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# Abundance and Run Timing of Adult Pacific Salmon in the East Fork Andreafsky River, Yukon Delta National Wildlife Refuge, Alaska, 2009

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# Abundance and Run Timing of Adult Pacific Salmon in the East Fork Andreafsky River, Yukon Delta National Wildlife Refuge, Alaska, 2009

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Gerald F. Maschmann

## Abstract

A resistance board weir was used to collect abundance, run timing, and biological data from salmon returning to the East Fork Andreafsky River, a tributary to the lower Yukon River, between June 22 and August 3, 2009. An estimated 3,004 Chinook salmon *Oncorhynchus tshawytscha* migrated through the weir. Seven age groups were identified from 2,582 Chinook salmon sampled, with age 1.4 (59%) dominant. The sex composition was 45% female. An estimated 8,770 summer chum salmon *O. keta* migrated through the weir. Five age groups were identified from 781 summer chum salmon sampled, with ages 0.3 (35%) and 0.4 (40%) dominating. The sex composition was 39% female. An estimated 2,395 pink salmon *O. gorbuscha*, 84 sockeye salmon *O. nerka*, and four coho salmon *O. kisutch* were counted through the weir. Other species counted through the weir during 2009 included 3,755 whitefish (Coregoninae), two Arctic grayling *Thymallus arcticus*, four Dolly Varden *Salvelinus malma*, and 73 northern pike *Esox lucius*.

## Introduction

The Alaska National Interest Lands Conservation Act (ANILCA), signed into law December 2, 1980, mandates salmon populations and their habitats be conserved within National Wildlife Refuge lands, international treaty obligations be fulfilled, and a subsistence priority for rural residents be maintained (USFWS 1991). Compliance with ANILCA mandates cannot be ensured without reliable data on salmon stocks originating from and returning to refuge lands. The Andreafsky River is one of several lower Yukon River tributaries on the Yukon Delta National Wildlife Refuge (Refuge). The Andreafsky River and its primary tributary, the East Fork Andreafsky River, provide important spawning and rearing habitat for Chinook salmon *Oncorhynchus tshawytscha*, summer chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and sockeye salmon *O. nerka* (USFWS 1991). The Andreafsky River supports one of the largest returns of Chinook salmon, has the second largest return of summer chum salmon (Bergstrom et al. 1998), and is believed to have the largest return of pink salmon in the Yukon River drainage (USFWS 1991). These Andreafsky River salmon stocks contribute to a large subsistence fishery in the lower Yukon River. The need to collect accurate escapement estimates is required to maintain genetic diversity, determine exploitation rates, and spawner recruit relationships (Labelle 1994). Data on escapement counts, which are necessary for effective management, are lacking for many individual stocks in the Yukon River drainage. Individual salmon stocks that return in low numbers or have early or late run timing may be incidentally over-harvested in the subsistence, commercial, or sport fisheries. Federal and State

fishery managers attempt to distribute salmon harvest over time to avoid over-harvesting an individual salmon stock (Mundy 1982).

Escapement monitoring on the East Fork Andreafsky River started with aerial surveys by the U.S. Fish and Wildlife Service (USFWS) from 1954-1960, and continued by the Alaska Department of Fish and Game (ADF&G) from 1961 to the present. Sonar and tower count methods were added by ADF&G from 1981 through 1988 (Appendix 1). The present weir project (operated by the USFWS Kenai Fish and Wildlife Field Office from 1994-2002 and the USFWS Fairbanks Fish and Wildlife Field Office from 2003-present) provides accurate escapement and biological data dating back to 1994 for Chinook salmon, summer chum salmon, and pink salmon, and from 1995 to 2005 for coho salmon. The Andreafsky River weir is one of the longest running escapement projects in the Yukon River drainage.

Poor salmon returns from 1998 – 2001 in the Yukon River resulted in harvest restrictions, complete fishery closures, and spawning escapements below management goals on many tributaries in the Yukon River drainage (Vania et al. 2002; Kruse 1998). Chinook salmon and summer chum salmon runs improved with harvestable surpluses from 2002-2006 (JTC 2007). However, Chinook salmon runs again showed a decline from 2007-2009. This project provides necessary enumeration information for management, especially during poor run years.

## **Objectives**

Specific objectives of the 2009 project were to: (1) enumerate adult salmon escapement; (2) describe run timing of Chinook salmon and summer chum salmon returns; (3) determine the true age, sex, and length composition of the adult Chinook salmon population; (4) estimate age, sex, and length composition of the adult summer chum salmon population; and (5) identify and count other fish species passing through the weir.

## **Study Area**

The Andreafsky River is located in the lower Yukon River drainage in western Alaska (Figure 1). The regional climate is subarctic with extreme temperatures reaching 28° C in summer and – 42° C in winter at St. Mary's, Alaska (Leslie 1989). Mean July high and February low temperatures between 1976 and 2000 were 18° and – 22° C, respectively. Average yearly precipitation is approximately 48 cm of rain and 172 cm of snow. The Andreafsky River ice breakup typically occurs in May or early June, and usually begins to freeze in late October (USFWS 1991). Maximum discharge typically follows breakup. Sporadic high discharge periods generated by heavy rains occur between late July and early September.

The Andreafsky River is one of the three largest Yukon River tributaries within Refuge boundaries (USFWS 1991) and drains a watershed of approximately 5,450 km<sup>2</sup>. The mainstem Andreafsky River and the East Fork Andreafsky River parallel each other flowing in a southwesterly direction for more than 200 river-kilometers (rkm) and converge 7 rkm above its confluence with the Yukon River. The mouth of the Andreafsky River is approximately 160 rkm upstream from the mouth of the Yukon River. The mainstem Andreafsky River and East Fork Andreafsky River flow through the Andreafsky Wilderness and the portions of each river within Refuge boundaries are designated as Wild and Scenic Rivers.

The East Fork Andreafsky River originates in the Nulato Hills at approximately 700 m elevation and drains an area of about 1,950 km<sup>2</sup> (USFWS 1991). The river cuts through alpine tundra at an average gradient of 7.6 m per km for 48 rkm. It then flows for 130 rkm through a forested river valley bordered by hills that rarely exceed 400 m elevation. Willow, spruce, alder, and birch dominate the riparian zone and much of the hillsides. This forested river section drops at an average rate of 1.4 m/km and is characterized by glides and riffles with a gravel and rubble substrate. The river widens in the lowermost 38 rkm and the gradient changes to 0.14 m/km. The valley here is a wetland, interspersed with forest and tundra, and bordered by hills that are typically less than 230 m elevation. Aquatic vegetation grows in the slower flowing stream channels. Water level fluctuations on the Yukon River also affect the stage height in the lower sections of the East Fork and mainstem Andreafsky Rivers.

## **Methods**

### *Weir Operation*

A modified resistance board weir (Tobin 1994; Tobin and Harper 1995; Zabkar and Harper 2003) spanning 105 m was installed in the East Fork Andreafsky River (62° 07'N, 162° 48.4'W) approximately 43 rkm upstream from the Yukon-Andreafsky River confluence and 26 air-km northeast of St. Mary's, Alaska (Figure 1). The weir site is located approximately 2.4 rkm downstream from the 1994 weir site described by Tobin and Harper (1995) and 2.1 rkm downstream from the 1981-1988 sonar and counting tower site described by Sandone (1989). Weir panel picket spacing (4.8 cm inside edge to inside edge) was designed to remain functional during higher water flow, but allowed some small pink salmon and resident fish to pass through the weir undetected (Zabkar and Harper 2003). Beginning in 1995, weir operation was extended into September (fall season) to collect coho salmon data. Since 2006, the weir has not operated during the fall season due to a lack of funds.

A staff gauge was installed upstream of the weir to measure daily water levels. Staff gauge measurements were calibrated to a monument with the three-foot mark on the staff gauge twelve and half feet below the horizontal from the monument. Water temperatures were collected once daily between 0730 and 0830 hours and two automatic temperature loggers collected water temperatures throughout the season.

Two passage chutes were installed, one approximately one-third of the way across from the left bank and the other centered between the banks, in water deep enough to allow fish passage in the event of low water. The thalweg was not used for a fish passage chute because the water was too deep. A fish trap was installed on both passage chutes to facilitate biological sampling. All fish were enumerated and identified to species as they passed through the live trap, except whitefish spp., which were grouped together under the subfamily Coregoninae. Fish were counted 24 hours per day and the numbers were recorded hourly.

The weir was cleaned and its integrity visually checked daily. Cleaning consisted of raking debris from the upstream surface of the weir or walking across each panel to submerge it enough to allow the current to wash debris downstream. Repairs were made when necessary.

### Biological Data

Adult salmon were identified and counted daily as they migrated through the weir live trap to determine run timing and escapement. An attempt was made in 2009 to sample every Chinook salmon passing through the weir for age, sex, and length information for an additional sample design study. The adipose fin was clipped on all sampled Chinook salmon so that sampled Chinook could be identified in carcass surveys carried out after weir operations ceased. A stratified random sampling design (Cochran 1977) was used to collect age, length, and sex ratio information for summer chum salmon. Biological sampling commenced at the beginning of each week, and the weekly sampling goal was 160 summer chum salmon spread over a minimum four-day period, with daily sampling spread out over the entire 24 hours. All target species within the trap were sampled to prevent bias. Non-target species were identified and counted, but not sampled.

Fish sampling consisted of identifying salmon species, determining sex, measuring length, collecting scales, and then releasing the fish upstream of the weir. Secondary external characteristics were used to determine sex. Length was measured from mid-eye to the fork of the caudal fin and rounded to the nearest 5 mm. Scales were removed from the area above the lateral line and posterior to the dorsal fin following the methods outlined by Koo (1962) and Devries and Frie (1996). Three scales were collected from each Chinook salmon sampled, and one scale was collected from each summer chum salmon sampled. Scales were sent to ADF&G post season for age determination, and impressions were made on cellulose acetate cards using a heated scale press and examined with a microfiche reader (Zabkar and Harper 2003). Age was determined by an ADF&G biologist and reported according to the European method (Koo 1962). Daily sex ratios were collected by visually examining each fish for external morphological features when sampling for age and length. The daily escapement counts and sex ratios were reported daily to the USFWS Fairbanks Fish and Wildlife Field Office.

### Data Analysis

Calculations for age and sex information were treated as a stratified random sample (Cochran 1977), with sampling weeks as the strata. Age 1.2 Chinook salmon were assumed to be males (Brady 1983; Bales 2007; Karpovich and DuBois 2007) regardless of their field determination. Each statistical week was defined as beginning on Sunday and ending the following Saturday. Incomplete weeks or weeks with low passage were combined with the week after the beginning of weir operation or with the week before the end of weir operation. Within a stratum, the proportion of the samples composed of a given sex or age,  $\hat{p}_{ij}$ , was calculated as

$$\hat{p}_{ij} = \frac{n_{ij}}{n_j},$$

where  $n_{ij}$  is the number of fish by sex  $i$  or age  $i$  sampled in week  $j$ , and  $n_j$  is the total number of fish sampled in week  $j$ . The variance of  $\hat{p}_{ij}$  was calculated as

$$\hat{v}(\hat{p}_{ij}) = \frac{\hat{p}_{ij}(1 - \hat{p}_{ij})}{n_j - 1}.$$

Sex and age compositions for the total run of Chinook and summer chum salmon of a given sex or age,  $\hat{p}_i$  were calculated as

$$\hat{p}_i = \sum_{j=1} \hat{W}_j \hat{p}_{ij},$$

where the stratum weight  $\hat{W}_j$  was calculated as

$$\hat{W}_j = \frac{N_j}{N},$$

and  $N_j$  equals the total number of fish of a given species passing through the weir during week  $j$ , and  $N$  is the total number of fish of a given species passing through the weir during the run. Variance,  $\hat{v}(\hat{p}_i)$  of sex and age compositions for the run was calculated as

$$\hat{v}(\hat{p}_i) = \sum_{j=1} \hat{W}_j^2 \hat{v}(\hat{p}_{ij}).$$

Substantial numbers of coho salmon in 1998 and all salmon species in 2001 were missed due to high water; therefore the counts for these years were not included in any annual comparative analyses.

