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**Determination of Aerial Survey Index Streams used to
Assess Salmon Stocks in the Westward Region**

by

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and

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March 2009

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid-eye to fork	MEF
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	mid-eye to tail fork	METF
hectare	ha	at	@	standard length	SL
kilogram	kg	compass directions:		total length	TL
kilometer	km	east	E		
liter	L	north	N	Mathematics, statistics	
meter	m	south	S	<i>all standard mathematical signs, symbols and abbreviations</i>	
milliliter	mL	west	W	alternate hypothesis	H _A
millimeter	mm	copyright	©	base of natural logarithm	<i>e</i>
		corporate suffixes:		catch per unit effort	CPUE
Weights and measures (English)		Company	Co.	coefficient of variation	CV
cubic feet per second	ft ³ /s	Corporation	Corp.	common test statistics	(F, t, χ^2 , etc.)
foot	ft	Incorporated	Inc.	confidence interval	CI
gallon	gal	Limited	Ltd.	correlation coefficient	
inch	in	District of Columbia	D.C.	(multiple)	R
mile	mi	et alii (and others)	et al.	correlation coefficient	r
nautical mile	nmi	et cetera (and so forth)	etc.	(simple)	
ounce	oz	exempli gratia	e.g.	covariance	cov
pound	lb	(for example)		degree (angular)	°
quart	qt	Federal Information Code	FIC	degrees of freedom	df
yard	yd	id est (that is)	i.e.	expected value	<i>E</i>
		latitude or longitude	lat. or long.	greater than	>
Time and temperature		monetary symbols	\$, ¢	greater than or equal to	≥
day	d	(U.S.)		harvest per unit effort	HPUE
degrees Celsius	°C	months (tables and figures): first three letters	Jan,...,Dec	less than	<
degrees Fahrenheit	°F	registered trademark	®	less than or equal to	≤
degrees kelvin	K	trademark	™	logarithm (natural)	ln
hour	h	United States	U.S.	logarithm (base 10)	log
minute	min	(adjective)		logarithm (specify base)	log ₂ , etc.
second	s	United States of America (noun)	USA	minute (angular)	'
		U.S.C.	United States Code	not significant	NS
Physics and chemistry		U.S. state	use two-letter abbreviations (e.g., AK, WA)	null hypothesis	H ₀
all atomic symbols				percent	%
alternating current	AC			probability	P
ampere	A			probability of a type I error	
calorie	cal			(rejection of the null hypothesis when true)	α
direct current	DC			probability of a type II error	
hertz	Hz			(acceptance of the null hypothesis when false)	β
horsepower	hp			second (angular)	"
hydrogen ion activity	pH			standard deviation	SD
(negative log of)				standard error	SE
parts per million	ppm			variance	
parts per thousand	ppt, ‰			population	Var
volts	V			sample	var
watts	W				

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ABSTRACT

Through this analysis an index of aerially surveyed salmon streams was created for the Westward Region that will provide tenable, representative estimates of escapement when logistical limitations prevent aerially surveying streams, and a foundation was established for assessing relationships or trends among all surveyed streams within a given district. Index streams were determined by district for the Alaska Peninsula, Chignik, and Kodiak management areas using correlation and linear regression analyses on aerial survey salmon escapement data from 1987 to 2007. Within the Alaska Peninsula management area, 81 streams were selected as chum salmon *Oncorhynchus keta* index streams and 67 were selected as pink salmon *Oncorhynchus gorbuscha* index streams. Within the Chignik management area, 21 streams were selected as chum salmon index streams and 30 were selected as pink salmon index streams. For the Kodiak management area, 34 streams were selected as chum salmon index streams and 47 were selected as pink salmon index streams. This study has also established a methodology for assessing the relationships using correlation and linear regression analyses among given stocks of salmon within a district, which in the future may be applied to other dynamic comparisons.

Key words: Salmon, aerial survey, stream index, escapement, correlation, linear regression, Alaska Peninsula, Aleutian Islands, Kodiak, Chignik.

INTRODUCTION

Within the Westward Region, which includes the Kodiak, Chignik, and Alaska Peninsula and Aleutian Islands management areas (Figure 1), there exist over 1,500 catalogued streams that have varying run sizes and return consistencies of adult Pacific salmon (*Oncorhynchus* spp.). The Westward Region aerial survey-estimated escapement database for some of these streams dates back to 1952, when it consisted of survey data for a mere three streams. With technological advances and growing demands for salmon escapement data to enhance the management of dynamic Westward Region salmon fisheries, this database has grown tremendously over time. However, with variations in surveying effort because of climatic, budgetary, geomorphological, or fishery-related changes, the frequency and focus on surveying particular streams changes over time. These changes in surveying effort can make it difficult to tease production or abundance trends from the data. It may, however, be possible to improve salmon fisheries management by examining the relationships among salmon escapement data from aerial survey streams by species and district, and therefore afford management staff the opportunity to prioritize their surveying efforts, if needed, without compromising data quality. Specifically, the determination and use of index streams may allow the estimation of a proportion of the salmon escapement by species, in a given district, that can be applied to estimate escapement in the entire district when constraints to surveying exist. It may also be possible to glean an understanding of the potential interactions among different salmon stocks as productivity in one stream may be affected by production in neighboring streams or by exposure to similar climatic conditions. The goals of this analysis are to 1) create an index of aerial survey streams by species and district that indicate which streams in the Westward Region presently provide tenable, representative estimates of escapement for each district and 2) establish a foundation for assessing relationships or trends among all surveyed streams.

STUDY AREA AND DATA QUALITY OVERVIEW

Alaska Peninsula and Aleutian Islands

The Alaska Peninsula and Aleutian Islands combined commercial salmon fishery registration area, collectively referred to as Area M, comprises two separate management areas: 1) the Alaska Peninsula Management Area and 2) the Aleutian Islands Management Area (Figure 1). The Alaska Peninsula Management Area (APMA) includes all state waters of Alaska from Cape

Menshikof to Cape Sarichef on the north side of the Alaska Peninsula and from a line extending from Scotch Cap through the easternmost tip of Ugamak Island to a line extending 135° southeast from Kupreanof Point on the south side of the Alaska Peninsula (5 AAC 09.100). The area is divided into six commercial fishing districts: the Southeastern (comprising the Southeastern District Mainland and the Shumagin Islands), South Central, Southwestern, Unimak, Northwestern, and Northern Districts (5 AAC 09.200; Figure 2). Commonly, aggregates of these districts are referred to as the South Peninsula and North Peninsula. These districts are further subdivided into sections and smaller statistical areas.

The Aleutian Islands Management Area (AIMA) includes the state waters of Alaska surrounding the Aleutian Islands west of Cape Sarichef and west of a line extending from Scotch Cap through the easternmost tip of Ugamak Island, including waters surrounding the Pribilof Islands except the Atka-Amlia Islands Area described in 5 AAC 11.101 (5 AAC 12.100; Figure 3). Parts of the Aleutian Islands area are separated into four commercial fishing districts: the Akutan, Unalaska, Umnak, and Adak Districts. There is little commercial salmon fishing in the area and very few of the 458 (minimum) known salmon streams are consistently monitored for escapement (Holmes 1997).

The Bear and Orzinski lakes' and Sandy, Nelson, and Ilnik rivers' stocks are the only sockeye salmon *Oncorhynchus nerka* runs in the APMA and AIMA that are consistently monitored. Escapement estimates for all of these runs are based mainly on weir counts with the addition of post-weir estimates. Similarly, the Nelson River has the only substantial Chinook salmon *O. tshawytscha* production within the APMA and AIMA, which is monitored by the weir (Honnold et al. 2007a).

Pink *O. gorbuscha* and chum *O. keta* salmon escapements in the APMA and AIMA are enumerated by aerial surveys. Escapements were estimated using peak counts, as well as estimates of carcasses in some years; these represented the index escapement. Achievement of the escapement goals were determined by these total index escapements.

Estimates of coho salmon *O. kisutch* escapement are inconclusive because the difficulty and expense precludes aerial surveys for estimating coho salmon escapement in the fall and in weir-monitored systems the vast majority of coho salmon escapement occurs after the weirs are pulled for the season.

Chignik

The Chignik Management Area (CMA) comprises all state waters and inland drainages on the south side of the Alaska Peninsula, bounded by a line extending 135° southeast for three miles from a point near Kilokak Rocks (57° 10.34' N lat., 156° 20.22' W long.) then due south, to a line extending 135° southeast for three miles from Kupreanof Point at 55° 33.98' N lat., 159° 35.88' W long. (Figure 4). The area is divided into five commercial fishing districts: Eastern, Central, Chignik Bay, Western, and Perryville districts (Figure 4). These districts are further divided into 14 sections and 25 statistical reporting areas (Pappas et al. 2003). Within the CMA there are at least 103 streams catalogued by the department as having adult runs of Pacific salmon.

The Black and Chignik lake stocks are the only two sockeye salmon stocks in the CMA that are consistently monitored. Similarly, the Chignik River has the only substantial Chinook salmon production within the CMA (Stichert 2007). Escapement estimates for all three runs are based mainly on weir counts with the addition of post-weir estimates for the late run of sockeye salmon.

Pink and chum salmon escapements in the CMA are enumerated by aerial surveys. Escapements after 1984 were estimated using area-under-the-curve methodology assuming a 15-day stream life (Johnson and Barrett 1988) and were referred to as estimated total escapement. Escapements before 1985 were estimated using varying stream life, as well as estimates of carcasses in some years; these were also considered measures of estimated total escapement. Starting in 2004, peak counts, carcass estimates, and ancillary data were used to estimate escapement, which was defined as index escapement. Achievement of the escapement goals were determined by these estimated or index total escapements. For chum salmon, total estimated escapement estimates were used for inseason fishery management until 2003, when index escapement was used to determine chum salmon escapement.

Estimates of coho salmon escapement are inconclusive because the vast majority of coho salmon escapement occurs after the Chignik River weir is pulled for the season and the inclement fall weather precludes reliable aerial surveys for estimating coho salmon escapement in other CMA streams.

Kodiak

The Kodiak Management Area (KMA) comprises the state waters of the western Gulf of Alaska (GOA) surrounding the Kodiak Archipelago, and along that portion of the Alaska Peninsula that drains into Shelikof Strait between Cape Douglas and Kilokak Rocks (Figure 5).

The archipelago is approximately 240 km (150 miles) long extending from Shuyak Island south to Tugidak Island. The Alaska Peninsula portion is about 256 km (160 miles) long and is separated from the archipelago by Shelikof Strait, which averages 48 km (30 miles) in width. Chirikof Island, located approximately 64 km (40 miles) south southwest of Tugidak Island, is also included in the KMA.

Salmon regulations define the KMA as all state waters of Alaska south of a line extending from Cape Douglas (58° 51.10' N. lat.), west of 150° W long., north of 55° 30.00' N lat., and north and east of a line extending 135° southeast for three miles from a point near Kilokak Rocks at 57° 10.34' N lat., 156° 20.22' W long. (the longitude of the southern entrance of Imuya Bay), then due south (5 AAC 18.100).

The KMA is divided into seven commercial fishing districts: the Afognak, Northwest Kodiak, Southwest Kodiak, Alitak, Eastside Kodiak, Northeast Kodiak, and Mainland districts (Figure 5). These are further subdivided into a number of sections, each of which is composed of a number of smaller statistical areas, including terminal or special harvest areas for enhanced or rehabilitated salmon stocks.

Commercial fisheries primarily target sockeye salmon from June through early July; some early chum salmon stocks may influence management in localized areas (Dinnocenzo et al. 2007). Pink salmon stocks are targeted from early July through mid-August, with some areas managed specifically for local sockeye or chum salmon stocks. Late-run sockeye, coho, and late-returning chum salmon are targeted from mid-August through early September; coho salmon are the targeted species in later September into October.

The Afognak, Buskin, Karluk, Frazer, and Upper Station lakes' and Ayakulik river stocks are the only sockeye salmon stocks in the KMA that are consistently monitored. Escapement estimates for all of these runs are based mainly on weir counts. Similarly, the Karluk and Ayakulik systems have

the only substantial Chinook salmon production within the KMA that are monitored using weirs (Honnold et al. 2007b).

Pink and chum salmon escapements in the KMA are enumerated by aerial surveys. Escapements were estimated using peak counts, as well as estimates of carcasses in some years; these represented the index escapement. Achievement of the escapement goals were determined by these total index escapements.

Estimates of coho salmon escapement are limited to the Buskin, American, Olds, and Pasagshak rivers. Of these systems, all escapements are estimated by foot surveys, with the exception of the Buskin River, which derives its escapement estimates from weir counts. All other coho salmon escapement estimates are inconclusive because the difficulty and expense of estimating coho salmon escapement precludes aerial surveys in the fall.

METHODS

Peak escapement counts, the maximum estimated number of fish observed by aerial survey in a stream during a given year, were gathered from the Alaska Department of Fish and Game (ADF&G) Westward Region Salmon Stream Survey database. The ADF&G staff made significant changes in 1987 to the aerial survey methodology and how streams were numbered (Nelson and Lloyd 2001). Due to these changes, analyses in this report used only data collected from 1987 to 2007 for the KMA and CMA. For the Alaska Peninsula, the data used in the analyses ranged from 1987 to 2005 because the index stream analysis for this area occurred in 2006 and it was determined that rerunning the analysis with the additional two years of data would not significantly affect the results. KMA pink salmon data were analyzed in odd- and even-year groupings for both regression and correlation analyses because the analyses of year-to-year time series data would not yield significant results.

Multiple criteria were used when selecting streams to be index streams, depending on management area and species. Streams were not used as index streams unless they had been monitored by aerial surveys for over half of the years during the time period chosen for the analyses. It was determined that if little effort had been made in the past to monitor the systems, there was little need to consider the systems as index streams for the future as analyses would have been difficult if these systems were included due to their smaller sample sizes. River or stream systems were not used as index streams if they had been monitored by aerial surveys for less than ten years since 1987 or if the median of the peak escapement count was zero. Conversely, a stream was considered as an index stream if there were 5 or fewer streams to represent the peak escapement within a given district for a species. Additionally, some streams relative to a given species were not selected as index streams because of their value to directed commercial or sport fisheries.

Streams with low median escapement values were also omitted from the analyses as they may not accurately represent escapement. Stream systems were not used for further analyses if the median peak count from 1987 to 2007 was 500 salmon or less. This cut-off value was used because systems that had 500 or fewer salmon observed over half of the time were considered of minor importance: no management action would likely be taken if few (< 500) or no salmon were observed in these systems.

The contrast in the median peak escapement counts between two streams can be as much as a factor of a thousand. In other words, for a specific management area the median peak

escapement count of a given species in one stream might be 1,000 and in another 1,000,000. To alleviate apparent clustering due to magnitude alone, each stream's peak escapement counts were standardized (Manly 1994):

$$y_{ij} = \frac{x_{ij} - \bar{x}_i}{s_i} \quad (1)$$

where y_{ij} is the standardized peak escapement count for stream i in year j , x_{ij} is the peak escapement count for stream i in year j , \bar{x}_i is the average of the peak escapement of stream i from 1987 to 2005 and s_i is the standard deviation of the peak escapement of stream i from 1987 to 2005.

Correlation analyses (Zar 1999) were performed to determine the index streams for each district using the peak escapement estimates for the streams remaining in each district after the removal of those streams that did not meet the median and survey frequency criteria previously described. Generally, streams with low peak escapements and that had escapement estimates with correlation coefficients equal to or greater than 0.60 were considered highly correlated and not considered as suitable index streams. For cases when two or more streams were strongly correlated, the stream that was correlated with the most other streams was kept as an index stream as it would represent the escapement for a greater number of streams than those streams that were only correlated with fewer streams. Correlation analyses were not performed for districts with five or fewer streams meeting median and survey frequency criteria.

Linear regression analyses (Zar 1999) were performed by regressing the estimated total index escapement (as determined by this study) on the estimated total escapements (which represents the peak survey, carcass enumeration, and ancillary and qualitative data) of that district's streams to help explain the variation between the total index escapement and the estimated total escapements. Data used in the linear regression analyses were limited to those years in which total escapement estimates by district were available; data from 1989 to 2007 were used in the KMA regression analyses for pink salmon because peak escapement was not defined by district prior to 1988. Outlying data points that were 3 standard deviations or more from the mean peak escapement were removed from the regression analysis.

RESULTS

ALEUTIAN ISLANDS

No streams in the Aleutian Islands Management Area were selected as index streams because they failed to meet the criteria for selecting index streams. There is little commercial salmon fishing in the area and very few of the 458 (minimum) known salmon streams are consistently monitored for escapement (Holmes 1997). No established escapement goals exist for Chinook, coho, or chum salmon. Additionally, Aleutian Islands pink and sockeye salmon sustainable escapement goals (SEGs) were eliminated in 2004 because of infrequent commercial fisheries and funding and logistic limitations associated with monitoring those escapement goals (Honnold et al. 2007a).

ALASKA PENINSULA - NORTH PENINSULA

Only streams surveyed for chum salmon peak escapements in the North Peninsula districts met the criteria for selection as index streams. Therefore, correlation and regression analyses were

performed for only chum salmon streams. Streams for the other salmon species failed to meet several facets of the index stream analysis criterion. All major river systems that support sockeye salmon stocks were monitored by weirs or aerial surveys. For the sockeye systems that were monitored by aerial surveys, all survey streams were considered important and kept as index streams. Chinook, coho, and pink salmon have very little directed harvest, either commercial or sport. Currently only established escapement goals for Chinook and coho salmon exist for the Nelson River system, a weir-monitored system, and for Bechevin Bay pink salmon in the Northwestern District (Honnold et al. 2007a). Furthermore, on the North Peninsula there are few river systems that support Chinook salmon, and coho salmon return after August when weather makes it difficult to perform aerial surveys. No streams from the North Peninsula were selected as pink salmon index streams because of low harvest levels in the area and the catch has usually been incidental during sockeye salmon fisheries (Murphy and Tschersich 2005). Additionally, pink salmon aerial survey escapement data for the North Peninsula failed to meet the criteria for index stream selection.

Chum Salmon

Of the 111 streams surveyed for chum salmon between 1987 and 2005, 38 streams were selected as chum salmon index streams (Table 1). By district, 20 streams were selected in the Northern District and 18 streams in the Northwestern District (Table 1; Figures 6 through 11; Appendix A1).

Linear regression analyses indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationships ($r^2 \geq 0.68$; Table 2; Appendix A2).

ALASKA PENINSULA - SOUTH PENINSULA

The pink and chum salmon stocks of the South Peninsula met the criteria for selecting index streams. Therefore, correlation and regression analyses were performed for only pink and chum salmon stocks. All river systems that support sockeye salmon stocks were monitored by weirs or aerial surveys. For those sockeye systems that were monitored by aerial surveys, all survey streams were considered important and kept as index streams. Chinook and coho salmon have had very little directed harvest, either commercial or sport, and currently only Thin Point coho salmon have an escapement goal (Honnold et al. 2007a). Furthermore, on the South Peninsula there are few river systems that support Chinook salmon, and coho salmon returns typically occur after August when inclement weather makes it difficult to perform aerial surveys.

Pink Salmon

Of the 216 streams surveyed for pink salmon between 1987 and 2005, 67 streams were selected as pink salmon index streams (Table 3). By district, 9 streams were selected in the South Central District, 35 streams in the Southeastern District, which are shared between the Southeastern District Mainland (22 streams) and the Shumagin Islands Section (13 streams) and 23 streams in the Southwestern District (Table 3; Figures 6 through 11; Appendix A3). In the Unimak District, no reduction in the number of survey streams was desired as few streams are presently surveyed.

Linear regression analyses indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationships ($r^2 \geq 0.87$; Table 2; Appendix A4).

Chum Salmon

Of the 217 streams surveyed for chum salmon between 1987 and 2005, 43 streams were selected as chum salmon index streams (Table 4). The following streams were selected by district as index streams: 10 streams in the South Central District, 19 streams in the Southeastern District, which are shared between the Southeastern District Mainland (16 streams) and the Shumagin Islands Section (3 streams) and 14 streams in the Southwestern District (Table 4; Figures 6 through 11; Appendix A5). In the Unimak District, no reduction in the number of survey streams was desired as few streams are presently surveyed.

Linear regression analyses indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationships ($r^2 \geq 0.69$; Table 2; Appendix A6).

CHIGNIK

The numerous pink and chum salmon stocks in the CMA met the criteria for selecting index streams. Therefore, correlation and regression analyses were performed for only pink and chum salmon stocks. Chinook salmon and the overwhelming majority of sockeye salmon stocks were monitored by the Chignik River weir: within the CMA other stocks of sockeye salmon were substantially smaller in size and lacked established escapement goals (Nelson and Lloyd 2001; Witteveen et al. 2007). Coho salmon in the CMA have no established escapement goals (Nelson et al. 2006; Witteveen et al. 2007). Furthermore, the removal of the Chignik weir in the first week of September and the frequent inclement weather has made it difficult to estimate coho salmon escapement or perform aerial surveys on coho salmon streams.

Pink Salmon

Of the 91 streams surveyed for pink salmon between 1987 and 2007, 30 streams were selected as pink salmon index streams (Table 5). By district, 3 streams were selected in the Chignik Bay District, 6 in the Central District, 12 for the Eastern District, 4 in the Western District, and 5 in the Perryville District (Table 5; Figure 12; Appendix B1).

Linear regression analyses indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationships ($r^2 \geq 0.66$; Table 2; Appendix B2). The linear regression analyses for Chignik Bay District pink salmon possessed 4 index streams.

Chum Salmon

Of the 115 streams surveyed for chum salmon between 1987 and 2007, 21 streams were selected as chum salmon index streams (Table 6). By district, 1 stream was selected in the Chignik Bay District, 6 in the Central District, 7 in the Eastern District, 3 in the Western District, and 4 in the Perryville District (Table 6; Figure 12; Appendix B3).

Linear regression analyses indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationship ($r^2 \geq 0.63$) with the exception of the Western District chum salmon, which had an $r^2 = 0.41$, and utilized only 3 index streams in the regression analysis (Table 2; Appendix B4). A regression analysis was not performed for the Chignik Bay District as only 1 stream met the criteria for the correlation analysis. An outlying data point was removed from the regression analysis for the Central District (2004 data point).

KODIAK

The numerous pink and chum salmon stocks in the KMA met the criteria for selecting index streams. Therefore, correlation and regression analyses were performed for only pink and chum salmon stocks. Within the KMA, all river systems that support sockeye and Chinook salmon stocks are monitored by weirs or aerial surveys. Coho salmon escapements within the KMA have been estimated by weir counts, foot surveys, and aerial surveys. For the 4 sockeye salmon and 2 coho salmon systems that were monitored by aerial surveys (Nelson and Lloyd 2001), all survey streams were considered important and kept as index streams. Therefore, correlation and regression analyses were performed for only pink and chum salmon stocks. KMA pink salmon escapement data were subdivided into even- and odd-year data sets to facilitate the correlation and regression analyses.

Pink Salmon

Of the 481 streams surveyed for pink salmon between 1989 and 2007, 47 streams were selected as even-year pink salmon index streams and 48 streams were selected as odd-year pink salmon index streams (Table 7). Of the odd-year pink salmon index streams, 4 were selected in the Afognak District, 7 in the Northwest District, 3 in the Southwest District, 5 in the Alitak District, 8 in the Eastside District, 8 in the Northeast District, and 13 in the Mainland District (Table 7; Figures 13 through 15; Appendix C1). Of the even-year pink salmon index streams, 7 were selected in the Afognak District, 8 in the Northwest District, 3 in the Southwest District, 5 in the Alitak District, 7 in the Eastside District, 8 in the Northeast District, and 9 in the Mainland District (Table 7; Figures 13 through 15; Appendix C1).

Linear regression analyses for odd- and even-year pink salmon indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationship ($r^2 \geq 0.62$) with the exception of the Southwest District odd-year pink salmon, which had an $r^2 = 0.51$ and only 3 index streams (Table 2; Appendices C1 and C2). It should be noted that odd-year pink salmon from the Alitak, Eastside, and Mainland districts each had outlying data points from 1995, 2003, and 1989 respectively. Even-year pink salmon from the Afognak and Southwest districts had outlying data points from 1998 and 1990 respectively.

Chum Salmon

Of the 520 streams surveyed for chum salmon between 1987 and 2007, 34 streams were selected as chum salmon index streams (Table 8). Of those chum salmon index streams, 4 were selected in the Afognak District, 2 in the Northwest District, 2 in the Southwest District, 5 in the Alitak District, 6 in the Eastside District, 4 in the Northeast District and 11 in the Mainland District (Table 8; Figures 13 through 15; Appendix C3).

Linear regression analyses indicated that the selected index streams accurately represented a proportion of the total estimated escapement and explained a substantial portion of the error in the regression relationship ($r^2 \geq 0.76$; Table 2; Appendix C4). It should be noted that a regression analysis was not performed for the Afognak District as less than 5 streams met the criteria for the correlation analysis. Outlying data points were removed from the regression analyses for the Eastside (2006 and 2007 data points) and Mainland (1998 data point) districts.

DISCUSSION

By examining the Westward Region Salmon Stream Survey database, we have identified relationships in escapement total escapement levels among various pink and chum salmon streams and peak escapement counts of selected streams within a given district. These relationships in turn can serve as tools for improving fisheries management by affording management the opportunity to prioritize their surveying efforts if needed because of budgetary, logistical, or climatic constraints to performing aerial surveys. Specifically, the selected index streams provide an estimate of a percentage of the estimated total escapement within a given district for a given species. If index streams are surveyed, their data may be applied to the linear regression relationship for their district and species and extrapolated to calculate the remaining portion of the estimated total escapement. This option for estimating escapement may prove valuable when aerial surveys are limited.

It should be noted that it is not the intention of this study to suggest that solely selected index streams should be aerially surveyed. As climate and fisheries change over time, it is necessary to monitor how these changes affect all species at any given time within a given district so that surveying effort may be focused where needed and therefore provide the best information possible to enable sound management decisions. Thus, management should maintain the flexibility to aerially survey streams not selected as index streams. As previously stated, the index survey streams indicate which streams will provide the best estimate of total escapement when budgetary, logistical, or climatic constraints hinder management's ability to maintain a desired level of aerial surveying. Additionally, the selected index streams and their subsequent survey data are specific to their respective species of salmon. If a stream that is not an index stream for one species of salmon receives adult returns of multiple salmonid species, it does not imply avoiding aerially surveying that same stream for other species. For example, if a stream that fails to meet the index stream criteria for pink salmon has a known coho salmon return, this does not imply that surveys should not be performed for coho salmon.

The correlation and regression analyses have established a methodological foundation for assessing the relationships among different runs of salmon. These analyses have identified which runs represent a significant portion of the estimated total escapement for a given district and species, which may eventually enable comparisons between districts and hopefully, between stocks or species. That is to say, if certain runs provide a greater contribution to the estimated total escapement of a district, it is plausible that those same runs may share life history trait similarities with or that impact other runs in other districts. These comparisons may be valuable in describing how different species interact and if this interaction affects potential returns. While such correlation analyses between districts and even management areas are beyond the scope of this report, it is hoped that this initial study will serve as a touchstone for such future investigations and improve our understanding of salmonid life history strategies.

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TABLES AND FIGURES

Table 1.–Selected index streams for North Peninsula chum salmon.

District	Stream Number	Stream Name
Northwest	311-3009	Mud Hole (Peterson Lagoon)
Northwest	311-3010	Clear Lagoon (Peterson Lagoon)
Northwest	311-4004	North Creek
Northwest	311-5001	Big River
Northwest	311-5002	Swanson Lagoon
Northwest	311-6001	Mike's Valley (St. Catherine Cove)
Northwest	311-6006	Anderson's Creek
Northwest	311-6008	Unnamed
Northwest	311-6012	Warm Springs Bay
Northwest	312-2002	Mike's Duck Camp
Northwest	312-2003	Alligator Hole, Center
Northwest	312-2005	Frosty Creek
Northwest	312-2006	Blue Bill Lake
Northwest	312-2013	Outer Marker Lakes
Northwest	312-2051	Springs S Frosty Creek
Northwest	312-4001	Joshua Green River
Northwest	312-4002	Moffet Springs Creek
Northwest	312-4003	Moffet Creek
Northern	313-1002	North Creek
Northern	313-3003	Sapsuk (Nelson) River
Northern	314-2003	314-2003
Northern	314-2004	Deer Valley
Northern	314-2005	Portage Valley
Northern	314-2006	Grass Valley
Northern	314-2007	Lawrence (Valley) Creek
Northern	314-2008	Mine Harbor
Northern	314-2009	Coal Creek
Northern	314-3004	Mud Bay 3004
Northern	314-3007	Head Creek, Right Head
Northern	314-3009	Right Head Creek
Northern	315-1001	Frank's Lagoon
Northern	317-2004	Bluff Creeks
Northern	317-2008	Birthday Creek
Northern	317-207A	Meshik River, Main
Northern	317-207H	Shoe Creek
Northern	317-207R	Rainbow Creek
Northern	318-206A	Cinder River, Main
Northern	318-206J	Wiggly Creek

Table 2.–Linear regression statistics for Alaska Peninsula, Chignik and Kodiak management area analyses.

