. 2007b
North Creek	Peak Aerial Survey	Percentile	Nelson and Lloyd 2001; Nelson et al. 2006
Orzinski Lake	Weir Count	Percentile	Nelson and Lloyd 2001; Nelson et al. 2006
Mortensen Lagoon	Peak Aerial Survey	Spawning Habitat Model, Percentile, Euphotic Volume Model, Zooplankton Model, Lake Surface Area	Nelson and Lloyd 2001; Nelson et al. 2006
Thin Point Lake	Peak Aerial Survey	Spawning Habitat Model, Percentile, Euphotic Volume Model, Zooplankton Model, Lake Surface Area	Nelson and Lloyd 2001; Nelson et al. 2006
McLees Lake	Weir Count	Percentile	Witteveen et al. 2009

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System	Enumeration Method	Goal Development Method	References
<i>Chignik</i>			
Chignik River Early Run	Weir Count	Yield Analysis, Euphotic Volume Model, Zooplankton Model	Witteveen et al. 2005
Chignik River Late Run	Weir Count	SRA, Euphotic Volume Model, Zooplankton Model	Witteveen et al. 2007
<i>Kodiak</i>			
Malina Creek	Peak Aerial Survey	Percentile, Zooplankton Model	Nelson et al. 2005
Afognak (Litnik) River	Weir Count	SRA	Nelson et al. 2005
Little River	Peak Aerial Survey	Risk Analysis	Honnold et al. 2007a
Uganik Lake	Peak Aerial Survey	Percentile	Honnold et al. 2007a
Karluk River Early Run	Weir Count	SRA	Honnold et al. 2007a
Karluk River Late Run	Weir Count	SRA	Nelson et al. 2005
Ayakulik River Early Run	Weir Count	Zooplankton Model and historical escapement	Nemeth et al. 2010
Ayakulik River Late Run	Weir Count	Zooplankton Model and historical escapement	Nemeth et al. 2010
Upper Station River Early Run	Weir Count	SRA	Nemeth et al. 2010; OEG: 5 AAC 18.61 (a)(3)
Upper Station River Late Run	Weir Count	SRA	Nelson et al. 2005
Frazer Lake	Weir Count	SRA	Honnold et al. 2007a
Saltery Lake	Weir Count	SRA, Zooplankton Model	Nemeth et al. 2010
Pasagshak River	Peak Aerial Survey	Percentile	Nemeth et al. 2010
Buskin Lake	Weir Count	SRA	Nemeth et al. 2010

Note: SRA = Spawner–recruit analysis.

^a One or more aerial surveys are attempted during the peak of the run. Peak count is used to index the escapement.

^b Hasbrouck, J. J., and R. A. Clark. Unpublished. Escapement goal review of Chinook salmon in the Ayakulik, Chignik, and Karluk rivers. Alaska Department of Fish and Game, Report to the Alaska Board of Fisheries, December 2001, Anchorage.

FIGURES

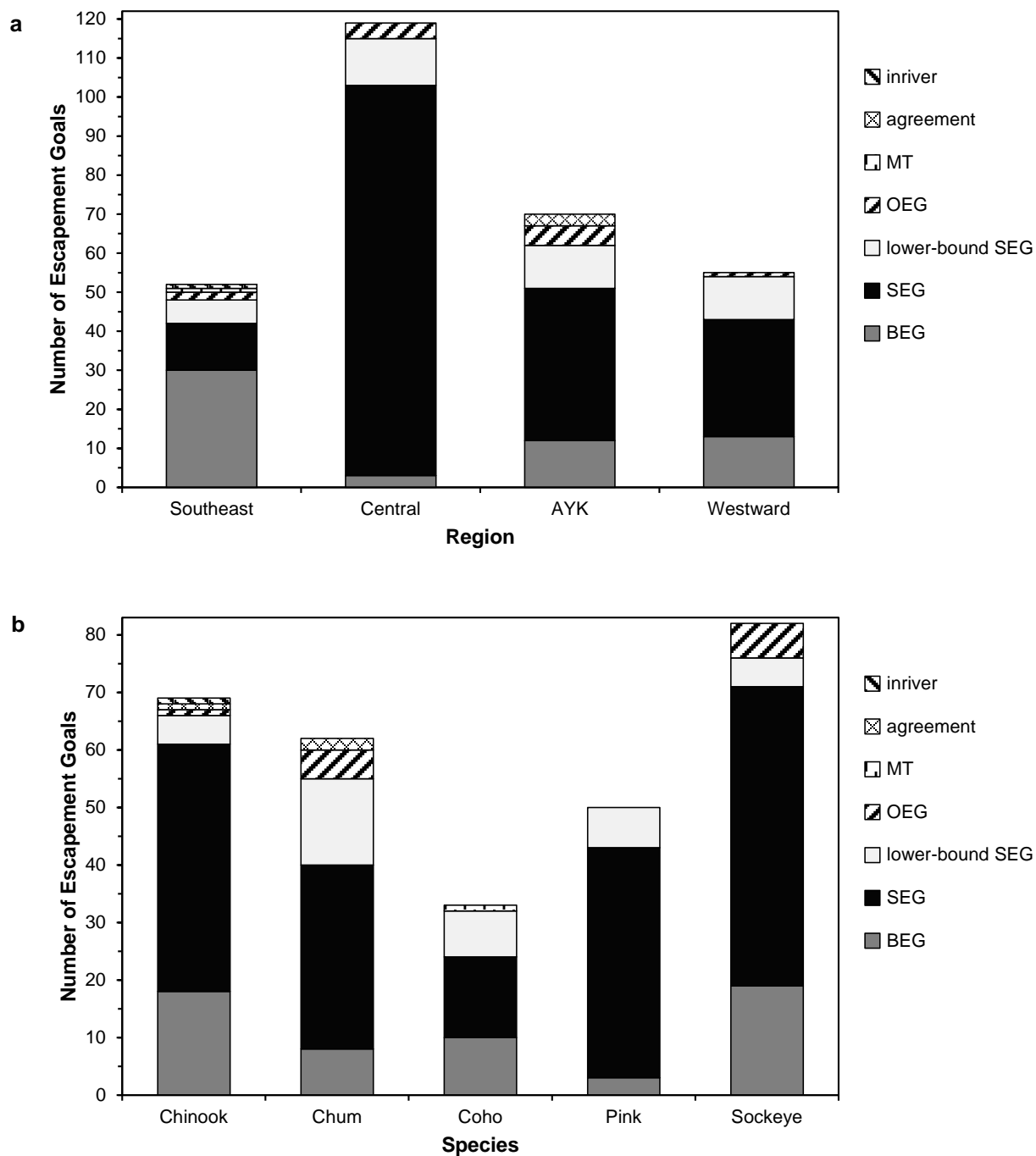


Figure 1.—Statewide summary of the 296 escapement goals in effect during the 2013 spawning season for (a) the four Division of Commercial Fisheries regions and (b) by species. BEG is biological escapement goal, SEG is sustainable escapement goal, OEG is optimal escapement goal (set by the Alaska Board of Fisheries), MT is management target, agreement goals are established through international treaties, and inriver is inriver escapement goal (set by the Alaska Board of Fisheries).

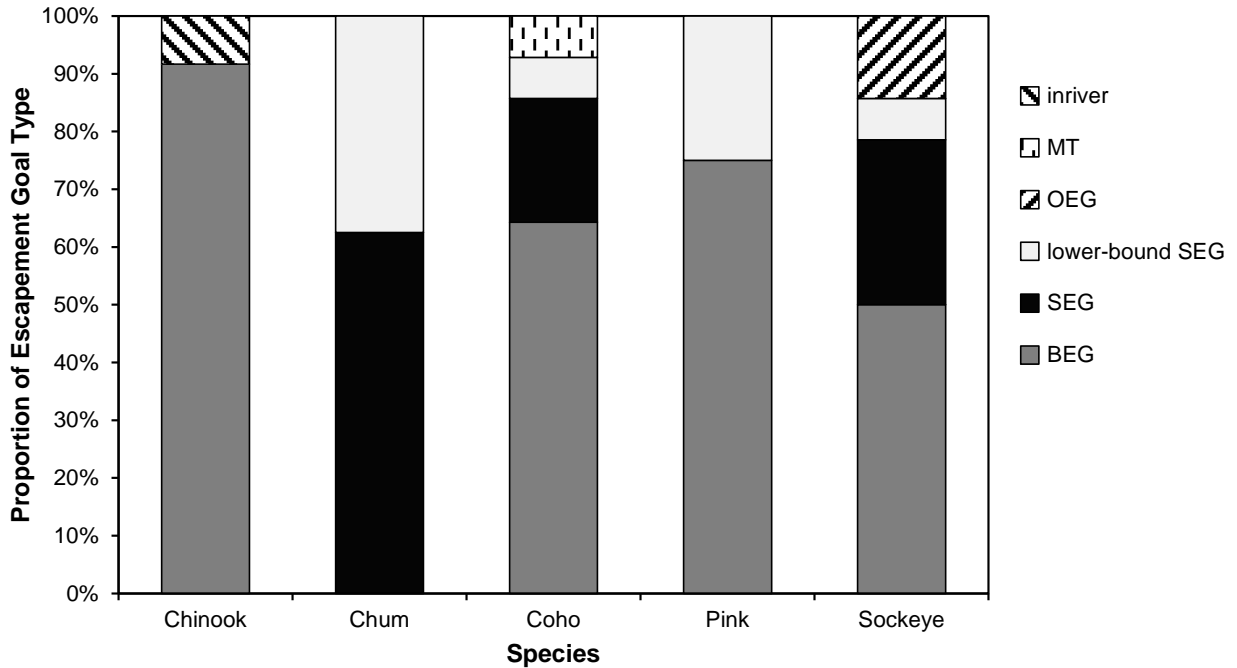


Figure 2.—Proportion of escapement goal types by species for the 52 escapement goals in Southeast Region. BEG is biological escapement goal, SEG is sustainable escapement goal, OEG is optimal escapement goal (set by the Alaska Board of Fisheries), MT is management target, and inriver is an inriver escapement goal (set by the Alaska Board of Fisheries).

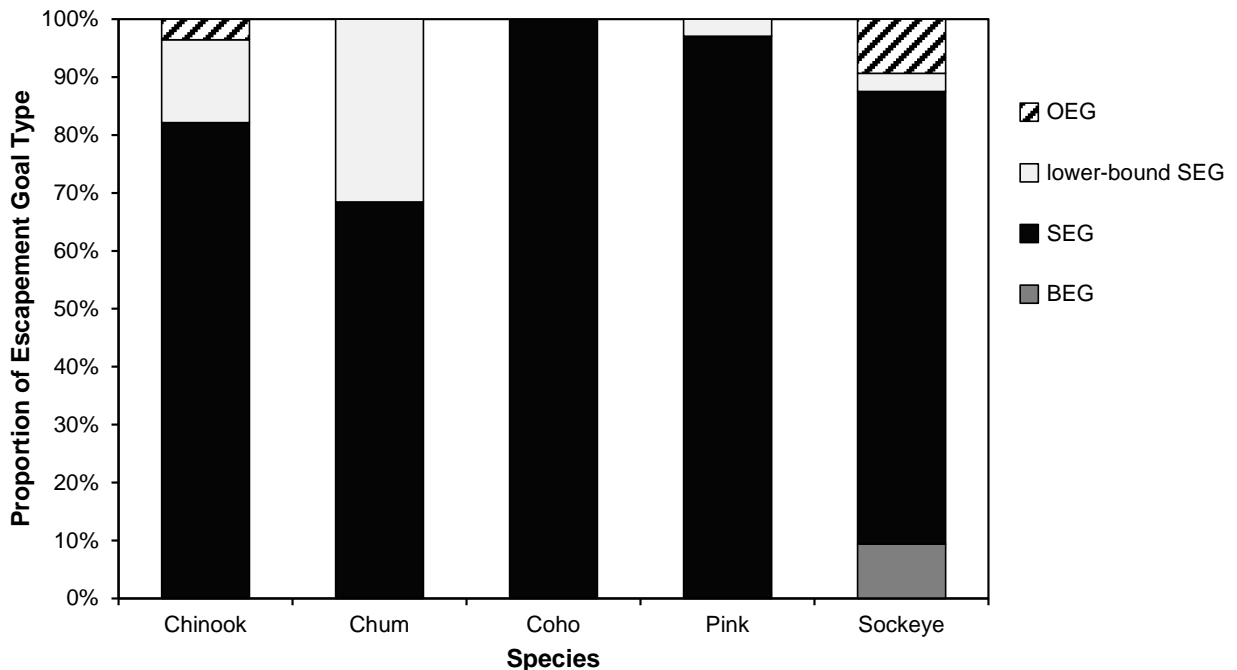


Figure 3.—Proportion of escapement goal types by species for the 119 escapement goals in Central Region (Bristol Bay, Cook Inlet, and Prince William Sound/Copper River). BEG is biological escapement goal, SEG is sustainable escapement goal, and OEG is optimal escapement goal (set by the Alaska Board of Fisheries).