Genetic, age, sex, and length data for sockeye salmon were collected in 2009 ( $n = 79$  fish). These data are planned for presentation in a future report specific to Yukon River sockeye salmon populations.

## Results and Discussion

### *Weir Operation*

The weir was operational from June 22 through August 3, 2009. No high or low water events hindered weir operation in 2009. The average river stage height during weir operations was 45.8 cm ranging between 80.5 cm and 29.6 cm (Figure 2). Water temperature during weir operations averaged 12°C and ranged between 7 and 17°C (Figure 2).

### *Biological Data*

An estimated 3,004 Chinook salmon, 8,770 summer chum salmon, four coho salmon, 2,395 pink salmon, and 84 sockeye salmon migrated through the weir in 2009 (Table 1). Passage estimates for Chinook salmon and summer chum salmon were conservative due to an unknown number of fish passing before and after the weir was operational. Approximately, 40 Chinook salmon were observed below the weir prior to the weir being pulled for the season. Non-salmon species recorded moving through the weir include 3,755 whitefish, two Arctic grayling, four Dolly Varden, and 73 northern pike.

The East Fork Andreafsky River weir recorded a below average Chinook salmon escapement (Figure 3), similar to the 2009 drainagewide Chinook salmon run which was assessed to be

below average (JTC 2010). The summer chum salmon escapement recorded at the weir was well below average (Figure 3), however, the overall 2009 drainagewide summer chum salmon run was near the low end of the average, but above the drainage wide escapement goal (JTC 2010).

### *Chinook Salmon*

The 2009 Chinook salmon escapement estimate (3,004 fish) was below the 1994-2008 historical average of 4,487 fish (Figure 3; Appendix 2). Peak passage (1,236 fish) occurred during the stratum of July 26 through August 3 (Table 1; Figure 4), which was the last stratum period of the season. The 2009 run timing was much later than average. The first quartile passed on July 17 (historical average July 5), the mid-point of the run at the weir was July 23 (historical average July 9), and the third quartile passage date was July 29 (historical average July 15) (Table 2). (Chinook salmon calculations were not adjusted for differences in project duration between years).

Female Chinook salmon lengths ranged from 535 to 980 mm, and male Chinook salmon ranged from 330 to 955 mm (Table 3). A total of 2,582 Chinook salmon were sampled for age composition, with 270 (10%) classified as unreadable, primarily due to scale regeneration. The weighted age composition of sampled Chinook salmon included seven age groups: age 1.1 (<1%), age 1.2 (25%), age 1.3 (16%), age 2.2 (<1%), age 1.4 (59%), age 2.3 (<1%), and age 1.5 (1%) (Table 4). Females composed an estimated 45% (weighted) of the overall escapement (Table 4). The age distributions of female and male Chinook salmon were different, with age 1.4 dominating at 94% for females, and age 1.2 dominating at 45% for males.

Of the 3,004 Chinook salmon that passed through the weir in 2009, 2,582, or 86% of the run, were sampled for age, sex, and length information. Chinook salmon were allowed to pass through the weir un-sampled during periods of high passage to reduce the stress the weir placed on the fish. Of the Chinook salmon sampled, 270, or approximately 10% of the scales could not be aged, leaving approximately 76% aged. One sampled Chinook salmon was not measured for length, and 100% of the sampled Chinook salmon were sexed. Additional analysis estimating weir sampling bias and comparing the data from Chinook sampled at the weir and Chinook sampled in the subsequent upstream carcass survey will be presented in another report (in prep.)

The 2009 ADF&G aerial survey conducted on the Andreafsky River estimated 1,664 Chinook salmon for the mainstem and 80 Chinook salmon for the East Fork (Appendix 1); however survey conditions were poor for the East Fork survey so it is assumed that this is an underestimate. The mainstem count was above the Sustainable Escapement Goal (SEG) of 640 to 1,600 Chinook salmon, and the East Fork was below the SEG of 960-1,700 Chinook salmon (Hayes and Newland, 2009).

### *Summer Chum Salmon*

The 2009 summer chum salmon escapement estimate of 8,770 fish was well below the 1994-2008 historical average of 74,188 fish (Figure 3; Appendix 3), and fell below the Biological Escapement Goal (BEG) of 65,000 to 130,000 fish (Appendix 1; JTC 2010). Peak passage (3,066 fish) occurred during the stratum of July 12 through July 18 (Table 1; Figure 4). The 2009 run timing was later than average. The first quartile passed on July 6 (historical average July 2), the mid-point of the run at the weir was July 13 (historical average July 6), and the third

quartile passage date was July 18 (historical average July 12) (Table 2). (Summer chum salmon calculations were not adjusted for differences in project duration between years).

Female summer chum salmon lengths ranged from 460 to 620 mm and male summer chum salmon ranged from 450 to 670 mm (Table 3). A total of 781 summer chum salmon were sampled for age composition, with 64 (8%) classified as unreadable, primarily due to scale regeneration. The weighted age composition of sampled summer chum salmon included five age groups: age 0.2 (9%), age 0.3 (35%), age 0.4 (40%), age 0.5 (15%), and age 0.6 (1%) (Table 5). Females comprised an estimated 39% (weighted) of the overall escapement (Table 5). Female summer chum salmon were predominately age 0.3 at 43% and age 0.4 at 36%, while male summer chum were predominately age 0.3 at 31% and age 0.4 at 42%.

### *Coho Salmon*

Coho salmon enumeration was discontinued after the 2005 season due to insufficient funding for continuing weir operations into August and September. There were four coho salmon that passed through the weir prior to closure. The first coho salmon passed through the weir on July 31 (Appendix 4).

### *Pink Salmon*

Pink salmon have strong returns to the East Fork Andreafsky River during even-numbered years and relatively weak returns during odd-numbered years (Appendix 5). The 2009 escapement through the weir (2,395 fish) was less than the odd-year 1994-2007 historical average of 9,433 fish. Pink salmon counts on the Andreafsky River are a measure of relative year to year abundance due to small pink salmon being able to pass uncounted between the weir pickets. Additionally, the 2009 pink salmon escapement estimate was incomplete since weir operation ceased before the end of the run. Peak passage (1,022 fish) occurred during the stratum of July 19 to 25 (Table 1).

### *Sockeye Salmon*

The 2009 sockeye salmon escapement estimate of 84 fish was below the 1995-2008 historical average of 221 fish (Appendix 6). However, the 2009 sockeye salmon escapement estimate was incomplete since weir operation ceased before the end of the run. Large populations of sockeye salmon are absent in the Yukon River drainage (Bergstrom et al. 1995), but small populations have been identified in several Yukon River tributaries (Alt 1983; O'Brien 2006), including the Andreafsky River.

## **Conclusion**

The East Fork Andreafsky River weir has been an important tool for monitoring salmon stocks originating in the Refuge, assisting both ADF&G and USFWS inseason managers with management of Yukon River fisheries. Due to the complexity of the Yukon River mixed-stock salmon fishery and the difficulty in managing specific stocks, it is vital to continue collecting information from individual salmon populations, including stocks in the Andreafsky River drainage. The East Fork Andreafsky weir is unique in that it is the only enumeration project in the lower river downstream of the Pilot Station sonar. The numerical, biological, and run timing information collected from the East Fork Andreafsky weir project is assumed to be representative of other Lower Yukon River systems experiencing lower salmon exploitation due

to their location in the lower portion of the Yukon River drainage. This project allows managers to evaluate escapement goals, analyze trends in population size, length, age, and gender, formulate run projections, determine harvest allocations, and monitor long-term changes associated with climate change, harvest fluctuations, diseases, and other stressors.

If commercial interest in Yukon River coho salmon continues to grow, it is recommended that coho salmon enumeration be reinstated on the East Fork Andreafsky River to monitor the status of this stock. Investigations into spawning and rearing locations for sockeye salmon are recommended to assure long-term viability of this small unique population.

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**Table 1. Salmon escapement estimates, by stratum, recorded at the East Fork Andreafsky River weir, Alaska, 2009.**

Stratum dates	Chinook salmon	Chum salmon	Coho salmon	Pink salmon	Sockeye salmon
June 22 - 27	0	21	0	0	0
June 28 - July 4	4	1,155	0	4	1
July 5 - 11	61	2,515	0	146	17
July 12 - 18	809	3,066	0	634	29
July 19 - 25	894	1,381	0	1,022	21
July 26 - August 3	1236	632	4	589	16
Total	3,004	8,770	4	2,395	84

**Table 2. Daily and cumulative estimates of Chinook salmon, summer chum salmon, and pink salmon, and daily and total estimates coho salmon, sockeye salmon, whitefish spp., northern pike, and Arctic grayling escapement through the East Fork Andreafsky River weir, Alaska, 2009.**

Date	Chinook salmon		Chum salmon		Pink salmon		Coho salmon	Sockeye salmon	Whitefish spp.	Northern Pike	Arctic grayling
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Daily	Daily	Daily	Daily
22-Jun	0	0	0	0	0	0	0	0	12	14	0
23-Jun	0	0	0	0	0	0	0	0	22	11	0
24-Jun	0	0	6	6	0	0	0	0	11	2	0
25-Jun	0	0	10	16	0	0	0	0	13	2	0
26-Jun	0	0	0	16	0	0	0	0	10	1	1
27-Jun	0	0	5	21	0	0	0	0	9	0	0
28-Jun	0	0	19	40	0	0	0	0	10	3	0
29-Jun	0	0	289	329	0	0	0	0	10	3	0
30-Jun	0	0	78	407	0	0	0	1	55	4	0
1-Jul	1	1	228	635	0	0	0	0	144	0	0
2-Jul	1	2	417	1,052	2	2	0	0	192	1	0
3-Jul	2	4	114	1,166	2	4	0	0	102	0	0
4-Jul	0	4	10	1,176	0	4	0	0	70	0	0
5-Jul	0	4	17	1,193	1	5	0	0	37	1	0
6-Jul	3	7	1137	2,330	6	11	0	5	101	1	0
7-Jul	15	22	583	2,913	26	37	0	3	80	0	0
8-Jul	7	29	42	2,955	38	75	0	0	96	1	0
9-Jul	0	29	11	2,966	9	84	0	1	25	0	0
10-Jul	2	31	176	3,142	9	93	0	3	89	0	0
11-Jul	34	65	549	3,691	57	150	0	5	160	0	0
12-Jul	247	312	634	4,325	73	223	0	9	189	0	1
13-Jul	106	418	269	4,594	84	307	0	2	225	1	0
14-Jul	142	560	547	5,141	94	401	0	5	159	0	0
15-Jul	13	573	411	5,552	94	495	0	2	142	0	0
16-Jul	13	586	498	6,050	74	569	0	2	138	0	0
17-Jul	251	837	483	6,533	90	659	0	6	239	1	0
18-Jul	37	874	224	6,757	125	784	0	3	150	2	0
19-Jul	76	950	176	6,933	99	883	0	4	107	0	0
20-Jul	53	1,003	186	7,119	94	977	0	1	159	0	0
21-Jul	112	1,115	235	7,354	239	1,216	0	2	142	3	0
22-Jul	201	1,316	332	7,686	133	1,349	0	2	90	0	0
23-Jul	222	1,538	175	7,861	183	1,532	0	5	101	1	0
24-Jul	126	1,664	164	8,025	191	1,723	0	4	141	7	0
25-Jul	104	1,768	113	8,138	83	1,806	0	3	169	4	0
26-Jul	39	1,807	165	8,303	104	1,910	0	6	123	2	0
27-Jul	37	1,844	72	8,375	107	2,017	0	1	59	7	0
28-Jul	262	2,106	148	8,523	156	2,173	0	4	65	0	0
29-Jul	221	2,327	47	8,570	45	2,218	0	2	22	0	0
30-Jul	172	2,499	33	8,603	32	2,250	0	1	12	0	0
31-Jul	178	2,677	33	8,636	38	2,288	1	0	18	0	0
1-Aug	171	2,848	25	8,661	28	2,316	1	2	13	0	0
2-Aug	94	2,942	64	8,725	50	2,366	2	0	16	1	0
3-Aug	62	3,004	45	8,770	29	2,395	0	0	28	0	0
Total	3,004		8,770		2,395**		4**	84**	3,755	73	2