Area	Species	District	N	Intercept	Slope	R ²	F	P
Alaska Peninsula	Chum	Northern	19	54,965.86	1.291	0.791	64.423	3.49E-07
		Northwest	19	84,160.74	1.255	0.681	36.245	1.38E-05
		South Central	19	58,641.57	1.010	0.690	37.858	1.06E-05
		Southeast District Mainland	19	29,641.36	1.693	0.915	182.800	1.59E-10
		Southeastern	19	22,068.06	1.698	0.919	191.835	1.09E-10
		Southwestern	19	45,468.45	1.515	0.757	52.872	1.31E-06
Alaska Peninsula	Pink	South Central	19	62,270.22	1.628	0.870	113.398	6.11E-09
		Southeast District Mainland	19	8,858.29	2.503	0.929	222.738	3.35E-11
		Southeastern	19	-117,938.68	1.999	0.964	455.396	1.03E-13
		Southwestern	19	-116,565.76	2.040	0.914	179.598	1.82E-10
Chignik	Chum	Chignik Bay	–	–	–	–	–	–
		Central	20	8,778.71	0.951	0.765	58.507	4.62E-07
		Eastern	21	32,544.43	3.020	0.625	31.604	2.02E-05
		Western	21	14,881.53	1.033	0.410	13.196	1.77E-03
		Perryville	21	14,878.91	1.643	0.772	64.427	1.60E-07
Chignik	Pink	Chignik Bay	21	21,349.33	2.596	0.658	36.502	8.22E-06
		Central	21	63,791.47	1.354	0.673	39.180	5.2E-06
		Eastern	21	-6,764.51	2.456	0.851	108.181	2.78E-09
		Western	21	-22,049.17	1.995	0.794	73.210	6.09E-08
		Perryville	21	-18,001.00	1.688	0.821	87.306	1.55E-08
Kodiak	Chum	Afognak	–	–	–	–	–	–
		Alitak	21	7,469.14	0.970	0.968	580.663	1.05E-15
		Eastside	19	-20,865.61	2.814	0.760	53.888	1.15E-06
		Mainland	20	3,739.57	15.909	0.828	86.775	2.63E-08
		Northeast	21	2,119.69	0.958	0.934	267.784	1.18E-12
		Northwest	21	-13,433.96	1.340	0.982	1041.813	4.62E-18
		Southwest	21	2,449.64	1.012	0.931	256.683	1.72E-12

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Table 2.–Page 2 of 2

Area	Species	District	N	Intercept	Slope	R ²	F	P
Kodiak	Pink-Odd year	Afognak	10	135,364.41	5.383	0.621	13.119	6.76E-03
		Alitak	9	-46,691.35	2.279	0.950	132.918	8.31E-06
		Eastside	9	-96,594.27	2.220	0.851	40.090	3.92E-04
		Mainland	9	196,945.28	1.642	0.653	13.157	8.43E-03
		Northeast	10	167,390.84	1.468	0.645	14.556	5.12E-03
		Northwest	10	-290,991.00	3.034	0.977	336.864	7.99E-08
		Southwest	10	135,843.64	1.869	0.507	8.228	2.09E-02
Kodiak	Pink-Even year	Afognak	8	59,027.72	2.067	0.648	11.029	1.60E-02
		Alitak	9	-57,363.47	2.279	0.861	43.231	3.11E-04
		Eastside	9	19,986.62	1.775	0.953	142.662	6.56E-06
		Mainland	9	-72,477.33	3.347	0.832	34.612	6.10E-04
		Northeast	9	8,987.51	1.799	0.786	25.660	1.45E-03
		Northwest	9	-560,458.58	2.573	0.715	17.542	4.09E-03
		Southwest	8	1,320,098.28	1.089	0.662	11.762	1.40E-02

Table 3.—Selected index streams for South Peninsula pink salmon.

District	Stream Number	Stream Name
South Central	283-6202	Coal Bay 6202
South Central	283-6203	Coal Bay 6203
South Central	283-6205	Coal Bay Main Stream
South Central	283-6315	Middle (Humpy/Priest) Creek
South Central	283-6316	Settlement Point (Creek)
South Central	283-6406	Canoe Bay River
South Central	283-6408	Entrance (Amies) Creek
South Central	283-7001	Mino Creek
South Central	283-7002	East of Mino Creek
Southeastern District Mainland	281-1003	Susie (Suzy) Creek
Southeastern District Mainland	281-2001	Chichagof Bay W Side
Southeastern District Mainland	281-2002	Chichagof Bay Stream
Southeastern District Mainland	281-3103	Orzinski Bay
Southeastern District Mainland	281-3207	Grub Gulch
Southeastern District Mainland	281-3303	Louie's Corner
Southeastern District Mainland	281-3304	Big River
Southeastern District Mainland	281-3401	Granville Bay
Southeastern District Mainland	281-3402	Osterback's Creek
Southeastern District Mainland	281-3403	Stonehouse
Southeastern District Mainland	281-3406	Island Bay 3406
Southeastern District Mainland	281-3502	Fox Bay 3502
Southeastern District Mainland	281-7004	Not Smiley's Creek
Southeastern District Mainland	281-7005	Beaver River
Southeastern District Mainland	281-8004	Cape Aliaksin, West
Southeastern District Mainland	281-8008	Lefthand Bay Kagayan (Lefthand River)
Southeastern District Mainland	281-8009	Foster Creek
Southeastern District Mainland	281-8014	Bishop (Johnson) Creek
Southeastern District Mainland	281-8015	Coleman Creek
Southeastern District Mainland	281-9001	Swedania Point Stream (Lumber B)
Southeastern District Mainland	281-9002	Rough Beach
Southeastern District Mainland	281-9004	San Diego Lagoon & Stream
Shumagin Islands	282-1003	Apollo Creek Major
Shumagin Islands	282-1014	Squaw Harbor Minor
Shumagin Islands	282-1015	Squaw Harbor Major
Shumagin Islands	282-1016	Ben Green Bight-Farm
Shumagin Islands	282-1103	Fox Hole-Popof
Shumagin Islands	282-1202	Zachary Bay 1202
Shumagin Islands	282-1203	Zachary Bay 1203
Shumagin Islands	282-1205	Zachary Bay 1205
Shumagin Islands	282-1207	Zachary Bay 1207
Shumagin Islands	282-1209	1st Stm S. Quartz Pt
Shumagin Islands	282-1302	Dry Lagoon
Shumagin Islands	282-1303	Bay Point
Shumagin Islands	282-1304	Pinnacle Point Stream

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District	Stream Number	Stream Name
Southwestern District	284-1211	Cannery Creek
Southwestern District	284-1213	Little John Lagoon Stream
Southwestern District	284-2003	McGinty's Creek
Southwestern District	284-2004	SW Bight Creek
Southwestern District	284-3101	Fox Island Anchorage East
Southwestern District	284-3103	Fox Island Anchorage West
Southwestern District	284-3106	Southern Creek
Southwestern District	284-3110	Eastern Creek
Southwestern District	284-3305	Ram's Creek
Southwestern District	284-3402	Russel Creek
Southwestern District	284-3409	Barney's Creek
Southwestern District	284-4101	Belkofski Village Creek
Southwestern District	284-4203	Indian Head
Southwestern District	284-4209	Captain's Harbor
Southwestern District	284-4210	Kitchen Anchorage
Southwestern District	284-4212	Rocky River
Southwestern District	284-5103	Dolgoi Harbor, NW
Southwestern District	284-5106	Dolgoi Harbor, SW
Southwestern District	284-5201	Nikolaski
Southwestern District	284-5206	West Spring Holes
Southwestern District	284-6004	Ikatan River
Southwestern District	284-6005	Whirl Point
Southwestern District	284-6008	Deadman's Cove

Table 4.–Selected index streams for South Peninsula chum salmon.

District	Stream Number	Stream Name
South Central	283-6102	SW. Stream, Long John Lagoon
South Central	283-6304	Stm S of Chinaman Lagoon
South Central	283-6305	Lower Chinaman Lagoon
South Central	283-6310	Chinaman Lagoon Main
South Central	283-6313	Ruby's (Jackson's) Lagoon
South Central	283-6316	Settlement Point (Creek)
South Central	283-6405	Bluff Point Creek
South Central	283-6406	Canoe Bay River
South Central	283-6408	Entrance (Armies) Creek
South Central	283-6409	Inner Canoe, South Side
Southeastern District Mainland	281-2001	Chichagof Bay W Side
Southeastern District Mainland	281-2002	Chichagof Bay Stream
Southeastern District Mainland	281-3204	Little Norway
Southeastern District Mainland	281-3205	Clark Bay SW
Southeastern District Mainland	281-3301	1st Stm N Rock Wall (Ramsey Bay)
Southeastern District Mainland	281-3304	Big River
Southeastern District Mainland	281-3305	Stepovak River
Southeastern District Mainland	281-3306	Granville Portage
Southeastern District Mainland	281-3401	Granville Bay
Southeastern District Mainland	281-3403	Stonehouse
Southeastern District Mainland	281-3506	Boulder Bay
Southeastern District Mainland	281-7005	Beaver River
Southeastern District Mainland	281-8009	Foster Creek
Southeastern District Mainland	281-8014	Johnson Creek
Southeastern District Mainland	281-8015	Coleman Creek
Southeastern District Mainland	281-9004	San Diego Lagoon & Stream
Shumagin Islands	282-1205	Zachary Bay
Shumagin Islands	282-1302	Dry Lagoon
Shumagin Islands	282-1303	Bay Point
Southwestern District	284-1101	Near Egg Island
Southwestern District	284-1211	Cannery Creek
Southwestern District	284-1213	Little John Lagoon Stream
Southwestern District	284-2001	Sandy Cove Stream
Southwestern District	284-3201	Old Man's Lagoon Stream
Southwestern District	284-3304	Head King Cove Lagoon
Southwestern District	284-3402	Russel Creek
Southwestern District	284-3403	Trout Creek
Southwestern District	284-3409	Barney's Creek
Southwestern District	284-4207	Belkofski Bay River
Southwestern District	284-5203	Little Bear Bay
Southwestern District	284-5205	Stream Guard Creek
Southwestern District	284-5206	West Spring Holes
Southwestern District	284-5208	Volcano River

Table 5.–Selected index streams for CMA pink salmon.

District	Stream Number	Stream Name
Chignik Bay	271-101B	Lake Bay Creek
Chignik Bay	271-103	Metrofania
Chignik Bay	271-104	Alfred
Central	272-204	Thompson Creek
Central	272-302	Hook Creek
Central	272-501	Kumlium Creek
Central	272-505	Bear Creek
Central	272-514	North Fork River
Central	272-516	New Creek
Eastern	272-602	Wolverine Creek
Eastern	272-605	Aniakchak River
Eastern	272-606	Fred Gungus
Eastern	272-701	West Creek
Eastern	272-702	Main Creek
Eastern	272-703	Northeast Creek
Eastern	272-805	Nakalilok Bay(North)
Eastern	272-900	272-900
Eastern	272-902	Cape Kuyuyukak 3
Eastern	272-904	Chiginagak Bay 4
Eastern	272-905	Chiginagak Bay 2
Eastern	272-961A	Agripina Lake
Eastern	272-961B	Agripina Slough
Western	273-702	Red Bluff Creek
Western	273-722	Ivan River
Western	273-723	Fishrack Bay
Western	273-802	Foot Creek
Perryville	275-401	Kupreanof Peninsula
Perryville	275-406	Ivanof River
Perryville	275-408	Wolverine Cove
Perryville	275-502	Humpback Creek
Perryville	275-505	Alexander Point

Table 6.–Selected index streams for CMA chum salmon.

District	Stream Number	Stream Name
Chignik Bay	271-101B	Lake Bay Ceek
Central	272-302	Hook Creek
Central	272-505	Bear Creek
Central	272-509	Rudy's Creek
Central	272-514	North Fork River
Central	272-602	Wolverine Creek
Central	272-604	Black Creek
Central	272-606	Freg Gungus
Eastern	272-701	West Creek
Eastern	272-702	Main Creek
Eastern	272-703	Northeast Creek
Eastern	272-721	Yantami Creek
Eastern	272-801	Ocean Beach
Eastern	272-802	Ocean Beach (North)
Eastern	272-804	Nakilokak River
Western	273-702	Red Bluff Creek
Western	273-722	Ivan River
Western	273-842	Portage Creek
Perryville	275-402	Smokey Hallow Creek
Perryville	275-404	Wasco's Creek
Perryville	275-406	Ivanof River
Perryville	275-502	Humpback Creek

Table 7.—Selected index streams for KMA pink salmon.

District	Odd-year		Even-year	
	Stream Number	Stream Name	Stream Number	Stream Name
Afognak	251-832	Malina River	251-832	Malina River
Afognak	252-318	Portage Creek	251-902	Long Lagoon
Afognak	252-338	Big Danger	251-903	Thorsheim Creek
Afognak	252-345	Marka Bay	252-101	South Arm Creek
Afognak			252-317	Little Waterfall
Afognak			252-318	Portage Creek
Afognak			252-345	Marka Bay
Northwest	253-121	S. Arm Uganik	253-115	Little River
Northwest	253-122	Uganik River	253-122	Uganik River
Northwest	253-331	Terror River	253-331	Terror River
Northwest	254-202	Uyak River	254-202	Uyak River
Northwest	254-203	East Uyak Creek	254-204	Brown's Lagoon
Northwest	254-301	Zacher River	254-301	Zacher River
Northwest	259-371	Sheratin River	254-401	Spiridon River
Northwest			259-371	Sheratin River
Southwest	255-101	Karluk River	255-101	Karluk River
Southwest	256-401	Sturgeon River	256-301	Caramel Creek
Southwest	256-402	East Sturgeon River	256-401	Sturgeon River
Alitak	257-403	Dog Salmon	257-402	Horse Marine
Alitak	257-502	Deadman River	257-403	Dog Salmon
Alitak	257-601	N.E. Portage	257-502	Deadman River
Alitak	257-603	Sulua Chum Creek	257-503	Alpine Cove Creek
Alitak	257-701	Humpy River	257-701	Humpy River
Eastside	258-206	N. Kiliuda Creek	258-207	W. Kiliuda Creek
Eastside	258-207	W. Kiliuda Creek	258-521	Midway Creek
Eastside	258-521	Midway Creek	258-522	Barling Creek
Eastside	258-522	Barling Creek	258-542	Kaiugnak Lagoon
Eastside	258-602	Kaguyak Bay Creek	258-701	Seven Rivers
Eastside	258-701	Seven Rivers	259-415	Saltery River
Eastside	259-412	Miam River	259-424	Eagle Harbor
Eastside	259-415	Saltery River		
Northeast	259-101	Monashka Creek	259-211	Buskin River
Northeast	259-211	Buskin River	259-223	Solonie Creek
Northeast	259-222	Russian River	259-231	American River
Northeast	259-223	Solonie Creek	259-242	Sid Olds
Northeast	259-231	American River	259-243	Kalsin Creek
Northeast	259-242	Sid Olds	259-251	Roslyn Creek
Northeast	259-251	Roslyn Creek	259-252	Twin Creek
Northeast	259-252	Twin Creek	259-254	Chiniak Creek

-continued-

Table 7.–Page 2 of 2

District	Odd-year		Even-year	
	Stream Number	Stream Name	Stream Number	Stream Name
Mainland	262-152	Big River	262-152	Big River
Mainland	262-153	Village Creek	262-153	Village Creek
Mainland	262-205	Cape Chiniak Creek	262-271	Kukak Creek
Mainland	262-271	Kukak Creek	262-402	Missak Creek
Mainland	262-451	Kinak Creek	262-451	Kinak Creek
Mainland	262-551	Dakavak	262-604	Kashvik Creek
Mainland	262-604	Kashvik Creek	262-702	Portage Creek
Mainland	262-654	Bear Bay Creek	262-704	Trail Creek
Mainland	262-705	Katie Creek	262-802	Kanatak
Mainland	262-751	Oil Creek		
Mainland	262-802	Kanatak		
Mainland	262-851	Big Creek		
Mainland	262-852	Des Moines		

Table 8.—Selected index streams for KMA chum salmon.

District	Stream Number	Stream Name
Afognak	251-301	Long Lagoon
	251-105	Malina River
	252-332	Big Danger
	252-343	Marka Bay
Northwest	253-331	Terror River
	254-301	Zacher River
Southwest	256-402	East Sturgeon River
	256-401	Sturgeon River
Alitak	257-601	N.E. Portage
	257-102	Big Sukhoi
	257-503	Alpine Cove Creek
	257-603	Sulua Chum Creek
	257-502	Deadman River
Eastside	258-602	Kaguyak Bay Creek
	258-206	N. Kiliuda Creek
	259-416	Rough Creek
	258-522	Barling Creek
	258-207	W. Kiliuda Creek
	259-424	Eagle Harbor
Northeast	259-222	Russin River
	259-223	Solonie Creek
	259-231	American River
	259-242	Sid Olds
Mainland	262-271	Kukak Creek
	262-752	Dry Bay
	262-602	Alogogshak Creek
	262-551	Dakavak
	262-951	Imuya Creek
	262-858	Kialagvik Creek
	262-703	Teresa Creek
	262-203	Serpent Creek
	262-851	Big Creek
	262-153	Village Creek
	262-152	Big River

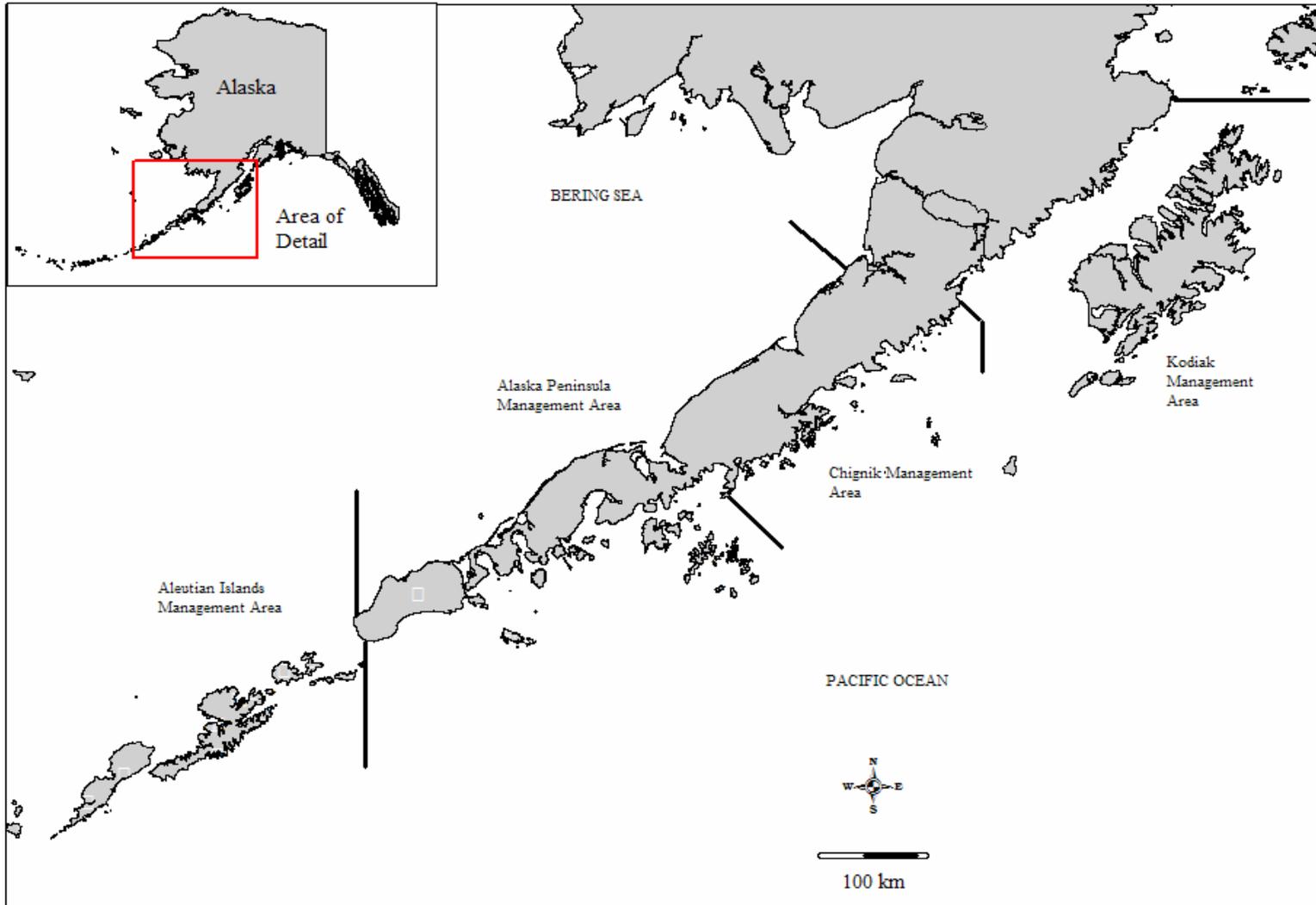


Figure 1.—Map of the Alaska Peninsula, Aleutian Islands, Chignik, and Kodiak Management areas.

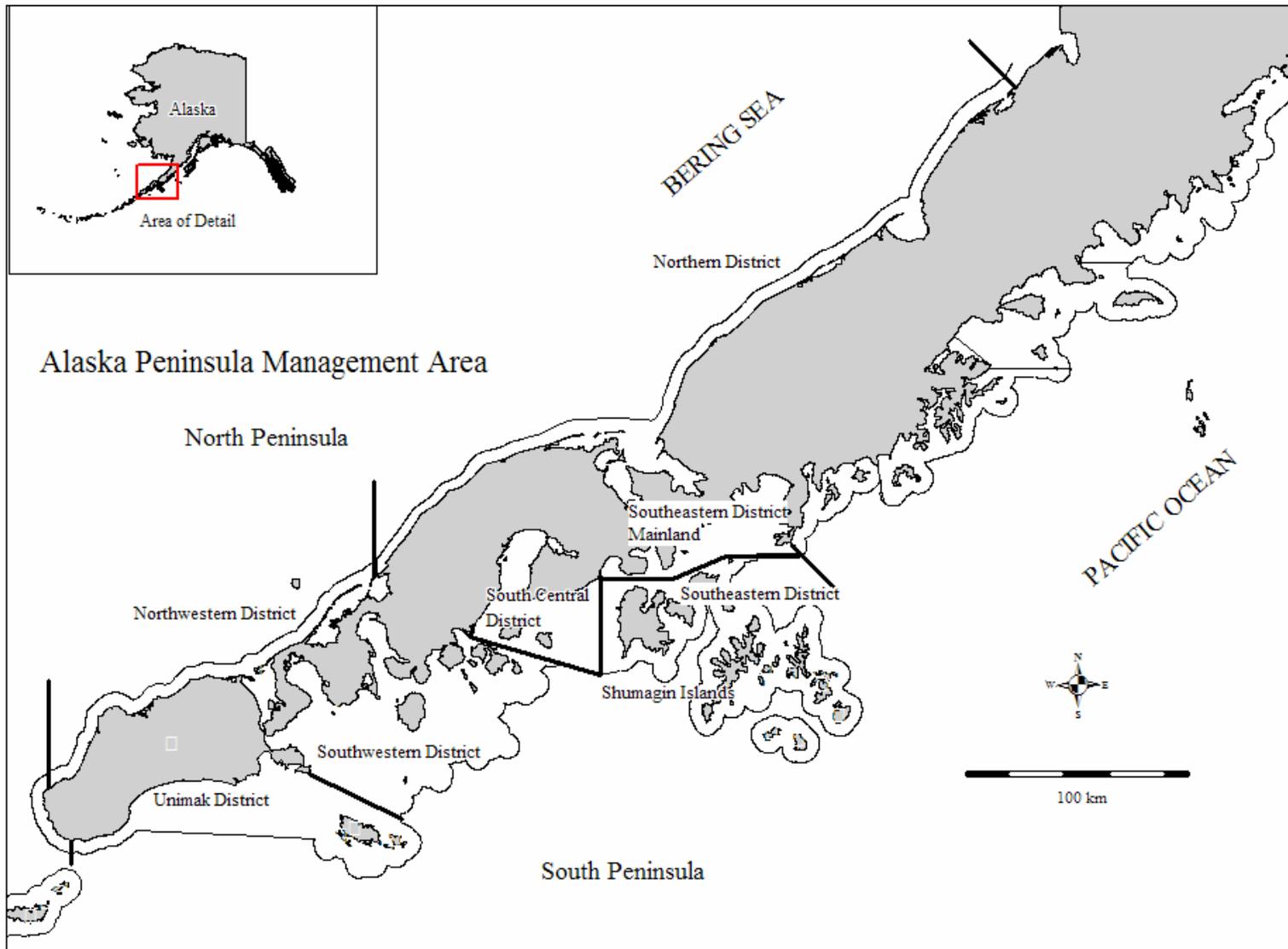


Figure 2.—Map of the Alaska Peninsula Management Area with the commercial salmon fishing districts depicted.

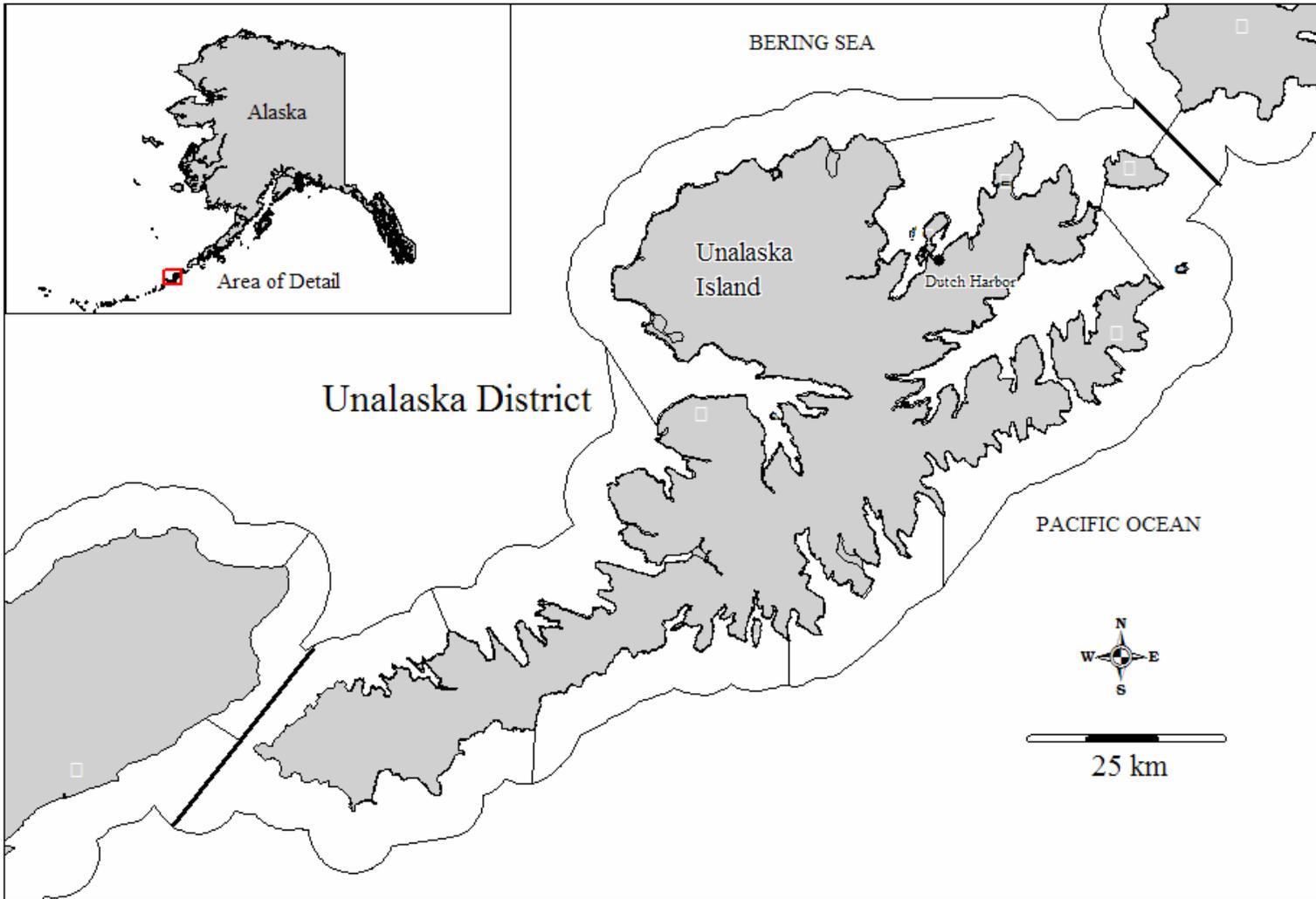


Figure 3.—Map of Unalaska Island within the Aleutian Islands Management Area.