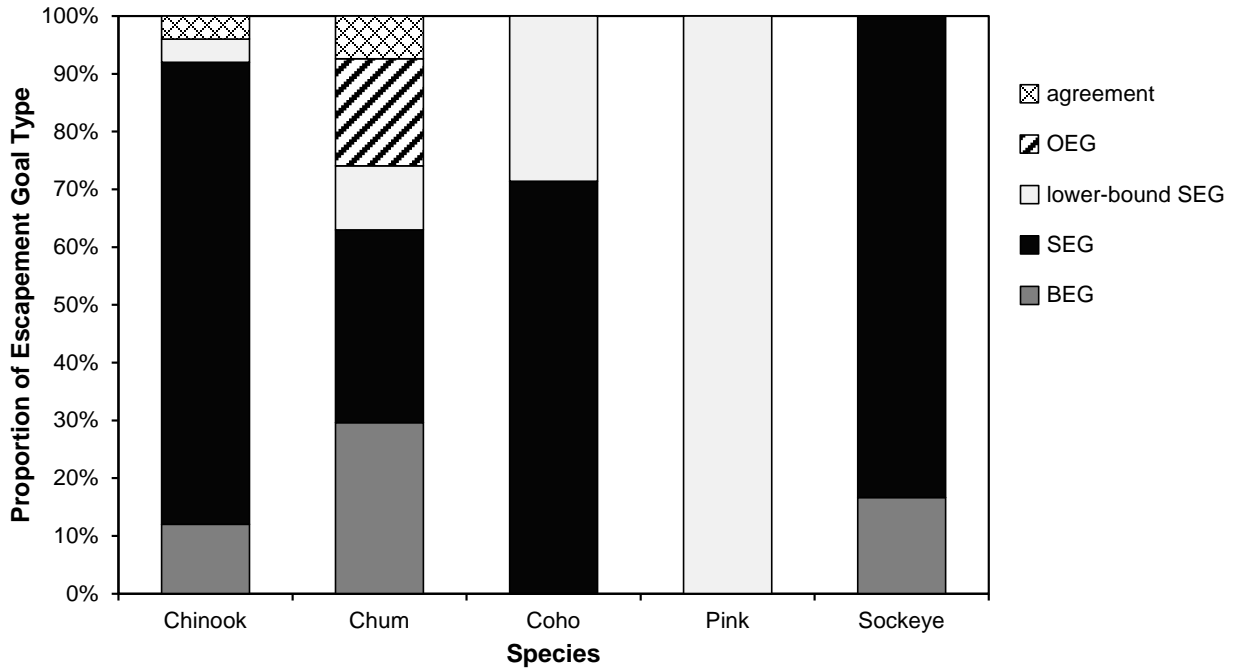


Figure 4.—Proportion of escapement goal types by species for the 70 escapement goals in Arctic-Yukon-Kuskokwim Region. BEG is biological escapement goal, SEG is sustainable escapement goal, OEG is optimal escapement goal (set by the Alaska Board of Fisheries), and agreement goals are established through international treaties.

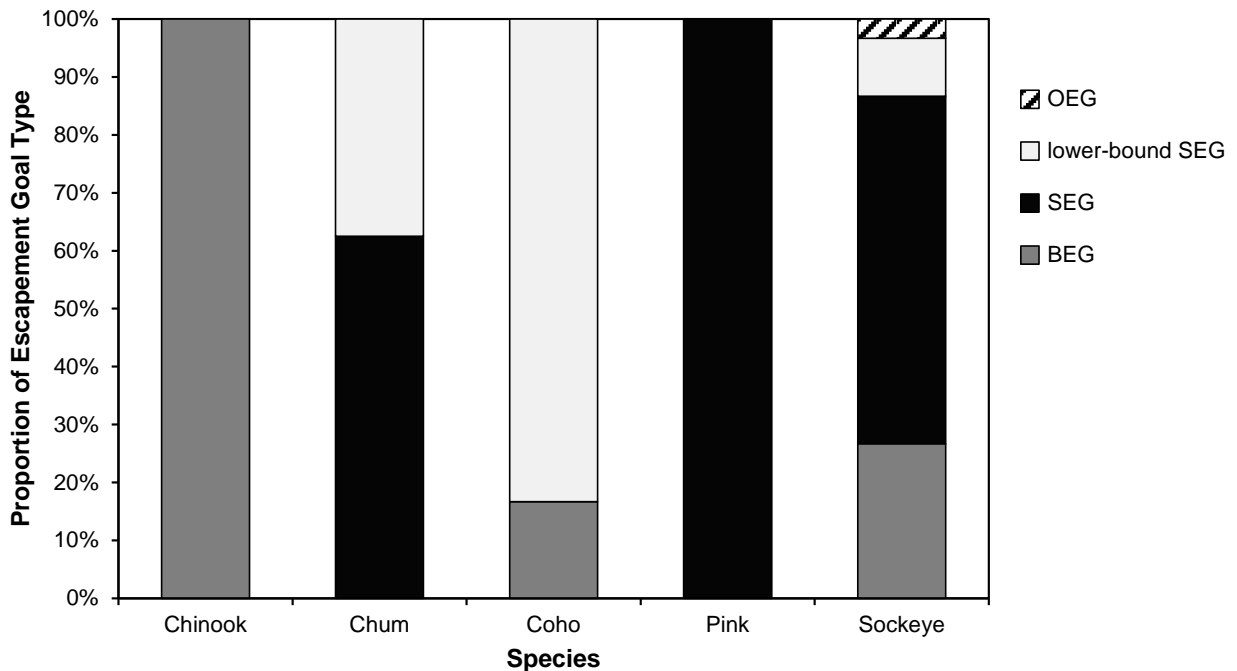


Figure 5.—Proportion of escapement goal types by species for the 55 escapement goals in Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas). BEG is biological escapement goal, SEG is sustainable escapement goal, and OEG is optimal escapement goal (set by the Alaska Board of Fisheries).

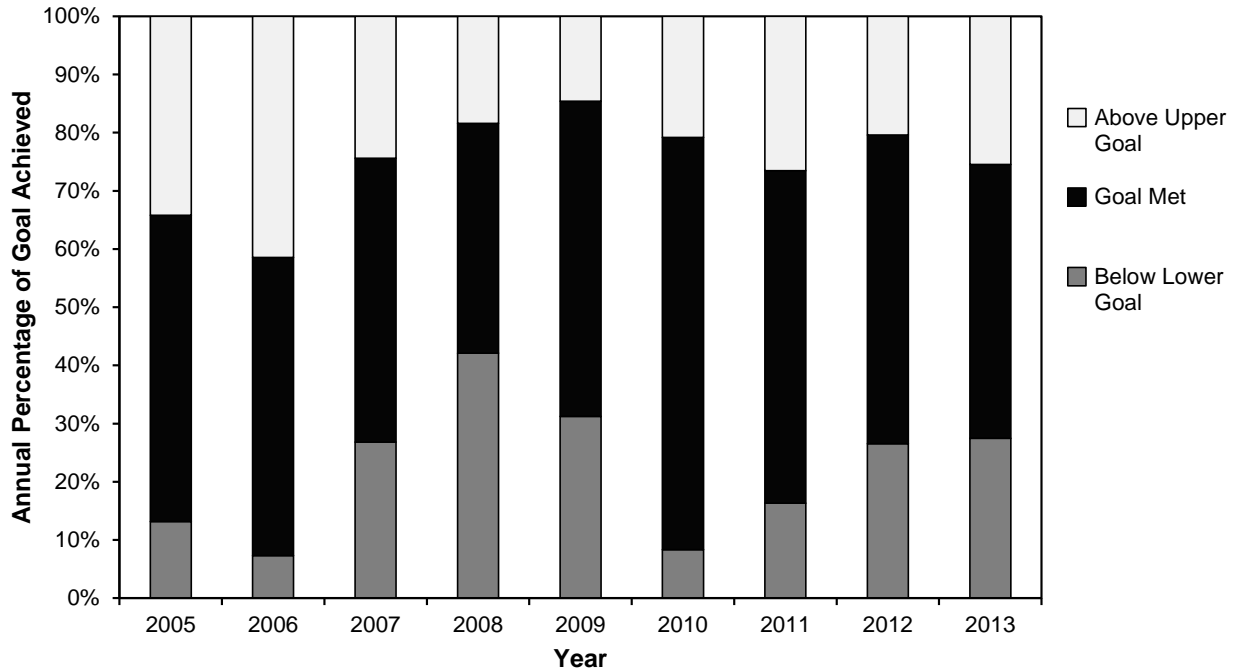


Figure 6.—Southeast Region salmon escapements compared against escapement goals for the years 2005 to 2013.

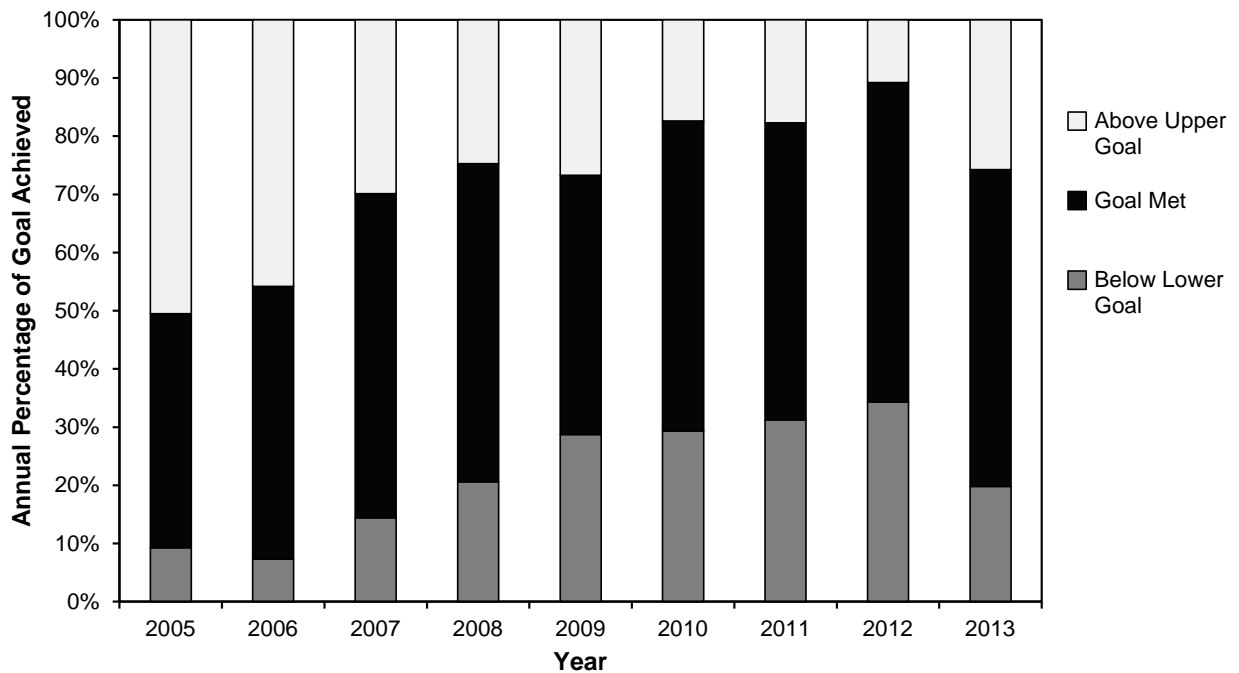


Figure 7.—Central Region (Bristol Bay, Cook Inlet, Prince William Sound/Copper River) salmon escapements compared against escapement goals for the years 2005 to 2013.