█ indicates dates at which 25, 50, and 75 percent of the run had passed the weir.  
 \*\* incomplete counts, weir removed

**Table 3. Mid-eye to fork length (mm) at age of female and male Chinook salmon and summer chum salmon sampled at East Fork Andreafsky River weir, Alaska, 2009.**

Age	Female					Male				
	N	Mean	Median	SE	Range	N	Mean	Median	SE	Range
<b>Chinook salmon</b>										
1.1	0	0	0	0.0	-	3	397	370	48	330-490
1.2	0	0	0	0.0	-	570	579	580	2.1	410-850
1.3	57	774	780	7.7	535-870	305	707	710	3.3	545-890
2.2	0	0	0	0.0	-	1	500	500	0.0	500-500
1.4	982	833	830	1.4	695-980	380	797	800	2.7	630-955
2.3	0	0	0	0.0	-	1	655	655	0.0	655-655
1.5	10	868	857.5	9.9	835-930	2	880	880	50.0	830-930
2.4	0	0	0	0.0	-	0	0	0	0.0	-
UNK	114	826	830	5.6	535-950	156	683	685	8.3	490-885
All Ages	1,163	830	830	1.4	535-980	1,418 *	677	670	2.9	330-955
<b>Chum salmon</b>										
0.2	28	508	510	4.2	470-550	32	537	528	5.6	490-610
0.3	128	530	530	2.5	460-600	125	560	560	2.9	470-655
0.4	112	543	540	2.5	460-620	175	578	575	2.4	450-665
0.5	30	551	552.5	4.7	500-605	85	588	580	3.5	515-670
0.6	0	0	0	0.0	-	3	577	570	6.7	570-590
UNK	27	534	540	6.9	480-600	36	571	570	5.9	520-655
All Ages	325	535	535	1.6	460-620	456	571	570	1.6	450-670

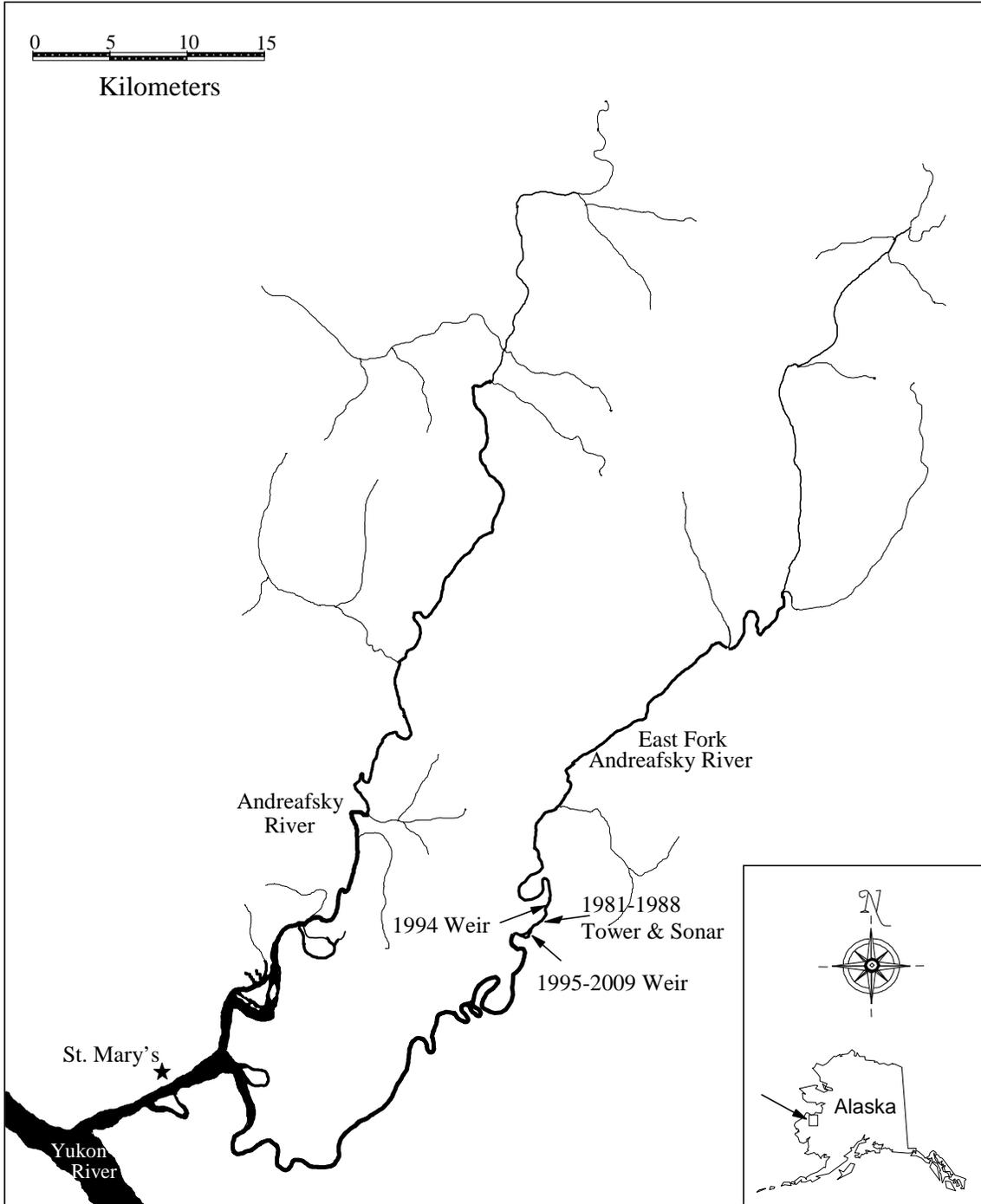
\* One male Chinook salmon, aged 1.2, stratum 3, did not have a length measurement.

**Table 4. Age and sex ratio estimates by stratum of Chinook salmon sampled at East Fork Andreafsky River weir, Alaska, 2009. Standard errors are in parentheses. Season totals are calculated from weighted weekly strata totals. Unknown age data are from unreadable scale samples and are listed for informational purposes. They were not included in age calculations.**

Strata	Run size (N)	Sample size (n)	Unknown age	Percent female	Brood year and age							
					2006	2005	2004	2004	2003	2003	2002	2002
					1.1	1.2	1.3	2.2	1.4	2.3	1.5	2.4
June 22 - July 11	68	68	6	53% (6.1)	0% (0.0)	24% (5.5)	11% (4.1)	0% (0.0)	65% (6.1)	0% (0.0)	0% (0.0)	0% (0.0)
July 12 - July 18	806	598	80	41% (2.0)	<1% (0.3)	31% (2.0)	12% (1.4)	0% (0.0)	56% (2.2)	<1% (0.2)	<1% (0.4)	0% (0.0)
July 19 - 25	894	863	78	43% (1.7)	0% (0.0)	28% (1.6)	15% (1.3)	<1% (0.1)	57% (1.8)	0% (0.0)	<1% (0.2)	0% (0.0)
July 26 - August	1,236	1,053	106	48% (1.5)	<1% (0.1)	19% (1.3)	19% (1.3)	0% (0.0)	62% (1.6)	0% (0.0)	<1% (0.2)	0% (0.0)
Total	3,004	2,582	270	45% (1.0)	<1% (0.1)	25% (0.9)	16% (.8)	<1% (<0.0)	59% (1.0)	<1% (0.1)	1% (0.2)	0% (0.0)
Female	1,351	1,163	114		0% (0.0)	0% (0.0)	5% (0.7)	0% (0.0)	94% (0.8)	0% (0.0)	1% (0.3)	0% (0.0)
Male	1,653	1,419	156		<1% (0.2)	45% (1.4)	24% (1.2)	<1% (0.1)	30% (1.3)	<1% (0.1)	<1% (0.1)	0% (0.0)

**Table 5. Age and sex ratio estimates by stratum of summer chum salmon sampled at East Fork Andreafsky River weir, Alaska, 2009. Standard errors are in parentheses. Season totals are calculated from weighted weekly strata totals. Unknown age data are from unreadable scale samples and are listed for informational purposes. They were not included in age calculations.**

Strata	Run size (N)	Sample size (n)	Unknown age	Percent female	Brood year and age				
					2006	2005	2004	2003	2002
					0.2	0.3	0.4	0.5	0.6
June 22 - July 4	1,176	186	26	37% (3.5)	1% (0.9)	13% (2.7)	51% (4.0)	35% (3.8)	0% (0.0)
July 5 - July 11	2,515	177	11	29% (3.4)	6% (1.9)	39% (3.8)	37% (3.8)	17% (2.9)	1% (0.6)
July 12 - July 18	3,066	160	9	36% (3.8)	14% (2.8)	33% (3.8)	42% (4.0)	10% (2.4)	1% (0.7)
July 19 - July 25	1,381	162	9	59% (3.9)	12% (2.6)	42% (4.0)	38% (3.9)	8% (2.2)	1% (0.7)
July 26 - August 4	632	96	8	55% (5.1)	10% (3.2)	60% (5.2)	25% (4.6)	5% (2.2)	0% (0.0)
Total	8,770	781	63	39% (1.9)	9% (1.2)	35% (1.9)	40% (2.0)	15% (1.4)	1% (0.3)
Female	3,425	325	27		10% (2.1)	43% (3.5)	36% (3.4)	11% (2.7)	0% (0.0)
Male	5,345	456	36		9% (1.5)	31% (2.4)	42% (2.6)	18% (1.9)	1% (0.5)