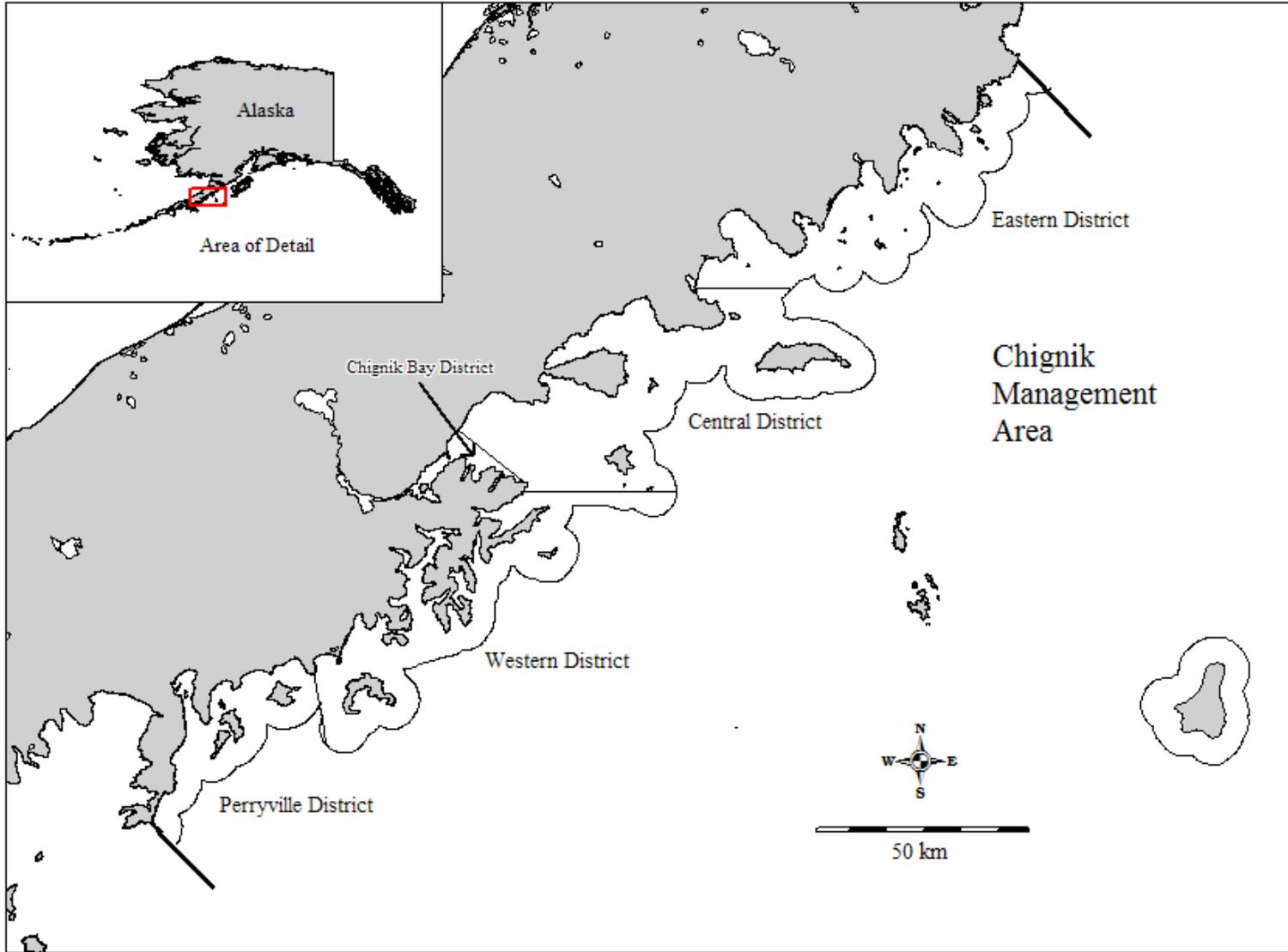


Figure 4.–The Chignik Management Area with the commercial salmon fishing districts depicted.

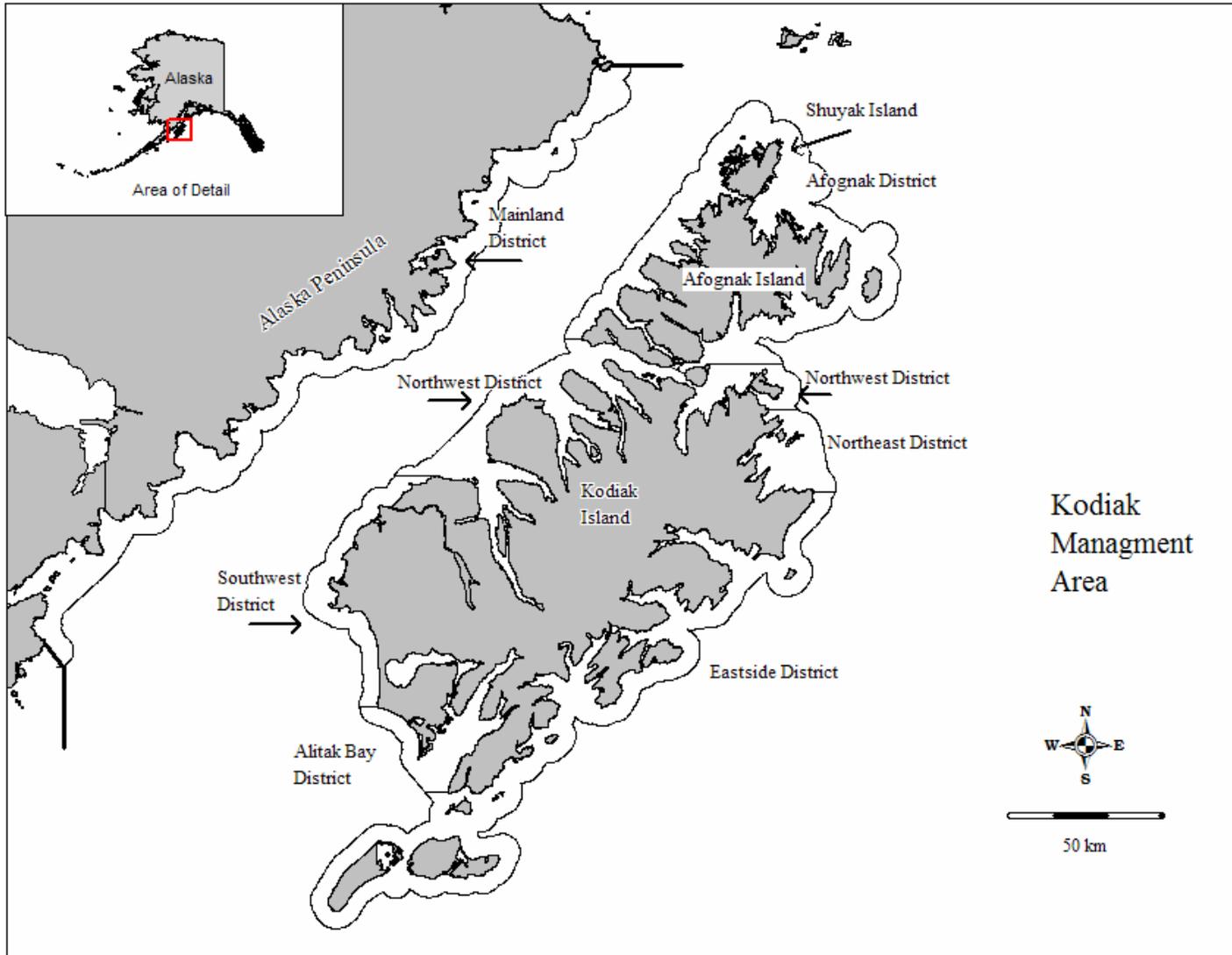


Figure 5.—Map of the Kodiak Management Area with the commercial salmon fishing districts depicted.

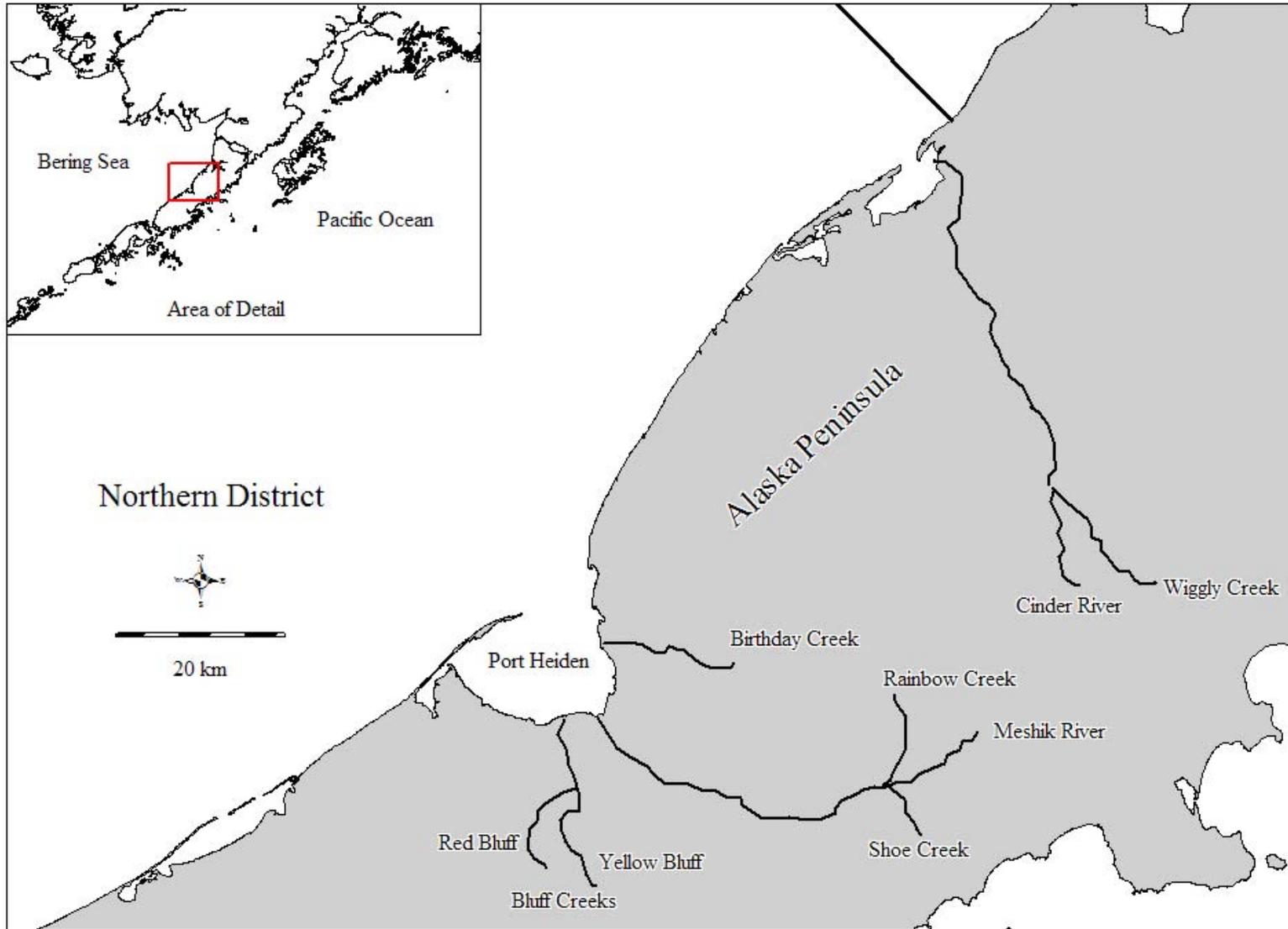


Figure 6. –Selected salmon index streams in the northeastern portion of the Northern District in the Alaska Peninsula Management Area.

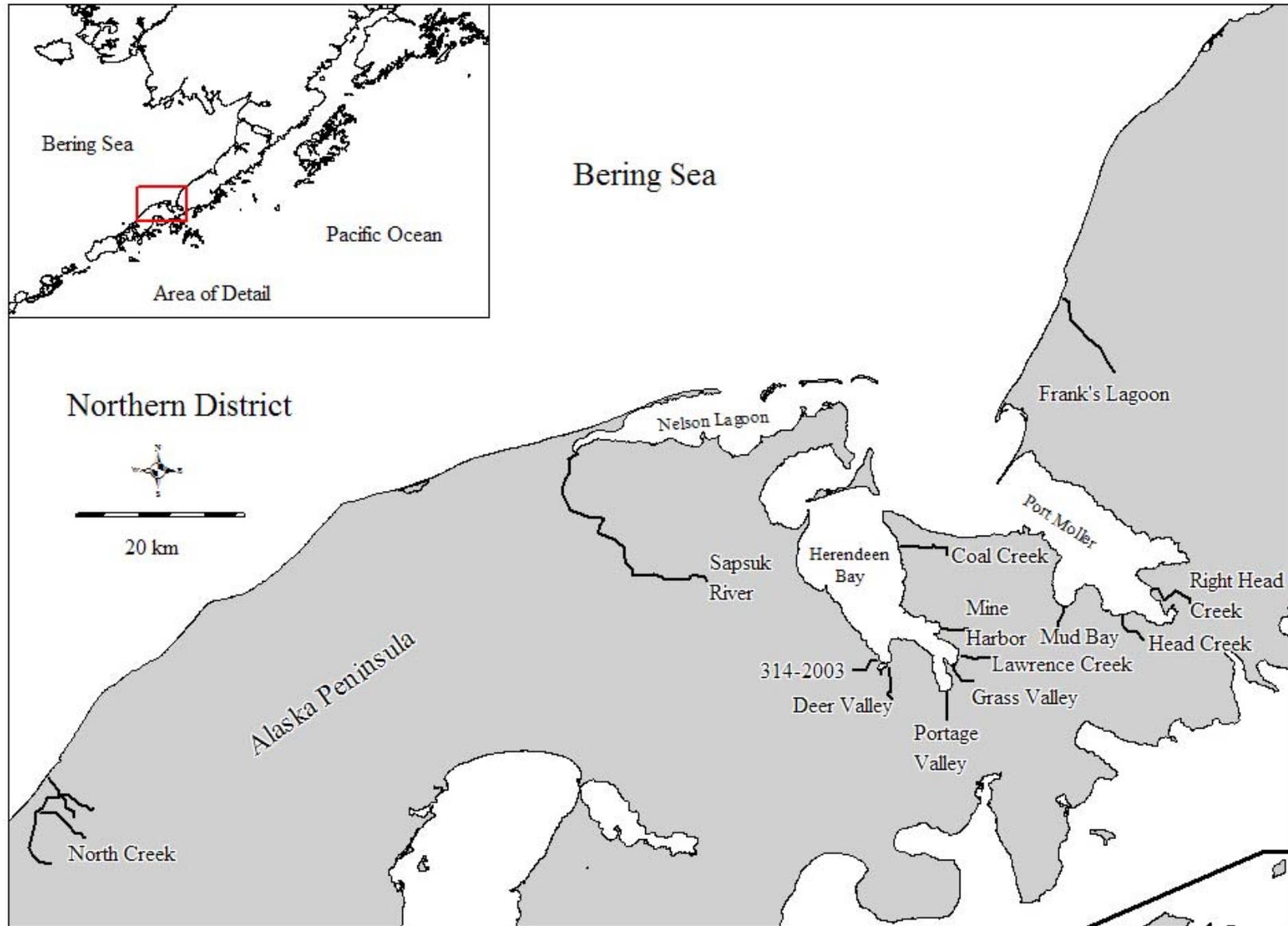


Figure 7.—Selected salmon index streams in the southwestern portion of the Northern District in the Alaska Peninsula Management Area.

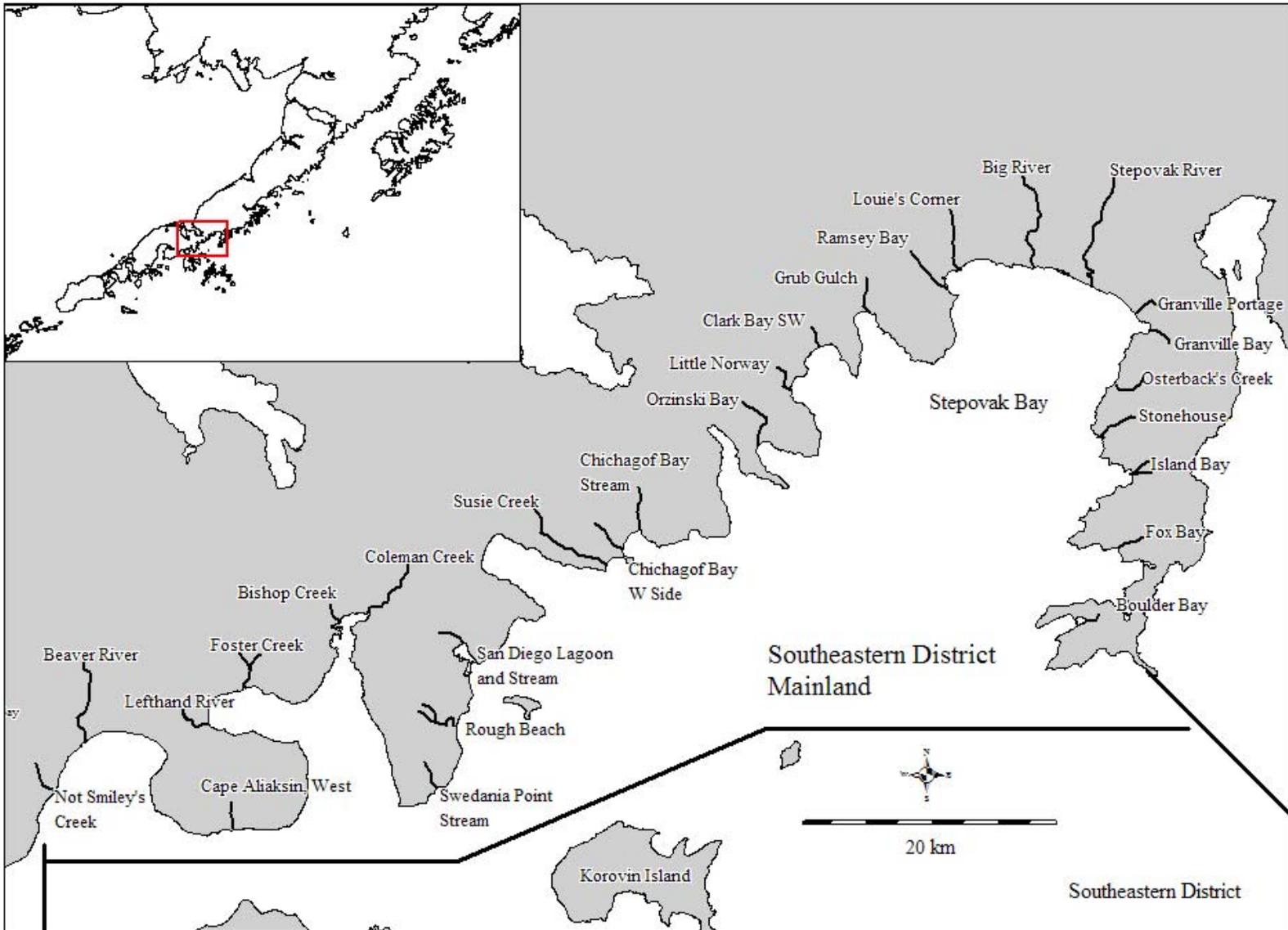


Figure 8.—Selected salmon index streams of the Southeastern District Mainland in the Alaska Peninsula Management Area.

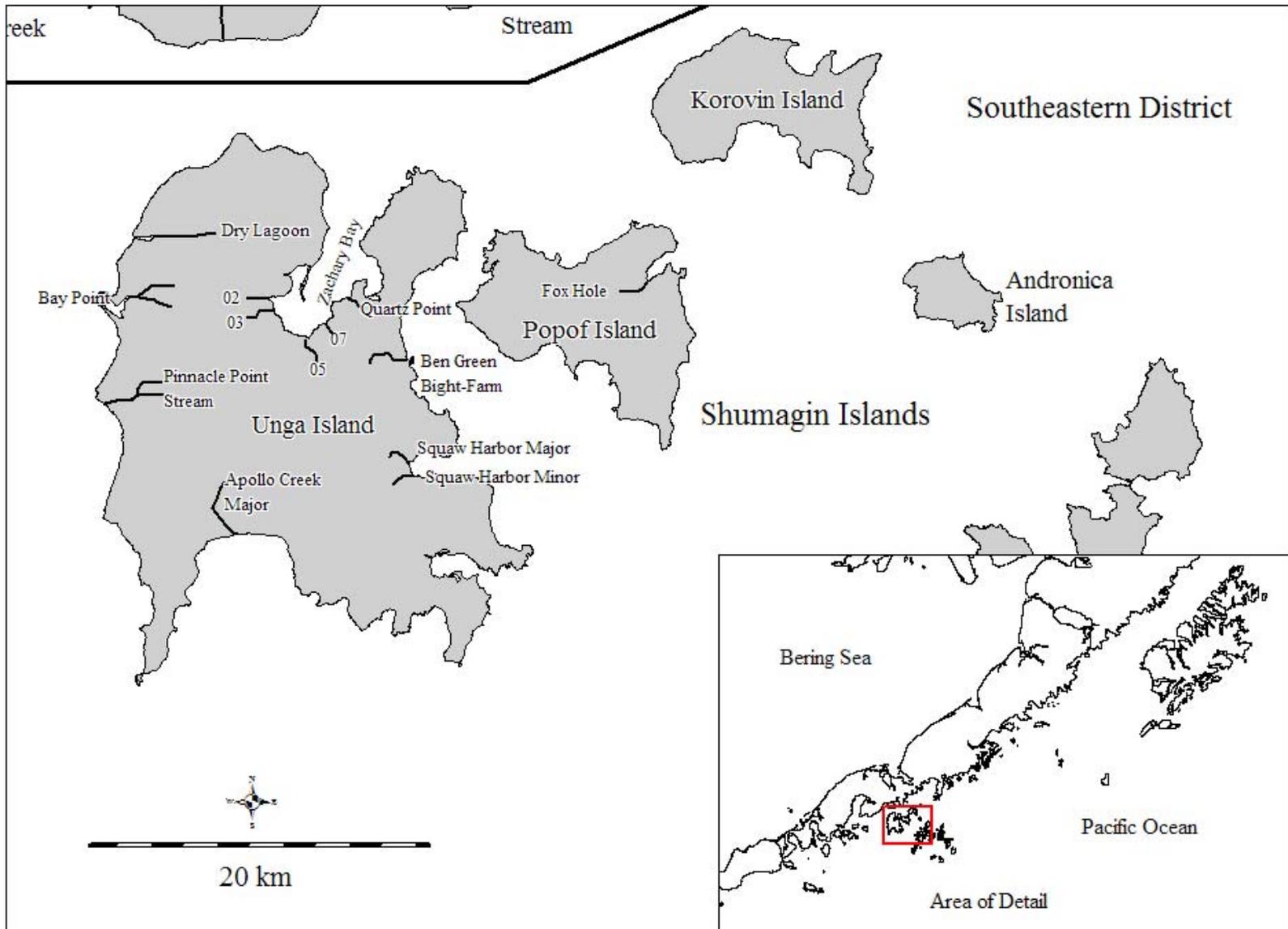


Figure 9.—Selected salmon index streams in the Shumagin Islands section of the Southeastern District in the Alaska Peninsula Management Area.

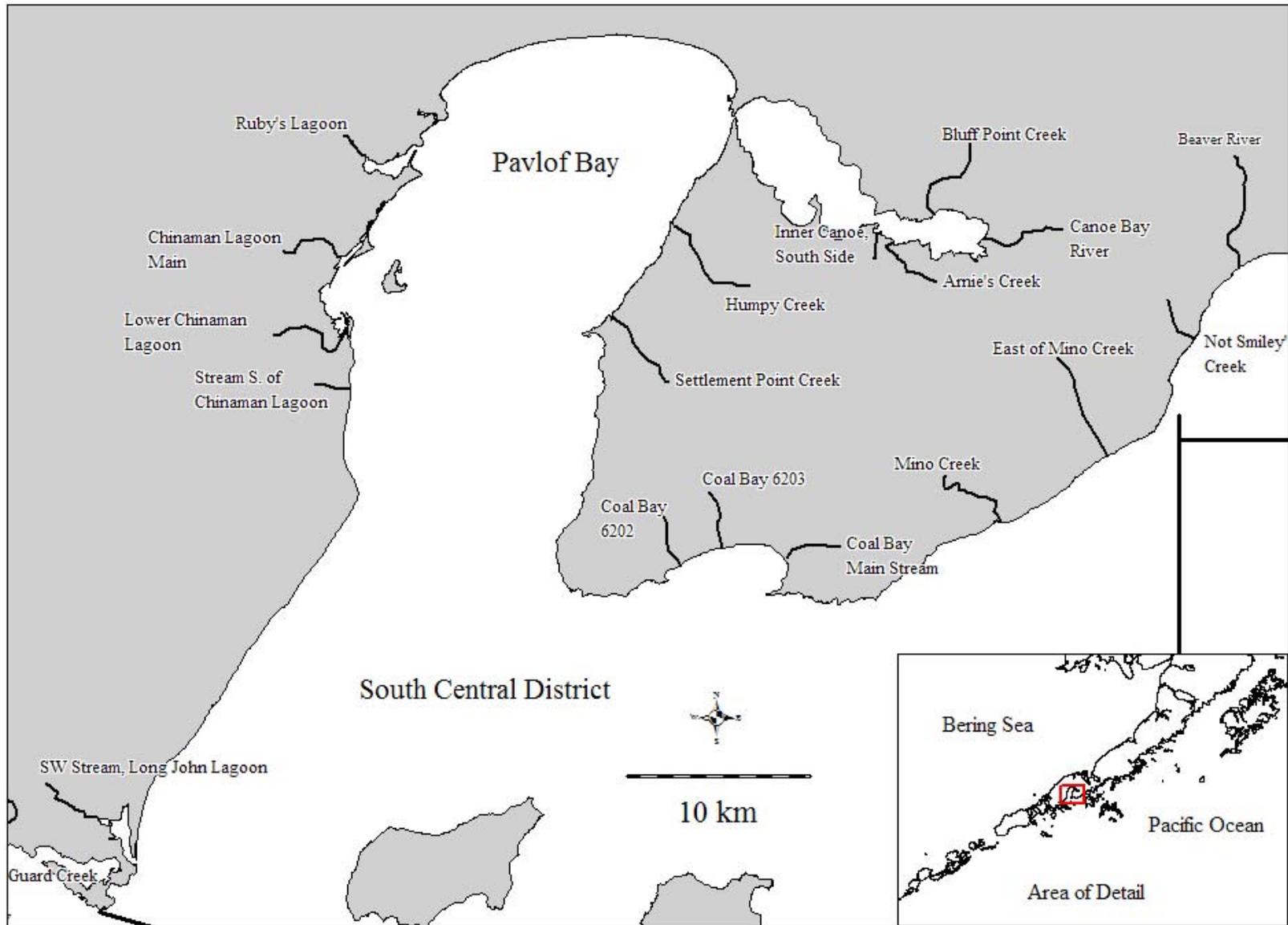


Figure 10.—Selected salmon index streams of the South Central District in the Alaska Peninsula Management Area.

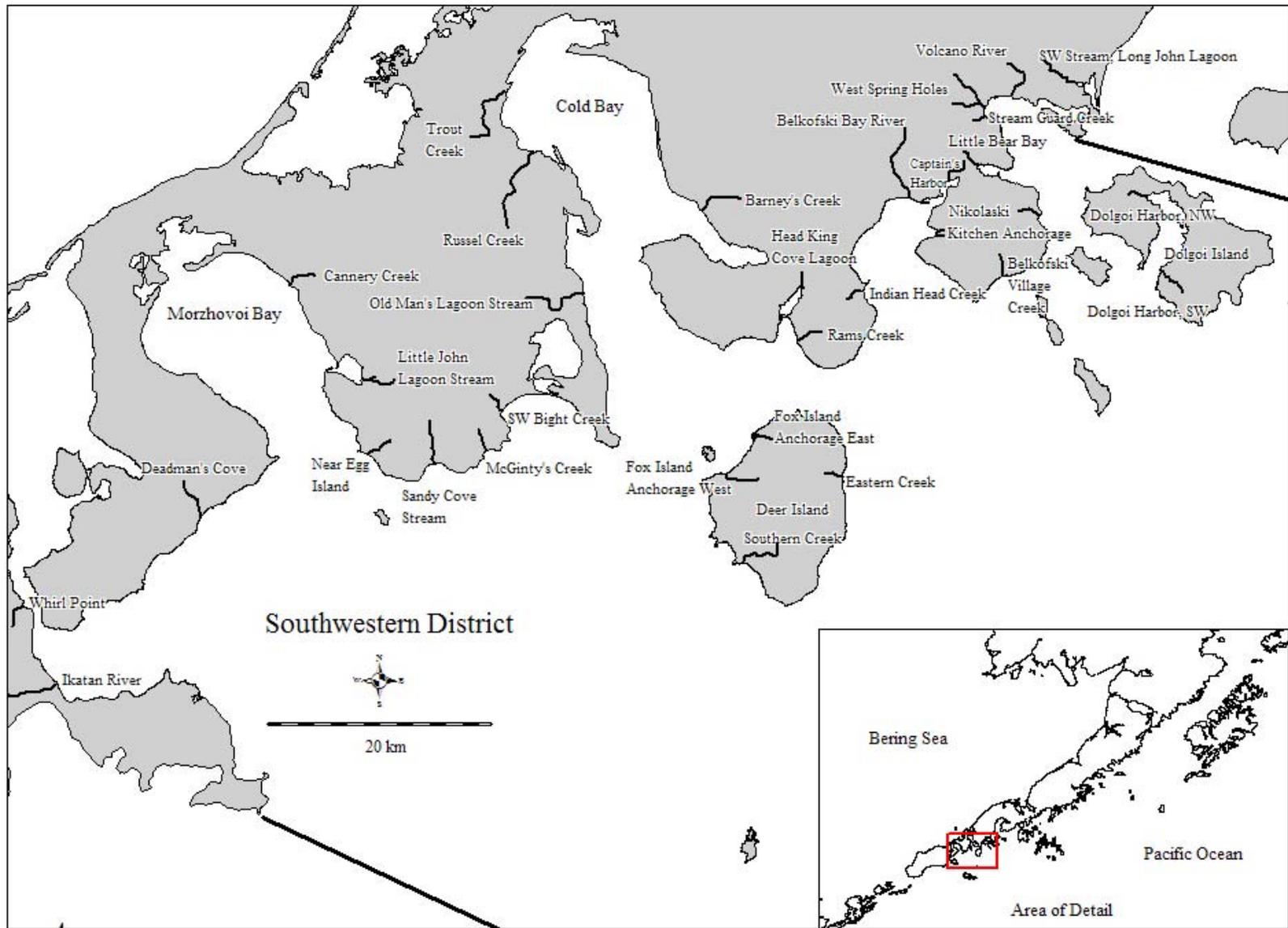


Figure 11.—Selected salmon index streams of the Southwestern District in the Alaska Peninsula Management Area.