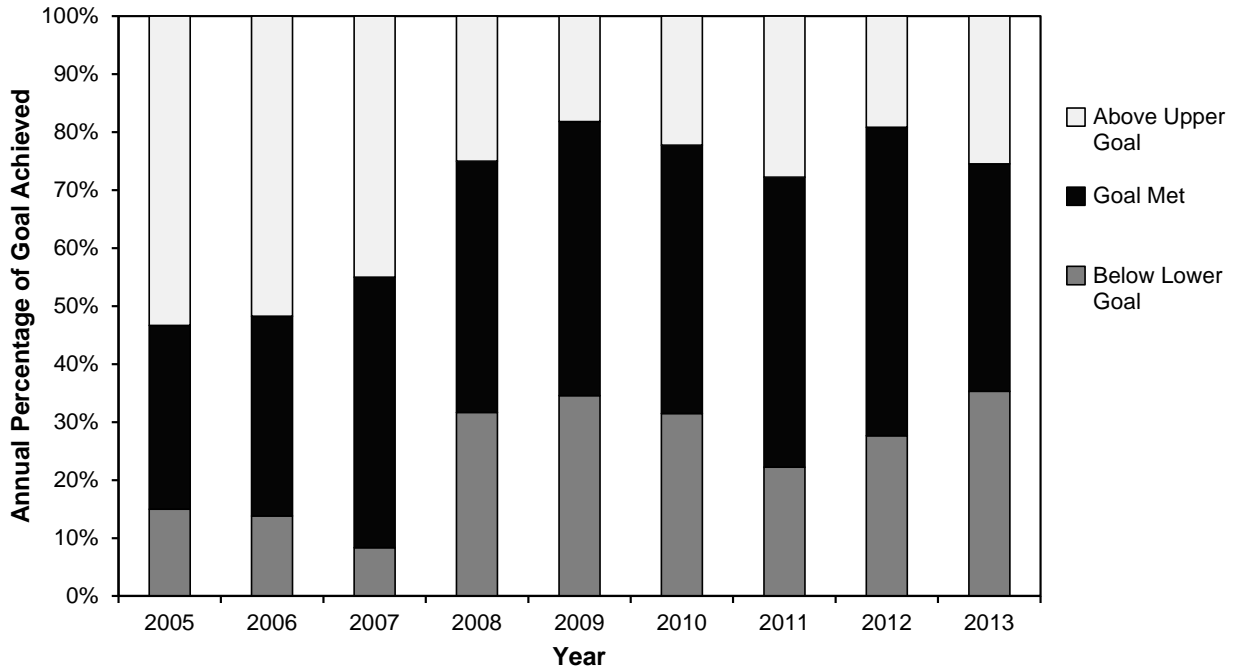


Figure 8.—Arctic-Yukon-Kuskokwim Region salmon escapements compared against escapement goals for the years 2005 to 2013.

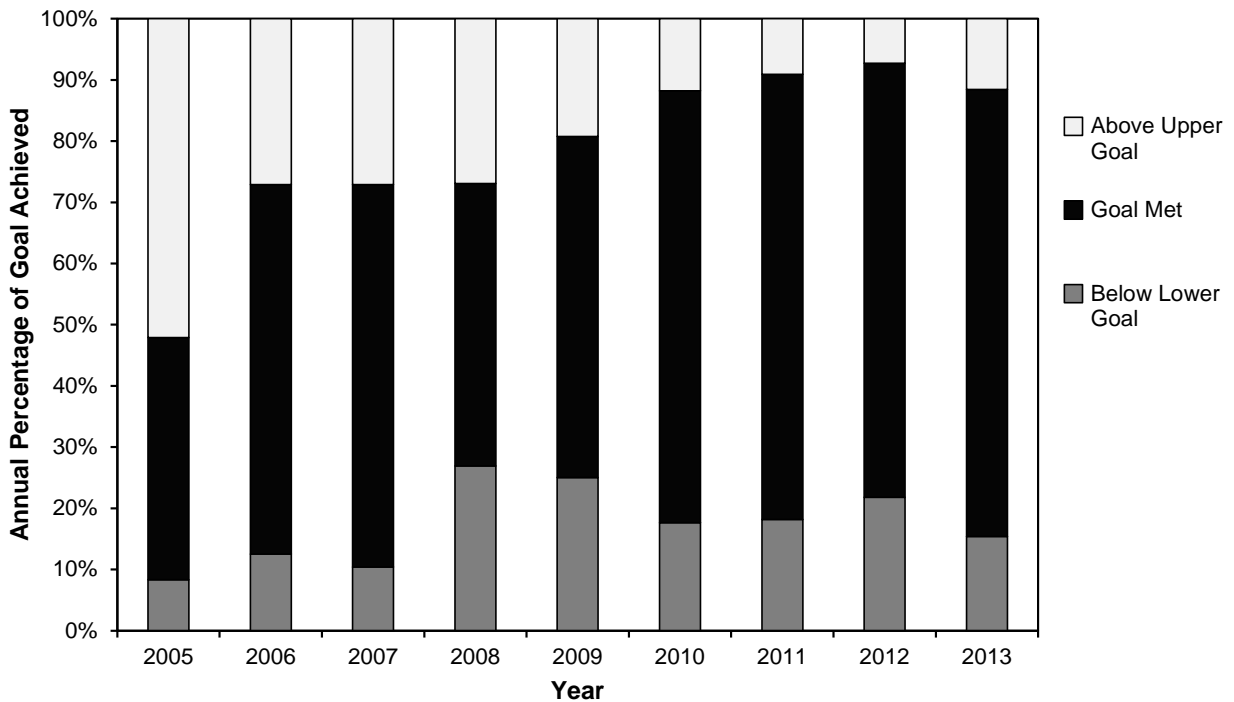


Figure 9.—Westward Region (Alaska Peninsula/Aleutian Islands, Kodiak, and Chignik areas) salmon escapements compared against escapement goals for the years 2005 to 2013.

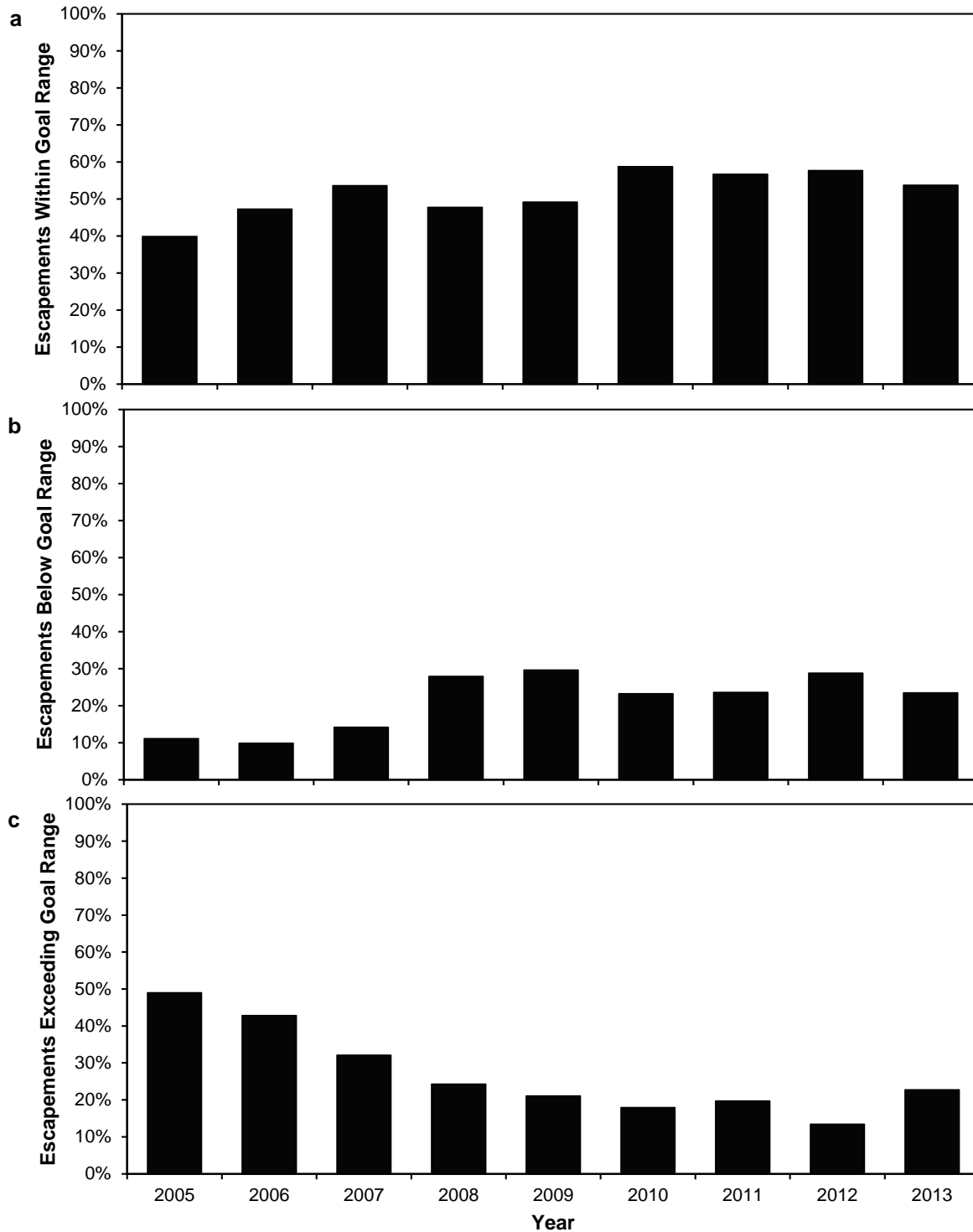



Figure 10.—Statewide summary by year of percentage of escapements that a) met the escapement goal (i.e., within goal range or above lower bound), b) were below lower bound of goal, or c) exceeded upper bound of goal range for the years 2005 to 2013.

**APPENDIX A.
ESCAPEMENT GOAL MEMO FOR THE BRISTOL BAY
MANAGEMENT AREA MEETING OF THE 2012/2013 BOARD
OF FISHERIES MEETING CYCLE**



MEMORANDUM

TO: Jeff Regnart, Director 
Division of Commercial Fisheries

DATE: January 31, 2013

Charles O. Swanton, Director
Division of Sport Fish

THRU: Tracy Lingnau, Regional Supervisor
Division of Commercial Fisheries, Region II

SUBJECT: Final Escapement Goal
Recommendations for
Select Bristol Bay
Management Area
Salmon Stocks

James J. Hasbrouck, Regional Supervisor
Division of Sport Fish, Region II

FROM: Lowell Fair, Regional Research Coordinator
Division of Commercial Fisheries, Region II

Jack W. Erickson, Regional Research Coordinator
Division of Sport Fish, Region II

The purpose of this memo is to formally recommend to you additions, deletions, and changes to escapement goals for the Bristol Bay Management Area (BBMA) and to solicit your final approval to include these recommendations as ADF&G salmon escapement goals. In February 2012, an interdivisional salmon escapement goal committee, including staff from the divisions of Commercial Fisheries and Sport Fish, initially met to discuss Bristol Bay salmon escapement goals. This review was based on the *Policy for the Management of Sustainable Salmon Fisheries* and the *Policy for Statewide Salmon Escapement Goals*.