**Figure 1. Weir locations in the East Fork Andreafsky River, Alaska, 1994-2009.**

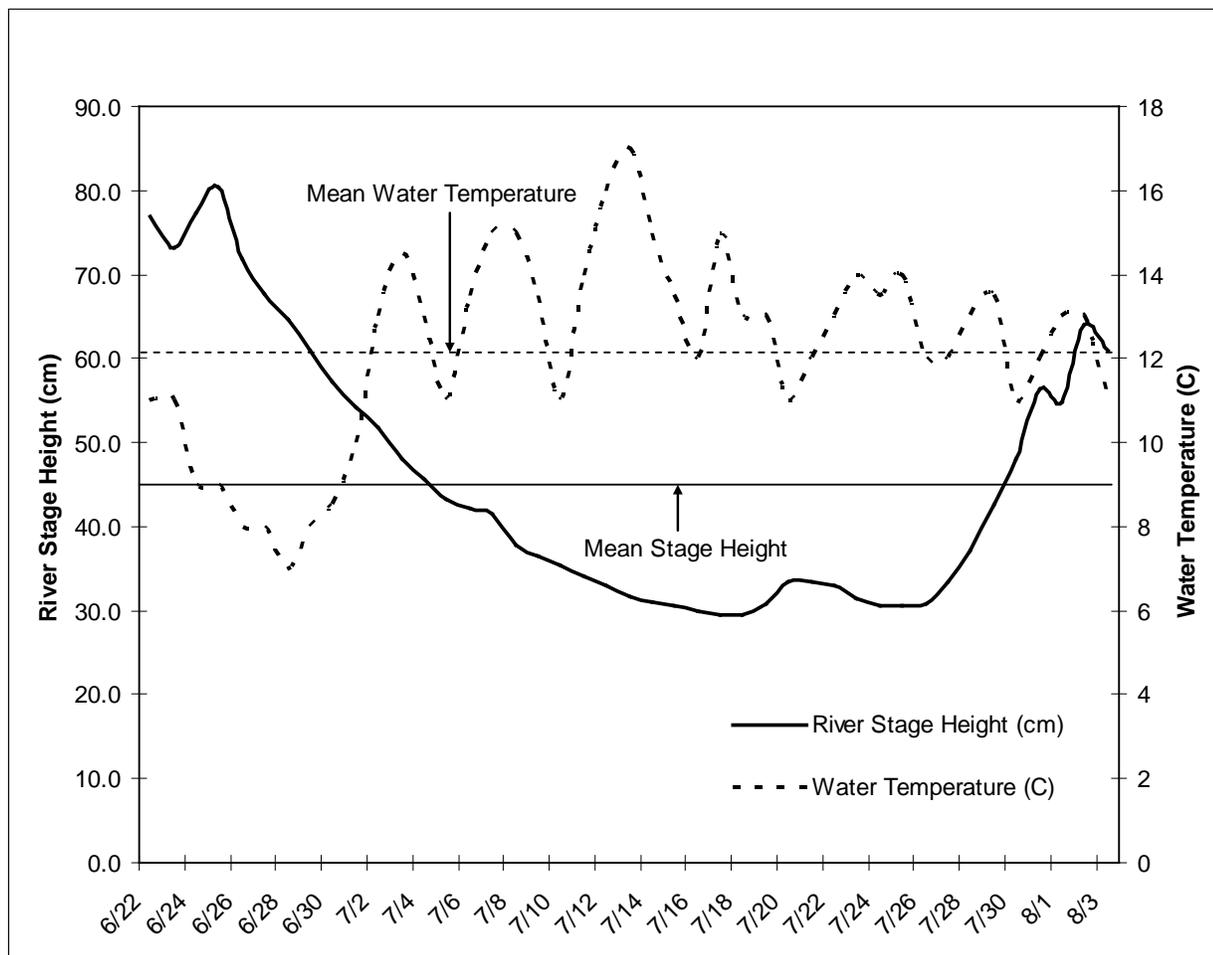


Figure 2. River stage heights and water temperatures at the East Fork Andreafsky River weir, 2009.

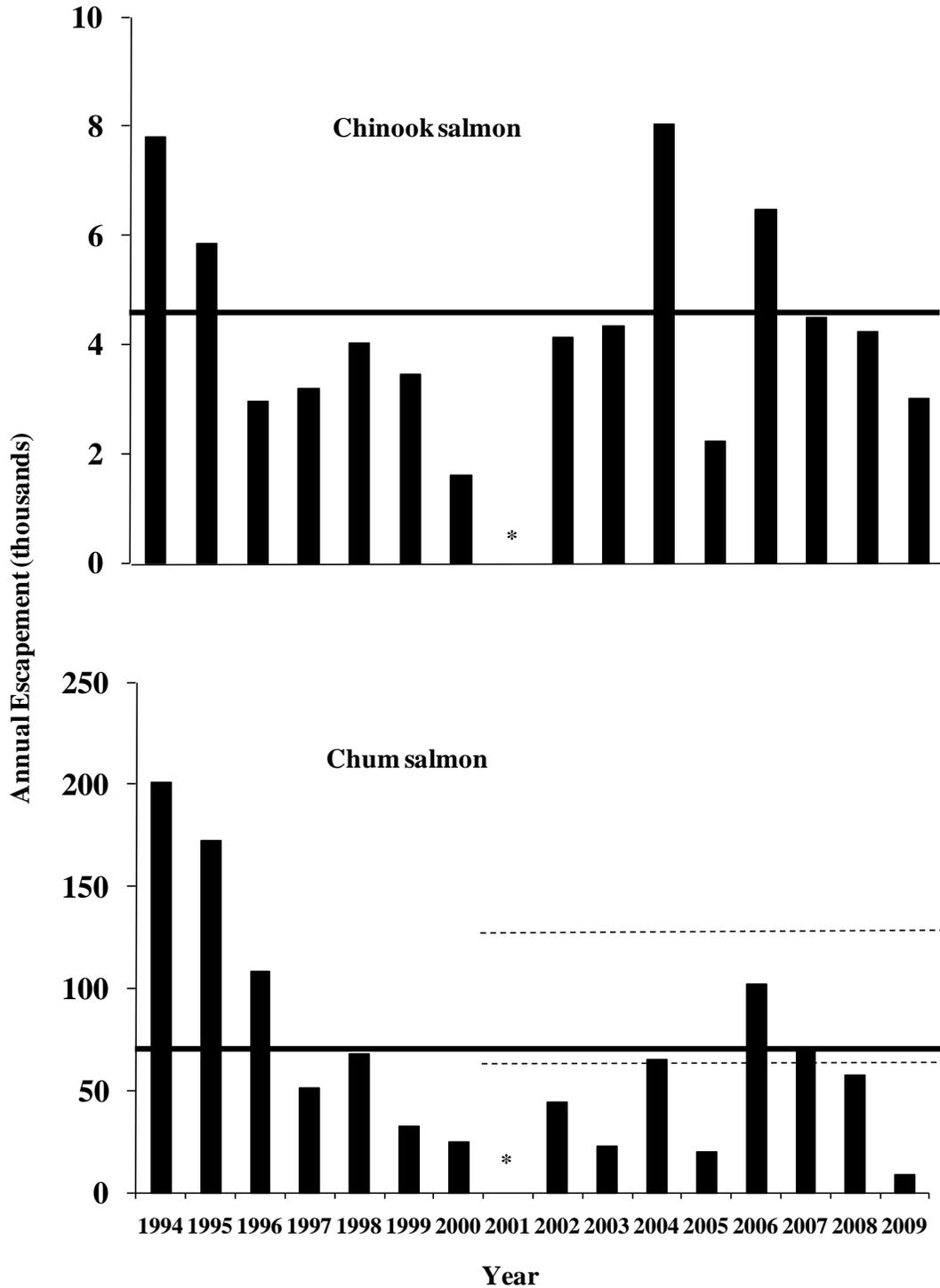


Figure 3. Annual escapement estimates of Chinook salmon and summer chum salmon migrating through the East Fork Andreafsky River weir, Alaska, 1994 to 2009. Historical average represented by the solid, horizontal line. The dotted lines in the summer chum salmon chart represent the maximum and minimum BEG (established in 2001). Asterisk denotes missing annual count due to high water.

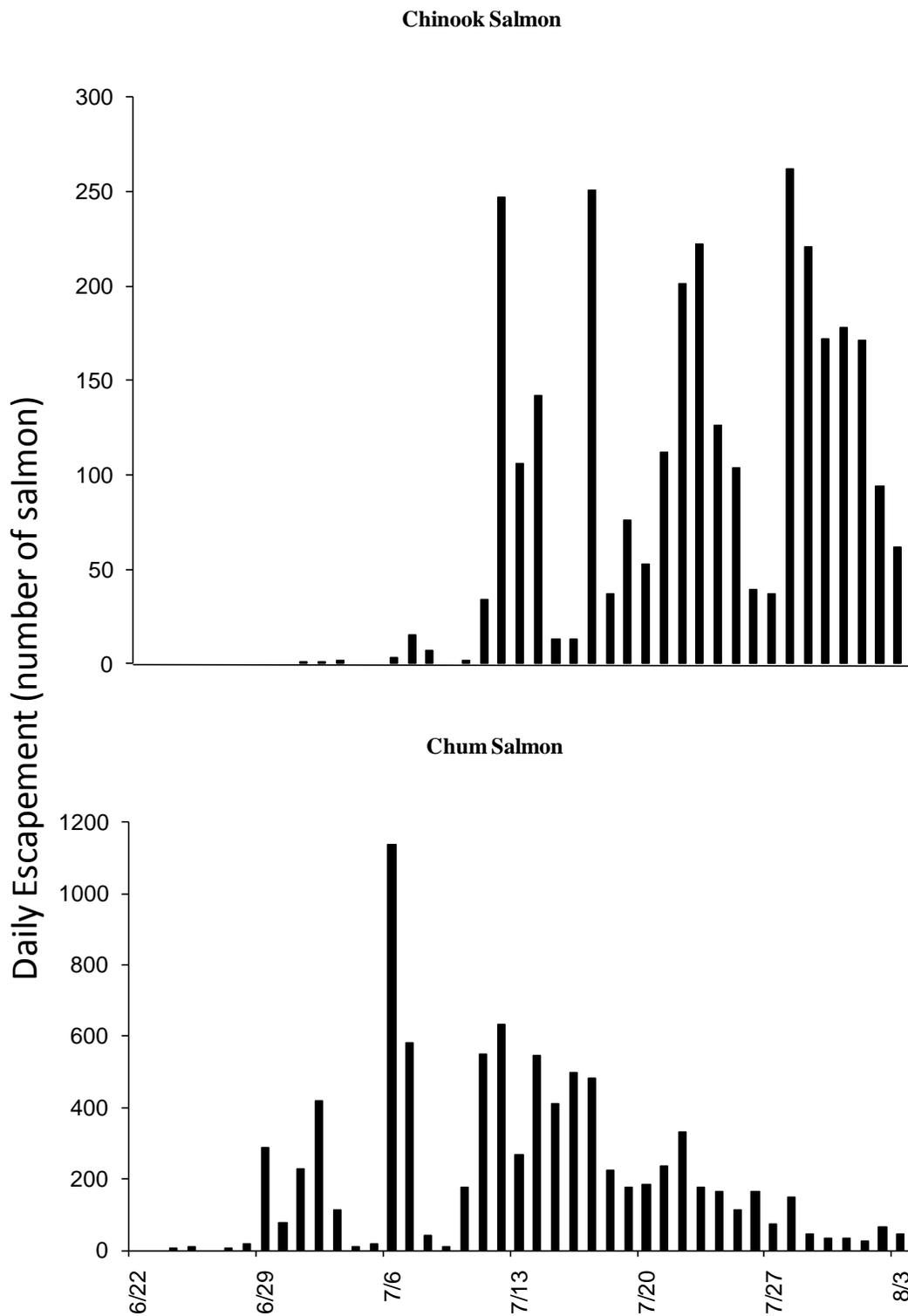


Figure 4.—Daily Chinook salmon and summer chum salmon escapement estimates through the East Fork Andreafsky River weir, Alaska, June 22 to August 3, 2009.