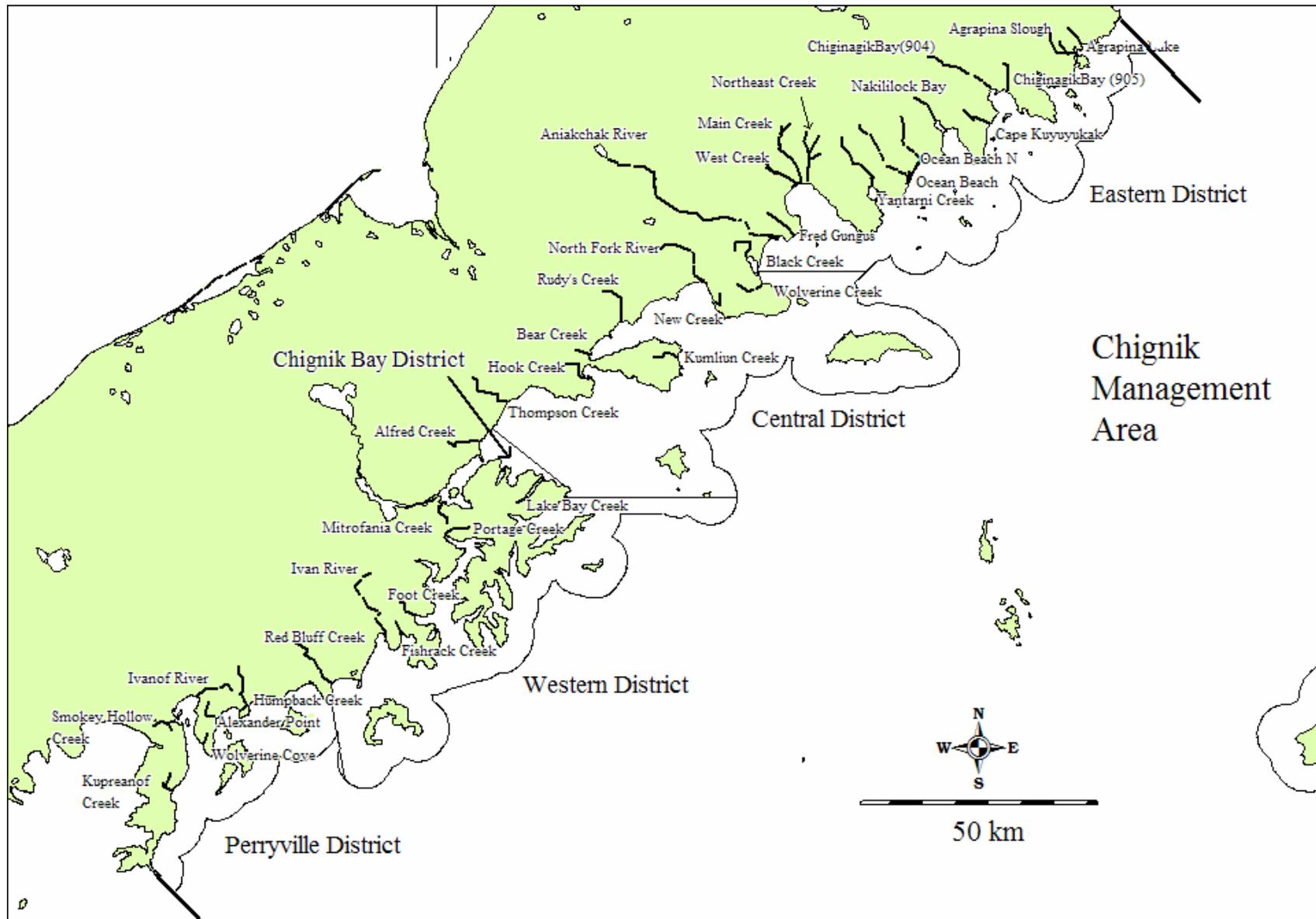


Figure 12.—Selected salmon index streams in the Chignik Management Area.

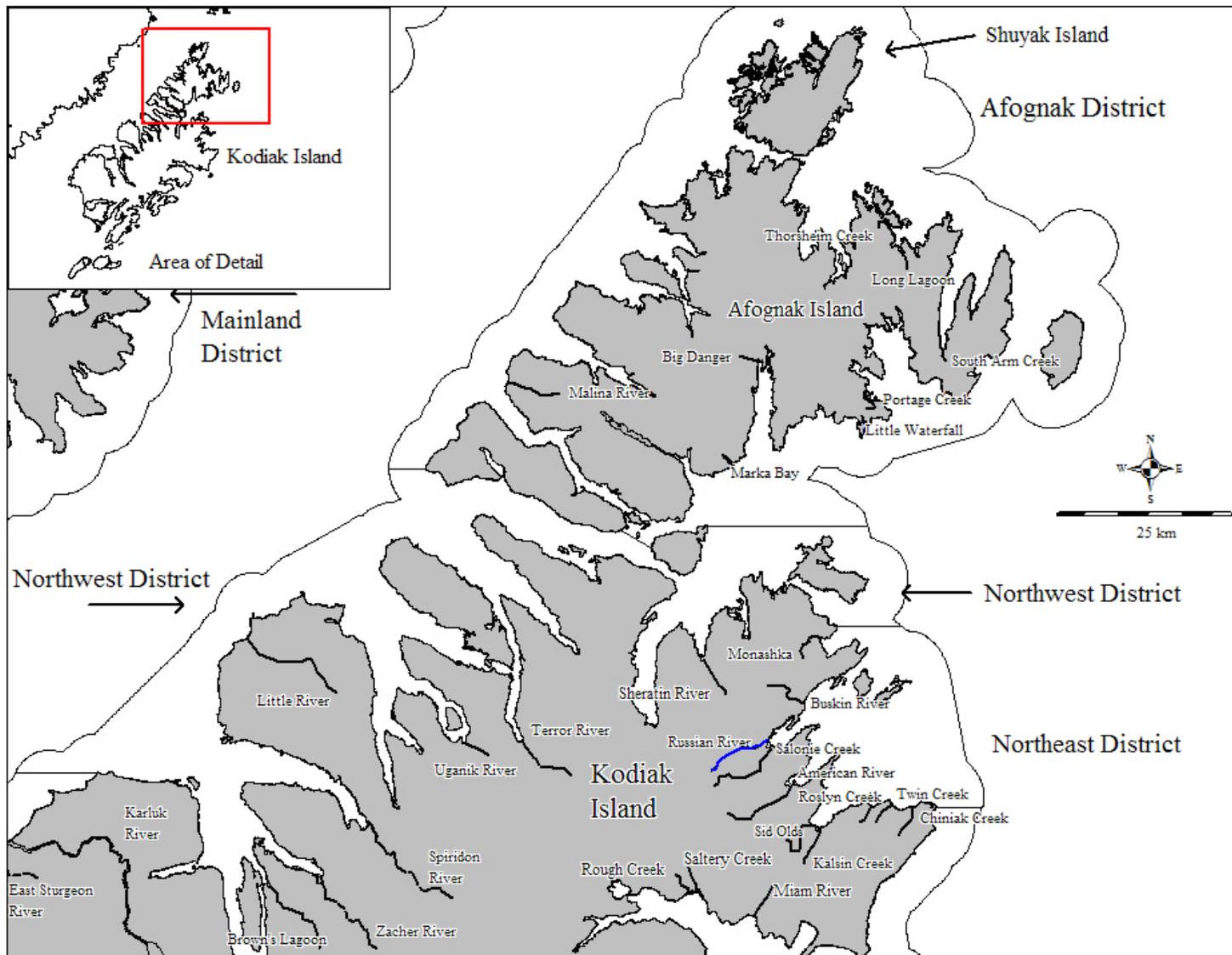


Figure 13.—Selected salmon index streams of the Afognak, Northwest, and Northeast districts in the Kodiak Management Area.

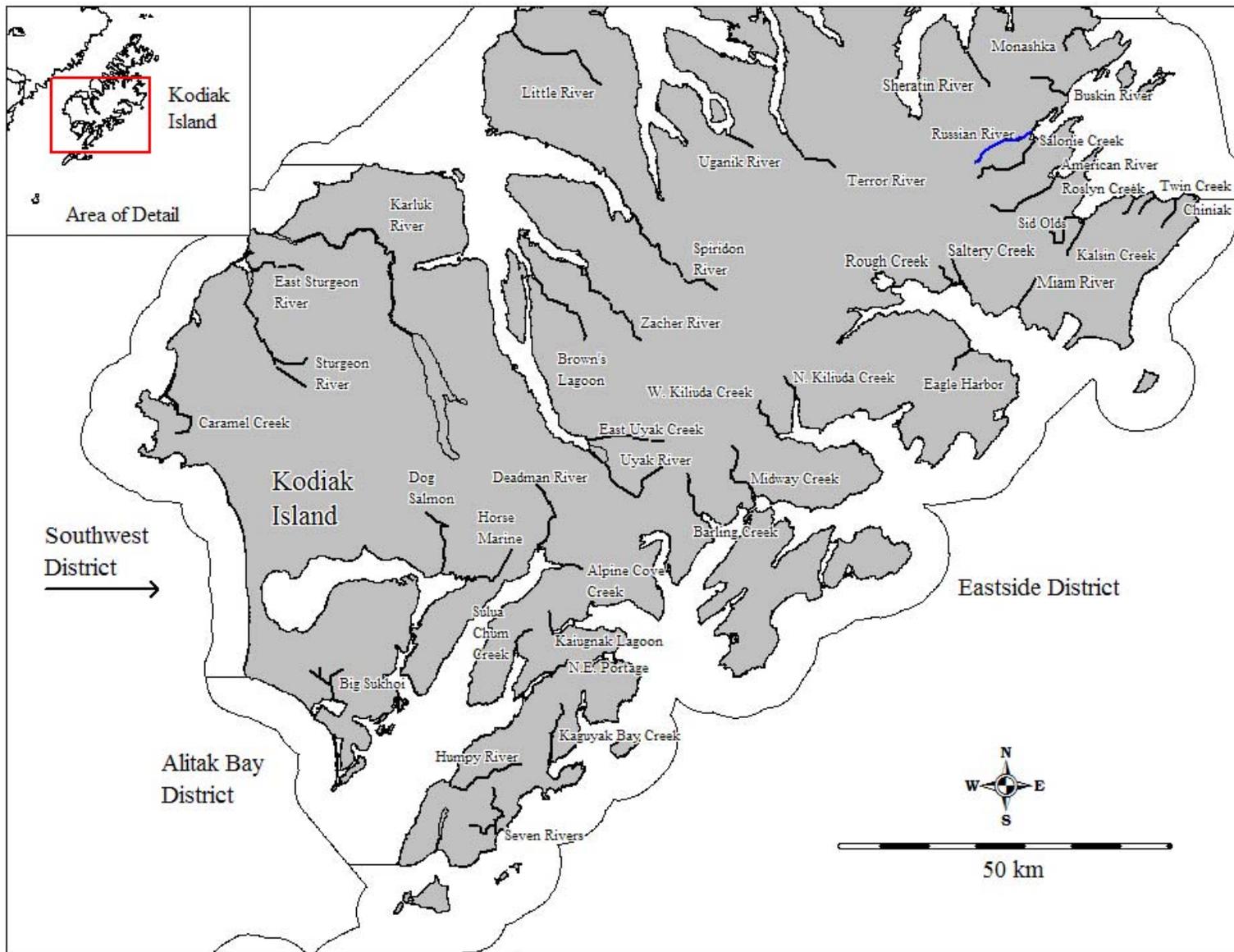


Figure 14.—Selected salmon index streams of the Southwest, Alitak, and Eastside districts in the Kodiak Management Area.

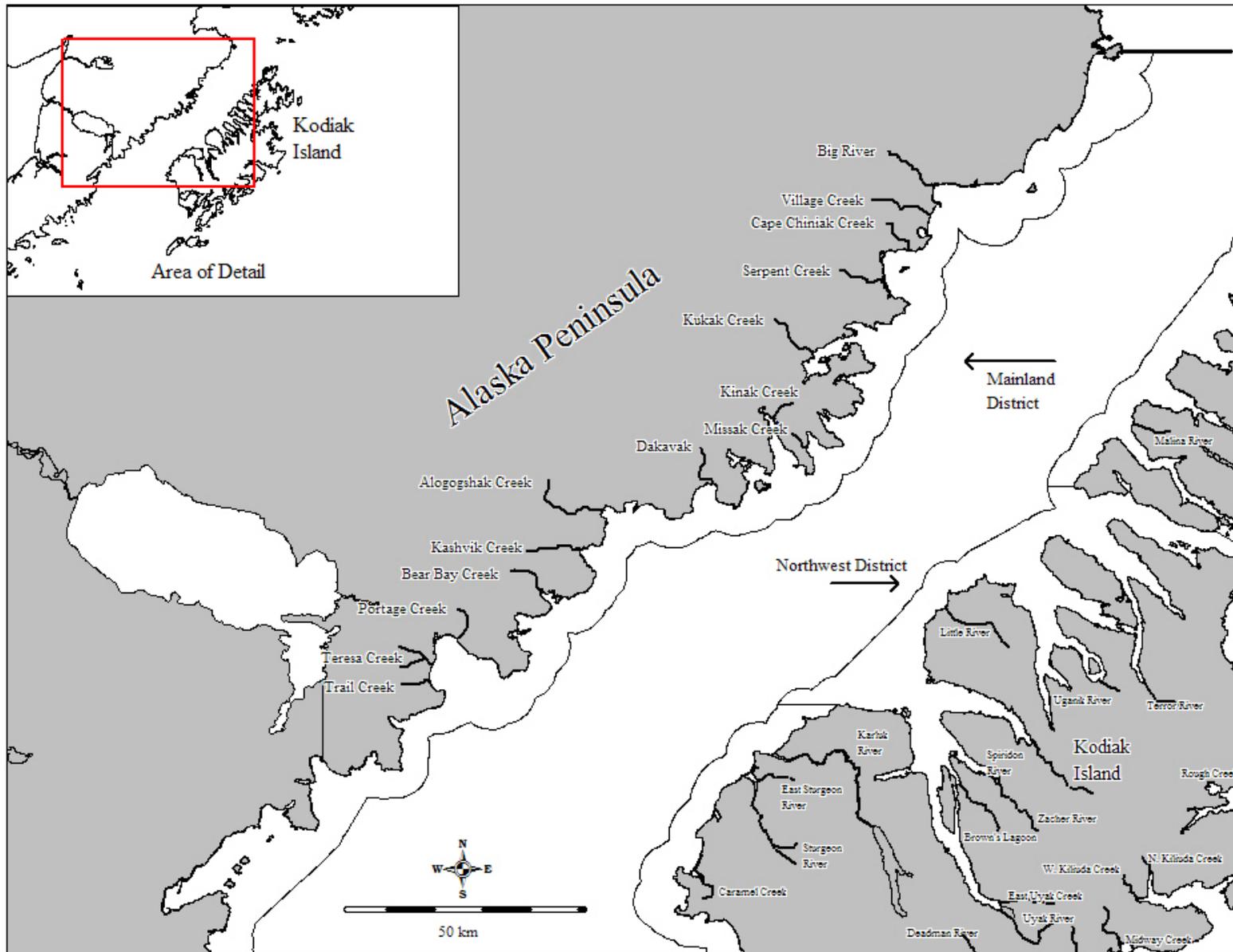


Figure 15.—Selected salmon index streams of the Mainland District in the Kodiak Management Area.

**APPENDIX A. ALASKA PENINSULA PINK AND CHUM
SALMON ANALYSES**

Appendix A1.–North Peninsula chum salmon correlation analysis results.

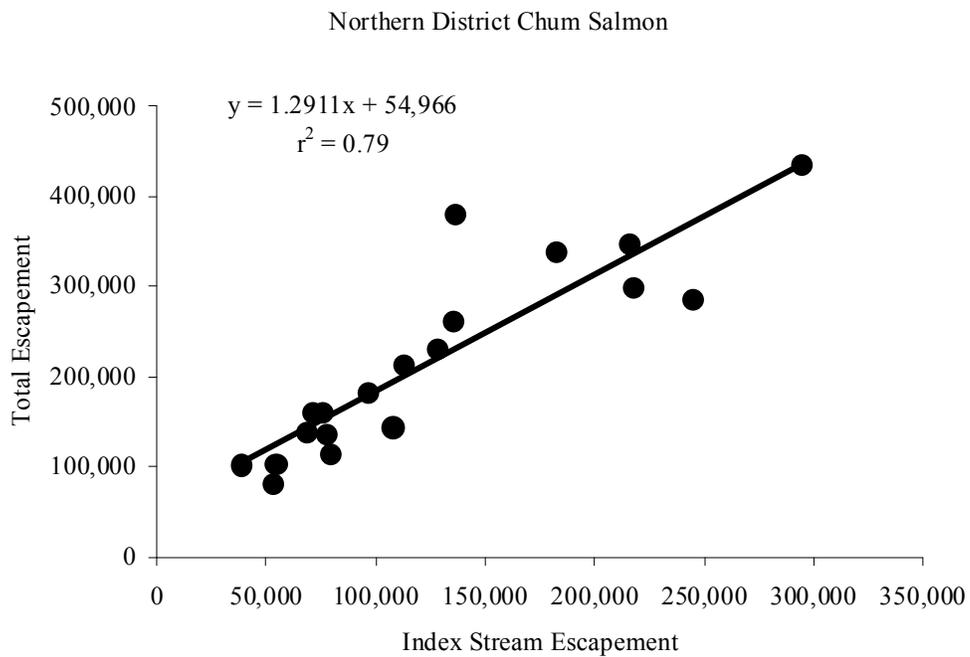
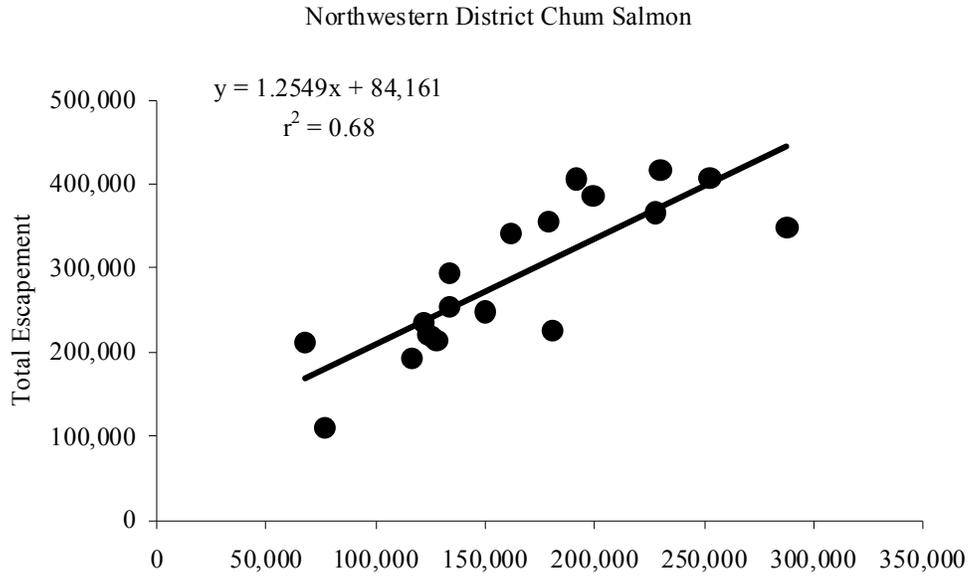
District	Stream Number	Stream Name	Keep/Remove	Correlated	Correlation	Comments
Northwest	311-3009	Mud Hole (Peterson Lagoon)	Keep			
Northwest	311-3010	Clear Lagoon (Peterson Lagoon)	Keep			
Northwest	311-4004	North Creek	Keep			
Northwest	311-5001	Big River	Keep			
Northwest	311-5002	Swanson Lagoon	Keep			
Northwest	311-6001	Mike's Valley (St. Catherine Cove)	Keep			
Northwest	311-6006	Anderson's Creek	Keep			
Northwest	311-6008	Unnamed	Keep			
Northwest	311-6012	Warmsprings Bay	Keep			
Northwest	312-2002	Mike's Duck Camp	Keep			
Northwest	312-2003	Alligator Hole, Center	Keep			
Northwest	312-2004	Alligator Hole, East (Third Bridge Creek)	Remove	0.73		Mike's Duck Camp
Northwest	312-2005	Frosty Creek	Keep			
Northwest	312-2006	Blue Bill Lake	Keep			
Northwest	312-2013	Outer Marker Lakes	Keep			
Northwest	312-2051	Springs S Frosty Creek	Keep			
Northwest	312-2052	2nd W Frosty Creek (Second Bridge Creek)	Remove	0.85		Springs S Frosty Creek
Northwest	312-4001	Joshua Green River	Keep			
Northwest	312-4002	Moffet Springs Creek	Keep			
Northwest	312-4003	Moffet Creek	Keep			
Northwest	312-4005	Unnamed (Springs 2 mi SW Joshua)	Remove	0.70		Mike's Valley (St. Catherine Cove)
Northern	313-1002	North Creek	Keep			
Northern	313-3003	Sapsuk (Nelson) River	Keep			
Northern	314-2002	314-2002	Remove	0.67		Deer Valley
Northern	314-2003	314-2003	Keep			
Northern	314-2004	Deer Valley	Keep			
Northern	314-2005	Portage Valley	Keep			
Northern	314-2006	Grass Valley	Keep			

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Appendix A1.–Page 2 of 2

District	Stream Number	Stream Name	Keep/Remove	Correlated	Correlation	Comments
Northern	314-2007	Lawrence (Valley) Creek	Keep			
Northern	314-2008	Mine Harbor	Keep			
Northern	314-2009	Coal Creek	Keep			
Northern	314-3004	Mud Bay 3004	Keep			
Northern	314-3005	Mud Bay 3005	Remove	0.82	Right Head Creek	
Northern	314-3007	Head Creek, Right Head	Keep			
Northern	314-3009	Right Head Creek	Keep			
Northern	314-3010	Left Head Creek	Remove	0.80	Right Head Creek	
Northern	315-1001	Frank's Lagoon	Keep			
Northern	316-1001	Lime Creek	Remove	0.71	Head Creek, Right Head	
Northern	316-1002	Unnamed, Cape Seniavin/3 Hills	Remove	0.87	North Creek	
Northern	317-2002	Charles Creek	Remove	0.74	Meloy Creek	
Northern	317-2004	Bluff Creeks	Keep			
Northern	317-2008	Birthday Creek	Keep			
Northern	317-207A	Meshik River, Main	Keep			
Northern	317-207E	Blue Violet Creek	Remove	0.92	Meshik River, Main	
Northern	317-207F	Wolf Creek	Remove	0.84	Meshik River, Main	
Northern	317-207H	Shoe Creek	Keep			
Northern	317-207OA	Paddle Creek	Remove	0.75	Frank's Lagoon	
Northern	317-207R	Rainbow Creek	Keep			
Northern	318-206A	Cinder River, Main	Keep			
Northern	318-206J	Wiggly Creek	Keep			

Appendix A2.—North Peninsula chum salmon regression analysis results for escapement data from 1987 to 2005.



Appendix A3.–South Peninsula pink salmon correlation analysis results.

District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
South Central	283-6102	SW. Stream, Long John Lagoon	Remove	0.71	Coal Bay 6202	
South Central	283-6104	Long John Lagoon Springs	Remove	0.79	Settlement Point (Creek)	
South Central	283-6201	Cape Tolstoi	Remove	0.68	Coal Bay 6202	
South Central	283-6202	Coal Bay 6202	Keep			
South Central	283-6203	Coal Bay 6203	Keep			
South Central	283-6204	Coal Bay, Unnamed (6204)	Remove	0.74	Coal Bay Main Stream	
South Central	283-6205	Coal Bay Main Stream	Keep			
South Central	283-6315	Middle (Humpy/Priest) Creek	Keep			
South Central	283-6316	Settlement Point (Creek)	Keep			
South Central	283-6405	Bluff Point Creek	Remove	0.90	Canoe Bay River	
South Central	283-6406	Canoe Bay River	Keep			
South Central	283-6407	Wolverine Gulch	Remove	0.88	Entrance (Arnies) Creek	
South Central	283-6408	Entrance (Arnies) Creek	Keep			
South Central	283-6410	Ness Creek	Remove	0.73	Entrance (Arnies) Creek	
South Central	283-7001	Mino Creek	Keep			
South Central	283-7002	East of Mino Creek	Keep			
South Central	283-7003	McGinty's Point	Remove	0.84	East of Mino Creek	
SEDM	281-1001	Dorenoi Bay SW	Remove	0.87	Foster Creek	
SEDM	281-1002	Dorenoi Bay NE River	Remove	0.86	Foster Creek	
SEDM	281-1003	Susie (Suzy) Creek	Keep			
SEDM	281-1004	West Cove	Remove	0.85	Beaver River	
SEDM	281-2001	Chichagof Bay W Side	Keep			
SEDM	281-2002	Chichagof Bay Stream	Keep			
SEDM	281-2003	Chichagof Bay E Side	Remove	0.83	Fox Bay 3502	
SEDM	281-2004	Windbound Bay	Remove	0.88	Chichagof Bay W Side	
SEDM	281-3103	Orzinski Bay	Keep			
SEDM	281-3204	Little Norway	Remove	0.73	Grub Gulch	
SEDM	281-3205	Clark Bay SW	Remove	0.90	Osterback's Creek	
SEDM	281-3207	Grub Gulch	Keep			

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District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
SEDM	281-3301	1st Stm N Rock Wall (Ramsey Bay)	Remove	0.79	Lefthand Bay Kagayan	
SEDM	281-3302	2nd Stm N Rock Wall (Ramsey Bay)	Remove	0.73	Lefthand Bay Kagayan	
SEDM	281-3303	Louie's Comer	Keep			
SEDM	281-3304	Big River	Keep			
SEDM	281-3305	Stepovak River	Remove	0.88	Chichagof Bay Stream	
SEDM	281-3306	Granville Portage	Remove	0.78	Granville Bay	
SEDM	281-3401	Granville Bay	Keep			
SEDM	281-3402	Osterback's Creek	Keep			
SEDM	281-3403	Stonehouse	Keep			
SEDM	281-3404	Stonehouse	Remove	0.87	Cape Aliaksin, West	
SEDM	281-3405	Island Bay 3405	Remove	0.80	Beaver River	
SEDM	281-3406	Island Bay 3406	Keep			
SEDM	281-3407	Island Bay 3407	Remove	0.83	Louie's Comer	
SEDM	281-3408	Island Bay 3408	Remove	0.88	Louie's Comer	
SEDM	281-3502	Fox Bay 3502	Keep			
SEDM	281-3504	Fox Bay 3504	Remove	0.80	Lefthand Bay Kagayan	
SEDM	281-3505	Fox Bay 3505	Remove	0.77	Louie's Comer	
SEDM	281-3506	Boulder Bay	Remove	0.75	Big River	
SEDM	281-3507	Near Bluff Point	Remove	0.95	San Diego Lagoon & Stream	
SEDM	281-7004	Not Smiley's Creek	Keep			
SEDM	281-7005	Beaver River	Keep			
SEDM	281-8004	Cape Aliaksin, West	Keep			
SEDM	281-8005	Cape Aliaksin, Center	Remove	0.83	Susie (Suzy) Creek	
SEDM	281-8006	Cape Aliaksin, East	Remove	0.75	Susie (Suzy) Creek	
SEDM	281-8008	Lefthand Bay Kagayan (Lefthand River)	Keep			
SEDM	281-8009	Foster Creek	Keep			
SEDM	281-8011	Monolith Point Creek	Remove	0.74	Chichagof Bay W Side	
SEDM	281-8012	Foster's Camp Creek	Remove	0.57	Coleman Creek	One high value lowered the r.
SEDM	281-8014	Bishop (Johnson) Creek	Keep			
SEDM	281-8015	Coleman Creek	Keep			

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District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
SEDM	281-9001	Swedania Point Stream (Lumber Bay)	Keep			
SEDM	281-9002	Rough Beach	Keep			
SEDM	281-9003	West Side San Diego Bay	Remove	0.72	Susie (Suzy) Creek	
SEDM	281-9004	San Diego Lagoon & Stream	Keep			
Shumagin Islands	282-1002	Apollo Creek Minor	Remove			
Shumagin Islands	282-1003	Apollo Creek Major	Keep			
Shumagin Islands	282-1004	Acheredin Lake	Remove	0.84	Fox Hole-Popof	
Shumagin Islands	282-1011	Apollo Gold Mine (Delarof Harbor)	Remove	0.81	Apollo Creek Major	
Shumagin Islands	282-1012	Apollo Creek Minor	Remove	0.87	Squaw Harbor Minor	
Shumagin Islands	282-1014	Squaw Harbor Minor	Keep			
Shumagin Islands	282-1015	Squaw Harbor Major	Keep			
Shumagin Islands	282-1016	Ben Green Bight-Farm	Keep			
Shumagin Islands	282-1101	Salmon Ranch- Popof	Remove	0.82	Fox Hole-Popof	
Shumagin Islands	282-1103	Fox Hole-Popof	Keep			
Shumagin Islands	282-1202	Zachary Bay 1202	Keep			
Shumagin Islands	282-1203	Zachary Bay 1203	Keep			
Shumagin Islands	282-1204	Zachary Bay 1204	Remove	0.81	Apollo Creek Major	
Shumagin Islands	282-1205	Zachary Bay 1205	Keep			
Shumagin Islands	282-1207	Zachary Bay 1207	Keep			
Shumagin Islands	282-1208	2nd Stm S. Quartz Pt	Remove	0.79	Zachary Bay 1202	
Shumagin Islands	282-1209	1st Stm S. Quartz Pt	Keep			
Shumagin Islands	282-1302	Dry Lagoon	Keep			
Shumagin Islands	282-1303	Bay Point	Keep			
Shumagin Islands	282-1304	Pinnacle Point Stream	Keep			
Southwestern	284-1101	Near Egg Island	Remove	0.96	SW Bight Creek	
Southwestern	284-1201	(Charlie) Hansen's Creek	Remove	0.78	Deadman's Cove	
Southwestern	284-1211	Cannery Creek	Keep			
Southwestern	284-1213	Little John Lagoon Stream	Keep			