The escapement goal review process was atypical this cycle. Unforeseen delays prevented us from having escapement goal recommendations completed prior to the board's October Work Session. Two significant events occurred since the last escapement goal review three years ago. The first was the transition from Bendix sonar to DIDSON for the Nushagak River, affecting goals for Chinook, chum, and sockeye salmon by applying a correction factor to historical escapements to put them in terms of DIDSON-equivalent counts. The second was an extensive run reconstruction of historical Bristol Bay sockeye salmon brood tables using comprehensive genetic stock composition estimates since 2006, along with older genetic estimates gathered from select sets of scale DNA dating back to the early 1960s. The review committee evaluated spawner-return data for sockeye salmon *O. nerka* in the Alagnak, Egegik, Igushik, Kulukak, Kvichak, Naknek, Nushagak, Togiak, Ugashik, and Wood rivers; Chinook salmon *O.*

Bristol Bay Escapement Goal Memo

tshawytscha in the Alagnak, Egegik, Naknek, Nushagak, and Togiak rivers; and chum salmon *O. keta* in the Nushagak River. There are no escapement goals for coho salmon *O. kisutch* or pink salmon *O. gorbuscha* for any Bristol Bay rivers. This review examined the existing 16 escapement goals and two others that were eliminated in the 2006 review: Nushagak River coho and pink salmon (Table 1).

The committee recommended changing the ranges for eight escapement goals (Nushagak River Chinook and chum salmon, and Egegik, Igushik, Naknek, Nushagak, Ugashik, and Wood rivers sockeye salmon). Four of those goals would also change in type: Igushik, Naknek, Nushagak, and Wood rivers changing from sustainable escapement goals (SEG) to biological escapement goals (BEG). Three goals were eliminated: Egegik and Togiak rivers Chinook salmon, and Kulukak Bay sockeye salmon. Finally, two new goals were established: Nushagak River coho and pink salmon.

At the Alaska Board of Fisheries (board) meeting in December 2012, it was decided that not all recommended escapement goals will go into effect for the 2013 salmon season. Recommendations for all nonsockeye salmon escapement goals will be implemented in 2013 (Table 2). Most of the sockeye salmon goals will not be implemented until 2015, with two exceptions. In 2013, the Kulukak Bay goal will be dropped and the Nushagak River goal will be modified to account for the conversion of Bendix sonar to DIDSON: 370,000 to 840,000. All other sockeye salmon escapement goals recommended in Fair et al. (2012), including the Nushagak River sockeye salmon goal of 400,000 to 900,000, will go into effect in 2015 (Table 3).

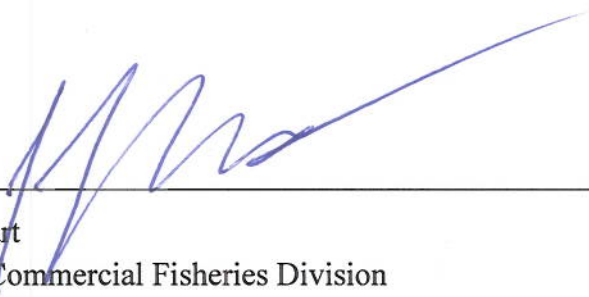
In summary, this comprehensive review of the 16 existing salmon escapement goals in BBMA resulted in eight modifications for the 2013 season and six modifications for the 2015 season. For the 2013 goals, there will be two added, three dropped, one change in range, and two changes in range and type. For the 2015 goals, there will be two changed in range and four changed in range and type. For the December 2012 board meeting, the department submitted an oral and written report (Fair et al. 2012) concerning escapement goals and specific recommendations for numerous Bristol Bay stocks. These reports listed all current and recommended escapement goals for Bristol Bay, as well as detailed descriptions of the methods used to reach these recommendations. Therefore, we respectfully seek your signatures for approval to establish these recommendations as ADF&G salmon escapement goals.

Literature Cited

Fair, L. F., C. E. Brazil, X. Zhang, R. A. Clark, and J. W. Erickson. 2012. Review of salmon escapement goals in Bristol Bay, Alaska, 2012. Alaska Department of Fish and Game, Fishery Manuscript Series No. 12-04, Anchorage.

Bristol Bay Escapement Goal Memo

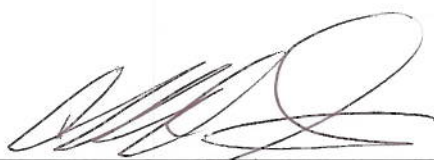
By signing this memo you will officially adopt the respective escapement goals summarized here.



2/15/13

Jeff Regnart
Director, Commercial Fisheries Division

Date



2/7/13

Charles O. Swanton
Director, Sport Fish Division

Date

Bristol Bay Escapement Goal Memo

Table 1.—Summary of current escapement goals and recommended escapement goals for salmon stocks in Bristol Bay, 2012 [From Fair et al. (2012)].

System	Current Escapement Goal			Escapement Data	Recommended Escapement Goal		
	Goal	Type	Year Adopted		Action	Goal	Type
Chinook Salmon							
Alagnak	2,700 minimum	SEG	2007	Aerial	No Change		
Egegik	450 minimum	SEG	2007	Aerial	Drop		
Naknek	5,000 minimum	SEG	2007	Aerial	No Change		
Nushagak	40,000–80,000	SEG	2007; Changed to SEG in 2007	Sonar	Change in range	55,000–120,000	SEG
Togiak	9,300 minimum	SEG	2007	Aerial	Drop		
Chum Salmon							
Nushagak	190,000 minimum	SEG	2007	Sonar	Change in range	200,000 minimum	SEG
Coho Salmon							
Nushagak	50,000–100,000	SEG	2007	Sonar	New Goal	60,000–120,000	SEG
Pink Salmon							
Nushagak				Sonar	New Goal	165,000 minimum	SEG
Sockeye Salmon							
Alagnak	320,000 minimum	SEG	2007	Tower	No Change		
Egegik	800,000–1,400,000	SEG	1995; Changed to SEG in 2007	Tower	Change in range	900,000–2,000,000	SEG
Igushik	150,000–300,000	SEG	2001; Changed to SEG in 2007	Tower	Change in range and type	200,000–400,000	BEG
Kvichak	2,000,000–10,000,000	SEG	One goal for all years in 2010	Tower	No Change		
Kulukak Bay	8,000 minimum	SEG	2007	Aerial	Drop		
Naknek	800,000–1,400,000	SEG	1983; Changed to SEG in 2007	Tower	Change in range and type	900,000–2,000,000	BEG
Nushagak	340,000–760,000	SEG	1998; Changed to SEG in 2007	Sonar	Change in range and type	400,000–900,000	BEG
Togiak	120,000–270,000	SEG	2007; Changed from a BEG in 2010	Tower	No Change		
Ugashik	500,000–1,200,000	SEG	1995; Changed to SEG in 2007	Tower	Change in range	600,000–1,400,000	SEG
Wood	700,000–1,500,000	SEG	2001; Changed to SEG in 2007	Tower	Change in range and type	800,000–1,800,000	BEG

Bristol Bay Escapement Goal Memo

Table 2.—Recommended changes to escapement goals for Bristol Bay salmon stocks that will go into effect in 2013.

System	Current Escapement Goal			Recommended Escapement Goal		
	Goal	Type	Escapement Data	Action	Goal	Type
Chinook Salmon						
Egegik	450 minimum	SEG	Aerial	Drop		
Nushagak	40,000–80,000	SEG	Sonar	Change in range	55,000–120,000	SEG
Togiak	9,300 minimum	SEG	Aerial	Drop		
Chum Salmon						
Nushagak	190,000 minimum	SEG	Sonar	Change in range	200,000 minimum	SEG
Coho Salmon						
Nushagak	50,000–100,000	SEG	Sonar	New Goal	60,000–120,000	SEG
Pink Salmon						
Nushagak			Sonar	New Goal	165,000 minimum	SEG
Sockeye Salmon						
Kulukak Bay	8,000 minimum	SEG	Aerial	Drop		
Nushagak	340,000–760,000	SEG	Sonar	Change in range	370,000–840,000	SEG

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Table 3.—Recommended changes to escapement goals for Bristol Bay salmon stocks that will go into effect in 2015.

System	Current Escapement Goal			Recommended Escapement Goal		
	Goal	Type	Escapement Data	Action	Goal	Type
Sockeye Salmon						
Egegik	800,000–1,400,000	SEG	Tower	Change in range	900,000–2,000,000	SEG
Igushik	150,000–300,000	SEG	Tower	Change in range and type	200,000–400,000	BEG
Naknek	800,000–1,400,000	SEG	Tower	Change in range and type	900,000–2,000,000	BEG
Nushagak	340,000–760,000	SEG	Sonar	Change in range and type	400,000–900,000	BEG
Ugashik	500,000–1,200,000	SEG	Tower	Change in range	600,000–1,400,000	SEG
Wood	700,000–1,500,000	SEG	Tower	Change in range and type	800,000–1,800,000	BEG

**APPENDIX B.
ESCAPEMENT GOAL MEMO FOR THE ALASKA
PENINSULA/ALEUTIAN ISLANDS MANAGEMENT AREA
MEETING OF THE 2012/2013 BOARD OF FISHERIES
MEETING CYCLE**



MEMORANDUM

TO: Jeff Regnart, Director
Division of Commercial Fisheries

DATE: March 4, 2013

Charles O. Swanton, Director
Division of Sport Fish

THRU: Steve Honnold, Regional Supervisor
Division of Commercial Fisheries, Region IV

SUBJECT: Alaska Peninsula/
Aleutian Islands
Escapement Goal
Memo

James Hasbrouck, Regional Supervisor
Division of Sport Fish, Region II

FROM: Nicholas Sagalkin, Regional Research Finfish
Supervisor
Division of Commercial Fisheries, Region IV

Jack W. Erickson, Regional Research Coordinator
Division of Sport Fish, Region II

The purpose of this memorandum is to inform you of our progress in reviewing and recommending escapement goals for the Alaska Peninsula and Aleutian Islands Management Area (Area M) of the Westward Region. The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the department to provide the Alaska Board of Fisheries (board) with a review of salmon escapement goals every three years in concert with the regulatory cycle for each management area. Escapement goals were evaluated and recommended based on the SSFP and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223).

In February 2012, an interdivisional team, including staff from the divisions of Commercial Fisheries and Sport Fish, was formed to review existing salmon escapement goals in Area M. This memorandum summarizes the preliminary results of the salmon escapement goal review and subsequent recommendations. The team has reached consensus on all recommendations outlined below.

Two important definitions are:

5 AAC 39.222(f)(3) "*Biological Escapement Goal (BEG): the escapement that provides the greatest potential for maximum sustained yield (MSY);*" and

5 AAC 39.222(f)(36) “*Sustainable Escapement Goal (SEG)*: a level of escapement, indicated by an index or an escapement estimate, that is known to provide for sustained yield over a 5 to 10 year period, used in situations where a BEG cannot be estimated or managed for.”

The Area M salmon escapement goals were last reviewed in 2009 (Witteveen et al. 2009). The 2012 review of the present 28 escapement goals resulted in consensus to leave 24 goals unchanged and eliminate four goals (Table 1 and Figure 1). This resulted in the following 24 escapement goals for Area M: one BEG for king salmon; one BEG and 13 SEGs for sockeye salmon; two SEGs for coho salmon; two aggregate SEGs for pink salmon, and five aggregate SEGs for chum salmon.

The review team determined the appropriate goal type for each Area M salmon stock with an existing goal, based on the quality and quantity of available data, and then determined the most appropriate methods to evaluate the escapement goal ranges. If a sufficient time series of escapement and total return estimates were available and the data contained sufficient information to provide a scientifically defensible, accurate estimate of the spawning escapement with the greatest potential to produce maximum sustained yield (S_{msy}), then the data were considered sufficient to attempt to develop a BEG. If return estimates were not available and/or the data were not sufficient to estimate S_{msy} , the data were used to establish an SEG. Methods used to develop BEGs included spawner-recruit analysis and a habitat-based model (Liermann et al. 2010). Methods used to develop SEGs included the percentile approach (Bue and Hasbrouck *Unpublished*) and risk analysis (Bernard et al. 2009).