**Appendix 1. Historical Chinook, summer chum, and coho salmon escapement estimates recorded for the Andreafsky River, Alaska, 1954-2009. Data provided by ADF&G from JTC (2010).**

Year	East Fork Andreafsky River						Mainstem Andreafsky River		
	Aerial Index Estimates			Sonar, Tower, or Weir			Aerial Index Estimates		
	Chinook salmon	Chum salmon	Coho salmon	Chinook salmon	Chum salmon	Coho salmon	Chinook salmon	Chum salmon	Coho salmon
1954	<i>a</i>	<i>a</i>					2,000 <i>a</i>	7,000 <i>a</i>	
1955									
1956	336 <i>b</i>	15,356 <i>b</i>							
1957									
1958	50 <i>b</i>	3,500 <i>b</i>					150 <i>b</i>	30,000 <i>b</i>	
1959	150 <i>b</i>	4,000 <i>b</i>					300 <i>b</i>	7,000 <i>b</i>	
1960	1,020	10,530					1,220	6,016	
1961	1,003	8,110							
1962	675 <i>b</i>	18,040					762 <i>b</i>	19,530	
1963									
1964	867	8,863					705	12,810	
1965							355 <i>b</i>	14,670 <i>b</i>	
1966	361	25,619 <i>b</i>					303	18,145	
1967							276 <i>b</i>	14,495 <i>b</i>	
1968	380	17,600					383 <i>b</i>	74,600 <i>b</i>	
1969	231 <i>b</i>	119,000					374 <i>b</i>	159,500 <i>b</i>	
1970	665	84,090					574 <i>b</i>	91,710 <i>b</i>	
1971	1,904	98,095					1,682	71,745	
1972	798 <i>b</i>	41,460 <i>b</i>					582 <i>b</i>	25,573	
1973	825	10,149 <i>b</i>					788	51,835	
1974		3,215 <i>b</i>					285	33,578	
1975	993	223,485					301	235,954	
1976	818	105,347					643	118,420	
1977	2,008	112,722					1,499	63,120	
1978	2,487	127,050					1,062	57,321	
1979	1,180	66,471					1,134	43,391	
1980	958 <i>b</i>	36,823 <i>b</i>					1,500	115,457	
1981	2,146 <i>b</i>	81,555	1,657 <i>b</i>	5,343 <i>c</i>	147,312 <i>c</i>		231 <i>b</i>		
1982	1,274	7,501 <i>b</i>			180,078 <i>c</i>		851	7,267 <i>b</i>	
1983				2,720 <i>c</i>	110,608 <i>c</i>				
1984	1,573 <i>b</i>	95,200 <i>b</i>			70,125 <i>c</i>		1,993	238,565	
1985	1,617	66,146					2,248	52,750	
1986	1,954	83,931		1,530 <i>d</i>	167,614 <i>d</i>		3,158	99,373	
1987	1,608	6,687 <i>b</i>		2,011 <i>d</i>	45,221 <i>d</i>		3,281	35,535	
1988	1,020	43,056	1,913	1,339 <i>d</i>	68,937 <i>d</i>		1,448	45,432	830
1989	1,399	21,460 <i>b</i>					1,089		
1990	2,503	11,519 <i>b</i>					1,545	20,426 <i>b</i>	
1991	1,938	31,886					2,544	46,657	
1992	1,030 <i>b</i>	11,308 <i>b</i>					2,002 <i>b</i>	37,808 <i>b</i>	
1993	5,855	10,935 <i>b</i>					2,765	9,111 <i>b</i>	
1994	300 <i>b</i>			7,801	200,981 <i>f</i>		213 <i>b</i>		
1995	1,635			5,841	172,148	10,901	1,108		
1996				2,955	108,450	8,037	624		
1997	1,140			3,186	51,139	9,472	1,510		
1998	1,027			4,034	67,720	5,417 <i>e</i>	1,249 <i>b</i>		
1999	<i>b</i>			3,444	32,587	2,963	870 <i>b</i>		

**Appendix 1. Continued.**

Year	East Fork Andreafsky River						Mainstem Andreafsky River		
	Aerial Index Estimates			Sonar, Tower, or Weir			Aerial Index Estimates		
	Chinook salmon	Chum salmon	Coho salmon	Chinook salmon	Chum salmon	Coho salmon	Chinook salmon	Chum salmon	Coho salmon
2000	1,018			1,609	24,785	8,451	427		
2001	1,065			1,148 <i>f</i>	2,134 <i>f</i>	15,896 <i>e</i>	570		
2002	1,447			4,123	44,194	3,577	977		
2003	1,116 <i>b</i>			4,336	22,461	8,231	1,578 <i>b</i>		
2004	2,879			8,045	64,883	11,146	1,317		
2005	1,715			2,239	20,127	5,303	1,492		
2006	590 <i>b</i>			6,463	102,260	23 <i>g</i>	824		
2007	1,758			4,504	69,642	9 <i>g</i>	976		
2008	278 <i>b</i>			4,242	57,259	2 <i>g</i>	262 <i>b</i>		
2009	80 <i>b</i>			3,004	8,770	4 <i>g</i>	1,664		
SEG <i>h</i>	960 - 1,900						640 - 1,600		
BEG <i>i</i>					65,000 - 130,000				

- a* Counts for both forks were combined into Andreafsky River count.
- b* Incomplete survey and/or poor survey timing or conditions resulting in minimal or inaccurate count.
- c* Sonar count.
- d* Tower count.
- e* Incomplete count, missing data not estimated
- f* Weir installed too late for an accurate count
- g* Incomplete count, weir removed
- h* Sustainable Escapement Goals.
- i* Biological Escapement Goals.

**Appendix 2. Historical daily Chinook salmon escapements recorded at the East Fork Andreafsky River weir 1994-2009. Data for 2001 were not used in calculations and are shown for informational purposes only.**

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
15-Jun				0												
16-Jun		0		0												
17-Jun		0		0		0										
18-Jun		0		0		0										
19-Jun		0	0	0		0			0	0				0		
20-Jun		1	0	0		0			0	0				0		
21-Jun		0	10	0		0			1	0				0	0	
22-Jun		1	0	0		0			20	0				0	0	0
23-Jun		0	33	14	0	0			0	4	67			0	0	0
24-Jun		2	6	21	0	0			0	2	26			0	0	0
25-Jun		0	0	59	0	0			3	7	15			7	1	0
26-Jun		0	59	0	0	0			1	3	55	16		2	0	0
27-Jun		41	42	101	1	0			26	12	181	2		0	5	0
28-Jun		48	19	11	0	0			314	19	534	42	0	0	1	0
29-Jun	1	67	6	1	10	0			119	4	290	88	6	4	10	0
30-Jun	188	104	8	0	34	47	9		27	0	461	238	51	7	7	0
1-Jul	141	81	72	75	93	19	16		319	176	582	11	40	134	14	1
2-Jul	54	71	21	24	17	9	39		105	295	25	89	13	197	44	1
3-Jul	222	17	205	29	36	0	89		230	22	375	135	51	75	41	2
4-Jul	156	55	124	49	75	12	74		5	6	353	114	128	277	50	0
5-Jul	651	107	309	98	336	97	38		20	83	263	111	276	141	133	0
6-Jul	225	678	258	356	373	42	407		356	136	1,187	154	437	476	301	3
7-Jul	1,156	433	280	227	386	114	18		307	336	878	271	574	442	610	15
8-Jul	108	155	244	123	204	197	71		130	469	463	169	392	157	777	7
9-Jul	351	260	186	49	129	216	17		178	823	503	46	86	299	110	0
10-Jul	375	250	111	64	167	256	30		191	48	368	7	165	255	7	2
11-Jul	288	382	72	69	255	507	57		264	107	122	15	449	86	11	34
12-Jul	581	1,022	52	88	138	214	35		166	345	315	9	1,108	653	23	247
13-Jul	779	697	100	15	62	331	55		191	311	106	58	201	103	53	106
14-Jul	433	375	96	16	61	97	18		158	340	105	108	67	96	76	142
15-Jul	352	292	62	124	91	22	90	169	140	2	53	49	117	28	265	13
16-Jul	389	97	95	274	197	33	76	87	210	7	58	55	262	25	355	13
17-Jul	144	46	110	91	263	75	62	41	119	25	54	30	714	34	277	251
18-Jul	285	38	55	25	184	63	48	196	94	235	29	14	371	132	283	37
19-Jul	161	25	42	70	240	65	34	71	75	158	40	22	264	78	130	76
20-Jul	53	37	69	264	67	302	22	107	50	28	57	17	164	35	57	53
21-Jul	66	74	51	148	129	55	12	175	29	10	40	50	161	95	58	112
22-Jul	62	33	26	35	117	67	21	66	12	2	13	51	166	249	130	201
23-Jul	209	24	2	103	57	15	6	15	32	23	17	15	117	59	104	222
24-Jul	149	7	4	57	66	54	11	5	16	58	12	22	48	63	75	126
25-Jul	25	78	6	0	12	24	10	17	7	31	19	46	25	102	49	104
26-Jul	51	21	3	11	8	5	9	7	3	4	5	4	8	33	35	39
27-Jul	92	12	6	3	8	34	7	17	6	22	14	4	2	149	26	37
28-Jul	20	15	16	29	11	6	3	10	3	108	23	4		4	61	262
29-Jul	10	9	13	58	23	159	57	41	4	28	19	0		4	39	221
30-Jul	13	5	7	144	31	80	4	16	2	4	7	4		3	24	172
31-Jul	10	1	10	2	17	59	20	11	46	0	15	3				178
1-Aug	1	8	4	8	20	38	12	8	55	2	13	2				171
2-Aug		2	2	4	4	18	4	12	48	5	4	2				94
3-Aug		13	2	128	11	42	24	4	10	1	3	8				62
4-Aug		5	5	2	1	11	19	8	3	1	6	4				

(continued)

Appendix 2. Continued.