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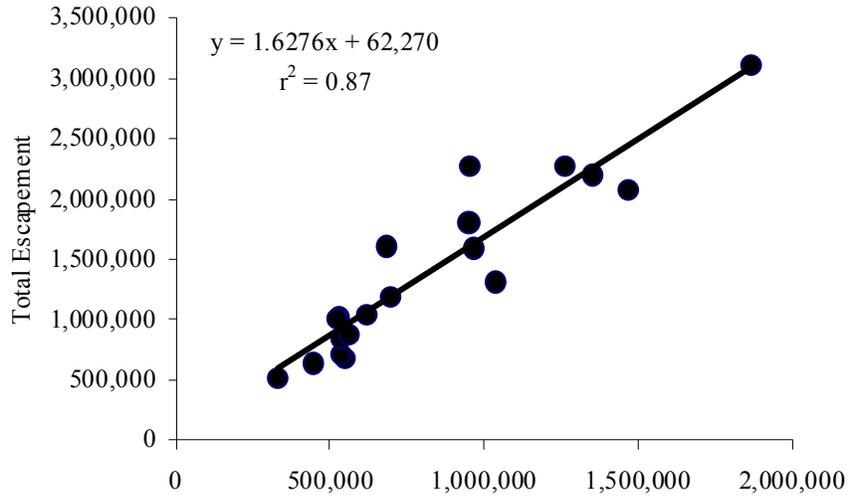
District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
Southwestern	284-2001	Sandy Cove Stream	Remove	0.73	Belkofski Bay River	
Southwestern	284-2003	McGinty's Creek	Keep			
Southwestern	284-2004	SW Bight Creek	Keep			
Southwestern	284-3101	Fox Island Anchorage East	Keep			
Southwestern	284-3102	Fox Island Anchorage Center	Remove	0.71	Ram's Creek	
Southwestern	284-3103	Fox Island Anchorage West	Keep			
Southwestern	284-3105	Paw Cape (Deer Island)	Remove	0.75	Fox Island Anchorage East	
Southwestern	284-3106	Southern Creek	Keep			
Southwestern	284-3110	Eastern Creek	Keep			
Southwestern	284-3305	Ram's Creek	Keep			
Southwestern	284-3402	Russel Creek	Keep			
Southwestern	284-3409	Barney's Creek	Keep			
Southwestern	284-3410	Delta Creek, Lenard Harbor	Remove	0.86	West Spring Holes	
Southwestern	284-3411	Lenard Harbor South	Remove	0.79	Ram's Creek	
Southwestern	284-4101	Belkofski Village Creek	Keep			
Southwestern	284-4203	Indian Head	Keep			
Southwestern	284-4205	Belkofski Bay River	Remove	0.77	Ram's Creek	
Southwestern	284-4206	Belkofski Bay Beach	Remove	0.65	Nikolaski	
Southwestern	284-4207	Belkofski Bay River	Remove	0.55	West Spring Holes	Without outlier, the r=0.71
Southwestern	284-4209	Captain's Harbor	Keep			
Southwestern	284-4210	Kitchen Anchorage	Keep			
Southwestern	284-4212	Rocky River	Keep			
Southwestern	284-5103	Dolgoi Harbor, NW	Keep			
Southwestern	284-5105	Dolgoi Harbor, South	Remove	0.83	Captain's Harbor	
Southwestern	284-5106	Dolgoi Harbor, SW	Keep			
Southwestern	284-5201	Nikolaski	Keep			
Southwestern	284-5203	Little Bear Bay	Remove	0.61	Ikatan River	Without 3 zero values, the r=0.74
Southwestern	284-5204	Stub Creek	Remove	0.66	Ram's Creek	
Southwestern	284-5206	West Spring Holes	Keep			
Southwestern	284-5207	Volcano Sloughs-Center	Remove	0.82	West Spring Holes	

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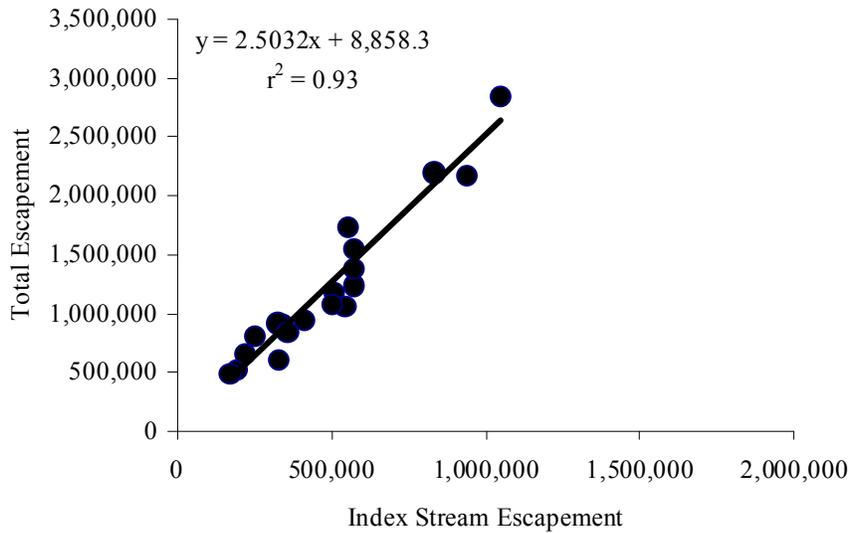
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District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
Southwestern	284-5208	Volcano River	Remove	0.94	SW Bight Creek	
Southwestern	284-6001	Ikatan Point	Remove	0.69	Deadman's Cove	
Southwestern	284-6003	Swede's Lake	Remove	0.61	Russel Creek	Without 4 zero values, the $r=0.72$
Southwestern	284-6004	Ikatan River	Keep			
Southwestern	284-6005	Whirl Point	Keep			
Southwestern	284-6006	Sankin Bay Creek	Remove	0.77	Deadman's Cove	
Southwestern	284-6007	Whalebone Bay	Remove	0.83	West Spring Holes	
Southwestern	284-6008	Deadman's Cove	Keep			

South Central District Pink Salmon

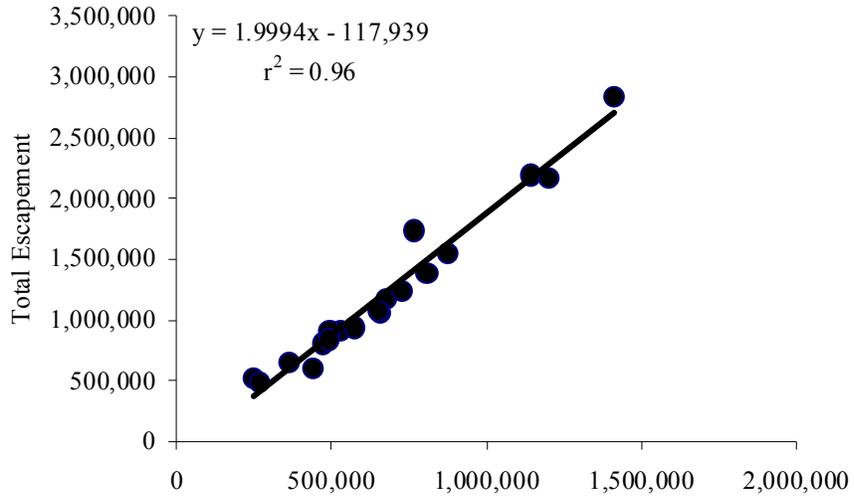


Southeast District Mainland Pink Salmon

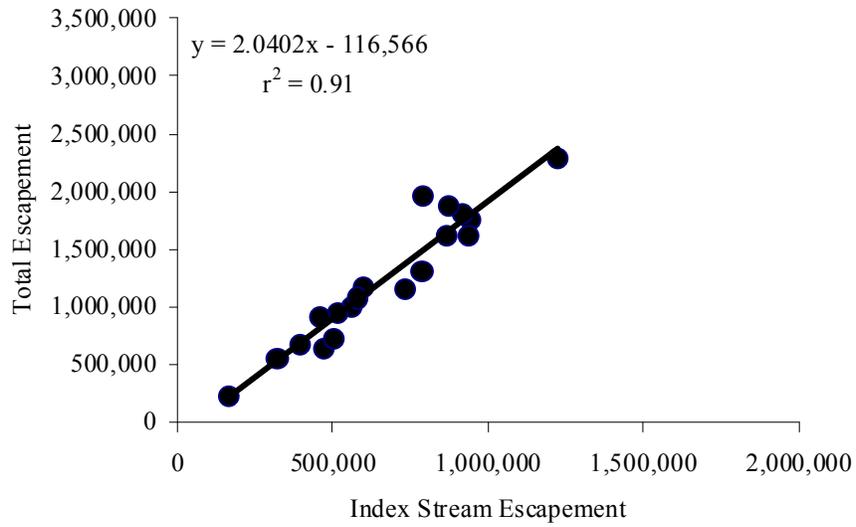


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Southeastern District Pink Salmon



Southwestern District Pink Salmon



Appendix A5.–South Peninsula chum salmon correlation analysis results.

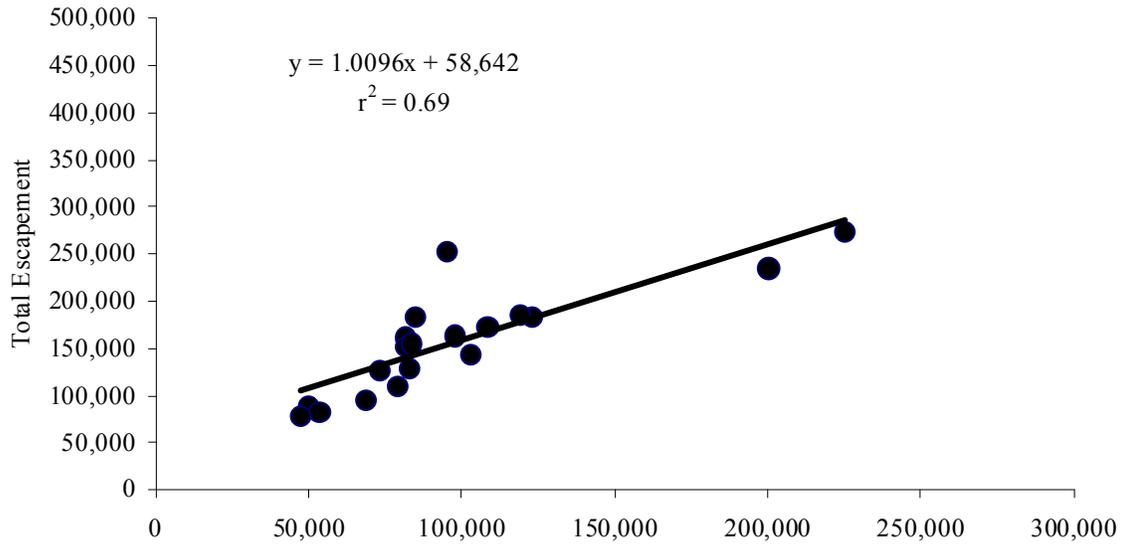
District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
SEDM	281-2001	Chichagof Bay W Side	Keep			
SEDM	281-2002	Chichagof Bay Stream	Keep			
SEDM	281-3204	Little Norway	Keep			
SEDM	281-3205	Clark Bay SW	Keep			
SEDM	281-3207	Grub Gulch	Remove	0.88	281-7005	
SEDM	281-3301	1st Stm N Rock Wall (Ramsey Bay)	Keep			
SEDM	281-3302	2nd Stm N Rock Wall (Ramsey Bay)	Remove	0.91	281-3304	
SEDM	281-3303	Louie's Corner	Remove	0.86	281-3304	
SEDM	281-3304	Big River	Keep			
SEDM	281-3305	Stepovak River	Keep			
SEDM	281-3306	Granville Portage	Keep			
SEDM	281-3401	Granville Bay	Keep			
SEDM	281-3403	Stonehouse	Keep			
SEDM	281-3506	Boulder Bay	Keep			
SEDM	281-7005	Beaver River	Keep			
SEDM	281-8008	Lefthand Bay Kagayan (Lefthand River)	Remove	0.77	281-7005	
SEDM	281-8009	Foster Creek	Keep			
SEDM	281-8014	Bishop (Johnson) Creek	Keep			
SEDM	281-8015	Coleman Creek	Keep			
SEDM	281-9004	San Diego Lagoon & Stream	Keep			
Shumagin Islands	282-1205	Zachary Bay 1205	Keep			
Shumagin Islands	282-1302	Zachary Bay 1202	Keep			
Shumagin Islands	282-1303	Zachary Bay 1203	Keep			
South Central	283-6102	SW. Stream, Long John Lagoon	Keep			
South Central	283-6304	Stm S of Chinaman Lagoon	Keep			
South Central	283-6305	Lower Chinaman Lagoon	Keep			
South Central	283-6310	Chinaman Lgn Main	Keep			

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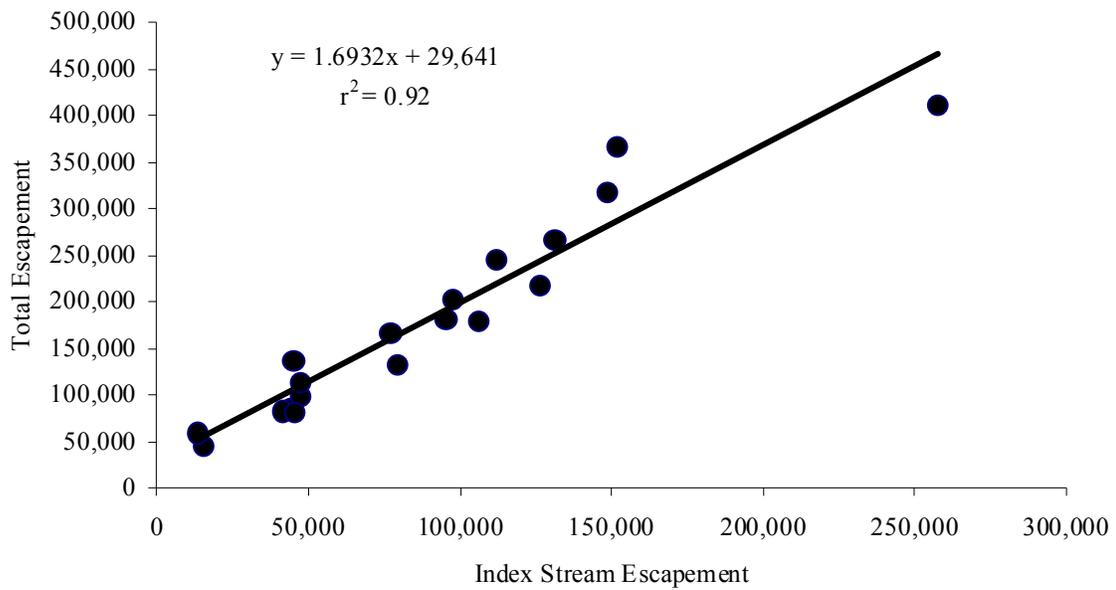
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District	Stream Number	Stream Name	Keep/Remove	Correlation	Correlated	Comments
South Central	283-6313	Ruby's (Jackson's) Lagoon	Keep			
South Central	283-6316	Settlement Point (Creek)	Keep			
South Central	283-6405	Bluff Point Creek	Keep			
South Central	283-6406	Canoe Bay River	Keep			
South Central	283-6408	Entrance (Amies) Creek	Keep			
South Central	283-6409	Inner Canoe, South Side	Keep			
Southwestern	284-1101	Near Egg Island	Keep			
Southwestern	284-1211	Cannery Creek	Keep			
Southwestern	284-1213	Little John Lagoon Stream	Keep			
Southwestern	284-2001	Sandy Cove Stream	Keep			
Southwestern	284-3201	Fox Island Anchorage East	Keep			
Southwestern	284-3303	W Side King Cove Lagoon	Remove	0.78	284-1213	
Southwestern	284-3304	Head King Cove Lagoon	Keep			
Southwestern	284-3402	Russel Creek	Keep			
Southwestern	284-3403	Trout Creek	Keep			
Southwestern	284-3409	Barney's Creek	Keep			
Southwestern	284-3410	Delta Creek, Lenard Harbor	Remove	0.78	284-3410	
Southwestern	284-4207	Belkofski Bay River	Keep			
Southwestern	284-5203	Little Bear Bay	Keep			
Southwestern	284-5205	Stream Guard Creek	Keep			
Southwestern	284-5206	West Spring Holes	Keep			
Southwestern	284-5207	Volcano Sloughs-Center	Remove	0.78	284-5208	
Southwestern	284-5208	Volcano River	Keep			

South Central District Chum Salmon

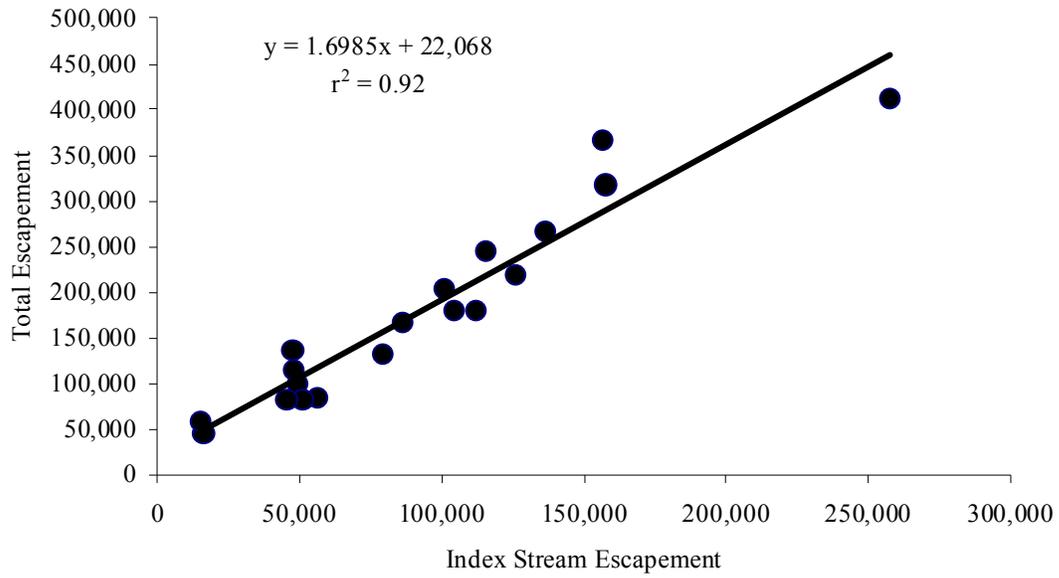


Southeastern District Mainland Chum Salmon

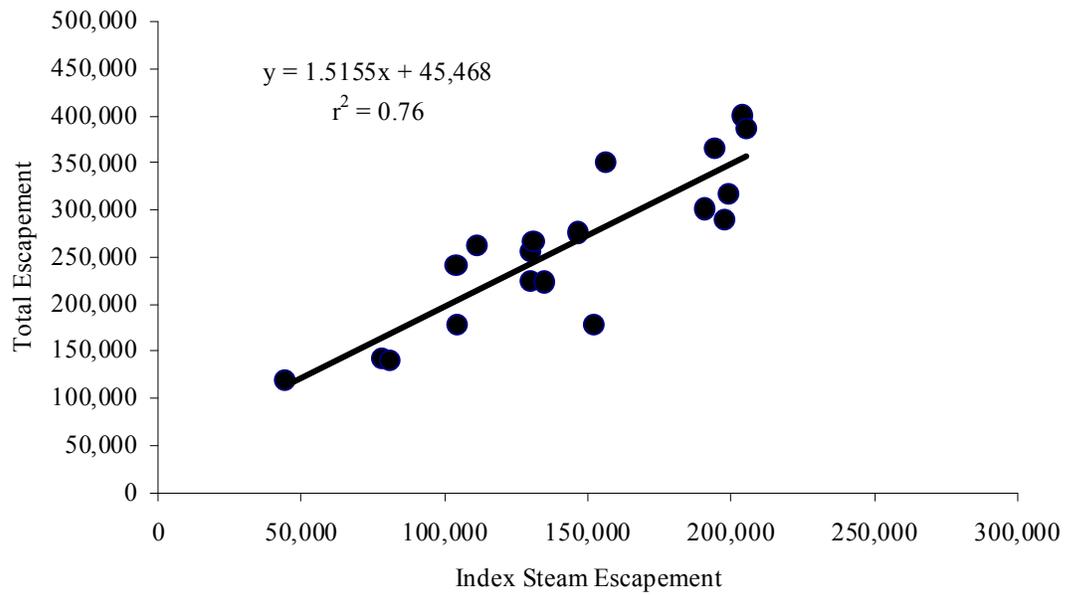


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Southeastern District Chum Salmon



Southwestern District Chum Salmon



**APPENDIX B. CMA PINK AND CHUM SALMON
ANALYSES**

Appendix B1.-CMA pink salmon correlation analysis results.

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Chignik Bay	271-102C	Mud Bay	Remove			Low median
Chignik Bay	271-105	Frank	Remove			Low median
Chignik Bay	271-103	Metrofania	Keep			
Chignik Bay	271-104	Alfred	Keep			
Chignik Bay	271-101B	Lake Bay Creek	Keep			
Chignik Bay	271-106	Through Creek	Remove	0.73	Alfred	
Central	272-504	Kujulik Bay 1	Remove			Low median
Central	272-506	Packer's Creek	Remove	0.81	Kujulik Bay 2	Low median
Central	272-512	Kujulik Bay	Remove	0.94	Dry Creek	Low median
Central	272-205	Mckinsey Creek	Remove	0.92	Dry Creek	Low median
Central	272-505	Bear Creek	Keep			Low median
Central	272-507	Kujulik Bay 2	Remove	0.82	Kumlium Creek	Low median
Central	272-201	Chignik Bay	Remove	0.66	Neketa Creek	Low median
Central	272-502	272-502	Remove	0.77	272-510	Low median
Central	272-202A	Chignik Bay	Remove	0.66	Neketa Creek	
Central	272-206	Dry Creek	Remove	0.81	Neketa Creek	
Central	272-202B	Neketa Creek	Remove	0.73	Kujulik Bay 3	
Central	272-508	Kujulik Bay 3	Remove	0.92	Kujulik Bay 4	
Central	272-510	272-510	Remove	0.74	New Creek	
Central	272-511A	Kujulik Bay 4	Remove			Outlier issues
Central	272-509	Rudy's Creek	Remove	0.83	North Fork River	
Central	272-204	Thompson Creek	Keep			
Central	272-302	Hook Creek	Keep			
Central	272-516	New Creek	Keep			
Central	272-501	Kumlium Creek	Keep			
Central	272-514	North Fork River	Keep			
Central	272-602	Wolverine Creek	Remove	0.66	New Creek	
Eastern	272-604	Black Creek	Remove			Low median
Eastern	272-923	Cape Providence	Remove	0.71	Chiginagak Bay 4	
Eastern	272-803	Nakalilok Bay	Remove	0.93	Agripina Slough	

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Appendix B1.–Page 2 of 3

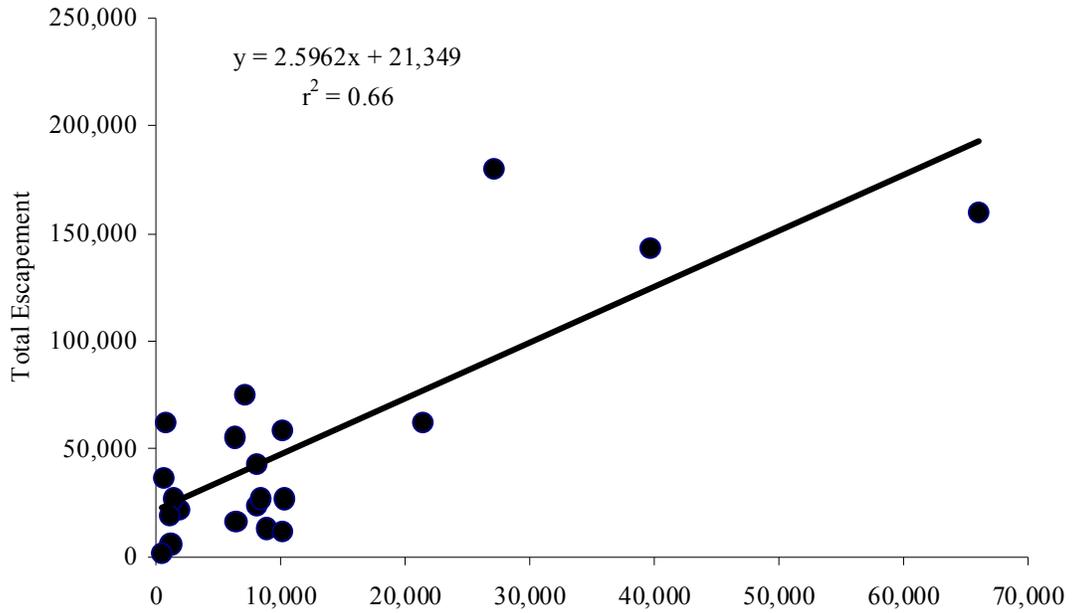
District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Eastern	272-903A	Chiginagak River	Remove	0.66	272-900	
Eastern	272-906	Chiginagak Bay	Remove	0.81	Fred Gungus	
Eastern	272-900	272-900	Keep			
Eastern	272-921	Port Wrangell Bay,	Remove	0.74	Chiginagak Bay, 4	
Eastern	272-805	Nakalilok Bay(North)	Keep			
Eastern	272-901	Cape Kuyuyukak	Remove	0.83	Cape Kuyuyukak 3	
Eastern	272-802	Ocean Beach (North)	Remove	0.86		
Eastern	272-963	Kilokak Creek,	Remove	0.82	Chiginagak Bay, 2	
Eastern	272-701	West Creek	Keep			
Eastern	272-905	Chiginagak Bay 2	Keep			
Eastern	272-961B	Agripina Slough	Keep			
Eastern	272-902	Cape Kuyuyukak 3	Keep			
Eastern	272-804	Nakalilok River	Remove	0.80	Northeast Creek	
Eastern	272-961A	Agripina Lake	Keep			
Eastern	272-721	Yantarni Creek	Remove	0.79	Ocean Beach	
Eastern	272-904	Chiginagak Bay 4	Keep			
Eastern	272-801	Ocean Beach	Remove	0.71	Main Creek	
Eastern	272-702	Main Creek	Keep			
Eastern	272-703	Northeast Creek	Keep			
Eastern	272-606	Fred Gungus	Keep			
Eastern	272-605	Aniakchak River	Keep			
Western	273-821	Windy Creek	Remove	0.78	Mitrofanina Bay	Median = 0
Western	273-844	Seal Bay	Remove	0.97	Fishrack Bay	Median = 0
Western	273-822	273-822	Remove	0.83	Seal Bay	
Western	273-720	Mitrofanina Bay	Remove	0.95	Ivan River	
Western	273-845	Dog Bay	Remove	0.90	Spoon Creek	
Western	273-823	Spoon Creek	Remove	0.87	Castle Creek	
Western	273-843	Seal Bay	Remove	0.81	Ivan River	
Western	273-842	Portage Creek	Remove	0.77	Castle Creek	
Western	273-723	Fishrack Bay	Keep			

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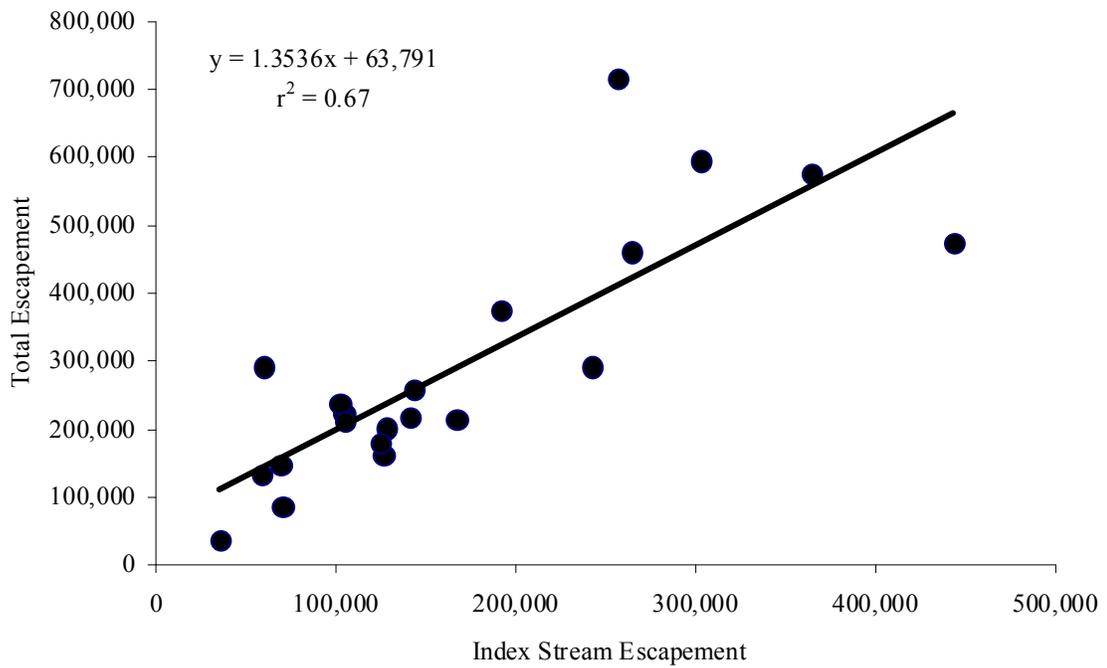
Appendix B1.–Page 3 of 3