After analyzing available data for each stock, the team estimated escapement goals, compared these estimates with the current goals, and then made recommendations to establish new goals or maintain (no change), change, or eliminate the current goals. The methods used to evaluate Area M escapement goals, as well as the rationale used to make subsequent recommendations, will be described in detail in a department Fishery Manuscript Report which will be published prior to the February Alaska Board of Fisheries (board) meeting. Preliminary results of the review are summarized below.

King salmon

The team recommends that the current Nelson River king salmon BEG of 2,400 to 4,400, as established in 2003, remain unchanged. Recent escapements were similar to historical counts and the team concluded that further analysis was not necessary.

Sockeye salmon

The team recommends no changes to the existing escapement goals for sockeye salmon. Overall, recent sockeye salmon runs have met or exceeded their respective escapement goals with one exception.

The Swanson Lagoon sockeye salmon stock has been below the escapement goal range in each of the last four years (2008–2011), despite little fishing effort directed at this stock. Escapement is very difficult to assess because the system has frequent large algae blooms, obscuring visibility. Given the continued inability to achieve the escapement goal, despite the use of specific management measures, Swanson Lagoon sockeye salmon meets the definition for a stock of management concern as defined in 5 AAC 39.222, *Policy for management of sustainable salmon fisheries*. The department recommended, and the Alaska Board of Fisheries

AP/AI Escapement Goal Memo

adopted, establishment of the Swanson Lagoon sockeye salmon stock as a stock of management concern.

Coho salmon

The team recommends that the current Nelson River coho salmon SEG of 18,000 and the Ilnik River coho salmon SEG of 9,000 remain unchanged. There is no recent information that would warrant changing the current SEGs for these stocks.

The team recommends eliminating the coho salmon SEG for Thin Point. There is little directed effort for Thin Point coho, and the system is rarely surveyed because escapement usually occurs after staff have completed aerial surveys.

Pink salmon

Four South Peninsula pink salmon escapement goals (even- and odd-year goals for two aggregate stocks) were evaluated during this review. The team recommends that the current South Peninsula pink salmon SEG ranges of 1,864,600 to 3,729,300 for even years, and 1,637,800 to 3,275,700 for odd years, remain unchanged. The team recommends eliminating the Bechevin Bay pink salmon SEG for even and odd years. Effort in Bechevin Bay targets chum salmon, rather than pink salmon, and aerial escapement estimates are unreliable because a large portion of fish are believed to spawn in the bay in areas difficult to survey.

Chum salmon

The team recommends that the current South Peninsula chum salmon SEG ranges of 106,400 to 212,800 for the Southeastern District; 89,800 to 179,600 for the South Central District; and 133,400 to 266,800 for the Southwestern District remain unchanged. The team also recommends that the North Peninsula chum salmon SEG ranges of 100,000 to 215,000 fish for the Northwestern District and 119,600 to 239,200 fish for the Northern District remain unchanged. Recent escapements were similar to historical counts and the team concluded that further analysis was not necessary. However, the team recommends that the SEG threshold of 800 fish for the Unimak District should be eliminated. There is little fishing effort and surveys in the area are limited.

In summary, the Area M Escapement Goal Review Team reviewed 28 existing salmon escapement goals, resulting in consensus to leave 24 goals unchanged and eliminate four goals. Staff are now preparing a report for the February 2013 board meeting. Escapement goal recommendations for each stock will be presented to the board orally and in writing. This report will list all current and recommended escapement goals, as well as detailed descriptions of the analyses performed.

AP/AI Escapement Goal Memo

By signing this memo you officially adopt the respective escapement goals and acknowledge the stock of concern summarized here.



3/12/13

Jeff Regnart
Director, Commercial Fisheries Division

Date



3/12/13

Charles O. Swanton
Director, Sport Fish Division

Date

References Cited

- Bernard, D. R., J. J. Hasbrouck, B. G. Bue and R. A. Clark. 2009. Estimating risk of management error from precautionary reference points (PRPs) for non-targeted salmon stocks. Alaska Department of Fish and Game, Special Publication No. 09-09, Anchorage.
- Bue, B.G., and J.J. Hasbrouck. *Unpublished*. Escapement goal review of salmon stocks of Upper Cook Inlet. Alaska Department of Fish and Game, Report to the Board of Fisheries, 2001, Anchorage.
- Liermann, M.C., R. Sharma, C. K. Parken. 2010. Using accessible watershed size to predict management parameters for Chinook salmon *Oncorhynchus tshawytscha*, populations with little or no spawner-recruit data: a Bayesian hierarchical modeling approach. *Fisheries Management and Ecology*. 17, 40-51.
- Witteveen, M.J., H. Finkle, M. Loewen, M.B. Foster, and J.W. Erickson. 2009. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas; A Report to the Alaska Board of Fisheries, 2010. Alaska Department of Fish and Game, Fishery Manuscript No. 09-09, Anchorage.

AP/AI Escapement Goal Memo

Table 1.—Current escapement goals, escapements observed from 2009 through 2011, king, sockeye, coho, pink, and chum salmon stocks of the Alaska Peninsula and Aleutian Islands management areas.

System	Escapement Data ^a	Current Escapement Goal			Escapements			2012 Recommendation
		Type (BEG, SEG)	Range		2009	2010	2011	
King Salmon								
Nelson River	WC/PAS	BEG	2,400	to 4,400	2,048	2,769	1,404	No change
Sockeye Salmon								
Orzinski Lake	WC	SEG	15,000	to 20,000	21,457	18,039	16,764	No change
Thin Point Lake	PAS	SEG	14,000	to 28,000	33,500	12,400	14,500	No change
Mortensens Lagoon	PAS	SEG	3,200	to 6,400	25,000	6,600	500	No change
Christianson Lagoon	PAS	SEG	25,000	to 50,000	48,100	27,900	35,200	No change
Swanson Lagoon	PAS	SEG	6,000	to 16,000	1,000	1,700	1,000	No change
North Creek	PAS	SEG	4,400	to 8,800	8,000	18,500	10,200	No change
Nelson River	WC	BEG	97,000	to 219,000	157,000	108,000	89,000	No change
Bear Lake								
Early	WC	SEG	176,000	to 293,000	216,237	226,534	207,451	No change
Late	WC	SEG	117,000	to 195,000	133,263	142,966	132,549	No change
Sandy River	WC	SEG	34,000	to 74,000	36,000	37,000	37,500	No change
Ilnik River	WC	SEG	40,000	to 60,000	66,000	59,000	43,000	No change
Meshik River	PAS	SEG	25,000	to 100,000	88,000	63,700	93,900	No change
Cinder River	PAS	SEG	12,000	to 48,000	133,600	108,900	106,000	No change
McLees Lake	WC/PAS	SEG ^b	10,000	to 60,000	10,120	32,842	36,602	No change
Coho Salmon								
Thin Point Lake	PAS	SEG	3,000		900		200	Remove SEG
Nelson River	PAS	SEG	18,000		22,000	15,000	21,000	No change
Ilnik River	PAS	SEG	9,000		24,000	19,600	22,000	No change
Pink Salmon								
South Peninsula Total -even years	PAS	SEG	1,864,600	to 3,729,300		742,912		No change
South Peninsula Total -odd years	PAS	SEG	1,637,800	to 3,275,700	3,067,000		2,494,950	No change
Bechevin Bay Section-even years	PAS	SEG	31,000			13,600		Remove SEG
Bechevin Bay Section-odd years	PAS	SEG	1,600		72,000		2,400	Remove SEG
Chum Salmon								
Southeastern District	PAS	SEG	106,400	to 212,800	84,460	144,100	151,400	No change
South Central District	PAS	SEG	89,800	to 179,600	18,600	85,600	169,000	No change
Southwestern District	PAS	SEG	133,400	to 266,800	385,730	142,650	176,425	No change
Unimak District	PAS	SEG	800		1,400	1,050	7,000	Remove SEG
Northwestern District	PAS	SEG	100,000	to 215,000	84,460	144,100	151,400	No change
Northern District	PAS	SEG	119,600	to 239,200	154,131	145,310	96,952	No change

^a PAS = Peak Aerial Survey, WC= Weir Count.

^b McLees Lake sockeye salmon SEG will be in effect if a weir is in place; there will be no goal if a weir is not operated.

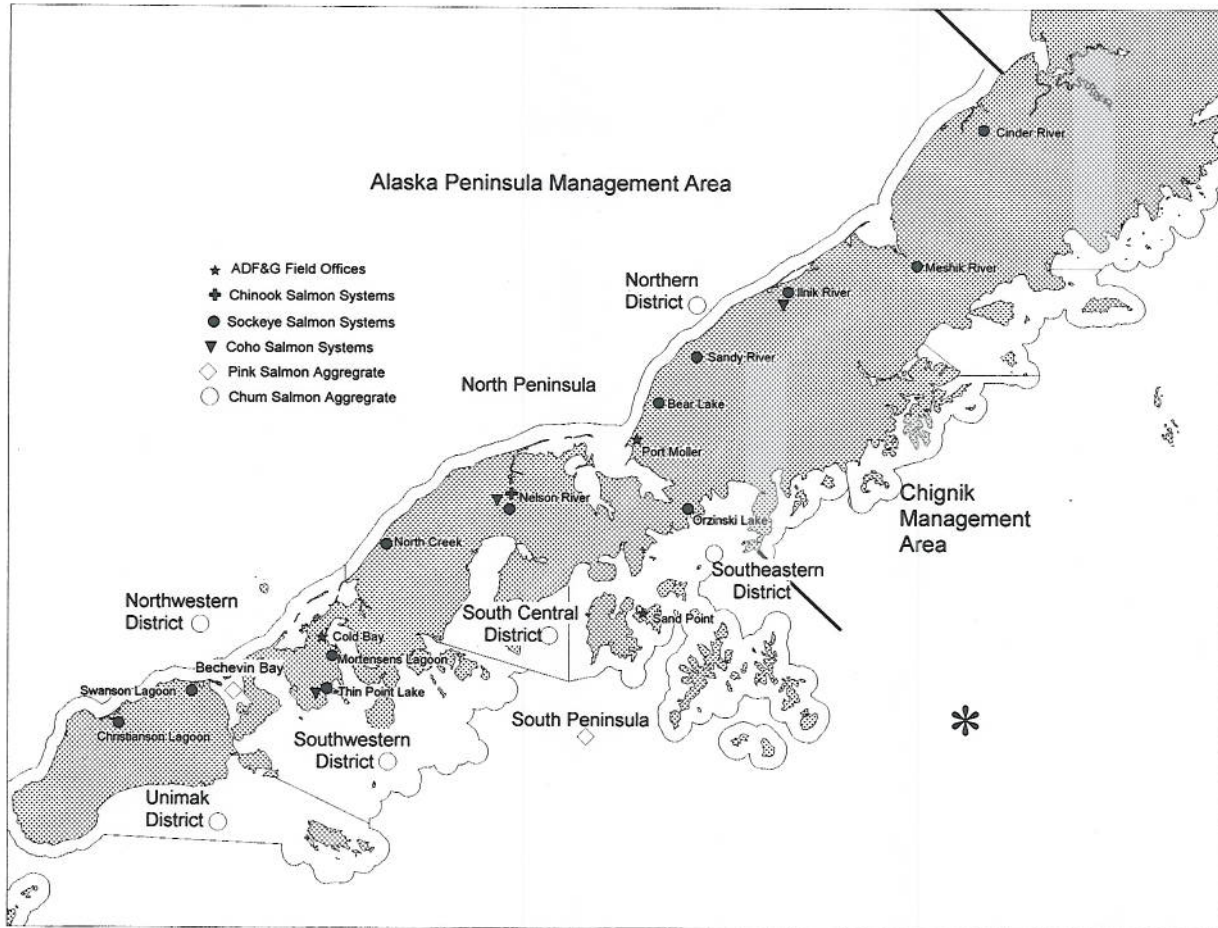



Figure 1.—Map of the Alaska Peninsula Management Area with the major king, sockeye, coho, pink, and chum salmon systems depicted.