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
5-Aug		6	6	1	7	5	14	6	3	4	5	8				
6-Aug		6	2	0	9	2	9	1	4	0	10	4				
7-Aug		19	7	1	10	1	4	11	4	1	8	3				
8-Aug		20	3	2	3	4	7	0	0	3	6	2				
9-Aug		25	2	2	5	0	10	4	0	1	13	9				
10-Aug		25	5	1	7	1	3	2	0	0	39	35				
11-Aug		7	2	1	1	2	8	1	4	1	17	14				
12-Aug		4	3	7	8	5	4	1	0	1	23	2				
13-Aug		11	0	14	7	3	1	10	1	2	21	2				
14-Aug		2	0	18	1	9	3	0	1	3	19	5				
15-Aug		2	0	26	0	2	6	11	0	3	17	7				
16-Aug		3	3	2	12	4	2	8	0	2	16	3				
17-Aug		3	0	4	9	7	1	2	3	1	14	1				
18-Aug		3	2	3	5	3	2	2	0	1	10	3				
19-Aug		2	2	3	2	0	2	2	1	2	9	3				
20-Aug		1	3	2	2	6	3	1	0	2	6	2				
21-Aug		2	3	1	2	0	1	0	0	0	8	2				
22-Aug		0	0	4	1	1	1	1	5	0	5	0				
23-Aug		1	2	2	1	0	0	0	0	0	1	5				
24-Aug		1	0	1	1	0	1	1	1	2	3	0				
25-Aug		0	0	4	1	0	0	0	0	2	1	1				
26-Aug		0	1	0	1	1	2	0	0	1	0	3				
27-Aug		0	0	0	0	1	0	0	0	0	1	3				
28-Aug		3	0	1	0	0	0	0	0	0	0	7				
29-Aug		1	2	2	0	0	0	0	0	0	0	6				
30-Aug		0	1	3	1	0	0	0	1	0	4	5				
31-Aug		0	2	1	1	0	0	0	0	0	2	2				
1-Sep		1	0	0	0	0	0	0	0	0	2	3				
2-Sep		0	0	0	0	1	1	0	0	0	0	3				
3-Sep		0	0	4	0	0	0	0	0	0	0	2				
4-Sep		0	0	0	0	0	0	0	0	0	1	3				
5-Sep		1	0	1	0	1	0	0	0	0	1	1				
6-Sep		0	1	1	0	0	0	0	0	0	2	0				
7-Sep		0	0	0	1	0	0	0	0	0	0	0				
8-Sep		3	0	2	0	0	0	0	0	0	1	1				
9-Sep		0	0	1	1	0	0	0	0	1	1	0				
10-Sep		0	0	0	0	0	0	0	0	0	0	0				
11-Sep		0	0	0	1	0	0	0	0	0	2	0				
12-Sep		0	0	2	0	0	0	0	0	0	0	0				
13-Sep			0	0	0	0	0	0	0	0	0	0				
14-Sep			0			0	0	0	0	0	0	0				
15-Sep			0			0	1			1	0	0				
16-Sep			0			0					0	0				
17-Sep			0			0					1	0				
18-Sep						0					0	0				
19-Sep						0					1	0				
20-Sep						0						1				
21-Sep						0										
22-Sep						0										
23-Sep						0										
Total	7,801	5,841	2,955	3,186	4,034	3,444	1,609	**	4,123	4,336	8,045	2,239	6,463	4,504	4,242	3,004

 = estimated escapement counts  
 = adjusted escapement counts  
 \*\* = incomplete count, missing data not estimated

**Appendix 3. Historical daily summer chum salmon estimates recorded at the East Fork Andreafsky River weir 1994-2009. Data for 2001 were not used in calculations and are shown for informational purposes only.**

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
15-Jun				0												
16-Jun		52		1												
17-Jun		332		4		0										
18-Jun		191		71		0										
19-Jun		423	62	539		0			0	0				0		
20-Jun		2,198	424	981		0			0	0				0		
21-Jun		861	3,315	192		0			117	2				0	1	
22-Jun		1,170	1,036	53		0			1,782	87				2	57	0
23-Jun		228	11,195	3,141	13	1			0	564	3,045			0	30	0
24-Jun		1,951	798	1,620	18	1			6	182	1,062			29	73	6
25-Jun		364	303	1,422	264	0			522	484	985			1166	34	10
26-Jun		504	7,306	208	175	7			694	183	2,467	256		348	1160	0
27-Jun		12,620	3,435	1,691	535	8			2,448	396	4,638	9		70	902	5
28-Jun		11,201	1,463	1,196	65	0			6,754	546	8,461	424	1,272	362	865	19
29-Jun	609	9,256	2,335	61	3,153	331			1,765	219	3,807	473	2,822	1644	1920	289
30-Jun	19,254	10,938	314	80	4,585	4,459	837		836	271	7,081	432	14,912	1785	1095	78
1-Jul	12,435	8,654	9,164	1,537	4,003	765	1,725		4,403	928	1,590	239	10,229	3581	1718	228
2-Jul	2,840	5,553	3,326	619	652	459	1,460		2,467	339	153	1,081	2,395	3463	2963	417
3-Jul	4,973	2,710	8,973	756	1,687	24	1,750		2,291	713	5,689	1,063	7,291	2694	2367	114
4-Jul	13,321	10,678	10,018	1,264	3,561	3,000	2,070		28	175	3,940	1,238	14,018	4834	4572	10
5-Jul	12,552	10,026	7,355	831	7,996	4,605	2,300		347	484	2,011	993	9,389	4725	8125	17
6-Jul	4,043	23,584	3,351	3,428	6,030	1,185	3,717		4,423	1,051	1,791	1,218	7,738	3852	5285	1137
7-Jul	27,527	8,514	3,124	2,980	4,696	1,619	72		2,254	1,376	2,474	1,839	4,225	1980	2598	583
8-Jul	5,251	732	4,771	2,440	3,088	1,569	1,548		845	2,476	2,096	1,270	3,614	1919	2763	42
9-Jul	3,883	4,808	3,500	1,799	845	1,754	942		2,265	2,025	1,990	1,112	2,351	4559	1438	11
10-Jul	12,416	6,473	2,303	3,195	1,003	2,135	727		1,732	244	2,069	1,370	3,478	6021	193	176
11-Jul	6,896	6,072	1,275	1,792	4,003	1,897	855		1,221	412	1,609	195	2,631	1455	300	549
12-Jul	8,424	3,973	1,497	1,738	4,401	501	477		1,099	1,762	1,815	197	1,609	2362	1276	634
13-Jul	14,628	4,552	1,680	1,062	829	710	911		1,055	586	1,071	1,458	725	1219	1955	269
14-Jul	11,611	2,990	1,038	1,302	1,248	1,223	352		544	254	896	1,242	330	1394	2019	547
15-Jul	8,275	2,874	935	3,222	2,160	412	638	196	1,014	33	605	557	1,127	860	2322	411
16-Jul	4,690	3,449	1,280	2,441	2,747	507	551	133	581	123	569	449	1,441	1867	3646	498
17-Jul	4,886	2,739	774	1,150	3,038	547	464	95	420	445	465	196	2,564	3294	1497	483
18-Jul	4,532	1,495	852	715	1,580	494	377	229	492	1,078	326	246	1,637	3834	1324	224
19-Jul	2,977	651	1,848	624	1,365	666	290	102	392	708	217	141	1,294	1349	896	176
20-Jul	1,091	1,150	1,721	1,220	370	816	206	74	192	681	276	523	924	468	691	186
21-Jul	1,351	807	1,116	800	335	242	424	228	153	283	142	493	944	700	594	235
22-Jul	2,228	591	605	668	304	240	280	72	61	47	59	182	921	1895	572	332
23-Jul	1,320	742	246	405	248	201	116	29	201	306	77	167	715	1417	535	175
24-Jul	868	290	291	313	200	173	84	32	98	222	116	54	548	1208	383	164
25-Jul	1,349	1,214	196	121	220	131	159	155	26	348	171	80	452	1784	335	113
26-Jul	1,977	521	365	339	166	73	130	116	22	218	85	28	334	645	142	165
27-Jul	2,196	605	278	400	130	132	64	110	60	220	69	32	330	444	191	72
28-Jul	841	265	738	219	202	92	43	88	123	389	73	100		95	149	148
29-Jul	564	211	334	234	145	245	173	78	17	220	52	112		179	168	47
30-Jul	524	248	272	131	115	242	70	37	36	61	37	74		139	105	33
31-Jul	410	94	260	86	140	200	172	10	119	80	34	79				33
1-Aug	239	160	93	134	191	158	89	24	81	104	17	50				25
2-Aug		81	158	81	91	118	125	40	33	111	21	25				64
3-Aug		147	91	182	76	124	109	28	36	40	28	23				45
4-Aug		59	192	48	56	117	83	17	40	91	22	5				

(continued)

Appendix 3. Continued.

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
5-Aug		77	132	101	73	45	57	13	3	182	25	24				
6-Aug		115	215	77	71	17	31	2	7	52	31	30				
7-Aug		76	163	29	104	11	5	7	13	85	33	14				
8-Aug		78	54	31	77	16	12	7	5	44	16	19				
9-Aug		70	110	44	34	10	10	7	5	21	36	9				
10-Aug		61	137	17	57	32	13	4	13	21	26	8				
11-Aug		35	63	14	39	14	10	4	11	27	34	18				
12-Aug		60	65	65	77	29	9	3	2	40	26	10				
13-Aug		73	26	36	100	16	22	15	0	21	30	3				
14-Aug		62	35	33	58	6	13	9	0	52	35	7				
15-Aug		49	59	31	34	10	4	9	1	43	39	9				
16-Aug		95	80	46	32	13	4	11	6	35	44	8				
17-Aug		64	35	37	27	10	5	6	1	27	48	5				
18-Aug		83	33	58	21	6	13	6	2	19	18	11				
19-Aug		41	110	43	16	3	5	10	0	32	7	0				
20-Aug		45	33	95	15	3	3	7	2	22	12	1				
21-Aug		47	64	54	13	19	0	7	0	21	5	3				
22-Aug		43	27	37	12	2	1	3	2	10	4	2				
23-Aug		35	37	31	10	6	2	10	3	12	3	25				
24-Aug		35	26	41	9	5	4	5	3	11	14	4				
25-Aug		56	103	41	8	5	6	4	3	24	5	6				
26-Aug		53	35	18	6	2	19	2	1	13	2	3				
27-Aug		57	26	20	5	9	17	3	0	11	2	3				
28-Aug		31	39	38	3	7	13	3	1	5	10	20				
29-Aug		53	78	57	2	5	10	1	0	14	8	22				
30-Aug		34	66	73	4	11	9	4	0	6	19	24				
31-Aug		63	31	21	11	13	2	11	0	2	20	12				
1-Sep		48	38	14	8	18	6	10	0	1	22	7				
2-Sep		75	40	13	4	19	5	9	0	1	14	10				
3-Sep		36	49	53	5	15	4	8	0	5	5	28				
4-Sep		25	48	28	8	5	2	7	0	0	5	9				
5-Sep		30	37	38	1	4	1	6	0	0	16	4				
6-Sep		50	29	31	8	4	1	6	0	2	8	13				
7-Sep		60	50	51	6	3	1	5	1	4	11	7				
8-Sep		96	39	28	4	2	0	4	0	2	12	6				
9-Sep		42	32	22	3	2	0	3	0	3	4	3				
10-Sep		42	32	24	9	3	9	2	2	1	3	8				
11-Sep		37	24	48	10	4	3	0	1	0	6	7				
12-Sep		15	16	42	3		5	1	8	16	2					
13-Sep			18	23	4		1	1	2	3	6					
14-Sep			39				2	3	1	1	3					
15-Sep			33				5	3		3	3					
16-Sep			38				18				2					
17-Sep							3				5					
18-Sep							6				0					
19-Sep							4				3					
20-Sep							8									
21-Sep							10									
22-Sep							1									
23-Sep							1									
Total	200,981	172,148	108,450	51,139	67,720	32,587	24,785	**	44,194	22,461	64,883	20,127	102,260	69,642	57,259	8,770