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Western	273-941	Castle Creek	Remove	0.81	Foot Creek	
Western	273-802	Foot Creek	Keep			
Western	273-702	Red Bluff Creek	Keep	0.75	Ivan River	Accounts for larger portion of run
Western	273-722	Ivan River	Keep			
Perryville	275-400	Hag Creek	Remove			Median = 0
Perryville	275-405	Sunnyside Creek	Remove	0.99	Long Beach River	Low median
Perryville	275-600	Long Beach River	Remove	0.95	Smokey Hollow Creek	Low median
Perryville	275-601	Kametolook River	Remove	0.86	Wasco's Creek	Low median
Perryville	275-504	Humpback Bay Creek	Remove	0.99	Wolverine Cove	Low median
Perryville	275-402	Smokey Hollow Creek	Keep	0.76	Kupreanof Peninsula	Low median
Perryville	275-408	Wolverine Cove	Remove			
Perryville	275-505	Alexander Point	Keep			
Perryville	275-404	Wasco's Creek	Remove	0.65	Kupreanof Peninsula	
Perryville	275-401	Kupreanof Peninsula	Keep			
Perryville	275-502	Humpback Creek	Keep			
Perryville	275-406	Ivanof River	Keep			

Chignik Bay District Pink Salmon

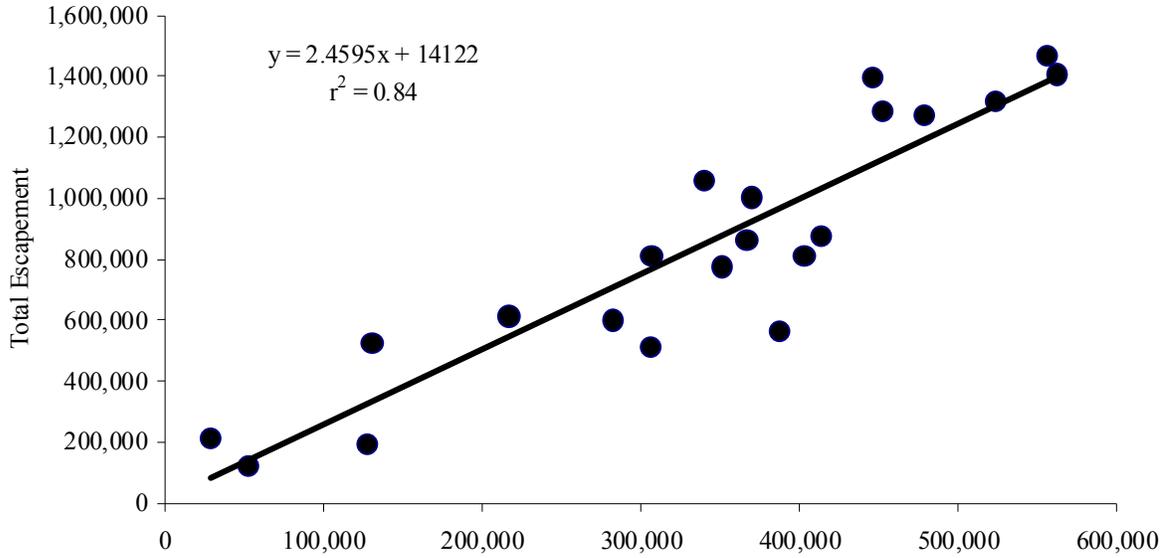


Central District Pink Salmon

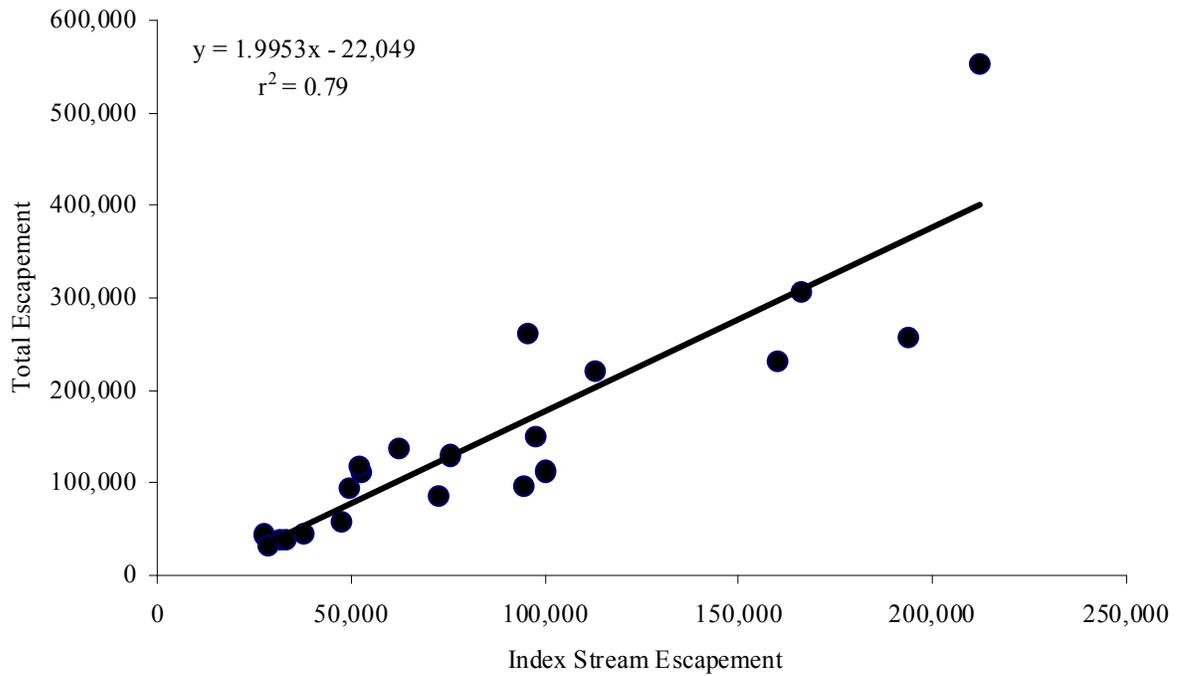


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Eastern District Pink Salmon

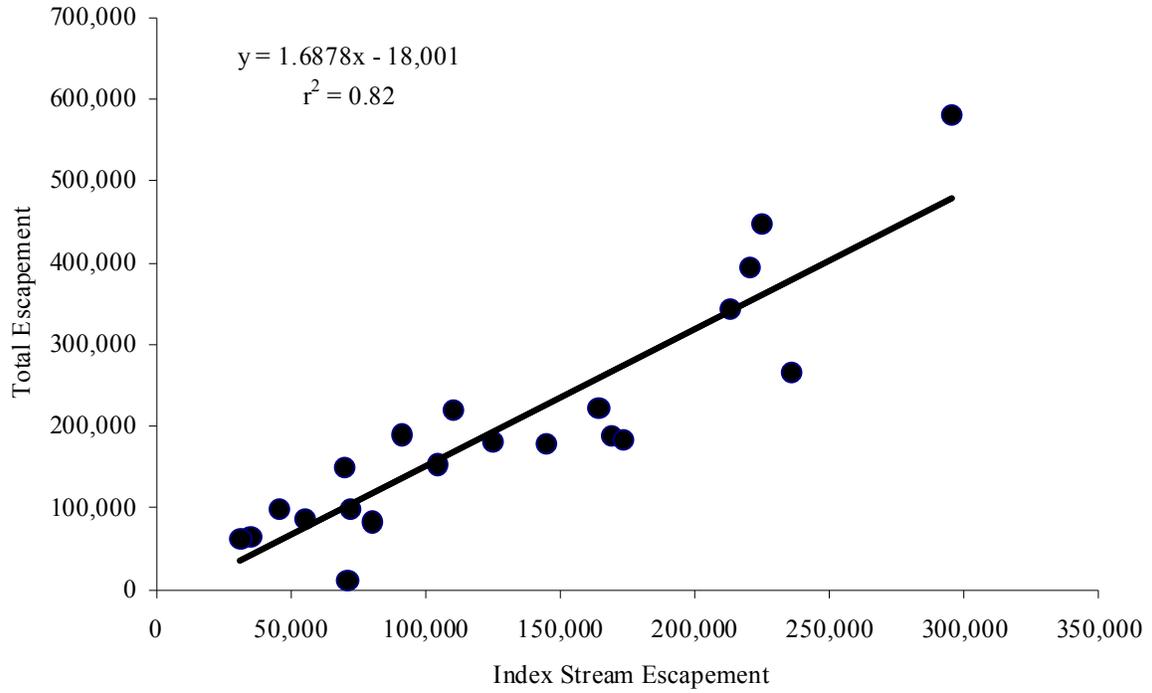


Western District Pink Salmon



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Perryville District Pink Salmon



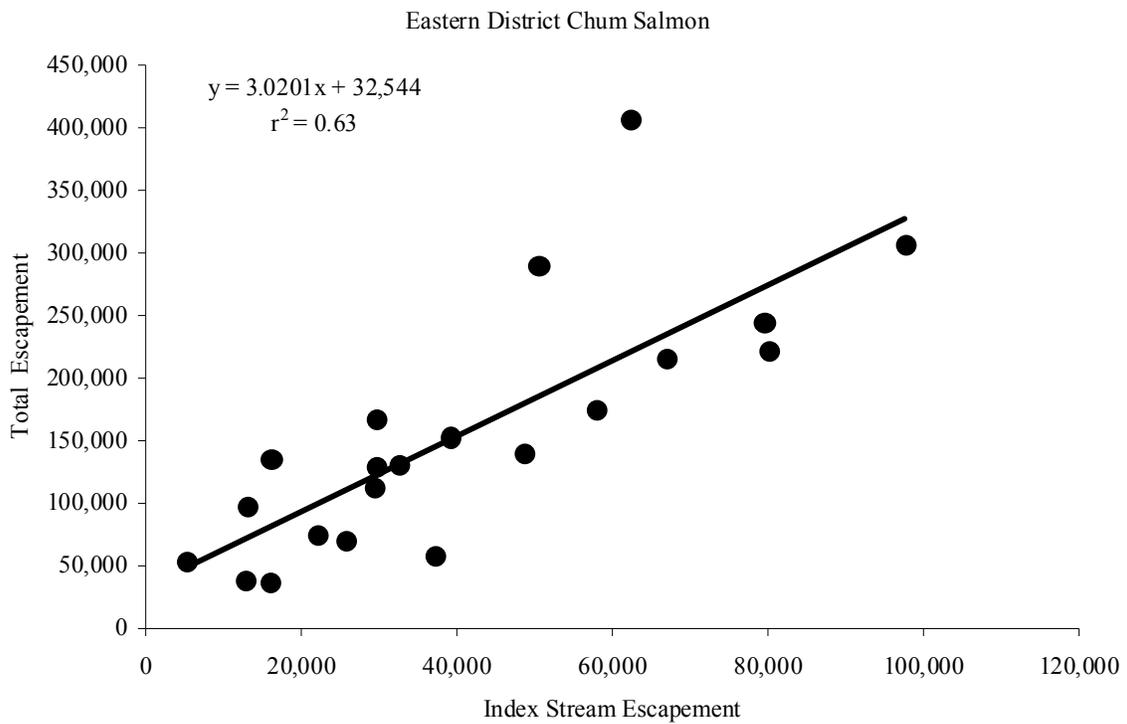
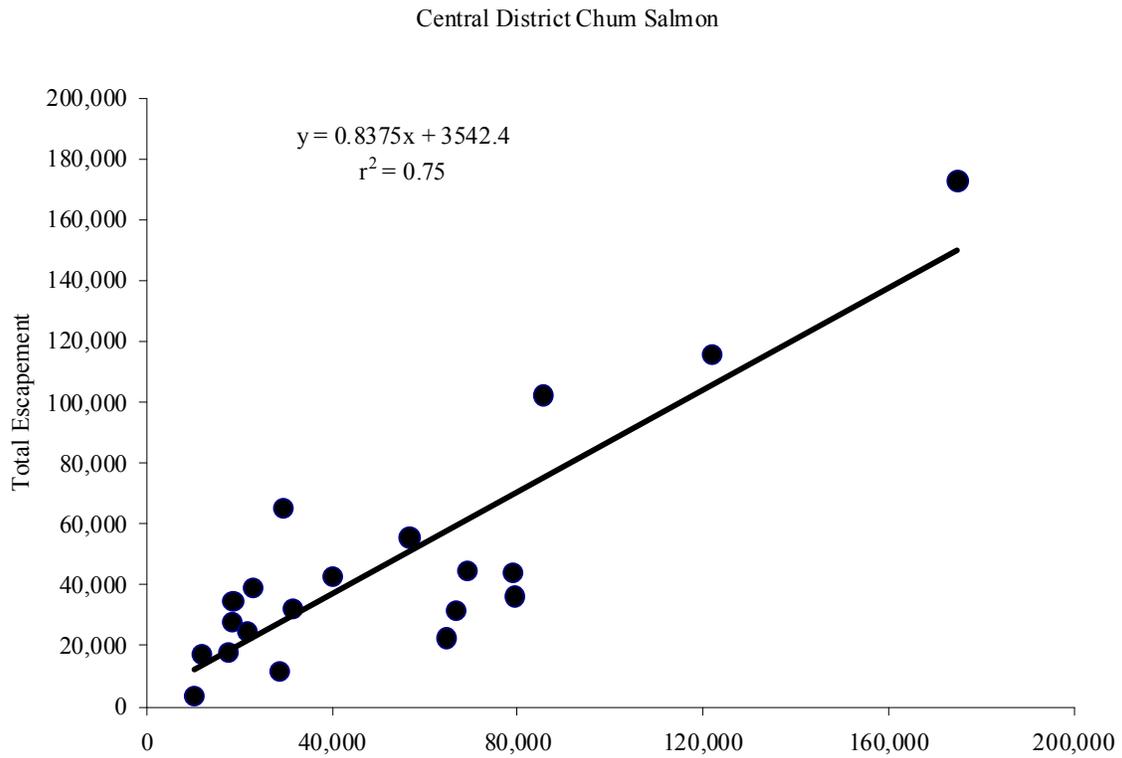
Appendix B3.–CMA chum salmon correlation analysis results.

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Chignik Bay	271-101B	Lake Bay Ceek	Keep			Only stream with escapement estimate
Central	272-204	Thompson Creek	Remove			Low Median
Central	272-510	272-510	Remove			Low Median
Central	272-507	Kujulik Bay	Remove			Low Median
Central	272-602	Wolverine Creek	Keep			
Central	272-506	Packer's Creek	Remove			
Central	272-508	Kujulik Bay	Remove	0.84	Kujulik Bay	
Central	272-516	New Creek	Remove			
Central	272-604	Black Creek	Keep	0.62	Freg Gungus	
Central	272-302	Hook Creek	Keep			
Central	272-509	Rudy's Creek	Keep			
Central	272-505	Bear Creek	Keep			
Central	272-514	North Fork River	Keep			
Eastern	272-606	Freg Gungus	Remove			Low Median
Eastern	272-704	Cape Kunmik	Remove			Low Median
Eastern	272-720	Yantarni Bay	Remove			Low Median
Eastern	272-900	272-900	Remove			Low Median
Eastern	272-901	Cape Kuyuyukak	Remove			Low Median
Eastern	272-902	Cape Kuyuyukak	Remove			Low Median
Eastern	272-923	Cape Providence	Remove			Low Median
Eastern	272-701	West Creek	Keep			
Eastern	272-803	Nakilokak Bay	Remove			Low Median
Eastern	272-805	Nakilokak Bay (north)	Remove			Low Median
Eastern	272-802	Ocean Beach (North)	Keep			
Eastern	272-801	Ocean Beach	Keep			
Eastern	272-703	Northeast Creek	Keep	0.66	Main Creek	
Eastern	272-721	Yantarni Creek	Keep			
Eastern	272-804	Nakilokak River	Keep			
Eastern	272-702	Main Creek	Keep			

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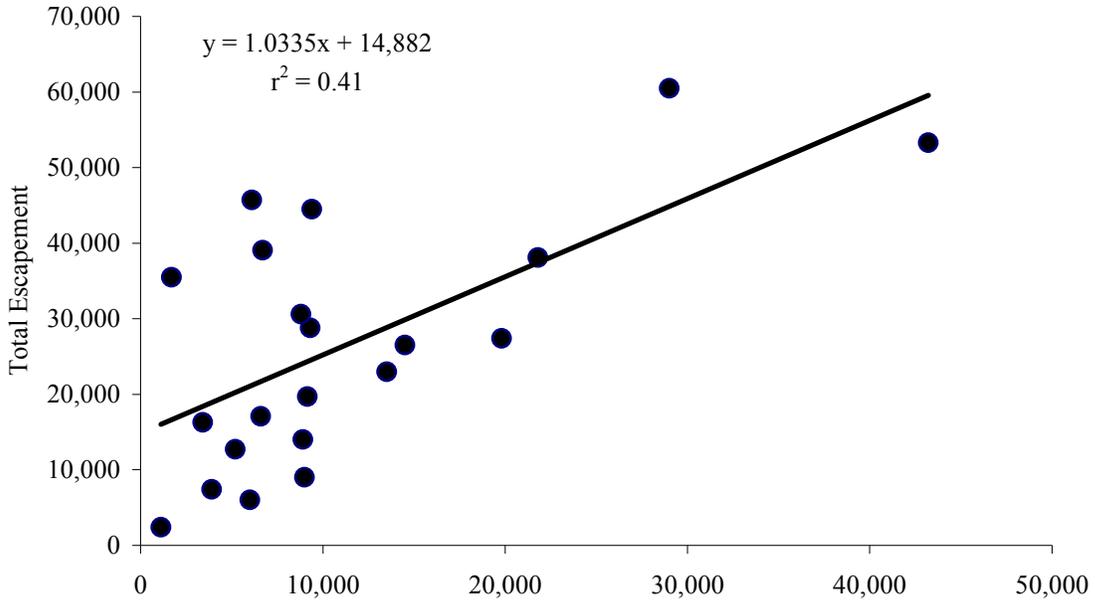
Appendix B3.–Page 2 of 2

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Western	273-720	Mitrofanía Bay	Remove			Median = 0
Western	273-821	Windy Creek	Remove			Median = 0
Western	273-822	273-822	Remove			Median = 0
Western	273-844	Seal Bay	Remove			Median = 0
Western	273-940	Castle Creek	Remove			Median = 0
Western	273-941	273-940	Remove			Median = 0
Western	273-723	Fishrack Bay	Keep			Median = 0
Western	273-823	Spoon Creek	Remove			Low Median
Western	273-845	Dog Bay	Remove			Low Median
Western	273-802	Foot Creek	Keep			Low Median
Western	273-843	Seal Bay	Remove			Infrequent surveys
Western	273-702	Red Bluff Creek	Keep			
Western	273-722	Ivan River	Keep			
Western	273-842	Portage Creek	Keep			
Perryville	275-400	Hag Creek	Remove			Median = 0
Perryville	275-401	Kupreanof Peninsula	Keep	0.94	Ivanof River	Median = 0
Perryville	275-403	S275-403	Remove			Median = 0
Perryville	275-405	Sunnyside Creek	Remove			Median = 0
Perryville	275-408	Wolverine Cove	Keep	0.93	Hag Creek	Median = 0
Perryville	275-503	S275-503	Remove			Median = 0
Perryville	275-504	Humpback Bay Creek	Remove			Median = 0
Perryville	275-505	Alexander Point	Keep			Median = 0
Perryville	275-506	S275-506	Remove	0.87	Wasco's Creek	Median = 0
Perryville	275-600	Long Beach River	Remove	0.93	S275-506	Median = 0
Perryville	275-601	Kametolook River	Keep	0.75	Hag Creek	
Perryville	275-404	Wasco's Creek	Keep			
Perryville	275-402	Smokey Hallow Creek	Keep	0.67	Ivanof River	
Perryville	275-502	Humpback Creek	Keep	0.88	Ivanof River	
Perryville	275-406	Ivanof River	Keep			

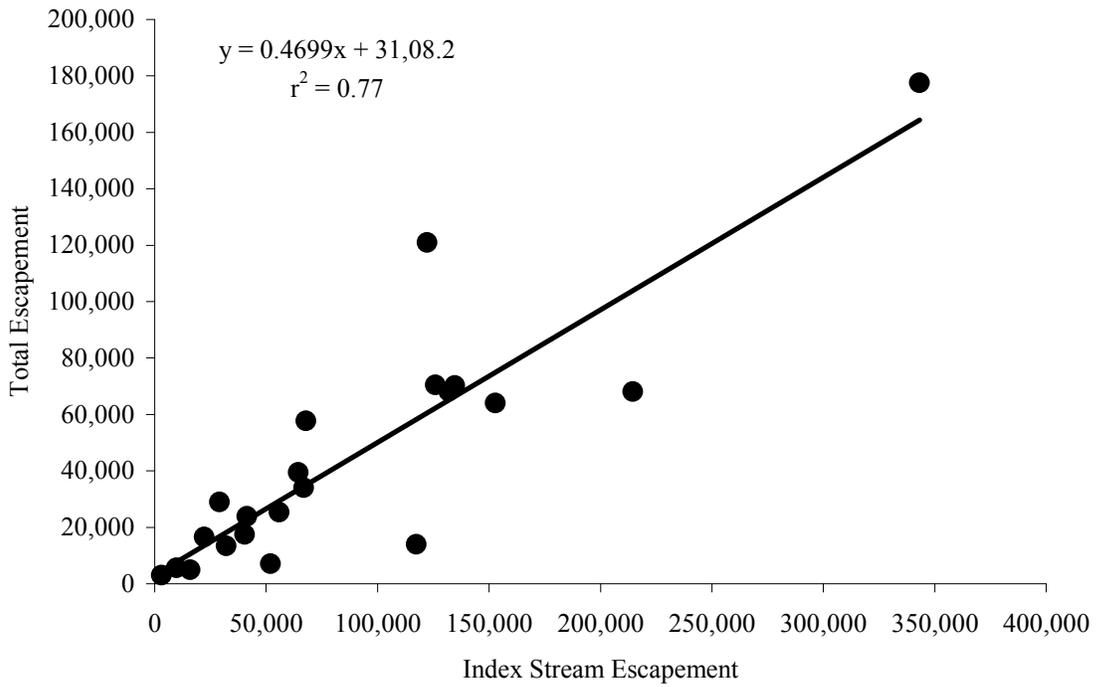


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Western District Chum Salmon



Perryville District Chum Salmon



**APPENDIX C. KMA PINK AND CHUM SALMON
ANALYSES**

Appendix C1.–KMA pink salmon correlation analysis results.

District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Afognak	Odd	252-331	South Creek	Remove	0.83	Malina River	
Afognak	Odd	252-308	West Shangin Bay	Remove	0.99	Long Lagoon	
Afognak	Odd	252-32	Bean Creek	Remove	0.99	Portage Creek	
Afognak	Odd	252-301	S.W. Redfox Xreek	Remove	0.99	Long Lagoon	
Afognak	Odd	251-901	Malina Bay	Remove	0.83	Big Danger	
Afognak	Odd	252-333	Saposa Bay	Remove	0.70	Marka Bay	
Afognak	Odd	251-831	Selief	Remove	0.99	Afognak River	
Afognak	Odd	252-336	Left Hand Bay	Remove	1.00	Long Lagoon	
Afognak	Odd	252-332	Grassy Lagoon Creek	Remove	0.73	Marka Bay	
Afognak	Odd	251-903	Thorsheim Creek	Remove	0.98	Long Lagoon	
Afognak	Odd	252-30	Bluefox Creek	Remove	0.89	Portage Creek	
Afognak	Odd	252-317	Little Waterfall	Remove	0.63	Malina River	
Afognak	Odd	252-337	N.E. Danger Creek	Remove	0.63	Marka Bay	
Afognak	Odd	252-33	Seal Bay Creek	Remove			Low median
Afognak	Odd	252-306	Hander Creek	Remove	-1.00	Portage Creek	
Afognak	Odd	252-101	South Arm Creek	Remove	0.66	Malina River	
Afognak	Odd	252-343	Afognak River	Remove	0.68	Marka Bay	
Afognak	Odd	251-902	Long Lagoon	Remove	0.63	Marka Bay	
Afognak	Odd	252-102	East Arm Creek	Remove	0.78	Malina River	
Afognak	Odd	251-832	Malina River	Keep			
Afognak	Odd	252-338	Big Danger	Keep			
Afognak	Odd	252-318	Portage Creek	Keep			
Afognak	Odd	252-345	Marka Bay	Keep			
Afognak	Even	251-903	Thorsheim Creek	Keep	0.71	Seal Bay	
Afognak	Even	252-317	Little Waterfall	Keep	0.82	South Arm Creek	
Afognak	Even	251-902	Long Lagoon	Keep	0.81	Seal Bay	
Afognak	Even	252-101	South Arm Creek	Keep	0.70	Big Danger	
Afognak	Even	252-102	East Arm Creek	Remove	0.74	Big Danger	
Afognak	Even	252-33	Seal Bay Creek	Remove	0.65	Afognak River	
Afognak	Even	252-338	Big Danger	Remove	0.73	Afognak River	
Afognak	Even	252-318	Portage Creek	Keep			

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Appendix C1.-Page 2 of 8

District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Afognak	Even	252-343	Afognak River	Remove	0.70	Malina River	Few surveys
Afognak	Even	251-832	Malina River	Keep			
Afognak	Even	252-345	Marka Bay	Keep			
Northwest	Odd	259-382	Red Cloud Creek	Remove	0.98	Terror River	Few surveys
Northwest	Odd	254-201	Uyak 201 Creek	Remove	0.99	Uganik River	
Northwest	Odd	253-121	S. Arm Uganik	Keep			
Northwest	Odd	259-391	Soldier's Bay Creek	Remove			
Northwest	Odd	254-401	Spiridon River	Remove	0.91	Uyak River	
Northwest	Odd	254-204	Brown's Lagoon	Remove	0.85	Kizhuyak River	
Northwest	Odd	253-332	Baumann's	Remove	0.85	Kizhuyak River	
Northwest	Odd	259-371	Sheratin River	Keep			
Northwest	Odd	253-115	Little River	Remove	0.90	Terror River	
Northwest	Odd	259-365	Kizhuyak River	Remove	0.98	Uganik River	
Northwest	Odd	254-301	Zacher River	Keep	0.69	East Uyak Creek	
Northwest	Odd	254-203	East Uyak Creek	Keep	0.80	Terror River	
Northwest	Odd	253-331	Terror River	Keep	0.97	Kizhuyak River	
Northwest	Odd	253-122	Uganik River	Keep	0.97	Terror River	
Northwest	Odd	254-202	Uyak River	Keep	0.65	Uganik River	
Northwest	Even	259-391	Soldier's Bay Creek	Remove	0.92	Uganik River	
Northwest	Even	254-203	East Uyak Creek	Remove	0.68	Uganik River	
Northwest	Even	253-332	Baumann's	Remove	0.78	Uyak River	
Northwest	Even	259-371	Sheratin River	Keep			
Northwest	Even	259-365	Kizhuyak River	Remove	0.65	Zacher River	
Northwest	Even	254-401	Spiridon River	Keep			
Northwest	Even	254-202	Uyak River	Keep			
Northwest	Even	254-301	Zacher River	Keep			
Northwest	Even	253-331	Terror River	Keep			
Northwest	Even	254-204	Brown's Lagoon	Keep			
Northwest	Even	253-115	Little River	Keep			

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Appendix C1.-Page 3 of 8

District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Northwest	Even	253-122	Uganik River	Keep			
Southwest	Odd	255-102	Cape Uyak	Remove			Median = 0
Southwest	Odd	256-102	N. Low Cape	Remove			Median = 0
Southwest	Odd	256-303A	256-303A	Remove			Median = 0
Southwest	Odd	255-10	Karluk Lagoon	Remove			Median = 0
Southwest	Odd	256-303	Grant's Lagoon Creek	Remove			Median = 0
Southwest	Odd	256-201	Red River	Remove			Median = 0
Southwest	Odd	256-202	Old Red River	Remove			Low median
Southwest	Odd	256-101	Low Cape	Remove			Median = 0
Southwest	Odd	256-40	Sturgeon Lagoon	Remove			Low median
Southwest	Odd	256-302	Halibut Bay	Remove			Low median
Southwest	Odd	256-301	Caramel Creek	Remove			
Southwest	Odd	256-402	East Sturgeon River	Keep			
Southwest	Odd	256-401	Sturgeon River	Keep			
Southwest	Odd	255-101	Karluk River	Keep			
Southwest	Even	256-302	Halibut Bay	Remove	1.00	Sturgeon River	Low counts
Southwest	Even	256-202	Old Red River	Remove			Low counts
Southwest	Even	256-402	East Sturgeon River		0.81	Sturgeon River	
Southwest	Even	256-301	Caramel Creek	Keep			
Southwest	Even	256-40	Sturgeon Lagoon	Remove			Low counts
Southwest	Even	256-401	Sturgeon River	Keep			
Southwest	Even	255-101	Karluk River	Keep			
Alitak	Odd	257-604	Tom's Creek	Remove	0.95	Deadman River	
Alitak	Odd	257-404	Talifson's Creek	Remove	0.83	Humpy River	Low counts
Alitak	Odd	257-503	Alpine Cove Creek	Remove	0.95	Deadman River	
Alitak	Odd	257-602	Sulua Pink Creek	Remove	0.88	Sulua Chum Creek	
Alitak	Odd	257-601	N.E. Portage	Keep			
Alitak	Odd	257-603	Sulua Chum Creek	Keep	0.71	Deadman River	