**APPENDIX C.
ESCAPEMENT GOAL MEMO FOR THE ARCTIC-YUKON-
KUSKOKWIM REGION MEETING OF THE 2012/2013
BOARD OF FISHERIES MEETING CYCLE**



MEMORANDUM

TO: Jeff Regnart, Director 
Division of Commercial Fisheries

DATE: January 31, 2013

Charles O. Swanton, Director
Division of Sport Fish

THRU: John Linderman, Regional Supervisor
Division of Commercial Fisheries, Region III

SUBJECT: Artic-Yukon-
Kuskokwim
Escapement Goal
Recommendations

Don Roach, Regional Supervisor
Division of Sport Fish, Region III

FROM: Jan Conitz, Regional Research Coordinator
Division of Commercial Fisheries, Region III

Katie Howard, Regional Research Coordinator
Division of Commercial Fisheries, Region III

Matt Evenson, Regional Research Coordinator
Division of Sport Fish, Region III

The purpose of this memorandum is to inform you of our progress in reviewing and recommending escapement goals for the Arctic-Yukon-Kuskokwim (AYK) Region. The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the department to provide the Alaska Board of Fisheries (board) with a review of salmon escapement goals every three years in concert with the regulatory cycle for each management area. Escapement goals were evaluated and recommended based on the SSFP and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223).

An interdivisional escapement goal review team (review team) was convened to review available escapement and other data and make escapement goal recommendations where appropriate. Escapement goals recommended in this memorandum are the products of several collaborative meetings of the review team, other department staff, and stakeholders from federal agencies and various nongovernmental organizations. The review team helped direct the work of other staff and reviewed that work in the process of making escapement goal recommendations to the directors of the divisions of Sport Fish and Commercial Fisheries.

Two important definitions are:

5 AAC 39.222(f)(3) “*Biological Escapement Goal (BEG)*: the escapement that provides the greatest potential for maximum sustained yield (MSY);” and

5 AAC 39.222(f)(36) “*Sustainable Escapement Goal (SEG)*: a level of escapement, indicated by an index or an escapement estimate, that is known to provide for sustained yield over a 5 to 10 year period, used in situations where a BEG cannot be estimated or managed for.”

Since inception of the *Policy for the Management of Sustainable Salmon Fisheries* and the *Policy for Statewide Salmon Escapement Goals* in 2000 and 2001, comprehensive escapement goal reviews have been conducted every three years for the AYK Region (ADFG 2004; Brannian et al. 2006; Molyneaux and Brannian 2006; Volk et al. 2009). Therefore, analyses for this review focused on stocks for which recent data (2009–2011) might result in a substantially different escapement goal from the last review, or those goals that should be eliminated or established.

The review team compiled existing data for each salmon stock with an existing goal and other monitored, exploited stocks without an existing goal and made a determination to either: 1) retain an existing goal; 2) revise an existing goal; 3) establish a new goal; or 4) eliminate a goal. For escapement goals that were being revised or newly created, we determined the most appropriate methods to evaluate the escapement goal.

Oral and written reports (Conitz et al. *In prep*) concerning escapement goals and specific recommendations for numerous stocks in all areas of the AYK Region will be presented to the board in January 2013. This memo will list all current and recommended escapement goals for all management areas of the AYK Region. These recommendations are briefly described for each management area below. Following the January 2013 Board of Fisheries meeting, a memorandum will be prepared by the review team to include any additional recommendations generated through the board review process, and these recommendations will be sent to the division directors for final adoption.

Kuskokwim Management Area

In the Kuskokwim Management Area, which includes the Kuskokwim River and Kuskokwim Bay drainages, there are currently 25 established escapement goals for 14 king salmon, four chum salmon, three coho salmon, and four sockeye salmon stocks (Table 1).

The review team is recommending that a model-based drainagewide SEG of 65,000–120,000 be established for Kuskokwim River king salmon. To develop this goal, historical (1976–2011) Kuskokwim River king salmon run size was estimated using models combining available escapement, harvest, run timing, and abundance data (Schaberg et al. 2012; Bue et al. *In prep*). From these estimates of total run size, a spawner-recruit relationship was modeled and yield profiles were constructed and used to select an escapement goal range (ADF&G *Unpublished*). This run reconstruction and spawner-recruit modeling represented new information to evaluate exploitation and escapement goals for Kuskokwim River king salmon.

The range for the drainagewide SEG was chosen to include the following attributes: 1) it corresponds to escapements that have a high probability (~80%) of achieving 80% or more of maximum returns; 2) escapements in this range are expected to provide yields adequate to meet

subsistence needs; 3) the lower bound does not extend below the smallest observed estimate of escapement; and, 4) the lower bound is approximately equal to the level of escapement having the highest probability of achieving MSY (64,500). Currently, there is no whole-river escapement monitoring project, so total escapement will be estimated each year postseason using the run reconstruction model.

Currently there are 10 SEGs for king salmon stocks in tributaries of the Kuskokwim River. Using the total run size estimates and spawner-recruit model for all stocks combined, the existing tributary goals were re-evaluated in the context of the drainagewide goal. All of these current SEGs were developed using the percentile method (Bue and Hasbrouck *Unpublished*). Weir-based goals for the George, Tuluksak, and Kwethluk rivers were developed with a relatively short time series (10–12 years) of escapement estimates. The Tuluksak and Kwethluk river data sets were also inconsistent over a time series that coincidentally happened to capture predominately high escapement years. With the new information provided by the total run size estimation, it is apparent that the goals for the George, Kwethluk, and Tuluksak rivers are higher than necessary. The weir-based goal on the Kogrukluk River was developed using a much longer time series dating back to 1976, and encompasses a much more representative range of king salmon production in the Kuskokwim River. Although the SEG for the Kogrukluk River stock was based upon an adequate time series, it was likewise revised on the basis of the new run reconstruction model and spawner-recruit analysis (ADF&G *Unpublished*). **Therefore, the review team recommends revisions to three of the weir-based SEGs for king salmon:**

- **Kwethluk River: previous goal 6,000–11,000; recommended revised goal=4,100–7,500;**
- **George River: previous goal 3,100–7,900; recommended revised goal=1,800–3,300; and**
- **Kogrukluk River: previous goal 5,300–14,000; recommended revised goal=4,800–8,800.**

These revisions were developed by multiplying the average proportional escapement in each of these systems (escapement in tributary divided by total drainage escapement) by the upper and lower bounds of the recommended drainagewide goal.

The review team is also recommending that the weir-based SEG for king salmon in the Tuluksak River be eliminated. This system has been extensively altered by mining activity and supports a very small and variable escapement of king salmon. The existing SEG is 1,000–2,100 and was based on a relatively short and inconsistent data set. Measured escapements between 1991 and 2011 have ranged from 239 to 2,917 fish. The nearby Kwethluk and Kisaralik rivers support much larger escapements and likely provide an adequate index of escapement for lower Kuskokwim River king salmon stocks.

The review team is also recommending that the aerial survey-based SEG for chum salmon in the Kanektok River (Kuskokwim Bay) be eliminated. Due to poor weather conditions, uncertainty of the relationship of the survey to peak spawning time, and availability of aircraft, these counts are unreliable for evaluating a goal on this system.

All other existing escapement goals for salmon stocks in the Kuskokwim Management Area are recommended to continue without revision.

Yukon Management Area

In the Yukon River Management Area, which includes the entire Yukon River drainage within Alaska, there are currently 16 established escapement goals for seven king salmon, two summer chum salmon, six fall chum salmon, and one coho salmon stocks (Table 2). Eight of these goals

Artic-Yukon-Kuskokwim Escapement Goal Memo

are BEGs and eight are SEGs. In addition, there are three goals for Canadian stocks, not listed here, that were established as part of the *Yukon River Salmon Agreement*. Escapement targets for these Canadian stocks (mainstem Yukon River king salmon, mainstem Yukon River fall chum salmon, and Fishing Branch River fall chum salmon) are set annually by the Yukon River Panel.

All existing escapement goals for salmon stocks in the Yukon Management Area are recommended to continue without revision.

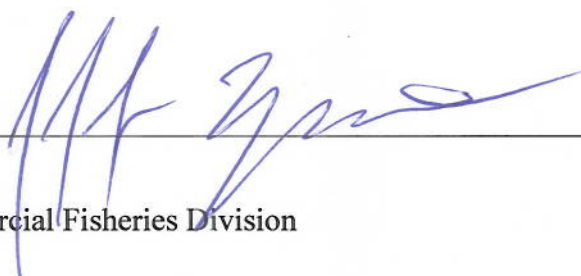
Norton Sound-Port Clarence and Kotzebue Management Areas

A total of 30 escapement goals exist in the Norton Sound-Port Clarence and Kotzebue management areas for six king salmon, 14 chum salmon, three coho salmon, five pink salmon, and two sockeye salmon stocks (Table 3). Biological escapement goals exist for three stocks, including Norton Sound Subdistrict 1 (Nome) chum salmon, Tubutulik River chum salmon, and Kotzebue (all areas) chum salmon. An optimal escapement goal (OEG) for Kwiniuk River chum salmon was established by the board in 2001. The remaining 26 goals are SEGs.

The review team is recommending elimination of the aerial survey SEG for king salmon on the Shaktoolik River. Due to poor weather conditions, uncertainty of the relationship of the survey to peak spawning time, and availability of aircraft, these counts are unreliable for evaluating a goal on this system.

All other existing escapement goals for salmon stocks in the Norton Sound-Port Clarence and Kotzebue Management Areas are recommended to continue without revision.


By signing this memo you will officially adopt the respective escapement goals summarized here.



Jeff Regnard
Director, Commercial Fisheries Division

2/15/13

Date



Charles O. Swanton
Director, Sport Fish Division

2/7/13

Date

LITERATURE CITED

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Table 1.–Summary of escapement goal recommendations for Kuskokwim Management Area salmon stocks for 2013.

Stock Unit	Assessment method	Most recent escapement goal			Recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
King Salmon							
 Kuskokwim River and tributaries							
Kuskokwim River (entire drainage)	Run reconstruction ¹				Establish goal	65,00–120,000	SEG
Aniak River	Aerial Survey	1,200–2,300	SEG	2005	No change		
Cheeneetnuk River	Aerial Survey	340–1,300	SEG	2005	No change		
Gagarayah River	Aerial Survey	300–830	SEG	2005	No change		
George River	Weir	3,100–7,900	SEG	2007	Revise goal	1,800–3,300	SEG
Holitna River	Aerial Survey	970–2,100	SEG	2005	No change		
Kisaralik River	Aerial Survey	400–1,200	SEG	2005	No change		
Kogrukluk River	Weir	5,300–14,000	SEG	2005	Revise goal	4,800–8,800	SEG
Kwethluk River	Weir	6,000–11,000	SEG	2007	Revise goal	4,100–7,500	SEG
Pitka Fork Salmon River	Aerial Survey	470–1,600	SEG	2005	No change		
Salmon River (Aniak Drainage)	Aerial Survey	330–1,200	SEG	2005	No change		
Tuluksak River	Weir	1,000–2,100	SEG	2007	Eliminate goal		
 Kuskokwim Bay							
Kanektok River	Aerial Survey	3,500–8,000	SEG	2005	No change		
Middle Fork Goodnews River	Weir	1,500–2,900	BEG	2005	No change		
North (Main) Fork Goodnews River	Aerial Survey	640–3,300	SEG	2005	No change		

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Table 1.–Page 2 of 2.

Stock Unit	Assessment method	Most recent escapement goal			Escapement goal recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
Chum Salmon							
Kuskokwim River and tributaries							
Aniak River	Sonar	220,000–480,000	SEG	2007	No change		
Kogruklu River	Weir	15,000–49,000	SEG	2005	No change		
Kuskokwim Bay							
Kanektok River	Aerial Survey	>5,200	SEG	2005	Eliminate goal		
Middle Fork Goodnews River	Weir	>12,000	SEG	2005	No change		
Coho Salmon							
Kuskokwim River and tributaries							
Kogruklu River	Weir	13,000–28,000	SEG	2005	No change		
Kwethluk	Weir	>19,000	SEG	2010	No change		
Kuskokwim Bay							
Middle Fork Goodnews River	Weir	>12,000	SEG	2005	No change		
Sockeye Salmon							
Kuskokwim River and tributaries							
Kogruklu River	Weir	4,400–17,000	SEG	2010	No change		
Kuskokwim Bay							
Goodnews River (Main Fork)	Aerial Survey	5,500–19,500	SEG	2005	No change		
Middle Fork Goodnews River	Weir	18,000–40,000	BEG	2007	No change		
Kanektok River	Aerial Survey	14,000–34,000	SEG	2005	No change		

1. Run reconstruction is conducted postseason, and uses a model to estimate total return from harvest and escapement monitoring projects.