 = estimated escapement counts  
 = adjusted escapement counts  
 \*\* = incomplete count, missing data not estimated

**Appendix 4. Historical daily coho salmon estimates recorded at the East Fork Andreafsky River weir, 1995-2009. Data for 1998 and 2001 were not used in calculations and are shown for informational purposes only.**

Date	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2,005	2006	2007	2008	2009
15-Jun			0												
16-Jun	0		0												
17-Jun	0		0		0										
18-Jun	0		0		0										
19-Jun	0	0	0		0			0	0				0		
20-Jun	0	0	0		0			0	0				0		
21-Jun	0	0	0		0			0	0				0	0	
22-Jun	0	0	0		0			0	0				0	0	0
23-Jun	0	0	0	0	0			0	0	0			0	0	0
24-Jun	0	0	0	0	0			0	0	0			0	0	0
25-Jun	0	0	0	0	0			0	0	0			0	0	0
26-Jun	0	0	0	0	0			0	0	0	0		0	0	0
27-Jun	0	0	0	0	0			0	0	0	0		0	0	0
28-Jun	0	0	0	0	0			0	0	0	0	0	0	0	0
29-Jun	0	0	0	0	0			0	0	0	0	0	0	0	0
30-Jun	0	0	0	0	0	0		0	0	0	0	0	0	0	0
1-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
2-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
3-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
4-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
5-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
6-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
7-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
8-Jul	0	0	0	0	0	0		0	1	0	0	0	0	0	0
9-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
10-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
11-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
12-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
13-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
14-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0
15-Jul	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
16-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Jul	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
20-Jul	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Jul	0	11	0	0	0	0	0	0	0	0	0	2	0	0	0
24-Jul	0	2	0	0	0	0	0	0	2	0	0	5	0	0	0
25-Jul	0	1	0	0	0	0	0	0	0	0	0	7	3	0	0
26-Jul	0	4	0	0	0	0	0	0	0	0	0	4	2	0	0
27-Jul	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
28-Jul	0	3	0	1	0	0	0	0	0	2	0	0	1	0	0
29-Jul	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0
30-Jul	0	9	0	1	0	1	0	0	1	1	0	0	3	0	0
31-Jul	0	25	0	0	0	1	0	0	2	2	0	0	0	0	1
1-Aug	0	1	0	0	0	7	0	0	0	1	1	0	0	0	1
2-Aug	0	7	0	1	0	9	0	0	1	4	0	0	0	0	2
3-Aug	1	4	0	5	0	18	0	0	1	0	0	0	0	0	0
4-Aug	0	15	0	8	9	16	0	1	1	0	1	0	0	0	0

(continued)

Appendix 4. Continued.

Date	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
5-Aug	0	20	0	8	4	14	0	0	2	8	0				
6-Aug	0	10	0	5	4	13	0	0	4	10	0				
7-Aug	1	26	1	16	0	12	0	0	28	14	1				
8-Aug	1	20	0	9	0	35	0	0	25	16	4				
9-Aug	3	26	0	5	1	79	0	0	27	98	2				
10-Aug	8	138	0	8	2	125	0	1	5	62	2				
11-Aug	12	105	0	3	2	89	0	0	9	115	0				
12-Aug	5	50	10	4	5	51	0	0	19	86	0				
13-Aug	3	16	47	111	1	211	0	0	40	78	0				
14-Aug	3	11	35	71	1	137	1	0	194	71	4				
15-Aug	9	19	6	9	0	64	22	0	146	63	9				
16-Aug	5	276	8	61	5	34	33	0	98	56	37				
17-Aug	11	92	7		2	23	5	0	50	48	6				
18-Aug	24	179	12		0	137	5	0	2	163	173				
19-Aug	41	1,052	13	8	0	108	51	1	7	384	24				
20-Aug	24	100	50		1	333	532	0	21	170	4				
21-Aug	95	149	414		42	303	270	0	11	185	2				
22-Aug	246	9	222		48	59	312	3	3	150	2				
23-Aug	305	32	22		0	10	343	6	24	80	21				
24-Aug	414	12	16		26	44	583	3	263	185	101				
25-Aug	245	1,539	577		8	533	217	7	1,744	243	19				
26-Aug	692	449	150		4	1,401	857	0	634	453	102				
27-Aug	1,436	5	10		4	1,643	382	0	288	17	128				
28-Aug	368	1	24		3	279	403	2	197	4	1,084				
29-Aug	938	179	2,335	371	0	626	103	0	243	38	475				
30-Aug	335	1,489	2,714	618	2	278	1,078	0	552	178	647				
31-Aug	265	374	122	568	1	192	2,264	0	729	490	218				
1-Sep	444	374	73	336	411	358	1,576	0	172	505	23				
2-Sep	863	147	53	17	162	238		14	107	897	23				
3-Sep	14	100	421	80	1,255	162		29	9	234	476				
4-Sep	29	250	355	490	704	160		43	646	167	483				
5-Sep	6	337	219	228	122	39		640	275	609	77				
6-Sep	21	78	514	591	40	46		738	14	1,550	128				
7-Sep	164	84	435	12	0	52		413	42	1,011	207				
8-Sep	2,403	24	169	0	14	48		345	459	578	80				
9-Sep	854	16	223	94	19	55		103	268	337	194				
10-Sep	391	1	52	555	41	94	85	237	9	535	343				
11-Sep	127	0	83	1,104	20	31	30	117	211	259	202				
12-Sep	95	0	64	6		79	20	726	231	13					
13-Sep		0	16	13		30	43	113	399	57					
14-Sep		0				22	21	35	8	37					
15-Sep		3				16	16		4	201					
16-Sep		160				28				240					
17-Sep						19				241					
18-Sep						3				42					
19-Sep						5				157					
20-Sep						5									
21-Sep						34									
22-Sep						32									
23-Sep						10									
Total	10,901	8,037	9,472	5,417**	2,963	8,451	9,252**	3,577	8,231	11,146	5,303	23*	9*	2*	4*

= estimated escapement count  
 = partial day's count adjusted to 24 hours  
 \*\* = incomplete count, missing data not estimated  
 \* = incomplete count, weir removed

**Appendix 5. Historical daily pink salmon escapement estimates recorded at the East Fork Andreafsky River weir, 1994-2009. Data for 2001 were not used in calculations and are shown for informational purposes only.**

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
15-Jun				0												
16-Jun		0		0												
17-Jun		0		0		0										
18-Jun		0		0		0										
19-Jun		0	12	0		0			0	0				0		
20-Jun		0	4	0		0			0	0				0		
21-Jun		0	40	0		0			52	0				0	0	
22-Jun		0	42	0		0			462	0				0	10	0
23-Jun		0	157	0	0	0			0	0	19			0	13	0
24-Jun		0	67	0	0	0			22	0	15			0	5	0
25-Jun		0	24	0	8	0			148	3	24			0	83	0
26-Jun		0	153	0	3	0			338	0	102	0		0	214	0
27-Jun		1	218	1	22	0			431	6	189	2		0	343	0
28-Jun		0	80	0	2	0			7,808	4	341	10	43	0	393	0
29-Jun	8	2	78	0	112	0			5,076	3	374	27	54	3	964	0
30-Jun	451	3	41	0	258	0	18		1,509	0	1,671	97	314	2	580	0
1-Jul	409	13	184	2	750	0	5		6,192	16	1,049	15	281	5	883	0
2-Jul	194	4	107	0	65	0	383		3,345	12	140	89	134	38	2,197	2
3-Jul	305	4	347	0	704	0	52		6,876	13	1,186	453	326	36	1,969	2
4-Jul	780	5	1,254	1	1,008	0	224		257	13	2,327	652	1,431	143	4,814	0
5-Jul	1,027	9	6,678	0	3,595	0	162		1,626	16	5,175	985	1,325	184	19,968	1
6-Jul	772	98	4,676	2	4,136	2	1,228		13,433	24	4,203	2,334	3,092	251	19,672	6
7-Jul	4,026	77	3,834	0	4,292	2	354		10,268	94	17,994	3,071	8,096	164	24,204	26
8-Jul	1,736	4	7,472	1	2,968	1	972		4,815	172	13,079	2,443	13,219	125	16,687	38
9-Jul	4,263	18	8,905	2	1,382	2	1,680		8,765	259	16,044	1,692	7,941	278	4,900	9
10-Jul	4,744	33	10,290	1	1,169	10	897		12,942	16	22,171	1,266	11,605	461	331	9
11-Jul	3,313	23	5,822	2	9,872	20	7,849		10,764	43	15,664	1,453	13,327	112	247	57
12-Jul	8,447	100	4,662	4	21,285	17	2,726		9,207	185	15,661	385	14,844	315	645	73
13-Jul	13,568	109	9,484	6	11,399	18	7,044		9,161	173	15,313	2,865	7,204	74	1,351	84
14-Jul	24,842	94	11,760	1	5,846	7	1,468		7,819	189	25,780	5,106	1,117	129	1,559	94
15-Jul	22,460	81	9,754	35	21,785	2	966	10	6,958	28	16,578	2,489	2,858	103	3,432	94
16-Jul	20,612	64	13,476	31	11,087	2	1,206	4	8,224	13	22,322	1,992	2,816	367	6,532	74
17-Jul	27,053	60	12,222	13	23,930	4	1,446	5	6,724	96	16,143	678	8,969	518	6,793	90
18-Jul	18,277	31	12,682	5	31,639	4	1,686	26	8,701	702	14,713	945	17,205	843	7,304	125
19-Jul	20,792	15	14,282	6	27,014	14	1,926	15	6,058	459	15,635	450	18,690	524	7,461	99
20-Jul	23,511	30	17,477	4	7,204	69	2,170	47	1,983	288	28,631	1,140	18,357	642	5,356	94
21-Jul	10,872	40	18,780	4	4,672	38	2,549	61	1,239	98	19,851	1,852	13,319	342	6,588	239
22-Jul	8,975	48	13,018	4	2,460	41	1,143	19	564	18	12,446	814	16,186	1,040	2,759	133
23-Jul	17,692	77	4,744	5	3,512	25	454	18	1,060	107	9,880	723	11,435	393	2,995	183
24-Jul	15,120	25	3,778	2	7,181	23	609	38	1,092	107	9,973	256	9,612	306	5,388	191
25-Jul	3,566	216	2,473	0	5,278	22	1,055	124	385	124	12,352	158	6,890	1,231	2,986	83
26-Jul	10,225	88	3,365	6	3,496	11	335	53	429	43	12,184	425	4,746	475	2,450	104
27-Jul	13,821	37	3,768	13	1,186	24	731	68	232	47	10,978	307	5,299	403	4,106	107
28-Jul	15,302	20	5,036	9	1,496	11	612	94	305	130	9,686	889		143	7,982	156
29-Jul	9,736	14	1,035	20	1,134	26	415	56	49	140	7,911	744		206	8,201	45
30-Jul	6,159	29	205	26	982	13	202	22	62	29	5,421	687		236	7,543	32
31-Jul	2,476	11	706	2	1,315	10	244	10	232	65	4,258	341				38
1-Aug	996	22	169	7	962	8	145	17	131	69	2,669	430				28
2-Aug		23	107	2	474	5	129	19	61	54	2,342	140				50
3-Aug		44	127	8	440	48	81	17	73	33	1,206	79				29
4-Aug		20	300	3	303	60	65	12	34	34	843	55				

(continued)

Appendix 5. Continued.