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District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Alitak	Odd	257-403	Dog Salmon	Keep			
Alitak	Odd	257-502	Deadman River	Keep	0.89	Humpy River	
Alitak	Odd	257-701	Humpy River	Keep			
Alitak	Even	257-603	Sulua Chum Creek	Remove	0.96	Deadman River	
Alitak	Even	257-50	Deadman Bay	Remove			Low counts
Alitak	Even	257-402	Horse Marine	Keep	0.85	Deadman River	
Alitak	Even	257-503	Alpine Cove Creek	Keep	0.77	Humpy River	
Alitak	Even	257-405	Chip Cove Creek	Remove			No counts
Alitak	Even	257-404	Talifson's Creek	Remove	-1.00	Humpy River	Low counts
Alitak	Even	257-401	Narrows Creek	Remove	0.71	Deadman River	
Alitak	Even	257-302	Akalura Creek	Remove	-0.65	Dog Salmon	
Alitak	Even	257-403	Dog Salmon	Keep			
Alitak	Even	257-305	Little Dog Salmon	Remove			Low counts
Alitak	Even	257-502	Deadman River	Keep			
Alitak	Even	257-701	Humpy River	Keep			
Eastside	Odd	259-418	Hidden Basin	Remove			Low median
Eastside	Odd	258-206	N. Kiliuda Creek	Keep			
Eastside	Odd	258-541	Kaiugnak Point	Remove	0.86	Barling Creek	
Eastside	Odd	259-415	Saltery River	Keep	0.80	Pasagshak River	
Eastside	Odd	258-205	Coxcomb Point Creek	Remove			Low median
Eastside	Odd	258-204	Dog Bay Creek	Remove	0.84	Kiavak Portage	Low median
Eastside	Odd	258-551	Kiavak Portage	Remove	0.66	Barling Creek	Low median
Eastside	Odd	259-411	Pasagshak River	Remove			Low median
Eastside	Odd	259-424	Eagle Harbor	Remove	0.68	W. Kiliuda Creek	
Eastside	Odd	258-602	Kaguyak Bay Creek	Keep			
Eastside	Odd	258-521	Midway Creek	Keep			
Eastside	Odd	258-542	Kaiugnak Lagoon	Remove	0.66	W. Kiliuda Creek	
Eastside	Odd	259-412	Miam River	Keep			

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District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Eastside	Odd	258-207	W. Kiliuda Creek	Keep			
Eastside	Odd	258-522	Barling Creek	Keep			
Eastside	Odd	258-701	Seven Rivers	Keep			
Eastside	Even	258-551	Kiavak Portage	Remove	0.98	Eagle Harbor	
Eastside	Even	258-511	Rolling Bay	Remove	0.71	N. Kiliuda Creek	
Eastside	Even	259-401	Sacramento River	Remove	0.89	Midway Creek	
Eastside	Even	258-602	Kaguayak Bay Creek	Remove	0.94	Saltery River	
Eastside	Even	259-414	Hurst Creek	Remove	0.67	Eagle Harbor	
Eastside	Even	258-541	Kaiugnak Point	Remove	0.89	Kaiugnak Lagoon	
Eastside	Even	259-416	Rough Creek	Remove	0.94	Saltery River	
Eastside	Even	258-206	N. Kiliuda Creek	Remove	0.91	W. Kiliuda Creek	
Eastside	Even	258-542	Kaiugnak Lagoon	Keep			
Eastside	Even	259-424	Eagle Harbor	Keep			
Eastside	Even	259-412	Miam River	Remove	0.89	Saltery River	
Eastside	Even	258-207	W. Kiliuda Creek	Keep			
Eastside	Even	259-415	Saltery River	Keep	0.77	Seven Rivers	
Eastside	Even	258-521	Midway Creek	Keep			
Eastside	Even	258-522	Barling Creek	Keep			
Eastside	Even	258-701	Seven Rivers	Keep			
Northeast	Odd	259-252	Twin Creek	Keep			
Northeast	Odd	259-102	Pillar Creek	Remove	0.86	Solonie Creek	
Northeast	Odd	259-101	Monashka Creek	Keep			
Northeast	Odd	259-223	Solonie Creek	Keep			
Northeast	Odd	259-245	Myrtle Creek	Remove	0.81	Roslyn Creek	
Northeast	Odd	259-221	Sargent's Creek	Remove	0.77	Russian River	
Northeast	Odd	259-222	Russian River	Keep			
Northeast	Odd	259-251	Roslyn Creek	Keep			
Northeast	Odd	259-254	Chiniak Creek	Remove	0.71	Roslyn Creek	

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Appendix C1.-Page 6 of 8

District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Northeast	Odd	259-211	Buskin River	Keep			
Northeast	Odd	259-242	Sid Olds	Keep			
Northeast	Odd	259-231	American River	Keep			
Northeast	Even	259-243	Kalsin Creek	Keep			
Northeast	Even	259-253	Capelin Creek	Remove	0.66	Sargent's Creek	
Northeast	Even	259-101	Monashka Creek	Remove	0.87	Chiniak Creek	
Northeast	Even	259-245	Myrtle Creek	Remove	0.74	Russian River	
Northeast	Even	259-252	Twin Creek	Keep			
Northeast	Even	259-221	Sargent's Creek	Remove	0.85	American River	
Northeast	Even	259-102	Pillar Creek	Remove	0.81	Chiniak Creek	
Northeast	Even	259-222	Russian River	Remove	0.79	Solonie Creek	
Northeast	Even	259-223	Solonie Creek	Keep			
Northeast	Even	259-251	Roslyn Creek	Keep			
Northeast	Even	259-254	Chiniak Creek	Keep	0.78	American River	
Northeast	Even	259-231	American River	Keep	0.80	Buskin River	
Northeast	Even	259-242	Sid Olds	Keep	0.74	Buskin River	
Northeast	Even	259-211	Buskin River	Keep			
Mainland	Odd	262-752	Dry Bay	Remove	0.78	Big Creek	Low median
Mainland	Odd	262-703	Teresa Creek	Remove	0.94	Big Creek	Low median
Mainland	Odd	262-861	Kayakliut Creek	Remove	0.96	Kashvik Creek	Low median
Mainland	Odd	262-351	Halferty Creek	Remove	0.90	Des Moines	
Mainland	Odd	262-656	West Bear Creek	Remove	0.93	Des Moines	
Mainland	Odd	262-801	Jute Creek	Remove	0.99	Big Creek	
Mainland	Odd	262-858	Kialagvik Creek	Remove			
Mainland	Odd	262-402	Missak Creek	Remove	0.98	Big Creek	
Mainland	Odd	262-654	Bear Bay Creek	Keep	0.84	Kukak Creek	
Mainland	Odd	262-704	Trail Creek	Remove	0.89	Village Creek	
Mainland	Odd	262-705	Katie Creek	Keep	0.82	Cape Chiniak Creek	

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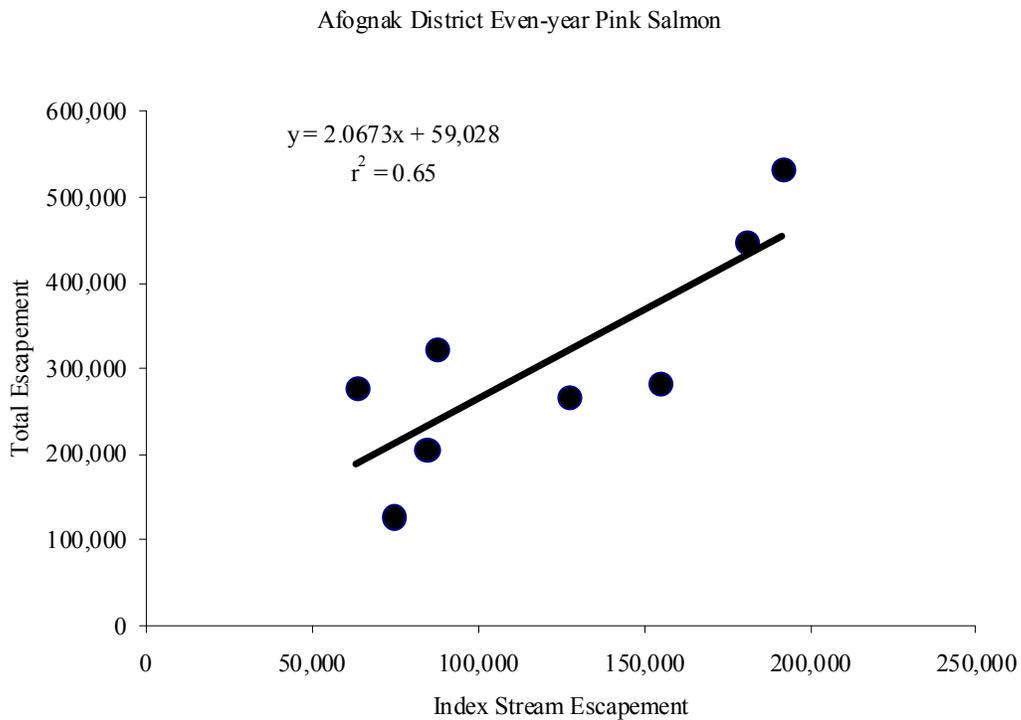
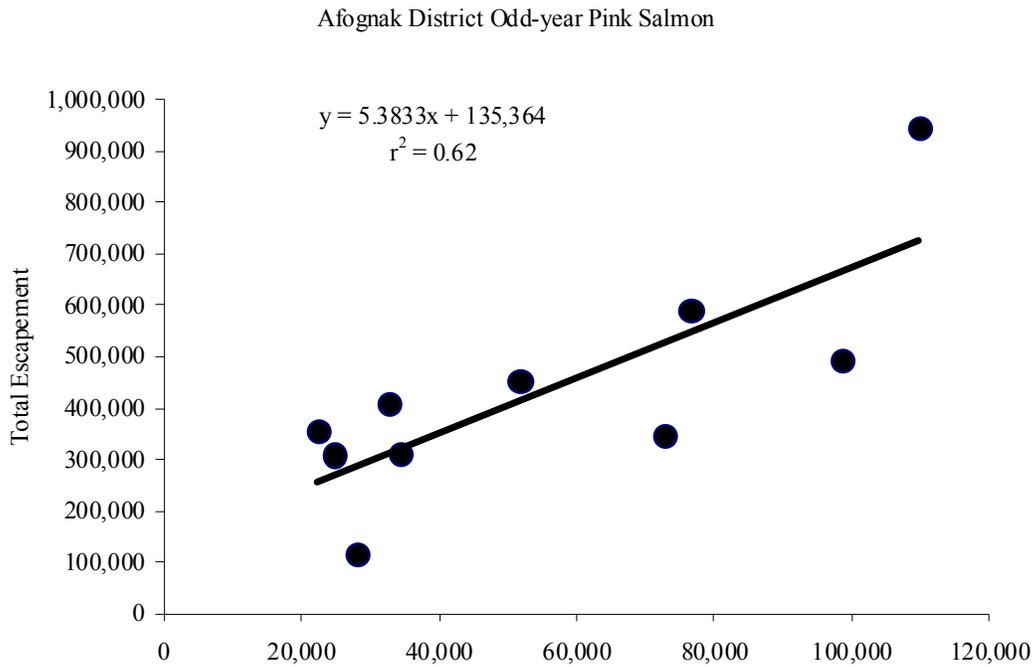
Appendix C1.-Page 7 of 8

District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Mainland	Odd	262-271	Kukak Creek	Keep	0.81	Cape Chiniak Creek	
Mainland	Odd	262-854	Short Creek	Remove	0.75	Kinak Creek	
Mainland	Odd	262-952	Circ Creek	Remove	0.93	Kanatak	
Mainland	Odd	262-853	Pass Creek	Remove	0.90	Oil Creek	
Mainland	Odd	262-652	Little Anilchak	Remove	0.99	Big Creek	
Mainland	Odd	262-501	Geographic Creek	Remove	1.00	Big Creek	
Mainland	Odd	262-951	Imuya Creek	Remove	1.00	Big Creek	
Mainland	Odd	262-653	Pterodactyl Creek	Remove	0.99	Big Creek	
Mainland	Odd	262-701	Helen Creek	Remove	0.99	Big Creek	
Mainland	Odd	262-205	Cape Chiniak Creek	Keep	0.79	Village Creek	
Mainland	Odd	262-702	Portage Creek	Remove	0.90	Big Creek	
Mainland	Odd	262-751	Oil Creek	Keep	0.89	Big Creek	
Mainland	Odd	262-852	Des Moines	Keep	0.94	Village Creek	
Mainland	Odd	262-153	Village Creek	Keep	0.81	Big Creek	
Mainland	Odd	262-551	Dakavak	Keep	0.79	Kashvik Creek	
Mainland	Odd	262-451	Kinak Creek	Keep	0.64	Kashvik Creek	
Mainland	Odd	262-802	Kanatak	Keep			
Mainland	Odd	262-651	Big Alinchak	Remove	0.99	Big Creek	
Mainland	Odd	262-152	Big River	Keep			
Mainland	Odd	262-604	Kashvik Creek	Keep			
Mainland	Odd	262-851	Big Creek	Keep			
Mainland	Even	262-951	Imuya Creek	Remove	0.78	Missak Creek	
Mainland	Even	262-853	Pass Creek	Remove	0.66	Big River	
Mainland	Even	262-801	Jute Creek	Remove	0.83	Village Creek	
Mainland	Even	262-652	Little Anilchak	Remove	0.86	Village Creek	
Mainland	Even	262-654	Bear Bay Creek	Keep			
Mainland	Even	262-703	Teresa Creek	Remove	0.67	Village Creek	
Mainland	Even	262-704	Trail Creek	Keep			
Mainland	Even	262-702	Portage Creek	Keep	0.67	Dakavak	

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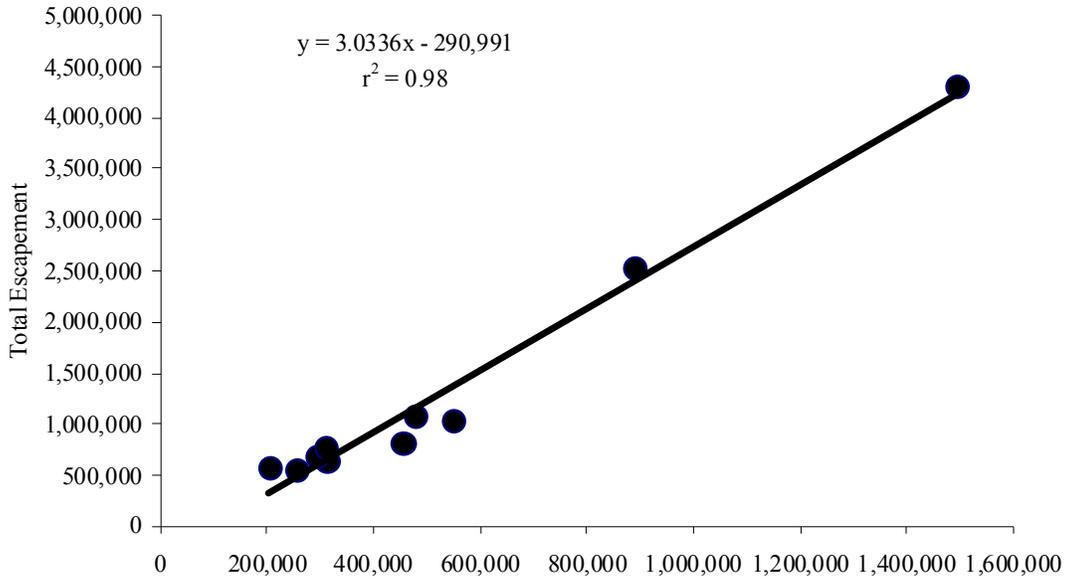
Appendix C1.-Page 8 of 8

District	Year	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Mainland	Even	262-802	Kanatak	Keep	0.62	Kinak Creek	
Mainland	Even	262-651	Big Alinchak	Remove	0.68	Kinak Creek	
Mainland	Even	262-551	Dakavak	Remove	0.76	Missak Creek	
Mainland	Even	262-851	Big Creek	Remove	0.84	Kinak Creek	
Mainland	Even	262-351	Halferty Creek	Remove	0.62	Missak Creek	
Mainland	Even	262-852	Des Moines	Remove	0.85	Village Creek	
Mainland	Even	262-402	Missak Creek	Keep	0.85	Kashvik Creek	
Mainland	Even	262-153	Village Creek	Keep			
Mainland	Even	262-271	Kukak Creek	Keep			
Mainland	Even	262-501	Geographic Creek	Remove	0.81	Big River	
Mainland	Even	262-451	Kinak Creek	Keep			
Mainland	Even	262-152	Big River	Keep			
Mainland	Even	262-604	Kashvik Creek	Keep			

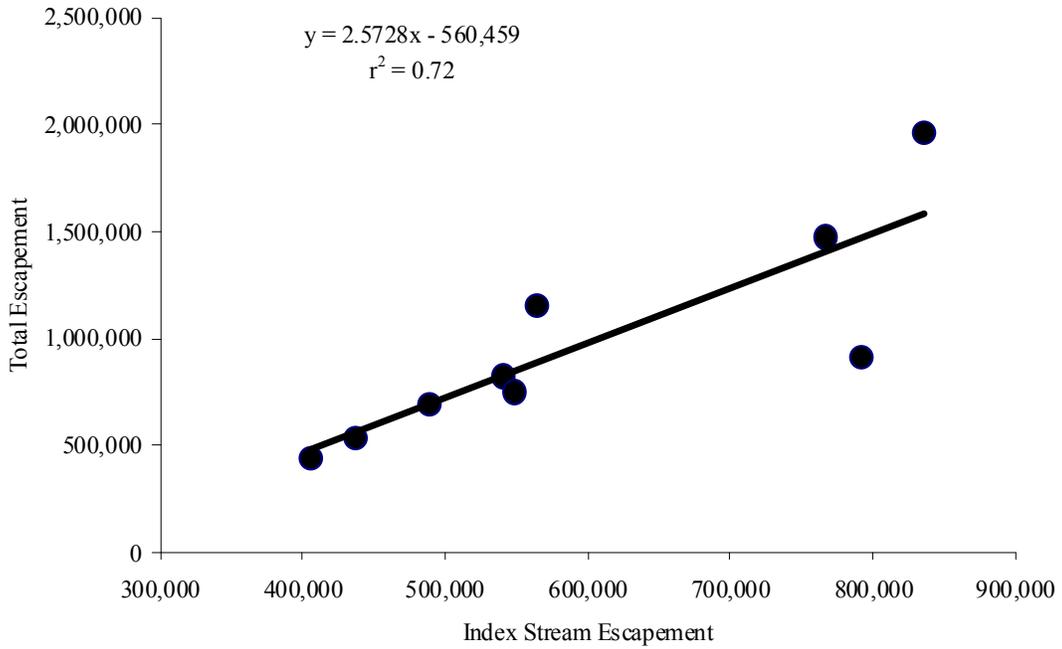


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Northwest District Odd-year Pink Salmon

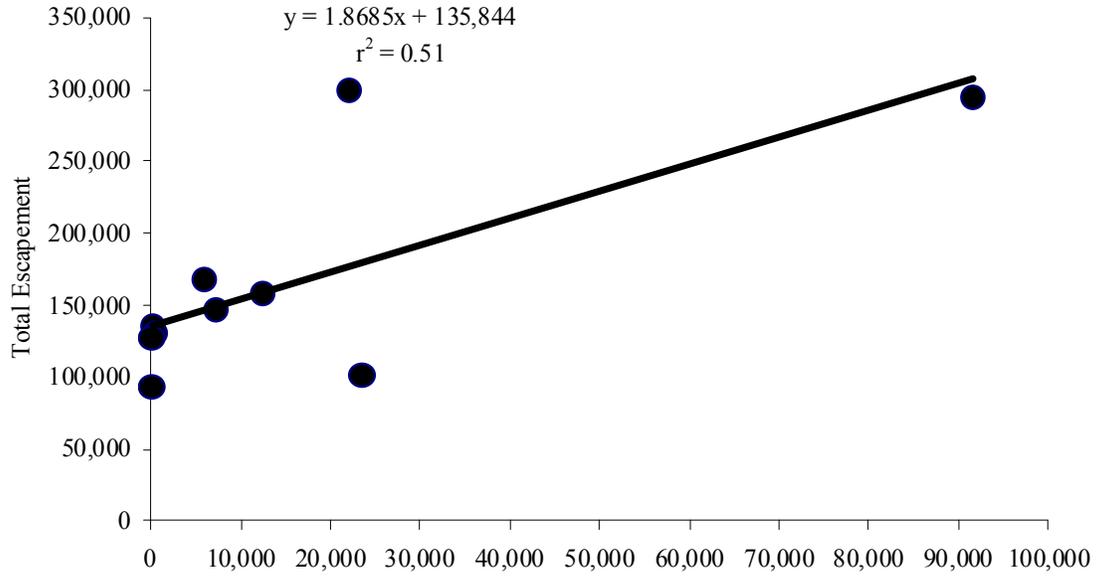


Northwest District Even-year Pink Salmon

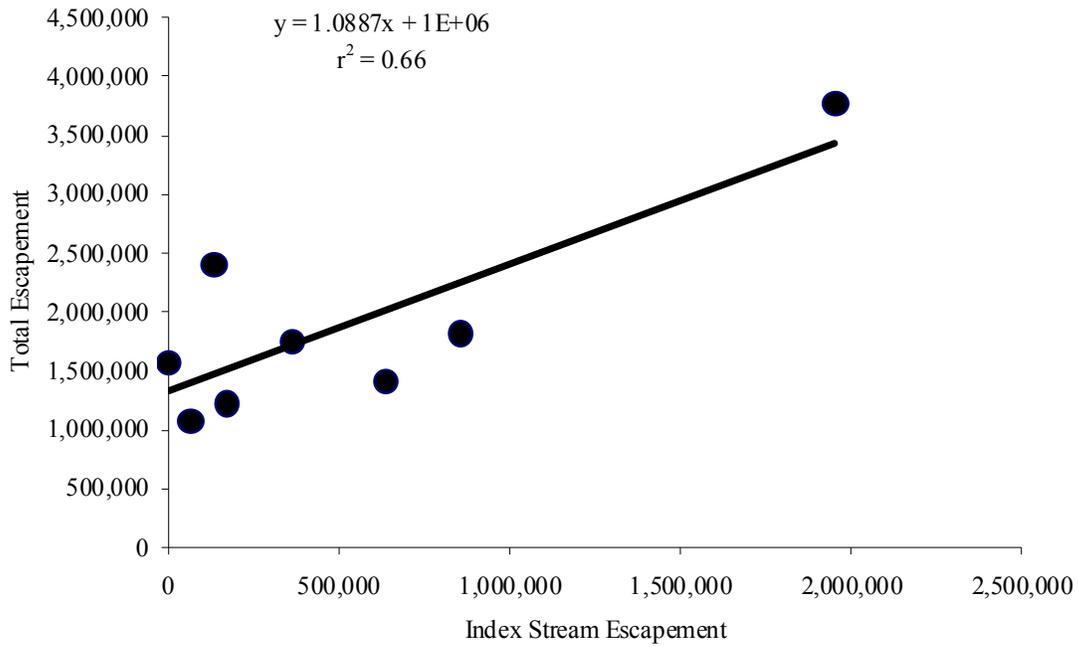


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Southwest District Odd-year Pink Salmon

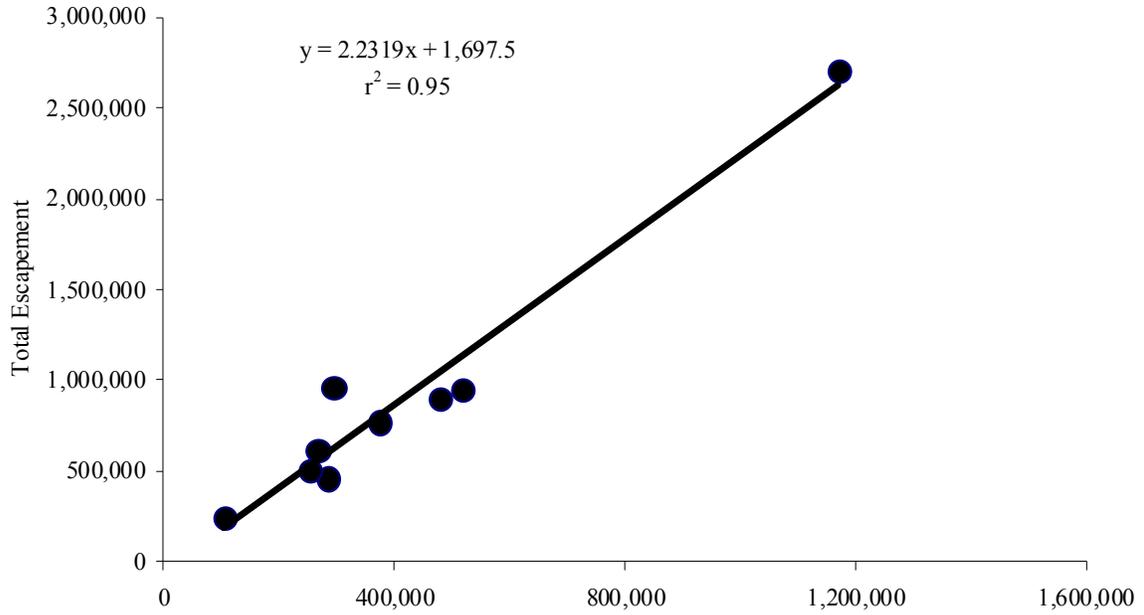


Southwest District Even-year Pink Salmon

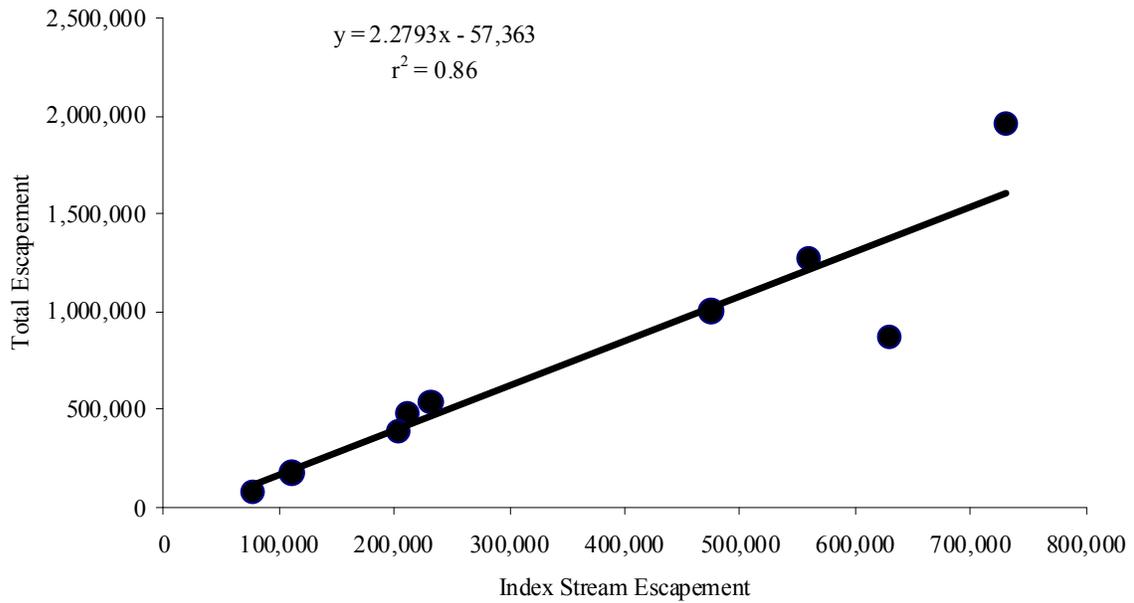


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Alitak District Odd-Year Pink Salmon