Table 2.—Summary of escapement goal recommendations for Yukon River Management Area for 2013.

Stock unit	Assessment method	Most recent escapement goal			Escapement goal recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
King salmon¹							
Andreafsky River (East Fork)	Weir	2,100–4,900	SEG	2010	No change		
Andreafsky River (West Fork)	Aerial Survey	640–1,600	SEG	2005	No change		
Nulato River (forks combined)	Aerial Survey	940–1,900	SEG	2005	No change		
Anvik River	Aerial Survey	1,100–1,700	SEG	2005	No change		
Gisasa River	Weir	none			No change		
Chena River	Tower/Mark-Recapture	2,800–5,700	BEG	2001	No change		
Salcha River	Tower/Mark-Recapture	3,300–6,500	BEG	2001	No change		
Chum Salmon (Summer)							
East Fork Andreafsky River	Weir	>40,000	SEG	2010	No change		
Anvik River	Sonar	350,000–700,000	BEG	2005	No change		

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Table 2.–Page 2 of 2.

Stock unit	Assessment method	Most recent escapement goal			Escapement goal recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
Chum Salmon (Fall)²							
Yukon R Drainage ³	Multiple ⁴	300,000–600,000	SEG	2010	No change		
Tanana River	Expanded Foot Survey	61,000–136,000	BEG	2001	No change		
Delta River	Foot Survey	6,000–13,000	BEG	2001	No change		
Upper Yukon R. Tributaries ⁵	Multiple ⁶	152,000–312,000	BEG	2001	No change		
Chandalar River	Sonar	74,000–152,000	BEG	2001	No change		
Sheenjek River	Sonar	50,000–104,000	BEG	2001	No change		
Coho Salmon							
Delta Clearwater River	Boat survey	5,200–17,000	SEG	2005	No change		

¹ The Canadian border king salmon escapement goal was established under the *Yukon River Salmon Agreement* and is reviewed annually by the Yukon River Panel. It is not included as part of this summary.

² The Canadian fall chum salmon border escapement goal and the Fishing Branch River goal, which are under the *Yukon River Salmon Agreement* and reviewed annually by the Yukon River Panel, are not included in this summary.

³ This goal includes all Alaskan and Canadian stocks.

⁴ Includes foot survey, weir, sonar, and aerial survey counts.

⁵ Includes Chandalar, Sheenjek, and Fishing Branch rivers. Per footnote 2 above, Fishing Branch River is not listed as an individual goal.

⁶ Includes sonar, weir, and aerial survey counts.

Table 3.—Summary of escapement goal recommendations for Norton Sound/Port Clarence and Kotzebue Management Areas for 2013.

Stock unit	Assessment method	Most recent escapement goal			Escapement goal recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
<i>Norton Sound/Port Clarence Management Area</i>							
King Salmon							
Fish R./Boston Cr.	Aerial survey	>100	SEG	2005	No change		
Kwiniuk River	Tower	300–550	SEG	2005	No change		
Tubutulik River	Aerial survey	none			No change		
North River (Unalakleet R.)	Tower	1,200–2,600	SEG	2005	No change		
Old Woman R. (Unalakleet R.)	Aerial survey	550–1,100	SEG	2005	No change		
Shaktoolik River	Aerial survey	400–800	SEG	2005	Eliminate goal		
Chum Salmon							
Nome Subdistrict 1 Aggregate	Multiple	23,000–35,000	BEG	2001	No change		
Eldorado River	Expanded aerial survey	6,000–9,200	SEG	2005	No change		
Nome River	Weir	2,900–4,300	SEG	2005	No change		
Snake River	Tower/weir	1,600–2,500	SEG	2005	No change		
Kwiniuk River	Tower	11,500–23,000	OEG	2001	No change		
Niukluk River (Fish R.)	Tower	>23,000	SEG	2010	No change		
Old Woman R. (Unalakleet R.)	Aerial survey	2,400–4,800	SEG	2005	No change		
Tubutulik River	Expanded aerial survey	8,000–16,000	BEG	2001	No change		

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Table 3.–Page 2 of 3.

Stock unit	Assessment method	Most recent escapement goal			Escapement goal recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
Coho Salmon							
Kwiniuk River	Aerial survey	650–1,300	SEG	2005	No change		
Niukluk River	Tower	2,400–7,200	SEG	2010	No change		
North River (Unalakleet R.)	Aerial survey	550–1,100	SEG	2005	No change		
Pink Salmon							
Kwiniuk River (all years)	Tower	>8,400	SEG	2005	No change		
Niukluk River (all years)	Tower	>10,500	SEG	2005	No change		
Nome River (even year)	Weir	>13,000	SEG	2005	No change		
Nome River (odd year)	Weir	>3,200	SEG	2005	No change		
North River (Unalakleet. R. all years)	Tower	>25,000	SEG	2005	No change		
Sockeye Salmon							
Salmon Lake	Aerial survey	4,000–8,000	SEG	2005	No change		
Glacial Lake	Aerial survey	800–1,600	SEG	2005	No change		

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Table 3.—Page 3 of 3.

Stock unit	Assessment method	Most recent escapement goal			Escapement goal recommendation for 2013		
		Goal	Type	Year established or last revised	Action	New or revised goal	Type
<i>Kotzebue Management Area</i>							
Chum Salmon							
Kotzebue (all areas)	Expanded aerial survey	196,000–421,000	BEG	2007	No change		
Noatak/Eli rivers	Aerial survey	42,000–91,000	SEG	2007	No change		
Salmon River (Kobuk R. drainage)	Aerial survey	3,300–7,200	SEG	2007	No change		
Squirrel River (Kobuk R. drainage)	Aerial survey	4,900–10,500	SEG	2007	No change		
Tutuksuk River (Kobuk R. drainage)	Aerial survey	1,400–3,000	SEG	2007	No change		
Upper Kobuk and Selby rivers	Aerial survey	9,700–21,000	SEG	2007	No change		

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APPENDIX D.
ESCAPEMENT GOAL MEMO FOR ALSEK AND KLUKSHU
RIVERS CHINOOK AND SOCKEYE SALMON

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

Division of Commercial Fisheries
Division of Sport Fish

SEAN PARNELL, GOVERNOR

1255 W. 8TH Street
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PHONE: (907) 465-4210 (CF)
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(907) 465-2772 (SF)

MEMORANDUM


TO: Jeff Regnart, Director
Division of Commercial Fisheries

DATE: February 21, 2013

Charles O. Swanton, Director
Division of Sport Fish

THRU: Scott Kelley, Regional Supervisor 
Division of Commercial Fisheries, Region I

SUBJECT: Alsek River Salmon
Escapement Goal
Memo

Brian Frenette, Regional Supervisor 
Division of Sport Fish, Region I

FROM: Steve Heintl, Regional Research Biologist
Division of Commercial Fisheries, Region I

John Der Hovanisian, Regional Research Coordinator
Division of Sport Fish, Region I

The purpose of this memorandum is to inform you of our progress reviewing and recommending escapement goals for the transboundary Alsek River and its Klukshu River tributary. Escapement goal recommendations for Alsek-Klukshu river Chinook salmon (Bernard and Jones 2010) and sockeye salmon (Eggers and Bernard 2011) were reviewed out of cycle in 2009–2010 by an interdivisional salmon escapement goal review committee consisting of regional staff from the Divisions of Commercial Fisheries and Sport Fish, as well as statewide representatives. These reviews were based on the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223). Based on the quality and quantity of available data, the committee evaluated the analyses and determined the appropriate goal type (biological [BEG] or sustainable [SEG] escapement goal) for each salmon stock. The committee recommended changes to 2 existing goals, and establishment of 2 new goals:


- change the Klukshu River (Alsek River) Chinook salmon goal from a current BEG range of 1,100–2,300 age-1.2+ fish, as counted at a weir, to a BEG range of 800–1,200;
- establish an Alsek River Chinook salmon BEG range of 3,500–5,300 age-1.2+ fish, in terms of expanded Klukshu weir counts;

- change the Klukshu River (Alek River) sockeye salmon goal from a current BEG range of 7,500–15,000, as counted at a weir, to a BEG range of 7,500–11,000;
- establish an Alek River sockeye salmon BEG range of 24,000–33,500, in terms of expanded Klukshu weir counts.

As specified in the Pacific Salmon Treaty, escapement goals for transboundary river and Chinook salmon stocks in Southeast Alaska are established through bilateral review by the Transboundary and Chinook technical committees of the Pacific Salmon Commission. In October 2009, the Chinook Technical Committee approved the recommended goals for Alek River Chinook salmon. In October 2010, the Canadian Department of Fisheries and Oceans, Centre for Science Advice Pacific reviewed and approved the escapement goal analyses. Final review and approval of the escapement goals by the Transboundary River Panel and Transboundary Technical Committee was completed in February 2013.

A summary of the region's Chinook and sockeye salmon escapement goals and recommended changes are included in Tables 1–2 of this memorandum.

By signing this memo you will officially adopt the respective escapement goals summarized here.

	2/21/13 Date
Jeff Regnart, Director, Division of Commercial Fisheries	
	2/21/13 Date
Charles O. Swanton, Director, Division of Sport Fish	

Cc:

Bob Clark	Steve Heintz	Andy Piston
John Der Hovanisian	Ed Jones	Philip Richards
Doug Eggers	Scott McPherson	Leon Shaul
Steve Fleischman	Andrew Munro	Eric Volk

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- Bernard, D.R. and E.L Jones III. 2010. Optimal escapement goals for Chinook salmon in the transboundary Alsek River. Alaska Department of Fish and Game, Fishery Manuscript 10-02, Anchorage.
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Table 1.—Estimated king salmon escapements for systems with formal escapement goals in Southeast Alaska, 2007–2012.

System	Escapement data	Goal type	Escapement goal	Year established	Escapement ^a						Recommendation
					2007	2008	2009	2010	2011	2012	
Blossom River	AS, IE	BEG	150–300 ^b	2012	135	257	123	180	147	205	NC
Keta River	AS, IE	BEG	175–400 ^b	2012	311	363	172	475	223	241	NC
Unuk River	M-R, AS	BEG	1,800–3,800 ^c	2008	5,668	3,104	3,157	4,854 ^d	3,272 ^d	956 ^d	NC
Chickamin River	AS, IE	BEG	450–900 ^b	1997	893	1,111	611	1,156	853	444	NC
Andrew Creek	AS,	BEG	650–1,500 ^c	1998	1,736	981	628	1,205	936	589	NC
Stikine River	M-R, weir	BEG	14,000–28,000 ^c	2000	14,560	18,352	11,086 ^d	15,180 ^d	14,569 ^d	25,939 ^d	NC
King Salmon River	AS	BEG	120–240 ^c	1997	181	120	109	158	192	236	NC
Taku River	MR, AS	BEG	19,000–36,000 ^c	2009	14,854	27,383 ^d	20,762 ^d	29,307 ^d	27,523 ^d	19,538 ^d	NC
Chilkat River	MR	BEG	1,750–3,500 ^c	2003	1,445 ^c	2,905 ^c	4,429 ^c	1,815 ^{d,c}	2,803 ^{d,c}	1,627 ^{d,c}	NC
Klukshu River (Alek River)	Weir	BEG	1,100–2,300 ^{d,e}	1998	676	466	1,466	2,159	1,667 ^d	693	Change to a BEG of 1,100–2,300 ^f
Alek River	Weir	BEG	NA	NA	2,827	1,885	6,239	9,518	6,668	2,687	Establish a BEG of 3,500–5,300 ^{d,h}
Situk River	Weir	BEG	450–1,050 ^c	2003	677	413	902	167 ⁱ	240 ^d	322	NC

^a Escapements are germane to king salmon ≥ 660 mm MEF, with the exception of the Klukshu River (Alek River) and Alek River.