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
5-Aug		17	237	3	127	28	49	5	11	35	890	91				
6-Aug		22	61	1	73	14	33	10	13	17	729	114				
7-Aug		37	109	1	104	13	17	10	7	20	789	41				
8-Aug		20	61	5	140	19	17	0	4	9	513	68				
9-Aug		29	55	1	68	7	35	3	5	8	439	39				
10-Aug		46	77	4	36	16	15	6	9	9	384	17				
11-Aug		18	44	7	40	15	11	10	2	6	205	23				
12-Aug		11	51	6	43	17	8	3	4	10	152	10				
13-Aug		12	25	4	52	8	14	8	1	14	140	3				
14-Aug		32	16	3	40	5	11	6	4	21	128	11				
15-Aug		20	7	0	11	3	9	2	1	16	116	10				
16-Aug		19	25	3	18	17	2	1	0	11	104	12				
17-Aug		17	8	5	0	1	1	1	1	6	96	5				
18-Aug		6	17	4	0	6	1	1	0	1	34	3				
19-Aug		7	40	2	2	0	3	6	0	14	35	1				
20-Aug		4	4	4	0	1	3	1	0	18	17	0				
21-Aug		7	2	1	0	1	1	0	1	10	17	3				
22-Aug		6	3	2	0	3	2	1	1	8	7	0				
23-Aug		4	8	2	0	2	1	3	2	12	5	0				
24-Aug		8	7	8	0	7	4	1	3	13	6	2				
25-Aug		3	16	10	0	1	5	0	1	10	7	2				
26-Aug		5	28	3	0	4	0	1	0	9	12	1				
27-Aug		9	1	1	0	1	0	0	0	2	4	2				
28-Aug		0	1	9	0	6	2	0	0	4	4	7				
29-Aug		7	1	15	2	6	1	0	0	3	5	3				
30-Aug		5	6	16	1	2	9	3	1	1	11	1				
31-Aug		0	4	1	2	3	2	0	0	0	18	2				
1-Sep		0	7	1	2	1	1	0	1	10	13	3				
2-Sep		2	4	0	0	1	0	0	1	2	35	2				
3-Sep		1	7	20	4	8	0	0	0	6	6	1				
4-Sep		0	1	13	5	2	0	0	0	8	11	0				
5-Sep		1	3	5	0	4	0	0	2	5	34	2				
6-Sep		1	0	2	2	2	0	0	0	4	47	0				
7-Sep		1	1	3	3	3	0	0	0	8	30	1				
8-Sep		1	0	3	0	0	0	0	0	12	24	0				
9-Sep		0	1	5	2	0	0	0	1	7	22	2				
10-Sep		1	0	4	2	0	1	0	0	5	13	3				
11-Sep		0	0	12	1	3	0	0	1	6	6	6				
12-Sep		1	0	6	2		0	0	2	4	4					
13-Sep			3	6	0		0	2	0	7	1					
14-Sep			0				1	0	0	3	3					
15-Sep			0				1	1		4	3					
16-Sep			1				0				3					
17-Sep							0				2					
18-Sep							0				3					
19-Sep							0				0					
20-Sep							0									
21-Sep							0									
22-Sep							0									
23-Sep							0									
Total	316,530	1,972	214,837	429	227,208	769	43,491	820**	165,991	4,303	399,670	39,030	20,735*	10,092*	189,908	2,395*

= estimated escapement count  
 = partial day's count adjusted to 24 hours  
 \*\* = incomplete count, missing data not estimated.  
 \* = incomplete count, weir removed

**Appendix 6. Historical daily sockeye salmon estimates recorded at the East Fork Andreafsky River weir, 1994-2009. Data for 2001 were not used in calculations and are shown for informational purposes only.**

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
15-Jun				0												
16-Jun		0		0												
17-Jun		0		0		0										
18-Jun		0		0		0				0						
19-Jun		0	0	0		0			0	0				0		
20-Jun		0	0	0		0			0	0				0		
21-Jun		0	0	0		0			0	0				0	0	
22-Jun		0	0	0		0			0	0				0	0	0
23-Jun		0	0	0	0	0			0	0	0			0	0	0
24-Jun		0	0	0	0	0			0	0	0			0	0	0
25-Jun		0	0	0	0	0			0	0	0			0	0	0
26-Jun		0	0	0	0	0			0	0	0	0		0	0	0
27-Jun		0	0	0	0	0			0	0	1	0		1	0	0
28-Jun		0	0	0	0	0			0	0	2	0	0	0	0	0
29-Jun	0	0	0	1	3	1			0	1	5	0	0	0	0	0
30-Jun	0	0	0	0	0	0	0		0	0	2	1	0	0	0	1
1-Jul	0	2	0	1	0	0	0		0	0	0	1	0	6	1	0
2-Jul	0	0	6	0	0	0	0		0	0	3	0	0	8	16	0
3-Jul	0	1	9	0	0	0	0		0	0	5	0	9	2	10	0
4-Jul	0	0	16	0	0	1	0		0	1	3	0	50	17	29	0
5-Jul	0	1	6	0	0	8	0		0	4	9	0	15	5	27	0
6-Jul	0	4	1	0	0	1	0		1	4	7	0	27	0	15	5
7-Jul	2	0	7	1	0	2	0		0	4	22	0	16	6	18	3
8-Jul	1	0	0	0	3	6	0		0	2	18	0	12	6	25	0
9-Jul	0	0	10	0	0	2	0		0	2	14	0	13	9	3	1
10-Jul	0	1	6	1	0	0	0		0	13	15	0	12	6	2	3
11-Jul	1	1	6	0	4	7	1		0	14	18	0	16	2	2	5
12-Jul	0	0	8	0	8	0	0		1	4	16	1	20	6	5	9
13-Jul	0	0	7	0	3	0	0		0	4	19	0	4	2	5	2
14-Jul	0	0	9	2	0	0	1		0	1	10	15	3	1	3	5
15-Jul	1	0	4	1	10	0	0	0	0	8	3	0	7	1	15	2
16-Jul	2	0	5	2	7	1	0	0	3	13	6	1	5	2	6	2
17-Jul	0	0	4	1	5	5	0	0	1	23	9	0	18	4	5	6
18-Jul	2	3	8	1	13	2	0	1	2	0	7	0	21	5	2	3
19-Jul	0	0	7	0	17	0	0	0	3	9	12	0	26	5	5	4
20-Jul	3	1	6	1	3	2	0	0	1	3	12	0	21	3	6	1
21-Jul	2	2	3	0	1	0	0	0	1	1	7	2	32	1	5	2
22-Jul	0	0	4	2	6	0	0	4	1	8	2	0	12	4	2	2
23-Jul	0	0	4	1	3	0	0	1	2	11	7	0	31	4	9	5
24-Jul	1	0	1	0	1	0	0	2	4	11	10	5	19	4	3	4
25-Jul	1	8	1	0	9	1	0	1	0	2	16	5	15	8	5	3
26-Jul	1	2	3	0	0	0	0	0	0	15	9	2	13	8	12	6
27-Jul	5	1	3	0	0	0	0	2	1	25	16	5	9	4	12	1
28-Jul	4	0	2	3	6	0	0	0	2	19	6	4		5	7	4
29-Jul	3	1	0	3	5	0	0	0	0	9	5	7		5	7	2
30-Jul	2	3	0	2	5	1	1	0	0	18	6	1		1	10	1
31-Jul	0	0	5	0	4	1	1	0	4	7	7	1				0
1-Aug	2	4	1	3	5	0	0	0	3	16	8	0				2
2-Aug		0	1	2	1	0	0	0	3	4	9	0				0
3-Aug		3	1	1	6	0	1	1	0	11	3	0				0
4-Aug		0	4	0	4	1	1	0	0	40	7	0				

(continued)

Appendix 6. Continued.

Date	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
5-Aug		0	1	0	3	0	1	0	0	5	2	2				
6-Aug		0	4	0	2	2	0	0	1	11	8	4				
7-Aug		1	3	0	5	0	0	0	0	9	9	0				
8-Aug		1	1	0	2	0	2	0	0	4	8	8				
9-Aug		0	5	0	2	0	1	0	1	2	6	1				
10-Aug		0	3	0	1	0	0	0	1	6	3	1				
11-Aug		0	2	0	4	1	1	0	0	6	5	2				
12-Aug		0	0	0	2	1	0	0	2	3	5	1				
13-Aug		3	0	2	12	1	0	1	0	12	4	3				
14-Aug		3	1	0	2	0	0	0	0	8	3	3				
15-Aug		3	1	0	1	0	0	0	0	7	2	0				
16-Aug		5	5	0	3	0	0	0	0	6	1	4				
17-Aug		5	0	0	2	0	1	0	0	5	0	0				
18-Aug		1	1	1	1	0	1	0	0	8	6	13				
19-Aug		1	5	2	0	2	1	0	0	8	4	0				
20-Aug		3	1	5	0	3	0	1	0	17	5	0				
21-Aug		1	3	5	0	2	0	0	0	0	6	1				
22-Aug		13	1	1	0	0	0	0	0	6	3	0				
23-Aug		9	0	1	0	1	0	0	0	11	0	0				
24-Aug		4	3	1	0	0	2	0	1	10	5	7				
25-Aug		0	16	8	0	0	3	0	0	5	15	1				
26-Aug		1	6	2	0	2	0	0	1	1	4	2				
27-Aug		0	2	1	0	0	11	0	0	6	2	0				
28-Aug		4	2	2	0	2	3	0	0	6	2	15				
29-Aug		1	4	5	0	0	4	0	1	4	2	5				
30-Aug		1	5	6	3	2	3	1	0	2	4	5				
31-Aug		2	0	0	0	0	5	0	0	2	1	1				
1-Sep		3	2	0	1	4	13	0	0	2	6	2				
2-Sep		0	1	4	1	2	5	0	0	1	6	2				
3-Sep		0	3	2	0	9	2	0	0	1	2	8				
4-Sep		2	3	1	0	13	2	0	0	5	5	1				
5-Sep		0	3	1	0	15	0	0	0	4	15	3				
6-Sep		3	2	2	0	2	0	0	0	0	6	3				
7-Sep		1	1	3	0	0	0	0	1	0	1	0				
8-Sep		2	0	1	1	1	0	0	0	1	2	0				
9-Sep		0	0	4	6	2	1	0	1	0	4	0				
10-Sep		1	0	4	0	0	2	0	0	0	1	2				
11-Sep		1	0	2	2	4	0	0	0	1	1	0				
12-Sep		0	0	3	0		0	0	0	0	1					
13-Sep			0	2	0		2	0	0	1	0					
14-Sep			0				1	0	0	1	0					
15-Sep			0				0			0	0					
16-Sep			0				0				1					
17-Sep							1				3					
18-Sep							0				2					
19-Sep							0				1					
20-Sep							1									
21-Sep							3									
22-Sep							1									
23-Sep							0									
Total	33**	113	248	100	188	113	79	15**	43	494	508	151	426*	141*	272*	84*

 = estimated escapement counts  
 \* \* = incomplete count, missing data not estimated.  
 \* = incomplete count, weir removed