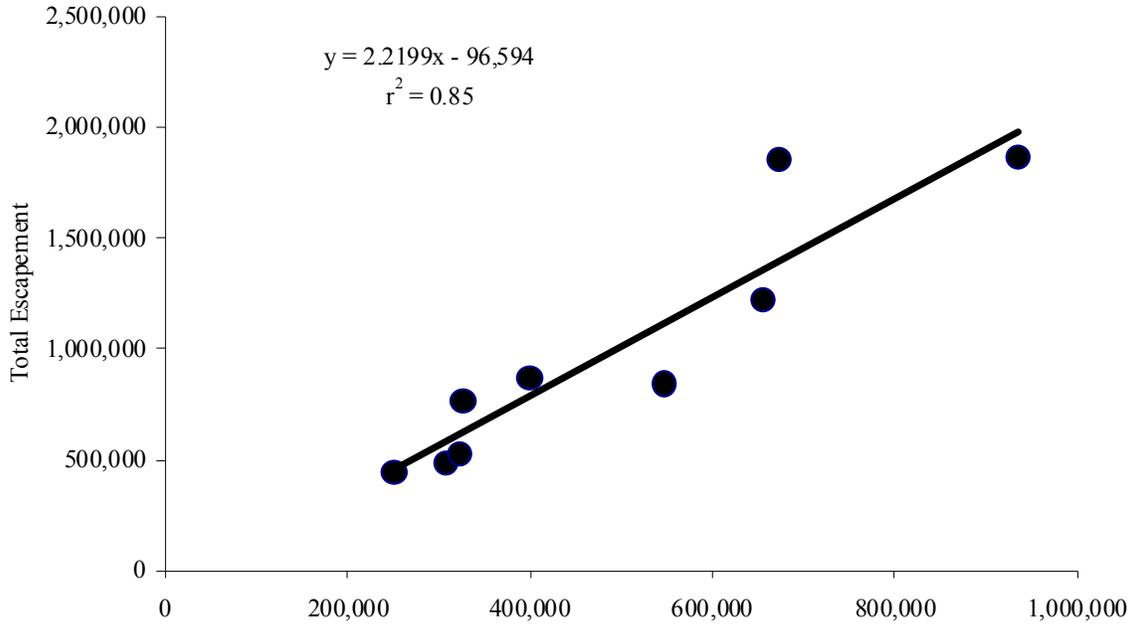


Alitak District Even-year Pink Salmon

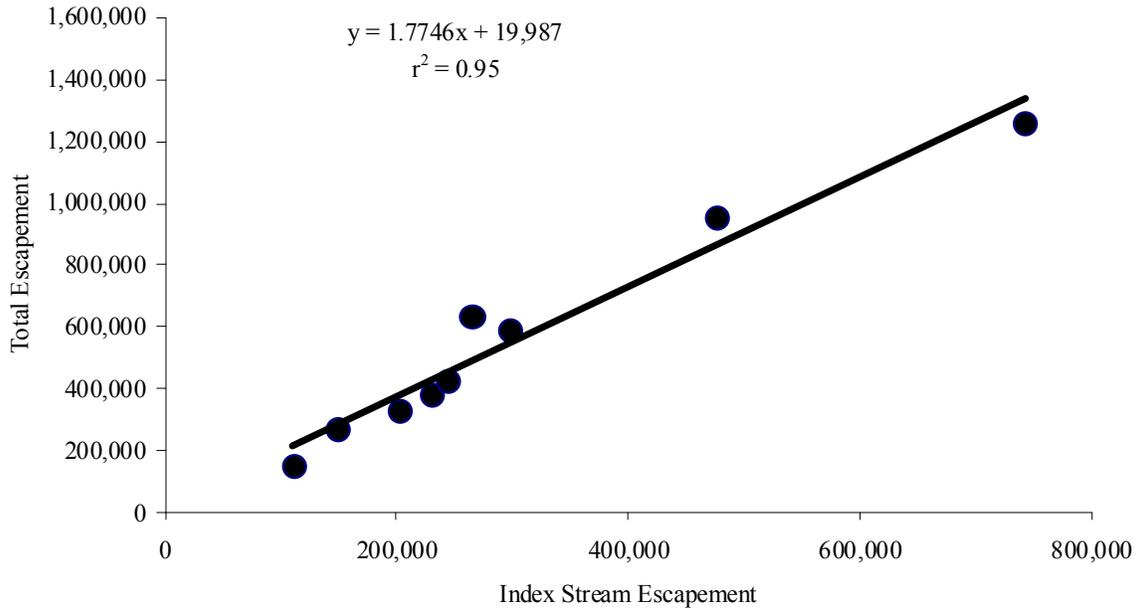


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Eastside District Odd-year Pink Salmon

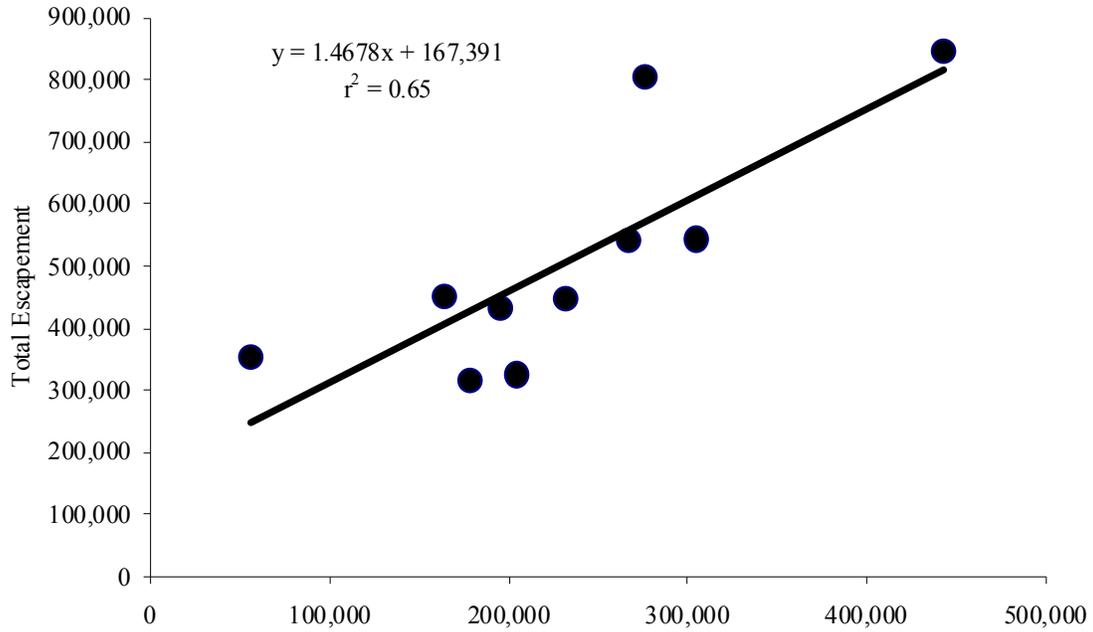


Eastside District Even-year Pink Salmon

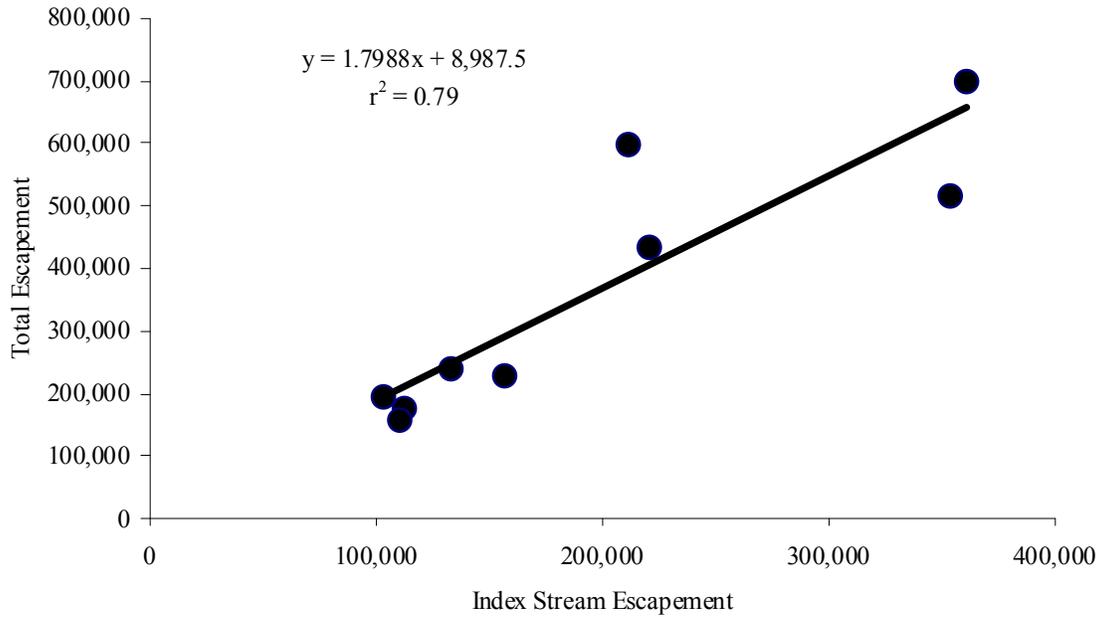


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Northeast District Odd-year Pink Salmon

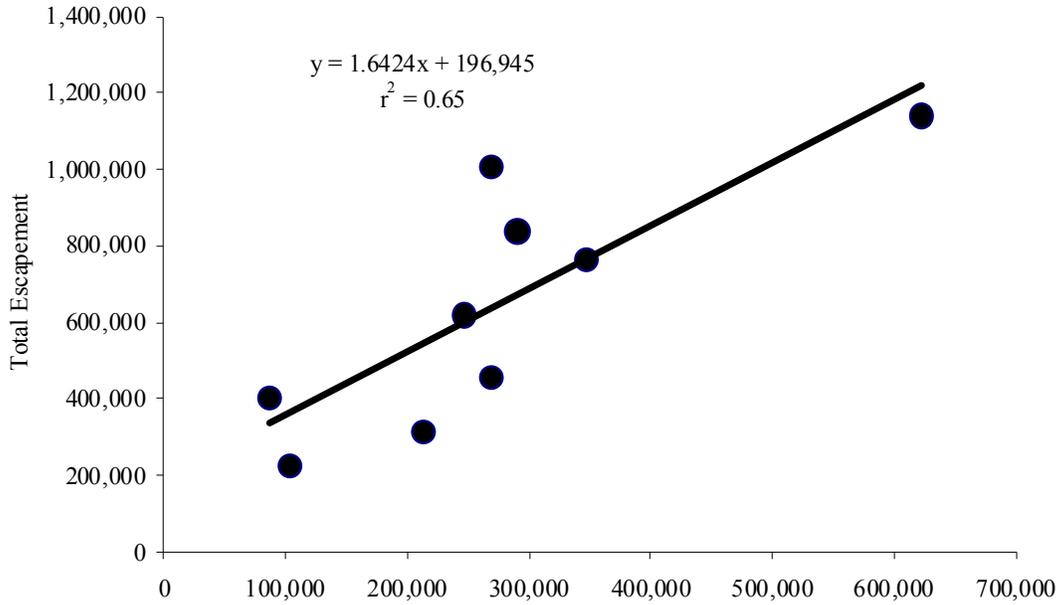


Northeast District Odd-year Pink Salmon

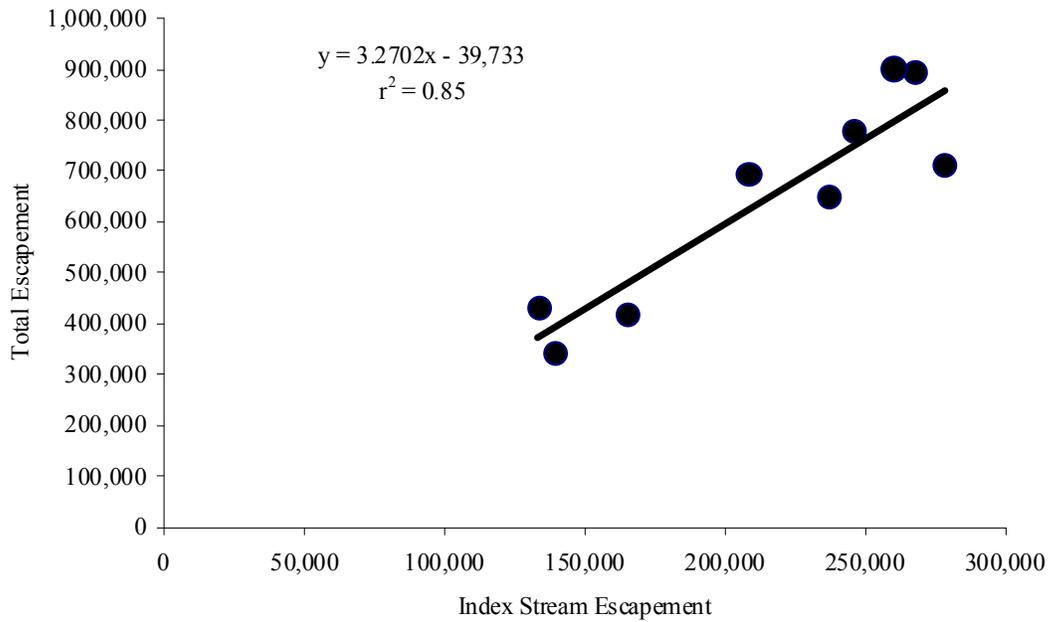


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Mainland District Odd-year Pink Salmon



Mainland District Even-year Pink Salmon



Appendix C3.-KMA chum salmon correlation analysis results.

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Afognak	251-202	Malina Bay	Remove			Median = 0
Afognak	251-902	South Creek	Remove			Median = 0
Afognak	251-831	Paul's Bay	Remove			Median = 0
Afognak	251-821	Big Waterfall	Remove			Median = 0
Afognak	252-331	N.E. Danger Creek	Remove			Median = 0
Afognak	251-301	Long Lagoon	Keep			
Afognak	251-302	Thorsheim Creek	Remove			Median = 0
Afognak	252-306	Saposa Bay	Remove			Median = 0
Afognak	251-403	South Arm Creek	Remove			Median = 0
Afognak	251-901	Seal Bay Creek	Remove			Median = 0
Afognak	251-101	Selief	Remove			Median = 0
Afognak	251-105	Malina River	Keep			
Afognak	251-825	Portage Creek	Remove			Median = 0
Afognak	252-332	Big Danger	Keep			
Afognak	251-404	East Arm Creek	Remove			Median = 0
Afognak	252-343	Marka Bay	Keep			
Northwest	259-383	Anton Slough	Remove			Median = 0
Northwest	259-382	Red Cloud Creek	Remove	0.87	Zacher River	Low median
Northwest	254-203	East Uyak Creek	Remove	0.79	Spiridon River	
Northwest	259-371	Sheratin River	Remove	0.83	Zacher River	
Northwest	259-365	Kizhuyak River	Remove	0.77	Zacher River	
Northwest	254-202	Uyak River	Remove	0.79	Spiridon River	
Northwest	253-122	Uganik River	Remove	0.67	Zacher River	
Northwest	254-401	Spiridon River	Remove	0.61	Uganik River	
Northwest	253-331	Terror River	Keep			
Northwest	254-301	Zacher River	Keep			
Southwest	255-102	Cape Uyak	Remove			Median = 0
Southwest	256-102	N. Low Cape	Remove			Median = 0
Southwest	255-10	Karluk Lagoon	Remove			Median = 0
Southwest	256-202	Old Red River	Remove			Median = 0

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Appendix C3.–Page 2 of 4

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Southwest	256-40	Sturgeon Lagoon	Remove			Median = 0
Southwest	256-302	Halibut Bay	Remove			Median = 0
Southwest	256-303	Grant's Lagoon Creek	Remove			Median = 0
Southwest	256-301	Caramel Creek	Remove			Median = 0
Southwest	256-201	Red River	Remove			Median = 0
Southwest	255-101	Karluk River	Remove			Median = 0
Southwest	256-402	East Sturgeon River	Keep			
Southwest	256-401	Sturgeon River	Keep			
Alitak	257-304	Upper Station	Remove			Median = 0
Alitak	257-604	Tom's Creek	Remove			Median = 0
Alitak	257-303	Silver Sal	Remove			Median = 0
Alitak	257-302	Akalura Creek	Remove			Median = 0
Alitak	257-602	Sulua Pink Creek	Remove	0.92	Tom's Creek	Median = 0
Alitak	257-403	Dog Salmon	Remove			Median = 0
Alitak	257-402	Horse Marine	Remove			Median = 0
Alitak	257-601	N.E. Portage	Keep			
Alitak	257-701	Humpy River	Remove			Median = 0
Alitak	257-102	Big Sukhoi	Keep			
Alitak	257-503	Alpine Cove Creek	Keep			
Alitak	257-603	Sulua Chum Creek	Keep			
Alitak	257-502	Deadman River	Keep			
Eastside	259-412	Miam River	Remove			Zero median
Eastside	258-542	Kaiugnak Lagoon	Remove			Low median
Eastside	259-414	Hurst Creek	Remove			Low median
Eastside	259-423	Kiliuda Pass Creek	Remove			Low median
Eastside	258-512	Natalia Bay	Remove			Low median
Eastside	258-208	Dukaluk Creek	Remove			Zero median
Eastside	258-602	Kaguyak Bay Creek	Keep			
Eastside	259-428	Gull Cape Lagoon	Remove			

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Appendix C3.–Page 3 of 4

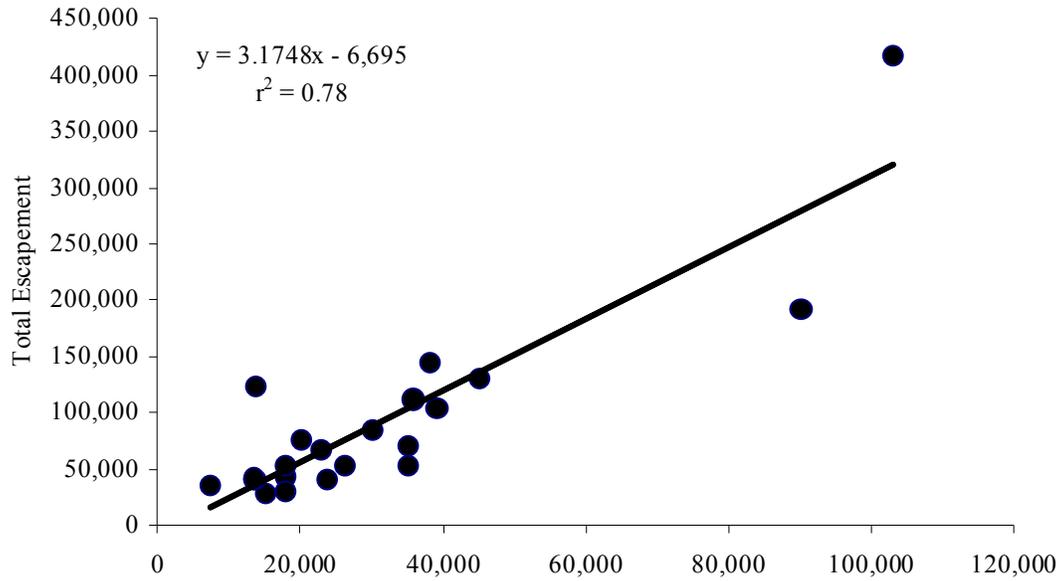
District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Eastside	259-415	Saltery River	Remove	0.82	W. Kiliuda Creek	
Eastside	258-206	N. Kiliuda Creek	Keep			
Eastside	258-204	Dog Bay Creek	Remove	0.71	Barling Creek	
Eastside	259-416	Rough Creek	Keep			
Eastside	258-205	Coxcomb Point Creek	Remove	0.81	Midway Creek	
Eastside	258-521	Midway Creek	Remove	0.79	Barling Creek	
Eastside	258-522	Barling Creek	Keep			
Eastside	258-207	W. Kiliuda Creek	Keep			
Eastside	259-424	Eagle Harbor	Keep			
Northeast	259-23	Middle Bay	Remove			Median = 0
Northeast	259-246	Mayflower Beach	Remove			Median = 0
Northeast	259-105	Virginia Creeek	Remove			Median = 0
Northeast	259-22	Women's Bay	Remove			Median = 0
Northeast	259-234	Felton Creek	Remove			Median = 0
Northeast	259-244	Frank's Creek	Remove			Median = 0
Northeast	259-253	Capelin Creek	Remove			Median = 0
Northeast	259-243	Kalsin Creek	Remove			Median = 0
Northeast	259-101	Monashka Creek	Remove			Median = 0
Northeast	259-233	Salt Creek	Remove			Median = 0
Northeast	259-245	Myrtle Creek	Remove			Median = 0
Northeast	259-252	Twin Creek	Remove			Median = 0
Northeast	259-102	Pillar Creek	Remove			Median = 0
Northeast	259-221	Sargent's Creek	Remove			Median = 0
Northeast	259-254	Chiniak Creek	Remove			Median = 0
Northeast	259-251	Roslyn Creek	Remove			Median = 0
Northeast	259-222	Russin River	Keep			
Northeast	259-223	Solonie Creek	Keep			
Northeast	259-211	Buskin River	Remove			Low median
Northeast	259-201	259-201	Remove			Few surveys
Northeast	259-242	American River	Keep			

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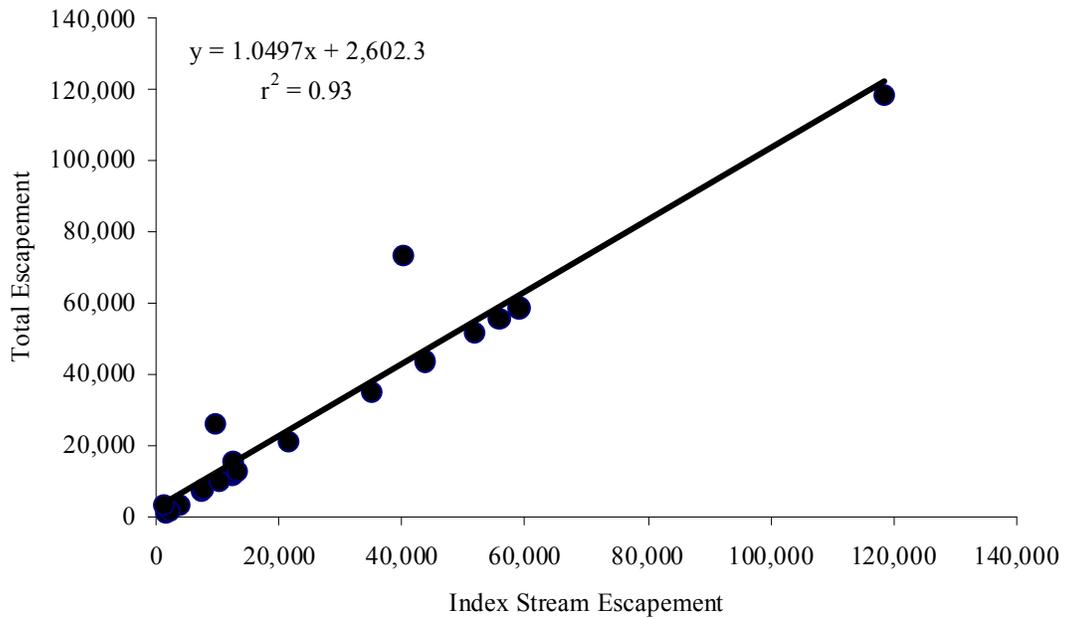
Appendix C3.–Page 4 of 4

District	Stream Number	Stream	Keep/Remove	Correlated	Correlation	Comments
Northeast	259-231	Sid Olds	Keep			
Mainland	262-154	Chiniak Lagoon	Remove	0.77	Dry Bay	
Mainland	262-451	Kinak Creek	Remove	0.76	Kialagvik Creek	
Mainland	262-272	Kukak Valley Creek	Remove	0.87	Icy Peak Creek	
Mainland	262-852	Des Moines	Remove	0.69	Pass Creek	
Mainland	262-853	Pass Creek	Remove	0.87	Icy Peak Creek	
Mainland	262-271	Kukak Creek	Keep			
Mainland	262-704	Trail Creek	Remove	0.86	Dry Bay	
Mainland	262-651	Big Alinchak	Remove	0.83	Dry Bay	
Mainland	262-802	Kanatak	Remove	0.89	Teresa Creek	
Mainland	262-752	Dry Bay	Keep			
Mainland	262-602	Alogogshak Creek	Keep			
Mainland	262-551	Dakavak	Keep			
Mainland	262-951	Imuya Creek	Keep			
Mainland	262-654	Bear Bay Creek	Remove	0.79	Teresa Creek	
Mainland	262-858	Kialagvik Creek	Keep			
Mainland	262-703	Teresa Creek	Keep			
Mainland	262-859	Icy Peak Creek	Remove	0.66	Village Creek	
Mainland	262-203	Serpent Creek	Keep			
Mainland	262-851	Big Creek	Keep			
Mainland	262-153	Village Creek	Keep			
Mainland	262-152	Big River	Keep			

Northwest District Chum Salmon

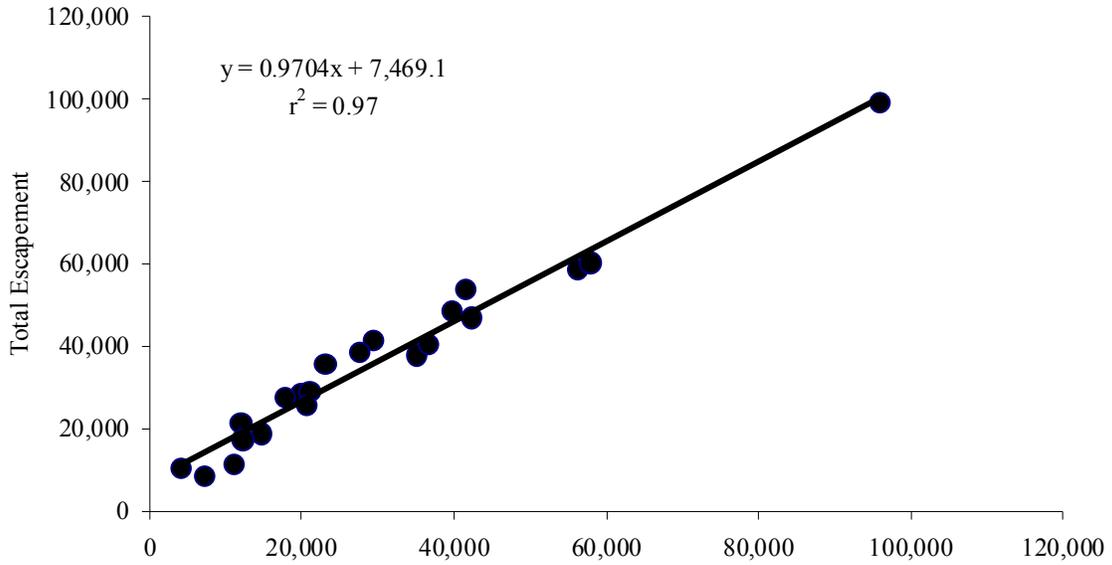


Southwest District Chum Salmon

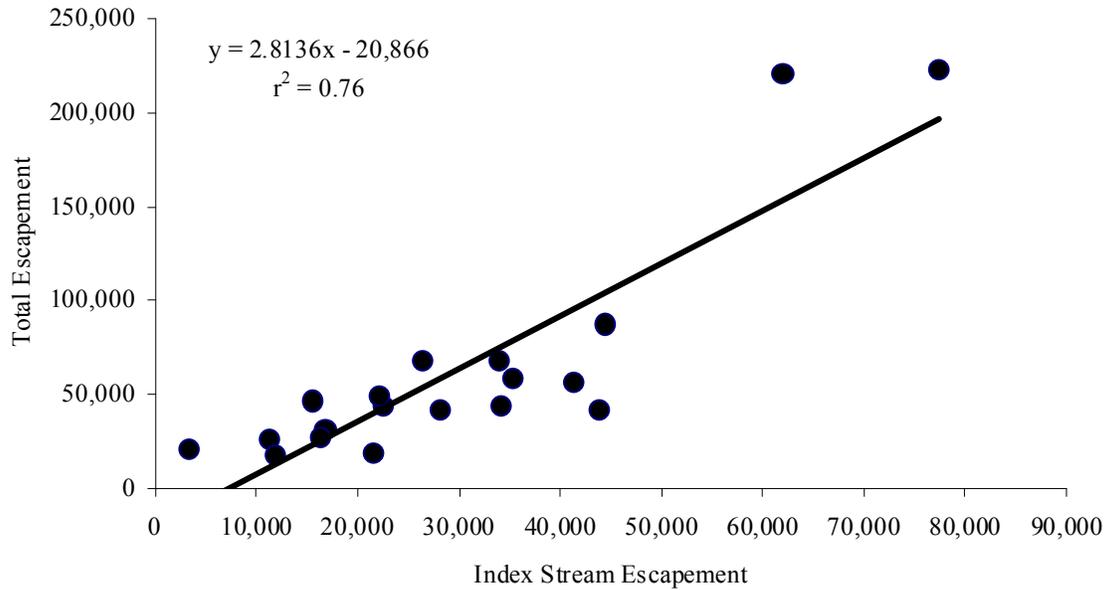


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Alitak District Chum Salmon

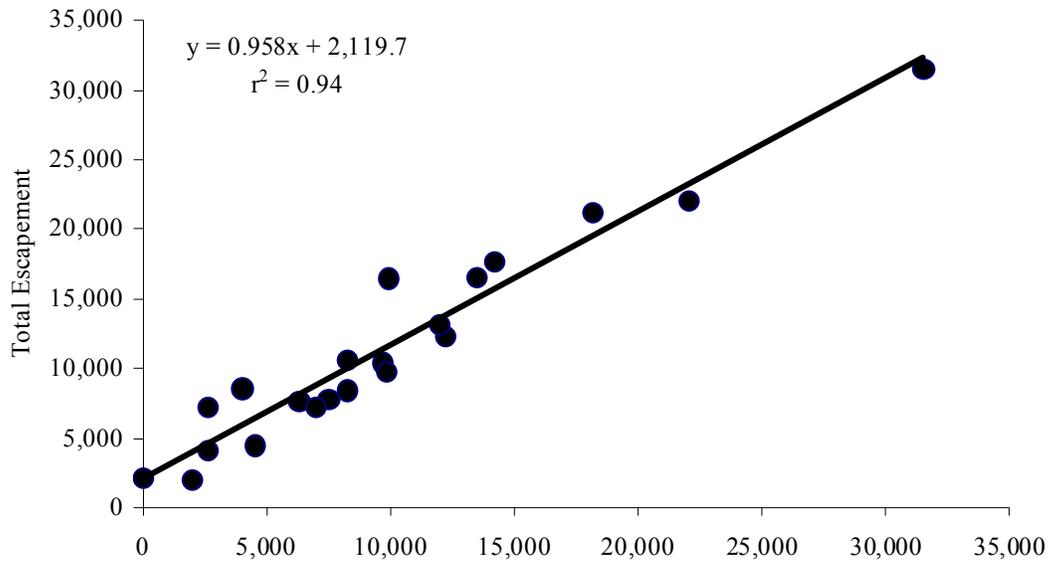


Eastside District Chum Salmon



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Northeast District Chum Salmon



Mainland District Chum Salmon