^b The goal is germane to king salmon ≥ 660 mm MEF as counted in peak survey counts. Reported escapements are survey counts.

^c The goal is germane to total escapement.

^d Preliminary pending biometric and/or peer review.

^e Inriver run. Spawning escapement is equal to the inriver run minus the inriver subsistence harvest, which averages <100 fish.

^f The goal is germane to age-1.2+ fish.

^g Klukshu River escapement = (Klukshu weir count + sport harvest below the weir in the Klukshu River) – Canadian harvest, where Canadian harvest = sport harvest (Dalton Post + Blanchard + Takhanne) + Aboriginal harvest (above and below the weir in the Klukshu River).

^h The Alek escapement = [(Klukshu weir count + sport harvest below the weir in the Klukshu River) x 4.00] – Canadian harvest, where Canadian harvest = sport harvest (Dalton Post + Blanchard + Takhanne) + Aboriginal harvest (above and below the weir in the Klukshu River).

ⁱ Weir compromised, partial count.

Note: AS = peak aerial survey, IE = index escapement, M-R = mark-recapture, NA = not applicable; NC = no change, BEG = biological escapement goal.

Table 2.—Estimated sockeye salmon escapements for systems with formal escapement goals in Southeast Alaska, 2006–2012.

System	Escapement data	Goal type	Escapement goal	Year established	Escapement						Recommendation
					2007	2008	2009	2010	2011	2012	
Hugh Smith Lake	Weir, MR	OEG	8,000–18,000	2003	33,743	3,588	9,483	15,646	22,029	13,353	NC
McDonald Lake ^a	FS,MR	SEG	55,000–120,000	2009	29,086	20,700	51,000	72,500	113,000	57,000	NC
Mainstem Stikine River	Run reconstruction	SEG	20,000–40,000	1987	20,865	16,178	23,045	25,185	33,659	30,668	NC
Tahltan Lake ^b	Weir	BEG	18,000–30,000	1993	20,874	10,416	30,323	22,702	34,248	13,463	NC
Speel Lake	Weir	BEG	4,000–13,000	2003	3,099	1,763	3,689	5,640	4,777	5,681	NC
Taku River	MR	SEG	71,000–80,000	1986	87,763	68,059	71,811	87,259	112,187	112,564	NC
Redoubt Lake	Weir	OEG	7,000–25,000	2003	66,938	10,146	12,851	17,119	21,806	40,903	NC
Chilkat Lake ^c	Sonar, MR	BEG	70,000–150,000	2009	68,000	71,735	150,033	61,906	63,628	107,723	NC
Chilkoot Lake	Weir	SEG	38,000–86,000	2009	72,561	32,957	33,545	71,657	65,915	114,025	NC
East Alsek-Doame River	AS, IE	BEG	13,000–26,000	2003	40,100	8,000	12,000	19,500	27,300	21,500	NC
Klukshu River (Alsek River)	Weir	BEG	7,500–15,000	2000	8,310	2,741	5,509	18,546	20,904	17,267	Change to a BEG of 7,500–11,000
Alsek River	Weir	BEG	NA	NA							Establish a BEG of 24,000–33,500
Lost River	BS, IE	Lower-bound SEG	1,000	2009	180	200	NA	1,525	1,006	453	NC
Situk River	Weir	BEG	30,000–70,000	2003	61,799	22,520	83,959	47,865 ^d	89,943	62,476	NC

^a McDonald Lake total escapement based on mark-recapture estimates (2006–2007) or calibrated peak foot survey count (2008–2011).

^b Tahltan escapement includes fish taken for broodstock.

^c Chilkat Lake total escapement based on mark-recapture estimates (2006–2007) or DIDSON sonar (2008–2011).

^d Situk River weir compromised in 2010; partial count.

Note: AS = peak aerial survey, FS = foot survey, BS = boat survey, IE = index escapement, MR = mark-recapture, NA = not applicable; NC = no change; BEG = biological escapement goal, SEG = sustainable escapement goal, OEG = optimal escapement goal.



**APPENDIX E.
ESCAPEMENT GOAL MEMO FOR KLAWOCK RIVER
COHO SALMON**

MEMORANDUM

State of Alaska DEPARTMENT OF FISH AND GAME

TO: Charles Swanton and Jeff Regnart
Directors, Division of Sport Fish and
Division of Commercial
Fisheries

DATE: February 22, 2013

FROM:  
Brian Frenette and Scott Kelley
Regional Supervisors, SE Region
Divisions of Sport Fish and
Commercial Fisheries

FILE NO.: \\work2013\KLW_EG_FINAL_121409.doc

SUBJECT Klawock Coho
Escapement Goal
Recommendation

This memo is to inform you of a change to the escapement goal for Klawock River coho salmon that was reviewed in 2007 by selected members of the Southeast Region Interdivisional Escapement Goal Review Team who had experience developing goals for this species (Bob Clark, Leon Shaul). The original memo was sent to you in December 2009 and was about the time there was transition in the Director for Commercial Fisheries Division from John Hilsinger to Jeff Regnart. However, the original memo was not signed for whatever reason, and this correspondence is a follow-up to ensure that we have all goals formally approved and accounted for on our end.

This memo is intended to correct oversights to: 1) notify you in 2007 when this escapement goal was first developed (outside of the Board of Fisheries cycle), and 2) list it in the most recent escapement goal memo submitted to you during the 2008 cycle.

The impetus for the revision was the need for a defensible goal. An informal goal of 6,000 (maximum) that was suggested by Division of Commercial Fisheries personnel to protect pink salmon was in place at the time. That goal was preceded by a goal of 6,000 (minimum or average), which was originally arrived at by consensus among Division of Sport Fish and Commercial Fisheries area management biologists. In fall 2006, Rocky Holmes asked John DerHovansian to review the Klawock escapement data and provide his best estimate of an escapement range. Complete details on the analyses are provided in Appendix A.

A summary of the region's coho salmon escapement goals is included in Table 1; the recommended change is noted in bold. A brief summary and rationale for the recommendation is included below for your review.

By signing this memo you will officially adopt the escapement goal.

KLAWOCK RIVER COHO SALMON

Old BEG

6,000 spawners as counted at the Prince of Wales Hatchery Association weir.

New SEG

4,000-9,000 spawners as counted at the Prince of Wales Hatchery Association weir.

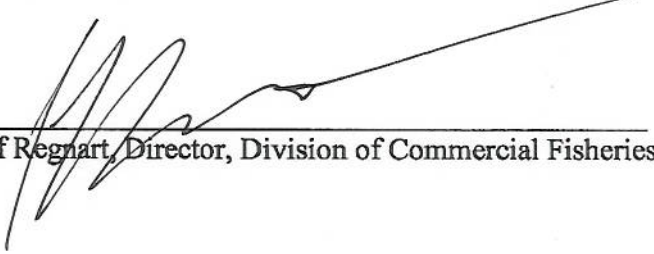
Two analyses were performed using run abundance and escapement data obtained from the 2006 Klawock Hatchery annual management plan, and surrogate information on exploitation rates, marine survival rates, and smolt age composition was obtained from Chuck Creek; an indicator stock on nearby Heceta Island. A smolt/spawner analysis was done in which exploitation and survival estimates from Chuck Creek were used to backcalculate the number of smolt in year $t-1$ that produced adults in year t . The smolt abundance estimates were then partitioned by age composition estimates from Chuck Creek into production by brood year to obtain estimates of smolt/spawner; average productivity was estimated at about 50 smolts/spawner. Escapements needed to produce x number of smolt were estimated by dividing smolt production by average productivity. This analysis yielded a point estimate of 9,400 and a range of around 5,100-10,100 adults. Next, theoretical Ricker spawner-recruit relationships were developed by choosing a range of productivity parameter α from coho systems that have survival and smolt production estimates similar to Klawock River and Chuck Creek. Escapements that would produce MSY were then calculated. Point goals ranged from about 4,900 to 7,000 adults, and the overall range of escapements that would theoretically provide 90% or more of MSY across the range of possible α values was 3,000 to 8,900.

Escapements reported in the 2006 Klawock Hatchery annual management plan were never lower than 4,000 and because this was the average minimum of the two analyses, it was selected as a suitable lower bound. Further, escapements averaged 9,300 adults from 1997 to 2005, and results from the two analyses supported an upper bound of 9,000. Thus, an escapement goal range of 4,000-9,000 was recommended. Because of uncertainty of the data, this is SEG rather than a BEG.



Charles Swanton, Director, Division of Sport Fish

2/22/13
Date



Jeff Reghart, Director, Division of Commercial Fisheries

2/22/13
Date

- Cc:
Bob Clark—RTS, Sport Fish Division
Steve Heint—Region I, Commercial Fisheries Division
Leon Shaul—Region I, Commercial Fisheries Division
John Der Hovanisian—Region I, Sport Fish Division
Ed Jones—Region I, Sport Fish Division

APPENDIX F.
ESCAPEMENT GOAL MEMO FOR KENAI RIVER EARLY-
AND LATE-RUN CHINOOK SALMON



MEMORANDUM

TO: Distribution
DATE: June 11, 2013

FROM: Jeff Regnart, Director
Division of Commercial Fisheries
SUBJECT: Kenai River Interim
Early- and Late-Run
King Salmon
Escapement Goals

Charles O. Swanton, Director
Division of Sport Fish

By means of this memo, the following escapement goals are hereby established.

ADF&G is transitioning to management of Kenai River king salmon based on DIDSON/ARIS¹ assessment technology. Ultimately, this assessment will take place upstream of the current location, at a site where there is little or no tidal influence. These goals will be reviewed and possibly revised after the sonar site is moved upriver and assessments validated.

Additional information can be found in Fishery Manuscript Series No. 13-02, *Run Reconstruction, Spawner-Recruit Analysis, and Escapement Goal Recommendation for Late-Run Chinook Salmon in the Kenai River* by Steven J. Fleischman and Timothy R. McKinley and Fishery Manuscript Series No. 13-03, *Run Reconstruction, Spawner-Recruit Analysis, and Escapement Goal Recommendation for Early-Run Chinook Salmon in the Kenai River* by Timothy R. McKinley and Steven J. Fleischman.

Kenai River Interim Early-Run King Salmon Escapement Goal

The Kenai River interim early-run king salmon goal is a **sustainable escapement goal of 3,800 to 8,500 fish** (SEG; definition in 5 ACC 39.222 (f)(36)), evaluated by multiplying DIDSON-based estimates of inriver abundance by 1.55 to account for undetected king salmon passing the sonar site at river mile 9, and subtracting harvest and catch-and-release mortality above the current sonar site.

Kenai River Interim Late-Run King Salmon Escapement Goal

The Kenai River interim late-run king salmon goal is an **SEG of 15,000 to 30,000 fish**, evaluated by multiplying DIDSON-based estimates of inriver abundance by 1.28 to account for undetected

¹ ARIS is the next generation of multi-beam imaging sonar technology. It produces images comparable to DIDSON or better.

Kenai Interim Early-and Late-run King Salmon Escapement Goals Approval Memo

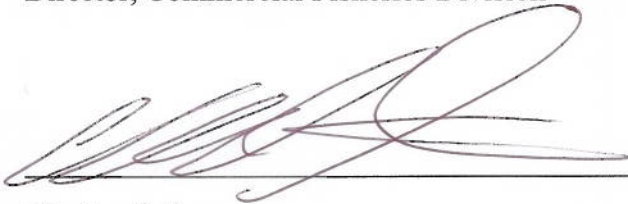
king salmon passing the sonar site at river mile 9, and subtracting harvest and catch-and-release mortality above the current sonar site.



6/11/13

Jeff Regnart
Director, Commercial Fisheries Division

Date



6/11/13

Charles O. Swanton
Director, Sport Fish Division

Date